Report No. 21546-1

Report:

Covanta Durham York Renewable Energy Limited Partnership Compliance Emission Testing in Accordance with Amended Environmental Compliance Approval (Air) No. 7306-8FDKNX

Date: November 25, 2015



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Revision History

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1	November 25, 2015	None

NOTICE:

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EXECUTIVE SUMMARY

ORTECH Consulting Inc. (ORTECH) completed an emission testing program at the Durham York Energy Centre (DYEC) located in Courtice, Ontario between September 29 and October 29, 2015. The emission testing program was performed to satisfy the requirements of the Ontario Ministry of the Environment and Climate Change (MOECC) Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX. Section 7(1) of the ECA states that "the owner shall perform annual source testing, in accordance with the procedures and schedule outlined in the attached Schedule E, to determine the rates of emissions of the test contaminants from the stack. The program shall be conducted not later than six months after the commencement date of operation of the facility/equipment and subsequent source testing programs shall be conducted once every calendar year thereafter." This program is the initial source testing program conducted under Amended ECA No. 7306-8FDKNX.

Source testing was performed on the Baghouse (BH) Outlet of Boiler No. 1 and BH Outlet of Boiler No. 2 for the test contaminants listed in Schedule D of the ECA. Although not required by the ECA, testing was also conducted at each location for hexavalent chromium.

The initial test program was conducted from September 29 to October 2, 2015 during which triplicate tests were conducted for each parameter listed in Schedule D of the ECA. After discussions between Covanta and the MOECC, additional testing was conducted for semi-volatile organic compounds, including dioxins, furans, 12 dioxin-like PCBs, chlorobenzenes, chlorophenols and PAHs. Triplicate semi-volatile organic tests were conducted on October 21 and October 22, 2015. An additional three semi-volatile organic tests were conducted on October 28 and October 29, 2015. The results from all of the tests performed are provided in the appendices of this report. The results from the additional testing are summarized in the text of the report.

Each set of dioxin and furan results is accompanied by a laboratory report that identifies interference by certain organics with the amount of the interference being reportedly less in the second and third set of dioxin and furan results when an additional cleanup procedure was applied to reduce interference. Interference creates elevated results for toxic equivalence because there is more weight added to the sample. The second and third sets of dioxin and furan analyses are considered more representative of actual DYEC emissions due to an additional laboratory procedure to prepare the extracts for analyses and laboratory notes that identify less interference in that data in comparison to the first set.

Prior to commencing the source testing program, relative accuracy and system bias testing was conducted on the Continuous Emission Monitoring Systems (CEMS) installed at the Scrubber Inlet and BH Outlet of each Boiler. The results of the relative accuracy and system bias testing are presented in ORTECH Report No. 21546-2. The DYEC CEMS met the performance parameters detailed in Schedule F of the ECA. The data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide. Concentration data measured by ORTECH between September 23 and September 27, 2015 at the Scrubber Inlet sampling locations was used to assess against the total hydrocarbons (organic matter) in-stack emissions limit detailed in Schedule C of the ECA.

Triplicate emission tests were completed for particulate matter, metals, semi-volatile organic compounds, aldehydes, acid gases, volatile organic compounds and combustion gases at the BH Outlet of each Boiler. The contaminant groups included in the emission test program and the reference test methods used are summarized below:

Test Groups	Reference Method
Metals	US EPA Method 29
$PM_{2.5}$ and PM_{10}	US EPA Methods 201A and 202
Hexavalent Chromium	US EPA SW-846 Method 0061
Semi-Volatile Organic Compounds	Environment Canada Method EPS 1/RM/2
Volatile Organic Compounds	US EPA SW-846 Method 0030
Aldehydes	CARB Method 430
Particulate, Halides and Ammonia	US EPA Method 26A
Combustion Gases:	
Oxygen and Carbon Dioxide	Facility CEM
Carbon Monoxide	Facility CEM
Sulphur Dioxide	Facility CEM
Nitrogen Oxides	Facility CEM
Total Hydrocarbons	Facility CEM/ORTECH per US EPA Method 25A

Schedule C of ECA No. 7306-8FDKNX lists in-stack limits for the emissions of various compounds. In-stack emissions limits are given for particulate matter, mercury, cadmium, lead, dioxins and furans and organic matter for comparison with the results from compliance source testing. In-stack emission limits are also given for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide calculated as the rolling arithmetic average of data measured by a CEMS.

Since relative accuracy and system bias testing demonstrated that the DYEC CEMS met the performance parameters detailed in Schedule F of the ECA, the data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide. Note the DYEC CEMS data for the four day test period (September 29 to October 2) was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA. Concentration data measured by ORTECH between September 23 and September 27, 2015 at the Scrubber Inlet sampling locations was used to assess against the total hydrocarbons (organic matter) in-stack emissions limit detailed in Schedule C of the ECA.

Consistent with the approach commonly required by the MOECC for compliance emission testing programs, the following results are conservative in the sense that when the analytical result is reported to be below the detection limit, the full detection limit is used to calculate emission data (with the exception of dioxin and furans which use half the detection limit) and is shown by a "<" symbol. Also, when one or both Boiler results are reported to be below the detection limit, the detection limit was used to conservatively estimate the total emission rate for the Main Stack.

The average results for the tests conducted at the Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet, along with the respective in-stack emission limits, are summarized in the following table:

Parameter	Limit	Boiler No. 1	Boiler No. 2	Combined Boilers
September 29 to October 2, 2015 Test Results:				
Power Output (MWh/day)	-	-	-	412 (7)
Average Combustion Zone Temp. (°C)	-	1127	1169	1148 (8)
Steam (tonnes/day)	-	837	838	1675 (7)
MSW Combusted (tonnes/day)	-	225	222	447 (7)
NOx Reagent Injection Rate (liters/d)	-	1333	1274	2607 (7)
Carbon Injection (kg/day)	-	95.3	91.5	187 (7)
Lime Injection (kg/day)	-	4075	3865	7940 (7)
Stack Temperature (°C)	-	135	134	135 (8)
Moisture Content (%)	-	16.5	16.3	16.4 (8)
Velocity (m/s)	-	17.3	17.4	-
Static Pressure (kPa)	-	-2.75	-2.68	-2.72 (8)
Absolute Pressure (kPa)	-	98.5	98.4	98.5 (8)
Actual Flowrate (m^3/s)	-	25.6	25.8	-
Dry Reference Flowrate (Rm^3/s) (1)	-	15.2	15.3	30.5 (7)
Oxygen (%)	-	7.69	8.00	7.85 (8)
Carbon Dioxide (%)	-	11.4	11.3	11.4 (8)
Particulate (mg/Rm^3) (2)	9	0.53	<0.41	<0.47 (8)
Mercury ($\mu g/Rm^3$) (2)	15	1.16	0.72	0.94 (8)
Cadmium ($\mu g/Rm^3$) (2)	7	0.12	0.15	0.14 (8)
Lead ($\mu g/Rm^3$) (2)	50	0.57	0.51	0.54 (8)
Hydrochloric Acid (mg/Rm^3) (4)	9	3.7	4.1	3.9 (8)
Sulphur Dioxide (mg/Rm^3) (4)	35	6.7	1.8	4.3 (8)
Nitrogen Oxides (mg/Rm^3) (4)	121	115	115	115 (8)
Total Hydrocarbons (ppm, dry) (5)	50	0	4.9	2.5 (8)
Carbon Monoxide (mg/Rm^3) (6)	40	24.4	27.0	25.7 (8)
October 21 to October 22, 2015 Test Results:				
Power Output (MWh/day)	-	-	-	358 (7)
Average Combustion Zone Temp. (°C)	-	1174	1139	1156 (8)
Steam (tonnes/day)	-	815	819	1633 (7)
MSW Combusted (tonnes/day)	-	222	220	442 (7)
NOx Reagent Injection Rate (liters/d)	-	1199	1503	2702 (7)
Carbon Injection (kg/day)	-	124	123	247 (7)
Lime Injection (kg/day)	-	5649	5749	11397 (7)
Dioxins and Furans (pg TEQ/Rm^3) (3)	60	<36.0	<32.4	<34.2 (8)
October 28 to October 29, 2015 Test Results:				
Power Output (MWh/day)	-	-	-	402 (7)
Average Combustion Zone Temp. (°C)	-	1167	1158	1162 (8)
Steam (tonnes/day)	-	821	821	1642 (7)
MSW Combusted (tonnes/day)	-	227	225	452 (7)
NOx Reagent Injection Rate (liters/d)	-	976	1499	2475 (7)
Carbon Injection (kg/day)	-	119	119	238 (7)
Lime Injection (kg/day)	-	4115	4154	8269 (7)
Dioxins and Furans (pg TEQ/Rm^3) (3)	60	<27.0	<22.2	<24.6 (8)

(1) dry at 25°C and 1 atmosphere
(2) dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
(3) calculated using the NATO/CCMS (1989) toxicity equivalence factors and the detection limit for those isomers below the analytical detection limit, dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
(4) maximum calculated rolling arithmetic average of 24 hours of data measured by the DYEC CEMS, dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
(5) average of six half-hour tests conducted by ORTECH between September 23 and September 27, 2015 measured at an undiluted location, reported on a dry basis expressed as equivalent methane
(6) maximum calculated rolling arithmetic average of 4 hours of data measured by the DYEC CEMS, dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
(7) total for combined Boilers
(8) average for combined Boilers

The emission data measured at each Boiler BH Outlet during the testing program was combined and used to assess the emissions from the Main Stack against the point of impingement criteria detailed in Ontario Regulation 419/05.

The CALPUFF dispersion modelling results for the 2015 emission testing program are provided in the following tables based on calculated ground level point of impingement concentrations for the average total Main Stack emissions. As shown in the following tables, the calculated impingement concentrations were well below the allowable impingement concentrations for all of the contaminants. The point of impingement concentration was less than 26.3% of the standard, guideline or upper risk threshold limit provided in Ontario Regulation 419/05 for each contaminant.

A scenario provided in the DYEC Emission Summary and Dispersion Modelling (ESDM) Report includes emissions from silo loading and the standby generator (Scenario H). The predominant contaminants from these sources are particulate from the silo loading and nitrogen oxides from the generator. These two contaminants were assessed and it was determined that, since the Main Stack emissions presented in this report are less than those in the ESDM Report, dispersion modelling would show a decrease in the point of impingement concentration for these two contaminants. As a result, additional dispersion modelling for Scenario H was not conducted.

Odour sampling was conducted by Zorix Environmental and the results were provided to ORTECH for inclusion in the report. ORTECH performed CALPUFF dispersion modelling for a five year period to determine the odour concentrations at off property receptors. The source input data for the modelling, including flowrate, temperature and odour emission rate, was provided by Covanta based on the odour testing report prepared by Zorix Environmental. The maximum 10-minute odour concentration at the most impacted sensitive receptor was 0.28 OU occurring at a former house that was located to the west of the facility. Note this house was included as a sensitive receptor in the Emission Summary and Dispersion Modelling report but has since been demolished. This concentration is below the ECA limit of 1 odour unit at sensitive receptors.

Covanta - Durham York Energy Centre
Main Stack with Both Boilers Operating
Regulation 419 Dispersion Modeling Results using CALPUFF for
Inorganic Compounds

Contaminant	Boiler No. 1 BH Outlet Average Emission Rate	Boiler No. 2 BH Outlet Average Emission Rate	Total Average Emission Rate	Calculated Impingement Concentration	Allowable Impingement Concentration	Percentage of Allowable Concentration	Status of Allowable Concentration
Base Case - 24 hour			1.00 g/s	1.13 µg/m³			
Base Case - 1 hour			1.00 g/s	24.2 µg/m³			
Base Case - 1/2 hour			1.00 g/s	29.0 µg/m³			
Base Case - 30 day			1.00 g/s	0.117 µg/m³			
Filterable Particulate Matter	10.7 mg/s	<8.41 mg/s	<19.1 mg/s	0.022 µg/m³	120 µg/m³	0.018	S
Hydrogen Chloride *	131 mg/s	109 mg/s	240 mg/s	0.27 µg/m³	20 µg/m³	1.36	S
Hydrogen Fluoride	<1.12 mg/s	<1.13 mg/s	<2.25 mg/s	0.0025 µg/m³	100 µg/m³	0.0025	S
Hydrogen Fluoride	<1.12 mg/s	<1.13 mg/s	<2.25 mg/s	0.00026 µg/m³	100 µg/m³	0.00026	S - 30 day
Ammonia	30.1 mg/s	18.5 mg/s	48.6 mg/s	0.055 µg/m³	100 µg/m³	0.055	S
Sulphur Dioxide **	0.062 g/s	0.014 g/s	0.076 g/s	0.086 µg/m³	275 µg/m³	0.031	S
Sulphur Dioxide **	0.062 g/s	0.014 g/s	0.076 g/s	1.84 µg/m³	690 µg/m³	0.27	S - 1 hour
Nitrogen Oxides **	2.20 g/s	2.14 g/s	4.34 g/s	4.91 µg/m³	200 µg/m³	2.45	S
Nitrogen Oxides **	2.20 g/s	2.14 g/s	4.34 g/s	105 µg/m³	400 µg/m³	26.3	S - 1 hour
Carbon Monoxide **	0.31 g/s	0.29 g/s	0.60 g/s	17.3 µg/m³	6000 µg/m³	0.29	S - 1/2 hour

S - Standard
G - Guideline
URT - Upper Risk Threshold
* Measured by ORTECH using the particulate, halide and ammonia test train.
** Emission data calculated using the CEM data measured by DYEC and the volumetric flowrates measured by ORTECH between September 29 and October 2, 2015.
Note: Unless otherwise stated all allowable limits are 24 hour standards or guidelines.

Covanta - Durham York Energy Centre
Main Stack with Both Boilers Operating
Regulation 419 Dispersion Modeling Results using CALPUFF for
Semi-Volatile Organic Compounds

Contaminant	Boiler No. 1 BH Outlet Average Emission Rate	Boiler No. 2 BH Outlet Average Emission Rate	Total Average Emission Rate	Calculated Impingement Concentration	Allowable Impingement Concentration	Percentage of Allowable Concentration	Status of Allowable Concentration
Base Case - 24 hour			1.00 g/s	1.13 µg/m³			
Base Case - 1 hour			1.00 g/s	24.2 µg/m³			
October 1 to October 2, 2015 Test Results:							
Dioxins, Furans and Dioxin-Like PCBs (TEQ)*	4.41 ng TEQ/s	1.99 ng TEQ/s	6.40 ng TEQ/s	0.0072 pg TEQ/m³	1 pg TEQ/m³	0.72	URT
Naphthalene	5.35 µg/s	4.19 µg/s	9.54 µg/s	0.000011 µg/m³	22.5 µg/m³	<0.0001	G
Biphenyl	3.09 µg/s	3.84 µg/s	6.93 µg/s	0.00017 µg/m³	60 µg/m³	0.00028	G - 1 hour
Benzo (a) pyrene	<0.031 µg/s	0.041 µg/s	<0.072 µg/s	0.000000081 µg/m³	0.0011 µg/m³	0.0074	G
1,2-Dichlorobenzene	0.55 µg/s	0.46 µg/s	1.01 µg/s	0.000024 µg/m³	30500 µg/m³	<0.0001	G - 1 hour
1,4-Dichlorobenzene	0.49 µg/s	0.39 µg/s	0.88 µg/s	0.00000099 µg/m³	95 µg/m³	<0.0001	S
1,2,4-Trichlorobenzene	0.40 µg/s	0.37 µg/s	0.77 µg/s	0.00000087 µg/m³	400 µg/m³	<0.0001	G
Pentachlorophenol	0.36 µg/s	<0.15 µg/s	<0.51 µg/s	0.00000058 µg/m³	20 µg/m³	<0.0001	G
October 21 to October 22, 2015 Test Results:							
Dioxins, Furans and Dioxin-Like PCBs (TEQ)*	0.62 ng TEQ/s	0.61 ng TEQ/s	1.23 ng TEQ/s	0.0014 pg TEQ/m³	1 pg TEQ/m³	0.14	URT
Naphthalene	13.3 µg/s	13.6 µg/s	26.9 µg/s	0.000030 µg/m³	22.5 µg/m³	<0.0001	G
Biphenyl	0.76 µg/s	1.57 µg/s	2.33 µg/s	0.000056 µg/m³	60 µg/m³	<0.0001	G - 1 hour
Benzo (a) pyrene	<0.036 µg/s	<0.036 µg/s	<0.072 µg/s	0.000000081 µg/m³	0.0011 µg/m³	0.0074	G
1,2-Dichlorobenzene	0.33 µg/s	0.22 µg/s	0.55 µg/s	0.000013 µg/m³	30500 µg/m³	<0.0001	G - 1 hour
1,4-Dichlorobenzene	0.25 µg/s	0.15 µg/s	0.40 µg/s	0.00000045 µg/m³	95 µg/m³	<0.0001	S
1,2,4-Trichlorobenzene	0.13 µg/s	<0.095 µg/s	<0.23 µg/s	0.00000025 µg/m³	400 µg/m³	<0.0001	G
Pentachlorophenol	0.68 µg/s	<0.18 µg/s	<0.86 µg/s	0.00000097 µg/m³	20 µg/m³	<0.0001	G
October 29 to October 29, 2015 Test Results:							
Dioxins, Furans and Dioxin-Like PCBs (TEQ)*	0.48 ng TEQ/s	0.42 ng TEQ/s	0.90 ng TEQ/s	0.0010 pg TEQ/m³	1 pg TEQ/m³	0.10	URT
Naphthalene	13.7 µg/s	12.7 µg/s	26.4 µg/s	0.000030 µg/m³	22.5 µg/m³	<0.0001	G
Biphenyl	0.61 µg/s	0.30 µg/s	0.91 µg/s	0.000022 µg/m³	60 µg/m³	<0.0001	G - 1 hour
Benzo (a) pyrene	<0.037 µg/s	<0.037 µg/s	<0.074 µg/s	0.000000084 µg/m³	0.0011 µg/m³	0.0076	G
1,2-Dichlorobenzene	0.38 µg/s	0.28 µg/s	0.66 µg/s	0.000016 µg/m³	30500 µg/m³	<0.0001	G - 1 hour
1,4-Dichlorobenzene	0.30 µg/s	0.23 µg/s	0.53 µg/s	0.00000060 µg/m³	95 µg/m³	<0.0001	S
1,2,4-Trichlorobenzene	0.20 µg/s	0.14 µg/s	0.34 µg/s	0.00000038 µg/m³	400 µg/m³	<0.0001	G
Pentachlorophenol	<0.25 µg/s	<0.19 µg/s	<0.44 µg/s	0.00000050 µg/m³	20 µg/m³	<0.0001	G

S - Standard
G - Guideline
URT - Upper Risk Threshold

* Calculated using the WHO (O. Reg. 419/05) toxicity equivalence factors and half the detection limit for those isomers not detected in quantities greater than the reportable detection limit.
Note: Unless otherwise stated all allowable limits are 24 hour standards or guidelines.

ORTECH

Main Stack with Both Boilers Operating
Regulation 419 Dispersion Modeling Results using CALPUFF for Metals

Contaminant	Boiler No. 1 BH Outlet Average Emission Rate	Boiler No. 2 BH Outlet Average Emission Rate	Total Average Emission Rate	Calculated Impingement Concentration	Allowable Impingement Concentration	Percentage of Allowable Concentration	Status of Allowable Concentration
Base Case - 24 hour			1.00 g/s	1.13 µg/m³			
Antimony	<0.0012 mg/s	<0.0029 mg/s	<0.0041 mg/s	0.0000046 µg/m³	25 µg/m³	<0.0001	S
Arsenic	<0.0012 mg/s	<0.0013 mg/s	<0.0026 mg/s	0.0000029 µg/m³	0.3 µg/m³	0.00097	G
Barium (as water soluble)	0.0039 mg/s	0.0059 mg/s	0.0098 mg/s	0.000011 µg/m³	10 µg/m³	0.00011	G
Beryllium	<0.0012 mg/s	<0.0012 mg/s	<0.0025 mg/s	0.0000028 µg/m³	0.01 µg/m³	0.028	S
Cadmium	0.0025 mg/s	0.0029 mg/s	0.0054 mg/s	0.0000061 µg/m³	0.025 µg/m³	0.024	S
Chromium	0.050 mg/s	0.12 mg/s	0.17 mg/s	0.00020 µg/m³	1.5 µg/m³	0.013	G
Cobalt	<0.0012 mg/s	<0.0014 mg/s	<0.0027 mg/s	0.0000030 µg/m³	0.1 µg/m³	0.0030	G
Copper	0.050 mg/s	0.061 mg/s	0.11 mg/s	0.00012 µg/m³	50 µg/m³	0.00025	S
Lead	0.011 mg/s	0.0099 mg/s	0.021 mg/s	0.000024 µg/m³	0.5 µg/m³	0.0048	S
Manganese (as compounds)	0.031 mg/s	0.070 mg/s	0.10 mg/s	0.00011 µg/m³	2.5 µg/m³	0.0046	G
Mercury	0.023 mg/s	0.014 mg/s	0.037 mg/s	0.000042 µg/m³	2 µg/m³	0.0021	S
Molybdenum	0.30 mg/s	0.30 mg/s	0.61 mg/s	0.00069 µg/m³	120 µg/m³	0.00057	G
Nickel	0.12 mg/s	0.15 mg/s	0.27 mg/s	0.00030 µg/m³	2 µg/m³	0.015	S
Selenium	<0.0062 mg/s	<0.0062 mg/s	<0.012 mg/s	0.000014 µg/m³	10 µg/m³	0.00014	G
Silver	<0.0012 mg/s	<0.0012 mg/s	<0.0025 mg/s	0.0000028 µg/m³	1 µg/m³	0.00028	S
Vanadium	<0.00062 mg/s	<0.00081 mg/s	<0.0014 mg/s	0.0000016 µg/m³	2 µg/m³	<0.0001	S
Zinc	0.064 mg/s	0.13 mg/s	0.19 mg/s	0.00022 µg/m³	120 µg/m³	0.00018	S
Hexavalent Chromium	<0.0048 mg/s	<0.0049 mg/s	<0.0097 mg/s	0.000011 µg/m³	0.07 µg/m³	0.016	URT

S - Standard
G - Guideline
URT - Upper Risk Threshold
Note: Unless otherwise stated all allowable limits are 24 hour standards or guidelines.

Main Stack with Both Boilers Operating
Regulation 419 Dispersion Modeling Results using CALPUFF for
Volatile Organic Compounds

Contaminant	Boiler No. 1 BH Outlet Average Emission Rate	Boiler No. 2 BH Outlet Average Emission Rate	Total Average Emission Rate	Calculated Impingement Concentration	Allowable Impingement Concentration	Percentage of Allowable Concentration	Status of Allowable Concentration
Base Case - 24 hour			1.00 g/s	1.13 µg/m^3			
Base Case - 1 hour			1.00 g/s	24.2 µg/m^3			
Acetone	<1.21 mg/s	<0.064 mg/s	<1.27 mg/s	0.0014 µg/m^3	11880 µg/m^3	<0.0001	S
Benzene	<0.59 mg/s	<0.039 mg/s	<0.63 mg/s	0.00071 µg/m^3	100 µg/m^3	0.00071	URT
Bromoform	<0.12 mg/s	<0.0064 mg/s	<0.12 mg/s	0.00014 µg/m^3	55 µg/m^3	0.00026	G
Bromomethane	<1.07 mg/s	<0.058 mg/s	<1.13 mg/s	0.0013 µg/m^3	1350 µg/m^3	<0.0001	G
1,3-Butadiene	<0.067 mg/s	<0.013 mg/s	<0.080 mg/s	0.000090 µg/m^3	300 µg/m^3	<0.0001	URT
2-Butanone	<0.16 mg/s	<0.0064 mg/s	<0.17 mg/s	0.00019 µg/m^3	1000 µg/m^3	<0.0001	S
Carbon Tetrachloride	<0.12 mg/s	<0.0064 mg/s	<0.12 mg/s	0.00014 µg/m^3	2.4 µg/m^3	0.0058	S
Chloroform	<0.12 mg/s	<0.011 mg/s	<0.13 mg/s	0.00015 µg/m^3	1 µg/m^3	0.015	S
Cumene (Isopropylbenzene)	<0.24 mg/s	<0.013 mg/s	<0.25 mg/s	0.00028 µg/m^3	400 µg/m^3	<0.0001	S
Dichlorodifluoromethane	<0.24 mg/s	<0.013 mg/s	<0.25 mg/s	0.00028 µg/m^3	500000 µg/m^3	<0.0001	G
trans,1,2-Dichloroethene	<0.12 mg/s	<0.0064 mg/s	<0.12 mg/s	0.00014 µg/m^3	105 µg/m^3	0.00013	G
Ethylbenzene	<0.18 mg/s	<0.0078 mg/s	<0.19 mg/s	0.00021 µg/m^3	1000 µg/m^3	<0.0001	S
Ethylene Dibromide	<0.24 mg/s	<0.013 mg/s	<0.25 mg/s	0.00028 µg/m^3	3 µg/m^3	0.0094	G
Mesitylene (1,3,5-Trimethylbenzene)	<0.24 mg/s	<0.013 mg/s	<0.25 mg/s	0.00029 µg/m^3	220 µg/m^3	0.00013	S
Methylene Chloride	<1.29 mg/s	<0.092 mg/s	<1.38 mg/s	0.0016 µg/m^3	220 µg/m^3	0.00071	G
Styrene	<0.25 mg/s	<0.032 mg/s	<0.28 mg/s	0.00032 µg/m^3	400 µg/m^3	<0.0001	S
Tetrachloroethene	<0.12 mg/s	<0.0066 mg/s	<0.12 mg/s	0.00014 µg/m^3	360 µg/m^3	<0.0001	S
Toluene	<2.48 mg/s	0.062 mg/s	<2.54 mg/s	0.0029 µg/m^3	2000 µg/m^3	0.00014	G
1,1,1-Trichloroethane	<0.12 mg/s	<0.0064 mg/s	<0.12 mg/s	0.00014 µg/m^3	115000 µg/m^3	<0.0001	S
Trichloroethene	<0.12 mg/s	<0.0064 mg/s	<0.12 mg/s	0.00014 µg/m^3	12 µg/m^3	0.0012	S
Trichlorotrifluoroethane	<0.24 mg/s	<0.013 mg/s	<0.25 mg/s	0.00028 µg/m^3	800000 µg/m^3	<0.0001	S
Trichlorofluoromethane	<0.24 mg/s	<0.013 mg/s	<0.25 mg/s	0.00028 µg/m^3	6000 µg/m^3	<0.0001	G
Total Xylenes	<0.71 mg/s	<0.034 mg/s	<0.74 mg/s	0.00084 µg/m^3	730 µg/m^3	0.00012	S
Vinyl Chloride	<0.24 mg/s	<0.013 mg/s	<0.25 mg/s	0.00028 µg/m^3	1 µg/m^3	0.028	S
Acetaldehyde	8.40 mg/s	10.9 mg/s	19.3 mg/s	0.022 µg/m^3	500 µg/m^3	<0.0001	S
Formaldehyde	8.60 mg/s	20.2 mg/s	28.8 mg/s	0.033 µg/m^3	65 µg/m^3	0.05007	S
Acrolein	<1.52 mg/s	<1.60 mg/s	<3.12 mg/s	0.0035 µg/m^3	0.4 µg/m^3	0.88140	S
Acrolein	<1.52 mg/s	<1.60 mg/s	<3.12 mg/s	0.076 µg/m^3	4.5 µg/m^3	1.68	S - 1 hour

S - Standard
G - Guideline
URT - Upper Risk Threshold
Note: Unless otherwise stated all allowable limits are 24 hour standards or guidelines.

In summary, the key results of the emission testing program carried out as required by ECA No. 7306-8FDKNX are:

- The facility was maintained within the operational parameters defined by the amended ECA that constitutes normal operation during the stack test periods. Testing was conducted at a steam production rate of greater than 1623 tonnes of steam per day for the two Boilers combined. The maximum continuous rating for the facility is 1614.7 tonnes of steam per day for the two Boilers combined (33.64 tonnes per hour for each Boiler).
- Using CALPUFF dispersion modelling techniques, the predicted maximum point of impingement concentrations, based on the average test results, show DYEC to be operating well below the standards in Regulation 419/05 (Schedule 3) under the Ontario Environmental Protection Act and other MOECC criteria including guidelines, upper risk thresholds and "to be updated" guidelines.

Tables referenced in this report for the tests conducted at Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet between September 29 and October 2, 2015 are provided in Appendix 1 and Appendix 2, respectively. Tables for the triplicate semi-volatile organic tests conducted at Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet on October 21 and October 22, 2015 are provided in Appendix 3 and Appendix 4, respectively. Tables for the additional three semi-volatile organic tests conducted at Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet on October 28 and October 29, 2015 are provided in Appendix 5 and Appendix 6, respectively.

1. INTRODUCTION

ORTECH Consulting Inc. (ORTECH) completed an emission testing program at the Durham York Energy Centre (DYEC) located in Courtice, Ontario. The emission testing program was performed to satisfy the requirements of the Ontario Ministry of the Environment and Climate Change (MOECC) Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX. Section 7(1) of the ECA states that "the owner shall perform annual source testing, in accordance with the procedures and schedule outlined in the attached Schedule E, to determine the rates of emissions of the test contaminants from the stack. The program shall be conducted not later than six months after the commencement date of operation of the facility/equipment and subsequent source testing programs shall be conducted once every calendar year thereafter." This program is the initial source testing program conducted under ECA No. 7306-8FDKNX.

Testing was performed on the BH Outlet of Boiler No. 1 and BH Outlet of Boiler No. 2 for the test contaminants listed in Schedule D of the ECA. Although not required by the ECA, testing was also conducted at each location for hexavalent chromium.

Prior to commencing the test program, Covanta prepared a Pre-Test Plan for review and approval by the MOECC. Provided in Appendix 7 is a copy of the Pre-Test Plan acceptance letter received from the MOECC, dated October 31, 2014, indicating acceptance of the proposed sampling strategy. A copy of the Amended Environmental Compliance Approval is also provided in Appendix 7.

The triplicate emission tests were conducted at each location between September 29 and October 29, 2015.

The initial test program was conducted from September 29 to October 2, 2015 during which triplicate tests were conducted for each parameter listed in Schedule D of the ECA. After discussions between Covanta and the MOECC, additional testing was conducted for semi-volatile organic compounds, including dioxins, furans, 12 dioxin-like PCBs, chlorobenzenes, chlorophenols and PAHs. The email communications between Covanta and the MOECC are also provided in Appendix 7.

Triplicate semi-volatile organic tests were conducted on October 21 and October 22, 2015. An additional three semi-volatile organic tests were conducted on October 28 and October 29, 2015. The results from the all of the tests performed are provided in the appendices of this report. The results from the additional testing are summarized in the text of the report.

2. PROCESS DESCRIPTION

DYEC is a thermal treatment facility with a maximum thermal treatment rate of 140,000 tonnes/year of municipal solid waste (MSW), as established by the Amended ECA. The maximum continuous rating (MCR) for the facility is defined as 218 tonnes per day, per unit, of MSW with a heat content of 13 MJ/kg per train. The steam production MCR is 33.64 tonnes per hour for each Boiler.

The facility was built to operate on a continuous basis; 24 hours/day, seven days/weeks, 365 days/year. Waste may be delivered six days per week between 7:00 am to 7:00 pm. The proposed operating schedule may be adjusted depending on demand and facility needs within the established setup indicated in the ECA (i.e., waste can only be received from Monday to Saturday – excluding statutory holidays, and between 7:00 am and 7:00 pm – ECA's Condition 4(1)(b)).

MSW arrives at the facility via covered refuse trucks and deposited in a storage pit within the receiving building. Facility operators manage MSW by moving and mixing MSW within the storage pit with the overhead grapple cranes. The MSW is lifted from the pit by crane and fed into the fuel hopper for each thermal treatment train.

The facility consists of two thermal treatment trains, each equipped with independently operated boilers/furnaces and air pollution control equipment. The treated exhaust gases are vented to a common 87.6 m stack and released to atmosphere.

2.1 Control Equipment

Flue gasses pass through a dry recirculating type scrubber for acid control and a fabric filter for particulate control. A Selective Non-Catalytic Reduction System (SNCR) with ammonia injection is used for NO_X control. Powdered carbon is injected for additional mercury control between the dry recirculating type scrubber and the fabric filter.

2.2 Continuous Emission Monitoring Systems

Continuous Emissions Monitors are installed in the vertical ductwork between the economizer and dry recirculating type scrubber (location referred to as the Scrubber Inlet), and in the vertical ductwork between the fabric filter and the ID fan (location referred to as the BH Outlet).

A summary of the CEMS installed at each location is provided below:

Unit	Location	Analyzer Manufacturer	Model No.	Serial No.	Parameter	Range
1	Scrubber Inlet	Environmental SA	MIR 9000	2684	CO (Low)	0-500 ppm
					CO (High)	0-2000 ppm
					HCl	0-1500 ppm
					O_2 (Dry)	0-25%
		Environmental SA	Graphite 52M	647	THC	0-100 ppm
		Ametek	RM CEM O2/IQ	10217710-2	O_2 (Wet)	0-25%
1	BH Outlet	Environmental SA	MIR 9000	2686	NO_X	0-500 ppm
					SO_2	0-200 ppm
					HCl	0-100 ppm
					HF	0-100 ppm
					O_2 (Dry)	0-25%
					CO_2	0-25%
		Ametek	RM CEM O2/IQ	10217710-1	O_2 (Wet)	0-25%
		Tethys	EXM400	F130304	NH_3	0-50 ppm
		OSI	OFS-2000W	13020629	Flow	0-40 m/s
		Teledyne	Light Hawk 560	5602492	Opacity	0-100%
		Environmental SA	Amesa	1825-269	Dioxin/Furan	0-10 ng/m^3
2	Scrubber Inlet	Environmental SA	MIR 9000	2685	CO (Low)	0-500 ppm
					CO (High)	0-2000 ppm
					HCl	0-1500 ppm
					O_2 (Dry)	0-25%
		Environmental SA	Graphite 52M	648	THC	0-100 ppm
		Ametek	RM CEM O2/IQ	10218084-1	O_2 (Wet)	0-25%
2	BH Outlet	Environmental SA	MIR 9000	2687	NO_X	0-500 ppm
					SO_2	0-200 ppm
					HCl	0-100 ppm
					HF	0-100 ppm
					O_2 (Dry)	0-25%
					CO_2	0-25%
		Ametek	RM CEM O2/IQ	10218084-2	O_2 (Wet)	0-25%
		Tethys	EXM400	F130303	NH_3	0-50 ppm
		OSI	OFS-2000W	13020633	Flow	0-40 m/s
		Teledyne	Light Hawk 560	5602493	Opacity	0-100%
		Environmental SA	Amesa	1825-284	Dioxin/Furan	0-10 ng/m^3

3. SAMPLING LOCATIONS

The BH Outlet sampling ports are located on the vertical circular ductwork between the baghouse outlet and the ID Fan inlet. There are two 6-inch ports, located 90 degrees apart, at the same elevation. A third port is located approximately 0.6 meters above the two sampling ports and 45 degrees apart. The two 6-inch sampling ports were used for isokinetic sampling; the third port was used for non-isokinetic sampling.

The BH Outlet duct has an inside diameter of 1.37 meters (54 inches) at the sampling ports. The two six inch ports are approximately 4.4 duct diameters (6.1 meters) downstream and 0.68 duct diameters (0.94 meters) upstream from the nearest flow disturbances.

The sampling ports are located at a "non-ideal" location as defined by the Ontario Source Testing Code. An "ideal" location is defined as being at least eight stack diameters downstream and at least two stack diameters upstream of flow disturbances.

Cyclonic flow checks were performed by ORTECH at the BH Outlet and Scrubber Inlet sampling locations on each Boiler on September 22, 2015. The cyclonic flow checks were performed using an S-type pitot tube and manometer following the procedures detailed in Ontario Source Testing Code Method 1. Briefly, the pitot tube was positioned at each sampling point so that the planes of the face openings were parallel to the cross-sectional axis of the duct. The pitot tube was then rotated about its longitudinal axis until the manometer reading was zero. The absolute value of the rotational angle was recorded to the nearest degree at each point. The average of the recorded angles was calculated at each location. If the average angle is less than 15^o, cyclonic flow is not present and sampling may proceed as normal.

The results for the cyclonic flow checks are provided in Appendix 8 and are summarized below:

Sampling Location	Performance Specification	Average Angle (^{o})	Cyclonic Flow Present
Boiler No. 1 Scrubber Inlet	Average <15^o	6.6	No
Boiler No. 2 Scrubber Inlet	Average <15^o	8.4	No
Boiler No. 1 BH Outlet	Average <15^o	8.8	No
Boiler No. 2 BH Outlet	Average <15^o	8.1	No

In addition, reverse flow was not observed at any point at any of the four sample locations during the cyclonic flow checks or during any test.

4. SAMPLING PROCEDURES

4.1 General

This section outlines the sampling procedures as well as pre-test and on site internal quality assurance/quality control (QA/QC) procedures which were utilized in the testing program. The procedures described in this section ensured that representative samples were collected and that the integrity of the collected samples was maintained. The use of these sampling procedures significantly reduced the possibility of sample contamination from external sources. Sample handling and documentation requirements were key factors in this program.

The triplicate emission tests were conducted at the Boiler No. 1 BH Outlet and the Boiler No. 2 BH Outlet from September 29 to October 2, 2015 for each contaminant group. Triplicate semi-volatile organic tests were also conducted between October 21 and October 22, 2015 and again from October 28 and October 29, 2015.

The contaminant groups included in the emission test program and the reference test methods used are summarized below:

Test Groups	Reference Method
Metals	US EPA Method 29
$PM_{2.5}$ and PM_{10}	US EPA Methods 201A and 202
Hexavalent Chromium	US EPA SW-846 Method 0061
Semi-Volatile Organic Compounds	Environment Canada Method EPS 1/RM/2
Volatile Organic Compounds	US EPA SW-846 Method 0030
Aldehydes	CARB Method 430
Particulate, Halides and Ammonia	US EPA Method 26A
Combustion Gases:	
Oxygen and Carbon Dioxide	Facility CEM
Carbon Monoxide	Facility CEM
Sulphur Dioxide	Facility CEM
Nitrogen Oxides	Facility CEM
Total Hydrocarbons	Facility CEM/ORTECH per US EPA Method 25A

Since relative accuracy and system bias testing demonstrated that the DYEC CEMS met the performance parameters detailed in Schedule F of the ECA, the data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides, carbon monoxide and organic matter (total hydrocarbons, undiluted expressed as equivalent methane). Total hydrocarbon concentrations measured by ORTECH at Boiler No. 1 Scrubber Inlet on September 27, 2015 and Boiler No. 2 Scrubber Inlet on September 23, 2015 following US EPA Method 25A are also included in the report.

4.2 Metals

Metals were sampled using the sampling procedures outlined in US EPA Method 29. Major components of the sampling train were as follows:

- A glass nozzle and probe liner assembly
- A quartz fiber filter with a low metal background
- The first impinger was initially empty to collect moisture
- The second and third impingers initially contained 100 mL each of 5% nitric acid/10% hydrogen peroxide solution to collect metals
- The fourth impinger was initially empty
- The fifth and sixth impingers initially contained 100 mL each of 4% potassium permanganate/10% sulphuric acid solution to collect mercury
- The seventh impinger contained silica gel

Each test for particulate matter and metals involved the collection of stack gas sampled isokinetically at twelve points centered on equal areas along each of two traverses (at 90° to each other) of the duct. Each of the twenty-four points was sampled for 5 minutes for a total actual sampling time of one hundred and twenty minutes.

At 2.5 minute time increments throughout each test the following information was measured and recorded on field data sheets:

- Elapsed sampling time
- Dry gas meter volume
- Pitot tube pressure
- Stack gas temperature
- Probe, oven and impinger temperatures
- Dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

The metals field data sheets are provided in Appendix 9.

At the start and finish of sampling each traverse the sampling train was leak-checked. A valid leak-check as specified by the sampling method is a leakage rate of less than 0.00057 cubic meters per minute (m^3/min) or 4% of the estimated sampling rate, whichever is less. All of the leak-checks, as detailed on the field data sheets, were acceptable.

A blank train was prepared and samples recovered in a manner identical to the test sampling trains for each Boiler.

4.3 Particle Size Distribution

Particle Size Distribution (PSD) tests were performed at each of the sample locations in accordance with the test procedures described in US EPA Method 201A using an Andersen Cascade Impaction Head. Sampling was conducted for one hundred and eighty minutes at six points across each traverse of the duct. At 5 minute time increments throughout each test the following information was measured and recorded on field data sheets:

- Elapsed sampling time
- Dry gas meter volume
- Pitot tube pressure
- Stack gas temperature
- Probe, oven and impinger temperatures
- Dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

Field data sheets for the PSD tests performed at each sample locations are provided collectively in Appendix 10.

The PSD head fractionates particulate into eight stages from >10 µm particle diameter using the pre-impactor to <1 µm. A total particulate catch of approximately 100 mg is required for optimum performance of the impactor. Due to low particulate levels in the exhaust gas the total catch was less than 11 mg for each test.

The results from the PSD tests were used, along with the particulate test results, to determine the percentage of total particulate emissions that have an aerodynamic diameter less than 10 µm and the percentage of the total particulate emissions with an aerodynamic diameter less than 2.5 µm.

4.4 Hexavalent Chromium

Hexavalent chromium was sampled using the sampling procedures outlined in US EPA SW-846 Method 0061. Major components of the sampling train are as follows:

- A glass nozzle and Teflon recirculating probe assembly
- The first Teflon impinger initially contained 150 mL of 0.1M potassium hydroxide
- The second and third Teflon impingers initially contained 75mL of 0.1M potassium hydroxide
- The fourth impinger was initially empty
- The fifth impinger contained silica gel

Each test for hexavalent chromium involved the collection of stack gas sampled isokinetically at twelve points centered on equal areas along each of two traverses (at 90° to each other) of the duct. Each point was sampled for 5 minutes for a total actual sampling time of one hundred and twenty minutes.

At 2.5 minute time increments throughout each test the following information was measured and recorded on field data sheets:

- Elapsed sampling time
- Dry gas meter volume
- Pitot tube pressure
- Stack gas temperature
- Probe, oven and impinger temperatures
- Dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

The hexavalent chromium field data sheets are provided in Appendix 11.

At the start and finish of sampling each traverse the sampling train was leak-checked. A valid leak-check as specified by the sampling method is a leakage rate of less than 0.00057 cubic meters per minute (m^3/min) or 4% of the estimated sampling rate, whichever is less. All of the leak-checks, as detailed on the field data sheets, were acceptable.

A blank train was prepared and samples recovered in a manner identical to the test sampling trains for each Boiler.

4.5 Semi-Volatile Organic Compounds

Semi-volatile organic compounds (SVOC), including dioxins and furans, polychlorinated biphenyls (PCBs), chlorobenzenes (CBs), chlorophenols (CPs) and polycyclic aromatic hydrocarbons (PAHs) were sampled using the sampling train and sampling procedures outlined in Environment Canada Report EPS 1/RM/2. Major components of the sampling train were as follows:

- A glass nozzle and probe liner assembly
- A clean and proven glass fiber filter was used
- Amberlite XAD-2 sorbent resin was used in a trap to collect semi-volatile organics
- The first impinger was initially empty
- The second impinger contained 100 mL of ethylene glycol
- The third impinger was initially empty
- The fourth impinger contained silica gel

All test train and auxiliary glassware were cleaned according to the methods as outlined in Environment Canada EPS 1/RM/2 except that the methods were modified by combining proofing extracts prior to analysis for the target analytes.

Each test for semi-volatile organic compounds involved the collection of stack gas sampled isokinetically at twelve points centered on equal areas along each of two traverses (at 90° to each other) of the duct. Each of the twenty-four points was sampled for 10 minutes for a total actual sampling time of two hundred and forty minutes.

At 2.5 minute time increments throughout each test the following information was measured and recorded on field data sheets:

- Elapsed sampling time
- Dry gas meter volume
- Pitot tube pressure
- Stack gas temperature
- Probe, oven and impinger outlet temperatures
- XAD-2 trap outlet temperature
- Dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

Field data sheets for the SVOC tests are provided in Appendix 12.

At the start and finish of sampling each traverse the sampling train was leak-checked. A valid leak-check as specified by the sampling method is a leakage rate of less than 0.00057 m^3/min or 4% of the estimated average sampling rate, whichever is less.

A blank train was prepared in a manner identical to the test trains for each Boiler. It was assembled, transported and left at the sampling site for a period of time equal to the test trains. The blank train was treated at the sampling site in the same manner as the test trains and a gas volume was drawn through the blank train approximately equal to the leak-check volume for the test trains.

4.6 Particulate and Acid Gases

Particulate matter, hydrogen fluoride, hydrogen chloride and ammonia were sampled together using the sampling train and sampling procedures outlined in US EPA Method 26A. Major components of the test train were as follows:

- A glass nozzle and probe liner assembly
- The first and second impingers contained 100 ml of 0.1N H_2SO_4
- The third impinger was initially empty
- The fourth impinger contained silica gel

Each test for particulate and acid gases involved the collection of stack gas sampled isokinetically at twelve points centered on equal areas along each of two traverses (at 90° to each other) of the duct. Each of the twenty-four points was sampled for 7.5 minutes for a total actual sampling time of one hundred and eighty minutes.

At 2.5 minute time increments throughout each test the following information was measured and recorded on field data sheets:

- Elapsed sampling time
- Dry gas meter volume
- Pitot tube pressure
- Stack gas temperature
- Probe, oven and impinger temperatures
- Dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

Field data sheets for the particulate and acid gases tests are provided in Appendix 13.

At the start and finish of sampling each traverse the sampling train was leak-checked. A valid leak-check as specified by the sampling method is a leakage rate of less than 0.00057 m^3/min or 4% of the estimated average sampling rate, whichever is less.

A blank train was prepared and samples recovered in a manner identical to the test sampling trains for each Boiler.

4.7 Volatile Organic Compounds

Volatile Organic Compound (VOC) sampling was performed in accordance with US EPA SW-846 Method 0030. Briefly, the sampling method involved withdrawing a sample of the stack gas through a heated glass lined sampling probe containing a glass wool plug to remove particulate material. The sample was then passed through a water cooled condenser and a Tenax GC adsorbent tube, as the primary volatile organic collection device. Condensate was collected in an initial condensate trap and the sample was then drawn through a second condenser and a combined secondary Tenax GC/charcoal adsorbent tube, as the secondary volatile organic collection device. The sampled gas stream then passed through a silica gel trap to remove any remaining traces of moisture prior to the rotameter, pump and dry gas meter.

During each test, three twenty minute runs were completed at an approximate flowrate of 1 L/min. A fourth run was also conducted during each test and the tube pair was archived in case a sample was lost during desorption or analysis. Analyses from the three runs performed were combined and used to calculate test average results.

At five minute time increments throughout sampling each pair of tubes, the following information was measured and recorded:

- Elapsed sampling time
- Dry gas meter volume
- Stack gas temperature
- Probe and first condenser outlet temperatures
- Dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

The sampling train components were cleaned using the procedures in US EPA SW-846 Method 0030, Volatile Organic Sampling Train (VOST).

Field data sheets for the VOST tests are provided in Appendix 14.

Blank tube samples analyzed for the program included three pairs of field blank tubes (one for each test), a trip blank pair of tubes and one laboratory blank pair of tubes.

4.8 Aldehydes

Some of the compounds listed as VOC's (acetaldehyde, formaldehyde and acrolein) are more commonly classified as aldehydes. These compounds were captured in a separate test train in accordance with CARB Method 430.

Major components of the test train were as follows:

- A glass probe liner assembly was used.
- The first and second impingers contained approximately 10 ml of 0.05% 2,4-dinitrophenylhydrazine (DNPH) in 2N HCl
- The third impinger was initially empty
- The fourth impinger contained silica gel

A single test for aldehydes involved the collection of gas sampled at a single point in the duct at a sampling flowrate of approximately 0.5 liters per minute for sixty minutes.

At five minute time increments throughout each test, the following information was measured and recorded for the train:

- Elapsed sampling time
- Dry gas meter volume
- Stack gas temperature
- Probe, oven and impinger outlet temperatures
- Dry gas meter temperature
- Control module orifice pressure
- Sampling pump vacuum

Field data sheets for the aldehyde tests are provided in Appendix 15.

4.9 Combustion Gases

Prior to commencing the source testing program relative accuracy and system bias testing was conducted on the Continuous Emission Monitoring Systems (CEMS) installed at the Scrubber Inlet and BH Outlet of each Boiler. The DYEC CEMS met the performance parameters detailed in Schedule F of the ECA. Therefore, the data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides, carbon monoxide and total hydrocarbons.

Combustion gases, including carbon dioxide, carbon monoxide, hydrogen chloride, nitrogen oxides, oxygen and sulphur dioxide, were measured continuously at the BH Outlet during the emission testing program by the DYEC CEMs. Oxygen and total hydrocarbons, expressed as equivalent methane, were measured continuously by the DYEC CEMS at the Scrubber Inlet.

ORTECH calculated 1-hour average concentrations for each clock hour using the 1-minute combustion gas data measured by the DYEC CEMs from September 29 to October 2, 2015. A 24-hour rolling average was determined for hydrogen chloride, nitrogen oxides and sulphur dioxide using the calculated 1-hour average data to compare to the in-stack emission limits stated in the ECA. A 4-hour rolling average was determined for carbon monoxide using the calculated 1-hour average data to compare to the in-stack emission limit stated in the ECA.

Total hydrocarbon concentrations measured by ORTECH at Boiler No. 1 Scrubber Inlet on September 27, 2015 and Boiler No. 2 Scrubber Inlet on September 23, 2015 following US EPA Method 25A are also included in the report.

5. SAMPLE RECOVERY AND ANALYSIS

All sample analysis was performed by ALS Laboratory Group (Burlington location) with the exception of the particle size distribution test gravimetric analysis of the filters and acetone probe rinse samples which was completed by ORTECH. Copies of Sample Logs/Chain of Custody Forms for all samples submitted for chemical analysis are provided in Appendix 16.

5.1 Metals

Before loading of the field test trains commenced, recovery data sheets were prepared to record initial weights of the test train components. These sheets were also used during sample recovery to record final weights and determine moisture gains and sample volumes. The metals train recovery data sheets are provided in Appendix 17.

Following the conclusion of each test performed with the metals train, the probe was disconnected and all openings sealed with Teflon tape. The test trains, including the probes, were taken to the on-site ORTECH mobile laboratory for sample recovery. The train recovery procedure is briefly described as follows.

The test trains were visually inspected to ensure that no damage occurred during transportation. The condition of the test train was noted. Filter and impinger content colors were recorded. The filter housing was disassembled and the filter carefully transferred to its pre-test petri dish with the use of Teflon coated tweezers.

All the impingers were wiped dry on the outside then weighed and the results used to determine the stack gas moisture content.

The front half of the sampling train was brushed and rinsed thoroughly with acetone. A nylon bristle probe brush was used to assist in dislodging particulate material which may have adhered to the inside surfaces of the nozzle and probe assembly. The front half was then rinsed in triplicate using 0.1 N nitric acid but no brushing was performed.

The contents of the first four impingers were combined. Triplicate rinses of the impingers and connecting glassware back to and including the Teflon filter support was performed with 0.1 N nitric acid and combined with the impinger solution sample.

The contents of the fifth and sixth impingers were combined. The impingers with connecting glassware were then rinsed in triplicate with approximately 100 mL of fresh potassium permanganate solution followed by a triplicate rinse with 100 mL of distilled, de-ionized water. All of the glassware rinses were added to the sample container.

Any brown residue which was present in the fifth and sixth impingers was removed by incrementally rinsing with small amounts of 8 N hydrochloric acid. These acid rinses were added to a separate sample bottle which initially contained 150 mL of distilled, de-ionized water. The impingers were then rinsed with distilled, de-ionized water into the same sample container.

Each sample container was sealed, labeled and the fluid level marked (where appropriate) once that portion of the recovery was completed. The samples were then checked against the master sample log/chain of custody form and refrigerated until they were delivered to the analytical laboratory for analysis.

The test samples were prepared and analyzed for metals according to EPA Method 29 (modified). It should be noted that the metals sampling and analysis procedures (US EPA Method 29) are validated for only 17 metals including Sb, As, Ba, Be, Cd, Co, Cr, Cu, Pb, Mn, Hg, Ni, P, Se, Ag, Tl and Zn. However, the method was used for all metals included in the program.

The metals analytical reports are provided in Appendix 18.

5.2 Particle Size Distribution

The Andersen Cascade Impactor, particle size distribution (PSD) samples were recovered in much the same way as the particulate samples from the metals train and the particulate, halide and ammonia train. Following the conclusion of each test performed with the PSD trains, the probe was disconnected and all openings sealed with Teflon tape. The PSD head was kept in an upright, vertical position, until the filter samples were recovered. The sample recoveries were performed in the on-site ORTECH sample recovery trailer.

The test trains were visually inspected to ensure that no damage during movement had occurred. The recovery procedure is briefly described as follows.

The condition of the test train was noted and the filter and impinger colours were recorded. The front half of the sampling train (nozzle and pre-impactor) was brushed and rinsed thoroughly with acetone. A nylon bristle probe brush was used to assist in dislodging particulate material which may have adhered to the inside surfaces of the nozzle assembly.

Gravimetric analysis of the PSD filters and the acetone probe rinse samples were performed by ORTECH in accordance with the reference methods. Sample recovery data sheets detailing the recovery of the PSD samples are contained in Appendix 19.

The impingers were wiped dry on the outside then weighed and the results used to determine the stack gas moisture content. The back-half of the sampling train was recovered following the procedures detailed in US EPA Method 202 for condensable particulate. The contents of the first impinger were poured into a glass sample bottle and rinses of the impinger and connecting glassware were performed with water which was added to the sample. The glassware was then rinsed with acetone and the rinse was repeated in duplicate with hexane. The acetone and hexane rinses were combined into a single glass sample bottle.

Each sample container was sealed, labeled and the fluid level marked (where appropriate) once that portion of the recovery was completed. The samples were then checked against the master sample log/chain of custody form and refrigerated until they were delivered to the analytical laboratory for analysis.

The condensable particulate analytical report is provided in Appendix 20.

5.3 Hexavalent Chromium

Before loading of the field test trains commenced, recovery data sheets were prepared to record initial weights of the test train components. These sheets were also used during sample recovery to record final weights and determine moisture gains and sample volumes. The hexavalent chromium train recovery data sheets are provided in Appendix 21.

Following the conclusion of each test performed with the hexavalent chromium train, the probe was disconnected and all openings sealed with Teflon tape. The pH of the impinger solution was verified to be greater than 8.5 prior to sample recovery. The train was then purged with nitrogen at 10 liters per minute for thirty minutes. The train recovery procedure is briefly described as follows.

The test trains were visually inspected to ensure that no damage occurred during transportation. The condition of the test train was noted. Impinger content colors were recorded. All the impingers were wiped dry on the outside then weighed and the results used to determine the stack gas moisture content.

The contents of the first four impingers were transferred into a sample container. The impingers and connecting glassware was then rinsed with water and the rinses were combined with the impinger solution. The impingers and connecting glassware were then rinsed in triplicate with 0.1M nitric acid into a separate sample container.

Each sample container was sealed, labeled and the fluid level marked (where appropriate) once that portion of the recovery was completed. The samples were then checked against the master sample log/chain of custody form and refrigerated until they were delivered to the analytical laboratory for analysis.

The samples were analyzed for hexavalent chromium by ion chromatography. The hexavalent chromium analytical report is provided in Appendix 22.

5.4 Semi-Volatile Organic Compounds

Prior to loading the field test trains, recovery data sheets were prepared to record initial weights of the test train components. These sheets were also used during sample recovery to record final weights and determine moisture gains and sample volumes. The train recovery data sheets are provided in Appendix 23.

Following the conclusion of each test performed with the semi-volatile organics train, the probe was disconnected and all openings sealed with Teflon tape. The test trains, including the probes, were taken to the on-site ORTECH mobile laboratory for sample recovery. The train recovery procedure is briefly described as follows.

The condition of the test train was noted. Filter, XAD-2 trap and impinger content colours were recorded. The filter housing was disassembled and the filter carefully transferred, with the use of Teflon coated tweezers, to a piece of pre-cleaned aluminum foil. The filter was then folded in half onto itself within the foil, the foil ends crimped, then placed in a pre-cleaned glass petri dish. Both the foil containing the filter and the glass Petri dish were labeled.

All of the impingers were wiped dry on the outside then weighed and the results used to determine the stack gas moisture content.

The front half of the sampling train, up to but not including the trap, was brushed and rinsed thoroughly with acetone. A Teflon probe brush was used to assist in dislodging particulate material that may have adhered to the inside surfaces of the cyclone bypass and filter top assembly. This front half rinse was then repeated using hexane, with no brushing, and all rinsing was combined with the probe rinse sample.

The XAD-2 trap was drained of excess cooling water and weighed. The ends were then sealed with Teflon tape and the trap was labeled and wrapped in aluminum foil.

The contents of the first three impingers were combined in a pre-cleaned amber glass sample bottle. Triplicate rinses of the impingers and connecting glassware back to and including the trap bottom u-tube were performed first with HPLC water, which was added to the impinger solution sample, and then with acetone followed by hexane. The acetone and hexane rinses were combined in a separate sample bottle from the impinger solutions.

Due to the design of ORTECH's glassware, the filter bottom, filter bottom u-tube and trap inlet stem were not soaked for five minutes in each of acetone and hexane. Instead, these pieces of glassware were given extra rinses with each of the solvents. Also, since ORTECH uses a one piece trap and condenser, the five minute soak of this component was performed by the analytical laboratory.

Each sample container was sealed and labeled once that portion of the recovery was completed. The samples were then checked against the master sample log/chain of custody form then refrigerated until they were delivered to ALS Laboratory Group for analysis.

Semi-volatile organic analyses were performed on single composite extracts for each test according to EPS 1/RM/3 and EPS 1/RM/23. These methods were modified slightly to include other semi-volatile organic compounds following the Environment Canada NITEP/Mid-Connecticut combustion test procedures.

The samples were analyzed by an enhanced version of Environment Canada method EPS 1/RM/3. The method was modified to include enhancements available from US EPA Method 23 including (a) a larger list of C-13 labeled extraction standards for more accurate determination of the PCDF targets, (b) a list of 5 C-13 labeled field standards added to the XAD-2 traps prior to sampling (to demonstrate an absence of target losses during the sampling event) and (c) the use of high resolution mass spectrometry (to improve limits of detection and help eliminate potential interferences).

The SVOC analytical report prepared by ALS Laboratory Group is provided in Appendix 24.

5.5 Particulate and Acid Gases

Following the conclusion of each test performed with the particulate and acid gas train, the probe was disconnected and all openings sealed with Teflon tape. The test trains, including the probes, were taken to the on-site ORTECH mobile laboratory for sample recovery. The train recovery procedure is briefly described as follows.

The test trains were visually inspected to ensure that no damage occurred during transportation. The condition of the test train was noted. Filter and impinger content colors were recorded. The filter housing was disassembled and the filter carefully transferred to its pre-test petri dish with the use of Teflon coated tweezers.

All the impingers were wiped dry on the outside then weighed and the results used to determine the stack gas moisture content.

The front half of the sampling train was brushed and rinsed thoroughly with acetone. A nylon bristle probe brush was used to assist in dislodging particulate material which may have adhered to the inside surfaces of the nozzle and probe assembly.

The contents of the first three impingers were combined. Triplicate rinses of the impingers and connecting glassware back to and including the Teflon filter support was performed with high purity water and combined with the impinger solution sample.

Each sample container was sealed, labeled and the fluid level marked (where appropriate) once that portion of the recovery was completed. The samples were then checked against the master sample log/chain of custody form and refrigerated until they were transported to the ALS laboratory for analysis.

Particulate samples (front half acetone rinse and filter) collected from the Particulate and Acid Gas Trains were weighed prior to the metals analysis. The gravimetric analysis followed the procedures outlined in Method 5 of the Ontario Source Testing Code. The gravimetric analysis required measuring the weight gain on the particulate filter and the residue remaining from evaporation of the acetone probe rinse. The gravimetric analysis also required desiccation of the samples prior to weight determination. Samples were weighed to a constant weight of ±0.5 milligrams. When gravimetric determinations were completed, the samples were processed for metals analysis.

Analysis for hydrogen fluoride, hydrogen chloride and ammonia was performed via ion chromatography.

Train recovery data sheets are provided in Appendix 25. The particulate and acid gases analytical results are presented in Appendix 26.

5.6 Volatile Organics Train Recovery

Following the conclusion of each tube pair run performed with the volatile organic sampling train (VOST), the tubes were removed from the train, capped and placed in appropriately labeled test tubes which were also capped. The tubes were sent to ALS Laboratory Group for volatile organic compound (VOC) analysis.

The VOST samples were analyzed via SW846 Method 5041A/8260B. Briefly, after spiking with internal and surrogate standards, the traps were thermally desorbed through a clam shell heater then through a chilled aqueous purge to remove the bulk of the moisture onto a secondary trap. These secondary traps are further dried using a counter current flow of helium. The secondary traps are then thermally desorbed into a VOC sample concentrator and again the VOCs are thermally transferred/concentrated onto a GC column. The VOC compounds are separated via gas chromatography (GC) and analyzed via GC/MS.

Due to target analytes that exceeded the instrument calibration range of 1µg/trap pair, some of the traps were desorbed through an aqueous purge and into a 0.5 L Tedlar bag. A sub-sample of the bag was taken with a gas-tight syringe and injected onto the secondary trap for analysis.

The condensate collected from each tube pair run was carefully transferred to a glass bottle and combined as a single sample for each sampling location. The condensate samples were archived for future analysis if necessary.

The VOST analytical report prepared by ALS Laboratory Group is provided in Appendix 27.

5.7 Aldehydes

Following the conclusion of each test performed with the Aldehyde Train the probe was disconnected and all openings were sealed with Teflon tape. The test train was then recovered on site in the ORTECH sample recovery trailer. The train recovery procedure is briefly described as follows.

The condition of the test train was noted. All the impingers were wiped dry and weighed. The contents of the first impinger were transferred into a glass sample container. The probe and first impinger were rinsed with approximately 4 mL of DNPH then rinsed with approximately 2 mL of high purity water into the sample container.

The contents of the second and third impingers were transferred into a glass sample container. The second and third impingers were rinsed with approximately 4 mL of DNPH then rinsed with approximately 2 mL of high purity water into the sample container.

Each sample container was sealed, labeled and the fluid level marked (where appropriate) once that portion of the recovery was completed. The samples were then checked against the master sample log/chain of custody form and refrigerated until they were transported to the ALS laboratory for analysis.

Analysis for formaldehyde, acetaldehyde and acrolein was performed via HPCL. The sample recovery data sheets are provided in Appendix 28 and the analytical results are presented in Appendix 29.

6. INTERNAL AND EXTERNAL QA/QC PROGRAM

6.1 General

As with other emission testing programs conducted by ORTECH, a comprehensive internal quality assurance/quality control (QA/QC) program was included.

Blank sampling trains were recovered and analyzed or reagent blanks were analyzed using the same procedures as the test trains to provide background concentrations of the emission test components.

6.2 Pre-Test Activities

Prior to the commencement of the emission testing program, the following activities were performed:

- Preparation, pre-cleaning and proofing of the manual stack sampling trains and sample containers.
- Preparation and quality checks of chemicals, reagents, filters and XAD-2 adsorbent resin.
- Calibration of all sampling and monitoring equipment.
- Development (and review) of data acquisition, data reduction and summary procedures.
- Development of internal QA/QC field data sheets.
- Review of equipment calibration logs.
- Review of proposed field and laboratory procedures.

All proving data for the Semi-Volatile Organics Train glassware and auxiliary equipment was deemed acceptable prior to the test program.

For each batch of VOST tubes, a minimum of 1 pair in 10 was analyzed to demonstrate an absence of significant background contaminants from the tubes prior to the test program.

The proof data for the semi-volatile organics glassware and VOST tubes is provided in Appendix 30.

All equipment used in the field testing program was calibrated and checked prior to the field testing program. Pertinent equipment calibration data is supplied in Appendix 31.

As part of ORTECH's internal QA/QC, data acquisition, data reduction and summary procedures were already in place and periodic spot checks of the computer programs were performed using known data sets.

6.3 Emission Testing QA/QC Results

Prior to the field testing program, preliminary testing was completed. Preliminary testing involved collecting data necessary to perform the required calculations for choosing a nozzle size to permit isokinetic sampling.

The internal diameter of each duct was measured and the appropriate number of sampling points was marked on each sampling probe.

The following general QA/QC criteria were satisfied for each of the test trains where applicable:

- All sampling equipment was cleaned and proven clean (where applicable) prior to the commencement of the field testing program.
- All sampling equipment passed a visual and operational check prior to use in the field.
- Oil filled manometer gauges which had been properly leveled and zeroed were used to measure the velocity pressure.
- All sampling data was recorded in ink on preformatted data sheets at least once every 5 minutes and at least twice during sampling each traverse point.
- Any unusual occurrences were noted during each test on the appropriate data form.
- The field team leader reviewed all calibration and sampling data forms daily.
- Only tapered edge sampling nozzles and S-type pitot tubes that had been visually inspected and caliper measured, and deemed acceptable, were used for sampling.
- Each leg of the S-type pitot was leak-checked before the start of testing. The leak-checks were all acceptable (no leak detected).
- Each entire sampling train met acceptable leak-check criteria before and after each test, and during any move from one sampling traverse to another.
- The S-type pitot tube and sampling nozzle were maintained parallel to the flow during testing and care was taken to ensure that they did not scrape the ports when being inserted and removed from the stack.
- The probe and filter components were maintained at 120°C ± 14°C during testing. If the probe or filter temperature was outside of the acceptable range the test was halted until the temperature could be brought back into the acceptable range.
- Covanta was responsible for monitoring process operations during testing and notified ORTECH when testing was to proceed as specified in the ECA.

6.4 Sample Recovery, Handling and Custody

ORTECH's sample identification scheme and system for handling and processing samples was initiated as part of ORTECH's sample tracking system for stack emission samples. All samples were identified by a unique sample number comprised of a series of numbers and letters. A master sample log/chain of custody form was maintained by the QA/QC designate and was made available to the ORTECH personnel designated to perform the sample recovery for a specific sampling train. Once a sample was collected it was labeled and checked against the sample log by the QA/QC designate.

The information contained within the sample number and the sample log enabled the sampling, recovery, data reduction and report writing personnel to easily determine the test date, test number, test type and train sample identification for a given sample. To ensure continuity, the analytical laboratory was requested to use the ORTECH number for sample identification.

The ORTECH personnel responsible for shipping samples used the master sample log/chain of custody form to document the transfer of the samples to the appropriate analytical laboratory. Appropriate care was taken when shipping the samples in order to maintain sample integrity. Once the samples and master sample log/chain of custody forms were received by the analytical laboratory, the laboratory personnel verified that all samples had been received and their integrity maintained. The laboratory personnel then signed the master log and made a photocopy which ORTECH personnel received as a record of the chain of custody for the samples.

6.5 Analytical Results

It should be noted that due to the design of ORTECH's semi-volatile organic sampling train glassware, the filter bottom, filter bottom u-tube and trap inlet stems are not soaked with each of the required solvents (acetone and hexane) during test train recovery. Instead, these components of the test train were given additional rinses with each of the required solvents. Also, because ORTECH uses a one piece condenser and XAD-2 trap, this component of the test train was Teflon sealed and wrapped with foil prior to being transported to the laboratory where it was given the required five minute soaking with each of acetone and hexane.

Analyses for the present emission testing program were performed using acceptable laboratory procedures in accordance with the specified analytical protocols. Adherence to the prescribed QA/QC procedures ensured data of consistent and measurable quality. Analytical quality control focused on the use of control standards to provide a measure of analytical accuracy. Replicate analysis (usually duplicate analysis) of the same sample was used as a means of determining precision of the various analytical procedures. Also specific acceptance criteria were defined for various analytical operations including calibrations, control standard analysis, drift checks, blanks, etc.

Note due to an error at the analytical laboratory the non-extractable (inorganic) fractions from the condensable particulate matter samples were compromised during the titration process. As a result data is not quantifiable for these samples.

The following general QA/QC procedures were incorporated into the analytical effort:

- the on-site Field Supervisor reviewed all data and QA/QC data on a daily basis for completeness and acceptability
- master sample logs were maintained for all samples collected
- analytical QA/QC data was tabulated by the analytical laboratories using appropriate charts or forms
- all hard copy raw data was maintained in organized files

Specific analytical QA/QC procedures are presented in the analytical reports and are briefly summarized below.

6.5.1 Metals Sample Analysis QA/QC

The analysis for mercury on the Method 29 stack samples employed cold vapour atomic absorption (CVAA). The analysis of stack samples involved sample digestion followed by Inductively Coupled Argon Plasma Mass Spectroscopy (ICP-MS) analysis. The analytical QA/QC is described as follows and the results are provided in the analytical report.

ICPMS Analysis

- An instrument calibration check standard was analyzed immediately after the calibration curve and must be within 90%-110% of the actual concentrations.
- Instrument calibration blank check sample were analyzed with every 10 samples and must be within three times the minimum detection limit.
- A continuing calibration check is run every 10 samples and must be within 85%-115% of the actual concentrations.
- Instrument (interference) check sample for ICP-MS analysis was analyzed before and after each analytical run. The value(s) found for the interference check sample must be within 80%-120% of the true value.
- One duplicate sample analysis was performed for this program on Test No. 1 at Boiler No. 1 BH Outlet. The relative percent difference was less than 11.0% well within the acceptable limit of less than ±20%, for elements that are greater than 5 times the minimum detection limit.
- One blank spike (performed as a pre-digestion spike) was analyzed. All of the recovery results were between 89-102%. The acceptable limit is 80-115% of the true value.
- One matrix spike (performed as a post digestion spike) was analyzed. All of the recovery results were between 81-106%, except for barium and beryllium. The acceptable limit is 80-120% of the true value. The matrix spikes for barium was low (40%) due to a suspected issue with the spiking intermediate. The front half matrix spike for beryllium was high (125%) however this was not considered to impact to data quality since beryllium was not detected in any of the test samples.

Mercury Analysis

- A 5 point calibration was performed.
- An instrument check calibration standard was analyzed immediately after the calibration and must be within 90%-110% of the actual concentration
- One mid-range calibration standard was analyzed after 10 samples and at the end of the run and must be within 85%-115% of the actual concentration.
- Instrument calibration blank check sample is analyzed with every 10 samples and must be within three times the minimum detection limit.
- One duplicate sample analysis was performed. The relative percent difference was less than 2.6% well within the acceptable limit of less than ±20%, for fractions that are greater than 5 times the minimum detection limit.
- One blank spike (performed as a pre-digestion spike) was analyzed. All of the recovery results were between 85-104% within the acceptable limit of 80-115% of the true value.
- One matrix spike (performed as a post digestion spike) was analyzed. All of the recovery results were between 81-97% within the acceptable limit of 80-120% of the true value.

6.5.2 Hexavalent Chromium Sample Analysis QA/QC

Analyses of the hexavalent chromium samples were analyzed via IC/PCR (Ion Chromatography/Post Column Reactor) following the procedures detailed in Method 7199. The analytical QA/QC included the following:

- A calibration curve bracketing the expected range.
- An instrument check calibration standard was analyzed immediately after the calibration and must be within 90%-110% of the actual concentration.
- A complete set of calibration standards were analyzed at the end of the analysis and must be within 10% of the true value.
- Instrument calibration blank check samples were analyzed with every 10 samples and must be within three times the minimum detection limit for each ion.
- All samples were analyzed in duplicate. The acceptance criterion is less than ±20%, for samples that are greater than 5 times the minimum detection limit. Hexavalent chromium was not detected in any of the samples in quantities greater than the reportable detection limit.

6.5.3 Acid Gas Sample Analysis QA/QC

Analyses of the acid gas samples from the Method 26A sampling train involved suppressed ion chromatography-conductivity detection. The analytical QA/QC included the following:

- A 6 point calibration bracketing the expected range.
- An instrument check calibration standard was analyzed immediately after the calibration and must be within 90%-110% of the actual concentration.
- A complete set of calibration standards were analyzed at the end of the analysis and must be within 10% of the true value.
- One mid-range calibration standard was analyzed after 10 samples and at the end of the run and must be within 90%-110% of the actual concentration.
- Instrument calibration blank check samples were analyzed with every 10 samples and must be within three times the minimum detection limit for each ion.
- All samples were analyzed in duplicate for hydrogen fluoride and hydrogen chloride. The relative percent difference was less than 1% well within the acceptable limit of less than ±20%, for compounds that are greater than 5 times the minimum detection limit.
- Blank spike samples were analyzed with the test samples. The recovery results of the blank spike samples were 93% for hydrogen chloride, 94% for hydrogen fluoride and 109% for ammonia, within the acceptable range of 90-110%.
- Matrix spike (spike confirmation) samples were analyzed with every 20 samples to confirm the identity of each peak. The recovery results of the matrix spike samples were 91% for hydrogen chloride, 94% for hydrogen fluoride and 106% for ammonia, within the acceptable range of 90-110%.

6.5.4 Aldehyde Sample Analysis QA/QC

Analysis for formaldehyde, acetaldehyde and acrolein was performed via GC/MS. Laboratory control samples, a spike sample and a travel spike sample were analyzed with the test samples. The laboratory control sample recoveries were 85% for formaldehyde and 43% for acetaldehyde.

The concentration of formaldehyde and acetaldehyde detected in the blank samples were similar to the concentrations detected in the test samples. The test results for formaldehyde and acetaldehyde may be elevated due to the high blank results.

Acrolein was not detected in any of the test or blank train samples in quantities greater than the reportable detection limit.

6.5.5 SVOC Sample Analysis QA/QC

After extraction of the dioxin and furan train samples, staff at ALS Laboratory Group added internal standards to all samples prior to analysis and surrogate standards were added to the filters and XAD resin prior to extraction. The analytical reports include the lists of the analytical surrogate standards and internal standards used. The analysis of samples involved complex sample extraction and cleanup, followed by GC/HRMS analysis.

The analytical laboratory reports for each set of dioxin and furan tests conducted identifies responses in the chlorinated diphenyl ether channel that elute at similar retention times to 1,2,3,4,7,8-hexachlorodibenzofuran and 1,2,3,6,7,8-hexachlorodibenzofuran isomer results. This response produces a positive bias on the two isomers. The analytical laboratory conducted additional florisil and carbon column clean-ups on the samples collected between October 21 and October 29, 2015 to minimize the impact of the interference on the analytical results. A description of the added cleanup is provided in the comments section of the applicable analytical reports.

Recovery of the dioxin and furan field spike standards, added to the XAD-2 traps prior to sampling, from the tests conducted between October 1 and October 2, 2015 were between 75-110%. Recovery of the dioxin and furan field spike standards from the tests conducted between October 21 and October 22, 2015 were between 78-105%. Recovery of the dioxin and furan field spike standards from the tests conducted between October 28 and October 29, 2015 were between 75-106%.

6.5.6 Volatile Organic Compound Analysis QA/QC

Prior to sampling VOST tube pairs were cleaned and conditioned under helium sweep (approximately 50 mL/min flow) through each tube in an oven at 280°C for at least 12 hours. One VOST pair was analyzed and proven clean for every 10 pairs cleaned. VOST tubes were end-capped and stored sealed in individual screw-capped vials at 4°C between conditioning and shipment to the field.

A field blank and a laboratory method blank were analyzed with the test sample tubes that were taken in the field. VOST tubes were desorbed and analyzed, combined as pairs, according to SW846 Method 5041A/8260B.

Run Conditions: Perkin Elmer Turbomatrix 650 Concentrator, Agilent 7890 GC, 5975C MSD, Chemstation, using a DB-624 capillary column, 30 m x 0.25 ID x 1.0 µm film thickness.

The oven was maintained at 35°C for 2 minutes, then the temperature was increased at a rate of 10°C/min. to 130°C. The temperature was then increased from 130°C to 180°C at 8°C/min, then from 180°C to 250°C at 20°C/min, and held at 250°C for 2 minutes.

The analytical report includes the list of surrogate standards used. The surrogate recoveries for each of the surrogates should be between 50-150%. The recoveries for each sample were between 67-129%.

7. RESULTS AND DISCUSSION

Emission tests were completed for particulate matter, metals, hexavalent chromium, semi-volatile organic compounds, aldehydes, acid gases and volatile organic compounds at the Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet.

Combustion gases, including hydrochloric acid, sulphur dioxide, nitrogen oxides, carbon monoxide and organic matter (total hydrocarbons, undiluted expressed as equivalent methane), were also measured during the emission testing program by the DYEC CEMS.

Tables referenced in this report for the tests conducted at Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet between September 29 and October 2, 2015 are provided in Appendix 1 and Appendix 2, respectively. Tables for the triplicate semi-volatile organic tests conducted at Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet on October 21 and October 22, 2015 are provided in Appendix 3 and Appendix 4, respectively. Tables for the additional three semi-volatile organic tests conducted at Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet on October 28 and October 29, 2015 are provided in Appendix 5 and Appendix 6, respectively.

Detailed test schedules are provided in Table 1 and Table 2.

7.1 Stack Gas Sampling Parameters

Emission test calculations for the particulate and acid gas, particle size, metals, hexavalent chromium, and SVOC tests conducted at the Boiler No. 1 BH Outlet are provided in Appendix 32 to Appendix 36, respectively.

Emission test calculations for the particulate and acid gas, particle size, metals, hexavalent chromium, and SVOC tests conducted at the Boiler No. 2 BH Outlet are provided in Appendix 37 to Appendix 41, respectively.

Stack gas sampling parameters for the tests conducted at each location are summarized in Table 3. These parameters include calibration data, nozzle diameter, dry gas volume sampled and average percentage of isokineticity for each test.

7.2 Stack Gas Physical Parameters

Stack gas physical parameters for tests conducted at each location are presented in Table 4. The average values from the isokinetic tests, conducted between September 29 and October 2, 2015, at each site are summarized below:

Stack Gas Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Gas Temperature (°C)	135	134
Moisture by Volume (%)	16.5	16.3
Velocity (m/s)	17.3	17.4
Static Pressure (kPa)	-2.75	-2.68
Absolute Pressure (kPa)	98.5	98.4
Carbon Dioxide by Volume (%)*	11.4	11.3
Oxygen by Volume (%)*	7.69	8.00

* dry basis, measured by DYEC CEMS

7.3 Volumetric Flowrate Data

Stack gas volumetric flowrates for the tests conducted at each location are presented in Table 5. The average flowrate values from the tests, conducted between September 29 and October 2, 2015, at each site are summarized below:

Stack Gas Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Flowrate (m^3/s)	25.6	25.8
Dry Reference Flowrate (Rm^3/s)*	15.2	15.3
Dry Adjusted Flowrate (Rm^3/s)**	20.2	19.9
Wet Reference Flowrate (Rm^3/s)*	18.2	18.3

* at 25°C and 1 atmosphere
** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

7.4 Particulate Emission Data

Filterable particulate emission data obtained from each of the particulate and acid gas tests conducted at the each location is presented in Table 6.

Average particulate emission data for each location is summarized below:

Particulate Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (mg/m^3)	0.42	<0.32
Dry Reference Conc. (mg/Rm^3)*	0.71	<0.53
Dry Adjusted Conc. (mg/Rm^3)**	0.53	<0.41
Wet Reference Conc. (mg/Rm^3)*	0.59	<0.45
Emission Rate (mg/s)	10.7	<8.41

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The ECA stipulates maximum in-stack limits for the emissions of various compounds including particulate matter. The particulate dry adjusted concentration at the Boiler No. 1 BH Outlet (0.53 mg/Rm^3, adjusted to 11% oxygen) and the Boiler No. 2 BH Outlet (<0.41 mg/Rm^3, adjusted to 11% oxygen) were well below the maximum limit (9 mg/Rm^3, adjusted to 11% oxygen) stated in the ECA.

The amount of particulate detected in the blank sampling train filter and acetone probe rinse samples for Boiler No. 1 was 0.9 mg and 0.2 mg, respectively. The amount of particulate detected in the blank sampling train filter and acetone probe rinse samples for Boiler No. 2 was 0.5 mg and 0.4 mg, respectively. Although these levels are significant relative to the amount detected in the test trains, the blank analysis was not subtracted from the test sample analyses during calculation of the particulate emission data.

Note particulate was not detected, in quantities greater than the analytical detection limit (0.1 mg), on the Test No. 1 and Test No. 2 filters for Boiler No. 2. The detection limit was used to determine emission data.

Particle size distribution test were also conducted in conjunction with the particulate tests at each location. The results from the particle size distribution tests were used, along with the particulate test results, to determine the percentage of total particulate emissions that have an aerodynamic diameter less than 10 µm and the percentage of the total particulate emissions with an aerodynamic diameter less than 2.5 µm.

Particle size distribution emission data is detailed in Table 7 and Table 8 for the each location.

The average filterable particle size distribution results from the tests conducted at each location, as a percentage of the total particulate loading, and the average $PM_{2.5}$ and PM_{10} emission rates using the particulate from the three particulate and acid gas tests is summarized below:

Particle Size Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
$PM_{2.5}$ as % of Particulate Loading	44.4	34.8
$PM_{2.5}$ Emission Rate (mg/s)	4.76	<2.89
PM_{10} as % of Particulate Loading	79.2	81.0
PM_{10} Emission Rate (mg/s)	8.57	<6.82
Total Filterable Emission Rate (mg/s)	10.7	<8.41

Condensable particulate emission data obtained from the back-half of each of the particle size distribution tests conducted at the each location is presented in Table 9. Note due to an error at the analytical laboratory the non-extractable (inorganic) fractions from the condensable particulate matter samples were compromised during the titration process. As a result data is not quantifiable for these samples.

Average condensable particulate emission data for each BH Outlet location is summarized below:

Condensable Particulate Emission Parameter	Inorganic Fraction		Organic Fraction	
	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
Actual Conc. (mg/m^3)	NQ	NQ	0.63	0.42
Dry Reference Conc. (mg/Rm^3)*	NQ	NQ	1.06	0.71
Dry Adjusted Conc. (mg/Rm^3)**	NQ	NQ	0.79	0.55
Wet Reference Conc. (mg/Rm^3)*	NQ	NQ	0.88	0.60
Emission Rate (mg/s)	NQ	NQ	16.3	11.3

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

NQ Not Quantifiable

The amount of condensable particulate detected in the blank sampling train for Boiler No. 1 was 1.4 mg for the organic fraction. The amount of condensable particulate detected in the blank sampling train for Boiler No. 2 was 1.3 mg for the organic fraction. Although these levels are significant relative to the amount detected in the test trains, the blank analysis was not subtracted from the test sample analyses during calculation of the particulate emission data.

7.5 Acid Gases

Hydrogen fluoride, hydrogen chloride and ammonia emission data for the tests conducted at each location are presented in Table 10. Hydrogen fluoride was not detected in any of the test samples in quantities greater than the reportable detection limit. The reportable detection limit was used to calculate hydrogen fluoride emission data. Hydrogen chloride and ammonia were detected in quantities greater than the reportable detection limit in all of the samples collected.

Average hydrogen chloride, hydrogen fluoride and ammonia emission data for the tests conducted at the BH Outlet of each Boiler is summarized below:

Emission Parameter	Hydrogen Chloride		Hydrogen Fluoride		Ammonia	
	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
Actual Conc. (mg/m^3)	5.10	4.11	<0.044	<0.042	1.17	0.69
Dry Reference Conc. (mg/Rm^3)*	8.59	6.91	<0.074	<0.071	1.97	1.16
Dry Adjusted Conc. (mg/Rm^3)**	6.41	5.31	<0.055	<0.055	1.47	0.90
Wet Reference Conc. (mg/Rm^3)*	7.15	5.78	<0.061	<0.059	1.64	0.97
Emission Rate (mg/s)	131	109	<1.12	<1.13	30.1	18.5
Dry Adjusted Conc. (ppm)**	4.30	3.56	<0.067	<0.067	2.12	1.29

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Hydrogen fluoride, hydrogen chloride and ammonia were not detected in the blank samples in quantities greater than the reportable detection limit. The blank analysis was not subtracted from the test sample analyses during calculation of the emission data.

7.6 Combustion Gas Emission Data

Combustion gases, including carbon dioxide, carbon monoxide, hydrogen chloride, nitrogen oxides, oxygen and sulphur dioxide, were measured continuously at the BH Outlet during the emission testing program by the DYEC CEMs. The oxygen, carbon dioxide and carbon monoxide concentrations for each test period were used to calculate the molecular weight of the gas stream. The oxygen concentration data was also used to correct the dry reference concentration data to 11% oxygen.

Oxygen and total hydrocarbons, expressed as equivalent methane, were measured continuously by the DYEC CEMS at the Scrubber Inlet.

ORTECH calculated 1-hour average concentrations for each clock hour using the 1-minute combustion gas data measured by the DYEC CEMs from September 29 to October 2, 2015. A 24-hour rolling average was determined for hydrogen chloride, nitrogen oxides and sulphur dioxide using the calculated 1-hour average data to compare to the in-stack limits stated in the ECA. A 4-hour rolling average was determined for carbon monoxide using the calculated 1-hour average data to compare to the in-stack limit stated in the ECA.

The minimum, average and maximum 1-hour, 4-hour and 24-hour combustion gas data measured by the DYEC CEMS is summarized in Table 11. The maximum concentration, along with the in-stack limit stated in the ECA, is summarized in the following table for each component.

Contaminant	Limit	Maximum Concentration	
		Boiler No. 1	Boiler No. 2
BH Outlet: Oxygen (%, 1-hr)	-	8.37	8.65
Carbon Dioxide (kg/Rm^3, 1-hr)**	-	0.22	0.24
Carbon Monoxide (mg/Rm^3, 4-hr)*	40	24.4	27.0
Sulphur Dioxide (mg/Rm^3, 24-hr)*	35	6.7	1.8
Nitrogen Oxides (mg/Rm^3, 24-hr)*	121	115	115
Hydrogen Chloride (mg/Rm^3, 24-hr)*	9	3.7	4.1
Scrubber Inlet: Oxygen (%, 1-hr)	-	10.41	19.74
Total Hydrocarbons (mg/Rm^3, 1-hr)*	-	2.4	23.6

* dry at reference conditions, adjusted to 11% oxygen

** dry at reference conditions

Concentration data measured by ORTECH between September 23 and September 27, 2015 at the Scrubber Inlet sampling locations was used to assess against the total hydrocarbons (organic matter) in-stack emissions limit detailed in Schedule C of the ECA. The average THC concentration, along with the in-stack limit stated in the ECA, is summarized in the following table.

Contaminant	Limit	Average Concentration	
		Boiler No. 1	Boiler No. 2
Scrubber Inlet: Total Hydrocarbons (ppm, dry expressed as equivalent methane)	50	0	4.9

7.7 Metal Emission Data

Metal analytical results for the tests performed at the each location are given in Tables 12, 13 and 14 for Test No. 1, Test No. 2 and Test No. 3, respectively. Metal concentrations and emission rates are shown in Tables 15, 16 and 17 for Test No. 1, Test No. 2 and Test No. 3, respectively.

Summaries of the metal actual concentrations, dry reference concentrations, dry adjusted concentrations, wet reference concentrations, and emission rates including the coefficients of variation for the tests performed are provided in Tables 18, 19, 20, 21 and 22, respectively. Table 23 summarizes the average metal emission data for the tests performed.

Table 24 summarizes the results from the blank metals trains. The amount of metals detected in the blank trains was significant when compared to the amounts collected in the test trains since most of the metals in the test trains were at or near the detection limit. The emission data was not corrected for the blank data.

The metals analysis of the Method 29 test trains was performed on two separate analytical fractions, the probe and filter hydrofluoric acid digest and analysis of the train impingers and associated rinses. In instances where all analyses were reported to be below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, and the remaining fractions were assigned a value of zero. In instances where any given fraction was detected that value was used to calculate emission data, and the remaining undetected fractions were assigned a value of zero.

The ECA stipulates maximum in-stack limits for the emissions of various compounds including cadmium and lead.

The average cadmium emission data is summarized below:

Cadmium Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (µg/m^3)	0.095	0.11
Dry Reference Conc. (µg/Rm^3)*	0.16	0.19
Dry Adjusted Conc. (µg/Rm^3)**	0.12	0.15
Wet Reference Conc. (µg/Rm^3)*	0.14	0.16
Emission Rate (mg/s)	0.0025	0.0029

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The average lead emission data is summarized below:

Lead Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. ($\mu g/m^3$)	0.44	0.39
Dry Reference Conc. ($\mu g/Rm^3$)*	0.76	0.65
Dry Adjusted Conc. ($\mu g/Rm^3$)**	0.57	0.51
Wet Reference Conc. ($\mu g/Rm^3$)*	0.63	0.55
Emission Rate (mg/s)	0.011	0.0099

*   at 25°C and 1 atmosphere
** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The cadmium and lead dry adjusted concentrations were well below the maximum in-stack emission limits stated in the ECA (7 $\mu g/Rm^3$, adjusted to 11% oxygen for cadmium and 50 $\mu g/Rm^3$, adjusted to 11% oxygen for lead).

7.8 Mercury Emission Data

Mercury analysis, concentration and emission data are also summarized in the metals emission tables. Mercury was detected in samples from each test, specifically in the impinger sample analysis and the mercury analytical results are not blank corrected. Blank train analysis data (Table 24) indicate that mercury was below the reportable detection limit in all of the sample fractions.

The average mercury emission data is summarized below:

Mercury Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. ($\mu g/m^3$)	0.90	0.54
Dry Reference Conc. ($\mu g/Rm^3$)*	1.53	0.91
Dry Adjusted Conc. ($\mu g/Rm^3$)**	1.16	0.72
Wet Reference Conc. ($\mu g/Rm^3$)*	1.28	0.77
Emission Rate (mg/s)	0.023	0.014

*   at 25°C and 1 atmosphere
** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The mercury dry adjusted concentrations were well below the maximum in-stack emission limit stated in the ECA of 15 $\mu g/Rm^3$, adjusted to 11% oxygen.

7.9 Hexavalent Chromium

Hexavalent chromium emission data for the tests conducted at each location are presented in Table 25.

Average hexavalent chromium emission data is summarized below:

Hexavalent Chromium Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (µg/m^3)	<0.19	<0.19
Dry Reference Conc. (µg/Rm^3)*	<0.31	<0.32
Dry Adjusted Conc. (µg/Rm^3)**	<0.24	<0.25
Wet Reference Conc. (µg/Rm^3)*	<0.26	<0.27
Emission Rate (mg/s)	<0.0048	<0.0049

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Hexavalent chromium was not detected in quantities greater than the reportable detection limit in any of the samples collected. Hexavalent chromium was also not detected in the blank samples. The total chromium collected in the metals sampling trains was greater than the hexavalent chromium detected for each test.

7.10 Semi-Volatile Organic Emission Data

The combined filter and probe rinse, and combined Amberlite XAD-2 cartridge and impinger solutions for each of the semi-volatile organics trains were analyzed together (one analysis per test) for semi-volatile organic compounds including select dioxins, furans and polycyclic aromatic hydrocarbons.

The results from the SVOC tests conducted between September 29 and October 2, 2015 are provided in the Appendix 1 and Appendix 2 for Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet, respectively.

After discussions between Covanta and the MOECC additional testing was conducted for semi-volatile organic compounds, including dioxins, furans, 12 dioxin-like PCBs, chlorobenzenes, chlorophenols and PAHs.

Triplicate semi-volatile organic tests were conducted on October 21 and October 22, 2015. The results from these tests are provided in the Appendix 3 and Appendix 4 for Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet, respectively. An additional three semi-volatile organic tests were conducted on October 28 and October 29, 2015. The results from these tests are provided in the Appendix 5 and Appendix 6 for Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet, respectively.

The average results from the additional tests are summarized in this section of the report.

7.10.1 Dioxins and Furans Emission Data

Dioxins and furans are groups of chemically related chlorinated organic compounds or congeners. There are seventy-five dioxin congeners and one hundred and thirty five furan congeners. The individual congeners all have different molecular structures and they may also have different molecular formulae. Individual congeners, which have the same molecular formula but different molecular structure, are referred to as isomers. Groups of isomers are referred to as congener groups or homologues. The basic dioxin and furan molecules have the molecular formulae $C_{12}H_8O_2$ and $C_{12}H_8O$, respectively. In chlorinated dioxin and furans, between one and eight chlorine atoms may replace an equal number of hydrogen atoms in the basic molecule.

The following table lists the chlorinated dioxin and furan congener groups, and the number of isomers present in each group:

Congener Group Abbreviation	Number of Chlorine Atoms Per Molecule	Molecular Formula	Number of Isomers Per Congener Group
Dioxins			
M1CDD	1	$C_{12}H_7ClO_2$	2
D2CDD	2	$C_{12}H_6Cl_2O_2$	10
T3CDD	3	$C_{12}H_5Cl_3O_2$	14
T4CDD	4	$C_{12}H_4Cl_4O_2$	22
P5CDD	5	$C_{12}H_3Cl_5O_2$	14
H6CDD	6	$C_{12}H_2Cl_6O_2$	10
H7CDD	7	$C_{12}H_1Cl_7O_2$	2
O8CDD	8	$C_{12}Cl_8O_2$	1
Furans			
M1CDF	1	$C_{12}H_7ClO$	4
D2CDF	2	$C_{12}H_6Cl_2O$	16
T3CDF	3	$C_{12}H_5Cl_3O$	28
T4CDF	4	$C_{12}H_4Cl_4O$	38
P5CDF	5	$C_{12}H_3Cl_5O$	28
H6CDF	6	$C_{12}H_2Cl_6O$	16
H7CDF	7	$C_{12}H_1Cl_7O$	4
O8CDF	8	$C_{12}Cl_8O$	1

In Ontario, the MOECC normally requires that only the higher tetra to octa (T4CDD to O8CDD) dioxin congeners and the higher tetra to octa (T4CDF to O8CDF) furan congeners are included in air emission testing. This is because the lower mono to tri congener groups (M1CDD to T3CDD and M1CDF to T3CDF) are considered to be generally less toxic than the higher congener groups and the test procedures have not been validated for these lower groups. In addition, it is acceptable to the MOECC to use only specific isomers in the higher congener groups to compare emission data with the MOECC criteria for dioxin and furan emissions.

Dioxin and furan congener group analytical results and emission data for the tests performed are given in Table 5 to Table 13. The results are shown as congener groups from T4CDF to O8CDF and T4CDD to O8CDD, as normally required by the MOECC.

The average dioxin and furan congener group emission rates are summarized below:

Dioxin and Furan Congener	Emission Rate (ng/s)	
	Total Dioxins	Total Furans
October 21 and October 22, 2015 Tests:		
Boiler No. 1 BH Outlet	82.7	18.1
Boiler No. 2 BH Outlet	42.8	12.5
October 28 and October 29, 2015 Tests:		
Boiler No. 1 BH Outlet	52.4	17.9
Boiler No. 2 BH Outlet	34.1	10.6

The amounts of dioxin and furan congeners detected in the blank sampling trains and in the laboratory blank were insignificant when compared to the amounts detected in the test trains. The blank sampling train analytical results are shown in Table 14. The blank analyses were not subtracted from the test sample analyses during calculation of the dioxin and furan congener emission data.

Dioxin, furan and dioxin-like PCB specific isomer analytical results and emission data for the tests performed are given in Table 15 to Table 23. The isomers included in these tables are considered the most toxic of all the dioxin and furan isomers. They are characterized by having chlorine atoms located at the 2, 3, 7 and 8 positions of the basic dioxin and furan molecules.

The blank sampling train analytical results are shown in Table 24. The blank analyses were not subtracted from the test sample analyses during the calculation of the dioxin and furan isomer emission data.

Several schemes have been proposed for calculating dioxin and furan toxic equivalents (TEQ's) in which different factors have been assigned to the various isomers and congener groups. Calculations in this report are based on the method preferred by the MOECC, which uses International Toxicity Equivalency Factors (I-TEFs).

The purpose in calculating dioxin and furan emission rates as toxic equivalents is to provide a means of assessing and comparing the effects of dioxin and furan emission rates for different emission sources. In these calculations, 2,3,7,8-T4CDD, the most toxic of all the dioxin and furan isomers, is assigned an arbitrary value of 1.0 for a toxic equivalency factor.

Then, other dioxin and furan isomers are assigned toxic equivalency factors which are based on their relative toxicity compared with 2,3,7,8-T4CDD. Emission rates for each isomer are multiplied by their assigned factor and the products are summed to provide the toxic equivalency emission rate.

Dioxin and furan TEQ emission data is given in Table 25 to Table 31.

The MOECC "Summary of Standards and Guidelines to Support Ontario Regulation 419/05 – Air Pollution – Local Air Quality", dated April 2012, provides a new framework for calculating dioxin and furan toxicity equivalent concentrations which includes emission data for 12 dioxin-like PCBs.

Tables 25 to 30 show the dioxins, furans and dioxin-like PCBs toxicity equivalent emission data calculated using the full detection limit for those compounds not detected. Table 31 shows the dioxins, furans and dioxin-like PCBs toxicity equivalent emission data calculated using half the detection limit for those compounds not detected.

The average dioxin, furan and dioxin-like PCBs toxicity equivalent emission data, calculated using the WHO toxicity equivalence factors and half the detection limit is summarized below:

Dioxin and Furan Emission Parameter	October 21-22, 2015		October 28-29, 2015	
	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
Actual Conc. (pg TEQ/m^3)	25.8	25.4	19.7	16.3
Dry Reference Conc. (pg TEQ/Rm^3)*	44.2	43.5	35.0	28.5
Dry Adjusted Conc. (pg TEQ/Rm^3)**	32.0	31.0	25.7	20.2
Wet Reference Conc. (pg TEQ/Rm^3)*	36.6	35.8	28.9	23.5
Emission Rate (ng TEQ/s)	0.62	0.61	0.48	0.42

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

The average dioxin and furan dry adjusted toxicity equivalent concentration, calculated using the NATO/CCMS (1989) toxicity equivalence factors and the full detection limit is summarized below:

Dioxin and Furan Emission Parameter	October 21-22, 2015		October 28-29, 2015	
	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
Dry Adjusted Conc. (pg TEQ/Rm^3)*	<36.0	<32.4	<27.0	<22.2

* at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

7.10.2 Chlorobenzene and Chlorophenol Emission Data

As with dioxins and furans, chlorobenzenes and chlorophenols are groups of compounds that have different molecular structures and may also have different numbers of chlorine atoms in the basic molecule. Chlorobenzenes have the structure of the benzene molecule except that between one and six chlorine atoms are substituted for an equal number of hydrogen atoms in the benzene ring. Benzene has the molecular formula C_6H_6. Chlorobenzene congener groups have the molecular formulae C_6H_5Cl, $C_6H_4Cl_2$, $C_6H_3Cl_3$, $C_6H_2Cl_4$, C_6HCl_5 and C_6Cl_6. Chlorophenols have the structure of the phenol molecule except that between one and five chlorine atoms are substituted for an equal number of hydrogen atoms in the benzene ring. Phenol has the molecular formula C_6H_5OH. Chlorophenol congener groups have the molecular formulae C_6H_4ClOH, $C_6H_3Cl_2OH$, $C_6H_2Cl_3OH$, C_6HCl_4OH and C_6Cl_5OH.

Chlorobenzene congener and isomer analytical results and emission data are given in Table 32 to Table 40.

Amounts collected were assumed to be equivalent to the detection limit, where the analytical results were below the method detection limits (<MDL).

The average total chlorobenzene emission data for each sampling location is presented below:

Chlorobenzenes Emission Parameter	October 21-22, 2015		October 28-29, 2015	
	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
Actual Conc. (ng/m^3)	<65.1	<51.1	<77.9	<59.8
Dry Reference Conc. (ng/Rm^3)*	<112	<87.7	<138	<105
Dry Adjusted Conc. (ng/Rm^3)**	<80.9	<62.4	<102	<74.4
Wet Reference Conc. (ng/Rm^3)*	<92.6	<72.1	<114	<86.3
Emission Rate (µg/s)	<1.58	<1.24	<1.91	<1.55

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Blank sampling train and laboratory blank analytical results for chlorobenzenes are given in Table 41. All of the blank analyses, for both the blank train and the laboratory blank, were below the reportable detection limits.

Chlorophenol congener and isomer analytical results and emission data is given in Table 42 to Table 50.

Amounts collected were assumed to be equivalent to the detection limit, where the analytical results were below the method detection limits (<MDL).

The average total chlorophenol emission data for each sampling location is presented below:

Chlorophenol Emission Parameter	October 21-22, 2015		October 28-29, 2015	
	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
Actual Conc. (ng/m^3)	<288	<161	<133	<122
Dry Reference Conc. (ng/Rm^3)*	<494	<277	<237	<214
Dry Adjusted Conc. (ng/Rm^3)**	<357	<197	<174	<152
Wet Reference Conc. (ng/Rm^3)*	<409	<228	<195	<177
Emission Rate (μg/s)	<6.97	<3.90	<3.27	<3.17

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Blank sampling train and laboratory blank analytical results for chlorophenols are given in Table 51. All of the blank analyses, for both the blank train and the laboratory blank, were below the reportable detection limits. The blank analyses were not subtracted from the test sample analyses during the calculation of chlorophenol emission data.

7.10.3 Polycyclic Aromatic Hydrocarbon Emission Data

The SVOC samples were also analyzed for select polycyclic aromatic hydrocarbon (PAH) compounds. Dibenzo(a,h)anthracene co-elutes with dibenzo(a,c)anthracene on the GC/MS. The data reported for dibenzo(a,c)anthracene represents the total of the (a,h) and (a,c) isomers. Similarly, triphenylene and chrysene also coleute.

Analytical results and PAH emission data for the tests performed are provided in Table 52, 53 and Table 54 for Test No. 1, Test No. 2 and Test No. 3, respectively. PAH actual concentrations, dry reference concentrations, dry adjusted concentrations, wet reference concentrations, and emission rates are shown in Tables 55 to 59, respectively. A summary of the average emission data is given in Table 60.

Table 61 summarizes the lab blank and blank train PAH analyses. The blank train sample analyses were not subtracted from the test train sample analyses for the purposes of emission rate calculations. Tetralin and to a lesser extent naphthalene were detected in the test samples and both of the blank trains in significant quantities; together tetralin and naphthalene on average accounted for greater than 92% of the PAH total in the test samples and 97% in the blank trains.

7.11 Aldehydes

Acetaldehyde, formaldehyde and acrolein emission data for the tests conducted at each location is presented in Table 83.

Average acetaldehyde, formaldehyde and acrolein emission data for the tests conducted at the BH Outlet of each Boiler is summarized below:

Emission Parameter	Acetaldehyde		Formaldehyde		Acrolein	
	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
Actual Conc. (µg/m^3)	346	465	355	856	<65.2	<68.2
Dry Reference Conc. (µg/Rm^3)*	579	775	594	1429	<105	<114
Dry Adjusted Conc. (µg/Rm^3)**	430	561	440	1034	<77.6	<82.5
Wet Reference Conc. (µg/Rm^3)*	485	644	497	1188	<87.6	<94.6
Emission Rate (mg/s)	8.40	10.9	8.60	20.2	<1.52	<1.60

* at 25°C and 1 atmosphere

** at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Acetaldehyde and formaldehyde were detected in the blank samples in quantities comparable to those found in the test samples. Acrolein was not detected in the blank samples or any of the test samples in quantities greater than the reportable detection limit. The blank analysis was not subtracted from the test sample analyses during calculation of the emission data.

7.12 Volatile Organic Emission Data

Three twenty minute runs were completed for each test at an approximate flowrate of one liter per minute for 20 minutes for volatile organic compounds. One backup pair of tubes was collected for each test and archived in case a sample was lost during the extraction process by the analytical laboratory.

Volatile organic analysis data for the tests is provided in Table 84, 85 and Table 86 for Test No. 1, Test No. 2 and Test No. 3, respectively. These tables indicate the total amount of each compound collected in the combined adsorbent tube samples from each volatile organics sampling train run. Emission data for the tests performed are provided in Table 87, 88 and 89 for Test No. 1, Test No. 2 and Test No. 3, respectively. The average test results of volatile organic actual concentrations, dry reference concentrations, dry adjusted concentrations, wet reference concentrations, and emission rates are shown in Table 90 to 94, respectively. The average volatile organic emission data is summarized in Table 95.

For the purpose of determining average and total analytical results for the VOC compounds, any analyte that was not detected was assigned a value equal to the reportable detection limit for calculation purposes.

Analysis of blank adsorbent tubes is provided in Table 96. The field blank tubes were taken to the test site and uncapped in order to expose the tubes to the ambient environment at the sampling location. The blank adsorbent tube results are generally below the analytical detection limit. Test sample analyses were not blank corrected during the calculation of the emission data.

8. DISPERSION MODELLING

The emission data measured during the testing program was used to assess emissions from the main stack against the point of impingement criteria detailed in Ontario Regulation 419/05 or the applicable MOECC guideline.

Dispersion modelling was completed using the CALPUFF model (Version 5.8.4) and CALPOST model (Version 6.221). The CALPUFF model was selected as it was the model used in the current facility Emission Summary and Dispersion Modelling (ESDM) Report, dated March 2011 (Golder Associates Report Number 10-1151-0343 (3000)). The MOECC granted a request for the use of CALPUFF in August 2010.

The meteorological data used in the dispersion modelling is the same data used in the ESDM Report and was provided by Golder Associates. Unless otherwise stated, all dispersion modelling parameters are the same as those used in the ESDM Report dispersion modelling Scenario A.

8.1 Source Parameters

The source parameters used in the dispersion modelling are included in the following table. The exit velocity and stack temperature were calculated based on the measurements at each BH Outlet during source testing. The coordinates are UTM NAD 83, Zone 17.

Source ID	Source Description	Release Height (m)	Temp. (K)	Stack Inside Diameter (m)	Exit Velocity (m/s)	X (m)	Y (m)
STCK1	Main Stack	87.6	408	1.7	22.6	680,538	4,860,346

8.2 Modelling Results

The model was run with a unit emission rate generating dispersion factors in µg/m^3 per g/s for 1-hr, 24-hr and 30-day averaging periods. Meteorological outliers were not removed from the model results. The dispersion factors are presented in the table below.

Averaging Period	1-hr	24-hr	30-day
Maximum POI Dispersion Factor (µg/m^3 per g/s)	24.2	1.13	0.117

For each contaminant, the applicable dispersion factor was multiplied by the total emission rate for each of the two Boilers generated from source testing to obtain the maximum Point of Impingement (POI) concentration. The CALPUFF modelling files are provided on CD in Appendix 42.

The CALPUFF dispersion modelling results for the 2015 emission testing program are provided in the following tables based on calculated ground level point of impingement concentrations for the average total Main Stack emissions.

The predicted POI concentration, calculated based on the average total emission rate, for each contaminant included in the emission testing program was well below the applicable standard, guideline or upper risk threshold.

A scenario provided in the DYEC Emission Summary and Dispersion Modelling (ESDM) Report includes emissions from silo loading and the standby generator (Scenario H). The predominant contaminants from these sources are particulate from the silo loading and nitrogen oxides from the generator. These two contaminants were assessed and it was determined that, since the Main Stack emissions presented in this report are less than those in the ESDM Report, dispersion modelling would show a decrease in the point of impingement concentration for these two contaminant. As a result, additional dispersion modelling for Scenario H was not conducted.

Covanta - Durham York Energy Centre
Main Stack with Both Boilers Operating
Regulation 419 Dispersion Modeling Results using CALPUFF for Inorganic Compounds

Contaminant	Boiler No. 1 BH Outlet Average Emission Rate	Boiler No. 2 BH Outlet Average Emission Rate	Total Average Emission Rate	Calculated Impingement Concentration	Allowable Impingement Concentration	Percentage of Allowable Concentration	Status of Allowable Concentration
Base Case - 24 hour			1.00 g/s	1.13 µg/m³			
Base Case - 1 hour			1.00 g/s	24.2 µg/m³			
Base Case - 1/2 hour			1.00 g/s	29.0 µg/m³			
Base Case - 30 day			1.00 g/s	0.117 µg/m³			
Filterable Particulate Matter	10.7 mg/s	<8.41 mg/s	<19.1 mg/s	0.022 µg/m³	120 µg/m³	0.018	S
Hydrogen Chloride *	131 mg/s	109 mg/s	240 mg/s	0.27 µg/m³	20 µg/m³	1.36	S
Hydrogen Fluoride	<1.12 mg/s	<1.13 mg/s	<2.25 mg/s	0.0025 µg/m³	100 µg/m³	0.0025	S
Hydrogen Fluoride	<1.12 mg/s	<1.13 mg/s	<2.25 mg/s	0.00026 µg/m³	100 µg/m³	0.00026	S - 30 day
Ammonia	30.1 mg/s	18.5 mg/s	48.6 mg/s	0.055 µg/m³	100 µg/m³	0.055	S
Sulphur Dioxide **	0.062 g/s	0.014 g/s	0.076 g/s	0.086 µg/m³	275 µg/m³	0.031	S
Sulphur Dioxide **	0.062 g/s	0.014 g/s	0.076 g/s	1.84 µg/m³	690 µg/m³	0.27	S - 1 hour
Nitrogen Oxides **	2.20 g/s	2.14 g/s	4.34 g/s	4.91 µg/m³	200 µg/m³	2.45	S
Nitrogen Oxides **	2.20 g/s	2.14 g/s	4.34 g/s	105 µg/m³	400 µg/m³	26.3	S - 1 hour
Carbon Monoxide **	0.31 g/s	0.29 g/s	0.60 g/s	17.3 µg/m³	6000 µg/m³	0.29	S - 1/2 hour

S - Standard
G - Guideline
URT - Upper Risk Threshold
* Measured by ORTECH using the particulate, halide and ammonia test train.
** Emission data calculated using the CEM data measured by DYEC and the volumetric flowrates measured by ORTECH between September 29 and October 2, 2015.
Note: Unless otherwise stated all allowable limits are 24 hour standards or guidelines.

Covanta - Durham York Energy Centre
Main Stack with Both Boilers Operating
Regulation 419 Dispersion Modeling Results using CALPUFF for
Semi-Volatile Organic Compounds

Contaminant	Boiler No. 1 BH Outlet Average Emission Rate	Boiler No. 2 BH Outlet Average Emission Rate	Total Average Emission Rate	Calculated Impingement Concentration	Allowable Impingement Concentration	Percentage of Allowable Concentration	Status of Allowable Concentration
Base Case - 24 hour			1.00 g/s	1.13 µg/m^3			
Base Case - 1 hour			1.00 g/s	24.2 µg/m^3			
October 1 to October 2, 2015 Test Results:							
Dioxins, Furans and Dioxin-Like PCBs (TEQ)*	4.41 ng TEQ/s	1.99 ng TEQ/s	6.40 ng TEQ/s	0.0072 pg TEQ/m^3	1 pg TEQ/m^3	0.72	URT
Naphthalene	5.35 µg/s	4.19 µg/s	9.54 µg/s	0.000011 µg/m^3	22.5 µg/m^3	<0.0001	G
Biphenyl	3.09 µg/s	3.84 µg/s	6.93 µg/s	0.00017 µg/m^3	60 µg/m^3	0.00028	G - 1 hour
Benzo (a) pyrene	<0.031 µg/s	0.041 µg/s	<0.072 µg/s	0.000000081 µg/m^3	0.0011 µg/m^3	0.0074	G
1,2-Dichlorobenzene	0.55 µg/s	0.46 µg/s	1.01 µg/s	0.000024 µg/m^3	30500 µg/m^3	<0.0001	G - 1 hour
1,4-Dichlorobenzene	0.49 µg/s	0.39 µg/s	0.88 µg/s	0.00000099 µg/m^3	95 µg/m^3	<0.0001	S
1,2,4-Trichlorobenzene	0.40 µg/s	0.37 µg/s	0.77 µg/s	0.00000087 µg/m^3	400 µg/m^3	<0.0001	G
Pentachlorophenol	0.36 µg/s	<0.15 µg/s	<0.51 µg/s	0.00000058 µg/m^3	20 µg/m^3	<0.0001	G
October 21 to October 22, 2015 Test Results:							
Dioxins, Furans and Dioxin-Like PCBs (TEQ)*	0.62 ng TEQ/s	0.61 ng TEQ/s	1.23 ng TEQ/s	0.0014 pg TEQ/m^3	1 pg TEQ/m^3	0.14	URT
Naphthalene	13.3 µg/s	13.6 µg/s	26.9 µg/s	0.000030 µg/m^3	22.5 µg/m^3	<0.0001	G
Biphenyl	0.76 µg/s	1.57 µg/s	2.33 µg/s	0.000056 µg/m^3	60 µg/m^3	<0.0001	G - 1 hour
Benzo (a) pyrene	<0.036 µg/s	<0.036 µg/s	<0.072 µg/s	0.000000081 µg/m^3	0.0011 µg/m^3	0.0074	G
1,2-Dichlorobenzene	0.33 µg/s	0.22 µg/s	0.55 µg/s	0.000013 µg/m^3	30500 µg/m^3	<0.0001	G - 1 hour
1,4-Dichlorobenzene	0.25 µg/s	0.15 µg/s	0.40 µg/s	0.00000045 µg/m^3	95 µg/m^3	<0.0001	S
1,2,4-Trichlorobenzene	0.13 µg/s	<0.095 µg/s	<0.23 µg/s	0.00000025 µg/m^3	400 µg/m^3	<0.0001	G
Pentachlorophenol	0.68 µg/s	<0.18 µg/s	<0.86 µg/s	0.00000097 µg/m^3	20 µg/m^3	<0.0001	G
October 29 to October 29, 2015 Test Results:							
Dioxins, Furans and Dioxin-Like PCBs (TEQ)*	0.48 ng TEQ/s	0.42 ng TEQ/s	0.90 ng TEQ/s	0.0010 pg TEQ/m^3	1 pg TEQ/m^3	0.10	URT
Naphthalene	13.7 µg/s	12.7 µg/s	26.4 µg/s	0.000030 µg/m^3	22.5 µg/m^3	<0.0001	G
Biphenyl	0.61 µg/s	0.30 µg/s	0.91 µg/s	0.000022 µg/m^3	60 µg/m^3	<0.0001	G - 1 hour
Benzo (a) pyrene	<0.037 µg/s	<0.037 µg/s	<0.074 µg/s	0.000000084 µg/m^3	0.0011 µg/m^3	0.0076	G
1,2-Dichlorobenzene	0.38 µg/s	0.28 µg/s	0.66 µg/s	0.000016 µg/m^3	30500 µg/m^3	<0.0001	G - 1 hour
1,4-Dichlorobenzene	0.30 µg/s	0.23 µg/s	0.53 µg/s	0.00000060 µg/m^3	95 µg/m^3	<0.0001	S
1,2,4-Trichlorobenzene	0.20 µg/s	0.14 µg/s	0.34 µg/s	0.00000038 µg/m^3	400 µg/m^3	<0.0001	G
Pentachlorophenol	<0.25 µg/s	<0.19 µg/s	<0.44 µg/s	0.00000050 µg/m^3	20 µg/m^3	<0.0001	G

S - Standard
G - Guideline
URT - Upper Risk Threshold

* Calculated using the WHO (O. Reg. 419/05) toxicity equivalence factors and half the detection limit for those isomers not detected in quantities greater than the reportable detection limit.
Note: Unless otherwise stated all allowable limits are 24 hour standards or guidelines.

Main Stack with Both Boilers Operating
Regulation 419 Dispersion Modeling Results using CALPUFF for Metals

Contaminant	Boiler No. 1 BH Outlet Average Emission Rate		Boiler No. 2 BH Outlet Average Emission Rate		Total Average Emission Rate		Calculated Impingement Concentration		Allowable Impingement Concentration		Percentage of Allowable Concentration	Status of Allowable Concentration
Base Case - 24 hour					1.00	g/s	1.13	µg/m^3				
Antimony	<0.0012	mg/s	<0.0029	mg/s	<0.0041	mg/s	0.0000046	µg/m^3	25	µg/m^3	<0.0001	S
Arsenic	<0.0012	mg/s	<0.0013	mg/s	<0.0026	mg/s	0.0000029	µg/m^3	0.3	µg/m^3	0.00097	G
Barium (as water soluble)	0.0039	mg/s	0.0059	mg/s	0.0098	mg/s	0.000011	µg/m^3	10	µg/m^3	0.00011	G
Beryllium	<0.0012	mg/s	<0.0012	mg/s	<0.0025	mg/s	0.0000028	µg/m^3	0.01	µg/m^3	0.028	S
Cadmium	0.0025	mg/s	0.0029	mg/s	0.0054	mg/s	0.0000061	µg/m^3	0.025	µg/m^3	0.024	S
Chromium	0.050	mg/s	0.12	mg/s	0.17	mg/s	0.00020	µg/m^3	1.5	µg/m^3	0.013	G
Cobalt	<0.0012	mg/s	<0.0014	mg/s	<0.0027	mg/s	0.0000030	µg/m^3	0.1	µg/m^3	0.0030	G
Copper	0.050	mg/s	0.061	mg/s	0.11	mg/s	0.00012	µg/m^3	50	µg/m^3	0.00025	S
Lead	0.011	mg/s	0.0099	mg/s	0.021	mg/s	0.000024	µg/m^3	0.5	µg/m^3	0.0048	S
Manganese (as compounds)	0.031	mg/s	0.070	mg/s	0.10	mg/s	0.00011	µg/m^3	2.5	µg/m^3	0.0046	G
Mercury	0.023	mg/s	0.014	mg/s	0.037	mg/s	0.000042	µg/m^3	2	µg/m^3	0.0021	S
Molybdenum	0.30	mg/s	0.30	mg/s	0.61	mg/s	0.00069	µg/m^3	120	µg/m^3	0.00057	G
Nickel	0.12	mg/s	0.15	mg/s	0.27	mg/s	0.00030	µg/m^3	2	µg/m^3	0.015	S
Selenium	<0.0062	mg/s	<0.0062	mg/s	<0.012	mg/s	0.000014	µg/m^3	10	µg/m^3	0.00014	G
Silver	<0.0012	mg/s	<0.0012	mg/s	<0.0025	mg/s	0.0000028	µg/m^3	1	µg/m^3	0.00028	S
Vanadium	<0.00062	mg/s	<0.00081	mg/s	<0.0014	mg/s	0.0000016	µg/m^3	2	µg/m^3	<0.0001	S
Zinc	0.064	mg/s	0.13	mg/s	0.19	mg/s	0.00022	µg/m^3	120	µg/m^3	0.00018	S
Hexavalent Chromium	<0.0048	mg/s	<0.0049	mg/s	<0.0097	mg/s	0.000011	µg/m^3	0.07	µg/m^3	0.016	URT

S - Standard
G - Guideline
URT - Upper Risk Threshold
Note: Unless otherwise stated all allowable limits are 24 hour standards or guidelines.

Main Stack with Both Boilers Operating
Regulation 419 Dispersion Modeling Results using CALPUFF for
Volatile Organic Compounds

Contaminant	Boiler No. 1 BH Outlet Average Emission Rate	Boiler No. 2 BH Outlet Average Emission Rate	Total Average Emission Rate	Calculated Impingement Concentration	Allowable Impingement Concentration	Percentage of Allowable Concentration	Status of Allowable Concentration
Base Case - 24 hour			1.00 g/s	1.13 µg/m³			
Base Case - 1 hour			1.00 g/s	24.2 µg/m³			
Acetone	<1.21 mg/s	<0.064 mg/s	<1.27 mg/s	0.0014 µg/m³	11880 µg/m³	<0.0001	S
Benzene	<0.59 mg/s	<0.039 mg/s	<0.63 mg/s	0.00071 µg/m³	100 µg/m³	0.00071	URT
Bromoform	<0.12 mg/s	<0.0064 mg/s	<0.12 mg/s	0.00014 µg/m³	55 µg/m³	0.00026	G
Bromomethane	<1.07 mg/s	<0.058 mg/s	<1.13 mg/s	0.0013 µg/m³	1350 µg/m³	<0.0001	G
1,3-Butadiene	<0.067 mg/s	<0.013 mg/s	<0.080 mg/s	0.000090 µg/m³	300 µg/m³	<0.0001	URT
2-Butanone	<0.16 mg/s	<0.0064 mg/s	<0.17 mg/s	0.00019 µg/m³	1000 µg/m³	<0.0001	S
Carbon Tetrachloride	<0.12 mg/s	<0.0064 mg/s	<0.12 mg/s	0.00014 µg/m³	2.4 µg/m³	0.0058	S
Chloroform	<0.12 mg/s	<0.011 mg/s	<0.13 mg/s	0.00015 µg/m³	1 µg/m³	0.015	S
Cumene (Isopropylbenzene)	<0.24 mg/s	<0.013 mg/s	<0.25 mg/s	0.00028 µg/m³	400 µg/m³	<0.0001	S
Dichlorodifluoromethane	<0.24 mg/s	<0.013 mg/s	<0.25 mg/s	0.00028 µg/m³	500000 µg/m³	<0.0001	G
trans,1,2-Dichloroethene	<0.12 mg/s	<0.0064 mg/s	<0.12 mg/s	0.00014 µg/m³	105 µg/m³	0.00013	G
Ethylbenzene	<0.18 mg/s	<0.0078 mg/s	<0.19 mg/s	0.00021 µg/m³	1000 µg/m³	<0.0001	S
Ethylene Dibromide	<0.24 mg/s	<0.013 mg/s	<0.25 mg/s	0.00028 µg/m³	3 µg/m³	0.0094	G
Mesitylene (1,3,5-Trimethylbenzene)	<0.24 mg/s	<0.013 mg/s	<0.25 mg/s	0.00029 µg/m³	220 µg/m³	0.00013	S
Methylene Chloride	<1.29 mg/s	<0.092 mg/s	<1.38 mg/s	0.0016 µg/m³	220 µg/m³	0.00071	G
Styrene	<0.25 mg/s	<0.032 mg/s	<0.28 mg/s	0.00032 µg/m³	400 µg/m³	<0.0001	S
Tetrachloroethene	<0.12 mg/s	<0.0066 mg/s	<0.12 mg/s	0.00014 µg/m³	360 µg/m³	<0.0001	S
Toluene	<2.48 mg/s	0.062 mg/s	<2.54 mg/s	0.0029 µg/m³	2000 µg/m³	0.00014	G
1,1,1-Trichloroethane	<0.12 mg/s	<0.0064 mg/s	<0.12 mg/s	0.00014 µg/m³	115000 µg/m³	<0.0001	S
Trichloroethene	<0.12 mg/s	<0.0064 mg/s	<0.12 mg/s	0.00014 µg/m³	12 µg/m³	0.0012	S
Trichlorotrifluoroethane	<0.24 mg/s	<0.013 mg/s	<0.25 mg/s	0.00028 µg/m³	800000 µg/m³	<0.0001	S
Trichlorofluoromethane	<0.24 mg/s	<0.013 mg/s	<0.25 mg/s	0.00028 µg/m³	6000 µg/m³	<0.0001	G
Total Xylenes	<0.71 mg/s	<0.034 mg/s	<0.74 mg/s	0.00084 µg/m³	730 µg/m³	0.00012	S
Vinyl Chloride	<0.24 mg/s	<0.013 mg/s	<0.25 mg/s	0.00028 µg/m³	1 µg/m³	0.028	S
Acetaldehyde	8.40 mg/s	10.9 mg/s	19.3 mg/s	0.022 µg/m³	500 µg/m³	<0.0001	S
Formaldehyde	8.60 mg/s	20.2 mg/s	28.8 mg/s	0.033 µg/m³	65 µg/m³	0.05007	S
Acrolein	<1.52 mg/s	<1.60 mg/s	<3.12 mg/s	0.0035 µg/m³	0.4 µg/m³	0.88140	S
Acrolein	<1.52 mg/s	<1.60 mg/s	<3.12 mg/s	0.076 µg/m³	4.5 µg/m³	1.68	S - 1 hour

S - Standard
G - Guideline
URT - Upper Risk Threshold
Note: Unless otherwise stated all allowable limits are 24 hour standards or guidelines.

9. ODOUR DISPERSION MODELLING

Odour sampling was conducted by Zorix Environmental and the results were provided to ORTECH for inclusion in the report. The Zorix Environmental odour testing report is provided in Appendix 43.

Odour Dispersion modelling was completed by ORTECH using the CALPUFF model (Version 5.8.4) and CALPOST model (Version 6.221) as discussed in the Dispersion Modelling Section of this report (Section 8). Unless otherwise indicated, the modelling methodology is the same as the methodology used in the current facility Emission Summary and Dispersion Modelling (ESDM) Report, dated March 2011 (Golder Associates Report Number 10-1151-0343 (3000)).

The following data was provided by Covanta, from the Zorix Environmental odour testing report:

- Exhaust flow rate ....11 m^3/s
- Exhaust temperature ....ambient (25°C)
- Odour Emission Rate........10,000 OU/s

This data represents the worst case scenario, which occurs when operations consist of venting combustion air drawn from the charging floor when the boiler is not combusting waste and exhausting through the Main Stack. During these outage periods the combustion air fans, which have a variable frequency drive, are operated at a significantly reduced load, ranging from 10% to not more than 30% capacity. The above flow rate and odour emission rate represent the fans operating at 30% capacity.

9.1 Source Parameters

The source parameters used in the odour dispersion modelling are included in the following table. The coordinates are UTM NAD 83, Zone 17.

Source ID	Source Description	Odour Emission Rate (OU/s)	Release Height (m)	Temp. (K)	Stack Inside Diameter (m)	Exit Velocity (m/s)	X (m)	Y (m)
STCK1	Main Stack	10,000	87.6	298	1.7	4.85	680,538	4,860,346

9.2 Meteorological Data

The meteorological data used in the dispersion modelling is the same dataset used in the current ESDM Report. It was provided by Golder Associates and covers a 5 year time period from 2003 through 2007, and was previously approved by the MOECC.

9.3 Concentration Conversion

The shortest averaging period that can be calculated by the CALPUFF model is 1 hour. The odour limit in the DYEC ECA is based on a 10-minute averaging time period. Therefore, the 1-hour averaging time period results obtained from the model have to be converted to a 10-minute averaging time period. As detailed in Schedule B of the ECA, the 1-hour concentrations predicted by CALPUFF were multiplied by a factor of 1.65 to derive the 10-minute concentrations.

9.4 Meteorological Outliers

As described in Section 6.6 of the Air Dispersion Modelling Guideline for Ontario (ADMGO), for 1-hour concentrations, the eight hours with the highest 1-hour concentrations in each single meteorological year may be discarded. For compliance assessments the MOECC will consider the highest concentration after elimination of these meteorological anomalies. Meteorological anomalies were discarded from the odour modelling results.

9.5 Odour Modelling Results

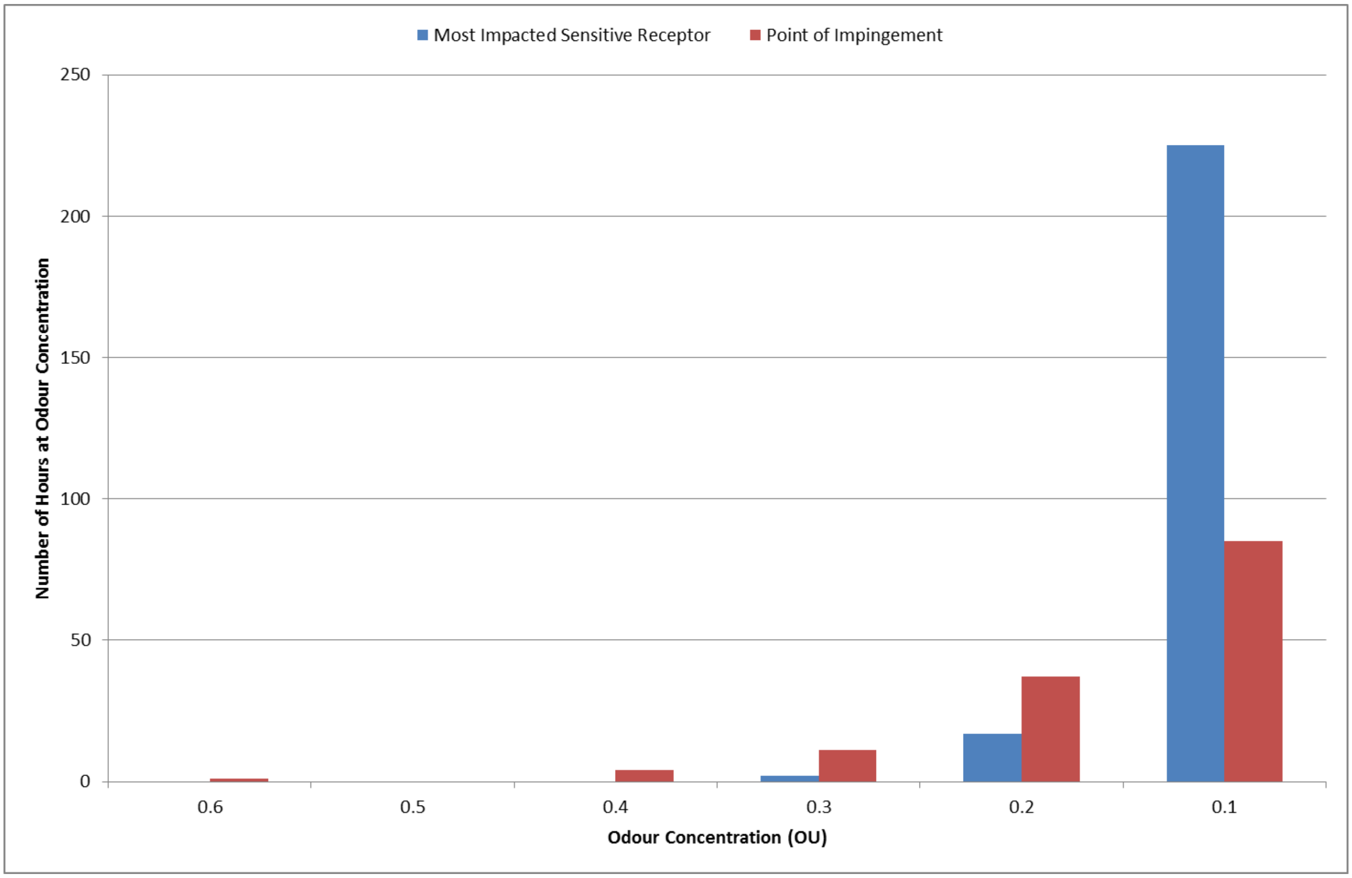
The maximum predicted 10-minute odour concentrations at all off-property receptors, as well as the most impacted sensitive receptor after the removal of meteorological anomalies is shown below.

Location	Maximum Odour Concentration (OU)
Point of Impingement	0.64
Most Impacted Sensitive Receptor*	0.28

* Most impacted sensitive receptor is considered to be the sensitive receptor with the highest odour concentration following the removal of meteorological outliers.

As shown, the maximum 10-minute odour concentration at a sensitive receptor was 0.28 OU and occurred at a former house to the west of the facility.

A histogram identifying all predicted 10-minute odour concentration occurrences at the most impacted sensitive receptor and the Point of Impingement (POI) is provided below. The figure graphs the number of occurrences (hours in the five year modelling period) at each odour concentration (grouped in increments of 0.1 OU), excluding meteorological outliers.



The following table shows the input data used for the histogram.

Odour Concentration (OU)	Number of Hours at Specified Odour Concentration	
	Most Impacted Sensitive Receptor	Point of Impingement
0.6	0	1
0.5	0	0
0.4	0	4
0.3	2	11
0.2	17	37
0.1	225	85
0*	43,532	43,638

* not included in histogram to allow clearer graphical representation of smaller numbers

The CALPUFF odour modelling files are provided on CD in Appendix 42.

10. FACILITY PROCESS DATA

Continuous Emission Monitoring (CEM) data was supplied by DYEC personnel for the emission test program. The one-minute CEM System data was provided for the following process parameters:

- Hydrogen Chloride (mg/Rm^3, adjusted to 11% oxygen)
- Nitrogen Oxides (mg/Rm^3, adjusted to 11% oxygen)
- Sulphur Dioxide (mg/Rm^3, adjusted to 11% oxygen)
- Carbon Monoxide (mg/Rm^3, adjusted to 11% oxygen)
- Oxygen (% volume, dry)
- Carbon Dioxide (kg/Rm^3)
- Total Hydrocarbons (mg/Rm^3, adjusted to 11% oxygen)

ORTECH calculated 1-hour average concentrations for each clock hour using the 1-minute combustion gas data measured by the DYEC CEMs from September 29 to October 2, 2015. The combustion gas concentrations, expressed as 1-hour average concentrations, at the Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet are provided in Appendix 44. The 1-minute data is archived at ORTECH and can be provided upon request.

Prior to commencing the source testing program relative accuracy and system bias testing was conducted on the Continuous Emission Monitoring Systems (CEMS) installed at the Scrubber Inlet and BH Outlet of each Boiler. The DYEC CEMS met the performance parameters detailed in Schedule F of the ECA. The data recorded by the DYEC CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides, carbon monoxide and total hydrocarbons.

The DYEC AMESA Dioxin and Furan sampling monitor was operating during the SVOC emission testing conducted on October 1, October 2, October 28 and October 29, 2015. An AMESA sample was collected during each SVOC test period, on the test days specified above, and was submitted by Covanta to ALS for analysis. The analytical results and volume sampled for each AMESA sample was supplied to ORTECH by Covanta and the emission data was calculated by ORTECH using the volumetric flowrates measured during the corresponding isokinetic SVOC test conducted by ORTECH during the source testing program. The AMESA dioxin and furan emission data and analytical report for the samples collected on October 1 and October 2, 2015 are provided in Appendix 45. The AMESA dioxin and furan emission data and analytical report for the samples collected on October 28 and October 29, 2015 are provided in Appendix 46.

ORTECH Report No. 21546-2, entitled "Covanta Durham York Renewable Energy Limited Partnership Compliance Relative Accuracy and System Bias Performance Evaluation of the Continuous Emission Monitoring Systems (CEMS)", which details the relative accuracy and system bias testing program is provided in Appendix 47.

Facility process data was also supplied by DYEC personnel for each test day. The process data is summarized below:

Test Date	Power Output* (MWh/d)	Aux. Fuel Combusted (m^3/d)	Avg. Combustion Zone Temp. (°C)		Steam (tonnes/d)		MSW Combusted (tonnes/d)		NO_X Reagent Inj. Rate (liters/d)		Carbon Inj. Rate (kg/d)		Lime Inj. Rate (kg/d)	
			Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
29 Sept. 2015	409	0	1115	1171	841	841	225	213	1212	1109	96	95	3968	3833
30 Sept. 2015	420	0	1127	1176	839	841	230	234	1315	1411	95	91	3973	3762
1 Oct. 2015	417	0	1134	1171	842	840	227	225	1438	1399	95	90	3940	3931
2 Oct. 2015	403	0	1133	1156	827	828	217	216	1368	1177	95	90	4417	3935
Average	412	0	1127	1169	837	838	225	222	1333	1274	95.3	91.5	4075	3865
21 Oct. 2015	311	0	1174	1136	810	815	220	220	1180	1387	123	123	5653	5748
22 Oct. 2015	405	0	1174	1141	819	822	223	220	1218	1618	124	123	5644	5749
Average	358	0	1174	1139	815	819	222	220	1199	1503	124	123	5649	5749
28 Oct. 2015	406	0	1175	1164	824	822	224	225	983	1523	119	120	4140	4154
29 Oct. 2015	398	0	1159	1151	818	820	230	224	968	1474	118	118	4090	4153
Average	402	0	1167	1158	821	821	227	225	976	1499	119	119	4115	4154

* Gross turbine output

11. CONCLUSIONS

The main conclusions which can be drawn from the present emission testing program, carried out as a requirement of the ECA No. 7306-8FDKNX, are:

- The facility was maintained within the operational parameters defined by the amended ECA that constitutes normal operation during the stack test periods. Testing was conducted at a steam production rate of greater than 1623 tonnes of steam per day for the two Boilers combined. The maximum continuous rating for the facility is 1614.7 tonnes of steam per day for the two Boilers combined (33.64 tonnes per hour for each Boiler).
- Using CALPUFF dispersion modelling techniques, the predicted maximum point of impingement concentrations, based on the average test results, show DYEC to be operating well below the standards in Regulation 419/05 (Schedule 3) under the Ontario Environmental Protection Act and other MOECC criteria including guidelines, upper risk thresholds and “to be updated” guidelines.

Schedule C of ECA No. 7306-8FDKNX lists in-stack limits for the emissions of various compounds. Emissions limits are given for particulate matter, mercury, cadmium, lead, dioxins and furans and organic matter as the results from compliance source testing. Emission limits are also given for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide calculated as the rolling arithmetic average of data measured by a CEMS.

Since relative accuracy and system bias testing demonstrated that the CEMS met the performance parameters detailed in Schedule F of the ECA, the data recorded by the facility CEMS was used to assess against the in-stack emissions limits detailed in Schedule C of the ECA for hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide. Note the DYEC CEMS data for the four day test period (September 29 to October 2) was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA.

Concentration data measured by ORTECH between September 23 and September 27, 2015 at the Scrubber Inlet sampling locations was used to assess against the total hydrocarbons (organic matter) in-stack emissions limit detailed in Schedule C of the ECA.

The average results for the tests conducted at the Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet, along with the respective in-stack emission limits, are summarized in the following table:

Parameter	Limit	Boiler No. 1	Boiler No. 2	Combined Boilers
September 29 to October 2, 2015 Test Results:				
Power Output (MWh/day)	-	-	-	412 (7)
Average Combustion Zone Temp. (°C)	-	1127	1169	1148 (8)
Steam (tonnes/day)	-	837	838	1675 (7)
MSW Combusted (tonnes/day)	-	225	222	447 (7)
NOx Reagent Injection Rate (liters/d)	-	1333	1274	2607 (7)
Carbon Injection (kg/day)	-	95.3	91.5	187 (7)
Lime Injection (kg/day)	-	4075	3865	7940 (7)
Stack Temperature (°C)	-	135	134	135 (8)
Moisture Content (%)	-	16.5	16.3	16.4 (8)
Velocity (m/s)	-	17.3	17.4	-
Static Pressure (kPa)	-	-2.75	-2.68	-2.72 (8)
Absolute Pressure (kPa)	-	98.5	98.4	98.5 (8)
Actual Flowrate (m^3/s)	-	25.6	25.8	-
Dry Reference Flowrate (Rm^3/s) (1)	-	15.2	15.3	30.5 (7)
Oxygen (%)	-	7.69	8.00	7.85 (8)
Carbon Dioxide (%)	-	11.4	11.3	11.4 (8)
Particulate (mg/Rm^3) (2)	9	0.53	<0.41	<0.47 (8)
Mercury (µg/Rm^3) (2)	15	1.16	0.72	0.94 (8)
Cadmium (µg/Rm^3) (2)	7	0.12	0.15	0.14 (8)
Lead (µg/Rm^3) (2)	50	0.57	0.51	0.54 (8)
Hydrochloric Acid (mg/Rm^3) (4)	9	3.7	4.1	3.9 (8)
Sulphur Dioxide (mg/Rm^3) (4)	35	6.7	1.8	4.3 (8)
Nitrogen Oxides (mg/Rm^3) (4)	121	115	115	115 (8)
Total Hydrocarbons (ppm, dry) (5)	50	0	4.9	2.5 (8)
Carbon Monoxide (mg/Rm^3) (6)	40	24.4	27.0	25.7 (8)
October 21 to October 22, 2015 Test Results:				
Power Output (MWh/day)	-	-	-	358 (7)
Average Combustion Zone Temp. (°C)	-	1174	1139	1156 (8)
Steam (tonnes/day)	-	815	819	1633 (7)
MSW Combusted (tonnes/day)	-	222	220	442 (7)
NOx Reagent Injection Rate (liters/d)	-	1199	1503	2702 (7)
Carbon Injection (kg/day)	-	124	123	247 (7)
Lime Injection (kg/day)	-	5649	5749	11397 (7)
Dioxins and Furans (pg TEQ/Rm^3) (3)	60	<36.0	<32.4	<34.2 (8)
October 28 to October 29, 2015 Test Results:				
Power Output (MWh/day)	-	-	-	402 (7)
Average Combustion Zone Temp. (°C)	-	1167	1158	1162 (8)
Steam (tonnes/day)	-	821	821	1642 (7)
MSW Combusted (tonnes/day)	-	227	225	452 (7)
NOx Reagent Injection Rate (liters/d)	-	976	1499	2475 (7)
Carbon Injection (kg/day)	-	119	119	238 (7)
Lime Injection (kg/day)	-	4115	4154	8269 (7)
Dioxins and Furans (pg TEQ/Rm^3) (3)	60	<27.0	<22.2	<24.6 (8)

(1) dry at 25°C and 1 atmosphere
(2) dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
(3) calculated using the NATO/CCMS (1989) toxicity equivalence factors and the detection limit for those isomers below the analytical detection limit, dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
(4) maximum calculated rolling arithmetic average of 24 hours of data measured by the DYEC CEMS, dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
(5) average of six half-hour tests conducted by ORTECH between September 23 and September 27, 2015 measured at an undiluted location, reported on a dry basis expressed as equivalent methane
(6) maximum calculated rolling arithmetic average of 4 hours of data measured by the DYEC CEMS, dry at 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
(7) total for combined Boilers
(8) average for combined Boilers

APPENDIX 1

Boiler No. 1 BH Outlet
Data Tables
September 29 to October 2, 2015 Testing
(98 pages)

TABLE 1
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Isokinetic Sampling Train Test Schedules

Particulate and Acid Gases Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	September 29, 2015	9:11	13:41	180
2	September 29, 2015	14:41	17:53	180
3	October 1, 2015	16:22	19:37	180

Paticle Size Distribution Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	September 29, 2015	9:09	13:40	180
2	September 29, 2015	14:40	17:50	180
3	October 1, 2015	16:19	19:34	180

Metals Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	September 30, 2015	8:07	13:46	120
2	September 30, 2015	14:48	17:01	120
3	October 1, 2015	7:41	9:54	120

Hexavalent Chromium Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	September 30, 2015	8:08	13:46	120
2	September 30, 2015	14:49	17:02	120
3	October 1, 2015	7:41	9:56	120

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	October 1, 2015	10:48	15:05	240
2	October 2, 2015	7:40	11:57	240
3	October 2, 2015	12:26	16:41	240

* Actual sampling time excluding leak-checks, traverse changes and process down time.

TABLE 2
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Compounds Test Schedules

Acrolein and Aldehydes Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	October 1, 2015	14:17	15:17	60
2	October 2, 2015	7:45	8:45	60
3	October 2, 2015	14:53	15:53	60

Volatile Organic Compounds Trains

Test Number	Tube Pair	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	1	October 1, 2015	11:20	11:40	20
	2	October 1, 2015	11:57	12:17	20
	3	October 1, 2015	12:25	12:45	20
	4	October 1, 2015	12:58	13:18	20
2	1	October 2, 2015	9:24	9:44	20
	2	October 2, 2015	10:23	10:43	20
	3	October 2, 2015	10:52	11:12	20
	4	October 2, 2015	11:21	11:41	20
3	1	October 2, 2015	12:30	12:50	20
	2	October 2, 2015	13:12	13:32	20
	3	October 2, 2015	13:40	14:00	20
	4	October 2, 2015	14:09	14:29	20

TABLE 3
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Stack Gas Sampling Parameters

Particulate and Acid Gases Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.845	0.981	6.50	3.796	100.9
2	0.845	0.981	6.50	3.734	101.2
3	0.847	1.017	6.46	3.668	102.0

Paticle Size Distribution Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.844	1.017	6.12	3.465	102.4
2	0.844	1.017	6.12	3.462	104.6
3	0.844	0.981	6.12	3.415	101.5

Metals Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.847	1.017	6.46	2.445	100.4
2	0.847	1.017	6.46	2.524	100.6
3	0.847	1.017	6.46	2.429	100.4

Hexavalent Chromium Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.846	0.981	6.50	2.448	100.3
2	0.846	0.981	6.50	2.472	100.5
3	0.846	0.981	6.50	2.447	101.0

Semi-Volatile Organic Compounds Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.847	1.017	6.46	4.811	100.4
2	0.847	1.017	6.46	4.599	101.0
3	0.847	1.017	6.46	4.644	100.9

* Dry at 25°C and 1 atmosphere

TABLE 4
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Stack Gas Physical Parameters

Particulate and Acid Gases Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	130	16.4	17.6	-2.79	97.6	11.3	7.67
2	130	16.1	17.2	-2.79	97.6	11.4	7.69
3	135	17.5	17.2	-2.71	99.1	11.6	7.54
Average	132	16.7	17.4	-2.76	98.1	11.4	7.63

Paticle Size Distribution Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	125	17.5	17.9	-2.79	97.6	11.3	7.67
2	116	16.3	16.8	-2.79	97.6	11.4	7.69
3	138	17.5	18.1	-2.71	99.1	11.6	7.54
Average	126	17.1	17.6	-2.76	98.1	11.4	7.63

Metals Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	140	15.9	17.5	-2.79	98.1	11.2	7.91
2	140	16.4	18.1	-2.79	98.2	11.1	7.92
3	138	16.5	17.3	-2.71	99.0	11.6	7.62
Average	139	16.3	17.7	-2.76	98.5	11.3	7.82

Hexavalent Chromium Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	140	15.9	17.4	-2.79	98.1	11.2	7.91
2	140	16.4	17.6	-2.79	98.2	11.1	7.92
3	139	16.5	17.2	-2.71	99.0	11.6	7.62
Average	140	16.3	17.4	-2.76	98.5	11.3	7.82

Semi-Volatile Organics Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	136	16.1	16.9	-2.71	99.0	11.6	7.57
2	135	16.4	16.1	-2.69	99.4	11.6	7.59
3	139	16.4	16.4	-2.69	99.4	11.7	7.52
Average	136	16.3	16.5	-2.70	99.3	11.6	7.56

* Dry basis, measured by the DYEC CEMS

TABLE 5
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Stack Gas Volumetric Flowrates

Particulate and Acid Gases Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	26.1	15.5	20.7	18.6
2	25.4	15.2	20.3	18.1
3	25.4	15.0	20.2	18.2
Average	25.6	15.2	20.4	18.3

Paticle Size Distribution Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	26.5	15.7	21.0	19.1
2	24.9	15.4	20.5	18.4
3	26.8	15.7	21.1	19.0
Average	26.0	15.6	20.9	18.8

Metals Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	25.9	15.2	20.0	18.1
2	26.8	15.7	20.6	18.8
3	25.6	15.1	20.3	18.1
Average	26.1	15.3	20.3	18.3

Hexavalent Chromium Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	25.7	15.1	19.8	17.9
2	26.0	15.2	19.9	18.2
3	25.4	15.0	20.1	17.9
Average	25.7	15.1	19.9	18.0

Semi-Volatile Organics Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	25.0	15.0	20.2	17.9
2	23.8	14.2	19.1	17.0
3	24.2	14.4	19.5	17.2
Average	24.3	14.5	19.6	17.4

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 6
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Particulate Emission Data

Test No.	Particulate Collected Probe Rinse	Main Filter	Total	Dry Gas Volume Sampled	Particulate Concentration Actual	Dry Reference	Dry Adjusted	Wet Reference	Particulate Emission Rate
	mg	mg	mg	Rm^3*	mg/m^3	mg/Rm^3*	mg/Rm^3**	mg/Rm^3*	mg/s
1	1.7	0.3	2.0	3.796	0.31	0.53	0.39	0.44	8.17
2	2.2	0.3	2.5	3.734	0.40	0.67	0.50	0.56	10.2
3	3.3	0.1	3.4	3.668	0.55	0.93	0.69	0.77	13.9
Average					0.42	0.71	0.53	0.59	10.7
Coefficient of Variation, %					28.1	28.6	28.1	27.9	27.0

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 7
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Particle Size Distribution Results

Test No. 1

Plate No.	Weight Percent < Cut Off Diameter	Effective Cut Off Diameter µm
1	81.3	13.99
2	72.9	8.71
3	63.6	5.83
4	55.1	4.05
5	44.9	2.55
6	37.4	1.31
7	25.2	0.79
8	16.8	0.54
PM_{10}	**75.0**	**10**
$PM_{2.5}$	**44.6**	**2.5**

Test No. 2

Plate No.	Weight Percent < Cut Off Diameter	Effective Cut Off Diameter µm
1	87.8	13.87
2	78.4	8.64
3	67.6	5.79
4	56.8	4.02
5	45.9	2.53
6	29.7	1.30
7	13.5	0.79
8	2.7	0.53
PM_{10}	**80.8**	**10**
$PM_{2.5}$	**45.5**	**2.5**

Test No. 3

Plate No.	Weight Percent < Cut Off Diameter	Effective Cut Off Diameter µm
1	87.6	14.24
2	80.4	8.87
3	69.1	5.94
4	58.8	4.13
5	44.3	2.60
6	30.9	1.34
7	18.6	0.81
8	11.3	0.55
PM_{10}	**81.9**	**10**
$PM_{2.5}$	**43.2**	**2.5**

Average

Plate No.	Weight Percent < Cut Off Diameter	Effective Cut Off Diameter µm
1	85.6	14.03
2	77.2	8.74
3	66.8	5.85
4	56.9	4.07
5	45.0	2.56
6	32.7	1.32
7	19.1	0.80
8	10.3	0.54
PM_{10}	**79.2**	**10**
$PM_{2.5}$	**44.4**	**2.5**

TABLE 8
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
PM_{10} and $PM_{2.5}$ Emission Data

Actual Concentration

Test Number	Total Suspended Particulate mg/m^3	PM_{10} mg/m^3	$PM_{2.5}$ mg/m^3
1	0.31	0.23	0.14
2	0.40	0.32	0.18
3	0.55	0.45	0.24
Average	0.42	0.34	0.19

Dry Reference Concentration

Test Number	Total Suspended Particulate mg/m^{3*}	PM_{10} mg/m^{3*}	$PM_{2.5}$ mg/m^{3*}
1	0.53	0.40	0.24
2	0.67	0.54	0.30
3	0.93	0.76	0.40
Average	0.71	0.57	0.31

Dry Adjusted Concentration

Test Number	Total Suspended Particulate mg/m^{3**}	PM_{10} mg/m^{3**}	$PM_{2.5}$ mg/m^{3**}
1	0.39	0.30	0.18
2	0.50	0.41	0.23
3	0.69	0.56	0.30
Average	0.53	0.42	0.23

Wet Reference Concentration

Test Number	Total Suspended Particulate mg/m^{3*}	PM_{10} mg/m^{3*}	$PM_{2.5}$ mg/m^{3*}
1	0.44	0.33	0.20
2	0.56	0.45	0.26
3	0.77	0.63	0.33
Average	0.59	0.47	0.26

Emission Rate

Test Number	Total Suspended Particulate mg/s	PM_{10} mg/s	$PM_{2.5}$ mg/s
1	8.17	6.13	3.64
2	10.2	8.22	4.63
3	13.9	11.4	6.00
Average	10.7	8.57	4.76

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 9
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Condensable Particulate Emission Data

Inorganic Condensable Particulate

Test No.	Total Collected mg	Dry Volume Sampled Rm³*	Inorganic Condensable Particulate Concentration Actual mg/m³	Dry Reference mg/Rm³*	Dry Adjusted mg/Rm³**	Wet Reference mg/Rm³*	Emission Rate mg/s
1	NQ	3.465	-	-	-	-	-
2	NQ	3.462	-	-	-	-	-
3	NQ	3.415	-	-	-	-	-
Average			-	-	-	-	-
Blank	NQ						

Organic Condensable Particulate

Test No.	Total Collected mg	Dry Volume Sampled Rm³*	Organic Condensable Particulate Concentration Actual mg/m³	Dry Reference mg/Rm³*	Dry Adjusted mg/Rm³**	Wet Reference mg/Rm³*	Emission Rate mg/s
1	6.0	3.465	1.03	1.73	1.30	1.44	26.8
2	3.1	3.462	0.54	0.90	0.67	0.75	13.6
3	1.9	3.415	0.33	0.56	0.41	0.46	8.35
Average			0.63	1.06	0.79	0.88	16.3
Blank	1.4						

* At 25 °C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
NQ Not Quantifiable due to an error at the analytical laboratory

TABLE 10
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Halides and Ammonia Emission Data

Hydrogen Chloride

Test No.	HCl Collected mg	Dry Volume Sampled Rm^3*	Actual mg/m^3	Hydrogen Chloride Concentration Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HCl Emission Rate mg/s
1	32.8	3.796	5.14	8.64	6.46	7.22	134
2	25.9	3.734	4.15	6.94	5.20	5.82	105
3	37.4	3.668	6.01	10.2	7.56	8.41	153
Average			5.10	8.59	6.41	7.15	131
Blank	<0.197						

Hydrogen Fluoride

Test No.	HF Collected mg	Dry Volume Sampled Rm^3*	Actual mg/m^3	Hydrogen Fluoride Concentration Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HF Emission Rate mg/s
1	<0.274	3.796	<0.043	<0.072	<0.054	<0.060	<1.12
2	<0.263	3.734	<0.042	<0.070	<0.053	<0.059	<1.07
3	<0.288	3.668	<0.046	<0.079	<0.058	<0.065	<1.18
Average			<0.044	<0.074	<0.055	<0.061	<1.12
Blank	<0.112						

Ammonia

Test No.	Ammonia Collected mg	Dry Volume Sampled Rm^3*	Actual mg/m^3	Ammonia Concentration Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Ammonia Emission Rate mg/s
1	7.26	3.796	1.14	1.91	1.43	1.60	29.7
2	8.86	3.734	1.42	2.37	1.78	1.99	36.1
3	5.98	3.668	0.96	1.63	1.21	1.34	24.4
Average			1.17	1.97	1.47	1.64	30.1
Blank	<0.283						

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

* At 25 °C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 11
Covanta - Durham York Energy Centre
Boiler No. 1
Combustion Gas Analyses

Data measured by the DYEC CEMS from September 29 to October 2, 2015

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (%, 1 hr Avg)	7.11	7.61	8.37
BH Outlet	Carbon Dioxide (kg/Rm^3, 1 hr Avg) *	0.19	0.21	0.22
BH Outlet	Carbon Monoxide (mg/Rm^3, 1 hr Avg) *	8.8	15.3	28.9
BH Outlet	Carbon Monoxide (mg/Rm^3, 4 hr Avg) *	10.9	15.4	24.4
BH Outlet	Sulphur Dioxide (mg/Rm^3, 1 hr Avg) *	0	3.1	34.2
BH Outlet	Sulphur Dioxide (mg/Rm^3, 24 hr Avg) *	0.7	3.8	6.7
BH Outlet	Nitrogen Oxides (mg/Rm^3, 1 hr Avg) *	89.0	110	150
BH Outlet	Nitrogen Oxides (mg/Rm^3, 24 hr Avg) *	105	109	115
BH Outlet	Hydrogen Chloride (mg/Rm^3, 1 hr Avg) *	0.9	2.5	7.2
BH Outlet	Hydrogen Chloride (mg/Rm^3, 24 hr Avg) *	1.6	2.7	3.7
Scrubber Inlet	Oxygen (%, 1 hr Avg)	7.39	7.94	10.41
Scrubber Inlet	Total Hydrocarbons (mg/Rm^3, 1 hr Avg) *	1.4	1.8	2.4

Data measured by the ORTECH CEMS on September 27, 2015

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
Scrubber Inlet	1	Total Hydrocarbons (ppm dry) **	0.0	0.0	0.3
Scrubber Inlet	2	Total Hydrocarbons (ppm dry) **	0.0	0.0	0.4
Scrubber Inlet	3	Total Hydrocarbons (ppm dry) **	0.0	0.0	0.4
Scrubber Inlet	4	Total Hydrocarbons (ppm dry) **	0.0	0.0	0.1
Scrubber Inlet	5	Total Hydrocarbons (ppm dry) **	0.0	0.0	0.8
Scrubber Inlet	6	Total Hydrocarbons (ppm dry) **	0.0	0.0	0.1
Average		Total Hydrocarbons (ppm dry) **		0.0	

* Reference conditions, dry basis adjusted to 11% oxygen
** Half hour tests reported on a dry basis as equivalent methane

TABLE 12
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Analyses Test No. 1

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	<5	0.59	0.59
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.79	<0.05	0.79
Chromium	7.22	0.39	7.61
Cobalt	<0.2	<0.1	<0.20
Copper	3.14	4.00	7.14
Lead	0.64	0.25	0.90
Manganese	2.71	3.14	5.85
Mercury *	<0.015	3.84	3.84
Molybdenum	45.9	0.74	46.6
Nickel	18.8	0.37	19.2
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	8.81	3.48	12.3
Total			107

* Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit, "<MDL").
Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 13
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Analyses Test No. 2

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	<5	0.72	0.72
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.13	0.050	0.18
Chromium	8.68	0.91	9.59
Cobalt	<0.2	<0.1	<0.20
Copper	3.05	7.37	10.4
Lead	0.56	0.41	0.97
Manganese	2.02	1.60	3.62
Mercury *	<0.015	2.98	2.98
Molybdenum	50.3	0.13	50.4
Nickel	20.3	0.97	21.3
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	<6	4.19	4.19
Total			107

* Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit, "<MDL"). Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 14
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Analyses Test No. 3

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	<5	0.59	0.59
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.21	<0.05	0.21
Chromium	6.66	0.22	6.88
Cobalt	<0.2	<0.1	<0.20
Copper	2.43	4.02	6.45
Lead	3.46	0.22	3.68
Manganese	4.71	0.57	5.28
Mercury *	<0.015	4.49	4.49
Molybdenum	49.5	0.13	49.6
Nickel	19.4	0.23	19.6
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	9.62	4.69	14.3
Total			113

* Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit, "<MDL").
Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 15
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Emission Data Test No. 1

Metal	Total Collected µg	Actual Concentration µg/m^3	Dry Reference Concentration µg/Rm^3*	Dry Adjusted Concentration µg/Rm^3**	Wet Reference Concentration µg/Rm^3*	Emission Rate mg/s
Antimony	<0.20	<0.048	<0.082	<0.062	<0.069	<0.0012
Arsenic	<0.20	<0.048	<0.082	<0.062	<0.069	<0.0012
Barium	0.59	0.14	0.24	0.18	0.20	0.0037
Beryllium	<0.20	<0.048	<0.082	<0.062	<0.069	<0.0012
Cadmium	0.79	0.19	0.32	0.25	0.27	0.0049
Chromium	7.61	1.83	3.11	2.37	2.61	0.047
Cobalt	<0.20	<0.048	<0.082	<0.062	<0.069	<0.0012
Copper	7.14	1.71	2.92	2.22	2.45	0.044
Lead	0.90	0.22	0.37	0.28	0.31	0.0056
Manganese	5.85	1.40	2.39	1.82	2.01	0.036
Mercury	3.84	0.92	1.57	1.19	1.32	0.024
Molybdenum	46.6	11.2	19.1	14.5	16.0	0.29
Nickel	19.2	4.60	7.84	5.96	6.59	0.12
Selenium	<1.00	<0.24	<0.41	<0.31	<0.34	<0.0062
Silver	<0.20	<0.048	<0.082	<0.062	<0.069	<0.0012
Thallium	<0.20	<0.048	<0.082	<0.062	<0.069	<0.0012
Vanadium	<0.10	<0.024	<0.041	<0.031	<0.034	<0.00062
Zinc	12.3	2.95	5.03	3.82	4.22	0.076
Total	107	25.7	43.8	33.3	36.8	0.67

Dry Gas Volume Sampled (Rm^3*) :	2.445
Actual Flowrate (m^3/s) :	25.9
Dry Reference Flowrate (Rm^3/s*) :	15.2
Dry Adjusted Flowrate (Rm^3/s**) :	20.0
Wet Reference Flowrate (Rm^3/s*) :	18.1

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 16
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Emission Data Test No. 2

Metal	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	<0.20	<0.046	<0.079	<0.060	<0.066	<0.0012
Arsenic	<0.20	<0.046	<0.079	<0.060	<0.066	<0.0012
Barium	0.72	0.17	0.29	0.22	0.24	0.0045
Beryllium	<0.20	<0.046	<0.079	<0.060	<0.066	<0.0012
Cadmium	0.18	0.043	0.073	0.056	0.061	0.0011
Chromium	9.59	2.23	3.80	2.90	3.17	0.060
Cobalt	<0.20	<0.046	<0.079	<0.060	<0.066	<0.0012
Copper	10.4	2.42	4.13	3.15	3.45	0.065
Lead	0.97	0.23	0.38	0.29	0.32	0.0060
Manganese	3.62	0.84	1.43	1.09	1.20	0.023
Mercury	2.98	0.69	1.18	0.90	0.99	0.019
Molybdenum	50.4	11.7	20.0	15.2	16.7	0.31
Nickel	21.3	4.94	8.43	6.42	7.04	0.13
Selenium	<1.00	<0.23	<0.40	<0.30	<0.33	<0.0062
Silver	<0.20	<0.046	<0.079	<0.060	<0.066	<0.0012
Thallium	<0.20	<0.046	<0.079	<0.060	<0.066	<0.0012
Vanadium	<0.10	<0.023	<0.040	<0.030	<0.033	<0.00062
Zinc	4.19	0.97	1.66	1.27	1.39	0.026
Total	107	24.8	42.3	32.2	35.3	0.66

Dry Gas Volume Sampled (Rm^3*) :	2.524
Actual Flowrate (m^3/s) :	26.8
Dry Reference Flowrate (Rm^3/s*) :	15.7
Dry Adjusted Flowrate (Rm^3/s**) :	20.6
Wet Reference Flowrate (Rm^3/s*) :	18.8

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 17
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Metals Emission Data Test No. 3

Metal	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	<0.20	<0.049	<0.082	<0.061	<0.069	<0.0012
Arsenic	<0.20	<0.049	<0.082	<0.061	<0.069	<0.0012
Barium	0.59	0.14	0.24	0.18	0.20	0.0037
Beryllium	<0.20	<0.049	<0.082	<0.061	<0.069	<0.0012
Cadmium	0.21	0.051	0.087	0.065	0.073	0.0013
Chromium	6.88	1.67	2.83	2.11	2.36	0.043
Cobalt	<0.20	<0.049	<0.082	<0.061	<0.069	<0.0012
Copper	6.45	1.57	2.66	1.98	2.22	0.040
Lead	3.68	0.89	1.52	1.13	1.26	0.023
Manganese	5.28	1.28	2.17	1.62	1.81	0.033
Mercury	4.49	1.09	1.85	1.37	1.54	0.028
Molybdenum	49.6	12.1	20.4	15.2	17.0	0.31
Nickel	19.6	4.77	8.08	6.01	6.74	0.12
Selenium	<1.00	<0.24	<0.41	<0.31	<0.34	<0.0062
Silver	<0.20	<0.049	<0.082	<0.061	<0.069	<0.0012
Thallium	<0.20	<0.049	<0.082	<0.061	<0.069	<0.0012
Vanadium	<0.10	<0.024	<0.041	<0.031	<0.034	<0.00062
Zinc	14.3	3.47	5.89	4.38	4.91	0.089
Total	113	27.6	46.7	34.7	39.0	0.71

Dry Gas Volume Sampled (Rm³*) :	2.429
Actual Flowrate (m³/s) :	25.6
Dry Reference Flowrate (Rm³/s*) :	15.1
Dry Adjusted Flowrate (Rm³/s**) :	20.3
Wet Reference Flowrate (Rm³/s*) :	18.1

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 18
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Actual Concentrations

Metal	Actual Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	µg/m³	µg/m³	µg/m³	µg/m³	%
Antimony	<0.048	<0.046	<0.049	<0.048	2.3
Arsenic	<0.048	<0.046	<0.049	<0.048	2.3
Barium	0.14	0.17	0.14	0.15	9.5
Beryllium	<0.048	<0.046	<0.049	<0.048	2.3
Cadmium	0.19	0.043	0.051	0.095	87.4
Chromium	1.83	2.23	1.67	1.91	15.0
Cobalt	<0.048	<0.046	<0.049	<0.048	2.3
Copper	1.71	2.42	1.57	1.90	24.0
Lead	0.22	0.23	0.89	0.44	87.4
Manganese	1.40	0.84	1.28	1.18	25.2
Mercury	0.92	0.69	1.09	0.90	22.2
Molybdenum	11.2	11.7	12.1	11.7	3.7
Nickel	4.60	4.94	4.77	4.77	3.5
Selenium	<0.24	<0.23	<0.24	<0.24	2.3
Silver	<0.048	<0.046	<0.049	<0.048	2.3
Thallium	<0.048	<0.046	<0.049	<0.048	2.3
Vanadium	<0.024	<0.023	<0.024	<0.024	2.3
Zinc	2.95	0.97	3.47	2.47	53.5
Total	25.7	24.8	27.6	26.0	5.5

TABLE 19
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Dry Reference Concentrations

Metal	Dry Reference Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	<0.082	<0.079	<0.082	<0.081	2.0
Arsenic	<0.082	<0.079	<0.082	<0.081	2.0
Barium	0.24	0.29	0.24	0.26	9.8
Beryllium	<0.082	<0.079	<0.082	<0.081	2.0
Cadmium	0.32	0.073	0.087	0.16	87.5
Chromium	3.11	3.80	2.83	3.25	15.3
Cobalt	<0.082	<0.079	<0.082	<0.081	2.0
Copper	2.92	4.13	2.66	3.23	24.3
Lead	0.37	0.38	1.52	0.76	87.1
Manganese	2.39	1.43	2.17	2.00	25.1
Mercury	1.57	1.18	1.85	1.53	21.8
Molybdenum	19.1	20.0	20.4	19.8	3.5
Nickel	7.84	8.43	8.08	8.12	3.6
Selenium	<0.41	<0.40	<0.41	<0.41	2.0
Silver	<0.082	<0.079	<0.082	<0.081	2.0
Thallium	<0.082	<0.079	<0.082	<0.081	2.0
Vanadium	<0.041	<0.040	<0.041	<0.041	2.0
Zinc	5.03	1.66	5.89	4.19	53.3
Total	43.8	42.3	46.7	44.3	5.1

* At 25°C and 1 atmosphere

TABLE 20
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Dry Adjusted Concentrations

Metal	Dry Adjusted Concentration				Coefficient
	Test No. 1 µg/Rm³**	Test No. 2 µg/Rm³**	Test No. 3 µg/Rm³**	Average µg/Rm³**	of Variation %
Antimony	<0.062	<0.060	<0.061	<0.061	1.5
Arsenic	<0.062	<0.060	<0.061	<0.061	1.5
Barium	0.18	0.22	0.18	0.19	10.6
Beryllium	<0.062	<0.060	<0.061	<0.061	1.5
Cadmium	0.25	0.056	0.065	0.12	88.0
Chromium	2.37	2.90	2.11	2.46	16.3
Cobalt	<0.062	<0.060	<0.061	<0.061	1.5
Copper	2.22	3.15	1.98	2.45	25.3
Lead	0.28	0.29	1.13	0.57	85.8
Manganese	1.82	1.09	1.62	1.51	24.8
Mercury	1.19	0.90	1.37	1.16	20.7
Molybdenum	14.5	15.2	15.2	15.0	2.8
Nickel	5.96	6.42	6.01	6.13	4.1
Selenium	<0.31	<0.30	<0.31	<0.31	1.5
Silver	<0.062	<0.060	<0.061	<0.061	1.5
Thallium	<0.062	<0.060	<0.061	<0.061	1.5
Vanadium	<0.031	<0.030	<0.031	<0.031	1.5
Zinc	3.82	1.27	4.38	3.16	52.6
Total	33.3	32.2	34.7	33.4	3.8

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 21
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Wet Reference Concentrations

Metal	Wet Reference Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	<0.069	<0.066	<0.069	<0.068	2.1
Arsenic	<0.069	<0.066	<0.069	<0.068	2.1
Barium	0.20	0.24	0.20	0.21	9.6
Beryllium	<0.069	<0.066	<0.069	<0.068	2.1
Cadmium	0.27	0.061	0.073	0.14	87.8
Chromium	2.61	3.17	2.36	2.72	15.2
Cobalt	<0.069	<0.066	<0.069	<0.068	2.1
Copper	2.45	3.45	2.22	2.71	24.2
Lead	0.31	0.32	1.26	0.63	86.9
Manganese	2.01	1.20	1.81	1.67	25.3
Mercury	1.32	0.99	1.54	1.28	21.8
Molybdenum	16.0	16.7	17.0	16.6	3.1
Nickel	6.59	7.04	6.74	6.79	3.4
Selenium	<0.34	<0.33	<0.34	<0.34	2.1
Silver	<0.069	<0.066	<0.069	<0.068	2.1
Thallium	<0.069	<0.066	<0.069	<0.068	2.1
Vanadium	<0.034	<0.033	<0.034	<0.034	2.1
Zinc	4.22	1.39	4.91	3.51	53.3
Total	36.8	35.3	39.0	37.0	5.0

* At 25°C and 1 atmosphere

TABLE 22
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Emission Rates

Metal	Emission Rate				Coefficient
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	of Variation %
Antimony	<0.0012	<0.0012	<0.0012	<0.0012	0.0
Arsenic	<0.0012	<0.0012	<0.0012	<0.0012	0.0
Barium	0.0037	0.0045	0.0037	0.0039	11.9
Beryllium	<0.0012	<0.0012	<0.0012	<0.0012	0.0
Cadmium	0.0049	0.0011	0.0013	0.0025	86.8
Chromium	0.047	0.060	0.043	0.050	17.5
Cobalt	<0.0012	<0.0012	<0.0012	<0.0012	0.0
Copper	0.044	0.065	0.040	0.050	26.5
Lead	0.0056	0.0060	0.023	0.011	85.8
Manganese	0.036	0.023	0.033	0.031	23.5
Mercury	0.024	0.019	0.028	0.023	20.0
Molybdenum	0.29	0.31	0.31	0.30	4.1
Nickel	0.12	0.13	0.12	0.12	5.5
Selenium	<0.0062	<0.0062	<0.0062	<0.0062	0.0
Silver	<0.0012	<0.0012	<0.0012	<0.0012	0.0
Thallium	<0.0012	<0.0012	<0.0012	<0.0012	0.0
Vanadium	<0.00062	<0.00062	<0.00062	<0.00062	0.0
Zinc	0.076	0.026	0.089	0.064	52.2
Total	0.67	0.66	0.71	0.68	3.5

TABLE 23
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Metal Emission Data

Metal	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	<0.048	<0.081	<0.061	<0.068	<0.0012
Arsenic	<0.048	<0.081	<0.061	<0.068	<0.0012
Barium	0.15	0.26	0.19	0.21	0.0039
Beryllium	<0.048	<0.081	<0.061	<0.068	<0.0012
Cadmium	0.095	0.16	0.12	0.14	0.0025
Chromium	1.91	3.25	2.46	2.72	0.050
Cobalt	<0.048	<0.081	<0.061	<0.068	<0.0012
Copper	1.90	3.23	2.45	2.71	0.050
Lead	0.44	0.76	0.57	0.63	0.011
Manganese	1.18	2.00	1.51	1.67	0.031
Mercury	0.90	1.53	1.16	1.28	0.023
Molybdenum	11.7	19.8	15.0	16.6	0.30
Nickel	4.77	8.12	6.13	6.79	0.12
Selenium	<0.24	<0.41	<0.31	<0.34	<0.0062
Silver	<0.048	<0.081	<0.061	<0.068	<0.0012
Thallium	<0.048	<0.081	<0.061	<0.068	<0.0012
Vanadium	<0.024	<0.041	<0.031	<0.034	<0.00062
Zinc	2.47	4.19	3.16	3.51	0.064
Total	26.0	44.3	33.4	37.0	0.68

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 24
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Train Metal Analyses

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	<5	0.70	0.70
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	<0.05	<0.10
Chromium	5.15	0.55	5.70
Cobalt	<0.2	<0.1	<0.20
Copper	5.53	5.28	10.8
Lead	<0.5	0.18	0.18
Manganese	1.54	0.53	2.07
Mercury *	<0.015	<0.05	<0.050
Molybdenum	50.4	0.12	50.5
Nickel	19.7	0.60	20.3
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	6.40	<3	6.40
Total			99.1

* Hydrofluoric acid digest not included in the total.
** Includes the permanganate impingers.

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit). Where all values are reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate the total collected in the blank, the remaining fractions are assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate the total collected in the blank.

TABLE 25
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Hexavalent Chromium Emission Data

Test No.	Hexavalent Chromium Collected µg	Dry Volume Sampled Rm^3*	Hexavalent Chromium Concentration: Actual $\mu g/m^3$	Dry Reference $\mu g/Rm^3$*	Dry Adjusted $\mu g/Rm^3$**	Wet Reference $\mu g/Rm^3$*	Hexavalent Chromium Emission Rate mg/s
1	<0.74	2.448	<0.18	<0.30	<0.23	<0.26	<0.0046
2	<0.79	2.472	<0.19	<0.32	<0.24	<0.27	<0.0049
3	<0.79	2.447	<0.19	<0.32	<0.24	<0.27	<0.0048
Average			<0.19	<0.31	<0.24	<0.26	<0.0048
Blank - 0.1M KOH	<0.30						
Blank - Water	<0.14						

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

* At 25 °C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 26
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 1

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	1210	0.15	0.25	0.19	0.21	3.77
Pentachlorodibenzo-p-dioxins	8410	1.05	1.75	1.30	1.46	26.2
Hexachlorodibenzo-p-dioxins	28500	3.55	5.92	4.40	4.96	88.9
Heptachlorodibenzo-p-dioxins	34200	4.27	7.11	5.28	5.96	107
Octachlorodibenzo-p-dioxin	12200	1.52	2.54	1.88	2.13	38.0
Total	84520	10.5	17.6	13.0	14.7	264

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	1490	0.19	0.31	0.23	0.26	4.65
Pentachlorodibenzofurans	4920	0.61	1.02	0.76	0.86	15.3
Hexachlorodibenzofurans	9270	1.16	1.93	1.43	1.61	28.9
Heptachlorodibenzofurans	8620	1.08	1.79	1.33	1.50	26.9
Octachlorodibenzofuran	3140	0.39	0.65	0.48	0.55	9.79
Total	27440	3.42	5.70	4.24	4.78	85.6

Dry Gas Volume Sampled (Rm³*) :	4.811
Actual Flowrate (m³/s) :	25.0
Dry Reference Flowrate (Rm³/s*) :	15.0
Dry Adjusted Flowrate (Rm³/s**) :	20.2
Wet Reference Flowrate (Rm³/s*) :	17.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 27
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 2

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	1410	0.18	0.31	0.23	0.26	4.35
Pentachlorodibenzo-p-dioxins	6890	0.89	1.50	1.11	1.25	21.3
Hexachlorodibenzo-p-dioxins	25800	3.35	5.61	4.17	4.69	79.7
Heptachlorodibenzo-p-dioxins	29200	3.79	6.35	4.72	5.30	90.2
Octachlorodibenzo-p-dioxin	10800	1.40	2.35	1.75	1.96	33.3
Total	74100	9.61	16.1	12.0	13.5	229

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	2100	0.27	0.46	0.34	0.38	6.48
Pentachlorodibenzofurans	4690	0.61	1.02	0.76	0.85	14.5
Hexachlorodibenzofurans	8120	1.05	1.77	1.31	1.47	25.1
Heptachlorodibenzofurans	7540	0.98	1.64	1.22	1.37	23.3
Octachlorodibenzofuran	2780	0.36	0.60	0.45	0.50	8.58
Total	25230	3.27	5.49	4.08	4.58	77.9

Dry Gas Volume Sampled (Rm^3*) :	4.599
Actual Flowrate (m^3/s) :	23.8
Dry Reference Flowrate (Rm^3/s*) :	14.2
Dry Adjusted Flowrate (Rm^3/s**) :	19.1
Wet Reference Flowrate (Rm^3/s*) :	17.0

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 28
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 3

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	1410	0.18	0.30	0.22	0.25	4.37
Pentachlorodibenzo-p-dioxins	9460	1.21	2.04	1.50	1.71	29.3
Hexachlorodibenzo-p-dioxins	38200	4.89	8.23	6.07	6.89	118
Heptachlorodibenzo-p-dioxins	49400	6.33	10.6	7.86	8.91	153
Octachlorodibenzo-p-dioxin	17600	2.26	3.79	2.80	3.17	54.6
Total	116070	14.9	25.0	18.5	20.9	360

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	2590	0.33	0.56	0.41	0.47	8.03
Pentachlorodibenzofurans	6800	0.87	1.46	1.08	1.23	21.1
Hexachlorodibenzofurans	12100	1.55	2.61	1.92	2.18	37.5
Heptachlorodibenzofurans	12800	1.64	2.76	2.04	2.31	39.7
Octachlorodibenzofuran	4400	0.56	0.95	0.70	0.79	13.6
Total	38690	4.96	8.33	6.15	6.97	120

Dry Gas Volume Sampled (Rm³*) :	4.644
Actual Flowrate (m³/s) :	24.2
Dry Reference Flowrate (Rm³/s*) :	14.4
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	17.2

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 29
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Actual Concentrations

Dioxins

Congener Group	Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	Actual Concentration				
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
Tetrachlorodibenzo-p-dioxins	0.15	0.18	0.18	0.17	10.4
Pentachlorodibenzo-p-dioxins	1.05	0.89	1.21	1.05	15.1
Hexachlorodibenzo-p-dioxins	3.55	3.35	4.89	3.93	21.4
Heptachlorodibenzo-p-dioxins	4.27	3.79	6.33	4.79	28.2
Octachlorodibenzo-p-dioxin	1.52	1.40	2.26	1.73	26.8
Total	10.5	9.61	14.9	11.7	24.0

Furans

Congener Group	Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	Actual Concentration				
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
Tetrachlorodibenzofurans	0.19	0.27	0.33	0.26	27.9
Pentachlorodibenzofurans	0.61	0.61	0.87	0.70	21.5
Hexachlorodibenzofurans	1.16	1.05	1.55	1.25	20.9
Heptachlorodibenzofurans	1.08	0.98	1.64	1.23	29.0
Octachlorodibenzofuran	0.39	0.36	0.56	0.44	24.9
Total	3.42	3.27	4.96	3.88	24.0

TABLE 30
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Dry Reference Concentrations

Dioxins

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.25	0.31	0.30	0.29	10.8
Pentachlorodibenzo-p-dioxins	1.75	1.50	2.04	1.76	15.3
Hexachlorodibenzo-p-dioxins	5.92	5.61	8.23	6.59	21.7
Heptachlorodibenzo-p-dioxins	7.11	6.35	10.6	8.03	28.5
Octachlorodibenzo-p-dioxin	2.54	2.35	3.79	2.89	27.1
Total	17.6	16.1	25.0	19.6	24.4

Furans

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.31	0.46	0.56	0.44	28.3
Pentachlorodibenzofurans	1.02	1.02	1.46	1.17	21.9
Hexachlorodibenzofurans	1.93	1.77	2.61	2.10	21.2
Heptachlorodibenzofurans	1.79	1.64	2.76	2.06	29.4
Octachlorodibenzofuran	0.65	0.60	0.95	0.73	25.3
Total	5.70	5.49	8.33	6.51	24.3

* At 25°C and 1 atmosphere

TABLE 31
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Dry Adjusted Concentrations

Dioxins

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.19	0.23	0.22	0.21	10.7
Pentachlorodibenzo-p-dioxins	1.30	1.11	1.50	1.31	15.0
Hexachlorodibenzo-p-dioxins	4.40	4.17	6.07	4.88	21.3
Heptachlorodibenzo-p-dioxins	5.28	4.72	7.86	5.95	28.1
Octachlorodibenzo-p-dioxin	1.88	1.75	2.80	2.14	26.7
Total	13.0	12.0	18.5	14.5	24.0

Furans

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.23	0.34	0.41	0.33	28.0
Pentachlorodibenzofurans	0.76	0.76	1.08	0.87	21.5
Hexachlorodibenzofurans	1.43	1.31	1.92	1.56	20.8
Heptachlorodibenzofurans	1.33	1.22	2.04	1.53	29.0
Octachlorodibenzofuran	0.48	0.45	0.70	0.54	24.9
Total	4.24	4.08	6.15	4.82	23.9

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 32
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Wet Reference Concentrations

Dioxins

Congener Group	Wet Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.21	0.26	0.25	0.24	10.7
Pentachlorodibenzo-p-dioxins	1.46	1.25	1.71	1.47	15.4
Hexachlorodibenzo-p-dioxins	4.96	4.69	6.89	5.51	21.7
Heptachlorodibenzo-p-dioxins	5.96	5.30	8.91	6.72	28.5
Octachlorodibenzo-p-dioxin	2.13	1.96	3.17	2.42	27.2
Total	14.7	13.5	20.9	16.4	24.4

Furans

Congener Group	Wet reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.26	0.38	0.47	0.37	28.2
Pentachlorodibenzofurans	0.86	0.85	1.23	0.98	21.9
Hexachlorodibenzofurans	1.61	1.47	2.18	1.76	21.3
Heptachlorodibenzofurans	1.50	1.37	2.31	1.73	29.4
Octachlorodibenzofuran	0.55	0.50	0.79	0.62	25.3
Total	4.78	4.58	6.97	5.45	24.4

* At 25°C and 1 atmosphere

TABLE 33
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Emission Rates

Dioxins

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	3.77	4.35	4.37	4.17	8.2
Pentachlorodibenzo-p-dioxins	26.2	21.3	29.3	25.6	15.9
Hexachlorodibenzo-p-dioxins	88.9	79.7	118	95.7	21.2
Heptachlorodibenzo-p-dioxins	107	90.2	153	117	28.0
Octachlorodibenzo-p-dioxin	38.0	33.3	54.6	42.0	26.6
Total	264	229	360	284	23.9

Furans

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzofurans	4.65	6.48	8.03	6.39	26.5
Pentachlorodibenzofurans	15.3	14.5	21.1	17.0	21.2
Hexachlorodibenzofurans	28.9	25.1	37.5	30.5	20.9
Heptachlorodibenzofurans	26.9	23.3	39.7	29.9	28.8
Octachlorodibenzofuran	9.79	8.58	13.6	10.7	24.8
Total	85.6	77.9	120	94.5	23.7

TABLE 34
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Congener Group Emission Data

Dioxins

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.17	0.29	0.21	0.24	4.17
Pentachlorodibenzo-p-dioxins	1.05	1.76	1.31	1.47	25.6
Hexachlorodibenzo-p-dioxins	3.93	6.59	4.88	5.51	95.7
Heptachlorodibenzo-p-dioxins	4.79	8.03	5.95	6.72	117
Octachlorodibenzo-p-dioxin	1.73	2.89	2.14	2.42	42.0
Total	11.7	19.6	14.5	16.4	284

Furans

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	0.26	0.44	0.33	0.37	6.39
Pentachlorodibenzofurans	0.70	1.17	0.87	0.98	17.0
Hexachlorodibenzofurans	1.25	2.10	1.56	1.76	30.5
Heptachlorodibenzofurans	1.23	2.06	1.53	1.73	29.9
Octachlorodibenzofuran	0.44	0.73	0.54	0.62	10.7
Total	3.88	6.51	4.82	5.45	94.5

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 35
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Dioxin and Furan Congener Group Analyses

Dioxins

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzo-p-dioxins	4.86	<3.5
Pentachlorodibenzo-p-dioxins	<3.0	2.10
Hexachlorodibenzo-p-dioxins	3.46	2.54
Heptachlorodibenzo-p-dioxins	<2.8	<2.1
Octachlorodibenzo-p-dioxin	<3.1	<8.3
Total	<17.2	<18.5

Furans

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzofurans	<2.7	<2.9
Pentachlorodibenzofurans	<1.9	<1.8
Hexachlorodibenzofurans	4.54	2.63
Heptachlorodibenzofurans	11.7	<2.6
Octachlorodibenzofuran	119	115
Total	<140	<125

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

TABLE 36
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 1

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<6.1	<0.76	<1.27	<0.94	<1.06	<0.019
12378-pentachlorodibenzo-p-dioxin	180	22.4	37.4	27.8	31.4	0.56
123478-hexachlorodibenzo-p-dioxin	597	74.5	124	92.1	104	1.86
123678-hexachlorodibenzo-p-dioxin	2090	261	434	323	364	6.52
123789-hexachlorodibenzo-p-dioxin	1140	142	237	176	199	3.55
1234678-heptachlorodibenzo-p-dioxin	16600	2070	3450	2562	2891	51.8
Octachlorodibenzo-p-dioxin	12200	1522	2536	1883	2125	38.0
2378-tetrachlorodibenzofuran	<35	<4.36	<7.27	<5.40	<6.10	<0.11
12378-pentachlorodibenzofuran	111	13.8	23.1	17.1	19.3	0.35
23478-pentachlorodibenzofuran	599	74.7	125	92.5	104	1.87
123478-hexachlorodibenzofuran	725	90.4	151	112	126	2.26
123678-hexachlorodibenzofuran	913	114	190	141	159	2.85
234678-hexachlorodibenzofuran	1810	226	376	279	315	5.64
123789-hexachlorodibenzofuran	492	61.4	102	75.9	85.7	1.53
1234678-heptachlorodibenzofuran	4480	559	931	691	780	14.0
1234789-heptachlorodibenzofuran	912	114	190	141	159	2.84
Octachlorodibenzofuran	3140	392	653	485	547	9.79
PCB 81	<140	<17.5	<29.1	<21.6	<24.4	<0.44
PCB 77	479	59.7	99.6	73.9	83.4	1.49
PCB 123	695	86.7	144	107	121	2.17
PCB 118	4630	577	962	715	806	14.4
PCB 114	267	33.3	55.5	41.2	46.5	0.83
PCB 105	1510	188	314	233	263	4.71
PCB 126	169	21.1	35.1	26.1	29.4	0.53
PCB 167	70.4	8.78	14.6	10.9	12.3	0.22
PCB 156	239	29.8	49.7	36.9	41.6	0.75
PCB 157	112	14.0	23.3	17.3	19.5	0.35
PCB 169	164	20.5	34.1	25.3	28.6	0.51
PCB 189	245	30.6	50.9	37.8	42.7	0.76
Total Dioxins & Furans Only	<46030	<5741	<9568	<7105	<8018	<144
Total PCBs Only	<8720	<1088	<1813	<1346	<1519	<27.2
Total Dioxins & Furans and PCBs	<54751	<6828	<11380	<8451	<9537	<171

Dry Gas Volume Sampled (Rm³*) :	4.811
Actual Flowrate (m³/s) :	25.0
Dry Reference Flowrate (Rm³/s*) :	15.0
Dry Adjusted Flowrate (Rm³/s**) :	20.2
Wet Reference Flowrate (Rm³/s*) :	17.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 37
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 2

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<5.1	<0.66	<1.11	<0.82	<0.93	<0.016
12378-pentachlorodibenzo-p-dioxin	<140	<18.2	<30.4	<22.6	<25.4	<0.43
123478-hexachlorodibenzo-p-dioxin	613	79.5	133	99.1	111	1.89
123678-hexachlorodibenzo-p-dioxin	1810	235	394	293	329	5.59
123789-hexachlorodibenzo-p-dioxin	897	116	195	145	163	2.77
1234678-heptachlorodibenzo-p-dioxin	13900	1803	3022	2247	2525	42.9
Octachlorodibenzo-p-dioxin	10800	1401	2348	1746	1962	33.3
2378-tetrachlorodibenzofuran	31.4	4.07	6.83	5.08	5.70	0.097
12378-pentachlorodibenzofuran	111	14.4	24.1	17.9	20.2	0.34
23478-pentachlorodibenzofuran	510	66.2	111	82.4	92.6	1.57
123478-hexachlorodibenzofuran	613	79.5	133	99.1	111	1.89
123678-hexachlorodibenzofuran	759	98.5	165	123	138	2.34
234678-hexachlorodibenzofuran	1560	202	339	252	283	4.82
123789-hexachlorodibenzofuran	430	55.8	93.5	69.5	78.1	1.33
1234678-heptachlorodibenzofuran	3880	503	844	627	705	12.0
1234789-heptachlorodibenzofuran	833	108	181	135	151	2.57
Octachlorodibenzofuran	2780	361	604	449	505	8.58
PCB 81	<140	<18.2	<30.4	<22.6	<25.4	<0.43
PCB 77	218	28.3	47.4	35.2	39.6	0.67
PCB 123	434	56.3	94.4	70.2	78.8	1.34
PCB 118	2620	340	570	424	476	8.09
PCB 114	174	22.6	37.8	28.1	31.6	0.54
PCB 105	1060	138	230	171	193	3.27
PCB 126	138	17.9	30.0	22.3	25.1	0.43
PCB 167	68.0	8.82	14.8	11.0	12.4	0.21
PCB 156	193	25.0	42.0	31.2	35.1	0.60
PCB 157	125	16.2	27.2	20.2	22.7	0.39
PCB 169	157	20.4	34.1	25.4	28.5	0.48
PCB 189	213	27.6	46.3	34.4	38.7	0.66
Total Dioxins & Furans Only	<39673	<5147	<8626	<6413	<7206	<122
Total PCBs Only	<5540	<719	<1205	<896	<1006	<17.1
Total Dioxins & Furans and PCBs	<45213	<5866	<9831	<7309	<8212	<140

Dry Gas Volume Sampled (Rm³*) :	4.599
Actual Flowrate (m³/s) :	23.8
Dry Reference Flowrate (Rm³/s*) :	14.2
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	17.0

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 38
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 3

Specific Isomer	Total Collected pg	Actual Concentration pg/m^3	Dry Reference Concentration pg/Rm^3*	Dry Adjusted Concentration pg/Rm^3**	Wet Reference Concentration pg/Rm^3*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<8.0	<1.03	<1.72	<1.27	<1.44	<0.025
12378-pentachlorodibenzo-p-dioxin	220	28.2	47.4	35.0	39.7	0.68
123478-hexachlorodibenzo-p-dioxin	927	119	200	147	167	2.87
123678-hexachlorodibenzo-p-dioxin	2710	347	584	431	489	8.40
123789-hexachlorodibenzo-p-dioxin	1250	160	269	199	225	3.88
1234678-heptachlorodibenzo-p-dioxin	23000	2947	4953	3657	4146	71.3
Octachlorodibenzo-p-dioxin	17600	2255	3790	2799	3173	54.6
2378-tetrachlorodibenzofuran	43.9	5.62	9.45	6.98	7.91	0.14
12378-pentachlorodibenzofuran	148	19.0	31.9	23.5	26.7	0.46
23478-pentachlorodibenzofuran	735	94.2	158	117	133	2.28
123478-hexachlorodibenzofuran	911	117	196	145	164	2.82
123678-hexachlorodibenzofuran	1150	147	248	183	207	3.57
234678-hexachlorodibenzofuran	2170	278	467	345	391	6.73
123789-hexachlorodibenzofuran	612	78.4	132	97.3	110	1.90
1234678-heptachlorodibenzofuran	6720	861	1447	1069	1211	20.8
1234789-heptachlorodibenzofuran	1320	169	284	210	238	4.09
Octachlorodibenzofuran	4400	564	947	700	793	13.6
PCB 81	<120	<15.4	<25.8	<19.1	<21.6	<0.37
PCB 77	240	30.8	51.7	38.2	43.3	0.74
PCB 123	521	66.8	112	82.8	93.9	1.62
PCB 118	3090	396	665	491	557	9.58
PCB 114	190	24.3	40.9	30.2	34.3	0.59
PCB 105	1100	141	237	175	198	3.41
PCB 126	179	22.9	38.5	28.5	32.3	0.56
PCB 167	83.5	10.7	18.0	13.3	15.1	0.26
PCB 156	311	39.8	67.0	49.5	56.1	0.96
PCB 157	142	18.2	30.6	22.6	25.6	0.44
PCB 169	187	24.0	40.3	29.7	33.7	0.58
PCB 189	366	46.9	78.8	58.2	66.0	1.13
Total Dioxins & Furans Only	<63925	<8191	<13765	<10165	<11524	<198
Total PCBs Only	<6530	<837	<1406	<1038	<1177	<20.2
Total Dioxins & Furans and PCBs	<70454	<9027	<15171	<11203	<12701	<218

Dry Gas Volume Sampled (Rm^3*) :	4.644
Actual Flowrate (m^3/s) :	24.2
Dry Reference Flowrate (Rm^3/s*) :	14.4
Dry Adjusted Flowrate (Rm^3/s**) :	19.5
Wet Reference Flowrate (Rm^3/s*) :	17.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 39
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration Test No. 1 pg/m³	Test No. 2 pg/m³	Test No. 3 pg/m³	Average pg/m³	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.76	<0.66	<1.03	<0.82	23.0
12378-pentachlorodibenzo-p-dioxin	22.4	<18.2	28.2	<22.9	21.9
123478-hexachlorodibenzo-p-dioxin	74.5	79.5	119	90.9	26.7
123678-hexachlorodibenzo-p-dioxin	261	235	347	281	21.0
123789-hexachlorodibenzo-p-dioxin	142	116	160	140	15.8
1234678-heptachlorodibenzo-p-dioxin	2070	1803	2947	2274	26.3
Octachlorodibenzo-p-dioxin	1522	1401	2255	1726	26.8
2378-tetrachlorodibenzofuran	<4.36	4.07	5.62	<4.69	17.6
12378-pentachlorodibenzofuran	13.8	14.4	19.0	15.7	17.9
23478-pentachlorodibenzofuran	74.7	66.2	94.2	78.3	18.3
123478-hexachlorodibenzofuran	90.4	79.5	117	95.6	20.0
123678-hexachlorodibenzofuran	114	98.5	147	120	20.8
234678-hexachlorodibenzofuran	226	202	278	235	16.5
123789-hexachlorodibenzofuran	61.4	55.8	78.4	65.2	18.1
1234678-heptachlorodibenzofuran	559	503	861	641	30.0
1234789-heptachlorodibenzofuran	114	108	169	130	25.9
Octachlorodibenzofuran	392	361	564	439	24.9
PCB 81	<17.5	<18.2	<15.4	<17.0	8.5
PCB 77	59.7	28.3	30.8	39.6	44.2
PCB 123	86.7	56.3	66.8	69.9	22.1
PCB 118	577	340	396	438	28.4
PCB 114	33.3	22.6	24.3	26.7	21.5
PCB 105	188	138	141	156	18.2
PCB 126	21.1	17.9	22.9	20.6	12.3
PCB 167	8.78	8.82	10.7	9.43	11.6
PCB 156	29.8	25.0	39.8	31.6	24.0
PCB 157	14.0	16.2	18.2	16.1	13.1
PCB 169	20.5	20.4	24.0	21.6	9.5
PCB 189	30.6	27.6	46.9	35.0	29.6
Total Dioxins & Furans Only	<5741	<5147	<8191	<6359	25.4
Total PCBs Only	<1088	<719	<837	<881	21.4
Total Dioxins & Furans and PCBs	<6828	<5866	<9027	<7240	22.4

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 40
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<1.27	<1.11	<1.72	<1.37	23.3
12378-pentachlorodibenzo-p-dioxin	37.4	<30.4	47.4	<38.4	22.2
123478-hexachlorodibenzo-p-dioxin	124	133	200	152	27.0
123678-hexachlorodibenzo-p-dioxin	434	394	584	471	21.3
123789-hexachlorodibenzo-p-dioxin	237	195	269	234	15.9
1234678-heptachlorodibenzo-p-dioxin	3450	3022	4953	3808	26.6
Octachlorodibenzo-p-dioxin	2536	2348	3790	2891	27.1
2378-tetrachlorodibenzofuran	<7.27	6.83	9.45	<7.85	17.9
12378-pentachlorodibenzofuran	23.1	24.1	31.9	26.4	18.2
23478-pentachlorodibenzofuran	125	111	158	131	18.6
123478-hexachlorodibenzofuran	151	133	196	160	20.3
123678-hexachlorodibenzofuran	190	165	248	201	21.1
234678-hexachlorodibenzofuran	376	339	467	394	16.7
123789-hexachlorodibenzofuran	102	93.5	132	109	18.4
1234678-heptachlorodibenzofuran	931	844	1447	1074	30.4
1234789-heptachlorodibenzofuran	190	181	284	218	26.2
Octachlorodibenzofuran	653	604	947	735	25.3
PCB 81	<29.1	<30.4	<25.8	<28.5	8.3
PCB 77	99.6	47.4	51.7	66.2	43.7
PCB 123	144	94.4	112	117	21.7
PCB 118	962	570	665	732	28.0
PCB 114	55.5	37.8	40.9	44.7	21.1
PCB 105	314	230	237	260	17.8
PCB 126	35.1	30.0	38.5	34.6	12.4
PCB 167	14.6	14.8	18.0	15.8	12.0
PCB 156	49.7	42.0	67.0	52.9	24.2
PCB 157	23.3	27.2	30.6	27.0	13.5
PCB 169	34.1	34.1	40.3	36.2	9.8
PCB 189	50.9	46.3	78.8	58.7	30.0
Total Dioxins & Furans Only	<9568	<8626	<13765	<10653	25.7
Total PCBs Only	<1813	<1205	<1406	<1474	21.0
Total Dioxins & Furans and PCBs	<11380	<9831	<15171	<12127	22.7

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 41
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.94	<0.82	<1.27	<1.01	22.9
12378-pentachlorodibenzo-p-dioxin	27.8	<22.6	35.0	<28.5	21.8
123478-hexachlorodibenzo-p-dioxin	92.1	99.1	147	113	26.7
123678-hexachlorodibenzo-p-dioxin	323	293	431	349	20.9
123789-hexachlorodibenzo-p-dioxin	176	145	199	173	15.6
1234678-heptachlorodibenzo-p-dioxin	2562	2247	3657	2822	26.2
Octachlorodibenzo-p-dioxin	1883	1746	2799	2143	26.7
2378-tetrachlorodibenzofuran	<5.40	5.08	6.98	<5.82	17.5
12378-pentachlorodibenzofuran	17.1	17.9	23.5	19.5	17.8
23478-pentachlorodibenzofuran	92.5	82.4	117	97.3	18.2
123478-hexachlorodibenzofuran	112	99.1	145	119	19.9
123678-hexachlorodibenzofuran	141	123	183	149	20.7
234678-hexachlorodibenzofuran	279	252	345	292	16.3
123789-hexachlorodibenzofuran	75.9	69.5	97.3	80.9	18.0
1234678-heptachlorodibenzofuran	691	627	1069	796	30.0
1234789-heptachlorodibenzofuran	141	135	210	162	25.8
Octachlorodibenzofuran	485	449	700	545	24.9
PCB 81	<21.6	<22.6	<19.1	<21.1	8.7
PCB 77	73.9	35.2	38.2	49.1	43.9
PCB 123	107	70.2	82.8	86.8	21.7
PCB 118	715	424	491	543	28.0
PCB 114	41.2	28.1	30.2	33.2	21.2
PCB 105	233	171	175	193	17.9
PCB 126	26.1	22.3	28.5	25.6	12.1
PCB 167	10.9	11.0	13.3	11.7	11.6
PCB 156	36.9	31.2	49.5	39.2	23.8
PCB 157	17.3	20.2	22.6	20.0	13.2
PCB 169	25.3	25.4	29.7	26.8	9.5
PCB 189	37.8	34.4	58.2	43.5	29.6
Total Dioxins & Furans Only	<7105	<6413	<10165	<7894	25.3
Total PCBs Only	<1346	<896	<1038	<1093	21.1
Total Dioxins & Furans and PCBs	<8451	<7309	<11203	<8988	22.3

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 42
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<1.06	<0.93	<1.44	<1.14	23.4
12378-pentachlorodibenzo-p-dioxin	31.4	<25.4	39.7	<32.1	22.2
123478-hexachlorodibenzo-p-dioxin	104	111	167	127	27.1
123678-hexachlorodibenzo-p-dioxin	364	329	489	394	21.3
123789-hexachlorodibenzo-p-dioxin	199	163	225	196	16.0
1234678-heptachlorodibenzo-p-dioxin	2891	2525	4146	3187	26.7
Octachlorodibenzo-p-dioxin	2125	1962	3173	2420	27.2
2378-tetrachlorodibenzofuran	<6.10	5.70	7.91	<6.57	18.0
12378-pentachlorodibenzofuran	19.3	20.2	26.7	22.1	18.2
23478-pentachlorodibenzofuran	104	92.6	133	110	18.7
123478-hexachlorodibenzofuran	126	111	164	134	20.4
123678-hexachlorodibenzofuran	159	138	207	168	21.2
234678-hexachlorodibenzofuran	315	283	391	330	16.8
123789-hexachlorodibenzofuran	85.7	78.1	110	91.4	18.4
1234678-heptachlorodibenzofuran	780	705	1211	899	30.4
1234789-heptachlorodibenzofuran	159	151	238	183	26.3
Octachlorodibenzofuran	547	505	793	615	25.3
PCB 81	<24.4	<25.4	<21.6	<23.8	8.2
PCB 77	83.4	39.6	43.3	55.4	43.9
PCB 123	121	78.8	93.9	97.9	21.9
PCB 118	806	476	557	613	28.1
PCB 114	46.5	31.6	34.3	37.5	21.2
PCB 105	263	193	198	218	18.0
PCB 126	29.4	25.1	32.3	28.9	12.6
PCB 167	12.3	12.4	15.1	13.2	12.0
PCB 156	41.6	35.1	56.1	44.2	24.3
PCB 157	19.5	22.7	25.6	22.6	13.5
PCB 169	28.6	28.5	33.7	30.3	9.9
PCB 189	42.7	38.7	66.0	49.1	30.0
Total Dioxins & Furans Only	<8018	<7206	<11524	<8916	25.7
Total PCBs Only	<1519	<1006	<1177	<1234	21.2
Total Dioxins & Furans and PCBs	<9537	<8212	<12701	<10150	22.7

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 43
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Rates

Specific Isomer	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.019	<0.016	<0.025	<0.020	23.1
12378-pentachlorodibenzo-p-dioxin	0.56	<0.43	0.68	<0.56	22.4
123478-hexachlorodibenzo-p-dioxin	1.86	1.89	2.87	2.21	26.1
123678-hexachlorodibenzo-p-dioxin	6.52	5.59	8.40	6.84	21.0
123789-hexachlorodibenzo-p-dioxin	3.55	2.77	3.88	3.40	16.7
1234678-heptachlorodibenzo-p-dioxin	51.8	42.9	71.3	55.3	26.3
Octachlorodibenzo-p-dioxin	38.0	33.3	54.6	42.0	26.6
2378-tetrachlorodibenzofuran	<0.11	0.097	0.14	<0.11	17.6
12378-pentachlorodibenzofuran	0.35	0.34	0.46	0.38	17.3
23478-pentachlorodibenzofuran	1.87	1.57	2.28	1.91	18.6
123478-hexachlorodibenzofuran	2.26	1.89	2.82	2.33	20.2
123678-hexachlorodibenzofuran	2.85	2.34	3.57	2.92	21.0
234678-hexachlorodibenzofuran	5.64	4.82	6.73	5.73	16.7
123789-hexachlorodibenzofuran	1.53	1.33	1.90	1.59	18.2
1234678-heptachlorodibenzofuran	14.0	12.0	20.8	15.6	29.8
1234789-heptachlorodibenzofuran	2.84	2.57	4.09	3.17	25.6
Octachlorodibenzofuran	9.79	8.58	13.6	10.7	24.8
PCB 81	<0.44	<0.43	<0.37	<0.41	8.7
PCB 77	1.49	0.67	0.74	0.97	46.8
PCB 123	2.17	1.34	1.62	1.71	24.7
PCB 118	14.4	8.09	9.58	10.7	31.0
PCB 114	0.83	0.54	0.59	0.65	24.1
PCB 105	4.71	3.27	3.41	3.80	20.9
PCB 126	0.53	0.43	0.56	0.50	13.5
PCB 167	0.22	0.21	0.26	0.23	11.3
PCB 156	0.75	0.60	0.96	0.77	24.1
PCB 157	0.35	0.39	0.44	0.39	11.7
PCB 169	0.51	0.48	0.58	0.53	9.3
PCB 189	0.76	0.66	1.13	0.85	29.4
Total Dioxins & Furans Only	<144	<122	<198	<155	25.3
Total PCBs Only	<27.2	<17.1	<20.2	<21.5	24.0
Total Dioxins & Furans and PCBs	<171	<140	<218	<176	22.5

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 44
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Specific Isomer Emission Data

Specific Isomer	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.82	<1.37	<1.01	<1.14	<0.020
12378-pentachlorodibenzo-p-dioxin	<22.9	<38.4	<28.5	<32.1	<0.56
123478-hexachlorodibenzo-p-dioxin	90.9	152	113	127	2.21
123678-hexachlorodibenzo-p-dioxin	281	471	349	394	6.84
123789-hexachlorodibenzo-p-dioxin	140	234	173	196	3.40
1234678-heptachlorodibenzo-p-dioxin	2274	3808	2822	3187	55.3
Octachlorodibenzo-p-dioxin	1726	2891	2143	2420	42.0
2378-tetrachlorodibenzofuran	<4.69	<7.85	<5.82	<6.57	<0.11
12378-pentachlorodibenzofuran	15.7	26.4	19.5	22.1	0.38
23478-pentachlorodibenzofuran	78.3	131	97.3	110	1.91
123478-hexachlorodibenzofuran	95.6	160	119	134	2.33
123678-hexachlorodibenzofuran	120	201	149	168	2.92
234678-hexachlorodibenzofuran	235	394	292	330	5.73
123789-hexachlorodibenzofuran	65.2	109	80.9	91.4	1.59
1234678-heptachlorodibenzofuran	641	1074	796	899	15.6
1234789-heptachlorodibenzofuran	130	218	162	183	3.17
Octachlorodibenzofuran	439	735	545	615	10.7
PCB 81	<17.0	<28.5	<21.1	<23.8	<0.41
PCB 77	39.6	66.2	49.1	55.4	0.97
PCB 123	69.9	117	86.8	97.9	1.71
PCB 118	438	732	543	613	10.7
PCB 114	26.7	44.7	33.2	37.5	0.65
PCB 105	156	260	193	218	3.80
PCB 126	20.6	34.6	25.6	28.9	0.50
PCB 167	9.43	15.8	11.7	13.2	0.23
PCB 156	31.6	52.9	39.2	44.2	0.77
PCB 157	16.1	27.0	20.0	22.6	0.39
PCB 169	21.6	36.2	26.8	30.3	0.53
PCB 189	35.0	58.7	43.5	49.1	0.85
Total Dioxins & Furans Only	<6359	<10653	<7894	<8916	<155
Total PCBs Only	<881	<1474	<1093	<1234	<21.5
Total Dioxins & Furans and PCBs	<7240	<12127	<8988	<10150	<176

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 45
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Dioxin and Furan Specific Isomer Analyses

Specific Isomer	Blank Train pg	Laboratory Blank pg
2378-tetrachlorodibenzo-p-dioxin	<3.7	<3.5
12378-pentachlorodibenzo-p-dioxin	<3.0	2.10
123478-hexachlorodibenzo-p-dioxin	<2.0	<1.9
123678-hexachlorodibenzo-p-dioxin	<2.1	<2.7
123789-hexachlorodibenzo-p-dioxin	<2.1	2.54
1234678-heptachlorodibenzo-p-dioxin	<2.8	<2.7
Octachlorodibenzo-p-dioxin	<3.1	<8.3
2378-tetrachlorodibenzofuran	<2.7	<2.9
12378-pentachlorodibenzofuran	<1.9	<4.0
23478-pentachlorodibenzofuran	<1.9	<1.8
123478-hexachlorodibenzofuran	<1.4	<2.1
123678-hexachlorodibenzofuran	1.90	<3.1
234678-hexachlorodibenzofuran	2.63	<3.6
123789-hexachlorodibenzofuran	<1.5	<1.6
1234678-heptachlorodibenzofuran	11.7	<11
1234789-heptachlorodibenzofuran	<2.6	<3.3
Octachlorodibenzofuran	119	115
PCB 81	<10	3.17
PCB 77	<11	5.50
PCB 123	63.4	<3.3
PCB 118	440	<6.3
PCB 114	<18	<2.9
PCB 105	159	<2.9
PCB 126	<11	<3.3
PCB 167	<4.0	<2.4
PCB 156	<13	<2.4
PCB 157	<3.9	<2.5
PCB 169	<12	<3.8
PCB 189	<3.0	<2.4
Total Dioxins & Furans Only	<166	<172
Total PCBs Only	<748	<40.9
Total Dioxins & Furans and PCBs	<914	<213

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

TABLE 46
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Actual Concentrations

Specific Isomer	Toxicity Equivalency Factor	Actual Concentration Test No. 1 pg TEQ/m^3	Test No. 2 pg TEQ/m^3	Test No. 3 pg TEQ/m^3	Average pg TEQ/m^3
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.76	<0.66	<1.03	<0.82
12378-pentachlorodibenzo-p-dioxin	1.000	22.4	<18.2	28.2	<22.9
123478-hexachlorodibenzo-p-dioxin	0.100	7.45	7.95	11.9	9.09
123678-hexachlorodibenzo-p-dioxin	0.100	26.1	23.5	34.7	28.1
123789-hexachlorodibenzo-p-dioxin	0.100	14.2	11.6	16.0	14.0
1234678-heptachlorodibenzo-p-dioxin	0.010	20.7	18.0	29.5	22.7
Octachlorodibenzo-p-dioxin	0.0003	0.46	0.42	0.68	0.52
2378-tetrachlorodibenzofuran	0.100	<0.44	0.41	0.56	<0.47
12378-pentachlorodibenzofuran	0.030	0.42	0.43	0.57	0.47
23478-pentachlorodibenzofuran	0.300	22.4	19.8	28.3	23.5
123478-hexachlorodibenzofuran	0.100	9.04	7.95	11.7	9.56
123678-hexachlorodibenzofuran	0.100	11.4	9.85	14.7	12.0
234678-hexachlorodibenzofuran	0.100	22.6	20.2	27.8	23.5
123789-hexachlorodibenzofuran	0.100	6.14	5.58	7.84	6.52
1234678-heptachlorodibenzofuran	0.010	5.59	5.03	8.61	6.41
1234789-heptachlorodibenzofuran	0.010	1.14	1.08	1.69	1.30
Octachlorodibenzofuran	0.0003	0.12	0.11	0.17	0.13
PCB 81	0.0003	<0.0052	<0.0054	<0.0046	<0.0051
PCB 77	0.0001	0.0060	0.0028	0.0031	0.0040
PCB 123	0.00003	0.0026	0.0017	0.0020	0.0021
PCB 118	0.00003	0.017	0.010	0.012	0.013
PCB 114	0.00003	0.0010	0.00068	0.00073	0.00080
PCB 105	0.00003	0.0056	0.0041	0.0042	0.0047
PCB 126	0.100	2.11	1.79	2.29	2.06
PCB 167	0.00003	0.00026	0.00026	0.00032	0.00028
PCB 156	0.00003	0.00089	0.00075	0.0012	0.00095
PCB 157	0.00003	0.00042	0.00049	0.00055	0.00048
PCB 169	0.030	0.61	0.61	0.72	0.65
PCB 189	0.00003	0.00092	0.00083	0.0014	0.0011
Total Dioxins & Furans Only		<171	<151	<224	<182
Total PCBs Only		<2.76	<2.43	<3.04	<2.74
Total Dioxins & Furans and PCBs		<174	<153	<227	<185

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 47
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Dry Reference Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.27	<1.11	<1.72	<1.37
12378-pentachlorodibenzo-p-dioxin	1.000	37.4	<30.4	47.4	<38.4
123478-hexachlorodibenzo-p-dioxin	0.100	12.4	13.3	20.0	15.2
123678-hexachlorodibenzo-p-dioxin	0.100	43.4	39.4	58.4	47.1
123789-hexachlorodibenzo-p-dioxin	0.100	23.7	19.5	26.9	23.4
1234678-heptachlorodibenzo-p-dioxin	0.010	34.5	30.2	49.5	38.1
Octachlorodibenzo-p-dioxin	0.0003	0.76	0.70	1.14	0.87
2378-tetrachlorodibenzofuran	0.100	<0.73	0.68	0.95	<0.79
12378-pentachlorodibenzofuran	0.030	0.69	0.72	0.96	0.79
23478-pentachlorodibenzofuran	0.300	37.4	33.3	47.5	39.4
123478-hexachlorodibenzofuran	0.100	15.1	13.3	19.6	16.0
123678-hexachlorodibenzofuran	0.100	19.0	16.5	24.8	20.1
234678-hexachlorodibenzofuran	0.100	37.6	33.9	46.7	39.4
123789-hexachlorodibenzofuran	0.100	10.2	9.35	13.2	10.9
1234678-heptachlorodibenzofuran	0.010	9.31	8.44	14.5	10.7
1234789-heptachlorodibenzofuran	0.010	1.90	1.81	2.84	2.18
Octachlorodibenzofuran	0.0003	0.20	0.18	0.28	0.22
PCB 81	0.0003	<0.0087	<0.0091	<0.0078	<0.0085
PCB 77	0.0001	0.010	0.0047	0.0052	0.0066
PCB 123	0.00003	0.0043	0.0028	0.0034	0.0035
PCB 118	0.00003	0.029	0.017	0.020	0.022
PCB 114	0.00003	0.0017	0.0011	0.0012	0.0013
PCB 105	0.00003	0.0094	0.0069	0.0071	0.0078
PCB 126	0.100	3.51	3.00	3.85	3.46
PCB 167	0.00003	0.00044	0.00044	0.00054	0.00047
PCB 156	0.00003	0.0015	0.0013	0.0020	0.0016
PCB 157	0.00003	0.00070	0.00082	0.00092	0.00081
PCB 169	0.030	1.02	1.02	1.21	1.08
PCB 189	0.00003	0.0015	0.0014	0.0024	0.0018
Total Dioxins & Furans Only		<286	<253	<376	<305
Total PCBs Only		<4.60	<4.07	<5.11	<4.60
Total Dioxins & Furans and PCBs		<290	<257	<381	<309

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 48
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.94	<0.82	<1.27	<1.01
12378-pentachlorodibenzo-p-dioxin	1.000	27.8	<22.6	35.0	<28.5
123478-hexachlorodibenzo-p-dioxin	0.100	9.21	9.91	14.7	11.3
123678-hexachlorodibenzo-p-dioxin	0.100	32.3	29.3	43.1	34.9
123789-hexachlorodibenzo-p-dioxin	0.100	17.6	14.5	19.9	17.3
1234678-heptachlorodibenzo-p-dioxin	0.010	25.6	22.5	36.6	28.2
Octachlorodibenzo-p-dioxin	0.0003	0.56	0.52	0.84	0.64
2378-tetrachlorodibenzofuran	0.100	<0.54	0.51	0.70	<0.58
12378-pentachlorodibenzofuran	0.030	0.51	0.54	0.71	0.59
23478-pentachlorodibenzofuran	0.300	27.7	24.7	35.1	29.2
123478-hexachlorodibenzofuran	0.100	11.2	9.91	14.5	11.9
123678-hexachlorodibenzofuran	0.100	14.1	12.3	18.3	14.9
234678-hexachlorodibenzofuran	0.100	27.9	25.2	34.5	29.2
123789-hexachlorodibenzofuran	0.100	7.59	6.95	9.73	8.09
1234678-heptachlorodibenzofuran	0.010	6.91	6.27	10.7	7.96
1234789-heptachlorodibenzofuran	0.010	1.41	1.35	2.10	1.62
Octachlorodibenzofuran	0.0003	0.15	0.13	0.21	0.16
PCB 81	0.0003	<0.0065	<0.0068	<0.0057	<0.0063
PCB 77	0.0001	0.0074	0.0035	0.0038	0.0049
PCB 123	0.00003	0.0032	0.0021	0.0025	0.0026
PCB 118	0.00003	0.021	0.013	0.015	0.016
PCB 114	0.00003	0.0012	0.00084	0.00091	0.0010
PCB 105	0.00003	0.0070	0.0051	0.0052	0.0058
PCB 126	0.100	2.61	2.23	2.85	2.56
PCB 167	0.00003	0.00033	0.00033	0.00040	0.00035
PCB 156	0.00003	0.0011	0.00094	0.0015	0.0012
PCB 157	0.00003	0.00052	0.00061	0.00068	0.00060
PCB 169	0.030	0.76	0.76	0.89	0.80
PCB 189	0.00003	0.0011	0.0010	0.0017	0.0013
Total Dioxins & Furans Only		<212	<188	<278	<226
Total PCBs Only		<3.42	<3.03	<3.78	<3.41
Total Dioxins & Furans and PCBs		<215	<191	<282	<229

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 48A
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using Half the Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	0.47	0.41	0.64	0.51
12378-pentachlorodibenzo-p-dioxin	1.000	27.8	11.3	35.0	24.7
123478-hexachlorodibenzo-p-dioxin	0.100	9.21	9.91	14.7	11.3
123678-hexachlorodibenzo-p-dioxin	0.100	32.3	29.3	43.1	34.9
123789-hexachlorodibenzo-p-dioxin	0.100	17.6	14.5	19.9	17.3
1234678-heptachlorodibenzo-p-dioxin	0.010	25.6	22.5	36.6	28.2
Octachlorodibenzo-p-dioxin	0.0003	0.56	0.52	0.84	0.64
2378-tetrachlorodibenzofuran	0.100	0.27	0.51	0.70	0.49
12378-pentachlorodibenzofuran	0.030	0.51	0.54	0.71	0.59
23478-pentachlorodibenzofuran	0.300	27.7	24.7	35.1	29.2
123478-hexachlorodibenzofuran	0.100	11.2	9.91	14.5	11.9
123678-hexachlorodibenzofuran	0.100	14.1	12.3	18.3	14.9
234678-hexachlorodibenzofuran	0.100	27.9	25.2	34.5	29.2
123789-hexachlorodibenzofuran	0.100	7.59	6.95	9.73	8.09
1234678-heptachlorodibenzofuran	0.010	6.91	6.27	10.7	7.96
1234789-heptachlorodibenzofuran	0.010	1.41	1.35	2.10	1.62
Octachlorodibenzofuran	0.0003	0.15	0.13	0.21	0.16
PCB 81	0.0003	0.0032	0.0034	0.0029	0.0032
PCB 77	0.0001	0.0074	0.0035	0.0038	0.0049
PCB 123	0.00003	0.0032	0.0021	0.0025	0.0026
PCB 118	0.00003	0.021	0.013	0.015	0.016
PCB 114	0.00003	0.0012	0.00084	0.00091	0.0010
PCB 105	0.00003	0.0070	0.0051	0.0052	0.0058
PCB 126	0.100	2.61	2.23	2.85	2.56
PCB 167	0.00003	0.00033	0.00033	0.00040	0.00035
PCB 156	0.00003	0.0011	0.00094	0.0015	0.0012
PCB 157	0.00003	0.00052	0.00061	0.00068	0.00060
PCB 169	0.030	0.76	0.76	0.89	0.80
PCB 189	0.00003	0.0011	0.0010	0.0017	0.0013
Total Dioxins & Furans Only		211	176	277	222
Total PCBs Only		3.41	3.02	3.77	3.40
Total Dioxins & Furans and PCBs		215	179	281	225

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 48B
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.94	<0.82	<1.27	<1.01
12378-pentachlorodibenzo-p-dioxin	0.500	13.9	<11.3	17.5	<14.2
123478-hexachlorodibenzo-p-dioxin	0.100	9.21	9.91	14.7	11.3
123678-hexachlorodibenzo-p-dioxin	0.100	32.3	29.3	43.1	34.9
123789-hexachlorodibenzo-p-dioxin	0.100	17.6	14.5	19.9	17.3
1234678-heptachlorodibenzo-p-dioxin	0.010	25.6	22.5	36.6	28.2
Octachlorodibenzo-p-dioxin	0.001	1.88	1.75	2.80	2.14
2378-tetrachlorodibenzofuran	0.100	<0.54	0.51	0.70	<0.58
12378-pentachlorodibenzofuran	0.050	0.86	0.90	1.18	0.98
23478-pentachlorodibenzofuran	0.500	46.2	41.2	58.4	48.6
123478-hexachlorodibenzofuran	0.100	11.2	9.91	14.5	11.9
123678-hexachlorodibenzofuran	0.100	14.1	12.3	18.3	14.9
234678-hexachlorodibenzofuran	0.100	27.9	25.2	34.5	29.2
123789-hexachlorodibenzofuran	0.100	7.59	6.95	9.73	8.09
1234678-heptachlorodibenzofuran	0.010	6.91	6.27	10.7	7.96
1234789-heptachlorodibenzofuran	0.010	1.41	1.35	2.10	1.62
Octachlorodibenzofuran	0.001	0.48	0.45	0.70	0.54
Total Dioxins & Furans		<219	<195	<287	<233
In-Stack Emission Limit					60

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

NATO/CCMS (1989) Toxicity Equivalency Factors

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 49
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Wet Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Wet Reference Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.06	<0.93	<1.44	<1.14
12378-pentachlorodibenzo-p-dioxin	1.000	31.4	<25.4	39.7	<32.1
123478-hexachlorodibenzo-p-dioxin	0.100	10.4	11.1	16.7	12.7
123678-hexachlorodibenzo-p-dioxin	0.100	36.4	32.9	48.9	39.4
123789-hexachlorodibenzo-p-dioxin	0.100	19.9	16.3	22.5	19.6
1234678-heptachlorodibenzo-p-dioxin	0.010	28.9	25.2	41.5	31.9
Octachlorodibenzo-p-dioxin	0.0003	0.64	0.59	0.95	0.73
2378-tetrachlorodibenzofuran	0.100	<0.61	0.57	0.79	<0.66
12378-pentachlorodibenzofuran	0.030	0.58	0.60	0.80	0.66
23478-pentachlorodibenzofuran	0.300	31.3	27.8	39.8	32.9
123478-hexachlorodibenzofuran	0.100	12.6	11.1	16.4	13.4
123678-hexachlorodibenzofuran	0.100	15.9	13.8	20.7	16.8
234678-hexachlorodibenzofuran	0.100	31.5	28.3	39.1	33.0
123789-hexachlorodibenzofuran	0.100	8.57	7.81	11.0	9.14
1234678-heptachlorodibenzofuran	0.010	7.80	7.05	12.1	8.99
1234789-heptachlorodibenzofuran	0.010	1.59	1.51	2.38	1.83
Octachlorodibenzofuran	0.0003	0.16	0.15	0.24	0.18
PCB 81	0.0003	<0.0073	<0.0076	<0.0065	<0.0071
PCB 77	0.0001	0.0083	0.0040	0.0043	0.0055
PCB 123	0.00003	0.0036	0.0024	0.0028	0.0029
PCB 118	0.00003	0.024	0.014	0.017	0.018
PCB 114	0.00003	0.0014	0.00095	0.0010	0.0011
PCB 105	0.00003	0.0079	0.0058	0.0059	0.0065
PCB 126	0.100	2.94	2.51	3.23	2.89
PCB 167	0.00003	0.00037	0.00037	0.00045	0.00040
PCB 156	0.00003	0.0012	0.0011	0.0017	0.0013
PCB 157	0.00003	0.00059	0.00068	0.00077	0.00068
PCB 169	0.030	0.86	0.86	1.01	0.91
PCB 189	0.00003	0.0013	0.0012	0.0020	0.0015
Total Dioxins & Furans Only		<239	<211	<315	<255
Total PCBs Only		<3.86	<3.40	<4.28	<3.85
Total Dioxins & Furans and PCBs		<243	<215	<319	<259

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 50
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Emission Rates

Specific Isomer	Toxicity Equivalency Factor	Emission Rate Test No. 1 ng TEQ/s	Test No. 2 ng TEQ/s	Test No. 3 ng TEQ/s	Average ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.019	<0.016	<0.025	<0.020
12378-pentachlorodibenzo-p-dioxin	1.000	0.56	<0.43	0.68	<0.56
123478-hexachlorodibenzo-p-dioxin	0.100	0.19	0.19	0.29	0.22
123678-hexachlorodibenzo-p-dioxin	0.100	0.65	0.56	0.84	0.68
123789-hexachlorodibenzo-p-dioxin	0.100	0.36	0.28	0.39	0.34
1234678-heptachlorodibenzo-p-dioxin	0.010	0.52	0.43	0.71	0.55
Octachlorodibenzo-p-dioxin	0.0003	0.011	0.010	0.016	0.013
2378-tetrachlorodibenzofuran	0.100	<0.011	0.0097	0.014	<0.011
12378-pentachlorodibenzofuran	0.030	0.010	0.010	0.014	0.011
23478-pentachlorodibenzofuran	0.300	0.56	0.47	0.68	0.57
123478-hexachlorodibenzofuran	0.100	0.23	0.19	0.28	0.23
123678-hexachlorodibenzofuran	0.100	0.28	0.23	0.36	0.29
234678-hexachlorodibenzofuran	0.100	0.56	0.48	0.67	0.57
123789-hexachlorodibenzofuran	0.100	0.15	0.13	0.19	0.16
1234678-heptachlorodibenzofuran	0.010	0.14	0.12	0.21	0.16
1234789-heptachlorodibenzofuran	0.010	0.028	0.026	0.041	0.032
Octachlorodibenzofuran	0.0003	0.0029	0.0026	0.0041	0.0032
PCB 81	0.0003	<0.00013	<0.00013	<0.00011	<0.00012
PCB 77	0.0001	0.00015	0.000067	0.000074	0.000097
PCB 123	0.00003	0.000065	0.000040	0.000048	0.000051
PCB 118	0.00003	0.00043	0.00024	0.00029	0.00032
PCB 114	0.00003	0.000025	0.000016	0.000018	0.000020
PCB 105	0.00003	0.00014	0.000098	0.00010	0.00011
PCB 126	0.100	0.053	0.043	0.056	0.050
PCB 167	0.00003	0.0000066	0.0000063	0.0000078	0.0000069
PCB 156	0.00003	0.000022	0.000018	0.000029	0.000023
PCB 157	0.00003	0.000010	0.000012	0.000013	0.000012
PCB 169	0.030	0.015	0.015	0.017	0.016
PCB 189	0.00003	0.000023	0.000020	0.000034	0.000026
Total Dioxins & Furans Only		<4.28	<3.59	<5.42	<4.43
Total PCBs Only		<0.069	<0.058	<0.074	<0.067
Total Dioxins & Furans and PCBs		<4.35	<3.65	<5.49	<4.50

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 51
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using the Full Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	<0.82	<1.37	<1.01	<1.14	<0.020
12378-pentachlorodibenzo-p-dioxin	<22.9	<38.4	<28.5	<32.1	<0.56
123478-hexachlorodibenzo-p-dioxin	9.09	15.2	11.3	12.7	0.22
123678-hexachlorodibenzo-p-dioxin	28.1	47.1	34.9	39.4	0.68
123789-hexachlorodibenzo-p-dioxin	14.0	23.4	17.3	19.6	0.34
1234678-heptachlorodibenzo-p-dioxin	22.7	38.1	28.2	31.9	0.55
Octachlorodibenzo-p-dioxin	0.52	0.87	0.64	0.73	0.013
2378-tetrachlorodibenzofuran	<0.47	<0.79	<0.58	<0.66	<0.011
12378-pentachlorodibenzofuran	0.47	0.79	0.59	0.66	0.011
23478-pentachlorodibenzofuran	23.5	39.4	29.2	32.9	0.57
123478-hexachlorodibenzofuran	9.56	16.0	11.9	13.4	0.23
123678-hexachlorodibenzofuran	12.0	20.1	14.9	16.8	0.29
234678-hexachlorodibenzofuran	23.5	39.4	29.2	33.0	0.57
123789-hexachlorodibenzofuran	6.52	10.9	8.09	9.14	0.16
1234678-heptachlorodibenzofuran	6.41	10.7	7.96	8.99	0.16
1234789-heptachlorodibenzofuran	1.30	2.18	1.62	1.83	0.032
Octachlorodibenzofuran	0.13	0.22	0.16	0.18	0.0032
PCB 81	<0.0051	<0.0085	<0.0063	<0.0071	<0.00012
PCB 77	0.0040	0.0066	0.0049	0.0055	0.000097
PCB 123	0.0021	0.0035	0.0026	0.0029	0.000051
PCB 118	0.013	0.022	0.016	0.018	0.00032
PCB 114	0.00080	0.0013	0.0010	0.0011	0.000020
PCB 105	0.0047	0.0078	0.0058	0.0065	0.00011
PCB 126	2.06	3.46	2.56	2.89	0.050
PCB 167	0.00028	0.00047	0.00035	0.00040	0.0000069
PCB 156	0.00095	0.0016	0.0012	0.0013	0.000023
PCB 157	0.00048	0.00081	0.00060	0.00068	0.000012
PCB 169	0.65	1.08	0.80	0.91	0.016
PCB 189	0.0011	0.0018	0.0013	0.0015	0.000026
Total Dioxins & Furans Only	<182	<305	<226	<255	<4.43
Total PCBs Only	<2.74	<4.60	<3.41	<3.85	<0.067
Total Dioxins & Furans and PCBs	<185	<309	<229	<259	<4.50

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 52
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using Half the Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	0.41	0.68	0.51	0.57	0.0099
12378-pentachlorodibenzo-p-dioxin	19.9	33.3	24.7	27.9	0.49
123478-hexachlorodibenzo-p-dioxin	9.09	15.2	11.3	12.7	0.22
123678-hexachlorodibenzo-p-dioxin	28.1	47.1	34.9	39.4	0.68
123789-hexachlorodibenzo-p-dioxin	14.0	23.4	17.3	19.6	0.34
1234678-heptachlorodibenzo-p-dioxin	22.7	38.1	28.2	31.9	0.55
Octachlorodibenzo-p-dioxin	0.52	0.87	0.64	0.73	0.013
2378-tetrachlorodibenzofuran	0.40	0.66	0.49	0.56	0.0096
12378-pentachlorodibenzofuran	0.47	0.79	0.59	0.66	0.011
23478-pentachlorodibenzofuran	23.5	39.4	29.2	32.9	0.57
123478-hexachlorodibenzofuran	9.56	16.0	11.9	13.4	0.23
123678-hexachlorodibenzofuran	12.0	20.1	14.9	16.8	0.29
234678-hexachlorodibenzofuran	23.5	39.4	29.2	33.0	0.57
123789-hexachlorodibenzofuran	6.52	10.9	8.09	9.14	0.16
1234678-heptachlorodibenzofuran	6.41	10.7	7.96	8.99	0.16
1234789-heptachlorodibenzofuran	1.30	2.18	1.62	1.83	0.032
Octachlorodibenzofuran	0.13	0.22	0.16	0.18	0.0032
PCB 81	0.0025	0.0043	0.0032	0.0036	0.000062
PCB 77	0.0040	0.0066	0.0049	0.0055	0.000097
PCB 123	0.0021	0.0035	0.0026	0.0029	0.000051
PCB 118	0.013	0.022	0.016	0.018	0.00032
PCB 114	0.00080	0.0013	0.0010	0.0011	0.000020
PCB 105	0.0047	0.0078	0.0058	0.0065	0.00011
PCB 126	2.06	3.46	2.56	2.89	0.050
PCB 167	0.00028	0.00047	0.00035	0.00040	0.0000069
PCB 156	0.00095	0.0016	0.0012	0.0013	0.000023
PCB 157	0.00048	0.00081	0.00060	0.00068	0.000012
PCB 169	0.65	1.08	0.80	0.91	0.016
PCB 189	0.0011	0.0018	0.0013	0.0015	0.000026
Total Dioxins & Furans Only	179	299	222	250	4.35
Total PCBs Only	2.74	4.59	3.40	3.84	0.067
Total Dioxins & Furans and PCBs	181	304	225	254	4.41

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 53
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Data for Chlorobenzenes
Test No. 1

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	188	23.4	39.1	29.0	32.7	0.59
1,4-Dichlorobenzene	138	17.2	28.7	21.3	24.0	0.43
1,2-Dichlorobenzene	157	19.6	32.6	24.2	27.3	0.49
Total Dichlorobenzene	483	60.2	100	74.6	84.1	1.51
1,3,5-trichlorobenzene	33.2	4.14	6.90	5.12	5.78	0.10
1,2,4-trichlorobenzene	110	13.7	22.9	17.0	19.2	0.34
1,2,3-trichlorobenzene	34.0	4.24	7.07	5.25	5.92	0.11
Total Trichlorobenzene	177	22.1	36.8	27.4	30.9	0.55
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	39.7	4.95	8.25	6.13	6.92	0.12
1,2,3,4-tetrachlorobenzene	<25	<3.12	<5.20	<3.86	<4.35	<0.078
Total Tetrachlorobenzene	<64.7	<8.07	<13.4	<9.99	<11.3	<0.20
Pentachlorobenzene	<25	<3.12	<5.20	<3.86	<4.35	<0.078
Hexachlorobenzene	<25	<3.12	<5.20	<3.86	<4.35	<0.078
Total Chlorobenzenes	<775	<96.6	<161	<120	<135	<2.42

Dry Gas Volume Sampled (Rm³*) :	4.811
Actual Flowrate (m³/s) :	25.0
Dry Reference Flowrate (Rm³/s*) :	15.0
Dry Adjusted Flowrate (Rm³/s**) :	20.2
Wet Reference Flowrate (Rm³/s*) :	17.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 54
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Data for Chlorobenzenes
Test No. 2

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	244	31.7	53.1	39.4	44.3	0.75
1,4-Dichlorobenzene	175	22.7	38.1	28.3	31.8	0.54
1,2-Dichlorobenzene	199	25.8	43.3	32.2	36.1	0.61
Total Dichlorobenzene	618	80.2	134	99.9	112	1.91
1,3,5-trichlorobenzene	48.0	6.23	10.4	7.76	8.72	0.15
1,2,4-trichlorobenzene	167	21.7	36.3	27.0	30.3	0.52
1,2,3-trichlorobenzene	51.1	6.63	11.1	8.26	9.28	0.16
Total Trichlorobenzene	266	34.5	57.9	43.0	48.3	0.82
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	62.8	8.15	13.7	10.2	11.4	0.19
1,2,3,4-tetrachlorobenzene	<25	<3.24	<5.44	<4.04	<4.54	<0.077
Total Tetrachlorobenzene	<87.8	<11.4	<19.1	<14.2	<15.9	<0.27
Pentachlorobenzene	30.3	3.93	6.59	4.90	5.50	0.094
Hexachlorobenzene	<25	<3.24	<5.44	<4.04	<4.54	<0.077
Total Chlorobenzenes	<1027	<133	<223	<166	<187	<3.17

Dry Gas Volume Sampled (Rm³*) :	4.599
Actual Flowrate (m³/s) :	23.8
Dry Reference Flowrate (Rm³/s*) :	14.2
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	17.0

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 55
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Data for Chlorobenzenes
Test No. 3

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	232	29.7	50.0	36.9	41.8	0.72
1,4-Dichlorobenzene	162	20.8	34.9	25.8	29.2	0.50
1,2-Dichlorobenzene	180	23.1	38.8	28.6	32.4	0.56
Total Dichlorobenzene	574	73.5	124	91.3	103	1.78
1,3,5-trichlorobenzene	29.9	3.83	6.44	4.75	5.39	0.093
1,2,4-trichlorobenzene	108	13.8	23.3	17.2	19.5	0.33
1,2,3-trichlorobenzene	31.0	3.97	6.68	4.93	5.59	0.096
Total Trichlorobenzene	169	21.6	36.4	26.9	30.4	0.52
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	42.1	5.39	9.07	6.69	7.59	0.13
1,2,3,4-tetrachlorobenzene	<25	<3.20	<5.38	<3.98	<4.51	<0.078
Total Tetrachlorobenzene	<67.1	<8.60	<14.4	<10.7	<12.1	<0.21
Pentachlorobenzene	25.3	3.24	5.45	4.02	4.56	0.078
Hexachlorobenzene	<25	<3.20	<5.38	<3.98	<4.51	<0.078
Total Chlorobenzenes	<860	<110	<185	<137	<155	<2.67

Dry Gas Volume Sampled (Rm³*) :	4.644
Actual Flowrate (m³/s) :	24.2
Dry Reference Flowrate (Rm³/s*) :	14.4
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	17.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 56
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Actual Concentrations for Chlorobenzenes

Specific Isomer	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
1,3-Dichlorobenzene	23.4	31.7	29.7	28.3	15.2
1,4-Dichlorobenzene	17.2	22.7	20.8	20.2	13.8
1,2-Dichlorobenzene	19.6	25.8	23.1	22.8	13.7
Total Dichlorobenzene	60.2	80.2	73.5	71.3	14.2
1,3,5-trichlorobenzene	4.14	6.23	3.83	4.73	27.5
1,2,4-trichlorobenzene	13.7	21.7	13.8	16.4	27.8
1,2,3-trichlorobenzene	4.24	6.63	3.97	4.95	29.6
Total Trichlorobenzene	22.1	34.5	21.6	26.1	28.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	4.95	8.15	5.39	6.16	28.1
1,2,3,4-tetrachlorobenzene	<3.12	<3.24	<3.20	<3.19	2.0
Total Tetrachlorobenzene	<8.07	<11.4	<8.60	<9.35	19.1
Pentachlorobenzene	<3.12	3.93	3.24	<3.43	12.8
Hexachlorobenzene	<3.12	<3.24	<3.20	<3.19	2.0
Total Chlorobenzenes	<96.6	<133	<110	<113	16.3

TABLE 57
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dry Reference Concentrations for Chlorobenzenes

Specific Isomer	Dry Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
1,3-Dichlorobenzene	39.1	53.1	50.0	47.4	15.5
1,4-Dichlorobenzene	28.7	38.1	34.9	33.9	14.1
1,2-Dichlorobenzene	32.6	43.3	38.8	38.2	14.0
Total Dichlorobenzene	100	134	124	119	14.5
1,3,5-trichlorobenzene	6.90	10.4	6.44	7.93	27.6
1,2,4-trichlorobenzene	22.9	36.3	23.3	27.5	27.9
1,2,3-trichlorobenzene	7.07	11.1	6.68	8.28	29.6
Total Trichlorobenzene	36.8	57.9	36.4	43.7	28.1
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	8.25	13.7	9.07	10.3	28.2
1,2,3,4-tetrachlorobenzene	<5.20	<5.44	<5.38	<5.34	2.4
Total Tetrachlorobenzene	<13.4	<19.1	<14.4	<15.7	19.2
Pentachlorobenzene	<5.20	6.59	5.45	<5.74	12.9
Hexachlorobenzene	<5.20	<5.44	<5.38	<5.34	2.4
Total Chlorobenzenes	<161	<223	<185	<190	16.5

* At 25°C and 1 atmosphere

TABLE 58
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dry Adjusted Concentrations for Chlorobenzenes

Specific Isomer	Dry Adjusted Concentration Test No. 1 ng/Rm^3*	Test No. 2 ng/Rm^3*	Test No. 3 ng/Rm^3*	Average ng/Rm^3*	Coefficient of Variation %
1,3-Dichlorobenzene	29.0	39.4	36.9	35.1	15.5
1,4-Dichlorobenzene	21.3	28.3	25.8	25.1	14.1
1,2-Dichlorobenzene	24.2	32.2	28.6	28.3	14.0
Total Dichlorobenzene	74.6	99.9	91.3	88.6	14.6
1,3,5-trichlorobenzene	5.12	7.76	4.75	5.88	27.9
1,2,4-trichlorobenzene	17.0	27.0	17.2	20.4	28.1
1,2,3-trichlorobenzene	5.25	8.26	4.93	6.15	29.9
Total Trichlorobenzene	27.4	43.0	26.9	32.4	28.4
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	6.13	10.2	6.69	7.66	28.4
1,2,3,4-tetrachlorobenzene	<3.86	<4.04	<3.98	<3.96	2.3
Total Tetrachlorobenzene	<9.99	<14.2	<10.7	<11.6	19.4
Pentachlorobenzene	<3.86	4.90	4.02	<4.26	13.1
Hexachlorobenzene	<3.86	<4.04	<3.98	<3.96	2.3
Total Chlorobenzenes	<120	<166	<137	<141	16.7

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 59

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Wet Reference Concentrations for Chlorobenzenes

Specific Isomer	Wet Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
1,3-Dichlorobenzene	32.7	44.3	41.8	39.6	15.4
1,4-Dichlorobenzene	24.0	31.8	29.2	28.3	13.9
1,2-Dichlorobenzene	27.3	36.1	32.4	32.0	13.8
Total Dichlorobenzene	84.1	112	103	100	14.4
1,3,5-trichlorobenzene	5.78	8.72	5.39	6.63	27.4
1,2,4-trichlorobenzene	19.2	30.3	19.5	23.0	27.7
1,2,3-trichlorobenzene	5.92	9.28	5.59	6.93	29.5
Total Trichlorobenzene	30.9	48.3	30.4	36.5	27.9
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	6.92	11.4	7.59	8.64	28.0
1,2,3,4-tetrachlorobenzene	<4.35	<4.54	<4.51	<4.47	2.2
Total Tetrachlorobenzene	<11.3	<15.9	<12.1	<13.1	19.0
Pentachlorobenzene	<4.35	5.50	4.56	<4.81	12.7
Hexachlorobenzene	<4.35	<4.54	<4.51	<4.47	2.2
Total Chlorobenzenes	<135	<187	<155	<159	16.4

* At 25°C and 1 atmosphere

TABLE 60
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Rates for Chlorobenzenes

Specific Isomer	Emission Rate Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
1,3-Dichlorobenzene	0.59	0.75	0.72	0.69	12.9
1,4-Dichlorobenzene	0.43	0.54	0.50	0.49	11.4
1,2-Dichlorobenzene	0.49	0.61	0.56	0.55	11.3
Total Dichlorobenzene	1.51	1.91	1.78	1.73	11.9
1,3,5-trichlorobenzene	0.10	0.15	0.093	0.11	25.6
1,2,4-trichlorobenzene	0.34	0.52	0.33	0.40	25.7
1,2,3-trichlorobenzene	0.11	0.16	0.096	0.12	27.6
Total Trichlorobenzene	0.55	0.82	0.52	0.63	26.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	0.12	0.19	0.13	0.15	25.9
1,2,3,4-tetrachlorobenzene	<0.078	<0.077	<0.078	<0.078	0.5
Total Tetrachlorobenzene	<0.20	<0.27	<0.21	<0.23	16.9
Pentachlorobenzene	<0.078	0.094	0.078	<0.083	10.6
Hexachlorobenzene	<0.078	<0.077	<0.078	<0.078	0.5
Total Chlorobenzenes	<2.42	<3.17	<2.67	<2.75	14.0

TABLE 61
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Emission Data for Chlorobenzenes

Specific Isomer	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	28.3	47.4	35.1	39.6	0.69
1,4-Dichlorobenzene	20.2	33.9	25.1	28.3	0.49
1,2-Dichlorobenzene	22.8	38.2	28.3	32.0	0.55
Total Dichlorobenzene	71.3	119	88.6	100	1.73
1,3,5-trichlorobenzene	4.73	7.93	5.88	6.63	0.11
1,2,4-trichlorobenzene	16.4	27.5	20.4	23.0	0.40
1,2,3-trichlorobenzene	4.95	8.28	6.15	6.93	0.12
Total Trichlorobenzene	26.1	43.7	32.4	36.5	0.63
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	6.16	10.3	7.66	8.64	0.15
1,2,3,4-tetrachlorobenzene	<3.19	<5.34	<3.96	<4.47	<0.078
Total Tetrachlorobenzene	<9.35	<15.7	<11.6	<13.1	<0.23
Pentachlorobenzene	<3.43	<5.74	<4.26	<4.81	<0.083
Hexachlorobenzene	<3.19	<5.34	<3.96	<4.47	<0.078
Total Chlorobenzenes	<113	<190	<141	<159	<2.75

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 62
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorobenzene Blank Analyses

Isomers and Congener Group Totals	Blank Train Total ng	Laboratory Blank Total ng
1,3-Dichlorobenzene	<25	<25
1,4-Dichlorobenzene	<25	<25
1,2-Dichlorobenzene	<25	<25
Total Dichlorobenzene	<75	<75
1,3,5-trichlorobenzene	<25	<25
1,2,4-trichlorobenzene	<25	<25
1,2,3-trichlorobenzene	<25	<25
Total Trichlorobenzene	<75	<75
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<25	<25
1,2,3,4-tetrachlorobenzene	<25	<25
Total Tetrachlorobenzene	<50	<50
Pentachlorobenzene	<25	<25
Hexachlorobenzene	<25	<25
Total Chlorobenzenes	<250	<250

"<" indicates that the amount detected is less than the analytical detection limit (<MDL).
In these cases the value of the detection limit was used to calculate the total collected.

TABLE 63
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 1

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	275	34.3	57.2	42.4	47.9	0.86
3-monochlorophenol	<50	<6.24	<10.4	<7.72	<8.71	<0.16
4-monochlorophenol	205	25.6	42.6	31.6	35.7	0.64
Total Monochlorophenols	<530	<66.1	<110	<81.8	<92.3	<1.65
2,6-dichlorophenol	<50	<6.24	<10.4	<7.72	<8.71	<0.16
2,4 & 2,5-dichlorophenol	155	19.3	32.2	23.9	27.0	0.48
3,5-dichlorophenol	101	12.6	21.0	15.6	17.6	0.31
2,3-dichlorophenol	<50	<6.24	<10.4	<7.72	<8.71	<0.16
3,4-dichlorophenol	<50	<6.24	<10.4	<7.72	<8.71	<0.16
Total Dichlorophenols	<406	<50.6	<84.4	<62.7	<70.7	<1.27
2,4,6-trichlorophenol	575	71.7	120	88.8	100	1.79
2,3,6-trichlorophenol	<50	<6.24	<10.4	<7.72	<8.71	<0.16
2,3,5-trichlorophenol	<50	<6.24	<10.4	<7.72	<8.71	<0.16
2,4,5-trichlorophenol	<50	<6.24	<10.4	<7.72	<8.71	<0.16
2,3,4-trichlorophenol	<50	<6.24	<10.4	<7.72	<8.71	<0.16
3,4,5-trichlorophenol	<50	<6.24	<10.4	<7.72	<8.71	<0.16
Total Trichlorophenols	<825	<103	<171	<127	<144	<2.57
2,3,5,6 & 2,3,4,6-tetrachlorophenol	109	13.6	22.7	16.8	19.0	0.34
2,3,4,5-tetrachlorophenol	<50	<6.24	<10.4	<7.72	<8.71	<0.16
Total Tetrachlorophenols	<159	<19.8	<33.0	<24.5	<27.7	<0.50
Pentachlorophenol	105	13.1	21.8	16.2	18.3	0.33
Total Chlorophenols	<2025	<253	<421	<313	<353	<6.31

Dry Gas Volume Sampled (Rm³*) :	4.811
Actual Flowrate (m³/s) :	25.0
Dry Reference Flowrate (Rm³/s*) :	15.0
Dry Adjusted Flowrate (Rm³/s**) :	20.2
Wet Reference Flowrate (Rm³/s*) :	17.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 64
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 2

Specific Isomer	Total Collected ng	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate µg/s
2-monochlorophenol	237	30.7	51.5	38.3	43.0	0.73
3-monochlorophenol	<50	<6.49	<10.9	<8.08	<9.08	<0.15
4-monochlorophenol	191	24.8	41.5	30.9	34.7	0.59
Total Monochlorophenols	<478	<62.0	<104	<77.3	<86.8	<1.48
2,6-dichlorophenol	<50	<6.49	<10.9	<8.08	<9.08	<0.15
2,4 & 2,5-dichlorophenol	162	21.0	35.2	26.2	29.4	0.50
3,5-dichlorophenol	<50	<6.49	<10.9	<8.08	<9.08	<0.15
2,3-dichlorophenol	<50	<6.49	<10.9	<8.08	<9.08	<0.15
3,4-dichlorophenol	<50	<6.49	<10.9	<8.08	<9.08	<0.15
Total Dichlorophenols	<362	<47.0	<78.7	<58.5	<65.7	<1.12
2,4,6-trichlorophenol	392	50.9	85.2	63.4	71.2	1.21
2,3,6-trichlorophenol	<50	<6.49	<10.9	<8.08	<9.08	<0.15
2,3,5-trichlorophenol	<50	<6.49	<10.9	<8.08	<9.08	<0.15
2,4,5-trichlorophenol	<50	<6.49	<10.9	<8.08	<9.08	<0.15
2,3,4-trichlorophenol	<50	<6.49	<10.9	<8.08	<9.08	<0.15
3,4,5-trichlorophenol	<50	<6.49	<10.9	<8.08	<9.08	<0.15
Total Trichlorophenols	<642	<83.3	<140	<104	<117	<1.98
2,3,5,6 & 2,3,4,6-tetrachlorophenol	122	15.8	26.5	19.7	22.2	0.38
2,3,4,5-tetrachlorophenol	<50	<6.49	<10.9	<8.08	<9.08	<0.15
Total Tetrachlorophenols	<172	<22.3	<37.4	<27.8	<31.2	<0.53
Pentachlorophenol	133	17.3	28.9	21.5	24.2	0.41
Total Chlorophenols	<1787	<232	<389	<289	<325	<5.52

Dry Gas Volume Sampled (Rm^3*) :	4.599
Actual Flowrate (m^3/s) :	23.8
Dry Reference Flowrate (Rm^3/s*) :	14.2
Dry Adjusted Flowrate (Rm^3/s**) :	19.1
Wet Reference Flowrate (Rm^3/s*) :	17.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 65
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 3

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	84.9	10.9	18.3	13.5	15.3	0.26
3-monochlorophenol	66.8	8.56	14.4	10.6	12.0	0.21
4-monochlorophenol	391	50.1	84.2	62.2	70.5	1.21
Total Monochlorophenols	543	69.5	117	86.3	97.8	1.68
2,6-dichlorophenol	105	13.5	22.6	16.7	18.9	0.33
2,4 & 2,5-dichlorophenol	274	35.1	59.0	43.6	49.4	0.85
3,5-dichlorophenol	115	14.7	24.8	18.3	20.7	0.36
2,3-dichlorophenol	<50	<6.41	<10.8	<7.95	<9.01	<0.16
3,4-dichlorophenol	<50	<6.41	<10.8	<7.95	<9.01	<0.16
Total Dichlorophenols	<594	<76.1	<128	<94.5	<107	<1.84
2,4,6-trichlorophenol	458	58.7	98.6	72.8	82.6	1.42
2,3,6-trichlorophenol	<50	<6.41	<10.8	<7.95	<9.01	<0.16
2,3,5-trichlorophenol	<50	<6.41	<10.8	<7.95	<9.01	<0.16
2,4,5-trichlorophenol	<50	<6.41	<10.8	<7.95	<9.01	<0.16
2,3,4-trichlorophenol	<50	<6.41	<10.8	<7.95	<9.01	<0.16
3,4,5-trichlorophenol	<50	<6.41	<10.8	<7.95	<9.01	<0.16
Total Trichlorophenols	<708	<90.7	<152	<113	<128	<2.20
2,3,5,6 & 2,3,4,6-tetrachlorophenol	108	13.8	23.3	17.2	19.5	0.33
2,3,4,5-tetrachlorophenol	<50	<6.41	<10.8	<7.95	<9.01	<0.16
Total Tetrachlorophenols	<158	<20.2	<34.0	<25.1	<28.5	<0.49
Pentachlorophenol	107	13.7	23.0	17.0	19.3	0.33
Total Chlorophenols	<2110	<270	<454	<335	<380	<6.54

Dry Gas Volume Sampled (Rm³*) :	4.644
Actual Flowrate (m³/s) :	24.2
Dry Reference Flowrate (Rm³/s*) :	14.4
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	17.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 66

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Chlorophenol Isomer and Congener Group Actual Concentrations

Specific Isomer	Actual Concentration Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
2-monochlorophenol	34.3	30.7	10.9	25.3	49.9
3-monochlorophenol	<6.24	<6.49	8.56	<7.09	18.0
4-monochlorophenol	25.6	24.8	50.1	33.5	43.0
Total Monochlorophenols	<66.1	<62.0	69.5	<65.9	5.7
2,6-dichlorophenol	<6.24	<6.49	13.5	<8.73	47.0
2,4 & 2,5-dichlorophenol	19.3	21.0	35.1	25.2	34.4
3,5-dichlorophenol	12.6	<6.49	14.7	<11.3	38.0
2,3-dichlorophenol	<6.24	<6.49	<6.41	<6.38	2.0
3,4-dichlorophenol	<6.24	<6.49	<6.41	<6.38	2.0
Total Dichlorophenols	<50.6	<47.0	<76.1	<57.9	27.4
2,4,6-trichlorophenol	71.7	50.9	58.7	60.4	17.4
2,3,6-trichlorophenol	<6.24	<6.49	<6.41	<6.38	2.0
2,3,5-trichlorophenol	<6.24	<6.49	<6.41	<6.38	2.0
2,4,5-trichlorophenol	<6.24	<6.49	<6.41	<6.38	2.0
2,3,4-trichlorophenol	<6.24	<6.49	<6.41	<6.38	2.0
3,4,5-trichlorophenol	<6.24	<6.49	<6.41	<6.38	2.0
Total Trichlorophenols	<103	<83.3	<90.7	<92.3	10.7
2,3,5,6 & 2,3,4,6-tetrachlorophenol	13.6	15.8	13.8	14.4	8.5
2,3,4,5-tetrachlorophenol	<6.24	<6.49	<6.41	<6.38	2.0
Total Tetrachlorophenols	<19.8	<22.3	<20.2	<20.8	6.4
Pentachlorophenol	13.1	17.3	13.7	14.7	15.3
Total Chlorophenols	<253	<232	<270	<252	7.7

TABLE 67
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	57.2	51.5	18.3	42.3	49.6
3-monochlorophenol	<10.4	<10.9	14.4	<11.9	18.3
4-monochlorophenol	42.6	41.5	84.2	56.1	43.4
Total Monochlorophenols	<110	<104	117	<110	5.9
2,6-dichlorophenol	<10.4	<10.9	22.6	<14.6	47.3
2,4 & 2,5-dichlorophenol	32.2	35.2	59.0	42.1	34.8
3,5-dichlorophenol	21.0	<10.9	24.8	<18.9	38.1
2,3-dichlorophenol	<10.4	<10.9	<10.8	<10.7	2.4
3,4-dichlorophenol	<10.4	<10.9	<10.8	<10.7	2.4
Total Dichlorophenols	<84.4	<78.7	<128	<97.0	27.7
2,4,6-trichlorophenol	120	85.2	98.6	101	17.1
2,3,6-trichlorophenol	<10.4	<10.9	<10.8	<10.7	2.4
2,3,5-trichlorophenol	<10.4	<10.9	<10.8	<10.7	2.4
2,4,5-trichlorophenol	<10.4	<10.9	<10.8	<10.7	2.4
2,3,4-trichlorophenol	<10.4	<10.9	<10.8	<10.7	2.4
3,4,5-trichlorophenol	<10.4	<10.9	<10.8	<10.7	2.4
Total Trichlorophenols	<171	<140	<152	<155	10.4
2,3,5,6 & 2,3,4,6-tetrachlorophenol	22.7	26.5	23.3	24.1	8.6
2,3,4,5-tetrachlorophenol	<10.4	<10.9	<10.8	<10.7	2.4
Total Tetrachlorophenols	<33.0	<37.4	<34.0	<34.8	6.6
Pentachlorophenol	21.8	28.9	23.0	24.6	15.4
Total Chlorophenols	<421	<389	<454	<421	7.8

* At 25°C and 1 atmosphere

TABLE 68
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
2-monochlorophenol	42.4	38.3	13.5	31.4	49.8
3-monochlorophenol	<7.72	<8.08	10.6	<8.81	18.0
4-monochlorophenol	31.6	30.9	62.2	41.6	43.0
Total Monochlorophenols	<81.8	<77.3	86.3	<81.8	5.5
2,6-dichlorophenol	<7.72	<8.08	16.7	<10.8	46.9
2,4 & 2,5-dichlorophenol	23.9	26.2	43.6	31.2	34.4
3,5-dichlorophenol	15.6	<8.08	18.3	<14.0	37.8
2,3-dichlorophenol	<7.72	<8.08	<7.95	<7.92	2.3
3,4-dichlorophenol	<7.72	<8.08	<7.95	<7.92	2.3
Total Dichlorophenols	<62.7	<58.5	<94.5	<71.9	27.4
2,4,6-trichlorophenol	88.8	63.4	72.8	75.0	17.1
2,3,6-trichlorophenol	<7.72	<8.08	<7.95	<7.92	2.3
2,3,5-trichlorophenol	<7.72	<8.08	<7.95	<7.92	2.3
2,4,5-trichlorophenol	<7.72	<8.08	<7.95	<7.92	2.3
2,3,4-trichlorophenol	<7.72	<8.08	<7.95	<7.92	2.3
3,4,5-trichlorophenol	<7.72	<8.08	<7.95	<7.92	2.3
Total Trichlorophenols	<127	<104	<113	<115	10.4
2,3,5,6 & 2,3,4,6-tetrachlorophenol	16.8	19.7	17.2	17.9	8.8
2,3,4,5-tetrachlorophenol	<7.72	<8.08	<7.95	<7.92	2.3
Total Tetrachlorophenols	<24.5	<27.8	<25.1	<25.8	6.7
Pentachlorophenol	16.2	21.5	17.0	18.2	15.6
Total Chlorophenols	<313	<289	<335	<312	7.5

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 69
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
2-monochlorophenol	47.9	43.0	15.3	35.4	49.7
3-monochlorophenol	<8.71	<9.08	12.0	<9.94	18.4
4-monochlorophenol	35.7	34.7	70.5	47.0	43.4
Total Monochlorophenols	<92.3	<86.8	97.8	<92.3	6.0
2,6-dichlorophenol	<8.71	<9.08	18.9	<12.2	47.4
2,4 & 2,5-dichlorophenol	27.0	29.4	49.4	35.3	34.8
3,5-dichlorophenol	17.6	<9.08	20.7	<15.8	38.1
2,3-dichlorophenol	<8.71	<9.08	<9.01	<8.93	2.2
3,4-dichlorophenol	<8.71	<9.08	<9.01	<8.93	2.2
Total Dichlorophenols	<70.7	<65.7	<107	<81.2	27.8
2,4,6-trichlorophenol	100	71.2	82.6	84.6	17.2
2,3,6-trichlorophenol	<8.71	<9.08	<9.01	<8.93	2.2
2,3,5-trichlorophenol	<8.71	<9.08	<9.01	<8.93	2.2
2,4,5-trichlorophenol	<8.71	<9.08	<9.01	<8.93	2.2
2,3,4-trichlorophenol	<8.71	<9.08	<9.01	<8.93	2.2
3,4,5-trichlorophenol	<8.71	<9.08	<9.01	<8.93	2.2
Total Trichlorophenols	<144	<117	<128	<129	10.5
2,3,5,6 & 2,3,4,6-tetrachlorophenol	19.0	22.2	19.5	20.2	8.5
2,3,4,5-tetrachlorophenol	<8.71	<9.08	<9.01	<8.93	2.2
Total Tetrachlorophenols	<27.7	<31.2	<28.5	<29.1	6.4
Pentachlorophenol	18.3	24.2	19.3	20.6	15.3
Total Chlorophenols	<353	<325	<380	<353	7.9

* At 25°C and 1 atmosphere

TABLE 70
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Emission Rates

Specific Isomer	Emission Rate Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
2-monochlorophenol	0.86	0.73	0.26	0.62	50.7
3-monochlorophenol	<0.16	<0.15	0.21	<0.17	17.4
4-monochlorophenol	0.64	0.59	1.21	0.81	42.5
Total Monochlorophenols	<1.65	<1.48	1.68	<1.60	7.0
2,6-dichlorophenol	<0.16	<0.15	0.33	<0.21	46.4
2,4 & 2,5-dichlorophenol	0.48	0.50	0.85	0.61	33.8
3,5-dichlorophenol	0.31	<0.15	0.36	<0.28	38.8
2,3-dichlorophenol	<0.16	<0.15	<0.16	<0.16	0.5
3,4-dichlorophenol	<0.16	<0.15	<0.16	<0.16	0.5
Total Dichlorophenols	<1.27	<1.12	<1.84	<1.41	27.2
2,4,6-trichlorophenol	1.79	1.21	1.42	1.47	20.0
2,3,6-trichlorophenol	<0.16	<0.15	<0.16	<0.16	0.5
2,3,5-trichlorophenol	<0.16	<0.15	<0.16	<0.16	0.5
2,4,5-trichlorophenol	<0.16	<0.15	<0.16	<0.16	0.5
2,3,4-trichlorophenol	<0.16	<0.15	<0.16	<0.16	0.5
3,4,5-trichlorophenol	<0.16	<0.15	<0.16	<0.16	0.5
Total Trichlorophenols	<2.57	<1.98	<2.20	<2.25	13.3
2,3,5,6 & 2,3,4,6-tetrachlorophenol	0.34	0.38	0.33	0.35	6.5
2,3,4,5-tetrachlorophenol	<0.16	<0.15	<0.16	<0.16	0.5
Total Tetrachlorophenols	<0.50	<0.53	<0.49	<0.51	4.4
Pentachlorophenol	0.33	0.41	0.33	0.36	13.1
Total Chlorophenols	<6.31	<5.52	<6.54	<6.12	8.8

TABLE 71
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Emission Data for Chlorophenol Isomer and Congener Groups

Specific Isomer	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate µg/s
2-monochlorophenol	25.3	42.3	31.4	35.4	0.62
3-monochlorophenol	<7.09	<11.9	<8.81	<9.94	<0.17
4-monochlorophenol	33.5	56.1	41.6	47.0	0.81
Total Monochlorophenols	<65.9	<110	<81.8	<92.3	<1.60
2,6-dichlorophenol	<8.73	<14.6	<10.8	<12.2	<0.21
2,4 & 2,5-dichlorophenol	25.2	42.1	31.2	35.3	0.61
3,5-dichlorophenol	<11.3	<18.9	<14.0	<15.8	<0.28
2,3-dichlorophenol	<6.38	<10.7	<7.92	<8.93	<0.16
3,4-dichlorophenol	<6.38	<10.7	<7.92	<8.93	<0.16
Total Dichlorophenols	<57.9	<97.0	<71.9	<81.2	<1.41
2,4,6-trichlorophenol	60.4	101	75.0	84.6	1.47
2,3,6-trichlorophenol	<6.38	<10.7	<7.92	<8.93	<0.16
2,3,5-trichlorophenol	<6.38	<10.7	<7.92	<8.93	<0.16
2,4,5-trichlorophenol	<6.38	<10.7	<7.92	<8.93	<0.16
2,3,4-trichlorophenol	<6.38	<10.7	<7.92	<8.93	<0.16
3,4,5-trichlorophenol	<6.38	<10.7	<7.92	<8.93	<0.16
Total Trichlorophenols	<92.3	<155	<115	<129	<2.25
2,3,5,6 & 2,3,4,6-tetrachlorophenol	14.4	24.1	17.9	20.2	0.35
2,3,4,5-tetrachlorophenol	<6.38	<10.7	<7.92	<8.93	<0.16
Total Tetrachlorophenols	<20.8	<34.8	<25.8	<29.1	<0.51
Pentachlorophenol	14.7	24.6	18.2	20.6	0.36
Total Chlorophenols	<252	<421	<312	<353	<6.12

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 72
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Blank Analyses

Congener Group	Lab Blank Total ng	Blank Train Total ng
2-monochlorophenol	<50	63.2
3-monochlorophenol	<50	<50
4-monochlorophenol	<50	<50
Total Monochlorophenols	<150	<163
2,6-dichlorophenol	<50	<50
2,4 & 2,5-dichlorophenol	<50	<50
3,5-dichlorophenol	<50	<50
2,3-dichlorophenol	<50	<50
3,4-dichlorophenol	<50	<50
Total Dichlorophenols	<250	<250
2,4,6-trichlorophenol	<50	<50
2,3,6-trichlorophenol	<50	<50
2,3,5-trichlorophenol	<50	<50
2,4,5-trichlorophenol	<50	<50
2,3,4-trichlorophenol	<50	<50
3,4,5-trichlorophenol	<50	<50
Total Trichlorophenols	<300	<300
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<50	<50
2,3,4,5-tetrachlorophenol	<50	<50
Total Tetrachlorophenols	<100	<100
Pentachlorophenol	<50	<50
Total Chlorophenols	<850	<863

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

TABLE 73
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 1

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	358	44.6	74.4	55.3	62.4	1.12
Acenaphthylene	71.8	8.95	14.9	11.1	12.5	0.22
Anthracene	48.8	6.09	10.1	7.53	8.50	0.15
Benzo(a)Anthracene	<10	<1.25	<2.08	<1.54	<1.74	<0.031
Benzo(b)Fluoranthene	11.4	1.42	2.37	1.76	1.99	0.036
Benzo(k)Fluoranthene	<10	<1.25	<2.08	<1.54	<1.74	<0.031
Benzo(a)fluorene	<10	<1.25	<2.08	<1.54	<1.74	<0.031
Benzo(b)fluorene	<10	<1.25	<2.08	<1.54	<1.74	<0.031
Benzo(g,h,i)Perylene	30.8	3.84	6.40	4.75	5.36	0.096
Benzo(a)Pyrene	<10	<1.25	<2.08	<1.54	<1.74	<0.031
Benzo(e)Pyrene	18.5	2.31	3.85	2.86	3.22	0.058
Biphenyl	816	102	170	126	142	2.54
2-Chloronaphthalene	<10	<1.25	<2.08	<1.54	<1.74	<0.031
Chrysene/Triphenylene	15.8	1.97	3.28	2.44	2.75	0.049
Coronene	<10	<1.25	<2.08	<1.54	<1.74	<0.031
Dibenzo(a,c/a,h)Anthracene	<10	<1.25	<2.08	<1.54	<1.74	<0.031
Dibenzo(a,e)pyrene	<10	<1.25	<2.08	<1.54	<1.74	<0.031
9,10-dimethylanthracene	<10	<1.25	<2.08	<1.54	<1.74	<0.031
7,12-Dimethylbenzo(a)anthracene	<10	<1.25	<2.08	<1.54	<1.74	<0.031
Fluoranthene	58.8	7.33	12.2	9.08	10.2	0.18
Fluorene	188	23.4	39.1	29.0	32.7	0.59
Indeno(1,2,3-cd)Pyrene	<10	<1.25	<2.08	<1.54	<1.74	<0.031
2-methylanthracene	37.4	4.66	7.77	5.77	6.51	0.12
3-Methylcholanthrene	<10	<1.25	<2.08	<1.54	<1.74	<0.031
1-Methylnaphthalene	278	34.7	57.8	42.9	48.4	0.87
2-Methylnaphthalene	545	68.0	113	84.1	94.9	1.70
1-Methylphenanthrene	<10	<1.25	<2.08	<1.54	<1.74	<0.031
9-Methylphenanthrene	44.8	5.59	9.31	6.91	7.80	0.14
Naphthalene	2860	357	594	441	498	8.92
Perylene	66.1	8.24	13.7	10.2	11.5	0.21
Phenanthrene	393	49.0	81.7	60.7	68.5	1.23
Picene	<10	<1.25	<2.08	<1.54	<1.74	<0.031
Pyrene	55.5	6.92	11.5	8.57	9.67	0.17
Tetralin	3640	454	757	562	634	11.3
m-terphenyl	12.7	1.58	2.64	1.96	2.21	0.040
o-Terphenyl	13.5	1.68	2.81	2.08	2.35	0.042
p-terphenyl	<10	<1.25	<2.08	<1.54	<1.74	<0.031
Total	<9724	<1213	<2021	<1501	<1694	<30.3

Dry Gas Volume Sampled (Rm³*) :	4.811
Actual Flowrate (m³/s) :	25.0
Dry Reference Flowrate (Rm³/s*) :	15.0
Dry Adjusted Flowrate (Rm³/s**) :	20.2
Wet Reference Flowrate (Rm³/s*) :	17.9

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 74
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 2

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	22.5	2.92	4.89	3.64	4.09	0.069
Acenaphthylene	<10	<1.30	<2.17	<1.62	<1.82	<0.031
Anthracene	24.6	3.19	5.35	3.98	4.47	0.076
Benzo(a)Anthracene	<10	<1.30	<2.17	<1.62	<1.82	<0.031
Benzo(b)Fluoranthene	<10	<1.30	<2.17	<1.62	<1.82	<0.031
Benzo(k)Fluoranthene	<10	<1.30	<2.17	<1.62	<1.82	<0.031
Benzo(a)fluorene	<10	<1.30	<2.17	<1.62	<1.82	<0.031
Benzo(b)fluorene	<10	<1.30	<2.17	<1.62	<1.82	<0.031
Benzo(g,h,i)Perylene	35.4	4.59	7.70	5.72	6.43	0.11
Benzo(a)Pyrene	<10	<1.30	<2.17	<1.62	<1.82	<0.031
Benzo(e)Pyrene	14.7	1.91	3.20	2.38	2.67	0.045
Biphenyl	352	45.7	76.5	56.9	63.9	1.09
2-Chloronaphthalene	<10	<1.30	<2.17	<1.62	<1.82	<0.031
Chrysene/Triphenylene	12.2	1.58	2.65	1.97	2.22	0.038
Coronene	<10	<1.30	<2.17	<1.62	<1.82	<0.031
Dibenzo(a,c/a,h)Anthracene	<10	<1.30	<2.17	<1.62	<1.82	<0.031
Dibenzo(a,e)pyrene	<10	<1.30	<2.17	<1.62	<1.82	<0.031
9,10-dimethylanthracene	<10	<1.30	<2.17	<1.62	<1.82	<0.031
7,12-Dimethylbenzo(a)anthracene	<10	<1.30	<2.17	<1.62	<1.82	<0.031
Fluoranthene	40.8	5.29	8.87	6.60	7.41	0.13
Fluorene	21.7	2.82	4.72	3.51	3.94	0.067
Indeno(1,2,3-cd)Pyrene	<10	<1.30	<2.17	<1.62	<1.82	<0.031
2-methylanthracene	14.6	1.89	3.17	2.36	2.65	0.045
3-Methylcholanthrene	<10	<1.30	<2.17	<1.62	<1.82	<0.031
1-Methylnaphthalene	29.8	3.87	6.48	4.82	5.41	0.092
2-Methylnaphthalene	48.2	6.25	10.5	7.79	8.75	0.15
1-Methylphenanthrene	45.7	5.93	9.94	7.39	8.30	0.14
9-Methylphenanthrene	16.9	2.19	3.67	2.73	3.07	0.052
Naphthalene	995	129	216	161	181	3.07
Perylene	107	13.9	23.3	17.3	19.4	0.33
Phenanthrene	125	16.2	27.2	20.2	22.7	0.39
Picene	<10	<1.30	<2.17	<1.62	<1.82	<0.031
Pyrene	40.2	5.22	8.74	6.50	7.30	0.12
Tetralin	4980	646	1083	805	904	15.4
m-terphenyl	16.6	2.15	3.61	2.68	3.01	0.051
o-Terphenyl	<10	<1.30	<2.17	<1.62	<1.82	<0.031
p-terphenyl	10.5	1.36	2.28	1.70	1.91	0.032
Total	<7123	<924	<1549	<1152	<1294	<22.0

Dry Gas Volume Sampled (Rm³*) :	4.599
Actual Flowrate (m³/s) :	23.8
Dry Reference Flowrate (Rm³/s*) :	14.2
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	17.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 75
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 3

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	51.1	6.55	11.0	8.13	9.21	0.16
Acenaphthylene	<10	<1.28	<2.15	<1.59	<1.80	<0.031
Anthracene	31.5	4.04	6.78	5.01	5.68	0.098
Benzo(a)Anthracene	<10	<1.28	<2.15	<1.59	<1.80	<0.031
Benzo(b)Fluoranthene	<10	<1.28	<2.15	<1.59	<1.80	<0.031
Benzo(k)Fluoranthene	<10	<1.28	<2.15	<1.59	<1.80	<0.031
Benzo(a)fluorene	<10	<1.28	<2.15	<1.59	<1.80	<0.031
Benzo(b)fluorene	<10	<1.28	<2.15	<1.59	<1.80	<0.031
Benzo(g,h,i)Perylene	164	21.0	35.3	26.1	29.6	0.51
Benzo(a)Pyrene	<10	<1.28	<2.15	<1.59	<1.80	<0.031
Benzo(e)Pyrene	44.3	5.68	9.54	7.04	7.99	0.14
Biphenyl	1820	233	392	289	328	5.64
2-Chloronaphthalene	<10	<1.28	<2.15	<1.59	<1.80	<0.031
Chrysene/Triphenylene	21.1	2.70	4.54	3.36	3.80	0.065
Coronene	137	17.6	29.5	21.8	24.7	0.42
Dibenzo(a,c/a,h)Anthracene	<10	<1.28	<2.15	<1.59	<1.80	<0.031
Dibenzo(a,e)pyrene	<10	<1.28	<2.15	<1.59	<1.80	<0.031
9,10-dimethylanthracene	<10	<1.28	<2.15	<1.59	<1.80	<0.031
7,12-Dimethylbenzo(a)anthracene	<10	<1.28	<2.15	<1.59	<1.80	<0.031
Fluoranthene	60.6	7.76	13.0	9.64	10.9	0.19
Fluorene	47.4	6.07	10.2	7.54	8.55	0.15
Indeno(1,2,3-cd)Pyrene	27.5	3.52	5.92	4.37	4.96	0.085
2-methylanthracene	19.1	2.45	4.11	3.04	3.44	0.059
3-Methylcholanthrene	<10	<1.28	<2.15	<1.59	<1.80	<0.031
1-Methylnaphthalene	65.5	8.39	14.1	10.4	11.8	0.20
2-Methylnaphthalene	103	13.2	22.2	16.4	18.6	0.32
1-Methylphenanthrene	20.6	2.64	4.44	3.28	3.71	0.064
9-Methylphenanthrene	19.6	2.51	4.22	3.12	3.53	0.061
Naphthalene	1310	168	282	208	236	4.06
Perylene	137	17.6	29.5	21.8	24.7	0.42
Phenanthrene	160	20.5	34.5	25.4	28.8	0.50
Picene	<10	<1.28	<2.15	<1.59	<1.80	<0.031
Pyrene	66.4	8.51	14.3	10.6	12.0	0.21
Tetralin	6030	773	1298	959	1087	18.7
m-terphenyl	36.3	4.65	7.82	5.77	6.54	0.11
o-Terphenyl	98.9	12.7	21.3	15.7	17.8	0.31
p-terphenyl	21.8	2.79	4.69	3.47	3.93	0.068
Total	<10633	<1362	<2290	<1691	<1917	<33.0

Dry Gas Volume Sampled (Rm³*) :	4.644
Actual Flowrate (m³/s) :	24.2
Dry Reference Flowrate (Rm³/s*) :	14.4
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	17.2

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 76
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Actual Concentrations

Compound	Actual Concentration Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
Acenaphthene	44.6	2.92	6.55	18.0	128
Acenaphthylene	8.95	<1.30	<1.28	<3.84	115
Anthracene	6.09	3.19	4.04	4.44	33.5
Benzo(a)Anthracene	<1.25	<1.30	<1.28	<1.28	2.0
Benzo(b)Fluoranthene	1.42	<1.30	<1.28	<1.33	5.8
Benzo(k)Fluoranthene	<1.25	<1.30	<1.28	<1.28	2.0
Benzo(a)fluorene	<1.25	<1.30	<1.28	<1.28	2.0
Benzo(b)fluorene	<1.25	<1.30	<1.28	<1.28	2.0
Benzo(g,h,i)Perylene	3.84	4.59	21.0	9.82	98.9
Benzo(a)Pyrene	<1.25	<1.30	<1.28	<1.28	2.0
Benzo(e)Pyrene	2.31	1.91	5.68	3.30	62.8
Biphenyl	102	45.7	233	127	75.9
2-Chloronaphthalene	<1.25	<1.30	<1.28	<1.28	2.0
Chrysene/Triphenylene	1.97	1.58	2.70	2.09	27.3
Coronene	<1.25	<1.30	17.6	<6.70	140
Dibenzo(a,c/a,h)Anthracene	<1.25	<1.30	<1.28	<1.28	2.0
Dibenzo(a,e)pyrene	<1.25	<1.30	<1.28	<1.28	2.0
9,10-dimethylanthracene	<1.25	<1.30	<1.28	<1.28	2.0
7,12-Dimethylbenzo(a)anthracene	<1.25	<1.30	<1.28	<1.28	2.0
Fluoranthene	7.33	5.29	7.76	6.80	19.4
Fluorene	23.4	2.82	6.07	10.8	103
Indeno(1,2,3-cd)Pyrene	<1.25	<1.30	3.52	<2.02	64.3
2-methylanthracene	4.66	1.89	2.45	3.00	48.8
3-Methylcholanthrene	<1.25	<1.30	<1.28	<1.28	2.0
1-Methylnaphthalene	34.7	3.87	8.39	15.6	106
2-Methylnaphthalene	68.0	6.25	13.2	29.1	116
1-Methylphenanthrene	<1.25	5.93	2.64	<3.27	73.5
9-Methylphenanthrene	5.59	2.19	2.51	3.43	54.6
Naphthalene	357	129	168	218	55.9
Perylene	8.24	13.9	17.6	13.2	35.5
Phenanthrene	49.0	16.2	20.5	28.6	62.4
Picene	<1.25	<1.30	<1.28	<1.28	2.0
Pyrene	6.92	5.22	8.51	6.88	23.9
Tetralin	454	646	773	624	25.7
m-terphenyl	1.58	2.15	4.65	2.80	58.3
o-Terphenyl	1.68	<1.30	12.7	<5.22	124
p-terphenyl	<1.25	1.36	2.79	<1.80	47.8
Total	<1213	<924	<1362	<1166	19.1

TABLE 77
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Reference Concentrations

Compound	Dry Reference Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	74.4	4.89	11.0	30.1	128
Acenaphthylene	14.9	<2.17	<2.15	<6.42	115
Anthracene	10.1	5.35	6.78	7.43	33.1
Benzo(a)Anthracene	<2.08	<2.17	<2.15	<2.14	2.4
Benzo(b)Fluoranthene	2.37	<2.17	<2.15	<2.23	5.3
Benzo(k)Fluoranthene	<2.08	<2.17	<2.15	<2.14	2.4
Benzo(a)fluorene	<2.08	<2.17	<2.15	<2.14	2.4
Benzo(b)fluorene	<2.08	<2.17	<2.15	<2.14	2.4
Benzo(g,h,i)Perylene	6.40	7.70	35.3	16.5	99.2
Benzo(a)Pyrene	<2.08	<2.17	<2.15	<2.14	2.4
Benzo(e)Pyrene	3.85	3.20	9.54	5.53	63.1
Biphenyl	170	76.5	392	213	76.2
2-Chloronaphthalene	<2.08	<2.17	<2.15	<2.14	2.4
Chrysene/Triphenylene	3.28	2.65	4.54	3.49	27.6
Coronene	<2.08	<2.17	29.5	<11.3	140
Dibenzo(a,c/a,h)Anthracene	<2.08	<2.17	<2.15	<2.14	2.4
Dibenzo(a,e)pyrene	<2.08	<2.17	<2.15	<2.14	2.4
9,10-dimethylanthracene	<2.08	<2.17	<2.15	<2.14	2.4
7,12-Dimethylbenzo(a)anthracene	<2.08	<2.17	<2.15	<2.14	2.4
Fluoranthene	12.2	8.87	13.0	11.4	19.4
Fluorene	39.1	4.72	10.2	18.0	103
Indeno(1,2,3-cd)Pyrene	<2.08	<2.17	5.92	<3.39	64.6
2-methylanthracene	7.77	3.17	4.11	5.02	48.4
3-Methylcholanthrene	<2.08	<2.17	<2.15	<2.14	2.4
1-Methylnaphthalene	57.8	6.48	14.1	26.1	106
2-Methylnaphthalene	113	10.5	22.2	48.6	116
1-Methylphenanthrene	<2.08	9.94	4.44	<5.48	73.5
9-Methylphenanthrene	9.31	3.67	4.22	5.74	54.2
Naphthalene	594	216	282	364	55.5
Perylene	13.7	23.3	29.5	22.2	35.8
Phenanthrene	81.7	27.2	34.5	47.8	61.9
Picene	<2.08	<2.17	<2.15	<2.14	2.4
Pyrene	11.5	8.74	14.3	11.5	24.1
Tetralin	757	1083	1298	1046	26.1
m-terphenyl	2.64	3.61	7.82	4.69	58.7
o-Terphenyl	2.81	<2.17	21.3	<8.76	124
p-terphenyl	<2.08	2.28	4.69	<3.02	48.2
Total	<2021	<1549	<2290	<1953	19.2

* At 25°C and 1 atmosphere

TABLE 78
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	55.3	3.64	8.13	22.3	128
Acenaphthylene	11.1	<1.62	<1.59	<4.76	115
Anthracene	7.53	3.98	5.01	5.51	33.2
Benzo(a)Anthracene	<1.54	<1.62	<1.59	<1.58	2.3
Benzo(b)Fluoranthene	1.76	<1.62	<1.59	<1.66	5.5
Benzo(k)Fluoranthene	<1.54	<1.62	<1.59	<1.58	2.3
Benzo(a)fluorene	<1.54	<1.62	<1.59	<1.58	2.3
Benzo(b)fluorene	<1.54	<1.62	<1.59	<1.58	2.3
Benzo(g,h,i)Perylene	4.75	5.72	26.1	12.2	98.8
Benzo(a)Pyrene	<1.54	<1.62	<1.59	<1.58	2.3
Benzo(e)Pyrene	2.86	2.38	7.04	4.09	62.8
Biphenyl	126	56.9	289	157	75.9
2-Chloronaphthalene	<1.54	<1.62	<1.59	<1.58	2.3
Chrysene/Triphenylene	2.44	1.97	3.36	2.59	27.2
Coronene	<1.54	<1.62	21.8	<8.31	140
Dibenzo(a,c/a,h)Anthracene	<1.54	<1.62	<1.59	<1.58	2.3
Dibenzo(a,e)pyrene	<1.54	<1.62	<1.59	<1.58	2.3
9,10-dimethylanthracene	<1.54	<1.62	<1.59	<1.58	2.3
7,12-Dimethylbenzo(a)anthracene	<1.54	<1.62	<1.59	<1.58	2.3
Fluoranthene	9.08	6.60	9.64	8.44	19.2
Fluorene	29.0	3.51	7.54	13.4	103
Indeno(1,2,3-cd)Pyrene	<1.54	<1.62	4.37	<2.51	64.2
2-methylanthracene	5.77	2.36	3.04	3.72	48.5
3-Methylcholanthrene	<1.54	<1.62	<1.59	<1.58	2.3
1-Methylnaphthalene	42.9	4.82	10.4	19.4	106
2-Methylnaphthalene	84.1	7.79	16.4	36.1	116
1-Methylphenanthrene	<1.54	7.39	3.28	<4.07	73.8
9-Methylphenanthrene	6.91	2.73	3.12	4.25	54.3
Naphthalene	441	161	208	270	55.6
Perylene	10.2	17.3	21.8	16.4	35.5
Phenanthrene	60.7	20.2	25.4	35.4	62.1
Picene	<1.54	<1.62	<1.59	<1.58	2.3
Pyrene	8.57	6.50	10.6	8.54	23.8
Tetralin	562	805	959	775	25.8
m-terphenyl	1.96	2.68	5.77	3.47	58.3
o-Terphenyl	2.08	<1.62	15.7	<6.48	124
p-terphenyl	<1.54	1.70	3.47	<2.24	47.8
Total	<1501	<1152	<1691	<1448	18.9

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 79
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Wet Reference Concentrations

Compound	Wet Reference Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	62.4	4.09	9.21	25.2	128
Acenaphthylene	12.5	<1.82	<1.80	<5.38	115
Anthracene	8.50	4.47	5.68	6.22	33.3
Benzo(a)Anthracene	<1.74	<1.82	<1.80	<1.79	2.2
Benzo(b)Fluoranthene	1.99	<1.82	<1.80	<1.87	5.5
Benzo(k)Fluoranthene	<1.74	<1.82	<1.80	<1.79	2.2
Benzo(a)fluorene	<1.74	<1.82	<1.80	<1.79	2.2
Benzo(b)fluorene	<1.74	<1.82	<1.80	<1.79	2.2
Benzo(g,h,i)Perylene	5.36	6.43	29.6	13.8	99.2
Benzo(a)Pyrene	<1.74	<1.82	<1.80	<1.79	2.2
Benzo(e)Pyrene	3.22	2.67	7.99	4.63	63.2
Biphenyl	142	63.9	328	178	76.2
2-Chloronaphthalene	<1.74	<1.82	<1.80	<1.79	2.2
Chrysene/Triphenylene	2.75	2.22	3.80	2.92	27.6
Coronene	<1.74	<1.82	24.7	<9.42	140
Dibenzo(a,c/a,h)Anthracene	<1.74	<1.82	<1.80	<1.79	2.2
Dibenzo(a,e)pyrene	<1.74	<1.82	<1.80	<1.79	2.2
9,10-dimethylanthracene	<1.74	<1.82	<1.80	<1.79	2.2
7,12-Dimethylbenzo(a)anthracene	<1.74	<1.82	<1.80	<1.79	2.2
Fluoranthene	10.2	7.41	10.9	9.53	19.6
Fluorene	32.7	3.94	8.55	15.1	103
Indeno(1,2,3-cd)Pyrene	<1.74	<1.82	4.96	<2.84	64.7
2-methylanthracene	6.51	2.65	3.44	4.20	48.5
3-Methylcholanthrene	<1.74	<1.82	<1.80	<1.79	2.2
1-Methylnaphthalene	48.4	5.41	11.8	21.9	106
2-Methylnaphthalene	94.9	8.75	18.6	40.8	116
1-Methylphenanthrene	<1.74	8.30	3.71	<4.59	73.4
9-Methylphenanthrene	7.80	3.07	3.53	4.80	54.3
Naphthalene	498	181	236	305	55.6
Perylene	11.5	19.4	24.7	18.5	35.8
Phenanthrene	68.5	22.7	28.8	40.0	62.1
Picene	<1.74	<1.82	<1.80	<1.79	2.2
Pyrene	9.67	7.30	12.0	9.65	24.2
Tetralin	634	904	1087	875	26.0
m-terphenyl	2.21	3.01	6.54	3.92	58.7
o-Terphenyl	2.35	<1.82	17.8	<7.33	124
p-terphenyl	<1.74	1.91	3.93	<2.53	48.2
Total	<1694	<1294	<1917	<1635	19.3

* At 25°C and 1 atmosphere

TABLE 80
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Rates

Compound	Emission Rate				Coefficient
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	of Variation %
Acenaphthene	1.12	0.069	0.16	0.45	130
Acenaphthylene	0.22	<0.031	<0.031	<0.095	117
Anthracene	0.15	0.076	0.098	0.11	36.1
Benzo(a)Anthracene	<0.031	<0.031	<0.031	<0.031	0.5
Benzo(b)Fluoranthene	0.036	<0.031	<0.031	<0.032	8.2
Benzo(k)Fluoranthene	<0.031	<0.031	<0.031	<0.031	0.5
Benzo(a)fluorene	<0.031	<0.031	<0.031	<0.031	0.5
Benzo(b)fluorene	<0.031	<0.031	<0.031	<0.031	0.5
Benzo(g,h,i)Perylene	0.096	0.11	0.51	0.24	98.5
Benzo(a)Pyrene	<0.031	<0.031	<0.031	<0.031	0.5
Benzo(e)Pyrene	0.058	0.045	0.14	0.080	62.3
Biphenyl	2.54	1.09	5.64	3.09	75.3
2-Chloronaphthalene	<0.031	<0.031	<0.031	<0.031	0.5
Chrysene/Triphenylene	0.049	0.038	0.065	0.051	27.5
Coronene	<0.031	<0.031	0.42	<0.16	140
Dibenzo(a,c/a,h)Anthracene	<0.031	<0.031	<0.031	<0.031	0.5
Dibenzo(a,e)pyrene	<0.031	<0.031	<0.031	<0.031	0.5
9,10-dimethylanthracene	<0.031	<0.031	<0.031	<0.031	0.5
7,12-Dimethylbenzo(a)anthracene	<0.031	<0.031	<0.031	<0.031	0.5
Fluoranthene	0.18	0.13	0.19	0.17	20.8
Fluorene	0.59	0.067	0.15	0.27	105
Indeno(1,2,3-cd)Pyrene	<0.031	<0.031	0.085	<0.049	63.8
2-methylanthracene	0.12	0.045	0.059	0.074	51.4
3-Methylcholanthrene	<0.031	<0.031	<0.031	<0.031	0.5
1-Methylnaphthalene	0.87	0.092	0.20	0.39	108
2-Methylnaphthalene	1.70	0.15	0.32	0.72	118
1-Methylphenanthrene	<0.031	0.14	0.064	<0.079	71.7
9-Methylphenanthrene	0.14	0.052	0.061	0.084	57.3
Naphthalene	8.92	3.07	4.06	5.35	58.5
Perylene	0.21	0.33	0.42	0.32	34.2
Phenanthrene	1.23	0.39	0.50	0.70	64.9
Picene	<0.031	<0.031	<0.031	<0.031	0.5
Pyrene	0.17	0.12	0.21	0.17	24.5
Tetralin	11.3	15.4	18.7	15.1	24.3
m-terphenyl	0.040	0.051	0.11	0.068	57.8
o-Terphenyl	0.042	<0.031	0.31	<0.13	123
p-terphenyl	<0.031	0.032	0.068	<0.044	47.3
Total	<30.3	<22.0	<33.0	<28.4	20.1

TABLE 81
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Polycyclic Aromatic Hydrocarbon Emission Data

Compound	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	18.0	30.1	22.3	25.2	0.45
Acenaphthylene	<3.84	<6.42	<4.76	<5.38	<0.095
Anthracene	4.44	7.43	5.51	6.22	0.11
Benzo(a)Anthracene	<1.28	<2.14	<1.58	<1.79	<0.031
Benzo(b)Fluoranthene	<1.33	<2.23	<1.66	<1.87	<0.032
Benzo(k)Fluoranthene	<1.28	<2.14	<1.58	<1.79	<0.031
Benzo(a)fluorene	<1.28	<2.14	<1.58	<1.79	<0.031
Benzo(b)fluorene	<1.28	<2.14	<1.58	<1.79	<0.031
Benzo(g,h,i)Perylene	9.82	16.5	12.2	13.8	0.24
Benzo(a)Pyrene	<1.28	<2.14	<1.58	<1.79	<0.031
Benzo(e)Pyrene	3.30	5.53	4.09	4.63	0.080
Biphenyl	127	213	157	178	3.09
2-Chloronaphthalene	<1.28	<2.14	<1.58	<1.79	<0.031
Chrysene/Triphenylene	2.09	3.49	2.59	2.92	0.051
Coronene	<6.70	<11.3	<8.31	<9.42	<0.16
Dibenzo(a,c/a,h)Anthracene	<1.28	<2.14	<1.58	<1.79	<0.031
Dibenzo(a,e)pyrene	<1.28	<2.14	<1.58	<1.79	<0.031
9,10-dimethylanthracene	<1.28	<2.14	<1.58	<1.79	<0.031
7,12-Dimethylbenzo(a)anthracene	<1.28	<2.14	<1.58	<1.79	<0.031
Fluoranthene	6.80	11.4	8.44	9.53	0.17
Fluorene	10.8	18.0	13.4	15.1	0.27
Indeno(1,2,3-cd)Pyrene	<2.02	<3.39	<2.51	<2.84	<0.049
2-methylanthracene	3.00	5.02	3.72	4.20	0.074
3-Methylcholanthrene	<1.28	<2.14	<1.58	<1.79	<0.031
1-Methylnaphthalene	15.6	26.1	19.4	21.9	0.39
2-Methylnaphthalene	29.1	48.6	36.1	40.8	0.72
1-Methylphenanthrene	<3.27	<5.48	<4.07	<4.59	<0.079
9-Methylphenanthrene	3.43	5.74	4.25	4.80	0.084
Naphthalene	218	364	270	305	5.35
Perylene	13.2	22.2	16.4	18.5	0.32
Phenanthrene	28.6	47.8	35.4	40.0	0.70
Picene	<1.28	<2.14	<1.58	<1.79	<0.031
Pyrene	6.88	11.5	8.54	9.65	0.17
Tetralin	624	1046	775	875	15.1
m-terphenyl	2.80	4.69	3.47	3.92	0.068
o-Terphenyl	<5.22	<8.76	<6.48	<7.33	<0.13
p-terphenyl	<1.80	<3.02	<2.24	<2.53	<0.044
Total	<1166	<1953	<1448	<1635	<28.4

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 82
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Polycyclic Aromatic Hydrocarbon Analyses

Compound	Blank Train ng	Laboratory Blank ng
Acenaphthene	<10	<10
Acenaphthylene	<10	<10
Anthracene	18.2	<10
Benzo(a)Anthracene	<10	<10
Benzo(b)Fluoranthene	<10	<10
Benzo(k)Fluoranthene	<10	<10
Benzo(a)fluorene	<10	<10
Benzo(b)fluorene	<10	<10
Benzo(g,h,i)Perylene	41.2	<10
Benzo(a)Pyrene	<10	<10
Benzo(e)Pyrene	<10	<10
Biphenyl	27.6	<10
2-Chloronaphthalene	<10	<10
Chrysene/Triphenylene	<10	<10
Coronene	<10	<10
Dibenzo(a,c/a,h)Anthracene	<10	<10
Dibenzo(a,e)pyrene	<10	<10
9,10-dimethylanthracene	<100	<10
7,12-Dimethylbenzo(a)anthracene	<10	<10
Fluoranthene	18.0	<10
Fluorene	<10	<10
Indeno(1,2,3-cd)Pyrene	<10	<10
2-methylanthracene	<10	<10
3-Methylcholanthrene	<10	<10
1-Methylnaphthalene	13.3	<10
2-Methylnaphthalene	17.0	<10
1-Methylphenanthrene	<10	<10
9-Methylphenanthrene	<10	<10
Naphthalene	1050	13.7
Perylene	119	<10
Phenanthrene	19.3	<10
Picene	<10	<10
Pyrene	44.7	<10
Tetralin	6080	<10
m-terphenyl	<10	<10
o-Terphenyl	<10	<10
p-terphenyl	<10	<10
Total	<7798	<374

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

TABLE 83
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Acetaldehyde, Formaldehyde and Acrolein Emission Data

Acetaldehyde

Test	Acetaldehyde Collected			Dry Volume	Acetaldehyde Concentration				Acetaldehyde
	Probe & Imp. 1	Imp. 2 & 3	Total	Sampled	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission Rate
No.	µg	µg	µg	Rm³*	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
1	7.9	8.7	16.6	0.0330	302	503	374	422	7.55
2	12	8.9	20.9	0.0320	390	654	486	546	9.28
3	15	5.7	20.7	0.0356	346	581	429	487	8.37
Average					346	579	430	485	8.40
Blank	6.5	7.7	14.2						

Formaldehyde

Test	Formaldehyde Collected			Dry Volume	Formaldehyde Concentration				Formaldehyde
	Probe & Imp. 1	Imp. 2 & 3	Total	Sampled	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission Rate
No.	µg	µg	µg	Rm³*	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
1	7.2	8.2	15.4	0.0330	280	467	347	391	7.00
2	14	6.6	20.6	0.0320	384	644	479	538	9.15
3	20	3.9	23.9	0.0356	399	671	496	562	9.66
Average					355	594	440	497	8.60
Blank	6.0	13	19.0						

Acrolein

Test	Acrolein Collected			Dry Volume	Acrolein Concentration				Acrolein
	Probe & Imp. 1	Imp. 2 & 3	Total	Sampled	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission Rate
No.	µg	µg	µg	Rm³*	µg/m³	µg/Rm³*	µg/Rm³**	µg/Rm³*	mg/s
1	<1.8	<1.6	<3.4	0.0330	<61.8	<103	<76.5	<86.4	<1.55
2	<2.0	<1.6	<3.6	0.0320	<67.2	<113	<83.7	<94.0	<1.60
3	<2.0	<1.5	<3.5	0.0356	<58.5	<98.3	<72.6	<82.3	<1.42
Average					<62.5	<105	<77.6	<87.6	<1.52
Blank	<1.6	<1.6	<3.2						

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

* At 25 °C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 84
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Analyses
Test No. 1

Compound	Cartridge Amount Collected				Coefficient of Variation	Total Collected
	Run No. 1 Tube 1A/1B	Run No. 2 Tube 2A/2B	Run No. 3 Tube 3A/3B	Average		
	µg	µg	µg	µg	%	µg
Acetone	0.49	<1	<1	<0.83	35.4	<2.49
Benzene	0.098	<0.5	<0.5	<0.37	63.3	<1.10
Bromodichloromethane	<0.01	<0.1	<0.1	<0.070	74.2	<0.21
Bromoform	<0.01	<0.1	<0.1	<0.070	74.2	<0.21
Bromomethane	0.25	<0.9	<0.9	<0.68	55.2	<2.05
1,3-Butadiene	<0.02	<0.2	<0.2	<0.14	74.2	<0.42
2-Butanone	0.57	<0.1	<0.1	<0.26	106	<0.77
Carbon Tetrachloride	<0.01	<0.1	<0.1	<0.070	74.2	<0.21
Chlorobenzene	0.014	<0.1	<0.1	<0.071	69.6	<0.21
Chloroform	0.018	<0.1	<0.1	<0.073	64.7	<0.22
Cumene (Isopropylbenzene)	0.022	<0.2	<0.2	<0.14	72.9	<0.42
Dibromochloromethane	<0.01	<0.1	<0.1	<0.070	74.2	<0.21
Dichlorodifluoromethane	<0.02	<0.2	<0.2	<0.14	74.2	<0.42
1,2-Dichloroethane	<0.01	<0.1	<0.1	<0.070	74.2	<0.21
trans,1,2-Dichloroethene	<0.01	<0.1	<0.1	<0.070	74.2	<0.21
1,1-Dichloroethene	<0.01	<0.1	<0.1	<0.070	74.2	<0.21
1,2-Dichloropropane	<0.01	<0.1	<0.1	<0.070	74.2	<0.21
Ethylbenzene	0.84	<0.1	<0.1	<0.35	123	<1.04
Ethylene Dibromide	<0.02	<0.2	<0.2	<0.14	74.2	<0.42
Mesitylene (1,3,5-Trimethylbenzene)	0.078	<0.2	<0.2	<0.16	44.2	<0.48
Methylene Chloride	1.40	1.13	<1	<1.18	17.5	<3.54
Styrene	0.20	<0.2	<0.2	<0.20	0.2	<0.60
Tetrachloroethene	<0.01	<0.1	<0.1	<0.070	74.2	<0.21
Toluene	3.32	1.76	<0.5	<1.86	76.0	<5.57
1,1,1-Trichloroethane	<0.01	<0.1	<0.1	<0.070	74.2	<0.21
Trichloroethene	<0.01	<0.1	<0.1	<0.070	74.2	<0.21
1,1,2-Trichloroethane	<0.02	<0.2	<0.2	<0.14	74.2	<0.42
Trichlorotrifluoroethane	<0.02	<0.2	<0.2	<0.14	74.2	<0.42
Trichlorofluoromethane	<0.02	<0.2	<0.2	<0.14	74.2	<0.42
M&P-Xylene	2.38	<0.3	<0.3	<0.99	121	<2.98
O-Xylene	0.89	<0.1	<0.1	<0.36	125	<1.09
Vinyl Chloride	<0.02	<0.2	<0.2	<0.14	74.2	<0.42
Total	<10.8	<9.19	<7.80	<9.27	16.3	<27.8

Dry Gas Volume Sampled (Rm^3*) :

Run No. 1	0.0228
Run No. 2	0.0218
Run No. 3	0.0209

* At 25°C and 1 atmosphere.

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit). For the purpose of determining average and total analytical results for each compound, any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

TABLE 85
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Analyses
Test No. 2

Compound	Cartridge Amount Collected				Coefficient	Total
	Run No. 1 Tube 5A/5B	Run No. 2 Tube 30A/30B	Run No. 3 Tube 7A/7B	Average	of Variation	Collected
	μg	μg	μg	μg	%	μg
Acetone	<1	<5	<5	<3.67	63.0	<11.0
Benzene	<0.5	<2.5	<2.5	<1.83	63.0	<5.50
Bromodichloromethane	<0.1	<0.5	<0.5	<0.37	63.0	<1.10
Bromoform	<0.1	<0.5	<0.5	<0.37	63.0	<1.10
Bromomethane	<0.9	<4.5	<4.5	<3.30	63.0	<9.90
1,3-Butadiene	<0.2	<0.02	<0.02	<0.080	130	<0.24
2-Butanone	<0.1	<0.5	<0.5	<0.37	63.0	<1.10
Carbon Tetrachloride	<0.1	<0.5	<0.5	<0.37	63.0	<1.10
Chlorobenzene	<0.1	<0.5	<0.5	<0.37	63.0	<1.10
Chloroform	<0.1	<0.5	<0.5	<0.37	63.0	<1.10
Cumene (Isopropylbenzene)	<0.2	<1	<1	<0.73	63.0	<2.20
Dibromochloromethane	<0.1	<0.5	<0.5	<0.37	63.0	<1.10
Dichlorodifluoromethane	<0.2	<1	<1	<0.73	63.0	<2.20
1,2-Dichloroethane	<0.1	<0.5	<0.5	<0.37	63.0	<1.10
trans,1,2-Dichloroethene	<0.1	<0.5	<0.5	<0.37	63.0	<1.10
1,1-Dichloroethene	<0.1	<0.5	<0.5	<0.37	63.0	<1.10
1,2-Dichloropropane	<0.1	<0.5	<0.5	<0.37	63.0	<1.10
Ethylbenzene	<0.1	<0.5	<0.5	<0.37	63.0	<1.10
Ethylene Dibromide	<0.2	<1	<1	<0.73	63.0	<2.20
Mesitylene (1,3,5-Trimethylbenzene)	<0.2	<1	<1	<0.73	63.0	<2.20
Methylene Chloride	<1	<5	<5	<3.67	63.0	<11.0
Styrene	<0.2	<1	<1	<0.73	63.0	<2.20
Tetrachloroethene	<0.1	<0.5	<0.5	<0.37	63.0	<1.10
Toluene	12.9	1.50	3.35	5.92	103	17.8
1,1,1-Trichloroethane	<0.1	<0.5	<0.5	<0.37	63.0	<1.10
Trichloroethene	<0.1	<0.5	<0.5	<0.37	63.0	<1.10
1,1,2-Trichloroethane	<0.2	<1	<1	<0.73	63.0	<2.20
Trichlorotrifluoroethane	<0.2	<1	<1	<0.73	63.0	<2.20
Trichlorofluoromethane	<0.2	<1	<1	<0.73	63.0	<2.20
M&P-Xylene	<0.3	<1.5	<1.5	<1.10	63.0	<3.30
O-Xylene	<0.1	<0.5	<0.5	<0.37	63.0	<1.10
Vinyl Chloride	<0.2	<1	<1	<0.73	63.0	<2.20
Total	<20.2	<37.0	<38.9	<32.0	32.1	<96.1

Dry Gas Volume Sampled (Rm^3*) :

Run No. 1	0.0222
Run No. 2	0.0221
Run No. 3	0.0211

* At 25°C and 1 atmosphere.

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit). For the purpose of determining average and total analytical results for each compound, any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

TABLE 86
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Analyses
Test No. 3

Compound	Cartridge Amount Collected Run No. 1 Tube 9A/9B	Run No. 2 Tube 10A/10B	Run No. 3 Tube 11A/11B	Average	Coefficient of Variation	Total Collected
	µg	µg	µg	µg	%	µg
Acetone	<1	<1	<1	<1.00	-	<3.00
Benzene	<0.5	<0.5	<0.5	<0.50	-	<1.50
Bromodichloromethane	<0.1	<0.1	<0.1	<0.10	-	<0.30
Bromoform	<0.1	<0.1	<0.1	<0.10	-	<0.30
Bromomethane	<0.9	<0.9	<0.9	<0.90	-	<2.70
1,3-Butadiene	<0.02	<0.02	<0.20	<0.080	130	<0.24
2-Butanone	<0.1	<0.1	<0.1	<0.10	-	<0.30
Carbon Tetrachloride	<0.1	<0.1	<0.1	<0.10	-	<0.30
Chlorobenzene	<0.1	<0.1	<0.1	<0.10	-	<0.30
Chloroform	<0.1	<0.1	<0.1	<0.10	-	<0.30
Cumene (Isopropylbenzene)	<0.2	<0.2	<0.2	<0.20	-	<0.60
Dibromochloromethane	<0.1	<0.1	<0.1	<0.10	-	<0.30
Dichlorodifluoromethane	<0.2	<0.2	<0.2	<0.20	-	<0.60
1,2-Dichloroethane	<0.1	<0.1	<0.1	<0.10	-	<0.30
trans,1,2-Dichloroethene	<0.1	<0.1	<0.1	<0.10	-	<0.30
1,1-Dichloroethene	<0.1	<0.1	<0.1	<0.10	-	<0.30
1,2-Dichloropropane	<0.1	<0.1	<0.1	<0.10	-	<0.30
Ethylbenzene	<0.1	<0.1	<0.1	<0.10	-	<0.30
Ethylene Dibromide	<0.2	<0.2	<0.2	<0.20	-	<0.60
Mesitylene (1,3,5-Trimethylbenzene)	<0.2	<0.2	<0.2	<0.20	-	<0.60
Methylene Chloride	<1	<1	<1	<1.00	-	<3.00
Styrene	<0.2	<0.2	<0.2	<0.20	-	<0.60
Tetrachloroethene	<0.1	<0.1	<0.1	<0.10	-	<0.30
Toluene	2.69	3.74	4.00	3.47	19.9	10.4
1,1,1-Trichloroethane	<0.1	<0.1	<0.1	<0.10	-	<0.30
Trichloroethene	<0.1	<0.1	<0.1	<0.10	-	<0.30
1,1,2-Trichloroethane	<0.2	<0.2	<0.2	<0.20	-	<0.60
Trichlorotrifluoroethane	<0.2	<0.2	<0.2	<0.20	-	<0.60
Trichlorofluoromethane	<0.2	<0.2	<0.2	<0.20	-	<0.60
M&P-Xylene	<0.3	<0.3	<0.3	<0.30	-	<0.90
O-Xylene	<0.1	<0.1	<0.1	<0.10	-	<0.30
Vinyl Chloride	<0.2	<0.2	<0.2	<0.20	-	<0.60
Total	<9.8	<10.9	<11.3	<10.7	7.2	<32.0

Dry Gas Volume Sampled (Rm^3*) :

Run No. 1	0.0221
Run No. 2	0.0218
Run No. 3	0.0211

* At 25°C and 1 atmosphere.

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit). For the purpose of determining average and total analytical results for each compound, any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

TABLE 87
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Emission Data
Test No. 1

Compound	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Acetone	<2.49	<22.8	<38.0	<28.3	<31.9	<0.57
Benzene	<1.10	<10.1	<16.8	<12.5	<14.1	<0.25
Bromodichloromethane	<0.21	<1.92	<3.21	<2.38	<2.69	<0.048
Bromoform	<0.21	<1.92	<3.21	<2.38	<2.69	<0.048
Bromomethane	<2.05	<18.8	<31.3	<23.2	<26.2	<0.47
1,3-Butadiene	<0.42	<3.85	<6.41	<4.76	<5.38	<0.096
2-Butanone	<0.77	<7.04	<11.7	<8.71	<9.83	<0.18
Carbon Tetrachloride	<0.21	<1.92	<3.21	<2.38	<2.69	<0.048
Chlorobenzene	<0.21	<1.96	<3.27	<2.43	<2.74	<0.049
Chloroform	<0.22	<2.00	<3.34	<2.48	<2.80	<0.050
Cumene (Isopropylbenzene)	<0.42	<3.87	<6.45	<4.79	<5.41	<0.097
Dibromochloromethane	<0.21	<1.92	<3.21	<2.38	<2.69	<0.048
Dichlorodifluoromethane	<0.42	<3.85	<6.41	<4.76	<5.38	<0.096
1,2-Dichloroethane	<0.21	<1.92	<3.21	<2.38	<2.69	<0.048
trans,1,2-Dichloroethene	<0.21	<1.92	<3.21	<2.38	<2.69	<0.048
1,1-Dichloroethene	<0.21	<1.92	<3.21	<2.38	<2.69	<0.048
1,2-Dichloropropane	<0.21	<1.92	<3.21	<2.38	<2.69	<0.048
Ethylbenzene	<1.04	<9.56	<15.9	<11.8	<13.4	<0.24
Ethylene Dibromide	<0.42	<3.85	<6.41	<4.76	<5.38	<0.096
Mesitylene (1,3,5-Trimethylbenzene)	<0.48	<4.38	<7.30	<5.42	<6.12	<0.11
Methylene Chloride	<3.54	<32.4	<54.0	<40.1	<45.3	<0.81
Styrene	<0.60	<5.50	<9.17	<6.81	<7.69	<0.14
Tetrachloroethene	<0.21	<1.92	<3.21	<2.38	<2.69	<0.048
Toluene	<5.57	<51.1	<85.1	<63.2	<71.3	<1.28
1,1,1-Trichloroethane	<0.21	<1.92	<3.21	<2.38	<2.69	<0.048
Trichloroethene	<0.21	<1.92	<3.21	<2.38	<2.69	<0.048
1,1,2-Trichloroethane	<0.42	<3.85	<6.41	<4.76	<5.38	<0.096
Trichlorotrifluoroethane	<0.42	<3.85	<6.41	<4.76	<5.38	<0.096
Trichlorofluoromethane	<0.42	<3.85	<6.41	<4.76	<5.38	<0.096
M&P-Xylene	<2.98	<27.3	<45.5	<33.8	<38.1	<0.68
O-Xylene	<1.09	<9.94	<16.6	<12.3	<13.9	<0.25
Vinyl Chloride	<0.42	<3.85	<6.41	<4.76	<5.38	<0.096
Total	<27.8	<255	<425	<315	<356	<6.37

Dry Gas Volume Sampled (Rm³*) :	0.0655
Actual Flowrate (m³/s) :	25.0
Dry Reference Flowrate (Rm³/s*) :	15.0
Dry Adjusted Flowrate (Rm³/s**) :	20.2
Wet Reference Flowrate (Rm³/s*) :	17.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 88
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Emission Data
Test No. 2

Compound	Total Collected µg	Actual Concentration µg/m^3	Dry Reference Concentration µg/Rm^3*	Dry Adjusted Concentration µg/Rm^3**	Wet Reference Concentration µg/Rm^3*	Emission Rate mg/s
Acetone	<11.0	<100	<168	<125	<140	<2.39
Benzene	<5.50	<50.1	<84.1	<62.5	<70.2	<1.19
Bromodichloromethane	<1.10	<10.0	<16.8	<12.5	<14.0	<0.24
Bromoform	<1.10	<10.0	<16.8	<12.5	<14.0	<0.24
Bromomethane	<9.90	<90.3	<151	<112	<126	<2.15
1,3-Butadiene	<0.24	<2.19	<3.67	<2.73	<3.06	<0.052
2-Butanone	<1.10	<10.0	<16.8	<12.5	<14.0	<0.24
Carbon Tetrachloride	<1.10	<10.0	<16.8	<12.5	<14.0	<0.24
Chlorobenzene	<1.10	<10.0	<16.8	<12.5	<14.0	<0.24
Chloroform	<1.10	<10.0	<16.8	<12.5	<14.0	<0.24
Cumene (Isopropylbenzene)	<2.20	<20.1	<33.6	<25.0	<28.1	<0.48
Dibromochloromethane	<1.10	<10.0	<16.8	<12.5	<14.0	<0.24
Dichlorodifluoromethane	<2.20	<20.1	<33.6	<25.0	<28.1	<0.48
1,2-Dichloroethane	<1.10	<10.0	<16.8	<12.5	<14.0	<0.24
trans,1,2-Dichloroethene	<1.10	<10.0	<16.8	<12.5	<14.0	<0.24
1,1-Dichloroethene	<1.10	<10.0	<16.8	<12.5	<14.0	<0.24
1,2-Dichloropropane	<1.10	<10.0	<16.8	<12.5	<14.0	<0.24
Ethylbenzene	<1.10	<10.0	<16.8	<12.5	<14.0	<0.24
Ethylene Dibromide	<2.20	<20.1	<33.6	<25.0	<28.1	<0.48
Mesitylene (1,3,5-Trimethylbenzene)	<2.20	<20.1	<33.6	<25.0	<28.1	<0.48
Methylene Chloride	<11.0	<100	<168	<125	<140	<2.39
Styrene	<2.20	<20.1	<33.6	<25.0	<28.1	<0.48
Tetrachloroethene	<1.10	<10.0	<16.8	<12.5	<14.0	<0.24
Toluene	17.8	162	271	202	227	3.85
1,1,1-Trichloroethane	<1.10	<10.0	<16.8	<12.5	<14.0	<0.24
Trichloroethene	<1.10	<10.0	<16.8	<12.5	<14.0	<0.24
1,1,2-Trichloroethane	<2.20	<20.1	<33.6	<25.0	<28.1	<0.48
Trichlorotrifluoroethane	<2.20	<20.1	<33.6	<25.0	<28.1	<0.48
Trichlorofluoromethane	<2.20	<20.1	<33.6	<25.0	<28.1	<0.48
M&P-Xylene	<3.30	<30.1	<50.4	<37.5	<42.1	<0.72
O-Xylene	<1.10	<10.0	<16.8	<12.5	<14.0	<0.24
Vinyl Chloride	<2.20	<20.1	<33.6	<25.0	<28.1	<0.48
Total	<96.1	<876	<1469	<1092	<1227	<20.9

Dry Gas Volume Sampled (Rm^3*) :	0.0654
Actual Flowrate (m^3/s) :	23.8
Dry Reference Flowrate (Rm^3/s*) :	14.2
Dry Adjusted Flowrate (Rm^3/s**) :	19.1
Wet Reference Flowrate (Rm^3/s*) :	17.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 89
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Emission Data
Test No. 3

Compound	Total Collected µg	Actual Concentration µg/m^3	Dry Reference Concentration µg/Rm^3*	Dry Adjusted Concentration µg/Rm^3**	Wet Reference Concentration µg/Rm^3*	Emission Rate mg/s
Acetone	<3.00	<27.5	<46.2	<34.1	<38.7	<0.67
Benzene	<1.50	<13.7	<23.1	<17.1	<19.3	<0.33
Bromodichloromethane	<0.30	<2.75	<4.62	<3.41	<3.87	<0.067
Bromoform	<0.30	<2.75	<4.62	<3.41	<3.87	<0.067
Bromomethane	<2.70	<24.7	<41.6	<30.7	<34.8	<0.60
1,3-Butadiene	<0.24	<2.20	<3.69	<2.73	<3.09	<0.053
2-Butanone	<0.30	<2.75	<4.62	<3.41	<3.87	<0.067
Carbon Tetrachloride	<0.30	<2.75	<4.62	<3.41	<3.87	<0.067
Chlorobenzene	<0.30	<2.75	<4.62	<3.41	<3.87	<0.067
Chloroform	<0.30	<2.75	<4.62	<3.41	<3.87	<0.067
Cumene (Isopropylbenzene)	<0.60	<5.50	<9.24	<6.82	<7.73	<0.13
Dibromochloromethane	<0.30	<2.75	<4.62	<3.41	<3.87	<0.067
Dichlorodifluoromethane	<0.60	<5.50	<9.24	<6.82	<7.73	<0.13
1,2-Dichloroethane	<0.30	<2.75	<4.62	<3.41	<3.87	<0.067
trans,1,2-Dichloroethene	<0.30	<2.75	<4.62	<3.41	<3.87	<0.067
1,1-Dichloroethene	<0.30	<2.75	<4.62	<3.41	<3.87	<0.067
1,2-Dichloropropane	<0.30	<2.75	<4.62	<3.41	<3.87	<0.067
Ethylbenzene	<0.30	<2.75	<4.62	<3.41	<3.87	<0.067
Ethylene Dibromide	<0.60	<5.50	<9.24	<6.82	<7.73	<0.13
Mesitylene (1,3,5-Trimethylbenzene)	<0.60	<5.50	<9.24	<6.82	<7.73	<0.13
Methylene Chloride	<3.00	<27.5	<46.2	<34.1	<38.7	<0.67
Styrene	<0.60	<5.50	<9.24	<6.82	<7.73	<0.13
Tetrachloroethene	<0.30	<2.75	<4.62	<3.41	<3.87	<0.067
Toluene	10.4	95.5	160	118	134	2.31
1,1,1-Trichloroethane	<0.30	<2.75	<4.62	<3.41	<3.87	<0.067
Trichloroethene	<0.30	<2.75	<4.62	<3.41	<3.87	<0.067
1,1,2-Trichloroethane	<0.60	<5.50	<9.24	<6.82	<7.73	<0.13
Trichlorotrifluoroethane	<0.60	<5.50	<9.24	<6.82	<7.73	<0.13
Trichlorofluoromethane	<0.60	<5.50	<9.24	<6.82	<7.73	<0.13
M&P-Xylene	<0.90	<8.24	<13.9	<10.2	<11.6	<0.20
O-Xylene	<0.30	<2.75	<4.62	<3.41	<3.87	<0.067
Vinyl Chloride	<0.60	<5.50	<9.24	<6.82	<7.73	<0.13
Total	<32.0	<293	<492	<363	<412	<7.08

Dry Gas Volume Sampled (Rm^3*) :	0.0650
Actual Flowrate (m^3/s) :	24.2
Dry Reference Flowrate (Rm^3/s*) :	14.4
Dry Adjusted Flowrate (Rm^3/s**) :	19.5
Wet Reference Flowrate (Rm^3/s*) :	17.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 90
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Actual Concentrations

Compound	Actual Concentration			
	Test No. 1	Test No. 2	Test No. 3	Average
	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$
Acetone	<22.8	<100	<27.5	<50.2
Benzene	<10.1	<50.1	<13.7	<24.7
Bromodichloromethane	<1.92	<10.0	<2.75	<4.90
Bromoform	<1.92	<10.0	<2.75	<4.90
Bromomethane	<18.8	<90.3	<24.7	<44.6
1,3-Butadiene	<3.85	<2.19	<2.20	<2.75
2-Butanone	<7.04	<10.0	<2.75	<6.61
Carbon Tetrachloride	<1.92	<10.0	<2.75	<4.90
Chlorobenzene	<1.96	<10.0	<2.75	<4.91
Chloroform	<2.00	<10.0	<2.75	<4.93
Cumene (Isopropylbenzene)	<3.87	<20.1	<5.50	<9.81
Dibromochloromethane	<1.92	<10.0	<2.75	<4.90
Dichlorodifluoromethane	<3.85	<20.1	<5.50	<9.80
1,2-Dichloroethane	<1.92	<10.0	<2.75	<4.90
trans,1,2-Dichloroethene	<1.92	<10.0	<2.75	<4.90
1,1-Dichloroethene	<1.92	<10.0	<2.75	<4.90
1,2-Dichloropropane	<1.92	<10.0	<2.75	<4.90
Ethylbenzene	<9.56	<10.0	<2.75	<7.45
Ethylene Dibromide	<3.85	<20.1	<5.50	<9.80
Mesitylene (1,3,5-Trimethylbenzene)	<4.38	<20.1	<5.50	<9.98
Methylene Chloride	<32.4	<100	<27.5	<53.4
Styrene	<5.50	<20.1	<5.50	<10.4
Tetrachloroethene	<1.92	<10.0	<2.75	<4.90
Toluene	<51.1	162	95.5	<103
1,1,1-Trichloroethane	<1.92	<10.0	<2.75	<4.90
Trichloroethene	<1.92	<10.0	<2.75	<4.90
1,1,2-Trichloroethane	<3.85	<20.1	<5.50	<9.80
Trichlorotrifluoroethane	<3.85	<20.1	<5.50	<9.80
Trichlorofluoromethane	<3.85	<20.1	<5.50	<9.80
M&P-Xylene	<27.3	<30.1	<8.24	<21.9
O-Xylene	<9.94	<10.0	<2.75	<7.57
Vinyl Chloride	<3.85	<20.1	<5.50	<9.80
Total	<255	<876	<293	<475

TABLE 91
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Dry Reference Concentrations

Compound	Dry Reference Concentration			
	Test No. 1	Test No. 2	Test No. 3	Average
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*
Acetone	<38.0	<168	<46.2	<84.1
Benzene	<16.8	<84.1	<23.1	<41.3
Bromodichloromethane	<3.21	<16.8	<4.62	<8.21
Bromoform	<3.21	<16.8	<4.62	<8.21
Bromomethane	<31.3	<151	<41.6	<74.7
1,3-Butadiene	<6.41	<3.67	<3.69	<4.59
2-Butanone	<11.7	<16.8	<4.62	<11.1
Carbon Tetrachloride	<3.21	<16.8	<4.62	<8.21
Chlorobenzene	<3.27	<16.8	<4.62	<8.23
Chloroform	<3.34	<16.8	<4.62	<8.25
Cumene (Isopropylbenzene)	<6.45	<33.6	<9.24	<16.4
Dibromochloromethane	<3.21	<16.8	<4.62	<8.21
Dichlorodifluoromethane	<6.41	<33.6	<9.24	<16.4
1,2-Dichloroethane	<3.21	<16.8	<4.62	<8.21
trans,1,2-Dichloroethene	<3.21	<16.8	<4.62	<8.21
1,1-Dichloroethene	<3.21	<16.8	<4.62	<8.21
1,2-Dichloropropane	<3.21	<16.8	<4.62	<8.21
Ethylbenzene	<15.9	<16.8	<4.62	<12.5
Ethylene Dibromide	<6.41	<33.6	<9.24	<16.4
Mesitylene (1,3,5-Trimethylbenzene)	<7.30	<33.6	<9.24	<16.7
Methylene Chloride	<54.0	<168	<46.2	<89.4
Styrene	<9.17	<33.6	<9.24	<17.3
Tetrachloroethene	<3.21	<16.8	<4.62	<8.21
Toluene	<85.1	271	160	<172
1,1,1-Trichloroethane	<3.21	<16.8	<4.62	<8.21
Trichloroethene	<3.21	<16.8	<4.62	<8.21
1,1,2-Trichloroethane	<6.41	<33.6	<9.24	<16.4
Trichlorotrifluoroethane	<6.41	<33.6	<9.24	<16.4
Trichlorofluoromethane	<6.41	<33.6	<9.24	<16.4
M&P-Xylene	<45.5	<50.4	<13.9	<36.6
O-Xylene	<16.6	<16.8	<4.62	<12.7
Vinyl Chloride	<6.41	<33.6	<9.24	<16.4
Total	<425	<1469	<492	<795

* At 25°C and 1 atmosphere

TABLE 92
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration Test No. 1 µg/Rm^3*	Test No. 2 µg/Rm^3*	Test No. 3 µg/Rm^3*	Average µg/Rm^3*
Acetone	<28.3	<125	<34.1	<62.4
Benzene	<12.5	<62.5	<17.1	<30.7
Bromodichloromethane	<2.38	<12.5	<3.41	<6.10
Bromoform	<2.38	<12.5	<3.41	<6.10
Bromomethane	<23.2	<112	<30.7	<55.5
1,3-Butadiene	<4.76	<2.73	<2.73	<3.41
2-Butanone	<8.71	<12.5	<3.41	<8.21
Carbon Tetrachloride	<2.38	<12.5	<3.41	<6.10
Chlorobenzene	<2.43	<12.5	<3.41	<6.11
Chloroform	<2.48	<12.5	<3.41	<6.13
Cumene (Isopropylbenzene)	<4.79	<25.0	<6.82	<12.2
Dibromochloromethane	<2.38	<12.5	<3.41	<6.10
Dichlorodifluoromethane	<4.76	<25.0	<6.82	<12.2
1,2-Dichloroethane	<2.38	<12.5	<3.41	<6.10
trans,1,2-Dichloroethene	<2.38	<12.5	<3.41	<6.10
1,1-Dichloroethene	<2.38	<12.5	<3.41	<6.10
1,2-Dichloropropane	<2.38	<12.5	<3.41	<6.10
Ethylbenzene	<11.8	<12.5	<3.41	<9.25
Ethylene Dibromide	<4.76	<25.0	<6.82	<12.2
Mesitylene (1,3,5-Trimethylbenzene)	<5.42	<25.0	<6.82	<12.4
Methylene Chloride	<40.1	<125	<34.1	<66.4
Styrene	<6.81	<25.0	<6.82	<12.9
Tetrachloroethene	<2.38	<12.5	<3.41	<6.10
Toluene	<63.2	202	118	<128
1,1,1-Trichloroethane	<2.38	<12.5	<3.41	<6.10
Trichloroethene	<2.38	<12.5	<3.41	<6.10
1,1,2-Trichloroethane	<4.76	<25.0	<6.82	<12.2
Trichlorotrifluoroethane	<4.76	<25.0	<6.82	<12.2
Trichlorofluoromethane	<4.76	<25.0	<6.82	<12.2
M&P-Xylene	<33.8	<37.5	<10.2	<27.2
O-Xylene	<12.3	<12.5	<3.41	<9.41
Vinyl Chloride	<4.76	<25.0	<6.82	<12.2
Total	<315	<1092	<363	<590

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 93
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Wet Reference Concentrations

Compound	Wet Reference Concentration			
	Test No. 1	Test No. 2	Test No. 3	Average
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*
Acetone	<31.9	<140	<38.7	<70.3
Benzene	<14.1	<70.2	<19.3	<34.5
Bromodichloromethane	<2.69	<14.0	<3.87	<6.87
Bromoform	<2.69	<14.0	<3.87	<6.87
Bromomethane	<26.2	<126	<34.8	<62.5
1,3-Butadiene	<5.38	<3.06	<3.09	<3.84
2-Butanone	<9.83	<14.0	<3.87	<9.25
Carbon Tetrachloride	<2.69	<14.0	<3.87	<6.87
Chlorobenzene	<2.74	<14.0	<3.87	<6.88
Chloroform	<2.80	<14.0	<3.87	<6.90
Cumene (Isopropylbenzene)	<5.41	<28.1	<7.73	<13.7
Dibromochloromethane	<2.69	<14.0	<3.87	<6.87
Dichlorodifluoromethane	<5.38	<28.1	<7.73	<13.7
1,2-Dichloroethane	<2.69	<14.0	<3.87	<6.87
trans,1,2-Dichloroethene	<2.69	<14.0	<3.87	<6.87
1,1-Dichloroethene	<2.69	<14.0	<3.87	<6.87
1,2-Dichloropropane	<2.69	<14.0	<3.87	<6.87
Ethylbenzene	<13.4	<14.0	<3.87	<10.4
Ethylene Dibromide	<5.38	<28.1	<7.73	<13.7
Mesitylene (1,3,5-Trimethylbenzene)	<6.12	<28.1	<7.73	<14.0
Methylene Chloride	<45.3	<140	<38.7	<74.8
Styrene	<7.69	<28.1	<7.73	<14.5
Tetrachloroethene	<2.69	<14.0	<3.87	<6.87
Toluene	<71.3	227	134	<144
1,1,1-Trichloroethane	<2.69	<14.0	<3.87	<6.87
Trichloroethene	<2.69	<14.0	<3.87	<6.87
1,1,2-Trichloroethane	<5.38	<28.1	<7.73	<13.7
Trichlorotrifluoroethane	<5.38	<28.1	<7.73	<13.7
Trichlorofluoromethane	<5.38	<28.1	<7.73	<13.7
M&P-Xylene	<38.1	<42.1	<11.6	<30.6
O-Xylene	<13.9	<14.0	<3.87	<10.6
Vinyl Chloride	<5.38	<28.1	<7.73	<13.7
Total	<356	<1227	<412	<665

* At 25°C and 1 atmosphere

TABLE 94
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Emission Rates

Compound	Emission Rate			
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s
Acetone	<0.57	<2.39	<0.67	<1.21
Benzene	<0.25	<1.19	<0.33	<0.59
Bromodichloromethane	<0.048	<0.24	<0.067	<0.12
Bromoform	<0.048	<0.24	<0.067	<0.12
Bromomethane	<0.47	<2.15	<0.60	<1.07
1,3-Butadiene	<0.096	<0.052	<0.053	<0.067
2-Butanone	<0.18	<0.24	<0.067	<0.16
Carbon Tetrachloride	<0.048	<0.24	<0.067	<0.12
Chlorobenzene	<0.049	<0.24	<0.067	<0.12
Chloroform	<0.050	<0.24	<0.067	<0.12
Cumene (Isopropylbenzene)	<0.097	<0.48	<0.13	<0.24
Dibromochloromethane	<0.048	<0.24	<0.067	<0.12
Dichlorodifluoromethane	<0.096	<0.48	<0.13	<0.24
1,2-Dichloroethane	<0.048	<0.24	<0.067	<0.12
trans,1,2-Dichloroethene	<0.048	<0.24	<0.067	<0.12
1,1-Dichloroethene	<0.048	<0.24	<0.067	<0.12
1,2-Dichloropropane	<0.048	<0.24	<0.067	<0.12
Ethylbenzene	<0.24	<0.24	<0.067	<0.18
Ethylene Dibromide	<0.096	<0.48	<0.13	<0.24
Mesitylene (1,3,5-Trimethylbenzene)	<0.11	<0.48	<0.13	<0.24
Methylene Chloride	<0.81	<2.39	<0.67	<1.29
Styrene	<0.14	<0.48	<0.13	<0.25
Tetrachloroethene	<0.048	<0.24	<0.067	<0.12
Toluene	<1.28	3.85	2.31	<2.48
1,1,1-Trichloroethane	<0.048	<0.24	<0.067	<0.12
Trichloroethene	<0.048	<0.24	<0.067	<0.12
1,1,2-Trichloroethane	<0.096	<0.48	<0.13	<0.24
Trichlorotrifluoroethane	<0.096	<0.48	<0.13	<0.24
Trichlorofluoromethane	<0.096	<0.48	<0.13	<0.24
M&P-Xylene	<0.68	<0.72	<0.20	<0.53
O-Xylene	<0.25	<0.24	<0.067	<0.18
Vinyl Chloride	<0.096	<0.48	<0.13	<0.24
Total	<6.37	<20.9	<7.08	<11.4

TABLE 95
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Volatile Organic Emission Data

Compound	Actual Concentration $\mu g/m^3$	Dry Reference Concentration $\mu g/Rm^3$*	Dry Adjusted Concentration $\mu g/Rm^3$*	Wet Reference Concentration $\mu g/Rm^3$*	Emission Rate mg/s
Acetone	<50.2	<84.1	<62.4	<70.3	<1.21
Benzene	<24.7	<41.3	<30.7	<34.5	<0.59
Bromodichloromethane	<4.90	<8.21	<6.10	<6.87	<0.12
Bromoform	<4.90	<8.21	<6.10	<6.87	<0.12
Bromomethane	<44.6	<74.7	<55.5	<62.5	<1.07
1,3-Butadiene	<2.75	<4.59	<3.41	<3.84	<0.067
2-Butanone	<6.61	<11.1	<8.21	<9.25	<0.16
Carbon Tetrachloride	<4.90	<8.21	<6.10	<6.87	<0.12
Chlorobenzene	<4.91	<8.23	<6.11	<6.88	<0.12
Chloroform	<4.93	<8.25	<6.13	<6.90	<0.12
Cumene (Isopropylbenzene)	<9.81	<16.4	<12.2	<13.7	<0.24
Dibromochloromethane	<4.90	<8.21	<6.10	<6.87	<0.12
Dichlorodifluoromethane	<9.80	<16.4	<12.2	<13.7	<0.24
1,2-Dichloroethane	<4.90	<8.21	<6.10	<6.87	<0.12
trans,1,2-Dichloroethene	<4.90	<8.21	<6.10	<6.87	<0.12
1,1-Dichloroethene	<4.90	<8.21	<6.10	<6.87	<0.12
1,2-Dichloropropane	<4.90	<8.21	<6.10	<6.87	<0.12
Ethylbenzene	<7.45	<12.5	<9.25	<10.4	<0.18
Ethylene Dibromide	<9.80	<16.4	<12.2	<13.7	<0.24
Mesitylene (1,3,5-Trimethylbenzene)	<9.98	<16.7	<12.4	<14.0	<0.24
Methylene Chloride	<53.4	<89.4	<66.4	<74.8	<1.29
Styrene	<10.4	<17.3	<12.9	<14.5	<0.25
Tetrachloroethene	<4.90	<8.21	<6.10	<6.87	<0.12
Toluene	<103	<172	<128	<144	<2.48
1,1,1-Trichloroethane	<4.90	<8.21	<6.10	<6.87	<0.12
Trichloroethene	<4.90	<8.21	<6.10	<6.87	<0.12
1,1,2-Trichloroethane	<9.80	<16.4	<12.2	<13.7	<0.24
Trichlorotrifluoroethane	<9.80	<16.4	<12.2	<13.7	<0.24
Trichlorofluoromethane	<9.80	<16.4	<12.2	<13.7	<0.24
M&P-Xylene	<21.9	<36.6	<27.2	<30.6	<0.53
O-Xylene	<7.57	<12.7	<9.41	<10.6	<0.18
Vinyl Chloride	<9.80	<16.4	<12.2	<13.7	<0.24
Total	<475	<795	<590	<665	<11.4

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 96
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Volatile Organic Analyses

Compound	Field Blank Tube 16A/16B µg	Field Blank Tube 21A/21B µg	Field Blank Tube 25A/25B µg	Trip Blank Tube 28A/28B µg	Method Blank µg
Acetone	<0.1	<0.1	<0.1	<0.1	<0.1
Benzene	<0.05	<0.05	<0.05	<0.05	<0.05
Bromodichloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Bromoform	<0.01	<0.01	<0.01	<0.01	<0.01
Bromomethane	<0.09	<0.09	<0.09	<0.09	<0.09
1,3-Butadiene	<0.02	<0.02	<0.02	<0.02	<0.02
2-Butanone	<0.01	0.013	<0.01	<0.01	<0.01
Carbon Tetrachloride	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorobenzene	<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	<0.01	<0.01	<0.01	<0.01	<0.01
Cumene (Isopropylbenzene)	<0.02	<0.02	<0.02	<0.02	<0.02
Dibromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlorodifluoromethane	<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichloroethane	<0.01	<0.01	<0.01	<0.01	<0.01
trans,1,2-Dichloroethene	<0.01	<0.01	<0.01	<0.01	<0.01
1,1-Dichloroethene	<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloropropane	<0.01	<0.01	<0.01	<0.01	<0.01
Ethylbenzene	<0.01	<0.01	<0.01	<0.01	<0.01
Ethylene Dibromide	<0.02	<0.02	<0.02	<0.02	<0.02
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.02	<0.02	<0.02	<0.02
Methylene Chloride	<0.1	<0.1	<0.1	<0.1	<0.1
Styrene	<0.02	<0.02	<0.02	<0.02	<0.02
Tetrachloroethene	<0.01	<0.01	<0.01	<0.01	<0.01
Toluene	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	<0.01	<0.01	<0.01	<0.01	<0.01
Trichloroethene	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2-Trichloroethane	<0.02	<0.02	<0.02	<0.02	<0.02
Trichlorotrifluoroethane	<0.02	<0.02	<0.02	<0.02	<0.02
Trichlorofluoromethane	<0.02	<0.02	<0.02	<0.02	<0.02
M&P-Xylene	<0.03	<0.03	<0.03	<0.03	<0.03
O-Xylene	<0.01	<0.01	<0.01	<0.01	<0.01
Vinyl Chloride	<0.02	<0.02	<0.02	<0.02	<0.02
Total	<0.78	<0.78	<0.78	<0.78	<0.78

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit).
For the purpose of determining the total analytical results for each compound, any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

APPENDIX 2

Boiler No. 2 BH Outlet
Data Tables
September 29 to October 2, 2015 Testing
(98 pages)

TABLE 1
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Isokinetic Sampling Train Test Schedules

Particulate and Acid Gases Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	September 30, 2015	8:13	14:34	180
2	September 30, 2015	16:02	19:14	180
3	October 1, 2015	7:42	11:01	180

Paticle Size Distribution Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	September 30, 2015	8:12	14:33	180
2	September 30, 2015	16:01	19:09	180
3	October 1, 2015	7:55	11:00	180

Metals Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	September 29, 2015	9:15	12:32	120
2	September 29, 2015	13:41	15:53	120
3	September 29, 2015	16:49	19:02	120

Hexavalent Chromium Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	September 29, 2015	9:50	12:33	120
2	September 29, 2015	13:40	15:52	120
3	September 29, 2015	16:47	19:04	120

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	October 1, 2015	12:14	16:31	240
2	October 2, 2015	7:42	11:57	240
3	October 2, 2015	12:26	16:40	240

* Actual sampling time excluding leak-checks, traverse changes and process down time.

TABLE 2
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Compounds Test Schedules

Acrolein and Aldehydes Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	October 1, 2015	16:39	17:39	60
2	October 2, 2015	7:49	8:49	60
3	October 2, 2015	14:33	15:33	60

Volatile Organic Compounds Trains

Test Number	Tube Pair	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	1	October 1, 2015	13:13	13:33	20
	2	October 1, 2015	13:43	14:03	20
	3	October 1, 2015	14:14	14:34	20
	4	October 1, 2015	14:41	15:01	20
2	1	October 2, 2015	9:17	9:37	20
	2	October 2, 2015	9:50	10:10	20
	3	October 2, 2015	10:17	10:37	20
	4	October 2, 2015	10:43	11:03	20
3	1	October 2, 2015	12:29	12:49	20
	2	October 2, 2015	12:57	13:17	20
	3	October 2, 2015	13:24	13:44	20
	4	October 2, 2015	13:51	14:11	20

TABLE 3
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Stack Gas Sampling Parameters

Particulate and Acid Gases Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.845	1.004	6.50	3.995	100.7
2	0.845	1.004	6.50	3.949	101.1
3	0.845	1.004	6.50	3.769	102.2

Paticle Size Distribution Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.844	0.985	6.12	3.427	95.2
2	0.844	0.985	6.12	3.452	97.7
3	0.844	0.985	6.12	3.695	113.0

Metals Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.847	0.985	6.46	2.454	101.7
2	0.847	0.985	6.46	2.406	99.7
3	0.847	0.985	6.46	2.435	100.4

Hexavalent Chromium Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.846	1.004	6.50	2.459	101.4
2	0.846	1.004	6.50	2.477	100.5
3	0.846	1.004	6.50	2.559	100.6

Semi-Volatile Organic Compounds Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.845	1.004	6.50	4.661	102.2
2	0.845	1.004	6.46	4.685	102.9
3	0.845	1.004	6.46	4.538	102.7

* Dry at 25°C and 1 atmosphere

TABLE 4
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Stack Gas Physical Parameters

Particulate and Acid Gases Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	136	15.9	18.7	-2.79	98.1	10.9	8.38
2	134	16.3	18.3	-2.79	98.4	11.0	8.28
3	133	16.4	17.3	-2.79	98.5	11.9	7.62
Average	134	16.2	18.1	-2.79	98.4	11.2	8.09

Paticle Size Distribution Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	134	16.1	19.1	-2.79	98.1	10.9	8.38
2	137	16.3	18.8	-2.79	98.4	11.0	8.28
3	133	16.9	17.3	-2.79	99.0	11.9	7.62
Average	135	16.4	18.4	-2.79	98.5	11.2	8.09

Metals Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	135	16.6	17.4	-2.61	97.8	11.0	8.18
2	136	15.7	17.2	-2.61	97.7	10.8	8.25
3	136	15.9	17.4	-2.61	97.8	10.8	8.41
Average	136	16.1	17.3	-2.61	97.8	10.9	8.28

Hexavalent Chromium Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	134	16.6	17.2	-2.61	97.8	11.0	8.18
2	136	15.7	17.4	-2.61	97.7	10.8	8.25
3	136	15.9	18.0	-2.61	97.8	10.8	8.41
Average	135	16.1	17.5	-2.61	97.8	10.9	8.28

Semi-Volatile Organics Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	131	17.0	16.0	-2.79	98.9	12.4	7.16
2	131	16.7	16.0	-2.49	99.6	12.0	7.36
3	133	16.8	15.6	-2.52	99.6	12.0	7.28
Average	132	16.8	15.9	-2.60	99.4	12.2	7.27

* Dry basis, measured by the DYEC CEMS

TABLE 5
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Stack Gas Volumetric Flowrates

Particulate and Acid Gases Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	27.6	16.4	20.7	19.5
2	27.1	16.1	20.5	19.3
3	25.5	15.2	20.4	18.2
Average	26.7	15.9	20.6	19.0

Paticle Size Distribution Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	28.2	16.7	21.2	20.0
2	27.8	16.4	21.0	19.6
3	25.5	15.2	20.4	18.3
Average	27.2	16.1	20.9	19.3

Metals Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	25.7	15.1	19.4	18.1
2	25.4	15.1	19.3	17.9
3	25.7	15.2	19.1	18.0
Average	25.6	15.1	19.3	18.0

Hexavalent Chromium Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	25.4	15.0	19.3	18.0
2	25.7	15.2	19.5	18.1
3	26.6	15.7	19.8	18.7
Average	25.9	15.3	19.5	18.2

Semi-Volatile Organics Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	23.6	14.1	19.6	17.0
2	23.6	14.3	19.5	17.1
3	23.1	13.8	19.0	16.6
Average	23.4	14.1	19.4	16.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 6
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Particulate Emission Data

Test No.	Particulate Collected Probe Rinse mg	Main Filter mg	Total mg	Dry Gas Volume Sampled Rm^3*	Particulate Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Particulate Emission Rate mg/s
1	2.2	<0.1	<2.3	3.995	<0.34	<0.58	<0.46	<0.48	<9.42
2	1.3	<0.1	<1.4	3.949	<0.21	<0.36	<0.28	<0.30	<5.71
3	2.3	0.2	2.5	3.769	0.40	0.66	0.49	0.55	10.1
Average					<0.32	<0.53	<0.41	<0.45	<8.41
Coefficient of Variation, %					30.1	29.9	28.1	29.9	28.1

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 7
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Particle Size Distribution Results

Test No. 1

Plate No.	Weight Percent < Cut Off Diameter	Effective Cut Off Diameter µm
1	87.8	14.17
2	75.5	8.83
3	55.1	5.91
4	46.9	4.11
5	38.8	2.59
6	30.6	1.33
7	10.2	0.81
8	0	0.55
PM_{10}	**78.2**	**10**
$PM_{2.5}$	**38.2**	**2.5**

Test No. 2

Plate No.	Weight Percent < Cut Off Diameter	Effective Cut Off Diameter µm
1	90.3	14.15
2	77.8	8.81
3	68.1	5.90
4	56.9	4.10
5	37.5	2.58
6	23.6	1.33
7	9.7	0.80
8	0	0.54
PM_{10}	**80.6**	**10**
$PM_{2.5}$	**36.6**	**2.5**

Test No. 3

Plate No.	Weight Percent < Cut Off Diameter	Effective Cut Off Diameter µm
1	84.1	13.62
2	84.1	8.49
3	65.9	5.68
4	47.7	3.95
5	29.5	2.49
6	22.7	1.28
7	6.8	0.77
8	0	0.52
PM_{10}	**84.1**	**10**
$PM_{2.5}$	**29.6**	**2.5**

Average

Plate No.	Weight Percent < Cut Off Diameter	Effective Cut Off Diameter µm
1	87.4	13.98
2	79.1	8.71
3	63.0	5.83
4	50.5	4.05
5	35.3	2.55
6	25.6	1.31
7	8.90	0.79
8	0	0.54
PM_{10}	**81.0**	**10**
$PM_{2.5}$	**34.8**	**2.5**

TABLE 8
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
PM_{10} and $PM_{2.5}$ Emission Data

Actual Concentration

Test Number	Total Suspended Particulate mg/m^3	PM_{10} mg/m^3	$PM_{2.5}$ mg/m^3
1	<0.34	<0.27	<0.13
2	<0.21	<0.17	<0.077
3	0.40	0.33	0.12
Average	<0.32	<0.26	<0.11

Dry Reference Concentration

Test Number	Total Suspended Particulate mg/m^{3*}	PM_{10} mg/m^{3*}	$PM_{2.5}$ mg/m^{3*}
1	<0.58	<0.45	<0.22
2	<0.36	<0.29	<0.13
3	0.66	0.56	0.20
Average	<0.53	<0.43	<0.18

Dry Adjusted Concentration

Test Number	Total Suspended Particulate mg/m^{3**}	PM_{10} mg/m^{3**}	$PM_{2.5}$ mg/m^{3**}
1	<0.46	<0.36	<0.17
2	<0.28	<0.22	<0.10
3	0.49	0.42	0.15
Average	<0.41	<0.33	<0.14

Wet Reference Concentration

Test Number	Total Suspended Particulate mg/m^{3*}	PM_{10} mg/m^{3*}	$PM_{2.5}$ mg/m^{3*}
1	<0.48	<0.38	<0.18
2	<0.30	<0.24	<0.11
3	0.55	0.47	0.16
Average	<0.45	<0.36	<0.15

Emission Rate

Test Number	Total Suspended Particulate mg/s	PM_{10} mg/s	$PM_{2.5}$ mg/s
1	<9.42	<7.37	<3.60
2	<5.71	<4.60	<2.09
3	10.10	8.49	2.99
Average	<8.41	<6.82	<2.89

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

* At 25 °C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 9
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Condensable Particulate Emission Data

Inorganic Condensable Particulate

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	Inorganic Condensable Particulate Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	NQ	3.427	-	-	-	-	-
2	NQ	3.452	-	-	-	-	-
3	NQ	3.695	-	-	-	-	-
Average			-	-	-	-	-
Blank	NQ						

Organic Condensable Particulate

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	Organic Condensable Particulate Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	3.0	3.427	0.52	0.88	0.69	0.74	14.4
2	2.1	3.452	0.36	0.61	0.48	0.51	9.79
3	2.4	3.695	0.39	0.65	0.48	0.54	9.87
Average			0.42	0.71	0.55	0.60	11.3
Blank	1.3						

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

NQ Not Quantifiable due to an error at the analytical laboratory

TABLE 10
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Halides and Ammonia Emission Data

Hydrogen Chloride

Test No.	HCl Collected mg	Dry Volume Sampled Rm^3*	Actual mg/m^3	Hydrogen Chloride Concentration Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HCl Emission Rate mg/s
1	21.3	3.995	3.17	5.33	4.22	4.48	87.4
2	24.4	3.949	3.67	6.18	4.85	5.15	99.5
3	34.7	3.769	5.49	9.21	6.86	7.69	140
Average			4.11	6.91	5.31	5.78	109
Blank	<0.197						

Hydrogen Fluoride

Test No.	HF Collected mg	Dry Volume Sampled Rm^3*	Actual mg/m^3	Hydrogen Fluoride Concentration Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HF Emission Rate mg/s
1	<0.279	3.995	<0.041	<0.070	<0.055	<0.059	<1.15
2	<0.282	3.949	<0.042	<0.071	<0.056	<0.060	<1.15
3	<0.270	3.769	<0.043	<0.072	<0.053	<0.060	<1.09
Average			<0.042	<0.071	<0.055	<0.059	<1.13
Blank	<0.112						

Ammonia

Test No.	Ammonia Collected mg	Dry Volume Sampled Rm^3*	Actual mg/m^3	Ammonia Concentration Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Ammonia Emission Rate mg/s
1	5.16	3.995	0.77	1.29	1.02	1.09	21.2
2	5.37	3.949	0.81	1.36	1.07	1.13	21.9
3	3.09	3.769	0.49	0.82	0.61	0.68	12.5
Average			0.69	1.16	0.90	0.97	18.5
Blank	<0.283						

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

* At 25 °C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 11
Covanta - Durham York Energy Centre
Boiler No. 2
Combustion Gas Analyses

Data measured by the DYEC CEMS from September 29 to October 2, 2015

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (%, 1 hr Avg)	6.58	7.82	8.65
BH Outlet	Carbon Dioxide (kg/Rm^3, 1 hr Avg) *	0.19	0.21	0.24
BH Outlet	Carbon Monoxide (mg/Rm^3, 1 hr Avg) *	7.4	14.6	64.3
BH Outlet	Carbon Monoxide (mg/Rm^3, 4 hr Avg) *	9.7	14.6	27.0
BH Outlet	Sulphur Dioxide (mg/Rm^3, 1 hr Avg) *	0.0	0.7	14.1
BH Outlet	Sulphur Dioxide (mg/Rm^3, 24 hr Avg) *	0.1	0.7	1.8
BH Outlet	Nitrogen Oxides (mg/Rm^3, 1 hr Avg) *	83.7	109	154
BH Outlet	Nitrogen Oxides (mg/Rm^3, 24 hr Avg) *	102	108	115
BH Outlet	Hydrogen Chloride (mg/Rm^3, 1 hr Avg) *	0	2.9	17.1
BH Outlet	Hydrogen Chloride (mg/Rm^3, 24 hr Avg) *	2.0	3.0	4.1
Scrubber Inlet	Oxygen (%, 1 hr Avg)	6.34	7.39	19.74
Scrubber Inlet	Total Hydrocarbons (mg/Rm^3, 1 hr Avg) *	0	2.3	23.6

Data measured by the ORTECH CEMS on September 23, 2015

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
Scrubber Inlet	1	Total Hydrocarbons (ppm dry) **	3.3	4.6	6.0
Scrubber Inlet	2	Total Hydrocarbons (ppm dry) **	2.8	4.6	5.9
Scrubber Inlet	3	Total Hydrocarbons (ppm dry) **	1.9	2.9	4.5
Scrubber Inlet	4	Total Hydrocarbons (ppm dry) **	1.1	2.2	3.1
Scrubber Inlet	5	Total Hydrocarbons (ppm dry) **	2.8	9.9	27.7
Scrubber Inlet	6	Total Hydrocarbons (ppm dry) **	3.7	5.1	6.1
Average		Total Hydrocarbons (ppm dry) **		4.9	

* Reference conditions, dry basis adjusted to 11% oxygen
** Half hour tests reported on a dry basis as equivalent methane

TABLE 12
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Analyses Test No. 1

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	0.85	<0.1	0.85
Arsenic	<1	<0.2	<0.20
Barium	<5	0.75	0.75
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.44	0.14	0.58
Chromium	5.55	0.84	6.39
Cobalt	<0.2	<0.1	<0.20
Copper	2.09	5.03	7.12
Lead	1.43	0.62	2.05
Manganese	2.18	12.1	14.3
Mercury *	0.026	2.83	2.85
Molybdenum	45.8	0.24	46.0
Nickel	17.4	0.87	18.3
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	19.1	4.58	23.7
Total			125

* Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit, "<MDL"). Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 13
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Analyses Test No. 2

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	<5	0.75	0.75
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.20	0.082	0.28
Chromium	5.52	1.18	6.70
Cobalt	<0.2	<0.1	<0.20
Copper	1.47	5.63	7.10
Lead	0.52	0.81	1.33
Manganese	1.80	4.27	6.07
Mercury *	<0.015	1.87	1.87
Molybdenum	46.9	0.30	47.2
Nickel	17.9	0.88	18.8
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	0.19	0.19
Zinc	9.04	7.61	16.7
Total			109

* Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit, "<MDL"). Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 14
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Analyses Test No. 3

Metal	Probe & Filter Hydrofluoric Acid Digest	Impingers & Rinses	Total Collected
	µg	µg	µg
Antimony	0.33	<0.1	0.33
Arsenic	<1	0.25	0.25
Barium	<5	1.34	1.34
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.41	0.14	0.56
Chromium	44.5	1.83	46.3
Cobalt	0.30	<0.1	0.30
Copper	3.08	11.9	15.0
Lead	0.82	0.58	1.40
Manganese	4.64	9.03	13.7
Mercury *	<0.015	1.95	1.95
Molybdenum	52.8	0.82	53.6
Nickel	31.3	1.57	32.9
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	15.4	6.30	21.7
Total			191

* Includes the permanganate impingers

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit, "<MDL"). Where all values were reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate emission data, the remaining fractions were assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate emission data.

TABLE 15
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Emission Data Test No. 1

Metal	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	0.85	0.20	0.35	0.27	0.29	0.0052
Arsenic	<0.20	<0.048	<0.081	<0.063	<0.068	<0.0012
Barium	0.75	0.18	0.31	0.24	0.26	0.0046
Beryllium	<0.20	<0.048	<0.081	<0.063	<0.068	<0.0012
Cadmium	0.58	0.14	0.24	0.18	0.20	0.0036
Chromium	6.39	1.53	2.60	2.03	2.17	0.039
Cobalt	<0.20	<0.048	<0.081	<0.063	<0.068	<0.0012
Copper	7.12	1.70	2.90	2.26	2.42	0.044
Lead	2.05	0.49	0.84	0.65	0.70	0.013
Manganese	14.3	3.42	5.82	4.53	4.85	0.088
Mercury	2.85	0.68	1.16	0.90	0.97	0.018
Molybdenum	46.0	11.0	18.8	14.6	15.7	0.28
Nickel	18.3	4.38	7.45	5.80	6.21	0.11
Selenium	<1.00	<0.24	<0.41	<0.32	<0.34	<0.0062
Silver	<0.20	<0.048	<0.081	<0.063	<0.068	<0.0012
Thallium	<0.20	<0.048	<0.081	<0.063	<0.068	<0.0012
Vanadium	<0.10	<0.024	<0.041	<0.032	<0.034	<0.00062
Zinc	23.7	5.67	9.65	7.51	8.05	0.15
Total	125	29.9	50.9	39.6	42.5	0.77

Dry Gas Volume Sampled (Rm^3*) :	2.454
Actual Flowrate (m^3/s) :	25.7
Dry Reference Flowrate (Rm^3/s*) :	15.1
Dry Adjusted Flowrate (Rm^3/s**) :	19.4
Wet Reference Flowrate (Rm^3/s*) :	18.1

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 16
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Emission Data Test No. 2

Metal	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	<0.20	<0.049	<0.083	<0.065	<0.070	<0.0013
Arsenic	<0.20	<0.049	<0.083	<0.065	<0.070	<0.0013
Barium	0.75	0.18	0.31	0.24	0.26	0.0047
Beryllium	<0.20	<0.049	<0.083	<0.065	<0.070	<0.0013
Cadmium	0.28	0.068	0.12	0.090	0.097	0.0017
Chromium	6.70	1.66	2.78	2.18	2.35	0.042
Cobalt	<0.20	<0.049	<0.083	<0.065	<0.070	<0.0013
Copper	7.10	1.75	2.95	2.31	2.49	0.045
Lead	1.33	0.33	0.55	0.43	0.46	0.0083
Manganese	6.07	1.50	2.52	1.97	2.13	0.038
Mercury	1.87	0.46	0.78	0.61	0.66	0.012
Molybdenum	47.2	11.7	19.6	15.3	16.5	0.30
Nickel	18.8	4.64	7.80	6.11	6.58	0.12
Selenium	<1.00	<0.25	<0.42	<0.33	<0.35	<0.0063
Silver	<0.20	<0.049	<0.083	<0.065	<0.070	<0.0013
Thallium	<0.20	<0.049	<0.083	<0.065	<0.070	<0.0013
Vanadium	0.19	0.047	0.080	0.062	0.067	0.0012
Zinc	16.7	4.11	6.92	5.41	5.84	0.10
Total	109	27.0	45.3	35.5	38.3	0.68

Dry Gas Volume Sampled (Rm³*) :	2.406
Actual Flowrate (m³/s) :	25.4
Dry Reference Flowrate (Rm³/s*) :	15.1
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	17.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 17
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Emission Data Test No. 3

Metal	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	0.33	0.080	0.14	0.11	0.11	0.0021
Arsenic	0.25	0.060	0.10	0.081	0.086	0.0015
Barium	1.34	0.33	0.55	0.44	0.46	0.0084
Beryllium	<0.20	<0.049	<0.082	<0.065	<0.069	<0.0012
Cadmium	0.56	0.14	0.23	0.18	0.19	0.0035
Chromium	46.3	11.3	19.0	15.1	16.1	0.29
Cobalt	0.30	0.072	0.12	0.097	0.10	0.0019
Copper	15.0	3.64	6.15	4.90	5.19	0.094
Lead	1.40	0.34	0.58	0.46	0.49	0.0088
Manganese	13.7	3.32	5.61	4.47	4.74	0.085
Mercury	1.95	0.47	0.80	0.64	0.68	0.012
Molybdenum	53.6	13.0	22.0	17.5	18.6	0.33
Nickel	32.9	7.98	13.5	10.7	11.4	0.21
Selenium	<1.00	<0.24	<0.41	<0.33	<0.35	<0.0062
Silver	<0.20	<0.049	<0.082	<0.065	<0.069	<0.0012
Thallium	<0.20	<0.049	<0.082	<0.065	<0.069	<0.0012
Vanadium	<0.10	<0.024	<0.041	<0.033	<0.035	<0.00062
Zinc	21.7	5.27	8.91	7.09	7.53	0.14
Total	191	46.4	78.4	62.4	66.2	1.19

Dry Gas Volume Sampled (Rm³*) :	2.435
Actual Flowrate (m³/s) :	25.7
Dry Reference Flowrate (Rm³/s*) :	15.2
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	18.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 18
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Actual Concentrations

Metal	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	µg/m³	µg/m³	µg/m³	µg/m³	%
Antimony	0.20	<0.049	0.080	<0.11	73.6
Arsenic	<0.048	<0.049	0.060	<0.053	12.8
Barium	0.18	0.18	0.33	0.23	35.9
Beryllium	<0.048	<0.049	<0.049	<0.049	1.6
Cadmium	0.14	0.068	0.14	0.11	34.6
Chromium	1.53	1.66	11.3	4.81	116
Cobalt	<0.048	<0.049	0.072	<0.057	24.3
Copper	1.70	1.75	3.64	2.37	46.6
Lead	0.49	0.33	0.34	0.39	23.6
Manganese	3.42	1.50	3.32	2.75	39.3
Mercury	0.68	0.46	0.47	0.54	23.0
Molybdenum	11.0	11.7	13.0	11.9	8.6
Nickel	4.38	4.64	7.98	5.67	35.5
Selenium	<0.24	<0.25	<0.24	<0.24	1.6
Silver	<0.048	<0.049	<0.049	<0.049	1.6
Thallium	<0.048	<0.049	<0.049	<0.049	1.6
Vanadium	<0.024	0.047	<0.024	<0.032	42.2
Zinc	5.67	4.11	5.27	5.02	16.1
Total	29.9	27.0	46.4	34.4	30.4

TABLE 19
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Dry Reference Concentrations

Metal	Dry Reference Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	0.35	<0.083	0.14	<0.19	74.1
Arsenic	<0.081	<0.083	0.10	<0.089	12.7
Barium	0.31	0.31	0.55	0.39	35.9
Beryllium	<0.081	<0.083	<0.082	<0.082	1.0
Cadmium	0.24	0.12	0.23	0.19	35.0
Chromium	2.60	2.78	19.0	8.14	116
Cobalt	<0.081	<0.083	0.12	<0.096	24.2
Copper	2.90	2.95	6.15	4.00	46.5
Lead	0.84	0.55	0.58	0.65	24.2
Manganese	5.82	2.52	5.61	4.65	39.7
Mercury	1.16	0.78	0.80	0.91	23.6
Molybdenum	18.8	19.6	22.0	20.1	8.4
Nickel	7.45	7.80	13.5	9.58	35.4
Selenium	<0.41	<0.42	<0.41	<0.41	1.0
Silver	<0.081	<0.083	<0.082	<0.082	1.0
Thallium	<0.081	<0.083	<0.082	<0.082	1.0
Vanadium	<0.041	0.080	<0.041	<0.054	41.7
Zinc	9.65	6.92	8.91	8.49	16.6
Total	50.9	45.3	78.4	58.2	30.4

* At 25°C and 1 atmosphere

TABLE 20
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Dry Adjusted Concentrations

Metal	Dry Adjusted Concentration				Coefficient
	Test No. 1 µg/Rm³**	Test No. 2 µg/Rm³**	Test No. 3 µg/Rm³**	Average µg/Rm³**	of Variation %
Antimony	0.27	<0.065	0.11	<0.15	73.3
Arsenic	<0.063	<0.065	0.081	<0.070	13.9
Barium	0.24	0.24	0.44	0.31	37.2
Beryllium	<0.063	<0.065	<0.065	<0.065	1.6
Cadmium	0.18	0.090	0.18	0.15	35.2
Chromium	2.03	2.18	15.1	6.45	117
Cobalt	<0.063	<0.065	0.097	<0.075	25.4
Copper	2.26	2.31	4.90	3.15	47.8
Lead	0.65	0.43	0.46	0.51	23.4
Manganese	4.53	1.97	4.47	3.66	39.9
Mercury	0.90	0.61	0.64	0.72	22.8
Molybdenum	14.6	15.3	17.5	15.8	9.6
Nickel	5.80	6.11	10.7	7.55	36.7
Selenium	<0.32	<0.33	<0.33	<0.32	1.6
Silver	<0.063	<0.065	<0.065	<0.065	1.6
Thallium	<0.063	<0.065	<0.065	<0.065	1.6
Vanadium	<0.032	0.062	<0.033	<0.042	41.3
Zinc	7.51	5.41	7.09	6.67	16.6
Total	39.6	35.5	62.4	45.8	31.6

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 21
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Wet Reference Concentrations

Metal	Wet Reference Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	0.29	<0.070	0.11	<0.16	73.4
Arsenic	<0.068	<0.070	0.086	<0.075	13.2
Barium	0.26	0.26	0.46	0.33	36.3
Beryllium	<0.068	<0.070	<0.069	<0.069	1.6
Cadmium	0.20	0.097	0.19	0.16	34.8
Chromium	2.17	2.35	16.1	6.86	116
Cobalt	<0.068	<0.070	0.10	<0.080	24.6
Copper	2.42	2.49	5.19	3.37	47.0
Lead	0.70	0.46	0.49	0.55	23.4
Manganese	4.85	2.13	4.74	3.91	39.5
Mercury	0.97	0.66	0.68	0.77	22.9
Molybdenum	15.7	16.5	18.6	16.9	8.9
Nickel	6.21	6.58	11.4	8.06	35.9
Selenium	<0.34	<0.35	<0.35	<0.35	1.6
Silver	<0.068	<0.070	<0.069	<0.069	1.6
Thallium	<0.068	<0.070	<0.069	<0.069	1.6
Vanadium	<0.034	0.067	<0.035	<0.045	42.0
Zinc	8.05	5.84	7.53	7.14	16.2
Total	42.5	38.3	66.2	49.0	30.8

* At 25°C and 1 atmosphere

TABLE 22
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Emission Rates

Metal	Emission Rate				Coefficient
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s	of Variation %
Antimony	0.0052	<0.0013	0.0021	<0.0029	73.9
Arsenic	<0.0012	<0.0013	0.0015	<0.0013	13.1
Barium	0.0046	0.0047	0.0084	0.0059	36.3
Beryllium	<0.0012	<0.0013	<0.0012	<0.0012	1.0
Cadmium	0.0036	0.0017	0.0035	0.0029	35.1
Chromium	0.039	0.042	0.29	0.12	116
Cobalt	<0.0012	<0.0013	0.0019	<0.0014	24.6
Copper	0.044	0.045	0.094	0.061	47.0
Lead	0.013	0.0083	0.0088	0.0099	24.0
Manganese	0.088	0.038	0.085	0.070	39.8
Mercury	0.018	0.012	0.012	0.014	23.4
Molybdenum	0.28	0.30	0.33	0.30	8.8
Nickel	0.11	0.12	0.21	0.15	35.9
Selenium	<0.0062	<0.0063	<0.0062	<0.0062	1.0
Silver	<0.0012	<0.0013	<0.0012	<0.0012	1.0
Thallium	<0.0012	<0.0013	<0.0012	<0.0012	1.0
Vanadium	<0.00062	0.0012	<0.00062	<0.00081	41.5
Zinc	0.15	0.10	0.14	0.13	16.7
Total	0.77	0.68	1.19	0.88	30.8

TABLE 23
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Metal Emission Data

Metal	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	<0.11	<0.19	<0.15	<0.16	<0.0029
Arsenic	<0.053	<0.089	<0.070	<0.075	<0.0013
Barium	0.23	0.39	0.31	0.33	0.0059
Beryllium	<0.049	<0.082	<0.065	<0.069	<0.0012
Cadmium	0.11	0.19	0.15	0.16	0.0029
Chromium	4.81	8.14	6.45	6.86	0.12
Cobalt	<0.057	<0.096	<0.075	<0.080	<0.0014
Copper	2.37	4.00	3.15	3.37	0.061
Lead	0.39	0.65	0.51	0.55	0.0099
Manganese	2.75	4.65	3.66	3.91	0.070
Mercury	0.54	0.91	0.72	0.77	0.014
Molybdenum	11.9	20.1	15.8	16.9	0.30
Nickel	5.67	9.58	7.55	8.06	0.15
Selenium	<0.24	<0.41	<0.32	<0.35	<0.0062
Silver	<0.049	<0.082	<0.065	<0.069	<0.0012
Thallium	<0.049	<0.082	<0.065	<0.069	<0.0012
Vanadium	<0.032	<0.054	<0.042	<0.045	<0.00081
Zinc	5.02	8.49	6.67	7.14	0.13
Total	34.4	58.2	45.8	49.0	0.88

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 24
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Train Metal Analyses

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	<5	1.02	1.02
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	<0.05	<0.10
Chromium	4.96	0.49	5.45
Cobalt	<0.2	<0.1	<0.20
Copper	<1	8.33	8.33
Lead	<0.5	0.36	0.36
Manganese	1.57	0.54	2.11
Mercury *	<0.015	<0.15	<0.15
Molybdenum	47.9	1.78	49.7
Nickel	18.8	0.29	19.1
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	<0.2	<0.05	<0.20
Vanadium	<1	<0.1	<0.10
Zinc	<6	<3	<6.00
Total			94.6

* Hydrofluoric acid digest not included in the total.

** Includes the permanganate impingers.

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit). Where all values are reported below the detection limit for a given metal, the value of the detection limit for the fraction most likely to contain that metal was used to calculate the total collected in the blank, the remaining fractions are assigned a value of zero. In instances where only one fraction was below the detection limit, that fraction was assigned a value of zero to calculate the total collected in the blank.

TABLE 25
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Hexavalent Chromium Emission Data

Test	Hexavalent Chromium Collected	Dry Volume Sampled	Hexavalent Chromium Concentration				Hexavalent Chromium Emission Rate
			Actual	Dry Reference	Dry Adjusted	Wet Reference	
No.	µg	Rm^3*	µg/m^3	µg/Rm^3*	µg/Rm^3**	µg/Rm^3*	mg/s
1	<0.79	2.459	<0.19	<0.32	<0.25	<0.27	<0.0048
2	<0.81	2.477	<0.19	<0.33	<0.25	<0.27	<0.0050
3	<0.81	2.559	<0.19	<0.32	<0.25	<0.27	<0.0050
Average			<0.19	<0.32	<0.25	<0.27	<0.0049
Blank - 0.1M KOH	<0.30						
Blank - Water	<0.22						

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

* At 25 °C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 26
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 1

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	1490	0.19	0.32	0.23	0.27	4.51
Pentachlorodibenzo-p-dioxins	7090	0.91	1.52	1.09	1.26	21.4
Hexachlorodibenzo-p-dioxins	14000	1.79	3.00	2.16	2.49	42.4
Heptachlorodibenzo-p-dioxins	10300	1.32	2.21	1.59	1.83	31.2
Octachlorodibenzo-p-dioxin	2920	0.37	0.63	0.45	0.52	8.83
Total	35800	4.59	7.68	5.53	6.37	108

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	1760	0.23	0.38	0.27	0.31	5.32
Pentachlorodibenzofurans	4220	0.54	0.91	0.65	0.75	12.8
Hexachlorodibenzofurans	4670	0.60	1.00	0.72	0.83	14.1
Heptachlorodibenzofurans	2930	0.38	0.63	0.45	0.52	8.86
Octachlorodibenzofuran	992	0.13	0.21	0.15	0.18	3.00
Total	14572	1.87	3.13	2.25	2.59	44.1

Dry Gas Volume Sampled (Rm³*) :	4.661
Actual Flowrate (m³/s) :	23.6
Dry Reference Flowrate (Rm³/s*) :	14.1
Dry Adjusted Flowrate (Rm³/s**) :	19.6
Wet Reference Flowrate (Rm³/s*) :	17.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 27
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 2

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	838	0.11	0.18	0.13	0.15	2.56
Pentachlorodibenzo-p-dioxins	3960	0.51	0.85	0.62	0.71	12.1
Hexachlorodibenzo-p-dioxins	7990	1.03	1.71	1.25	1.43	24.4
Heptachlorodibenzo-p-dioxins	6460	0.84	1.38	1.01	1.15	19.7
Octachlorodibenzo-p-dioxin	1960	0.25	0.42	0.31	0.35	5.98
Total	21208	2.74	4.53	3.32	3.79	64.7

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	1090	0.14	0.23	0.17	0.19	3.33
Pentachlorodibenzofurans	2590	0.33	0.55	0.41	0.46	7.91
Hexachlorodibenzofurans	2680	0.35	0.57	0.42	0.48	8.18
Heptachlorodibenzofurans	1680	0.22	0.36	0.26	0.30	5.13
Octachlorodibenzofuran	694	0.090	0.15	0.11	0.12	2.12
Total	8734	1.13	1.86	1.37	1.56	26.7

Dry Gas Volume Sampled (Rm^3*) :	4.685
Actual Flowrate (m^3/s) :	23.6
Dry Reference Flowrate (Rm^3/s*) :	14.3
Dry Adjusted Flowrate (Rm^3/s**) :	19.5
Wet Reference Flowrate (Rm^3/s*) :	17.1

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 28
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 3

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	1070	0.14	0.24	0.17	0.20	3.25
Pentachlorodibenzo-p-dioxins	6040	0.80	1.33	0.97	1.11	18.4
Hexachlorodibenzo-p-dioxins	11900	1.57	2.62	1.90	2.18	36.2
Heptachlorodibenzo-p-dioxins	9410	1.24	2.07	1.51	1.72	28.6
Octachlorodibenzo-p-dioxin	2880	0.38	0.63	0.46	0.53	8.76
Total	31300	4.12	6.90	5.01	5.73	95.2

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	1610	0.21	0.35	0.26	0.29	4.90
Pentachlorodibenzofurans	3400	0.45	0.75	0.54	0.62	10.3
Hexachlorodibenzofurans	3860	0.51	0.85	0.62	0.71	11.7
Heptachlorodibenzofurans	2620	0.34	0.58	0.42	0.48	7.97
Octachlorodibenzofuran	961	0.13	0.21	0.15	0.18	2.92
Total	12451	1.64	2.74	1.99	2.28	37.9

Dry Gas Volume Sampled (Rm³*) :	4.538
Actual Flowrate (m³/s) :	23.1
Dry Reference Flowrate (Rm³/s*) :	13.8
Dry Adjusted Flowrate (Rm³/s**) :	19.0
Wet Reference Flowrate (Rm³/s*) :	16.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 29
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Actual Concentrations

Dioxins

Congener Group	Actual Concentration Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.19	0.11	0.14	0.15	28.4
Pentachlorodibenzo-p-dioxins	0.91	0.51	0.80	0.74	27.7
Hexachlorodibenzo-p-dioxins	1.79	1.03	1.57	1.46	26.7
Heptachlorodibenzo-p-dioxins	1.32	0.84	1.24	1.13	22.9
Octachlorodibenzo-p-dioxin	0.37	0.25	0.38	0.34	21.2
Total	4.59	2.74	4.12	3.82	25.1

Furans

Congener Group	Actual Concentration Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
Tetrachlorodibenzofurans	0.23	0.14	0.21	0.19	23.6
Pentachlorodibenzofurans	0.54	0.33	0.45	0.44	23.4
Hexachlorodibenzofurans	0.60	0.35	0.51	0.48	26.4
Heptachlorodibenzofurans	0.38	0.22	0.34	0.31	26.9
Octachlorodibenzofuran	0.13	0.090	0.13	0.11	18.7
Total	1.87	1.13	1.64	1.55	24.5

TABLE 30
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Dry Reference Concentrations

Dioxins

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.32	0.18	0.24	0.24	28.9
Pentachlorodibenzo-p-dioxins	1.52	0.85	1.33	1.23	28.3
Hexachlorodibenzo-p-dioxins	3.00	1.71	2.62	2.44	27.3
Heptachlorodibenzo-p-dioxins	2.21	1.38	2.07	1.89	23.6
Octachlorodibenzo-p-dioxin	0.63	0.42	0.63	0.56	21.9
Total	7.68	4.53	6.90	6.37	25.8

Furans

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.38	0.23	0.35	0.32	24.2
Pentachlorodibenzofurans	0.91	0.55	0.75	0.74	24.0
Hexachlorodibenzofurans	1.00	0.57	0.85	0.81	27.0
Heptachlorodibenzofurans	0.63	0.36	0.58	0.52	27.5
Octachlorodibenzofuran	0.21	0.15	0.21	0.19	19.4
Total	3.13	1.86	2.74	2.58	25.1

* At 25°C and 1 atmosphere

TABLE 31
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Dry Adjusted Concentrations

Dioxins

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.23	0.13	0.17	0.18	28.0
Pentachlorodibenzo-p-dioxins	1.09	0.62	0.97	0.89	27.5
Hexachlorodibenzo-p-dioxins	2.16	1.25	1.90	1.77	26.5
Heptachlorodibenzo-p-dioxins	1.59	1.01	1.51	1.37	22.8
Octachlorodibenzo-p-dioxin	0.45	0.31	0.46	0.41	21.2
Total	5.53	3.32	5.01	4.62	25.0

Furans

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.27	0.17	0.26	0.23	23.5
Pentachlorodibenzofurans	0.65	0.41	0.54	0.53	23.1
Hexachlorodibenzofurans	0.72	0.42	0.62	0.59	26.1
Heptachlorodibenzofurans	0.45	0.26	0.42	0.38	26.7
Octachlorodibenzofuran	0.15	0.11	0.15	0.14	18.7
Total	2.25	1.37	1.99	1.87	24.3

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 32
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Wet Reference Concentrations

Dioxins

Congener Group	Wet Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.27	0.15	0.20	0.20	28.6
Pentachlorodibenzo-p-dioxins	1.26	0.71	1.11	1.02	27.9
Hexachlorodibenzo-p-dioxins	2.49	1.43	2.18	2.03	26.9
Heptachlorodibenzo-p-dioxins	1.83	1.15	1.72	1.57	23.3
Octachlorodibenzo-p-dioxin	0.52	0.35	0.53	0.47	21.6
Total	6.37	3.79	5.73	5.30	25.4

Furans

Congener Group	Wet reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.31	0.19	0.29	0.27	23.9
Pentachlorodibenzofurans	0.75	0.46	0.62	0.61	23.6
Hexachlorodibenzofurans	0.83	0.48	0.71	0.67	26.6
Heptachlorodibenzofurans	0.52	0.30	0.48	0.43	27.2
Octachlorodibenzofuran	0.18	0.12	0.18	0.16	19.1
Total	2.59	1.56	2.28	2.14	24.7

* At 25°C and 1 atmosphere

TABLE 33
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Rates

Dioxins

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	4.51	2.56	3.25	3.44	28.7
Pentachlorodibenzo-p-dioxins	21.4	12.1	18.4	17.3	27.6
Hexachlorodibenzo-p-dioxins	42.4	24.4	36.2	34.3	26.6
Heptachlorodibenzo-p-dioxins	31.2	19.7	28.6	26.5	22.7
Octachlorodibenzo-p-dioxin	8.83	5.98	8.76	7.86	20.7
Total	108	64.7	95.2	89.4	25.0

Furans

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzofurans	5.32	3.33	4.90	4.52	23.3
Pentachlorodibenzofurans	12.8	7.91	10.3	10.3	23.5
Hexachlorodibenzofurans	14.1	8.18	11.7	11.3	26.4
Heptachlorodibenzofurans	8.86	5.13	7.97	7.32	26.6
Octachlorodibenzofuran	3.00	2.12	2.92	2.68	18.2
Total	44.1	26.7	37.9	36.2	24.4

TABLE 34
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Congener Group Emission Data

Dioxins

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.15	0.24	0.18	0.20	3.44
Pentachlorodibenzo-p-dioxins	0.74	1.23	0.89	1.02	17.3
Hexachlorodibenzo-p-dioxins	1.46	2.44	1.77	2.03	34.3
Heptachlorodibenzo-p-dioxins	1.13	1.89	1.37	1.57	26.5
Octachlorodibenzo-p-dioxin	0.34	0.56	0.41	0.47	7.86
Total	3.82	6.37	4.62	5.30	89.4

Furans

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	0.19	0.32	0.23	0.27	4.52
Pentachlorodibenzofurans	0.44	0.74	0.53	0.61	10.3
Hexachlorodibenzofurans	0.48	0.81	0.59	0.67	11.3
Heptachlorodibenzofurans	0.31	0.52	0.38	0.43	7.32
Octachlorodibenzofuran	0.11	0.19	0.14	0.16	2.68
Total	1.55	2.58	1.87	2.14	36.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 35
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Dioxin and Furan Congener Group Analyses

Dioxins

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzo-p-dioxins	5.41	<3.5
Pentachlorodibenzo-p-dioxins	<2.4	2.10
Hexachlorodibenzo-p-dioxins	<2.1	2.54
Heptachlorodibenzo-p-dioxins	<2.6	<2.1
Octachlorodibenzo-p-dioxin	<2.6	<8.3
Total	<15.1	<18.5

Furans

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzofurans	<2.9	<2.9
Pentachlorodibenzofurans	<2.1	<1.8
Hexachlorodibenzofurans	4.62	2.63
Heptachlorodibenzofurans	9.68	<2.6
Octachlorodibenzofuran	<110	115
Total	<129	<125

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

TABLE 36
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 1

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<6.1	<0.78	<1.31	<0.94	<1.09	<0.018
12378-pentachlorodibenzo-p-dioxin	150	19.2	32.2	23.2	26.7	0.45
123478-hexachlorodibenzo-p-dioxin	288	36.9	61.8	44.5	51.2	0.87
123678-hexachlorodibenzo-p-dioxin	1050	135	225	162	187	3.18
123789-hexachlorodibenzo-p-dioxin	510	65.4	109	78.7	90.8	1.54
1234678-heptachlorodibenzo-p-dioxin	5280	677	1133	815	940	16.0
Octachlorodibenzo-p-dioxin	2920	374	626	451	520	8.83
2378-tetrachlorodibenzofuran	44.8	5.74	9.61	6.91	7.97	0.14
12378-pentachlorodibenzofuran	123	15.8	26.4	19.0	21.9	0.37
23478-pentachlorodibenzofuran	528	67.7	113	81.5	94.0	1.60
123478-hexachlorodibenzofuran	356	45.6	76.4	54.9	63.3	1.08
123678-hexachlorodibenzofuran	509	65.2	109	78.6	90.6	1.54
234678-hexachlorodibenzofuran	883	113	189	136	157	2.67
123789-hexachlorodibenzofuran	292	37.4	62.6	45.1	52.0	0.88
1234678-heptachlorodibenzofuran	1440	185	309	222	256	4.36
1234789-heptachlorodibenzofuran	391	50.1	83.9	60.3	69.6	1.18
Octachlorodibenzofuran	992	127	213	153	177	3.00
PCB 81	57.4	7.36	12.3	8.86	10.2	0.17
PCB 77	166	21.3	35.6	25.6	29.5	0.50
PCB 123	161	20.6	34.5	24.8	28.6	0.49
PCB 118	892	114	191	138	159	2.70
PCB 114	<92	<11.8	<19.7	<14.2	<16.4	<0.28
PCB 105	377	48.3	80.9	58.2	67.1	1.14
PCB 126	244	31.3	52.3	37.7	43.4	0.74
PCB 167	57.0	7.31	12.2	8.80	10.1	0.17
PCB 156	156	20.0	33.5	24.1	27.8	0.47
PCB 157	133	17.0	28.5	20.5	23.7	0.40
PCB 169	217	27.8	46.6	33.5	38.6	0.66
PCB 189	190	24.4	40.8	29.3	33.8	0.57
Total Dioxins & Furans Only	<15763	<2021	<3382	<2433	<2805	<47.7
Total PCBs Only	<2742	<352	<588	<423	<488	<8.30
Total Dioxins & Furans and PCBs	<18505	<2372	<3970	<2856	<3293	<56.0

Dry Gas Volume Sampled (Rm^3*) :	4.661
Actual Flowrate (m^3/s) :	23.6
Dry Reference Flowrate (Rm^3/s*) :	14.1
Dry Adjusted Flowrate (Rm^3/s**) :	19.6
Wet Reference Flowrate (Rm^3/s*) :	17.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 37
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 2

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<4.1	<0.53	<0.88	<0.64	<0.73	<0.013
12378-pentachlorodibenzo-p-dioxin	90.5	11.7	19.3	14.2	16.2	0.28
123478-hexachlorodibenzo-p-dioxin	195	25.2	41.6	30.5	34.8	0.60
123678-hexachlorodibenzo-p-dioxin	652	84.3	139	102	116	1.99
123789-hexachlorodibenzo-p-dioxin	324	41.9	69.2	50.7	57.8	0.99
1234678-heptachlorodibenzo-p-dioxin	3300	427	704	517	589	10.1
Octachlorodibenzo-p-dioxin	1960	253	418	307	350	5.98
2378-tetrachlorodibenzofuran	24.4	3.16	5.21	3.82	4.36	0.074
12378-pentachlorodibenzofuran	71.3	9.22	15.2	11.2	12.7	0.22
23478-pentachlorodibenzofuran	297	38.4	63.4	46.5	53.0	0.91
123478-hexachlorodibenzofuran	214	27.7	45.7	33.5	38.2	0.65
123678-hexachlorodibenzofuran	309	40.0	66.0	48.4	55.2	0.94
234678-hexachlorodibenzofuran	534	69.1	114	83.6	95.3	1.63
123789-hexachlorodibenzofuran	169	21.9	36.1	26.5	30.2	0.52
1234678-heptachlorodibenzofuran	817	106	174	128	146	2.49
1234789-heptachlorodibenzofuran	252	32.6	53.8	39.4	45.0	0.77
Octachlorodibenzofuran	694	89.8	148	109	124	2.12
PCB 81	61.5	7.95	13.1	9.63	11.0	0.19
PCB 77	122	15.8	26.0	19.1	21.8	0.37
PCB 123	<200	<25.9	<42.7	<31.3	<35.7	<0.61
PCB 118	1580	204	337	247	282	4.82
PCB 114	108	14.0	23.1	16.9	19.3	0.33
PCB 105	577	74.6	123	90.3	103	1.76
PCB 126	<120	<15.5	<25.6	<18.8	<21.4	<0.37
PCB 167	40.8	5.28	8.71	6.39	7.28	0.12
PCB 156	109	14.1	23.3	17.1	19.5	0.33
PCB 157	70.4	9.11	15.0	11.0	12.6	0.21
PCB 169	134	17.3	28.6	21.0	23.9	0.41
PCB 189	100	12.9	21.3	15.7	17.8	0.31
Total Dioxins & Furans Only	<9907	<1281	<2115	<1551	<1768	<30.2
Total PCBs Only	<3223	<417	<688	<504	<575	<9.84
Total Dioxins & Furans and PCBs	<13130	<1698	<2803	<2055	<2344	<40.1

Dry Gas Volume Sampled (Rm³*) :	4.685
Actual Flowrate (m³/s) :	23.6
Dry Reference Flowrate (Rm³/s*) :	14.3
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	17.1

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 38
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 3

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<7.0	<0.92	<1.54	<1.12	<1.28	<0.021
12378-pentachlorodibenzo-p-dioxin	122	16.1	26.9	19.5	22.3	0.37
123478-hexachlorodibenzo-p-dioxin	262	34.5	57.7	41.9	48.0	0.80
123678-hexachlorodibenzo-p-dioxin	897	118	198	144	164	2.73
123789-hexachlorodibenzo-p-dioxin	494	65.0	109	79.1	90.5	1.50
1234678-heptachlorodibenzo-p-dioxin	4740	624	1045	759	868	14.4
Octachlorodibenzo-p-dioxin	2880	379	635	461	528	8.76
2378-tetrachlorodibenzofuran	32.9	4.33	7.25	5.27	6.03	0.10
12378-pentachlorodibenzofuran	111	14.6	24.5	17.8	20.3	0.34
23478-pentachlorodibenzofuran	419	55.2	92.3	67.1	76.8	1.27
123478-hexachlorodibenzofuran	309	40.7	68.1	49.5	56.6	0.94
123678-hexachlorodibenzofuran	438	57.7	96.5	70.1	80.2	1.33
234678-hexachlorodibenzofuran	727	95.7	160	116	133	2.21
123789-hexachlorodibenzofuran	235	30.9	51.8	37.6	43.1	0.71
1234678-heptachlorodibenzofuran	1230	162	271	197	225	3.74
1234789-heptachlorodibenzofuran	351	46.2	77.3	56.2	64.3	1.07
Octachlorodibenzofuran	961	127	212	154	176	2.92
PCB 81	57.9	7.62	12.8	9.27	10.6	0.18
PCB 77	162	21.3	35.7	25.9	29.7	0.49
PCB 123	150	19.7	33.1	24.0	27.5	0.46
PCB 118	998	131	220	160	183	3.03
PCB 114	95.6	12.6	21.1	15.3	17.5	0.29
PCB 105	400	52.7	88.1	64.0	73.3	1.22
PCB 126	<160	<21.1	<35.3	<25.6	<29.3	<0.49
PCB 167	51.5	6.78	11.3	8.24	9.43	0.16
PCB 156	165	21.7	36.4	26.4	30.2	0.50
PCB 157	105	13.8	23.1	16.8	19.2	0.32
PCB 169	191	25.1	42.1	30.6	35.0	0.58
PCB 189	165	21.7	36.4	26.4	30.2	0.50
Total Dioxins & Furans Only	<14216	<1871	<3133	<2275	<2604	<43.2
Total PCBs Only	<2701	<356	<595	<432	<495	<8.21
Total Dioxins & Furans and PCBs	<16917	<2227	<3728	<2708	<3099	<51.4

Dry Gas Volume Sampled (Rm³*) :	4.538
Actual Flowrate (m³/s) :	23.1
Dry Reference Flowrate (Rm³/s*) :	13.8
Dry Adjusted Flowrate (Rm³/s**) :	19.0
Wet Reference Flowrate (Rm³/s*) :	16.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 39
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration Test No. 1 pg/m³	Test No. 2 pg/m³	Test No. 3 pg/m³	Average pg/m³	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.78	<0.53	<0.92	<0.74	26.6
12378-pentachlorodibenzo-p-dioxin	19.2	11.7	16.1	15.7	24.1
123478-hexachlorodibenzo-p-dioxin	36.9	25.2	34.5	32.2	19.2
123678-hexachlorodibenzo-p-dioxin	135	84.3	118	112	22.8
123789-hexachlorodibenzo-p-dioxin	65.4	41.9	65.0	57.4	23.4
1234678-heptachlorodibenzo-p-dioxin	677	427	624	576	22.9
Octachlorodibenzo-p-dioxin	374	253	379	336	21.2
2378-tetrachlorodibenzofuran	5.74	3.16	4.33	4.41	29.4
12378-pentachlorodibenzofuran	15.8	9.22	14.6	13.2	26.5
23478-pentachlorodibenzofuran	67.7	38.4	55.2	53.8	27.3
123478-hexachlorodibenzofuran	45.6	27.7	40.7	38.0	24.4
123678-hexachlorodibenzofuran	65.2	40.0	57.7	54.3	23.9
234678-hexachlorodibenzofuran	113	69.1	95.7	92.7	24.0
123789-hexachlorodibenzofuran	37.4	21.9	30.9	30.1	26.0
1234678-heptachlorodibenzofuran	185	106	162	151	27.0
1234789-heptachlorodibenzofuran	50.1	32.6	46.2	43.0	21.4
Octachlorodibenzofuran	127	89.8	127	114	18.7
PCB 81	7.36	7.95	7.62	7.64	3.9
PCB 77	21.3	15.8	21.3	19.5	16.4
PCB 123	20.6	<25.9	19.7	<22.1	15.0
PCB 118	114	204	131	150	31.9
PCB 114	<11.8	14.0	12.6	<12.8	8.6
PCB 105	48.3	74.6	52.7	58.5	24.1
PCB 126	31.3	<15.5	<21.1	<22.6	35.3
PCB 167	7.31	5.28	6.78	6.45	16.3
PCB 156	20.0	14.1	21.7	18.6	21.5
PCB 157	17.0	9.11	13.8	13.3	30.0
PCB 169	27.8	17.3	25.1	23.4	23.3
PCB 189	24.4	12.9	21.7	19.7	30.4
Total Dioxins & Furans Only	<2021	<1281	<1871	<1724	22.7
Total PCBs Only	<352	<417	<356	<375	9.8
Total Dioxins & Furans and PCBs	<2372	<1698	<2227	<2099	16.9

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 40
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<1.31	<0.88	<1.54	<1.24	27.3
12378-pentachlorodibenzo-p-dioxin	32.2	19.3	26.9	26.1	24.7
123478-hexachlorodibenzo-p-dioxin	61.8	41.6	57.7	53.7	19.9
123678-hexachlorodibenzo-p-dioxin	225	139	198	187	23.5
123789-hexachlorodibenzo-p-dioxin	109	69.2	109	95.8	24.1
1234678-heptachlorodibenzo-p-dioxin	1133	704	1045	961	23.6
Octachlorodibenzo-p-dioxin	626	418	635	560	21.9
2378-tetrachlorodibenzofuran	9.61	5.21	7.25	7.36	30.0
12378-pentachlorodibenzofuran	26.4	15.2	24.5	22.0	27.1
23478-pentachlorodibenzofuran	113	63.4	92.3	89.7	27.9
123478-hexachlorodibenzofuran	76.4	45.7	68.1	63.4	25.1
123678-hexachlorodibenzofuran	109	66.0	96.5	90.6	24.5
234678-hexachlorodibenzofuran	189	114	160	155	24.6
123789-hexachlorodibenzofuran	62.6	36.1	51.8	50.2	26.6
1234678-heptachlorodibenzofuran	309	174	271	251	27.6
1234789-heptachlorodibenzofuran	83.9	53.8	77.3	71.7	22.1
Octachlorodibenzofuran	213	148	212	191	19.4
PCB 81	12.3	13.1	12.8	12.7	3.2
PCB 77	35.6	26.0	35.7	32.5	17.1
PCB 123	34.5	<42.7	33.1	<36.8	14.1
PCB 118	191	337	220	250	31.0
PCB 114	<19.7	23.1	21.1	<21.3	7.8
PCB 105	80.9	123	88.1	97.4	23.2
PCB 126	52.3	<25.6	<35.3	<37.7	35.9
PCB 167	12.2	8.71	11.3	10.8	17.0
PCB 156	33.5	23.3	36.4	31.0	22.2
PCB 157	28.5	15.0	23.1	22.2	30.6
PCB 169	46.6	28.6	42.1	39.1	23.9
PCB 189	40.8	21.3	36.4	32.8	31.0
Total Dioxins & Furans Only	<3382	<2115	<3133	<2876	23.3
Total PCBs Only	<588	<688	<595	<624	8.9
Total Dioxins & Furans and PCBs	<3970	<2803	<3728	<3500	17.6

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 41
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.94	<0.64	<1.12	<0.90	26.8
12378-pentachlorodibenzo-p-dioxin	23.2	14.2	19.5	18.9	23.9
123478-hexachlorodibenzo-p-dioxin	44.5	30.5	41.9	39.0	19.0
123678-hexachlorodibenzo-p-dioxin	162	102	144	136	22.6
123789-hexachlorodibenzo-p-dioxin	78.7	50.7	79.1	69.5	23.4
1234678-heptachlorodibenzo-p-dioxin	815	517	759	697	22.8
Octachlorodibenzo-p-dioxin	451	307	461	406	21.2
2378-tetrachlorodibenzofuran	6.91	3.82	5.27	5.33	29.0
12378-pentachlorodibenzofuran	19.0	11.2	17.8	16.0	26.4
23478-pentachlorodibenzofuran	81.5	46.5	67.1	65.0	27.1
123478-hexachlorodibenzofuran	54.9	33.5	49.5	46.0	24.2
123678-hexachlorodibenzofuran	78.6	48.4	70.1	65.7	23.7
234678-hexachlorodibenzofuran	136	83.6	116	112	23.7
123789-hexachlorodibenzofuran	45.1	26.5	37.6	36.4	25.8
1234678-heptachlorodibenzofuran	222	128	197	182	26.8
1234789-heptachlorodibenzofuran	60.3	39.4	56.2	52.0	21.3
Octachlorodibenzofuran	153	109	154	139	18.7
PCB 81	8.86	9.63	9.27	9.25	4.1
PCB 77	25.6	19.1	25.9	23.5	16.4
PCB 123	24.8	<31.3	24.0	<26.7	14.9
PCB 118	138	247	160	182	31.9
PCB 114	<14.2	16.9	15.3	<15.5	8.8
PCB 105	58.2	90.3	64.0	70.8	24.2
PCB 126	37.7	<18.8	<25.6	<27.4	34.9
PCB 167	8.80	6.39	8.24	7.81	16.2
PCB 156	24.1	17.1	26.4	22.5	21.6
PCB 157	20.5	11.0	16.8	16.1	29.7
PCB 169	33.5	21.0	30.6	28.3	23.1
PCB 189	29.3	15.7	26.4	23.8	30.3
Total Dioxins & Furans Only	<2433	<1551	<2275	<2086	22.5
Total PCBs Only	<423	<504	<432	<453	9.8
Total Dioxins & Furans and PCBs	<2856	<2055	<2708	<2540	16.8

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 42
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration Test No. 1 pg/Rm^3*	Test No. 2 pg/Rm^3*	Test No. 3 pg/Rm^3*	Average pg/Rm^3*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<1.09	<0.73	<1.28	<1.03	27.0
12378-pentachlorodibenzo-p-dioxin	26.7	16.2	22.3	21.7	24.4
123478-hexachlorodibenzo-p-dioxin	51.2	34.8	48.0	44.7	19.5
123678-hexachlorodibenzo-p-dioxin	187	116	164	156	23.1
123789-hexachlorodibenzo-p-dioxin	90.8	57.8	90.5	79.7	23.8
1234678-heptachlorodibenzo-p-dioxin	940	589	868	799	23.2
Octachlorodibenzo-p-dioxin	520	350	528	466	21.6
2378-tetrachlorodibenzofuran	7.97	4.36	6.03	6.12	29.6
12378-pentachlorodibenzofuran	21.9	12.7	20.3	18.3	26.8
23478-pentachlorodibenzofuran	94.0	53.0	76.8	74.6	27.6
123478-hexachlorodibenzofuran	63.3	38.2	56.6	52.7	24.7
123678-hexachlorodibenzofuran	90.6	55.2	80.2	75.3	24.2
234678-hexachlorodibenzofuran	157	95.3	133	129	24.2
123789-hexachlorodibenzofuran	52.0	30.2	43.1	41.7	26.3
1234678-heptachlorodibenzofuran	256	146	225	209	27.2
1234789-heptachlorodibenzofuran	69.6	45.0	64.3	59.6	21.7
Octachlorodibenzofuran	177	124	176	159	19.1
PCB 81	10.2	11.0	10.6	10.6	3.6
PCB 77	29.5	21.8	29.7	27.0	16.7
PCB 123	28.6	<35.7	27.5	<30.6	14.5
PCB 118	159	282	183	208	31.4
PCB 114	<16.4	19.3	17.5	<17.7	8.3
PCB 105	67.1	103	73.3	81.1	23.7
PCB 126	43.4	<21.4	<29.3	<31.4	35.5
PCB 167	10.1	7.28	9.43	8.95	16.6
PCB 156	27.8	19.5	30.2	25.8	21.9
PCB 157	23.7	12.6	19.2	18.5	30.2
PCB 169	38.6	23.9	35.0	32.5	23.6
PCB 189	33.8	17.8	30.2	27.3	30.7
Total Dioxins & Furans Only	<2805	<1768	<2604	<2393	23.0
Total PCBs Only	<488	<575	<495	<519	9.3
Total Dioxins & Furans and PCBs	<3293	<2344	<3099	<2912	17.2

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 43
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Rates

Specific Isomer	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.018	<0.013	<0.021	<0.017	25.7
12378-pentachlorodibenzo-p-dioxin	0.45	0.28	0.37	0.37	24.2
123478-hexachlorodibenzo-p-dioxin	0.87	0.60	0.80	0.75	18.9
123678-hexachlorodibenzo-p-dioxin	3.18	1.99	2.73	2.63	22.8
123789-hexachlorodibenzo-p-dioxin	1.54	0.99	1.50	1.34	23.0
1234678-heptachlorodibenzo-p-dioxin	16.0	10.1	14.4	13.5	22.7
Octachlorodibenzo-p-dioxin	8.83	5.98	8.76	7.86	20.7
2378-tetrachlorodibenzofuran	0.14	0.074	0.10	0.10	29.7
12378-pentachlorodibenzofuran	0.37	0.22	0.34	0.31	26.2
23478-pentachlorodibenzofuran	1.60	0.91	1.27	1.26	27.4
123478-hexachlorodibenzofuran	1.08	0.65	0.94	0.89	24.3
123678-hexachlorodibenzofuran	1.54	0.94	1.33	1.27	23.8
234678-hexachlorodibenzofuran	2.67	1.63	2.21	2.17	24.0
123789-hexachlorodibenzofuran	0.88	0.52	0.71	0.70	26.1
1234678-heptachlorodibenzofuran	4.36	2.49	3.74	3.53	26.9
1234789-heptachlorodibenzofuran	1.18	0.77	1.07	1.01	21.2
Octachlorodibenzofuran	3.00	2.12	2.92	2.68	18.2
PCB 81	0.17	0.19	0.18	0.18	4.2
PCB 77	0.50	0.37	0.49	0.46	15.9
PCB 123	0.49	<0.61	0.46	<0.52	15.8
PCB 118	2.70	4.82	3.03	3.52	32.4
PCB 114	<0.28	0.33	0.29	<0.30	8.9
PCB 105	1.14	1.76	1.22	1.37	24.7
PCB 126	0.74	<0.37	<0.49	<0.53	35.8
PCB 167	0.17	0.12	0.16	0.15	16.1
PCB 156	0.47	0.33	0.50	0.44	20.7
PCB 157	0.40	0.21	0.32	0.31	30.1
PCB 169	0.66	0.41	0.58	0.55	23.1
PCB 189	0.57	0.31	0.50	0.46	30.3
Total Dioxins & Furans Only	<47.7	<30.2	<43.2	<40.4	22.4
Total PCBs Only	<8.30	<9.84	<8.21	<8.78	10.4
Total Dioxins & Furans and PCBs	<56.0	<40.1	<51.4	<49.2	16.7

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 44
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Specific Isomer Emission Data

Specific Isomer	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.74	<1.24	<0.90	<1.03	<0.017
12378-pentachlorodibenzo-p-dioxin	15.7	26.1	18.9	21.7	0.37
123478-hexachlorodibenzo-p-dioxin	32.2	53.7	39.0	44.7	0.75
123678-hexachlorodibenzo-p-dioxin	112	187	136	156	2.63
123789-hexachlorodibenzo-p-dioxin	57.4	95.8	69.5	79.7	1.34
1234678-heptachlorodibenzo-p-dioxin	576	961	697	799	13.5
Octachlorodibenzo-p-dioxin	336	560	406	466	7.86
2378-tetrachlorodibenzofuran	4.41	7.36	5.33	6.12	0.10
12378-pentachlorodibenzofuran	13.2	22.0	16.0	18.3	0.31
23478-pentachlorodibenzofuran	53.8	89.7	65.0	74.6	1.26
123478-hexachlorodibenzofuran	38.0	63.4	46.0	52.7	0.89
123678-hexachlorodibenzofuran	54.3	90.6	65.7	75.3	1.27
234678-hexachlorodibenzofuran	92.7	155	112	129	2.17
123789-hexachlorodibenzofuran	30.1	50.2	36.4	41.7	0.70
1234678-heptachlorodibenzofuran	151	251	182	209	3.53
1234789-heptachlorodibenzofuran	43.0	71.7	52.0	59.6	1.01
Octachlorodibenzofuran	114	191	139	159	2.68
PCB 81	7.64	12.7	9.25	10.6	0.18
PCB 77	19.5	32.5	23.5	27.0	0.46
PCB 123	<22.1	<36.8	<26.7	<30.6	<0.52
PCB 118	150	250	182	208	3.52
PCB 114	<12.8	<21.3	<15.5	<17.7	<0.30
PCB 105	58.5	97.4	70.8	81.1	1.37
PCB 126	<22.6	<37.7	<27.4	<31.4	<0.53
PCB 167	6.45	10.8	7.81	8.95	0.15
PCB 156	18.6	31.0	22.5	25.8	0.44
PCB 157	13.3	22.2	16.1	18.5	0.31
PCB 169	23.4	39.1	28.3	32.5	0.55
PCB 189	19.7	32.8	23.8	27.3	0.46
Total Dioxins & Furans Only	<1724	<2876	<2086	<2393	<40.4
Total PCBs Only	<375	<624	<453	<519	<8.78
Total Dioxins & Furans and PCBs	<2099	<3500	<2540	<2912	<49.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 45
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Dioxin and Furan Specific Isomer Analyses

Specific Isomer	Blank Train pg	Laboratory Blank pg
2378-tetrachlorodibenzo-p-dioxin	<4.5	<3.5
12378-pentachlorodibenzo-p-dioxin	<2.4	2.10
123478-hexachlorodibenzo-p-dioxin	<2.1	<1.9
123678-hexachlorodibenzo-p-dioxin	<2.1	<2.7
123789-hexachlorodibenzo-p-dioxin	<2.1	2.54
1234678-heptachlorodibenzo-p-dioxin	<2.6	<2.7
Octachlorodibenzo-p-dioxin	<2.6	<8.3
2378-tetrachlorodibenzofuran	<2.9	<2.9
12378-pentachlorodibenzofuran	<2.1	<4.0
23478-pentachlorodibenzofuran	<2.0	<1.8
123478-hexachlorodibenzofuran	<1.9	<2.1
123678-hexachlorodibenzofuran	<1.8	<3.1
234678-hexachlorodibenzofuran	2.88	<3.6
123789-hexachlorodibenzofuran	<2.0	<1.6
1234678-heptachlorodibenzofuran	9.68	<11
1234789-heptachlorodibenzofuran	<2.6	<3.3
Octachlorodibenzofuran	<110	115
PCB 81	<4.8	3.17
PCB 77	<4.9	5.50
PCB 123	8.91	<3.3
PCB 118	89.8	<6.3
PCB 114	<3.7	<2.9
PCB 105	<28	<2.9
PCB 126	<4.2	<3.3
PCB 167	<3.0	<2.4
PCB 156	<3.0	<2.4
PCB 157	<3.1	<2.5
PCB 169	<9.7	<3.8
PCB 189	<2.0	<2.4
Total Dioxins & Furans Only	<156	<172
Total PCBs Only	<165	<40.9
Total Dioxins & Furans and PCBs	<321	<213

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

TABLE 46
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Actual Concentrations

Specific Isomer	Toxicity Equivalency Factor	Actual Concentration Test No. 1 pg TEQ/m³	Test No. 2 pg TEQ/m³	Test No. 3 pg TEQ/m³	Average pg TEQ/m³
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.78	<0.53	<0.92	<0.74
12378-pentachlorodibenzo-p-dioxin	1.000	19.2	11.7	16.1	15.7
123478-hexachlorodibenzo-p-dioxin	0.100	3.69	2.52	3.45	3.22
123678-hexachlorodibenzo-p-dioxin	0.100	13.5	8.43	11.8	11.2
123789-hexachlorodibenzo-p-dioxin	0.100	6.54	4.19	6.50	5.74
1234678-heptachlorodibenzo-p-dioxin	0.010	6.77	4.27	6.24	5.76
Octachlorodibenzo-p-dioxin	0.0003	0.11	0.076	0.11	0.10
2378-tetrachlorodibenzofuran	0.100	0.57	0.32	0.43	0.44
12378-pentachlorodibenzofuran	0.030	0.47	0.28	0.44	0.40
23478-pentachlorodibenzofuran	0.300	20.3	11.5	16.5	16.1
123478-hexachlorodibenzofuran	0.100	4.56	2.77	4.07	3.80
123678-hexachlorodibenzofuran	0.100	6.52	4.00	5.77	5.43
234678-hexachlorodibenzofuran	0.100	11.3	6.91	9.57	9.27
123789-hexachlorodibenzofuran	0.100	3.74	2.19	3.09	3.01
1234678-heptachlorodibenzofuran	0.010	1.8	1.06	1.62	1.51
1234789-heptachlorodibenzofuran	0.010	0.50	0.33	0.46	0.43
Octachlorodibenzofuran	0.0003	0.038	0.027	0.038	0.034
PCB 81	0.0003	0.0022	0.0024	0.0023	0.0023
PCB 77	0.0001	0.0021	0.0016	0.0021	0.0019
PCB 123	0.00003	0.00062	<0.00078	0.00059	<0.00066
PCB 118	0.00003	0.0034	0.0061	0.0039	0.0045
PCB 114	0.00003	<0.00035	0.00042	0.00038	<0.00038
PCB 105	0.00003	0.0014	0.0022	0.0016	0.0018
PCB 126	0.100	3.13	<1.55	<2.11	<2.26
PCB 167	0.00003	0.00022	0.00016	0.00020	0.00019
PCB 156	0.00003	0.00060	0.00042	0.00065	0.00056
PCB 157	0.00003	0.00051	0.00027	0.00041	0.00040
PCB 169	0.030	0.83	0.52	0.75	0.70
PCB 189	0.00003	0.00073	0.00039	0.00065	0.00059
Total Dioxins & Furans Only		<100	<61.1	<87.1	<82.9
Total PCBs Only		<3.97	<2.09	<2.87	<2.98
Total Dioxins & Furans and PCBs		<104	<63.2	<90.0	<85.9

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 47
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Dry Reference Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.31	<0.88	<1.54	<1.24
12378-pentachlorodibenzo-p-dioxin	1.000	32.2	19.3	26.9	26.1
123478-hexachlorodibenzo-p-dioxin	0.100	6.18	4.16	5.77	5.37
123678-hexachlorodibenzo-p-dioxin	0.100	22.5	13.9	19.8	18.7
123789-hexachlorodibenzo-p-dioxin	0.100	10.9	6.92	10.9	9.58
1234678-heptachlorodibenzo-p-dioxin	0.010	11.3	7.04	10.4	9.61
Octachlorodibenzo-p-dioxin	0.0003	0.19	0.13	0.19	0.17
2378-tetrachlorodibenzofuran	0.100	0.96	0.52	0.72	0.74
12378-pentachlorodibenzofuran	0.030	0.79	0.46	0.73	0.66
23478-pentachlorodibenzofuran	0.300	34.0	19.0	27.7	26.9
123478-hexachlorodibenzofuran	0.100	7.64	4.57	6.81	6.34
123678-hexachlorodibenzofuran	0.100	10.9	6.60	9.65	9.06
234678-hexachlorodibenzofuran	0.100	18.9	11.4	16.0	15.5
123789-hexachlorodibenzofuran	0.100	6.26	3.61	5.18	5.02
1234678-heptachlorodibenzofuran	0.010	3.09	1.74	2.71	2.51
1234789-heptachlorodibenzofuran	0.010	0.84	0.54	0.77	0.72
Octachlorodibenzofuran	0.0003	0.064	0.044	0.064	0.057
PCB 81	0.0003	0.0037	0.0039	0.0038	0.0038
PCB 77	0.0001	0.0036	0.0026	0.0036	0.0032
PCB 123	0.00003	0.0010	<0.0013	0.00099	<0.0011
PCB 118	0.00003	0.0057	0.010	0.0066	0.0075
PCB 114	0.00003	<0.00059	0.00069	0.00063	<0.00064
PCB 105	0.00003	0.0024	0.0037	0.0026	0.0029
PCB 126	0.100	5.23	<2.56	<3.53	<3.77
PCB 167	0.00003	0.00037	0.00026	0.00034	0.00032
PCB 156	0.00003	0.0010	0.00070	0.0011	0.00093
PCB 157	0.00003	0.00086	0.00045	0.00069	0.00067
PCB 169	0.030	1.40	0.86	1.26	1.17
PCB 189	0.00003	0.0012	0.00064	0.0011	0.00098
Total Dioxins & Furans Only		<168	<101	<146	<138
Total PCBs Only		<6.65	<3.44	<4.81	<4.97
Total Dioxins & Furans and PCBs		<175	<104	<151	<143

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 48
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.94	<0.64	<1.12	<0.90
12378-pentachlorodibenzo-p-dioxin	1.000	23.2	14.2	19.5	18.9
123478-hexachlorodibenzo-p-dioxin	0.100	4.45	3.05	4.19	3.90
123678-hexachlorodibenzo-p-dioxin	0.100	16.2	10.2	14.4	13.6
123789-hexachlorodibenzo-p-dioxin	0.100	7.87	5.07	7.91	6.95
1234678-heptachlorodibenzo-p-dioxin	0.010	8.15	5.17	7.59	6.97
Octachlorodibenzo-p-dioxin	0.0003	0.14	0.092	0.14	0.12
2378-tetrachlorodibenzofuran	0.100	0.69	0.38	0.53	0.53
12378-pentachlorodibenzofuran	0.030	0.57	0.33	0.53	0.48
23478-pentachlorodibenzofuran	0.300	24.4	13.9	20.1	19.5
123478-hexachlorodibenzofuran	0.100	5.49	3.35	4.95	4.60
123678-hexachlorodibenzofuran	0.100	7.86	4.84	7.01	6.57
234678-hexachlorodibenzofuran	0.100	13.6	8.36	11.6	11.2
123789-hexachlorodibenzofuran	0.100	4.51	2.65	3.76	3.64
1234678-heptachlorodibenzofuran	0.010	2.22	1.28	1.97	1.82
1234789-heptachlorodibenzofuran	0.010	0.60	0.39	0.56	0.52
Octachlorodibenzofuran	0.0003	0.046	0.033	0.046	0.042
PCB 81	0.0003	0.0027	0.0029	0.0028	0.0028
PCB 77	0.0001	0.0026	0.0019	0.0026	0.0024
PCB 123	0.00003	0.00075	<0.00094	0.00072	<0.00080
PCB 118	0.00003	0.0041	0.0074	0.0048	0.0054
PCB 114	0.00003	<0.00043	0.00051	0.00046	<0.00046
PCB 105	0.00003	0.0017	0.0027	0.0019	0.0021
PCB 126	0.100	3.77	<1.88	<2.56	<2.74
PCB 167	0.00003	0.00026	0.00019	0.00025	0.00023
PCB 156	0.00003	0.00072	0.00051	0.00079	0.00068
PCB 157	0.00003	0.00062	0.00033	0.00050	0.00048
PCB 169	0.030	1.00	0.63	0.92	0.85
PCB 189	0.00003	0.00088	0.00047	0.00079	0.00071
Total Dioxins & Furans Only		<121	<74.0	<106	<100
Total PCBs Only		<4.79	<2.53	<3.49	<3.60
Total Dioxins & Furans and PCBs		<126	<76.5	<109	<104

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 48A
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using Half the Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	0.47	0.32	0.56	0.45
12378-pentachlorodibenzo-p-dioxin	1.000	23.2	14.2	19.5	18.9
123478-hexachlorodibenzo-p-dioxin	0.100	4.45	3.05	4.19	3.90
123678-hexachlorodibenzo-p-dioxin	0.100	16.2	10.2	14.4	13.6
123789-hexachlorodibenzo-p-dioxin	0.100	7.87	5.07	7.91	6.95
1234678-heptachlorodibenzo-p-dioxin	0.010	8.15	5.17	7.59	6.97
Octachlorodibenzo-p-dioxin	0.0003	0.14	0.092	0.14	0.12
2378-tetrachlorodibenzofuran	0.100	0.69	0.38	0.53	0.53
12378-pentachlorodibenzofuran	0.030	0.57	0.33	0.53	0.48
23478-pentachlorodibenzofuran	0.300	24.4	13.9	20.1	19.5
123478-hexachlorodibenzofuran	0.100	5.49	3.35	4.95	4.60
123678-hexachlorodibenzofuran	0.100	7.86	4.84	7.01	6.57
234678-hexachlorodibenzofuran	0.100	13.6	8.36	11.6	11.2
123789-hexachlorodibenzofuran	0.100	4.51	2.65	3.76	3.64
1234678-heptachlorodibenzofuran	0.010	2.22	1.28	1.97	1.82
1234789-heptachlorodibenzofuran	0.010	0.60	0.39	0.56	0.52
Octachlorodibenzofuran	0.0003	0.046	0.033	0.046	0.042
PCB 81	0.0003	0.0027	0.0029	0.0028	0.0028
PCB 77	0.0001	0.0026	0.0019	0.0026	0.0024
PCB 123	0.00003	0.00075	0.00047	0.00072	0.00065
PCB 118	0.00003	0.0041	0.0074	0.0048	0.0054
PCB 114	0.00003	0.00021	0.00051	0.00046	0.00039
PCB 105	0.00003	0.0017	0.0027	0.0019	0.0021
PCB 126	0.100	3.77	0.94	1.28	2.00
PCB 167	0.00003	0.00026	0.00019	0.00025	0.00023
PCB 156	0.00003	0.00072	0.00051	0.00079	0.00068
PCB 157	0.00003	0.00062	0.00033	0.00050	0.00048
PCB 169	0.030	1.00	0.63	0.92	0.85
PCB 189	0.00003	0.00088	0.00047	0.00079	0.00071
Total Dioxins & Furans Only		120	73.6	105	99.8
Total PCBs Only		4.79	1.59	2.21	2.86
Total Dioxins & Furans and PCBs		125	75.2	108	103

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 48B

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations

Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.94	<0.64	<1.12	<0.90
12378-pentachlorodibenzo-p-dioxin	0.500	11.6	<7.08	9.76	<9.47
123478-hexachlorodibenzo-p-dioxin	0.100	4.45	3.05	4.19	3.90
123678-hexachlorodibenzo-p-dioxin	0.100	16.2	10.2	14.4	13.6
123789-hexachlorodibenzo-p-dioxin	0.100	7.87	5.07	7.91	6.95
1234678-heptachlorodibenzo-p-dioxin	0.010	8.15	5.17	7.59	6.97
Octachlorodibenzo-p-dioxin	0.001	0.45	0.31	0.46	0.41
2378-tetrachlorodibenzofuran	0.100	<0.69	0.38	0.53	<0.53
12378-pentachlorodibenzofuran	0.050	0.95	0.56	0.89	0.80
23478-pentachlorodibenzofuran	0.500	40.7	23.2	33.5	32.5
123478-hexachlorodibenzofuran	0.100	5.49	3.35	4.95	4.60
123678-hexachlorodibenzofuran	0.100	7.86	4.84	7.01	6.57
234678-hexachlorodibenzofuran	0.100	13.6	8.36	11.6	11.2
123789-hexachlorodibenzofuran	0.100	4.51	2.65	3.76	3.64
1234678-heptachlorodibenzofuran	0.010	2.22	1.28	1.97	1.82
1234789-heptachlorodibenzofuran	0.010	0.60	0.39	0.56	0.52
Octachlorodibenzofuran	0.001	0.15	0.11	0.15	0.14
Total Dioxins & Furans		<126	<76.7	<110	<105
In-Stack Emission Limit					60

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

NATO/CCMS (1989) Toxicity Equivalency Factors

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 49
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Wet Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Wet Reference Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.09	<0.73	<1.28	<1.03
12378-pentachlorodibenzo-p-dioxin	1.000	26.7	16.2	22.3	21.7
123478-hexachlorodibenzo-p-dioxin	0.100	5.12	3.48	4.80	4.47
123678-hexachlorodibenzo-p-dioxin	0.100	18.7	11.6	16.4	15.6
123789-hexachlorodibenzo-p-dioxin	0.100	9.08	5.78	9.05	7.97
1234678-heptachlorodibenzo-p-dioxin	0.010	9.40	5.89	8.68	7.99
Octachlorodibenzo-p-dioxin	0.0003	0.16	0.10	0.16	0.14
2378-tetrachlorodibenzofuran	0.100	0.80	0.44	0.60	0.61
12378-pentachlorodibenzofuran	0.030	0.66	0.38	0.61	0.55
23478-pentachlorodibenzofuran	0.300	28.2	15.9	23.0	22.4
123478-hexachlorodibenzofuran	0.100	6.33	3.82	5.66	5.27
123678-hexachlorodibenzofuran	0.100	9.06	5.52	8.02	7.53
234678-hexachlorodibenzofuran	0.100	15.7	9.53	13.3	12.9
123789-hexachlorodibenzofuran	0.100	5.20	3.02	4.31	4.17
1234678-heptachlorodibenzofuran	0.010	2.56	1.46	2.25	2.09
1234789-heptachlorodibenzofuran	0.010	0.70	0.45	0.64	0.60
Octachlorodibenzofuran	0.0003	0.053	0.037	0.053	0.048
PCB 81	0.0003	0.0031	0.0033	0.0032	0.0032
PCB 77	0.0001	0.0030	0.0022	0.0030	0.0027
PCB 123	0.00003	0.00086	<0.0011	0.00082	<0.00092
PCB 118	0.00003	0.0048	0.0085	0.0055	0.0062
PCB 114	0.00003	<0.00049	0.00058	0.00053	<0.00053
PCB 105	0.00003	0.0020	0.0031	0.0022	0.0024
PCB 126	0.100	4.34	<2.14	<2.93	<3.14
PCB 167	0.00003	0.00030	0.00022	0.00028	0.00027
PCB 156	0.00003	0.00083	0.00058	0.00091	0.00077
PCB 157	0.00003	0.00071	0.00038	0.00058	0.00055
PCB 169	0.030	1.16	0.72	1.05	0.98
PCB 189	0.00003	0.0010	0.00054	0.00091	0.00082
Total Dioxins & Furans Only		<139	<84.3	<121	<115
Total PCBs Only		<5.52	<2.88	<4.00	<4.13
Total Dioxins & Furans and PCBs		<145	<87.2	<125	<119

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 50
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Emission Rates

Specific Isomer	Toxicity Equivalency Factor	Emission Rate Test No. 1 ng TEQ/s	Test No. 2 ng TEQ/s	Test No. 3 ng TEQ/s	Average ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.018	<0.013	<0.021	<0.017
12378-pentachlorodibenzo-p-dioxin	1.000	0.45	0.28	0.37	0.37
123478-hexachlorodibenzo-p-dioxin	0.100	0.087	0.060	0.080	0.075
123678-hexachlorodibenzo-p-dioxin	0.100	0.32	0.20	0.27	0.26
123789-hexachlorodibenzo-p-dioxin	0.100	0.15	0.099	0.15	0.13
1234678-heptachlorodibenzo-p-dioxin	0.010	0.16	0.10	0.14	0.13
Octachlorodibenzo-p-dioxin	0.0003	0.0026	0.0018	0.0026	0.0024
2378-tetrachlorodibenzofuran	0.100	0.014	0.0074	0.010	0.010
12378-pentachlorodibenzofuran	0.030	0.011	0.0065	0.010	0.0093
23478-pentachlorodibenzofuran	0.300	0.48	0.27	0.38	0.38
123478-hexachlorodibenzofuran	0.100	0.11	0.065	0.094	0.089
123678-hexachlorodibenzofuran	0.100	0.15	0.094	0.13	0.13
234678-hexachlorodibenzofuran	0.100	0.27	0.16	0.22	0.22
123789-hexachlorodibenzofuran	0.100	0.088	0.052	0.071	0.070
1234678-heptachlorodibenzofuran	0.010	0.044	0.025	0.037	0.035
1234789-heptachlorodibenzofuran	0.010	0.012	0.0077	0.011	0.010
Octachlorodibenzofuran	0.0003	0.00090	0.00064	0.00088	0.00080
PCB 81	0.0003	0.000052	0.000056	0.000053	0.000054
PCB 77	0.0001	0.000050	0.000037	0.000049	0.000046
PCB 123	0.00003	0.000015	<0.000018	0.000014	<0.000016
PCB 118	0.00003	0.000081	0.00014	0.000091	0.00011
PCB 114	0.00003	<0.0000083	0.0000099	0.0000087	<0.0000090
PCB 105	0.00003	0.000034	0.000053	0.000036	0.000041
PCB 126	0.100	0.074	<0.037	<0.049	<0.053
PCB 167	0.00003	0.0000052	0.0000037	0.0000047	0.0000045
PCB 156	0.00003	0.000014	0.000010	0.000015	0.000013
PCB 157	0.00003	0.000012	0.0000064	0.0000096	0.0000094
PCB 169	0.030	0.020	0.012	0.017	0.016
PCB 189	0.00003	0.000017	0.0000092	0.000015	0.000014
Total Dioxins & Furans Only		<2.37	<1.44	<2.01	<1.94
Total PCBs Only		<0.094	<0.049	<0.066	<0.070
Total Dioxins & Furans and PCBs		<2.46	<1.49	<2.08	<2.01

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 51
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using the Full Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	<0.74	<1.24	<0.90	<1.03	<0.017
12378-pentachlorodibenzo-p-dioxin	15.7	26.1	18.9	21.7	0.37
123478-hexachlorodibenzo-p-dioxin	3.22	5.37	3.90	4.47	0.075
123678-hexachlorodibenzo-p-dioxin	11.2	18.7	13.6	15.6	0.26
123789-hexachlorodibenzo-p-dioxin	5.74	9.58	6.95	7.97	0.13
1234678-heptachlorodibenzo-p-dioxin	5.76	9.61	6.97	7.99	0.13
Octachlorodibenzo-p-dioxin	0.10	0.17	0.12	0.14	0.0024
2378-tetrachlorodibenzofuran	0.44	0.74	0.53	0.61	0.010
12378-pentachlorodibenzofuran	0.40	0.66	0.48	0.55	0.0093
23478-pentachlorodibenzofuran	16.1	26.9	19.5	22.4	0.38
123478-hexachlorodibenzofuran	3.80	6.34	4.60	5.27	0.089
123678-hexachlorodibenzofuran	5.43	9.06	6.57	7.53	0.13
234678-hexachlorodibenzofuran	9.27	15.5	11.2	12.9	0.22
123789-hexachlorodibenzofuran	3.01	5.02	3.64	4.17	0.070
1234678-heptachlorodibenzofuran	1.51	2.51	1.82	2.09	0.035
1234789-heptachlorodibenzofuran	0.43	0.72	0.52	0.60	0.010
Octachlorodibenzofuran	0.034	0.057	0.042	0.048	0.00080
PCB 81	0.0023	0.0038	0.0028	0.0032	0.000054
PCB 77	0.0019	0.0032	0.0024	0.0027	0.000046
PCB 123	<0.00066	<0.0011	<0.00080	<0.00092	<0.000016
PCB 118	0.0045	0.0075	0.0054	0.0062	0.00011
PCB 114	<0.00038	<0.00064	<0.00046	<0.00053	<0.0000090
PCB 105	0.0018	0.0029	0.0021	0.0024	0.000041
PCB 126	<2.26	<3.77	<2.74	<3.14	<0.053
PCB 167	0.00019	0.00032	0.00023	0.00027	0.0000045
PCB 156	0.00056	0.00093	0.00068	0.00077	0.000013
PCB 157	0.00040	0.00067	0.00048	0.00055	0.0000094
PCB 169	0.70	1.17	0.85	0.98	0.016
PCB 189	0.00059	0.00098	0.00071	0.00082	0.000014
Total Dioxins & Furans Only	<82.9	<138	<100	<115	<1.94
Total PCBs Only	<2.98	<4.97	<3.60	<4.13	<0.070
Total Dioxins & Furans and PCBs	<85.9	<143	<104	<119	<2.01

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 52
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using Half the Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	0.37	0.62	0.45	0.52	0.0087
12378-pentachlorodibenzo-p-dioxin	15.7	26.1	18.9	21.7	0.37
123478-hexachlorodibenzo-p-dioxin	3.22	5.37	3.90	4.47	0.075
123678-hexachlorodibenzo-p-dioxin	11.2	18.7	13.6	15.6	0.26
123789-hexachlorodibenzo-p-dioxin	5.74	9.58	6.95	7.97	0.13
1234678-heptachlorodibenzo-p-dioxin	5.76	9.61	6.97	7.99	0.13
Octachlorodibenzo-p-dioxin	0.10	0.17	0.12	0.14	0.0024
2378-tetrachlorodibenzofuran	0.44	0.74	0.53	0.61	0.010
12378-pentachlorodibenzofuran	0.40	0.66	0.48	0.55	0.0093
23478-pentachlorodibenzofuran	16.1	26.9	19.5	22.4	0.38
123478-hexachlorodibenzofuran	3.80	6.34	4.60	5.27	0.089
123678-hexachlorodibenzofuran	5.43	9.06	6.57	7.53	0.13
234678-hexachlorodibenzofuran	9.27	15.5	11.2	12.9	0.22
123789-hexachlorodibenzofuran	3.01	5.02	3.64	4.17	0.070
1234678-heptachlorodibenzofuran	1.51	2.51	1.82	2.09	0.035
1234789-heptachlorodibenzofuran	0.43	0.72	0.52	0.60	0.010
Octachlorodibenzofuran	0.034	0.057	0.042	0.048	0.00080
PCB 81	0.0023	0.0038	0.0028	0.0032	0.000054
PCB 77	0.0019	0.0032	0.0024	0.0027	0.000046
PCB 123	0.00053	0.00089	0.00065	0.00074	0.000012
PCB 118	0.0045	0.0075	0.0054	0.0062	0.00011
PCB 114	0.00032	0.00054	0.00039	0.00045	0.0000076
PCB 105	0.0018	0.0029	0.0021	0.0024	0.000041
PCB 126	1.65	2.76	2.00	2.29	0.039
PCB 167	0.00019	0.00032	0.00023	0.00027	0.0000045
PCB 156	0.00056	0.00093	0.00068	0.00077	0.000013
PCB 157	0.00040	0.00067	0.00048	0.00055	0.0000094
PCB 169	0.70	1.17	0.85	0.98	0.016
PCB 189	0.00059	0.00098	0.00071	0.00082	0.000014
Total Dioxins & Furans Only	82.5	138	99.8	115	1.93
Total PCBs Only	2.37	3.95	2.86	3.29	0.056
Total Dioxins & Furans and PCBs	84.9	142	103	118	1.99

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 53
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 1

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	214	27.4	45.9	33.0	38.1	0.65
1,4-Dichlorobenzene	156	20.0	33.5	24.1	27.8	0.47
1,2-Dichlorobenzene	188	24.1	40.3	29.0	33.5	0.57
Total Dichlorobenzene	558	71.5	120	86.1	99.3	1.69
1,3,5-trichlorobenzene	36.1	4.63	7.75	5.57	6.42	0.11
1,2,4-trichlorobenzene	142	18.2	30.5	21.9	25.3	0.43
1,2,3-trichlorobenzene	43.4	5.56	9.31	6.70	7.72	0.13
Total Trichlorobenzene	222	28.4	47.5	34.2	39.4	0.67
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	49.7	6.37	10.7	7.67	8.84	0.15
1,2,3,4-tetrachlorobenzene	<25	<3.20	<5.36	<3.86	<4.45	<0.076
Total Tetrachlorobenzene	<74.7	<9.58	<16.0	<11.5	<13.3	<0.23
Pentachlorobenzene	<25	<3.20	<5.36	<3.86	<4.45	<0.076
Hexachlorobenzene	<25	<3.20	<5.36	<3.86	<4.45	<0.076
Total Chlorobenzenes	<904	<116	<194	<140	<161	<2.74

Dry Gas Volume Sampled (Rm³*) :	4.661
Actual Flowrate (m³/s) :	23.6
Dry Reference Flowrate (Rm³/s*) :	14.1
Dry Adjusted Flowrate (Rm³/s**) :	19.6
Wet Reference Flowrate (Rm³/s*) :	17.0

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 54
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 2

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	152	19.7	32.4	23.8	27.1	0.46
1,4-Dichlorobenzene	113	14.6	24.1	17.7	20.2	0.34
1,2-Dichlorobenzene	130	16.8	27.7	20.3	23.2	0.40
Total Dichlorobenzene	395	51.1	84.3	61.8	70.5	1.21
1,3,5-trichlorobenzene	29.7	3.84	6.34	4.65	5.30	0.091
1,2,4-trichlorobenzene	127	16.4	27.1	19.9	22.7	0.39
1,2,3-trichlorobenzene	39.6	5.12	8.45	6.20	7.07	0.12
Total Trichlorobenzene	196	25.4	41.9	30.7	35.0	0.60
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	51.6	6.67	11.0	8.08	9.21	0.16
1,2,3,4-tetrachlorobenzene	<25	<3.23	<5.34	<3.91	<4.46	<0.076
Total Tetrachlorobenzene	<76.6	<9.91	<16.4	<12.0	<13.7	<0.23
Pentachlorobenzene	<25	<3.23	<5.34	<3.91	<4.46	<0.076
Hexachlorobenzene	<25	<3.23	<5.34	<3.91	<4.46	<0.076
Total Chlorobenzenes	<718	<92.8	<153	<112	<128	<2.19

Dry Gas Volume Sampled (Rm³*) :	4.685
Actual Flowrate (m³/s) :	23.6
Dry Reference Flowrate (Rm³/s*) :	14.3
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	17.1

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 55
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 3

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	152	20.0	33.5	24.3	27.8	0.46
1,4-Dichlorobenzene	118	15.5	26.0	18.9	21.6	0.36
1,2-Dichlorobenzene	137	18.0	30.2	21.9	25.1	0.42
Total Dichlorobenzene	407	53.6	89.7	65.1	74.6	1.24
1,3,5-trichlorobenzene	25.4	3.34	5.60	4.07	4.65	0.077
1,2,4-trichlorobenzene	100	13.2	22.0	16.0	18.3	0.30
1,2,3-trichlorobenzene	29.7	3.91	6.54	4.75	5.44	0.090
Total Trichlorobenzene	155	20.4	34.2	24.8	28.4	0.47
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	39.4	5.19	8.68	6.31	7.22	0.12
1,2,3,4-tetrachlorobenzene	<25	<3.29	<5.51	<4.00	<4.58	<0.076
Total Tetrachlorobenzene	<64.4	<8.48	<14.2	<10.3	<11.8	<0.20
Pentachlorobenzene	<25	<3.29	<5.51	<4.00	<4.58	<0.076
Hexachlorobenzene	<25	<3.29	<5.51	<4.00	<4.58	<0.076
Total Chlorobenzenes	<677	<89.1	<149	<108	<124	<2.06

Dry Gas Volume Sampled (Rm^3*) :	4.538
Actual Flowrate (m^3/s) :	23.1
Dry Reference Flowrate (Rm^3/s*) :	13.8
Dry Adjusted Flowrate (Rm^3/s**) :	19.0
Wet Reference Flowrate (Rm^3/s*) :	16.6

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 56
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Actual Concentrations for Chlorobenzenes

Specific Isomer	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
1,3-Dichlorobenzene	27.4	19.7	20.0	22.4	19.6
1,4-Dichlorobenzene	20.0	14.6	15.5	16.7	17.2
1,2-Dichlorobenzene	24.1	16.8	18.0	19.6	19.9
Total Dichlorobenzene	71.5	51.1	53.6	58.7	19.0
1,3,5-trichlorobenzene	4.63	3.84	3.34	3.94	16.4
1,2,4-trichlorobenzene	18.2	16.4	13.2	15.9	16.0
1,2,3-trichlorobenzene	5.56	5.12	3.91	4.86	17.6
Total Trichlorobenzene	28.4	25.4	20.4	24.7	16.3
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	6.37	6.67	5.19	6.08	12.9
1,2,3,4-tetrachlorobenzene	<3.20	<3.23	<3.29	<3.24	1.4
Total Tetrachlorobenzene	<9.58	<9.91	<8.48	<9.32	8.0
Pentachlorobenzene	<3.20	<3.23	<3.29	<3.24	1.4
Hexachlorobenzene	<3.20	<3.23	<3.29	<3.24	1.4
Total Chlorobenzenes	<116	<92.8	<89.1	<99.3	14.6

TABLE 57
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dry Reference Concentrations for Chlorobenzenes

Specific Isomer	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
1,3-Dichlorobenzene	45.9	32.4	33.5	37.3	20.1
1,4-Dichlorobenzene	33.5	24.1	26.0	27.9	17.7
1,2-Dichlorobenzene	40.3	27.7	30.2	32.8	20.4
Total Dichlorobenzene	120	84.3	89.7	97.9	19.5
1,3,5-trichlorobenzene	7.75	6.34	5.60	6.56	16.6
1,2,4-trichlorobenzene	30.5	27.1	22.0	26.5	16.0
1,2,3-trichlorobenzene	9.31	8.45	6.54	8.10	17.5
Total Trichlorobenzene	47.5	41.9	34.2	41.2	16.3
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	10.7	11.0	8.68	10.1	12.4
1,2,3,4-tetrachlorobenzene	<5.36	<5.34	<5.51	<5.40	1.7
Total Tetrachlorobenzene	<16.0	<16.4	<14.2	<15.5	7.5
Pentachlorobenzene	<5.36	<5.34	<5.51	<5.40	1.7
Hexachlorobenzene	<5.36	<5.34	<5.51	<5.40	1.7
Total Chlorobenzenes	<194	<153	<149	<165	15.0

* At 25°C and 1 atmosphere

TABLE 58
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dry Adjusted Concentrations for Chlorobenzenes

Specific Isomer	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
1,3-Dichlorobenzene	33.0	23.8	24.3	27.0	19.2
1,4-Dichlorobenzene	24.1	17.7	18.9	20.2	16.8
1,2-Dichlorobenzene	29.0	20.3	21.9	23.8	19.4
Total Dichlorobenzene	86.1	61.8	65.1	71.0	18.5
1,3,5-trichlorobenzene	5.57	4.65	4.07	4.76	16.0
1,2,4-trichlorobenzene	21.9	19.9	16.0	19.3	15.6
1,2,3-trichlorobenzene	6.70	6.20	4.75	5.88	17.2
Total Trichlorobenzene	34.2	30.7	24.8	29.9	15.8
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	7.67	8.08	6.31	7.35	12.6
1,2,3,4-tetrachlorobenzene	<3.86	<3.91	<4.00	<3.92	1.8
Total Tetrachlorobenzene	<11.5	<12.0	<10.3	<11.3	7.7
Pentachlorobenzene	<3.86	<3.91	<4.00	<3.92	1.8
Hexachlorobenzene	<3.86	<3.91	<4.00	<3.92	1.8
Total Chlorobenzenes	<140	<112	<108	<120	14.2

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 59
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Wet Reference Concentrations for Chlorobenzenes

Specific Isomer	Wet Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
1,3-Dichlorobenzene	38.1	27.1	27.8	31.0	19.7
1,4-Dichlorobenzene	27.8	20.2	21.6	23.2	17.4
1,2-Dichlorobenzene	33.5	23.2	25.1	27.3	20.0
Total Dichlorobenzene	99.3	70.5	74.6	81.5	19.1
1,3,5-trichlorobenzene	6.42	5.30	4.65	5.46	16.4
1,2,4-trichlorobenzene	25.3	22.7	18.3	22.1	15.9
1,2,3-trichlorobenzene	7.72	7.07	5.44	6.74	17.4
Total Trichlorobenzene	39.4	35.0	28.4	34.3	16.2
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	8.84	9.21	7.22	8.42	12.6
1,2,3,4-tetrachlorobenzene	<4.45	<4.46	<4.58	<4.50	1.6
Total Tetrachlorobenzene	<13.3	<13.7	<11.8	<12.9	7.7
Pentachlorobenzene	<4.45	<4.46	<4.58	<4.50	1.6
Hexachlorobenzene	<4.45	<4.46	<4.58	<4.50	1.6
Total Chlorobenzenes	<161	<128	<124	<138	14.7

* At 25°C and 1 atmosphere

TABLE 60
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Rates for Chlorobenzenes

Specific Isomer	Emission Rate Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
1,3-Dichlorobenzene	0.65	0.46	0.46	0.52	20.3
1,4-Dichlorobenzene	0.47	0.34	0.36	0.39	17.8
1,2-Dichlorobenzene	0.57	0.40	0.42	0.46	20.4
Total Dichlorobenzene	1.69	1.21	1.24	1.38	19.6
1,3,5-trichlorobenzene	0.11	0.091	0.077	0.092	17.4
1,2,4-trichlorobenzene	0.43	0.39	0.30	0.37	17.1
1,2,3-trichlorobenzene	0.13	0.12	0.090	0.11	18.7
Total Trichlorobenzene	0.67	0.60	0.47	0.58	17.3
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	0.15	0.16	0.12	0.14	14.0
1,2,3,4-tetrachlorobenzene	<0.076	<0.076	<0.076	<0.076	0.4
Total Tetrachlorobenzene	<0.23	<0.23	<0.20	<0.22	9.2
Pentachlorobenzene	<0.076	<0.076	<0.076	<0.076	0.4
Hexachlorobenzene	<0.076	<0.076	<0.076	<0.076	0.4
Total Chlorobenzenes	<2.74	<2.19	<2.06	<2.33	15.4

TABLE 61
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Emission Data for Chlorobenzenes

Specific Isomer	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	22.4	37.3	27.0	31.0	0.52
1,4-Dichlorobenzene	16.7	27.9	20.2	23.2	0.39
1,2-Dichlorobenzene	19.6	32.8	23.8	27.3	0.46
Total Dichlorobenzene	58.7	97.9	71.0	81.5	1.38
1,3,5-trichlorobenzene	3.94	6.56	4.76	5.46	0.092
1,2,4-trichlorobenzene	15.9	26.5	19.3	22.1	0.37
1,2,3-trichlorobenzene	4.86	8.10	5.88	6.74	0.11
Total Trichlorobenzene	24.7	41.2	29.9	34.3	0.58
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	6.08	10.1	7.35	8.42	0.14
1,2,3,4-tetrachlorobenzene	<3.24	<5.40	<3.92	<4.50	<0.076
Total Tetrachlorobenzene	<9.32	<15.5	<11.3	<12.9	<0.22
Pentachlorobenzene	<3.24	<5.40	<3.92	<4.50	<0.076
Hexachlorobenzene	<3.24	<5.40	<3.92	<4.50	<0.076
Total Chlorobenzenes	<99.3	<165	<120	<138	<2.33

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 62
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorobenzene Blank Analyses

Isomers and Congener Group Totals	Blank Train Total ng	Laboratory Blank Total ng
1,3-Dichlorobenzene	<25	<25
1,4-Dichlorobenzene	<25	<25
1,2-Dichlorobenzene	<25	<25
Total Dichlorobenzene	<75	<75
1,3,5-trichlorobenzene	<25	<25
1,2,4-trichlorobenzene	<25	<25
1,2,3-trichlorobenzene	<25	<25
Total Trichlorobenzene	<75	<75
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<25	<25
1,2,3,4-tetrachlorobenzene	<25	<25
Total Tetrachlorobenzene	<50	<50
Pentachlorobenzene	<25	<25
Hexachlorobenzene	<25	<25
Total Chlorobenzenes	<250	<250

"<" indicates that the amount detected is less than the analytical detection limit (<MDL).
In these cases the value of the detection limit was used to calculate the total collected.

TABLE 63
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 1

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	209	26.8	44.8	32.3	37.2	0.63
3-monochlorophenol	<50	<6.41	<10.7	<7.72	<8.90	<0.15
4-monochlorophenol	144	18.5	30.9	22.2	25.6	0.44
Total Monochlorophenols	<403	<51.7	<86.5	<62.2	<71.7	<1.22
2,6-dichlorophenol	<50	<6.41	<10.7	<7.72	<8.90	<0.15
2,4 & 2,5-dichlorophenol	105	13.5	22.5	16.2	18.7	0.32
3,5-dichlorophenol	78.6	10.1	16.9	12.1	14.0	0.24
2,3-dichlorophenol	<50	<6.41	<10.7	<7.72	<8.90	<0.15
3,4-dichlorophenol	<50	<6.41	<10.7	<7.72	<8.90	<0.15
Total Dichlorophenols	<334	<42.8	<71.6	<51.5	<59.4	<1.01
2,4,6-trichlorophenol	64.1	8.22	13.8	9.89	11.4	0.19
2,3,6-trichlorophenol	<50	<6.41	<10.7	<7.72	<8.90	<0.15
2,3,5-trichlorophenol	<50	<6.41	<10.7	<7.72	<8.90	<0.15
2,4,5-trichlorophenol	<50	<6.41	<10.7	<7.72	<8.90	<0.15
2,3,4-trichlorophenol	<50	<6.41	<10.7	<7.72	<8.90	<0.15
3,4,5-trichlorophenol	<50	<6.41	<10.7	<7.72	<8.90	<0.15
Total Trichlorophenols	<314	<40.3	<67.4	<48.5	<55.9	<0.95
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<50	<6.41	<10.7	<7.72	<8.90	<0.15
2,3,4,5-tetrachlorophenol	<50	<6.41	<10.7	<7.72	<8.90	<0.15
Total Tetrachlorophenols	<100	<12.8	<21.5	<15.4	<17.8	<0.30
Pentachlorophenol	<50	<6.41	<10.7	<7.72	<8.90	<0.15
Total Chlorophenols	<1201	<154	<258	<185	<214	<3.63

Dry Gas Volume Sampled (Rm³*) :	4.661
Actual Flowrate (m³/s) :	23.6
Dry Reference Flowrate (Rm³/s*) :	14.1
Dry Adjusted Flowrate (Rm³/s**) :	19.6
Wet Reference Flowrate (Rm³/s*) :	17.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 64
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 2

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	216	27.9	46.1	33.8	38.6	0.66
3-monochlorophenol	<50	<6.47	<10.7	<7.83	<8.92	<0.15
4-monochlorophenol	139	18.0	29.7	21.8	24.8	0.42
Total Monochlorophenols	<405	<52.4	<86.4	<63.4	<72.3	<1.24
2,6-dichlorophenol	<50	<6.47	<10.7	<7.83	<8.92	<0.15
2,4 & 2,5-dichlorophenol	126	16.3	26.9	19.7	22.5	0.38
3,5-dichlorophenol	<50	<6.47	<10.7	<7.83	<8.92	<0.15
2,3-dichlorophenol	<50	<6.47	<10.7	<7.83	<8.92	<0.15
3,4-dichlorophenol	<50	<6.47	<10.7	<7.83	<8.92	<0.15
Total Dichlorophenols	<326	<42.2	<69.6	<51.0	<58.2	<1.00
2,4,6-trichlorophenol	180	23.3	38.4	28.2	32.1	0.55
2,3,6-trichlorophenol	<50	<6.47	<10.7	<7.83	<8.92	<0.15
2,3,5-trichlorophenol	<50	<6.47	<10.7	<7.83	<8.92	<0.15
2,4,5-trichlorophenol	<50	<6.47	<10.7	<7.83	<8.92	<0.15
2,3,4-trichlorophenol	<50	<6.47	<10.7	<7.83	<8.92	<0.15
3,4,5-trichlorophenol	<50	<6.47	<10.7	<7.83	<8.92	<0.15
Total Trichlorophenols	<430	<55.6	<91.8	<67.3	<76.8	<1.31
2,3,5,6 & 2,3,4,6-tetrachlorophenol	52.6	6.80	11.2	8.23	9.39	0.16
2,3,4,5-tetrachlorophenol	<50	<6.47	<10.7	<7.83	<8.92	<0.15
Total Tetrachlorophenols	<103	<13.3	<21.9	<16.1	<18.3	<0.31
Pentachlorophenol	<50	<6.47	<10.7	<7.83	<8.92	<0.15
Total Chlorophenols	<1314	<170	<280	<206	<234	<4.01

Dry Gas Volume Sampled (Rm³*) :	4.685
Actual Flowrate (m³/s) :	23.6
Dry Reference Flowrate (Rm³/s*) :	14.3
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	17.1

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 65
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 3

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	105	13.8	23.1	16.8	19.2	0.32
3-monochlorophenol	<50	<6.58	<11.0	<8.00	<9.16	<0.15
4-monochlorophenol	56.2	7.40	12.4	8.99	10.3	0.17
Total Monochlorophenols	<211	<27.8	<46.5	<33.8	<38.7	<0.64
2,6-dichlorophenol	<50	<6.58	<11.0	<8.00	<9.16	<0.15
2,4 & 2,5-dichlorophenol	<50	<6.58	<11.0	<8.00	<9.16	<0.15
3,5-dichlorophenol	55.7	7.33	12.3	8.91	10.2	0.17
2,3-dichlorophenol	<50	<6.58	<11.0	<8.00	<9.16	<0.15
3,4-dichlorophenol	<50	<6.58	<11.0	<8.00	<9.16	<0.15
Total Dichlorophenols	<256	<33.7	<56.3	<40.9	<46.8	<0.78
2,4,6-trichlorophenol	<50	<6.58	<11.0	<8.00	<9.16	<0.15
2,3,6-trichlorophenol	<50	<6.58	<11.0	<8.00	<9.16	<0.15
2,3,5-trichlorophenol	<50	<6.58	<11.0	<8.00	<9.16	<0.15
2,4,5-trichlorophenol	<50	<6.58	<11.0	<8.00	<9.16	<0.15
2,3,4-trichlorophenol	<50	<6.58	<11.0	<8.00	<9.16	<0.15
3,4,5-trichlorophenol	<50	<6.58	<11.0	<8.00	<9.16	<0.15
Total Trichlorophenols	<300	<39.5	<66.1	<48.0	<55.0	<0.91
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<50	<6.58	<11.0	<8.00	<9.16	<0.15
2,3,4,5-tetrachlorophenol	<50	<6.58	<11.0	<8.00	<9.16	<0.15
Total Tetrachlorophenols	<100	<13.2	<22.0	<16.0	<18.3	<0.30
Pentachlorophenol	<50	<6.58	<11.0	<8.00	<9.16	<0.15
Total Chlorophenols	<917	<121	<202	<147	<168	<2.79

Dry Gas Volume Sampled (Rm³*) :	4.538
Actual Flowrate (m³/s) :	23.1
Dry Reference Flowrate (Rm³/s*) :	13.8
Dry Adjusted Flowrate (Rm³/s**) :	19.0
Wet Reference Flowrate (Rm³/s*) :	16.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 66
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Actual Concentrations

Specific Isomer	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
2-monochlorophenol	26.8	27.9	13.8	22.8	34.3
3-monochlorophenol	<6.41	<6.47	<6.58	<6.49	1.4
4-monochlorophenol	18.5	18.0	7.40	14.6	42.8
Total Monochlorophenols	<51.7	<52.4	<27.8	<43.9	31.8
2,6-dichlorophenol	<6.41	<6.47	<6.58	<6.49	1.4
2,4 & 2,5-dichlorophenol	13.5	16.3	<6.58	<12.1	41.2
3,5-dichlorophenol	10.1	<6.47	7.33	<7.96	23.7
2,3-dichlorophenol	<6.41	<6.47	<6.58	<6.49	1.4
3,4-dichlorophenol	<6.41	<6.47	<6.58	<6.49	1.4
Total Dichlorophenols	<42.8	<42.2	<33.7	<39.5	12.9
2,4,6-trichlorophenol	8.22	23.3	<6.58	<12.7	72.5
2,3,6-trichlorophenol	<6.41	<6.47	<6.58	<6.49	1.4
2,3,5-trichlorophenol	<6.41	<6.47	<6.58	<6.49	1.4
2,4,5-trichlorophenol	<6.41	<6.47	<6.58	<6.49	1.4
2,3,4-trichlorophenol	<6.41	<6.47	<6.58	<6.49	1.4
3,4,5-trichlorophenol	<6.41	<6.47	<6.58	<6.49	1.4
Total Trichlorophenols	<40.3	<55.6	<39.5	<45.1	20.2
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<6.41	6.80	<6.58	<6.60	3.0
2,3,4,5-tetrachlorophenol	<6.41	<6.47	<6.58	<6.49	1.4
Total Tetrachlorophenols	<12.8	<13.3	<13.2	<13.1	1.8
Pentachlorophenol	<6.41	<6.47	<6.58	<6.49	1.4
Total Chlorophenols	<154	<170	<121	<148	16.9

TABLE 67
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
2-monochlorophenol	44.8	46.1	23.1	38.0	33.9
3-monochlorophenol	<10.7	<10.7	<11.0	<10.8	1.7
4-monochlorophenol	30.9	29.7	12.4	24.3	42.6
Total Monochlorophenols	<86.5	<86.4	<46.5	<73.1	31.5
2,6-dichlorophenol	<10.7	<10.7	<11.0	<10.8	1.7
2,4 & 2,5-dichlorophenol	22.5	26.9	<11.0	<20.1	40.7
3,5-dichlorophenol	16.9	<10.7	12.3	<13.3	24.2
2,3-dichlorophenol	<10.7	<10.7	<11.0	<10.8	1.7
3,4-dichlorophenol	<10.7	<10.7	<11.0	<10.8	1.7
Total Dichlorophenols	<71.6	<69.6	<56.3	<65.8	12.6
2,4,6-trichlorophenol	13.8	38.4	<11.0	<21.1	71.7
2,3,6-trichlorophenol	<10.7	<10.7	<11.0	<10.8	1.7
2,3,5-trichlorophenol	<10.7	<10.7	<11.0	<10.8	1.7
2,4,5-trichlorophenol	<10.7	<10.7	<11.0	<10.8	1.7
2,3,4-trichlorophenol	<10.7	<10.7	<11.0	<10.8	1.7
3,4,5-trichlorophenol	<10.7	<10.7	<11.0	<10.8	1.7
Total Trichlorophenols	<67.4	<91.8	<66.1	<75.1	19.3
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<10.7	11.2	<11.0	<11.0	2.3
2,3,4,5-tetrachlorophenol	<10.7	<10.7	<11.0	<10.8	1.7
Total Tetrachlorophenols	<21.5	<21.9	<22.0	<21.8	1.4
Pentachlorophenol	<10.7	<10.7	<11.0	<10.8	1.7
Total Chlorophenols	<258	<280	<202	<247	16.3

* At 25°C and 1 atmosphere

TABLE 68
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
2-monochlorophenol	32.3	33.8	16.8	27.6	34.0
3-monochlorophenol	<7.72	<7.83	<8.00	<7.85	1.8
4-monochlorophenol	22.2	21.8	8.99	17.7	42.5
Total Monochlorophenols	<62.2	<63.4	<33.8	<53.1	31.5
2,6-dichlorophenol	<7.72	<7.83	<8.00	<7.85	1.8
2,4 & 2,5-dichlorophenol	16.2	19.7	<8.00	<14.6	41.1
3,5-dichlorophenol	12.1	<7.83	8.91	<9.62	23.3
2,3-dichlorophenol	<7.72	<7.83	<8.00	<7.85	1.8
3,4-dichlorophenol	<7.72	<7.83	<8.00	<7.85	1.8
Total Dichlorophenols	<51.5	<51.0	<40.9	<47.8	12.5
2,4,6-trichlorophenol	9.89	28.2	<8.00	<15.4	72.5
2,3,6-trichlorophenol	<7.72	<7.83	<8.00	<7.85	1.8
2,3,5-trichlorophenol	<7.72	<7.83	<8.00	<7.85	1.8
2,4,5-trichlorophenol	<7.72	<7.83	<8.00	<7.85	1.8
2,3,4-trichlorophenol	<7.72	<7.83	<8.00	<7.85	1.8
3,4,5-trichlorophenol	<7.72	<7.83	<8.00	<7.85	1.8
Total Trichlorophenols	<48.5	<67.3	<48.0	<54.6	20.2
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<7.72	8.23	<8.00	<7.98	3.2
2,3,4,5-tetrachlorophenol	<7.72	<7.83	<8.00	<7.85	1.8
Total Tetrachlorophenols	<15.4	<16.1	<16.0	<15.8	2.2
Pentachlorophenol	<7.72	<7.83	<8.00	<7.85	1.8
Total Chlorophenols	<185	<206	<147	<179	16.7

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 69
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
2-monochlorophenol	37.2	38.6	19.2	31.7	34.1
3-monochlorophenol	<8.90	<8.92	<9.16	<8.99	1.6
4-monochlorophenol	25.6	24.8	10.3	20.2	42.6
Total Monochlorophenols	<71.7	<72.3	<38.7	<60.9	31.6
2,6-dichlorophenol	<8.90	<8.92	<9.16	<8.99	1.6
2,4 & 2,5-dichlorophenol	18.7	22.5	<9.16	<16.8	40.9
3,5-dichlorophenol	14.0	<8.92	10.2	<11.0	23.8
2,3-dichlorophenol	<8.90	<8.92	<9.16	<8.99	1.6
3,4-dichlorophenol	<8.90	<8.92	<9.16	<8.99	1.6
Total Dichlorophenols	<59.4	<58.2	<46.8	<54.8	12.6
2,4,6-trichlorophenol	11.4	32.1	<9.16	<17.6	72.1
2,3,6-trichlorophenol	<8.90	<8.92	<9.16	<8.99	1.6
2,3,5-trichlorophenol	<8.90	<8.92	<9.16	<8.99	1.6
2,4,5-trichlorophenol	<8.90	<8.92	<9.16	<8.99	1.6
2,3,4-trichlorophenol	<8.90	<8.92	<9.16	<8.99	1.6
3,4,5-trichlorophenol	<8.90	<8.92	<9.16	<8.99	1.6
Total Trichlorophenols	<55.9	<76.8	<55.0	<62.5	19.7
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<8.90	9.39	<9.16	<9.15	2.7
2,3,4,5-tetrachlorophenol	<8.90	<8.92	<9.16	<8.99	1.6
Total Tetrachlorophenols	<17.8	<18.3	<18.3	<18.1	1.7
Pentachlorophenol	<8.90	<8.92	<9.16	<8.99	1.6
Total Chlorophenols	<214	<234	<168	<205	16.6

* At 25°C and 1 atmosphere

TABLE 70
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Emission Rates

Specific Isomer	Emission Rate Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
2-monochlorophenol	0.63	0.66	0.32	0.54	35.2
3-monochlorophenol	<0.15	<0.15	<0.15	<0.15	0.4
4-monochlorophenol	0.44	0.42	0.17	0.34	43.6
Total Monochlorophenols	<1.22	<1.24	<0.64	<1.03	32.7
2,6-dichlorophenol	<0.15	<0.15	<0.15	<0.15	0.4
2,4 & 2,5-dichlorophenol	0.32	0.38	<0.15	<0.28	42.0
3,5-dichlorophenol	0.24	<0.15	0.17	<0.19	24.2
2,3-dichlorophenol	<0.15	<0.15	<0.15	<0.15	0.4
3,4-dichlorophenol	<0.15	<0.15	<0.15	<0.15	0.4
Total Dichlorophenols	<1.01	<1.00	<0.78	<0.93	14.0
2,4,6-trichlorophenol	0.19	0.55	<0.15	<0.30	73.2
2,3,6-trichlorophenol	<0.15	<0.15	<0.15	<0.15	0.4
2,3,5-trichlorophenol	<0.15	<0.15	<0.15	<0.15	0.4
2,4,5-trichlorophenol	<0.15	<0.15	<0.15	<0.15	0.4
2,3,4-trichlorophenol	<0.15	<0.15	<0.15	<0.15	0.4
3,4,5-trichlorophenol	<0.15	<0.15	<0.15	<0.15	0.4
Total Trichlorophenols	<0.95	<1.31	<0.91	<1.06	20.9
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<0.15	0.16	<0.15	<0.15	3.3
2,3,4,5-tetrachlorophenol	<0.15	<0.15	<0.15	<0.15	0.4
Total Tetrachlorophenols	<0.30	<0.31	<0.30	<0.31	1.9
Pentachlorophenol	<0.15	<0.15	<0.15	<0.15	0.4
Total Chlorophenols	<3.63	<4.01	<2.79	<3.48	18.0

TABLE 71
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Emission Data for Chlorophenol Isomer and Congener Groups

Specific Isomer	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate µg/s
2-monochlorophenol	22.8	38.0	27.6	31.7	0.54
3-monochlorophenol	<6.49	<10.8	<7.85	<8.99	<0.15
4-monochlorophenol	14.6	24.3	17.7	20.2	0.34
Total Monochlorophenols	<43.9	<73.1	<53.1	<60.9	<1.03
2,6-dichlorophenol	<6.49	<10.8	<7.85	<8.99	<0.15
2,4 & 2,5-dichlorophenol	<12.1	<20.1	<14.6	<16.8	<0.28
3,5-dichlorophenol	<7.96	<13.3	<9.62	<11.0	<0.19
2,3-dichlorophenol	<6.49	<10.8	<7.85	<8.99	<0.15
3,4-dichlorophenol	<6.49	<10.8	<7.85	<8.99	<0.15
Total Dichlorophenols	<39.5	<65.8	<47.8	<54.8	<0.93
2,4,6-trichlorophenol	<12.7	<21.1	<15.4	<17.6	<0.30
2,3,6-trichlorophenol	<6.49	<10.8	<7.85	<8.99	<0.15
2,3,5-trichlorophenol	<6.49	<10.8	<7.85	<8.99	<0.15
2,4,5-trichlorophenol	<6.49	<10.8	<7.85	<8.99	<0.15
2,3,4-trichlorophenol	<6.49	<10.8	<7.85	<8.99	<0.15
3,4,5-trichlorophenol	<6.49	<10.8	<7.85	<8.99	<0.15
Total Trichlorophenols	<45.1	<75.1	<54.6	<62.5	<1.06
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<6.60	<11.0	<7.98	<9.15	<0.15
2,3,4,5-tetrachlorophenol	<6.49	<10.8	<7.85	<8.99	<0.15
Total Tetrachlorophenols	<13.1	<21.8	<15.8	<18.1	<0.31
Pentachlorophenol	<6.49	<10.8	<7.85	<8.99	<0.15
Total Chlorophenols	<148	<247	<179	<205	<3.48

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 72
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Blank Analyses

Congener Group	Lab Blank Total ng	Blank Train Total ng
2-monochlorophenol	<50	59
3-monochlorophenol	<50	<50
4-monochlorophenol	<50	<50
Total Monochlorophenols	<150	<159
2,6-dichlorophenol	<50	<50
2,4 & 2,5-dichlorophenol	<50	<50
3,5-dichlorophenol	<50	<50
2,3-dichlorophenol	<50	<50
3,4-dichlorophenol	<50	<50
Total Dichlorophenols	<250	<250
2,4,6-trichlorophenol	<50	<50
2,3,6-trichlorophenol	<50	<50
2,3,5-trichlorophenol	<50	<50
2,4,5-trichlorophenol	<50	<50
2,3,4-trichlorophenol	<50	<50
3,4,5-trichlorophenol	<50	<50
Total Trichlorophenols	<300	<300
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<50	<50
2,3,4,5-tetrachlorophenol	<50	<50
Total Tetrachlorophenols	<100	<100
Pentachlorophenol	<50	<50
Total Chlorophenols	<850	<859

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

TABLE 73
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 1

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	17.4	2.23	3.73	2.69	3.10	0.053
Acenaphthylene	<10	<1.28	<2.15	<1.54	<1.78	<0.030
Anthracene	35.2	4.51	7.55	5.43	6.26	0.11
Benzo(a)Anthracene	<10	<1.28	<2.15	<1.54	<1.78	<0.030
Benzo(b)Fluoranthene	35.6	4.56	7.64	5.49	6.33	0.11
Benzo(k)Fluoranthene	16.5	2.12	3.54	2.55	2.94	0.050
Benzo(a)fluorene	<10	<1.28	<2.15	<1.54	<1.78	<0.030
Benzo(b)fluorene	<10	<1.28	<2.15	<1.54	<1.78	<0.030
Benzo(g,h,i)Perylene	57.8	7.41	12.4	8.92	10.3	0.17
Benzo(a)Pyrene	16.6	2.13	3.56	2.56	2.95	0.050
Benzo(e)Pyrene	65.1	8.34	14.0	10.0	11.6	0.20
Biphenyl	915	117	196	141	163	2.77
2-Chloronaphthalene	<10	<1.28	<2.15	<1.54	<1.78	<0.030
Chrysene/Triphenylene	25.5	3.27	5.47	3.94	4.54	0.077
Coronene	<10	<1.28	<2.15	<1.54	<1.78	<0.030
Dibenzo(a,c/a,h)Anthracene	<10	<1.28	<2.15	<1.54	<1.78	<0.030
Dibenzo(a,e)pyrene	<10	<1.28	<2.15	<1.54	<1.78	<0.030
9,10-dimethylanthracene	<10	<1.28	<2.15	<1.54	<1.78	<0.030
7,12-Dimethylbenzo(a)anthracene	<10	<1.28	<2.15	<1.54	<1.78	<0.030
Fluoranthene	64.6	8.28	13.9	9.97	11.5	0.20
Fluorene	16.1	2.06	3.45	2.48	2.86	0.049
Indeno(1,2,3-cd)Pyrene	22.1	2.83	4.74	3.41	3.93	0.067
2-methylanthracene	10.2	1.31	2.19	1.57	1.82	0.031
3-Methylcholanthrene	<10	<1.28	<2.15	<1.54	<1.78	<0.030
1-Methylnaphthalene	28.2	3.61	6.05	4.35	5.02	0.085
2-Methylnaphthalene	41.5	5.32	8.90	6.41	7.38	0.13
1-Methylphenanthrene	11.7	1.50	2.51	1.81	2.08	0.035
9-Methylphenanthrene	<10	<1.28	<2.15	<1.54	<1.78	<0.030
Naphthalene	1650	212	354	255	294	4.99
Perylene	190	24.4	40.8	29.3	33.8	0.57
Phenanthrene	118	15.1	25.3	18.2	21.0	0.36
Picene	<10	<1.28	<2.15	<1.54	<1.78	<0.030
Pyrene	101	12.9	21.7	15.6	18.0	0.31
Tetralin	8210	1052	1761	1267	1461	24.8
m-terphenyl	10.5	1.35	2.25	1.62	1.87	0.032
o-Terphenyl	<10	<1.28	<2.15	<1.54	<1.78	<0.030
p-terphenyl	<10	<1.28	<2.15	<1.54	<1.78	<0.030
Total	<11809	<1514	<2533	<1823	<2101	<35.7

Dry Gas Volume Sampled (Rm³*) :	4.661
Actual Flowrate (m³/s) :	23.6
Dry Reference Flowrate (Rm³/s*) :	14.1
Dry Adjusted Flowrate (Rm³/s**) :	19.6
Wet Reference Flowrate (Rm³/s*) :	17.0

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 74
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 2

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	18.7	2.42	3.99	2.93	3.34	0.057
Acenaphthylene	<10	<1.29	<2.13	<1.57	<1.78	<0.031
Anthracene	27.9	3.61	5.96	4.37	4.98	0.085
Benzo(a)Anthracene	<10	<1.29	<2.13	<1.57	<1.78	<0.031
Benzo(b)Fluoranthene	17.6	2.28	3.76	2.75	3.14	0.054
Benzo(k)Fluoranthene	13.3	1.72	2.84	2.08	2.37	0.041
Benzo(a)fluorene	<10	<1.29	<2.13	<1.57	<1.78	<0.031
Benzo(b)fluorene	<10	<1.29	<2.13	<1.57	<1.78	<0.031
Benzo(g,h,i)Perylene	67.1	8.68	14.3	10.5	12.0	0.20
Benzo(a)Pyrene	11.3	1.46	2.41	1.77	2.02	0.034
Benzo(e)Pyrene	50.0	6.47	10.7	7.83	8.92	0.15
Biphenyl	2270	294	485	355	405	6.93
2-Chloronaphthalene	<10	<1.29	<2.13	<1.57	<1.78	<0.031
Chrysene/Triphenylene	14.6	1.89	3.12	2.29	2.61	0.045
Coronene	18.1	2.34	3.86	2.83	3.23	0.055
Dibenzo(a,c/a,h)Anthracene	<10	<1.29	<2.13	<1.57	<1.78	<0.031
Dibenzo(a,e)pyrene	<10	<1.29	<2.13	<1.57	<1.78	<0.031
9,10-dimethylanthracene	<10	<1.29	<2.13	<1.57	<1.78	<0.031
7,12-Dimethylbenzo(a)anthracene	<10	<1.29	<2.13	<1.57	<1.78	<0.031
Fluoranthene	41.7	5.39	8.90	6.53	7.44	0.13
Fluorene	14.4	1.86	3.07	2.25	2.57	0.044
Indeno(1,2,3-cd)Pyrene	18.8	2.43	4.01	2.94	3.36	0.057
2-methylanthracene	11.5	1.49	2.45	1.80	2.05	0.035
3-Methylcholanthrene	<10	<1.29	<2.13	<1.57	<1.78	<0.031
1-Methylnaphthalene	26.9	3.48	5.74	4.21	4.80	0.082
2-Methylnaphthalene	38.2	4.94	8.15	5.98	6.82	0.12
1-Methylphenanthrene	13.9	1.80	2.97	2.18	2.48	0.042
9-Methylphenanthrene	12.4	1.60	2.65	1.94	2.21	0.038
Naphthalene	1400	181	299	219	250	4.27
Perylene	155	20.0	33.1	24.3	27.7	0.47
Phenanthrene	108	14.0	23.1	16.9	19.3	0.33
Picene	<10	<1.29	<2.13	<1.57	<1.78	<0.031
Pyrene	56.2	7.27	12.0	8.80	10.0	0.17
Tetralin	7450	964	1590	1166	1330	22.7
m-terphenyl	<10	<1.29	<2.13	<1.57	<1.78	<0.031
o-Terphenyl	<10	<1.29	<2.13	<1.57	<1.78	<0.031
p-terphenyl	<10	<1.29	<2.13	<1.57	<1.78	<0.031
Total	<11996	<1551	<2560	<1878	<2141	<36.6

Dry Gas Volume Sampled (Rm³*) :	4.685
Actual Flowrate (m³/s) :	23.6
Dry Reference Flowrate (Rm³/s*) :	14.3
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	17.1

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 75
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 3

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	34.9	4.59	7.69	5.59	6.39	0.11
Acenaphthylene	<10	<1.32	<2.20	<1.60	<1.83	<0.030
Anthracene	23.3	3.07	5.13	3.73	4.27	0.071
Benzo(a)Anthracene	<10	<1.32	<2.20	<1.60	<1.83	<0.030
Benzo(b)Fluoranthene	28.6	3.77	6.30	4.58	5.24	0.087
Benzo(k)Fluoranthene	16.9	2.22	3.72	2.70	3.10	0.051
Benzo(a)fluorene	<10	<1.32	<2.20	<1.60	<1.83	<0.030
Benzo(b)fluorene	<10	<1.32	<2.20	<1.60	<1.83	<0.030
Benzo(g,h,i)Perylene	52.5	6.91	11.6	8.40	9.62	0.16
Benzo(a)Pyrene	12.3	1.62	2.71	1.97	2.25	0.037
Benzo(e)Pyrene	57.6	7.58	12.7	9.22	10.6	0.18
Biphenyl	599	78.9	132	95.9	110	1.82
2-Chloronaphthalene	<10	<1.32	<2.20	<1.60	<1.83	<0.030
Chrysene/Triphenylene	23.1	3.04	5.09	3.70	4.23	0.070
Coronene	<10	<1.32	<2.20	<1.60	<1.83	<0.030
Dibenzo(a,c/a,h)Anthracene	<10	<1.32	<2.20	<1.60	<1.83	<0.030
Dibenzo(a,e)pyrene	<10	<1.32	<2.20	<1.60	<1.83	<0.030
9,10-dimethylanthracene	<10	<1.32	<2.20	<1.60	<1.83	<0.030
7,12-Dimethylbenzo(a)anthracene	<10	<1.32	<2.20	<1.60	<1.83	<0.030
Fluoranthene	51.9	6.83	11.4	8.31	9.51	0.16
Fluorene	14.7	1.94	3.24	2.35	2.69	0.045
Indeno(1,2,3-cd)Pyrene	20.0	2.63	4.41	3.20	3.66	0.061
2-methylanthracene	<10	<1.32	<2.20	<1.60	<1.83	<0.030
3-Methylcholanthrene	<10	<1.32	<2.20	<1.60	<1.83	<0.030
1-Methylnaphthalene	21.5	2.83	4.74	3.44	3.94	0.065
2-Methylnaphthalene	35.5	4.67	7.82	5.68	6.50	0.11
1-Methylphenanthrene	10.4	1.37	2.29	1.66	1.91	0.032
9-Methylphenanthrene	12.3	1.62	2.71	1.97	2.25	0.037
Naphthalene	1090	143	240	174	200	3.31
Perylene	110	14.5	24.2	17.6	20.2	0.33
Phenanthrene	95.1	12.5	21.0	15.2	17.4	0.29
Picene	<10	<1.32	<2.20	<1.60	<1.83	<0.030
Pyrene	85.1	11.2	18.8	13.6	15.6	0.26
Tetralin	5600	737	1234	896	1026	17.0
m-terphenyl	<10	<1.32	<2.20	<1.60	<1.83	<0.030
o-Terphenyl	<10	<1.32	<2.20	<1.60	<1.83	<0.030
p-terphenyl	<10	<1.32	<2.20	<1.60	<1.83	<0.030
Total	<8155	<1074	<1797	<1305	<1494	<24.8

Dry Gas Volume Sampled (Rm³*) :	4.538
Actual Flowrate (m³/s) :	23.1
Dry Reference Flowrate (Rm³/s*) :	13.8
Dry Adjusted Flowrate (Rm³/s**) :	19.0
Wet Reference Flowrate (Rm³/s*) :	16.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 76
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Actual Concentrations

Compound	Actual Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/m³	ng/m³	ng/m³	ng/m³	%
Acenaphthene	2.23	2.42	4.59	3.08	42.6
Acenaphthylene	<1.28	<1.29	<1.32	<1.30	1.4
Anthracene	4.51	3.61	3.07	3.73	19.6
Benzo(a)Anthracene	<1.28	<1.29	<1.32	<1.30	1.4
Benzo(b)Fluoranthene	4.56	2.28	3.77	3.53	32.8
Benzo(k)Fluoranthene	2.12	1.72	2.22	2.02	13.1
Benzo(a)fluorene	<1.28	<1.29	<1.32	<1.30	1.4
Benzo(b)fluorene	<1.28	<1.29	<1.32	<1.30	1.4
Benzo(g,h,i)Perylene	7.41	8.68	6.91	7.67	11.9
Benzo(a)Pyrene	2.13	1.46	1.62	1.74	20.1
Benzo(e)Pyrene	8.34	6.47	7.58	7.46	12.7
Biphenyl	117	294	78.9	163	70.1
2-Chloronaphthalene	<1.28	<1.29	<1.32	<1.30	1.4
Chrysene/Triphenylene	3.27	1.89	3.04	2.73	27.1
Coronene	<1.28	2.34	<1.32	<1.65	36.5
Dibenzo(a,c/a,h)Anthracene	<1.28	<1.29	<1.32	<1.30	1.4
Dibenzo(a,e)pyrene	<1.28	<1.29	<1.32	<1.30	1.4
9,10-dimethylanthracene	<1.28	<1.29	<1.32	<1.30	1.4
7,12-Dimethylbenzo(a)anthracene	<1.28	<1.29	<1.32	<1.30	1.4
Fluoranthene	8.28	5.39	6.83	6.84	21.1
Fluorene	2.06	1.86	1.94	1.95	5.2
Indeno(1,2,3-cd)Pyrene	2.83	2.43	2.63	2.63	7.6
2-methylanthracene	1.31	1.49	<1.32	<1.37	7.4
3-Methylcholanthrene	<1.28	<1.29	<1.32	<1.30	1.4
1-Methylnaphthalene	3.61	3.48	2.83	3.31	12.7
2-Methylnaphthalene	5.32	4.94	4.67	4.98	6.5
1-Methylphenanthrene	1.50	1.80	1.37	1.56	14.1
9-Methylphenanthrene	<1.28	1.60	1.62	<1.50	12.7
Naphthalene	212	181	143	179	19.1
Perylene	24.4	20.0	14.5	19.6	25.2
Phenanthrene	15.1	14.0	12.5	13.9	9.4
Picene	<1.28	<1.29	<1.32	<1.30	1.4
Pyrene	12.9	7.27	11.2	10.5	27.8
Tetralin	1052	964	737	918	17.7
m-terphenyl	1.35	<1.29	<1.32	<1.32	2.0
o-Terphenyl	<1.28	<1.29	<1.32	<1.30	1.4
p-terphenyl	<1.28	<1.29	<1.32	<1.30	1.4
Total	<1514	<1551	<1074	<1380	19.3

TABLE 77
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Reference Concentrations

Compound	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Acenaphthene	3.73	3.99	7.69	5.14	43.1
Acenaphthylene	<2.15	<2.13	<2.20	<2.16	1.7
Anthracene	7.55	5.96	5.13	6.21	19.8
Benzo(a)Anthracene	<2.15	<2.13	<2.20	<2.16	1.7
Benzo(b)Fluoranthene	7.64	3.76	6.30	5.90	33.4
Benzo(k)Fluoranthene	3.54	2.84	3.72	3.37	13.9
Benzo(a)fluorene	<2.15	<2.13	<2.20	<2.16	1.7
Benzo(b)fluorene	<2.15	<2.13	<2.20	<2.16	1.7
Benzo(g,h,i)Perylene	12.4	14.3	11.6	12.8	11.1
Benzo(a)Pyrene	3.56	2.41	2.71	2.89	20.6
Benzo(e)Pyrene	14.0	10.7	12.7	12.4	13.4
Biphenyl	196	485	132	271	69.3
2-Chloronaphthalene	<2.15	<2.13	<2.20	<2.16	1.7
Chrysene/Triphenylene	5.47	3.12	5.09	4.56	27.7
Coronene	<2.15	3.86	<2.20	<2.74	35.6
Dibenzo(a,c/a,h)Anthracene	<2.15	<2.13	<2.20	<2.16	1.7
Dibenzo(a,e)pyrene	<2.15	<2.13	<2.20	<2.16	1.7
9,10-dimethylanthracene	<2.15	<2.13	<2.20	<2.16	1.7
7,12-Dimethylbenzo(a)anthracene	<2.15	<2.13	<2.20	<2.16	1.7
Fluoranthene	13.9	8.90	11.4	11.4	21.8
Fluorene	3.45	3.07	3.24	3.26	5.9
Indeno(1,2,3-cd)Pyrene	4.74	4.01	4.41	4.39	8.3
2-methylanthracene	2.19	2.45	<2.20	<2.28	6.6
3-Methylcholanthrene	<2.15	<2.13	<2.20	<2.16	1.7
1-Methylnaphthalene	6.05	5.74	4.74	5.51	12.5
2-Methylnaphthalene	8.90	8.15	7.82	8.29	6.7
1-Methylphenanthrene	2.51	2.97	2.29	2.59	13.3
9-Methylphenanthrene	<2.15	2.65	2.71	<2.50	12.4
Naphthalene	354	299	240	298	19.1
Perylene	40.8	33.1	24.2	32.7	25.3
Phenanthrene	25.3	23.1	21.0	23.1	9.4
Picene	<2.15	<2.13	<2.20	<2.16	1.7
Pyrene	21.7	12.0	18.8	17.5	28.4
Tetralin	1761	1590	1234	1529	17.6
m-terphenyl	2.25	<2.13	<2.20	<2.20	2.7
o-Terphenyl	<2.15	<2.13	<2.20	<2.16	1.7
p-terphenyl	<2.15	<2.13	<2.20	<2.16	1.7
Total	<2533	<2560	<1797	<2297	18.9

* At 25°C and 1 atmosphere

TABLE 78
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Acenaphthene	2.69	2.93	5.59	3.73	43.1
Acenaphthylene	<1.54	<1.57	<1.60	<1.57	1.8
Anthracene	5.43	4.37	3.73	4.51	19.1
Benzo(a)Anthracene	<1.54	<1.57	<1.60	<1.57	1.8
Benzo(b)Fluoranthene	5.49	2.75	4.58	4.28	32.6
Benzo(k)Fluoranthene	2.55	2.08	2.70	2.44	13.2
Benzo(a)fluorene	<1.54	<1.57	<1.60	<1.57	1.8
Benzo(b)fluorene	<1.54	<1.57	<1.60	<1.57	1.8
Benzo(g,h,i)Perylene	8.92	10.5	8.40	9.28	11.8
Benzo(a)Pyrene	2.56	1.77	1.97	2.10	19.6
Benzo(e)Pyrene	10.0	7.83	9.22	9.03	12.4
Biphenyl	141	355	95.9	197	70.2
2-Chloronaphthalene	<1.54	<1.57	<1.60	<1.57	1.8
Chrysene/Triphenylene	3.94	2.29	3.70	3.31	27.0
Coronene	<1.54	2.83	<1.60	<1.99	36.6
Dibenzo(a,c/a,h)Anthracene	<1.54	<1.57	<1.60	<1.57	1.8
Dibenzo(a,e)pyrene	<1.54	<1.57	<1.60	<1.57	1.8
9,10-dimethylanthracene	<1.54	<1.57	<1.60	<1.57	1.8
7,12-Dimethylbenzo(a)anthracene	<1.54	<1.57	<1.60	<1.57	1.8
Fluoranthene	9.97	6.53	8.31	8.27	20.8
Fluorene	2.48	2.25	2.35	2.36	4.9
Indeno(1,2,3-cd)Pyrene	3.41	2.94	3.20	3.18	7.4
2-methylanthracene	1.57	1.80	<1.60	<1.66	7.4
3-Methylcholanthrene	<1.54	<1.57	<1.60	<1.57	1.8
1-Methylnaphthalene	4.35	4.21	3.44	4.00	12.3
2-Methylnaphthalene	6.41	5.98	5.68	6.02	6.0
1-Methylphenanthrene	1.81	2.18	1.66	1.88	14.0
9-Methylphenanthrene	<1.54	1.94	1.97	<1.82	13.1
Naphthalene	255	219	174	216	18.6
Perylene	29.3	24.3	17.6	23.7	24.8
Phenanthrene	18.2	16.9	15.2	16.8	8.9
Picene	<1.54	<1.57	<1.60	<1.57	1.8
Pyrene	15.6	8.80	13.6	12.7	27.6
Tetralin	1267	1166	896	1110	17.3
m-terphenyl	1.62	<1.57	<1.60	<1.60	1.8
o-Terphenyl	<1.54	<1.57	<1.60	<1.57	1.8
p-terphenyl	<1.54	<1.57	<1.60	<1.57	1.8
Total	<1823	<1878	<1305	<1668	18.9

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 79
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Wet Reference Concentrations

Compound	Wet Reference Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm^3*	ng/Rm^3*	ng/Rm^3*	ng/Rm^3*	%
Acenaphthene	3.10	3.34	6.39	4.28	43.0
Acenaphthylene	<1.78	<1.78	<1.83	<1.80	1.6
Anthracene	6.26	4.98	4.27	5.17	19.6
Benzo(a)Anthracene	<1.78	<1.78	<1.83	<1.80	1.6
Benzo(b)Fluoranthene	6.33	3.14	5.24	4.91	33.1
Benzo(k)Fluoranthene	2.94	2.37	3.10	2.80	13.5
Benzo(a)fluorene	<1.78	<1.78	<1.83	<1.80	1.6
Benzo(b)fluorene	<1.78	<1.78	<1.83	<1.80	1.6
Benzo(g,h,i)Perylene	10.3	12.0	9.62	10.6	11.4
Benzo(a)Pyrene	2.95	2.02	2.25	2.41	20.2
Benzo(e)Pyrene	11.6	8.92	10.6	10.4	12.9
Biphenyl	163	405	110	226	69.7
2-Chloronaphthalene	<1.78	<1.78	<1.83	<1.80	1.6
Chrysene/Triphenylene	4.54	2.61	4.23	3.79	27.4
Coronene	<1.78	3.23	<1.83	<2.28	36.1
Dibenzo(a,c/a,h)Anthracene	<1.78	<1.78	<1.83	<1.80	1.6
Dibenzo(a,e)pyrene	<1.78	<1.78	<1.83	<1.80	1.6
9,10-dimethylanthracene	<1.78	<1.78	<1.83	<1.80	1.6
7,12-Dimethylbenzo(a)anthracene	<1.78	<1.78	<1.83	<1.80	1.6
Fluoranthene	11.5	7.44	9.51	9.48	21.4
Fluorene	2.86	2.57	2.69	2.71	5.5
Indeno(1,2,3-cd)Pyrene	3.93	3.36	3.66	3.65	7.9
2-methylanthracene	1.82	2.05	<1.83	<1.90	7.0
3-Methylcholanthrene	<1.78	<1.78	<1.83	<1.80	1.6
1-Methylnaphthalene	5.02	4.80	3.94	4.59	12.5
2-Methylnaphthalene	7.38	6.82	6.50	6.90	6.5
1-Methylphenanthrene	2.08	2.48	1.91	2.16	13.7
9-Methylphenanthrene	<1.78	2.21	2.25	<2.08	12.6
Naphthalene	294	250	200	248	19.0
Perylene	33.8	27.7	20.2	27.2	25.1
Phenanthrene	21.0	19.3	17.4	19.2	9.3
Picene	<1.78	<1.78	<1.83	<1.80	1.6
Pyrene	18.0	10.0	15.6	14.5	28.0
Tetralin	1461	1330	1026	1272	17.5
m-terphenyl	1.87	<1.78	<1.83	<1.83	2.3
o-Terphenyl	<1.78	<1.78	<1.83	<1.80	1.6
p-terphenyl	<1.78	<1.78	<1.83	<1.80	1.6
Total	<2101	<2141	<1494	<1912	19.0

* At 25°C and 1 atmosphere

TABLE 80
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Rates

Compound	Emission Rate Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
Acenaphthene	0.053	0.057	0.11	0.072	41.3
Acenaphthylene	<0.030	<0.031	<0.030	<0.030	0.4
Anthracene	0.11	0.085	0.071	0.087	20.5
Benzo(a)Anthracene	<0.030	<0.031	<0.030	<0.030	0.4
Benzo(b)Fluoranthene	0.11	0.054	0.087	0.083	32.9
Benzo(k)Fluoranthene	0.050	0.041	0.051	0.047	12.4
Benzo(a)fluorene	<0.030	<0.031	<0.030	<0.030	0.4
Benzo(b)fluorene	<0.030	<0.031	<0.030	<0.030	0.4
Benzo(g,h,i)Perylene	0.17	0.20	0.16	0.18	12.8
Benzo(a)Pyrene	0.050	0.034	0.037	0.041	20.6
Benzo(e)Pyrene	0.20	0.15	0.18	0.17	12.7
Biphenyl	2.77	6.93	1.82	3.84	70.8
2-Chloronaphthalene	<0.030	<0.031	<0.030	<0.030	0.4
Chrysene/Triphenylene	0.077	0.045	0.070	0.064	26.8
Coronene	<0.030	0.055	<0.030	<0.039	37.2
Dibenzo(a,c/a,h)Anthracene	<0.030	<0.031	<0.030	<0.030	0.4
Dibenzo(a,e)pyrene	<0.030	<0.031	<0.030	<0.030	0.4
9,10-dimethylanthracene	<0.030	<0.031	<0.030	<0.030	0.4
7,12-Dimethylbenzo(a)anthracene	<0.030	<0.031	<0.030	<0.030	0.4
Fluoranthene	0.20	0.13	0.16	0.16	21.3
Fluorene	0.049	0.044	0.045	0.046	5.6
Indeno(1,2,3-cd)Pyrene	0.067	0.057	0.061	0.062	7.8
2-methylanthracene	0.031	0.035	<0.030	<0.032	8.1
3-Methylcholanthrene	<0.030	<0.031	<0.030	<0.030	0.4
1-Methylnaphthalene	0.085	0.082	0.065	0.078	13.8
2-Methylnaphthalene	0.13	0.12	0.11	0.12	7.5
1-Methylphenanthrene	0.035	0.042	0.032	0.036	15.0
9-Methylphenanthrene	<0.030	0.038	0.037	<0.035	12.1
Naphthalene	4.99	4.27	3.31	4.19	20.1
Perylene	0.57	0.47	0.33	0.46	26.2
Phenanthrene	0.36	0.33	0.29	0.33	10.5
Picene	<0.030	<0.031	<0.030	<0.030	0.4
Pyrene	0.31	0.17	0.26	0.25	27.7
Tetralin	24.8	22.7	17.0	21.5	18.8
m-terphenyl	0.032	<0.031	<0.030	<0.031	2.4
o-Terphenyl	<0.030	<0.031	<0.030	<0.030	0.4
p-terphenyl	<0.030	<0.031	<0.030	<0.030	0.4
Total	<35.7	<36.6	<24.8	<32.4	20.3

TABLE 81

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Summary of Polycyclic Aromatic Hydrocarbon Emission Data

Compound	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	3.08	5.14	3.73	4.28	0.072
Acenaphthylene	<1.30	<2.16	<1.57	<1.80	<0.030
Anthracene	3.73	6.21	4.51	5.17	0.087
Benzo(a)Anthracene	<1.30	<2.16	<1.57	<1.80	<0.030
Benzo(b)Fluoranthene	3.53	5.90	4.28	4.91	0.083
Benzo(k)Fluoranthene	2.02	3.37	2.44	2.80	0.047
Benzo(a)fluorene	<1.30	<2.16	<1.57	<1.80	<0.030
Benzo(b)fluorene	<1.30	<2.16	<1.57	<1.80	<0.030
Benzo(g,h,i)Perylene	7.67	12.8	9.28	10.6	0.18
Benzo(a)Pyrene	1.74	2.89	2.10	2.41	0.041
Benzo(e)Pyrene	7.46	12.4	9.03	10.4	0.17
Biphenyl	163	271	197	226	3.84
2-Chloronaphthalene	<1.30	<2.16	<1.57	<1.80	<0.030
Chrysene/Triphenylene	2.73	4.56	3.31	3.79	0.064
Coronene	<1.65	<2.74	<1.99	<2.28	<0.039
Dibenzo(a,c/a,h)Anthracene	<1.30	<2.16	<1.57	<1.80	<0.030
Dibenzo(a,e)pyrene	<1.30	<2.16	<1.57	<1.80	<0.030
9,10-dimethylanthracene	<1.30	<2.16	<1.57	<1.80	<0.030
7,12-Dimethylbenzo(a)anthracene	<1.30	<2.16	<1.57	<1.80	<0.030
Fluoranthene	6.84	11.4	8.27	9.48	0.16
Fluorene	1.95	3.26	2.36	2.71	0.046
Indeno(1,2,3-cd)Pyrene	2.63	4.39	3.18	3.65	0.062
2-methylanthracene	<1.37	<2.28	<1.66	<1.90	<0.032
3-Methylcholanthrene	<1.30	<2.16	<1.57	<1.80	<0.030
1-Methylnaphthalene	3.31	5.51	4.00	4.59	0.078
2-Methylnaphthalene	4.98	8.29	6.02	6.90	0.12
1-Methylphenanthrene	1.56	2.59	1.88	2.16	0.036
9-Methylphenanthrene	<1.50	<2.50	<1.82	<2.08	<0.035
Naphthalene	179	298	216	248	4.19
Perylene	19.6	32.7	23.7	27.2	0.46
Phenanthrene	13.9	23.1	16.8	19.2	0.33
Picene	<1.30	<2.16	<1.57	<1.80	<0.030
Pyrene	10.5	17.5	12.7	14.5	0.25
Tetralin	918	1529	1110	1272	21.5
m-terphenyl	<1.32	<2.20	<1.60	<1.83	<0.031
o-Terphenyl	<1.30	<2.16	<1.57	<1.80	<0.030
p-terphenyl	<1.30	<2.16	<1.57	<1.80	<0.030
Total	<1380	<2297	<1668	<1912	<32.4

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 82
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Polycyclic Aromatic Hydrocarbon Analyses

Compound	Blank Train ng	Laboratory Blank ng
Acenaphthene	11.7	<10
Acenaphthylene	<10	<10
Anthracene	13.1	<10
Benzo(a)Anthracene	<10	<10
Benzo(b)Fluoranthene	<10	<10
Benzo(k)Fluoranthene	<10	<10
Benzo(a)fluorene	<10	<10
Benzo(b)fluorene	<10	<10
Benzo(g,h,i)Perylene	<10	<10
Benzo(a)Pyrene	<10	<10
Benzo(e)Pyrene	<10	<10
Biphenyl	25.0	<10
2-Chloronaphthalene	<10	<10
Chrysene/Triphenylene	<10	<10
Coronene	<10	<10
Dibenzo(a,c/a,h)Anthracene	<10	<10
Dibenzo(a,e)pyrene	<10	<10
9,10-dimethylanthracene	<10	<10
7,12-Dimethylbenzo(a)anthracene	<10	<10
Fluoranthene	14.9	<10
Fluorene	<10	<10
Indeno(1,2,3-cd)Pyrene	<10	<10
2-methylanthracene	<10	<10
3-Methylcholanthrene	<10	<10
1-Methylnaphthalene	10.3	<10
2-Methylnaphthalene	14.7	<10
1-Methylphenanthrene	<10	<10
9-Methylphenanthrene	<10	<10
Naphthalene	775	13.7
Perylene	86.1	<10
Phenanthrene	13.0	<10
Picene	<10	<10
Pyrene	19.9	<10
Tetralin	4490	<10
m-terphenyl	<10	<10
o-Terphenyl	<10	<10
p-terphenyl	<10	<10
Total	<5734	<374

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

TABLE 83
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Acetaldehyde, Formaldehyde and Acrolein Emission Data

Acetaldehyde

Test	Acetaldehyde Collected			Dry Volume	Acetaldehyde Concentration				Acetaldehyde
	Probe & Imp. 1	Imp. 2 & 3	Total	Sampled	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission Rate
No.	µg	µg	µg	Rm^3*	µg/m^3	µg/Rm^3*	µg/Rm^3**	µg/Rm^3*	mg/s
1	23	9.9	32.9	0.0283	694	1162	836	964	16.4
2	14	10	24.0	0.0374	389	641	470	536	9.17
3	10	6.6	16.6	0.0319	311	520	378	433	7.18
Average					465	775	561	644	10.9
Blank	6.6	7.9	14.5						

Formaldehyde

Test	Formaldehyde Collected			Dry Volume	Formaldehyde Concentration				Formaldehyde
	Probe & Imp. 1	Imp. 2 & 3	Total	Sampled	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission Rate
No.	µg	µg	µg	Rm^3*	µg/m^3	µg/Rm^3*	µg/Rm^3**	µg/Rm^3*	mg/s
1	68	9.8	77.8	0.0283	1642	2748	1977	2280	38.8
2	16	23	39.0	0.0374	632	1042	764	872	14.9
3	11	4.8	15.8	0.0319	296	495	360	412	6.83
Average					856	1429	1034	1188	20.2
Blank	11	21	32.0						

Acrolein

Test	Acrolein Collected			Dry Volume	Acrolein Concentration				Acrolein
	Probe & Imp. 1	Imp. 2 & 3	Total	Sampled	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission Rate
No.	µg	µg	µg	Rm^3*	µg/m^3	µg/Rm^3*	µg/Rm^3**	µg/Rm^3*	mg/s
1	<2.2	<1.4	<3.6	0.0283	<76.0	<127	<91.5	<105	<1.79
2	<2.2	<1.7	<3.9	0.0374	<63.2	<104	<76.4	<87.2	<1.49
3	<1.9	<1.6	<3.5	0.0319	<65.5	<110	<79.7	<91.2	<1.51
Average					<68.2	<114	<82.5	<94.6	<1.60
Blank	<1.5	<1.7	<3.2						

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

* At 25 °C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 84
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Analyses
Test No. 1

Compound	Cartridge Amount Collected				Coefficient of Variation	Total Collected
	Run No. 1 Tube 12A/12B	Run No. 3 Tube 14A/14B	Run No. 4 Tube 15A/15B	Average		
	µg	µg	µg	µg	%	µg
Acetone	<0.1	<0.1	<0.1	<0.10	-	<0.30
Benzene	0.051	<0.05	0.054	<0.052	3.7	<0.15
Bromodichloromethane	<0.01	<0.01	0.011	<0.010	4.7	<0.031
Bromoform	<0.01	<0.01	<0.01	<0.010	-	<0.030
Bromomethane	<0.09	<0.09	<0.09	<0.090	-	<0.27
1,3-Butadiene	<0.02	<0.02	<0.02	<0.020	-	<0.060
2-Butanone	<0.01	<0.01	<0.01	<0.010	-	<0.030
Carbon Tetrachloride	<0.01	<0.01	<0.01	<0.010	-	<0.030
Chlorobenzene	0.010	<0.01	0.014	<0.011	19.9	<0.034
Chloroform	0.017	<0.01	0.020	<0.016	32.4	<0.047
Cumene (Isopropylbenzene)	<0.02	<0.02	<0.02	<0.020	-	<0.060
Dibromochloromethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Dichlorodifluoromethane	<0.02	<0.02	<0.02	<0.020	-	<0.060
1,2-Dichloroethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
trans,1,2-Dichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
1,1-Dichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
1,2-Dichloropropane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Ethylbenzene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Ethylene Dibromide	<0.02	<0.02	<0.02	<0.020	-	<0.060
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.02	<0.02	<0.020	-	<0.060
Methylene Chloride	0.56	<0.1	<0.1	<0.33	90.5	<0.66
Styrene	0.047	<0.02	0.053	<0.040	43.9	<0.12
Tetrachloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Toluene	0.065	0.053	0.33	0.15	104	0.44
1,1,1-Trichloroethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Trichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
1,1,2-Trichloroethane	<0.02	<0.02	<0.02	<0.020	-	<0.060
Trichlorotrifluoroethane	<0.02	<0.02	<0.02	<0.020	-	<0.060
Trichlorofluoromethane	0.028	<0.02	<0.02	<0.023	20.8	<0.068
M&P-Xylene	<0.03	<0.03	<0.03	<0.030	-	<0.090
O-Xylene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Vinyl Chloride	<0.02	<0.02	<0.02	<0.020	-	<0.060
Total	<1.30	<0.78	<1.01	<1.03	25.0	<3.09

Dry Gas Volume Sampled (Rm^3*) :

Run No. 1	0.0199
Run No. 3	0.0219
Run No. 4	0.0231

* At 25°C and 1 atmosphere.

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit). For the purpose of determining average and total analytical results for each compound, any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

TABLE 85
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Analyses
Test No. 2

Compound	Cartridge Amount Collected				Coefficient	Total
	Run No. 2 Tube 18A/18B	Run No. 3 Tube 19A/19B	Run No. 4 Tube 20A/20B	Average	of Variation	Collected
	µg	µg	µg	µg	%	µg
Acetone	<0.1	<0.1	<0.1	<0.10	-	<0.30
Benzene	0.061	<0.05	0.076	<0.062	20.6	<0.19
Bromodichloromethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Bromoform	<0.01	<0.01	<0.01	<0.010	-	<0.030
Bromomethane	<0.09	<0.09	<0.09	<0.090	-	<0.27
1,3-Butadiene	<0.02	<0.02	<0.02	<0.020	-	<0.060
2-Butanone	<0.01	<0.01	<0.01	<0.010	-	<0.030
Carbon Tetrachloride	<0.01	<0.01	<0.01	<0.010	-	<0.030
Chlorobenzene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Chloroform	0.016	0.016	0.021	0.018	17.5	0.053
Cumene (Isopropylbenzene)	<0.02	<0.02	<0.02	<0.020	-	<0.060
Dibromochloromethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Dichlorodifluoromethane	<0.02	<0.02	<0.02	<0.020	-	<0.060
1,2-Dichloroethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
trans,1,2-Dichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
1,1-Dichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
1,2-Dichloropropane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Ethylbenzene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Ethylene Dibromide	<0.02	<0.02	<0.02	<0.020	-	<0.060
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.02	<0.02	<0.020	-	<0.060
Methylene Chloride	<0.1	<0.1	<0.1	<0.10	-	<0.30
Styrene	0.055	<0.02	0.087	<0.054	61.8	<0.16
Tetrachloroethene	<0.01	<0.01	0.012	<0.011	11.6	<0.032
Toluene	0.075	0.054	0.078	0.069	19.5	0.21
1,1,1-Trichloroethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Trichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
1,1,2-Trichloroethane	<0.02	<0.02	<0.02	<0.020	-	<0.060
Trichlorotrifluoroethane	<0.02	<0.02	<0.02	<0.020	-	<0.060
Trichlorofluoromethane	<0.02	<0.02	<0.02	<0.020	-	<0.060
M&P-Xylene	0.041	<0.03	<0.03	<0.034	19.2	<0.10
O-Xylene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Vinyl Chloride	<0.02	<0.02	<0.02	<0.020	-	<0.060
Total	<0.87	<0.79	<0.91	<0.86	7.4	<2.57

Dry Gas Volume Sampled (Rm^{3}*) :

Run No. 2	0.0214
Run No. 3	0.0211
Run No. 4	0.0224

* At 25°C and 1 atmosphere.

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit). For the purpose of determining average and total analytical results for each compound, any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

TABLE 86
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Analyses
Test No. 3

Compound	Cartridge Amount Collected				Coefficient of Variation	Total Collected
	Run No. 1 Tube 22A/22B	Run No. 2 Tube 23A/23B	Run No. 3 Tube 24A/24B	Average		
	µg	µg	µg	µg	%	µg
Acetone	<0.1	<0.1	<0.1	<0.10	-	<0.30
Benzene	0.066	0.075	0.063	0.068	8.9	0.20
Bromodichloromethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Bromoform	<0.01	<0.01	<0.01	<0.010	-	<0.030
Bromomethane	<0.09	<0.09	<0.09	<0.090	-	<0.27
1,3-Butadiene	<0.02	<0.02	<0.02	<0.020	-	<0.060
2-Butanone	<0.01	<0.01	<0.01	<0.010	-	<0.030
Carbon Tetrachloride	<0.01	<0.01	<0.01	<0.010	-	<0.030
Chlorobenzene	0.010	<0.01	<0.01	<0.010	1.8	<0.030
Chloroform	0.019	0.019	0.022	0.020	8.8	0.060
Cumene (Isopropylbenzene)	<0.02	<0.02	<0.02	<0.020	-	<0.060
Dibromochloromethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Dichlorodifluoromethane	<0.02	<0.02	<0.02	<0.020	-	<0.060
1,2-Dichloroethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
trans,1,2-Dichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
1,1-Dichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
1,2-Dichloropropane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Ethylbenzene	0.022	0.014	0.015	0.017	26.6	0.050
Ethylene Dibromide	<0.02	<0.02	<0.02	<0.020	-	<0.060
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.02	<0.02	<0.020	-	<0.060
Methylene Chloride	0.13	<0.1	<0.1	<0.11	15.2	<0.33
Styrene	0.059	0.088	<0.02	<0.055	61.1	<0.17
Tetrachloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Toluene	0.095	0.068	0.053	0.072	29.7	0.22
1,1,1-Trichloroethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Trichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
1,1,2-Trichloroethane	<0.02	<0.02	<0.02	<0.020	-	<0.060
Trichlorotrifluoroethane	<0.02	<0.02	<0.02	<0.020	-	<0.060
Trichlorofluoromethane	<0.02	<0.02	<0.02	<0.020	-	<0.060
M&P-Xylene	0.082	0.049	0.047	0.059	33.5	0.18
O-Xylene	0.022	0.012	0.015	0.017	31.5	0.050
Vinyl Chloride	<0.02	<0.02	<0.02	<0.020	-	<0.060
Total	<0.99	<0.92	<0.83	<0.92	8.7	<2.75

Dry Gas Volume Sampled (Rm^3*) :

Run No. 1	0.0240
Run No. 2	0.0226
Run No. 3	0.0214

* At 25°C and 1 atmosphere.

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit). For the purpose of determining average and total analytical results for each compound, any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

TABLE 87
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Emission Data
Test No. 1

Compound	Total Collected µg	Actual Concentration µg/m^3	Dry Reference Concentration µg/Rm^3*	Dry Adjusted Concentration µg/Rm^3**	Wet Reference Concentration µg/Rm^3*	Emission Rate mg/s
Acetone	<0.30	<2.76	<4.62	<3.33	<3.84	<0.065
Benzene	<0.15	<1.42	<2.38	<1.71	<1.98	<0.034
Bromodichloromethane	<0.031	<0.28	<0.48	<0.34	<0.39	<0.0067
Bromoform	<0.030	<0.28	<0.46	<0.33	<0.38	<0.0065
Bromomethane	<0.27	<2.49	<4.16	<2.99	<3.45	<0.059
1,3-Butadiene	<0.060	<0.55	<0.92	<0.67	<0.77	<0.013
2-Butanone	<0.030	<0.28	<0.46	<0.33	<0.38	<0.0065
Carbon Tetrachloride	<0.030	<0.28	<0.46	<0.33	<0.38	<0.0065
Chlorobenzene	<0.034	<0.31	<0.52	<0.38	<0.43	<0.0074
Chloroform	<0.047	<0.43	<0.72	<0.52	<0.60	<0.010
Cumene (Isopropylbenzene)	<0.060	<0.55	<0.92	<0.67	<0.77	<0.013
Dibromochloromethane	<0.030	<0.28	<0.46	<0.33	<0.38	<0.0065
Dichlorodifluoromethane	<0.060	<0.55	<0.92	<0.67	<0.77	<0.013
1,2-Dichloroethane	<0.030	<0.28	<0.46	<0.33	<0.38	<0.0065
trans,1,2-Dichloroethene	<0.030	<0.28	<0.46	<0.33	<0.38	<0.0065
1,1-Dichloroethene	<0.030	<0.28	<0.46	<0.33	<0.38	<0.0065
1,2-Dichloropropane	<0.030	<0.28	<0.46	<0.33	<0.38	<0.0065
Ethylbenzene	<0.030	<0.28	<0.46	<0.33	<0.38	<0.0065
Ethylene Dibromide	<0.060	<0.55	<0.92	<0.67	<0.77	<0.013
Mesitylene (1,3,5-Trimethylbenzene)	<0.060	<0.55	<0.92	<0.67	<0.77	<0.013
Methylene Chloride	<0.66	<6.07	<10.2	<7.31	<8.43	<0.14
Styrene	<0.12	<1.10	<1.84	<1.33	<1.53	<0.026
Tetrachloroethene	<0.030	<0.28	<0.46	<0.33	<0.38	<0.0065
Toluene	0.44	4.09	6.85	4.93	5.68	0.097
1,1,1-Trichloroethane	<0.030	<0.28	<0.46	<0.33	<0.38	<0.0065
Trichloroethene	<0.030	<0.28	<0.46	<0.33	<0.38	<0.0065
1,1,2-Trichloroethane	<0.060	<0.55	<0.92	<0.67	<0.77	<0.013
Trichlorotrifluoroethane	<0.060	<0.55	<0.92	<0.67	<0.77	<0.013
Trichlorofluoromethane	<0.068	<0.63	<1.05	<0.76	<0.87	<0.015
M&P-Xylene	<0.090	<0.83	<1.39	<1.00	<1.15	<0.020
O-Xylene	<0.030	<0.28	<0.46	<0.33	<0.38	<0.0065
Vinyl Chloride	<0.060	<0.55	<0.92	<0.67	<0.77	<0.013
Total	<3.09	<28.4	<47.6	<34.2	<39.5	<0.67

Dry Gas Volume Sampled (Rm^3*) :	0.0649
Actual Flowrate (m^3/s) :	23.6
Dry Reference Flowrate (Rm^3/s*) :	14.1
Dry Adjusted Flowrate (Rm^3/s**) :	19.6
Wet Reference Flowrate (Rm^3/s*) :	17.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 88
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Emission Data
Test No. 2

Compound	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Acetone	<0.30	<2.80	<4.62	<3.39	<3.86	<0.066
Benzene	<0.19	<1.74	<2.87	<2.10	<2.40	<0.041
Bromodichloromethane	<0.030	<0.28	<0.46	<0.34	<0.39	<0.0066
Bromoform	<0.030	<0.28	<0.46	<0.34	<0.39	<0.0066
Bromomethane	<0.27	<2.52	<4.16	<3.05	<3.48	<0.059
1,3-Butadiene	<0.060	<0.56	<0.92	<0.68	<0.77	<0.013
2-Butanone	<0.030	<0.28	<0.46	<0.34	<0.39	<0.0066
Carbon Tetrachloride	<0.030	<0.28	<0.46	<0.34	<0.39	<0.0066
Chlorobenzene	<0.030	<0.28	<0.46	<0.34	<0.39	<0.0066
Chloroform	0.053	0.50	0.82	0.60	0.68	0.012
Cumene (Isopropylbenzene)	<0.060	<0.56	<0.92	<0.68	<0.77	<0.013
Dibromochloromethane	<0.030	<0.28	<0.46	<0.34	<0.39	<0.0066
Dichlorodifluoromethane	<0.060	<0.56	<0.92	<0.68	<0.77	<0.013
1,2-Dichloroethane	<0.030	<0.28	<0.46	<0.34	<0.39	<0.0066
trans,1,2-Dichloroethene	<0.030	<0.28	<0.46	<0.34	<0.39	<0.0066
1,1-Dichloroethene	<0.030	<0.28	<0.46	<0.34	<0.39	<0.0066
1,2-Dichloropropane	<0.030	<0.28	<0.46	<0.34	<0.39	<0.0066
Ethylbenzene	<0.030	<0.28	<0.46	<0.34	<0.39	<0.0066
Ethylene Dibromide	<0.060	<0.56	<0.92	<0.68	<0.77	<0.013
Mesitylene (1,3,5-Trimethylbenzene)	<0.060	<0.56	<0.92	<0.68	<0.77	<0.013
Methylene Chloride	<0.30	<2.80	<4.62	<3.39	<3.86	<0.066
Styrene	<0.16	<1.51	<2.50	<1.83	<2.09	<0.036
Tetrachloroethene	<0.032	<0.30	<0.50	<0.36	<0.41	<0.0071
Toluene	0.21	1.93	3.18	2.34	2.66	0.046
1,1,1-Trichloroethane	<0.030	<0.28	<0.46	<0.34	<0.39	<0.0066
Trichloroethene	<0.030	<0.28	<0.46	<0.34	<0.39	<0.0066
1,1,2-Trichloroethane	<0.060	<0.56	<0.92	<0.68	<0.77	<0.013
Trichlorotrifluoroethane	<0.060	<0.56	<0.92	<0.68	<0.77	<0.013
Trichlorofluoromethane	<0.060	<0.56	<0.92	<0.68	<0.77	<0.013
M&P-Xylene	<0.10	<0.94	<1.56	<1.14	<1.30	<0.022
O-Xylene	<0.030	<0.28	<0.46	<0.34	<0.39	<0.0066
Vinyl Chloride	<0.060	<0.56	<0.92	<0.68	<0.77	<0.013
Total	<2.57	<24.0	<39.6	<29.0	<33.1	<0.57

Dry Gas Volume Sampled (Rm³*) :	0.0649
Actual Flowrate (m³/s) :	23.6
Dry Reference Flowrate (Rm³/s*) :	14.3
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	17.1

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 89
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Emission Data
Test No. 3

Compound	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Acetone	<0.30	<2.64	<4.41	<3.21	<3.67	<0.061
Benzene	0.20	1.79	3.00	2.18	2.49	0.041
Bromodichloromethane	<0.030	<0.26	<0.44	<0.32	<0.37	<0.0061
Bromoform	<0.030	<0.26	<0.44	<0.32	<0.37	<0.0061
Bromomethane	<0.27	<2.37	<3.97	<2.89	<3.30	<0.055
1,3-Butadiene	<0.060	<0.53	<0.88	<0.64	<0.73	<0.012
2-Butanone	<0.030	<0.26	<0.44	<0.32	<0.37	<0.0061
Carbon Tetrachloride	<0.030	<0.26	<0.44	<0.32	<0.37	<0.0061
Chlorobenzene	<0.030	<0.27	<0.45	<0.32	<0.37	<0.0062
Chloroform	0.060	0.52	0.88	0.64	0.73	0.012
Cumene (Isopropylbenzene)	<0.060	<0.53	<0.88	<0.64	<0.73	<0.012
Dibromochloromethane	<0.030	<0.26	<0.44	<0.32	<0.37	<0.0061
Dichlorodifluoromethane	<0.060	<0.53	<0.88	<0.64	<0.73	<0.012
1,2-Dichloroethane	<0.030	<0.26	<0.44	<0.32	<0.37	<0.0061
trans,1,2-Dichloroethene	<0.030	<0.26	<0.44	<0.32	<0.37	<0.0061
1,1-Dichloroethene	<0.030	<0.26	<0.44	<0.32	<0.37	<0.0061
1,2-Dichloropropane	<0.030	<0.26	<0.44	<0.32	<0.37	<0.0061
Ethylbenzene	0.050	0.44	0.74	0.54	0.62	0.010
Ethylene Dibromide	<0.060	<0.53	<0.88	<0.64	<0.73	<0.012
Mesitylene (1,3,5-Trimethylbenzene)	<0.060	<0.53	<0.88	<0.64	<0.73	<0.012
Methylene Chloride	<0.33	<2.89	<4.84	<3.52	<4.02	<0.067
Styrene	<0.17	<1.46	<2.45	<1.78	<2.04	<0.034
Tetrachloroethene	<0.030	<0.26	<0.44	<0.32	<0.37	<0.0061
Toluene	0.22	1.90	3.18	2.31	2.65	0.044
1,1,1-Trichloroethane	<0.030	<0.26	<0.44	<0.32	<0.37	<0.0061
Trichloroethene	<0.030	<0.26	<0.44	<0.32	<0.37	<0.0061
1,1,2-Trichloroethane	<0.060	<0.53	<0.88	<0.64	<0.73	<0.012
Trichlorotrifluoroethane	<0.060	<0.53	<0.88	<0.64	<0.73	<0.012
Trichlorofluoromethane	<0.060	<0.53	<0.88	<0.64	<0.73	<0.012
M&P-Xylene	0.18	1.56	2.62	1.90	2.18	0.036
O-Xylene	0.050	0.44	0.73	0.53	0.61	0.010
Vinyl Chloride	<0.060	<0.53	<0.88	<0.64	<0.73	<0.012
Total	<2.75	<24.2	<40.5	<29.4	<33.7	<0.56

Dry Gas Volume Sampled (Rm³*) :	0.0680
Actual Flowrate (m³/s) :	23.1
Dry Reference Flowrate (Rm³/s*) :	13.8
Dry Adjusted Flowrate (Rm³/s**) :	19.0
Wet Reference Flowrate (Rm³/s*) :	16.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 90
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Actual Concentrations

Compound	Actual Concentration			
	Test No. 1	Test No. 2	Test No. 3	Average
	µg/m³	µg/m³	µg/m³	µg/m³
Acetone	<2.76	<2.80	<2.64	<2.73
Benzene	<1.42	<1.74	1.79	<1.65
Bromodichloromethane	<0.28	<0.28	<0.26	<0.28
Bromoform	<0.28	<0.28	<0.26	<0.27
Bromomethane	<2.49	<2.52	<2.37	<2.46
1,3-Butadiene	<0.55	<0.56	<0.53	<0.55
2-Butanone	<0.28	<0.28	<0.26	<0.27
Carbon Tetrachloride	<0.28	<0.28	<0.26	<0.27
Chlorobenzene	<0.31	<0.28	<0.27	<0.29
Chloroform	<0.43	0.50	0.52	<0.48
Cumene (Isopropylbenzene)	<0.55	<0.56	<0.53	<0.55
Dibromochloromethane	<0.28	<0.28	<0.26	<0.27
Dichlorodifluoromethane	<0.55	<0.56	<0.53	<0.55
1,2-Dichloroethane	<0.28	<0.28	<0.26	<0.27
trans,1,2-Dichloroethene	<0.28	<0.28	<0.26	<0.27
1,1-Dichloroethene	<0.28	<0.28	<0.26	<0.27
1,2-Dichloropropane	<0.28	<0.28	<0.26	<0.27
Ethylbenzene	<0.28	<0.28	0.44	<0.33
Ethylene Dibromide	<0.55	<0.56	<0.53	<0.55
Mesitylene (1,3,5-Trimethylbenzene)	<0.55	<0.56	<0.53	<0.55
Methylene Chloride	<6.07	<2.80	<2.89	<3.92
Styrene	<1.10	<1.51	<1.46	<1.36
Tetrachloroethene	<0.28	<0.30	<0.26	<0.28
Toluene	4.09	1.93	1.90	2.64
1,1,1-Trichloroethane	<0.28	<0.28	<0.26	<0.27
Trichloroethene	<0.28	<0.28	<0.26	<0.27
1,1,2-Trichloroethane	<0.55	<0.56	<0.53	<0.55
Trichlorotrifluoroethane	<0.55	<0.56	<0.53	<0.55
Trichlorofluoromethane	<0.63	<0.56	<0.53	<0.57
M&P-Xylene	<0.83	<0.94	1.56	<1.11
O-Xylene	<0.28	<0.28	0.44	<0.33
Vinyl Chloride	<0.55	<0.56	<0.53	<0.55
Total	<28.4	<24.0	<24.2	<25.5

TABLE 91
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Dry Reference Concentrations

Compound	Dry Reference Concentration			
	Test No. 1	Test No. 2	Test No. 3	Average
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*
Acetone	<4.62	<4.62	<4.41	<4.55
Benzene	<2.38	<2.87	3.00	<2.75
Bromodichloromethane	<0.48	<0.46	<0.44	<0.46
Bromoform	<0.46	<0.46	<0.44	<0.46
Bromomethane	<4.16	<4.16	<3.97	<4.10
1,3-Butadiene	<0.92	<0.92	<0.88	<0.91
2-Butanone	<0.46	<0.46	<0.44	<0.46
Carbon Tetrachloride	<0.46	<0.46	<0.44	<0.46
Chlorobenzene	<0.52	<0.46	<0.45	<0.48
Chloroform	<0.72	0.82	0.88	<0.81
Cumene (Isopropylbenzene)	<0.92	<0.92	<0.88	<0.91
Dibromochloromethane	<0.46	<0.46	<0.44	<0.46
Dichlorodifluoromethane	<0.92	<0.92	<0.88	<0.91
1,2-Dichloroethane	<0.46	<0.46	<0.44	<0.46
trans,1,2-Dichloroethene	<0.46	<0.46	<0.44	<0.46
1,1-Dichloroethene	<0.46	<0.46	<0.44	<0.46
1,2-Dichloropropane	<0.46	<0.46	<0.44	<0.46
Ethylbenzene	<0.46	<0.46	0.74	<0.56
Ethylene Dibromide	<0.92	<0.92	<0.88	<0.91
Mesitylene (1,3,5-Trimethylbenzene)	<0.92	<0.92	<0.88	<0.91
Methylene Chloride	<10.2	<4.62	<4.84	<6.54
Styrene	<1.84	<2.50	<2.45	<2.26
Tetrachloroethene	<0.46	<0.50	<0.44	<0.47
Toluene	6.85	3.18	3.18	4.41
1,1,1-Trichloroethane	<0.46	<0.46	<0.44	<0.46
Trichloroethene	<0.46	<0.46	<0.44	<0.46
1,1,2-Trichloroethane	<0.92	<0.92	<0.88	<0.91
Trichlorotrifluoroethane	<0.92	<0.92	<0.88	<0.91
Trichlorofluoromethane	<1.05	<0.92	<0.88	<0.95
M&P-Xylene	<1.39	<1.56	2.62	<1.85
O-Xylene	<0.46	<0.46	0.73	<0.55
Vinyl Chloride	<0.92	<0.92	<0.88	<0.91
Total	<47.6	<39.6	<40.5	<42.6

* At 25°C and 1 atmosphere

TABLE 92
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration			
	Test No. 1	Test No. 2	Test No. 3	Average
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*
Acetone	<3.33	<3.39	<3.21	<3.31
Benzene	<1.71	<2.10	2.18	<2.00
Bromodichloromethane	<0.34	<0.34	<0.32	<0.33
Bromoform	<0.33	<0.34	<0.32	<0.33
Bromomethane	<2.99	<3.05	<2.89	<2.98
1,3-Butadiene	<0.67	<0.68	<0.64	<0.66
2-Butanone	<0.33	<0.34	<0.32	<0.33
Carbon Tetrachloride	<0.33	<0.34	<0.32	<0.33
Chlorobenzene	<0.38	<0.34	<0.32	<0.35
Chloroform	<0.52	0.60	0.64	<0.59
Cumene (Isopropylbenzene)	<0.67	<0.68	<0.64	<0.66
Dibromochloromethane	<0.33	<0.34	<0.32	<0.33
Dichlorodifluoromethane	<0.67	<0.68	<0.64	<0.66
1,2-Dichloroethane	<0.33	<0.34	<0.32	<0.33
trans,1,2-Dichloroethene	<0.33	<0.34	<0.32	<0.33
1,1-Dichloroethene	<0.33	<0.34	<0.32	<0.33
1,2-Dichloropropane	<0.33	<0.34	<0.32	<0.33
Ethylbenzene	<0.33	<0.34	0.54	<0.40
Ethylene Dibromide	<0.67	<0.68	<0.64	<0.66
Mesitylene (1,3,5-Trimethylbenzene)	<0.67	<0.68	<0.64	<0.66
Methylene Chloride	<7.31	<3.39	<3.52	<4.74
Styrene	<1.33	<1.83	<1.78	<1.65
Tetrachloroethene	<0.33	<0.36	<0.32	<0.34
Toluene	4.93	2.34	2.31	3.19
1,1,1-Trichloroethane	<0.33	<0.34	<0.32	<0.33
Trichloroethene	<0.33	<0.34	<0.32	<0.33
1,1,2-Trichloroethane	<0.67	<0.68	<0.64	<0.66
Trichlorotrifluoroethane	<0.67	<0.68	<0.64	<0.66
Trichlorofluoromethane	<0.76	<0.68	<0.64	<0.69
M&P-Xylene	<1.00	<1.14	1.90	<1.35
O-Xylene	<0.33	<0.34	0.53	<0.40
Vinyl Chloride	<0.67	<0.68	<0.64	<0.66
Total	<34.2	<29.0	<29.4	<30.9

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 93
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Wet Reference Concentrations

Compound	Wet Reference Concentration			
	Test No. 1	Test No. 2	Test No. 3	Average
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*
Acetone	<3.84	<3.86	<3.67	<3.79
Benzene	<1.98	<2.40	2.49	<2.29
Bromodichloromethane	<0.39	<0.39	<0.37	<0.38
Bromoform	<0.38	<0.39	<0.37	<0.38
Bromomethane	<3.45	<3.48	<3.30	<3.41
1,3-Butadiene	<0.77	<0.77	<0.73	<0.76
2-Butanone	<0.38	<0.39	<0.37	<0.38
Carbon Tetrachloride	<0.38	<0.39	<0.37	<0.38
Chlorobenzene	<0.43	<0.39	<0.37	<0.40
Chloroform	<0.60	0.68	0.73	<0.67
Cumene (Isopropylbenzene)	<0.77	<0.77	<0.73	<0.76
Dibromochloromethane	<0.38	<0.39	<0.37	<0.38
Dichlorodifluoromethane	<0.77	<0.77	<0.73	<0.76
1,2-Dichloroethane	<0.38	<0.39	<0.37	<0.38
trans,1,2-Dichloroethene	<0.38	<0.39	<0.37	<0.38
1,1-Dichloroethene	<0.38	<0.39	<0.37	<0.38
1,2-Dichloropropane	<0.38	<0.39	<0.37	<0.38
Ethylbenzene	<0.38	<0.39	0.62	<0.46
Ethylene Dibromide	<0.77	<0.77	<0.73	<0.76
Mesitylene (1,3,5-Trimethylbenzene)	<0.77	<0.77	<0.73	<0.76
Methylene Chloride	<8.43	<3.86	<4.02	<5.44
Styrene	<1.53	<2.09	<2.04	<1.88
Tetrachloroethene	<0.38	<0.41	<0.37	<0.39
Toluene	5.68	2.66	2.65	3.66
1,1,1-Trichloroethane	<0.38	<0.39	<0.37	<0.38
Trichloroethene	<0.38	<0.39	<0.37	<0.38
1,1,2-Trichloroethane	<0.77	<0.77	<0.73	<0.76
Trichlorotrifluoroethane	<0.77	<0.77	<0.73	<0.76
Trichlorofluoromethane	<0.87	<0.77	<0.73	<0.79
M&P-Xylene	<1.15	<1.30	2.18	<1.54
O-Xylene	<0.38	<0.39	0.61	<0.46
Vinyl Chloride	<0.77	<0.77	<0.73	<0.76
Total	<39.5	<33.1	<33.7	<35.4

* At 25°C and 1 atmosphere

TABLE 94
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Emission Rates

Compound	Emission Rate Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s
Acetone	<0.065	<0.066	<0.061	<0.064
Benzene	<0.034	<0.041	0.041	<0.039
Bromodichloromethane	<0.0067	<0.0066	<0.0061	<0.0065
Bromoform	<0.0065	<0.0066	<0.0061	<0.0064
Bromomethane	<0.059	<0.059	<0.055	<0.058
1,3-Butadiene	<0.013	<0.013	<0.012	<0.013
2-Butanone	<0.0065	<0.0066	<0.0061	<0.0064
Carbon Tetrachloride	<0.0065	<0.0066	<0.0061	<0.0064
Chlorobenzene	<0.0074	<0.0066	<0.0062	<0.0067
Chloroform	<0.010	0.012	0.012	<0.011
Cumene (Isopropylbenzene)	<0.013	<0.013	<0.012	<0.013
Dibromochloromethane	<0.0065	<0.0066	<0.0061	<0.0064
Dichlorodifluoromethane	<0.013	<0.013	<0.012	<0.013
1,2-Dichloroethane	<0.0065	<0.0066	<0.0061	<0.0064
trans,1,2-Dichloroethene	<0.0065	<0.0066	<0.0061	<0.0064
1,1-Dichloroethene	<0.0065	<0.0066	<0.0061	<0.0064
1,2-Dichloropropane	<0.0065	<0.0066	<0.0061	<0.0064
Ethylbenzene	<0.0065	<0.0066	0.010	<0.0078
Ethylene Dibromide	<0.013	<0.013	<0.012	<0.013
Mesitylene (1,3,5-Trimethylbenzene)	<0.013	<0.013	<0.012	<0.013
Methylene Chloride	<0.14	<0.066	<0.067	<0.092
Styrene	<0.026	<0.036	<0.034	<0.032
Tetrachloroethene	<0.0065	<0.0071	<0.0061	<0.0066
Toluene	0.097	0.046	0.044	0.062
1,1,1-Trichloroethane	<0.0065	<0.0066	<0.0061	<0.0064
Trichloroethene	<0.0065	<0.0066	<0.0061	<0.0064
1,1,2-Trichloroethane	<0.013	<0.013	<0.012	<0.013
Trichlorotrifluoroethane	<0.013	<0.013	<0.012	<0.013
Trichlorofluoromethane	<0.015	<0.013	<0.012	<0.013
M&P-Xylene	<0.020	<0.022	0.036	<0.026
O-Xylene	<0.0065	<0.0066	0.010	<0.0077
Vinyl Chloride	<0.013	<0.013	<0.012	<0.013
Total	<0.67	<0.57	<0.56	<0.60

TABLE 95
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Volatile Organic Emission Data

Compound	Actual Concentration $\mu g/m^3$	Dry Reference Concentration $\mu g/Rm^3$*	Dry Adjusted Concentration $\mu g/Rm^3$*	Wet Reference Concentration $\mu g/Rm^3$*	Emission Rate mg/s
Acetone	<2.73	<4.55	<3.31	<3.79	<0.064
Benzene	<1.65	<2.75	<2.00	<2.29	<0.039
Bromodichloromethane	<0.28	<0.46	<0.33	<0.38	<0.0065
Bromoform	<0.27	<0.46	<0.33	<0.38	<0.0064
Bromomethane	<2.46	<4.10	<2.98	<3.41	<0.058
1,3-Butadiene	<0.55	<0.91	<0.66	<0.76	<0.013
2-Butanone	<0.27	<0.46	<0.33	<0.38	<0.0064
Carbon Tetrachloride	<0.27	<0.46	<0.33	<0.38	<0.0064
Chlorobenzene	<0.29	<0.48	<0.35	<0.40	<0.0067
Chloroform	<0.48	<0.81	<0.59	<0.67	<0.011
Cumene (Isopropylbenzene)	<0.55	<0.91	<0.66	<0.76	<0.013
Dibromochloromethane	<0.27	<0.46	<0.33	<0.38	<0.0064
Dichlorodifluoromethane	<0.55	<0.91	<0.66	<0.76	<0.013
1,2-Dichloroethane	<0.27	<0.46	<0.33	<0.38	<0.0064
trans,1,2-Dichloroethene	<0.27	<0.46	<0.33	<0.38	<0.0064
1,1-Dichloroethene	<0.27	<0.46	<0.33	<0.38	<0.0064
1,2-Dichloropropane	<0.27	<0.46	<0.33	<0.38	<0.0064
Ethylbenzene	<0.33	<0.56	<0.40	<0.46	<0.0078
Ethylene Dibromide	<0.55	<0.91	<0.66	<0.76	<0.013
Mesitylene (1,3,5-Trimethylbenzene)	<0.55	<0.91	<0.66	<0.76	<0.013
Methylene Chloride	<3.92	<6.54	<4.74	<5.44	<0.092
Styrene	<1.36	<2.26	<1.65	<1.88	<0.032
Tetrachloroethene	<0.28	<0.47	<0.34	<0.39	<0.0066
Toluene	2.64	4.41	3.19	3.66	0.062
1,1,1-Trichloroethane	<0.27	<0.46	<0.33	<0.38	<0.0064
Trichloroethene	<0.27	<0.46	<0.33	<0.38	<0.0064
1,1,2-Trichloroethane	<0.55	<0.91	<0.66	<0.76	<0.013
Trichlorotrifluoroethane	<0.55	<0.91	<0.66	<0.76	<0.013
Trichlorofluoromethane	<0.57	<0.95	<0.69	<0.79	<0.013
M&P-Xylene	<1.11	<1.85	<1.35	<1.54	<0.026
O-Xylene	<0.33	<0.55	<0.40	<0.46	<0.0077
Vinyl Chloride	<0.55	<0.91	<0.66	<0.76	<0.013
Total	<25.5	<42.6	<30.9	<35.4	<0.60

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 96
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Volatile Organic Analyses

Compound	Field Blank Tube 16A/16B µg	Field Blank Tube 21A/21B µg	Field Blank Tube 25A/25B µg	Trip Blank Tube 28A/28B µg	Method Blank µg
Acetone	<0.1	<0.1	<0.1	<0.1	<0.1
Benzene	<0.05	<0.05	<0.05	<0.05	<0.05
Bromodichloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Bromoform	<0.01	<0.01	<0.01	<0.01	<0.01
Bromomethane	<0.09	<0.09	<0.09	<0.09	<0.09
1,3-Butadiene	<0.02	<0.02	<0.02	<0.02	<0.02
2-Butanone	<0.01	0.013	<0.01	<0.01	<0.01
Carbon Tetrachloride	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorobenzene	<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	<0.01	<0.01	<0.01	<0.01	<0.01
Cumene (Isopropylbenzene)	<0.02	<0.02	<0.02	<0.02	<0.02
Dibromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlorodifluoromethane	<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichloroethane	<0.01	<0.01	<0.01	<0.01	<0.01
trans,1,2-Dichloroethene	<0.01	<0.01	<0.01	<0.01	<0.01
1,1-Dichloroethene	<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloropropane	<0.01	<0.01	<0.01	<0.01	<0.01
Ethylbenzene	<0.01	<0.01	<0.01	<0.01	<0.01
Ethylene Dibromide	<0.02	<0.02	<0.02	<0.02	<0.02
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.02	<0.02	<0.02	<0.02
Methylene Chloride	<0.1	<0.1	<0.1	<0.1	<0.1
Styrene	<0.02	<0.02	<0.02	<0.02	<0.02
Tetrachloroethene	<0.01	<0.01	<0.01	<0.01	<0.01
Toluene	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	<0.01	<0.01	<0.01	<0.01	<0.01
Trichloroethene	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2-Trichloroethane	<0.02	<0.02	<0.02	<0.02	<0.02
Trichlorotrifluoroethane	<0.02	<0.02	<0.02	<0.02	<0.02
Trichlorofluoromethane	<0.02	<0.02	<0.02	<0.02	<0.02
M&P-Xylene	<0.03	<0.03	<0.03	<0.03	<0.03
O-Xylene	<0.01	<0.01	<0.01	<0.01	<0.01
Vinyl Chloride	<0.02	<0.02	<0.02	<0.02	<0.02
Total	0.78	0.78	0.78	0.78	0.78

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit).
For the purpose of determining the total analytical results for each compound, any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

APPENDIX 3

Boiler No. 1 BH Outlet
Data Tables
October 21 to October 22, 2015 Testing
(63 pages)

TABLE 1
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Semi-Volatile Organic Compounds Train Test Schedule

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	October 21, 2015	14:28	19:42	240
2	October 22, 2015	8:42	13:00	240
3	October 22, 2015	14:47	19:01	240

* Actual sampling time excluding leak-checks, traverse changes and process down time.

TABLE 2
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Stack Gas Sampling Parameters

Semi-Volatile Organic Compounds Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.845	0.967	6.54	4.663	100.5
2	0.845	0.967	6.54	4.696	102.2
3	0.845	0.967	6.54	4.602	100.4

* Dry at 25°C and 1 atmosphere

TABLE 3
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Stack Gas Physical Parameters

Semi-Volatile Organics Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	138	16.8	16.3	-2.57	98.6	12.0	7.43
2	140	18.4	16.7	-2.81	98.1	12.4	6.90
3	138	16.7	16.2	-2.64	98.5	12.2	7.29
Average	139	17.3	16.4	-2.67	98.4	12.2	7.21

* Dry basis, measured by the DYEC CEMS

TABLE 4
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Stack Gas Volumetric Flowrates

Semi-Volatile Organics Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	24.1	14.2	19.3	17.1
2	24.7	14.1	19.9	17.2
3	23.9	14.0	19.3	16.8
Average	24.2	14.1	19.5	17.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 5
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 1

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	506	0.064	0.11	0.080	0.090	1.54
Pentachlorodibenzo-p-dioxins	1500	0.19	0.32	0.24	0.27	4.57
Hexachlorodibenzo-p-dioxins	6050	0.76	1.30	0.95	1.08	18.4
Heptachlorodibenzo-p-dioxins	13300	1.68	2.85	2.10	2.37	40.5
Octachlorodibenzo-p-dioxin	9370	1.18	2.01	1.48	1.67	28.5
Total	30726	3.88	6.59	4.85	5.47	93.6

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	805	0.10	0.17	0.13	0.14	2.45
Pentachlorodibenzofurans	705	0.089	0.15	0.11	0.13	2.15
Hexachlorodibenzofurans	1140	0.14	0.24	0.18	0.20	3.47
Heptachlorodibenzofurans	1470	0.19	0.32	0.23	0.26	4.48
Octachlorodibenzofuran	1770	0.22	0.38	0.28	0.32	5.39
Total	5890	0.74	1.26	0.93	1.05	17.9

Dry Gas Volume Sampled (Rm³*) :	4.663
Actual Flowrate (m³/s) :	24.1
Dry Reference Flowrate (Rm³/s*) :	14.2
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	17.1

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 6
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 2

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	501	0.061	0.11	0.076	0.087	1.50
Pentachlorodibenzo-p-dioxins	1440	0.18	0.31	0.22	0.25	4.32
Hexachlorodibenzo-p-dioxins	5560	0.68	1.18	0.84	0.97	16.7
Heptachlorodibenzo-p-dioxins	12300	1.50	2.62	1.86	2.15	36.9
Octachlorodibenzo-p-dioxin	8680	1.06	1.85	1.31	1.52	26.1
Total	28481	3.46	6.06	4.30	4.97	85.5

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	1100	0.13	0.23	0.17	0.19	3.30
Pentachlorodibenzofurans	760	0.092	0.16	0.11	0.13	2.28
Hexachlorodibenzofurans	1170	0.14	0.25	0.18	0.20	3.51
Heptachlorodibenzofurans	2400	0.29	0.51	0.36	0.42	7.21
Octachlorodibenzofuran	1660	0.20	0.35	0.25	0.29	4.98
Total	7090	0.86	1.51	1.07	1.24	21.3

Dry Gas Volume Sampled (Rm³*) :	4.696
Actual Flowrate (m³/s) :	24.7
Dry Reference Flowrate (Rm³/s*) :	14.1
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	17.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 7
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 3

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	528	0.067	0.11	0.083	0.096	1.61
Pentachlorodibenzo-p-dioxins	1070	0.14	0.23	0.17	0.19	3.26
Hexachlorodibenzo-p-dioxins	4590	0.58	1.00	0.72	0.83	14.0
Heptachlorodibenzo-p-dioxins	9730	1.24	2.11	1.53	1.76	29.6
Octachlorodibenzo-p-dioxin	6740	0.86	1.46	1.06	1.22	20.5
Total	22658	2.88	4.92	3.57	4.10	68.9

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	670	0.085	0.15	0.11	0.12	2.04
Pentachlorodibenzofurans	190	0.024	0.041	0.030	0.034	0.58
Hexachlorodibenzofurans	1060	0.13	0.23	0.17	0.19	3.22
Heptachlorodibenzofurans	1830	0.23	0.40	0.29	0.33	5.57
Octachlorodibenzofuran	1250	0.16	0.27	0.20	0.23	3.80
Total	5000	0.64	1.09	0.79	0.91	15.2

Dry Gas Volume Sampled (Rm^3*) :	4.602
Actual Flowrate (m^3/s) :	23.9
Dry Reference Flowrate (Rm^3/s*) :	14.0
Dry Adjusted Flowrate (Rm^3/s**) :	19.3
Wet Reference Flowrate (Rm^3/s*) :	16.8

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 8
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Actual Concentrations

Dioxins

Congener Group	Actual Concentration Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.064	0.061	0.067	0.064	4.9
Pentachlorodibenzo-p-dioxins	0.19	0.18	0.14	0.17	16.5
Hexachlorodibenzo-p-dioxins	0.76	0.68	0.58	0.67	13.4
Heptachlorodibenzo-p-dioxins	1.68	1.50	1.24	1.47	15.1
Octachlorodibenzo-p-dioxin	1.18	1.06	0.86	1.03	15.9
Total	3.88	3.46	2.88	3.41	14.7

Furans

Congener Group	Actual Concentration Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
Tetrachlorodibenzofurans	0.10	0.13	0.085	0.11	23.0
Pentachlorodibenzofurans	0.089	0.092	0.024	0.069	56.1
Hexachlorodibenzofurans	0.14	0.14	0.13	0.14	3.4
Heptachlorodibenzofurans	0.19	0.29	0.23	0.24	22.4
Octachlorodibenzofuran	0.22	0.20	0.16	0.19	16.8
Total	0.74	0.86	0.64	0.75	15.1

TABLE 9
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Dry Reference Concentrations

Dioxins

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.11	0.11	0.11	0.11	3.8
Pentachlorodibenzo-p-dioxins	0.32	0.31	0.23	0.29	16.6
Hexachlorodibenzo-p-dioxins	1.30	1.18	1.00	1.16	13.1
Heptachlorodibenzo-p-dioxins	2.85	2.62	2.11	2.53	14.9
Octachlorodibenzo-p-dioxin	2.01	1.85	1.46	1.77	15.8
Total	6.59	6.06	4.92	5.86	14.5

Furans

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.17	0.23	0.15	0.18	24.7
Pentachlorodibenzofurans	0.15	0.16	0.041	0.12	56.5
Hexachlorodibenzofurans	0.24	0.25	0.23	0.24	4.1
Heptachlorodibenzofurans	0.32	0.51	0.40	0.41	24.1
Octachlorodibenzofuran	0.38	0.35	0.27	0.33	16.8
Total	1.26	1.51	1.09	1.29	16.5

* At 25°C and 1 atmosphere

TABLE 10
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Dry Adjusted Concentrations

Dioxins

Congener Group	Test No. 1 ng/Rm³*	Dry Adjusted Concentration Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.080	0.076	0.083	0.080	4.8
Pentachlorodibenzo-p-dioxins	0.24	0.22	0.17	0.21	16.9
Hexachlorodibenzo-p-dioxins	0.95	0.84	0.72	0.84	13.8
Heptachlorodibenzo-p-dioxins	2.10	1.86	1.53	1.83	15.5
Octachlorodibenzo-p-dioxin	1.48	1.31	1.06	1.28	16.3
Total	4.85	4.30	3.57	4.24	15.1

Furans

Congener Group	Test No. 1 ng/Rm³*	Dry Adjusted Concentration Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.13	0.17	0.11	0.13	23.0
Pentachlorodibenzofurans	0.11	0.11	0.030	0.085	56.2
Hexachlorodibenzofurans	0.18	0.18	0.17	0.17	3.8
Heptachlorodibenzofurans	0.23	0.36	0.29	0.29	22.2
Octachlorodibenzofuran	0.28	0.25	0.20	0.24	17.2
Total	0.93	1.07	0.79	0.93	15.2

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 11
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Wet Reference Concentrations

Dioxins

Congener Group	Wet Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.090	0.087	0.096	0.091	4.6
Pentachlorodibenzo-p-dioxins	0.27	0.25	0.19	0.24	16.3
Hexachlorodibenzo-p-dioxins	1.08	0.97	0.83	0.96	12.9
Heptachlorodibenzo-p-dioxins	2.37	2.15	1.76	2.09	14.7
Octachlorodibenzo-p-dioxin	1.67	1.52	1.22	1.47	15.5
Total	5.47	4.97	4.10	4.85	14.3

Furans

Congener Group	Wet reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.14	0.19	0.12	0.15	23.8
Pentachlorodibenzofurans	0.13	0.13	0.034	0.098	56.2
Hexachlorodibenzofurans	0.20	0.20	0.19	0.20	3.4
Heptachlorodibenzofurans	0.26	0.42	0.33	0.34	23.3
Octachlorodibenzofuran	0.32	0.29	0.23	0.28	16.5
Total	1.05	1.24	0.91	1.06	15.7

* At 25°C and 1 atmosphere

TABLE 12
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Emission Rates

Dioxins

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	1.54	1.50	1.61	1.55	3.3
Pentachlorodibenzo-p-dioxins	4.57	4.32	3.26	4.05	17.2
Hexachlorodibenzo-p-dioxins	18.4	16.7	14	16.4	13.7
Heptachlorodibenzo-p-dioxins	40.5	36.9	29.6	35.7	15.6
Octachlorodibenzo-p-dioxin	28.5	26.1	20.5	25.0	16.4
Total	93.6	85.5	68.9	82.7	15.2

Furans

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzofurans	2.45	3.30	2.04	2.60	24.8
Pentachlorodibenzofurans	2.15	2.28	0.58	1.67	56.8
Hexachlorodibenzofurans	3.47	3.51	3.22	3.40	4.6
Heptachlorodibenzofurans	4.48	7.21	5.57	5.75	23.9
Octachlorodibenzofuran	5.39	4.98	3.80	4.73	17.5
Total	17.9	21.3	15.2	18.1	16.8

TABLE 13
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Congener Group Emission Data

Dioxins

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.064	0.11	0.080	0.091	1.55
Pentachlorodibenzo-p-dioxins	0.17	0.29	0.21	0.24	4.05
Hexachlorodibenzo-p-dioxins	0.67	1.16	0.84	0.96	16.4
Heptachlorodibenzo-p-dioxins	1.47	2.53	1.83	2.09	35.7
Octachlorodibenzo-p-dioxin	1.03	1.77	1.28	1.47	25.0
Total	3.41	5.86	4.24	4.85	82.7

Furans

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	0.11	0.18	0.13	0.15	2.60
Pentachlorodibenzofurans	0.069	0.12	0.085	0.098	1.67
Hexachlorodibenzofurans	0.14	0.24	0.17	0.20	3.40
Heptachlorodibenzofurans	0.24	0.41	0.29	0.34	5.75
Octachlorodibenzofuran	0.19	0.33	0.24	0.28	4.73
Total	0.75	1.29	0.93	1.06	18.1

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 14
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Dioxin and Furan Congener Group Analyses

Dioxins

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzo-p-dioxins	<10	<11
Pentachlorodibenzo-p-dioxins	<6.0	<6.1
Hexachlorodibenzo-p-dioxins	15.1	<5.4
Heptachlorodibenzo-p-dioxins	47.4	5.96
Octachlorodibenzo-p-dioxin	<20	<8.0
Total	<98.5	<36.5

Furans

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzofurans	<13	<12
Pentachlorodibenzofurans	<5.4	<4.8
Hexachlorodibenzofurans	<4.5	<5.0
Heptachlorodibenzofurans	<6.2	<6.4
Octachlorodibenzofuran	<6.8	<8.4
Total	<35.9	<36.6

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

TABLE 15
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 1

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<20	<2.53	<4.29	<3.16	<3.56	<0.061
12378-pentachlorodibenzo-p-dioxin	21.2	2.68	4.55	3.35	3.78	0.065
123478-hexachlorodibenzo-p-dioxin	81.5	10.3	17.5	12.9	14.5	0.25
123678-hexachlorodibenzo-p-dioxin	357	45.1	76.6	56.3	63.6	1.09
123789-hexachlorodibenzo-p-dioxin	168	21.2	36.0	26.5	29.9	0.51
1234678-heptachlorodibenzo-p-dioxin	5690	719	1220	898	1013	17.3
Octachlorodibenzo-p-dioxin	9370	1184	2009	1478	1669	28.5
2378-tetrachlorodibenzofuran	<35	<4.42	<7.51	<5.52	<6.23	<0.11
12378-pentachlorodibenzofuran	31.2	3.94	6.69	4.92	5.56	0.095
23478-pentachlorodibenzofuran	85.5	10.8	18.3	13.5	15.2	0.26
123478-hexachlorodibenzofuran	91.0	11.5	19.5	14.4	16.2	0.28
123678-hexachlorodibenzofuran	<100	<12.6	<21.4	<15.8	<17.8	<0.30
234678-hexachlorodibenzofuran	221	27.9	47.4	34.9	39.4	0.67
123789-hexachlorodibenzofuran	<50	<6.32	<10.7	<7.89	<8.90	<0.15
1234678-heptachlorodibenzofuran	1300	164	279	205	232	3.96
1234789-heptachlorodibenzofuran	170	21.5	36.5	26.8	30.3	0.52
Octachlorodibenzofuran	1770	224	380	279	315	5.39
PCB 81	<1100	<139	<236	<174	<196	<3.35
PCB 77	<620	<78.3	<133	<97.8	<110	<1.89
PCB 123	19200	2426	4118	3029	3419	58.5
PCB 118	16200	2047	3474	2556	2885	49.3
PCB 114	677	85.5	145	107	121	2.06
PCB 105	5730	724	1229	904	1020	17.4
PCB 126	<170	<21.5	<36.5	<26.8	<30.3	<0.52
PCB 167	271	34.2	58.1	42.8	48.3	0.83
PCB 156	502	63.4	108	79.2	89.4	1.53
PCB 157	136	17.2	29.2	21.5	24.2	0.41
PCB 169	25.7	3.25	5.51	4.06	4.58	0.078
PCB 189	<54	<6.82	<11.6	<8.52	<9.62	<0.16
Total Dioxins & Furans Only	<19561	<2472	<4195	<3086	<3484	<59.6
Total PCBs Only	<44686	<5646	<9583	<7051	<7958	<136
Total Dioxins & Furans and PCBs	<64247	<8118	<13778	<10137	<11441	<196

Dry Gas Volume Sampled (Rm³*) :	4.663
Actual Flowrate (m³/s) :	24.1
Dry Reference Flowrate (Rm³/s*) :	14.2
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	17.1

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 16
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 2

Specific Isomer	Total Collected pg	Actual Concentration pg/m^3	Dry Reference Concentration pg/Rm^3*	Dry Adjusted Concentration pg/Rm^3**	Wet Reference Concentration pg/Rm^3*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<14	<1.70	<2.98	<2.11	<2.44	<0.042
12378-pentachlorodibenzo-p-dioxin	22.1	2.69	4.71	3.33	3.86	0.066
123478-hexachlorodibenzo-p-dioxin	<86	<10.5	<18.3	<13.0	<15.0	<0.26
123678-hexachlorodibenzo-p-dioxin	310	37.7	66.0	46.8	54.1	0.93
123789-hexachlorodibenzo-p-dioxin	143	17.4	30.5	21.6	25.0	0.43
1234678-heptachlorodibenzo-p-dioxin	5080	618	1082	766	887	15.3
Octachlorodibenzo-p-dioxin	8680	1055	1848	1310	1515	26.1
2378-tetrachlorodibenzofuran	30.6	3.72	6.52	4.62	5.34	0.092
12378-pentachlorodibenzofuran	38.1	4.63	8.11	5.75	6.65	0.11
23478-pentachlorodibenzofuran	<60	<7.29	<12.8	<9.05	<10.5	<0.18
123478-hexachlorodibenzofuran	72.7	8.84	15.5	11.0	12.7	0.22
123678-hexachlorodibenzofuran	105	12.8	22.4	15.8	18.3	0.32
234678-hexachlorodibenzofuran	195	23.7	41.5	29.4	34.0	0.59
123789-hexachlorodibenzofuran	<38	<4.62	<8.09	<5.73	<6.63	<0.11
1234678-heptachlorodibenzofuran	1270	154	270	192	222	3.81
1234789-heptachlorodibenzofuran	197	23.9	42.0	29.7	34.4	0.59
Octachlorodibenzofuran	1660	202	353	250	290	4.98
PCB 81	<91	<11.1	<19.4	<13.7	<15.9	<0.27
PCB 77	278	33.8	59.2	41.9	48.5	0.83
PCB 123	<260	<31.6	<55.4	<39.2	<45.4	<0.78
PCB 118	2140	260	456	323	374	6.43
PCB 114	<120	<14.6	<25.6	<18.1	<20.9	<0.36
PCB 105	913	111	194	138	159	2.74
PCB 126	<94	<11.4	<20.0	<14.2	<16.4	<0.28
PCB 167	<37	<4.50	<7.88	<5.58	<6.46	<0.11
PCB 156	<69	<8.39	<14.7	<10.4	<12.0	<0.21
PCB 157	66.5	8.08	14.2	10.0	11.6	0.20
PCB 169	<30	<3.65	<6.39	<4.53	<5.24	<0.090
PCB 189	62.5	7.60	13.3	9.43	10.9	0.19
Total Dioxins & Furans Only	<18002	<2188	<3833	<2716	<3142	<54.1
Total PCBs Only	<4161	<506	<886	<628	<726	<12.5
Total Dioxins & Furans and PCBs	<22163	<2694	<4719	<3344	<3869	<66.5

Dry Gas Volume Sampled (Rm^3*) :	4.696
Actual Flowrate (m^3/s) :	24.7
Dry Reference Flowrate (Rm^3/s*) :	14.1
Dry Adjusted Flowrate (Rm^3/s**) :	19.9
Wet Reference Flowrate (Rm^3/s*) :	17.2

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 17
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 3

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<11	<1.40	<2.39	<1.73	<1.99	<0.033
12378-pentachlorodibenzo-p-dioxin	<21	<2.67	<4.56	<3.31	<3.80	<0.064
123478-hexachlorodibenzo-p-dioxin	62.5	7.96	13.6	9.85	11.3	0.19
123678-hexachlorodibenzo-p-dioxin	264	33.6	57.4	41.6	47.8	0.80
123789-hexachlorodibenzo-p-dioxin	<110	<14.0	<23.9	<17.3	<19.9	<0.33
1234678-heptachlorodibenzo-p-dioxin	4130	526	897	651	748	12.6
Octachlorodibenzo-p-dioxin	6740	858	1465	1062	1220	20.5
2378-tetrachlorodibenzofuran	<16	<2.04	<3.48	<2.52	<2.90	<0.049
12378-pentachlorodibenzofuran	<22	<2.80	<4.78	<3.47	<3.98	<0.067
23478-pentachlorodibenzofuran	66.5	8.46	14.5	10.5	12.0	0.20
123478-hexachlorodibenzofuran	59.7	7.60	13.0	9.41	10.8	0.18
123678-hexachlorodibenzofuran	90.4	11.5	19.6	14.2	16.4	0.28
234678-hexachlorodibenzofuran	159	20.2	34.6	25.1	28.8	0.48
123789-hexachlorodibenzofuran	35.2	4.48	7.65	5.55	6.37	0.11
1234678-heptachlorodibenzofuran	1010	129	219	159	183	3.07
1234789-heptachlorodibenzofuran	149	19.0	32.4	23.5	27.0	0.45
Octachlorodibenzofuran	1250	159	272	197	226	3.80
PCB 81	<75	<9.55	<16.3	<11.8	<13.6	<0.23
PCB 77	221	28.1	48.0	34.8	40.0	0.67
PCB 123	195	24.8	42.4	30.7	35.3	0.59
PCB 118	1310	167	285	206	237	3.99
PCB 114	<94	<12.0	<20.4	<14.8	<17.0	<0.29
PCB 105	485	61.7	105	76.4	87.8	1.48
PCB 126	<65	<8.27	<14.1	<10.2	<11.8	<0.20
PCB 167	<28	<3.56	<6.08	<4.41	<5.07	<0.085
PCB 156	90.1	11.5	19.6	14.2	16.3	0.27
PCB 157	41.6	5.30	9.04	6.56	7.53	0.13
PCB 169	<15	<1.91	<3.26	<2.36	<2.72	<0.046
PCB 189	57.0	7.26	12.4	8.98	10.3	0.17
Total Dioxins & Furans Only	<14196	<1807	<3085	<2238	<2571	<43.2
Total PCBs Only	<2677	<341	<582	<422	<485	<8.14
Total Dioxins & Furans and PCBs	<16873	<2148	<3666	<2660	<3055	<51.3

Dry Gas Volume Sampled (Rm^3*) :	4.602
Actual Flowrate (m^3/s) :	23.9
Dry Reference Flowrate (Rm^3/s*) :	14.0
Dry Adjusted Flowrate (Rm^3/s**) :	19.3
Wet Reference Flowrate (Rm^3/s*) :	16.8

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 18
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration Test No. 1 pg/m³	Test No. 2 pg/m³	Test No. 3 pg/m³	Average pg/m³	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<2.53	<1.70	<1.40	<1.88	31.1
12378-pentachlorodibenzo-p-dioxin	2.68	2.69	<2.67	<2.68	0.3
123478-hexachlorodibenzo-p-dioxin	10.3	<10.5	7.96	<9.57	14.6
123678-hexachlorodibenzo-p-dioxin	45.1	37.7	33.6	38.8	15.0
123789-hexachlorodibenzo-p-dioxin	21.2	17.4	<14.0	<17.5	20.6
1234678-heptachlorodibenzo-p-dioxin	719	618	526	621	15.6
Octachlorodibenzo-p-dioxin	1184	1055	858	1032	15.9
2378-tetrachlorodibenzofuran	<4.42	3.72	<2.04	<3.39	36.1
12378-pentachlorodibenzofuran	3.94	4.63	<2.80	<3.79	24.4
23478-pentachlorodibenzofuran	10.8	<7.29	8.46	<8.85	20.2
123478-hexachlorodibenzofuran	11.5	8.84	7.60	9.31	21.4
123678-hexachlorodibenzofuran	<12.6	12.8	11.5	<12.3	5.6
234678-hexachlorodibenzofuran	27.9	23.7	20.2	24.0	16.1
123789-hexachlorodibenzofuran	<6.32	<4.62	4.48	<5.14	19.9
1234678-heptachlorodibenzofuran	164	154	129	149	12.4
1234789-heptachlorodibenzofuran	21.5	23.9	19.0	21.5	11.6
Octachlorodibenzofuran	224	202	159	195	16.8
PCB 81	<139	<11.1	<9.55	<53.2	140
PCB 77	<78.3	33.8	28.1	<46.8	58.8
PCB 123	2426	<31.6	24.8	<828	167
PCB 118	2047	260	167	825	128
PCB 114	85.5	<14.6	<12.0	<37.4	112
PCB 105	724	111	61.7	299	123
PCB 126	<21.5	<11.4	<8.27	<13.7	50.2
PCB 167	34.2	<4.50	<3.56	<14.1	124
PCB 156	63.4	<8.39	11.5	<27.8	111
PCB 157	17.2	8.08	5.30	10.2	61.0
PCB 169	3.25	<3.65	<1.91	<2.93	31.0
PCB 189	<6.82	7.60	7.26	<7.23	5.4
Total Dioxins & Furans Only	<2472	<2188	<1807	<2156	15.5
Total PCBs Only	<5646	<506	<341	<2164	139
Total Dioxins & Furans and PCBs	<8118	<2694	<2148	<4320	76.4

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 19
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<4.29	<2.98	<2.39	<3.22	30.2
12378-pentachlorodibenzo-p-dioxin	4.55	4.71	<4.56	<4.61	1.9
123478-hexachlorodibenzo-p-dioxin	17.5	<18.3	13.6	<16.5	15.3
123678-hexachlorodibenzo-p-dioxin	76.6	66.0	57.4	66.6	14.4
123789-hexachlorodibenzo-p-dioxin	36.0	30.5	<23.9	<30.1	20.1
1234678-heptachlorodibenzo-p-dioxin	1220	1082	897	1066	15.2
Octachlorodibenzo-p-dioxin	2009	1848	1465	1774	15.8
2378-tetrachlorodibenzofuran	<7.51	6.52	<3.48	<5.83	36.0
12378-pentachlorodibenzofuran	6.69	8.11	<4.78	<6.53	25.6
23478-pentachlorodibenzofuran	18.3	<12.8	14.5	<15.2	18.8
123478-hexachlorodibenzofuran	19.5	15.5	13.0	16.0	20.6
123678-hexachlorodibenzofuran	<21.4	22.4	19.6	<21.1	6.5
234678-hexachlorodibenzofuran	47.4	41.5	34.6	41.2	15.6
123789-hexachlorodibenzofuran	<10.7	<8.09	7.65	<8.82	18.8
1234678-heptachlorodibenzofuran	279	270	219	256	12.5
1234789-heptachlorodibenzofuran	36.5	42.0	32.4	36.9	13.0
Octachlorodibenzofuran	380	353	272	335	16.8
PCB 81	<236	<19.4	<16.3	<90.5	139
PCB 77	<133	59.2	48.0	<80.1	57.6
PCB 123	4118	<55.4	42.4	<1405	167
PCB 118	3474	456	285	1405	128
PCB 114	145	<25.6	<20.4	<63.7	111
PCB 105	1229	194	105	510	123
PCB 126	<36.5	<20.0	<14.1	<23.5	49.2
PCB 167	58.1	<7.88	<6.08	<24.0	123
PCB 156	108	<14.7	19.6	<47.3	111
PCB 157	29.2	14.2	9.04	17.5	59.9
PCB 169	5.51	<6.39	<3.26	<5.05	31.9
PCB 189	<11.6	13.3	12.4	<12.4	7.0
Total Dioxins & Furans Only	<4195	<3833	<3085	<3704	15.3
Total PCBs Only	<9583	<886	<582	<3684	139
Total Dioxins & Furans and PCBs	<13778	<4719	<3666	<7388	75.2

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 20
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration Test No. 1 pg/Rm^3*	Test No. 2 pg/Rm^3*	Test No. 3 pg/Rm^3*	Average pg/Rm^3*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<3.16	<2.11	<1.73	<2.33	31.5
12378-pentachlorodibenzo-p-dioxin	3.35	3.33	<3.31	<3.33	0.5
123478-hexachlorodibenzo-p-dioxin	12.9	<13.0	9.85	<11.9	14.9
123678-hexachlorodibenzo-p-dioxin	56.3	46.8	41.6	48.2	15.5
123789-hexachlorodibenzo-p-dioxin	26.5	21.6	<17.3	<21.8	21.0
1234678-heptachlorodibenzo-p-dioxin	898	766	651	772	16.0
Octachlorodibenzo-p-dioxin	1478	1310	1062	1283	16.3
2378-tetrachlorodibenzofuran	<5.52	4.62	<2.52	<4.22	36.5
12378-pentachlorodibenzofuran	4.92	5.75	<3.47	<4.71	24.5
23478-pentachlorodibenzofuran	13.5	<9.05	10.5	<11.0	20.6
123478-hexachlorodibenzofuran	14.4	11.0	9.41	11.6	21.8
123678-hexachlorodibenzofuran	<15.8	15.8	14.2	<15.3	5.9
234678-hexachlorodibenzofuran	34.9	29.4	25.1	29.8	16.5
123789-hexachlorodibenzofuran	<7.89	<5.73	5.55	<6.39	20.4
1234678-heptachlorodibenzofuran	205	192	159	185	12.7
1234789-heptachlorodibenzofuran	26.8	29.7	23.5	26.7	11.7
Octachlorodibenzofuran	279	250	197	242	17.2
PCB 81	<174	<13.7	<11.8	<66.4	140
PCB 77	<97.8	41.9	34.8	<58.2	59.3
PCB 123	3029	<39.2	30.7	<1033	167
PCB 118	2556	323	206	1028	129
PCB 114	107	<18.1	<14.8	<46.6	112
PCB 105	904	138	76.4	373	124
PCB 126	<26.8	<14.2	<10.2	<17.1	50.7
PCB 167	42.8	<5.58	<4.41	<17.6	124
PCB 156	79.2	<10.4	14.2	<34.6	112
PCB 157	21.5	10.0	6.56	12.7	61.5
PCB 169	4.06	<4.53	<2.36	<3.65	31.2
PCB 189	<8.52	9.43	8.98	<8.98	5.1
Total Dioxins & Furans Only	<3086	<2716	<2238	<2680	15.9
Total PCBs Only	<7051	<628	<422	<2700	140
Total Dioxins & Furans and PCBs	<10137	<3344	<2660	<5380	76.8

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 21
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<3.56	<2.44	<1.99	<2.67	30.3
12378-pentachlorodibenzo-p-dioxin	3.78	3.86	<3.80	<3.81	1.1
123478-hexachlorodibenzo-p-dioxin	14.5	<15.0	11.3	<13.6	14.7
123678-hexachlorodibenzo-p-dioxin	63.6	54.1	47.8	55.2	14.4
123789-hexachlorodibenzo-p-dioxin	29.9	25.0	<19.9	<24.9	20.1
1234678-heptachlorodibenzo-p-dioxin	1013	887	748	883	15.0
Octachlorodibenzo-p-dioxin	1669	1515	1220	1468	15.5
2378-tetrachlorodibenzofuran	<6.23	5.34	<2.90	<4.82	35.8
12378-pentachlorodibenzofuran	5.56	6.65	<3.98	<5.40	24.8
23478-pentachlorodibenzofuran	15.2	<10.5	12.0	<12.6	19.2
123478-hexachlorodibenzofuran	16.2	12.7	10.8	13.2	20.7
123678-hexachlorodibenzofuran	<17.8	18.3	16.4	<17.5	5.8
234678-hexachlorodibenzofuran	39.4	34.0	28.8	34.1	15.5
123789-hexachlorodibenzofuran	<8.90	<6.63	6.37	<7.30	19.1
1234678-heptachlorodibenzofuran	232	222	183	212	12.1
1234789-heptachlorodibenzofuran	30.3	34.4	27.0	30.5	12.2
Octachlorodibenzofuran	315	290	226	277	16.5
PCB 81	<196	<15.9	<13.6	<75.1	139
PCB 77	<110	48.5	40.0	<66.3	57.9
PCB 123	3419	<45.4	35.3	<1167	167
PCB 118	2885	374	237	1165	128
PCB 114	121	<20.9	<17.0	<52.8	111
PCB 105	1020	159	87.8	423	123
PCB 126	<30.3	<16.4	<11.8	<19.5	49.4
PCB 167	48.3	<6.46	<5.07	<19.9	123
PCB 156	89.4	<12.0	16.3	<39.3	111
PCB 157	24.2	11.6	7.53	14.5	60.2
PCB 169	4.58	<5.24	<2.72	<4.18	31.3
PCB 189	<9.62	10.9	10.3	<10.3	6.3
Total Dioxins & Furans Only	<3484	<3142	<2571	<3066	15.0
Total PCBs Only	<7958	<726	<485	<3056	139
Total Dioxins & Furans and PCBs	<11441	<3869	<3055	<6122	75.5

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 22
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Rates

Specific Isomer	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.061	<0.042	<0.033	<0.045	30.9
12378-pentachlorodibenzo-p-dioxin	0.065	0.066	<0.064	<0.065	2.0
123478-hexachlorodibenzo-p-dioxin	0.25	<0.26	0.19	<0.23	15.8
123678-hexachlorodibenzo-p-dioxin	1.09	0.93	0.80	0.94	15.1
123789-hexachlorodibenzo-p-dioxin	0.51	0.43	<0.33	<0.43	20.8
1234678-heptachlorodibenzo-p-dioxin	17.3	15.3	12.6	15.0	15.9
Octachlorodibenzo-p-dioxin	28.5	26.1	20.5	25.0	16.4
2378-tetrachlorodibenzofuran	<0.11	0.092	<0.049	<0.082	36.5
12378-pentachlorodibenzofuran	0.095	0.11	<0.067	<0.092	25.9
23478-pentachlorodibenzofuran	0.26	<0.18	0.20	<0.21	19.3
123478-hexachlorodibenzofuran	0.28	0.22	0.18	0.23	21.3
123678-hexachlorodibenzofuran	<0.30	0.32	0.28	<0.30	7.0
234678-hexachlorodibenzofuran	0.67	0.59	0.48	0.58	16.3
123789-hexachlorodibenzofuran	<0.15	<0.11	0.11	<0.12	19.5
1234678-heptachlorodibenzofuran	3.96	3.81	3.07	3.61	13.1
1234789-heptachlorodibenzofuran	0.52	0.59	0.45	0.52	13.3
Octachlorodibenzofuran	5.39	4.98	3.80	4.73	17.5
PCB 81	<3.35	<0.27	<0.23	<1.28	139
PCB 77	<1.89	0.83	0.67	<1.13	58.3
PCB 123	58.5	<0.78	0.59	<19.9	167
PCB 118	49.3	6.43	3.99	19.9	128
PCB 114	2.06	<0.36	<0.29	<0.90	111
PCB 105	17.4	2.74	1.48	7.22	123
PCB 126	<0.52	<0.28	<0.20	<0.33	49.9
PCB 167	0.83	<0.11	<0.085	<0.34	123
PCB 156	1.53	<0.21	0.27	<0.67	111
PCB 157	0.41	0.20	0.13	0.25	60.6
PCB 169	0.078	<0.090	<0.046	<0.071	32.3
PCB 189	<0.16	0.19	0.17	<0.18	6.7
Total Dioxins & Furans Only	<59.6	<54.1	<43.2	<52.3	15.9
Total PCBs Only	<136	<12.5	<8.14	<52.2	139
Total Dioxins & Furans and PCBs	<196	<66.5	<51.3	<105	75.9

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 23
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Specific Isomer Emission Data

Specific Isomer	Actual Concentration pg/m^3	Dry Reference Concentration pg/Rm^3*	Dry Adjusted Concentration pg/Rm^3**	Wet Reference Concentration pg/Rm^3*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<1.88	<3.22	<2.33	<2.67	<0.045
12378-pentachlorodibenzo-p-dioxin	<2.68	<4.61	<3.33	<3.81	<0.065
123478-hexachlorodibenzo-p-dioxin	<9.57	<16.5	<11.9	<13.6	<0.23
123678-hexachlorodibenzo-p-dioxin	38.8	66.6	48.2	55.2	0.94
123789-hexachlorodibenzo-p-dioxin	<17.5	<30.1	<21.8	<24.9	<0.43
1234678-heptachlorodibenzo-p-dioxin	621	1066	772	883	15.0
Octachlorodibenzo-p-dioxin	1032	1774	1283	1468	25.0
2378-tetrachlorodibenzofuran	<3.39	<5.83	<4.22	<4.82	<0.082
12378-pentachlorodibenzofuran	<3.79	<6.53	<4.71	<5.40	<0.092
23478-pentachlorodibenzofuran	<8.85	<15.2	<11.0	<12.6	<0.21
123478-hexachlorodibenzofuran	9.31	16.0	11.6	13.2	0.23
123678-hexachlorodibenzofuran	<12.3	<21.1	<15.3	<17.5	<0.30
234678-hexachlorodibenzofuran	24.0	41.2	29.8	34.1	0.58
123789-hexachlorodibenzofuran	<5.14	<8.82	<6.39	<7.30	<0.12
1234678-heptachlorodibenzofuran	149	256	185	212	3.61
1234789-heptachlorodibenzofuran	21.5	36.9	26.7	30.5	0.52
Octachlorodibenzofuran	195	335	242	277	4.73
PCB 81	<53.2	<90.5	<66.4	<75.1	<1.28
PCB 77	<46.8	<80.1	<58.2	<66.3	<1.13
PCB 123	<828	<1405	<1033	<1167	<19.9
PCB 118	825	1405	1028	1165	19.9
PCB 114	<37.4	<63.7	<46.6	<52.8	<0.90
PCB 105	299	510	373	423	7.22
PCB 126	<13.7	<23.5	<17.1	<19.5	<0.33
PCB 167	<14.1	<24.0	<17.6	<19.9	<0.34
PCB 156	<27.8	<47.3	<34.6	<39.3	<0.67
PCB 157	10.2	17.5	12.7	14.5	0.25
PCB 169	<2.93	<5.05	<3.65	<4.18	<0.071
PCB 189	<7.23	<12.4	<8.98	<10.3	<0.18
Total Dioxins & Furans Only	<2156	<3704	<2680	<3066	<52.3
Total PCBs Only	<2164	<3684	<2700	<3056	<52.2
Total Dioxins & Furans and PCBs	<4320	<7388	<5380	<6122	<105

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 24
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Dioxin and Furan Specific Isomer Analyses

Specific Isomer	Blank Train pg	Laboratory Blank pg
2378-tetrachlorodibenzo-p-dioxin	<10	<11
12378-pentachlorodibenzo-p-dioxin	<6.0	<6.1
123478-hexachlorodibenzo-p-dioxin	<6.7	<5.3
123678-hexachlorodibenzo-p-dioxin	<6.9	<5.4
123789-hexachlorodibenzo-p-dioxin	<6.8	<5.4
1234678-heptachlorodibenzo-p-dioxin	23.6	5.96
Octachlorodibenzo-p-dioxin	<20	<8.0
2378-tetrachlorodibenzofuran	<13	<12
12378-pentachlorodibenzofuran	<5.4	<4.8
23478-pentachlorodibenzofuran	<5.3	<4.7
123478-hexachlorodibenzofuran	<4.2	<4.6
123678-hexachlorodibenzofuran	<4.1	<4.5
234678-hexachlorodibenzofuran	<4.0	<4.5
123789-hexachlorodibenzofuran	<4.5	<5.0
1234678-heptachlorodibenzofuran	<5.1	<5.2
1234789-heptachlorodibenzofuran	<6.2	<6.4
Octachlorodibenzofuran	<6.8	<8.4
PCB 81	<5.8	<3.0
PCB 77	<6.4	<4.0
PCB 123	<6.2	2.97
PCB 118	<50	<7.2
PCB 114	<5.6	<1.3
PCB 105	19.5	5.51
PCB 126	<6.5	<2.2
PCB 167	<5.8	<2.6
PCB 156	<5.8	3.60
PCB 157	<6.3	<2.5
PCB 169	<6.6	<3.0
PCB 189	<4.2	<2.0
Total Dioxins & Furans Only	<139	<107
Total PCBs Only	<129	<39.9
Total Dioxins & Furans and PCBs	<267	<147

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

TABLE 25
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Actual Concentrations

Specific Isomer	Toxicity Equivalency Factor	Actual Concentration Test No. 1 pg TEQ/m³	Test No. 2 pg TEQ/m³	Test No. 3 pg TEQ/m³	Average pg TEQ/m³
2378-tetrachlorodibenzo-p-dioxin	1.000	<2.53	<1.70	<1.40	<1.88
12378-pentachlorodibenzo-p-dioxin	1.000	2.68	2.69	<2.67	<2.68
123478-hexachlorodibenzo-p-dioxin	0.100	1.03	<1.05	0.80	<0.96
123678-hexachlorodibenzo-p-dioxin	0.100	4.51	3.77	3.36	3.88
123789-hexachlorodibenzo-p-dioxin	0.100	2.12	1.74	<1.40	<1.75
1234678-heptachlorodibenzo-p-dioxin	0.010	7.19	6.18	5.26	6.21
Octachlorodibenzo-p-dioxin	0.0003	0.36	0.32	0.26	0.31
2378-tetrachlorodibenzofuran	0.100	<0.44	0.37	<0.20	<0.34
12378-pentachlorodibenzofuran	0.030	0.12	0.14	<0.084	<0.11
23478-pentachlorodibenzofuran	0.300	3.24	<2.19	2.54	<2.66
123478-hexachlorodibenzofuran	0.100	1.15	0.88	0.76	0.93
123678-hexachlorodibenzofuran	0.100	<1.26	1.28	1.15	<1.23
234678-hexachlorodibenzofuran	0.100	2.79	2.37	2.02	2.40
123789-hexachlorodibenzofuran	0.100	<0.63	<0.46	0.45	<0.51
1234678-heptachlorodibenzofuran	0.010	1.64	1.54	1.29	1.49
1234789-heptachlorodibenzofuran	0.010	0.21	0.24	0.19	0.21
Octachlorodibenzofuran	0.0003	0.067	0.061	0.048	0.058
PCB 81	0.0003	<0.042	<0.0033	<0.0029	<0.016
PCB 77	0.0001	<0.0078	0.0034	0.0028	<0.0047
PCB 123	0.00003	0.073	<0.00095	0.00074	<0.025
PCB 118	0.00003	0.061	0.0078	0.0050	0.025
PCB 114	0.00003	0.0026	<0.00044	<0.00036	<0.0011
PCB 105	0.00003	0.022	0.0033	0.0019	0.0090
PCB 126	0.100	<2.15	<1.14	<0.83	<1.37
PCB 167	0.00003	0.0010	<0.00013	<0.00011	<0.00042
PCB 156	0.00003	0.0019	<0.00025	0.00034	<0.00083
PCB 157	0.00003	0.00052	0.00024	0.00016	0.00031
PCB 169	0.030	0.097	<0.11	<0.057	<0.088
PCB 189	0.00003	<0.00020	0.00023	0.00022	<0.00022
Total Dioxins & Furans Only		<32.0	<27.0	<23.9	<27.6
Total PCBs Only		<2.46	<1.27	<0.90	<1.54
Total Dioxins & Furans and PCBs		<34.4	<28.2	<24.8	<29.2

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 26
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Dry Reference Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<4.29	<2.98	<2.39	<3.22
12378-pentachlorodibenzo-p-dioxin	1.000	4.55	4.71	<4.56	<4.61
123478-hexachlorodibenzo-p-dioxin	0.100	1.75	<1.83	1.36	<1.65
123678-hexachlorodibenzo-p-dioxin	0.100	7.66	6.60	5.74	6.66
123789-hexachlorodibenzo-p-dioxin	0.100	3.60	3.05	<2.39	<3.01
1234678-heptachlorodibenzo-p-dioxin	0.010	12.2	10.8	8.97	10.7
Octachlorodibenzo-p-dioxin	0.0003	0.60	0.55	0.44	0.53
2378-tetrachlorodibenzofuran	0.100	<0.75	0.65	<0.35	<0.58
12378-pentachlorodibenzofuran	0.030	0.20	0.24	<0.14	<0.20
23478-pentachlorodibenzofuran	0.300	5.50	<3.83	4.34	<4.56
123478-hexachlorodibenzofuran	0.100	1.95	1.55	1.30	1.60
123678-hexachlorodibenzofuran	0.100	<2.14	2.24	1.96	<2.11
234678-hexachlorodibenzofuran	0.100	4.74	4.15	3.46	4.12
123789-hexachlorodibenzofuran	0.100	<1.07	<0.81	0.76	<0.88
1234678-heptachlorodibenzofuran	0.010	2.79	2.70	2.19	2.56
1234789-heptachlorodibenzofuran	0.010	0.36	0.42	0.32	0.37
Octachlorodibenzofuran	0.0003	0.11	0.11	0.081	0.10
PCB 81	0.0003	<0.071	<0.0058	<0.0049	<0.027
PCB 77	0.0001	<0.013	0.0059	0.0048	<0.0080
PCB 123	0.00003	0.12	<0.0017	0.0013	<0.042
PCB 118	0.00003	0.10	0.014	0.0085	0.042
PCB 114	0.00003	0.0044	<0.00077	<0.00061	<0.0019
PCB 105	0.00003	0.037	0.0058	0.0032	0.015
PCB 126	0.100	<3.65	<2.00	<1.41	<2.35
PCB 167	0.00003	0.0017	<0.00024	<0.00018	<0.00072
PCB 156	0.00003	0.0032	<0.00044	0.00059	<0.0014
PCB 157	0.00003	0.00087	0.00042	0.00027	0.00052
PCB 169	0.030	0.17	<0.19	<0.098	<0.15
PCB 189	0.00003	<0.00035	0.00040	0.00037	<0.00037
Total Dioxins & Furans Only		<54.3	<47.2	<40.8	<47.4
Total PCBs Only		<4.17	<2.23	<1.53	<2.64
Total Dioxins & Furans and PCBs		<58.4	<49.5	<42.3	<50.1

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 27
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm^3*	Test No. 2 pg TEQ/Rm^3*	Test No. 3 pg TEQ/Rm^3*	Average pg TEQ/Rm^3*
2378-tetrachlorodibenzo-p-dioxin	1.000	<3.16	<2.11	<1.73	<2.33
12378-pentachlorodibenzo-p-dioxin	1.000	3.35	3.33	<3.31	<3.33
123478-hexachlorodibenzo-p-dioxin	0.100	1.29	<1.30	0.99	<1.19
123678-hexachlorodibenzo-p-dioxin	0.100	5.63	4.68	4.16	4.82
123789-hexachlorodibenzo-p-dioxin	0.100	2.65	2.16	<1.73	<2.18
1234678-heptachlorodibenzo-p-dioxin	0.010	8.98	7.66	6.51	7.72
Octachlorodibenzo-p-dioxin	0.0003	0.44	0.39	0.32	0.39
2378-tetrachlorodibenzofuran	0.100	<0.55	0.46	<0.25	<0.42
12378-pentachlorodibenzofuran	0.030	0.15	0.17	<0.10	<0.14
23478-pentachlorodibenzofuran	0.300	4.05	<2.72	3.14	<3.30
123478-hexachlorodibenzofuran	0.100	1.44	1.10	0.94	1.16
123678-hexachlorodibenzofuran	0.100	<1.58	1.58	1.42	<1.53
234678-hexachlorodibenzofuran	0.100	3.49	2.94	2.51	2.98
123789-hexachlorodibenzofuran	0.100	<0.79	<0.57	0.55	<0.64
1234678-heptachlorodibenzofuran	0.010	2.05	1.92	1.59	1.85
1234789-heptachlorodibenzofuran	0.010	0.27	0.30	0.23	0.27
Octachlorodibenzofuran	0.0003	0.084	0.075	0.059	0.073
PCB 81	0.0003	<0.052	<0.0041	<0.0035	<0.020
PCB 77	0.0001	<0.0098	0.0042	0.0035	<0.0058
PCB 123	0.00003	0.091	<0.0012	0.00092	<0.031
PCB 118	0.00003	0.077	0.0097	0.0062	0.031
PCB 114	0.00003	0.0032	<0.00054	<0.00044	<0.0014
PCB 105	0.00003	0.027	0.0041	0.0023	0.011
PCB 126	0.100	<2.68	<1.42	<1.02	<1.71
PCB 167	0.00003	0.0013	<0.00017	<0.00013	<0.00053
PCB 156	0.00003	0.0024	<0.00031	0.00043	<0.0010
PCB 157	0.00003	0.00064	0.00030	0.00020	0.00038
PCB 169	0.030	0.12	<0.14	<0.071	<0.11
PCB 189	0.00003	<0.00026	0.00028	0.00027	<0.00027
Total Dioxins & Furans Only		<39.9	<33.5	<29.6	<34.3
Total PCBs Only		<3.07	<1.58	<1.11	<1.92
Total Dioxins & Furans and PCBs		<43.0	<35.1	<30.7	<36.2

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 27A
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using Half the Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	1.58	1.06	0.87	1.17
12378-pentachlorodibenzo-p-dioxin	1.000	3.35	3.33	1.66	2.78
123478-hexachlorodibenzo-p-dioxin	0.100	1.29	0.65	0.99	0.97
123678-hexachlorodibenzo-p-dioxin	0.100	5.63	4.68	4.16	4.82
123789-hexachlorodibenzo-p-dioxin	0.100	2.65	2.16	0.87	1.89
1234678-heptachlorodibenzo-p-dioxin	0.010	8.98	7.66	6.51	7.72
Octachlorodibenzo-p-dioxin	0.0003	0.44	0.39	0.32	0.39
2378-tetrachlorodibenzofuran	0.100	0.28	0.46	0.13	0.29
12378-pentachlorodibenzofuran	0.030	0.15	0.17	0.052	0.12
23478-pentachlorodibenzofuran	0.300	4.05	1.36	3.14	2.85
123478-hexachlorodibenzofuran	0.100	1.44	1.10	0.94	1.16
123678-hexachlorodibenzofuran	0.100	0.79	1.58	1.42	1.27
234678-hexachlorodibenzofuran	0.100	3.49	2.94	2.51	2.98
123789-hexachlorodibenzofuran	0.100	0.39	0.29	0.55	0.41
1234678-heptachlorodibenzofuran	0.010	2.05	1.92	1.59	1.85
1234789-heptachlorodibenzofuran	0.010	0.27	0.30	0.23	0.27
Octachlorodibenzofuran	0.0003	0.084	0.075	0.059	0.073
PCB 81	0.0003	0.026	0.0021	0.0018	0.010
PCB 77	0.0001	0.0049	0.0042	0.0035	0.0042
PCB 123	0.00003	0.091	0.00059	0.00092	0.031
PCB 118	0.00003	0.077	0.0097	0.0062	0.031
PCB 114	0.00003	0.0032	0.00027	0.00022	0.0012
PCB 105	0.00003	0.027	0.0041	0.0023	0.011
PCB 126	0.100	1.34	0.71	0.51	0.85
PCB 167	0.00003	0.0013	0.000084	0.000066	0.00048
PCB 156	0.00003	0.0024	0.00016	0.00043	0.00099
PCB 157	0.00003	0.00064	0.00030	0.00020	0.00038
PCB 169	0.030	0.12	0.068	0.035	0.075
PCB 189	0.00003	0.00013	0.00028	0.00027	0.00023
Total Dioxins & Furans Only		36.9	30.1	26.0	31.0
Total PCBs Only		1.70	0.80	0.56	1.02
Total Dioxins & Furans and PCBs		38.6	30.9	26.6	32.0

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 27B
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<3.16	<2.11	<1.73	<2.33
12378-pentachlorodibenzo-p-dioxin	0.500	1.67	1.67	<1.66	<1.66
123478-hexachlorodibenzo-p-dioxin	0.100	1.29	<1.30	0.99	<1.19
123678-hexachlorodibenzo-p-dioxin	0.100	5.63	4.68	4.16	4.82
123789-hexachlorodibenzo-p-dioxin	0.100	2.65	2.16	<1.73	<2.18
1234678-heptachlorodibenzo-p-dioxin	0.010	8.98	7.66	6.51	7.72
Octachlorodibenzo-p-dioxin	0.001	1.48	1.31	1.06	1.28
2378-tetrachlorodibenzofuran	0.100	<0.55	0.46	<0.25	<0.42
12378-pentachlorodibenzofuran	0.050	0.25	0.29	<0.17	<0.24
23478-pentachlorodibenzofuran	0.500	6.75	<4.53	5.24	<5.50
123478-hexachlorodibenzofuran	0.100	1.44	1.10	0.94	1.16
123678-hexachlorodibenzofuran	0.100	<1.58	1.58	1.42	<1.53
234678-hexachlorodibenzofuran	0.100	3.49	2.94	2.51	2.98
123789-hexachlorodibenzofuran	0.100	<0.79	<0.57	0.55	<0.64
1234678-heptachlorodibenzofuran	0.010	2.05	1.92	1.59	1.85
1234789-heptachlorodibenzofuran	0.010	0.27	0.30	0.23	0.27
Octachlorodibenzofuran	0.001	0.28	0.25	0.20	0.24
Total Dioxins & Furans		<42.3	<34.8	<31.0	<36.0
In-Stack Limit					60

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

NATO/CCMS (1989) Toxicity Equivalency Factors

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 28
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Wet Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Wet Reference Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<3.56	<2.44	<1.99	<2.67
12378-pentachlorodibenzo-p-dioxin	1.000	3.78	3.86	<3.80	<3.81
123478-hexachlorodibenzo-p-dioxin	0.100	1.45	<1.50	1.13	<1.36
123678-hexachlorodibenzo-p-dioxin	0.100	6.36	5.41	4.78	5.52
123789-hexachlorodibenzo-p-dioxin	0.100	2.99	2.50	<1.99	<2.49
1234678-heptachlorodibenzo-p-dioxin	0.010	10.1	8.87	7.48	8.83
Octachlorodibenzo-p-dioxin	0.0003	0.50	0.45	0.37	0.44
2378-tetrachlorodibenzofuran	0.100	<0.62	0.53	<0.29	<0.48
12378-pentachlorodibenzofuran	0.030	0.17	0.20	<0.12	<0.16
23478-pentachlorodibenzofuran	0.300	4.57	<3.14	3.61	<3.77
123478-hexachlorodibenzofuran	0.100	1.62	1.27	1.08	1.32
123678-hexachlorodibenzofuran	0.100	<1.78	1.83	1.64	<1.75
234678-hexachlorodibenzofuran	0.100	3.94	3.40	2.88	3.41
123789-hexachlorodibenzofuran	0.100	<0.89	<0.66	0.64	<0.73
1234678-heptachlorodibenzofuran	0.010	2.32	2.22	1.83	2.12
1234789-heptachlorodibenzofuran	0.010	0.30	0.34	0.27	0.31
Octachlorodibenzofuran	0.0003	0.095	0.087	0.068	0.083
PCB 81	0.0003	<0.059	<0.0048	<0.0041	<0.023
PCB 77	0.0001	<0.011	0.0049	0.0040	<0.0066
PCB 123	0.00003	0.10	<0.0014	0.0011	<0.035
PCB 118	0.00003	0.087	0.011	0.0071	0.035
PCB 114	0.00003	0.0036	<0.00063	<0.00051	<0.0016
PCB 105	0.00003	0.031	0.0048	0.0026	0.013
PCB 126	0.100	<3.03	<1.64	<1.18	<1.95
PCB 167	0.00003	0.0014	<0.00019	<0.00015	<0.00060
PCB 156	0.00003	0.0027	<0.00036	0.00049	<0.0012
PCB 157	0.00003	0.00073	0.00035	0.00023	0.00043
PCB 169	0.030	0.14	<0.16	<0.081	<0.13
PCB 189	0.00003	<0.00029	0.00033	0.00031	<0.00031
Total Dioxins & Furans Only		<45.1	<38.7	<34.0	<39.3
Total PCBs Only		<3.46	<1.83	<1.28	<2.19
Total Dioxins & Furans and PCBs		<48.5	<40.6	<35.2	<41.4

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 29
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Emission Rates

Specific Isomer	Toxicity Equivalency Factor	Emission Rate Test No. 1 ng TEQ/s	Test No. 2 ng TEQ/s	Test No. 3 ng TEQ/s	Average ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.061	<0.042	<0.033	<0.045
12378-pentachlorodibenzo-p-dioxin	1.000	0.065	0.066	<0.064	<0.065
123478-hexachlorodibenzo-p-dioxin	0.100	0.025	<0.026	0.019	<0.023
123678-hexachlorodibenzo-p-dioxin	0.100	0.11	0.093	0.080	0.094
123789-hexachlorodibenzo-p-dioxin	0.100	0.051	0.043	<0.033	<0.043
1234678-heptachlorodibenzo-p-dioxin	0.010	0.17	0.15	0.13	0.15
Octachlorodibenzo-p-dioxin	0.0003	0.0086	0.0078	0.0062	0.0075
2378-tetrachlorodibenzofuran	0.100	<0.011	0.0092	<0.0049	<0.0082
12378-pentachlorodibenzofuran	0.030	0.0029	0.0034	<0.0020	<0.0028
23478-pentachlorodibenzofuran	0.300	0.078	<0.054	0.061	<0.064
123478-hexachlorodibenzofuran	0.100	0.028	0.022	0.018	0.023
123678-hexachlorodibenzofuran	0.100	<0.030	0.032	0.028	<0.030
234678-hexachlorodibenzofuran	0.100	0.067	0.059	0.048	0.058
123789-hexachlorodibenzofuran	0.100	<0.015	<0.011	0.011	<0.012
1234678-heptachlorodibenzofuran	0.010	0.040	0.038	0.031	0.036
1234789-heptachlorodibenzofuran	0.010	0.0052	0.0059	0.0045	0.0052
Octachlorodibenzofuran	0.0003	0.0016	0.0015	0.0011	0.0014
PCB 81	0.0003	<0.0010	<0.000082	<0.000068	<0.00039
PCB 77	0.0001	<0.00019	0.000083	0.000067	<0.00011
PCB 123	0.00003	0.0018	<0.000023	0.000018	<0.00060
PCB 118	0.00003	0.0015	0.00019	0.00012	0.00060
PCB 114	0.00003	0.000062	<0.000011	<0.0000086	<0.000027
PCB 105	0.00003	0.00052	0.000082	0.000044	0.00022
PCB 126	0.100	<0.052	<0.028	<0.020	<0.033
PCB 167	0.00003	0.000025	<0.0000033	<0.0000026	<0.000010
PCB 156	0.00003	0.000046	<0.0000062	0.0000082	<0.000020
PCB 157	0.00003	0.000012	0.0000060	0.0000038	0.0000074
PCB 169	0.030	0.0023	<0.0027	<0.0014	<0.0021
PCB 189	0.00003	<0.0000049	0.0000056	0.0000052	<0.0000053
Total Dioxins & Furans Only		<0.77	<0.67	<0.57	<0.67
Total PCBs Only		<0.059	<0.031	<0.021	<0.037
Total Dioxins & Furans and PCBs		<0.83	<0.70	<0.59	<0.71

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 30
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using the Full Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	<1.88	<3.22	<2.33	<2.67	<0.045
12378-pentachlorodibenzo-p-dioxin	<2.68	<4.61	<3.33	<3.81	<0.065
123478-hexachlorodibenzo-p-dioxin	<0.96	<1.65	<1.19	<1.36	<0.023
123678-hexachlorodibenzo-p-dioxin	3.88	6.66	4.82	5.52	0.094
123789-hexachlorodibenzo-p-dioxin	<1.75	<3.01	<2.18	<2.49	<0.043
1234678-heptachlorodibenzo-p-dioxin	6.21	10.7	7.72	8.83	0.15
Octachlorodibenzo-p-dioxin	0.31	0.53	0.39	0.44	0.0075
2378-tetrachlorodibenzofuran	<0.34	<0.58	<0.42	<0.48	<0.0082
12378-pentachlorodibenzofuran	<0.11	<0.20	<0.14	<0.16	<0.0028
23478-pentachlorodibenzofuran	<2.66	<4.56	<3.30	<3.77	<0.064
123478-hexachlorodibenzofuran	0.93	1.60	1.16	1.32	0.023
123678-hexachlorodibenzofuran	<1.23	<2.11	<1.53	<1.75	<0.030
234678-hexachlorodibenzofuran	2.40	4.12	2.98	3.41	0.058
123789-hexachlorodibenzofuran	<0.51	<0.88	<0.64	<0.73	<0.012
1234678-heptachlorodibenzofuran	1.49	2.56	1.85	2.12	0.036
1234789-heptachlorodibenzofuran	0.21	0.37	0.27	0.31	0.0052
Octachlorodibenzofuran	0.058	0.10	0.073	0.083	0.0014
PCB 81	<0.016	<0.027	<0.020	<0.023	<0.00039
PCB 77	<0.0047	<0.0080	<0.0058	<0.0066	<0.00011
PCB 123	<0.025	<0.042	<0.031	<0.035	<0.00060
PCB 118	0.025	0.042	0.031	0.035	0.00060
PCB 114	<0.0011	<0.0019	<0.0014	<0.0016	<0.000027
PCB 105	0.0090	0.015	0.011	0.013	0.00022
PCB 126	<1.37	<2.35	<1.71	<1.95	<0.033
PCB 167	<0.00042	<0.00072	<0.00053	<0.00060	<0.000010
PCB 156	<0.00083	<0.0014	<0.0010	<0.0012	<0.000020
PCB 157	0.00031	0.00052	0.00038	0.00043	0.0000074
PCB 169	<0.088	<0.15	<0.11	<0.13	<0.0021
PCB 189	<0.00022	<0.00037	<0.00027	<0.00031	<0.0000053
Total Dioxins & Furans Only	<27.6	<47.4	<34.3	<39.3	<0.67
Total PCBs Only	<1.54	<2.64	<1.92	<2.19	<0.037
Total Dioxins & Furans and PCBs	<29.2	<50.1	<36.2	<41.4	<0.71

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 31

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Summary of Dioxin and Furan Toxicity Equivalent Emission Data

Calculated Using Half the Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	0.94	1.61	1.17	1.33	0.023
12378-pentachlorodibenzo-p-dioxin	2.23	3.84	2.78	3.18	0.054
123478-hexachlorodibenzo-p-dioxin	0.78	1.34	0.97	1.11	0.019
123678-hexachlorodibenzo-p-dioxin	3.88	6.66	4.82	5.52	0.094
123789-hexachlorodibenzo-p-dioxin	1.52	2.61	1.89	2.16	0.037
1234678-heptachlorodibenzo-p-dioxin	6.21	10.7	7.72	8.83	0.15
Octachlorodibenzo-p-dioxin	0.31	0.53	0.39	0.44	0.0075
2378-tetrachlorodibenzofuran	0.23	0.40	0.29	0.33	0.0057
12378-pentachlorodibenzofuran	0.10	0.17	0.12	0.14	0.0024
23478-pentachlorodibenzofuran	2.29	3.92	2.85	3.25	0.055
123478-hexachlorodibenzofuran	0.93	1.60	1.16	1.32	0.023
123678-hexachlorodibenzofuran	1.02	1.76	1.27	1.45	0.025
234678-hexachlorodibenzofuran	2.40	4.12	2.98	3.41	0.058
123789-hexachlorodibenzofuran	0.33	0.57	0.41	0.47	0.0080
1234678-heptachlorodibenzofuran	1.49	2.56	1.85	2.12	0.036
1234789-heptachlorodibenzofuran	0.21	0.37	0.27	0.31	0.0052
Octachlorodibenzofuran	0.058	0.10	0.073	0.083	0.0014
PCB 81	0.0080	0.014	0.010	0.011	0.00019
PCB 77	0.0034	0.0058	0.0042	0.0048	0.000082
PCB 123	0.025	0.042	0.031	0.0348	0.00059
PCB 118	0.025	0.042	0.031	0.035	0.00060
PCB 114	0.00099	0.0017	0.0012	0.0014	0.000024
PCB 105	0.0090	0.015	0.011	0.013	0.00022
PCB 126	0.69	1.18	0.85	0.97	0.017
PCB 167	0.00038	0.00065	0.00048	0.00054	0.0000092
PCB 156	0.00079	0.0013	0.00099	0.0011	0.000019
PCB 157	0.00031	0.00052	0.00038	0.00043	0.0000074
PCB 169	0.060	0.10	0.075	0.086	0.0015
PCB 189	0.00018	0.00031	0.00023	0.00026	0.0000044
Total Dioxins & Furans Only	24.9	42.8	31.0	35.5	0.60
Total PCBs Only	0.82	1.40	1.02	1.16	0.020
Total Dioxins & Furans and PCBs	25.8	44.2	32.0	36.6	0.62

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 32
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Data for Chlorobenzenes
Test No. 1

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	122	15.4	26.2	19.2	21.7	0.37
1,4-Dichlorobenzene	91	11.5	19.5	14.4	16.2	0.28
1,2-Dichlorobenzene	121	15.3	25.9	19.1	21.5	0.37
Total Dichlorobenzene	334	42.2	71.6	52.7	59.5	1.02
1,3,5-trichlorobenzene	<30	<3.79	<6.43	<4.73	<5.34	<0.091
1,2,4-trichlorobenzene	45.9	5.80	9.84	7.24	8.17	0.14
1,2,3-trichlorobenzene	<30	<3.79	<6.43	<4.73	<5.34	<0.091
Total Trichlorobenzene	<106	<13.4	<22.7	<16.7	<18.9	<0.32
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<30	<3.79	<6.43	<4.73	<5.34	<0.091
1,2,3,4-tetrachlorobenzene	<30	<3.79	<6.43	<4.73	<5.34	<0.091
Total Tetrachlorobenzene	<60.0	<7.58	<12.9	<9.47	<10.7	<0.18
Pentachlorobenzene	<30	<3.79	<6.43	<4.73	<5.34	<0.091
Hexachlorobenzene	<30	<3.79	<6.43	<4.73	<5.34	<0.091
Total Chlorobenzenes	<560	<70.7	<120	<88.3	<99.7	<1.71

Dry Gas Volume Sampled (Rm³*) :	4.663
Actual Flowrate (m³/s) :	24.1
Dry Reference Flowrate (Rm³/s*) :	14.2
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	17.1

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 33
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Data for Chlorobenzenes
Test No. 2

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	123	15.0	26.2	18.6	21.5	0.37
1,4-Dichlorobenzene	91.6	11.1	19.5	13.8	16.0	0.28
1,2-Dichlorobenzene	113	13.7	24.1	17.0	19.7	0.34
Total Dichlorobenzene	328	39.8	69.8	49.4	57.2	0.98
1,3,5-trichlorobenzene	<30	<3.65	<6.39	<4.53	<5.24	<0.090
1,2,4-trichlorobenzene	45.9	5.58	9.77	6.93	8.01	0.14
1,2,3-trichlorobenzene	<30	<3.65	<6.39	<4.53	<5.24	<0.090
Total Trichlorobenzene	<106	<12.9	<22.6	<16.0	<18.5	<0.32
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<30	<3.65	<6.39	<4.53	<5.24	<0.090
1,2,3,4-tetrachlorobenzene	<30	<3.65	<6.39	<4.53	<5.24	<0.090
Total Tetrachlorobenzene	<60.0	<7.29	<12.8	<9.05	<10.5	<0.18
Pentachlorobenzene	<30	<3.65	<6.39	<4.53	<5.24	<0.090
Hexachlorobenzene	<30	<3.65	<6.39	<4.53	<5.24	<0.090
Total Chlorobenzenes	<554	<67.3	<118	<83.5	<96.6	<1.66

Dry Gas Volume Sampled (Rm³*) :	4.696
Actual Flowrate (m³/s) :	24.7
Dry Reference Flowrate (Rm³/s*) :	14.1
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	17.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 34
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Data for Chlorobenzenes
Test No. 3

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	80.2	10.2	17.4	12.6	14.5	0.24
1,4-Dichlorobenzene	68.5	8.72	14.9	10.8	12.4	0.21
1,2-Dichlorobenzene	88.4	11.3	19.2	13.9	16.0	0.27
Total Dichlorobenzene	237	30.2	51.5	37.4	42.9	0.72
1,3,5-trichlorobenzene	<30	<3.82	<6.52	<4.73	<5.43	<0.091
1,2,4-trichlorobenzene	32.9	4.19	7.15	5.19	5.96	0.10
1,2,3-trichlorobenzene	<30	<3.82	<6.52	<4.73	<5.43	<0.091
Total Trichlorobenzene	<93	<11.8	<20.2	<14.6	<16.8	<0.28
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<30	<3.82	<6.52	<4.73	<5.43	<0.091
1,2,3,4-tetrachlorobenzene	<30	<3.82	<6.52	<4.73	<5.43	<0.091
Total Tetrachlorobenzene	<60.0	<7.64	<13.0	<9.46	<10.9	<0.18
Pentachlorobenzene	<30	<3.82	<6.52	<4.73	<5.43	<0.091
Hexachlorobenzene	<30	<3.82	<6.52	<4.73	<5.43	<0.091
Total Chlorobenzenes	<450	<57.3	<97.8	<70.9	<81.5	<1.37

Dry Gas Volume Sampled (Rm³*) :	4.602
Actual Flowrate (m³/s) :	23.9
Dry Reference Flowrate (Rm³/s*) :	14.0
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	16.8

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 35
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Actual Concentrations for Chlorobenzenes

Specific Isomer	Actual Concentration Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
1,3-Dichlorobenzene	15.4	15.0	10.2	13.5	21.3
1,4-Dichlorobenzene	11.5	11.1	8.72	10.5	14.5
1,2-Dichlorobenzene	15.3	13.7	11.3	13.4	15.2
Total Dichlorobenzene	42.2	39.8	30.2	37.4	17.0
1,3,5-trichlorobenzene	<3.79	<3.65	<3.82	<3.75	2.5
1,2,4-trichlorobenzene	5.80	5.58	4.19	5.19	16.8
1,2,3-trichlorobenzene	<3.79	<3.65	<3.82	<3.75	2.5
Total Trichlorobenzene	<13.4	<12.9	<11.8	<12.7	6.3
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<3.79	<3.65	<3.82	<3.75	2.5
1,2,3,4-tetrachlorobenzene	<3.79	<3.65	<3.82	<3.75	2.5
Total Tetrachlorobenzene	<7.58	<7.29	<7.64	<7.50	2.5
Pentachlorobenzene	<3.79	<3.65	<3.82	<3.75	2.5
Hexachlorobenzene	<3.79	<3.65	<3.82	<3.75	2.5
Total Chlorobenzenes	<70.7	<67.3	<57.3	<65.1	10.7

TABLE 36
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dry Reference Concentrations for Chlorobenzenes

Specific Isomer	Dry Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
1,3-Dichlorobenzene	26.2	26.2	17.4	23.3	21.7
1,4-Dichlorobenzene	19.5	19.5	14.9	18.0	14.9
1,2-Dichlorobenzene	25.9	24.1	19.2	23.1	15.1
Total Dichlorobenzene	71.6	69.8	51.5	64.3	17.3
1,3,5-trichlorobenzene	<6.43	<6.39	<6.52	<6.45	1.0
1,2,4-trichlorobenzene	9.84	9.77	7.15	8.92	17.2
1,2,3-trichlorobenzene	<6.43	<6.39	<6.52	<6.45	1.0
Total Trichlorobenzene	<22.7	<22.6	<20.2	<21.8	6.5
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<6.43	<6.39	<6.52	<6.45	1.0
1,2,3,4-tetrachlorobenzene	<6.43	<6.39	<6.52	<6.45	1.0
Total Tetrachlorobenzene	<12.9	<12.8	<13.0	<12.9	1.0
Pentachlorobenzene	<6.43	<6.39	<6.52	<6.45	1.0
Hexachlorobenzene	<6.43	<6.39	<6.52	<6.45	1.0
Total Chlorobenzenes	<120	<118	<97.8	<112	11.0

* At 25°C and 1 atmosphere

TABLE 37
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dry Adjusted Concentrations for Chlorobenzenes

Specific Isomer	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
1,3-Dichlorobenzene	19.2	18.6	12.6	16.8	21.6
1,4-Dichlorobenzene	14.4	13.8	10.8	13.0	14.8
1,2-Dichlorobenzene	19.1	17.0	13.9	16.7	15.6
Total Dichlorobenzene	52.7	49.4	37.4	46.5	17.4
1,3,5-trichlorobenzene	<4.73	<4.53	<4.73	<4.66	2.5
1,2,4-trichlorobenzene	7.24	6.93	5.19	6.45	17.2
1,2,3-trichlorobenzene	<4.73	<4.53	<4.73	<4.66	2.5
Total Trichlorobenzene	<16.7	<16.0	<14.6	<15.8	6.6
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<4.73	<4.53	<4.73	<4.66	2.5
1,2,3,4-tetrachlorobenzene	<4.73	<4.53	<4.73	<4.66	2.5
Total Tetrachlorobenzene	<9.47	<9.05	<9.46	<9.33	2.5
Pentachlorobenzene	<4.73	<4.53	<4.73	<4.66	2.5
Hexachlorobenzene	<4.73	<4.53	<4.73	<4.66	2.5
Total Chlorobenzenes	<88.3	<83.5	<70.9	<80.9	11.1

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 38
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Wet Reference Concentrations for Chlorobenzenes

Specific Isomer	Wet Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
1,3-Dichlorobenzene	21.7	21.5	14.5	19.2	21.2
1,4-Dichlorobenzene	16.2	16.0	12.4	14.9	14.4
1,2-Dichlorobenzene	21.5	19.7	16.0	19.1	14.8
Total Dichlorobenzene	59.5	57.2	42.9	53.2	16.9
1,3,5-trichlorobenzene	<5.34	<5.24	<5.43	<5.34	1.8
1,2,4-trichlorobenzene	8.17	8.01	5.96	7.38	16.7
1,2,3-trichlorobenzene	<5.34	<5.24	<5.43	<5.34	1.8
Total Trichlorobenzene	<18.9	<18.5	<16.8	<18.1	6.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<5.34	<5.24	<5.43	<5.34	1.8
1,2,3,4-tetrachlorobenzene	<5.34	<5.24	<5.43	<5.34	1.8
Total Tetrachlorobenzene	<10.7	<10.5	<10.9	<10.7	1.8
Pentachlorobenzene	<5.34	<5.24	<5.43	<5.34	1.8
Hexachlorobenzene	<5.34	<5.24	<5.43	<5.34	1.8
Total Chlorobenzenes	<99.7	<96.6	<81.5	<92.6	10.5

* At 25°C and 1 atmosphere

TABLE 39
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Rates for Chlorobenzenes

Specific Isomer	Emission Rate Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
1,3-Dichlorobenzene	0.37	0.37	0.24	0.33	22.2
1,4-Dichlorobenzene	0.28	0.28	0.21	0.25	15.4
1,2-Dichlorobenzene	0.37	0.34	0.27	0.33	15.7
Total Dichlorobenzene	1.02	0.98	0.72	0.91	17.9
1,3,5-trichlorobenzene	<0.091	<0.090	<0.091	<0.091	0.8
1,2,4-trichlorobenzene	0.14	0.14	0.10	0.13	17.8
1,2,3-trichlorobenzene	<0.091	<0.090	<0.091	<0.091	0.8
Total Trichlorobenzene	<0.32	<0.32	<0.28	<0.31	7.1
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.091	<0.090	<0.091	<0.091	0.8
1,2,3,4-tetrachlorobenzene	<0.091	<0.090	<0.091	<0.091	0.8
Total Tetrachlorobenzene	<0.18	<0.18	<0.18	<0.18	0.8
Pentachlorobenzene	<0.091	<0.090	<0.091	<0.091	0.8
Hexachlorobenzene	<0.091	<0.090	<0.091	<0.091	0.8
Total Chlorobenzenes	<1.71	<1.66	<1.37	<1.58	11.6

TABLE 40
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Emission Data for Chlorobenzenes

Specific Isomer	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	13.5	23.3	16.8	19.2	0.33
1,4-Dichlorobenzene	10.5	18.0	13.0	14.9	0.25
1,2-Dichlorobenzene	13.4	23.1	16.7	19.1	0.33
Total Dichlorobenzene	37.4	64.3	46.5	53.2	0.91
1,3,5-trichlorobenzene	<3.75	<6.45	<4.66	<5.34	<0.091
1,2,4-trichlorobenzene	5.19	8.92	6.45	7.38	0.13
1,2,3-trichlorobenzene	<3.75	<6.45	<4.66	<5.34	<0.091
Total Trichlorobenzene	<12.7	<21.8	<15.8	<18.1	<0.31
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<3.75	<6.45	<4.66	<5.34	<0.091
1,2,3,4-tetrachlorobenzene	<3.75	<6.45	<4.66	<5.34	<0.091
Total Tetrachlorobenzene	<7.50	<12.9	<9.33	<10.7	<0.18
Pentachlorobenzene	<3.75	<6.45	<4.66	<5.34	<0.091
Hexachlorobenzene	<3.75	<6.45	<4.66	<5.34	<0.091
Total Chlorobenzenes	<65.1	<112	<80.9	<92.6	<1.58

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 41
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorobenzene Blank Analyses

Isomers and Congener Group Totals	Blank Train Total ng	Laboratory Blank Total ng
1,3-Dichlorobenzene	<30	<30
1,4-Dichlorobenzene	<30	<30
1,2-Dichlorobenzene	<30	<30
Total Dichlorobenzene	<90	<90
1,3,5-trichlorobenzene	<30	<30
1,2,4-trichlorobenzene	<30	<30
1,2,3-trichlorobenzene	<30	<30
Total Trichlorobenzene	<90	<90
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<30	<30
1,2,3,4-tetrachlorobenzene	<30	<30
Total Tetrachlorobenzene	<60	<60
Pentachlorobenzene	<30	<30
Hexachlorobenzene	<30	<30
Total Chlorobenzenes	<300	<300

"<" indicates that the amount detected is less than the analytical detection limit (<MDL).
In these cases the value of the detection limit was used to calculate the total collected.

TABLE 42
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 1

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	63	7.96	13.5	9.94	11.2	0.19
3-monochlorophenol	<60	<7.58	<12.9	<9.47	<10.7	<0.18
4-monochlorophenol	258	32.6	55.3	40.7	45.9	0.79
Total Monochlorophenols	<381	<48.1	<81.7	<60.1	<67.9	<1.16
2,6-dichlorophenol	<60	<7.58	<12.9	<9.47	<10.7	<0.18
2,4 & 2,5-dichlorophenol	106	13.4	22.7	16.7	18.9	0.32
3,5-dichlorophenol	<60	<7.58	<12.9	<9.47	<10.7	<0.18
2,3-dichlorophenol	<60	<7.58	<12.9	<9.47	<10.7	<0.18
3,4-dichlorophenol	<60	<7.58	<12.9	<9.47	<10.7	<0.18
Total Dichlorophenols	<346	<43.7	<74.2	<54.6	<61.6	<1.05
2,4,6-trichlorophenol	807	102	173	127	144	2.46
2,3,6-trichlorophenol	<60	<7.58	<12.9	<9.47	<10.7	<0.18
2,3,5-trichlorophenol	<60	<7.58	<12.9	<9.47	<10.7	<0.18
2,4,5-trichlorophenol	<60	<7.58	<12.9	<9.47	<10.7	<0.18
2,3,4-trichlorophenol	<60	<7.58	<12.9	<9.47	<10.7	<0.18
3,4,5-trichlorophenol	<60	<7.58	<12.9	<9.47	<10.7	<0.18
Total Trichlorophenols	<1107	<140	<237	<175	<197	<3.37
2,3,5,6 & 2,3,4,6-tetrachlorophenol	145	18.3	31.1	22.9	25.8	0.44
2,3,4,5-tetrachlorophenol	<60	<7.58	<12.9	<9.47	<10.7	<0.18
Total Tetrachlorophenols	<205	<25.9	<44.0	<32.3	<36.5	<0.62
Pentachlorophenol	204	25.8	43.7	32.2	36.3	0.62
Total Chlorophenols	<2243	<283	<481	<354	<399	<6.83

Dry Gas Volume Sampled (Rm³*) :	4.663
Actual Flowrate (m³/s) :	24.1
Dry Reference Flowrate (Rm³/s*) :	14.2
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	17.1

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 43
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 2

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	<60	<7.29	<12.8	<9.05	<10.5	<0.18
3-monochlorophenol	<60	<7.29	<12.8	<9.05	<10.5	<0.18
4-monochlorophenol	252	30.6	53.7	38.0	44.0	0.76
Total Monochlorophenols	<372	<45.2	<79.2	<56.1	<64.9	<1.12
2,6-dichlorophenol	<60	<7.29	<12.8	<9.05	<10.5	<0.18
2,4 & 2,5-dichlorophenol	134	16.3	28.5	20.2	23.4	0.40
3,5-dichlorophenol	<60	<7.29	<12.8	<9.05	<10.5	<0.18
2,3-dichlorophenol	<60	<7.29	<12.8	<9.05	<10.5	<0.18
3,4-dichlorophenol	<60	<7.29	<12.8	<9.05	<10.5	<0.18
Total Dichlorophenols	<374	<45.5	<79.6	<56.4	<65.3	<1.12
2,4,6-trichlorophenol	941	114	200	142	164	2.83
2,3,6-trichlorophenol	<60	<7.29	<12.8	<9.05	<10.5	<0.18
2,3,5-trichlorophenol	<60	<7.29	<12.8	<9.05	<10.5	<0.18
2,4,5-trichlorophenol	<60	<7.29	<12.8	<9.05	<10.5	<0.18
2,3,4-trichlorophenol	<60	<7.29	<12.8	<9.05	<10.5	<0.18
3,4,5-trichlorophenol	<60	<7.29	<12.8	<9.05	<10.5	<0.18
Total Trichlorophenols	<1241	<151	<264	<187	<217	<3.73
2,3,5,6 & 2,3,4,6-tetrachlorophenol	177	21.5	37.7	26.7	30.9	0.53
2,3,4,5-tetrachlorophenol	<60	<7.29	<12.8	<9.05	<10.5	<0.18
Total Tetrachlorophenols	<237	<28.8	<50.5	<35.8	<41.4	<0.71
Pentachlorophenol	263	32.0	56.0	39.7	45.9	0.79
Total Chlorophenols	<2487	<302	<530	<375	<434	<7.47

Dry Gas Volume Sampled (Rm³*) :	4.696
Actual Flowrate (m³/s) :	24.7
Dry Reference Flowrate (Rm³/s*) :	14.1
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	17.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 44
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 3

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	<60	<7.64	<13.0	<9.46	<10.9	<0.18
3-monochlorophenol	<60	<7.64	<13.0	<9.46	<10.9	<0.18
4-monochlorophenol	215	27.4	46.7	33.9	38.9	0.65
Total Monochlorophenols	<335	<42.6	<72.8	<52.8	<60.7	<1.02
2,6-dichlorophenol	<60	<7.64	<13.0	<9.46	<10.9	<0.18
2,4 & 2,5-dichlorophenol	102	13.0	22.2	16.1	18.5	0.31
3,5-dichlorophenol	<60	<7.64	<13.0	<9.46	<10.9	<0.18
2,3-dichlorophenol	<60	<7.64	<13.0	<9.46	<10.9	<0.18
3,4-dichlorophenol	<60	<7.64	<13.0	<9.46	<10.9	<0.18
Total Dichlorophenols	<342	<43.5	<74.3	<53.9	<61.9	<1.04
2,4,6-trichlorophenol	795	101	173	125	144	2.42
2,3,6-trichlorophenol	<60	<7.64	<13.0	<9.46	<10.9	<0.18
2,3,5-trichlorophenol	<60	<7.64	<13.0	<9.46	<10.9	<0.18
2,4,5-trichlorophenol	<60	<7.64	<13.0	<9.46	<10.9	<0.18
2,3,4-trichlorophenol	<60	<7.64	<13.0	<9.46	<10.9	<0.18
3,4,5-trichlorophenol	<60	<7.64	<13.0	<9.46	<10.9	<0.18
Total Trichlorophenols	<1095	<139	<238	<173	<198	<3.33
2,3,5,6 & 2,3,4,6-tetrachlorophenol	135	17.2	29.3	21.3	24.4	0.41
2,3,4,5-tetrachlorophenol	<60	<7.64	<13.0	<9.46	<10.9	<0.18
Total Tetrachlorophenols	<195	<24.8	<42.4	<30.7	<35.3	<0.59
Pentachlorophenol	208	26.5	45.2	32.8	37.7	0.63
Total Chlorophenols	<2175	<277	<473	<343	<394	<6.62

Dry Gas Volume Sampled (Rm³*) :	4.602
Actual Flowrate (m³/s) :	23.9
Dry Reference Flowrate (Rm³/s*) :	14.0
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	16.8

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 45
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Actual Concentrations

Specific Isomer	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
2-monochlorophenol	7.96	<7.29	<7.64	<7.63	4.4
3-monochlorophenol	<7.58	<7.29	<7.64	<7.50	2.5
4-monochlorophenol	32.6	30.6	27.4	30.2	8.8
Total Monochlorophenols	<48.1	<45.2	<42.6	<45.3	6.1
2,6-dichlorophenol	<7.58	<7.29	<7.64	<7.50	2.5
2,4 & 2,5-dichlorophenol	13.4	16.3	13.0	14.2	12.7
3,5-dichlorophenol	<7.58	<7.29	<7.64	<7.50	2.5
2,3-dichlorophenol	<7.58	<7.29	<7.64	<7.50	2.5
3,4-dichlorophenol	<7.58	<7.29	<7.64	<7.50	2.5
Total Dichlorophenols	<43.7	<45.5	<43.5	<44.2	2.4
2,4,6-trichlorophenol	102	114	101	106	7.0
2,3,6-trichlorophenol	<7.58	<7.29	<7.64	<7.50	2.5
2,3,5-trichlorophenol	<7.58	<7.29	<7.64	<7.50	2.5
2,4,5-trichlorophenol	<7.58	<7.29	<7.64	<7.50	2.5
2,3,4-trichlorophenol	<7.58	<7.29	<7.64	<7.50	2.5
3,4,5-trichlorophenol	<7.58	<7.29	<7.64	<7.50	2.5
Total Trichlorophenols	<140	<151	<139	<143	4.5
2,3,5,6 & 2,3,4,6-tetrachlorophenol	18.3	21.5	17.2	19.0	11.8
2,3,4,5-tetrachlorophenol	<7.58	<7.29	<7.64	<7.50	2.5
Total Tetrachlorophenols	<25.9	<28.8	<24.8	<26.5	7.8
Pentachlorophenol	25.8	32.0	26.5	28.1	12.1
Total Chlorophenols	<283	<302	<277	<288	4.6

TABLE 46
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	13.5	<12.8	<13.0	<13.1	2.8
3-monochlorophenol	<12.9	<12.8	<13.0	<12.9	1.0
4-monochlorophenol	55.3	53.7	46.7	51.9	8.8
Total Monochlorophenols	<81.7	<79.2	<72.8	<77.9	5.9
2,6-dichlorophenol	<12.9	<12.8	<13.0	<12.9	1.0
2,4 & 2,5-dichlorophenol	22.7	28.5	22.2	24.5	14.4
3,5-dichlorophenol	<12.9	<12.8	<13.0	<12.9	1.0
2,3-dichlorophenol	<12.9	<12.8	<13.0	<12.9	1.0
3,4-dichlorophenol	<12.9	<12.8	<13.0	<12.9	1.0
Total Dichlorophenols	<74.2	<79.6	<74.3	<76.1	4.1
2,4,6-trichlorophenol	173	200	173	182	8.7
2,3,6-trichlorophenol	<12.9	<12.8	<13.0	<12.9	1.0
2,3,5-trichlorophenol	<12.9	<12.8	<13.0	<12.9	1.0
2,4,5-trichlorophenol	<12.9	<12.8	<13.0	<12.9	1.0
2,3,4-trichlorophenol	<12.9	<12.8	<13.0	<12.9	1.0
3,4,5-trichlorophenol	<12.9	<12.8	<13.0	<12.9	1.0
Total Trichlorophenols	<237	<264	<238	<247	6.2
2,3,5,6 & 2,3,4,6-tetrachlorophenol	31.1	37.7	29.3	32.7	13.5
2,3,4,5-tetrachlorophenol	<12.9	<12.8	<13.0	<12.9	1.0
Total Tetrachlorophenols	<44.0	<50.5	<42.4	<45.6	9.4
Pentachlorophenol	43.7	56.0	45.2	48.3	13.9
Total Chlorophenols	<481	<530	<473	<494	6.2

* At 25°C and 1 atmosphere

TABLE 47
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
2-monochlorophenol	9.94	<9.05	<9.46	<9.48	4.7
3-monochlorophenol	<9.47	<9.05	<9.46	<9.33	2.5
4-monochlorophenol	40.7	38.0	33.9	37.5	9.2
Total Monochlorophenols	<60.1	<56.1	<52.8	<56.3	6.5
2,6-dichlorophenol	<9.47	<9.05	<9.46	<9.33	2.5
2,4 & 2,5-dichlorophenol	16.7	20.2	16.1	17.7	12.6
3,5-dichlorophenol	<9.47	<9.05	<9.46	<9.33	2.5
2,3-dichlorophenol	<9.47	<9.05	<9.46	<9.33	2.5
3,4-dichlorophenol	<9.47	<9.05	<9.46	<9.33	2.5
Total Dichlorophenols	<54.6	<56.4	<53.9	<55.0	2.4
2,4,6-trichlorophenol	127	142	125	132	6.9
2,3,6-trichlorophenol	<9.47	<9.05	<9.46	<9.33	2.5
2,3,5-trichlorophenol	<9.47	<9.05	<9.46	<9.33	2.5
2,4,5-trichlorophenol	<9.47	<9.05	<9.46	<9.33	2.5
2,3,4-trichlorophenol	<9.47	<9.05	<9.46	<9.33	2.5
3,4,5-trichlorophenol	<9.47	<9.05	<9.46	<9.33	2.5
Total Trichlorophenols	<175	<187	<173	<178	4.4
2,3,5,6 & 2,3,4,6-tetrachlorophenol	22.9	26.7	21.3	23.6	11.8
2,3,4,5-tetrachlorophenol	<9.47	<9.05	<9.46	<9.33	2.5
Total Tetrachlorophenols	<32.3	<35.8	<30.7	<32.9	7.8
Pentachlorophenol	32.2	39.7	32.8	34.9	11.9
Total Chlorophenols	<354	<375	<343	<357	4.6

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 48
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	11.2	<10.5	<10.9	<10.9	3.4
3-monochlorophenol	<10.7	<10.5	<10.9	<10.7	1.8
4-monochlorophenol	45.9	44.0	38.9	43.0	8.4
Total Monochlorophenols	<67.9	<64.9	<60.7	<64.5	5.6
2,6-dichlorophenol	<10.7	<10.5	<10.9	<10.7	1.8
2,4 & 2,5-dichlorophenol	18.9	23.4	18.5	20.2	13.5
3,5-dichlorophenol	<10.7	<10.5	<10.9	<10.7	1.8
2,3-dichlorophenol	<10.7	<10.5	<10.9	<10.7	1.8
3,4-dichlorophenol	<10.7	<10.5	<10.9	<10.7	1.8
Total Dichlorophenols	<61.6	<65.3	<61.9	<62.9	3.2
2,4,6-trichlorophenol	144	164	144	151	7.8
2,3,6-trichlorophenol	<10.7	<10.5	<10.9	<10.7	1.8
2,3,5-trichlorophenol	<10.7	<10.5	<10.9	<10.7	1.8
2,4,5-trichlorophenol	<10.7	<10.5	<10.9	<10.7	1.8
2,3,4-trichlorophenol	<10.7	<10.5	<10.9	<10.7	1.8
3,4,5-trichlorophenol	<10.7	<10.5	<10.9	<10.7	1.8
Total Trichlorophenols	<197	<217	<198	<204	5.4
2,3,5,6 & 2,3,4,6-tetrachlorophenol	25.8	30.9	24.4	27.1	12.6
2,3,4,5-tetrachlorophenol	<10.7	<10.5	<10.9	<10.7	1.8
Total Tetrachlorophenols	<36.5	<41.4	<35.3	<37.7	8.5
Pentachlorophenol	36.3	45.9	37.7	40.0	13.0
Total Chlorophenols	<399	<434	<394	<409	5.3

* At 25°C and 1 atmosphere

TABLE 49
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Emission Rates

Specific Isomer	Emission Rate Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
2-monochlorophenol	0.19	<0.18	<0.18	<0.18	3.3
3-monochlorophenol	<0.18	<0.18	<0.18	<0.18	0.8
4-monochlorophenol	0.79	0.76	0.65	0.73	9.4
Total Monochlorophenols	<1.16	<1.12	<1.02	<1.10	6.6
2,6-dichlorophenol	<0.18	<0.18	<0.18	<0.18	0.8
2,4 & 2,5-dichlorophenol	0.32	0.40	0.31	0.35	14.5
3,5-dichlorophenol	<0.18	<0.18	<0.18	<0.18	0.8
2,3-dichlorophenol	<0.18	<0.18	<0.18	<0.18	0.8
3,4-dichlorophenol	<0.18	<0.18	<0.18	<0.18	0.8
Total Dichlorophenols	<1.05	<1.12	<1.04	<1.07	4.1
2,4,6-trichlorophenol	2.46	2.83	2.42	2.57	8.7
2,3,6-trichlorophenol	<0.18	<0.18	<0.18	<0.18	0.8
2,3,5-trichlorophenol	<0.18	<0.18	<0.18	<0.18	0.8
2,4,5-trichlorophenol	<0.18	<0.18	<0.18	<0.18	0.8
2,3,4-trichlorophenol	<0.18	<0.18	<0.18	<0.18	0.8
3,4,5-trichlorophenol	<0.18	<0.18	<0.18	<0.18	0.8
Total Trichlorophenols	<3.37	<3.73	<3.33	<3.48	6.3
2,3,5,6 & 2,3,4,6-tetrachlorophenol	0.44	0.53	0.41	0.46	13.6
2,3,4,5-tetrachlorophenol	<0.18	<0.18	<0.18	<0.18	0.8
Total Tetrachlorophenols	<0.62	<0.71	<0.59	<0.64	9.5
Pentachlorophenol	0.62	0.79	0.63	0.68	13.8
Total Chlorophenols	<6.83	<7.47	<6.62	<6.97	6.3

TABLE 50
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Emission Data for Chlorophenol Isomer and Congener Groups

Specific Isomer	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	<7.63	<13.1	<9.48	<10.9	<0.18
3-monochlorophenol	<7.50	<12.9	<9.33	<10.7	<0.18
4-monochlorophenol	30.2	51.9	37.5	43.0	0.73
Total Monochlorophenols	<45.3	<77.9	<56.3	<64.5	<1.10
2,6-dichlorophenol	<7.50	<12.9	<9.33	<10.7	<0.18
2,4 & 2,5-dichlorophenol	14.2	24.5	17.7	20.2	0.35
3,5-dichlorophenol	<7.50	<12.9	<9.33	<10.7	<0.18
2,3-dichlorophenol	<7.50	<12.9	<9.33	<10.7	<0.18
3,4-dichlorophenol	<7.50	<12.9	<9.33	<10.7	<0.18
Total Dichlorophenols	<44.2	<76.1	<55.0	<62.9	<1.07
2,4,6-trichlorophenol	106	182	132	151	2.57
2,3,6-trichlorophenol	<7.50	<12.9	<9.33	<10.7	<0.18
2,3,5-trichlorophenol	<7.50	<12.9	<9.33	<10.7	<0.18
2,4,5-trichlorophenol	<7.50	<12.9	<9.33	<10.7	<0.18
2,3,4-trichlorophenol	<7.50	<12.9	<9.33	<10.7	<0.18
3,4,5-trichlorophenol	<7.50	<12.9	<9.33	<10.7	<0.18
Total Trichlorophenols	<143	<247	<178	<204	<3.48
2,3,5,6 & 2,3,4,6-tetrachlorophenol	19.0	32.7	23.6	27.1	0.46
2,3,4,5-tetrachlorophenol	<7.50	<12.9	<9.33	<10.7	<0.18
Total Tetrachlorophenols	<26.5	<45.6	<32.9	<37.7	<0.64
Pentachlorophenol	28.1	48.3	34.9	40.0	0.68
Total Chlorophenols	<288	<494	<357	<409	<6.97

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 51
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Blank Analyses

Congener Group	Lab Blank Total ng	Blank Train Total ng
2-monochlorophenol	<60	<60
3-monochlorophenol	<60	<60
4-monochlorophenol	<60	<60
Total Monochlorophenols	<180	<180
2,6-dichlorophenol	<60	<60
2,4 & 2,5-dichlorophenol	<60	<60
3,5-dichlorophenol	<60	<60
2,3-dichlorophenol	<60	<60
3,4-dichlorophenol	<60	<60
Total Dichlorophenols	<300	<300
2,4,6-trichlorophenol	<60	<60
2,3,6-trichlorophenol	<60	<60
2,3,5-trichlorophenol	<60	<60
2,4,5-trichlorophenol	<60	<60
2,3,4-trichlorophenol	<60	<60
3,4,5-trichlorophenol	<60	<60
Total Trichlorophenols	<360	<360
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<60	<60
2,3,4,5-tetrachlorophenol	<60	<60
Total Tetrachlorophenols	<120	<120
Pentachlorophenol	<60	<60
Total Chlorophenols	<1020	<1020

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

TABLE 52
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 1

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	154	19.5	33.0	24.3	27.4	0.47
Acenaphthylene	50.3	6.36	10.8	7.94	8.96	0.15
Anthracene	70.1	8.86	15.0	11.1	12.5	0.21
Benzo(a)Anthracene	<12	<1.52	<2.57	<1.89	<2.14	<0.037
Benzo(b)Fluoranthene	<12	<1.52	<2.57	<1.89	<2.14	<0.037
Benzo(j/k)Fluoranthene	<12	<1.52	<2.57	<1.89	<2.14	<0.037
Benzo(a)fluorene	<12	<1.52	<2.57	<1.89	<2.14	<0.037
Benzo(b)fluorene	<12	<1.52	<2.57	<1.89	<2.14	<0.037
Benzo(g,h,i)Perylene	39.5	4.99	8.47	6.23	7.03	0.12
Benzo(a)Pyrene	<12	<1.52	<2.57	<1.89	<2.14	<0.037
Benzo(e)Pyrene	<12	<1.52	<2.57	<1.89	<2.14	<0.037
Biphenyl	160	20.2	34.3	25.2	28.5	0.49
2-Chloronaphthalene	<12	<1.52	<2.57	<1.89	<2.14	<0.037
Chrysene/Triphenylene	<12	<1.52	<2.57	<1.89	<2.14	<0.037
Coronene	25.1	3.17	5.38	3.96	4.47	0.076
Dibenzo(a,c/a,h)Anthracene	<12	<1.52	<2.57	<1.89	<2.14	<0.037
Dibenzo(a,e)pyrene	<12	<1.52	<2.57	<1.89	<2.14	<0.037
9,10-dimethylanthracene	<12	<1.52	<2.57	<1.89	<2.14	<0.037
7,12-Dimethylbenzo(a)anthracene	<12	<1.52	<2.57	<1.89	<2.14	<0.037
Fluoranthene	50.6	6.39	10.9	7.98	9.01	0.15
Fluorene	94.0	11.9	20.2	14.8	16.7	0.29
Indeno(1,2,3-cd)Pyrene	<12	<1.52	<2.57	<1.89	<2.14	<0.037
2-methylanthracene	31.6	3.99	6.78	4.99	5.63	0.096
3-Methylcholanthrene	<12	<1.52	<2.57	<1.89	<2.14	<0.037
1-Methylnaphthalene	149	18.8	32.0	23.5	26.5	0.45
2-Methylnaphthalene	291	36.8	62.4	45.9	51.8	0.89
1-Methylphenanthrene	14.1	1.78	3.02	2.22	2.51	0.043
9-Methylphenanthrene	25.9	3.27	5.55	4.09	4.61	0.079
Naphthalene	5140	649	1102	811	915	15.7
Perylene	<12	<1.52	<2.57	<1.89	<2.14	<0.037
Phenanthrene	272	34.4	58.3	42.9	48.4	0.83
Picene	<12	<1.52	<2.57	<1.89	<2.14	<0.037
Pyrene	47.9	6.05	10.3	7.56	8.53	0.15
Tetralin	19200	2426	4118	3029	3419	58.5
m-terphenyl	<12	<1.52	<2.57	<1.89	<2.14	<0.037
o-Terphenyl	<12	<1.52	<2.57	<1.89	<2.14	<0.037
p-terphenyl	<12	<1.52	<2.57	<1.89	<2.14	<0.037
Total	<26055	<3292	<5588	<4111	<4640	<79.3

Dry Gas Volume Sampled (Rm³*) :	4.663
Actual Flowrate (m³/s) :	24.1
Dry Reference Flowrate (Rm³/s*) :	14.2
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	17.1

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 53
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 2

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	72.5	8.81	15.4	10.9	12.7	0.22
Acenaphthylene	24.5	2.98	5.22	3.70	4.28	0.074
Anthracene	60.8	7.39	12.9	9.17	10.6	0.18
Benzo(a)Anthracene	<12	<1.46	<2.56	<1.81	<2.09	<0.036
Benzo(b)Fluoranthene	<12	<1.46	<2.56	<1.81	<2.09	<0.036
Benzo(j/k)Fluoranthene	<12	<1.46	<2.56	<1.81	<2.09	<0.036
Benzo(a)fluorene	<12	<1.46	<2.56	<1.81	<2.09	<0.036
Benzo(b)fluorene	<12	<1.46	<2.56	<1.81	<2.09	<0.036
Benzo(g,h,i)Perylene	19.0	2.31	4.05	2.87	3.32	0.057
Benzo(a)Pyrene	<12	<1.46	<2.56	<1.81	<2.09	<0.036
Benzo(e)Pyrene	<12	<1.46	<2.56	<1.81	<2.09	<0.036
Biphenyl	519	63.1	111	78.3	90.6	1.56
2-Chloronaphthalene	<12	<1.46	<2.56	<1.81	<2.09	<0.036
Chrysene/Triphenylene	<12	<1.46	<2.56	<1.81	<2.09	<0.036
Coronene	<12	<1.46	<2.56	<1.81	<2.09	<0.036
Dibenzo(a,c/a,h)Anthracene	<12	<1.46	<2.56	<1.81	<2.09	<0.036
Dibenzo(a,e)pyrene	<12	<1.46	<2.56	<1.81	<2.09	<0.036
9,10-dimethylanthracene	<12	<1.46	<2.56	<1.81	<2.09	<0.036
7,12-Dimethylbenzo(a)anthracene	<12	<1.46	<2.56	<1.81	<2.09	<0.036
Fluoranthene	29.3	3.56	6.24	4.42	5.11	0.088
Fluorene	46.9	5.70	9.99	7.08	8.19	0.14
Indeno(1,2,3-cd)Pyrene	<12	<1.46	<2.56	<1.81	<2.09	<0.036
2-methylanthracene	12.5	1.52	2.66	1.89	2.18	0.038
3-Methylcholanthrene	<12	<1.46	<2.56	<1.81	<2.09	<0.036
1-Methylnaphthalene	80.0	9.72	17.0	12.1	14.0	0.24
2-Methylnaphthalene	147	17.9	31.3	22.2	25.7	0.44
1-Methylphenanthrene	<12	<1.46	<2.56	<1.81	<2.09	<0.036
9-Methylphenanthrene	<12	<1.46	<2.56	<1.81	<2.09	<0.036
Naphthalene	4300	523	916	649	751	12.9
Perylene	<12	<1.46	<2.56	<1.81	<2.09	<0.036
Phenanthrene	143	17.4	30.5	21.6	25.0	0.43
Picene	<12	<1.46	<2.56	<1.81	<2.09	<0.036
Pyrene	46.4	5.64	9.88	7.00	8.10	0.14
Tetralin	17900	2176	3812	2701	3125	53.7
m-terphenyl	<12	<1.46	<2.56	<1.81	<2.09	<0.036
o-Terphenyl	<12	<1.46	<2.56	<1.81	<2.09	<0.036
p-terphenyl	<12	<1.46	<2.56	<1.81	<2.09	<0.036
Total	<23677	<2878	<5042	<3572	<4133	<71.1

Dry Gas Volume Sampled (Rm³*) :	4.696
Actual Flowrate (m³/s) :	24.7
Dry Reference Flowrate (Rm³/s*) :	14.1
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	17.2

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 54
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 3

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	53.4	6.80	11.6	8.42	9.67	0.16
Acenaphthylene	18.8	2.39	4.09	2.96	3.40	0.057
Anthracene	54.2	6.90	11.8	8.54	9.81	0.16
Benzo(a)Anthracene	<12	<1.53	<2.61	<1.89	<2.17	<0.037
Benzo(b)Fluoranthene	<12	<1.53	<2.61	<1.89	<2.17	<0.037
Benzo(j/k)Fluoranthene	<12	<1.53	<2.61	<1.89	<2.17	<0.037
Benzo(a)fluorene	<12	<1.53	<2.61	<1.89	<2.17	<0.037
Benzo(b)fluorene	<12	<1.53	<2.61	<1.89	<2.17	<0.037
Benzo(g,h,i)Perylene	41.0	5.22	8.91	6.46	7.42	0.12
Benzo(a)Pyrene	<12	<1.53	<2.61	<1.89	<2.17	<0.037
Benzo(e)Pyrene	<12	<1.53	<2.61	<1.89	<2.17	<0.037
Biphenyl	78.3	9.97	17.0	12.3	14.2	0.24
2-Chloronaphthalene	<12	<1.53	<2.61	<1.89	<2.17	<0.037
Chrysene/Triphenylene	<12	<1.53	<2.61	<1.89	<2.17	<0.037
Coronene	24.8	3.16	5.39	3.91	4.49	0.075
Dibenzo(a,c/a,h)Anthracene	<12	<1.53	<2.61	<1.89	<2.17	<0.037
Dibenzo(a,e)pyrene	<12	<1.53	<2.61	<1.89	<2.17	<0.037
9,10-dimethylanthracene	<12	<1.53	<2.61	<1.89	<2.17	<0.037
7,12-Dimethylbenzo(a)anthracene	<12	<1.53	<2.61	<1.89	<2.17	<0.037
Fluoranthene	45.8	5.83	9.95	7.22	8.29	0.14
Fluorene	40.4	5.14	8.78	6.37	7.32	0.12
Indeno(1,2,3-cd)Pyrene	<12	<1.53	<2.61	<1.89	<2.17	<0.037
2-methylanthracene	<12	<1.53	<2.61	<1.89	<2.17	<0.037
3-Methylcholanthrene	<12	<1.53	<2.61	<1.89	<2.17	<0.037
1-Methylnaphthalene	58.9	7.50	12.8	9.28	10.7	0.18
2-Methylnaphthalene	109	13.9	23.7	17.2	19.7	0.33
1-Methylphenanthrene	12.7	1.62	2.76	2.00	2.30	0.039
9-Methylphenanthrene	<12	<1.53	<2.61	<1.89	<2.17	<0.037
Naphthalene	3700	471	804	583	670	11.3
Perylene	<12	<1.53	<2.61	<1.89	<2.17	<0.037
Phenanthrene	154	19.6	33.5	24.3	27.9	0.47
Picene	<12	<1.53	<2.61	<1.89	<2.17	<0.037
Pyrene	60.7	7.73	13.2	9.57	11.0	0.18
Tetralin	16100	2049	3498	2538	2915	49.0
m-terphenyl	<12	<1.53	<2.61	<1.89	<2.17	<0.037
o-Terphenyl	<12	<1.53	<2.61	<1.89	<2.17	<0.037
p-terphenyl	<12	<1.53	<2.61	<1.89	<2.17	<0.037
Total	<20816	<2650	<4523	<3281	<3769	<63.3

Dry Gas Volume Sampled (Rm³*) :	4.602
Actual Flowrate (m³/s) :	23.9
Dry Reference Flowrate (Rm³/s*) :	14.0
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	16.8

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 55
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Actual Concentrations

Compound	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
Acenaphthene	19.5	8.81	6.80	11.7	58.2
Acenaphthylene	6.36	2.98	2.39	3.91	54.7
Anthracene	8.86	7.39	6.90	7.72	13.2
Benzo(a)Anthracene	<1.52	<1.46	<1.53	<1.50	2.5
Benzo(b)Fluoranthene	<1.52	<1.46	<1.53	<1.50	2.5
Benzo(j/k)Fluoranthene	<1.52	<1.46	<1.53	<1.50	2.5
Benzo(a)fluorene	<1.52	<1.46	<1.53	<1.50	2.5
Benzo(b)fluorene	<1.52	<1.46	<1.53	<1.50	2.5
Benzo(g,h,i)Perylene	4.99	2.31	5.22	4.17	38.8
Benzo(a)Pyrene	<1.52	<1.46	<1.53	<1.50	2.5
Benzo(e)Pyrene	<1.52	<1.46	<1.53	<1.50	2.5
Biphenyl	20.2	63.1	9.97	31.1	90.6
2-Chloronaphthalene	<1.52	<1.46	<1.53	<1.50	2.5
Chrysene/Triphenylene	<1.52	<1.46	<1.53	<1.50	2.5
Coronene	3.17	<1.46	3.16	<2.60	37.9
Dibenzo(a,c/a,h)Anthracene	<1.52	<1.46	<1.53	<1.50	2.5
Dibenzo(a,e)pyrene	<1.52	<1.46	<1.53	<1.50	2.5
9,10-dimethylanthracene	<1.52	<1.46	<1.53	<1.50	2.5
7,12-Dimethylbenzo(a)anthracene	<1.52	<1.46	<1.53	<1.50	2.5
Fluoranthene	6.39	3.56	5.83	5.26	28.5
Fluorene	11.9	5.70	5.14	7.57	49.4
Indeno(1,2,3-cd)Pyrene	<1.52	<1.46	<1.53	<1.50	2.5
2-methylanthracene	3.99	1.52	<1.53	<2.35	60.8
3-Methylcholanthrene	<1.52	<1.46	<1.53	<1.50	2.5
1-Methylnaphthalene	18.8	9.72	7.50	12.0	50.0
2-Methylnaphthalene	36.8	17.9	13.9	22.8	53.6
1-Methylphenanthrene	1.78	<1.46	1.62	<1.62	10.0
9-Methylphenanthrene	3.27	<1.46	<1.53	<2.09	49.3
Naphthalene	649	523	471	548	16.8
Perylene	<1.52	<1.46	<1.53	<1.50	2.5
Phenanthrene	34.4	17.4	19.6	23.8	38.8
Picene	<1.52	<1.46	<1.53	<1.50	2.5
Pyrene	6.05	5.64	7.73	6.47	17.1
Tetralin	2426	2176	2049	2217	8.6
m-terphenyl	<1.52	<1.46	<1.53	<1.50	2.5
o-Terphenyl	<1.52	<1.46	<1.53	<1.50	2.5
p-terphenyl	<1.52	<1.46	<1.53	<1.50	2.5
Total	<3292	<2878	<2650	<2940	11.1

TABLE 56
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Reference Concentrations

Compound	Dry Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	33.0	15.4	11.6	20.0	57.1
Acenaphthylene	10.8	5.22	4.09	6.70	53.6
Anthracene	15.0	12.9	11.8	13.3	12.4
Benzo(a)Anthracene	<2.57	<2.56	<2.61	<2.58	1.0
Benzo(b)Fluoranthene	<2.57	<2.56	<2.61	<2.58	1.0
Benzo(j/k)Fluoranthene	<2.57	<2.56	<2.61	<2.58	1.0
Benzo(a)fluorene	<2.57	<2.56	<2.61	<2.58	1.0
Benzo(b)fluorene	<2.57	<2.56	<2.61	<2.58	1.0
Benzo(g,h,i)Perylene	8.47	4.05	8.91	7.14	37.7
Benzo(a)Pyrene	<2.57	<2.56	<2.61	<2.58	1.0
Benzo(e)Pyrene	<2.57	<2.56	<2.61	<2.58	1.0
Biphenyl	34.3	111	17.0	53.9	92.2
2-Chloronaphthalene	<2.57	<2.56	<2.61	<2.58	1.0
Chrysene/Triphenylene	<2.57	<2.56	<2.61	<2.58	1.0
Coronene	5.38	<2.56	5.39	<4.44	36.8
Dibenzo(a,c/a,h)Anthracene	<2.57	<2.56	<2.61	<2.58	1.0
Dibenzo(a,e)pyrene	<2.57	<2.56	<2.61	<2.58	1.0
9,10-dimethylanthracene	<2.57	<2.56	<2.61	<2.58	1.0
7,12-Dimethylbenzo(a)anthracene	<2.57	<2.56	<2.61	<2.58	1.0
Fluoranthene	10.9	6.24	9.95	9.01	27.1
Fluorene	20.2	9.99	8.78	13.0	48.2
Indeno(1,2,3-cd)Pyrene	<2.57	<2.56	<2.61	<2.58	1.0
2-methylanthracene	6.78	2.66	<2.61	<4.02	59.6
3-Methylcholanthrene	<2.57	<2.56	<2.61	<2.58	1.0
1-Methylnaphthalene	32.0	17.0	12.8	20.6	48.9
2-Methylnaphthalene	62.4	31.3	23.7	39.1	52.4
1-Methylphenanthrene	3.02	<2.56	2.76	<2.78	8.4
9-Methylphenanthrene	5.55	<2.56	<2.61	<3.57	48.1
Naphthalene	1102	916	804	941	16.0
Perylene	<2.57	<2.56	<2.61	<2.58	1.0
Phenanthrene	58.3	30.5	33.5	40.7	37.6
Picene	<2.57	<2.56	<2.61	<2.58	1.0
Pyrene	10.3	9.88	13.2	11.1	16.3
Tetralin	4118	3812	3498	3809	8.1
m-terphenyl	<2.57	<2.56	<2.61	<2.58	1.0
o-Terphenyl	<2.57	<2.56	<2.61	<2.58	1.0
p-terphenyl	<2.57	<2.56	<2.61	<2.58	1.0
Total	<5588	<5042	<4523	<5051	10.5

* At 25°C and 1 atmosphere

TABLE 57
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	24.3	10.9	8.42	14.6	58.7
Acenaphthylene	7.94	3.70	2.96	4.87	55.2
Anthracene	11.1	9.17	8.54	9.59	13.7
Benzo(a)Anthracene	<1.89	<1.81	<1.89	<1.87	2.5
Benzo(b)Fluoranthene	<1.89	<1.81	<1.89	<1.87	2.5
Benzo(j/k)Fluoranthene	<1.89	<1.81	<1.89	<1.87	2.5
Benzo(a)fluorene	<1.89	<1.81	<1.89	<1.87	2.5
Benzo(b)fluorene	<1.89	<1.81	<1.89	<1.87	2.5
Benzo(g,h,i)Perylene	6.23	2.87	6.46	5.19	38.8
Benzo(a)Pyrene	<1.89	<1.81	<1.89	<1.87	2.5
Benzo(e)Pyrene	<1.89	<1.81	<1.89	<1.87	2.5
Biphenyl	25.2	78.3	12.3	38.6	90.5
2-Chloronaphthalene	<1.89	<1.81	<1.89	<1.87	2.5
Chrysene/Triphenylene	<1.89	<1.81	<1.89	<1.87	2.5
Coronene	3.96	<1.81	3.91	<3.23	38.0
Dibenzo(a,c/a,h)Anthracene	<1.89	<1.81	<1.89	<1.87	2.5
Dibenzo(a,e)pyrene	<1.89	<1.81	<1.89	<1.87	2.5
9,10-dimethylanthracene	<1.89	<1.81	<1.89	<1.87	2.5
7,12-Dimethylbenzo(a)anthracene	<1.89	<1.81	<1.89	<1.87	2.5
Fluoranthene	7.98	4.42	7.22	6.54	28.7
Fluorene	14.8	7.08	6.37	9.43	49.8
Indeno(1,2,3-cd)Pyrene	<1.89	<1.81	<1.89	<1.87	2.5
2-methylanthracene	4.99	1.89	<1.89	<2.92	61.2
3-Methylcholanthrene	<1.89	<1.81	<1.89	<1.87	2.5
1-Methylnaphthalene	23.5	12.1	9.28	15.0	50.4
2-Methylnaphthalene	45.9	22.2	17.2	28.4	54.0
1-Methylphenanthrene	2.22	<1.81	2.00	<2.01	10.3
9-Methylphenanthrene	4.09	<1.81	<1.89	<2.60	49.7
Naphthalene	811	649	583	681	17.2
Perylene	<1.89	<1.81	<1.89	<1.87	2.5
Phenanthrene	42.9	21.6	24.3	29.6	39.3
Picene	<1.89	<1.81	<1.89	<1.87	2.5
Pyrene	7.56	7.00	9.57	8.04	16.8
Tetralin	3029	2701	2538	2756	9.1
m-terphenyl	<1.89	<1.81	<1.89	<1.87	2.5
o-Terphenyl	<1.89	<1.81	<1.89	<1.87	2.5
p-terphenyl	<1.89	<1.81	<1.89	<1.87	2.5
Total	<4111	<3572	<3281	<3655	11.5

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 58

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Polycyclic Aromatic Hydrocarbon Wet Reference Concentrations

Compound	Wet Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Acenaphthene	27.4	12.7	9.67	16.6	57.3
Acenaphthylene	8.96	4.28	3.40	5.55	53.8
Anthracene	12.5	10.6	9.81	11.0	12.5
Benzo(a)Anthracene	<2.14	<2.09	<2.17	<2.13	1.8
Benzo(b)Fluoranthene	<2.14	<2.09	<2.17	<2.13	1.8
Benzo(j/k)Fluoranthene	<2.14	<2.09	<2.17	<2.13	1.8
Benzo(a)fluorene	<2.14	<2.09	<2.17	<2.13	1.8
Benzo(b)fluorene	<2.14	<2.09	<2.17	<2.13	1.8
Benzo(g,h,i)Perylene	7.03	3.32	7.42	5.93	38.3
Benzo(a)Pyrene	<2.14	<2.09	<2.17	<2.13	1.8
Benzo(e)Pyrene	<2.14	<2.09	<2.17	<2.13	1.8
Biphenyl	28.5	90.6	14.2	44.4	91.4
2-Chloronaphthalene	<2.14	<2.09	<2.17	<2.13	1.8
Chrysene/Triphenylene	<2.14	<2.09	<2.17	<2.13	1.8
Coronene	4.47	<2.09	4.49	<3.69	37.4
Dibenzo(a,c/a,h)Anthracene	<2.14	<2.09	<2.17	<2.13	1.8
Dibenzo(a,e)pyrene	<2.14	<2.09	<2.17	<2.13	1.8
9,10-dimethylanthracene	<2.14	<2.09	<2.17	<2.13	1.8
7,12-Dimethylbenzo(a)anthracene	<2.14	<2.09	<2.17	<2.13	1.8
Fluoranthene	9.01	5.11	8.29	7.47	27.7
Fluorene	16.7	8.19	7.32	10.7	48.5
Indeno(1,2,3-cd)Pyrene	<2.14	<2.09	<2.17	<2.13	1.8
2-methylanthracene	5.63	2.18	<2.17	<3.33	59.9
3-Methylcholanthrene	<2.14	<2.09	<2.17	<2.13	1.8
1-Methylnaphthalene	26.5	14.0	10.7	17.1	49.1
2-Methylnaphthalene	51.8	25.7	19.7	32.4	52.7
1-Methylphenanthrene	2.51	<2.09	2.30	<2.30	9.0
9-Methylphenanthrene	4.61	<2.09	<2.17	<2.96	48.4
Naphthalene	915	751	670	779	16.1
Perylene	<2.14	<2.09	<2.17	<2.13	1.8
Phenanthrene	48.4	25.0	27.9	33.8	37.9
Picene	<2.14	<2.09	<2.17	<2.13	1.8
Pyrene	8.53	8.10	11.0	9.21	16.9
Tetralin	3419	3125	2915	3153	8.0
m-terphenyl	<2.14	<2.09	<2.17	<2.13	1.8
o-Terphenyl	<2.14	<2.09	<2.17	<2.13	1.8
p-terphenyl	<2.14	<2.09	<2.17	<2.13	1.8
Total	<4640	<4133	<3769	<4181	10.5

* At 25°C and 1 atmosphere

TABLE 59
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Rates

Compound	Emission Rate				Coefficient of Variation
	Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	%
Acenaphthene	0.47	0.22	0.16	0.28	57.7
Acenaphthylene	0.15	0.074	0.057	0.095	54.3
Anthracene	0.21	0.18	0.16	0.19	13.2
Benzo(a)Anthracene	<0.037	<0.036	<0.037	<0.036	0.8
Benzo(b)Fluoranthene	<0.037	<0.036	<0.037	<0.036	0.8
Benzo(j/k)Fluoranthene	<0.037	<0.036	<0.037	<0.036	0.8
Benzo(a)fluorene	<0.037	<0.036	<0.037	<0.036	0.8
Benzo(b)fluorene	<0.037	<0.036	<0.037	<0.036	0.8
Benzo(g,h,i)Perylene	0.12	0.057	0.12	0.10	37.6
Benzo(a)Pyrene	<0.037	<0.036	<0.037	<0.036	0.8
Benzo(e)Pyrene	<0.037	<0.036	<0.037	<0.036	0.8
Biphenyl	0.49	1.56	0.24	0.76	92.1
2-Chloronaphthalene	<0.037	<0.036	<0.037	<0.036	0.8
Chrysene/Triphenylene	<0.037	<0.036	<0.037	<0.036	0.8
Coronene	0.076	<0.036	0.075	<0.063	36.8
Dibenzo(a,c/a,h)Anthracene	<0.037	<0.036	<0.037	<0.036	0.8
Dibenzo(a,e)pyrene	<0.037	<0.036	<0.037	<0.036	0.8
9,10-dimethylanthracene	<0.037	<0.036	<0.037	<0.036	0.8
7,12-Dimethylbenzo(a)anthracene	<0.037	<0.036	<0.037	<0.036	0.8
Fluoranthene	0.15	0.088	0.14	0.13	27.3
Fluorene	0.29	0.14	0.12	0.18	48.9
Indeno(1,2,3-cd)Pyrene	<0.037	<0.036	<0.037	<0.036	0.8
2-methylanthracene	0.096	0.038	<0.037	<0.057	60.2
3-Methylcholanthrene	<0.037	<0.036	<0.037	<0.036	0.8
1-Methylnaphthalene	0.45	0.24	0.18	0.29	49.5
2-Methylnaphthalene	0.89	0.44	0.33	0.55	53.1
1-Methylphenanthrene	0.043	<0.036	0.039	<0.039	8.9
9-Methylphenanthrene	0.079	<0.036	<0.037	<0.050	48.7
Naphthalene	15.7	12.9	11.3	13.3	16.7
Perylene	<0.037	<0.036	<0.037	<0.036	0.8
Phenanthrene	0.83	0.43	0.47	0.58	38.2
Picene	<0.037	<0.036	<0.037	<0.036	0.8
Pyrene	0.15	0.14	0.18	0.16	15.6
Tetralin	58.5	53.7	49.0	53.7	8.8
m-terphenyl	<0.037	<0.036	<0.037	<0.036	0.8
o-Terphenyl	<0.037	<0.036	<0.037	<0.036	0.8
p-terphenyl	<0.037	<0.036	<0.037	<0.036	0.8
Total	<79.3	<71.1	<63.3	<71.3	11.2

TABLE 60
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Polycyclic Aromatic Hydrocarbon Emission Data

Compound	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	11.7	20.0	14.6	16.6	0.28
Acenaphthylene	3.91	6.70	4.87	5.55	0.095
Anthracene	7.72	13.3	9.59	11.0	0.19
Benzo(a)Anthracene	<1.50	<2.58	<1.87	<2.13	<0.036
Benzo(b)Fluoranthene	<1.50	<2.58	<1.87	<2.13	<0.036
Benzo(j/k)Fluoranthene	<1.50	<2.58	<1.87	<2.13	<0.036
Benzo(a)fluorene	<1.50	<2.58	<1.87	<2.13	<0.036
Benzo(b)fluorene	<1.50	<2.58	<1.87	<2.13	<0.036
Benzo(g,h,i)Perylene	4.17	7.14	5.19	5.93	0.10
Benzo(a)Pyrene	<1.50	<2.58	<1.87	<2.13	<0.036
Benzo(e)Pyrene	<1.50	<2.58	<1.87	<2.13	<0.036
Biphenyl	31.1	53.9	38.6	44.4	0.76
2-Chloronaphthalene	<1.50	<2.58	<1.87	<2.13	<0.036
Chrysene/Triphenylene	<1.50	<2.58	<1.87	<2.13	<0.036
Coronene	<2.60	<4.44	<3.23	<3.69	<0.063
Dibenzo(a,c/a,h)Anthracene	<1.50	<2.58	<1.87	<2.13	<0.036
Dibenzo(a,e)pyrene	<1.50	<2.58	<1.87	<2.13	<0.036
9,10-dimethylanthracene	<1.50	<2.58	<1.87	<2.13	<0.036
7,12-Dimethylbenzo(a)anthracene	<1.50	<2.58	<1.87	<2.13	<0.036
Fluoranthene	5.26	9.01	6.54	7.47	0.13
Fluorene	7.57	13.0	9.43	10.7	0.18
Indeno(1,2,3-cd)Pyrene	<1.50	<2.58	<1.87	<2.13	<0.036
2-methylanthracene	<2.35	<4.02	<2.92	<3.33	<0.057
3-Methylcholanthrene	<1.50	<2.58	<1.87	<2.13	<0.036
1-Methylnaphthalene	12.0	20.6	15.0	17.1	0.29
2-Methylnaphthalene	22.8	39.1	28.4	32.4	0.55
1-Methylphenanthrene	<1.62	<2.78	<2.01	<2.30	<0.039
9-Methylphenanthrene	<2.09	<3.57	<2.60	<2.96	<0.050
Naphthalene	548	941	681	779	13.3
Perylene	<1.50	<2.58	<1.87	<2.13	<0.036
Phenanthrene	23.8	40.7	29.6	33.8	0.58
Picene	<1.50	<2.58	<1.87	<2.13	<0.036
Pyrene	6.47	11.1	8.04	9.21	0.16
Tetralin	2217	3809	2756	3153	53.7
m-terphenyl	<1.50	<2.58	<1.87	<2.13	<0.036
o-Terphenyl	<1.50	<2.58	<1.87	<2.13	<0.036
p-terphenyl	<1.50	<2.58	<1.87	<2.13	<0.036
Total	<2940	<5051	<3655	<4181	<71.3

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 61
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Polycyclic Aromatic Hydrocarbon Analyses

Compound	Blank Train ng	Laboratory Blank ng
Acenaphthene	<12	<12
Acenaphthylene	<12	<12
Anthracene	44.4	<12
Benzo(a)Anthracene	<12	<12
Benzo(b)Fluoranthene	<12	<12
Benzo(j/k)Fluoranthene	<12	<12
Benzo(a)fluorene	<12	<12
Benzo(b)fluorene	<12	<12
Benzo(g,h,i)Perylene	<12	<12
Benzo(a)Pyrene	<12	<12
Benzo(e)Pyrene	<12	<12
Biphenyl	38.9	<12
2-Chloronaphthalene	<12	<12
Chrysene/Triphenylene	<12	<12
Coronene	<12	<12
Dibenzo(a,c/a,h)Anthracene	<12	<12
Dibenzo(a,e)pyrene	<12	<12
9,10-dimethylanthracene	<12	<12
7,12-Dimethylbenzo(a)anthracene	<12	<12
Fluoranthene	<12	<12
Fluorene	<12	<12
Indeno(1,2,3-cd)Pyrene	<12	<12
2-methylanthracene	<12	<12
3-Methylcholanthrene	<12	<12
1-Methylnaphthalene	16.7	<12
2-Methylnaphthalene	22.4	<12
1-Methylphenanthrene	<12	<12
9-Methylphenanthrene	<12	<12
Naphthalene	3440	36.1
Perylene	<12	<12
Phenanthrene	15.7	<12
Picene	<12	<12
Pyrene	<12	<12
Tetralin	16200	<12
m-terphenyl	<12	<12
o-Terphenyl	<12	<12
p-terphenyl	<12	<12
Total	20138	<468

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

APPENDIX 4

Boiler No. 2 BH Outlet
Data Tables
October 21 to October 22, 2015 Testing
(63 pages)

TABLE 1
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Semi-Volatile Organic Compounds Train Test Schedule

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	October 21, 2015	14:27	18:52	240
2	October 22, 2015	8:40	13:03	240
3	October 22, 2015	14:38	19:03	240

* Actual sampling time excluding leak-checks, traverse changes and process down time.

TABLE 2
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Stack Gas Sampling Parameters

Semi-Volatile Organic Compounds Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.846	0.989	6.51	4.747	103.4
2	0.846	0.989	6.51	4.644	101.4
3	0.846	0.989	6.51	4.547	100.2

* Dry at 25°C and 1 atmosphere

TABLE 3
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Stack Gas Physical Parameters

Semi-Volatile Organics Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	135	17.6	16.3	-2.57	98.7	12.2	7.00
2	136	18.4	16.6	-2.57	98.4	12.1	6.91
3	136	17.2	16.2	-2.69	98.4	12.1	7.03
Average	136	17.7	16.4	-2.61	98.5	12.1	6.98

* Dry basis, measured by the DYEC CEMS

TABLE 4
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Stack Gas Volumetric Flowrates

Semi-Volatile Organics Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	24.1	14.2	19.9	17.2
2	24.5	14.1	19.9	17.3
3	23.9	14.0	19.6	16.9
Average	24.2	14.1	19.8	17.1

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 5
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 1

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	245	0.030	0.052	0.037	0.043	0.73
Pentachlorodibenzo-p-dioxins	1480	0.18	0.31	0.22	0.26	4.43
Hexachlorodibenzo-p-dioxins	5470	0.68	1.15	0.82	0.95	16.4
Heptachlorodibenzo-p-dioxins	6300	0.78	1.33	0.95	1.10	18.8
Octachlorodibenzo-p-dioxin	2450	0.30	0.52	0.37	0.43	7.33
Total	15945	1.98	3.36	2.40	2.77	47.7

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	27.2	0.0034	0.0057	0.0041	0.0047	0.081
Pentachlorodibenzofurans	746	0.093	0.16	0.11	0.13	2.23
Hexachlorodibenzofurans	1450	0.18	0.31	0.22	0.25	4.34
Heptachlorodibenzofurans	1500	0.19	0.32	0.23	0.26	4.49
Octachlorodibenzofuran	669	0.083	0.14	0.10	0.12	2.00
Total	4392	0.55	0.93	0.66	0.76	13.1

Dry Gas Volume Sampled (Rm^3*) :	4.747
Actual Flowrate (m^3/s) :	24.1
Dry Reference Flowrate (Rm^3/s*) :	14.2
Dry Adjusted Flowrate (Rm^3/s**) :	19.9
Wet Reference Flowrate (Rm^3/s*) :	17.2

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 6
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 2

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	205	0.025	0.044	0.031	0.036	0.62
Pentachlorodibenzo-p-dioxins	1300	0.16	0.28	0.20	0.23	3.95
Hexachlorodibenzo-p-dioxins	4930	0.61	1.06	0.75	0.87	15.0
Heptachlorodibenzo-p-dioxins	4970	0.62	1.07	0.76	0.87	15.1
Octachlorodibenzo-p-dioxin	1640	0.20	0.35	0.25	0.29	4.98
Total	13045	1.62	2.81	1.99	2.29	39.6

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	336	0.042	0.072	0.051	0.059	1.02
Pentachlorodibenzofurans	843	0.10	0.18	0.13	0.15	2.56
Hexachlorodibenzofurans	1370	0.17	0.30	0.21	0.24	4.16
Heptachlorodibenzofurans	1330	0.16	0.29	0.20	0.23	4.04
Octachlorodibenzofuran	489	0.061	0.11	0.075	0.086	1.48
Total	4368	0.54	0.94	0.67	0.77	13.3

Dry Gas Volume Sampled (Rm³*) :	4.644
Actual Flowrate (m³/s) :	24.5
Dry Reference Flowrate (Rm³/s*) :	14.1
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	17.3

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 7
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 3

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	152	0.020	0.033	0.024	0.028	0.47
Pentachlorodibenzo-p-dioxins	1120	0.14	0.25	0.18	0.20	3.45
Hexachlorodibenzo-p-dioxins	4560	0.59	1.00	0.72	0.83	14.0
Heptachlorodibenzo-p-dioxins	5410	0.70	1.19	0.85	0.99	16.7
Octachlorodibenzo-p-dioxin	2080	0.27	0.46	0.33	0.38	6.40
Total	13322	1.72	2.93	2.09	2.43	41.0

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	121	0.016	0.027	0.019	0.022	0.37
Pentachlorodibenzofurans	553	0.071	0.12	0.087	0.10	1.70
Hexachlorodibenzofurans	1250	0.16	0.27	0.20	0.23	3.85
Heptachlorodibenzofurans	1060	0.14	0.23	0.17	0.19	3.26
Octachlorodibenzofuran	584	0.075	0.13	0.092	0.11	1.80
Total	3568	0.46	0.78	0.56	0.65	11.0

Dry Gas Volume Sampled (Rm^3*) :	4.547
Actual Flowrate (m^3/s) :	23.9
Dry Reference Flowrate (Rm^3/s*) :	14.0
Dry Adjusted Flowrate (Rm^3/s**) :	19.6
Wet Reference Flowrate (Rm^3/s*) :	16.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 8
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Actual Concentrations

Dioxins

Congener Group	Actual Concentration Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.030	0.025	0.020	0.025	21.6
Pentachlorodibenzo-p-dioxins	0.18	0.16	0.14	0.16	12.1
Hexachlorodibenzo-p-dioxins	0.68	0.61	0.59	0.63	7.6
Heptachlorodibenzo-p-dioxins	0.78	0.62	0.70	0.70	11.9
Octachlorodibenzo-p-dioxin	0.30	0.20	0.27	0.26	19.8
Total	1.98	1.62	1.72	1.77	10.6

Furans

Congener Group	Actual Concentration Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
Tetrachlorodibenzofurans	0.0034	0.042	0.016	0.020	96.7
Pentachlorodibenzofurans	0.093	0.10	0.071	0.089	18.8
Hexachlorodibenzofurans	0.18	0.17	0.16	0.17	5.6
Heptachlorodibenzofurans	0.19	0.16	0.14	0.16	15.3
Octachlorodibenzofuran	0.083	0.061	0.075	0.073	15.6
Total	0.55	0.54	0.46	0.52	9.4

TABLE 9
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Dry Reference Concentrations

Dioxins

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.052	0.044	0.033	0.043	21.2
Pentachlorodibenzo-p-dioxins	0.31	0.28	0.25	0.28	11.7
Hexachlorodibenzo-p-dioxins	1.15	1.06	1.00	1.07	7.0
Heptachlorodibenzo-p-dioxins	1.33	1.07	1.19	1.20	10.8
Octachlorodibenzo-p-dioxin	0.52	0.35	0.46	0.44	18.7
Total	3.36	2.81	2.93	3.03	9.5

Furans

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.0057	0.072	0.027	0.035	97.6
Pentachlorodibenzofurans	0.16	0.18	0.12	0.15	19.6
Hexachlorodibenzofurans	0.31	0.30	0.27	0.29	5.3
Heptachlorodibenzofurans	0.32	0.29	0.23	0.28	15.1
Octachlorodibenzofuran	0.14	0.11	0.13	0.12	14.5
Total	0.93	0.94	0.78	0.88	9.7

* At 25°C and 1 atmosphere

TABLE 10
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Dry Adjusted Concentrations

Dioxins

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.037	0.031	0.024	0.031	21.2
Pentachlorodibenzo-p-dioxins	0.22	0.20	0.18	0.20	11.7
Hexachlorodibenzo-p-dioxins	0.82	0.75	0.72	0.76	7.1
Heptachlorodibenzo-p-dioxins	0.95	0.76	0.85	0.85	11.1
Octachlorodibenzo-p-dioxin	0.37	0.25	0.33	0.32	19.0
Total	2.40	1.99	2.09	2.16	9.8

Furans

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.0041	0.051	0.019	0.025	97.3
Pentachlorodibenzofurans	0.11	0.13	0.087	0.11	19.3
Hexachlorodibenzofurans	0.22	0.21	0.20	0.21	5.2
Heptachlorodibenzofurans	0.23	0.20	0.17	0.20	15.0
Octachlorodibenzofuran	0.10	0.075	0.092	0.089	14.8
Total	0.66	0.67	0.56	0.63	9.5

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 11
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Wet Reference Concentrations

Dioxins

Congener Group	Wet Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.043	0.036	0.028	0.035	21.1
Pentachlorodibenzo-p-dioxins	0.26	0.23	0.20	0.23	11.6
Hexachlorodibenzo-p-dioxins	0.95	0.87	0.83	0.88	7.0
Heptachlorodibenzo-p-dioxins	1.10	0.87	0.99	0.98	11.3
Octachlorodibenzo-p-dioxin	0.43	0.29	0.38	0.36	19.3
Total	2.77	2.29	2.43	2.50	10.0

Furans

Congener Group	Wet reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.0047	0.059	0.022	0.029	96.9
Pentachlorodibenzofurans	0.13	0.15	0.10	0.13	18.9
Hexachlorodibenzofurans	0.25	0.24	0.23	0.24	5.1
Heptachlorodibenzofurans	0.26	0.23	0.19	0.23	14.9
Octachlorodibenzofuran	0.12	0.086	0.11	0.10	15.1
Total	0.76	0.77	0.65	0.73	9.2

* At 25°C and 1 atmosphere

TABLE 12
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Rates

Dioxins

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.73	0.62	0.47	0.61	21.9
Pentachlorodibenzo-p-dioxins	4.43	3.95	3.45	3.94	12.4
Hexachlorodibenzo-p-dioxins	16.4	15.0	14.0	15.1	7.7
Heptachlorodibenzo-p-dioxins	18.8	15.1	16.7	16.9	11.2
Octachlorodibenzo-p-dioxin	7.33	4.98	6.40	6.24	19.0
Total	47.7	39.6	41.0	42.8	10.1

Furans

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzofurans	0.081	1.02	0.37	0.49	97.8
Pentachlorodibenzofurans	2.23	2.56	1.70	2.16	20.0
Hexachlorodibenzofurans	4.34	4.16	3.85	4.12	6.0
Heptachlorodibenzofurans	4.49	4.04	3.26	3.93	15.7
Octachlorodibenzofuran	2.00	1.48	1.80	1.76	14.8
Total	13.1	13.3	11.0	12.5	10.3

TABLE 13
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Congener Group Emission Data

Dioxins

Congener Group	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.025	0.043	0.031	0.035	0.61
Pentachlorodibenzo-p-dioxins	0.16	0.28	0.20	0.23	3.94
Hexachlorodibenzo-p-dioxins	0.63	1.07	0.76	0.88	15.1
Heptachlorodibenzo-p-dioxins	0.70	1.20	0.85	0.98	16.9
Octachlorodibenzo-p-dioxin	0.26	0.44	0.32	0.36	6.24
Total	1.77	3.03	2.16	2.50	42.8

Furans

Congener Group	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	0.020	0.035	0.025	0.029	0.49
Pentachlorodibenzofurans	0.089	0.15	0.11	0.13	2.16
Hexachlorodibenzofurans	0.17	0.29	0.21	0.24	4.12
Heptachlorodibenzofurans	0.16	0.28	0.20	0.23	3.93
Octachlorodibenzofuran	0.073	0.12	0.089	0.10	1.76
Total	0.52	0.88	0.63	0.73	12.5

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 14
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Dioxin and Furan Congener Group Analyses

Dioxins

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzo-p-dioxins	<11	<11
Pentachlorodibenzo-p-dioxins	<7.4	<6.1
Hexachlorodibenzo-p-dioxins	10.9	<5.4
Heptachlorodibenzo-p-dioxins	<8.7	5.96
Octachlorodibenzo-p-dioxin	<8.0	<8.0
Total	<46.0	<36.5

Furans

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzofurans	<13	<12
Pentachlorodibenzofurans	<7.1	<4.8
Hexachlorodibenzofurans	<4.8	<5.0
Heptachlorodibenzofurans	<6.4	<6.4
Octachlorodibenzofuran	<11	<8.4
Total	<42.3	<36.6

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

TABLE 15
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 1

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<11	<1.37	<2.32	<1.65	<1.91	<0.033
12378-pentachlorodibenzo-p-dioxin	25.9	3.21	5.46	3.89	4.50	0.077
123478-hexachlorodibenzo-p-dioxin	<91	<11.3	<19.2	<13.7	<15.8	<0.27
123678-hexachlorodibenzo-p-dioxin	398	49.4	83.8	59.8	69.2	1.19
123789-hexachlorodibenzo-p-dioxin	168	20.9	35.4	25.3	29.2	0.50
1234678-heptachlorodibenzo-p-dioxin	3110	386	655	467	541	9.30
Octachlorodibenzo-p-dioxin	2450	304	516	368	426	7.33
2378-tetrachlorodibenzofuran	<14	<1.74	<2.95	<2.10	<2.43	<0.042
12378-pentachlorodibenzofuran	<19	<2.36	<4.00	<2.86	<3.30	<0.057
23478-pentachlorodibenzofuran	83.3	10.3	17.5	12.5	14.5	0.25
123478-hexachlorodibenzofuran	113	14.0	23.8	17.0	19.7	0.34
123678-hexachlorodibenzofuran	147	18.2	31.0	22.1	25.6	0.44
234678-hexachlorodibenzofuran	276	34.3	58.1	41.5	48.0	0.83
123789-hexachlorodibenzofuran	70.3	8.73	14.8	10.6	12.2	0.21
1234678-heptachlorodibenzofuran	743	92.2	157	112	129	2.22
1234789-heptachlorodibenzofuran	154	19.1	32.4	23.1	26.8	0.46
Octachlorodibenzofuran	669	83.0	141	101	116	2.00
PCB 81	<73	<9.06	<15.4	<11.0	<12.7	<0.22
PCB 77	219	27.2	46.1	32.9	38.1	0.66
PCB 123	262	32.5	55.2	39.4	45.6	0.78
PCB 118	2420	300	510	364	421	7.24
PCB 114	<110	<13.7	<23.2	<16.5	<19.1	<0.33
PCB 105	734	91.1	155	110	128	2.20
PCB 126	<56	<6.95	<11.8	<8.42	<9.74	<0.17
PCB 167	31.0	3.85	6.53	4.66	5.39	0.093
PCB 156	<59	<7.32	<12.4	<8.87	<10.3	<0.18
PCB 157	38.5	4.78	8.11	5.79	6.70	0.12
PCB 169	<14	<1.74	<2.95	<2.10	<2.43	<0.042
PCB 189	<73	<9.06	<15.4	<11.0	<12.7	<0.22
Total Dioxins & Furans Only	<8543	<1060	<1800	<1284	<1486	<25.6
Total PCBs Only	<4090	<508	<861	<615	<711	<12.2
Total Dioxins & Furans and PCBs	<12632	<1568	<2661	<1899	<2197	<37.8

Dry Gas Volume Sampled (Rm³*) :	4.747
Actual Flowrate (m³/s) :	24.1
Dry Reference Flowrate (Rm³/s*) :	14.2
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	17.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 16
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 2

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<14	<1.73	<3.01	<2.14	<2.46	<0.043
12378-pentachlorodibenzo-p-dioxin	33.3	4.13	7.17	5.08	5.84	0.10
123478-hexachlorodibenzo-p-dioxin	70.0	8.67	15.1	10.7	12.3	0.21
123678-hexachlorodibenzo-p-dioxin	353	43.7	76.0	53.9	62.0	1.07
123789-hexachlorodibenzo-p-dioxin	154	19.1	33.2	23.5	27.0	0.47
1234678-heptachlorodibenzo-p-dioxin	2350	291	506	359	412	7.14
Octachlorodibenzo-p-dioxin	1640	203	353	250	288	4.98
2378-tetrachlorodibenzofuran	<17	<2.11	<3.66	<2.59	<2.98	<0.052
12378-pentachlorodibenzofuran	27.0	3.35	5.81	4.12	4.74	0.082
23478-pentachlorodibenzofuran	72.4	8.97	15.6	11.0	12.7	0.22
123478-hexachlorodibenzofuran	86.3	10.7	18.6	13.2	15.1	0.26
123678-hexachlorodibenzofuran	139	17.2	29.9	21.2	24.4	0.42
234678-hexachlorodibenzofuran	187	23.2	40.3	28.5	32.8	0.57
123789-hexachlorodibenzofuran	55.2	6.84	11.9	8.42	9.69	0.17
1234678-heptachlorodibenzofuran	698	86.5	150	106	123	2.12
1234789-heptachlorodibenzofuran	131	16.2	28.2	20.0	23.0	0.40
Octachlorodibenzofuran	489	60.6	105	74.6	85.8	1.48
PCB 81	<3200	<397	<689	<488	<562	<9.72
PCB 77	<230	<28.5	<49.5	<35.1	<40.4	<0.70
PCB 123	1120	139	241	171	197	3.40
PCB 118	8750	1084	1884	1335	1536	26.6
PCB 114	<390	<48.3	<84.0	<59.5	<68.4	<1.18
PCB 105	2710	336	584	413	476	8.23
PCB 126	<230	<28.5	<49.5	<35.1	<40.4	<0.70
PCB 167	<62	<7.68	<13.4	<9.46	<10.9	<0.19
PCB 156	205	25.4	44.1	31.3	36.0	0.62
PCB 157	62.9	7.79	13.5	9.60	11.0	0.19
PCB 169	<32	<3.97	<6.89	<4.88	<5.62	<0.097
PCB 189	83.9	10.4	18.1	12.8	14.7	0.25
Total Dioxins & Furans Only	<6516	<808	<1403	<994	<1144	<19.8
Total PCBs Only	<17076	<2116	<3677	<2605	<2997	<51.8
Total Dioxins & Furans and PCBs	<23592	<2924	<5080	<3599	<4140	<71.6

Dry Gas Volume Sampled (Rm³*) :	4.644
Actual Flowrate (m³/s) :	24.5
Dry Reference Flowrate (Rm³/s*) :	14.1
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	17.3

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 17
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 3

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<11	<1.42	<2.42	<1.73	<2.00	<0.034
12378-pentachlorodibenzo-p-dioxin	<15	<1.93	<3.30	<2.36	<2.73	<0.046
123478-hexachlorodibenzo-p-dioxin	73.8	9.51	16.2	11.6	13.4	0.23
123678-hexachlorodibenzo-p-dioxin	340	43.8	74.8	53.4	61.9	1.05
123789-hexachlorodibenzo-p-dioxin	141	18.2	31.0	22.1	25.7	0.43
1234678-heptachlorodibenzo-p-dioxin	2550	329	561	401	465	7.85
Octachlorodibenzo-p-dioxin	2080	268	457	327	379	6.40
2378-tetrachlorodibenzofuran	<15	<1.93	<3.30	<2.36	<2.73	<0.046
12378-pentachlorodibenzofuran	22.5	2.90	4.95	3.53	4.10	0.069
23478-pentachlorodibenzofuran	61.2	7.88	13.5	9.61	11.1	0.19
123478-hexachlorodibenzofuran	88.6	11.4	19.5	13.9	16.1	0.27
123678-hexachlorodibenzofuran	114	14.7	25.1	17.9	20.8	0.35
234678-hexachlorodibenzofuran	215	27.7	47.3	33.8	39.2	0.66
123789-hexachlorodibenzofuran	51.9	6.69	11.4	8.15	9.46	0.16
1234678-heptachlorodibenzofuran	646	83.2	142	101	118	1.99
1234789-heptachlorodibenzofuran	134	17.3	29.5	21.0	24.4	0.41
Octachlorodibenzofuran	584	75.2	128	91.7	106	1.80
PCB 81	<26	<3.35	<5.72	<4.08	<4.74	<0.080
PCB 77	84.2	10.8	18.5	13.2	15.3	0.26
PCB 123	63.0	8.12	13.9	9.90	11.5	0.19
PCB 118	531	68.4	117	83.4	96.7	1.63
PCB 114	33.8	4.35	7.43	5.31	6.16	0.10
PCB 105	187	24.1	41.1	29.4	34.1	0.58
PCB 126	<29	<3.74	<6.38	<4.56	<5.28	<0.089
PCB 167	<10	<1.29	<2.20	<1.57	<1.82	<0.031
PCB 156	<26	<3.35	<5.72	<4.08	<4.74	<0.080
PCB 157	26.8	3.45	5.89	4.21	4.88	0.083
PCB 169	<11	<1.42	<2.42	<1.73	<2.00	<0.034
PCB 189	68.9	8.88	15.2	10.8	12.6	0.21
Total Dioxins & Furans Only	<7143	<920	<1571	<1122	<1301	<22.0
Total PCBs Only	<1097	<141	<241	<172	<200	<3.38
Total Dioxins & Furans and PCBs	<8240	<1061	<1812	<1294	<1501	<25.4

Dry Gas Volume Sampled (Rm³*) :	4.547
Actual Flowrate (m³/s) :	23.9
Dry Reference Flowrate (Rm³/s*) :	14.0
Dry Adjusted Flowrate (Rm³/s**) :	19.6
Wet Reference Flowrate (Rm³/s*) :	16.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 18
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	pg/m³	pg/m³	pg/m³	pg/m³	%
2378-tetrachlorodibenzo-p-dioxin	<1.37	<1.73	<1.42	<1.51	13.3
12378-pentachlorodibenzo-p-dioxin	3.21	4.13	<1.93	<3.09	35.7
123478-hexachlorodibenzo-p-dioxin	<11.3	8.67	9.51	<9.83	13.6
123678-hexachlorodibenzo-p-dioxin	49.4	43.7	43.8	45.6	7.1
123789-hexachlorodibenzo-p-dioxin	20.9	19.1	18.2	19.4	7.1
1234678-heptachlorodibenzo-p-dioxin	386	291	329	335	14.2
Octachlorodibenzo-p-dioxin	304	203	268	258	19.8
2378-tetrachlorodibenzofuran	<1.74	<2.11	<1.93	<1.93	9.6
12378-pentachlorodibenzofuran	<2.36	3.35	2.90	<2.87	17.2
23478-pentachlorodibenzofuran	10.3	8.97	7.88	9.07	13.6
123478-hexachlorodibenzofuran	14.0	10.7	11.4	12.0	14.6
123678-hexachlorodibenzofuran	18.2	17.2	14.7	16.7	11.0
234678-hexachlorodibenzofuran	34.3	23.2	27.7	28.4	19.6
123789-hexachlorodibenzofuran	8.73	6.84	6.69	7.42	15.3
1234678-heptachlorodibenzofuran	92.2	86.5	83.2	87.3	5.2
1234789-heptachlorodibenzofuran	19.1	16.2	17.3	17.5	8.3
Octachlorodibenzofuran	83.0	60.6	75.2	73.0	15.6
PCB 81	<9.06	<397	<3.35	<136	165
PCB 77	27.2	<28.5	10.8	<22.2	44.3
PCB 123	32.5	139	8.12	59.8	116
PCB 118	300	1084	68.4	484	110
PCB 114	<13.7	<48.3	4.35	<22.1	105
PCB 105	91.1	336	24.1	150	109
PCB 126	<6.95	<28.5	<3.74	<13.1	103
PCB 167	3.85	<7.68	<1.29	<4.27	75.3
PCB 156	<7.32	25.4	<3.35	<12.0	97.8
PCB 157	4.78	7.79	3.45	5.34	41.7
PCB 169	<1.74	<3.97	<1.42	<2.37	58.5
PCB 189	<9.06	10.4	8.88	<9.44	8.8
Total Dioxins & Furans Only	<1060	<808	<920	<929	13.6
Total PCBs Only	<508	<2116	<141	<922	114
Total Dioxins & Furans and PCBs	<1568	<2924	<1061	<1851	52.0

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 19
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<2.32	<3.01	<2.42	<2.58	14.6
12378-pentachlorodibenzo-p-dioxin	5.46	7.17	<3.30	<5.31	36.5
123478-hexachlorodibenzo-p-dioxin	<19.2	15.1	16.2	<16.8	12.6
123678-hexachlorodibenzo-p-dioxin	83.8	76.0	74.8	78.2	6.3
123789-hexachlorodibenzo-p-dioxin	35.4	33.2	31.0	33.2	6.6
1234678-heptachlorodibenzo-p-dioxin	655	506	561	574	13.1
Octachlorodibenzo-p-dioxin	516	353	457	442	18.7
2378-tetrachlorodibenzofuran	<2.95	<3.66	<3.30	<3.30	10.8
12378-pentachlorodibenzofuran	<4.00	5.81	4.95	<4.92	18.4
23478-pentachlorodibenzofuran	17.5	15.6	13.5	15.5	13.2
123478-hexachlorodibenzofuran	23.8	18.6	19.5	20.6	13.5
123678-hexachlorodibenzofuran	31.0	29.9	25.1	28.7	11.0
234678-hexachlorodibenzofuran	58.1	40.3	47.3	48.6	18.5
123789-hexachlorodibenzofuran	14.8	11.9	11.4	12.7	14.5
1234678-heptachlorodibenzofuran	157	150	142	150	4.8
1234789-heptachlorodibenzofuran	32.4	28.2	29.5	30.0	7.2
Octachlorodibenzofuran	141	105	128	125	14.5
PCB 81	<15.4	<689	<5.72	<237	165
PCB 77	46.1	<49.5	18.5	<38.1	44.7
PCB 123	55.2	241	13.9	103	117
PCB 118	510	1884	117	837	111
PCB 114	<23.2	<84.0	7.43	<38.2	106
PCB 105	155	584	41.1	260	110
PCB 126	<11.8	<49.5	<6.38	<22.6	104
PCB 167	6.53	<13.4	<2.20	<7.36	76.4
PCB 156	<12.4	44.1	<5.72	<20.8	98.8
PCB 157	8.11	13.5	5.89	9.18	42.9
PCB 169	<2.95	<6.89	<2.42	<4.09	59.8
PCB 189	<15.4	18.1	15.2	<16.2	10.0
Total Dioxins & Furans Only	<1800	<1403	<1571	<1591	12.5
Total PCBs Only	<861	<3677	<241	<1593	115
Total Dioxins & Furans and PCBs	<2661	<5080	<1812	<3184	53.2

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 20
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	pg/Rm^3*	pg/Rm^3*	pg/Rm^3*	pg/Rm^3*	%
2378-tetrachlorodibenzo-p-dioxin	<1.65	<2.14	<1.73	<1.84	14.1
12378-pentachlorodibenzo-p-dioxin	3.89	5.08	<2.36	<3.78	36.2
123478-hexachlorodibenzo-p-dioxin	<13.7	10.7	11.6	<12.0	12.8
123678-hexachlorodibenzo-p-dioxin	59.8	53.9	53.4	55.7	6.4
123789-hexachlorodibenzo-p-dioxin	25.3	23.5	22.1	23.6	6.6
1234678-heptachlorodibenzo-p-dioxin	467	359	401	409	13.4
Octachlorodibenzo-p-dioxin	368	250	327	315	19.0
2378-tetrachlorodibenzofuran	<2.10	<2.59	<2.36	<2.35	10.4
12378-pentachlorodibenzofuran	<2.86	4.12	3.53	<3.50	18.0
23478-pentachlorodibenzofuran	12.5	11.0	9.61	11.1	13.1
123478-hexachlorodibenzofuran	17.0	13.2	13.9	14.7	13.8
123678-hexachlorodibenzofuran	22.1	21.2	17.9	20.4	10.8
234678-hexachlorodibenzofuran	41.5	28.5	33.8	34.6	18.8
123789-hexachlorodibenzofuran	10.6	8.42	8.15	9.05	14.6
1234678-heptachlorodibenzofuran	112	106	101	107	4.8
1234789-heptachlorodibenzofuran	23.1	20.0	21.0	21.4	7.5
Octachlorodibenzofuran	101	74.6	91.7	89.0	14.8
PCB 81	<11.0	<488	<4.08	<168	165
PCB 77	32.9	<35.1	13.2	<27.1	44.5
PCB 123	39.4	171	9.90	73.4	117
PCB 118	364	1335	83.4	594	111
PCB 114	<16.5	<59.5	5.31	<27.1	105
PCB 105	110	413	29.4	184	110
PCB 126	<8.42	<35.1	<4.56	<16.0	104
PCB 167	4.66	<9.46	<1.57	<5.23	76.0
PCB 156	<8.87	31.3	<4.08	<14.7	98.5
PCB 157	5.79	9.60	4.21	6.53	42.4
PCB 169	<2.10	<4.88	<1.73	<2.90	59.3
PCB 189	<11.0	12.8	10.8	<11.5	9.5
Total Dioxins & Furans Only	<1284	<994	<1122	<1133	12.8
Total PCBs Only	<615	<2605	<172	<1131	115
Total Dioxins & Furans and PCBs	<1899	<3599	<1294	<2264	52.8

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 21
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<1.91	<2.46	<2.00	<2.12	13.7
12378-pentachlorodibenzo-p-dioxin	4.50	5.84	<2.73	<4.36	35.8
123478-hexachlorodibenzo-p-dioxin	<15.8	12.3	13.4	<13.9	13.0
123678-hexachlorodibenzo-p-dioxin	69.2	62.0	61.9	64.4	6.5
123789-hexachlorodibenzo-p-dioxin	29.2	27.0	25.7	27.3	6.5
1234678-heptachlorodibenzo-p-dioxin	541	412	465	473	13.7
Octachlorodibenzo-p-dioxin	426	288	379	364	19.3
2378-tetrachlorodibenzofuran	<2.43	<2.98	<2.73	<2.72	10.1
12378-pentachlorodibenzofuran	<3.30	4.74	4.10	<4.05	17.8
23478-pentachlorodibenzofuran	14.5	12.7	11.1	12.8	13.1
123478-hexachlorodibenzofuran	19.7	15.1	16.1	17.0	13.9
123678-hexachlorodibenzofuran	25.6	24.4	20.8	23.6	10.6
234678-hexachlorodibenzofuran	48.0	32.8	39.2	40.0	19.1
123789-hexachlorodibenzofuran	12.2	9.69	9.46	10.5	14.7
1234678-heptachlorodibenzofuran	129	123	118	123	4.7
1234789-heptachlorodibenzofuran	26.8	23.0	24.4	24.7	7.7
Octachlorodibenzofuran	116	85.8	106	103	15.1
PCB 81	<12.7	<562	<4.74	<193	165
PCB 77	38.1	<40.4	15.3	<31.3	44.3
PCB 123	45.6	197	11.5	84.5	117
PCB 118	421	1536	96.7	684	110
PCB 114	<19.1	<68.4	6.16	<31.2	105
PCB 105	128	476	34.1	212	110
PCB 126	<9.74	<40.4	<5.28	<18.5	103
PCB 167	5.39	<10.9	<1.82	<6.03	75.7
PCB 156	<10.3	36.0	<4.74	<17.0	98.1
PCB 157	6.70	11.0	4.88	7.54	42.0
PCB 169	<2.43	<5.62	<2.00	<3.35	58.9
PCB 189	<12.7	14.7	12.6	<13.3	9.1
Total Dioxins & Furans Only	<1486	<1144	<1301	<1310	13.1
Total PCBs Only	<711	<2997	<200	<1303	114
Total Dioxins & Furans and PCBs	<2197	<4140	<1501	<2613	52.4

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 22
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Rates

Specific Isomer	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.033	<0.043	<0.034	<0.036	14.5
12378-pentachlorodibenzo-p-dioxin	0.077	0.10	<0.046	<0.075	36.8
123478-hexachlorodibenzo-p-dioxin	<0.27	0.21	0.23	<0.24	13.1
123678-hexachlorodibenzo-p-dioxin	1.19	1.07	1.05	1.10	7.0
123789-hexachlorodibenzo-p-dioxin	0.50	0.47	0.43	0.47	7.3
1234678-heptachlorodibenzo-p-dioxin	9.30	7.14	7.85	8.10	13.6
Octachlorodibenzo-p-dioxin	7.33	4.98	6.40	6.24	19.0
2378-tetrachlorodibenzofuran	<0.042	<0.052	<0.046	<0.047	10.5
12378-pentachlorodibenzofuran	<0.057	0.082	0.069	<0.069	18.1
23478-pentachlorodibenzofuran	0.25	0.22	0.19	0.22	13.9
123478-hexachlorodibenzofuran	0.34	0.26	0.27	0.29	14.1
123678-hexachlorodibenzofuran	0.44	0.42	0.35	0.40	11.6
234678-hexachlorodibenzofuran	0.83	0.57	0.66	0.69	19.0
123789-hexachlorodibenzofuran	0.21	0.17	0.16	0.18	15.2
1234678-heptachlorodibenzofuran	2.22	2.12	1.99	2.11	5.5
1234789-heptachlorodibenzofuran	0.46	0.40	0.41	0.42	7.8
Octachlorodibenzofuran	2.00	1.48	1.80	1.76	14.8
PCB 81	<0.22	<9.72	<0.080	<3.34	165
PCB 77	0.66	<0.70	0.26	<0.54	45.0
PCB 123	0.78	3.40	0.19	1.46	117
PCB 118	7.24	26.6	1.63	11.8	111
PCB 114	<0.33	<1.18	0.10	<0.54	106
PCB 105	2.20	8.23	0.58	3.67	110
PCB 126	<0.17	<0.70	<0.089	<0.32	104
PCB 167	0.093	<0.19	<0.031	<0.10	76.3
PCB 156	<0.18	0.62	<0.080	<0.29	98.8
PCB 157	0.12	0.19	0.083	0.13	42.9
PCB 169	<0.042	<0.097	<0.034	<0.058	59.8
PCB 189	<0.22	0.25	0.21	<0.23	10.1
Total Dioxins & Furans Only	<25.6	<19.8	<22.0	<22.4	13.0
Total PCBs Only	<12.2	<51.8	<3.38	<22.5	115
Total Dioxins & Furans and PCBs	<37.8	<71.6	<25.4	<44.9	53.3

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 23
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Specific Isomer Emission Data

Specific Isomer	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<1.51	<2.58	<1.84	<2.12	<0.036
12378-pentachlorodibenzo-p-dioxin	<3.09	<5.31	<3.78	<4.36	<0.075
123478-hexachlorodibenzo-p-dioxin	<9.83	<16.8	<12.0	<13.9	<0.24
123678-hexachlorodibenzo-p-dioxin	45.6	78.2	55.7	64.4	1.10
123789-hexachlorodibenzo-p-dioxin	19.4	33.2	23.6	27.3	0.47
1234678-heptachlorodibenzo-p-dioxin	335	574	409	473	8.10
Octachlorodibenzo-p-dioxin	258	442	315	364	6.24
2378-tetrachlorodibenzofuran	<1.93	<3.30	<2.35	<2.72	<0.047
12378-pentachlorodibenzofuran	<2.87	<4.92	<3.50	<4.05	<0.069
23478-pentachlorodibenzofuran	9.07	15.5	11.1	12.8	0.22
123478-hexachlorodibenzofuran	12.0	20.6	14.7	17.0	0.29
123678-hexachlorodibenzofuran	16.7	28.7	20.4	23.6	0.40
234678-hexachlorodibenzofuran	28.4	48.6	34.6	40.0	0.69
123789-hexachlorodibenzofuran	7.42	12.7	9.05	10.5	0.18
1234678-heptachlorodibenzofuran	87.3	150	107	123	2.11
1234789-heptachlorodibenzofuran	17.5	30.0	21.4	24.7	0.42
Octachlorodibenzofuran	73.0	125	89.0	103	1.76
PCB 81	<136	<237	<168	<193	<3.34
PCB 77	<22.2	<38.1	<27.1	<31.3	<0.54
PCB 123	59.8	103	73.4	84.5	1.46
PCB 118	484	837	594	684	11.8
PCB 114	<22.1	<38.2	<27.1	<31.2	<0.54
PCB 105	150	260	184	212	3.67
PCB 126	<13.1	<22.6	<16.0	<18.5	<0.32
PCB 167	<4.27	<7.36	<5.23	<6.03	<0.10
PCB 156	<12.0	<20.8	<14.7	<17.0	<0.29
PCB 157	5.34	9.18	6.53	7.54	0.13
PCB 169	<2.37	<4.09	<2.90	<3.35	<0.058
PCB 189	<9.44	<16.2	<11.5	<13.3	<0.23
Total Dioxins & Furans Only	<929	<1591	<1133	<1310	<22.4
Total PCBs Only	<922	<1593	<1131	<1303	<22.5
Total Dioxins & Furans and PCBs	<1851	<3184	<2264	<2613	<44.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 24
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Dioxin and Furan Specific Isomer Analyses

Specific Isomer	Blank Train pg	Laboratory Blank pg
2378-tetrachlorodibenzo-p-dioxin	<11	<11
12378-pentachlorodibenzo-p-dioxin	<7.4	<6.1
123478-hexachlorodibenzo-p-dioxin	<9.0	<5.3
123678-hexachlorodibenzo-p-dioxin	<9.2	<5.4
123789-hexachlorodibenzo-p-dioxin	<9.1	<5.4
1234678-heptachlorodibenzo-p-dioxin	<8.7	5.96
Octachlorodibenzo-p-dioxin	<8.0	<8.0
2378-tetrachlorodibenzofuran	<13	<12
12378-pentachlorodibenzofuran	<7.1	<4.8
23478-pentachlorodibenzofuran	<6.9	<4.7
123478-hexachlorodibenzofuran	<4.5	<4.6
123678-hexachlorodibenzofuran	<4.4	<4.5
234678-hexachlorodibenzofuran	<4.4	<4.5
123789-hexachlorodibenzofuran	<4.8	<5.0
1234678-heptachlorodibenzofuran	<5.3	<5.2
1234789-heptachlorodibenzofuran	<6.4	<6.4
Octachlorodibenzofuran	<11	<8.4
PCB 81	<3.9	<3.0
PCB 77	<4.6	<4.0
PCB 123	<4.7	2.97
PCB 118	<41	<7.2
PCB 114	<4.2	<1.3
PCB 105	13.9	5.51
PCB 126	<5.0	<2.2
PCB 167	<2.4	<2.6
PCB 156	<1.0	3.60
PCB 157	<1.1	<2.5
PCB 169	<1.2	<3.0
PCB 189	<2.2	<2.0
Total Dioxins & Furans Only	<130	<107
Total PCBs Only	<85.2	<39.9
Total Dioxins & Furans and PCBs	<215	<147

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

TABLE 25
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Actual Concentrations

Specific Isomer	Toxicity Equivalency Factor	Actual Concentration Test No. 1 pg TEQ/m³	Test No. 2 pg TEQ/m³	Test No. 3 pg TEQ/m³	Average pg TEQ/m³
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.37	<1.73	<1.42	<1.51
12378-pentachlorodibenzo-p-dioxin	1.000	3.21	4.13	<1.93	<3.09
123478-hexachlorodibenzo-p-dioxin	0.100	<1.13	0.87	0.95	<0.98
123678-hexachlorodibenzo-p-dioxin	0.100	4.94	4.37	4.38	4.56
123789-hexachlorodibenzo-p-dioxin	0.100	2.09	1.91	1.82	1.94
1234678-heptachlorodibenzo-p-dioxin	0.010	3.86	2.91	3.29	3.35
Octachlorodibenzo-p-dioxin	0.0003	0.091	0.061	0.080	0.078
2378-tetrachlorodibenzofuran	0.100	<0.17	<0.21	<0.19	<0.19
12378-pentachlorodibenzofuran	0.030	<0.071	0.10	0.087	<0.086
23478-pentachlorodibenzofuran	0.300	3.10	2.69	2.37	2.72
123478-hexachlorodibenzofuran	0.100	1.40	1.07	1.14	1.20
123678-hexachlorodibenzofuran	0.100	1.82	1.72	1.47	1.67
234678-hexachlorodibenzofuran	0.100	3.43	2.32	2.77	2.84
123789-hexachlorodibenzofuran	0.100	0.87	0.68	0.67	0.74
1234678-heptachlorodibenzofuran	0.010	0.92	0.87	0.83	0.87
1234789-heptachlorodibenzofuran	0.010	0.19	0.16	0.17	0.18
Octachlorodibenzofuran	0.0003	0.025	0.018	0.023	0.022
PCB 81	0.0003	<0.0027	<0.12	<0.0010	<0.041
PCB 77	0.0001	0.0027	<0.0029	0.0011	<0.0022
PCB 123	0.00003	0.00098	0.0042	0.00024	0.0018
PCB 118	0.00003	0.0090	0.033	0.0021	0.015
PCB 114	0.00003	<0.00041	<0.0014	0.00013	<0.00066
PCB 105	0.00003	0.0027	0.010	0.00072	0.0045
PCB 126	0.100	<0.70	<2.85	<0.37	<1.31
PCB 167	0.00003	0.00012	<0.00023	<0.000039	<0.00013
PCB 156	0.00003	<0.00022	0.00076	<0.00010	<0.00036
PCB 157	0.00003	0.00014	0.00023	0.00010	0.00016
PCB 169	0.030	<0.052	<0.12	<0.043	<0.071
PCB 189	0.00003	<0.00027	0.00031	0.00027	<0.00028
Total Dioxins & Furans Only		<28.7	<25.8	<23.6	<26.0
Total PCBs Only		<0.77	<3.14	<0.42	<1.44
Total Dioxins & Furans and PCBs		<29.5	<29.0	<24.0	<27.5

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 26
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Dry Reference Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<2.32	<3.01	<2.42	<2.58
12378-pentachlorodibenzo-p-dioxin	1.000	5.46	7.17	<3.30	<5.31
123478-hexachlorodibenzo-p-dioxin	0.100	<1.92	1.51	1.62	<1.68
123678-hexachlorodibenzo-p-dioxin	0.100	8.38	7.60	7.48	7.82
123789-hexachlorodibenzo-p-dioxin	0.100	3.54	3.32	3.10	3.32
1234678-heptachlorodibenzo-p-dioxin	0.010	6.55	5.06	5.61	5.74
Octachlorodibenzo-p-dioxin	0.0003	0.15	0.11	0.14	0.13
2378-tetrachlorodibenzofuran	0.100	<0.29	<0.37	<0.33	<0.33
12378-pentachlorodibenzofuran	0.030	<0.12	0.17	0.15	<0.15
23478-pentachlorodibenzofuran	0.300	5.26	4.68	4.04	4.66
123478-hexachlorodibenzofuran	0.100	2.38	1.86	1.95	2.06
123678-hexachlorodibenzofuran	0.100	3.10	2.99	2.51	2.87
234678-hexachlorodibenzofuran	0.100	5.81	4.03	4.73	4.86
123789-hexachlorodibenzofuran	0.100	1.48	1.19	1.14	1.27
1234678-heptachlorodibenzofuran	0.010	1.57	1.50	1.42	1.50
1234789-heptachlorodibenzofuran	0.010	0.32	0.28	0.29	0.30
Octachlorodibenzofuran	0.0003	0.042	0.032	0.039	0.037
PCB 81	0.0003	<0.0046	<0.21	<0.0017	<0.071
PCB 77	0.0001	0.0046	<0.0050	0.0019	<0.0038
PCB 123	0.00003	0.0017	0.0072	0.00042	0.0031
PCB 118	0.00003	0.015	0.057	0.0035	0.025
PCB 114	0.00003	<0.00070	<0.0025	0.00022	<0.0011
PCB 105	0.00003	0.0046	0.018	0.0012	0.0078
PCB 126	0.100	<1.18	<4.95	<0.64	<2.26
PCB 167	0.00003	0.00020	<0.00040	<0.000066	<0.00022
PCB 156	0.00003	<0.00037	0.0013	<0.00017	<0.00062
PCB 157	0.00003	0.00024	0.00041	0.00018	0.00028
PCB 169	0.030	<0.088	<0.21	<0.073	<0.12
PCB 189	0.00003	<0.00046	0.00054	0.00045	<0.00049
Total Dioxins & Furans Only		<48.7	<44.9	<40.3	<44.6
Total PCBs Only		<1.30	<5.46	<0.72	<2.49
Total Dioxins & Furans and PCBs		<50.0	<50.3	<41.0	<47.1

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 27
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.65	<2.14	<1.73	<1.84
12378-pentachlorodibenzo-p-dioxin	1.000	3.89	5.08	<2.36	<3.78
123478-hexachlorodibenzo-p-dioxin	0.100	<1.37	1.07	1.16	<1.20
123678-hexachlorodibenzo-p-dioxin	0.100	5.98	5.39	5.34	5.57
123789-hexachlorodibenzo-p-dioxin	0.100	2.53	2.35	2.21	2.36
1234678-heptachlorodibenzo-p-dioxin	0.010	4.67	3.59	4.01	4.09
Octachlorodibenzo-p-dioxin	0.0003	0.11	0.075	0.098	0.095
2378-tetrachlorodibenzofuran	0.100	<0.21	<0.26	<0.24	<0.24
12378-pentachlorodibenzofuran	0.030	<0.086	0.12	0.11	<0.11
23478-pentachlorodibenzofuran	0.300	3.76	3.31	2.88	3.32
123478-hexachlorodibenzofuran	0.100	1.70	1.32	1.39	1.47
123678-hexachlorodibenzofuran	0.100	2.21	2.12	1.79	2.04
234678-hexachlorodibenzofuran	0.100	4.15	2.85	3.38	3.46
123789-hexachlorodibenzofuran	0.100	1.06	0.84	0.82	0.90
1234678-heptachlorodibenzofuran	0.010	1.12	1.06	1.01	1.07
1234789-heptachlorodibenzofuran	0.010	0.23	0.20	0.21	0.21
Octachlorodibenzofuran	0.0003	0.030	0.022	0.028	0.027
PCB 81	0.0003	<0.0033	<0.15	<0.0012	<0.050
PCB 77	0.0001	0.0033	<0.0035	0.0013	<0.0027
PCB 123	0.00003	0.0012	0.0051	0.00030	0.0022
PCB 118	0.00003	0.011	0.040	0.0025	0.018
PCB 114	0.00003	<0.00050	<0.0018	0.00016	<0.00081
PCB 105	0.00003	0.0033	0.012	0.00088	0.0055
PCB 126	0.100	<0.84	<3.51	<0.46	<1.60
PCB 167	0.00003	0.00014	<0.00028	<0.000047	<0.00016
PCB 156	0.00003	<0.00027	0.00094	<0.00012	<0.00044
PCB 157	0.00003	0.00017	0.00029	0.00013	0.00020
PCB 169	0.030	<0.063	<0.15	<0.052	<0.087
PCB 189	0.00003	<0.00033	0.00038	0.00032	<0.00035
Total Dioxins & Furans Only		<34.8	<31.8	<28.8	<31.8
Total PCBs Only		<0.93	<3.87	<0.51	<1.77
Total Dioxins & Furans and PCBs		<35.7	<35.7	<29.3	<33.5

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 27A
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using Half the Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	0.83	1.07	0.86	0.92
12378-pentachlorodibenzo-p-dioxin	1.000	3.89	5.08	1.18	3.38
123478-hexachlorodibenzo-p-dioxin	0.100	0.68	1.07	1.16	0.97
123678-hexachlorodibenzo-p-dioxin	0.100	5.98	5.39	5.34	5.57
123789-hexachlorodibenzo-p-dioxin	0.100	2.53	2.35	2.21	2.36
1234678-heptachlorodibenzo-p-dioxin	0.010	4.67	3.59	4.01	4.09
Octachlorodibenzo-p-dioxin	0.0003	0.11	0.075	0.098	0.095
2378-tetrachlorodibenzofuran	0.100	0.11	0.13	0.12	0.12
12378-pentachlorodibenzofuran	0.030	0.043	0.12	0.11	0.091
23478-pentachlorodibenzofuran	0.300	3.76	3.31	2.88	3.32
123478-hexachlorodibenzofuran	0.100	1.70	1.32	1.39	1.47
123678-hexachlorodibenzofuran	0.100	2.21	2.12	1.79	2.04
234678-hexachlorodibenzofuran	0.100	4.15	2.85	3.38	3.46
123789-hexachlorodibenzofuran	0.100	1.06	0.84	0.82	0.90
1234678-heptachlorodibenzofuran	0.010	1.12	1.06	1.01	1.07
1234789-heptachlorodibenzofuran	0.010	0.23	0.20	0.21	0.21
Octachlorodibenzofuran	0.0003	0.030	0.022	0.028	0.027
PCB 81	0.0003	0.0016	0.073	0.00061	0.025
PCB 77	0.0001	0.0033	0.0018	0.0013	0.0021
PCB 123	0.00003	0.0012	0.0051	0.00030	0.0022
PCB 118	0.00003	0.011	0.040	0.0025	0.018
PCB 114	0.00003	0.00025	0.00089	0.00016	0.00043
PCB 105	0.00003	0.0033	0.012	0.00088	0.0055
PCB 126	0.100	0.42	1.75	0.23	0.80
PCB 167	0.00003	0.00014	0.00014	0.000024	0.00010
PCB 156	0.00003	0.00013	0.00094	0.000061	0.00038
PCB 157	0.00003	0.00017	0.00029	0.00013	0.00020
PCB 169	0.030	0.032	0.073	0.026	0.044
PCB 189	0.00003	0.00016	0.00038	0.00032	0.00029
Total Dioxins & Furans Only		33.1	30.6	26.6	30.1
Total PCBs Only		0.47	1.96	0.26	0.90
Total Dioxins & Furans and PCBs		33.6	32.6	26.9	31.0

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 27B
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.65	<2.14	<1.73	<1.84
12378-pentachlorodibenzo-p-dioxin	0.500	1.95	2.54	<1.18	<1.89
123478-hexachlorodibenzo-p-dioxin	0.100	<1.37	1.07	1.16	<1.20
123678-hexachlorodibenzo-p-dioxin	0.100	5.98	5.39	5.34	5.57
123789-hexachlorodibenzo-p-dioxin	0.100	2.53	2.35	2.21	2.36
1234678-heptachlorodibenzo-p-dioxin	0.010	4.67	3.59	4.01	4.09
Octachlorodibenzo-p-dioxin	0.001	0.37	0.25	0.33	0.32
2378-tetrachlorodibenzofuran	0.100	<0.21	<0.26	<0.24	<0.24
12378-pentachlorodibenzofuran	0.050	<0.14	0.21	0.18	<0.18
23478-pentachlorodibenzofuran	0.500	6.26	5.52	4.81	5.53
123478-hexachlorodibenzofuran	0.100	1.70	1.32	1.39	1.47
123678-hexachlorodibenzofuran	0.100	2.21	2.12	1.79	2.04
234678-hexachlorodibenzofuran	0.100	4.15	2.85	3.38	3.46
123789-hexachlorodibenzofuran	0.100	1.06	0.84	0.82	0.90
1234678-heptachlorodibenzofuran	0.010	1.12	1.06	1.01	1.07
1234789-heptachlorodibenzofuran	0.010	0.23	0.20	0.21	0.21
Octachlorodibenzofuran	0.001	0.10	0.075	0.092	0.089
Total Dioxins & Furans		<35.7	<31.8	<29.9	<32.4
In-Stack Emission Limit					60

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

NATO/CCMS (1989) Toxicity Equivalency Factors

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 28
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Wet Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Wet Reference Concentration Test No. 1 pg TEQ/Rm^3*	Test No. 2 pg TEQ/Rm^3*	Test No. 3 pg TEQ/Rm^3*	Average pg TEQ/Rm^3*
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.91	<2.46	<2.00	<2.12
12378-pentachlorodibenzo-p-dioxin	1.000	4.50	5.84	<2.73	<4.36
123478-hexachlorodibenzo-p-dioxin	0.100	<1.58	1.23	1.34	<1.39
123678-hexachlorodibenzo-p-dioxin	0.100	6.92	6.20	6.19	6.44
123789-hexachlorodibenzo-p-dioxin	0.100	2.92	2.70	2.57	2.73
1234678-heptachlorodibenzo-p-dioxin	0.010	5.41	4.12	4.65	4.73
Octachlorodibenzo-p-dioxin	0.0003	0.13	0.086	0.11	0.11
2378-tetrachlorodibenzofuran	0.100	<0.24	<0.30	<0.27	<0.27
12378-pentachlorodibenzofuran	0.030	<0.099	0.14	0.12	<0.12
23478-pentachlorodibenzofuran	0.300	4.35	3.81	3.34	3.83
123478-hexachlorodibenzofuran	0.100	1.97	1.51	1.61	1.70
123678-hexachlorodibenzofuran	0.100	2.56	2.44	2.08	2.36
234678-hexachlorodibenzofuran	0.100	4.80	3.28	3.92	4.00
123789-hexachlorodibenzofuran	0.100	1.22	0.97	0.95	1.05
1234678-heptachlorodibenzofuran	0.010	1.29	1.23	1.18	1.23
1234789-heptachlorodibenzofuran	0.010	0.27	0.23	0.24	0.25
Octachlorodibenzofuran	0.0003	0.035	0.026	0.032	0.031
PCB 81	0.0003	<0.0038	<0.17	<0.0014	<0.058
PCB 77	0.0001	0.0038	<0.0040	0.0015	<0.0031
PCB 123	0.00003	0.0014	0.0059	0.00034	0.0025
PCB 118	0.00003	0.013	0.046	0.0029	0.021
PCB 114	0.00003	<0.00057	<0.0021	0.00018	<0.00094
PCB 105	0.00003	0.0038	0.014	0.0010	0.0064
PCB 126	0.100	<0.97	<4.04	<0.53	<1.85
PCB 167	0.00003	0.00016	<0.00033	<0.000055	<0.00018
PCB 156	0.00003	<0.00031	0.0011	<0.00014	<0.00051
PCB 157	0.00003	0.00020	0.00033	0.00015	0.00023
PCB 169	0.030	<0.073	<0.17	<0.060	<0.10
PCB 189	0.00003	<0.00038	0.00044	0.00038	<0.00040
Total Dioxins & Furans Only		<40.2	<36.6	<33.4	<36.7
Total PCBs Only		<1.07	<4.45	<0.60	<2.04
Total Dioxins & Furans and PCBs		<41.3	<41.0	<33.9	<38.8

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 29
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Emission Rates

Specific Isomer	Toxicity Equivalency Factor	Emission Rate Test No. 1 ng TEQ/s	Test No. 2 ng TEQ/s	Test No. 3 ng TEQ/s	Average ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.033	<0.043	<0.034	<0.036
12378-pentachlorodibenzo-p-dioxin	1.000	0.077	0.10	<0.046	<0.075
123478-hexachlorodibenzo-p-dioxin	0.100	<0.027	0.021	0.023	<0.024
123678-hexachlorodibenzo-p-dioxin	0.100	0.12	0.11	0.10	0.11
123789-hexachlorodibenzo-p-dioxin	0.100	0.050	0.047	0.043	0.047
1234678-heptachlorodibenzo-p-dioxin	0.010	0.093	0.071	0.079	0.081
Octachlorodibenzo-p-dioxin	0.0003	0.0022	0.0015	0.0019	0.0019
2378-tetrachlorodibenzofuran	0.100	<0.0042	<0.0052	<0.0046	<0.0047
12378-pentachlorodibenzofuran	0.030	<0.0017	0.0025	0.0021	<0.0021
23478-pentachlorodibenzofuran	0.300	0.075	0.066	0.057	0.066
123478-hexachlorodibenzofuran	0.100	0.034	0.026	0.027	0.029
123678-hexachlorodibenzofuran	0.100	0.044	0.042	0.035	0.040
234678-hexachlorodibenzofuran	0.100	0.083	0.057	0.066	0.069
123789-hexachlorodibenzofuran	0.100	0.021	0.017	0.016	0.018
1234678-heptachlorodibenzofuran	0.010	0.022	0.021	0.020	0.021
1234789-heptachlorodibenzofuran	0.010	0.0046	0.0040	0.0041	0.0042
Octachlorodibenzofuran	0.0003	0.00060	0.00045	0.00054	0.00053
PCB 81	0.0003	<0.000066	<0.0029	<0.000024	<0.0010
PCB 77	0.0001	0.000066	<0.000070	0.000026	<0.000054
PCB 123	0.00003	0.000024	0.00010	0.0000058	0.000044
PCB 118	0.00003	0.00022	0.00080	0.000049	0.00035
PCB 114	0.00003	<0.0000099	<0.000036	0.0000031	<0.000016
PCB 105	0.00003	0.000066	0.00025	0.000017	0.00011
PCB 126	0.100	<0.017	<0.070	<0.0089	<0.032
PCB 167	0.00003	0.0000028	<0.0000056	<0.00000092	<0.0000031
PCB 156	0.00003	<0.0000053	0.000019	<0.0000024	<0.0000088
PCB 157	0.00003	0.0000035	0.0000057	0.0000025	0.0000039
PCB 169	0.030	<0.0013	<0.0029	<0.0010	<0.0017
PCB 189	0.00003	<0.0000066	0.0000076	0.0000064	<0.0000069
Total Dioxins & Furans Only		<0.69	<0.63	<0.56	<0.63
Total PCBs Only		<0.018	<0.077	<0.010	<0.035
Total Dioxins & Furans and PCBs		<0.71	<0.71	<0.57	<0.66

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 30
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using the Full Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	<1.51	<2.58	<1.84	<2.12	<0.036
12378-pentachlorodibenzo-p-dioxin	<3.09	<5.31	<3.78	<4.36	<0.075
123478-hexachlorodibenzo-p-dioxin	<0.98	<1.68	<1.20	<1.39	<0.024
123678-hexachlorodibenzo-p-dioxin	4.56	7.82	5.57	6.44	0.11
123789-hexachlorodibenzo-p-dioxin	1.94	3.32	2.36	2.73	0.047
1234678-heptachlorodibenzo-p-dioxin	3.35	5.74	4.09	4.73	0.081
Octachlorodibenzo-p-dioxin	0.078	0.13	0.095	0.11	0.0019
2378-tetrachlorodibenzofuran	<0.19	<0.33	<0.24	<0.27	<0.0047
12378-pentachlorodibenzofuran	<0.086	<0.15	<0.11	<0.12	<0.0021
23478-pentachlorodibenzofuran	2.72	4.66	3.32	3.83	0.066
123478-hexachlorodibenzofuran	1.20	2.06	1.47	1.70	0.029
123678-hexachlorodibenzofuran	1.67	2.87	2.04	2.36	0.040
234678-hexachlorodibenzofuran	2.84	4.86	3.46	4.00	0.069
123789-hexachlorodibenzofuran	0.74	1.27	0.90	1.05	0.018
1234678-heptachlorodibenzofuran	0.87	1.50	1.07	1.23	0.021
1234789-heptachlorodibenzofuran	0.18	0.30	0.21	0.25	0.0042
Octachlorodibenzofuran	0.022	0.037	0.027	0.031	0.00053
PCB 81	<0.041	<0.071	<0.050	<0.058	<0.0010
PCB 77	<0.0022	<0.0038	<0.0027	<0.0031	<0.000054
PCB 123	0.0018	0.0031	0.0022	0.0025	0.000044
PCB 118	0.015	0.025	0.018	0.021	0.00035
PCB 114	<0.00066	<0.0011	<0.00081	<0.00094	<0.000016
PCB 105	0.0045	0.0078	0.0055	0.0064	0.00011
PCB 126	<1.31	<2.26	<1.60	<1.85	<0.032
PCB 167	<0.00013	<0.00022	<0.00016	<0.00018	<0.0000031
PCB 156	<0.00036	<0.00062	<0.00044	<0.00051	<0.0000088
PCB 157	0.00016	0.00028	0.00020	0.00023	0.0000039
PCB 169	<0.071	<0.12	<0.087	<0.10	<0.0017
PCB 189	<0.00028	<0.00049	<0.00035	<0.00040	<0.0000069
Total Dioxins & Furans Only	<26.0	<44.6	<31.8	<36.7	<0.63
Total PCBs Only	<1.44	<2.49	<1.77	<2.04	<0.035
Total Dioxins & Furans and PCBs	<27.5	<47.1	<33.5	<38.8	<0.66

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 31
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using Half the Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	0.75	1.29	0.92	1.06	0.018
12378-pentachlorodibenzo-p-dioxin	2.77	4.76	3.38	3.91	0.067
123478-hexachlorodibenzo-p-dioxin	0.79	1.36	0.97	1.12	0.019
123678-hexachlorodibenzo-p-dioxin	4.56	7.82	5.57	6.44	0.11
123789-hexachlorodibenzo-p-dioxin	1.94	3.32	2.36	2.73	0.047
1234678-heptachlorodibenzo-p-dioxin	3.35	5.74	4.09	4.73	0.081
Octachlorodibenzo-p-dioxin	0.078	0.13	0.095	0.11	0.0019
2378-tetrachlorodibenzofuran	0.096	0.17	0.12	0.14	0.0023
12378-pentachlorodibenzofuran	0.074	0.13	0.091	0.10	0.0018
23478-pentachlorodibenzofuran	2.72	4.66	3.32	3.83	0.066
123478-hexachlorodibenzofuran	1.20	2.06	1.47	1.70	0.029
123678-hexachlorodibenzofuran	1.67	2.87	2.04	2.36	0.040
234678-hexachlorodibenzofuran	2.84	4.86	3.46	4.00	0.069
123789-hexachlorodibenzofuran	0.74	1.27	0.90	1.05	0.018
1234678-heptachlorodibenzofuran	0.87	1.50	1.07	1.23	0.021
1234789-heptachlorodibenzofuran	0.18	0.30	0.21	0.25	0.0042
Octachlorodibenzofuran	0.022	0.037	0.027	0.031	0.00053
PCB 81	0.020	0.036	0.025	0.029	0.00050
PCB 77	0.0017	0.0030	0.0021	0.0025	0.000042
PCB 123	0.0018	0.0031	0.0022	0.0025	0.000044
PCB 118	0.015	0.025	0.018	0.021	0.00035
PCB 114	0.00035	0.00061	0.00043	0.00050	0.0000086
PCB 105	0.0045	0.0078	0.0055	0.0064	0.00011
PCB 126	0.65	1.13	0.80	0.92	0.016
PCB 167	0.000083	0.00014	0.00010	0.00012	0.0000020
PCB 156	0.00031	0.00053	0.0004	0.00043	0.0000075
PCB 157	0.00016	0.00028	0.00020	0.00023	0.0000039
PCB 169	0.036	0.061	0.044	0.050	0.00086
PCB 189	0.00024	0.00041	0.00029	0.00034	0.0000058
Total Dioxins & Furans Only	24.7	42.3	30.1	34.8	0.60
Total PCBs Only	0.73	1.27	0.90	1.04	0.018
Total Dioxins & Furans and PCBs	25.4	43.5	31.0	35.8	0.61

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 32
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 1

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	67.1	8.33	14.1	10.1	11.7	0.20
1,4-Dichlorobenzene	48.6	6.03	10.2	7.31	8.45	0.15
1,2-Dichlorobenzene	81.3	10.1	17.1	12.2	14.1	0.24
Total Dichlorobenzene	197	24.5	41.5	29.6	34.3	0.59
1,3,5-trichlorobenzene	<30	<3.72	<6.32	<4.51	<5.22	<0.090
1,2,4-trichlorobenzene	<30	<3.72	<6.32	<4.51	<5.22	<0.090
1,2,3-trichlorobenzene	<30	<3.72	<6.32	<4.51	<5.22	<0.090
Total Trichlorobenzene	<90.0	<11.2	<19.0	<13.5	<15.7	<0.27
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<30	<3.72	<6.32	<4.51	<5.22	<0.090
1,2,3,4-tetrachlorobenzene	<30	<3.72	<6.32	<4.51	<5.22	<0.090
Total Tetrachlorobenzene	<60.0	<7.45	<12.6	<9.02	<10.4	<0.18
Pentachlorobenzene	<30	<3.72	<6.32	<4.51	<5.22	<0.090
Hexachlorobenzene	<30	<3.72	<6.32	<4.51	<5.22	<0.090
Total Chlorobenzenes	<407	<50.5	<85.7	<61.2	<70.8	<1.22

Dry Gas Volume Sampled (Rm³*) :	4.747
Actual Flowrate (m³/s) :	24.1
Dry Reference Flowrate (Rm³/s*) :	14.2
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	17.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 33
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 2

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	114	14.1	24.5	17.4	20.0	0.35
1,4-Dichlorobenzene	63.9	7.92	13.8	9.75	11.2	0.19
1,2-Dichlorobenzene	80.8	10.0	17.4	12.3	14.2	0.25
Total Dichlorobenzene	259	32.1	55.7	39.5	45.4	0.79
1,3,5-trichlorobenzene	<30	<3.72	<6.46	<4.58	<5.27	<0.091
1,2,4-trichlorobenzene	34.2	4.24	7.36	5.22	6.00	0.10
1,2,3-trichlorobenzene	<30	<3.72	<6.46	<4.58	<5.27	<0.091
Total Trichlorobenzene	<94.2	<11.7	<20.3	<14.4	<16.5	<0.29
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<30	<3.72	<6.46	<4.58	<5.27	<0.091
1,2,3,4-tetrachlorobenzene	<30	<3.72	<6.46	<4.58	<5.27	<0.091
Total Tetrachlorobenzene	<60.0	<7.44	<12.9	<9.15	<10.5	<0.18
Pentachlorobenzene	<30	<3.72	<6.46	<4.58	<5.27	<0.091
Hexachlorobenzene	<30	<3.72	<6.46	<4.58	<5.27	<0.091
Total Chlorobenzenes	<473	<58.6	<102	<72.2	<83.0	<1.44

Dry Gas Volume Sampled (Rm³*) :	4.644
Actual Flowrate (m³/s) :	24.5
Dry Reference Flowrate (Rm³/s*) :	14.1
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	17.3

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 34
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 3

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	40.4	5.20	8.88	6.35	7.36	0.12
1,4-Dichlorobenzene	33.4	4.30	7.35	5.25	6.09	0.10
1,2-Dichlorobenzene	59.4	7.65	13.1	9.33	10.8	0.18
Total Dichlorobenzene	133	17.2	29.3	20.9	24.3	0.41
1,3,5-trichlorobenzene	<30	<3.86	<6.60	<4.71	<5.47	<0.092
1,2,4-trichlorobenzene	<30	<3.86	<6.60	<4.71	<5.47	<0.092
1,2,3-trichlorobenzene	<30	<3.86	<6.60	<4.71	<5.47	<0.092
Total Trichlorobenzene	<90	<11.6	<19.8	<14.1	<16.4	<0.28
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<30	<3.86	<6.60	<4.71	<5.47	<0.092
1,2,3,4-tetrachlorobenzene	<30	<3.86	<6.60	<4.71	<5.47	<0.092
Total Tetrachlorobenzene	<60.0	<7.73	<13.2	<9.43	<10.9	<0.18
Pentachlorobenzene	<30	<3.86	<6.60	<4.71	<5.47	<0.092
Hexachlorobenzene	<30	<3.86	<6.60	<4.71	<5.47	<0.092
Total Chlorobenzenes	<343	<44.2	<75.5	<53.9	<62.5	<1.06

Dry Gas Volume Sampled (Rm³*) :	4.547
Actual Flowrate (m³/s) :	23.9
Dry Reference Flowrate (Rm³/s*) :	14.0
Dry Adjusted Flowrate (Rm³/s**) :	19.6
Wet Reference Flowrate (Rm³/s*) :	16.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 35
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Actual Concentrations for Chlorobenzenes

Specific Isomer	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
1,3-Dichlorobenzene	8.33	14.1	5.20	9.22	49.1
1,4-Dichlorobenzene	6.03	7.92	4.30	6.08	29.7
1,2-Dichlorobenzene	10.1	10.0	7.65	9.25	15.0
Total Dichlorobenzene	24.5	32.1	17.2	24.6	30.3
1,3,5-trichlorobenzene	<3.72	<3.72	<3.86	<3.77	2.2
1,2,4-trichlorobenzene	<3.72	4.24	<3.86	<3.94	6.7
1,2,3-trichlorobenzene	<3.72	<3.72	<3.86	<3.77	2.2
Total Trichlorobenzene	<11.2	<11.7	<11.6	<11.5	2.4
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<3.72	<3.72	<3.86	<3.77	2.2
1,2,3,4-tetrachlorobenzene	<3.72	<3.72	<3.86	<3.77	2.2
Total Tetrachlorobenzene	<7.45	<7.44	<7.73	<7.54	2.2
Pentachlorobenzene	<3.72	<3.72	<3.86	<3.77	2.2
Hexachlorobenzene	<3.72	<3.72	<3.86	<3.77	2.2
Total Chlorobenzenes	<50.5	<58.6	<44.2	<51.1	14.1

TABLE 36
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dry Reference Concentrations for Chlorobenzenes

Specific Isomer	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
1,3-Dichlorobenzene	14.1	24.5	8.88	15.9	50.3
1,4-Dichlorobenzene	10.2	13.8	7.35	10.4	30.7
1,2-Dichlorobenzene	17.1	17.4	13.1	15.9	15.3
Total Dichlorobenzene	41.5	55.7	29.3	42.2	31.3
1,3,5-trichlorobenzene	<6.32	<6.46	<6.60	<6.46	2.2
1,2,4-trichlorobenzene	<6.32	7.36	<6.60	<6.76	8.0
1,2,3-trichlorobenzene	<6.32	<6.46	<6.60	<6.46	2.2
Total Trichlorobenzene	<19.0	<20.3	<19.8	<19.7	3.4
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<6.32	<6.46	<6.60	<6.46	2.2
1,2,3,4-tetrachlorobenzene	<6.32	<6.46	<6.60	<6.46	2.2
Total Tetrachlorobenzene	<12.6	<12.9	<13.2	<12.9	2.2
Pentachlorobenzene	<6.32	<6.46	<6.60	<6.46	2.2
Hexachlorobenzene	<6.32	<6.46	<6.60	<6.46	2.2
Total Chlorobenzenes	<85.7	<102	<75.5	<87.7	15.1

* At 25°C and 1 atmosphere

TABLE 37
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dry Adjusted Concentrations for Chlorobenzenes

Specific	Dry Adjusted Concentration				Coefficient
Isomer	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	of Variation %
1,3-Dichlorobenzene	10.1	17.4	6.35	11.3	49.8
1,4-Dichlorobenzene	7.31	9.75	5.25	7.43	30.3
1,2-Dichlorobenzene	12.2	12.3	9.33	11.3	15.1
Total Dichlorobenzene	29.6	39.5	20.9	30.0	30.9
1,3,5-trichlorobenzene	<4.51	<4.58	<4.71	<4.60	2.2
1,2,4-trichlorobenzene	<4.51	5.22	<4.71	<4.81	7.6
1,2,3-trichlorobenzene	<4.51	<4.58	<4.71	<4.60	2.2
Total Trichlorobenzene	<13.5	<14.4	<14.1	<14.0	3.1
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<4.51	<4.58	<4.71	<4.60	2.2
1,2,3,4-tetrachlorobenzene	<4.51	<4.58	<4.71	<4.60	2.2
Total Tetrachlorobenzene	<9.02	<9.15	<9.43	<9.20	2.2
Pentachlorobenzene	<4.51	<4.58	<4.71	<4.60	2.2
Hexachlorobenzene	<4.51	<4.58	<4.71	<4.60	2.2
Total Chlorobenzenes	<61.2	<72.2	<53.9	<62.4	14.7

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 38
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Wet Reference Concentrations for Chlorobenzenes

Specific Isomer	Wet Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
1,3-Dichlorobenzene	11.7	20.0	7.36	13.0	49.4
1,4-Dichlorobenzene	8.45	11.2	6.09	8.58	29.9
1,2-Dichlorobenzene	14.1	14.2	10.8	13.0	14.8
Total Dichlorobenzene	34.3	45.4	24.3	34.6	30.5
1,3,5-trichlorobenzene	<5.22	<5.27	<5.47	<5.32	2.5
1,2,4-trichlorobenzene	<5.22	6.00	<5.47	<5.56	7.2
1,2,3-trichlorobenzene	<5.22	<5.27	<5.47	<5.32	2.5
Total Trichlorobenzene	<15.7	<16.5	<16.4	<16.2	2.9
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<5.22	<5.27	<5.47	<5.32	2.5
1,2,3,4-tetrachlorobenzene	<5.22	<5.27	<5.47	<5.32	2.5
Total Tetrachlorobenzene	<10.4	<10.5	<10.9	<10.6	2.5
Pentachlorobenzene	<5.22	<5.27	<5.47	<5.32	2.5
Hexachlorobenzene	<5.22	<5.27	<5.47	<5.32	2.5
Total Chlorobenzenes	<70.8	<83.0	<62.5	<72.1	14.3

* At 25°C and 1 atmosphere

TABLE 39
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Rates for Chlorobenzenes

Specific Isomer	Emission Rate Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
1,3-Dichlorobenzene	0.20	0.35	0.12	0.22	50.3
1,4-Dichlorobenzene	0.15	0.19	0.10	0.15	30.9
1,2-Dichlorobenzene	0.24	0.25	0.18	0.22	15.8
Total Dichlorobenzene	0.59	0.79	0.41	0.59	31.6
1,3,5-trichlorobenzene	<0.090	<0.091	<0.092	<0.091	1.4
1,2,4-trichlorobenzene	<0.090	0.10	<0.092	<0.095	7.9
1,2,3-trichlorobenzene	<0.090	<0.091	<0.092	<0.091	1.4
Total Trichlorobenzene	<0.27	<0.29	<0.28	<0.28	3.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.090	<0.091	<0.092	<0.091	1.4
1,2,3,4-tetrachlorobenzene	<0.090	<0.091	<0.092	<0.091	1.4
Total Tetrachlorobenzene	<0.18	<0.18	<0.18	<0.18	1.4
Pentachlorobenzene	<0.090	<0.091	<0.092	<0.091	1.4
Hexachlorobenzene	<0.090	<0.091	<0.092	<0.091	1.4
Total Chlorobenzenes	<1.22	<1.44	<1.06	<1.24	15.4

TABLE 40
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Emission Data for Chlorobenzenes

Specific Isomer	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	9.22	15.9	11.3	13.0	0.22
1,4-Dichlorobenzene	6.08	10.4	7.43	8.58	0.15
1,2-Dichlorobenzene	9.25	15.9	11.3	13.0	0.22
Total Dichlorobenzene	24.6	42.2	30.0	34.6	0.59
1,3,5-trichlorobenzene	<3.77	<6.46	<4.60	<5.32	<0.091
1,2,4-trichlorobenzene	<3.94	<6.76	<4.81	<5.56	<0.095
1,2,3-trichlorobenzene	<3.77	<6.46	<4.60	<5.32	<0.091
Total Trichlorobenzene	<11.5	<19.7	<14.0	<16.2	<0.28
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<3.77	<6.46	<4.60	<5.32	<0.091
1,2,3,4-tetrachlorobenzene	<3.77	<6.46	<4.60	<5.32	<0.091
Total Tetrachlorobenzene	<7.54	<12.9	<9.20	<10.6	<0.18
Pentachlorobenzene	<3.77	<6.46	<4.60	<5.32	<0.091
Hexachlorobenzene	<3.77	<6.46	<4.60	<5.32	<0.091
Total Chlorobenzenes	<51.1	<87.7	<62.4	<72.1	<1.24

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 41
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorobenzene Blank Analyses

Isomers and Congener Group Totals	Blank Train Total ng	Laboratory Blank Total ng
1,3-Dichlorobenzene	<30	<30
1,4-Dichlorobenzene	<30	<30
1,2-Dichlorobenzene	<30	<30
Total Dichlorobenzene	<90	<90
1,3,5-trichlorobenzene	<30	<30
1,2,4-trichlorobenzene	<30	<30
1,2,3-trichlorobenzene	<30	<30
Total Trichlorobenzene	<90	<90
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<30	<30
1,2,3,4-tetrachlorobenzene	<30	<30
Total Tetrachlorobenzene	<60	<60
Pentachlorobenzene	<30	<30
Hexachlorobenzene	<30	<30
Total Chlorobenzenes	<300	<300

"<" indicates that the amount detected is less than the analytical detection limit (<MDL).
In these cases the value of the detection limit was used to calculate the total collected.

TABLE 42
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 1

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	ng	ng/m^3	ng/Rm^3*	ng/Rm^3**	ng/Rm^3*	µg/s
2-monochlorophenol	<60	<7.45	<12.6	<9.02	<10.4	<0.18
3-monochlorophenol	<60	<7.45	<12.6	<9.02	<10.4	<0.18
4-monochlorophenol	98.5	12.2	20.7	14.8	17.1	0.29
Total Monochlorophenols	<219	<27.1	<46.0	<32.8	<38.0	<0.65
2,6-dichlorophenol	<60	<7.45	<12.6	<9.02	<10.4	<0.18
2,4 & 2,5-dichlorophenol	<60	<7.45	<12.6	<9.02	<10.4	<0.18
3,5-dichlorophenol	<60	<7.45	<12.6	<9.02	<10.4	<0.18
2,3-dichlorophenol	<60	<7.45	<12.6	<9.02	<10.4	<0.18
3,4-dichlorophenol	<60	<7.45	<12.6	<9.02	<10.4	<0.18
Total Dichlorophenols	<300	<37.2	<63.2	<45.1	<52.2	<0.90
2,4,6-trichlorophenol	266	33.0	56.0	40.0	46.3	0.80
2,3,6-trichlorophenol	<60	<7.45	<12.6	<9.02	<10.4	<0.18
2,3,5-trichlorophenol	<60	<7.45	<12.6	<9.02	<10.4	<0.18
2,4,5-trichlorophenol	<60	<7.45	<12.6	<9.02	<10.4	<0.18
2,3,4-trichlorophenol	<60	<7.45	<12.6	<9.02	<10.4	<0.18
3,4,5-trichlorophenol	<60	<7.45	<12.6	<9.02	<10.4	<0.18
Total Trichlorophenols	<566	<70.3	<119	<85.1	<98.4	<1.69
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<60	<7.45	<12.6	<9.02	<10.4	<0.18
2,3,4,5-tetrachlorophenol	<60	<7.45	<12.6	<9.02	<10.4	<0.18
Total Tetrachlorophenols	<120	<14.9	<25.3	<18.0	<20.9	<0.36
Pentachlorophenol	<60	<7.45	<12.6	<9.02	<10.4	<0.18
Total Chlorophenols	<1265	<157	<266	<190	<220	<3.78

Dry Gas Volume Sampled (Rm^3*) :	4.747
Actual Flowrate (m^3/s) :	24.1
Dry Reference Flowrate (Rm^3/s*) :	14.2
Dry Adjusted Flowrate (Rm^3/s**) :	19.9
Wet Reference Flowrate (Rm^3/s*) :	17.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 43
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 2

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	<60	<7.44	<12.9	<9.15	<10.5	<0.18
3-monochlorophenol	164	20.3	35.3	25.0	28.8	0.50
4-monochlorophenol	130	16.1	28.0	19.8	22.8	0.39
Total Monochlorophenols	<354	<43.9	<76.2	<54.0	<62.1	<1.07
2,6-dichlorophenol	<60	<7.44	<12.9	<9.15	<10.5	<0.18
2,4 & 2,5-dichlorophenol	122	15.1	26.3	18.6	21.4	0.37
3,5-dichlorophenol	<60	<7.44	<12.9	<9.15	<10.5	<0.18
2,3-dichlorophenol	<60	<7.44	<12.9	<9.15	<10.5	<0.18
3,4-dichlorophenol	<60	<7.44	<12.9	<9.15	<10.5	<0.18
Total Dichlorophenols	<362	<44.9	<78.0	<55.2	<63.5	<1.10
2,4,6-trichlorophenol	186	23.1	40.1	28.4	32.6	0.56
2,3,6-trichlorophenol	<60	<7.44	<12.9	<9.15	<10.5	<0.18
2,3,5-trichlorophenol	<60	<7.44	<12.9	<9.15	<10.5	<0.18
2,4,5-trichlorophenol	<60	<7.44	<12.9	<9.15	<10.5	<0.18
2,3,4-trichlorophenol	<60	<7.44	<12.9	<9.15	<10.5	<0.18
3,4,5-trichlorophenol	<60	<7.44	<12.9	<9.15	<10.5	<0.18
Total Trichlorophenols	<486	<60.2	<105	<74.1	<85.3	<1.48
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<60	<7.44	<12.9	<9.15	<10.5	<0.18
2,3,4,5-tetrachlorophenol	<60	<7.44	<12.9	<9.15	<10.5	<0.18
Total Tetrachlorophenols	<120	<14.9	<25.8	<18.3	<21.1	<0.36
Pentachlorophenol	<60	<7.44	<12.9	<9.15	<10.5	<0.18
Total Chlorophenols	<1382	<171	<298	<211	<243	<4.20

Dry Gas Volume Sampled (Rm³*) :	4.644
Actual Flowrate (m³/s) :	24.5
Dry Reference Flowrate (Rm³/s*) :	14.1
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	17.3

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 44
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 3

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	<60	<7.73	<13.2	<9.43	<10.9	<0.18
3-monochlorophenol	<60	<7.73	<13.2	<9.43	<10.9	<0.18
4-monochlorophenol	89.3	11.5	19.6	14.0	16.3	0.27
Total Monochlorophenols	<209	<27.0	<46.0	<32.9	<38.1	<0.64
2,6-dichlorophenol	<60	<7.73	<13.2	<9.43	<10.9	<0.18
2,4 & 2,5-dichlorophenol	<60	<7.73	<13.2	<9.43	<10.9	<0.18
3,5-dichlorophenol	<60	<7.73	<13.2	<9.43	<10.9	<0.18
2,3-dichlorophenol	<60	<7.73	<13.2	<9.43	<10.9	<0.18
3,4-dichlorophenol	<60	<7.73	<13.2	<9.43	<10.9	<0.18
Total Dichlorophenols	<300	<38.6	<66.0	<47.1	<54.7	<0.92
2,4,6-trichlorophenol	221	28.5	48.6	34.7	40.3	0.68
2,3,6-trichlorophenol	<60	<7.73	<13.2	<9.43	<10.9	<0.18
2,3,5-trichlorophenol	<60	<7.73	<13.2	<9.43	<10.9	<0.18
2,4,5-trichlorophenol	<60	<7.73	<13.2	<9.43	<10.9	<0.18
2,3,4-trichlorophenol	<60	<7.73	<13.2	<9.43	<10.9	<0.18
3,4,5-trichlorophenol	<60	<7.73	<13.2	<9.43	<10.9	<0.18
Total Trichlorophenols	<521	<67.1	<115	<81.8	<94.9	<1.60
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<60	<7.73	<13.2	<9.43	<10.9	<0.18
2,3,4,5-tetrachlorophenol	<60	<7.73	<13.2	<9.43	<10.9	<0.18
Total Tetrachlorophenols	<120	<15.5	<26.4	<18.9	<21.9	<0.37
Pentachlorophenol	<60	<7.73	<13.2	<9.43	<10.9	<0.18
Total Chlorophenols	<1210	<156	<266	<190	<221	<3.73

Dry Gas Volume Sampled (Rm³*) :	4.547
Actual Flowrate (m³/s) :	23.9
Dry Reference Flowrate (Rm³/s*) :	14.0
Dry Adjusted Flowrate (Rm³/s**) :	19.6
Wet Reference Flowrate (Rm³/s*) :	16.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 45
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Actual Concentrations

Specific Isomer	Actual Concentration Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
2-monochlorophenol	<7.45	<7.44	<7.73	<7.54	2.2
3-monochlorophenol	<7.45	20.3	<7.73	<11.8	62.1
4-monochlorophenol	12.2	16.1	11.5	13.3	18.7
Total Monochlorophenols	<27.1	<43.9	<27.0	<32.7	29.8
2,6-dichlorophenol	<7.45	<7.44	<7.73	<7.54	2.2
2,4 & 2,5-dichlorophenol	<7.45	15.1	<7.73	<10.1	43.1
3,5-dichlorophenol	<7.45	<7.44	<7.73	<7.54	2.2
2,3-dichlorophenol	<7.45	<7.44	<7.73	<7.54	2.2
3,4-dichlorophenol	<7.45	<7.44	<7.73	<7.54	2.2
Total Dichlorophenols	<37.2	<44.9	<38.6	<40.2	10.1
2,4,6-trichlorophenol	33.0	23.1	28.5	28.2	17.7
2,3,6-trichlorophenol	<7.45	<7.44	<7.73	<7.54	2.2
2,3,5-trichlorophenol	<7.45	<7.44	<7.73	<7.54	2.2
2,4,5-trichlorophenol	<7.45	<7.44	<7.73	<7.54	2.2
2,3,4-trichlorophenol	<7.45	<7.44	<7.73	<7.54	2.2
3,4,5-trichlorophenol	<7.45	<7.44	<7.73	<7.54	2.2
Total Trichlorophenols	<70.3	<60.2	<67.1	<65.9	7.8
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<7.45	<7.44	<7.73	<7.54	2.2
2,3,4,5-tetrachlorophenol	<7.45	<7.44	<7.73	<7.54	2.2
Total Tetrachlorophenols	<14.9	<14.9	<15.5	<15.1	2.2
Pentachlorophenol	<7.45	<7.44	<7.73	<7.54	2.2
Total Chlorophenols	<157	<171	<156	<161	5.3

TABLE 46
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
2-monochlorophenol	<12.6	<12.9	<13.2	<12.9	2.2
3-monochlorophenol	<12.6	35.3	<13.2	<20.4	63.5
4-monochlorophenol	20.7	28.0	19.6	22.8	19.9
Total Monochlorophenols	<46.0	<76.2	<46	<56.1	31.1
2,6-dichlorophenol	<12.6	<12.9	<13.2	<12.9	2.2
2,4 & 2,5-dichlorophenol	<12.6	26.3	<13.2	<17.4	44.4
3,5-dichlorophenol	<12.6	<12.9	<13.2	<12.9	2.2
2,3-dichlorophenol	<12.6	<12.9	<13.2	<12.9	2.2
3,4-dichlorophenol	<12.6	<12.9	<13.2	<12.9	2.2
Total Dichlorophenols	<63.2	<78.0	<66.0	<69.0	11.4
2,4,6-trichlorophenol	56.0	40.1	48.6	48.2	16.6
2,3,6-trichlorophenol	<12.6	<12.9	<13.2	<12.9	2.2
2,3,5-trichlorophenol	<12.6	<12.9	<13.2	<12.9	2.2
2,4,5-trichlorophenol	<12.6	<12.9	<13.2	<12.9	2.2
2,3,4-trichlorophenol	<12.6	<12.9	<13.2	<12.9	2.2
3,4,5-trichlorophenol	<12.6	<12.9	<13.2	<12.9	2.2
Total Trichlorophenols	<119	<105	<115	<113	6.6
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<12.6	<12.9	<13.2	<12.9	2.2
2,3,4,5-tetrachlorophenol	<12.6	<12.9	<13.2	<12.9	2.2
Total Tetrachlorophenols	<25.3	<25.8	<26.4	<25.8	2.2
Pentachlorophenol	<12.6	<12.9	<13.2	<12.9	2.2
Total Chlorophenols	<266	<298	<266	<277	6.5

* At 25°C and 1 atmosphere

TABLE 47
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm^3*	ng/Rm^3*	ng/Rm^3*	ng/Rm^3*	%
2-monochlorophenol	<9.02	<9.15	<9.43	<9.20	2.2
3-monochlorophenol	<9.02	25.0	<9.43	<14.5	63.0
4-monochlorophenol	14.8	19.8	14.0	16.2	19.4
Total Monochlorophenols	<32.8	<54.0	<32.9	<39.9	30.6
2,6-dichlorophenol	<9.02	<9.15	<9.43	<9.20	2.2
2,4 & 2,5-dichlorophenol	<9.02	18.6	<9.43	<12.4	43.9
3,5-dichlorophenol	<9.02	<9.15	<9.43	<9.20	2.2
2,3-dichlorophenol	<9.02	<9.15	<9.43	<9.20	2.2
3,4-dichlorophenol	<9.02	<9.15	<9.43	<9.20	2.2
Total Dichlorophenols	<45.1	<55.2	<47.1	<49.2	10.9
2,4,6-trichlorophenol	40.0	28.4	34.7	34.4	16.9
2,3,6-trichlorophenol	<9.02	<9.15	<9.43	<9.20	2.2
2,3,5-trichlorophenol	<9.02	<9.15	<9.43	<9.20	2.2
2,4,5-trichlorophenol	<9.02	<9.15	<9.43	<9.20	2.2
2,3,4-trichlorophenol	<9.02	<9.15	<9.43	<9.20	2.2
3,4,5-trichlorophenol	<9.02	<9.15	<9.43	<9.20	2.2
Total Trichlorophenols	<85.1	<74.1	<81.8	<80.4	7.0
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<9.02	<9.15	<9.43	<9.20	2.2
2,3,4,5-tetrachlorophenol	<9.02	<9.15	<9.43	<9.20	2.2
Total Tetrachlorophenols	<18.0	<18.3	<18.9	<18.4	2.2
Pentachlorophenol	<9.02	<9.15	<9.43	<9.20	2.2
Total Chlorophenols	<190	<211	<190	<197	6.1

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 48
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
2-monochlorophenol	<10.4	<10.5	<10.9	<10.6	2.5
3-monochlorophenol	<10.4	28.8	<10.9	<16.7	62.5
4-monochlorophenol	17.1	22.8	16.3	18.7	19.0
Total Monochlorophenols	<38.0	<62.1	<38.1	<46.1	30.1
2,6-dichlorophenol	<10.4	<10.5	<10.9	<10.6	2.5
2,4 & 2,5-dichlorophenol	<10.4	21.4	<10.9	<14.3	43.5
3,5-dichlorophenol	<10.4	<10.5	<10.9	<10.6	2.5
2,3-dichlorophenol	<10.4	<10.5	<10.9	<10.6	2.5
3,4-dichlorophenol	<10.4	<10.5	<10.9	<10.6	2.5
Total Dichlorophenols	<52.2	<63.5	<54.7	<56.8	10.5
2,4,6-trichlorophenol	46.3	32.6	40.3	39.7	17.2
2,3,6-trichlorophenol	<10.4	<10.5	<10.9	<10.6	2.5
2,3,5-trichlorophenol	<10.4	<10.5	<10.9	<10.6	2.5
2,4,5-trichlorophenol	<10.4	<10.5	<10.9	<10.6	2.5
2,3,4-trichlorophenol	<10.4	<10.5	<10.9	<10.6	2.5
3,4,5-trichlorophenol	<10.4	<10.5	<10.9	<10.6	2.5
Total Trichlorophenols	<98.4	<85.3	<94.9	<92.9	7.3
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<10.4	<10.5	<10.9	<10.6	2.5
2,3,4,5-tetrachlorophenol	<10.4	<10.5	<10.9	<10.6	2.5
Total Tetrachlorophenols	<20.9	<21.1	<21.9	<21.3	2.5
Pentachlorophenol	<10.4	<10.5	<10.9	<10.6	2.5
Total Chlorophenols	<220	<243	<221	<228	5.7

* At 25°C and 1 atmosphere

TABLE 49
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Emission Rates

Specific Isomer	Emission Rate Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
2-monochlorophenol	<0.18	<0.18	<0.18	<0.18	1.4
3-monochlorophenol	<0.18	0.50	<0.18	<0.29	63.5
4-monochlorophenol	0.29	0.39	0.27	0.32	20.0
Total Monochlorophenols	<0.65	<1.07	<0.64	<0.79	31.1
2,6-dichlorophenol	<0.18	<0.18	<0.18	<0.18	1.4
2,4 & 2,5-dichlorophenol	<0.18	0.37	<0.18	<0.24	44.4
3,5-dichlorophenol	<0.18	<0.18	<0.18	<0.18	1.4
2,3-dichlorophenol	<0.18	<0.18	<0.18	<0.18	1.4
3,4-dichlorophenol	<0.18	<0.18	<0.18	<0.18	1.4
Total Dichlorophenols	<0.90	<1.10	<0.92	<0.97	11.3
2,4,6-trichlorophenol	0.80	0.56	0.68	0.68	17.0
2,3,6-trichlorophenol	<0.18	<0.18	<0.18	<0.18	1.4
2,3,5-trichlorophenol	<0.18	<0.18	<0.18	<0.18	1.4
2,4,5-trichlorophenol	<0.18	<0.18	<0.18	<0.18	1.4
2,3,4-trichlorophenol	<0.18	<0.18	<0.18	<0.18	1.4
3,4,5-trichlorophenol	<0.18	<0.18	<0.18	<0.18	1.4
Total Trichlorophenols	<1.69	<1.48	<1.60	<1.59	6.9
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<0.18	<0.18	<0.18	<0.18	1.4
2,3,4,5-tetrachlorophenol	<0.18	<0.18	<0.18	<0.18	1.4
Total Tetrachlorophenols	<0.36	<0.36	<0.37	<0.36	1.4
Pentachlorophenol	<0.18	<0.18	<0.18	<0.18	1.4
Total Chlorophenols	<3.78	<4.20	<3.73	<3.90	6.6

TABLE 50
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Emission Data for Chlorophenol Isomer and Congener Groups

Specific Isomer	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	<7.54	<12.9	<9.20	<10.6	<0.18
3-monochlorophenol	<11.8	<20.4	<14.5	<16.7	<0.29
4-monochlorophenol	13.3	22.8	16.2	18.7	0.32
Total Monochlorophenols	<32.7	<56.1	<39.9	<46.1	<0.79
2,6-dichlorophenol	<7.54	<12.9	<9.20	<10.6	<0.18
2,4 & 2,5-dichlorophenol	<10.1	<17.4	<12.4	<14.3	<0.24
3,5-dichlorophenol	<7.54	<12.9	<9.20	<10.6	<0.18
2,3-dichlorophenol	<7.54	<12.9	<9.20	<10.6	<0.18
3,4-dichlorophenol	<7.54	<12.9	<9.20	<10.6	<0.18
Total Dichlorophenols	<40.2	<69.0	<49.2	<56.8	<0.97
2,4,6-trichlorophenol	28.2	48.2	34.4	39.7	0.68
2,3,6-trichlorophenol	<7.54	<12.9	<9.20	<10.6	<0.18
2,3,5-trichlorophenol	<7.54	<12.9	<9.20	<10.6	<0.18
2,4,5-trichlorophenol	<7.54	<12.9	<9.20	<10.6	<0.18
2,3,4-trichlorophenol	<7.54	<12.9	<9.20	<10.6	<0.18
3,4,5-trichlorophenol	<7.54	<12.9	<9.20	<10.6	<0.18
Total Trichlorophenols	<65.9	<113	<80.4	<92.9	<1.59
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<7.54	<12.9	<9.20	<10.6	<0.18
2,3,4,5-tetrachlorophenol	<7.54	<12.9	<9.20	<10.6	<0.18
Total Tetrachlorophenols	<15.1	<25.8	<18.4	<21.3	<0.36
Pentachlorophenol	<7.54	<12.9	<9.20	<10.6	<0.18
Total Chlorophenols	<161	<277	<197	<228	<3.90

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 51
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Blank Analyses

Congener Group	Lab Blank Total ng	Blank Train Total ng
2-monochlorophenol	<60	<60
3-monochlorophenol	<60	<60
4-monochlorophenol	<60	<60
Total Monochlorophenols	<180	<180
2,6-dichlorophenol	<60	<60
2,4 & 2,5-dichlorophenol	<60	<60
3,5-dichlorophenol	<60	<60
2,3-dichlorophenol	<60	<60
3,4-dichlorophenol	<60	<60
Total Dichlorophenols	<300	<300
2,4,6-trichlorophenol	<60	<60
2,3,6-trichlorophenol	<60	<60
2,3,5-trichlorophenol	<60	<60
2,4,5-trichlorophenol	<60	<60
2,3,4-trichlorophenol	<60	<60
3,4,5-trichlorophenol	<60	<60
Total Trichlorophenols	<360	<360
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<60	<60
2,3,4,5-tetrachlorophenol	<60	<60
Total Tetrachlorophenols	<120	<120
Pentachlorophenol	<60	<60
Total Chlorophenols	<1020	<1020

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

TABLE 52
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 1

Compound	Total Collected ng	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate µg/s
Acenaphthene	122	15.1	25.7	18.3	21.2	0.36
Acenaphthylene	33.8	4.20	7.12	5.08	5.88	0.10
Anthracene	67.3	8.35	14.2	10.1	11.7	0.20
Benzo(a)Anthracene	<12	<1.49	<2.53	<1.80	<2.09	<0.036
Benzo(b)Fluoranthene	<12	<1.49	<2.53	<1.80	<2.09	<0.036
Benzo(j/k)Fluoranthene	<12	<1.49	<2.53	<1.80	<2.09	<0.036
Benzo(a)fluorene	<12	<1.49	<2.53	<1.80	<2.09	<0.036
Benzo(b)fluorene	<12	<1.49	<2.53	<1.80	<2.09	<0.036
Benzo(g,h,i)Perylene	60.5	7.51	12.7	9.09	10.5	0.18
Benzo(a)Pyrene	<12	<1.49	<2.53	<1.80	<2.09	<0.036
Benzo(e)Pyrene	<12	<1.49	<2.53	<1.80	<2.09	<0.036
Biphenyl	158	19.6	33.3	23.8	27.5	0.47
2-Chloronaphthalene	<12	<1.49	<2.53	<1.80	<2.09	<0.036
Chrysene/Triphenylene	<12	<1.49	<2.53	<1.80	<2.09	<0.036
Coronene	38.3	4.75	8.07	5.76	6.66	0.11
Dibenzo(a,c/a,h)Anthracene	<12	<1.49	<2.53	<1.80	<2.09	<0.036
Dibenzo(a,e)pyrene	<12	<1.49	<2.53	<1.80	<2.09	<0.036
9,10-dimethylanthracene	<12	<1.49	<2.53	<1.80	<2.09	<0.036
7,12-Dimethylbenzo(a)anthracene	<12	<1.49	<2.53	<1.80	<2.09	<0.036
Fluoranthene	47.6	5.91	10.0	7.16	8.28	0.14
Fluorene	79.7	9.89	16.8	12.0	13.9	0.24
Indeno(1,2,3-cd)Pyrene	<12	<1.49	<2.53	<1.80	<2.09	<0.036
2-methylanthracene	18.5	2.30	3.90	2.78	3.22	0.055
3-Methylcholanthrene	<12	<1.49	<2.53	<1.80	<2.09	<0.036
1-Methylnaphthalene	130	16.1	27.4	19.5	22.6	0.39
2-Methylnaphthalene	260	32.3	54.8	39.1	45.2	0.78
1-Methylphenanthrene	12.8	1.59	2.70	1.92	2.23	0.038
9-Methylphenanthrene	16.2	2.01	3.41	2.44	2.82	0.048
Naphthalene	4930	612	1039	741	857	14.7
Perylene	<12	<1.49	<2.53	<1.80	<2.09	<0.036
Phenanthrene	213	26.4	44.9	32.0	37.0	0.64
Picene	<12	<1.49	<2.53	<1.80	<2.09	<0.036
Pyrene	64.1	7.96	13.5	9.64	11.1	0.19
Tetralin	18800	2334	3960	2826	3270	56.2
m-terphenyl	<12	<1.49	<2.53	<1.80	<2.09	<0.036
o-Terphenyl	<12	<1.49	<2.53	<1.80	<2.09	<0.036
p-terphenyl	<12	<1.49	<2.53	<1.80	<2.09	<0.036
Total	<25292	<3139	<5328	<3802	<4399	<75.7

Dry Gas Volume Sampled (Rm^3*) :	4.747
Actual Flowrate (m^3/s) :	24.1
Dry Reference Flowrate (Rm^3/s*) :	14.2
Dry Adjusted Flowrate (Rm^3/s**) :	19.9
Wet Reference Flowrate (Rm^3/s*) :	17.2

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 53
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 2

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	126	15.6	27.1	19.2	22.1	0.38
Acenaphthylene	28.9	3.58	6.22	4.41	5.07	0.088
Anthracene	62.5	7.75	13.5	9.54	11.0	0.19
Benzo(a)Anthracene	<12	<1.49	<2.58	<1.83	<2.11	<0.036
Benzo(b)Fluoranthene	<12	<1.49	<2.58	<1.83	<2.11	<0.036
Benzo(j/k)Fluoranthene	<12	<1.49	<2.58	<1.83	<2.11	<0.036
Benzo(a)fluorene	<12	<1.49	<2.58	<1.83	<2.11	<0.036
Benzo(b)fluorene	<12	<1.49	<2.58	<1.83	<2.11	<0.036
Benzo(g,h,i)Perylene	34.9	4.33	7.52	5.32	6.13	0.11
Benzo(a)Pyrene	<12	<1.49	<2.58	<1.83	<2.11	<0.036
Benzo(e)Pyrene	<12	<1.49	<2.58	<1.83	<2.11	<0.036
Biphenyl	1320	164	284	201	232	4.01
2-Chloronaphthalene	<12	<1.49	<2.58	<1.83	<2.11	<0.036
Chrysene/Triphenylene	<12	<1.49	<2.58	<1.83	<2.11	<0.036
Coronene	18.2	2.26	3.92	2.78	3.19	0.055
Dibenzo(a,c/a,h)Anthracene	<12	<1.49	<2.58	<1.83	<2.11	<0.036
Dibenzo(a,e)pyrene	<12	<1.49	<2.58	<1.83	<2.11	<0.036
9,10-dimethylanthracene	<12	<1.49	<2.58	<1.83	<2.11	<0.036
7,12-Dimethylbenzo(a)anthracene	<12	<1.49	<2.58	<1.83	<2.11	<0.036
Fluoranthene	108	13.4	23.3	16.5	19.0	0.33
Fluorene	133	16.5	28.6	20.3	23.3	0.40
Indeno(1,2,3-cd)Pyrene	<12	<1.49	<2.58	<1.83	<2.11	<0.036
2-methylanthracene	31.9	3.95	6.87	4.87	5.60	0.097
3-Methylcholanthrene	<12	<1.49	<2.58	<1.83	<2.11	<0.036
1-Methylnaphthalene	123	15.2	26.5	18.8	21.6	0.37
2-Methylnaphthalene	196	24.3	42.2	29.9	34.4	0.60
1-Methylphenanthrene	22.3	2.76	4.80	3.40	3.91	0.068
9-Methylphenanthrene	26.0	3.22	5.60	3.97	4.56	0.079
Naphthalene	4230	524	911	645	742	12.8
Perylene	<12	<1.49	<2.58	<1.83	<2.11	<0.036
Phenanthrene	468	58.0	101	71.4	82.1	1.42
Picene	<12	<1.49	<2.58	<1.83	<2.11	<0.036
Pyrene	84.7	10.5	18.2	12.9	14.9	0.26
Tetralin	18100	2243	3898	2762	3177	55.0
m-terphenyl	16.0	1.98	3.45	2.44	2.81	0.049
o-Terphenyl	15.2	1.88	3.27	2.32	2.67	0.046
p-terphenyl	<12	<1.49	<2.58	<1.83	<2.11	<0.036
Total	<25361	<3143	<5461	<3869	<4451	<77.0

Dry Gas Volume Sampled (Rm³*) :	4.644
Actual Flowrate (m³/s) :	24.5
Dry Reference Flowrate (Rm³/s*) :	14.1
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	17.3

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 54
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 3

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	43.2	5.57	9.50	6.79	7.87	0.13
Acenaphthylene	17.5	2.25	3.85	2.75	3.19	0.054
Anthracene	60.2	7.76	13.2	9.46	11.0	0.19
Benzo(a)Anthracene	<12	<1.55	<2.64	<1.89	<2.19	<0.037
Benzo(b)Fluoranthene	<12	<1.55	<2.64	<1.89	<2.19	<0.037
Benzo(j/k)Fluoranthene	<12	<1.55	<2.64	<1.89	<2.19	<0.037
Benzo(a)fluorene	<12	<1.55	<2.64	<1.89	<2.19	<0.037
Benzo(b)fluorene	<12	<1.55	<2.64	<1.89	<2.19	<0.037
Benzo(g,h,i)Perylene	89.2	11.5	19.6	14.0	16.3	0.27
Benzo(a)Pyrene	<12	<1.55	<2.64	<1.89	<2.19	<0.037
Benzo(e)Pyrene	<12	<1.55	<2.64	<1.89	<2.19	<0.037
Biphenyl	78.8	10.2	17.3	12.4	14.4	0.24
2-Chloronaphthalene	<12	<1.55	<2.64	<1.89	<2.19	<0.037
Chrysene/Triphenylene	<12	<1.55	<2.64	<1.89	<2.19	<0.037
Coronene	60.6	7.81	13.3	9.52	11.0	0.19
Dibenzo(a,c/a,h)Anthracene	<12	<1.55	<2.64	<1.89	<2.19	<0.037
Dibenzo(a,e)pyrene	<12	<1.55	<2.64	<1.89	<2.19	<0.037
9,10-dimethylanthracene	<12	<1.55	<2.64	<1.89	<2.19	<0.037
7,12-Dimethylbenzo(a)anthracene	<12	<1.55	<2.64	<1.89	<2.19	<0.037
Fluoranthene	44.2	5.69	9.72	6.94	8.05	0.14
Fluorene	26.5	3.41	5.83	4.16	4.83	0.082
Indeno(1,2,3-cd)Pyrene	<12	<1.55	<2.64	<1.89	<2.19	<0.037
2-methylanthracene	<12	<1.55	<2.64	<1.89	<2.19	<0.037
3-Methylcholanthrene	<12	<1.55	<2.64	<1.89	<2.19	<0.037
1-Methylnaphthalene	59.5	7.67	13.1	9.35	10.8	0.18
2-Methylnaphthalene	102	13.1	22.4	16.0	18.6	0.31
1-Methylphenanthrene	12.4	1.60	2.73	1.95	2.26	0.038
9-Methylphenanthrene	<12	<1.55	<2.64	<1.89	<2.19	<0.037
Naphthalene	4290	553	943	674	782	13.2
Perylene	<12	<1.55	<2.64	<1.89	<2.19	<0.037
Phenanthrene	97.1	12.5	21.4	15.3	17.7	0.30
Picene	<12	<1.55	<2.64	<1.89	<2.19	<0.037
Pyrene	101	13.0	22.2	15.9	18.4	0.31
Tetralin	18800	2422	4135	2953	3425	57.9
m-terphenyl	<12	<1.55	<2.64	<1.89	<2.19	<0.037
o-Terphenyl	<12	<1.55	<2.64	<1.89	<2.19	<0.037
p-terphenyl	<12	<1.55	<2.64	<1.89	<2.19	<0.037
Total	<24146	<3111	<5310	<3793	<4399	<74.3

Dry Gas Volume Sampled (Rm³*) :	4.547
Actual Flowrate (m³/s) :	23.9
Dry Reference Flowrate (Rm³/s*) :	14.0
Dry Adjusted Flowrate (Rm³/s**) :	19.6
Wet Reference Flowrate (Rm³/s*) :	16.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 55
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Actual Concentrations

Compound	Actual Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
Acenaphthene	15.1	15.6	5.57	12.1	46.8
Acenaphthylene	4.20	3.58	2.25	3.34	29.7
Anthracene	8.35	7.75	7.76	7.95	4.4
Benzo(a)Anthracene	<1.49	<1.49	<1.55	<1.51	2.2
Benzo(b)Fluoranthene	<1.49	<1.49	<1.55	<1.51	2.2
Benzo(j/k)Fluoranthene	<1.49	<1.49	<1.55	<1.51	2.2
Benzo(a)fluorene	<1.49	<1.49	<1.55	<1.51	2.2
Benzo(b)fluorene	<1.49	<1.49	<1.55	<1.51	2.2
Benzo(g,h,i)Perylene	7.51	4.33	11.5	7.78	46.2
Benzo(a)Pyrene	<1.49	<1.49	<1.55	<1.51	2.2
Benzo(e)Pyrene	<1.49	<1.49	<1.55	<1.51	2.2
Biphenyl	19.6	164	10.2	64.4	133
2-Chloronaphthalene	<1.49	<1.49	<1.55	<1.51	2.2
Chrysene/Triphenylene	<1.49	<1.49	<1.55	<1.51	2.2
Coronene	4.75	2.26	7.81	4.94	56.3
Dibenzo(a,c/a,h)Anthracene	<1.49	<1.49	<1.55	<1.51	2.2
Dibenzo(a,e)pyrene	<1.49	<1.49	<1.55	<1.51	2.2
9,10-dimethylanthracene	<1.49	<1.49	<1.55	<1.51	2.2
7,12-Dimethylbenzo(a)anthracene	<1.49	<1.49	<1.55	<1.51	2.2
Fluoranthene	5.91	13.4	5.69	8.33	52.6
Fluorene	9.89	16.5	3.41	9.93	65.8
Indeno(1,2,3-cd)Pyrene	<1.49	<1.49	<1.55	<1.51	2.2
2-methylanthracene	2.30	3.95	<1.55	<2.60	47.4
3-Methylcholanthrene	<1.49	<1.49	<1.55	<1.51	2.2
1-Methylnaphthalene	16.1	15.2	7.67	13.0	35.8
2-Methylnaphthalene	32.3	24.3	13.1	23.2	41.4
1-Methylphenanthrene	1.59	2.76	1.60	1.98	34.1
9-Methylphenanthrene	2.01	3.22	<1.55	<2.26	38.3
Naphthalene	612	524	553	563	7.9
Perylene	<1.49	<1.49	<1.55	<1.51	2.2
Phenanthrene	26.4	58.0	12.5	32.3	72.1
Picene	<1.49	<1.49	<1.55	<1.51	2.2
Pyrene	7.96	10.5	13.0	10.5	24.1
Tetralin	2334	2243	2422	2333	3.8
m-terphenyl	<1.49	1.98	<1.55	<1.67	16.1
o-Terphenyl	<1.49	1.88	<1.55	<1.64	13.0
p-terphenyl	<1.49	<1.49	<1.55	<1.51	2.2
Total	<3139	<3143	<3111	<3131	0.6

TABLE 56
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Reference Concentrations

Compound	Dry Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	25.7	27.1	9.50	20.8	47.1
Acenaphthylene	7.12	6.22	3.85	5.73	29.5
Anthracene	14.2	13.5	13.2	13.6	3.6
Benzo(a)Anthracene	<2.53	<2.58	<2.64	<2.58	2.2
Benzo(b)Fluoranthene	<2.53	<2.58	<2.64	<2.58	2.2
Benzo(j/k)Fluoranthene	<2.53	<2.58	<2.64	<2.58	2.2
Benzo(a)fluorene	<2.53	<2.58	<2.64	<2.58	2.2
Benzo(b)fluorene	<2.53	<2.58	<2.64	<2.58	2.2
Benzo(g,h,i)Perylene	12.7	7.52	19.6	13.3	45.7
Benzo(a)Pyrene	<2.53	<2.58	<2.64	<2.58	2.2
Benzo(e)Pyrene	<2.53	<2.58	<2.64	<2.58	2.2
Biphenyl	33.3	284	17.3	112	134
2-Chloronaphthalene	<2.53	<2.58	<2.64	<2.58	2.2
Chrysene/Triphenylene	<2.53	<2.58	<2.64	<2.58	2.2
Coronene	8.07	3.92	13.3	8.44	55.9
Dibenzo(a,c/a,h)Anthracene	<2.53	<2.58	<2.64	<2.58	2.2
Dibenzo(a,e)pyrene	<2.53	<2.58	<2.64	<2.58	2.2
9,10-dimethylanthracene	<2.53	<2.58	<2.64	<2.58	2.2
7,12-Dimethylbenzo(a)anthracene	<2.53	<2.58	<2.64	<2.58	2.2
Fluoranthene	10.0	23.3	9.72	14.3	53.9
Fluorene	16.8	28.6	5.83	17.1	66.8
Indeno(1,2,3-cd)Pyrene	<2.53	<2.58	<2.64	<2.58	2.2
2-methylanthracene	3.90	6.87	<2.64	<4.47	48.6
3-Methylcholanthrene	<2.53	<2.58	<2.64	<2.58	2.2
1-Methylnaphthalene	27.4	26.5	13.1	22.3	35.9
2-Methylnaphthalene	54.8	42.2	22.4	39.8	41.0
1-Methylphenanthrene	2.70	4.80	2.73	3.41	35.4
9-Methylphenanthrene	3.41	5.60	<2.64	<3.88	39.5
Naphthalene	1039	911	943	964	6.9
Perylene	<2.53	<2.58	<2.64	<2.58	2.2
Phenanthrene	44.9	101	21.4	55.7	73.3
Picene	<2.53	<2.58	<2.64	<2.58	2.2
Pyrene	13.5	18.2	22.2	18.0	24.2
Tetralin	3960	3898	4135	3997	3.1
m-terphenyl	<2.53	3.45	<2.64	<2.87	17.4
o-Terphenyl	<2.53	3.27	<2.64	<2.81	14.3
p-terphenyl	<2.53	<2.58	<2.64	<2.58	2.2
Total	<5328	<5461	<5310	<5366	1.5

* At 25°C and 1 atmosphere

TABLE 57
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	18.3	19.2	6.79	14.8	46.9
Acenaphthylene	5.08	4.41	2.75	4.08	29.4
Anthracene	10.1	9.54	9.46	9.70	3.7
Benzo(a)Anthracene	<1.80	<1.83	<1.89	<1.84	2.2
Benzo(b)Fluoranthene	<1.80	<1.83	<1.89	<1.84	2.2
Benzo(j/k)Fluoranthene	<1.80	<1.83	<1.89	<1.84	2.2
Benzo(a)fluorene	<1.80	<1.83	<1.89	<1.84	2.2
Benzo(b)fluorene	<1.80	<1.83	<1.89	<1.84	2.2
Benzo(g,h,i)Perylene	9.09	5.32	14.0	9.48	46.0
Benzo(a)Pyrene	<1.80	<1.83	<1.89	<1.84	2.2
Benzo(e)Pyrene	<1.80	<1.83	<1.89	<1.84	2.2
Biphenyl	23.8	201	12.4	79.2	134
2-Chloronaphthalene	<1.80	<1.83	<1.89	<1.84	2.2
Chrysene/Triphenylene	<1.80	<1.83	<1.89	<1.84	2.2
Coronene	5.76	2.78	9.52	6.02	56.1
Dibenzo(a,c/a,h)Anthracene	<1.80	<1.83	<1.89	<1.84	2.2
Dibenzo(a,e)pyrene	<1.80	<1.83	<1.89	<1.84	2.2
9,10-dimethylanthracene	<1.80	<1.83	<1.89	<1.84	2.2
7,12-Dimethylbenzo(a)anthracene	<1.80	<1.83	<1.89	<1.84	2.2
Fluoranthene	7.16	16.5	6.94	10.2	53.4
Fluorene	12.0	20.3	4.16	12.1	66.4
Indeno(1,2,3-cd)Pyrene	<1.80	<1.83	<1.89	<1.84	2.2
2-methylanthracene	2.78	4.87	<1.89	<3.18	48.2
3-Methylcholanthrene	<1.80	<1.83	<1.89	<1.84	2.2
1-Methylnaphthalene	19.5	18.8	9.35	15.9	35.7
2-Methylnaphthalene	39.1	29.9	16.0	28.3	41.0
1-Methylphenanthrene	1.92	3.40	1.95	2.42	34.9
9-Methylphenanthrene	2.44	3.97	<1.89	<2.76	39.1
Naphthalene	741	645	674	687	7.2
Perylene	<1.80	<1.83	<1.89	<1.84	2.2
Phenanthrene	32.0	71.4	15.3	39.6	72.9
Picene	<1.80	<1.83	<1.89	<1.84	2.2
Pyrene	9.64	12.9	15.9	12.8	24.3
Tetralin	2826	2762	2953	2847	3.4
m-terphenyl	<1.80	2.44	<1.89	<2.04	17.0
o-Terphenyl	<1.80	2.32	<1.89	<2.00	13.8
p-terphenyl	<1.80	<1.83	<1.89	<1.84	2.2
Total	<3802	<3869	<3793	<3821	1.1

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 58
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Wet Reference Concentrations

Compound	Wet Reference Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	21.2	22.1	7.87	17.1	46.7
Acenaphthylene	5.88	5.07	3.19	4.71	29.3
Anthracene	11.7	11.0	11.0	11.2	3.8
Benzo(a)Anthracene	<2.09	<2.11	<2.19	<2.13	2.5
Benzo(b)Fluoranthene	<2.09	<2.11	<2.19	<2.13	2.5
Benzo(j/k)Fluoranthene	<2.09	<2.11	<2.19	<2.13	2.5
Benzo(a)fluorene	<2.09	<2.11	<2.19	<2.13	2.5
Benzo(b)fluorene	<2.09	<2.11	<2.19	<2.13	2.5
Benzo(g,h,i)Perylene	10.5	6.13	16.3	11.0	46.3
Benzo(a)Pyrene	<2.09	<2.11	<2.19	<2.13	2.5
Benzo(e)Pyrene	<2.09	<2.11	<2.19	<2.13	2.5
Biphenyl	27.5	232	14.4	91.2	134
2-Chloronaphthalene	<2.09	<2.11	<2.19	<2.13	2.5
Chrysene/Triphenylene	<2.09	<2.11	<2.19	<2.13	2.5
Coronene	6.66	3.19	11.0	6.97	56.5
Dibenzo(a,c/a,h)Anthracene	<2.09	<2.11	<2.19	<2.13	2.5
Dibenzo(a,e)pyrene	<2.09	<2.11	<2.19	<2.13	2.5
9,10-dimethylanthracene	<2.09	<2.11	<2.19	<2.13	2.5
7,12-Dimethylbenzo(a)anthracene	<2.09	<2.11	<2.19	<2.13	2.5
Fluoranthene	8.28	19.0	8.05	11.8	53.0
Fluorene	13.9	23.3	4.83	14.0	66.1
Indeno(1,2,3-cd)Pyrene	<2.09	<2.11	<2.19	<2.13	2.5
2-methylanthracene	3.22	5.60	<2.19	<3.67	47.7
3-Methylcholanthrene	<2.09	<2.11	<2.19	<2.13	2.5
1-Methylnaphthalene	22.6	21.6	10.8	18.3	35.5
2-Methylnaphthalene	45.2	34.4	18.6	32.7	40.9
1-Methylphenanthrene	2.23	3.91	2.26	2.80	34.5
9-Methylphenanthrene	2.82	4.56	<2.19	<3.19	38.6
Naphthalene	857	742	782	794	7.4
Perylene	<2.09	<2.11	<2.19	<2.13	2.5
Phenanthrene	37.0	82.1	17.7	45.6	72.5
Picene	<2.09	<2.11	<2.19	<2.13	2.5
Pyrene	11.1	14.9	18.4	14.8	24.5
Tetralin	3270	3177	3425	3290	3.8
m-terphenyl	<2.09	2.81	<2.19	<2.36	16.6
o-Terphenyl	<2.09	2.67	<2.19	<2.31	13.4
p-terphenyl	<2.09	<2.11	<2.19	<2.13	2.5
Total	<4399	<4451	<4399	<4416	0.7

* At 25°C and 1 atmosphere

TABLE 59
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Rates

Compound	Emission Rate				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	μg/s	μg/s	μg/s	μg/s	%
Acenaphthene	0.36	0.38	0.13	0.29	47.5
Acenaphthylene	0.10	0.088	0.054	0.081	30.1
Anthracene	0.20	0.19	0.19	0.19	4.3
Benzo(a)Anthracene	<0.036	<0.036	<0.037	<0.036	1.4
Benzo(b)Fluoranthene	<0.036	<0.036	<0.037	<0.036	1.4
Benzo(j/k)Fluoranthene	<0.036	<0.036	<0.037	<0.036	1.4
Benzo(a)fluorene	<0.036	<0.036	<0.037	<0.036	1.4
Benzo(b)fluorene	<0.036	<0.036	<0.037	<0.036	1.4
Benzo(g,h,i)Perylene	0.18	0.11	0.27	0.19	45.1
Benzo(a)Pyrene	<0.036	<0.036	<0.037	<0.036	1.4
Benzo(e)Pyrene	<0.036	<0.036	<0.037	<0.036	1.4
Biphenyl	0.47	4.01	0.24	1.57	134
2-Chloronaphthalene	<0.036	<0.036	<0.037	<0.036	1.4
Chrysene/Triphenylene	<0.036	<0.036	<0.037	<0.036	1.4
Coronene	0.11	0.055	0.19	0.12	55.4
Dibenzo(a,c/a,h)Anthracene	<0.036	<0.036	<0.037	<0.036	1.4
Dibenzo(a,e)pyrene	<0.036	<0.036	<0.037	<0.036	1.4
9,10-dimethylanthracene	<0.036	<0.036	<0.037	<0.036	1.4
7,12-Dimethylbenzo(a)anthracene	<0.036	<0.036	<0.037	<0.036	1.4
Fluoranthene	0.14	0.33	0.14	0.20	53.9
Fluorene	0.24	0.40	0.082	0.24	66.8
Indeno(1,2,3-cd)Pyrene	<0.036	<0.036	<0.037	<0.036	1.4
2-methylanthracene	0.055	0.097	<0.037	<0.063	48.7
3-Methylcholanthrene	<0.036	<0.036	<0.037	<0.036	1.4
1-Methylnaphthalene	0.39	0.37	0.18	0.32	36.3
2-Methylnaphthalene	0.78	0.60	0.31	0.56	41.5
1-Methylphenanthrene	0.038	0.068	0.038	0.048	35.4
9-Methylphenanthrene	0.048	0.079	<0.037	<0.055	39.6
Naphthalene	14.7	12.8	13.2	13.6	7.4
Perylene	<0.036	<0.036	<0.037	<0.036	1.4
Phenanthrene	0.64	1.42	0.30	0.79	73.3
Picene	<0.036	<0.036	<0.037	<0.036	1.4
Pyrene	0.19	0.26	0.31	0.25	23.6
Tetralin	56.2	55.0	57.9	56.4	2.6
m-terphenyl	<0.036	0.049	<0.037	<0.040	17.4
o-Terphenyl	<0.036	0.046	<0.037	<0.040	14.2
p-terphenyl	<0.036	<0.036	<0.037	<0.036	1.4
Total	<75.7	<77.0	<74.3	<75.7	1.8

TABLE 60
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Polycyclic Aromatic Hydrocarbon Emission Data

Compound	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	12.1	20.8	14.8	17.1	0.29
Acenaphthylene	3.34	5.73	4.08	4.71	0.081
Anthracene	7.95	13.6	9.70	11.2	0.19
Benzo(a)Anthracene	<1.51	<2.58	<1.84	<2.13	<0.036
Benzo(b)Fluoranthene	<1.51	<2.58	<1.84	<2.13	<0.036
Benzo(j/k)Fluoranthene	<1.51	<2.58	<1.84	<2.13	<0.036
Benzo(a)fluorene	<1.51	<2.58	<1.84	<2.13	<0.036
Benzo(b)fluorene	<1.51	<2.58	<1.84	<2.13	<0.036
Benzo(g,h,i)Perylene	7.78	13.3	9.48	11.0	0.19
Benzo(a)Pyrene	<1.51	<2.58	<1.84	<2.13	<0.036
Benzo(e)Pyrene	<1.51	<2.58	<1.84	<2.13	<0.036
Biphenyl	64.4	112	79.2	91.2	1.57
2-Chloronaphthalene	<1.51	<2.58	<1.84	<2.13	<0.036
Chrysene/Triphenylene	<1.51	<2.58	<1.84	<2.13	<0.036
Coronene	4.94	8.44	6.02	6.97	0.12
Dibenzo(a,c/a,h)Anthracene	<1.51	<2.58	<1.84	<2.13	<0.036
Dibenzo(a,e)pyrene	<1.51	<2.58	<1.84	<2.13	<0.036
9,10-dimethylanthracene	<1.51	<2.58	<1.84	<2.13	<0.036
7,12-Dimethylbenzo(a)anthracene	<1.51	<2.58	<1.84	<2.13	<0.036
Fluoranthene	8.33	14.3	10.2	11.8	0.20
Fluorene	9.93	17.1	12.1	14.0	0.24
Indeno(1,2,3-cd)Pyrene	<1.51	<2.58	<1.84	<2.13	<0.036
2-methylanthracene	<2.60	<4.47	<3.18	<3.67	<0.063
3-Methylcholanthrene	<1.51	<2.58	<1.84	<2.13	<0.036
1-Methylnaphthalene	13.0	22.3	15.9	18.3	0.32
2-Methylnaphthalene	23.2	39.8	28.3	32.7	0.56
1-Methylphenanthrene	1.98	3.41	2.42	2.80	0.048
9-Methylphenanthrene	<2.26	<3.88	<2.76	<3.19	<0.055
Naphthalene	563	964	687	794	13.6
Perylene	<1.51	<2.58	<1.84	<2.13	<0.036
Phenanthrene	32.3	55.7	39.6	45.6	0.79
Picene	<1.51	<2.58	<1.84	<2.13	<0.036
Pyrene	10.5	18.0	12.8	14.8	0.25
Tetralin	2333	3997	2847	3290	56.4
m-terphenyl	<1.67	<2.87	<2.04	<2.36	<0.040
o-Terphenyl	<1.64	<2.81	<2.00	<2.31	<0.040
p-terphenyl	<1.51	<2.58	<1.84	<2.13	<0.036
Total	<3131	<5366	<3821	<4416	<75.7

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 61
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Polycyclic Aromatic Hydrocarbon Analyses

Compound	Blank Train ng	Laboratory Blank ng
Acenaphthene	<12	<12
Acenaphthylene	<12	<12
Anthracene	35.3	<12
Benzo(a)Anthracene	<12	<12
Benzo(b)Fluoranthene	<12	<12
Benzo(j/k)Fluoranthene	<12	<12
Benzo(a)fluorene	<12	<12
Benzo(b)fluorene	<12	<12
Benzo(g,h,i)Perylene	<12	<12
Benzo(a)Pyrene	<12	<12
Benzo(e)Pyrene	<12	<12
Biphenyl	31.3	<12
2-Chloronaphthalene	<12	<12
Chrysene/Triphenylene	<12	<12
Coronene	<12	<12
Dibenzo(a,c/a,h)Anthracene	<12	<12
Dibenzo(a,e)pyrene	<12	<12
9,10-dimethylanthracene	<12	<12
7,12-Dimethylbenzo(a)anthracene	<12	<12
Fluoranthene	<12	<12
Fluorene	<12	<12
Indeno(1,2,3-cd)Pyrene	<12	<12
2-methylanthracene	<12	<12
3-Methylcholanthrene	<12	<12
1-Methylnaphthalene	16.9	<12
2-Methylnaphthalene	18.8	<12
1-Methylphenanthrene	<12	<12
9-Methylphenanthrene	<12	<12
Naphthalene	2800	36.1
Perylene	<12	<12
Phenanthrene	14.1	<12
Picene	<12	<12
Pyrene	<12	<12
Tetralin	13500	<12
m-terphenyl	<12	<12
o-Terphenyl	<12	<12
p-terphenyl	<12	<12
Total	<16776	<468

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

APPENDIX 5

Boiler No. 1 BH Outlet
Data Tables
October 28 to October 29, 2015 Testing
(63 pages)

TABLE 1
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Semi-Volatile Organic Compounds Train Test Schedule

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
4	October 28, 2015	13:15	17:28	240
5	October 29, 2015	8:36	13:50	240
6	October 29, 2015	15:25	19:45	240

* Actual sampling time excluding leak-checks, traverse changes and process down time.

TABLE 2
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Stack Gas Sampling Parameters

Semi-Volatile Organic Compounds Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
4	0.845	0.967	6.54	4.453	100.0
5	0.845	0.967	6.48	4.513	100.9
6	0.845	0.967	6.48	4.511	100.9

* Dry at 25°C and 1 atmosphere

TABLE 3
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Stack Gas Physical Parameters

Semi-Volatile Organics Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
4	142	16.6	16.2	-2.79	96.3	12.2	7.04
5	142	18.2	16.9	-2.69	96.2	12.0	7.32
6	141	17.9	16.7	-2.69	96.5	12.1	7.98
Average	142	17.6	16.6	-2.72	96.3	12.1	7.45

* Dry basis, measured by the DYEC CEMS

TABLE 4
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Stack Gas Volumetric Flowrates

Semi-Volatile Organics Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
4	23.9	13.6	19.1	16.3
5	24.9	13.9	19.1	17.0
6	24.7	13.9	18.1	16.9
Average	24.5	13.8	18.7	16.7

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 5
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 4

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	754	0.096	0.17	0.12	0.14	2.30
Pentachlorodibenzo-p-dioxins	1390	0.18	0.31	0.22	0.26	4.25
Hexachlorodibenzo-p-dioxins	3150	0.40	0.71	0.50	0.59	9.62
Heptachlorodibenzo-p-dioxins	6270	0.80	1.41	1.00	1.17	19.1
Octachlorodibenzo-p-dioxin	5110	0.65	1.15	0.82	0.96	15.6
Total	16674	2.13	3.74	2.67	3.12	50.9

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	1690	0.22	0.38	0.27	0.32	5.16
Pentachlorodibenzofurans	860	0.11	0.19	0.14	0.16	2.63
Hexachlorodibenzofurans	751	0.096	0.17	0.12	0.14	2.29
Heptachlorodibenzofurans	1100	0.14	0.25	0.18	0.21	3.36
Octachlorodibenzofuran	956	0.12	0.21	0.15	0.18	2.92
Total	5357	0.68	1.20	0.86	1.00	16.4

Dry Gas Volume Sampled (Rm³*) :	4.453
Actual Flowrate (m³/s) :	23.9
Dry Reference Flowrate (Rm³/s*) :	13.6
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	16.3

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 6
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 5

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	860	0.11	0.19	0.14	0.16	2.65
Pentachlorodibenzo-p-dioxins	1440	0.18	0.32	0.23	0.26	4.44
Hexachlorodibenzo-p-dioxins	3490	0.43	0.77	0.56	0.63	10.7
Heptachlorodibenzo-p-dioxins	7560	0.94	1.68	1.22	1.37	23.3
Octachlorodibenzo-p-dioxin	6440	0.80	1.43	1.04	1.17	19.8
Total	19790	2.45	4.39	3.19	3.59	61.0

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	2270	0.28	0.50	0.37	0.41	6.99
Pentachlorodibenzofurans	1100	0.14	0.24	0.18	0.20	3.39
Hexachlorodibenzofurans	893	0.11	0.20	0.14	0.16	2.75
Heptachlorodibenzofurans	1400	0.17	0.31	0.23	0.25	4.31
Octachlorodibenzofuran	1180	0.15	0.26	0.19	0.21	3.63
Total	6843	0.85	1.52	1.10	1.24	21.1

Dry Gas Volume Sampled (Rm³*) :	4.513
Actual Flowrate (m³/s) :	24.9
Dry Reference Flowrate (Rm³/s*) :	13.9
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	17.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 7
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 6

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	677	0.084	0.15	0.12	0.12	2.09
Pentachlorodibenzo-p-dioxins	1220	0.15	0.27	0.21	0.22	3.76
Hexachlorodibenzo-p-dioxins	2960	0.37	0.66	0.50	0.54	9.12
Heptachlorodibenzo-p-dioxins	5480	0.68	1.21	0.93	1.00	16.9
Octachlorodibenzo-p-dioxin	4420	0.55	0.98	0.75	0.81	13.6
Total	14757	1.84	3.27	2.51	2.69	45.5

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	1980	0.25	0.44	0.34	0.36	6.10
Pentachlorodibenzofurans	1040	0.13	0.23	0.18	0.19	3.20
Hexachlorodibenzofurans	664	0.083	0.15	0.11	0.12	2.05
Heptachlorodibenzofurans	783	0.098	0.17	0.13	0.14	2.41
Octachlorodibenzofuran	825	0.10	0.18	0.14	0.15	2.54
Total	5292	0.66	1.17	0.90	0.96	16.3

Dry Gas Volume Sampled (Rm³*) :	4.511
Actual Flowrate (m³/s) :	24.7
Dry Reference Flowrate (Rm³/s*) :	13.9
Dry Adjusted Flowrate (Rm³/s**) :	18.1
Wet Reference Flowrate (Rm³/s*) :	16.9

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 8
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Actual Concentrations

Dioxins

Congener Group	Actual Concentration Test No. 4 ng/m³	Test No. 5 ng/m³	Test No. 6 ng/m³	Average ng/m³	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.096	0.11	0.084	0.096	11.5
Pentachlorodibenzo-p-dioxins	0.18	0.18	0.15	0.17	8.8
Hexachlorodibenzo-p-dioxins	0.40	0.43	0.37	0.40	7.8
Heptachlorodibenzo-p-dioxins	0.80	0.94	0.68	0.81	15.6
Octachlorodibenzo-p-dioxin	0.65	0.80	0.55	0.67	18.5
Total	2.13	2.45	1.84	2.14	14.2

Furans

Congener Group	Actual Concentration Test No. 4 ng/m³	Test No. 5 ng/m³	Test No. 6 ng/m³	Average ng/m³	Coefficient of Variation %
Tetrachlorodibenzofurans	0.22	0.28	0.25	0.25	13.1
Pentachlorodibenzofurans	0.11	0.14	0.13	0.13	10.9
Hexachlorodibenzofurans	0.096	0.11	0.083	0.096	14.3
Heptachlorodibenzofurans	0.14	0.17	0.098	0.14	27.6
Octachlorodibenzofuran	0.12	0.15	0.10	0.12	17.4
Total	0.68	0.85	0.66	0.73	13.9

TABLE 9
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Dry Reference Concentrations

Dioxins

Congener Group	Dry Reference Concentration Test No. 4	Test No. 5	Test No. 6	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.17	0.19	0.15	0.17	11.9
Pentachlorodibenzo-p-dioxins	0.31	0.32	0.27	0.30	8.8
Hexachlorodibenzo-p-dioxins	0.71	0.77	0.66	0.71	8.2
Heptachlorodibenzo-p-dioxins	1.41	1.68	1.21	1.43	16.1
Octachlorodibenzo-p-dioxin	1.15	1.43	0.98	1.18	19.1
Total	3.74	4.39	3.27	3.80	14.7

Furans

Congener Group	Dry Reference Concentration Test No. 4	Test No. 5	Test No. 6	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.38	0.50	0.44	0.44	14.0
Pentachlorodibenzofurans	0.19	0.24	0.23	0.22	11.8
Hexachlorodibenzofurans	0.17	0.20	0.15	0.17	14.9
Heptachlorodibenzofurans	0.25	0.31	0.17	0.24	28.1
Octachlorodibenzofuran	0.21	0.26	0.18	0.22	18.0
Total	1.20	1.52	1.17	1.30	14.7

* At 25°C and 1 atmosphere

TABLE 10
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Dry Adjusted Concentrations

Dioxins

Congener Group	Dry Adjusted Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.12	0.14	0.12	0.12	9.8
Pentachlorodibenzo-p-dioxins	0.22	0.23	0.21	0.22	5.6
Hexachlorodibenzo-p-dioxins	0.50	0.56	0.50	0.52	6.5
Heptachlorodibenzo-p-dioxins	1.00	1.22	0.93	1.05	14.2
Octachlorodibenzo-p-dioxin	0.82	1.04	0.75	0.87	17.3
Total	2.67	3.19	2.51	2.79	12.8

Furans

Congener Group	Dry Adjusted Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.27	0.37	0.34	0.32	15.1
Pentachlorodibenzofurans	0.14	0.18	0.18	0.16	14.0
Hexachlorodibenzofurans	0.12	0.14	0.11	0.13	12.9
Heptachlorodibenzofurans	0.18	0.23	0.13	0.18	26.0
Octachlorodibenzofuran	0.15	0.19	0.14	0.16	16.1
Total	0.86	1.10	0.90	0.95	13.8

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 11
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Wet Reference Concentrations

Dioxins

Congener Group	Wet Reference Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.14	0.16	0.12	0.14	11.6
Pentachlorodibenzo-p-dioxins	0.26	0.26	0.22	0.25	8.9
Hexachlorodibenzo-p-dioxins	0.59	0.63	0.54	0.59	7.9
Heptachlorodibenzo-p-dioxins	1.17	1.37	1.00	1.18	15.7
Octachlorodibenzo-p-dioxin	0.96	1.17	0.81	0.98	18.6
Total	3.12	3.59	2.69	3.13	14.3

Furans

Congener Group	Wet Reference Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.32	0.41	0.36	0.36	13.0
Pentachlorodibenzofurans	0.16	0.20	0.19	0.18	10.8
Hexachlorodibenzofurans	0.14	0.16	0.12	0.14	14.4
Heptachlorodibenzofurans	0.21	0.25	0.14	0.20	27.7
Octachlorodibenzofuran	0.18	0.21	0.15	0.18	17.5
Total	1.00	1.24	0.96	1.07	13.9

* At 25°C and 1 atmosphere

TABLE 12
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Congener Group Emission Rates

Dioxins

Congener Group	Emission Rate Test No. 4 ng/s	Test No. 5 ng/s	Test No. 6 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	2.30	2.65	2.09	2.35	12.1
Pentachlorodibenzo-p-dioxins	4.25	4.44	3.76	4.15	8.4
Hexachlorodibenzo-p-dioxins	9.62	10.7	9.12	9.83	8.5
Heptachlorodibenzo-p-dioxins	19.1	23.3	16.9	19.8	16.4
Octachlorodibenzo-p-dioxin	15.6	19.8	13.6	16.4	19.4
Total	50.9	61.0	45.5	52.4	15.0

Furans

Congener Group	Emission Rate Test No. 4 ng/s	Test No. 5 ng/s	Test No. 6 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzofurans	5.16	6.99	6.10	6.08	15.0
Pentachlorodibenzofurans	2.63	3.39	3.20	3.07	12.9
Hexachlorodibenzofurans	2.29	2.75	2.05	2.36	15.1
Heptachlorodibenzofurans	3.36	4.31	2.41	3.36	28.3
Octachlorodibenzofuran	2.92	3.63	2.54	3.03	18.3
Total	16.4	21.1	16.3	17.9	15.3

TABLE 13
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Congener Group Emission Data

Dioxins

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.096	0.17	0.12	0.14	2.35
Pentachlorodibenzo-p-dioxins	0.17	0.30	0.22	0.25	4.15
Hexachlorodibenzo-p-dioxins	0.40	0.71	0.52	0.59	9.83
Heptachlorodibenzo-p-dioxins	0.81	1.43	1.05	1.18	19.8
Octachlorodibenzo-p-dioxin	0.67	1.18	0.87	0.98	16.4
Total	2.14	3.80	2.79	3.13	52.4

Furans

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	0.25	0.44	0.32	0.36	6.08
Pentachlorodibenzofurans	0.13	0.22	0.16	0.18	3.07
Hexachlorodibenzofurans	0.096	0.17	0.13	0.14	2.36
Heptachlorodibenzofurans	0.14	0.24	0.18	0.20	3.36
Octachlorodibenzofuran	0.12	0.22	0.16	0.18	3.03
Total	0.73	1.30	0.95	1.07	17.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 14
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Dioxin and Furan Congener Group Analyses

Dioxins

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzo-p-dioxins	<7.6	<5.3
Pentachlorodibenzo-p-dioxins	<3.4	<2.4
Hexachlorodibenzo-p-dioxins	<3.4	<2.8
Heptachlorodibenzo-p-dioxins	<4.2	<2.9
Octachlorodibenzo-p-dioxin	3.71	<3.2
Total	<22.3	<16.6

Furans

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzofurans	<5.3	<4.0
Pentachlorodibenzofurans	<2.8	<2.4
Hexachlorodibenzofurans	<2.2	<2.0
Heptachlorodibenzofurans	<3.4	<2.1
Octachlorodibenzofuran	<3.5	<3.4
Total	<17.2	<13.9

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

TABLE 15
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 4

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<7.6	<0.97	<1.71	<1.22	<1.42	<0.023
12378-pentachlorodibenzo-p-dioxin	27.0	3.45	6.06	4.32	5.06	0.082
123478-hexachlorodibenzo-p-dioxin	62.1	7.94	13.9	9.93	11.6	0.19
123678-hexachlorodibenzo-p-dioxin	183	23.4	41.1	29.3	34.3	0.56
123789-hexachlorodibenzo-p-dioxin	94.6	12.1	21.2	15.1	17.7	0.29
1234678-heptachlorodibenzo-p-dioxin	2700	345	606	432	506	8.25
Octachlorodibenzo-p-dioxin	5110	653	1148	817	957	15.6
2378-tetrachlorodibenzofuran	<30	<3.83	<6.74	<4.80	<5.62	<0.092
12378-pentachlorodibenzofuran	43.3	5.53	9.72	6.92	8.11	0.13
23478-pentachlorodibenzofuran	69.9	8.93	15.7	11.2	13.1	0.21
123478-hexachlorodibenzofuran	54.3	6.94	12.2	8.68	10.2	0.17
123678-hexachlorodibenzofuran	69.8	8.92	15.7	11.2	13.1	0.21
234678-hexachlorodibenzofuran	113	14.4	25.4	18.1	21.2	0.35
123789-hexachlorodibenzofuran	28.7	3.67	6.45	4.59	5.38	0.088
1234678-heptachlorodibenzofuran	585	74.8	131	93.5	110	1.79
1234789-heptachlorodibenzofuran	101	12.9	22.7	16.2	18.9	0.31
Octachlorodibenzofuran	956	122	215	153	179	2.92
PCB 81	<65	<8.31	<14.6	<10.4	<12.2	<0.20
PCB 77	279	35.7	62.7	44.6	52.3	0.85
PCB 123	<180	<23.0	<40.4	<28.8	<33.7	<0.55
PCB 118	<150	<19.2	<33.7	<24.0	<28.1	<0.46
PCB 114	111	14.2	24.9	17.7	20.8	0.34
PCB 105	466	59.5	105	74.5	87.3	1.42
PCB 126	<93	<11.9	<20.9	<14.9	<17.4	<0.28
PCB 167	<33	<4.22	<7.41	<5.28	<6.18	<0.10
PCB 156	92.0	11.8	20.7	14.7	17.2	0.28
PCB 157	<45	<5.75	<10.1	<7.20	<8.43	<0.14
PCB 169	<14	<1.79	<3.14	<2.24	<2.62	<0.043
PCB 189	<42	<5.37	<9.43	<6.72	<7.87	<0.13
Total Dioxins & Furans Only	<10235	<1308	<2299	<1637	<1918	<31.3
Total PCBs Only	<1570	<201	<353	<251	<294	<4.79
Total Dioxins & Furans and PCBs	<11805	<1509	<2651	<1888	<2212	<36.1

Dry Gas Volume Sampled (Rm³*) :	4.453
Actual Flowrate (m³/s) :	23.9
Dry Reference Flowrate (Rm³/s*) :	13.6
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	16.3

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 16
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 5

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	8.50	1.05	1.88	1.37	1.54	0.026
12378-pentachlorodibenzo-p-dioxin	33.1	4.09	7.33	5.34	6.00	0.10
123478-hexachlorodibenzo-p-dioxin	64.2	7.94	14.2	10.4	11.6	0.20
123678-hexachlorodibenzo-p-dioxin	205	25.4	45.4	33.1	37.1	0.63
123789-hexachlorodibenzo-p-dioxin	<97	<12.0	<21.5	<15.6	<17.6	<0.30
1234678-heptachlorodibenzo-p-dioxin	3180	393	705	513	576	9.79
Octachlorodibenzo-p-dioxin	6440	797	1427	1038	1167	19.8
2378-tetrachlorodibenzofuran	<27	<3.34	<5.98	<4.35	<4.89	<0.083
12378-pentachlorodibenzofuran	<37	<4.58	<8.20	<5.97	<6.70	<0.11
23478-pentachlorodibenzofuran	79.1	9.78	17.5	12.8	14.3	0.24
123478-hexachlorodibenzofuran	56.5	6.99	12.5	9.11	10.2	0.17
123678-hexachlorodibenzofuran	77.9	9.64	17.3	12.6	14.1	0.24
234678-hexachlorodibenzofuran	129	16.0	28.6	20.8	23.4	0.40
123789-hexachlorodibenzofuran	29.8	3.69	6.60	4.81	5.40	0.092
1234678-heptachlorodibenzofuran	773	95.6	171	125	140	2.38
1234789-heptachlorodibenzofuran	104	12.9	23.0	16.8	18.8	0.32
Octachlorodibenzofuran	1180	146	261	190	214	3.63
PCB 81	<66	<8.16	<14.6	<10.6	<12.0	<0.20
PCB 77	299	37.0	66.3	48.2	54.2	0.92
PCB 123	149	18.4	33.0	24.0	27.0	0.46
PCB 118	1110	137	246	179	201	3.42
PCB 114	82.4	10.2	18.3	13.3	14.9	0.25
PCB 105	<370	<45.8	<82.0	<59.7	<67.0	<1.14
PCB 126	<91	<11.3	<20.2	<14.7	<16.5	<0.28
PCB 167	<32	<3.96	<7.09	<5.16	<5.80	<0.099
PCB 156	96.3	11.9	21.3	15.5	17.4	0.30
PCB 157	<47	<5.81	<10.4	<7.58	<8.52	<0.14
PCB 169	27.4	3.39	6.07	4.42	4.96	0.084
PCB 189	<50	<6.18	<11.1	<8.06	<9.06	<0.15
Total Dioxins & Furans Only	<12521	<1549	<2774	<2019	<2269	<38.6
Total PCBs Only	<2420	<299	<536	<390	<438	<7.45
Total Dioxins & Furans and PCBs	<14941	<1848	<3311	<2409	<2707	<46.0

Dry Gas Volume Sampled (Rm³*) :	4.513
Actual Flowrate (m³/s) :	24.9
Dry Reference Flowrate (Rm³/s*) :	13.9
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	17.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 17
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 6

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<6.7	<0.84	<1.49	<1.14	<1.22	<0.021
12378-pentachlorodibenzo-p-dioxin	22.8	2.84	5.05	3.88	4.16	0.070
123478-hexachlorodibenzo-p-dioxin	51.1	6.37	11.3	8.70	9.32	0.16
123678-hexachlorodibenzo-p-dioxin	164	20.5	36.4	27.9	29.9	0.51
123789-hexachlorodibenzo-p-dioxin	97.6	12.2	21.6	16.6	17.8	0.30
1234678-heptachlorodibenzo-p-dioxin	2320	289	514	395	423	7.15
Octachlorodibenzo-p-dioxin	4420	551	980	752	806	13.6
2378-tetrachlorodibenzofuran	<25	<3.12	<5.54	<4.26	<4.56	<0.077
12378-pentachlorodibenzofuran	47.4	5.91	10.5	8.07	8.64	0.15
23478-pentachlorodibenzofuran	74.1	9.24	16.4	12.6	13.5	0.23
123478-hexachlorodibenzofuran	<44	<5.49	<9.75	<7.49	<8.02	<0.14
123678-hexachlorodibenzofuran	61.4	7.66	13.6	10.5	11.2	0.19
234678-hexachlorodibenzofuran	105	13.1	23.3	17.9	19.1	0.32
123789-hexachlorodibenzofuran	27.0	3.37	5.99	4.60	4.92	0.083
1234678-heptachlorodibenzofuran	532	66.4	118	90.6	97.0	1.64
1234789-heptachlorodibenzofuran	75.0	9.36	16.6	12.8	13.7	0.23
Octachlorodibenzofuran	825	103	183	140	150	2.54
PCB 81	<89	<11.1	<19.7	<15.2	<16.2	<0.27
PCB 77	240	29.9	53.2	40.9	43.8	0.74
PCB 123	<120	<15.0	<26.6	<20.4	<21.9	<0.37
PCB 118	1160	145	257	197	212	3.57
PCB 114	104	13.0	23.1	17.7	19.0	0.32
PCB 105	474	59.1	105	80.7	86.4	1.46
PCB 126	<86	<10.7	<19.1	<14.6	<15.7	<0.26
PCB 167	<26	<3.24	<5.76	<4.43	<4.74	<0.080
PCB 156	<52	<6.49	<11.5	<8.85	<9.48	<0.16
PCB 157	<47	<5.86	<10.4	<8.00	<8.57	<0.14
PCB 169	<31	<3.87	<6.87	<5.28	<5.65	<0.096
PCB 189	49.4	6.16	11.0	8.41	9.01	0.15
Total Dioxins & Furans Only	<8898	<1110	<1973	<1515	<1622	<27.4
Total PCBs Only	<2478	<309	<549	<422	<452	<7.64
Total Dioxins & Furans and PCBs	<11377	<1419	<2522	<1937	<2074	<35.1

Dry Gas Volume Sampled (Rm³*) :	4.511
Actual Flowrate (m³/s) :	24.7
Dry Reference Flowrate (Rm³/s*) :	13.9
Dry Adjusted Flowrate (Rm³/s**) :	18.1
Wet Reference Flowrate (Rm³/s*) :	16.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 18
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration Test No. 4 pg/m³	Test No. 5 pg/m³	Test No. 6 pg/m³	Average pg/m³	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.97	1.05	<0.84	<0.95	11.4
12378-pentachlorodibenzo-p-dioxin	3.45	4.09	2.84	3.46	18.1
123478-hexachlorodibenzo-p-dioxin	7.94	7.94	6.37	7.42	12.2
123678-hexachlorodibenzo-p-dioxin	23.4	25.4	20.5	23.1	10.7
123789-hexachlorodibenzo-p-dioxin	12.1	<12.0	12.2	<12.1	0.7
1234678-heptachlorodibenzo-p-dioxin	345	393	289	343	15.2
Octachlorodibenzo-p-dioxin	653	797	551	667	18.5
2378-tetrachlorodibenzofuran	<3.83	<3.34	<3.12	<3.43	10.7
12378-pentachlorodibenzofuran	5.53	<4.58	5.91	<5.34	12.9
23478-pentachlorodibenzofuran	8.93	9.78	9.24	9.32	4.6
123478-hexachlorodibenzofuran	6.94	6.99	<5.49	<6.47	13.2
123678-hexachlorodibenzofuran	8.92	9.64	7.66	8.74	11.4
234678-hexachlorodibenzofuran	14.4	16.0	13.1	14.5	9.9
123789-hexachlorodibenzofuran	3.67	3.69	3.37	3.57	5.0
1234678-heptachlorodibenzofuran	74.8	95.6	66.4	78.9	19.1
1234789-heptachlorodibenzofuran	12.9	12.9	9.36	11.7	17.4
Octachlorodibenzofuran	122	146	103	124	17.4
PCB 81	<8.31	<8.16	<11.1	<9.19	18.0
PCB 77	35.7	37.0	29.9	34.2	10.9
PCB 123	<23.0	18.4	<15.0	<18.8	21.4
PCB 118	<19.2	137	145	<100	70.2
PCB 114	14.2	10.2	13.0	12.5	16.4
PCB 105	59.5	<45.8	59.1	<54.8	14.3
PCB 126	<11.9	<11.3	<10.7	<11.3	5.1
PCB 167	<4.22	<3.96	<3.24	<3.81	13.2
PCB 156	11.8	11.9	<6.49	<10.1	30.7
PCB 157	<5.75	<5.81	<5.86	<5.81	1.0
PCB 169	<1.79	3.39	<3.87	<3.02	36.1
PCB 189	<5.37	<6.18	6.16	<5.90	7.9
Total Dioxins & Furans Only	<1308	<1549	<1110	<1322	16.6
Total PCBs Only	<201	<299	<309	<270	22.3
Total Dioxins & Furans and PCBs	<1509	<1848	<1419	<1592	14.2

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 19
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration Test No. 4 pg/Rm³*	Test No. 5 pg/Rm³*	Test No. 6 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<1.71	1.88	<1.49	<1.69	11.8
12378-pentachlorodibenzo-p-dioxin	6.06	7.33	5.05	6.15	18.6
123478-hexachlorodibenzo-p-dioxin	13.9	14.2	11.3	13.2	12.1
123678-hexachlorodibenzo-p-dioxin	41.1	45.4	36.4	41.0	11.1
123789-hexachlorodibenzo-p-dioxin	21.2	<21.5	21.6	<21.5	0.9
1234678-heptachlorodibenzo-p-dioxin	606	705	514	608	15.6
Octachlorodibenzo-p-dioxin	1148	1427	980	1185	19.1
2378-tetrachlorodibenzofuran	<6.74	<5.98	<5.54	<6.09	9.9
12378-pentachlorodibenzofuran	9.72	<8.20	10.5	<9.48	12.4
23478-pentachlorodibenzofuran	15.7	17.5	16.4	16.6	5.6
123478-hexachlorodibenzofuran	12.2	12.5	<9.75	<11.5	13.2
123678-hexachlorodibenzofuran	15.7	17.3	13.6	15.5	11.8
234678-hexachlorodibenzofuran	25.4	28.6	23.3	25.7	10.4
123789-hexachlorodibenzofuran	6.45	6.60	5.99	6.34	5.1
1234678-heptachlorodibenzofuran	131	171	118	140	19.8
1234789-heptachlorodibenzofuran	22.7	23.0	16.6	20.8	17.3
Octachlorodibenzofuran	215	261	183	220	18.0
PCB 81	<14.6	<14.6	<19.7	<16.3	18.1
PCB 77	62.7	66.3	53.2	60.7	11.1
PCB 123	<40.4	33.0	<26.6	<33.3	20.7
PCB 118	<33.7	246	257	<179	70.4
PCB 114	24.9	18.3	23.1	22.1	15.6
PCB 105	105	<82.0	105	<97.2	13.6
PCB 126	<20.9	<20.2	<19.1	<20.0	4.6
PCB 167	<7.41	<7.09	<5.76	<6.76	12.9
PCB 156	20.7	21.3	<11.5	<17.8	30.7
PCB 157	<10.1	<10.4	<10.4	<10.3	1.7
PCB 169	<3.14	6.07	<6.87	<5.36	36.6
PCB 189	<9.43	<11.1	11.0	<10.5	8.7
Total Dioxins & Furans Only	<2299	<2774	<1973	<2349	17.2
Total PCBs Only	<353	<536	<549	<479	23.0
Total Dioxins & Furans and PCBs	<2651	<3311	<2522	<2828	15.0

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 20
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration Test No. 4	Test No. 5	Test No. 6	Average	Coefficient of Variation
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<1.22	1.37	<1.14	<1.24	9.4
12378-pentachlorodibenzo-p-dioxin	4.32	5.34	3.88	4.51	16.6
123478-hexachlorodibenzo-p-dioxin	9.93	10.4	8.70	9.66	8.9
123678-hexachlorodibenzo-p-dioxin	29.3	33.1	27.9	30.1	8.9
123789-hexachlorodibenzo-p-dioxin	15.1	<15.6	16.6	<15.8	4.8
1234678-heptachlorodibenzo-p-dioxin	432	513	395	446	13.5
Octachlorodibenzo-p-dioxin	817	1038	752	869	17.3
2378-tetrachlorodibenzofuran	<4.80	<4.35	<4.26	<4.47	6.5
12378-pentachlorodibenzofuran	6.92	<5.97	8.07	<6.99	15.1
23478-pentachlorodibenzofuran	11.2	12.8	12.6	12.2	7.2
123478-hexachlorodibenzofuran	8.68	9.11	<7.49	<8.43	10.0
123678-hexachlorodibenzofuran	11.2	12.6	10.5	11.4	9.4
234678-hexachlorodibenzofuran	18.1	20.8	17.9	18.9	8.7
123789-hexachlorodibenzofuran	4.59	4.81	4.60	4.66	2.6
1234678-heptachlorodibenzofuran	93.5	125	90.6	103	18.3
1234789-heptachlorodibenzofuran	16.2	16.8	12.8	15.2	14.1
Octachlorodibenzofuran	153	190	140	161	16.1
PCB 81	<10.4	<10.6	<15.2	<12.1	22.2
PCB 77	44.6	48.2	40.9	44.6	8.3
PCB 123	<28.8	24.0	<20.4	<24.4	17.2
PCB 118	<24.0	179	197	<133	71.4
PCB 114	17.7	13.3	17.7	16.2	15.8
PCB 105	74.5	<59.7	80.7	<71.6	15.1
PCB 126	<14.9	<14.7	<14.6	<14.7	0.8
PCB 167	<5.28	<5.16	<4.43	<4.95	9.3
PCB 156	14.7	15.5	<8.85	<13.0	27.9
PCB 157	<7.20	<7.58	<8.00	<7.59	5.3
PCB 169	<2.24	4.42	<5.28	<3.98	39.4
PCB 189	<6.72	<8.06	8.41	<7.73	11.6
Total Dioxins & Furans Only	<1637	<2019	<1515	<1724	15.3
Total PCBs Only	<251	<390	<422	<354	25.6
Total Dioxins & Furans and PCBs	<1888	<2409	<1937	<2078	13.9

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 21
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration Test No. 4	Test No. 5	Test No. 6	Average	Coefficient of Variation
	pg/Rm^3*	pg/Rm^3*	pg/Rm^3*	pg/Rm^3*	%
2378-tetrachlorodibenzo-p-dioxin	<1.42	1.54	<1.22	<1.40	11.5
12378-pentachlorodibenzo-p-dioxin	5.06	6.00	4.16	5.07	18.1
123478-hexachlorodibenzo-p-dioxin	11.6	11.6	9.32	10.9	12.3
123678-hexachlorodibenzo-p-dioxin	34.3	37.1	29.9	33.8	10.8
123789-hexachlorodibenzo-p-dioxin	17.7	<17.6	17.8	<17.7	0.6
1234678-heptachlorodibenzo-p-dioxin	506	576	423	502	15.3
Octachlorodibenzo-p-dioxin	957	1167	806	977	18.6
2378-tetrachlorodibenzofuran	<5.62	<4.89	<4.56	<5.02	10.8
12378-pentachlorodibenzofuran	8.11	<6.70	8.64	<7.82	12.8
23478-pentachlorodibenzofuran	13.1	14.3	13.5	13.6	4.6
123478-hexachlorodibenzofuran	10.2	10.2	<8.02	<9.48	13.3
123678-hexachlorodibenzofuran	13.1	14.1	11.2	12.8	11.6
234678-hexachlorodibenzofuran	21.2	23.4	19.1	21.2	10.0
123789-hexachlorodibenzofuran	5.38	5.40	4.92	5.23	5.1
1234678-heptachlorodibenzofuran	110	140	97.0	116	19.2
1234789-heptachlorodibenzofuran	18.9	18.8	13.7	17.1	17.5
Octachlorodibenzofuran	179	214	150	181	17.5
PCB 81	<12.2	<12.0	<16.2	<13.5	17.9
PCB 77	52.3	54.2	43.8	50.1	11.1
PCB 123	<33.7	27.0	<21.9	<27.5	21.6
PCB 118	<28.1	201	212	<147	70.1
PCB 114	20.8	14.9	19.0	18.2	16.5
PCB 105	87.3	<67.0	86.4	<80.3	14.3
PCB 126	<17.4	<16.5	<15.7	<16.5	5.3
PCB 167	<6.18	<5.80	<4.74	<5.57	13.4
PCB 156	17.2	17.4	<9.48	<14.7	30.8
PCB 157	<8.43	<8.52	<8.57	<8.51	0.8
PCB 169	<2.62	4.96	<5.65	<4.41	36.0
PCB 189	<7.87	<9.06	9.01	<8.65	7.8
Total Dioxins & Furans Only	<1918	<2269	<1622	<1936	16.7
Total PCBs Only	<294	<438	<452	<395	22.1
Total Dioxins & Furans and PCBs	<2212	<2707	<2074	<2331	14.3

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 22
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Specific Isomer Emission Rates

Specific Isomer	Emission Rate Test No. 4 ng/s	Test No. 5 ng/s	Test No. 6 ng/s	Average ng/s	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.023	0.026	<0.021	<0.023	11.9
12378-pentachlorodibenzo-p-dioxin	0.082	0.10	0.070	0.085	18.8
123478-hexachlorodibenzo-p-dioxin	0.19	0.20	0.16	0.18	11.7
123678-hexachlorodibenzo-p-dioxin	0.56	0.63	0.51	0.57	11.2
123789-hexachlorodibenzo-p-dioxin	0.29	<0.30	0.30	<0.30	2.1
1234678-heptachlorodibenzo-p-dioxin	8.25	9.79	7.15	8.40	15.8
Octachlorodibenzo-p-dioxin	15.6	19.8	13.6	16.4	19.4
2378-tetrachlorodibenzofuran	<0.092	<0.083	<0.077	<0.084	8.7
12378-pentachlorodibenzofuran	0.13	<0.11	0.15	<0.13	12.3
23478-pentachlorodibenzofuran	0.21	0.24	0.23	0.23	6.6
123478-hexachlorodibenzofuran	0.17	0.17	<0.14	<0.16	12.8
123678-hexachlorodibenzofuran	0.21	0.24	0.19	0.21	11.9
234678-hexachlorodibenzofuran	0.35	0.40	0.32	0.36	10.7
123789-hexachlorodibenzofuran	0.088	0.092	0.083	0.088	4.9
1234678-heptachlorodibenzofuran	1.79	2.38	1.64	1.94	20.3
1234789-heptachlorodibenzofuran	0.31	0.32	0.23	0.29	16.9
Octachlorodibenzofuran	2.92	3.63	2.54	3.03	18.3
PCB 81	<0.20	<0.20	<0.27	<0.23	18.8
PCB 77	0.85	0.92	0.74	0.84	10.9
PCB 123	<0.55	0.46	<0.37	<0.46	19.6
PCB 118	<0.46	3.42	3.57	<2.48	70.7
PCB 114	0.34	0.25	0.32	0.30	14.7
PCB 105	1.42	<1.14	1.46	<1.34	13.1
PCB 126	<0.28	<0.28	<0.26	<0.28	3.6
PCB 167	<0.10	<0.099	<0.080	<0.093	12.2
PCB 156	0.28	0.30	<0.16	<0.25	30.3
PCB 157	<0.14	<0.14	<0.14	<0.14	3.0
PCB 169	<0.043	0.084	<0.096	<0.074	37.5
PCB 189	<0.13	<0.15	0.15	<0.14	9.9
Total Dioxins & Furans Only	<31.3	<38.6	<27.4	<32.4	17.5
Total PCBs Only	<4.79	<7.45	<7.64	<6.63	24.0
Total Dioxins & Furans and PCBs	<36.1	<46.0	<35.1	<39.0	15.5

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 23
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Specific Isomer Emission Data

Specific Isomer	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.95	<1.69	<1.24	<1.40	<0.023
12378-pentachlorodibenzo-p-dioxin	3.46	6.15	4.51	5.07	0.085
123478-hexachlorodibenzo-p-dioxin	7.42	13.2	9.66	10.9	0.18
123678-hexachlorodibenzo-p-dioxin	23.1	41.0	30.1	33.8	0.57
123789-hexachlorodibenzo-p-dioxin	<12.1	<21.5	<15.8	<17.7	<0.30
1234678-heptachlorodibenzo-p-dioxin	343	608	446	502	8.40
Octachlorodibenzo-p-dioxin	667	1185	869	977	16.4
2378-tetrachlorodibenzofuran	<3.43	<6.09	<4.47	<5.02	<0.084
12378-pentachlorodibenzofuran	<5.34	<9.48	<6.99	<7.82	<0.13
23478-pentachlorodibenzofuran	9.32	16.6	12.2	13.6	0.23
123478-hexachlorodibenzofuran	<6.47	<11.5	<8.43	<9.48	<0.16
123678-hexachlorodibenzofuran	8.74	15.5	11.4	12.8	0.21
234678-hexachlorodibenzofuran	14.5	25.7	18.9	21.2	0.36
123789-hexachlorodibenzofuran	3.57	6.34	4.66	5.23	0.088
1234678-heptachlorodibenzofuran	78.9	140	103	116	1.94
1234789-heptachlorodibenzofuran	11.7	20.8	15.2	17.1	0.29
Octachlorodibenzofuran	124	220	161	181	3.03
PCB 81	<9.19	<16.3	<12.1	<13.5	<0.23
PCB 77	34.2	60.7	44.6	50.1	0.84
PCB 123	<18.8	<33.3	<24.4	<27.5	<0.46
PCB 118	<100	<179	<133	<147	<2.48
PCB 114	12.5	22.1	16.2	18.2	0.30
PCB 105	<54.8	<97.2	<71.6	<80.3	<1.34
PCB 126	<11.3	<20.0	<14.7	<16.5	<0.28
PCB 167	<3.81	<6.76	<4.95	<5.57	<0.093
PCB 156	<10.1	<17.8	<13.0	<14.7	<0.25
PCB 157	<5.81	<10.3	<7.59	<8.51	<0.14
PCB 169	<3.02	<5.36	<3.98	<4.41	<0.074
PCB 189	<5.90	<10.5	<7.73	<8.65	<0.14
Total Dioxins & Furans Only	<1322	<2349	<1724	<1936	<32.4
Total PCBs Only	<270	<479	<354	<395	<6.63
Total Dioxins & Furans and PCBs	<1592	<2828	<2078	<2331	<39.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 24
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Dioxin and Furan Specific Isomer Analyses

Specific Isomer	Blank Train pg	Laboratory Blank pg
2378-tetrachlorodibenzo-p-dioxin	<7.6	<5.3
12378-pentachlorodibenzo-p-dioxin	<3.4	<2.4
123478-hexachlorodibenzo-p-dioxin	<3.3	<2.7
123678-hexachlorodibenzo-p-dioxin	<3.4	<2.8
123789-hexachlorodibenzo-p-dioxin	<3.4	<2.8
1234678-heptachlorodibenzo-p-dioxin	<4.2	<2.9
Octachlorodibenzo-p-dioxin	3.71	<3.2
2378-tetrachlorodibenzofuran	<5.3	<4.0
12378-pentachlorodibenzofuran	<2.8	<2.4
23478-pentachlorodibenzofuran	<2.7	<2.3
123478-hexachlorodibenzofuran	<2.1	<1.9
123678-hexachlorodibenzofuran	<2.0	<1.8
234678-hexachlorodibenzofuran	<2.0	<1.8
123789-hexachlorodibenzofuran	<2.2	<2.0
1234678-heptachlorodibenzofuran	<2.8	<1.8
1234789-heptachlorodibenzofuran	<3.4	<2.1
Octachlorodibenzofuran	<3.5	<3.4
PCB 81	<12	<3.0
PCB 77	19.1	<3.0
PCB 123	40.9	<2.7
PCB 118	304	<2.2
PCB 114	<8.0	<2.3
PCB 105	91.0	<2.4
PCB 126	<8.6	<2.7
PCB 167	<4.8	<2.9
PCB 156	<4.3	<2.7
PCB 157	<4.8	<2.9
PCB 169	<5.2	<3.2
PCB 189	<1.6	<2.5
Total Dioxins & Furans Only	<57.8	<45.6
Total PCBs Only	<504	<32.5
Total Dioxins & Furans and PCBs	<562	<78.1

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

TABLE 25
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Actual Concentrations

Specific Isomer	Toxicity Equivalency Factor	Actual Concentration Test No. 4 pg TEQ/m³	Test No. 5 pg TEQ/m³	Test No. 6 pg TEQ/m³	Average pg TEQ/m³
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.97	1.05	<0.84	<0.95
12378-pentachlorodibenzo-p-dioxin	1.000	3.45	4.09	2.84	3.46
123478-hexachlorodibenzo-p-dioxin	0.100	0.79	0.79	0.64	0.74
123678-hexachlorodibenzo-p-dioxin	0.100	2.34	2.54	2.05	2.31
123789-hexachlorodibenzo-p-dioxin	0.100	1.21	<1.20	1.22	<1.21
1234678-heptachlorodibenzo-p-dioxin	0.010	3.45	3.93	2.89	3.43
Octachlorodibenzo-p-dioxin	0.0003	0.20	0.24	0.17	0.20
2378-tetrachlorodibenzofuran	0.100	<0.38	<0.33	<0.31	<0.34
12378-pentachlorodibenzofuran	0.030	0.17	<0.14	0.18	<0.16
23478-pentachlorodibenzofuran	0.300	2.68	2.94	2.77	2.80
123478-hexachlorodibenzofuran	0.100	0.69	0.70	<0.55	<0.65
123678-hexachlorodibenzofuran	0.100	0.89	0.96	0.77	0.87
234678-hexachlorodibenzofuran	0.100	1.44	1.60	1.31	1.45
123789-hexachlorodibenzofuran	0.100	0.37	0.37	0.34	0.36
1234678-heptachlorodibenzofuran	0.010	0.75	0.96	0.66	0.79
1234789-heptachlorodibenzofuran	0.010	0.13	0.13	0.094	0.12
Octachlorodibenzofuran	0.0003	0.037	0.044	0.031	0.037
PCB 81	0.0003	<0.0025	<0.0024	<0.0033	<0.0028
PCB 77	0.0001	0.0036	0.0037	0.0030	0.0034
PCB 123	0.00003	<0.00069	0.00055	<0.00045	<0.00056
PCB 118	0.00003	<0.00058	0.0041	0.0043	<0.0030
PCB 114	0.00003	0.00043	0.00031	0.00039	0.00037
PCB 105	0.00003	0.0018	<0.0014	0.0018	<0.0016
PCB 126	0.100	<1.19	<1.13	<1.07	<1.13
PCB 167	0.00003	<0.00013	<0.00012	<0.000097	<0.00011
PCB 156	0.00003	0.00035	0.00036	<0.00019	<0.00030
PCB 157	0.00003	<0.00017	<0.00017	<0.00018	<0.00017
PCB 169	0.030	<0.054	0.10	<0.12	<0.090
PCB 189	0.00003	<0.00016	<0.00019	0.00018	<0.00018
Total Dioxins & Furans Only		<19.9	<22.0	<17.7	<19.9
Total PCBs Only		<1.25	<1.24	<1.20	<1.23
Total Dioxins & Furans and PCBs		<21.2	<23.3	<18.9	<21.1

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 26
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Dry Reference Concentration			
		Test No. 4 pg TEQ/Rm³*	Test No. 5 pg TEQ/Rm³*	Test No. 6 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.71	1.88	<1.49	<1.69
12378-pentachlorodibenzo-p-dioxin	1.000	6.06	7.33	5.05	6.15
123478-hexachlorodibenzo-p-dioxin	0.100	1.39	1.42	1.13	1.32
123678-hexachlorodibenzo-p-dioxin	0.100	4.11	4.54	3.64	4.10
123789-hexachlorodibenzo-p-dioxin	0.100	2.12	<2.15	2.16	<2.15
1234678-heptachlorodibenzo-p-dioxin	0.010	6.06	7.05	5.14	6.08
Octachlorodibenzo-p-dioxin	0.0003	0.34	0.43	0.29	0.36
2378-tetrachlorodibenzofuran	0.100	<0.67	<0.60	<0.55	<0.61
12378-pentachlorodibenzofuran	0.030	0.29	<0.25	0.32	<0.28
23478-pentachlorodibenzofuran	0.300	4.71	5.26	4.93	4.97
123478-hexachlorodibenzofuran	0.100	1.22	1.25	<0.98	<1.15
123678-hexachlorodibenzofuran	0.100	1.57	1.73	1.36	1.55
234678-hexachlorodibenzofuran	0.100	2.54	2.86	2.33	2.57
123789-hexachlorodibenzofuran	0.100	0.64	0.66	0.60	0.63
1234678-heptachlorodibenzofuran	0.010	1.31	1.71	1.18	1.40
1234789-heptachlorodibenzofuran	0.010	0.23	0.23	0.17	0.21
Octachlorodibenzofuran	0.0003	0.064	0.078	0.055	0.066
PCB 81	0.0003	<0.0044	<0.0044	<0.0059	<0.0049
PCB 77	0.0001	0.0063	0.0066	0.0053	0.0061
PCB 123	0.00003	<0.0012	0.00099	<0.00080	<0.0010
PCB 118	0.00003	<0.0010	0.0074	0.0077	<0.0054
PCB 114	0.00003	0.00075	0.00055	0.00069	0.00066
PCB 105	0.00003	0.0031	<0.0025	0.0032	<0.0029
PCB 126	0.100	<2.09	<2.02	<1.91	<2.00
PCB 167	0.00003	<0.00022	<0.00021	<0.00017	<0.00020
PCB 156	0.00003	0.00062	0.00064	<0.00035	<0.00054
PCB 157	0.00003	<0.00030	<0.00031	<0.00031	<0.00031
PCB 169	0.030	<0.094	0.18	<0.21	<0.16
PCB 189	0.00003	<0.00028	<0.00033	0.00033	<0.00031
Total Dioxins & Furans Only		<35.1	<39.4	<31.4	<35.3
Total PCBs Only		<2.20	<2.22	<2.14	<2.19
Total Dioxins & Furans and PCBs		<37.3	<41.6	<33.5	<37.5

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 27
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 4 pg TEQ/Rm^3*	Test No. 5 pg TEQ/Rm^3*	Test No. 6 pg TEQ/Rm^3*	Average pg TEQ/Rm^3*
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.22	1.37	<1.14	<1.24
12378-pentachlorodibenzo-p-dioxin	1.000	4.32	5.34	3.88	4.51
123478-hexachlorodibenzo-p-dioxin	0.100	0.99	1.04	0.87	0.97
123678-hexachlorodibenzo-p-dioxin	0.100	2.93	3.31	2.79	3.01
123789-hexachlorodibenzo-p-dioxin	0.100	1.51	<1.56	1.66	<1.58
1234678-heptachlorodibenzo-p-dioxin	0.010	4.32	5.13	3.95	4.46
Octachlorodibenzo-p-dioxin	0.0003	0.25	0.31	0.23	0.26
2378-tetrachlorodibenzofuran	0.100	<0.48	<0.44	<0.43	<0.45
12378-pentachlorodibenzofuran	0.030	0.21	<0.18	0.24	<0.21
23478-pentachlorodibenzofuran	0.300	3.35	3.83	3.78	3.65
123478-hexachlorodibenzofuran	0.100	0.87	0.91	<0.75	<0.84
123678-hexachlorodibenzofuran	0.100	1.12	1.26	1.05	1.14
234678-hexachlorodibenzofuran	0.100	1.81	2.08	1.79	1.89
123789-hexachlorodibenzofuran	0.100	0.46	0.48	0.46	0.47
1234678-heptachlorodibenzofuran	0.010	0.94	1.25	0.91	1.03
1234789-heptachlorodibenzofuran	0.010	0.16	0.17	0.13	0.15
Octachlorodibenzofuran	0.0003	0.046	0.057	0.042	0.048
PCB 81	0.0003	<0.0031	<0.0032	<0.0045	<0.0036
PCB 77	0.0001	0.0045	0.0048	0.0041	0.0045
PCB 123	0.00003	<0.00086	0.00072	<0.00061	<0.00073
PCB 118	0.00003	<0.00072	0.0054	0.0059	<0.0040
PCB 114	0.00003	0.00053	0.00040	0.00053	0.00049
PCB 105	0.00003	0.0022	<0.0018	0.0024	<0.0021
PCB 126	0.100	<1.49	<1.47	<1.46	<1.47
PCB 167	0.00003	<0.00016	<0.00015	<0.00013	<0.00015
PCB 156	0.00003	0.00044	0.00047	<0.00027	<0.00039
PCB 157	0.00003	<0.00022	<0.00023	<0.00024	<0.00023
PCB 169	0.030	<0.067	0.13	<0.16	<0.12
PCB 189	0.00003	<0.00020	<0.00024	0.00025	<0.00023
Total Dioxins & Furans Only		<25.0	<28.7	<24.1	<25.9
Total PCBs Only		<1.57	<1.62	<1.64	<1.61
Total Dioxins & Furans and PCBs		<26.5	<30.3	<25.7	<27.5

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 27A
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using Half the Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration			
		Test No. 4 pg TEQ/Rm³*	Test No. 5 pg TEQ/Rm³*	Test No. 6 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	0.61	1.37	0.57	0.85
12378-pentachlorodibenzo-p-dioxin	1.000	4.32	5.34	3.88	4.51
123478-hexachlorodibenzo-p-dioxin	0.100	0.99	1.04	0.87	0.97
123678-hexachlorodibenzo-p-dioxin	0.100	2.93	3.31	2.79	3.01
123789-hexachlorodibenzo-p-dioxin	0.100	1.51	0.78	1.66	1.32
1234678-heptachlorodibenzo-p-dioxin	0.010	4.32	5.13	3.95	4.46
Octachlorodibenzo-p-dioxin	0.0003	0.25	0.31	0.23	0.26
2378-tetrachlorodibenzofuran	0.100	0.24	0.22	0.21	0.22
12378-pentachlorodibenzofuran	0.030	0.21	0.089	0.24	0.18
23478-pentachlorodibenzofuran	0.300	3.35	3.83	3.78	3.65
123478-hexachlorodibenzofuran	0.100	0.87	0.91	0.37	0.72
123678-hexachlorodibenzofuran	0.100	1.12	1.26	1.05	1.14
234678-hexachlorodibenzofuran	0.100	1.81	2.08	1.79	1.89
123789-hexachlorodibenzofuran	0.100	0.46	0.48	0.46	0.47
1234678-heptachlorodibenzofuran	0.010	0.94	1.25	0.91	1.03
1234789-heptachlorodibenzofuran	0.010	0.16	0.17	0.13	0.15
Octachlorodibenzofuran	0.0003	0.046	0.057	0.042	0.048
PCB 81	0.0003	0.0016	0.0016	0.0023	0.0018
PCB 77	0.0001	0.0045	0.0048	0.0041	0.0045
PCB 123	0.00003	0.00043	0.00072	0.00031	0.00049
PCB 118	0.00003	0.00036	0.0054	0.0059	0.0039
PCB 114	0.00003	0.00053	0.00040	0.00053	0.00049
PCB 105	0.00003	0.0022	0.00089	0.0024	0.0019
PCB 126	0.100	0.74	0.73	0.73	0.74
PCB 167	0.00003	0.000079	0.000077	0.000066	0.000074
PCB 156	0.00003	0.00044	0.00047	0.00013	0.00035
PCB 157	0.00003	0.00011	0.00011	0.00012	0.00011
PCB 169	0.030	0.034	0.13	0.079	0.082
PCB 189	0.00003	0.00010	0.00012	0.00025	0.00016
Total Dioxins & Furans Only		24.1	27.6	22.9	24.9
Total PCBs Only		0.79	0.88	0.83	0.83
Total Dioxins & Furans and PCBs		24.9	28.5	23.8	25.7

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 27B
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 4 pg TEQ/Rm³*	Test No. 5 pg TEQ/Rm³*	Test No. 6 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.22	1.37	<1.14	<1.24
12378-pentachlorodibenzo-p-dioxin	0.500	2.16	2.67	1.94	2.26
123478-hexachlorodibenzo-p-dioxin	0.100	0.99	1.04	0.87	0.97
123678-hexachlorodibenzo-p-dioxin	0.100	2.93	3.31	2.79	3.01
123789-hexachlorodibenzo-p-dioxin	0.100	1.51	<1.56	1.66	<1.58
1234678-heptachlorodibenzo-p-dioxin	0.010	4.32	5.13	3.95	4.46
Octachlorodibenzo-p-dioxin	0.001	0.82	1.04	0.75	0.87
2378-tetrachlorodibenzofuran	0.100	<0.48	<0.44	<0.43	<0.45
12378-pentachlorodibenzofuran	0.050	0.35	<0.30	0.40	<0.35
23478-pentachlorodibenzofuran	0.500	5.59	6.38	6.31	6.09
123478-hexachlorodibenzofuran	0.100	0.87	0.91	<0.75	<0.84
123678-hexachlorodibenzofuran	0.100	1.12	1.26	1.05	1.14
234678-hexachlorodibenzofuran	0.100	1.81	2.08	1.79	1.89
123789-hexachlorodibenzofuran	0.100	0.46	0.48	0.46	0.47
1234678-heptachlorodibenzofuran	0.010	0.94	1.25	0.91	1.03
1234789-heptachlorodibenzofuran	0.010	0.16	0.17	0.13	0.15
Octachlorodibenzofuran	0.001	0.15	0.19	0.14	0.16
Total Dioxins & Furans		<25.9	<29.6	<25.5	<27.0
In-Stack Emission Limit					60

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

NATO/CCMS (1989) Toxicity Equivalency Factors

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 28
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Wet Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Wet Reference Concentration Test No. 4 pg TEQ/Rm³*	Test No. 5 pg TEQ/Rm³*	Test No. 6 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.42	1.54	<1.22	<1.40
12378-pentachlorodibenzo-p-dioxin	1.000	5.06	6.00	4.16	5.07
123478-hexachlorodibenzo-p-dioxin	0.100	1.16	1.16	0.93	1.09
123678-hexachlorodibenzo-p-dioxin	0.100	3.43	3.71	2.99	3.38
123789-hexachlorodibenzo-p-dioxin	0.100	1.77	<1.76	1.78	<1.77
1234678-heptachlorodibenzo-p-dioxin	0.010	5.06	5.76	4.23	5.02
Octachlorodibenzo-p-dioxin	0.0003	0.29	0.35	0.24	0.29
2378-tetrachlorodibenzofuran	0.100	<0.56	<0.49	<0.46	<0.50
12378-pentachlorodibenzofuran	0.030	0.24	<0.20	0.26	<0.23
23478-pentachlorodibenzofuran	0.300	3.93	4.30	4.05	4.09
123478-hexachlorodibenzofuran	0.100	1.02	1.02	<0.80	<0.95
123678-hexachlorodibenzofuran	0.100	1.31	1.41	1.12	1.28
234678-hexachlorodibenzofuran	0.100	2.12	2.34	1.91	2.12
123789-hexachlorodibenzofuran	0.100	0.54	0.54	0.49	0.52
1234678-heptachlorodibenzofuran	0.010	1.10	1.40	0.97	1.16
1234789-heptachlorodibenzofuran	0.010	0.19	0.19	0.14	0.17
Octachlorodibenzofuran	0.0003	0.054	0.064	0.045	0.054
PCB 81	0.0003	<0.0037	<0.0036	<0.0049	<0.0040
PCB 77	0.0001	0.0052	0.0054	0.0044	0.0050
PCB 123	0.00003	<0.0010	0.00081	<0.00066	<0.00083
PCB 118	0.00003	<0.00084	0.0060	0.0063	<0.0044
PCB 114	0.00003	0.00062	0.00045	0.00057	0.00055
PCB 105	0.00003	0.0026	<0.0020	0.0026	<0.0024
PCB 126	0.100	<1.74	<1.65	<1.57	<1.65
PCB 167	0.00003	<0.00019	<0.00017	<0.00014	<0.00017
PCB 156	0.00003	0.00052	0.00052	<0.00028	<0.00044
PCB 157	0.00003	<0.00025	<0.00026	<0.00026	<0.00026
PCB 169	0.030	<0.079	0.15	<0.17	<0.13
PCB 189	0.00003	<0.00024	<0.00027	0.00027	<0.00026
Total Dioxins & Furans Only		<29.2	<32.2	<25.8	<29.1
Total PCBs Only		<1.84	<1.82	<1.76	<1.80
Total Dioxins & Furans and PCBs		<31.1	<34.1	<27.6	<30.9

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 29
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dioxin and Furan Toxicity Equivalent Emission Rates

Specific Isomer	Toxicity Equivalency Factor	Emission Rate Test No. 4 ng TEQ/s	Test No. 5 ng TEQ/s	Test No. 6 ng TEQ/s	Average ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.023	0.026	<0.021	<0.023
12378-pentachlorodibenzo-p-dioxin	1.000	0.082	0.10	0.070	0.085
123478-hexachlorodibenzo-p-dioxin	0.100	0.019	0.020	0.016	0.018
123678-hexachlorodibenzo-p-dioxin	0.100	0.056	0.063	0.051	0.057
123789-hexachlorodibenzo-p-dioxin	0.100	0.029	<0.030	0.030	<0.030
1234678-heptachlorodibenzo-p-dioxin	0.010	0.082	0.098	0.071	0.084
Octachlorodibenzo-p-dioxin	0.0003	0.0047	0.0060	0.0041	0.0049
2378-tetrachlorodibenzofuran	0.100	<0.0092	<0.0083	<0.0077	<0.0084
12378-pentachlorodibenzofuran	0.030	0.0040	<0.0034	0.0044	<0.0039
23478-pentachlorodibenzofuran	0.300	0.064	0.073	0.068	0.069
123478-hexachlorodibenzofuran	0.100	0.017	0.017	<0.014	<0.016
123678-hexachlorodibenzofuran	0.100	0.021	0.024	0.019	0.021
234678-hexachlorodibenzofuran	0.100	0.035	0.040	0.032	0.036
123789-hexachlorodibenzofuran	0.100	0.0088	0.0092	0.0083	0.0088
1234678-heptachlorodibenzofuran	0.010	0.018	0.024	0.016	0.019
1234789-heptachlorodibenzofuran	0.010	0.0031	0.0032	0.0023	0.0029
Octachlorodibenzofuran	0.0003	0.00088	0.0011	0.00076	0.00091
PCB 81	0.0003	<0.000060	<0.000061	<0.000082	<0.000068
PCB 77	0.0001	0.000085	0.000092	0.000074	0.000084
PCB 123	0.00003	<0.000016	0.000014	<0.000011	<0.000014
PCB 118	0.00003	<0.000014	0.00010	0.00011	<0.000075
PCB 114	0.00003	0.000010	0.0000076	0.0000096	0.0000091
PCB 105	0.00003	0.000043	<0.000034	0.000044	<0.000040
PCB 126	0.100	<0.028	<0.028	<0.026	<0.028
PCB 167	0.00003	<0.0000030	<0.0000030	<0.0000024	<0.0000028
PCB 156	0.00003	0.0000084	0.0000089	<0.0000048	<0.0000074
PCB 157	0.00003	<0.0000041	<0.0000043	<0.0000043	<0.0000043
PCB 169	0.030	<0.0013	0.0025	<0.0029	<0.0022
PCB 189	0.00003	<0.0000038	<0.0000046	0.0000046	<0.0000043
Total Dioxins & Furans Only		<0.48	<0.55	<0.44	<0.49
Total PCBs Only		<0.030	<0.031	<0.030	<0.030
Total Dioxins & Furans and PCBs		<0.51	<0.58	<0.47	<0.52

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 30
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using the Full Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	<0.95	<1.69	<1.24	<1.40	<0.023
12378-pentachlorodibenzo-p-dioxin	3.46	6.15	4.51	5.07	0.085
123478-hexachlorodibenzo-p-dioxin	0.74	1.32	0.97	1.09	0.018
123678-hexachlorodibenzo-p-dioxin	2.31	4.10	3.01	3.38	0.057
123789-hexachlorodibenzo-p-dioxin	<1.21	<2.15	<1.58	<1.77	<0.030
1234678-heptachlorodibenzo-p-dioxin	3.43	6.08	4.46	5.02	0.084
Octachlorodibenzo-p-dioxin	0.20	0.36	0.26	0.29	0.0049
2378-tetrachlorodibenzofuran	<0.34	<0.61	<0.45	<0.50	<0.0084
12378-pentachlorodibenzofuran	<0.16	<0.28	<0.21	<0.23	<0.0039
23478-pentachlorodibenzofuran	2.80	4.97	3.65	4.09	0.069
123478-hexachlorodibenzofuran	<0.65	<1.15	<0.84	<0.95	<0.016
123678-hexachlorodibenzofuran	0.87	1.55	1.14	1.28	0.021
234678-hexachlorodibenzofuran	1.45	2.57	1.89	2.12	0.036
123789-hexachlorodibenzofuran	0.36	0.63	0.47	0.52	0.0088
1234678-heptachlorodibenzofuran	0.79	1.40	1.03	1.16	0.019
1234789-heptachlorodibenzofuran	0.12	0.21	0.15	0.17	0.0029
Octachlorodibenzofuran	0.037	0.066	0.048	0.054	0.00091
PCB 81	<0.0028	<0.0049	<0.0036	<0.0040	<0.000068
PCB 77	0.0034	0.0061	0.0045	0.0050	0.000084
PCB 123	<0.00056	<0.0010	<0.00073	<0.00083	<0.000014
PCB 118	<0.0030	<0.0054	<0.0040	<0.0044	<0.000075
PCB 114	0.00037	0.00066	0.00049	0.00055	0.0000091
PCB 105	<0.0016	<0.0029	<0.0021	<0.0024	<0.000040
PCB 126	<1.13	<2.00	<1.47	<1.65	<0.028
PCB 167	<0.00011	<0.00020	<0.00015	<0.00017	<0.0000028
PCB 156	<0.00030	<0.00054	<0.00039	<0.00044	<0.0000074
PCB 157	<0.00017	<0.00031	<0.00023	<0.00026	<0.0000043
PCB 169	<0.090	<0.16	<0.12	<0.13	<0.0022
PCB 189	<0.00018	<0.00031	<0.00023	<0.00026	<0.0000043
Total Dioxins & Furans Only	<19.9	<35.3	<25.9	<29.1	<0.49
Total PCBs Only	<1.23	<2.19	<1.61	<1.80	<0.030
Total Dioxins & Furans and PCBs	<21.1	<37.5	<27.5	<30.9	<0.52

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 31
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using Half the Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	0.65	1.16	0.85	0.95	0.016
12378-pentachlorodibenzo-p-dioxin	3.46	6.15	4.51	5.07	0.085
123478-hexachlorodibenzo-p-dioxin	0.74	1.32	0.97	1.09	0.018
123678-hexachlorodibenzo-p-dioxin	2.31	4.10	3.01	3.38	0.057
123789-hexachlorodibenzo-p-dioxin	1.01	1.79	1.32	1.48	0.025
1234678-heptachlorodibenzo-p-dioxin	3.43	6.08	4.46	5.02	0.084
Octachlorodibenzo-p-dioxin	0.20	0.36	0.26	0.29	0.0049
2378-tetrachlorodibenzofuran	0.17	0.30	0.22	0.25	0.0042
12378-pentachlorodibenzofuran	0.14	0.24	0.18	0.20	0.0034
23478-pentachlorodibenzofuran	2.80	4.97	3.65	4.09	0.069
123478-hexachlorodibenzofuran	0.56	0.99	0.72	0.81	0.014
123678-hexachlorodibenzofuran	0.87	1.55	1.14	1.28	0.021
234678-hexachlorodibenzofuran	1.45	2.57	1.89	2.12	0.036
123789-hexachlorodibenzofuran	0.36	0.63	0.47	0.52	0.0088
1234678-heptachlorodibenzofuran	0.79	1.40	1.03	1.16	0.019
1234789-heptachlorodibenzofuran	0.12	0.21	0.15	0.17	0.0029
Octachlorodibenzofuran	0.037	0.066	0.048	0.054	0.00091
PCB 81	0.0014	0.0024	0.0018	0.0020	0.000034
PCB 77	0.0034	0.0061	0.0045	0.0050	0.000084
PCB 123	0.00037	0.00067	0.00049	0.00055	0.0000092
PCB 118	0.0029	0.0052	0.0039	0.0043	0.000072
PCB 114	0.00037	0.00066	0.00049	0.00055	0.0000091
PCB 105	0.0014	0.0025	0.0019	0.0021	0.000035
PCB 126	0.56	1.00	0.74	0.83	0.014
PCB 167	0.000057	0.00010	0.000074	0.000084	0.0000014
PCB 156	0.00027	0.00048	0.00035	0.00039	0.0000066
PCB 157	0.000087	0.00015	0.00011	0.00013	0.0000021
PCB 169	0.062	0.11	0.082	0.091	0.0015
PCB 189	0.00012	0.00021	0.00016	0.00017	0.0000029
Total Dioxins & Furans Only	19.1	33.9	24.9	27.9	0.47
Total PCBs Only	0.64	1.13	0.83	0.93	0.016
Total Dioxins & Furans and PCBs	19.7	35.0	25.7	28.9	0.48

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 32
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Data for Chlorobenzenes
Test No. 4

Specific Isomer	Total Collected ng	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate µg/s
1,3-Dichlorobenzene	105	13.4	23.6	16.8	19.7	0.32
1,4-Dichlorobenzene	76.4	9.76	17.2	12.2	14.3	0.23
1,2-Dichlorobenzene	85.4	10.9	19.2	13.7	16.0	0.26
Total Dichlorobenzene	267	34.1	59.9	42.7	50.0	0.81
1,3,5-trichlorobenzene	<30	<3.83	<6.74	<4.80	<5.62	<0.092
1,2,4-trichlorobenzene	47	6.01	10.6	7.52	8.81	0.14
1,2,3-trichlorobenzene	<30	<3.83	<6.74	<4.80	<5.62	<0.092
Total Trichlorobenzene	<107	<13.7	<24.0	<17.1	<20.0	<0.33
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<30	<3.83	<6.74	<4.80	<5.62	<0.092
1,2,3,4-tetrachlorobenzene	<30	<3.83	<6.74	<4.80	<5.62	<0.092
Total Tetrachlorobenzene	<60.0	<7.67	<13.5	<9.59	<11.2	<0.18
Pentachlorobenzene	<30	<3.83	<6.74	<4.80	<5.62	<0.092
Hexachlorobenzene	<30	<3.83	<6.74	<4.80	<5.62	<0.092
Total Chlorobenzenes	<494	<63.1	<111	<79.0	<92.5	<1.51

Dry Gas Volume Sampled (Rm^3*) :	4.453
Actual Flowrate (m^3/s) :	23.9
Dry Reference Flowrate (Rm^3/s*) :	13.6
Dry Adjusted Flowrate (Rm^3/s**) :	19.1
Wet Reference Flowrate (Rm^3/s*) :	16.3

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 33
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Data for Chlorobenzenes
Test No. 5

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	229	28.3	50.7	36.9	41.5	0.71
1,4-Dichlorobenzene	134	16.6	29.7	21.6	24.3	0.41
1,2-Dichlorobenzene	182	22.5	40.3	29.3	33.0	0.56
Total Dichlorobenzene	545	67.4	121	87.9	98.7	1.68
1,3,5-trichlorobenzene	<30	<3.71	<6.65	<4.84	<5.44	<0.092
1,2,4-trichlorobenzene	97	12.0	21.5	15.6	17.6	0.30
1,2,3-trichlorobenzene	30.5	3.77	6.76	4.92	5.53	0.094
Total Trichlorobenzene	<158	<19.5	<34.9	<25.4	<28.5	<0.49
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	39.8	4.92	8.82	6.42	7.21	0.12
1,2,3,4-tetrachlorobenzene	<30	<3.71	<6.65	<4.84	<5.44	<0.092
Total Tetrachlorobenzene	<69.8	<8.63	<15.5	<11.3	<12.6	<0.21
Pentachlorobenzene	32.2	3.98	7.13	5.19	5.83	0.099
Hexachlorobenzene	<30	<3.71	<6.65	<4.84	<5.44	<0.092
Total Chlorobenzenes	<835	<103	<185	<135	<151	<2.57

Dry Gas Volume Sampled (Rm^3*) :	4.513
Actual Flowrate (m^3/s) :	24.9
Dry Reference Flowrate (Rm^3/s*) :	13.9
Dry Adjusted Flowrate (Rm^3/s**) :	19.1
Wet Reference Flowrate (Rm^3/s*) :	17.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 34
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Data for Chlorobenzenes
Test No. 6

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	122	15.2	27.0	20.8	22.2	0.38
1,4-Dichlorobenzene	81.5	10.2	18.1	13.9	14.9	0.25
1,2-Dichlorobenzene	102	12.7	22.6	17.4	18.6	0.31
Total Dichlorobenzene	306	38.1	67.7	52.0	55.7	0.94
1,3,5-trichlorobenzene	<30	<3.74	<6.65	<5.11	<5.47	<0.092
1,2,4-trichlorobenzene	54.4	6.79	12.1	9.26	9.92	0.17
1,2,3-trichlorobenzene	<30	<3.74	<6.65	<5.11	<5.47	<0.092
Total Trichlorobenzene	<114	<14.3	<25.4	<19.5	<20.9	<0.35
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<30	<3.74	<6.65	<5.11	<5.47	<0.092
1,2,3,4-tetrachlorobenzene	<30	<3.74	<6.65	<5.11	<5.47	<0.092
Total Tetrachlorobenzene	<60.0	<7.49	<13.3	<10.2	<10.9	<0.18
Pentachlorobenzene	<30	<3.74	<6.65	<5.11	<5.47	<0.092
Hexachlorobenzene	<30	<3.74	<6.65	<5.11	<5.47	<0.092
Total Chlorobenzenes	<540	<67.4	<120	<91.9	<98.4	<1.66

Dry Gas Volume Sampled (Rm³*) :	4.511
Actual Flowrate (m³/s) :	24.7
Dry Reference Flowrate (Rm³/s*) :	13.9
Dry Adjusted Flowrate (Rm³/s**) :	18.1
Wet Reference Flowrate (Rm³/s*) :	16.9

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 35
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Actual Concentrations for Chlorobenzenes

Specific Isomer	Actual Concentration Test No. 4 ng/m³	Test No. 5 ng/m³	Test No. 6 ng/m³	Average ng/m³	Coefficient of Variation %
1,3-Dichlorobenzene	13.4	28.3	15.2	19.0	42.9
1,4-Dichlorobenzene	9.76	16.6	10.2	12.2	31.4
1,2-Dichlorobenzene	10.9	22.5	12.7	15.4	40.6
Total Dichlorobenzene	34.1	67.4	38.1	46.5	39.1
1,3,5-trichlorobenzene	<3.83	<3.71	<3.74	<3.76	1.7
1,2,4-trichlorobenzene	6.01	12.0	6.79	8.26	39.4
1,2,3-trichlorobenzene	<3.83	3.77	<3.74	<3.78	1.2
Total Trichlorobenzene	<13.7	<19.5	<14.3	<15.8	20.2
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<3.83	4.92	<3.74	<4.17	15.8
1,2,3,4-tetrachlorobenzene	<3.83	<3.71	<3.74	<3.76	1.7
Total Tetrachlorobenzene	<7.67	<8.63	<7.49	<7.93	7.8
Pentachlorobenzene	<3.83	3.98	<3.74	<3.85	3.2
Hexachlorobenzene	<3.83	<3.71	<3.74	<3.76	1.7
Total Chlorobenzenes	<63.1	<103	<67.4	<77.9	28.3

TABLE 36
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dry Reference Concentrations for Chlorobenzenes

Specific Isomer	Dry Reference Concentration				Coefficient of Variation
	Test No. 4	Test No. 5	Test No. 6	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
1,3-Dichlorobenzene	23.6	50.7	27.0	33.8	43.8
1,4-Dichlorobenzene	17.2	29.7	18.1	21.6	32.3
1,2-Dichlorobenzene	19.2	40.3	22.6	27.4	41.5
Total Dichlorobenzene	59.9	121	67.7	82.8	40.0
1,3,5-trichlorobenzene	<6.74	<6.65	<6.65	<6.68	0.8
1,2,4-trichlorobenzene	10.6	21.5	12.1	14.7	40.3
1,2,3-trichlorobenzene	<6.74	6.76	<6.65	<6.72	0.9
Total Trichlorobenzene	<24.0	<34.9	<25.4	<28.1	21.1
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<6.74	8.82	<6.65	<7.40	16.6
1,2,3,4-tetrachlorobenzene	<6.74	<6.65	<6.65	<6.68	0.8
Total Tetrachlorobenzene	<13.5	<15.5	<13.3	<14.1	8.5
Pentachlorobenzene	<6.74	7.13	<6.65	<6.84	3.8
Hexachlorobenzene	<6.74	<6.65	<6.65	<6.68	0.8
Total Chlorobenzenes	<111	<185	<120	<138	29.2

* At 25°C and 1 atmosphere

TABLE 37
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Dry Adjusted Concentrations for Chlorobenzenes

Specific Isomer	Dry Adjusted Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
1,3-Dichlorobenzene	16.8	36.9	20.8	24.8	43.0
1,4-Dichlorobenzene	12.2	21.6	13.9	15.9	31.5
1,2-Dichlorobenzene	13.7	29.3	17.4	20.1	40.8
Total Dichlorobenzene	42.7	87.9	52.0	60.9	39.2
1,3,5-trichlorobenzene	<4.80	<4.84	<5.11	<4.91	3.4
1,2,4-trichlorobenzene	7.52	15.6	9.26	10.8	39.6
1,2,3-trichlorobenzene	<4.80	4.92	<5.11	<4.94	3.2
Total Trichlorobenzene	<17.1	<25.4	<19.5	<20.7	20.7
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<4.80	6.42	<5.11	<5.44	15.8
1,2,3,4-tetrachlorobenzene	<4.80	<4.84	<5.11	<4.91	3.4
Total Tetrachlorobenzene	<9.59	<11.3	<10.2	<10.4	8.1
Pentachlorobenzene	<4.80	5.19	<5.11	<5.03	4.1
Hexachlorobenzene	<4.80	<4.84	<5.11	<4.91	3.4
Total Chlorobenzenes	<79.0	<135	<91.9	<102	28.6

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 38
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Wet Reference Concentrations for Chlorobenzenes

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 4	Test No. 5	Test No. 6	Average	
	ng/Rm^3*	ng/Rm^3*	ng/Rm^3*	ng/Rm^3*	%
1,3-Dichlorobenzene	19.7	41.5	22.2	27.8	42.9
1,4-Dichlorobenzene	14.3	24.3	14.9	17.8	31.4
1,2-Dichlorobenzene	16.0	33.0	18.6	22.5	40.6
Total Dichlorobenzene	50.0	98.7	55.7	68.1	39.1
1,3,5-trichlorobenzene	<5.62	<5.44	<5.47	<5.51	1.8
1,2,4-trichlorobenzene	8.81	17.6	9.92	12.1	39.5
1,2,3-trichlorobenzene	<5.62	5.53	<5.47	<5.54	1.4
Total Trichlorobenzene	<20.0	<28.5	<20.9	<23.1	20.2
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<5.62	7.21	<5.47	<6.10	15.8
1,2,3,4-tetrachlorobenzene	<5.62	<5.44	<5.47	<5.51	1.8
Total Tetrachlorobenzene	<11.2	<12.6	<10.9	<11.6	7.8
Pentachlorobenzene	<5.62	5.83	<5.47	<5.64	3.2
Hexachlorobenzene	<5.62	<5.44	<5.47	<5.51	1.8
Total Chlorobenzenes	<92.5	<151	<98.4	<114	28.3

* At 25°C and 1 atmosphere

TABLE 39
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Emission Rates for Chlorobenzenes

Specific Isomer	Emission Rate Test No. 4 µg/s	Test No. 5 µg/s	Test No. 6 µg/s	Average µg/s	Coefficient of Variation %
1,3-Dichlorobenzene	0.32	0.71	0.38	0.47	44.5
1,4-Dichlorobenzene	0.23	0.41	0.25	0.30	33.0
1,2-Dichlorobenzene	0.26	0.56	0.31	0.38	42.2
Total Dichlorobenzene	0.81	1.68	0.94	1.14	40.7
1,3,5-trichlorobenzene	<0.092	<0.092	<0.092	<0.092	0.5
1,2,4-trichlorobenzene	0.14	0.30	0.17	0.20	41.1
1,2,3-trichlorobenzene	<0.092	0.094	<0.092	<0.093	1.3
Total Trichlorobenzene	<0.33	<0.49	<0.35	<0.39	21.9
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.092	0.12	<0.092	<0.10	17.3
1,2,3,4-tetrachlorobenzene	<0.092	<0.092	<0.092	<0.092	0.5
Total Tetrachlorobenzene	<0.18	<0.21	<0.18	<0.19	9.2
Pentachlorobenzene	<0.092	0.099	<0.092	<0.094	4.4
Hexachlorobenzene	<0.092	<0.092	<0.092	<0.092	0.5
Total Chlorobenzenes	<1.51	<2.57	<1.66	<1.91	30.0

TABLE 40
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Emission Data for Chlorobenzenes

Specific Isomer	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate µg/s
1,3-Dichlorobenzene	19.0	33.8	24.8	27.8	0.47
1,4-Dichlorobenzene	12.2	21.6	15.9	17.8	0.30
1,2-Dichlorobenzene	15.4	27.4	20.1	22.5	0.38
Total Dichlorobenzene	46.5	82.8	60.9	68.1	1.14
1,3,5-trichlorobenzene	<3.76	<6.68	<4.91	<5.51	<0.092
1,2,4-trichlorobenzene	8.26	14.7	10.8	12.1	0.20
1,2,3-trichlorobenzene	<3.78	<6.72	<4.94	<5.54	<0.093
Total Trichlorobenzene	<15.8	<28.1	<20.7	<23.1	<0.39
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<4.17	<7.40	<5.44	<6.10	<0.10
1,2,3,4-tetrachlorobenzene	<3.76	<6.68	<4.91	<5.51	<0.092
Total Tetrachlorobenzene	<7.93	<14.1	<10.4	<11.6	<0.19
Pentachlorobenzene	<3.85	<6.84	<5.03	<5.64	<0.094
Hexachlorobenzene	<3.76	<6.68	<4.91	<5.51	<0.092
Total Chlorobenzenes	<77.9	<138	<102	<114	<1.91

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 41
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorobenzene Blank Analyses

Isomers and Congener Group Totals	Blank Train Total ng	Laboratory Blank Total ng
1,3-Dichlorobenzene	<30	<30
1,4-Dichlorobenzene	<30	<30
1,2-Dichlorobenzene	<30	<30
Total Dichlorobenzene	<90	<90
1,3,5-trichlorobenzene	<30	<30
1,2,4-trichlorobenzene	<30	<30
1,2,3-trichlorobenzene	<30	<30
Total Trichlorobenzene	<90	<90
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<30	<30
1,2,3,4-tetrachlorobenzene	<30	<30
Total Tetrachlorobenzene	<60	<60
Pentachlorobenzene	<30	<30
Hexachlorobenzene	<30	<30
Total Chlorobenzenes	<300	<300

"<" indicates that the amount detected is less than the analytical detection limit (<MDL).
In these cases the value of the detection limit was used to calculate the total collected.

TABLE 42
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 4

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	<60	<7.67	<13.5	<9.59	<11.2	<0.18
3-monochlorophenol	<60	<7.67	<13.5	<9.59	<11.2	<0.18
4-monochlorophenol	62.7	8.01	14.1	10.0	11.7	0.19
Total Monochlorophenols	<183	<23.3	<41.0	<29.2	<34.2	<0.56
2,6-dichlorophenol	<60	<7.67	<13.5	<9.59	<11.2	<0.18
2,4 & 2,5-dichlorophenol	<60	<7.67	<13.5	<9.59	<11.2	<0.18
3,5-dichlorophenol	<60	<7.67	<13.5	<9.59	<11.2	<0.18
2,3-dichlorophenol	<60	<7.67	<13.5	<9.59	<11.2	<0.18
3,4-dichlorophenol	<60	<7.67	<13.5	<9.59	<11.2	<0.18
Total Dichlorophenols	<300	<38.3	<67.4	<48.0	<56.2	<0.92
2,4,6-trichlorophenol	<60	<7.67	<13.5	<9.59	<11.2	<0.18
2,3,6-trichlorophenol	<60	<7.67	<13.5	<9.59	<11.2	<0.18
2,3,5-trichlorophenol	<60	<7.67	<13.5	<9.59	<11.2	<0.18
2,4,5-trichlorophenol	<60	<7.67	<13.5	<9.59	<11.2	<0.18
2,3,4-trichlorophenol	<60	<7.67	<13.5	<9.59	<11.2	<0.18
3,4,5-trichlorophenol	<60	<7.67	<13.5	<9.59	<11.2	<0.18
Total Trichlorophenols	<360	<46.0	<80.8	<57.6	<67.5	<1.10
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<60	<7.67	<13.5	<9.59	<11.2	<0.18
2,3,4,5-tetrachlorophenol	<60	<7.67	<13.5	<9.59	<11.2	<0.18
Total Tetrachlorophenols	<120	<15.3	<26.9	<19.2	<22.5	<0.37
Pentachlorophenol	<60	<7.67	<13.5	<9.59	<11.2	<0.18
Total Chlorophenols	<1023	<131	<230	<164	<192	<3.12

Dry Gas Volume Sampled (Rm³*) :	4.453
Actual Flowrate (m³/s) :	23.9
Dry Reference Flowrate (Rm³/s*) :	13.6
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	16.3

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 43
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 5

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	<60	<7.42	<13.3	<9.68	<10.9	<0.18
3-monochlorophenol	<60	<7.42	<13.3	<9.68	<10.9	<0.18
4-monochlorophenol	129	16.0	28.6	20.8	23.4	0.40
Total Monochlorophenols	<249	<30.8	<55.2	<40.2	<45.1	<0.77
2,6-dichlorophenol	<60	<7.42	<13.3	<9.68	<10.9	<0.18
2,4 & 2,5-dichlorophenol	<60	<7.42	<13.3	<9.68	<10.9	<0.18
3,5-dichlorophenol	<60	<7.42	<13.3	<9.68	<10.9	<0.18
2,3-dichlorophenol	<60	<7.42	<13.3	<9.68	<10.9	<0.18
3,4-dichlorophenol	<60	<7.42	<13.3	<9.68	<10.9	<0.18
Total Dichlorophenols	<300	<37.1	<66.5	<48.4	<54.4	<0.92
2,4,6-trichlorophenol	<60	<7.42	<13.3	<9.68	<10.9	<0.18
2,3,6-trichlorophenol	<60	<7.42	<13.3	<9.68	<10.9	<0.18
2,3,5-trichlorophenol	<60	<7.42	<13.3	<9.68	<10.9	<0.18
2,4,5-trichlorophenol	<60	<7.42	<13.3	<9.68	<10.9	<0.18
2,3,4-trichlorophenol	<60	<7.42	<13.3	<9.68	<10.9	<0.18
3,4,5-trichlorophenol	<60	<7.42	<13.3	<9.68	<10.9	<0.18
Total Trichlorophenols	<360	<44.5	<79.8	<58.1	<65.2	<1.11
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<60	<7.42	<13.3	<9.68	<10.9	<0.18
2,3,4,5-tetrachlorophenol	<60	<7.42	<13.3	<9.68	<10.9	<0.18
Total Tetrachlorophenols	<120	<14.8	<26.6	<19.4	<21.7	<0.37
Pentachlorophenol	122	15.1	27.0	19.7	22.1	0.38
Total Chlorophenols	<1151	<142	<255	<186	<209	<3.55

Dry Gas Volume Sampled (Rm³*) :	4.513
Actual Flowrate (m³/s) :	24.9
Dry Reference Flowrate (Rm³/s*) :	13.9
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	17.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 44
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 6

Specific Isomer	Total Collected ng	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate µg/s
2-monochlorophenol	<60	<7.49	<13.3	<10.2	<10.9	<0.18
3-monochlorophenol	<60	<7.49	<13.3	<10.2	<10.9	<0.18
4-monochlorophenol	<60	<7.49	<13.3	<10.2	<10.9	<0.18
Total Monochlorophenols	<180	<22.5	<39.9	<30.6	<32.8	<0.55
2,6-dichlorophenol	<60	<7.49	<13.3	<10.2	<10.9	<0.18
2,4 & 2,5-dichlorophenol	<60	<7.49	<13.3	<10.2	<10.9	<0.18
3,5-dichlorophenol	<60	<7.49	<13.3	<10.2	<10.9	<0.18
2,3-dichlorophenol	<60	<7.49	<13.3	<10.2	<10.9	<0.18
3,4-dichlorophenol	<60	<7.49	<13.3	<10.2	<10.9	<0.18
Total Dichlorophenols	<300	<37.4	<66.5	<51.1	<54.7	<0.92
2,4,6-trichlorophenol	<60	<7.49	<13.3	<10.2	<10.9	<0.18
2,3,6-trichlorophenol	<60	<7.49	<13.3	<10.2	<10.9	<0.18
2,3,5-trichlorophenol	<60	<7.49	<13.3	<10.2	<10.9	<0.18
2,4,5-trichlorophenol	<60	<7.49	<13.3	<10.2	<10.9	<0.18
2,3,4-trichlorophenol	<60	<7.49	<13.3	<10.2	<10.9	<0.18
3,4,5-trichlorophenol	<60	<7.49	<13.3	<10.2	<10.9	<0.18
Total Trichlorophenols	<360	<44.9	<79.8	<61.3	<65.6	<1.11
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<60	<7.49	<13.3	<10.2	<10.9	<0.18
2,3,4,5-tetrachlorophenol	<60	<7.49	<13.3	<10.2	<10.9	<0.18
Total Tetrachlorophenols	<120	<15.0	<26.6	<20.4	<21.9	<0.37
Pentachlorophenol	<60	<7.49	<13.3	<10.2	<10.9	<0.18
Total Chlorophenols	<1020	<127	<226	<174	<186	<3.14

Dry Gas Volume Sampled (Rm^3*) :	4.511
Actual Flowrate (m^3/s) :	24.7
Dry Reference Flowrate (Rm^3/s*) :	13.9
Dry Adjusted Flowrate (Rm^3/s**) :	18.1
Wet Reference Flowrate (Rm^3/s*) :	16.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 45
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Actual Concentrations

Specific Isomer	Actual Concentration Test No. 4	Test No. 5	Test No. 6	Average	Coefficient of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
2-monochlorophenol	<7.67	<7.42	<7.49	<7.52	1.7
3-monochlorophenol	<7.67	<7.42	<7.49	<7.52	1.7
4-monochlorophenol	8.01	16.0	<7.49	<10.5	45.3
Total Monochlorophenols	<23.3	<30.8	<22.5	<25.5	17.9
2,6-dichlorophenol	<7.67	<7.42	<7.49	<7.52	1.7
2,4 & 2,5-dichlorophenol	<7.67	<7.42	<7.49	<7.52	1.7
3,5-dichlorophenol	<7.67	<7.42	<7.49	<7.52	1.7
2,3-dichlorophenol	<7.67	<7.42	<7.49	<7.52	1.7
3,4-dichlorophenol	<7.67	<7.42	<7.49	<7.52	1.7
Total Dichlorophenols	<38.3	<37.1	<37.4	<37.6	1.7
2,4,6-trichlorophenol	<7.67	<7.42	<7.49	<7.52	1.7
2,3,6-trichlorophenol	<7.67	<7.42	<7.49	<7.52	1.7
2,3,5-trichlorophenol	<7.67	<7.42	<7.49	<7.52	1.7
2,4,5-trichlorophenol	<7.67	<7.42	<7.49	<7.52	1.7
2,3,4-trichlorophenol	<7.67	<7.42	<7.49	<7.52	1.7
3,4,5-trichlorophenol	<7.67	<7.42	<7.49	<7.52	1.7
Total Trichlorophenols	<46.0	<44.5	<44.9	<45.1	1.7
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<7.67	<7.42	<7.49	<7.52	1.7
2,3,4,5-tetrachlorophenol	<7.67	<7.42	<7.49	<7.52	1.7
Total Tetrachlorophenols	<15.3	<14.8	<15.0	<15.0	1.7
Pentachlorophenol	<7.67	15.1	<7.49	<10.1	43.0
Total Chlorophenols	<131	<142	<127	<133	5.9

TABLE 46
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration Test No. 4	Test No. 5	Test No. 6	Average	Coefficient of Variation
	ng/Rm^3*	ng/Rm^3*	ng/Rm^3*	ng/Rm^3*	%
2-monochlorophenol	<13.5	<13.3	<13.3	<13.4	0.8
3-monochlorophenol	<13.5	<13.3	<13.3	<13.4	0.8
4-monochlorophenol	14.1	28.6	<13.3	<18.7	46.1
Total Monochlorophenols	<41.0	<55.2	<39.9	<45.4	18.8
2,6-dichlorophenol	<13.5	<13.3	<13.3	<13.4	0.8
2,4 & 2,5-dichlorophenol	<13.5	<13.3	<13.3	<13.4	0.8
3,5-dichlorophenol	<13.5	<13.3	<13.3	<13.4	0.8
2,3-dichlorophenol	<13.5	<13.3	<13.3	<13.4	0.8
3,4-dichlorophenol	<13.5	<13.3	<13.3	<13.4	0.8
Total Dichlorophenols	<67.4	<66.5	<66.5	<66.8	0.8
2,4,6-trichlorophenol	<13.5	<13.3	<13.3	<13.4	0.8
2,3,6-trichlorophenol	<13.5	<13.3	<13.3	<13.4	0.8
2,3,5-trichlorophenol	<13.5	<13.3	<13.3	<13.4	0.8
2,4,5-trichlorophenol	<13.5	<13.3	<13.3	<13.4	0.8
2,3,4-trichlorophenol	<13.5	<13.3	<13.3	<13.4	0.8
3,4,5-trichlorophenol	<13.5	<13.3	<13.3	<13.4	0.8
Total Trichlorophenols	<80.8	<79.8	<79.8	<80.1	0.8
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<13.5	<13.3	<13.3	<13.4	0.8
2,3,4,5-tetrachlorophenol	<13.5	<13.3	<13.3	<13.4	0.8
Total Tetrachlorophenols	<26.9	<26.6	<26.6	<26.7	0.8
Pentachlorophenol	<13.5	27.0	<13.3	<17.9	43.9
Total Chlorophenols	<230	<255	<226	<237	6.7

* At 25°C and 1 atmosphere

TABLE 47
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
2-monochlorophenol	<9.59	<9.68	<10.2	<9.83	3.4
3-monochlorophenol	<9.59	<9.68	<10.2	<9.83	3.4
4-monochlorophenol	10.0	20.8	<10.2	<13.7	45.1
Total Monochlorophenols	<29.2	<40.2	<30.6	<33.3	17.8
2,6-dichlorophenol	<9.59	<9.68	<10.2	<9.83	3.4
2,4 & 2,5-dichlorophenol	<9.59	<9.68	<10.2	<9.83	3.4
3,5-dichlorophenol	<9.59	<9.68	<10.2	<9.83	3.4
2,3-dichlorophenol	<9.59	<9.68	<10.2	<9.83	3.4
3,4-dichlorophenol	<9.59	<9.68	<10.2	<9.83	3.4
Total Dichlorophenols	<48.0	<48.4	<51.1	<49.1	3.4
2,4,6-trichlorophenol	<9.59	<9.68	<10.2	<9.83	3.4
2,3,6-trichlorophenol	<9.59	<9.68	<10.2	<9.83	3.4
2,3,5-trichlorophenol	<9.59	<9.68	<10.2	<9.83	3.4
2,4,5-trichlorophenol	<9.59	<9.68	<10.2	<9.83	3.4
2,3,4-trichlorophenol	<9.59	<9.68	<10.2	<9.83	3.4
3,4,5-trichlorophenol	<9.59	<9.68	<10.2	<9.83	3.4
Total Trichlorophenols	<57.6	<58.1	<61.3	<59.0	3.4
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<9.59	<9.68	<10.2	<9.83	3.4
2,3,4,5-tetrachlorophenol	<9.59	<9.68	<10.2	<9.83	3.4
Total Tetrachlorophenols	<19.2	<19.4	<20.4	<19.7	3.4
Pentachlorophenol	<9.59	19.7	<10.2	<13.2	42.9
Total Chlorophenols	<164	<186	<174	<174	6.3

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 48
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration Test No. 4 ng/Rm^3*	Test No. 5 ng/Rm^3*	Test No. 6 ng/Rm^3*	Average ng/Rm^3*	Coefficient of Variation %
2-monochlorophenol	<11.2	<10.9	<10.9	<11.0	1.8
3-monochlorophenol	<11.2	<10.9	<10.9	<11.0	1.8
4-monochlorophenol	11.7	23.4	<10.9	<15.4	45.3
Total Monochlorophenols	<34.2	<45.1	<32.8	<37.4	18.0
2,6-dichlorophenol	<11.2	<10.9	<10.9	<11.0	1.8
2,4 & 2,5-dichlorophenol	<11.2	<10.9	<10.9	<11.0	1.8
3,5-dichlorophenol	<11.2	<10.9	<10.9	<11.0	1.8
2,3-dichlorophenol	<11.2	<10.9	<10.9	<11.0	1.8
3,4-dichlorophenol	<11.2	<10.9	<10.9	<11.0	1.8
Total Dichlorophenols	<56.2	<54.4	<54.7	<55.1	1.8
2,4,6-trichlorophenol	<11.2	<10.9	<10.9	<11.0	1.8
2,3,6-trichlorophenol	<11.2	<10.9	<10.9	<11.0	1.8
2,3,5-trichlorophenol	<11.2	<10.9	<10.9	<11.0	1.8
2,4,5-trichlorophenol	<11.2	<10.9	<10.9	<11.0	1.8
2,3,4-trichlorophenol	<11.2	<10.9	<10.9	<11.0	1.8
3,4,5-trichlorophenol	<11.2	<10.9	<10.9	<11.0	1.8
Total Trichlorophenols	<67.5	<65.2	<65.6	<66.1	1.8
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<11.2	<10.9	<10.9	<11.0	1.8
2,3,4,5-tetrachlorophenol	<11.2	<10.9	<10.9	<11.0	1.8
Total Tetrachlorophenols	<22.5	<21.7	<21.9	<22.0	1.8
Pentachlorophenol	<11.2	22.1	<10.9	<14.8	43.1
Total Chlorophenols	<192	<209	<186	<195	6.0

* At 25°C and 1 atmosphere

TABLE 49
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Isomer and Congener Group Emission Rates

Specific Isomer	Emission Rate Test No. 4 µg/s	Test No. 5 µg/s	Test No. 6 µg/s	Average µg/s	Coefficient of Variation %
2-monochlorophenol	<0.18	<0.18	<0.18	<0.18	0.5
3-monochlorophenol	<0.18	<0.18	<0.18	<0.18	0.5
4-monochlorophenol	0.19	0.40	<0.18	<0.26	46.8
Total Monochlorophenols	<0.56	<0.77	<0.55	<0.63	19.4
2,6-dichlorophenol	<0.18	<0.18	<0.18	<0.18	0.5
2,4 & 2,5-dichlorophenol	<0.18	<0.18	<0.18	<0.18	0.5
3,5-dichlorophenol	<0.18	<0.18	<0.18	<0.18	0.5
2,3-dichlorophenol	<0.18	<0.18	<0.18	<0.18	0.5
3,4-dichlorophenol	<0.18	<0.18	<0.18	<0.18	0.5
Total Dichlorophenols	<0.92	<0.92	<0.92	<0.92	0.5
2,4,6-trichlorophenol	<0.18	<0.18	<0.18	<0.18	0.5
2,3,6-trichlorophenol	<0.18	<0.18	<0.18	<0.18	0.5
2,3,5-trichlorophenol	<0.18	<0.18	<0.18	<0.18	0.5
2,4,5-trichlorophenol	<0.18	<0.18	<0.18	<0.18	0.5
2,3,4-trichlorophenol	<0.18	<0.18	<0.18	<0.18	0.5
3,4,5-trichlorophenol	<0.18	<0.18	<0.18	<0.18	0.5
Total Trichlorophenols	<1.10	<1.11	<1.11	<1.11	0.5
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<0.18	<0.18	<0.18	<0.18	0.5
2,3,4,5-tetrachlorophenol	<0.18	<0.18	<0.18	<0.18	0.5
Total Tetrachlorophenols	<0.37	<0.37	<0.37	<0.37	0.5
Pentachlorophenol	<0.18	0.38	<0.18	<0.25	44.6
Total Chlorophenols	<3.12	<3.55	<3.14	<3.27	7.3

TABLE 50
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Emission Data for Chlorophenol Isomer and Congener Groups

Specific Isomer	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	<7.52	<13.4	<9.83	<11.0	<0.18
3-monochlorophenol	<7.52	<13.4	<9.83	<11.0	<0.18
4-monochlorophenol	<10.5	<18.7	<13.7	<15.4	<0.26
Total Monochlorophenols	<25.5	<45.4	<33.3	<37.4	<0.63
2,6-dichlorophenol	<7.52	<13.4	<9.83	<11.0	<0.18
2,4 & 2,5-dichlorophenol	<7.52	<13.4	<9.83	<11.0	<0.18
3,5-dichlorophenol	<7.52	<13.4	<9.83	<11.0	<0.18
2,3-dichlorophenol	<7.52	<13.4	<9.83	<11.0	<0.18
3,4-dichlorophenol	<7.52	<13.4	<9.83	<11.0	<0.18
Total Dichlorophenols	<37.6	<66.8	<49.1	<55.1	<0.92
2,4,6-trichlorophenol	<7.52	<13.4	<9.83	<11.0	<0.18
2,3,6-trichlorophenol	<7.52	<13.4	<9.83	<11.0	<0.18
2,3,5-trichlorophenol	<7.52	<13.4	<9.83	<11.0	<0.18
2,4,5-trichlorophenol	<7.52	<13.4	<9.83	<11.0	<0.18
2,3,4-trichlorophenol	<7.52	<13.4	<9.83	<11.0	<0.18
3,4,5-trichlorophenol	<7.52	<13.4	<9.83	<11.0	<0.18
Total Trichlorophenols	<45.1	<80.1	<59.0	<66.1	<1.11
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<7.52	<13.4	<9.83	<11.0	<0.18
2,3,4,5-tetrachlorophenol	<7.52	<13.4	<9.83	<11.0	<0.18
Total Tetrachlorophenols	<15.0	<26.7	<19.7	<22.0	<0.37
Pentachlorophenol	<10.1	<17.9	<13.2	<14.8	<0.25
Total Chlorophenols	<133	<237	<174	<195	<3.27

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 51
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Chlorophenol Blank Analyses

Congener Group	Lab Blank Total ng	Blank Train Total ng
2-monochlorophenol	<60	<60
3-monochlorophenol	<60	<60
4-monochlorophenol	<60	<60
Total Monochlorophenols	<180	<180
2,6-dichlorophenol	<60	<60
2,4 & 2,5-dichlorophenol	<60	<60
3,5-dichlorophenol	<60	<60
2,3-dichlorophenol	<60	<60
3,4-dichlorophenol	<60	<60
Total Dichlorophenols	<300	<300
2,4,6-trichlorophenol	<60	<60
2,3,6-trichlorophenol	<60	<60
2,3,5-trichlorophenol	<60	<60
2,4,5-trichlorophenol	<60	<60
2,3,4-trichlorophenol	<60	<60
3,4,5-trichlorophenol	<60	<60
Total Trichlorophenols	<360	<360
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<60	<60
2,3,4,5-tetrachlorophenol	<60	<60
Total Tetrachlorophenols	<120	<120
Pentachlorophenol	<60	<60
Total Chlorophenols	<1020	<1020

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

TABLE 52
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 4

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	76.8	9.81	17.2	12.3	14.4	0.23
Acenaphthylene	30.2	3.86	6.78	4.83	5.66	0.092
Anthracene	60.7	7.76	13.6	9.71	11.4	0.19
Benzo(a)Anthracene	<12	<1.53	<2.69	<1.92	<2.25	<0.037
Benzo(b)Fluoranthene	<12	<1.53	<2.69	<1.92	<2.25	<0.037
Benzo(j/k)Fluoranthene	<12	<1.53	<2.69	<1.92	<2.25	<0.037
Benzo(a)fluorene	<12	<1.53	<2.69	<1.92	<2.25	<0.037
Benzo(b)fluorene	<12	<1.53	<2.69	<1.92	<2.25	<0.037
Benzo(g,h,i)Perylene	23.3	2.98	5.23	3.73	4.37	0.071
Benzo(a)Pyrene	<12	<1.53	<2.69	<1.92	<2.25	<0.037
Benzo(e)Pyrene	<12	<1.53	<2.69	<1.92	<2.25	<0.037
Biphenyl	116	14.8	26.0	18.5	21.7	0.35
2-Chloronaphthalene	<12	<1.53	<2.69	<1.92	<2.25	<0.037
Chrysene/Triphenylene	<12	<1.53	<2.69	<1.92	<2.25	<0.037
Coronene	<12	<1.53	<2.69	<1.92	<2.25	<0.037
Dibenzo(a,c/a,h)Anthracene	<12	<1.53	<2.69	<1.92	<2.25	<0.037
Dibenzo(a,e)pyrene	<12	<1.53	<2.69	<1.92	<2.25	<0.037
9,10-dimethylanthracene	12.8	1.64	2.87	2.05	2.40	0.039
7,12-Dimethylbenzo(a)anthracene	<12	<1.53	<2.69	<1.92	<2.25	<0.037
Fluoranthene	28.3	3.62	6.36	4.53	5.30	0.086
Fluorene	43.7	5.58	9.81	6.99	8.19	0.13
Indeno(1,2,3-cd)Pyrene	<12	<1.53	<2.69	<1.92	<2.25	<0.037
2-methylanthracene	13.5	1.73	3.03	2.16	2.53	0.041
3-Methylcholanthrene	<12	<1.53	<2.69	<1.92	<2.25	<0.037
1-Methylnaphthalene	85.5	10.9	19.2	13.7	16.0	0.26
2-Methylnaphthalene	162	20.7	36.4	25.9	30.4	0.49
1-Methylphenanthrene	24.9	3.18	5.59	3.98	4.67	0.076
9-Methylphenanthrene	12.4	1.58	2.78	1.98	2.32	0.038
Naphthalene	4420	565	993	707	828	13.5
Perylene	<12	<1.53	<2.69	<1.92	<2.25	<0.037
Phenanthrene	150	19.2	33.7	24.0	28.1	0.46
Picene	<12	<1.53	<2.69	<1.92	<2.25	<0.037
Pyrene	30.6	3.91	6.87	4.89	5.73	0.093
Tetralin	19800	2530	4446	3166	3710	60.5
m-terphenyl	13.4	1.71	3.01	2.14	2.51	0.041
o-Terphenyl	<12	<1.53	<2.69	<1.92	<2.25	<0.037
p-terphenyl	<12	<1.53	<2.69	<1.92	<2.25	<0.037
Total	<25332	<3237	<5689	<4051	<4746	<77.4

Dry Gas Volume Sampled (Rm³*) :	4.453
Actual Flowrate (m³/s) :	23.9
Dry Reference Flowrate (Rm³/s*) :	13.6
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	16.3

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 53
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 5

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	66.0	8.16	14.6	10.6	12.0	0.20
Acenaphthylene	23.6	2.92	5.23	3.81	4.28	0.073
Anthracene	66.1	8.18	14.6	10.7	12.0	0.20
Benzo(a)Anthracene	<12	<1.48	<2.66	<1.94	<2.17	<0.037
Benzo(b)Fluoranthene	<12	<1.48	<2.66	<1.94	<2.17	<0.037
Benzo(j/k)Fluoranthene	<12	<1.48	<2.66	<1.94	<2.17	<0.037
Benzo(a)fluorene	<12	<1.48	<2.66	<1.94	<2.17	<0.037
Benzo(b)fluorene	<12	<1.48	<2.66	<1.94	<2.17	<0.037
Benzo(g,h,i)Perylene	21.0	2.60	4.65	3.39	3.80	0.065
Benzo(a)Pyrene	<12	<1.48	<2.66	<1.94	<2.17	<0.037
Benzo(e)Pyrene	<12	<1.48	<2.66	<1.94	<2.17	<0.037
Biphenyl	391	48.4	86.6	63.1	70.8	1.20
2-Chloronaphthalene	<12	<1.48	<2.66	<1.94	<2.17	<0.037
Chrysene/Triphenylene	<12	<1.48	<2.66	<1.94	<2.17	<0.037
Coronene	<12	<1.48	<2.66	<1.94	<2.17	<0.037
Dibenzo(a,c/a,h)Anthracene	<12	<1.48	<2.66	<1.94	<2.17	<0.037
Dibenzo(a,e)pyrene	<12	<1.48	<2.66	<1.94	<2.17	<0.037
9,10-dimethylanthracene	12.7	1.57	2.81	2.05	2.30	0.039
7,12-Dimethylbenzo(a)anthracene	<12	<1.48	<2.66	<1.94	<2.17	<0.037
Fluoranthene	37.6	4.65	8.33	6.06	6.81	0.12
Fluorene	43.1	5.33	9.55	6.95	7.81	0.13
Indeno(1,2,3-cd)Pyrene	<12	<1.48	<2.66	<1.94	<2.17	<0.037
2-methylanthracene	<12	<1.48	<2.66	<1.94	<2.17	<0.037
3-Methylcholanthrene	<12	<1.48	<2.66	<1.94	<2.17	<0.037
1-Methylnaphthalene	76.1	9.41	16.9	12.3	13.8	0.23
2-Methylnaphthalene	146	18.1	32.4	23.5	26.5	0.45
1-Methylphenanthrene	16.8	2.08	3.72	2.71	3.04	0.052
9-Methylphenanthrene	<12	<1.48	<2.66	<1.94	<2.17	<0.037
Naphthalene	4860	601	1077	784	881	15.0
Perylene	<12	<1.48	<2.66	<1.94	<2.17	<0.037
Phenanthrene	203	25.1	45.0	32.7	36.8	0.63
Picene	<12	<1.48	<2.66	<1.94	<2.17	<0.037
Pyrene	32.2	3.98	7.13	5.19	5.83	0.099
Tetralin	22600	2795	5008	3644	4095	69.6
m-terphenyl	<12	<1.48	<2.66	<1.94	<2.17	<0.037
o-Terphenyl	<12	<1.48	<2.66	<1.94	<2.17	<0.037
p-terphenyl	<12	<1.48	<2.66	<1.94	<2.17	<0.037
Total	<28859	<3570	<6395	<4654	<5229	<88.9

Dry Gas Volume Sampled (Rm³*) :	4.513
Actual Flowrate (m³/s) :	24.9
Dry Reference Flowrate (Rm³/s*) :	13.9
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	17.0

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 54
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 6

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	51.7	6.45	11.5	8.80	9.43	0.16
Acenaphthylene	19.0	2.37	4.21	3.23	3.46	0.059
Anthracene	54.6	6.81	12.1	9.30	9.96	0.17
Benzo(a)Anthracene	<12	<1.50	<2.66	<2.04	<2.19	<0.037
Benzo(b)Fluoranthene	<12	<1.50	<2.66	<2.04	<2.19	<0.037
Benzo(j/k)Fluoranthene	<12	<1.50	<2.66	<2.04	<2.19	<0.037
Benzo(a)fluorene	<12	<1.50	<2.66	<2.04	<2.19	<0.037
Benzo(b)fluorene	<12	<1.50	<2.66	<2.04	<2.19	<0.037
Benzo(g,h,i)Perylene	35.6	4.44	7.89	6.06	6.49	0.11
Benzo(a)Pyrene	<12	<1.50	<2.66	<2.04	<2.19	<0.037
Benzo(e)Pyrene	<12	<1.50	<2.66	<2.04	<2.19	<0.037
Biphenyl	83.8	10.5	18.6	14.3	15.3	0.26
2-Chloronaphthalene	<12	<1.50	<2.66	<2.04	<2.19	<0.037
Chrysene/Triphenylene	<12	<1.50	<2.66	<2.04	<2.19	<0.037
Coronene	<12	<1.50	<2.66	<2.04	<2.19	<0.037
Dibenzo(a,c/a,h)Anthracene	<12	<1.50	<2.66	<2.04	<2.19	<0.037
Dibenzo(a,e)pyrene	<12	<1.50	<2.66	<2.04	<2.19	<0.037
9,10-dimethylanthracene	<12	<1.50	<2.66	<2.04	<2.19	<0.037
7,12-Dimethylbenzo(a)anthracene	<12	<1.50	<2.66	<2.04	<2.19	<0.037
Fluoranthene	38.6	4.82	8.56	6.57	7.04	0.12
Fluorene	34.2	4.27	7.58	5.82	6.24	0.11
Indeno(1,2,3-cd)Pyrene	<12	<1.50	<2.66	<2.04	<2.19	<0.037
2-methylanthracene	<12	<1.50	<2.66	<2.04	<2.19	<0.037
3-Methylcholanthrene	<12	<1.50	<2.66	<2.04	<2.19	<0.037
1-Methylnaphthalene	59.1	7.37	13.1	10.1	10.8	0.18
2-Methylnaphthalene	107	13.3	23.7	18.2	19.5	0.33
1-Methylphenanthrene	19.7	2.46	4.37	3.35	3.59	0.061
9-Methylphenanthrene	<12	<1.50	<2.66	<2.04	<2.19	<0.037
Naphthalene	4120	514	913	701	751	12.7
Perylene	<12	<1.50	<2.66	<2.04	<2.19	<0.037
Phenanthrene	120	15.0	26.6	20.4	21.9	0.37
Picene	<12	<1.50	<2.66	<2.04	<2.19	<0.037
Pyrene	82.3	10.3	18.2	14.0	15.0	0.25
Tetralin	19100	2383	4234	3252	3482	58.9
m-terphenyl	<12	<1.50	<2.66	<2.04	<2.19	<0.037
o-Terphenyl	<12	<1.50	<2.66	<2.04	<2.19	<0.037
p-terphenyl	<12	<1.50	<2.66	<2.04	<2.19	<0.037
Total	<24202	<3019	<5365	<4120	<4413	<74.6

Dry Gas Volume Sampled (Rm³*) :	4.511
Actual Flowrate (m³/s) :	24.7
Dry Reference Flowrate (Rm³/s*) :	13.9
Dry Adjusted Flowrate (Rm³/s**) :	18.1
Wet Reference Flowrate (Rm³/s*) :	16.9

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 55
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Actual Concentrations

Compound	Actual Concentration Test No. 4	Test No. 5	Test No. 6	Average	Coefficient of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
Acenaphthene	9.81	8.16	6.45	8.14	20.7
Acenaphthylene	3.86	2.92	2.37	3.05	24.7
Anthracene	7.76	8.18	6.81	7.58	9.2
Benzo(a)Anthracene	<1.53	<1.48	<1.50	<1.50	1.7
Benzo(b)Fluoranthene	<1.53	<1.48	<1.50	<1.50	1.7
Benzo(j/k)Fluoranthene	<1.53	<1.48	<1.50	<1.50	1.7
Benzo(a)fluorene	<1.53	<1.48	<1.50	<1.50	1.7
Benzo(b)fluorene	<1.53	<1.48	<1.50	<1.50	1.7
Benzo(g,h,i)Perylene	2.98	2.60	4.44	3.34	29.2
Benzo(a)Pyrene	<1.53	<1.48	<1.50	<1.50	1.7
Benzo(e)Pyrene	<1.53	<1.48	<1.50	<1.50	1.7
Biphenyl	14.8	48.4	10.5	24.5	84.5
2-Chloronaphthalene	<1.53	<1.48	<1.50	<1.50	1.7
Chrysene/Triphenylene	<1.53	<1.48	<1.50	<1.50	1.7
Coronene	<1.53	<1.48	<1.50	<1.50	1.7
Dibenzo(a,c/a,h)Anthracene	<1.53	<1.48	<1.50	<1.50	1.7
Dibenzo(a,e)pyrene	<1.53	<1.48	<1.50	<1.50	1.7
9,10-dimethylanthracene	1.64	1.57	<1.50	<1.57	4.4
7,12-Dimethylbenzo(a)anthracene	<1.53	<1.48	<1.50	<1.50	1.7
Fluoranthene	3.62	4.65	4.82	4.36	14.9
Fluorene	5.58	5.33	4.27	5.06	13.8
Indeno(1,2,3-cd)Pyrene	<1.53	<1.48	<1.50	<1.50	1.7
2-methylanthracene	1.73	<1.48	<1.50	<1.57	8.6
3-Methylcholanthrene	<1.53	<1.48	<1.50	<1.50	1.7
1-Methylnaphthalene	10.9	9.41	7.37	9.24	19.3
2-Methylnaphthalene	20.7	18.1	13.3	17.4	21.4
1-Methylphenanthrene	3.18	2.08	2.46	2.57	21.8
9-Methylphenanthrene	1.58	<1.48	<1.50	<1.52	3.6
Naphthalene	565	601	514	560	7.8
Perylene	<1.53	<1.48	<1.50	<1.50	1.7
Phenanthrene	19.2	25.1	15.0	19.7	25.8
Picene	<1.53	<1.48	<1.50	<1.50	1.7
Pyrene	3.91	3.98	10.3	6.05	60.3
Tetralin	2530	2795	2383	2569	8.1
m-terphenyl	1.71	<1.48	<1.50	<1.56	8.2
o-Terphenyl	<1.53	<1.48	<1.50	<1.50	1.7
p-terphenyl	<1.53	<1.48	<1.50	<1.50	1.7
Total	<3237	<3570	<3019	<3275	8.5

TABLE 56
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Reference Concentrations

Compound	Dry Reference Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Acenaphthene	17.2	14.6	11.5	14.4	20.1
Acenaphthylene	6.78	5.23	4.21	5.41	23.9
Anthracene	13.6	14.6	12.1	13.5	9.5
Benzo(a)Anthracene	<2.69	<2.66	<2.66	<2.67	0.8
Benzo(b)Fluoranthene	<2.69	<2.66	<2.66	<2.67	0.8
Benzo(j/k)Fluoranthene	<2.69	<2.66	<2.66	<2.67	0.8
Benzo(a)fluorene	<2.69	<2.66	<2.66	<2.67	0.8
Benzo(b)fluorene	<2.69	<2.66	<2.66	<2.67	0.8
Benzo(g,h,i)Perylene	5.23	4.65	7.89	5.93	29.1
Benzo(a)Pyrene	<2.69	<2.66	<2.66	<2.67	0.8
Benzo(e)Pyrene	<2.69	<2.66	<2.66	<2.67	0.8
Biphenyl	26.0	86.6	18.6	43.8	85.3
2-Chloronaphthalene	<2.69	<2.66	<2.66	<2.67	0.8
Chrysene/Triphenylene	<2.69	<2.66	<2.66	<2.67	0.8
Coronene	<2.69	<2.66	<2.66	<2.67	0.8
Dibenzo(a,c/a,h)Anthracene	<2.69	<2.66	<2.66	<2.67	0.8
Dibenzo(a,e)pyrene	<2.69	<2.66	<2.66	<2.67	0.8
9,10-dimethylanthracene	2.87	2.81	<2.66	<2.78	4.0
7,12-Dimethylbenzo(a)anthracene	<2.69	<2.66	<2.66	<2.67	0.8
Fluoranthene	6.36	8.33	8.56	7.75	15.6
Fluorene	9.81	9.55	7.58	8.98	13.6
Indeno(1,2,3-cd)Pyrene	<2.69	<2.66	<2.66	<2.67	0.8
2-methylanthracene	3.03	<2.66	<2.66	<2.78	7.7
3-Methylcholanthrene	<2.69	<2.66	<2.66	<2.67	0.8
1-Methylnaphthalene	19.2	16.9	13.1	16.4	18.8
2-Methylnaphthalene	36.4	32.4	23.7	30.8	21.0
1-Methylphenanthrene	5.59	3.72	4.37	4.56	20.8
9-Methylphenanthrene	2.78	<2.66	<2.66	<2.70	2.7
Naphthalene	993	1077	913	994	8.2
Perylene	<2.69	<2.66	<2.66	<2.67	0.8
Phenanthrene	33.7	45.0	26.6	35.1	26.4
Picene	<2.69	<2.66	<2.66	<2.67	0.8
Pyrene	6.87	7.13	18.2	10.8	60.4
Tetralin	4446	5008	4234	4563	8.8
m-terphenyl	3.01	<2.66	<2.66	<2.78	7.3
o-Terphenyl	<2.69	<2.66	<2.66	<2.67	0.8
p-terphenyl	<2.69	<2.66	<2.66	<2.67	0.8
Total	<5689	<6395	<5365	<5816	9.1

* At 25°C and 1 atmosphere

TABLE 57
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration				Coefficient
	Test No. 4	Test No. 5	Test No. 6	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	12.3	10.6	8.80	10.6	16.5
Acenaphthylene	4.83	3.81	3.23	3.96	20.4
Anthracene	9.71	10.7	9.30	9.89	7.1
Benzo(a)Anthracene	<1.92	<1.94	<2.04	<1.97	3.4
Benzo(b)Fluoranthene	<1.92	<1.94	<2.04	<1.97	3.4
Benzo(j/k)Fluoranthene	<1.92	<1.94	<2.04	<1.97	3.4
Benzo(a)fluorene	<1.92	<1.94	<2.04	<1.97	3.4
Benzo(b)fluorene	<1.92	<1.94	<2.04	<1.97	3.4
Benzo(g,h,i)Perylene	3.73	3.39	6.06	4.39	33.2
Benzo(a)Pyrene	<1.92	<1.94	<2.04	<1.97	3.4
Benzo(e)Pyrene	<1.92	<1.94	<2.04	<1.97	3.4
Biphenyl	18.5	63.1	14.3	32.0	84.5
2-Chloronaphthalene	<1.92	<1.94	<2.04	<1.97	3.4
Chrysene/Triphenylene	<1.92	<1.94	<2.04	<1.97	3.4
Coronene	<1.92	<1.94	<2.04	<1.97	3.4
Dibenzo(a,c/a,h)Anthracene	<1.92	<1.94	<2.04	<1.97	3.4
Dibenzo(a,e)pyrene	<1.92	<1.94	<2.04	<1.97	3.4
9,10-dimethylanthracene	2.05	2.05	<2.04	<2.05	0.1
7,12-Dimethylbenzo(a)anthracene	<1.92	<1.94	<2.04	<1.97	3.4
Fluoranthene	4.53	6.06	6.57	5.72	18.6
Fluorene	6.99	6.95	5.82	6.59	10.1
Indeno(1,2,3-cd)Pyrene	<1.92	<1.94	<2.04	<1.97	3.4
2-methylanthracene	2.16	<1.94	<2.04	<2.05	5.5
3-Methylcholanthrene	<1.92	<1.94	<2.04	<1.97	3.4
1-Methylnaphthalene	13.7	12.3	10.1	12.0	15.2
2-Methylnaphthalene	25.9	23.5	18.2	22.6	17.5
1-Methylphenanthrene	3.98	2.71	3.35	3.35	19.0
9-Methylphenanthrene	1.98	<1.94	<2.04	<1.99	2.7
Naphthalene	707	784	701	731	6.3
Perylene	<1.92	<1.94	<2.04	<1.97	3.4
Phenanthrene	24.0	32.7	20.4	25.7	24.6
Picene	<1.92	<1.94	<2.04	<1.97	3.4
Pyrene	4.89	5.19	14.0	8.03	64.5
Tetralin	3166	3644	3252	3354	7.6
m-terphenyl	2.14	<1.94	<2.04	<2.04	5.1
o-Terphenyl	<1.92	<1.94	<2.04	<1.97	3.4
p-terphenyl	<1.92	<1.94	<2.04	<1.97	3.4
Total	<4051	<4654	<4120	<4275	7.7

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 58
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Wet Reference Concentrations

Compound	Wet Reference Concentration				Coefficient of Variation
	Test No. 4	Test No. 5	Test No. 6	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	14.4	12.0	9.43	11.9	20.8
Acenaphthylene	5.66	4.28	3.46	4.47	24.8
Anthracene	11.4	12.0	9.96	11.1	9.3
Benzo(a)Anthracene	<2.25	<2.17	<2.19	<2.20	1.8
Benzo(b)Fluoranthene	<2.25	<2.17	<2.19	<2.20	1.8
Benzo(j/k)Fluoranthene	<2.25	<2.17	<2.19	<2.20	1.8
Benzo(a)fluorene	<2.25	<2.17	<2.19	<2.20	1.8
Benzo(b)fluorene	<2.25	<2.17	<2.19	<2.20	1.8
Benzo(g,h,i)Perylene	4.37	3.80	6.49	4.89	29.0
Benzo(a)Pyrene	<2.25	<2.17	<2.19	<2.20	1.8
Benzo(e)Pyrene	<2.25	<2.17	<2.19	<2.20	1.8
Biphenyl	21.7	70.8	15.3	36.0	84.5
2-Chloronaphthalene	<2.25	<2.17	<2.19	<2.20	1.8
Chrysene/Triphenylene	<2.25	<2.17	<2.19	<2.20	1.8
Coronene	<2.25	<2.17	<2.19	<2.20	1.8
Dibenzo(a,c/a,h)Anthracene	<2.25	<2.17	<2.19	<2.20	1.8
Dibenzo(a,e)pyrene	<2.25	<2.17	<2.19	<2.20	1.8
9,10-dimethylanthracene	2.40	2.30	<2.19	<2.30	4.6
7,12-Dimethylbenzo(a)anthracene	<2.25	<2.17	<2.19	<2.20	1.8
Fluoranthene	5.30	6.81	7.04	6.38	14.8
Fluorene	8.19	7.81	6.24	7.41	14.0
Indeno(1,2,3-cd)Pyrene	<2.25	<2.17	<2.19	<2.20	1.8
2-methylanthracene	2.53	<2.17	<2.19	<2.30	8.8
3-Methylcholanthrene	<2.25	<2.17	<2.19	<2.20	1.8
1-Methylnaphthalene	16.0	13.8	10.8	13.5	19.5
2-Methylnaphthalene	30.4	26.5	19.5	25.4	21.6
1-Methylphenanthrene	4.67	3.04	3.59	3.77	21.9
9-Methylphenanthrene	2.32	<2.17	<2.19	<2.23	3.7
Naphthalene	828	881	751	820	7.9
Perylene	<2.25	<2.17	<2.19	<2.20	1.8
Phenanthrene	28.1	36.8	21.9	28.9	25.9
Picene	<2.25	<2.17	<2.19	<2.20	1.8
Pyrene	5.73	5.83	15.0	8.86	60.1
Tetralin	3710	4095	3482	3762	8.2
m-terphenyl	2.51	<2.17	<2.19	<2.29	8.3
o-Terphenyl	<2.25	<2.17	<2.19	<2.20	1.8
p-terphenyl	<2.25	<2.17	<2.19	<2.20	1.8
Total	<4746	<5229	<4413	<4796	8.6

* At 25°C and 1 atmosphere

TABLE 59
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Rates

Compound	Emission Rate Test No. 4 µg/s	Test No. 5 µg/s	Test No. 6 µg/s	Average µg/s	Coefficient of Variation %
Acenaphthene	0.23	0.20	0.16	0.20	19.0
Acenaphthylene	0.092	0.073	0.059	0.074	22.7
Anthracene	0.19	0.20	0.17	0.19	9.5
Benzo(a)Anthracene	<0.037	<0.037	<0.037	<0.037	0.5
Benzo(b)Fluoranthene	<0.037	<0.037	<0.037	<0.037	0.5
Benzo(j/k)Fluoranthene	<0.037	<0.037	<0.037	<0.037	0.5
Benzo(a)fluorene	<0.037	<0.037	<0.037	<0.037	0.5
Benzo(b)fluorene	<0.037	<0.037	<0.037	<0.037	0.5
Benzo(g,h,i)Perylene	0.071	0.065	0.11	0.082	29.7
Benzo(a)Pyrene	<0.037	<0.037	<0.037	<0.037	0.5
Benzo(e)Pyrene	<0.037	<0.037	<0.037	<0.037	0.5
Biphenyl	0.35	1.20	0.26	0.61	86.0
2-Chloronaphthalene	<0.037	<0.037	<0.037	<0.037	0.5
Chrysene/Triphenylene	<0.037	<0.037	<0.037	<0.037	0.5
Coronene	<0.037	<0.037	<0.037	<0.037	0.5
Dibenzo(a,c/a,h)Anthracene	<0.037	<0.037	<0.037	<0.037	0.5
Dibenzo(a,e)pyrene	<0.037	<0.037	<0.037	<0.037	0.5
9,10-dimethylanthracene	0.039	0.039	<0.037	<0.038	3.2
7,12-Dimethylbenzo(a)anthracene	<0.037	<0.037	<0.037	<0.037	0.5
Fluoranthene	0.086	0.12	0.12	0.11	16.8
Fluorene	0.13	0.13	0.11	0.12	12.9
Indeno(1,2,3-cd)Pyrene	<0.037	<0.037	<0.037	<0.037	0.5
2-methylanthracene	0.041	<0.037	<0.037	<0.038	6.4
3-Methylcholanthrene	<0.037	<0.037	<0.037	<0.037	0.5
1-Methylnaphthalene	0.26	0.23	0.18	0.23	17.8
2-Methylnaphthalene	0.49	0.45	0.33	0.42	20.1
1-Methylphenanthrene	0.076	0.052	0.061	0.063	19.6
9-Methylphenanthrene	0.038	<0.037	<0.037	<0.037	1.4
Naphthalene	13.5	15.0	12.7	13.7	8.4
Perylene	<0.037	<0.037	<0.037	<0.037	0.5
Phenanthrene	0.46	0.63	0.37	0.48	26.8
Picene	<0.037	<0.037	<0.037	<0.037	0.5
Pyrene	0.093	0.099	0.25	0.15	61.1
Tetralin	60.5	69.6	58.9	63.0	9.2
m-terphenyl	0.041	<0.037	<0.037	<0.038	6.0
o-Terphenyl	<0.037	<0.037	<0.037	<0.037	0.5
p-terphenyl	<0.037	<0.037	<0.037	<0.037	0.5
Total	<77.4	<88.9	<74.6	<80.3	9.5

TABLE 60
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Summary of Polycyclic Aromatic Hydrocarbon Emission Data

Compound	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	8.14	14.4	10.6	11.9	0.20
Acenaphthylene	3.05	5.41	3.96	4.47	0.074
Anthracene	7.58	13.5	9.89	11.1	0.19
Benzo(a)Anthracene	<1.50	<2.67	<1.97	<2.20	<0.037
Benzo(b)Fluoranthene	<1.50	<2.67	<1.97	<2.20	<0.037
Benzo(j/k)Fluoranthene	<1.50	<2.67	<1.97	<2.20	<0.037
Benzo(a)fluorene	<1.50	<2.67	<1.97	<2.20	<0.037
Benzo(b)fluorene	<1.50	<2.67	<1.97	<2.20	<0.037
Benzo(g,h,i)Perylene	3.34	5.93	4.39	4.89	0.082
Benzo(a)Pyrene	<1.50	<2.67	<1.97	<2.20	<0.037
Benzo(e)Pyrene	<1.50	<2.67	<1.97	<2.20	<0.037
Biphenyl	24.5	43.8	32.0	36.0	0.61
2-Chloronaphthalene	<1.50	<2.67	<1.97	<2.20	<0.037
Chrysene/Triphenylene	<1.50	<2.67	<1.97	<2.20	<0.037
Coronene	<1.50	<2.67	<1.97	<2.20	<0.037
Dibenzo(a,c/a,h)Anthracene	<1.50	<2.67	<1.97	<2.20	<0.037
Dibenzo(a,e)pyrene	<1.50	<2.67	<1.97	<2.20	<0.037
9,10-dimethylanthracene	<1.57	<2.78	<2.05	<2.30	<0.038
7,12-Dimethylbenzo(a)anthracene	<1.50	<2.67	<1.97	<2.20	<0.037
Fluoranthene	4.36	7.75	5.72	6.38	0.11
Fluorene	5.06	8.98	6.59	7.41	0.12
Indeno(1,2,3-cd)Pyrene	<1.50	<2.67	<1.97	<2.20	<0.037
2-methylanthracene	<1.57	<2.78	<2.05	<2.30	<0.038
3-Methylcholanthrene	<1.50	<2.67	<1.97	<2.20	<0.037
1-Methylnaphthalene	9.24	16.4	12.0	13.5	0.23
2-Methylnaphthalene	17.4	30.8	22.6	25.4	0.42
1-Methylphenanthrene	2.57	4.56	3.35	3.77	0.063
9-Methylphenanthrene	<1.52	<2.70	<1.99	<2.23	<0.037
Naphthalene	560	994	731	820	13.7
Perylene	<1.50	<2.67	<1.97	<2.20	<0.037
Phenanthrene	19.7	35.1	25.7	28.9	0.48
Picene	<1.50	<2.67	<1.97	<2.20	<0.037
Pyrene	6.05	10.8	8.03	8.86	0.15
Tetralin	2569	4563	3354	3762	63.0
m-terphenyl	<1.56	<2.78	<2.04	<2.29	<0.038
o-Terphenyl	<1.50	<2.67	<1.97	<2.20	<0.037
p-terphenyl	<1.50	<2.67	<1.97	<2.20	<0.037
Total	<3275	<5816	<4275	<4796	<80.3

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 61

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet

Blank Polycyclic Aromatic Hydrocarbon Analyses

Compound	Blank Train ng	Laboratory Blank ng
Acenaphthene	<12	<12
Acenaphthylene	<12	<12
Anthracene	42.8	<12
Benzo(a)Anthracene	<12	<12
Benzo(b)Fluoranthene	<12	<12
Benzo(j/k)Fluoranthene	<12	<12
Benzo(a)fluorene	<12	<12
Benzo(b)fluorene	<12	<12
Benzo(g,h,i)Perylene	55.9	<12
Benzo(a)Pyrene	<12	<12
Benzo(e)Pyrene	<12	<12
Biphenyl	34.4	<12
2-Chloronaphthalene	<12	<12
Chrysene/Triphenylene	<12	<12
Coronene	<12	<12
Dibenzo(a,c/a,h)Anthracene	<12	<12
Dibenzo(a,e)pyrene	<12	<12
9,10-dimethylanthracene	<12	<12
7,12-Dimethylbenzo(a)anthracene	<12	<12
Fluoranthene	16.7	<12
Fluorene	<12	<12
Indeno(1,2,3-cd)Pyrene	<12	<12
2-methylanthracene	<12	<12
3-Methylcholanthrene	<12	<12
1-Methylnaphthalene	15.5	<12
2-Methylnaphthalene	20.8	<12
1-Methylphenanthrene	18.0	<12
9-Methylphenanthrene	<12	<12
Naphthalene	3550	25.3
Perylene	<12	<12
Phenanthrene	32.6	<12
Picene	<12	<12
Pyrene	45.2	<12
Tetralin	18200	<12
m-terphenyl	<12	<12
o-Terphenyl	<12	<12
p-terphenyl	<12	<12
Total	<22344	<457

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

APPENDIX 6

Boiler No. 2 BH Outlet
Data Tables
October 28 to October 29, 2015 Testing
(63 pages)

TABLE 1
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Semi-Volatile Organic Compounds Train Test Schedule

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
4	October 28, 2015	12:28	16:40	240
5	October 29, 2015	8:42	13:32	240
6	October 29, 2015	15:30	19:36	240

* Actual sampling time excluding leak-checks, traverse changes and process down time.

TABLE 2
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Stack Gas Sampling Parameters

Semi-Volatile Organic Compounds Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
4	0.846	0.989	6.51	4.669	98.9
5	0.846	0.989	6.51	4.918	100.5
6	0.846	0.989	6.51	4.830	100.6

* Dry at 25°C and 1 atmosphere

TABLE 3
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Stack Gas Physical Parameters

Semi-Volatile Organics Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
4	134	16.9	17.0	-2.57	96.5	11.7	6.89
5	138	17.8	18.0	-2.57	96.3	11.5	6.95
6	137	17.9	17.6	-2.57	96.6	11.6	7.05
Average	136	17.5	17.5	-2.57	96.5	11.6	6.96

* Dry basis, measured by the DYEC CEMS

TABLE 4
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Stack Gas Volumetric Flowrates

Semi-Volatile Organics Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
4	25.2	14.6	20.6	17.5
5	26.6	15.1	21.3	18.4
6	26.0	14.8	20.7	18.0
Average	25.9	14.8	20.9	18.0

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 5
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 4

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	192	0.024	0.041	0.029	0.034	0.60
Pentachlorodibenzo-p-dioxins	816	0.10	0.17	0.12	0.15	2.55
Hexachlorodibenzo-p-dioxins	2690	0.33	0.58	0.41	0.48	8.41
Heptachlorodibenzo-p-dioxins	3520	0.44	0.75	0.53	0.63	11.0
Octachlorodibenzo-p-dioxin	1660	0.21	0.36	0.25	0.30	5.19
Total	8878	1.10	1.90	1.35	1.59	27.8

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	341	0.042	0.073	0.052	0.061	1.07
Pentachlorodibenzofurans	279	0.035	0.060	0.042	0.050	0.87
Hexachlorodibenzofurans	853	0.11	0.18	0.13	0.15	2.67
Heptachlorodibenzofurans	892	0.11	0.19	0.14	0.16	2.79
Octachlorodibenzofuran	453	0.056	0.097	0.069	0.081	1.42
Total	2818	0.35	0.60	0.43	0.50	8.81

Dry Gas Volume Sampled (Rm^3*) :	4.669
Actual Flowrate (m^3/s) :	25.2
Dry Reference Flowrate (Rm^3/s*) :	14.6
Dry Adjusted Flowrate (Rm^3/s**) :	20.6
Wet Reference Flowrate (Rm^3/s*) :	17.5

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 6
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 5

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	298	0.034	0.061	0.043	0.050	0.91
Pentachlorodibenzo-p-dioxins	681	0.079	0.14	0.098	0.11	2.09
Hexachlorodibenzo-p-dioxins	4060	0.47	0.83	0.59	0.68	12.5
Heptachlorodibenzo-p-dioxins	5030	0.58	1.02	0.73	0.84	15.4
Octachlorodibenzo-p-dioxin	2270	0.26	0.46	0.33	0.38	6.97
Total	12339	1.42	2.51	1.78	2.06	37.9

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	713	0.082	0.14	0.10	0.12	2.19
Pentachlorodibenzofurans	544	0.063	0.11	0.078	0.091	1.67
Hexachlorodibenzofurans	1150	0.13	0.23	0.17	0.19	3.53
Heptachlorodibenzofurans	999	0.12	0.20	0.14	0.17	3.07
Octachlorodibenzofuran	610	0.070	0.12	0.088	0.10	1.87
Total	4016	0.46	0.82	0.58	0.67	12.3

Dry Gas Volume Sampled (Rm^3*) :	4.918
Actual Flowrate (m^3/s) :	26.6
Dry Reference Flowrate (Rm^3/s*) :	15.1
Dry Adjusted Flowrate (Rm^3/s**) :	21.3
Wet Reference Flowrate (Rm^3/s*) :	18.4

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 7
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 6

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	235	0.028	0.049	0.035	0.040	0.72
Pentachlorodibenzo-p-dioxins	964	0.11	0.20	0.14	0.16	2.95
Hexachlorodibenzo-p-dioxins	3530	0.42	0.73	0.52	0.60	10.8
Heptachlorodibenzo-p-dioxins	4910	0.58	1.02	0.73	0.84	15.0
Octachlorodibenzo-p-dioxin	2330	0.27	0.48	0.34	0.40	7.14
Total	11969	1.41	2.48	1.77	2.04	36.7

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	310	0.037	0.064	0.046	0.053	0.95
Pentachlorodibenzofurans	404	0.048	0.084	0.060	0.069	1.24
Hexachlorodibenzofurans	977	0.12	0.20	0.14	0.17	2.99
Heptachlorodibenzofurans	1190	0.14	0.25	0.18	0.20	3.65
Octachlorodibenzofuran	611	0.072	0.13	0.090	0.10	1.87
Total	3492	0.41	0.72	0.52	0.59	10.7

Dry Gas Volume Sampled (Rm³*) :	4.830
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**) :	20.7
Wet Reference Flowrate (Rm³/s*) :	18.0

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 8
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Actual Concentrations

Dioxins

Congener Group	Actual Concentration Test No. 4	Test No. 5	Test No. 6	Average	Coefficient of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzo-p-dioxins	0.024	0.034	0.028	0.029	18.7
Pentachlorodibenzo-p-dioxins	0.10	0.079	0.11	0.098	18.1
Hexachlorodibenzo-p-dioxins	0.33	0.47	0.42	0.41	16.7
Heptachlorodibenzo-p-dioxins	0.44	0.58	0.58	0.53	15.5
Octachlorodibenzo-p-dioxin	0.21	0.26	0.27	0.25	14.8
Total	1.10	1.42	1.41	1.31	13.9

Furans

Congener Group	Actual Concentration Test No. 4	Test No. 5	Test No. 6	Average	Coefficient of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzofurans	0.042	0.082	0.037	0.054	46.4
Pentachlorodibenzofurans	0.035	0.063	0.048	0.048	29.2
Hexachlorodibenzofurans	0.11	0.13	0.12	0.12	11.6
Heptachlorodibenzofurans	0.11	0.12	0.14	0.12	13.0
Octachlorodibenzofuran	0.056	0.070	0.072	0.066	13.1
Total	0.35	0.46	0.41	0.41	14.0

TABLE 9
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Dry Reference Concentrations

Dioxins

Congener Group	Dry Reference Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.041	0.061	0.049	0.050	19.6
Pentachlorodibenzo-p-dioxins	0.17	0.14	0.20	0.17	18.0
Hexachlorodibenzo-p-dioxins	0.58	0.83	0.73	0.71	17.7
Heptachlorodibenzo-p-dioxins	0.75	1.02	1.02	0.93	16.5
Octachlorodibenzo-p-dioxin	0.36	0.46	0.48	0.43	15.7
Total	1.90	2.51	2.48	2.30	14.9

Furans

Congener Group	Dry Reference Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.073	0.14	0.064	0.094	47.1
Pentachlorodibenzofurans	0.060	0.11	0.084	0.085	30.1
Hexachlorodibenzofurans	0.18	0.23	0.20	0.21	12.5
Heptachlorodibenzofurans	0.19	0.20	0.25	0.21	13.6
Octachlorodibenzofuran	0.097	0.12	0.13	0.12	14.1
Total	0.60	0.82	0.72	0.71	14.9

* At 25°C and 1 atmosphere

TABLE 10
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Dry Adjusted Concentrations

Dioxins

Congener Group	Dry Adjusted Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.029	0.043	0.035	0.036	19.5
Pentachlorodibenzo-p-dioxins	0.12	0.098	0.14	0.12	18.4
Hexachlorodibenzo-p-dioxins	0.41	0.59	0.52	0.51	17.7
Heptachlorodibenzo-p-dioxins	0.53	0.73	0.73	0.66	16.7
Octachlorodibenzo-p-dioxin	0.25	0.33	0.34	0.31	16.0
Total	1.35	1.78	1.77	1.63	15.1

Furans

Congener Group	Dry Adjusted Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.052	0.10	0.046	0.067	46.8
Pentachlorodibenzofurans	0.042	0.078	0.060	0.060	30.0
Hexachlorodibenzofurans	0.13	0.17	0.14	0.15	12.4
Heptachlorodibenzofurans	0.14	0.14	0.18	0.15	14.1
Octachlorodibenzofuran	0.069	0.088	0.090	0.082	14.4
Total	0.43	0.58	0.52	0.51	15.0

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 11
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Wet Reference Concentrations

Dioxins

Congener Group	Wet Reference Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.034	0.050	0.040	0.041	18.9
Pentachlorodibenzo-p-dioxins	0.15	0.11	0.16	0.14	18.1
Hexachlorodibenzo-p-dioxins	0.48	0.68	0.60	0.59	16.9
Heptachlorodibenzo-p-dioxins	0.63	0.84	0.84	0.77	15.7
Octachlorodibenzo-p-dioxin	0.30	0.38	0.40	0.36	14.9
Total	1.59	2.06	2.04	1.89	14.1

Furans

Congener Group	Wet Reference Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.061	0.12	0.053	0.078	46.5
Pentachlorodibenzofurans	0.050	0.091	0.069	0.070	29.3
Hexachlorodibenzofurans	0.15	0.19	0.17	0.17	11.8
Heptachlorodibenzofurans	0.16	0.17	0.20	0.18	13.1
Octachlorodibenzofuran	0.081	0.10	0.10	0.096	13.3
Total	0.50	0.67	0.59	0.59	14.2

* At 25°C and 1 atmosphere

TABLE 12
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Congener Group Emission Rates

Dioxins

Congener Group	Emission Rate Test No. 4 ng/s	Test No. 5 ng/s	Test No. 6 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.60	0.91	0.72	0.75	21.3
Pentachlorodibenzo-p-dioxins	2.55	2.09	2.95	2.53	17.1
Hexachlorodibenzo-p-dioxins	8.41	12.5	10.8	10.6	19.3
Heptachlorodibenzo-p-dioxins	11.0	15.4	15.0	13.8	17.7
Octachlorodibenzo-p-dioxin	5.19	6.97	7.14	6.43	16.8
Total	27.8	37.9	36.7	34.1	16.2

Furans

Congener Group	Emission Rate Test No. 4 ng/s	Test No. 5 ng/s	Test No. 6 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzofurans	1.07	2.19	0.95	1.40	48.8
Pentachlorodibenzofurans	0.87	1.67	1.24	1.26	31.7
Hexachlorodibenzofurans	2.67	3.53	2.99	3.06	14.2
Heptachlorodibenzofurans	2.79	3.07	3.65	3.17	13.8
Octachlorodibenzofuran	1.42	1.87	1.87	1.72	15.3
Total	8.81	12.3	10.7	10.6	16.6

TABLE 13
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Congener Group Emission Data

Dioxins

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.029	0.050	0.036	0.041	0.75
Pentachlorodibenzo-p-dioxins	0.098	0.17	0.12	0.14	2.53
Hexachlorodibenzo-p-dioxins	0.41	0.71	0.51	0.59	10.6
Heptachlorodibenzo-p-dioxins	0.53	0.93	0.66	0.77	13.8
Octachlorodibenzo-p-dioxin	0.25	0.43	0.31	0.36	6.43
Total	1.31	2.30	1.63	1.89	34.1

Furans

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	0.054	0.094	0.067	0.078	1.40
Pentachlorodibenzofurans	0.048	0.085	0.060	0.070	1.26
Hexachlorodibenzofurans	0.12	0.21	0.15	0.17	3.06
Heptachlorodibenzofurans	0.12	0.21	0.15	0.18	3.17
Octachlorodibenzofuran	0.066	0.12	0.082	0.096	1.72
Total	0.41	0.71	0.51	0.59	10.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 14
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Dioxin and Furan Congener Group Analyses

Dioxins

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzo-p-dioxins	<8.3	<5.3
Pentachlorodibenzo-p-dioxins	<4.3	<2.4
Hexachlorodibenzo-p-dioxins	<4.3	<2.8
Heptachlorodibenzo-p-dioxins	<3.7	<2.9
Octachlorodibenzo-p-dioxin	<3.0	<3.2
Total	<23.6	<16.6

Furans

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzofurans	<6.8	<4.0
Pentachlorodibenzofurans	<3.9	<2.4
Hexachlorodibenzofurans	<3.2	<2.0
Heptachlorodibenzofurans	<2.7	<2.1
Octachlorodibenzofuran	<4.0	<3.4
Total	<20.6	<13.9

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

TABLE 15
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 4

Specific Isomer	Total Collected pg	Actual Concentration pg/m^3	Dry Reference Concentration pg/Rm^3*	Dry Adjusted Concentration pg/Rm^3**	Wet Reference Concentration pg/Rm^3*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<7.2	<0.89	<1.54	<1.09	<1.29	<0.023
12378-pentachlorodibenzo-p-dioxin	15.3	1.90	3.28	2.32	2.73	0.048
123478-hexachlorodibenzo-p-dioxin	<47	<5.83	<10.1	<7.13	<8.40	<0.15
123678-hexachlorodibenzo-p-dioxin	215	26.7	46.0	32.6	38.4	0.67
123789-hexachlorodibenzo-p-dioxin	<80	<9.93	<17.1	<12.1	<14.3	<0.25
1234678-heptachlorodibenzo-p-dioxin	1710	212	366	260	306	5.35
Octachlorodibenzo-p-dioxin	1660	206	356	252	297	5.19
2378-tetrachlorodibenzofuran	12.1	1.50	2.59	1.84	2.16	0.038
12378-pentachlorodibenzofuran	<14	<1.74	<3.00	<2.13	<2.50	<0.044
23478-pentachlorodibenzofuran	46.7	5.79	10.0	7.09	8.34	0.15
123478-hexachlorodibenzofuran	56.6	7.02	12.1	8.59	10.1	0.18
123678-hexachlorodibenzofuran	78.0	9.68	16.7	11.8	13.9	0.24
234678-hexachlorodibenzofuran	133	16.5	28.5	20.2	23.8	0.42
123789-hexachlorodibenzofuran	31.9	3.96	6.83	4.84	5.70	0.10
1234678-heptachlorodibenzofuran	428	53.1	91.7	65.0	76.5	1.34
1234789-heptachlorodibenzofuran	95.2	11.8	20.4	14.5	17.0	0.30
Octachlorodibenzofuran	453	56.2	97.0	68.8	80.9	1.42
PCB 81	<28	<3.47	<6.00	<4.25	<5.00	<0.088
PCB 77	92.2	11.4	19.7	14.0	16.5	0.29
PCB 123	<62	<7.69	<13.3	<9.41	<11.1	<0.19
PCB 118	<52	<6.45	<11.1	<7.89	<9.29	<0.16
PCB 114	<52	<6.45	<11.1	<7.89	<9.29	<0.16
PCB 105	389	48.3	83.3	59.0	69.5	1.22
PCB 126	<61	<7.57	<13.1	<9.26	<10.9	<0.19
PCB 167	<18	<2.23	<3.86	<2.73	<3.22	<0.056
PCB 156	<39	<4.84	<8.35	<5.92	<6.97	<0.12
PCB 157	<20	<2.48	<4.28	<3.04	<3.57	<0.063
PCB 169	<15	<1.86	<3.21	<2.28	<2.68	<0.047
PCB 189	<38	<4.72	<8.14	<5.77	<6.79	<0.12
Total Dioxins & Furans Only	<5083	<631	<1089	<772	<908	<15.9
Total PCBs Only	<866	<107	<186	<131	<155	<2.71
Total Dioxins & Furans and PCBs	<5949	<738	<1274	<903	<1063	<18.6

Dry Gas Volume Sampled (Rm^3*) :	4.669
Actual Flowrate (m^3/s) :	25.2
Dry Reference Flowrate (Rm^3/s*) :	14.6
Dry Adjusted Flowrate (Rm^3/s**) :	20.6
Wet Reference Flowrate (Rm^3/s*) :	17.5

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 16
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 5

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<10	<1.15	<2.03	<1.44	<1.67	<0.031
12378-pentachlorodibenzo-p-dioxin	<18	<2.08	<3.66	<2.59	<3.00	<0.055
123478-hexachlorodibenzo-p-dioxin	87.3	10.1	17.8	12.6	14.6	0.27
123678-hexachlorodibenzo-p-dioxin	274	31.6	55.7	39.5	45.7	0.84
123789-hexachlorodibenzo-p-dioxin	118	13.6	24.0	17.0	19.7	0.36
1234678-heptachlorodibenzo-p-dioxin	2430	280	494	350	405	7.46
Octachlorodibenzo-p-dioxin	2270	262	462	327	379	6.97
2378-tetrachlorodibenzofuran	13.2	1.52	2.68	1.90	2.20	0.041
12378-pentachlorodibenzofuran	17.4	2.01	3.54	2.51	2.90	0.053
23478-pentachlorodibenzofuran	<42	<4.85	<8.54	<6.05	<7.01	<0.13
123478-hexachlorodibenzofuran	70.4	8.13	14.3	10.1	11.7	0.22
123678-hexachlorodibenzofuran	106	12.2	21.6	15.3	17.7	0.33
234678-hexachlorodibenzofuran	182	21.0	37.0	26.2	30.4	0.56
123789-hexachlorodibenzofuran	40.8	4.71	8.30	5.88	6.81	0.13
1234678-heptachlorodibenzofuran	625	72.1	127	90.1	104	1.92
1234789-heptachlorodibenzofuran	139	16.0	28.3	20.0	23.2	0.43
Octachlorodibenzofuran	610	70.4	124	87.9	102	1.87
PCB 81	48.5	5.60	9.86	6.99	8.09	0.15
PCB 77	121	14.0	24.6	17.4	20.2	0.37
PCB 123	<92	<10.6	<18.7	<13.3	<15.4	<0.28
PCB 118	1430	165	291	206	239	4.39
PCB 114	79.4	9.16	16.1	11.4	13.2	0.24
PCB 105	513	59.2	104	73.9	85.6	1.58
PCB 126	<38	<4.39	<7.73	<5.48	<6.34	<0.12
PCB 167	<11	<1.27	<2.24	<1.59	<1.84	<0.034
PCB 156	<28	<3.23	<5.69	<4.04	<4.67	<0.086
PCB 157	<23	<2.65	<4.68	<3.32	<3.84	<0.071
PCB 169	25.5	2.94	5.19	3.68	4.26	0.078
PCB 189	<51	<5.89	<10.4	<7.35	<8.51	<0.16
Total Dioxins & Furans Only	<7053	<814	<1434	<1017	<1177	<21.7
Total PCBs Only	<2460	<284	<500	<355	<411	<7.55
Total Dioxins & Furans and PCBs	<9514	<1098	<1934	<1371	<1587	<29.2

Dry Gas Volume Sampled (Rm³*) :	4.918
Actual Flowrate (m³/s) :	26.6
Dry Reference Flowrate (Rm³/s*) :	15.1
Dry Adjusted Flowrate (Rm³/s**) :	21.3
Wet Reference Flowrate (Rm³/s*) :	18.4

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 17
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Data
Test No. 6

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<8.9	<1.05	<1.84	<1.32	<1.52	<0.027
12378-pentachlorodibenzo-p-dioxin	<18	<2.12	<3.73	<2.66	<3.06	<0.055
123478-hexachlorodibenzo-p-dioxin	69.2	8.16	14.3	10.2	11.8	0.21
123678-hexachlorodibenzo-p-dioxin	256	30.2	53.0	37.9	43.6	0.78
123789-hexachlorodibenzo-p-dioxin	109	12.8	22.6	16.1	18.6	0.33
1234678-heptachlorodibenzo-p-dioxin	2370	279	491	351	403	7.26
Octachlorodibenzo-p-dioxin	2330	275	482	345	397	7.14
2378-tetrachlorodibenzofuran	<14	<1.65	<2.90	<2.07	<2.38	<0.043
12378-pentachlorodibenzofuran	<15	<1.77	<3.11	<2.22	<2.55	<0.046
23478-pentachlorodibenzofuran	48.3	5.69	10.0	7.15	8.22	0.15
123478-hexachlorodibenzofuran	61.6	7.26	12.8	9.12	10.5	0.19
123678-hexachlorodibenzofuran	86.0	10.1	17.8	12.7	14.6	0.26
234678-hexachlorodibenzofuran	173	20.4	35.8	25.6	29.5	0.53
123789-hexachlorodibenzofuran	<34	<4.01	<7.04	<5.03	<5.79	<0.10
1234678-heptachlorodibenzofuran	594	70.0	123	87.9	101	1.82
1234789-heptachlorodibenzofuran	123	14.5	25.5	18.2	20.9	0.38
Octachlorodibenzofuran	611	72.0	127	90.4	104	1.87
PCB 81	<68	<8.01	<14.1	<10.1	<11.6	<0.21
PCB 77	232	27.3	48.0	34.3	39.5	0.71
PCB 123	<320	<37.7	<66.3	<47.4	<54.5	<0.98
PCB 118	5060	596	1048	749	861	15.5
PCB 114	<200	<23.6	<41.4	<29.6	<34.0	<0.61
PCB 105	2500	295	518	370	426	7.66
PCB 126	<170	<20.0	<35.2	<25.2	<28.9	<0.52
PCB 167	190	22.4	39.3	28.1	32.3	0.58
PCB 156	457	53.9	94.6	67.6	77.8	1.40
PCB 157	132	15.6	27.3	19.5	22.5	0.40
PCB 169	<37	<4.36	<7.66	<5.48	<6.30	<0.11
PCB 189	45.2	5.33	9.36	6.69	7.69	0.14
Total Dioxins & Furans Only	<6921	<816	<1433	<1025	<1178	<21.2
Total PCBs Only	<9411	<1109	<1948	<1393	<1602	<28.8
Total Dioxins & Furans and PCBs	<16332	<1925	<3381	<2418	<2780	<50.0

Dry Gas Volume Sampled (Rm³*) :	4.830
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**) :	20.7
Wet Reference Flowrate (Rm³/s*) :	18.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 18
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration Test No. 4 pg/m³	Test No. 5 pg/m³	Test No. 6 pg/m³	Average pg/m³	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.89	<1.15	<1.05	<1.03	12.7
12378-pentachlorodibenzo-p-dioxin	1.90	<2.08	<2.12	<2.03	5.8
123478-hexachlorodibenzo-p-dioxin	<5.83	10.1	8.16	<8.02	26.5
123678-hexachlorodibenzo-p-dioxin	26.7	31.6	30.2	29.5	8.6
123789-hexachlorodibenzo-p-dioxin	<9.93	13.6	12.8	<12.1	16.1
1234678-heptachlorodibenzo-p-dioxin	212	280	279	257	15.2
Octachlorodibenzo-p-dioxin	206	262	275	248	14.8
2378-tetrachlorodibenzofuran	1.50	1.52	<1.65	<1.56	5.1
12378-pentachlorodibenzofuran	<1.74	2.01	<1.77	<1.84	8.1
23478-pentachlorodibenzofuran	5.79	<4.85	5.69	<5.45	9.5
123478-hexachlorodibenzofuran	7.02	8.13	7.26	7.47	7.8
123678-hexachlorodibenzofuran	9.68	12.2	10.1	10.7	12.8
234678-hexachlorodibenzofuran	16.5	21.0	20.4	19.3	12.6
123789-hexachlorodibenzofuran	3.96	4.71	<4.01	<4.22	9.9
1234678-heptachlorodibenzofuran	53.1	72.1	70.0	65.1	16.0
1234789-heptachlorodibenzofuran	11.8	16.0	14.5	14.1	15.2
Octachlorodibenzofuran	56.2	70.4	72.0	66.2	13.1
PCB 81	<3.47	5.60	<8.01	<5.70	39.9
PCB 77	11.4	14.0	27.3	17.6	48.6
PCB 123	<7.69	<10.6	<37.7	<18.7	88.6
PCB 118	<6.45	165	596	<256	119
PCB 114	<6.45	9.16	<23.6	<13.1	70.4
PCB 105	48.3	59.2	295	134	104
PCB 126	<7.57	<4.39	<20.0	<10.7	77.6
PCB 167	<2.23	<1.27	22.4	<8.63	138
PCB 156	<4.84	<3.23	53.9	<20.6	139
PCB 157	<2.48	<2.65	15.6	<6.90	109
PCB 169	<1.86	2.94	<4.36	<3.06	41.0
PCB 189	<4.72	<5.89	5.33	<5.31	11.0
Total Dioxins & Furans Only	<631	<814	<816	<754	14.1
Total PCBs Only	<107	<284	<1109	<500	107
Total Dioxins & Furans and PCBs	<738	<1098	<1925	<1254	48.5

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 19
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration Test No. 4 pg/Rm^3*	Test No. 5 pg/Rm^3*	Test No. 6 pg/Rm^3*	Average pg/Rm^3*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<1.54	<2.03	<1.84	<1.81	13.7
12378-pentachlorodibenzo-p-dioxin	3.28	<3.66	<3.73	<3.55	6.8
123478-hexachlorodibenzo-p-dioxin	<10.1	17.8	14.3	<14.0	27.4
123678-hexachlorodibenzo-p-dioxin	46.0	55.7	53.0	51.6	9.7
123789-hexachlorodibenzo-p-dioxin	<17.1	24.0	22.6	<21.2	17.0
1234678-heptachlorodibenzo-p-dioxin	366	494	491	450	16.2
Octachlorodibenzo-p-dioxin	356	462	482	433	15.7
2378-tetrachlorodibenzofuran	2.59	2.68	<2.90	<2.72	5.8
12378-pentachlorodibenzofuran	<3.00	3.54	<3.11	<3.21	8.9
23478-pentachlorodibenzofuran	10.0	<8.54	10.0	<9.51	8.9
123478-hexachlorodibenzofuran	12.1	14.3	12.8	13.1	8.6
123678-hexachlorodibenzofuran	16.7	21.6	17.8	18.7	13.6
234678-hexachlorodibenzofuran	28.5	37.0	35.8	33.8	13.7
123789-hexachlorodibenzofuran	6.83	8.30	<7.04	<7.39	10.7
1234678-heptachlorodibenzofuran	91.7	127	123	114	17.0
1234789-heptachlorodibenzofuran	20.4	28.3	25.5	24.7	16.2
Octachlorodibenzofuran	97.0	124	127	116	14.1
PCB 81	<6.00	9.86	<14.1	<9.98	40.5
PCB 77	19.7	24.6	48.0	30.8	49.1
PCB 123	<13.3	<18.7	<66.3	<32.7	89.0
PCB 118	<11.1	291	1048	<450	119
PCB 114	<11.1	16.1	<41.4	<22.9	70.9
PCB 105	83.3	104	518	235	104
PCB 126	<13.1	<7.73	<35.2	<18.7	78.0
PCB 167	<3.86	<2.24	39.3	<15.1	138
PCB 156	<8.35	<5.69	94.6	<36.2	140
PCB 157	<4.28	<4.68	27.3	<12.1	109
PCB 169	<3.21	5.19	<7.66	<5.35	41.6
PCB 189	<8.14	<10.4	9.36	<9.29	12.0
Total Dioxins & Furans Only	<1089	<1434	<1433	<1319	15.1
Total PCBs Only	<186	<500	<1948	<878	107
Total Dioxins & Furans and PCBs	<1274	<1934	<3381	<2197	49.1

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 20
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration Test No. 4 pg/Rm³*	Test No. 5 pg/Rm³*	Test No. 6 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<1.09	<1.44	<1.32	<1.28	13.8
12378-pentachlorodibenzo-p-dioxin	2.32	<2.59	<2.66	<2.53	7.2
123478-hexachlorodibenzo-p-dioxin	<7.13	12.6	10.2	<9.99	27.4
123678-hexachlorodibenzo-p-dioxin	32.6	39.5	37.9	36.7	9.8
123789-hexachlorodibenzo-p-dioxin	<12.1	17.0	16.1	<15.1	17.2
1234678-heptachlorodibenzo-p-dioxin	260	350	351	320	16.4
Octachlorodibenzo-p-dioxin	252	327	345	308	16.0
2378-tetrachlorodibenzofuran	1.84	1.90	<2.07	<1.94	6.3
12378-pentachlorodibenzofuran	<2.13	2.51	<2.22	<2.28	8.7
23478-pentachlorodibenzofuran	7.09	<6.05	7.15	<6.76	9.1
123478-hexachlorodibenzofuran	8.59	10.1	9.12	9.29	8.5
123678-hexachlorodibenzofuran	11.8	15.3	12.7	13.3	13.4
234678-hexachlorodibenzofuran	20.2	26.2	25.6	24.0	13.8
123789-hexachlorodibenzofuran	4.84	5.88	<5.03	<5.25	10.5
1234678-heptachlorodibenzofuran	65.0	90.1	87.9	81.0	17.2
1234789-heptachlorodibenzofuran	14.5	20.0	18.2	17.6	16.2
Octachlorodibenzofuran	68.8	87.9	90.4	82.4	14.4
PCB 81	<4.25	6.99	<10.1	<7.10	41.0
PCB 77	14.0	17.4	34.3	21.9	49.7
PCB 123	<9.41	<13.3	<47.4	<23.3	89.5
PCB 118	<7.89	206	749	<321	120
PCB 114	<7.89	11.4	<29.6	<16.3	71.4
PCB 105	59.0	73.9	370	168	105
PCB 126	<9.26	<5.48	<25.2	<13.3	78.5
PCB 167	<2.73	<1.59	28.1	<10.8	139
PCB 156	<5.92	<4.04	67.6	<25.9	140
PCB 157	<3.04	<3.32	19.5	<8.63	109
PCB 169	<2.28	3.68	<5.48	<3.81	42.1
PCB 189	<5.77	<7.35	6.69	<6.60	12.0
Total Dioxins & Furans Only	<772	<1017	<1025	<938	15.3
Total PCBs Only	<131	<355	<1393	<626	107
Total Dioxins & Furans and PCBs	<903	<1371	<2418	<1564	49.6

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 21
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration Test No. 4	Test No. 5	Test No. 6	Average	Coefficient of Variation
	pg/Rm^3*	pg/Rm^3*	pg/Rm^3*	pg/Rm^3*	%
2378-tetrachlorodibenzo-p-dioxin	<1.29	<1.67	<1.52	<1.49	12.9
12378-pentachlorodibenzo-p-dioxin	2.73	<3.00	<3.06	<2.93	6.0
123478-hexachlorodibenzo-p-dioxin	<8.40	14.6	11.8	<11.6	26.7
123678-hexachlorodibenzo-p-dioxin	38.4	45.7	43.6	42.6	8.8
123789-hexachlorodibenzo-p-dioxin	<14.3	19.7	18.6	<17.5	16.2
1234678-heptachlorodibenzo-p-dioxin	306	405	403	371	15.4
Octachlorodibenzo-p-dioxin	297	379	397	357	14.9
2378-tetrachlorodibenzofuran	2.16	2.20	<2.38	<2.25	5.2
12378-pentachlorodibenzofuran	<2.50	2.90	<2.55	<2.65	8.2
23478-pentachlorodibenzofuran	8.34	<7.01	8.22	<7.86	9.4
123478-hexachlorodibenzofuran	10.1	11.7	10.5	10.8	7.9
123678-hexachlorodibenzofuran	13.9	17.7	14.6	15.4	12.9
234678-hexachlorodibenzofuran	23.8	30.4	29.5	27.9	12.8
123789-hexachlorodibenzofuran	5.70	6.81	<5.79	<6.10	10.1
1234678-heptachlorodibenzofuran	76.5	104	101	94.0	16.2
1234789-heptachlorodibenzofuran	17.0	23.2	20.9	20.4	15.4
Octachlorodibenzofuran	80.9	102	104	95.6	13.3
PCB 81	<5.00	8.09	<11.6	<8.22	40.0
PCB 77	16.5	20.2	39.5	25.4	48.7
PCB 123	<11.1	<15.4	<54.5	<27.0	88.7
PCB 118	<9.29	239	861	<370	119
PCB 114	<9.29	13.2	<34.0	<18.9	70.5
PCB 105	69.5	85.6	426	194	104
PCB 126	<10.9	<6.34	<28.9	<15.4	77.6
PCB 167	<3.22	<1.84	32.3	<12.5	138
PCB 156	<6.97	<4.67	77.8	<29.8	139
PCB 157	<3.57	<3.84	22.5	<9.96	109
PCB 169	<2.68	4.26	<6.30	<4.41	41.1
PCB 189	<6.79	<8.51	7.69	<7.66	11.2
Total Dioxins & Furans Only	<908	<1177	<1178	<1088	14.3
Total PCBs Only	<155	<411	<1602	<722	107
Total Dioxins & Furans and PCBs	<1063	<1587	<2780	<1810	48.6

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 22
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Emission Rates

Specific Isomer	Emission Rate Test No. 4	Test No. 5	Test No. 6	Average	Coefficient of Variation
	ng/s	ng/s	ng/s	ng/s	%
2378-tetrachlorodibenzo-p-dioxin	<0.023	<0.031	<0.027	<0.027	15.3
12378-pentachlorodibenzo-p-dioxin	0.048	<0.055	<0.055	<0.053	8.1
123478-hexachlorodibenzo-p-dioxin	<0.15	0.27	0.21	<0.21	29.0
123678-hexachlorodibenzo-p-dioxin	0.67	0.84	0.78	0.77	11.2
123789-hexachlorodibenzo-p-dioxin	<0.25	0.36	0.33	<0.32	18.5
1234678-heptachlorodibenzo-p-dioxin	5.35	7.46	7.26	6.69	17.4
Octachlorodibenzo-p-dioxin	5.19	6.97	7.14	6.43	16.8
2378-tetrachlorodibenzofuran	0.038	0.041	<0.043	<0.040	6.3
12378-pentachlorodibenzofuran	<0.044	0.053	<0.046	<0.048	10.6
23478-pentachlorodibenzofuran	0.15	<0.13	0.15	<0.14	7.4
123478-hexachlorodibenzofuran	0.18	0.22	0.19	0.19	10.4
123678-hexachlorodibenzofuran	0.24	0.33	0.26	0.28	15.3
234678-hexachlorodibenzofuran	0.42	0.56	0.53	0.50	15.1
123789-hexachlorodibenzofuran	0.10	0.13	<0.10	<0.11	12.4
1234678-heptachlorodibenzofuran	1.34	1.92	1.82	1.69	18.4
1234789-heptachlorodibenzofuran	0.30	0.43	0.38	0.37	17.7
Octachlorodibenzofuran	1.42	1.87	1.87	1.72	15.3
PCB 81	<0.088	0.15	<0.21	<0.15	40.7
PCB 77	0.29	0.37	0.71	0.46	49.0
PCB 123	<0.19	<0.28	<0.98	<0.49	88.7
PCB 118	<0.16	4.39	15.5	<6.69	119
PCB 114	<0.16	0.24	<0.61	<0.34	70.6
PCB 105	1.22	1.58	7.66	3.48	104
PCB 126	<0.19	<0.12	<0.52	<0.28	77.9
PCB 167	<0.056	<0.034	0.58	<0.22	138
PCB 156	<0.12	<0.086	1.40	<0.54	140
PCB 157	<0.063	<0.071	0.40	<0.18	109
PCB 169	<0.047	0.078	<0.11	<0.080	41.8
PCB 189	<0.12	<0.16	0.14	<0.14	13.7
Total Dioxins & Furans Only	<15.9	<21.7	<21.2	<19.6	16.4
Total PCBs Only	<2.71	<7.55	<28.8	<13.0	107
Total Dioxins & Furans and PCBs	<18.6	<29.2	<50.0	<32.6	49.0

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 23
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Specific Isomer Emission Data

Specific Isomer	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<1.03	<1.81	<1.28	<1.49	<0.027
12378-pentachlorodibenzo-p-dioxin	<2.03	<3.55	<2.53	<2.93	<0.053
123478-hexachlorodibenzo-p-dioxin	<8.02	<14.0	<9.99	<11.6	<0.21
123678-hexachlorodibenzo-p-dioxin	29.5	51.6	36.7	42.6	0.77
123789-hexachlorodibenzo-p-dioxin	<12.1	<21.2	<15.1	<17.5	<0.32
1234678-heptachlorodibenzo-p-dioxin	257	450	320	371	6.69
Octachlorodibenzo-p-dioxin	248	433	308	357	6.43
2378-tetrachlorodibenzofuran	<1.56	<2.72	<1.94	<2.25	<0.040
12378-pentachlorodibenzofuran	<1.84	<3.21	<2.28	<2.65	<0.048
23478-pentachlorodibenzofuran	<5.45	<9.51	<6.76	<7.86	<0.14
123478-hexachlorodibenzofuran	7.47	13.1	9.29	10.8	0.19
123678-hexachlorodibenzofuran	10.7	18.7	13.3	15.4	0.28
234678-hexachlorodibenzofuran	19.3	33.8	24.0	27.9	0.50
123789-hexachlorodibenzofuran	<4.22	<7.39	<5.25	<6.10	<0.11
1234678-heptachlorodibenzofuran	65.1	114	81.0	94.0	1.69
1234789-heptachlorodibenzofuran	14.1	24.7	17.6	20.4	0.37
Octachlorodibenzofuran	66.2	116	82.4	95.6	1.72
PCB 81	<5.70	<9.98	<7.10	<8.22	<0.15
PCB 77	17.6	30.8	21.9	25.4	0.46
PCB 123	<18.7	<32.7	<23.3	<27.0	<0.49
PCB 118	<256	<450	<321	<370	<6.69
PCB 114	<13.1	<22.9	<16.3	<18.9	<0.34
PCB 105	134	235	168	194	3.48
PCB 126	<10.7	<18.7	<13.3	<15.4	<0.28
PCB 167	<8.63	<15.1	<10.8	<12.5	<0.22
PCB 156	<20.6	<36.2	<25.9	<29.8	<0.54
PCB 157	<6.90	<12.1	<8.63	<9.96	<0.18
PCB 169	<3.06	<5.35	<3.81	<4.41	<0.080
PCB 189	<5.31	<9.29	<6.60	<7.66	<0.14
Total Dioxins & Furans Only	<754	<1319	<938	<1088	<19.6
Total PCBs Only	<500	<878	<626	<722	<13.0
Total Dioxins & Furans and PCBs	<1254	<2197	<1564	<1810	<32.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 24
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Dioxin and Furan Specific Isomer Analyses

Specific Isomer	Blank Train pg	Laboratory Blank pg
2378-tetrachlorodibenzo-p-dioxin	<8.3	<5.3
12378-pentachlorodibenzo-p-dioxin	<4.3	<2.4
123478-hexachlorodibenzo-p-dioxin	<4.2	<2.7
123678-hexachlorodibenzo-p-dioxin	<4.3	<2.8
123789-hexachlorodibenzo-p-dioxin	<4.3	<2.8
1234678-heptachlorodibenzo-p-dioxin	<3.7	<2.9
Octachlorodibenzo-p-dioxin	<3.0	<3.2
2378-tetrachlorodibenzofuran	<6.8	<4.0
12378-pentachlorodibenzofuran	<3.9	<2.4
23478-pentachlorodibenzofuran	<3.8	<2.3
123478-hexachlorodibenzofuran	<3.0	<1.9
123678-hexachlorodibenzofuran	<2.9	<1.8
234678-hexachlorodibenzofuran	<2.9	<1.8
123789-hexachlorodibenzofuran	<3.2	<2.0
1234678-heptachlorodibenzofuran	<2.2	<1.8
1234789-heptachlorodibenzofuran	<2.7	<2.1
Octachlorodibenzofuran	<4.0	<3.4
PCB 81	<38	<3.0
PCB 77	<38	<3.0
PCB 123	<150	<2.7
PCB 118	1420	<2.2
PCB 114	<36	<2.3
PCB 105	507	<2.4
PCB 126	<39	<2.7
PCB 167	<11	<2.9
PCB 156	<21	<2.7
PCB 157	<7.2	<2.9
PCB 169	<7.9	<3.2
PCB 189	<1.8	<2.5
Total Dioxins & Furans Only	<67.5	<45.6
Total PCBs Only	<2277	<32.5
Total Dioxins & Furans and PCBs	<2344	<78.1

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

TABLE 25
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Actual Concentrations

Specific Isomer	Toxicity Equivalency Factor	Actual Concentration Test No. 4 pg TEQ/m³	Test No. 5 pg TEQ/m³	Test No. 6 pg TEQ/m³	Average pg TEQ/m³
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.89	<1.15	<1.05	<1.03
12378-pentachlorodibenzo-p-dioxin	1.000	1.90	<2.08	<2.12	<2.03
123478-hexachlorodibenzo-p-dioxin	0.100	<0.58	1.01	0.82	<0.80
123678-hexachlorodibenzo-p-dioxin	0.100	2.67	3.16	3.02	2.95
123789-hexachlorodibenzo-p-dioxin	0.100	<0.99	1.36	1.28	<1.21
1234678-heptachlorodibenzo-p-dioxin	0.010	2.12	2.80	2.79	2.57
Octachlorodibenzo-p-dioxin	0.0003	0.062	0.079	0.082	0.074
2378-tetrachlorodibenzofuran	0.100	0.15	0.15	<0.16	<0.16
12378-pentachlorodibenzofuran	0.030	<0.052	0.060	<0.053	<0.055
23478-pentachlorodibenzofuran	0.300	1.74	<1.45	1.71	<1.63
123478-hexachlorodibenzofuran	0.100	0.70	0.81	0.73	0.75
123678-hexachlorodibenzofuran	0.100	0.97	1.22	1.01	1.07
234678-hexachlorodibenzofuran	0.100	1.65	2.10	2.04	1.93
123789-hexachlorodibenzofuran	0.100	0.40	0.47	<0.40	<0.42
1234678-heptachlorodibenzofuran	0.010	0.53	0.72	0.70	0.65
1234789-heptachlorodibenzofuran	0.010	0.12	0.16	0.14	0.14
Octachlorodibenzofuran	0.0003	0.017	0.021	0.022	0.020
PCB 81	0.0003	<0.0010	0.0017	<0.0024	<0.0017
PCB 77	0.0001	0.0011	0.0014	0.0027	0.0018
PCB 123	0.00003	<0.00023	<0.00032	<0.0011	<0.00056
PCB 118	0.00003	<0.00019	0.0050	0.018	<0.0077
PCB 114	0.00003	<0.00019	0.00027	<0.00071	<0.00039
PCB 105	0.00003	0.0014	0.0018	0.0088	0.0040
PCB 126	0.100	<0.76	<0.44	<2.00	<1.07
PCB 167	0.00003	<0.000067	<0.000038	0.00067	<0.00026
PCB 156	0.00003	<0.00015	<0.000097	0.0016	<0.00062
PCB 157	0.00003	<0.000074	<0.000080	0.00047	<0.00021
PCB 169	0.030	<0.056	0.088	<0.13	<0.092
PCB 189	0.00003	<0.00014	<0.00018	0.00016	<0.00016
Total Dioxins & Furans Only		<15.5	<18.8	<18.1	<17.5
Total PCBs Only		<0.82	<0.54	<2.17	<1.18
Total Dioxins & Furans and PCBs		<16.4	<19.4	<20.3	<18.7

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 26
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Dry Reference Concentration Test No. 4 pg TEQ/Rm³*	Test No. 5 pg TEQ/Rm³*	Test No. 6 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.54	<2.03	<1.84	<1.81
12378-pentachlorodibenzo-p-dioxin	1.000	3.28	<3.66	<3.73	<3.55
123478-hexachlorodibenzo-p-dioxin	0.100	<1.01	1.78	1.43	<1.40
123678-hexachlorodibenzo-p-dioxin	0.100	4.60	5.57	5.30	5.16
123789-hexachlorodibenzo-p-dioxin	0.100	<1.71	2.40	2.26	<2.12
1234678-heptachlorodibenzo-p-dioxin	0.010	3.66	4.94	4.91	4.50
Octachlorodibenzo-p-dioxin	0.0003	0.11	0.14	0.14	0.13
2378-tetrachlorodibenzofuran	0.100	0.26	0.27	<0.29	<0.27
12378-pentachlorodibenzofuran	0.030	<0.090	0.11	<0.093	<0.096
23478-pentachlorodibenzofuran	0.300	3.00	<2.56	3.00	<2.85
123478-hexachlorodibenzofuran	0.100	1.21	1.43	1.28	1.31
123678-hexachlorodibenzofuran	0.100	1.67	2.16	1.78	1.87
234678-hexachlorodibenzofuran	0.100	2.85	3.70	3.58	3.38
123789-hexachlorodibenzofuran	0.100	0.68	0.83	<0.70	<0.74
1234678-heptachlorodibenzofuran	0.010	0.92	1.27	1.23	1.14
1234789-heptachlorodibenzofuran	0.010	0.20	0.28	0.25	0.25
Octachlorodibenzofuran	0.0003	0.029	0.037	0.038	0.035
PCB 81	0.0003	<0.0018	0.0030	<0.0042	<0.0030
PCB 77	0.0001	0.0020	0.0025	0.0048	0.0031
PCB 123	0.00003	<0.00040	<0.00056	<0.0020	<0.00098
PCB 118	0.00003	<0.00033	0.0087	0.031	<0.013
PCB 114	0.00003	<0.00033	0.00048	<0.0012	<0.00069
PCB 105	0.00003	0.0025	0.0031	0.016	0.0071
PCB 126	0.100	<1.31	<0.77	<3.52	<1.87
PCB 167	0.00003	<0.00012	<0.000067	0.0012	<0.00045
PCB 156	0.00003	<0.00025	<0.00017	0.0028	<0.0011
PCB 157	0.00003	<0.00013	<0.00014	0.00082	<0.00036
PCB 169	0.030	<0.096	0.16	<0.23	<0.16
PCB 189	0.00003	<0.00024	<0.00031	0.00028	<0.00028
Total Dioxins & Furans Only		<26.8	<33.2	<31.9	<30.6
Total PCBs Only		<1.41	<0.95	<3.81	<2.06
Total Dioxins & Furans and PCBs		<28.2	<34.1	<35.7	<32.7

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 27
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 4 pg TEQ/Rm³*	Test No. 5 pg TEQ/Rm³*	Test No. 6 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.09	<1.44	<1.32	<1.28
12378-pentachlorodibenzo-p-dioxin	1.000	2.32	<2.59	<2.66	<2.53
123478-hexachlorodibenzo-p-dioxin	0.100	<0.71	1.26	1.02	<1.00
123678-hexachlorodibenzo-p-dioxin	0.100	3.26	3.95	3.79	3.67
123789-hexachlorodibenzo-p-dioxin	0.100	<1.21	1.70	1.61	<1.51
1234678-heptachlorodibenzo-p-dioxin	0.010	2.60	3.50	3.51	3.20
Octachlorodibenzo-p-dioxin	0.0003	0.076	0.098	0.10	0.092
2378-tetrachlorodibenzofuran	0.100	0.18	0.19	<0.21	<0.19
12378-pentachlorodibenzofuran	0.030	<0.064	0.075	<0.067	<0.069
23478-pentachlorodibenzofuran	0.300	2.13	<1.82	2.14	<2.03
123478-hexachlorodibenzofuran	0.100	0.86	1.01	0.91	0.93
123678-hexachlorodibenzofuran	0.100	1.18	1.53	1.27	1.33
234678-hexachlorodibenzofuran	0.100	2.02	2.62	2.56	2.40
123789-hexachlorodibenzofuran	0.100	0.48	0.59	<0.50	<0.53
1234678-heptachlorodibenzofuran	0.010	0.65	0.90	0.88	0.81
1234789-heptachlorodibenzofuran	0.010	0.14	0.20	0.18	0.18
Octachlorodibenzofuran	0.0003	0.021	0.026	0.027	0.025
PCB 81	0.0003	<0.0013	0.0021	<0.0030	<0.0021
PCB 77	0.0001	0.0014	0.0017	0.0034	0.0022
PCB 123	0.00003	<0.00028	<0.00040	<0.0014	<0.00070
PCB 118	0.00003	<0.00024	0.0062	0.022	<0.0096
PCB 114	0.00003	<0.00024	0.00034	<0.00089	<0.00049
PCB 105	0.00003	0.0018	0.0022	0.011	0.0050
PCB 126	0.100	<0.93	<0.55	<2.52	<1.33
PCB 167	0.00003	<0.000082	<0.000048	0.00084	<0.00032
PCB 156	0.00003	<0.00018	<0.00012	0.0020	<0.00078
PCB 157	0.00003	<0.000091	<0.000099	0.00059	<0.00026
PCB 169	0.030	<0.068	0.11	<0.16	<0.11
PCB 189	0.00003	<0.00017	<0.00022	0.00020	<0.00020
Total Dioxins & Furans Only		<19.0	<23.5	<22.8	<21.8
Total PCBs Only		<1.00	<0.67	<2.73	<1.47
Total Dioxins & Furans and PCBs		<20.0	<24.2	<25.5	<23.2

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 27A
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using Half the Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 4 pg TEQ/Rm³*	Test No. 5 pg TEQ/Rm³*	Test No. 6 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	0.55	0.72	0.66	0.64
12378-pentachlorodibenzo-p-dioxin	1.000	2.32	1.30	1.33	1.65
123478-hexachlorodibenzo-p-dioxin	0.100	0.36	1.26	1.02	0.88
123678-hexachlorodibenzo-p-dioxin	0.100	3.26	3.95	3.79	3.67
123789-hexachlorodibenzo-p-dioxin	0.100	0.61	1.70	1.61	1.31
1234678-heptachlorodibenzo-p-dioxin	0.010	2.60	3.50	3.51	3.20
Octachlorodibenzo-p-dioxin	0.0003	0.076	0.098	0.10	0.092
2378-tetrachlorodibenzofuran	0.100	0.18	0.19	0.10	0.16
12378-pentachlorodibenzofuran	0.030	0.032	0.075	0.033	0.047
23478-pentachlorodibenzofuran	0.300	2.13	0.91	2.14	1.73
123478-hexachlorodibenzofuran	0.100	0.86	1.01	0.91	0.93
123678-hexachlorodibenzofuran	0.100	1.18	1.53	1.27	1.33
234678-hexachlorodibenzofuran	0.100	2.02	2.62	2.56	2.40
123789-hexachlorodibenzofuran	0.100	0.48	0.59	0.25	0.44
1234678-heptachlorodibenzofuran	0.010	0.65	0.90	0.88	0.81
1234789-heptachlorodibenzofuran	0.010	0.14	0.20	0.18	0.18
Octachlorodibenzofuran	0.0003	0.021	0.026	0.027	0.025
PCB 81	0.0003	0.00064	0.0021	0.0015	0.0014
PCB 77	0.0001	0.0014	0.0017	0.0034	0.0022
PCB 123	0.00003	0.00014	0.00020	0.00071	0.00035
PCB 118	0.00003	0.00012	0.0062	0.022	0.0096
PCB 114	0.00003	0.00012	0.00034	0.00044	0.00030
PCB 105	0.00003	0.0018	0.0022	0.011	0.0050
PCB 126	0.100	0.46	0.27	1.26	0.67
PCB 167	0.00003	0.000041	0.000024	0.00084	0.00030
PCB 156	0.00003	0.000089	0.000061	0.0020	0.00073
PCB 157	0.00003	0.000046	0.000050	0.00059	0.00023
PCB 169	0.030	0.034	0.11	0.082	0.076
PCB 189	0.00003	0.000087	0.00011	0.00020	0.00013
Total Dioxins & Furans Only		17.5	20.6	20.4	19.5
Total PCBs Only		0.50	0.40	1.38	0.76
Total Dioxins & Furans and PCBs		18.0	21.0	21.8	20.2

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 27B
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 4 pg TEQ/Rm³*	Test No. 5 pg TEQ/Rm³*	Test No. 6 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.09	<1.44	<1.32	<1.28
12378-pentachlorodibenzo-p-dioxin	0.500	1.16	<1.30	<1.33	<1.26
123478-hexachlorodibenzo-p-dioxin	0.100	<0.71	1.26	1.02	<1.00
123678-hexachlorodibenzo-p-dioxin	0.100	3.26	3.95	3.79	3.67
123789-hexachlorodibenzo-p-dioxin	0.100	<1.21	1.70	1.61	<1.51
1234678-heptachlorodibenzo-p-dioxin	0.010	2.60	3.50	3.51	3.20
Octachlorodibenzo-p-dioxin	0.001	0.25	0.33	0.34	0.31
2378-tetrachlorodibenzofuran	0.100	0.18	0.19	<0.21	<0.19
12378-pentachlorodibenzofuran	0.050	<0.11	0.13	<0.11	<0.11
23478-pentachlorodibenzofuran	0.500	3.54	<3.03	3.57	<3.38
123478-hexachlorodibenzofuran	0.100	0.86	1.01	0.91	0.93
123678-hexachlorodibenzofuran	0.100	1.18	1.53	1.27	1.33
234678-hexachlorodibenzofuran	0.100	2.02	2.62	2.56	2.40
123789-hexachlorodibenzofuran	0.100	0.48	0.59	<0.50	<0.53
1234678-heptachlorodibenzofuran	0.010	0.65	0.90	0.88	0.81
1234789-heptachlorodibenzofuran	0.010	0.14	0.20	0.18	0.18
Octachlorodibenzofuran	0.001	0.069	0.088	0.090	0.082
Total Dioxins & Furans		<19.5	<23.8	<23.2	<22.2
In-Stack Emission Limit					60

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

NATO/CCMS (1989) Toxicity Equivalency Factors

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 28
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Wet Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Wet Reference Concentration Test No. 4 pg TEQ/Rm³*	Test No. 5 pg TEQ/Rm³*	Test No. 6 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.29	<1.67	<1.52	<1.49
12378-pentachlorodibenzo-p-dioxin	1.000	2.73	<3.00	<3.06	<2.93
123478-hexachlorodibenzo-p-dioxin	0.100	<0.84	1.46	1.18	<1.16
123678-hexachlorodibenzo-p-dioxin	0.100	3.84	4.57	4.36	4.26
123789-hexachlorodibenzo-p-dioxin	0.100	<1.43	1.97	1.86	<1.75
1234678-heptachlorodibenzo-p-dioxin	0.010	3.06	4.05	4.03	3.71
Octachlorodibenzo-p-dioxin	0.0003	0.089	0.11	0.12	0.11
2378-tetrachlorodibenzofuran	0.100	0.22	0.22	<0.24	<0.22
12378-pentachlorodibenzofuran	0.030	<0.075	0.087	<0.077	<0.080
23478-pentachlorodibenzofuran	0.300	2.50	<2.10	2.47	<2.36
123478-hexachlorodibenzofuran	0.100	1.01	1.17	1.05	1.08
123678-hexachlorodibenzofuran	0.100	1.39	1.77	1.46	1.54
234678-hexachlorodibenzofuran	0.100	2.38	3.04	2.95	2.79
123789-hexachlorodibenzofuran	0.100	0.57	0.68	<0.58	<0.61
1234678-heptachlorodibenzofuran	0.010	0.76	1.04	1.01	0.94
1234789-heptachlorodibenzofuran	0.010	0.17	0.23	0.21	0.20
Octachlorodibenzofuran	0.0003	0.024	0.031	0.031	0.029
PCB 81	0.0003	<0.0015	0.0024	<0.0035	<0.0025
PCB 77	0.0001	0.0016	0.0020	0.0039	0.0025
PCB 123	0.00003	<0.00033	<0.00046	<0.0016	<0.00081
PCB 118	0.00003	<0.00028	0.0072	0.026	<0.011
PCB 114	0.00003	<0.00028	0.00040	<0.0010	<0.00057
PCB 105	0.00003	0.0021	0.0026	0.013	0.0058
PCB 126	0.100	<1.09	<0.63	<2.89	<1.54
PCB 167	0.00003	<0.000096	<0.000055	0.00097	<0.00037
PCB 156	0.00003	<0.00021	<0.00014	0.0023	<0.00089
PCB 157	0.00003	<0.00011	<0.00012	0.00067	<0.00030
PCB 169	0.030	<0.080	0.13	<0.19	<0.13
PCB 189	0.00003	<0.00020	<0.00026	0.00023	<0.00023
Total Dioxins & Furans Only		<22.4	<27.2	<26.2	<25.3
Total PCBs Only		<1.18	<0.78	<3.14	<1.70
Total Dioxins & Furans and PCBs		<23.6	<28.0	<29.3	<27.0

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 29
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Toxicity Equivalent Emission Rates

Specific Isomer	Toxicity Equivalency Factor	Emission Rate Test No. 4 ng TEQ/s	Test No. 5 ng TEQ/s	Test No. 6 ng TEQ/s	Average ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.023	<0.031	<0.027	<0.027
12378-pentachlorodibenzo-p-dioxin	1.000	0.048	<0.055	<0.055	<0.053
123478-hexachlorodibenzo-p-dioxin	0.100	<0.015	0.027	0.021	<0.021
123678-hexachlorodibenzo-p-dioxin	0.100	0.067	0.084	0.078	0.077
123789-hexachlorodibenzo-p-dioxin	0.100	<0.025	0.036	0.033	<0.032
1234678-heptachlorodibenzo-p-dioxin	0.010	0.053	0.075	0.073	0.067
Octachlorodibenzo-p-dioxin	0.0003	0.0016	0.0021	0.0021	0.0019
2378-tetrachlorodibenzofuran	0.100	0.0038	0.0041	<0.0043	<0.0040
12378-pentachlorodibenzofuran	0.030	<0.0013	0.0016	<0.0014	<0.0014
23478-pentachlorodibenzofuran	0.300	0.044	<0.039	0.044	<0.042
123478-hexachlorodibenzofuran	0.100	0.018	0.022	0.019	0.019
123678-hexachlorodibenzofuran	0.100	0.024	0.033	0.026	0.028
234678-hexachlorodibenzofuran	0.100	0.042	0.056	0.053	0.050
123789-hexachlorodibenzofuran	0.100	0.010	0.013	<0.010	<0.011
1234678-heptachlorodibenzofuran	0.010	0.013	0.019	0.018	0.017
1234789-heptachlorodibenzofuran	0.010	0.0030	0.0043	0.0038	0.0037
Octachlorodibenzofuran	0.0003	0.00042	0.00056	0.00056	0.00052
PCB 81	0.0003	<0.000026	0.000045	<0.000063	<0.000044
PCB 77	0.0001	0.000029	0.000037	0.000071	0.000046
PCB 123	0.00003	<0.0000058	<0.0000085	<0.000029	<0.000015
PCB 118	0.00003	<0.0000049	0.00013	0.00047	<0.00020
PCB 114	0.00003	<0.0000049	0.0000073	<0.000018	<0.000010
PCB 105	0.00003	0.000036	0.000047	0.00023	0.00010
PCB 126	0.100	<0.019	<0.012	<0.052	<0.028
PCB 167	0.00003	<0.0000017	<0.0000010	0.000017	<0.0000067
PCB 156	0.00003	<0.0000037	<0.0000026	0.000042	<0.000016
PCB 157	0.00003	<0.0000019	<0.0000021	0.000012	<0.0000054
PCB 169	0.030	<0.0014	0.0023	<0.0034	<0.0024
PCB 189	0.00003	<0.0000036	<0.0000047	0.0000042	<0.0000041
Total Dioxins & Furans Only		<0.39	<0.50	<0.47	<0.45
Total PCBs Only		<0.021	<0.014	<0.056	<0.030
Total Dioxins & Furans and PCBs		<0.41	<0.52	<0.53	<0.49

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 30
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using the Full Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m^3	Dry Reference Concentration pg TEQ/Rm^3*	Dry Adjusted Concentration pg TEQ/Rm^3**	Wet Reference Concentration pg TEQ/Rm^3*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	<1.03	<1.81	<1.28	<1.49	<0.027
12378-pentachlorodibenzo-p-dioxin	<2.03	<3.55	<2.53	<2.93	<0.053
123478-hexachlorodibenzo-p-dioxin	<0.80	<1.40	<1.00	<1.16	<0.021
123678-hexachlorodibenzo-p-dioxin	2.95	5.16	3.67	4.26	0.077
123789-hexachlorodibenzo-p-dioxin	<1.21	<2.12	<1.51	<1.75	<0.032
1234678-heptachlorodibenzo-p-dioxin	2.57	4.50	3.20	3.71	0.067
Octachlorodibenzo-p-dioxin	0.074	0.13	0.092	0.11	0.0019
2378-tetrachlorodibenzofuran	<0.16	<0.27	<0.19	<0.22	<0.0040
12378-pentachlorodibenzofuran	<0.055	<0.096	<0.069	<0.080	<0.0014
23478-pentachlorodibenzofuran	<1.63	<2.85	<2.03	<2.36	<0.042
123478-hexachlorodibenzofuran	0.75	1.31	0.93	1.08	0.019
123678-hexachlorodibenzofuran	1.07	1.87	1.33	1.54	0.028
234678-hexachlorodibenzofuran	1.93	3.38	2.40	2.79	0.050
123789-hexachlorodibenzofuran	<0.42	<0.74	<0.53	<0.61	<0.011
1234678-heptachlorodibenzofuran	0.65	1.14	0.81	0.94	0.017
1234789-heptachlorodibenzofuran	0.14	0.25	0.18	0.20	0.0037
Octachlorodibenzofuran	0.020	0.035	0.025	0.029	0.00052
PCB 81	<0.0017	<0.0030	<0.0021	<0.0025	<0.000044
PCB 77	0.0018	0.0031	0.0022	0.0025	0.000046
PCB 123	<0.00056	<0.00098	<0.00070	<0.00081	<0.000015
PCB 118	<0.0077	<0.013	<0.0096	<0.011	<0.00020
PCB 114	<0.00039	<0.00069	<0.00049	<0.00057	<0.000010
PCB 105	0.0040	0.0071	0.0050	0.0058	0.00010
PCB 126	<1.07	<1.87	<1.33	<1.54	<0.028
PCB 167	<0.00026	<0.00045	<0.00032	<0.00037	<0.0000067
PCB 156	<0.00062	<0.0011	<0.00078	<0.00089	<0.000016
PCB 157	<0.00021	<0.00036	<0.00026	<0.00030	<0.0000054
PCB 169	<0.092	<0.16	<0.11	<0.13	<0.0024
PCB 189	<0.00016	<0.00028	<0.00020	<0.00023	<0.0000041
Total Dioxins & Furans Only	<17.5	<30.6	<21.8	<25.3	<0.45
Total PCBs Only	<1.18	<2.06	<1.47	<1.70	<0.030
Total Dioxins & Furans and PCBs	<18.7	<32.7	<23.2	<27.0	<0.49

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 31
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using Half the Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	0.52	0.90	0.64	0.75	0.013
12378-pentachlorodibenzo-p-dioxin	1.33	2.32	1.65	1.92	0.034
123478-hexachlorodibenzo-p-dioxin	0.70	1.24	0.88	1.02	0.018
123678-hexachlorodibenzo-p-dioxin	2.95	5.16	3.67	4.26	0.077
123789-hexachlorodibenzo-p-dioxin	1.05	1.84	1.31	1.51	0.027
1234678-heptachlorodibenzo-p-dioxin	2.57	4.50	3.20	3.71	0.067
Octachlorodibenzo-p-dioxin	0.074	0.13	0.092	0.11	0.0019
2378-tetrachlorodibenzofuran	0.13	0.22	0.16	0.19	0.0033
12378-pentachlorodibenzofuran	0.038	0.066	0.047	0.054	0.00098
23478-pentachlorodibenzofuran	1.39	2.43	1.73	2.01	0.036
123478-hexachlorodibenzofuran	0.75	1.31	0.93	1.08	0.019
123678-hexachlorodibenzofuran	1.07	1.87	1.33	1.54	0.028
234678-hexachlorodibenzofuran	1.93	3.38	2.40	2.79	0.050
123789-hexachlorodibenzofuran	0.36	0.62	0.44	0.51	0.0092
1234678-heptachlorodibenzofuran	0.65	1.14	0.81	0.94	0.017
1234789-heptachlorodibenzofuran	0.14	0.25	0.18	0.20	0.0037
Octachlorodibenzofuran	0.020	0.035	0.025	0.029	0.00052
PCB 81	0.0011	0.0020	0.0014	0.0016	0.000030
PCB 77	0.0018	0.0031	0.0022	0.0025	0.000046
PCB 123	0.00028	0.00049	0.00035	0.00040	0.0000073
PCB 118	0.0076	0.013	0.0096	0.011	0.00020
PCB 114	0.00024	0.00042	0.00030	0.00035	0.0000063
PCB 105	0.0040	0.0071	0.0050	0.0058	0.00010
PCB 126	0.53	0.93	0.67	0.77	0.014
PCB 167	0.00024	0.00042	0.00030	0.00035	0.0000063
PCB 156	0.00058	0.0010	0.00073	0.00084	0.000015
PCB 157	0.00018	0.00032	0.00023	0.00026	0.0000047
PCB 169	0.061	0.11	0.076	0.087	0.0016
PCB 189	0.00011	0.00019	0.00013	0.00015	0.0000028
Total Dioxins & Furans Only	15.7	27.4	19.5	22.6	0.41
Total PCBs Only	0.61	1.07	0.76	0.88	0.016
Total Dioxins & Furans and PCBs	16.3	28.5	20.2	23.5	0.42

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 32
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 4

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	88.9	11.0	19.0	13.5	15.9	0.28
1,4-Dichlorobenzene	61.7	7.66	13.2	9.37	11.0	0.19
1,2-Dichlorobenzene	70.9	8.80	15.2	10.8	12.7	0.22
Total Dichlorobenzene	222	27.5	47.4	33.6	39.6	0.69
1,3,5-trichlorobenzene	<30	<3.72	<6.43	<4.55	<5.36	<0.094
1,2,4-trichlorobenzene	37.3	4.63	7.99	5.66	6.66	0.12
1,2,3-trichlorobenzene	<30	<3.72	<6.43	<4.55	<5.36	<0.094
Total Trichlorobenzene	<97.3	<12.1	<20.8	<14.8	<17.4	<0.30
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<30	<3.72	<6.43	<4.55	<5.36	<0.094
1,2,3,4-tetrachlorobenzene	<30	<3.72	<6.43	<4.55	<5.36	<0.094
Total Tetrachlorobenzene	<60.0	<7.45	<12.9	<9.11	<10.7	<0.19
Pentachlorobenzene	<30	<3.72	<6.43	<4.55	<5.36	<0.094
Hexachlorobenzene	<30	<3.72	<6.43	<4.55	<5.36	<0.094
Total Chlorobenzenes	<439	<54.4	<94.0	<66.6	<78.4	<1.37

Dry Gas Volume Sampled (Rm³*) :	4.669
Actual Flowrate (m³/s) :	25.2
Dry Reference Flowrate (Rm³/s*) :	14.6
Dry Adjusted Flowrate (Rm³/s**) :	20.6
Wet Reference Flowrate (Rm³/s*) :	17.5

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 33
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 5

Specific Isomer	Total Collected ng	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate µg/s
1,3-Dichlorobenzene	127	14.7	25.8	18.3	21.2	0.39
1,4-Dichlorobenzene	79.5	9.18	16.2	11.5	13.3	0.24
1,2-Dichlorobenzene	104	12.0	21.1	15.0	17.4	0.32
Total Dichlorobenzene	311	35.8	63.1	44.8	51.8	0.95
1,3,5-trichlorobenzene	<30	<3.46	<6.10	<4.32	<5.01	<0.092
1,2,4-trichlorobenzene	50	5.77	10.2	7.21	8.34	0.15
1,2,3-trichlorobenzene	<30	<3.46	<6.10	<4.32	<5.01	<0.092
Total Trichlorobenzene	<110	<12.7	<22.4	<15.9	<18.4	<0.34
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<30	<3.46	<6.10	<4.32	<5.01	<0.092
1,2,3,4-tetrachlorobenzene	<30	<3.46	<6.10	<4.32	<5.01	<0.092
Total Tetrachlorobenzene	<60.0	<6.93	<12.2	<8.65	<10.0	<0.18
Pentachlorobenzene	<30	<3.46	<6.10	<4.32	<5.01	<0.092
Hexachlorobenzene	<30	<3.46	<6.10	<4.32	<5.01	<0.092
Total Chlorobenzenes	<541	<62.4	<110	<77.9	<90.2	<1.66

Dry Gas Volume Sampled (Rm^3*) :	4.918
Actual Flowrate (m^3/s) :	26.6
Dry Reference Flowrate (Rm^3/s*) :	15.1
Dry Adjusted Flowrate (Rm^3/s**) :	21.3
Wet Reference Flowrate (Rm^3/s*) :	18.4

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 34
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 6

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	119	14.0	24.6	17.6	20.3	0.36
1,4-Dichlorobenzene	80.7	9.51	16.7	11.9	13.7	0.25
1,2-Dichlorobenzene	99.1	11.7	20.5	14.7	16.9	0.30
Total Dichlorobenzene	299	35.2	61.9	44.2	50.9	0.92
1,3,5-trichlorobenzene	<30	<3.54	<6.21	<4.44	<5.11	<0.092
1,2,4-trichlorobenzene	51.9	6.12	10.7	7.68	8.84	0.16
1,2,3-trichlorobenzene	<30	<3.54	<6.21	<4.44	<5.11	<0.092
Total Trichlorobenzene	<112	<13.2	<23.2	<16.6	<19.0	<0.34
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<30	<3.54	<6.21	<4.44	<5.11	<0.092
1,2,3,4-tetrachlorobenzene	<30	<3.54	<6.21	<4.44	<5.11	<0.092
Total Tetrachlorobenzene	<60.0	<7.07	<12.4	<8.88	<10.2	<0.18
Pentachlorobenzene	<30	<3.54	<6.21	<4.44	<5.11	<0.092
Hexachlorobenzene	<30	<3.54	<6.21	<4.44	<5.11	<0.092
Total Chlorobenzenes	<531	<62.5	<110	<78.6	<90.3	<1.63

Dry Gas Volume Sampled (Rm³*) :	4.830
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**) :	20.7
Wet Reference Flowrate (Rm³/s*) :	18.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 35

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Actual Concentrations for Chlorobenzenes

Specific Isomer	Actual Concentration Test No. 4	Test No. 5	Test No. 6	Average	Coefficient of Variation
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
1,3-Dichlorobenzene	11.0	14.7	14.0	13.2	14.6
1,4-Dichlorobenzene	7.66	9.18	9.51	8.78	11.3
1,2-Dichlorobenzene	8.80	12.0	11.7	10.8	16.3
Total Dichlorobenzene	27.5	35.8	35.2	32.8	14.2
1,3,5-trichlorobenzene	<3.72	<3.46	<3.54	<3.57	3.8
1,2,4-trichlorobenzene	4.63	5.77	6.12	5.51	14.1
1,2,3-trichlorobenzene	<3.72	<3.46	<3.54	<3.57	3.8
Total Trichlorobenzene	<12.1	<12.7	<13.2	<12.7	4.4
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<3.72	<3.46	<3.54	<3.57	3.8
1,2,3,4-tetrachlorobenzene	<3.72	<3.46	<3.54	<3.57	3.8
Total Tetrachlorobenzene	<7.45	<6.93	<7.07	<7.15	3.8
Pentachlorobenzene	<3.72	<3.46	<3.54	<3.57	3.8
Hexachlorobenzene	<3.72	<3.46	<3.54	<3.57	3.8
Total Chlorobenzenes	<54.4	<62.4	<62.5	<59.8	7.7

TABLE 36
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dry Reference Concentrations for Chlorobenzenes

Specific Isomer	Dry Reference Concentration Test No. 4	Test No. 5	Test No. 6	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
1,3-Dichlorobenzene	19.0	25.8	24.6	23.2	15.6
1,4-Dichlorobenzene	13.2	16.2	16.7	15.4	12.2
1,2-Dichlorobenzene	15.2	21.1	20.5	18.9	17.3
Total Dichlorobenzene	47.4	63.1	61.9	57.5	15.2
1,3,5-trichlorobenzene	<6.43	<6.10	<6.21	<6.25	2.6
1,2,4-trichlorobenzene	7.99	10.2	10.7	9.63	15.1
1,2,3-trichlorobenzene	<6.43	<6.10	<6.21	<6.25	2.6
Total Trichlorobenzene	<20.8	<22.4	<23.2	<22.1	5.3
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<6.43	<6.10	<6.21	<6.25	2.6
1,2,3,4-tetrachlorobenzene	<6.43	<6.10	<6.21	<6.25	2.6
Total Tetrachlorobenzene	<12.9	<12.2	<12.4	<12.5	2.6
Pentachlorobenzene	<6.43	<6.10	<6.21	<6.25	2.6
Hexachlorobenzene	<6.43	<6.10	<6.21	<6.25	2.6
Total Chlorobenzenes	<94.0	<110	<110	<105	8.8

* At 25°C and 1 atmosphere

TABLE 37
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dry Adjusted Concentrations for Chlorobenzenes

Specific	Dry Adjusted Concentration				Coefficient
Isomer	Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	of Variation %
1,3-Dichlorobenzene	13.5	18.3	17.6	16.5	15.8
1,4-Dichlorobenzene	9.37	11.5	11.9	10.9	12.6
1,2-Dichlorobenzene	10.8	15.0	14.7	13.5	17.5
Total Dichlorobenzene	33.6	44.8	44.2	40.9	15.4
1,3,5-trichlorobenzene	<4.55	<4.32	<4.44	<4.44	2.6
1,2,4-trichlorobenzene	5.66	7.21	7.68	6.85	15.4
1,2,3-trichlorobenzene	<4.55	<4.32	<4.4	<4.44	2.6
Total Trichlorobenzene	<14.8	<15.9	<16.6	<15.7	5.7
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<4.55	<4.32	<4.44	<4.44	2.6
1,2,3,4-tetrachlorobenzene	<4.55	<4.32	<4.44	<4.44	2.6
Total Tetrachlorobenzene	<9.11	<8.65	<8.88	<8.88	2.6
Pentachlorobenzene	<4.55	<4.32	<4.44	<4.44	2.6
Hexachlorobenzene	<4.55	<4.32	<4.44	<4.44	2.6
Total Chlorobenzenes	<66.6	<77.9	<78.6	<74.4	9.0

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 38
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Wet Reference Concentrations for Chlorobenzenes

Specific Isomer	Wet Reference Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
1,3-Dichlorobenzene	15.9	21.2	20.3	19.1	14.8
1,4-Dichlorobenzene	11.0	13.3	13.7	12.7	11.4
1,2-Dichlorobenzene	12.7	17.4	16.9	15.6	16.5
Total Dichlorobenzene	39.6	51.8	50.9	47.4	14.4
1,3,5-trichlorobenzene	<5.36	<5.01	<5.11	<5.16	3.5
1,2,4-trichlorobenzene	6.66	8.34	8.84	7.95	14.3
1,2,3-trichlorobenzene	<5.36	<5.01	<5.11	<5.16	3.5
Total Trichlorobenzene	<17.4	<18.4	<19.0	<18.3	4.6
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<5.36	<5.01	<5.11	<5.16	3.5
1,2,3,4-tetrachlorobenzene	<5.36	<5.01	<5.11	<5.16	3.5
Total Tetrachlorobenzene	<10.7	<10.0	<10.2	<10.3	3.5
Pentachlorobenzene	<5.36	<5.01	<5.11	<5.16	3.5
Hexachlorobenzene	<5.36	<5.01	<5.11	<5.16	3.5
Total Chlorobenzenes	<78.4	<90.2	<90.3	<86.3	7.9

* At 25°C and 1 atmosphere

TABLE 39
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Rates for Chlorobenzenes

Specific Isomer	Emission Rate Test No. 4 µg/s	Test No. 5 µg/s	Test No. 6 µg/s	Average µg/s	Coefficient of Variation %
1,3-Dichlorobenzene	0.28	0.39	0.36	0.34	17.1
1,4-Dichlorobenzene	0.19	0.24	0.25	0.23	13.4
1,2-Dichlorobenzene	0.22	0.32	0.30	0.28	18.6
Total Dichlorobenzene	0.69	0.95	0.92	0.85	16.5
1,3,5-trichlorobenzene	<0.094	<0.092	<0.092	<0.093	1.1
1,2,4-trichlorobenzene	0.12	0.15	0.16	0.14	16.1
1,2,3-trichlorobenzene	<0.094	<0.092	<0.092	<0.093	1.1
Total Trichlorobenzene	<0.30	<0.34	<0.34	<0.33	6.4
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.094	<0.092	<0.092	<0.093	1.1
1,2,3,4-tetrachlorobenzene	<0.094	<0.092	<0.092	<0.093	1.1
Total Tetrachlorobenzene	<0.19	<0.18	<0.18	<0.19	1.1
Pentachlorobenzene	<0.094	<0.092	<0.092	<0.093	1.1
Hexachlorobenzene	<0.094	<0.092	<0.092	<0.093	1.1
Total Chlorobenzenes	<1.37	<1.66	<1.63	<1.55	10.1

TABLE 40
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Emission Data for Chlorobenzenes

Specific Isomer	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	13.2	23.2	16.5	19.1	0.34
1,4-Dichlorobenzene	8.78	15.4	10.9	12.7	0.23
1,2-Dichlorobenzene	10.8	18.9	13.5	15.6	0.28
Total Dichlorobenzene	32.8	57.5	40.9	47.4	0.85
1,3,5-trichlorobenzene	<3.57	<6.25	<4.44	<5.16	<0.093
1,2,4-trichlorobenzene	5.51	9.63	6.85	7.95	0.14
1,2,3-trichlorobenzene	<3.57	<6.25	<4.44	<5.16	<0.093
Total Trichlorobenzene	<12.7	<22.1	<15.7	<18.3	<0.33
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<3.57	<6.25	<4.44	<5.16	<0.093
1,2,3,4-tetrachlorobenzene	<3.57	<6.25	<4.44	<5.16	<0.093
Total Tetrachlorobenzene	<7.15	<12.5	<8.88	<10.3	<0.19
Pentachlorobenzene	<3.57	<6.25	<4.44	<5.16	<0.093
Hexachlorobenzene	<3.57	<6.25	<4.44	<5.16	<0.093
Total Chlorobenzenes	<59.8	<105	<74.4	<86.3	<1.55

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 41
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorobenzene Blank Analyses

Isomers and Congener Group Totals	Blank Train Total ng	Laboratory Blank Total ng
1,3-Dichlorobenzene	<30	<30
1,4-Dichlorobenzene	<30	<30
1,2-Dichlorobenzene	<30	<30
Total Dichlorobenzene	<90	<90
1,3,5-trichlorobenzene	<30	<30
1,2,4-trichlorobenzene	<30	<30
1,2,3-trichlorobenzene	<30	<30
Total Trichlorobenzene	<90	<90
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<30	<30
1,2,3,4-tetrachlorobenzene	<30	<30
Total Tetrachlorobenzene	<60	<60
Pentachlorobenzene	<30	<30
Hexachlorobenzene	<30	<30
Total Chlorobenzenes	<300	<300

"<" indicates that the amount detected is less than the analytical detection limit (<MDL).
In these cases the value of the detection limit was used to calculate the total collected.

TABLE 42
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 4

Specific Isomer	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
2-monochlorophenol	<60	<7.45	<12.9	<9.11	<10.7	<0.19
3-monochlorophenol	<60	<7.45	<12.9	<9.11	<10.7	<0.19
4-monochlorophenol	60.2	7.47	12.9	9.14	10.8	0.19
Total Monochlorophenols	<180	<22.4	<38.6	<27.4	<32.2	<0.56
2,6-dichlorophenol	<60	<7.45	<12.9	<9.11	<10.7	<0.19
2,4 & 2,5-dichlorophenol	<60	<7.45	<12.9	<9.11	<10.7	<0.19
3,5-dichlorophenol	<60	<7.45	<12.9	<9.11	<10.7	<0.19
2,3-dichlorophenol	<60	<7.45	<12.9	<9.11	<10.7	<0.19
3,4-dichlorophenol	<60	<7.45	<12.9	<9.11	<10.7	<0.19
Total Dichlorophenols	<300	<37.2	<64.3	<45.5	<53.6	<0.94
2,4,6-trichlorophenol	<60	<7.45	<12.9	<9.11	<10.7	<0.19
2,3,6-trichlorophenol	<60	<7.45	<12.9	<9.11	<10.7	<0.19
2,3,5-trichlorophenol	<60	<7.45	<12.9	<9.11	<10.7	<0.19
2,4,5-trichlorophenol	<60	<7.45	<12.9	<9.11	<10.7	<0.19
2,3,4-trichlorophenol	<60	<7.45	<12.9	<9.11	<10.7	<0.19
3,4,5-trichlorophenol	<60	<7.45	<12.9	<9.11	<10.7	<0.19
Total Trichlorophenols	<360	<44.7	<77.1	<54.6	<64.3	<1.13
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<60	<7.45	<12.9	<9.11	<10.7	<0.19
2,3,4,5-tetrachlorophenol	<60	<7.45	<12.9	<9.11	<10.7	<0.19
Total Tetrachlorophenols	<120	<14.9	<25.7	<18.2	<21.4	<0.38
Pentachlorophenol	<60	<7.45	<12.9	<9.11	<10.7	<0.19
Total Chlorophenols	<1020	<127	<219	<155	<182	<3.19

Dry Gas Volume Sampled (Rm³*) :	4.669
Actual Flowrate (m³/s) :	25.2
Dry Reference Flowrate (Rm³/s*) :	14.6
Dry Adjusted Flowrate (Rm³/s**) :	20.6
Wet Reference Flowrate (Rm³/s*) :	17.5

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 43
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 5

Specific Isomer	Total Collected ng	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate µg/s
2-monochlorophenol	<60	<6.93	<12.2	<8.65	<10.0	<0.18
3-monochlorophenol	<60	<6.93	<12.2	<8.65	<10.0	<0.18
4-monochlorophenol	<60	<6.93	<12.2	<8.65	<10.0	<0.18
Total Monochlorophenols	<180	<20.8	<36.6	<25.9	<30.0	<0.55
2,6-dichlorophenol	<60	<6.93	<12.2	<8.65	<10.0	<0.18
2,4 & 2,5-dichlorophenol	<60	<6.93	<12.2	<8.65	<10.0	<0.18
3,5-dichlorophenol	<60	<6.93	<12.2	<8.65	<10.0	<0.18
2,3-dichlorophenol	<60	<6.93	<12.2	<8.65	<10.0	<0.18
3,4-dichlorophenol	<60	<6.93	<12.2	<8.65	<10.0	<0.18
Total Dichlorophenols	<300	<34.6	<61.0	<43.2	<50.1	<0.92
2,4,6-trichlorophenol	<60	<6.93	<12.2	<8.65	<10.0	<0.18
2,3,6-trichlorophenol	<60	<6.93	<12.2	<8.65	<10.0	<0.18
2,3,5-trichlorophenol	<60	<6.93	<12.2	<8.65	<10.0	<0.18
2,4,5-trichlorophenol	<60	<6.93	<12.2	<8.65	<10.0	<0.18
2,3,4-trichlorophenol	<60	<6.93	<12.2	<8.65	<10.0	<0.18
3,4,5-trichlorophenol	<60	<6.93	<12.2	<8.65	<10.0	<0.18
Total Trichlorophenols	<360	<41.6	<73.2	<51.9	<60.1	<1.11
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<60	<6.93	<12.2	<8.65	<10.0	<0.18
2,3,4,5-tetrachlorophenol	<60	<6.93	<12.2	<8.65	<10.0	<0.18
Total Tetrachlorophenols	<120	<13.9	<24.4	<17.3	<20.0	<0.37
Pentachlorophenol	<60	<6.93	<12.2	<8.65	<10.0	<0.18
Total Chlorophenols	<1020	<118	<207	<147	<170	<3.13

Dry Gas Volume Sampled (Rm^3*) :	4.918
Actual Flowrate (m^3/s) :	26.6
Dry Reference Flowrate (Rm^3/s*) :	15.1
Dry Adjusted Flowrate (Rm^3/s**) :	21.3
Wet Reference Flowrate (Rm^3/s*) :	18.4

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 44
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Analysis and Emission Data
Test No. 6

Specific Isomer	Total Collected ng	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate µg/s
2-monochlorophenol	<60	<7.07	<12.4	<8.88	<10.2	<0.18
3-monochlorophenol	<60	<7.07	<12.4	<8.88	<10.2	<0.18
4-monochlorophenol	80.3	9.46	16.6	11.9	13.7	0.25
Total Monochlorophenols	<200	<23.6	<41.5	<29.7	<34.1	<0.61
2,6-dichlorophenol	<60	<7.07	<12.4	<8.88	<10.2	<0.18
2,4 & 2,5-dichlorophenol	<60	<7.07	<12.4	<8.88	<10.2	<0.18
3,5-dichlorophenol	<60	<7.07	<12.4	<8.88	<10.2	<0.18
2,3-dichlorophenol	<60	<7.07	<12.4	<8.88	<10.2	<0.18
3,4-dichlorophenol	<60	<7.07	<12.4	<8.88	<10.2	<0.18
Total Dichlorophenols	<300	<35.4	<62.1	<44.4	<51.1	<0.92
2,4,6-trichlorophenol	<60	<7.07	<12.4	<8.88	<10.2	<0.18
2,3,6-trichlorophenol	<60	<7.07	<12.4	<8.88	<10.2	<0.18
2,3,5-trichlorophenol	<60	<7.07	<12.4	<8.88	<10.2	<0.18
2,4,5-trichlorophenol	<60	<7.07	<12.4	<8.88	<10.2	<0.18
2,3,4-trichlorophenol	<60	<7.07	<12.4	<8.88	<10.2	<0.18
3,4,5-trichlorophenol	<60	<7.07	<12.4	<8.88	<10.2	<0.18
Total Trichlorophenols	<360	<42.4	<74.5	<53.3	<61.3	<1.10
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<60	<7.07	<12.4	<8.88	<10.2	<0.18
2,3,4,5-tetrachlorophenol	<60	<7.07	<12.4	<8.88	<10.2	<0.18
Total Tetrachlorophenols	<120	<14.1	<24.8	<17.8	<20.4	<0.37
Pentachlorophenol	<60	<7.07	<12.4	<8.88	<10.2	<0.18
Total Chlorophenols	<1040	<123	<215	<154	<177	<3.19

Dry Gas Volume Sampled (Rm^3*) :	4.830
Actual Flowrate (m^3/s) :	26.0
Dry Reference Flowrate (Rm^3/s*) :	14.8
Dry Adjusted Flowrate (Rm^3/s**) :	20.7
Wet Reference Flowrate (Rm^3/s*) :	18.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 45
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Actual Concentrations

Specific Isomer	Actual Concentration Test No. 4 ng/m³	Test No. 5 ng/m³	Test No. 6 ng/m³	Average ng/m³	Coefficient of Variation %
2-monochlorophenol	<7.45	<6.93	<7.07	<7.15	3.8
3-monochlorophenol	<7.45	<6.93	<7.07	<7.15	3.8
4-monochlorophenol	7.47	<6.93	9.46	<7.95	16.8
Total Monochlorophenols	<22.4	<20.8	<23.6	<22.2	6.4
2,6-dichlorophenol	<7.45	<6.93	<7.07	<7.15	3.8
2,4 & 2,5-dichlorophenol	<7.45	<6.93	<7.07	<7.15	3.8
3,5-dichlorophenol	<7.45	<6.93	<7.07	<7.15	3.8
2,3-dichlorophenol	<7.45	<6.93	<7.07	<7.15	3.8
3,4-dichlorophenol	<7.45	<6.93	<7.07	<7.15	3.8
Total Dichlorophenols	<37.2	<34.6	<35.4	<35.7	3.8
2,4,6-trichlorophenol	<7.45	<6.93	<7.07	<7.15	3.8
2,3,6-trichlorophenol	<7.45	<6.93	<7.07	<7.15	3.8
2,3,5-trichlorophenol	<7.45	<6.93	<7.07	<7.15	3.8
2,4,5-trichlorophenol	<7.45	<6.93	<7.07	<7.15	3.8
2,3,4-trichlorophenol	<7.45	<6.93	<7.07	<7.15	3.8
3,4,5-trichlorophenol	<7.45	<6.93	<7.07	<7.15	3.8
Total Trichlorophenols	<44.7	<41.6	<42.4	<42.9	3.8
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<7.45	<6.93	<7.07	<7.15	3.8
2,3,4,5-tetrachlorophenol	<7.45	<6.93	<7.07	<7.15	3.8
Total Tetrachlorophenols	<14.9	<13.9	<14.1	<14.3	3.8
Pentachlorophenol	<7.45	<6.93	<7.07	<7.15	3.8
Total Chlorophenols	<127	<118	<123	<122	3.6

TABLE 46
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration Test No. 4 ng/Rm^3*	Test No. 5 ng/Rm^3*	Test No. 6 ng/Rm^3*	Average ng/Rm^3*	Coefficient of Variation %
2-monochlorophenol	<12.9	<12.2	<12.4	<12.5	2.6
3-monochlorophenol	<12.9	<12.2	<12.4	<12.5	2.6
4-monochlorophenol	12.9	<12.2	16.6	<13.9	17.1
Total Monochlorophenols	<38.6	<36.6	<41.5	<38.9	6.3
2,6-dichlorophenol	<12.9	<12.2	<12.4	<12.5	2.6
2,4 & 2,5-dichlorophenol	<12.9	<12.2	<12.4	<12.5	2.6
3,5-dichlorophenol	<12.9	<12.2	<12.4	<12.5	2.6
2,3-dichlorophenol	<12.9	<12.2	<12.4	<12.5	2.6
3,4-dichlorophenol	<12.9	<12.2	<12.4	<12.5	2.6
Total Dichlorophenols	<64.3	<61.0	<62.1	<62.5	2.6
2,4,6-trichlorophenol	<12.9	<12.2	<12.4	<12.5	2.6
2,3,6-trichlorophenol	<12.9	<12.2	<12.4	<12.5	2.6
2,3,5-trichlorophenol	<12.9	<12.2	<12.4	<12.5	2.6
2,4,5-trichlorophenol	<12.9	<12.2	<12.4	<12.5	2.6
2,3,4-trichlorophenol	<12.9	<12.2	<12.4	<12.5	2.6
3,4,5-trichlorophenol	<12.9	<12.2	<12.4	<12.5	2.6
Total Trichlorophenols	<77.1	<73.2	<74.5	<74.9	2.6
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<12.9	<12.2	<12.4	<12.5	2.6
2,3,4,5-tetrachlorophenol	<12.9	<12.2	<12.4	<12.5	2.6
Total Tetrachlorophenols	<25.7	<24.4	<24.8	<25.0	2.6
Pentachlorophenol	<12.9	<12.2	<12.4	<12.5	2.6
Total Chlorophenols	<219	<207	<215	<214	2.7

* At 25°C and 1 atmosphere

TABLE 47
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration				Coefficient
	Test No. 4	Test No. 5	Test No. 6	Average	of Variation
	ng/Rm^3*	ng/Rm^3*	ng/Rm^3*	ng/Rm^3*	%
2-monochlorophenol	<9.11	<8.65	<8.88	<8.88	2.6
3-monochlorophenol	<9.11	<8.65	<8.88	<8.88	2.6
4-monochlorophenol	9.14	<8.65	11.9	<9.89	17.6
Total Monochlorophenols	<27.4	<25.9	<29.7	<27.7	6.8
2,6-dichlorophenol	<9.11	<8.65	<8.88	<8.88	2.6
2,4 & 2,5-dichlorophenol	<9.11	<8.65	<8.88	<8.88	2.6
3,5-dichlorophenol	<9.11	<8.65	<8.88	<8.88	2.6
2,3-dichlorophenol	<9.11	<8.65	<8.88	<8.88	2.6
3,4-dichlorophenol	<9.11	<8.65	<8.88	<8.88	2.6
Total Dichlorophenols	<45.5	<43.2	<44.4	<44.4	2.6
2,4,6-trichlorophenol	<9.11	<8.65	<8.88	<8.88	2.6
2,3,6-trichlorophenol	<9.11	<8.65	<8.88	<8.88	2.6
2,3,5-trichlorophenol	<9.11	<8.65	<8.88	<8.88	2.6
2,4,5-trichlorophenol	<9.11	<8.65	<8.88	<8.88	2.6
2,3,4-trichlorophenol	<9.11	<8.65	<8.88	<8.88	2.6
3,4,5-trichlorophenol	<9.11	<8.65	<8.88	<8.88	2.6
Total Trichlorophenols	<54.6	<51.9	<53.3	<53.3	2.6
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<9.11	<8.65	<8.88	<8.88	2.6
2,3,4,5-tetrachlorophenol	<9.11	<8.65	<8.88	<8.88	2.6
Total Tetrachlorophenols	<18.2	<17.3	<17.8	<17.8	2.6
Pentachlorophenol	<9.11	<8.65	<8.88	<8.88	2.6
Total Chlorophenols	<155	<147	<154	<152	2.8

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 48
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Isomer and Congener Group Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 4	Test No. 5	Test No. 6	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
2-monochlorophenol	<10.7	<10.0	<10.2	<10.3	3.5
3-monochlorophenol	<10.7	<10.0	<10.2	<10.3	3.5
4-monochlorophenol	10.8	<10.0	13.7	<11.5	16.8
Total Monochlorophenols	<32.2	<30.0	<34.1	<32.1	6.3
2,6-dichlorophenol	<10.7	<10.0	<10.2	<10.3	3.5
2,4 & 2,5-dichlorophenol	<10.7	<10.0	<10.2	<10.3	3.5
3,5-dichlorophenol	<10.7	<10.0	<10.2	<10.3	3.5
2,3-dichlorophenol	<10.7	<10.0	<10.2	<10.3	3.5
3,4-dichlorophenol	<10.7	<10.0	<10.2	<10.3	3.5
Total Dichlorophenols	<53.6	<50.1	<51.1	<51.6	3.5
2,4,6-trichlorophenol	<10.7	<10.0	<10.2	<10.3	3.5
2,3,6-trichlorophenol	<10.7	<10.0	<10.2	<10.3	3.5
2,3,5-trichlorophenol	<10.7	<10.0	<10.2	<10.3	3.5
2,4,5-trichlorophenol	<10.7	<10.0	<10.2	<10.3	3.5
2,3,4-trichlorophenol	<10.7	<10.0	<10.2	<10.3	3.5
3,4,5-trichlorophenol	<10.7	<10.0	<10.2	<10.3	3.5
Total Trichlorophenols	<64.3	<60.1	<61.3	<61.9	3.5
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<10.7	<10.0	<10.2	<10.3	3.5
2,3,4,5-tetrachlorophenol	<10.7	<10.0	<10.2	<10.3	3.5
Total Tetrachlorophenols	<21.4	<20.0	<20.4	<20.6	3.5
Pentachlorophenol	<10.7	<10.0	<10.2	<10.3	3.5
Total Chlorophenols	<182	<170	<177	<177	3.4

* At 25°C and 1 atmosphere

TABLE 49

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet

Chlorophenol Isomer and Congener Group Emission Rates

Specific Isomer	Emission Rate Test No. 4 µg/s	Test No. 5 µg/s	Test No. 6 µg/s	Average µg/s	Coefficient of Variation %
2-monochlorophenol	<0.19	<0.18	<0.18	<0.19	1.1
3-monochlorophenol	<0.19	<0.18	<0.18	<0.19	1.1
4-monochlorophenol	0.19	<0.18	0.25	<0.21	16.8
Total Monochlorophenols	<0.56	<0.55	<0.61	<0.58	5.7
2,6-dichlorophenol	<0.19	<0.18	<0.18	<0.19	1.1
2,4 & 2,5-dichlorophenol	<0.19	<0.18	<0.18	<0.19	1.1
3,5-dichlorophenol	<0.19	<0.18	<0.18	<0.19	1.1
2,3-dichlorophenol	<0.19	<0.18	<0.18	<0.19	1.1
3,4-dichlorophenol	<0.19	<0.18	<0.18	<0.19	1.1
Total Dichlorophenols	<0.94	<0.92	<0.92	<0.93	1.1
2,4,6-trichlorophenol	<0.19	<0.18	<0.18	<0.19	1.1
2,3,6-trichlorophenol	<0.19	<0.18	<0.18	<0.19	1.1
2,3,5-trichlorophenol	<0.19	<0.18	<0.18	<0.19	1.1
2,4,5-trichlorophenol	<0.19	<0.18	<0.18	<0.19	1.1
2,3,4-trichlorophenol	<0.19	<0.18	<0.18	<0.19	1.1
3,4,5-trichlorophenol	<0.19	<0.18	<0.18	<0.19	1.1
Total Trichlorophenols	<1.13	<1.11	<1.10	<1.11	1.1
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<0.19	<0.18	<0.18	<0.19	1.1
2,3,4,5-tetrachlorophenol	<0.19	<0.18	<0.18	<0.19	1.1
Total Tetrachlorophenols	<0.38	<0.37	<0.37	<0.37	1.1
Pentachlorophenol	<0.19	<0.18	<0.18	<0.19	1.1
Total Chlorophenols	<3.19	<3.13	<3.19	<3.17	1.0

TABLE 50
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Emission Data for Chlorophenol Isomer and Congener Groups

Specific Isomer	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate µg/s
2-monochlorophenol	<7.15	<12.5	<8.88	<10.3	<0.19
3-monochlorophenol	<7.15	<12.5	<8.88	<10.3	<0.19
4-monochlorophenol	<7.95	<13.9	<9.89	<11.5	<0.21
Total Monochlorophenols	<22.2	<38.9	<27.7	<32.1	<0.58
2,6-dichlorophenol	<7.15	<12.5	<8.88	<10.3	<0.19
2,4 & 2,5-dichlorophenol	<7.15	<12.5	<8.88	<10.3	<0.19
3,5-dichlorophenol	<7.15	<12.5	<8.88	<10.3	<0.19
2,3-dichlorophenol	<7.15	<12.5	<8.88	<10.3	<0.19
3,4-dichlorophenol	<7.15	<12.5	<8.88	<10.3	<0.19
Total Dichlorophenols	<35.7	<62.5	<44.4	<51.6	<0.93
2,4,6-trichlorophenol	<7.15	<12.5	<8.88	<10.3	<0.19
2,3,6-trichlorophenol	<7.15	<12.5	<8.88	<10.3	<0.19
2,3,5-trichlorophenol	<7.15	<12.5	<8.88	<10.3	<0.19
2,4,5-trichlorophenol	<7.15	<12.5	<8.88	<10.3	<0.19
2,3,4-trichlorophenol	<7.15	<12.5	<8.88	<10.3	<0.19
3,4,5-trichlorophenol	<7.15	<12.5	<8.88	<10.3	<0.19
Total Trichlorophenols	<42.9	<74.9	<53.3	<61.9	<1.11
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<7.15	<12.5	<8.88	<10.3	<0.19
2,3,4,5-tetrachlorophenol	<7.15	<12.5	<8.88	<10.3	<0.19
Total Tetrachlorophenols	<14.3	<25.0	<17.8	<20.6	<0.37
Pentachlorophenol	<7.15	<12.5	<8.88	<10.3	<0.19
Total Chlorophenols	<122	<214	<152	<177	<3.17

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 51
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Chlorophenol Blank Analyses

Congener Group	Lab Blank Total ng	Blank Train Total ng
2-monochlorophenol	<60	<60
3-monochlorophenol	<60	<60
4-monochlorophenol	<60	<60
Total Monochlorophenols	<180	<180
2,6-dichlorophenol	<60	<60
2,4 & 2,5-dichlorophenol	<60	<60
3,5-dichlorophenol	<60	<60
2,3-dichlorophenol	<60	<60
3,4-dichlorophenol	<60	<60
Total Dichlorophenols	<300	<300
2,4,6-trichlorophenol	<60	<60
2,3,6-trichlorophenol	<60	<60
2,3,5-trichlorophenol	<60	<60
2,4,5-trichlorophenol	<60	<60
2,3,4-trichlorophenol	<60	<60
3,4,5-trichlorophenol	<60	<60
Total Trichlorophenols	<360	<360
2,3,5,6 & 2,3,4,6-tetrachlorophenol	<60	<60
2,3,4,5-tetrachlorophenol	<60	<60
Total Tetrachlorophenols	<120	<120
Pentachlorophenol	<60	<60
Total Chlorophenols	<1020	<1020

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

TABLE 52
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 4

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	25.0	3.10	5.35	3.79	4.47	0.078
Acenaphthylene	18.1	2.25	3.88	2.75	3.23	0.057
Anthracene	52.9	6.56	11.3	8.03	9.45	0.17
Benzo(a)Anthracene	<12	<1.49	<2.57	<1.82	<2.14	<0.038
Benzo(b)Fluoranthene	<12	<1.49	<2.57	<1.82	<2.14	<0.038
Benzo(j/k)Fluoranthene	<12	<1.49	<2.57	<1.82	<2.14	<0.038
Benzo(a)fluorene	<12	<1.49	<2.57	<1.82	<2.14	<0.038
Benzo(b)fluorene	<12	<1.49	<2.57	<1.82	<2.14	<0.038
Benzo(g,h,i)Perylene	30.4	3.77	6.51	4.61	5.43	0.095
Benzo(a)Pyrene	<12	<1.49	<2.57	<1.82	<2.14	<0.038
Benzo(e)Pyrene	<12	<1.49	<2.57	<1.82	<2.14	<0.038
Biphenyl	120	14.9	25.7	18.2	21.4	0.38
2-Chloronaphthalene	<12	<1.49	<2.57	<1.82	<2.14	<0.038
Chrysene/Triphenylene	<12	<1.49	<2.57	<1.82	<2.14	<0.038
Coronene	<12	<1.49	<2.57	<1.82	<2.14	<0.038
Dibenzo(a,c/a,h)Anthracene	<12	<1.49	<2.57	<1.82	<2.14	<0.038
Dibenzo(a,e)pyrene	<12	<1.49	<2.57	<1.82	<2.14	<0.038
9,10-dimethylanthracene	<12	<1.49	<2.57	<1.82	<2.14	<0.038
7,12-Dimethylbenzo(a)anthracene	<12	<1.49	<2.57	<1.82	<2.14	<0.038
Fluoranthene	19.2	2.38	4.11	2.91	3.43	0.060
Fluorene	17.8	2.21	3.81	2.70	3.18	0.056
Indeno(1,2,3-cd)Pyrene	<12	<1.49	<2.57	<1.82	<2.14	<0.038
2-methylanthracene	<12	<1.49	<2.57	<1.82	<2.14	<0.038
3-Methylcholanthrene	<12	<1.49	<2.57	<1.82	<2.14	<0.038
1-Methylnaphthalene	52.7	6.54	11.3	8.00	9.42	0.16
2-Methylnaphthalene	87.1	10.8	18.7	13.2	15.6	0.27
1-Methylphenanthrene	14.6	1.81	3.13	2.22	2.61	0.046
9-Methylphenanthrene	<12	<1.49	<2.57	<1.82	<2.14	<0.038
Naphthalene	4180	519	895	635	747	13.1
Perylene	<12	<1.49	<2.57	<1.82	<2.14	<0.038
Phenanthrene	70.7	8.77	15.1	10.7	12.6	0.22
Picene	<12	<1.49	<2.57	<1.82	<2.14	<0.038
Pyrene	27.6	3.42	5.91	4.19	4.93	0.086
Tetralin	20000	2482	4284	3036	3574	62.5
m-terphenyl	<12	<1.49	<2.57	<1.82	<2.14	<0.038
o-Terphenyl	<12	<1.49	<2.57	<1.82	<2.14	<0.038
p-terphenyl	<12	<1.49	<2.57	<1.82	<2.14	<0.038
Total	<24992	<3101	<5353	<3794	<4466	<78.2

Dry Gas Volume Sampled (Rm³*) :	4.669
Actual Flowrate (m³/s) :	25.2
Dry Reference Flowrate (Rm³/s*) :	14.6
Dry Adjusted Flowrate (Rm³/s**) :	20.6
Wet Reference Flowrate (Rm³/s*) :	17.5

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 53
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 5

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	30.7	3.54	6.24	4.43	5.12	0.094
Acenaphthylene	71.6	8.26	14.6	10.3	11.9	0.22
Anthracene	64.6	7.46	13.1	9.31	10.8	0.20
Benzo(a)Anthracene	<12	<1.39	<2.44	<1.73	<2.00	<0.037
Benzo(b)Fluoranthene	<12	<1.39	<2.44	<1.73	<2.00	<0.037
Benzo(j/k)Fluoranthene	<12	<1.39	<2.44	<1.73	<2.00	<0.037
Benzo(a)fluorene	<12	<1.39	<2.44	<1.73	<2.00	<0.037
Benzo(b)fluorene	<12	<1.39	<2.44	<1.73	<2.00	<0.037
Benzo(g,h,i)Perylene	33.7	3.89	6.85	4.86	5.62	0.10
Benzo(a)Pyrene	<12	<1.39	<2.44	<1.73	<2.00	<0.037
Benzo(e)Pyrene	<12	<1.39	<2.44	<1.73	<2.00	<0.037
Biphenyl	66.7	7.70	13.6	9.61	11.1	0.20
2-Chloronaphthalene	<12	<1.39	<2.44	<1.73	<2.00	<0.037
Chrysene/Triphenylene	<12	<1.39	<2.44	<1.73	<2.00	<0.037
Coronene	<12	<1.39	<2.44	<1.73	<2.00	<0.037
Dibenzo(a,c/a,h)Anthracene	<12	<1.39	<2.44	<1.73	<2.00	<0.037
Dibenzo(a,e)pyrene	<12	<1.39	<2.44	<1.73	<2.00	<0.037
9,10-dimethylanthracene	<12	<1.39	<2.44	<1.73	<2.00	<0.037
7,12-Dimethylbenzo(a)anthracene	<12	<1.39	<2.44	<1.73	<2.00	<0.037
Fluoranthene	32.6	3.76	6.63	4.70	5.44	0.10
Fluorene	41.6	4.80	8.46	6.00	6.94	0.13
Indeno(1,2,3-cd)Pyrene	<12	<1.39	<2.44	<1.73	<2.00	<0.037
2-methylanthracene	<12	<1.39	<2.44	<1.73	<2.00	<0.037
3-Methylcholanthrene	<12	<1.39	<2.44	<1.73	<2.00	<0.037
1-Methylnaphthalene	59.3	6.84	12.1	8.55	9.90	0.18
2-Methylnaphthalene	96.7	11.2	19.7	13.9	16.1	0.30
1-Methylphenanthrene	18.1	2.09	3.68	2.61	3.02	0.056
9-Methylphenanthrene	<12	<1.39	<2.44	<1.73	<2.00	<0.037
Naphthalene	4480	517	911	646	748	13.8
Perylene	<12	<1.39	<2.44	<1.73	<2.00	<0.037
Phenanthrene	128	14.8	26.0	18.5	21.4	0.39
Picene	<12	<1.39	<2.44	<1.73	<2.00	<0.037
Pyrene	38.8	4.48	7.89	5.59	6.47	0.12
Tetralin	20800	2401	4229	2998	3471	63.9
m-terphenyl	<12	<1.39	<2.44	<1.73	<2.00	<0.037
o-Terphenyl	<12	<1.39	<2.44	<1.73	<2.00	<0.037
p-terphenyl	<12	<1.39	<2.44	<1.73	<2.00	<0.037
Total	<26238	<3029	<5335	<3782	<4378	<80.6

Dry Gas Volume Sampled (Rm³*) :	4.918
Actual Flowrate (m³/s) :	26.6
Dry Reference Flowrate (Rm³/s*) :	15.1
Dry Adjusted Flowrate (Rm³/s**) :	21.3
Wet Reference Flowrate (Rm³/s*) :	18.4

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 54
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 6

Compound	Total Collected ng	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	57.2	6.74	11.8	8.47	9.74	0.18
Acenaphthylene	27.8	3.28	5.76	4.12	4.73	0.085
Anthracene	48.3	5.69	10.0	7.15	8.22	0.15
Benzo(a)Anthracene	<12	<1.41	<2.48	<1.78	<2.04	<0.037
Benzo(b)Fluoranthene	<12	<1.41	<2.48	<1.78	<2.04	<0.037
Benzo(j/k)Fluoranthene	<12	<1.41	<2.48	<1.78	<2.04	<0.037
Benzo(a)fluorene	<12	<1.41	<2.48	<1.78	<2.04	<0.037
Benzo(b)fluorene	<12	<1.41	<2.48	<1.78	<2.04	<0.037
Benzo(g,h,i)Perylene	141	16.6	29.2	20.9	24.0	0.43
Benzo(a)Pyrene	<12	<1.41	<2.48	<1.78	<2.04	<0.037
Benzo(e)Pyrene	<12	<1.41	<2.48	<1.78	<2.04	<0.037
Biphenyl	104	12.3	21.5	15.4	17.7	0.32
2-Chloronaphthalene	<12	<1.41	<2.48	<1.78	<2.04	<0.037
Chrysene/Triphenylene	<12	<1.41	<2.48	<1.78	<2.04	<0.037
Coronene	133	15.7	27.5	19.7	22.6	0.41
Dibenzo(a,c/a,h)Anthracene	<12	<1.41	<2.48	<1.78	<2.04	<0.037
Dibenzo(a,e)pyrene	<12	<1.41	<2.48	<1.78	<2.04	<0.037
9,10-dimethylanthracene	<12	<1.41	<2.48	<1.78	<2.04	<0.037
7,12-Dimethylbenzo(a)anthracene	<12	<1.41	<2.48	<1.78	<2.04	<0.037
Fluoranthene	38.3	4.51	7.93	5.67	6.52	0.12
Fluorene	37.2	4.38	7.70	5.51	6.33	0.11
Indeno(1,2,3-cd)Pyrene	24.7	2.91	5.11	3.66	4.20	0.076
2-methylanthracene	18.3	2.16	3.79	2.71	3.12	0.056
3-Methylcholanthrene	<12	<1.41	<2.48	<1.78	<2.04	<0.037
1-Methylnaphthalene	70.8	8.34	14.7	10.5	12.1	0.22
2-Methylnaphthalene	133	15.7	27.5	19.7	22.6	0.41
1-Methylphenanthrene	19.9	2.35	4.12	2.95	3.39	0.061
9-Methylphenanthrene	<12	<1.41	<2.48	<1.78	<2.04	<0.037
Naphthalene	3690	435	764	546	628	11.3
Perylene	<12	<1.41	<2.48	<1.78	<2.04	<0.037
Phenanthrene	134	15.8	27.7	19.8	22.8	0.41
Picene	<12	<1.41	<2.48	<1.78	<2.04	<0.037
Pyrene	51.8	6.10	10.7	7.67	8.82	0.16
Tetralin	16700	1968	3458	2472	2843	51.2
m-terphenyl	<12	<1.41	<2.48	<1.78	<2.04	<0.037
o-Terphenyl	<12	<1.41	<2.48	<1.78	<2.04	<0.037
p-terphenyl	<12	<1.41	<2.48	<1.78	<2.04	<0.037
Total	<21669	<2554	<4486	<3208	<3689	<66.4

Dry Gas Volume Sampled (Rm³*) :	4.830
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**) :	20.7
Wet Reference Flowrate (Rm³/s*) :	18.0

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 55
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Actual Concentrations

Compound	Actual Concentration Test No. 4	Test No. 5	Test No. 6	Average	Coefficient of Variation
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
Acenaphthene	3.10	3.54	6.74	4.46	44.5
Acenaphthylene	2.25	8.26	3.28	4.60	70.0
Anthracene	6.56	7.46	5.69	6.57	13.4
Benzo(a)Anthracene	<1.49	<1.39	<1.41	<1.43	3.8
Benzo(b)Fluoranthene	<1.49	<1.39	<1.41	<1.43	3.8
Benzo(j/k)Fluoranthene	<1.49	<1.39	<1.41	<1.43	3.8
Benzo(a)fluorene	<1.49	<1.39	<1.41	<1.43	3.8
Benzo(b)fluorene	<1.49	<1.39	<1.41	<1.43	3.8
Benzo(g,h,i)Perylene	3.77	3.89	16.6	8.09	91.2
Benzo(a)Pyrene	<1.49	<1.39	<1.41	<1.43	3.8
Benzo(e)Pyrene	<1.49	<1.39	<1.41	<1.43	3.8
Biphenyl	14.9	7.70	12.3	11.6	31.3
2-Chloronaphthalene	<1.49	<1.39	<1.41	<1.43	3.8
Chrysene/Triphenylene	<1.49	<1.39	<1.41	<1.43	3.8
Coronene	<1.49	<1.39	15.7	<6.18	133
Dibenzo(a,c/a,h)Anthracene	<1.49	<1.39	<1.41	<1.43	3.8
Dibenzo(a,e)pyrene	<1.49	<1.39	<1.41	<1.43	3.8
9,10-dimethylanthracene	<1.49	<1.39	<1.41	<1.43	3.8
7,12-Dimethylbenzo(a)anthracene	<1.49	<1.39	<1.41	<1.43	3.8
Fluoranthene	2.38	3.76	4.51	3.55	30.4
Fluorene	2.21	4.80	4.38	3.80	36.7
Indeno(1,2,3-cd)Pyrene	<1.49	<1.39	2.91	<1.93	44.2
2-methylanthracene	<1.49	<1.39	2.16	<1.68	25.0
3-Methylcholanthrene	<1.49	<1.39	<1.41	<1.43	3.8
1-Methylnaphthalene	6.54	6.84	8.34	7.24	13.3
2-Methylnaphthalene	10.8	11.2	15.7	12.5	21.6
1-Methylphenanthrene	1.81	2.09	2.35	2.08	12.8
9-Methylphenanthrene	<1.49	<1.39	<1.41	<1.43	3.8
Naphthalene	519	517	435	490	9.8
Perylene	<1.49	<1.39	<1.41	<1.43	3.8
Phenanthrene	8.77	14.8	15.8	13.1	28.9
Picene	<1.49	<1.39	<1.41	<1.43	3.8
Pyrene	3.42	4.48	6.10	4.67	28.9
Tetralin	2482	2401	1968	2284	12.1
m-terphenyl	<1.49	<1.39	<1.41	<1.43	3.8
o-Terphenyl	<1.49	<1.39	<1.41	<1.43	3.8
p-terphenyl	<1.49	<1.39	<1.41	<1.43	3.8
Total	<3101	<3029	<2554	<2895	10.3

TABLE 56
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Reference Concentrations

Compound	Dry Reference Concentration				Coefficient of Variation
	Test No. 4	Test No. 5	Test No. 6	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	5.35	6.24	11.8	7.81	45.0
Acenaphthylene	3.88	14.6	5.76	8.06	70.7
Anthracene	11.3	13.1	10.0	11.5	13.7
Benzo(a)Anthracene	<2.57	<2.44	<2.48	<2.50	2.6
Benzo(b)Fluoranthene	<2.57	<2.44	<2.48	<2.50	2.6
Benzo(j/k)Fluoranthene	<2.57	<2.44	<2.48	<2.50	2.6
Benzo(a)fluorene	<2.57	<2.44	<2.48	<2.50	2.6
Benzo(b)fluorene	<2.57	<2.44	<2.48	<2.50	2.6
Benzo(g,h,i)Perylene	6.51	6.85	29.2	14.2	91.6
Benzo(a)Pyrene	<2.57	<2.44	<2.48	<2.50	2.6
Benzo(e)Pyrene	<2.57	<2.44	<2.48	<2.50	2.6
Biphenyl	25.7	13.6	21.5	20.3	30.4
2-Chloronaphthalene	<2.57	<2.44	<2.48	<2.50	2.6
Chrysene/Triphenylene	<2.57	<2.44	<2.48	<2.50	2.6
Coronene	<2.57	<2.44	27.5	<10.8	133
Dibenzo(a,c/a,h)Anthracene	<2.57	<2.44	<2.48	<2.50	2.6
Dibenzo(a,e)pyrene	<2.57	<2.44	<2.48	<2.50	2.6
9,10-dimethylanthracene	<2.57	<2.44	<2.48	<2.50	2.6
7,12-Dimethylbenzo(a)anthracene	<2.57	<2.44	<2.48	<2.50	2.6
Fluoranthene	4.11	6.63	7.93	6.22	31.2
Fluorene	3.81	8.46	7.70	6.66	37.4
Indeno(1,2,3-cd)Pyrene	<2.57	<2.44	5.11	<3.37	44.7
2-methylanthracene	<2.57	<2.44	3.79	<2.93	25.4
3-Methylcholanthrene	<2.57	<2.44	<2.48	<2.50	2.6
1-Methylnaphthalene	11.3	12.1	14.7	12.7	13.9
2-Methylnaphthalene	18.7	19.7	27.5	22.0	22.2
1-Methylphenanthrene	3.13	3.68	4.12	3.64	13.7
9-Methylphenanthrene	<2.57	<2.44	<2.48	<2.50	2.6
Naphthalene	895	911	764	857	9.4
Perylene	<2.57	<2.44	<2.48	<2.50	2.6
Phenanthrene	15.1	26.0	27.7	23.0	29.7
Picene	<2.57	<2.44	<2.48	<2.50	2.6
Pyrene	5.91	7.89	10.7	8.18	29.6
Tetralin	4284	4229	3458	3990	11.6
m-terphenyl	<2.57	<2.44	<2.48	<2.50	2.6
o-Terphenyl	<2.57	<2.44	<2.48	<2.50	2.6
p-terphenyl	<2.57	<2.44	<2.48	<2.50	2.6
Total	<5353	<5335	<4486	<5058	9.8

* At 25°C and 1 atmosphere

TABLE 57
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration				Coefficient
	Test No. 4	Test No. 5	Test No. 6	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	3.79	4.43	8.47	5.56	45.6
Acenaphthylene	2.75	10.3	4.12	5.73	70.5
Anthracene	8.03	9.31	7.15	8.16	13.3
Benzo(a)Anthracene	<1.82	<1.73	<1.78	<1.78	2.6
Benzo(b)Fluoranthene	<1.82	<1.73	<1.78	<1.78	2.6
Benzo(j/k)Fluoranthene	<1.82	<1.73	<1.78	<1.78	2.6
Benzo(a)fluorene	<1.82	<1.73	<1.78	<1.78	2.6
Benzo(b)fluorene	<1.82	<1.73	<1.78	<1.78	2.6
Benzo(g,h,i)Perylene	4.61	4.86	20.9	10.1	92.1
Benzo(a)Pyrene	<1.82	<1.73	<1.78	<1.78	2.6
Benzo(e)Pyrene	<1.82	<1.73	<1.78	<1.78	2.6
Biphenyl	18.2	9.61	15.4	14.4	30.4
2-Chloronaphthalene	<1.82	<1.73	<1.78	<1.78	2.6
Chrysene/Triphenylene	<1.82	<1.73	<1.78	<1.78	2.6
Coronene	<1.82	<1.73	19.7	<7.75	134
Dibenzo(a,c/a,h)Anthracene	<1.82	<1.73	<1.78	<1.78	2.6
Dibenzo(a,e)pyrene	<1.82	<1.73	<1.78	<1.78	2.6
9,10-dimethylanthracene	<1.82	<1.73	<1.78	<1.78	2.6
7,12-Dimethylbenzo(a)anthracene	<1.82	<1.73	<1.78	<1.78	2.6
Fluoranthene	2.91	4.70	5.67	4.43	31.6
Fluorene	2.70	6.00	5.51	4.74	37.5
Indeno(1,2,3-cd)Pyrene	<1.82	<1.73	3.66	<2.40	45.2
2-methylanthracene	<1.82	<1.73	2.71	<2.09	25.9
3-Methylcholanthrene	<1.82	<1.73	<1.78	<1.78	2.6
1-Methylnaphthalene	8.00	8.55	10.5	9.01	14.5
2-Methylnaphthalene	13.2	13.9	19.7	15.6	22.7
1-Methylphenanthrene	2.22	2.61	2.95	2.59	14.1
9-Methylphenanthrene	<1.82	<1.73	<1.78	<1.78	2.6
Naphthalene	635	646	546	609	9.0
Perylene	<1.82	<1.73	<1.78	<1.78	2.6
Phenanthrene	10.7	18.5	19.8	16.3	30.0
Picene	<1.82	<1.73	<1.78	<1.78	2.6
Pyrene	4.19	5.59	7.67	5.82	30.1
Tetralin	3036	2998	2472	2835	11.1
m-terphenyl	<1.82	<1.73	<1.78	<1.78	2.6
o-Terphenyl	<1.82	<1.73	<1.78	<1.78	2.6
p-terphenyl	<1.82	<1.73	<1.78	<1.78	2.6
Total	<3794	<3782	<3208	<3595	9.3

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 58
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Wet Reference Concentrations

Compound	Wet Reference Concentration				Coefficient of Variation
	Test No. 4	Test No. 5	Test No. 6	Average	
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	4.47	5.12	9.74	6.44	44.6
Acenaphthylene	3.23	11.9	4.73	6.64	70.2
Anthracene	9.45	10.8	8.22	9.48	13.5
Benzo(a)Anthracene	<2.14	<2.00	<2.04	<2.06	3.5
Benzo(b)Fluoranthene	<2.14	<2.00	<2.04	<2.06	3.5
Benzo(j/k)Fluoranthene	<2.14	<2.00	<2.04	<2.06	3.5
Benzo(a)fluorene	<2.14	<2.00	<2.04	<2.06	3.5
Benzo(b)fluorene	<2.14	<2.00	<2.04	<2.06	3.5
Benzo(g,h,i)Perylene	5.43	5.62	24.0	11.7	91.3
Benzo(a)Pyrene	<2.14	<2.00	<2.04	<2.06	3.5
Benzo(e)Pyrene	<2.14	<2.00	<2.04	<2.06	3.5
Biphenyl	21.4	11.1	17.7	16.8	31.2
2-Chloronaphthalene	<2.14	<2.00	<2.04	<2.06	3.5
Chrysene/Triphenylene	<2.14	<2.00	<2.04	<2.06	3.5
Coronene	<2.14	<2.00	22.6	<8.93	133
Dibenzo(a,c/a,h)Anthracene	<2.14	<2.00	<2.04	<2.06	3.5
Dibenzo(a,e)pyrene	<2.14	<2.00	<2.04	<2.06	3.5
9,10-dimethylanthracene	<2.14	<2.00	<2.04	<2.06	3.5
7,12-Dimethylbenzo(a)anthracene	<2.14	<2.00	<2.04	<2.06	3.5
Fluoranthene	3.43	5.44	6.52	5.13	30.6
Fluorene	3.18	6.94	6.33	5.48	36.8
Indeno(1,2,3-cd)Pyrene	<2.14	<2.00	4.20	<2.78	44.3
2-methylanthracene	<2.14	<2.00	3.12	<2.42	25.0
3-Methylcholanthrene	<2.14	<2.00	<2.04	<2.06	3.5
1-Methylnaphthalene	9.42	9.90	12.1	10.5	13.4
2-Methylnaphthalene	15.6	16.1	22.6	18.1	21.7
1-Methylphenanthrene	2.61	3.02	3.39	3.01	13.0
9-Methylphenanthrene	<2.14	<2.00	<2.04	<2.06	3.5
Naphthalene	747	748	628	708	9.7
Perylene	<2.14	<2.00	<2.04	<2.06	3.5
Phenanthrene	12.6	21.4	22.8	18.9	29.1
Picene	<2.14	<2.00	<2.04	<2.06	3.5
Pyrene	4.93	6.47	8.82	6.74	29.0
Tetralin	3574	3471	2843	3296	12.0
m-terphenyl	<2.14	<2.00	<2.04	<2.06	3.5
o-Terphenyl	<2.14	<2.00	<2.04	<2.06	3.5
p-terphenyl	<2.14	<2.00	<2.04	<2.06	3.5
Total	<4466	<4378	<3689	<4178	10.2

* At 25°C and 1 atmosphere

TABLE 59
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Rates

Compound	Emission Rate				Coefficient of Variation
	Test No. 4 µg/s	Test No. 5 µg/s	Test No. 6 µg/s	Average µg/s	%
Acenaphthene	0.078	0.094	0.18	0.12	44.9
Acenaphthylene	0.057	0.22	0.085	0.12	72.3
Anthracene	0.17	0.20	0.15	0.17	15.0
Benzo(a)Anthracene	<0.038	<0.037	<0.037	<0.037	1.1
Benzo(b)Fluoranthene	<0.038	<0.037	<0.037	<0.037	1.1
Benzo(j/k)Fluoranthene	<0.038	<0.037	<0.037	<0.037	1.1
Benzo(a)fluorene	<0.038	<0.037	<0.037	<0.037	1.1
Benzo(b)fluorene	<0.038	<0.037	<0.037	<0.037	1.1
Benzo(g,h,i)Perylene	0.095	0.10	0.43	0.21	91.4
Benzo(a)Pyrene	<0.038	<0.037	<0.037	<0.037	1.1
Benzo(e)Pyrene	<0.038	<0.037	<0.037	<0.037	1.1
Biphenyl	0.38	0.20	0.32	0.30	29.0
2-Chloronaphthalene	<0.038	<0.037	<0.037	<0.037	1.1
Chrysene/Triphenylene	<0.038	<0.037	<0.037	<0.037	1.1
Coronene	<0.038	<0.037	0.41	<0.16	133
Dibenzo(a,c/a,h)Anthracene	<0.038	<0.037	<0.037	<0.037	1.1
Dibenzo(a,e)pyrene	<0.038	<0.037	<0.037	<0.037	1.1
9,10-dimethylanthracene	<0.038	<0.037	<0.037	<0.037	1.1
7,12-Dimethylbenzo(a)anthracene	<0.038	<0.037	<0.037	<0.037	1.1
Fluoranthene	0.060	0.10	0.12	0.092	31.8
Fluorene	0.056	0.13	0.11	0.099	38.6
Indeno(1,2,3-cd)Pyrene	<0.038	<0.037	0.076	<0.050	44.4
2-methylanthracene	<0.038	<0.037	0.056	<0.043	25.1
3-Methylcholanthrene	<0.038	<0.037	<0.037	<0.037	1.1
1-Methylnaphthalene	0.16	0.18	0.22	0.19	14.1
2-Methylnaphthalene	0.27	0.30	0.41	0.33	22.1
1-Methylphenanthrene	0.046	0.056	0.061	0.054	14.4
9-Methylphenanthrene	<0.038	<0.037	<0.037	<0.037	1.1
Naphthalene	13.1	13.8	11.3	12.7	9.9
Perylene	<0.038	<0.037	<0.037	<0.037	1.1
Phenanthrene	0.22	0.39	0.41	0.34	30.7
Picene	<0.038	<0.037	<0.037	<0.037	1.1
Pyrene	0.086	0.12	0.16	0.12	29.9
Tetralin	62.5	63.9	51.2	59.2	11.8
m-terphenyl	<0.038	<0.037	<0.037	<0.037	1.1
o-Terphenyl	<0.038	<0.037	<0.037	<0.037	1.1
p-terphenyl	<0.038	<0.037	<0.037	<0.037	1.1
Total	<78.2	<80.6	<66.4	<75.0	10.1

TABLE 60
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Polycyclic Aromatic Hydrocarbon Emission Data

Compound	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate µg/s
Acenaphthene	4.46	7.81	5.56	6.44	0.12
Acenaphthylene	4.60	8.06	5.73	6.64	0.12
Anthracene	6.57	11.5	8.16	9.48	0.17
Benzo(a)Anthracene	<1.43	<2.50	<1.78	<2.06	<0.037
Benzo(b)Fluoranthene	<1.43	<2.50	<1.78	<2.06	<0.037
Benzo(j/k)Fluoranthene	<1.43	<2.50	<1.78	<2.06	<0.037
Benzo(a)fluorene	<1.43	<2.50	<1.78	<2.06	<0.037
Benzo(b)fluorene	<1.43	<2.50	<1.78	<2.06	<0.037
Benzo(g,h,i)Perylene	8.09	14.2	10.1	11.7	0.21
Benzo(a)Pyrene	<1.43	<2.50	<1.78	<2.06	<0.037
Benzo(e)Pyrene	<1.43	<2.50	<1.78	<2.06	<0.037
Biphenyl	11.6	20.3	14.4	16.8	0.30
2-Chloronaphthalene	<1.43	<2.50	<1.78	<2.06	<0.037
Chrysene/Triphenylene	<1.43	<2.50	<1.78	<2.06	<0.037
Coronene	<6.18	<10.8	<7.75	<8.93	<0.16
Dibenzo(a,c/a,h)Anthracene	<1.43	<2.50	<1.78	<2.06	<0.037
Dibenzo(a,e)pyrene	<1.43	<2.50	<1.78	<2.06	<0.037
9,10-dimethylanthracene	<1.43	<2.50	<1.78	<2.06	<0.037
7,12-Dimethylbenzo(a)anthracene	<1.43	<2.50	<1.78	<2.06	<0.037
Fluoranthene	3.55	6.22	4.43	5.13	0.092
Fluorene	3.80	6.66	4.74	5.48	0.099
Indeno(1,2,3-cd)Pyrene	<1.93	<3.37	<2.40	<2.78	<0.050
2-methylanthracene	<1.68	<2.93	<2.09	<2.42	<0.043
3-Methylcholanthrene	<1.43	<2.50	<1.78	<2.06	<0.037
1-Methylnaphthalene	7.24	12.7	9.01	10.5	0.19
2-Methylnaphthalene	12.5	22.0	15.6	18.1	0.33
1-Methylphenanthrene	2.08	3.64	2.59	3.01	0.054
9-Methylphenanthrene	<1.43	<2.50	<1.78	<2.06	<0.037
Naphthalene	490	857	609	708	12.7
Perylene	<1.43	<2.50	<1.78	<2.06	<0.037
Phenanthrene	13.1	23.0	16.3	18.9	0.34
Picene	<1.43	<2.50	<1.78	<2.06	<0.037
Pyrene	4.67	8.18	5.82	6.74	0.12
Tetralin	2284	3990	2835	3296	59.2
m-terphenyl	<1.43	<2.50	<1.78	<2.06	<0.037
o-Terphenyl	<1.43	<2.50	<1.78	<2.06	<0.037
p-terphenyl	<1.43	<2.50	<1.78	<2.06	<0.037
Total	<2895	<5058	<3595	<4178	<75.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 61
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Polycyclic Aromatic Hydrocarbon Analyses

Compound	Blank Train ng	Laboratory Blank ng
Acenaphthene	<12	<12
Acenaphthylene	<12	<12
Anthracene	43.9	<12
Benzo(a)Anthracene	<12	<12
Benzo(b)Fluoranthene	<12	<12
Benzo(j/k)Fluoranthene	<12	<12
Benzo(a)fluorene	<12	<12
Benzo(b)fluorene	<12	<12
Benzo(g,h,i)Perylene	23.5	<12
Benzo(a)Pyrene	<12	<12
Benzo(e)Pyrene	<12	<12
Biphenyl	39.1	<12
2-Chloronaphthalene	<12	<12
Chrysene/Triphenylene	<12	<12
Coronene	<12	<12
Dibenzo(a,c/a,h)Anthracene	<12	<12
Dibenzo(a,e)pyrene	<12	<12
9,10-dimethylanthracene	<12	<12
7,12-Dimethylbenzo(a)anthracene	<12	<12
Fluoranthene	18.8	<12
Fluorene	<12	<12
Indeno(1,2,3-cd)Pyrene	<12	<12
2-methylanthracene	<12	<12
3-Methylcholanthrene	<12	<12
1-Methylnaphthalene	16.7	<12
2-Methylnaphthalene	19.9	<12
1-Methylphenanthrene	<12	<12
9-Methylphenanthrene	<12	<12
Naphthalene	3510	25.3
Perylene	<12	<12
Phenanthrene	27.4	<12
Picene	<12	<12
Pyrene	45.3	<12
Tetralin	18300	<12
m-terphenyl	<12	<12
o-Terphenyl	<12	<12
p-terphenyl	<12	<12
Total	<22369	<457

"<" indicates that the amount detected is less than the analytical detection limit (<MDL). In these cases the value of the detection limit was used to calculate the total collected.

APPENDIX 7

Pre-Test Plan Acceptance Letter and
Amended Environmental Compliance Approval (Air) No. 7306-8FDKNX
(90 pages)

Tina Sanderson

From:	Hussain, Lubna I. (MOECC) <Lubna.I.Hussain@ontario.ca>
Sent:	October-21-15 2:57 PM
To:	Brasowski,Leon
Cc:	Azocar, Guillermo (MOECC); Neild,Matthew; Huxter,Amanda; Dunn, Philip (MOECC); Thomas, Sandra (MOECC); Dugas, Celeste (MOECC)
Subject:	RE: Preliminary DYEC Source Test Results

Hello Leon,

Thank you for this e-mail update. To confirm the MOECC does support your decision to move forwards with a repeat of the source testing for dioxins and furans beginning today.

Based on our conversation yesterday, I understand that you would like to re-test as there is indication that some of the samples from the October 1 and October 2 sampling are potentially contaminated.

To provide further context on the e-mail from Guillermo below, the steps outlined are suggestions for your further investigation as needed, but we do support your decision to begin testing today.

Please do let me know if you have any questions.

Regards,
Lubna

Lubna Hussain P.Eng.
Manager – Technology Standards Section
Standards Development Branch
Ministry of the Environment and Climate Change
E-mail : Lubna.I.Hussain@ontario.ca
Phone: 416-212-0081

From: Brasowski,Leon [mailto:LBrasowski@covanta.com]
Sent: October-21-15 10:52 AM
To: Hussain, Lubna I. (MOECC)
Cc: Azocar, Guillermo (MOECC); Neild,Matthew; Huxter,Amanda
Subject: RE: Preliminary DYEC Source Test Results

Good Morning Lubna!

Covanta certainly appreciated your time yesterday to further discuss the preliminary DYEC Source Test Results following my initial email to you and Covanta's desires to prioritize and expediently demonstrate compliance for all ECA performance standards. As a result, Covanta intends to start source testing for Dioxin/Furans this afternoon as early as 2 pm. This source testing program will likely end by Friday October 23rd, but may continue into early the following week as conditions warrant. Source testing and analysis of results will be conducted by ORTECH with analysis by ALS, consistent with initial testing and analysis.

The decision to expediently repeat Dioxins/Furans testing at this time was made with the understanding that ALS Life Sciences noted on the cover page of their Dioxin Analyses, attached, which states that "Despite additional work, there were still peaks at the diphenylether monitoring mass indicating the possibility that the results for 1,2,3,4,7,8 HxCDF and 1,2,3,6,7,8 HxDCF may be elevated." This in conjunction with our initial findings noted to you below regarding mass, TEQ and ratio results reflect these are not representative relative to both the September test results and emission data from other Energy-from-Waste facilities. We would also like to point out that upon review of the draft DYEC Source Test result report received yesterday – we have also found that there was contamination in the samples for acetaldehyde and formaldehyde. That means that two separate and independent sample trains had either contamination or interference issues.

We understood from our conversation that MOECC supports a decision to expediently move forward with a repeat source test program for Dioxin/Furans. Covanta will utilize this program to further our understanding of the initial results and be able to more fully respond to Guilermo's questions noted by his email below of October 20th. An initial review of process data between September and October is inconclusive. Furthermore, at this time we are still awaiting QA/QC regarding the duplicate extracts being analyzed by SGS. We will continue to work with you in a transparent fashion, as our expectation is that DYEC will demonstrate among the lowest emissions of Energy-from Waste facilities worldwide.

Should you have any questions, please do not hesitate to call.

Leon Brasowski
Director, Environmental Engineering

COVANTA
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From: Azocar, Guillermo (MOECC) [mailto:Guillermo.Azocar@ontario.ca]
Sent: Tuesday, October 20, 2015 5:14 PM
To: Brasowski,Leon <LBrasowski@covanta.com>
Cc: Hussain, Lubna I. (MOECC) <Lubna.I.Hussain@ontario.ca>
Subject: RE: Preliminary DYEC Source Test Results

Hi Leon,

Is it possible to get the ALS' dioxins/furans lab report, to check the reported data and any flagging done by the lab on the results?

Did you get the analysis from Covanta's dioxin monitor? If so, how do they compare to ALS/ORTECH results?

I believe that you should undertake additional dioxins testing only after you get the results from SGS, had time to compare to ALS results, check combustion gas temperatures, combustion chamber residence time (based on measured flows), baghouses inlet temperature, combustion excess oxygen, rate of lime and carbon injection (adsorption potential), particulate matter results (for potential presence of ionized carbon particles), HCl results, and the operation of the SNCR system operation and ammonia injection rate as a potential reduction of dioxins of furans by oxidation, that may impact even precursors (such as chlorophenols) before they are formed.

How do all these process/emissions parameters compare to the operation of unit 1 in September?

Regards,

Guillermo Azocar
Source Assessment Specialist.-

From: Brasowski,Leon [mailto:LBrasowski@covanta.com]
Sent: October 19, 2015 6:33 PM
To: Dugas, Celeste (MOECC); Dunn, Philip (MOECC); Hussain, Lubna I. (MOECC); Azocar, Guillermo (MOECC); Thomas, Sandra (MOECC)
Cc: 'Gioseph Anello'; 'Mirka Januszkiewicz (Mirka.Januszkiewicz@durham.ca)'; Neild,Matthew; Huxter,Amanda
Subject: Preliminary DYEC Source Test Results

As discussed today with Phil Dunn, the following information is provided as an interim summary of preliminary test results at the Durham York Energy Centre for source testing conducted between September 10th and October 2nd.

Preliminary test results for all constituents identified by the MOECC approved Source Test Plan as required by the ECA for testing conducted between September 28th an October 2nd have just been made available today to Covanta. A cursory review of this information indicates mostly passing results, however, preliminary dioxin and furan results warrant discussion at this time. Prior to the conduct of the ECA required source tests, Covanta conducted dioxin testing on Unit #2 on September 10th to verify the ability of the DYEC to meet the obligations of the ECA. The table below provides an overview of results from dioxin source testing in September and October of 2015:

		Unit 1			Unit 2		
Date	Run	Mass (a)	TEQ (b)	Ratio (c)	Mass (a)	TEQ (b)	Ratio (c)
Sept 10	1	---	---	---	1,244	25.7	48.5
	2	---	---	---	1,770	32.5	54.4
	Average	---	---	---	1,507	29.1	51.4
Oct 1	1	7,105	212	33.5	2,433	121	20.1
Oct 2	2	6,413	188	34.1	1,551	74	21.0
	3	10,165	278	36.6	2,275	106	21.5

	Average	7,894	226	34.7	2,086	100.3	20.8

NOTES:
(a) Units expressed as picograms per reference cubic meter at 11% O2, dry gas basis.
(b) Units expressed as picograms of toxic equivalence when applying WHO 2005 isomer specific toxicity factors to the isomer distribution associated with the mass emission factor.
(c) The TEQ ratio is the mass factor divided by the TEQ factor and is an indicator of the isomer distribution.

The test program in September was conducted by ORTECH, the same firm that conducted the ECA mandated source testing. In each case the field samples were analyzed by ALS Laboratory.

The September 10th results were consistent with Covanta's expectations when considering both the mass, TEQ and ratio results. The ECA source test results are unusual and at present are not considered to be representative relative to both the September results and emission data from other Energy-from-Waste facilities. Covanta requested ALS to ship their duplicates to a second lab (SGS) to validate the preliminary results. SGS has received the duplicates.

ORTECH has calculated that the stack concentrations of dioxin emissions from both units in October will result in an impingement concentration of 0.0072 pg TEQ/m^3, well below the allowable impingement concentration of 1 pg TEQ/m^3 as established by Regulation 419.

We are currently implementing a comprehensive review of all operational data and will begin additional testing tomorrow to evaluate these preliminary results from which Covanta will develop the scope and schedule of an evaluation program. Our expectation is that we will have SGS results to review against the preliminary ALS data on Wednesday, October 21st.

Should you have any questions, please contact me.

Leon Brasowski
Director, Environmental Engineering

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Via email: lbrasowski@covanta.ca
File No.: CR:SA:109198:14

2014/10/31

Mr. Leon Brasowski, Director Environmental Engineering
Covanta
445 South St.
Morristown, New Jersey
07960

Dear Mr. Brasowski:

Subject: Pre Test Plan for source testing to be conducted at Durham-York Energy Centre. Environmental Compliance Approval No. 7306-8FDKNX.

We received your revised pre-test plan, dated 2014/10/22, Covanta Project 3824, prepared on behalf of Durham-York Energy Centre (DYEC), and referring to source testing to be conducted at DYEC's Energy-From-Waste facility. The testing is required by Condition 7 of the Environmental Compliance Approval No. 7306-8FDKNX, issued on 2011/06/28, and the Notice No. 1 of ECA amendment, issued on 2014/08/12.

The objective of this source testing program is to validate that the facility's two thermal treatment trains are capable of meeting their individual performance parameters and their combined emission limits when operating at maximum continuous rating, as required by the source testing definition and conditions listed in the ECA.

The revision of the pre-test plan was required to better define the sampling locations, the sampling strategies, and the monitoring of relevant process conditions associated with the potential generation of contaminants of interest listed in the ECA.

Target Source:

- Municipal Solid Waste Energy-From-Waste Incinerator – Thermal Treatment Unit 1
- Municipal Solid Waste Energy-From-Waste Incinerator – Thermal Treatment Unit 2

Target contaminants:

1. Total Suspended Particulate Matter (TSP),

2. PM_{10},
3. $PM_{2.5}$,
4. PM condensable,
5. Metals (17 selected metals, as listed in the ECA's Schedule "D"),
6. Semivolatile Organic Compounds (17 dioxins and furans isomers, 12 dioxin-like PCBs, 39 selected PAHs, 12 chlorobenzenes, and19 chlorophenols) – as listed in ECA's Schedule "D",
7. Volatile Organic Compounds (33 selected VOCs, including 4 aldehydes/ketones, as listed in the ECA's Schedule "D"),
8. Hydrogen fluoride (HF),
9. Hydrogen chloride (HCl),
10. Nitrogen oxides (NO_X),
11. Sulphur dioxide (SO_2),
12. Combustion gases (oxygen, CO, and CO_2), and
13. Total organic matter (THC).

***Reference methods*:**

1. TSP:	OSTC Method ON-5,
2. $PM_{2.5}/PM_{10}$:	US EPA 40CFR60 Method 201A,
3. PM condensable:	US EPA 40CFR60 Method 202,
4. Metals:	US EPA 40CFR60 Method 29,
5. Hexavalent chromium:	US EPA SW-846, Method 0061,
6. SVOCs:	Environment Canada's Report EPS 1/RM/2,
7. VOCs:	US EPA SW-846 Method 0030,
8. Aldehydes/ketones:	State of California Method CARB 430
9. HF:	US EPA 40CFR60 Method 13B,
10. HCl:	US EPA 40CFR60 Method 26 (for RATA), and DYEC CEMS (for compliance),
11. NOx:	US EPA 40CFR60 Method 7E (for RATA), and DYEC CEMS (for compliance),
12. SO_2:	US EPA 40CFR60 Method 6C (for RATA), and DYEC CEMS (for compliance),
13. CO_2:	US EPA 40CFR60 Method 3A,
14. O_2:	US EPA 40CFR60 Method 3A (for emissions normalization at the stack, and RATA undiluted at outlet of combustor), and DYEC CEMS (for compliance – undiluted at outlet of combustor),
15. CO:	US EPA 40CFR60 Method 10 (for RATA), and DYEC CEMS (for compliance),
16. THC:	US EPA 40CFR60 Method 25A, and
17. Stack Gas Parameters:	Ontario Source Testing Code's Method ON-1 to ON-4.

Notes: *ORTECH Environmental has been subcontracted to conduct the source testing program on behalf of Covanta.*

Please be aware that for this program, the US EPA Methods 201A and 202 are the reference method for the determination of PM2.5 and condensable particulate matter; but for future programs, we will be phasing in Environment Canada's Reference Method EPS 1/RM/55 (modified when necessary to incorporate OSTC requirements).

Relative Accuracy Test Audit:

It is indicated in the pre-test plan that relative accuracy test audit (RATA) will be performed on the two thermal treatment Units' Continuous Emission Monitoring System (CEMS) in accordance with 40CFR Part 60 Appendix B or EPS 1/PG/7 as per Schedule F of the ECA. The relative accuracy testing will consist of a minimum of nine-run performance test runs.

Notes:

The intent of the RATA is to assure that accurate and representative concentrations are generated by the thermal treatment Units' Continuous Emission Monitoring Systems (CEMS); based on EPS 1/PG/7; we have highlighted the minimum parameters expected from this certification:

- ***Representativeness of the probe location.*** *An initial check must be made to determine that the probe location is representative with respect to the homogeneity of the gas stream.*

  A location that does not offer the possibility of obtaining a representative sample of the exhaust gas is of little value. Representative means that the target contaminant(s) or emission rate measurements are directly representative of the total emissions from the exhaust gas being released by the process/source under scrutiny.

- ***Cyclonic flow check*** *(flow rate sensor).*

- ***Exhaust gas stratification.*** *A stratification test must be carried out for each gaseous species measured by the installed CEM system; noting that the expectation is to check for both spatial and temporal stratification.*

  Using two automated systems with similar response characteristics, the concentration of a target gas must be measured at each of the sampling points in the matrix with one system (traversing system), while simultaneously measuring the target gas concentration at a fixed or reference location, usually at the centre of the duct, or the desired target location.

  If significant gas stratification of any of the measured species is present at the proposed location, then serious consideration should be given to relocating the system to another location where the flow has been determined to be non-stratified.

- ***Operational Test Period** (168-hour cumulative time period). Intended to validate that the CEM system is capable to continue to generate accurate long-term emissions data.*

- ***Calibration drift.***
- ***System response rime.***
- ***Relative Accuracy.***
- ***System Bias.***
- ***Orientation sensitivity** (flow rate sensor)*

- ***Calibration Gases**. The gases used by both the CEM system and the reference method during the relative accuracy test must be U.S. Environmental Protection Agency (EPA) protocol grade.*

  Gases used during the calibration drift and response time tests must be certified to an accuracy of 2.0% by the supplier, but protocol gases may be used if desired.

We noted the analyzers' QA/QC procedures/strategies outlined in the pre-test plan's Appendix "B".

***Proposed Sampling Strategy*:**

It is stated in the pre-test plan that the source testing strategies outlined in the pre-test plan were developed to satisfy the requirements for validated source testing data stipulated in the MOE "Ontario Source Testing Code" (OSTC).

Two sampling stations are indicated in the pre-test plan: one between the boiler outlet and the dry scrubber, and one between the baghouse and the ID fan.

Triplicate samples will be collected for all the target contaminants, as specified in Table 10 of the pre-test plan.

The sampling station, at the **inlet of the dry scrubber**, has the two ports at the same horizontal plane and 90 degrees apart. This duct is 1.4 metres in diameter with the sampling ports located non-ideally, 3.8 equivalent stack diameters upstream of any flow disturbance and 4.7 equivalent stack diameters downstream of any flow disturbance.

For this sampling location, 12 points per traverse were selected; which is consistent with the OSTC's Method ON-1 (Figure 1-1).

It is not expected that isokinetic sampling or flow determination be conducted in this sampling location. Due to the non-ideal location of the sampling ports, the 12 points per traverse shall be used to check for flow disturbances (cyclonic, reverse or unstable flow), and located a point of average flow for the placing of the probe tip. If flow disturbances are present, the actions to be taken to address them shall be submitted to the Technology Standards Section to confirm their acceptability.

This location is suitable for determination of excess oxygen from the combustion chamber, CO and total organic matter (THC).

Each thermal treatment line has a sampling station at the **inlet of the ID fan**, with two ports at the same horizontal plane and 90 degrees apart. This duct is 1.4 metres in diameter with the sampling ports located at a non-acceptable location, 0.6 equivalent stack diameters upstream of any flow disturbance and 4.4 equivalent stack diameters downstream of any flow disturbance.

Prior to the conduction of the first compliance test run, cyclonic flow and reverse flow tests will be performed in triplicate at each sample location. The cyclonic flow and reverse flow checks will be conducted using the S-type Pitot tube and manometer according to the procedure in Sections 7.0 and 8.0 of Part B Method ON-1 of the Ontario Source Testing Code. The cyclonic, reverse flows results, as well as the dynamic pressure of the flow will be documented with actual field data.

This testing is being conducted to confirm that the proposed sampling locations are suitable for obtaining reliable emission data and that the sampling data is representative of the sources being tested.

Any provisions that may be required from the conduct of these ON-1 tests will be submitted to the MOECC Technology Standards Section to confirm acceptability, or to discuss alternate strategies.

Notes:

- It should be noted that sampling total suspended particulate matter for two hours per test-run is acceptable provided that a minimum of 3.4 $STDm^3$ of sample is collected, as required by the OSTC when a particulate matter catch of less than 25 mg is expected; or a minimum of 1.7 $STDm^3$ when more than 25 mg of particulate matter is expected to be caught.

- For those compounds with in-stack emission limits, the monitoring of the emissions shall be consistent with the time of the average period stated in the ECA, to be able to validate compliance of the facility (extrapolation is not acceptable, as those combustion processes are generally dynamic/temporal, meaning that the effective operation of the process is not defined by isolated and or static factors or parameters, and the extrapolation will assume that the process parameters are static through time).

***Brief Process Description*:**

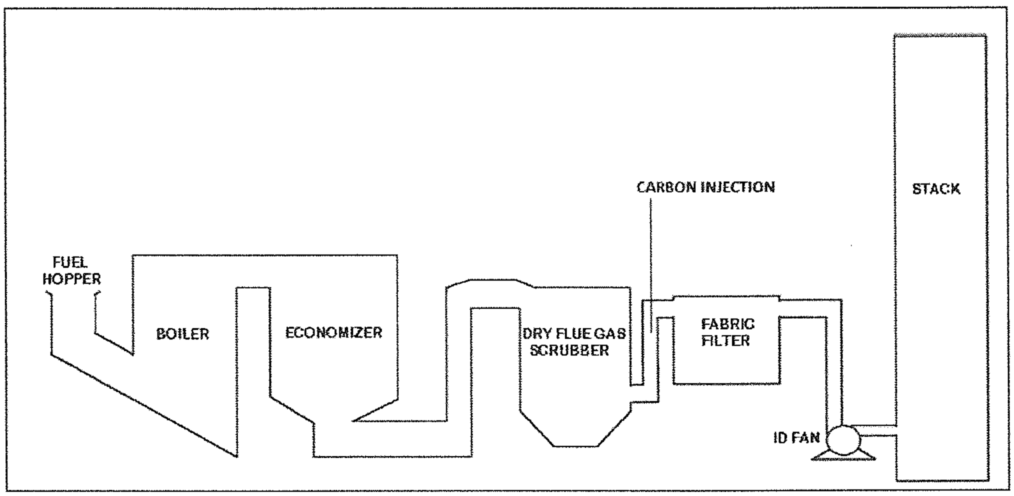
The DYEC is an energy-from-waste facility built with the aim at processing solid waste from the Regions of Durham and York. The maximum thermal processing rate stated in the ECA is 140,000 tonnes of waste per year. The facility is expected to operate on a continuous basis, 24 hours/day, 7 days/week, 365 days/year, with the waste delivered initially set at 6 days per week between 07:00 and 19:00 hours.

The facility consists of two thermal treatment lines, with each having a MSW processing nominal capacity 218 t/d of MSW, with a heat content of 13 MJ/kg, to generate 20 MW of electricity (nominal capacity) and 33,640 kilograms per hour of steam (nominal capacity).

Each thermal treatment line is equipped with independent an air pollution control equipment; consisting of a Selective Non-Catalytic Reduction System with ammonia injection (for NOx control), an activated carbon injection system (to reduce mercury and dioxins in flue gas), a dry recirculation lime injection scrubber (to control acid gases), and a pulse jet type baghouse (to control particulate emissions).

The treated exhaust gases from both lines are vented to the atmosphere via a common exhaust stack, having an exit diameter of 1.71 metres, extending 87.6 metres above grade.

Process Diagram:



***Operating Conditions during the source testing program*:**

It is indicated in the pre-test plan that the source testing program will be conducted targeting Maximum Continuous Rating (MCR) load processing from both thermal treatment units.

The MCR load of each thermal treatment unit is set at 218 t/d of MSW (based on the ECA stated maximum 140,000 t/y).

Note: *The MOECC expects the source testing to be conducted when operating each thermal treatment unit targeting its MCR load (i.e., no higher than the nominal capacity stated in the ECA and no lower than 90% of the stated nominal capacity).*

Process Parameters to be monitored and reported during the source testing program:

It is not stated in the pre-test plan, but it is expected that Covanta's personnel will be responsible for the monitoring, collection, compilation and reporting of the pertinent process data during the test program, in order to establish MSW processing levels that can be properly correlated to the magnitude of the emissions of the contaminants of interest being exhausted from the process.

The process parameters to be monitored and recorded include:

- Power output (MW)
- Steam generated
- Daily MSW combusted
- Auxiliary fuel combusted
- Reagent injection rate for NOx reduction
- Upset conditions during the source testing program (including actions taken to correct it, if applicable).

Note: *We recommend the reporting of the above process parameters on an hourly basis, as this timeframe will be more consistent with the duration of the manual trains sample collection and emissions monitored of contaminants with time average of less than 24-hour.*

The carbon injection set rate is required to be included in the report.

Our review indicated that the pre-test plan is acceptable, as the proposed reference methodologies, monitoring/sampling strategies, and process monitoring strategies are acceptable.

Please note that besides the key personnel listed in the pre-test plan's Section 1.2, the District Manager and the Environmental Officer in charge of overseeing this facility (from the MOECC York-Durham District Office) are required to be notified of any issues pertaining this facility's operation; which, includes this source testing program; as they are the designated MOECC liaison with DYEC and with the public.

We noted that the test program organization flowchart includes two individuals: W. Fisher (Program Manager), and C. Davis (CEMs Coordinator), and they are not listed as key personnel for this program. What organization do they represent, and will they be actively involved with this source testing program?

We noted Covanta's plans to carry out the initial source testing program for the DYEC in December 2014 and January 2015; as indicated in the following table:

Day	Event
June 13, 2014	CEMS is installed, functional, and operating according to manufacturer's instructions
November 10, 2014	First arrival of MSW onsite
November 14, 2014	Begin operation of facility
December 1, 2014	Begin CEMS conditioning period of at least 168 hours
December 10, 2014	Begin 168 hour operational test period
January 2, 2015	Begin source testing to verify sample locations, certify the CEMS - RATA
January 11, 2015	Conduct Remainder of Source Testing during the Acceptance Test Period

Please confirm the RATA and Source testing schedule, at least, two weeks prior to conducting them, to Sandra Thomas from the MOECC's York-Durham District Office, and to Guillermo Azocar from the Technology Standards Section.

Just a reminder that the source testing report is required to be submitted only in electronic format to the Technology Standards Section; and in electronic and hardcopy formats to the MOECC's York-Durham District Office.

If you have any questions with regard to this assessment, I can be reached by phone at 416-327-6403, or by email at guillermo.azocar@ontario.ca.

Sincerely yours,

G Azocar

Guillermo Azocar
Source Assessment Specialist
Technology Standards Section

cc: H. Titus – Covanta (via email: htitus@covanta.com)
G. J. Aldina – Covanta (via email: jaldina@covanta.com)
C. Belore – ORTECH (via email: cbelore@ortech.ca)
D. Fumerton – MOECC York-Durham District Office (via email: dave.fumerton@ontario.ca)
S. Thomas – MOECC York-Durham District Office (via email: Sandra.thomas@ontario.ca)
M. Wojcik – MOECC EAB (via email: margaret.wojcik@ontario.ca)
L. Hussain/C. Ruddy – MOECC SDB TSS (via email)

File AQ-02 (Durham-York Energy Centre)

CONTENT COPY OF ORIGINAL

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 1
Issue Date: August 12, 2014

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and

The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
72 Osbourne Rd Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 forWaste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment,, as follows:

1. The following definition has been added:

"Contingency and Emergency Response Plan" also means the document entitled "Spill Contingency and Emergency Response Plan";

2. The following Conditions are amended to read as follows:

2.(5)(b)(iii) The Owner may use equipment used to handle the hazardous wastes to handle other wastes provided that prior to such use the equipment has been thoroughly cleaned first.

4.(5)(e) A maximum of 630 tonnes of the Residual Waste, limited to the bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is as follows:

(i) The storage duration is limited to a maximum of seven (7) days.

(ii) Should longer storage duration be required to accommodate the duration of the required compliance testing, a minimum of forty eight (48) hours before the storage extension is commenced, the Owner shall notify the District Manager of the required extension. The

notification shall include the duration of the extension and the reasons.

3. The following Conditions are added:

7.(7) (e) The Owner shall carry out the required bottom and fly ash compliance testing in accordance with the document entitled "Ash Sampling and Testing Protocol", listed in the attached Schedule.

11.8 Containment evaluations performed under the Spill Contingency and Emergency Response Plan shall be conducted by the Owner in accordance to procedures agreed by the District Manager pursuant to Conditions 8.(7)(i),(ii) and (iii).

4. The following documents have been added to Schedule "A":

4. October 31, 2013 letter from Mirka Januszkiewicz, the Regional Municipality of Durham to Ian Parrott, Ministry of the Environment and Climate Change, requesting approval of the Ash Sampling and Testing Protocol and the document entitled "Durham York Energy Centre, Ash Sampling and Testing Protocol", prepared by by Golder Associates and dated June 2014.

5. Document entitled "Durham York Energy Centre, Spill Contingency & Emergency Response Plan" prepared by Covanta Durham York Renewable Energy Limited Partnership and dated January 13, 2014, excluding section entitled "Containment Evaluation".

6. Document entitled "Durham York Energy Centre, Protocol for the Measurement of Combustion Temperature and the Development of Time and Temperature Correlations", prepared by Covanta Durham York Renewable Energy Limited Partnership and dated June 2014.

7. Document entitled "Durham York Energy Centre, Noise Monitoring and Reporting Plan", prepared by Golder Associates and dated September 2011.

The reasons for this amendment to the Approval are as follows:

to approve the "Ash Sampling and Testing Protocol" as required Condition 7.(7)(a), the "Durham York Energy Centre, Spill Contingency & Emergency Response Plan", as required Condition 11.(3), "Durham York Energy Centre, Noise Monitoring and Reporting Plan" as required Condition 7.(5)(a) and "Durham York Energy Centre, Protocol for the Measurement of Combustion Temperature and the Development of Time and Temperature Correlations" as proposed by the applicant.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;

8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary* Environmental Review Tribunal 655 Bay Street, Suite 1500 Toronto, Ontario M5G 1E5	<u>AND</u>	The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment 2 St. Clair Avenue West, Floor 12A Toronto, Ontario M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 12th day of August, 2014

Ian Parrott, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

MW/
c: District Manager, MOE York-Durham
n/a, The Regional Municipality of Durham

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 2
Issue Date: October 24, 2014

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and
The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership
445 South St
Morristown, New Jersey
USA 07960

Site Location: Durham York Energy Centre
1835 Energy Drive
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, as follows:

1. The address of the Site has been changed to read as follows:

Durham York Energy Centre
1835 Energy Drive
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

2. The following definitions have been added:

"**Operator**" means any person other than the Regions' employees, authorized by the Regions as having the charge, management or control of any aspect of the Site and includes TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership, the partnership under the laws of Nova Scotia more particularly described in the October 6, 2014 letter from Joanna Rosengarten to the Ministry of Environment and Climate Change, and includes its successors and assignees, their successors and assignees;

"**Regions**" means any person that is responsible for the establishment or operation of the Site being approved by this Approval, and it includes The Regional Municipality of Durham and The Regional Municipality of York, their successors and assignees;

2. The following definition has been amended to read as follows:

"**Site**" means the property referred to as Durham York Energy Centre where the Owner has located and operates the Facility and the Works and located at 1835 Energy Drive in the Municipality of Clarington, Regional Municipality of Durham;

"**Owner**" within the context of this Approval, means the Regions and the Operator;

3. The following Conditions have been amended to read as follows:

"General: Change of Ownership" Conditions 1.(14) and 1.(15):

(14) The Regions shall notify the Director in writing, and forward a copy of the notification to the District Manager, within thirty (30) days of the occurrence of any changes:

(a) the ownership of the Site;
(b) the operator of the Site;
(c) the address of the Regions;
(d) the partners, where the Regions are or at any time become a partnership and a copy of the most recent declaration filed under the *Business Names Act*, R.S.O. 1990, c. B.17, as amended, shall be included in the notification;
(e) the name of the corporation where the Regions are or at any time become a corporation, other than a municipal corporation, and a copy of the most current information filed under the *Corporations Information Act*, R.S.O. 1990, c. C.39, as amended, shall be included in the notification.

(15) No portion of this Site shall be transferred or encumbered prior to or after closing of the Site unless the Director is notified in advance. In the event of any change in ownership of the Site, other than change to a successor municipality, the Regions shall notify the successor of and provide the successor with a copy of this Approval, and the Regions shall provide a copy of the notification to the District Manager and the Director.

"Service Area, Approved Waste Types, Rates And Storage: Storage Restrictions" Condition 2.(5)(e):

2.(5)(e) (i) A maximum of 630 tonnes of the Residual Waste, limited to the bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation.

(ii) The storage duration of bottom ash in the bunkers is limited to a maximum of seven (7) days.

(iii) Should additional storage location(s) and a longer storage duration be required during testing, a minimum of forty eight (48) hours before the storage parameters are changed from those approved in Condition 2.(5)(e)(i) and (ii), the Owner shall notify the District Manager, in writing, of the proposed changes and provide the reasons for the changes.

"Site Operations: Residual Waste Handling and Disposal" Condition 4.(5)(b)(iii):

4.(5)(b)(iii) The Owner may use the equipment that comes in contact with the hazardous wastes to handle other wastes provided that prior to such use, the equipment has been cleaned, as confirmed by visual inspections, to ensure the removal of any hazardous waste residues and to prevent cross contamination.

"Closure of the Site" Conditions 18.(1) and 18.(2):

(1) A minimum of nine (9) months prior to closure of the Site, the Regions shall submit, for approval by the Director, a written Closure Plan for the Site. This Plan shall include, as a minimum, a description of the work that will be done to facilitate closure of the Site and a schedule for completion of that work.

(2) Within ten (10) days after closure of the Site, the Regions shall notify the Director and the District Manager, in writing, that the Site is closed and that the approved Closure Plan has been implemented.

4. "Covanta Durham York Renewable Energy Limited Partnership" is replaced with "TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership, the partnership under

the laws of Nova Scotia more particularly described in the October 6, 2014 letter from Joanna Rosengarten to the Ministry of Environment and Climate Change and includes its successors and assignees", in the Environmental Compliance Approval dated June 28, 2011 and in the Notice of Amendment dated August 12, 2014.

5. The following documents are added to Schedule "A":

8. Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Matthew R. Mulcahy, Covanta Durham York Renewable Energy Limited Partnership, Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Cliff Curtis, The Regional Municipality of Durham and Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Laura McDowell, The Regional Municipality of York, including the following attached supporting documentation:

(a) revised Section 8.0 "Ash Handling and Associated System" and revised Section 10.0 "Potable Process and Wastewater" dated May 2014, of the document entitled "Design and Operations Report", dated March 2011, prepared by Golder Associates Ltd.

(b) Drawing No. M-2530, entitled "Piping & Instrumentation Diagram Bottom Ash Lime Slurry System"

(c) Drawing No. 70258-1-ME-GA-SK-001, entitled "Covanta Durham York Hydrated Lime System for Boiler Bottom Ash"

9. E-mail dated September 10, 2014 (2:26 p.m.) from Leon Brasowski, Covanta Durham York Renewable Energy Limited Partnership, to Margaret Wojcik, Ontario Ministry of the Environment and Climate Change, providing additional supporting documentation on the proposal, including an attachment entitled "M-1500^0360 Highlighted for MOE.pdf".

10. E-mail dated October 13, 2014 (3:23 p.m.) from Leon Brasowski, Covanta Durham York Renewable Energy Limited Partnership, to Ricki Allum, Ontario Ministry of the Environment and Climate Change, providing additional supporting documentation on the legal name of the applicant, including an attachment entitled "Partnership Legal Clarification.pdf".

The reasons for this amendment to the Approval are as follows:

to approve the proposed Bottom Ash Lime Conditioning System, to correct the typographical errors in the Notice of Amendment dated August 12, 2014, to clarify the intent of the Residual Waste equipment cleaning condition and to allow different bottom ash storage conditions during testing.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;

7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary* Environmental Review Tribunal 655 Bay Street, Suite 1500 Toronto, Ontario M5G 1E5	AND	The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment 2 St. Clair Avenue West, Floor 12A Toronto, Ontario M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 24th day of October, 2014

Tesfaye Gebrezghi, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

MW/
c: District Manager, MOE York-Durham
Leon Brasowski, Covanta Energy Corporation

Ontario

Ministry of the Environment
Ministère de l'Environnement

CERTIFICATE OF APPROVAL
MULTI-MEDIA
Number 7306-8FDKNX
Issue Date: June 28, 2011

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and

The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
72 Osbourne Road
Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham

You have applied in accordance with Sections 9 and 27 of the Environmental Protection Act and Section 53 of the Ontario Water Resources Act for approval of:

A thermal treatment facility to be used for the receipt and manual and/or mechanical sorting of solid non-hazardous post-diversion municipal waste (Waste), temporary storage and thermal treatment of the Waste, abatement of the emissions from the processes and activities undertaken at the Site, handling, screening, sorting and/or conditioning of the residual wastes and management of the wastewater and the non-contact stormwater generated at the Site. The Facility's maximum Waste thermal treatment rate is 140,000 tonnes per year of Waste, the nominal electricity generation rate is 20 Megawatts and the nominal steam generation rate 72,000 kilograms per hour of steam.

The facility consists of the following major processes and support units:

(1) two (2) identical combustion trains, each having a nominal capacity of 218 tonnes of Waste per day venting into the atmosphere via a common exhaust stack, having an exit diameter of 1.71 metres, extending 87.6 metres above grade.

Each combustion train is an independent process train and it consists of the following main components:

(a) a stoker grate steam Boiler, having a design heat input of 118 Gigajoules per hour, equipped with a natural gas fired auxiliary Low NOx burner, having a nominal heat input of 59.5 Gigajoules per hour; and

(b) the following air pollution control equipment:

(i) a Selective Non Catalytic Reduction System (SNCR System) with ammonia injection for NOx control;
(ii) an activated carbon injection system, to reduce mercury and dioxins in flue gas;
(iii) a dry recirculation lime injection scrubber to control acid gases;
(iv) a pulse jet type baghouse to control particulate emissions;

(2) one (1) steam turbine generator set having a rated capacity of 20 Megawatts;

(3) waste and reagent storage as described in Condition 2.:

(4) fly ash conditioning system including two (2) surge bins, two (2) pugmills and seven (7) curing/storage bunkers;

(5) bottom ash sorting system including conveyors, screens, a rotary drum magnet and an eddy separator;

(6) one (1) emergency diesel generator, rated at 250 Kilowatts;

(7) natural gas-fired combustion equipment for comfort heating;

(8) a wastewater management system for collection, recirculation and reuse of the process water; and

(9) a stormwater management facility for collection, transmission and discharge of non-contact runoff at the Site, as described in the attached Schedule "G",

Note: Use of the site for any other type of waste is not approved under this Certificate, and requires obtaining a separate approval amending this Certificate.

For the purpose of this Provisional Certificate of Approval and the terms and conditions specified below, the following definitions apply:

"***Acoustic Assessment Report***" means the report, prepared in accordance with *Publication NPC-233* by Paul Niejadlik / Golder Associates Ltd. and dated March 2011 submitted in support of the application, that documents all sources of noise emissions and Noise Control Measures present at the Facility;

"**Acoustic Assessment Summary Table**" means a table summarizing the results of the Acoustic Assessment Report;

"**Acoustic Audit**" means an investigative procedure consisting of measurements of all noise emissions due to the operation of the Facility, assessed in comparison to the Performance Limits for the Facility regarding noise emissions, completed in accordance with the procedures set in the Ministry's *Publication NPC-103* and reported in accordance with the Ministry's *Publication NPC-233;*

"**Acoustic Audit Report**" means a report presenting the results of an Acoustic Audit, prepared in accordance with the Ministry's *Publication NPC-233;*

"**Acoustical Consultant**" means a person currently active in the field of environmental acoustics and noise/vibration control, who is familiar with Ministry noise guidelines and procedures and has a combination of formal university education, training and experience necessary to assess noise emissions from a Facility;

"**Air Standards Manager**" means the Manager, Human Toxicology and Air Standards Section, Standards Development Branch, or any other person who represents and carries out the duties of the Manager, Human Toxicology and Air Standards Section, Standards Development Branch, as those duties relate to the conditions of this Certificate;

"**APC Building**" means the building at the Site where the APC Equipment and the reagent indoor storage tanks are located;

"**APC Equipment**" means all the air pollution control equipment at the Facility, including the SNCR System, the activated carbon injection system, the dry recirculation lime injection scrubber and the pulse jet type baghouse to control emissions from the combustion chamber of the Boilers, the dust collectors to control emissions from the Residue Building and the dust collectors to control emissions from the reagent storage silos;

"**Boiler Building**" means the building at the Site where the Boilers, turbine generator and the air cooled condenser(s) are located;

"**Boilers**" means the two (2) steam boilers firing the approved Waste described in this Certificate;

"**Bulky Unprocessable Items**" means the incoming Waste received at the Site that cannot be processed in the Equipment;

"**CEM Systems**" means the continuous monitoring and recording systems used to measure and record the temperature and the emissions from the Boilers as specified in the attached Schedule "F";

"**Certificate**" means this entire provisional Certificate of Approval, issued in accordance with Sections 39 and 9 of the *EPA* and Section 53 of the *OWRA,* and includes any schedules attached to it, the application and the supporting documentation listed in the attached Schedule "A;

"***40 CFR 60***" means title 40, part 60 under the Code of Federal Regulations (Air Programs, U.S. Environmental Protection Agency), revised as of July 1, 1990, published by the Office of the Federal Register, National Archives and Records, Administration in the United States of America;

"**Complaint**" means a complaint received either by the Owner or the District Manager that has been confirmed by staff of the Ministry and the cause of which is attributed to the Owner's activities at the Facility;

"**Commencement Date of Operation**" means the date when the approved Waste is first received at the Site;

"**Compound of Concern**" means a contaminant that, based on generally available information, may be emitted to the atmosphere in a quantity from any source at the Facility that is significant either in comparison to the relevant Ministry Point of Impingement Limit or if a Ministry Point of Impingement Limit is not available for the compound then, based on generally available toxicological information, the compound has the potential to cause an adverse effect as defined by the *EPA* at a Point of Impingement;

"**Controlled Shutdown**" means an immediate cut-off of all waste into the Boilers, while maintaining the operation of the combustion chamber and the APC Equipment within the Performance Requirements;

"**Description Section**" means the section on page one of the Certificate describing the Owner's operations and the Equipment located at the Facility and specifying the Facility Production Limit for the Facility;

"**Dioxins and Furans**" means polychlorinated dibenzo-dioxins and polychlorinated dibenzofurans;

"**Director**" means any person appointed in writing by the Minister of the Environment pursuant to section 5 of the *EPA* and pursuant to section 5 of the *OWRA* as a Director for the purposes of Part V of the *EPA,* section 9 of the *EPA* and section 53 of the *OWRA;*

"**District Manager**" means the District Manager of the York Durham District Office of the Ministry;

"**Emergency Shutdown**" means an immediate cut-off of all waste feed into the Boilers, followed by an accelerated extinction of all combustion in the Boilers, while maintaining the combustion temperature within the Performance Requirements, except when unreasonable;

"**Emission Summary Table**" means the table prepared in accordance with *O. Reg. 419/05* and the Procedure Document listing the appropriate Point of Impingement concentrations of each Compound of Concern from the Facility and providing comparison to the corresponding Ministry Point of Impingement Limit;

"*EAA*" means the Environmental Assessment Act, R.S.O. 1990, c. E.18, as amended;

"**EA Approval**" means the Notice of Approval to Proceed with the Undertaking signed by the Minister of the Environment on November 3, 2010, EA File No. 04-EA-02-08;

"*EPA*" means the Environmental Protection Act, R.S.O. 1990, c. E.19, as amended;

"**Equipment**" means equipment or processes associated with the thermal treatment of the approved Waste described in this Certificate and in the Supporting Documentation referred to herein and any other equipment or processes handling wastes and reagents;

"**ESDM Report**" means the Emission Summary and Dispersion Modelling Report prepared in accordance with the Procedure Document by Golder Associates and dated March 2011 submitted in support of the application, and includes any amendments to the ESDM Report listed in the attached Schedule "A" and all subsequent up-dated ESDM Reports as applicable;

"**Facility**" means the entire operation associated with thermal treatment of Waste located on the property where the Equipment is located;

"**Facility Production Limit**" means the production limit placed on the main product(s) or raw materials used by the Facility that represents the design capacity of the Facility and assists in the definition of the operations approved by the Director;

"**Grizzly Building**" means the building at the Site where the bottom ash is screened and where the oversized constituents of the bottom ash (grizzly overs) are temporarily stored prior to transport for subsequent storage in the Residue Building;

"**Independent Acoustical Consultant**" means an Acoustical Consultant who is not representing the Owner and was not involved in preparing the Acoustic Assessment Report or the design/implementation of Noise Control Measures for the Facility and/or Equipment. The Independent Acoustical Consultant shall not be retained by the Acoustical Consultant involved in the noise impact assessment or the design/implementation of Noise Control Measures for the Facility and/or Equipment;

"**I-TEF**" means International Toxic Equivalency Factor derived for each dioxin and furan congener by comparing its toxicity to the toxicity of 2,3,7,8 tetrachloro dibenzo-p-dioxin, as recommended by the North Atlantic Treaty Organization Committee on Challenges to Modern Society (NATO CCMS) in 1989 and adopted by Canada in 1990;

"**I-TEQ**" means International Toxic Equivalent of dioxins and furans calculated using the I-TEFs, as recommended by the NATO CCMS in 1989 and adopted by Canada in 1990;

"**Manager**" means the Manager, Technology Standards Section, Standards Development Branch, who has been appointed under Section 5 of the *EPA* for the purposes of Section 11(1)2 of the *O. Reg. 419/05,* or any other person who represents and carries out the duties of the Manager,

Technology Standards Section, Standards Development Branch, as those duties relate to the conditions of this Certificate;

"**Ministry**" means the ministry of the government of Ontario responsible for the *EPA* and the *OWRA* and includes all officials, employees or other persons acting on its behalf or the Ontario Ministry of the Environment;

"**Municipality**" means the Municipality of Clarington;

"*NMA*" means the *Nutrient Management Act*, 2002, S.O. 2002, c. 4, as amended;

"**Noise Control Measures**" means measures to reduce the noise emission from the Facility and/or Equipment including, but not limited to silencers, acoustic louvers, enclosures, absorptive treatment, plenums and barriers;

"**LDR**" means the Lands Disposal Restrictions referred to in sections 74 through 85 of the *O. Reg. 347,* which prohibit the disposal of hazardous wastes on land until they have been treated to meet the treatment standards under the *O. Reg. 347;*

"**Leachate Toxicity Criteria**" means the concentrations of any of the contaminants listed in Schedule 4 at a concentration equal to or in excess of the concentration specified for that contaminant in Schedule 4 using the Toxicity Characteristic Leaching Procedure, defined in the *O. Reg. 347*;

"***O. Reg. 419/05***" means the *Ontario Regulation 419/05,* Air Pollution – Local Air Quality enacted under the *EPA,* as amended;

*"**O. Reg. 347**"* means the *Ontario Regulation 347,* R.R.O 1990 (General –Waste Management) enacted under the *EPA,* as amended;

"***OWRA***" means the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40, as amended;

"**Owner**" means any person that is responsible for the establishment and operation of the Site being approved by this Certificate, and it includes The Regional Municipality of Durham, The Regional Municipality of York, and Covanta Durham York Renewable Energy Limited Partnership (operator), their successors and assignees;

"***PA***" means the *Pesticides Act*, R.S.O. 1990, c.P. 11, as amended;

"**Performance Requirements**" means the performance requirements and emission limits specified in the section of this Certificate entitled "Performance Requirements";

"**Point of Impingement**" means any point outside the Facility in the natural environment and as defined by s.2 of the *O. Reg. 419/05;*

"**Point of Reception**" means the Point of Reception as defined by *Publication NPC-205* and/or *Publication NPC-232*, as applicable;

"**Pre-test Information**" means the information outlined in Section 1.1 of the Source Testing Code;

"**Procedure Document**" means the Ministry's document entitled "Procedure for Preparing an Emission Summary and Dispersion Modelling Report" dated July 2005, as amended;

"**Professional Engineer**" means a Professional Engineer as defined within the *Professional Engineers Act*, R.S.O. 1990, c. P.28, as amended;

"**Provincial Officer**" means any person designated in writing by the Minister as a provincial officer pursuant to Section 5 of the *OWRA* or Section 5 of the *EPA* or Section 17 of the *PA* or Section 4 of the *NMA* or Section 8 of the *SDWA;*

"***Publication NPC-103***" means the Ministry's Publication NPC-103 of the Model Municipal Noise Control By-Law, Final Report, dated August 1978, published by the Ministry, as amended;

"***Publication NPC-205***" means the Ministry's Publication NPC-205, entitled "Sound Level Limits for Stationary Sources in Class 1 & 2 Areas (Urban)", dated October, 1995, as amended;

"***Publication NPC-207***" means the Ministry's draft technical publication entitled "Impulse Vibration in Residential Buildings", dated November 1983, supplementing the Model Municipal Noise Control By-Law, Final Report, dated August 1978, published by the Ministry, as amended;

"***Publication NPC-232***" means the Ministry's Publication NPC-232, entitled "Sound Level Limits for Stationary Sources in Class 3 Areas (Rural)", dated October, 1995, as amended;

"***Publication NPC-233***" means the Ministry's Publication NPC-233, entitled "Information to be Submitted for Approval of Stationary Sources of Sound", dated October, 1995, as amended;

"**Rejected Waste**" means either municipal waste which cannot be processed at the Facility or waste which the Site is not approved to accept. Rejected Waste includes but is not limited to the Bulky Unprocessable Items and the Unacceptable Waste;

"**Regional Director**" means the Regional Director of the Central Region of the Ministry;

"**Regions**" means The Regional Municipality of Durham and The Regional Municipality of York;

*"**Report EPS 1/PG/7**"* means the Environment Canada Report EPS 1/PG/7, entitled "Protocols and Performance Specifications for Continuous Monitoring of Gaseous Emissions from Thermal Generation", dated September, 1993, as amended;

"**Residual Waste**" means waste resulting from the Waste processing activities at the Site. Residual Waste is limited to the recovered ferrous metals, the recovered non-ferrous metals, the bottom ash (consisting of the ash fines and the grizzly overs) and the fly ash (untreated and following conditioning);

"**Residue Building**" means the building at the Site where the bottom ash and the fly ash are processed, temporarily stored and loaded in transport vehicles for off-site disposal;

"**Schedules**" means the following schedules "A", "B", "C", "D", "F" and "G", attached to the Certificate and forming part of the Certificate;

"*SDWA*" means the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, as amended;

"**Sensitive Receptor**" means any location where routine or normal activities occurring at reasonably expected times would experience adverse effect(s) from odour discharges from the Facility, including one or a combination of:

(a) private residences or public facilities where people sleep (e.g.: single and multi-unit dwellings, nursing homes, hospitals, trailer parks, camping grounds, etc.);

(b) institutional facilities (e.g.: schools, churches, community centres, day care centres, recreational centres, etc.);

(c) outdoor public recreational areas (e.g.: trailer parks, play grounds, picnic areas, etc.); and

(d) other outdoor public areas where there are continuous human activities (e.g.: commercial plazas and office buildings);

"**Site**" means the property where the Owner has located and operates the Facility and the Works and located at 72 Osbourne Road, 27, Concession Broken Front, Part 1 in the Municipality of Clarington, Regional Municipality of Durham;

"**Source Testing**" means monitoring, sampling and testing to measure emissions resulting from operating the Facility under conditions which yield the worst case emissions within the approved operating range of the Facility;

"***Source Testing Code***" means the Ministry's document entitled "Source Testing Code, Version 2, Report No. ARB-66-80", dated November 1980, as amended;

"**Stack**" means the stack that discharges emissions from the Boilers after those emissions have been controlled by the associated APC Equipment;

"**Substantial Completion**" has the same meaning as "substantial performance" in the *Construction Lien Act* R.S.O. 1990, c.C-30, as amended;

"**Supporting Documentation**" means the documents listed in the attached Schedule "A" of this Certificate which forms part of this Certificate;

"**Test Contaminants**" means the contaminants set out in the attached Schedule "D";

"**Tipping Building**" means the building at the Site where the incoming Waste is received, sorted and temporarily stored;

"**Total Power Failure**" means the loss of the external power supply and concurrent loss of all in-plant power generation;

"**Trained Personnel**" means one or more Site personnel trained in accordance with the requirements of Condition 9.;

"**Waste**" means municipal solid waste as defined in the *O. Reg. 347* and limited to the approved waste set out in Condition No. 2.(2);

"**Waste Processing Rate** means the mass of Waste fed into one of the Boilers;

"**Works**" means the sewage works described in the Owner's application, this Certificate and in the Supporting Documentation referred to herein, to the extent approved by this Certificate;

"**Unacceptable Waste**" means the incoming Waste received at the Site that does not meet the incoming Waste quality criteria set out in this Certificate, is of hazardous nature and requires caution when handling; and

"**Undiluted Gases**" means the flue gas stream which contains oxygen, carbon monoxide, total hydrocarbons and all contaminants in the same concentrations as they exist in the flue gas stream emerging from an individual piece of equipment, such as the combustion chamber of one Boiler or one baghouse, and into which gas stream no ambient air and/or no other gas stream originating from another piece of equipment, except for dilution air introduced within the CEM Systems, has been introduced.

You are hereby notified that this approval is issued to you subject to the terms and conditions outlined below:

GENERAL PROVISIONS

1. GENERAL

Compliance

(1) The Owner shall ensure compliance with all the conditions of this Certificate and shall ensure that any person authorized to carry out work on or operate any aspect of the Site, including the Works, is notified of this Certificate and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

(2) Any person authorized to carry out work on or operate any aspect of the Site shall comply with the conditions of this Certificate.

Build in Accordance

(3) (a) Except as otherwise provided by this Certificate, the Site shall be designed, developed, built, operated, monitored, inspected and maintained in accordance with the following applications:

(i) Applications for a Certificate of Approval (Air) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of

Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the Supporting Documentation listed in the attached Schedule "A".

(ii) Applications for a Provisional Certificate of Approval (Waste Disposal Site) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the Supporting Documentation listed in the attached Schedule "A".

(iii) Applications for a Certificate of Approval of Municipal and Private Sewage Works dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the Supporting Documentation listed in the attached Schedule "A".

(b) (i) Any design optimization or modification that is inconsistent with the conceptual design set out in the Supporting Documentation in Schedule "A" shall be clearly identified, along with an explanation of the reasons for the change and submitted to the Director for approval.

(ii) If a change to the conceptual design is submitted to the Director for approval, no construction of the Site shall commence prior to the Director approving, in writing, the final conceptual design of the Site.

As-built Drawings

(4) (a) Within ninety (90) days of the completion of the initial successful Source Testing program, a set of as-built drawings showing the Facility and the Works and bearing the stamp of a Professional Engineer, shall be prepared and retained at the Site.

(b) These drawings shall be kept up-to-date through revisions undertaken from time to time and a copy shall be retained at the location of the Site or at the operational office of the Owner for the operational life of the Site.

(c) Notwithstanding provisions of Condition 1.(4)(b), an amendment to this Certificate shall be sought for changes to the as-built drawings, requiring approval.

(d) The as-built drawings shall be made available to Ministry staff upon request.

Interpretation

(5) Where there is a conflict between a provision of any document, including the application referred to in this Certificate and the conditions of this Certificate, the conditions in this Certificate shall take precedence.

(6) Where there is a conflict between the applications and a provision in any documents listed in Schedule "A", the applications shall take precedence, unless it is clear that the purpose of the document was to amend the applications and that the Ministry approved the amendment.

(7) Where there is a conflict between any two documents listed in Schedule "A", other than the applications, the document bearing the most recent date shall take precedence.

(8) The requirements of this Certificate are severable. If any requirement of this Certificate, or the application of any requirement of this Certificate to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this Certificate shall not be affected thereby.

Other Legal Obligations

(9) The issuance of, and compliance with the conditions of this Certificate does not:

(a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement; or

(b) limit in any way the authority of the Ministry to require certain steps be taken or to require the Owner to furnish any further information related to compliance with this Certificate.

Adverse Effects

(10) The Site shall be constructed, operated and maintained in a manner which ensures the health and safety of all persons and prevents adverse effects on the natural environment or on any persons.

(11) The Owner shall take steps to minimize and ameliorate any adverse effect on the natural environment or impairment of water quality resulting from the approved operations at the Site, including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.

(12) Despite the Owner or any other person fulfilling any obligations imposed by this Certificate, the person remains responsible for any contravention of any other condition of this Certificate or any applicable statute, regulation, or other legal requirement resulting from any act or emission that caused the adverse effect to the natural environment or impairment of water quality.

(13) If at any time odours, pests, litter, dust, noise or other such negative effects are generated at this Site and cause an adverse effect, the Owner shall take immediate appropriate remedial action that may be necessary to alleviate the adverse effect, including suspension of all waste management activities if necessary.

Change of Ownership

(14) The Owner shall notify the Director in writing, and forward a copy of the notification to the District Manager, within thirty (30) days of the occurrence of any changes:

(a) the ownership of the Site;
(b) the operator of the Site;
(c) the address of the Owner;
(d) the partners, where the Owner is or at any time becomes a partnership and a copy of the most recent declaration filed under the *Business Names Act*, R.S.O. 1990, c. B.17, as amended, shall be included in the notification;
(e) the name of the corporation where the Owner is or at any time becomes a corporation, other than a municipal corporation, and a copy of the most current information filed under the *Corporations Information Act*, R.S.O. 1990, c. C.39, as amended, shall be included in the notification.

(15) No portion of this Site shall be transferred or encumbered prior to or after closing of the Site unless the Director is notified in advance. In the event of any change in ownership of the Site, other than change to a successor municipality, the Owner shall notify the successor of and provide the successor with a copy of this Certificate, and the Owner shall provide a copy of the notification to the District Manager and the Director.

Inspections by the Ministry

(16) No person shall hinder or obstruct a Provincial Officer from carrying out any and all inspections authorized by the *OWRA,* the *EPA,* the *PA,* the *SDWA* or the *NMA* of any place to which this Certificate relates, and without limiting the foregoing:

(a) to enter upon the premises where the approved processing is undertaken, or the location where the records required by the conditions of this Certificate are kept;
(b) to have access to, inspect, and copy any records required to be kept by the conditions of this Certificate;
(c) to inspect the Site, related equipment and appurtenances;
(d) to inspect the practices, procedures, or operations required by the conditions of this Certificate;
(e) to conduct interviews with staff, contractors, agents and assignees of the Owner; and
(f) to sample and monitor for the purposes of assessing compliance with the terms and conditions of this Certificate or the *EPA,* the *OWRA,* the *PA,* the *SDWA* or the *NMA.*

Information

(17) Any information requested by the Ministry, concerning the operation of the Site and its operation under this Certificate, including but not limited to any records required to be kept by this Certificate, manuals, plans, records, data, procedures and supporting documentation shall be provided to the Ministry, in a timely manner, upon request.

(18) The receipt of any information by the Ministry or the failure of the Ministry to prosecute any person or to require any person to take any action, under this Certificate or under any statute, regulation or other legal requirement, in relation to the information, shall not be construed as:

(a) an approval, waiver, or justification by the Ministry of any act or omission of any person that contravenes any term or condition of this Certificate or any statute, regulation or other legal requirement; or

(b) acceptance by the Ministry of the information's completeness or accuracy.

(19) The Owner shall ensure that a copy of this Certificate, in its entirety and including all its Notices of Amendment and the Supporting Documentation listed in Schedule "A" are retained at the Site at all times.

2. **SERVICE AREA, APPROVED WASTE TYPES, RATES and STORAGE**

(1) The service area for the Site is the area within the jurisdictional boundaries of The Regional Municipality of Durham and The Regional Municipality of York.

(2) The operation of this Site is limited to:

(a) receipt, temporary storage, transfer and processing, including thermal treatment, of solid non-hazardous waste remaining after Waste Diversion required by the EA Approval, limited to Waste from the following sources:

(i) domestic waste and Industrial Commercial and Institutional waste from the Regions' curbside collection and/or from the Regions' waste management facilities; and

(ii) waste generated on-Site through activities not relating to the handling and processing of Waste (ie. office, lunch room, etc.);

(b) collection and management of the stormwater run-off generated at the Site.

(3) The following Unacceptable Waste is prohibited from being accepted at the Site:

(a) hazardous waste, as defined in the *O. Reg. 347;*
(b) wastes which have been source-separated for the purposes of diversion;

(c) international waste generated outside of Canada, but collected within the jurisdictional boundaries of The Regional Municipality of Durham and The Regional Municipality of York.

(4) Waste Receipt Rate:

(a) The maximum daily amount of Waste that is approved to be accepted at the Site shall not exceed 1,520 tonnes per day.

(5) Storage Restrictions:

Solids:

(a) A maximum of 7,350 cubic metres shall be stored inside the Waste pit within the Tipping Building as shown in the Supporting Documentation.

(b) Rejected Waste, limited to the Bulky Unprocessable Items removed from the incoming Waste in the Tipping Building shall be stored:

(i) in two (2) roll-off bins having a maximum total storage capacity of 30 cubic metres, located within the confines of the Tipping Building; and/or

(ii) in the appropriate dedicated bunkers, located within the confines of the Residue Building and described in Conditions 2.(5)(c), 2.(5)(d) and 2.(5)(d), below.

(c) A maximum of approximately 77 tonnes or 106 cubic metres of the Residual Waste, limited to the recovered ferrous metals, shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of seven (7) days.

(d) A maximum of approximately 120 tonnes or 100 cubic metres of the Residual Waste, limited to the recovered non-ferrous metals, shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of seven (7) days.

(e) A maximum of 630 tonnes of the Residual Waste, limited to bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of seven (7) days.

(f) A maximum of 700 tonnes of the Residual Waste, limited to the fly ash shall be stored in seven (7) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of thirty six (36) days.

(g) A maximum of 85 cubic metres of activated carbon for the carbon injection system shall be stored in one (1) outdoor tank, located adjacent to the APC Building.

(h) A maximum of 150 cubic metres of lime for the dry scrubber shall be stored in one (1) or more indoor tank(s), located within the confines of the APC Building.

(i) If required, recirculated residue shall be stored in one (1) or more indoor tank(s), located within the confines of the APC Building.

(j) A maximum of 35 tonnes or 25 cubic metres of cement for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.

(k) A maximum of 25 tonnes or 45 cubic metres of pozzolan for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.

Liquids:

(l) (i) A maximum of 36 cubic metres or 40 tonnes of aqueous ammonia for the SNCR System shall be stored in one (1) outdoor tank, located adjacent to the APC Building.

(ii) The Owner shall ensure that the aqueous ammonia storage tank is equipped with a liquid level monitoring device designed to provide a visual and an auditory alarm when the high level setpoint is reached.

(iii) The aqueous ammonia storage tank spill containment area and the loading area shall be designed in accordance with the requirements in the Ministry's document entitled *"Guidelines for Environmental Protection Measures at Chemical and Waste Storage Facilities"* dated May 2007, as amended.

(6) No outdoor storage of waste, including storage in vehicles, is approved under this Certificate.

(7) The Owner shall ensure that storage of all wastes is undertaken in a manner that does not cause an adverse effect or a hazard to the environment or any person.

(8) (a) Waste received at the Site shall be processed within four (4) days from its receipt at the Site.

(b) Emergency Waste storage duration extension:

(i) The Owner may store the incoming Waste inside the tipping pit within the confines of the Tipping Building for up-to seven (7) days from its receipt at the Site, on an emergency basis only.

(ii) Within twenty four (24) hours from the start of the emergency storage of the incoming Waste, the Owner shall notify, in writing, the District Manager that the incoming Waste is being stored longer then four (4) days.

(iii) Should there be public complaints about the extended incoming Waste storage, the Owner, in consultation with the District Manager, shall determine the cause of the complaints, propose appropriate abatement measures, including but not be limited to the removal and off-site disposal of the Waste contained in the tipping pit, and implement the said measures upon receiving written concurrence from the District Manager within the time frame acceptable to the District Manager.

(9) In the event that Waste cannot be processed at the Site and the Site is at its approved storage capacity, the Owner shall cease accepting additional Waste. Receipt of additional Waste may be resumed once such receipt complies with the waste storage limitations approved in this Certificate.

3. **SIGNS and SITE SECURITY**

(1) Prior to receipt of Waste at the Site, the Owner shall ensure that a sign is posted at the entrance to the Site. The sign shall be visible from the main road leading to the Site. The following information shall be included on the sign:

(a) name of the Owner;
(b) this Certificate number;
(c) hours during which the Site is open;
(d) waste types that are approved to be accepted at the Site;
(e) Owner's telephone number to which complaints may be directed;
(f) Owner's twenty-four hour emergency telephone number (if different from above);
(g) a warning against unauthorized access; and
(h) a warning against dumping at the Site.

(2) The Owner shall ensure that appropriate and visible signs are posted at the Site clearly identifying the wastes and the process reagents and stating warnings about the nature and any possible hazards of the wastes and the reagents.

(3) The Owner shall ensure that appropriate and visible signs are posted at the Site to prohibit smoking, open flames or sources of ignition from being allowed near any flammable materials storage areas.

(4) The Owner shall install and maintain appropriate and visible signs at the Site to direct vehicles to the Waste receiving and Residual Waste removal areas and to the reagent unloading areas.

(5) The Owner shall post appropriate and visible signs along the traffic route providing clear directions to the Site.

(6) The Owner shall ensure that the Site is fenced in and that all entrances are secured by lockable gates to restrict access only to authorized personnel when the Site is not open.

(7) The Owner shall ensure that access to the Site, with the exception of the area designated as a Public Information Centre, is regulated and that no unauthorized persons are permitted at the Site without the Trained Personnel escort.

(8) The Owner shall ensure that the Site is operated in a safe and secure manner, and that Waste, the Residual Waste and the Unacceptable Waste are properly handled, packaged or contained and stored so as not to pose any threat to the general public and the Site personnel.

4. <u>SITE OPERATIONS</u>

(1) **Operating hours:**

(a) The Site is approved to operate twenty-four (24) hours per day three hundred and sixty-five (365) days per year.

(b) Notwithstanding Condition 4.(1)(a), Waste shall only be received at the Site and the Residual Waste shall only be transferred from the Site between 7:00 a.m. and 7:00 p.m. Monday to Saturday. No receipt of the Waste or transfer of the Residual Waste shall be undertaken on statutory holidays.

(c) Emergency Receipt of Waste:

(i) The Owner may receive Waste at the Site outside of the operating hours specified in Condition 4.(1)(b), above, on an emergency basis only.

(ii) Within twenty four (24) hours from the receipt of Waste outside of the approved receiving hours, the Owner shall notify, in writing, the District Manager that Waste was received outside of the approved receiving hours.

(iii) Should there be complaints about Waste shipments outside of the approved hours, the Owner, in consultation with the District Manager, shall determine the cause of the complaint, propose appropriate abatement measures and implement the said measures upon receiving written concurrence from the District Manager within the time frame acceptable to the District Manager.

(2) **Incoming Waste receipt:**

(a) At the weigh scale, the Trained Personnel shall:

(i) inspect the required documentation prior to acceptance of the incoming Waste at the Site; and

(ii) inspect the incoming Waste with radiation detection equipment.

(b) In the Tipping Building, the Trained Personnel shall:

(i) visually inspect all incoming Waste being unloaded into the Waste pit; and

(ii) once per hour, or as accepted by the District Manager, unload the incoming Waste on the tipping floor for a manual visual inspection and sorting of the incoming Waste.

(c) The Owner shall only accept the incoming Waste that is delivered in vehicles that have been approved by the Ministry.

(d) The Owner shall ensure that all unloading of incoming Waste at the Site takes place entirely within the confines of the Tipping Building.

(3) **Unacceptable Waste handling:**

(a) In the event that waste that is not approved under this Certificate is inadvertently accepted at the Site, the Owner shall ensure that the Unacceptable Waste:

(i) is stored in a way that ensures that no adverse effects result from its storage;
(ii) is segregated from all other waste;
(iii) is handled and removed from the Site in accordance with the *O. Reg. 347* and the *EPA*; and
(iv) is removed from the Site within (4) days of its receipt or as acceptable to the District Manager.

(b) The Owner shall ensure that all loading of the Unacceptable Waste into transport vehicles is carried out entirely within the confines of the Tipping Building.

(4) **Waste Sorting:**

(a) The Trained Personnel shall remove the Bulky Unprocessable Items and Unacceptable Waste from the incoming Waste prior to charging of the Waste to the Boilers.

(b) All sorting of the incoming Waste at the Site shall be undertaken indoors, within the confines of the Tipping Building and/or the Refuse Building.

(5) **Residual Waste Handling and Disposal:**

(a) (i) Except for transportation of the Residual Waste between the Grizzly Building and the Residue Building, the Owner shall ensure that all

handling of the bottom ash and its segregated constituents, and of the fly ash, is undertaken within the confines of enclosed conveyors and enclosed buildings.

(ii) The Owner shall ensure that all loading of the Residual Waste into vehicles for its transport from the Site is carried out entirely within the confines of the Residue Building.

(b) (i) Different constituents of the Residual Waste shall not be comingled prior to the required compliance testing, unless all Residual Waste is to be disposed of at a Waste Disposal Site that is approved to accept hazardous waste.

(ii) The Owner shall ensure that the equipment used in handling of the hazardous wastes or that came in direct contact with the hazardous wastes is not used to handle other wastes.

(iii) On an emergency basis, the Owner may use equipment used to handle the hazardous wastes to handle other wastes provided that prior to such use the equipment has been thoroughly cleaned first.

(c) (i) Only haulers approved by the Ministry shall be used to transport the Residual Waste from the Site.

(ii) The Residual Waste shall be transported from the Site in appropriately covered vehicles that will not allow fugitive dust emissions to be emitted into the natural environment during the said transport.

d) Residual Waste generated at the Site shall be disposed of shall only be disposed of at an approved waste disposal site in accordance with the requirements in the *EPA* and the *O. Reg. 347* or at a location with the appropriate jurisdictional approval or a license, if required.

(e) Should the Residual Waste limited to the conditioned fly ash and/or the bottom ash be deemed a hazardous waste, the ash shall be disposed of at an approved waste disposal site in accordance with the Land Disposal Restrictions requirements in the *EPA* and the *O. Reg.* 347 or at a location with the appropriate jurisdictional approval or a license, if required.

(6) **Wastewater Management**

(a) The Owner shall ensure that all wastewater generated at the Site is contained within enclosed buildings, tanks, pipes and conveyors at the Site and the approved outdoor Wastewater Settling Basin.

(b) The Owner shall ensure that all wastewater generated at the Site is collected in leak-proof and sufficiently designed wastewater storage facilities:

(i) Wastewater Holding Tank, to collect the continuous reject water flow from the Boiler make-up water treatment system and the Boiler blowdown, having an approximate holding capacity of 100 cubic metres, located within the confines of the Boiler Building and venting to the atmosphere; and

(ii) Wastewater Settling Basin, to collect the wastewater from the floor drains in the buildings at the Site, except for the Tipping Building and the Residue Building, the ash discharger overflow and drain water, the Boiler and turbine-generator washdown water and the APC Equipment area washdown water, having an approximate holding capacity of 38 cubic metres, located outdoors, open to the atmosphere and equipped with a filter basket and an oil skimmer board.

(c) The wastewater pumps shall be located in the area designed in accordance with the Supporting Documentation to ensure that any potential leaks or drips are contained and directed to the Wastewater Settling Basin.

(d) (i) The wastewater level in the Wastewater Holding Tank shall be monitored and controlled to ensure that the wastewater inflow to the Tank does not cause the Tank overflow.

(ii) The wastewater level in the Wastewater Settling Basin shall be monitored and controlled to ensure that the atmospheric precipitation does not cause an overflow from the Basin.

(e) The Owner shall regularly empty, and clean as necessary, all sumps, wastewater storage/holding areas and equipment that are used to contain, collect and handling the wastewater generated at the Site.

(f) Should the Owner find it necessary to remove the wastewater from the Site, the wastewater shall only be disposed of at a Ministry-approved site in accordance with the site's certificate of approval or be discharged to the sanitary sewer in accordance with the agreement with the municipality accepting the discharge.

(g) The floors of the Tipping Building and the Residue Building shall be sufficiently sloped to facilitate the flow of the wastewater generated from the floor cleaning activities and from the truck washdown towards the designated wastewater collection area.

(h) The Owner shall ensure that the Wastewater Settling Basin is regularly cleaned out and that it does not become a source of odour emissions.

(7) All activities approved under this Certificate shall only be carried out by appropriately Trained Personnel.

5. EQUIPMENT and SITE INSPECTIONS and MAINTENANCE

Operation and Maintenance

(1) Prior to the receipt of the Waste at the Site, the Owner shall prepare and update as necessary, an Operation and Maintenance Manual for all the Equipment, the APC Equipment, the CEM Systems, the Works and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility. The Manual shall be prepared in accordance with the written manufacturer's and/or supplier's specifications and good engineering practice.

As a minimum, the Operation and Maintenance Manual shall specify:

(a) operation procedures of the Equipment, the APC Equipment, the CEM Systems, the Works, and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility, in accordance with manufacturers' recommendations and good engineering practices to achieve compliance with this Certificate, the *EPA,* the *OWRA* and their Regulations;
(b) calibration procedures for the CEM Systems as required by this Certificate;
(c) procedures for start-up and shutdown, including Controlled Shutdown and Emergency Shutdown;
(d) quality assurance procedures for the operation and calibration of the CEM Systems in accordance with *40 CFR 60*, Appendix F or *Report EPS 1/PG/7,* as appropriate;
(e) Waste receiving and screening procedures;
(f) Waste, Rejected Waste and Residual Waste handling procedures;
(g) testing and monitoring procedures as required by this Certificate;
(h) maintenance and preventative maintenance procedures as required by this Certificate;
(i) Facility inspection, including frequency of inspections, procedures;
(j) procedure for handling complaints as required by this Certificate.
(k) contingency measures to resolve upset conditions and/or minimize the environmental impacts from the Facility;
(l) emergency response procedures, including procedures for dealing with power failure, fire, explosion, spills and any other potential emergencies;
(m) procedures for record keeping activities as required by this Certificate;
(n) description of the responsibilities of the Site personnel and the personnel training protocols; and
(o) a list of personnel positions responsible for operation and maintenance, including supervisory personnel and personnel responsible for handling of the emergency situations, recording and reporting pursuant to the requirements of this Certificate, along with the training and experience required for the positions and a description of the responsibilities.

(2) A copy of this Operations and Maintenance Manual shall be kept at the Site, be accessible to the Site personnel at all times and be updated, as required. The Operations and Maintenance Manual shall be available for inspection by a Provincial Officer upon request.

(3) The Owner shall implement the operation, maintenance, preventative maintenance and calibration procedures set out in the Operations and Maintenance Manual required by this Certificate.

Critical Spare Parts

(4) (a) The Owner shall prepare a list of critical spare parts, update this list annually or more frequently, if necessary, to ensure that this list is maintained up-to-date and shall be available for inspection by a Provincial Officer upon request.

(b) The Owner shall ensure that the critical spare parts are available at the Site at all times or are immediately available from an off-Site supplier.

Inspections

(5) Prior to receipt of the Waste at the Site, the Owner shall prepare a comprehensive written inspection program which includes inspections of all aspects of the Site's operations including, but not limited to the following:

(a) buildings and the indoor waste storage facilities and presence of dust and odour and leaks in or near any openings, such as doorways, window, vent, louver or any other opening;
(b) outdoor Residual Waste transport equipment, and the presence of dust and leaks at or near transfer points or the equipment seams;
(c) the Equipment, the APC Equipment, the CEM Systems, the Works and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility;
(d) spill containment areas, loading areas and the conditions around the Wastewater Settling Basin;
(e) security fencing, gates, barriers and signs;
(f) off-site nuisance impacts such as odour, dust, litter, etc.
(g) presence of stormwater pooling at the Site; and
(h) condition of the on-Site roads for presence of leaks and drips from the waste delivery trucks or excessive dust emissions.

(6) The inspections, except for the inspection of the Works, are to be undertaken daily by the Trained Personnel in accordance with the inspection program to ensure that the Facility is maintained in good working order at all times and that no off-Site impacts are occurring. Any deficiencies detected during these regular inspections must be promptly corrected.

Inspections and Maintenance of the Works

(7) The Owner shall inspect the Works at least once a year and, if necessary, clean and maintain the Works to prevent the excessive build-up of sediments and/or vegetation.

6. PERFORMANCE REQUIREMENTS

(1) The Owner shall, ensure that the Facility/Equipment is designed and operated in such a manner as to ensure that the following Performance Requirements are met:

(a) the maximum 10-minute average concentration of odour at the most impacted Sensitive Receptor, resulting from the operation of the Facility/Equipment, calculated in accordance with the procedures outlined in the attached Schedule "B", shall not exceed 1 odour unit;

(b) the noise emissions from the Facility shall comply with the limits set out in Ministry *Publication NPC-205;*

(c) the vibration emissions from the Facility shall comply with the limits set out in Ministry *Publication NPC-207.*

(2) The Owner shall ensure that the Boilers and the associated APC Equipment and the CEM Systems are designed and operated in such a manner as to ensure that the following Performance Requirements are met:

(a) (i) The temperature in the combustion zone of each Boiler shall reach a minimum of 1000 degrees Celsius (°C) for one second, prior to introduction of the Waste into the combustion chamber of the Boiler during the start-up, and thereafter maintained during the entire thermal treatment cycle and subsequent shutdown until all Waste combustion is completed.

(ii) Compliance with the minimum temperature requirement shall be demonstrated by direct measurement at the location where the combustion gases have achieved the residence time of one second at a minimum temperature of 1000°C (the Target Location) or by correlation of the required temperature of 1000°C for one second to the temperature measured downstream of the Target Location as proven by a method acceptable to the Director.

(b) The concentration of residual oxygen in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, as measured and recorded by the CEM System, shall not be less than 6 percent by volume on a dry basis.

(c) (i) The operational target for the concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler is 40 milligrams per dry cubic metre, as a 4-hour rolling average, normalized to 11 percent oxygen at a reference temperature of 25°C and a reference pressure of 101.3 kilopascals, as measured and recorded by the CEM System, for the period from and including initial commissioning of the facility to twelve months following the completion of the first Source Testing program.

(ii) The 4-hour average concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, as measured and recorded by the CEM System, shall not be more than 40 milligrams per dry cubic metre, normalized to 11 percent oxygen at a reference temperature of 25°C and a reference pressure of 101.3 kilopascals, after the first twelve months following the completion of the first Source Testing program.

(d) The emissions from the Boilers after those emissions have been controlled by the associated APC Equipment for discharge into the atmosphere via the Stack shall comply with the emission concentration limits listed in the attached Schedule "C", as measured by a CEM System or by Source Testing as applicable.

(e) The Boilers shall include combustion air control systems, which are capable of automatically adjusting the distribution and the quantity of combustion air, in such a manner that changes in the Waste Processing Rate and/or Waste composition or irregularities in the loading and/or combustion shall not adversely affect the performance of the Boilers.

(f) The Boilers shall provide and maintain a high degree of gas turbulence and mixing in the combustion chamber.

(g) The Boilers shall achieve the temperature, oxygen availability and turbulence requirements over the complete range of operating parameters, including feed rate, feed characteristics, combustion air, flue gas flow rate and heat losses.

(h) The inlet temperature into each baghouse of the APC Equipment of the Boilers shall not be less than 120°C and not more than 185°C.

(3) The Owner shall install and maintain visual and audible alarm systems to alert the Facility/Equipment operators of any potential deviation from the above Performance Requirements for parameters that are continuously monitored by applicable CEM Systems and shall forthwith take all reasonable actions to bring the Equipment/Facility into compliance with all Performance Conditions.

(4) In the event that the CEM Systems indicate that emissions from the Boilers and the Stack exceed any Performance Requirements in the attached Schedule "C" for a continuous three (3) hour period, the Owner shall forthwith cut-off all Waste feed into the affected Boiler and initiate an Emergency Shutdown, while maintaining a temperature of 1000°C, as practicable, in the combustion zone of the Boiler.

Residual Waste Compliance Criteria

(5) (a) The Residual Waste generated at the Site and destined for a non-hazardous waste disposal site in Ontario shall not meet any of the criteria from the definition of "hazardous waste" set out in the *O. Reg. 347.*

(b) The Residual Waste that meets any of the criteria from the definition of "hazardous waste" set out in the *O. Reg.* 347 shall be handled and disposed of in accordance with the LDR requirements set out in the *EPA* and the *O. Reg. 347.*

(6) The Residual Waste, limited to the bottom ash, destined for a non-hazardous waste disposal site shall meet the definition of "incinerator ash" set out in the *O. Reg. 347.*

7. TESTING, MONITORING and AUDITING

Source Testing

(1) The Owner shall perform annual Source Testing in accordance with the procedures and schedule outlined in the attached Schedule "E", to determine the rate of emission of the Test Contaminants from the Stack. The first Source Testing program shall be conducted not later than six (6) months after the Commencement Date of Operation of the Facility/Equipment and subsequent Source Testing program shall be conducted once (1) every calendar year thereafter.

Continuous Monitoring

(2) The Owner shall select, test and install appropriate CEM Systems and continuous recording devices in accordance with the requirements outlined in the attached Schedule "F" to conduct and maintain a program to continuously monitor, as a minimum, the following parameters prior to commencement of operation of the Boilers:

(a) the temperature at one (1) second downstream of the combustion zone of each Boiler where most of the combustion has been completed and the combustion temperature is fully developed;

(b) the inlet temperature of the gases into each baghouse of the APC Equipment of each Boiler;

(c) the concentration of carbon monoxide, oxygen and organic matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler;

(d) the opacity and moisture content of the flue gas and the concentration of oxygen, nitrogen oxides, sulphur dioxide, hydrogen chloride, hydrogen fluoride and ammonia in the Undiluted Gases leaving the baghouse of the APC Equipment of each Boiler.

Long-Term Sampling for Dioxins and Furans

(3) (a) The Owner shall develop, install, maintain and update as necessary a long-term sampling system, with a minimum monthly sampling frequency, to measure the concentration of Dioxins and Furans in the Undiluted Gases leaving the APC Equipment associated with each Boiler. The performance of

this sampling system will be evaluated during the annual Source Testing programs in accordance with the principles outlined by 40 CFR 60, Appendix B, Specification 4.

(b) The Owner shall evaluate the performance of the long-term sampling system in determining Dioxins and Furans emission trends and/or fluctuations as well as demonstrating the ongoing performance of the APC Equipment associated with the Boilers.

Ambient Air Monitoring

(4) (a) The Regions shall develop and implement the Ambient Air Monitoring and Reporting Plan, in accordance with the requirements set out in the EA Approval and as determined to be acceptable by the Regional Director.

(b) The Regions shall report the results of the Ambient Air Monitoring program to the Regional Director in accordance with the Ambient Air Monitoring and Reporting Plan and in accordance with the requirements of Condition 14.

(c) The Regions shall post the Ambient Air Monitoring and Reporting Plan and the results of the Ambient Air Monitoring program on the Owner's web site for the Facility in accordance with the requirements of the EA Approval and Condition 15.

Noise Monitoring - Acoustic Audit

(5) The Owner:

(a) shall carry out Acoustic Audit measurements on the actual noise emissions due to the operation of the Facility. The Acoustic Audit measurements shall be carried out in accordance with the procedures in *Publication NPC-103* and in accordance to the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director;

(b) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of *Publication NPC-233* and the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director, to the District Manager and the Director, not later than three (3) months after the commencement of operation of the Facility.

(6) The Director:

(a) may not accept the results of the Acoustic Audit if the requirements of *Publication NPC-233* or the approved Noise Monitoring and Reporting Plan were not followed;

(b) may require the Owner to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

Residual Waste Testing

(7) (a) A minimum of six (6) months prior to the Commencement Date of Operation, the Owner shall submit to the Director for approval, a Testing Protocol for testing of the bottom ash for compliance with the criteria set out in the "incinerator ash" definition from the *O. Reg.* 347 and for testing of the Residual Waste for compliance with the criteria set out in this Certificate.

(b) As a minimum, the Testing Protocol shall comply with the Ministry's regulatory requirements for sampling and testing of waste, including the requirements set out in the Ministry's document entitled "Principles of Sampling and Analysis of Waste for TCLP under Ontario Regulation 347", dated February 2002, as amended.

(c) The Testing Protocol shall include the rationale for the proposed methods and the following:

(i) a sampling protocol, including the proposed number of samples to be taken and their locations, to ensure that representative sample(s) are being tested for compliance with this Certificate;

(ii) sample(s) handling and preserving procedures;

(iii) analytical protocol for the applicable contaminants to ensure that appropriate analytical method(s) are being used for compliance testing required by this Certificate; and

(iv) a testing protocol for the bottom ash during the Site commissioning period.

(d) The Owner shall implement the Testing Protocol on the Commencement Date of Operation.

(8) For handling of the bottom ash as a solid non-hazardous waste, the Owner shall follow the following schedule for compliance testing:

(a) for the Site commissioning period, the bottom ash shall be tested in accordance with the Testing Protocol approved by the Director;

(b) for the period following the Site commissioning period, the bottom ash shall be tested for the content of the combustible materials on an annual basis, until the compliance testing results indicate that the bottom ash meets the "incinerator ash" definition from the *O. Reg. 347* for three (3) consecutive years, following which a triennial compliance testing event may be carried out;

(c) should any annual or triennial compliance testing event indicate that the bottom ash does not meet the "incinerator ash" definition, prior to each of the next three (3) shipments from the Site, compliance testing of each of the three (3) shipments shall be carried out. Once three (3) consecutive tests re - establish compliance with the "incinerator ash" definition from the *O. Reg. 347* and that the bottom ash does not exceed the Leachate Toxicity Criteria, the compliance testing schedule set out in Condition 7.(8)(b) may be resumed; and

(d) should the results of any compliance testing of the bottom ash indicate that the concentrations of the leachate toxic contaminants in the bottom ash equal to or exceed the Leachate Toxicity Criteria, the bottom ash shall be handled as a hazardous waste. Once three (3) consecutive tests re - establish that the bottom ash does not exceed the Leachate Toxicity Criteria, the bottom ash compliance testing schedule set out in Condition 7.(8)(b) may be resumed.

(9) (a) For handling of the bottom ash as a hazardous waste and for handling of the fly ash, prior to final disposal at a hazardous waste landfill site in Ontario, the Owner shall undertake any sampling and testing that would be required to comply with the LDR requirements set out in the *EPA* and the *O. Reg. 347.*

(b) The Owner shall follow the following schedule for compliance testing:

(i) prior to each of the first three (3) shipments of the ash from the Site, the ash shall be tested so that for the compliance with the LDR requirements can be demonstrated;

(ii) following the three (3) initial compliance testing events, the ash shall be tested on an annual basis, until the compliance testing results indicate that the ash meets the LDR requirements during the three (3) consecutive years, following which a triennial compliance testing may be carried out; and

(iii) should any annual or triennial compliance testing event indicate that the ash does not meet the LDR requirements, prior to next three (3) shipments from the Site, compliance testing of each of the three (3) shipments shall be carried out. Once three (3) consecutive tests re - establish compliance with the LDR requirements, the compliance testing schedule set out in Condition 7.(9)(b)(ii) may be resumed.

Soil Testing:

(10) (a) Within one hundred and twenty (120) days from the date of this Certificate, the Regions shall undertake the soil testing in accordance with the Soil Testing Plan required by this Certificate.

(b) The soil testing shall be repeated every three (3) years or as agreed upon in writing by the Regional Director.

Disposal of Residual Waste

(11) The Owners shall ensure that no portion of the Residual Waste undergoing compliance testing is transferred from the Site until the results of the compliance testing required by this Certificate demonstrate compliance with the relevant Ministry's requirements.

(12) Bottom ash that is not a hazardous waste, as defined in the *O. Reg. 347,* may be disposed of at an approved non-hazardous waste landfill site or at a site approved to accept such waste by an appropriate government agency of equivalent jurisdiction.

(13) Residual Waste shall be treated to comply with the LDR requirements set out in the *EPA* and the *O. Reg. 347* prior to disposal of at an approved hazardous waste landfill site or at a site approved to accept such waste by an appropriate government agency of equivalent jurisdiction.

Groundwater and Surface Water Monitoring

(14) (a) The Regions shall develop and implement the Groundwater and Surface Water Monitoring Plan, in accordance with the requirements set out in the EA Approval and as determined to be acceptable to the Regional Director.

(b) The Regions shall report the results of the Groundwater and Surface Water Monitoring program to the Regional Director and to the Director in accordance with the schedule set out in the EA Approval and in accordance with the requirements of Condition 14.

(c) The Regions shall post the Groundwater and Surface Water Monitoring Plan and the results of the Groundwater and Surface Water Monitoring program on the Owner's web site for the Facility in accordance with the requirements of the EA Approval and Condition 15.

8. NUISANCE IMPACT CONTROL and HOUSEKEEPING

Odour Management

(1) (a) The Owner shall maintain a negative air pressure atmosphere in the Tipping Building at all times to contain any potential odours within the confines of the Tipping Building.

(b) (i) Once per year, or as required by the District Manager, the Owner shall undertake a test to measure the worse case scenario negative air pressure atmosphere throughout the Tipping Building, while the activities approved in this Certificate are carried out in the Tipping Building.

(ii) Notwithstanding the requirements set out in Condition 8.(1)(b)(i), the Owner shall install sufficient instrumentation to measure the air flow into the Boilers and demonstrate that adequate air flow is maintained

to maintain a negative air pressure atmosphere throughout the Tipping Building.

(c) In the event that adequate negative air pressure cannot be maintained, the Owner shall implement any necessary additional odour containment and control measures, including, but not necessarily limited to, those in the required Contingency and Emergency Response Plan.

(2) The Owner shall ensure that the entrance and exit doors into the Tipping Building, the Residue Building and the Grizzly Building are kept closed at all times except to permit the entry or exit of the respective waste transport vehicles and waste handling equipment into and out of these Buildings.

(3) The Owner shall ensure that, at all times, the air from the Tipping Building, the Residue Building, the Grizzly Building and from the Equipment is exhausted through an appropriate and fully functional APC Equipment approved by this Certificate.

(4) The Owner shall undertake appropriate housekeeping activities, including regular cleaning of the tipping floor to control potential sources of fugitive odour emissions.

(5) The Owner shall ensure that no Waste handling equipment or empty storage containers are stored outside, unless they have been washed to prevent fugitive odour emissions.

(6) The Owner shall regularly clean all equipment and storage areas that are used to handle, process and store waste at the Site, including the surfaces of the outdoor spill containment areas, as required.

(7) (i) Prior to the receipt of Waste at the Site, the Owner shall provide documentation which outlines the testing carried out by a licensed structural engineer to confirm the effectiveness of the containment in the buildings, conveyors and tanks and silos at the Site.

(ii) The testing shall be carried out and repeated as directed by the District Manager in accordance with the test protocol prepared in consultation with and approved by the District Manager.

(iii) These tests shall be repeated as directed or agreed by the District Manager.

(8) The Owner shall prepare and implement an Odour Management and Mitigation Plan in accordance with the requirements set out in the EA Approval and as determined to be acceptable to the Regional Director.

(9) (a) In addition to the requirements set out in the EA Approval, the Odour Management and Mitigation Plan shall include the following:

(i) identification of all potential sources of odourous emissions;

(ii) description of the preventative and control measures to minimize odourous emissions from the identified sources;
(iii) procedures for the implementation of the Odour Management and Mitigation Plan;
(iv) inspection and maintenance procedures to ensure effective implementation of the Odour Management and Mitigation Plan; and
(v) procedures for verification and recording the progress of the implementation of the Odour Management and Mitigation Plan.

(b) The Owner shall continue to submit an updated Odour Management and Mitigation Plan until such time as the Regional Director notifies the Owner in writing that further submissions are no longer required.

Vehicles and Traffic

(10) (a) The Owner shall ensure that all vehicles transporting waste to and from the Site are not leaking or dripping waste when arriving at or leaving the Site.

(b) Should the Owner become aware that the truck(s) delivering waste to the Site have leaked wastewater on the municipal roadways, the Owner shall immediately report the violation to the owner of the vehicle(s) and to the District Manager.

(c) The Owner shall ensure that the exterior of all vehicles delivering Waste to the Site or hauling waste from the Site is washed prior to the trucks' departure from the Site, if necessary.

(d) Any necessary truck washing shall occur only in the designated wash down area of the Tipping Building or the Residue Building.

(11) The Owner shall ensure that there is no queuing or parking of vehicles that are waiting to enter the Site on any roadway that is not a distinct part of the Site.

Litter

(12) The Owner shall:

(a) take all practical steps to prevent the escape of litter from the Site;
(b) pick up litter around the Site on a daily basis, or more frequently if necessary; and
(c) if necessary, erect litter fences around the areas causing a litter problem.

Dust

(13) The Owner shall ensure that all on-site roads and operations/yard areas are regularly swept/washed to prevent dust impacts off-Site.

Vermin and Vectors

(14) The Owner shall:

(a) implement necessary housekeeping procedures to eliminate sources and potential sources of attraction for vermin and vectors; and

(b) hire a qualified, licensed pest control professional to design and implement a pest control plan for the Site. The pest control plan shall remain in place, and be updated from time to time as necessary, until the Site has been closed and this Certificate has been revoked.

Visual Screening

(15) The Owner shall provide visual screening for the Site in accordance with the documentation included in the attached Schedule "A".

9. STAFF TRAINING

(1) (a) The Owner shall ensure that all operators of the Site are trained with respect to the following, as per the specific job requirements of each individual operator:

(i) terms and conditions of this Certificate and the requirements of the EA Approval;
(ii) operation and management of the Site, or area(s) within the Site, as per the specific job requirements of each individual operator, and which may include procedures for receiving, screening and identifying Waste, refusal, handling, processing and temporarily storing wastes, operation of the Equipment, the APC Equipment, the CEM System and the Works;
(iii) testing, monitoring and operating requirements;
(iv) maintenance and inspection procedures;
(v) recording procedures;
(vi) nuisance impact control and housekeeping procedures;
(vii) procedures for recording and responding to public complaints;
(viii) an outline of the responsibilities of Site personnel including roles and responsibilities during emergency situations;
(ix) the Contingency and Emergency Response Plan including exit locations and evacuation routing, and location of relevant equipment available for emergency situations;
(x) environmental, and occupational health and safety concerns pertaining to the wastes to be handled;
(xi) emergency first-aid information; and
(xii) relevant waste management legislation and regulations, including the *EPA*, the *OWRA*, the *O. Reg. 347*, the *O. Reg. 419/05* and the Ministry guidelines affecting thermal treatment facilities.

(2) The Owner shall ensure that all personnel are trained in the requirements of this Certificate relevant to the employee's position:

(a) upon commencing employment at the Site in a particular position;
(b) whenever items listed in Condition 9.(1) are changed or updated; and
(c) during the planned refresher training.

10. COMPLAINTS / ODOUR-CONTAMINANT EMISSIONS RESPONSE PROCEDURE

(1) The Owner or a designated representative of the Owner shall be available to receive public complaints caused by the operations at the Site twenty-four (24) hours per day, seven (7) days per week.

(2) If at any time, the Owner or the Ministry receives a complaint or the Owner or the Provincial Officer detects an emission of odour or any contaminant, (Emission Event), from the Site, in addition to the requirements set out in the EA approval, the Owner shall record all relevant information in the computerized tracking system and shall respond to the complaint/Emission Event according to the following procedure:

Step 1: Record of Complaint/Emission Event

(a) (i) The Owner shall record each complaint/Emission Event and each record shall include the following:

(A) name, address and the telephone number of the complainant, if known;
(B) time and date of the complaint/Emission Event;
(C) details of the complaint; and

(ii) After the complaint/Emission Event has been recorded in the tracking system, the Owner shall immediately report to the District Manager by phone or e-mail during office hours and to the Ministry's Spills Actions Centre at 1-800-268-6060 after office hours on the receipt of the complaint or occurrence of the Emission Event.

Step 2: Investigation and Handling of Complaint/Emission Event

(b) The Owner shall immediately initiate investigation of the complaint/Emission Event. As a minimum, the investigation shall include the following:

(i) determination of the activities being undertaken at the Site at the time of the complaint/Emission Event;
(ii) meteorological conditions including, but not limited to the ambient temperature, approximate wind speed and its direction.
(iii) determination if the complaint is attributed to activities being undertaken at the Site and if so, the possible cause(s) of the complaint/Emission Event; and

(iv) determination of the remedial action(s) to address the cause(s) of the Complaint/Emission Event, and the schedule for the implementation of the necessary remedial action(s).

(c) The Owner shall respond to the complainant, if known, and the response shall include the results of the investigation of the Complaint, the action(s) taken or planned to be taken to address the cause(s) of the Complaint, and if any follow-up response(s) will be provided.

(d) Upon completed investigation of the Complaint/Emission event, the Owner shall, within three (3) business days, submit a report to the District Manager on the Complaint, on the action(s) taken or planned to be taken to address the cause(s) of the Complaint and on all proposed action(s) to prevent recurrence of the Complaint/Emission Event in the future.

(3) If, in the opinion of the District Manager, failure of the APC Equipment and/or any other process or equipment upset or malfunction results in off-site Complaint/Emission Event, confirmed by the Owner or a Provincial Officer of the Ministry, the Owner shall, immediately upon notification from the District Manager, implement any necessary additional control measures, including, but not necessarily limited to, those in the Contingency and Emergency Response Plan required by this Certificate.

(4) If the District Manager deems the additional control measures taken as per condition 10.(3) to be unsuitable, insufficient or ineffective, the District Manager may direct the Owner, in writing, to take further measures to address the noted failure, upset or malfunction including pursuant to section 39 of the *EPA* requiring a reduction in the receipt of Waste, cessation of the receipt of Waste, removal and off-site disposal of Waste from the Tipping Building as well as making repairs or modifications to equipment or processes.

11. <u>CONTINGENCY and EMERGENCY RESPONSE PLAN</u>

(1) (a) The Owner shall develop and implement a Contingency and Emergency Response Plan in accordance with the requirements set out in the EA Approval.

(b) Notwithstanding the requirements set out in the EA Approval, the Contingency and Emergency Response Plan shall be prepared in consultation with the District Manager or designate, the local Municipality and the Fire Department.

(2) In addition to the requirements set out in the EA Approval, the Contingency and Emergency Response Plan, as a minimum, shall include the following:

(a) the Site plan clearly showing the equipment layout and all storage areas for wastes and reagents;

(b) a list of Site personnel responsible for the implementation of the contingency measures and various emergency response tasks and their training requirements;
(c) a list of equipment and materials required for the implementation of the contingency measures and the emergency situation response;
(d) maintenance and testing program for equipment required for the implementation of the contingency measures and the emergency situation response;
(e) procedures to be undertaken as part of the implementation of the contingency measures and the emergency situation response;
(f) names and telephone numbers of waste management companies available for emergency response;
(g) notification protocol, with names and telephone numbers of persons to be contacted, including the Owner, the Site personnel, the Ministry of the Environment Spills Action Centre and the York Durham District, the local Fire and Police Departments, the local Municipality, the local Medical Officer of Health, and the Ministry of Labour;
(h) procedures and actions to be taken should the incoming Waste not meet the applicable quality criteria specified in this Certificate;
(i) procedures and actions to be taken should the outgoing Residual Waste fail to meet the criteria specified in this Certificate;
(j) procedures and actions to be taken should the current disposal options for the outgoing Residual Waste become unavailable;
(k) design of the contingency measure, procedures and actions should the emissions from the Site, including the fugitive odour/dust emissions, cause occurrences of public Complaints;
(l) procedures and actions to be taken should the Owner be unable to maintain the negative pressure in the Tipping Building;
(m) procedures and actions to be taken should the occurrence of Complaints require the Owner to suspend the waste processing activities at the Site; and
(n) identification and risk assessment of all reasonably foreseeable incidents that may result in a discharge into the natural environment of any contaminant in an amount, concentration or level in excess of that prescribed by the Regulations and/or imposed by this Certificate, including but not limited to:
    (i) a breakdown of the Facility/Equipment or part of the Facility/Equipment, including the APC Equipment and the CEM Systems associated with the Boilers;
    (ii) CEM Systems indicate that the Boilers and associated APC Equipment have been out of compliance with the Performance Requirements;
    (iii) any change in process parameters which may result in non compliance with the Performance Requirements;
    (iv) power failure resulting in the use of the Emergency Diesel Generator or Total Power Failure; and
    (v) description of the preventative and control measures to minimize the occurrence or impacts of the above incidents; and
    (vi) procedures for corrective measures and timelines to take to address the above incidents in a timely manner to effectively prevent or minimize the discharge of any contaminant into the natural environment and continue to maintain compliance with the *EPA* , the Regulations and

this Certificate, including procedures for Waste Processing Rate reduction, waste feed cut-off, Controlled Shutdown or Emergency Shutdown of the Boilers as applicable.

(3) The Owner shall submit the finalized Contingency and Emergency Response Plan to the Director a minimum of one hundred and twenty (120) days prior to the Commencement Date of Operation, for approval.

(4) An up-to-date version of the Contingency and Emergency Response Plan shall be kept at the Site at all times, in a central location available to all staff, and it shall be available for inspection by a Provincial Officer upon request.

(5) The Owner shall ensure that the names and telephone numbers of the persons to be contacted in the event of an emergency situation are kept up-to-date, and that these numbers are prominently displayed at the Site and at all times available to all staff and emergency response personnel.

(6) The Contingency and Emergency Response Plan shall be reviewed on a regular basis and updated, as necessary. The revised version of the Contingency and Emergency Response Plan shall be submitted to the local Municipality and the Fire Department for comments and to the District Manager for comments and concurrence.

(7) The Owner shall implement the recommendations of the updated Contingency and Emergency Response Plan, immediately upon receipt of the written concurrence from the District Manager.

12. EMERGENCY SITUATION RESPONSE and REPORTING

(1) The Owner shall immediately take all measures necessary to contain and clean up any spill or leak which may result from the operation at this Site and manage any emergency situation in accordance with the Contingency and Emergency Response Plan.

(2) The Owner shall ensure that the equipment and materials listed in the Contingency and Emergency Response Plan are immediately available at the Site, are in a good state of repair, and fully operational at all times.

(3) The Owner shall ensure that all Site personnel responsible for the emergency situation response are fully trained in the use of the equipment and related materials, and in the procedures to be employed in the event of an emergency.

(4) All Spills as defined in the *EPA* shall be immediately reported to the **Ministry's Spills Action Centre at 1-800-268-6060** and shall be recorded in the log book as to the nature of the emergency situation, and the action taken for clean-up, correction and prevention of future occurrences.

13. **SUBMISSIONS to the REGIONAL DIRECTOR or DISTRICT MANAGER**

(1) The Owner shall notify the District Manager in writing, at least six (60) days prior to the scheduled date for the first receipt of Waste at the Site, as to whether or not the construction of the Facility has been carried out in accordance with this Certificate to a point of Substantial Completion.

(2) (a) The Owner shall forthwith notify the District Manager and the Spills Action Centre by telephone, when any of the following incidents occur that may result in a discharge into the natural environment of any contaminant in an amount, concentration or level in excess of that prescribed by the Regulations and/or imposed by this Certificate:

(i) CEM Systems indicate that the Boilers and associated APC Equipment have been out of compliance with the Performance Requirements triggering a Waste Processing Rate Reduction, Waste Feed cut-off, Controlled Shutdown or Emergency Shutdown as specified in the Emergency Response and Contingency Plan;
(ii) failure of the APC Equipment associated with the Boilers; and
(iii) power failure resulting in the use of the emergency diesel generator or Total Power Failure;

(b) In addition to fulfilling the notification requirements from the *EPA*, the Owner shall prepare and submit a written report to the District Manager with respect to any of the above said occurrences, within five (5) calendar days of the occurrence, in the following format:

(i) date of the occurrence;
(ii) general description of the occurrence;
(iii) duration of the occurrence;
(iv) effect of the occurrence on the emissions from the Facility;
(v) measures taken to alleviate the effect of the occurrence on the emissions from the Facility; and
(vi) measures taken to prevent the occurrence of the same or similar occurrence in the future.

(3) Should a Spill, as defined in the *EPA*, occur at the Site, in addition to fulfilling the requirements from the *EPA* and applicable regulations, the Owner shall submit to the District Manager a written report within three (3) calendar days outlining the nature of the Spill, remedial measure taken and the measures taken to prevent future occurrences at the Site.

(4) (a) Within ninety (90) days from the date of this Certificate, the Regions shall prepare and submit to the District Manager for concurrence, a Soil Testing Plan to monitor the impact of the Site operations at the locations where the ambient air monitoring is proposed by the Owner in accordance with the requirements set out in the EA Approval.

(b) (i) This Plan shall ensure that representative samples of the soil to be tested are collected in sufficient numbers and that the samples are properly preserved and tested so that reliable data on the soil characteristics is collected.

(ii) As a minimum, the Plan shall include testing for cadmium, lead, chromium, nickel, cobalt, copper, molybdenum, selenium, zinc and mercury, Dioxins and Furans.

(iii) This Plan shall comply with the Ministry's regulatory requirements for sampling and testing of soil and it shall include the rationale for the proposed methods.

(iv) This Plan be kept at the Site at all times and be available for inspection by a Provincial Officer upon request.

14. RECORDS KEEPING

(1) Any information requested by the Ministry concerning the Facility and its operation under this Certificate, including, but not limited to, any records required to be kept by this Certificate, shall be provided to the Ministry, upon request, in a timely manner.

(2) The Owner shall retain, for a minimum of seven (7) years from the date of their creation, except as noted below, all reports, records and information described in this Certificate.

Daily Activities

(3) The Owner shall maintain an on-Site written or digital record of activities undertaken at the Site. All measurements shall be recorded in consistent metric units of measurement. As a minimum, the record shall include the following:

(a) date of record and the name and signature of the person completing the report;
(b) quantity and source of the incoming Waste received at the Site;
(c) records of the estimated quantity of Waste thermally treated in the Boilers;
(d) quantity of the Unacceptable Waste received at the Site by the end of the approved Waste receipt period and the type(s) of the Unacceptable Waste received;
(e) quantity and type of the Residual Waste shipped from the Site, including any required outgoing Residual Waste characterization results;
(f) destination and/or receiving site(s) for the Residual Waste shipped from the Site;
(g) quantity and type of any Rejected Waste accepted at the Site;
(h) destination and/or receiving site(s) for the Rejected Waste shipped from the Site;
(i) housekeeping activities, including litter collection and washing/cleaning activities, etc.
(j) amount of electricity produced;

(k) amount of excess electricity exported to the electrical grid.

Monitoring and Testing Records

(4) The Owner shall maintain an on-Site written or digital record of activities undertaken at the Site. All measurements shall be recorded in consistent metric units of measurement. As a minimum, the record shall include the following:

(a) day and time of the activity;
(b) all original records produced by the recording devices associated with the CEM Systems;
(c) a summary of daily records of readings of the CEM Systems, including:
 (i) the daily minimum and maximum 4-hour average readings for carbon monoxide;
 (ii) the daily minimum and maximum one hour average readings for oxygen;
 (iii) the daily minimum and maximum 10-minute average readings for organic matter;
 (iv) the daily minimum and maximum 24-hour average readings for sulphur dioxide;
 (v) the daily minimum and maximum 24-hour average readings for nitrogen oxides;
 (vi) the daily minimum and maximum 24-hour average readings for hydrogen chloride;
 (vii) the daily minimum and maximum 6-minute average and 2-hour average opacity readings; and
 (viii) the daily minimum and maximum one-hour average readings for temperature measurements.
(d) records of all excursions from the applicable Performance Requirements as measured by the CEM Systems, duration of the excursions, reasons for the excursions and corrective measures taken to eliminate the excursions;
(e) all records produced during any Acoustic Audit;
(f) all records produced during any Source Testing;
(g) all records produced by the long term sampling program for Dioxins and Furans required by this Certificate;
(h) all records produced during the Residual Waste compliance testing;
(i) all records produced during the Soil Testing;
(j) all records produced during the Groundwater and Surface Water Monitoring required by this Certificate;
(k) all records produced during the Ambient Air Monitoring required by this Certificate;
(l) all records associated with radiation monitoring of the incoming Waste, including but not limited to:
 (i) transaction number;
 (ii) hauler;
 (iii) vehicle ID;
 (iv) alarm level;
 (v) maximum CPS;
 (vi) uSv/hr;

(vii) comment;
(viii) background CPS;
(ix) driver time in and out; and
(x) name of the Trainer Personnel that carried out the monitoring.

(m) results of the containment testing carried out in the buildings, conveyors, tanks and silos, as required;
(n) results the negative pressure in the Tipping Building carried out, as required.

Inspections/Maintenance/Repairs

(5) The Owner shall maintain an on-Site written or digital record of inspections and maintenance as required by this Certificate. As a minimum, the record shall include the following:

(a) the name and signature of the Trained Personnel that conducted the inspection;
(b) the date and time of the inspection;
(c) the list of any deficiencies discovered, including the need for a maintenance or repair activity;
(d) the recommendations for remedial action;
(e) the date, time and description of actions (repair or maintenance) undertaken;
(f) the name and signature of the Trained Personnel who undertook the remedial action; and
(g) an estimate of the quantity of any materials removed during cleaning of the Works.

Emergency Situations

(6) The Owner shall maintain an on-Site written or digital record of the emergency situations. As a minimum, the record shall include the following:

(a) the type of an emergency situation;
(b) description of how the emergency situation was handled;
(c) the type and amount of material spilled, if applicable;
(d) a description of how the material was cleaned up and stored, if generated; and
(e) the location and time of final disposal, if applicable; and
(f) description of the preventative and control measures undertaken to minimize the potential for re-occurrence of the emergency situation in the future.

Complaints Response Records

(7) The Owner shall establish and maintain a written or digital record of complaints received and the responses made as required by this Certificate.

Training

(8) The Owner shall maintain an on-Site written or digital record of training as required by this Certificate. As a minimum, the record shall include the following:

(a) date of training;
(b) name and signature of person who has been trained; and
(c) description of the training provided.

Reports

(9) The Owner shall keep at the Site the following reports required by this Certificate:

(a) the ESDM Report
(b) the Acoustic Assessment Report;
(c) the Annual Report; and
(d) the Third Party Audit.

15. REPORTING

Annual Report

(1) By March 31st following the end of each operating year, the Owner shall prepare and submit to the District Manager and to the Advisory Committee, an Annual Report summarizing the operation of the Site covering the previous calendar year. This Annual Report shall include, as a minimum, the following information:

(a) a summary of the quality and the quantity of the Wastes accepted at the Site, including the maximum amount of the Waste received annually and daily and the sources of the Waste;

(b) a summary of the quality and the quantity of the Residual Waste shipped from the Site, including the analytical data required to characterize the Residual Waste, the off-Site destinations for the Residual Waste and its subsequent use, if known;

(c) estimated material balance for each month documenting the maximum amount of wastes stored at the Site;

(d) annual water usage;

(e) annual amount of the electricity produced and the annual amount of the electricity exported to the electrical grid;

(f) summaries and conclusions from the records required by Conditions 14.(3) through 14.(8) of this Certificate;

(g) the Emission Summary Table and the Acoustic Assessment Summary Table for the Facility as of December 31 from the previous calendar year;

(h) a summary of dates, duration and reasons for any environmental and operational problems, Boilers downtime, APC Equipment and CEM System malfunctions that may have negatively impacted the quality of the environment or any incidents triggered by the Emergency Response and

Contingency Plan and corrective measures taken to eliminate the environmental impacts of the incidents;

(i) a summary of the dates, duration and reasons for all excursions from the applicable Performance Requirements as measured by the CEM Systems or as reported by the annual Source Testing, reasons for the excursions and corrective measures taken to eliminate the excursions;

(j) results of the evaluation of the performance of the long-term sampling system in determining the Dioxins and Furans emission trends and/or fluctuations for the year reported on as well as demonstrating the ongoing performance of the APC Equipment associated with the Boilers;

(k) dates of all environmental complaints relating to the Site together with cause of the Complaints and actions taken to prevent future Complaints and/or events that could lead to future Complaints;

(l) any environmental and operational problems that could have negatively impacted the environment, discovered as a result of daily inspections or otherwise and any mitigative actions taken;

(m) a summary of any emergency situations that have occurred at the Site and how they were handled;

(n) the results and an interpretive analysis of the results of the groundwater and surface water, including an assessment of the need to amend the monitoring programs;

(o) summaries of the Advisory Committee meetings, including the issues raised by the public and their current status;

(p) any recommendations to improve the environmental and process performance of the Site in the future;

(q) statement of compliance with this Certificate, including compliance with the *O. Reg. 419/05* and all air emission limits based on the results of source testing, continuous monitoring and engineering calculations, as may be appropriate; and

(r) interpretation of the results and comparison to the results from previous Annual Reports to demonstrate the Facility's impact on the environment.

Third Party Audit

(2) (a) The Regions shall ensure that an independent technical review of the operations at the Site is undertaken in accordance with the requirements of the EA Approval.

(b) In addition to the Third Party Audit requirements set out in the EA approval, the Third Party Audit shall include the following:

(i) a review of the data from the monitoring and testing required by this Certificate;
(ii) a review of all complaints received about the operation of the Facility;
(iii) any recommendations for improving the operation of the Facility received from the Advisory Committee; and
(iv) a recommendation of any improvements that could be made to ensure that the operation of the Facility is optimized and is protective of the health and safety of people and the environment.

(3) The Regions shall submit a Written Audit Report on the results of the independent technical review to the Regional Director in accordance with the Audit Plan and retain a copy at the Site.

Soil Testing Report

(4) Within one (1) month of completion of each Soil Testing event, the Regions shall submit to the District Manager a Soil Testing Report, which includes the details on the sampling/testing procedures, the results of the testing and a comparison with the results obtained during the previous Soil Testing.

16. PUBLIC ACCESS TO DOCUMENTATION

(1) The Owner shall, at all times, maintain documentation that describes the current operations of the Facility. The Owner shall post the documentation at the website for the undertaking and during regular business hours, the Owner shall make the following documents available for inspection at the Site by any interested member of the public, upon submission to the Ministry for review:

(a) a current ESDM Report that demonstrates compliance with the Performance Limits for the Facility regarding all Compounds of Concern;

(b) a current Acoustic Assessment Report that demonstrates compliance with the Performance Limits for the Facility regarding noise emissions;

(c) the most recent Annual Report;

(d) the most current Third Party Audit Report;

(e) Odour Management and Mitigation Plan, prepared in accordance with the requirements of the EA Approval;

(f) Noise Monitoring and Reporting Plan, prepared in accordance with the requirements of the EA Approval; and

(g) Groundwater and Surface Water Monitoring and Reporting Plan, prepared in accordance with the requirements of the EA Approval.

(2) The Owner shall ensure that necessary hardware and software are provided at a location available to the public, to provide on-line real-time reporting of the operating parameter data for the Facility, including acceptable operating limits, stack emissions, and all other parameters for which continuous monitoring is required and that continuous records of the same be kept and made available to the public.

17. <u>ADVISORY COMMITTEE</u>

(1) The Regions shall establish an Advisory Committee in accordance with the requirements set out in the EA Approval.

18. <u>CLOSURE of the SITE</u>

(1) A minimum of nine (9) months prior to closure of the Site, the Owner shall submit, for approval by the Director, a written Closure Plan for the Site. This Plan shall include, as a minimum, a description of the work that will be done to facilitate closure of the Site and a schedule for completion of that work.

(2) Within ten (10) days after closure of the Site, the Owner shall notify the Director and the District Manager, in writing, that the Site is closed and that the approved Closure Plan has been implemented.

<u>SCHEDULE "A"</u>

Supporting Documentation

(1) Applications for a Certificate of Approval (Air) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

- (a) Emission Summary and Dispersion Modelling Report, dated March 2011, prepared by Golder Associates;
- (b) Acoustic Assessment Report prepared by Golder Associates Ltd., dated March 2011 and signed by Paul Niejadlik.

(2) Applications for a Provisional Certificate of Approval (Waste Disposal Site) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

- (a) Attachment #1 containing the “Design and Operations Report”, dated March 2011, prepared by Golder Associates Ltd.;
- (b) Attachment #3 containing the “Public Consultation Report”, dated March 2011, prepared by Golder Associates Ltd.;
- (c) Attachment #4 containing the Host Community Agreement
- (d) Attachment #5 containing the proof of legal name for Covanta Durham York Renewable Energy Limited Partnership; and
- (e) A letter May 24, 2011 from Anthony Ciccone, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, providing additional technical information on the proposal and attaching a report entitled “Amendment #1 Durham York Energy Centre Design and Operations Report”, dated May 2011;

(3) Applications for a Certificate of Approval of Municipal and Private Sewage Works dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of Durham and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

(a) "Surface Water and Groundwater Technical Study Report" dated July 2009, prepared by Jacques Whitford, Markham, Ontario (CD Report).

(b) "Stormwater Design Model Output" prepared by Sigma Energy, dated March 2001 (CD Report).

(c) Clearance letter from Central Lake Ontario Conservation date February 22, 2011.

(d) A letter dated March 23, 2011, from Brian Bahor, Covanta Energy Corporation, to Stefanos Habtom, Ontario Ministry of the Environment, providing additional technical design information on the proposed stormwater management ponds.

SCHEDULE "B"

Procedure to calculate and record the 10-minute average concentration of odour at the Point of Impingement and at the most impacted Sensitive Receptor

(a) Calculate and record one-hour average concentration of odour at the Point of Impingement and at the most impacted Sensitive Receptor, employing CALPUFF atmospheric dispersion model or the dispersion model acceptable to the Director that employs at least five (5) years of hourly local meteorological data and that can provide results reported as individual one-hour average odour concentrations.

(b) Convert and record each of the one-hour average concentrations predicted over the five (5) years of hourly local meteorological data at the Point of Impingement and at the most impacted Sensitive Receptor to 10-minute average concentrations using the One-hour Average to 10-Minute Average Conversion described below; and

(c) Record and present the 10-Minute Average concentrations predicted to occur over a five (5) year period at the Point of Impingement and at the most impacted Sensitive Receptor in a histogram. The histogram shall identify all predicted 10-minute average odour concentration occurrences in terms of frequency, identifying the number of occurrences over the entire range of predicted odour concentration in increments of not more than 1/10 of one odour unit. The maximum 10-minute average concentration of odour at the Sensitive Receptor will be considered to be the maximum odour concentration at the most impacted Sensitive Receptor that occurs and is represented in the histogram, disregarding outlying data points on the histogram as agreed to by the Director.

One-hour Average To 10-minute Average Conversion

1. Use the following formula to convert and record one-hour average concentrations predicted by the CALPUFF atmospheric dispersion model or by the dispersion model acceptable to the Director to 10-minute average concentrations:

X10min = X60min*1.65

where X10min = 10-minute average concentration
X60min = one-hour average concentration

SCHEDULE "C"

PERFORMANCE REQUIREMENTS

In-Stack Emission Limits

Parameter	In-Stack Emission Limit	Verification of Compliance
Total Suspended Particulate Matter (filterable particulate measured in accordance with the Ontario Source Testing Code)	9 mg/Rm3	Results from compliance Source Testing
cadmium	7 µg/Rm3	Results from compliance Source Testing
lead	50 µg/Rm3	Results from compliance Source Testing
mercury	15 µg/Rm3	Results from compliance Source Testing
dioxins and furans	60 pg/Rm3	Results from compliance Source Testing; results expressed as I-TEQ
hydrochloric acid (HCl)	9 mg/Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes
sulphur dioxide (SO2)	35 mg/Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes
nitrogen oxides (NOx)	121 mg/ Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes
organic matter (undiluted, expressed as equivalent methane)	50 ppmdv (33 mg/ Rm3)	Results from compliance source testing
carbon monoxide	35 ppmdv (40 mg/Rm3)	Calculated as the rolling arithmetic average of four (4) hours of data measured by a CEM System that provides data at least once every fifteen minutes, in accordance with condition 6 (2) (c)
opacity	10 percent	Calculated as the rolling arithmetic average of six (6) minutes of data measured by a CEM System that provides data at least once every minute
	5 percent	Calculated as the rolling arithmetic average of two (2) hours of data measured by a CEM System that provides data at least once every

		fifteen minutes

mg/Rm3- milligrams per reference cubic metre;

pg/Rm3 - picograms per reference cubic metre

ppmdv parts per million by dry volume,

µg/Rm3 - micrograms per reference cubic metre

R- reference conditions - 25 degrees Celsius, 101.3 kilopascals, dry basis, 11% oxygen

SCHEDULE "D"

TEST CONTAMINANTS

Hydrogen Chloride
Hydrogen Fluoride
Oxides of Nitrogen expressed as Nitrogen Dioxide
Sulphur Dioxide
Total Hydrocarbons, expressed as methane on wet basis
Carbon Dioxide
Total Suspended Particulate Matter (< 44 microns)
Total PM-10 including condensables
Total PM-2.5 including condensables

Metals

Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Copper
Lead
Mercury
Molybdenum
Nickel
Selenium
Silver
Thallium
Vanadium
Zinc

Schedule "D" - Cont'd

Chlorobenzenes	Chlorophenols
Monochlorobenzene (MCB) 1,2-Dichlorobenzene (1,2-DCB) 1,3-Dichlorobenzene (1,3-DCB) 1,4-Dichlorobenzene (1,4-DCB) 1,2,3-Trichlorobenzene (1,2,3-TCB) 1,2,4-Trichlorobenzene (1,2,4-TCB) 1,3,5-Trichlorobenzene (1,3,5-TCB) 1,2,3,4-Tetrachlorobenzene (1,2,3,4-TeCB) 1,2,3,5-Tetrachlorobenzene (1,2,3,5-TeCB) 1,2,4,5-Tetrachlorobenzene (1,2,4,5-TeCB) Pentachlorobenzene (PeCB) Hexachlorobenzene (HxCB)	2-monochlorophenol (2-MCP) 3-monochlorophenol (3-MCP) 4-monochlorophenol (4-MCP) 2,3-dichlorophenol (2,3-DCP) 2,4-dichlorophenol (2,4-DCP) 2,5-dichlorophenol (2,5-DCP) 2,6-dichlorophenol (2,6-DCP) 3,4-dichlorophenol (3,4-DCP) 3,5-dichlorophenol (3,5-DCP) 2,3,4-trichlorophenol (2,3,4-T3CP) 2,3,5-trichlorophenol (2,3,5-T3CP) 2,3,6-trichlorophenol (2,3,6-T3CP) 2,4,5-trichlorophenol (2,4,5-T3CP) 2,4,6-trichlorophenol (2,4,6-T3CP) 3,4,5-trichlorophenol (3,4,5-T3CP) 2,3,4,5-tetrachlorophenol (2,3,4,5-T4CP) 2,3,4,6-tetrachlorophenol (2,3,4,6-T4CP) 2,3,5,6-tetrachlorophenol (2,3,5,6-T4CP) Pentachlorophenol (PeCP)

Schedule "D" - Cont'd

Co-Planar PCBs (Dioxin-like PCBs)	Volatile Organic Matter
PCB-077 (3,3',4,4'-TCB)	Acetaldehyde
PCB-081 (3,4,4',5-TCB)	Acetone
PCB-105 (2,3,3',4,4'-PeCB)	Acrolein
PCB-114 (2,3,4,4',5-PeCB)	Benzene
PCB-118 (2,3',4,4',5-PeCB)	Bromodichloromethane
PCB-123 (2',3,4,4',5-PeCB)	Bromoform
PCB-126 (3,3',4,4',5-PeCB)	Bromomethane
PCB-156 (2,3,3',4,4',5-HxCB)	Butadiene, 1,3 -
PCB-157 (2,3,3',4,4',5'-HxCB)	Butanone, 2 -
PCB-167 (2,3',4,4',5,5'-HxCB)	Carbon Tetrachloride
PCB-169 (3,3',4,4',5,5'-HxCB)	Chloroform
PCB-189 (2,3,3',4,4',5,5'-HpCB)	Cumene
	Dibromochloromethane
	Dichlorodifluoromethane
	Dichloroethane, 1,2 -
	Dichloroethene, Trans - 1,2
	Dichloroethene, 1,1 -
	Dichloropropane, 1,2 -
	Ethylbenzene
	Ethylene Dibromide
	Formaldehyde
	Mesitylene
	Methylene Chloride
	Styrene
	Tetrachloroethene
	Toluene
	Trichloroethane, 1,1,1 -
	Trichloroethene
	Trichloroethylene, 1,1,2 -
	Trichlorotrifluoroethane
	Trichlorofluoromethane
	Xylenes, M-, P- and O-
	Vinyl Chloride

Schedule "D" - Cont'd

Polycyclic Organic Matter	Dioxin/Furan Isomers
Acenaphthylene	
Acenaphthene	2,3,7,8-Tetrachlorodibenzo-p-dioxin
Anthracene	1,2,3,7,8-Pentachlorodibenzo-p-dioxin
Benzo(a)anthracene	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin
Benzo(b)fluoranthene	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin
Benzo(k)fluoranthene	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin
Benzo(a)fluorene	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
Benzo(b)fluorene	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin
Benzo(ghi)perylene	
Benzo(a)pyrene	2,3,7,8-Tetrachlorodibenzofuran
Benzo(e)pyrene	2,3,4,7,8-Pentachlorodibenzofuran
Biphenyl	1,2,3,7,8-Pentachlorodibenzofuran
2-Chloronaphthalene	1,2,3,4,7,8-Hexachlorodibenzofuran
Chrysene	1,2,3,6,7,8-Hexachlorodibenzofuran
Coronene	1,2,3,7,8,9-Hexachlorodibenzofuran
Dibenzo(a,c)anthracene	2,3,4,6,7,8-Hexachlorodibenzofuran
Dibenzo(a,h)anthracene	1,2,3,4,6,7,8-Heptachlorodibenzofuran
Dibenzo(a,e)pyrene	1,2,3,4,7,8,9-Heptachlorodibenzofuran
9,10-Dimethylanthracene	1,2,3,4,6,7,8,9-Octachlorodibenzofuran
7,12-Dimethylbenzo(a)anthracene	
Fluoranthene	
Fluorene	
Indeno(1,2,3-cd)pyrene	
2-Methylanthracene	
3-Methylcholanthrene	
1-Methylnaphthalene	
2-Methylnaphthalene	
1-Methylphenanthrene	
9-Methylphenanthrene	
Naphthalene	
Perylene	
Phenanthrene	
Picene	
Pyrene	
Tetralin	
M-terphenyl	
O-terphenyl	
P-terphenyl	
Triphenylene	

SCHEDULE "E"

SOURCE TESTING PROCEDURES

1. The Owner shall submit, to the Manager a test protocol including the Pre-Test Information required by the Source Testing Code, at least two (2) months prior to the scheduled Source Testing date.

2. (1) For the purpose of the Source Testing program, the Owner is temporarily permitted to operate the Boilers at a residual oxygen concentration below the performance limit outlined in Condition 6.(2)(b) during the period of the Source Testing. The Owner shall ensure that the concentration of residual oxygen in the Undiluted Gases leaving the combustion zone of the Boilers, as measured and recorded by the CEM System, shall not be less than 5 percent by volume on a dry basis, during this Source Testing program.

   (2) If the Source Testing results demonstrate that compliance with the Performance Requirements can be maintained at a residual oxygen concentration below the performance limit outlined in Condition 6.(2)(b), the Owner may apply to the Director for approval to alter the required residual oxygen concentration.

3. The Owner shall finalize the test protocol in consultation with the Manager.

4. The Owner shall not commence the Source Testing until the Manager has accepted the test protocol.

5. The Owner shall complete the first Source Testing not later than six (6) months after Commencement of Operation of the Facility/Equipment.

6. The Owner shall conduct subsequent Source Testing at least once (1) every calendar year thereafter.

7. The Owner shall notify the District Manager and the Manager in writing of the location, date and time of any impending Source Testing required by this Certificate, at least fifteen (15) days prior to the Source Testing.

8. The Owner shall submit a report on the Source Testing programs to the District Manager and the Manager not later than three (3) months after completing each Source Testing program. The report shall be in the format described in the Source Testing Code, and shall also include, but not be limited to:

   (1) an executive summary;
   (2) records of operating conditions; including process description, records of waste composition and feed rate during the Source Testing;
   (3) all records produced by the CEM Equipment;
   (4) procedures followed during the Source Testing and any deviation from the proposed test protocol and the reasons therefore;
   (5) the results of the analyses of the stack emissions;

(6) a summary table that compares the Source Testing results, the monitoring data and the records of operating conditions during the Source Testing to the requirements imposed by the *EPA*, the Regulation and/or the Performance Requirements;

(7) the results of dispersion calculations in accordance with the *O. Reg. 419/05*, indicating the maximum concentration of the Test Contaminants, at the Point of Impingement.

(8) an updated site wide emission source inventory to assess the aggregate point of impingement concentrations of the Test Contaminants.

9. The Owner shall ensure that the Source Testing Report is made available and easily accessible for review by the public at the Facility, immediately after the document is submitted to the Ministry.

10. The Director may not accept the results of the Source Testing if:

(1) the Source Testing Code or the requirements of the Manager were not followed; or

(2) the Owner did not notify the District Manager and the Manager of the Source Testing; or

(3) the Owner failed to provide a complete report on the Source Testing.

11. If the Director does not accept the results of the Source Testing, the Director may require re-testing.

SCHEDULE "F"

PARAMETER:
Temperature

LOCATION:
The sample point for the Continuous Temperature Monitor shall be located at a point where the temperature in the combustion zone of the Boilers has reached at least 1000°C for a period of not less than one second. Compliance shall be proven by direct measurement or/and a correlation between the measured temperature and the intended target proven by a method acceptable to the Director.

PERFORMANCE:
The Continuous Temperature Monitor shall meet the following minimum performance specifications for the following parameters.

	PARAMETERS	SPECIFICATION
1)	Type:	"K", "J" or other type or alternative measurement device with equivalent measurement accuracy and suitable to the temperature range being measured
2)	Accuracy:	± 1.5 percent of the minimum gas temperature

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor without a significant loss of accuracy and with a time resolution of 1 minutes or better. Temperature readings for record keeping and reporting purposes shall be kept as one-hour average values.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 95 percent of the time for each calendar quarter.

PARAMETER:
Carbon Monoxide

INSTALLATION:
The Continuous Carbon Monoxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (parts per million, ppm):	0 to ≥100 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Carbon Monoxide Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤10 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3) Calibration Error:	≤ 2.5 percent of actual concentration
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 5 percent of span value
7) Span Calibration Drift (24-hour):	≤5 percent of span value
8) Response Time (90 percent response to a step change):	≤180 seconds
9) Operational Test Period:	≥168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:
Oxygen

INSTALLATION:
The Continuous Oxygen Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of oxygen in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler and in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (percentage):	0 - 20 or 0 - 25
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Oxygen Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (percentage):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤10 percent of the mean value of the reference method test data
3) Calibration Error:	0.25 percent O_2
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 0.5 percent O_2
7) Span Calibration Drift (24-hour):	≤ 0.5 percent O_2
8) Response Time (90 percent response to a step change):	≤ 90 seconds
9) Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better. Oxygen concentration readings for record keeping and reporting purposes shall be kept as one-hour average values.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:
Hydrogen Chloride

INSTALLATION:
The Continuous Hydrogen Chloride Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of hydrogen chloride in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (parts per million, ppm):	0 to ≥100 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Hydrogen Chloride Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤ 20 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3) Calibration Error:	≤ 2 percent of actual concentration
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 5 percent of span value
7) Span Calibration Drift (24-hour):	≤ 5 percent of span value
8) Response Time (90 percent response to a step change):	≤ 240 seconds
9) Operational Test Period:	≥168 hours without corrective maintenance

CALIBRATION:
The monitor shall be calibrated daily at the sample point, to ensure that it meets the drift limits specified above, during the periods of the operation of the . The results of all calibrations shall be recorded at the time of calibration.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 5 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:
Nitrogen Oxides

INSTALLATION:
The Continuous Nitrogen Oxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of nitrogen oxides in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Analyzer Operating Range (parts per million, ppm):	0 to ≥200 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Nitrogen Oxides Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data
3) Calibration Error:	≤ 2 percent of actual concentration
4) System Bias:	≤4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 2.5 percent of span value
7) Span Calibration Drift (24-hour):	≤ 2.5 percent of span value
8) Response Time (90 percent response to a step change):	≤ 240 seconds
9) Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:
Sulphur Dioxide

INSTALLATION:
The Continuous Sulphur Dioxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of sulphur dioxide in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1. Range (parts per million, ppm):	0 to ≥100 ppm
2. Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Sulphur Dioxide Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1. Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2. Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data
3. Calibration Error:	≤ 2 percent of actual concentration
4. System Bias:	≤ 4 percent of the mean value of the reference method test data
5. Procedure for Zero and Span Calibration Check:	all system components checked
6. Zero Calibration Drift (24-hour):	≤ 2.5 percent of span value
7. Span Calibration Drift (24-hour):	≤ 2.5 percent of span value
8. Response Time (90 percent response to a step change):	≤ 200 seconds
9. Operational Test Period:	≥168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:
Total Hydrocarbons

INSTALLATION:
The Total Hydrocarbons Monitor shall be installed at an accessible location where the measurements are representative of the concentrations of Organic Matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler and shall meet the following installation specifications.

	PARAMETERS	**SPECIFICATION**
1.	Detector Type:	Flame Ionization
2.	Oven Temperature:	160°C minimum
3.	Flame Temperature:	1800 °C minimum at the corona of the hydrogen flame
4.	Range (parts per million, ppm):	0 to ≥200 ppm
5.	Calibration Gas:	propane in air or nitrogen
6.	Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Total Hydrocarbons Monitor shall meet the following minimum performance specifications for the following parameters.

	PARAMETERS	**SPECIFICATION**
1.	Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2.	Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3.	System Bias:	≤ 4 percent of the mean value of the reference method test data
4.	Noise:	≤ 1 percent of span value on most sensitive range
5.	Repeatability:	≤ 1 percent of span value
6.	Linearity (response with propane in air):	≤ 3 percent of span value over all ranges
7.	Calibration Error:	≤ 2 percent of actual concentration
8.	Procedure for Zero and Span Calibration Check:	all system components checked on all ranges
9.	Zero Calibration Drift (24-hours):	≤ 2.5 percent of span value on all ranges
10.	Span Calibration Drift (24-hours):	≤ 2.5 percent of span value
11.	Response Time (90 percent response to a step change):	≤ 60 seconds
12.	Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better. Measurements of concentrations of organic matter (as methane) shall be kept as 10 minute average values for record keeping and reporting purposes.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER: Opacity

INSTALLATION: The Continuous Opacity Monitor shall be installed at an accessible location where the measurements are representative of the actual opacity of the Undiluted Gases leaving the APC Equipment associated with each Boiler and shall meet the following design and installation specifications.

PARAMETERS		SPECIFICATION
1)	Wavelength at Peak Spectral Response (nanometres, nm):	500 - 600
2)	Wavelength at Mean Spectral Response (nm):	500 - 600
3)	Detector Angle of View:	≤ 5 degrees
4)	Angle of Projection:	≤ 5 degrees
5)	Range (percent of opacity):	0 -100

PERFORMANCE:
The Continuous Opacity Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS		SPECIFICATION
1)	Span Value (percent opacity):	2 times the average normal opacity of the source
2)	Calibration Error:	≤3 percent opacity
3)	Attenuator Calibration:	≤2 percent opacity
4)	Response Time (95 percent response to a step change):	≤ 10 seconds
5)	Schedule for Zero and Calibration Checks:	daily minimum
6)	Procedure for Zero and Calibration Checks:	all system components checked
7)	Zero Calibration Drift (24-hours):	≤ 2 percent opacity
8)	Span Calibration Drift (24-hours):	≤ 2 percent opacity
9)	Conditioning Test Period:	≥ 168 hours without corrective maintenance
10)	Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
The monitor shall be calibrated, to ensure that it meets the drift limits specified above, during the periods of the operation of the Equipment. The results of all calibrations shall be recorded at the time of calibration.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 30 seconds or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:
Moisture, Hydrogen Fluoride and Ammonia

Selection and Installation

The Owner shall select and install a CEM System, to measure moisture content of the stack gases, the concentration of hydrogen fluoride and ammonia in the Undiluted Gases leaving the APC Equipment associated with each Boiler, as follows:

a) Design and Performance Specifications shall be in accordance with 40 CFR 60, Appendix B, Specification 4.

b) The Owner shall select the probe locations in compliance with 40 CFR 60, Appendix B, Specification 2.

Test Procedures

The Owner shall verify compliance with the Design and Performance Specifications in accordance with 40 CFR 60, Appendix B, Specification 4, with the reference method for the relative accuracy test being Method 4. of the Source Testing Code.

In furtherance of, but without limiting the generality of the foregoing, the mean difference between the calibration gas value and the analyzer response value at each of the four test concentrations shall be less than 5 percent of the measurement range.

SCHEDULE "G"

A stormwater management facility to service a 10.0 ha drainage area of the Durham York Energy Centre located on the west side of Osbourne Road and north of the CN Rail, Lot 27, Concession Broken Front, Part, Municipality of Clarington, Regional Municipality of Durham, designed to provide quality and quantity control of stormwater run-off by attenuating runoff from storm events up to 1:100 years return frequency to or below the pre-development levels, consisting of:

East Stormwater Management Pond (East SWM Pond)

A stormwater management facility to service a 5.7 ha drainage area comprising of the eastern part of the Durham York Energy Centre consisting of the following:

- one (1) approximately 128 m long drainage ditch collecting stormwater runoff from the north eastern part of the site, having an average horizontal slope of 1.56%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- one (1) approximately 199 m long drainage ditch collecting stormwater runoff from the eastern part of the site, having an average horizontal slope of 2.77%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- approximately fourteen (14) catch basins/maintenance holes and a total of 466.8 m long 450 mm diameter and 34.6 m of 600 mm diameter corrugated PE stormwater sewers conveying stormwater runoff collected from the north and north eastern part of the site, discharging to a forebay of a wet extended detention stormwater management pond described below;

- one (1) forebay with approximate bottom dimensions of 11.0 m wide and 34.8 m long and depth of 1.0 m, equipped with 600 mm diameter corrugated HDPE inlet pipe, a rip-rap covered inlet structure, and a forebay berm with top elevation of 95.0 m masl, discharging to a wet extended detention pond described below;

- one (1) wet extended detention stormwater management pond located at the south east part of the site, with approximate bottom dimensions of 21.0 m wide and 71.4 m long and a maximum depth of 2.7 m at 96.70 m masl elevation, having side slopes of 3H:1V and 5H:1V near the outlet structure, providing a permanent pool storage capacity of 1,008 m^3 at elevation 95.0 m masl, an active storage capacity of 3,099 m^3 at 96.70 m masl elevation, and total storage capacity of 4,107 m^3, equipped with an outlet structure consisting of a 150 mm diameter reverse slope inlet pipe with a gate valve and a 450 mm diameter perforated pipe riser fitted with 75 mm diameter orifice plate, a 75 mm diameter maintenance discharge pipe with a gate valve, and an emergency overflow structure at elevation 97.0 m masl, discharging through a 450 mm diameter outlet pipe to existing swale along the northern side of the CN Rail line to Tooley Creek and eventually to Lake Ontario;

West Stormwater Management Pond (West SWM Pond)

A stormwater management facility to service a 4.3 ha drainage area comprising of the western part of the Durham York Energy Centre consisting of the following:

- one (1) approximately 296 m long drainage ditch collecting stormwater runoff from the north western part of the site, having an average horizontal slope of 1.0%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- approximately five (5) catch basins/maintenance holes and a total of 272.2 m long 450 mm diameter corrugated PE stormwater sewers conveying stormwater runoff collected from the western part of the site, discharging to a forebay of a wet extended detention stormwater management pond described below;

- one (1) forebay with approximate bottom dimensions of 13.0 m wide and 26.0 m long and depth of 1.0 m, equipped with 450 mm diameter corrugated HDPE inlet pipe, a rip-rap covered inlet structure, and a forebay berm with top elevation of 95.0 m masl, discharging to a wet extended detention pond described below;

- one (1) wet extended detention stormwater management pond located at the south western part of the site, with approximate bottom dimensions of 13.0 m wide and 58.0 m long and a maximum depth of 2.5 m at 96.5 m masl elevation, having side slopes of 3H:1V and 5H:1V near the outlet structure, providing a permanent storage capacity of 623 m^3 at elevation 95.0 m masl, an active storage capacity of 2,054 m^3 at 96.50 m masl elevation, and total storage capacity of 2,677 m^3, equipped with an outlet structure consisting of a 150 mm diameter reverse slope inlet pipe with a gate valve and a 450 mm diameter perforated pipe riser fitted with 75 mm diameter orifice plate, a 75 mm diameter maintenance discharge pipe with a gate valve, and an emergency overflow structure at elevation 96.80 m masl, discharging through a 450 mm diameter outlet pipe to existing swale along the northern side of the CN Rail line to Tooley Creek and eventually to Lake Ontario;

including all associated controls and appurtenances.

The reasons for the imposition of these terms and conditions are as follows:

GENERAL

Conditions 1.(1), (2), (5), (6), (7), (8), (9), (10), (11), (12), (13), (17), (18) and (19) are included to clarify the legal rights and responsibilities of the Owner.

Conditions Nos.1.(3) and (4) are included to ensure that the Site is operated in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.

Condition No. 1.(14) is included to ensure that the Site is operated under the corporate name which appears on the application form submitted for this approval and to ensure that the Director is informed of any changes.

Condition No.1.(15) is included to restrict potential transfer or encumbrance of the Site without the notification to the Director and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this Certificate.

Condition No. 1.(16) is included to ensure that the appropriate Ministry staff has ready access to the operations of the Site which are approved under this Certificate. The Condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the *EPA*, the *OWRA*, the *PA*, the *NMA* and the *SDWA*.

SERVICE AREA, APPROVED WASTE TYPES, RATES and STORAGE

Condition No. 2. is included to specify the approved waste receipt rates, the approved waste types and the service area from which waste may be accepted at the Site based on the Owner's application and supporting documentation. Condition No. 2. is also included to specify the maximum amount of waste that is approved to be stored at the Site.

SIGNS and SITE SECURITY

Condition No. 3. is included to ensure that the Site's users, operators and the public are fully aware of important information and restrictions related to the operation of the Site. Condition No. 3. is also included to ensure that the Site is sufficiently secured, supervised and operated by properly trained personnel and to ensure controlled access and integrity of the Site by preventing unauthorized access when the Site is closed and no site personnel is on duty.

SITE OPERATIONS

Condition No. 4. is included to outline the operational requirements for the Facility to ensure that the said operation does not result in an adverse effect or a hazard to the natural environment or any person.

EQUIPMENT and SITE INSPECTIONS and MAINTENANCE

Condition No. 5. is included to require the Site to be maintained and inspected thoroughly on a regular basis to ensure that the operations at the Site are undertaken in a manner which does not result in an adverse effect or a hazard to the health and safety of the environment or any person.

PERFORMANCE REQUIREMENTS

Condition No. 6 is included to set out the minimum performance requirements considered necessary to prevent an adverse effect resulting from the operation of the Facility.

TESTING, MONITORING and AUDITING

Condition No. 7. is to require the Owner to gather accurate information on the operation of the Facility so that the environmental impact and subsequent compliance with the *EPA*, the *OWRA*, their Regulations and this Certificate can be verified.

NUISANCE IMPACT CONTROL and HOUSEKEEPING

Condition No. 8. is included to ensure that the Site is operated and maintained in an environmentally acceptable manner which does not result in a negative impact on the natural environment or any person. Condition No. 8 is also included to specify odour control measures to minimize a potential for odour emissions from the Site.

STAFF TRAINING

Condition No. 9. is included to ensure that staff are properly trained in the operation of the equipment and instrumentation used at the Site, in the emergency response procedures and on the requirements and restrictions related to the Site operations under this Certificate.

COMPLAINTS RECORDING PROCEDURE

Condition No.10. is included to require the Owner to respond to any environmental complaints resulting from the Facility appropriately and in a timely manner and that appropriate actions are taken to prevent any further incidents that may cause complaints in the future.

CONTINGENCY and EMERGENCY RESPONSE PLAN and EMERGENCY SITUATIONS RESPONSE AND REPORTING

Conditions Nos.11. and 12. are included to ensure that the Owner is prepared and properly equipped to take immediate action in the event of an emergency situation.

SUBMISSIONS to the REGIONAL DIRECTOR or DISTRICT MANAGER

Condition No. 13. is included to set out the requirements for the submissions to the District Manager and the Regional Director regarding the operation of the Facility and the activities required by this Certificate.

RECORDS KEEPING

Condition No.14. is included to ensure that detailed records of Site activities, inspections, monitoring and upsets are recorded and maintained for inspection and information purposes.

REPORTING

Condition No.15. is to ensure that regular review of site, operations and monitoring is carried out and findings documented by a third party for determining whether or not the Site is being operated in compliance with this Certificate of Approval, the EPA and its regulations and whether or not any changes should be considered.

PUBLIC ACCESS to DOCUMENTATION

Condition No.16. is included to ensure that the public has access to information on the operation of the Site in order to participate in the activities of the Advisory Committee in a meaningful and effective way.

ADVISORY COMMITTEE

Condition No.17. is included to require the Owner to establish a forum for the exchange of information and public dialogue on activities carried out at the Site and to ensure that the local residents are properly informed of the activities at the Site and that their concerns can be heard and acted upon , as necessary. Open communication with the public and local authorities is important in helping to maintain high standards for the operation of the Site and protection of the natural environment. Condition 16. is also included to ensure that the requirements of the EA Approval are fulfilled.

CLOSURE of the SITE

Condition No.18. is included to ensure that the final closure of the Site is completed in accordance with Ministry's standards.

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, and in accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, you may by written Notice served upon me, the Environmental Review Tribunal, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 142 of the Environmental Protection Act and Section 101 of the

Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary* Environmental Review Tribunal 655 Bay Street, 15th Floor Toronto, Ontario M5G 1E5	AND	The Director Section 9 and 39, *Environmental Protection Act* Section 53, *Ontario Water Resources Act* Ministry of the Environment 2 St. Clair Avenue West, Floor 12A Toronto, Ontario M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted site is approved under Section 9 and Section 27 of the Environmental Protection Act and Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 28th day of June, 2011

Signature
Ian Parrott, P .Eng.
Director
Section 9, *EPA*
Section 39, *EPA*
Section 53, *OWRA*

MW,QN,SH/

c: District Manager, MOE York-Durham
Regional Director, MOE Central Region

APPENDIX 8

Cyclonic and Reverse Flow Field Data Sheets
(4 pages)

Cyclonic/Reverse Flow Data Sheet

Method 2: SOP Number 93-T62-SP-002

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.	1
Test Date	SEPT. 22 2015
Test Location	UNIT #4 INLET
Operator CB RW	Signature CHRIS BELORE

Project No.	21546

Pitot ID	15C
Pitot Factor	.845

Barometric ("Hg)	
Static ("H_2O)	-2.25
Time	17:25

Measuring Device	MII Number
Probe/Pitot	B03777
Manometer	B03784
Temperature Indicator	COE 20032
Barometer	ENV. CANADA

O2 (%)	
CO2 (%)	
CO (ppm)	

Point Number	Delta P			Stack Temp	Delta P at 90°	Angle from 90° to
	" H_2O			°F	"H_2O	obtain 0"H_2O
	Delta P	Max	Min			
Traverse 1						
FAR 1	.38	.39	.37	328	.09	9
2	.46	.47	.45	330	.07	9
3	.50	.51	.49	330	.08	9
4	.52	.52	.51	330	.06	9
5	.53	.53	.52	330	.08	10
6	.52	.53	.51	330	.07	9
7	.69	.70	.66	330	.07	8
8	.75	.75	.74	330	.02	5
9	.71	.72	.70	330	0	0
10	.68	.68	.67	330	0	0
11	.55	.56	.54	326	-.02	7
12	.47	.48	.46	322	-.03	5
Traverse 2						
FAR 1	.58	.59	.57	335	.05	7
2	.63	.64	.62	337	.02	7
3	.65	.65	.64	337	.04	8
4	.63	.64	.62	337	.03	8
5	.63	.64	.62	337	.03	8
6	.58	.59	.57	337	.05	2
7	.66	.66	.64	337	.07	6
8	.74	.75	.74	337	.04	9
9	.84	.85	.84	338	.04	9
10	.84	.85	.84	338	0	0
11	.74	.75	.73	333	-.04	8
12	.74	.75	.72	330	-.05	8

Average Angle (°)	6.6

Notes: Flow cyclonic if average angle >15°

Cyclonic/Reverse Flow Data Sheet

Method 2: SOP Number 93-T62-SP-002

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.	1
Test Date	SEPT. 22 / 2015
Test Location	UNIT 1 OUTLET
Operator DM / CB	Signature C. BELOTE

Project No.	21546

Pitot ID	15C
Pitot Factor	0.845

Measuring Device	MII Number
Probe/Pitot	B03777
Manometer	B03784
Temperature Indicator	CDE 20032
Barometer	ENV. CANADA

Barometric ("Hg)	
Static ("H_2O)	-11.1
Time	09:50 - 10:35

O2 (%)	
CO2 (%)	
CO (ppm)	

09:50 - 10:15

Point Number	Delta P			Stack Temp	Delta P at 90°	Angle from 90° to
	" H_2O			°F	"H_2O	obtain 0"H_2O
	Delta P	Max	Min			
Traverse 1						
1	.67	.68	.66	274	.11	6
2	.76	.77	.76	275	.07	9
3	.76	.77	.76	276	.06	8
4	.72	.73	.71	276	.06	8
5	.70	.72	.70	276	.08	10
6	.67	.67	.64	276	.08	12
7	.56	.57	.55	276	.10	14
8	.60	.61	.59	276	.07	14
9	.63	.64	.61	275	.08	12
10	.58	.59	.58	273	.03	10
11	.57	.58	.57	272	-0.02	0
12	~~.45~~ 51	.52	.50	272	~~.00~~ 0	~~20~~ 0
Traverse 2						
1	.66	.66	.65	277	.13	11
2	.73	.74	.73	277	.10	14
3	.75	.76	.74	277	.06	9
4	.71	.72	.70	277	.07	8
5	.67	.67	.66	277	.10	8
6	.61	.62	.60	277	.07	8
7	.61	.62	.60	277	.05	7
8	.62	.63	.61	277	.10	7
9	.66	.66	.65	272	.09	8
10	.61	.62	.60	274	.04	7
11	.61	.62	.60	271	.08	12
12	.55	.56	.54	270	.01	8

7.7

10:18 - 10:35

Average Angle (°)	~~7.6~~ 8.8

Notes: Flow cyclonic if average angle > 15°

Cyclonic/Reverse Flow Data Sheet

Method 2: SOP Number 93-T62-SP-002

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.	1
Test Date	SEPT. 22, 2015
Test Location	UNIT 2 INLET
Operator	Signature CR RW

Project No.	21546

Pitot ID	15 C
Pitot Factor	.845

Barometric ("Hg)	
Static ("H_2O)	3.10
Time	17:00 - 17:30

Measuring Device	MII Number
Probe/Pitot	B03777
Manometer	B03784
Temperature Indicator	COE 20032
Barometer	ENV. CANADA

O2 (%)	
CO2 (%)	
CO (ppm)	

FRC

Point Number	Delta P			Stack Temp	Delta P at 90°	Angle from 90° to
	" H_2O			°F	"H_2O	obtain 0"H_2O
	Delta P	Max	Min			
Traverse 1						
1	.61	.62	.60	330	.12	10
2	.63	.64	.63	330	.10	8
3	.66	.67	.65	330	.08	9
4	.68	.69	.67	330	.10	7
5	.63	.64	.62	330	.08	8
6	.62	.64	.61	330	.08	8
7	.78	.79	.77	330	.12	9
8	.87	.87	.86	330	.10	9
9	.90	.91	.90	330	.07	10
10	.90	.91	.89	330	0	0
11	.78	.79	.77	330	-.03	7
12	.76	.77	.75	330	-.05	6
Traverse 2						
1	.66	.67	.65	332	.07	9
2	.65	.65	.64	333	.06	9
3	.65	.66	.64	333	.08	10
4	.66	.67	.65	333	.09	10
5	.67	.67	.66	333	.10	11
6	.65	.66	.65	333	.14	12
7	.84	.86	.83	332	.10	11
8	.91	.92	.90	332	.10	11
9	.97	.97	.95	332	.07	11
10	.91	.91	.90	331	.05	17
11	.84	.85	.83	333	0	0
12	.68	.69	.67	320	0	0

Average Angle (°)	8.4

Notes: Flow cyclonic if average angle >15°

Cyclonic/Reverse Flow Data Sheet

Method 2: SOP Number 93-T62-SP-002

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.	1
Test Date	SEPT. 22 2015
Test Location	UNIT No. 2 OUTLET.
Operator	Signature CB DH

Project No.	21546

Pitot ID	15C
Pitot Factor	0.845

Barometric ("Hg)	
Static ("H_2O)	-12.0
Time	10:41 - 11:10

Measuring Device	MII Number
Probe/Pitot	B03777
Manometer	B03784
Temperature Indicator	CAE 20032
Barometer	ENV. CANADA

O2 (%)	
CO2 (%)	
CO (ppm)	

10:41 - 10:56

	Point Number	Delta P "H_2O"			Stack Temp °F	Delta P at 90° "H_2O"	Angle from 90° to obtain 0"H_2O
		Delta P	Max	Min			
	Traverse 1						
FAR	1	.71	.72	.71	273	.08	6
	2	.83	.85	.83	273	.08	6
	3	.88	.89	.87	273	.07	8
	4	.82	.83	.81	273	.10	9
	5	.72	.73	.71	273	.11	11
	6	.68	.68	.67	273	.11	12
	7	.73	.74	.73	273	.11	12
	8	.74	.75	.74	273	.11	10
	9	.74	.75	.74	273	.07	5
	10	.75	.76	.74	273	.02	7
	11	.71	.71	.70	271	.06	7
NEAR	12	.67	.68	.66	268	.12	14
	Traverse 2						
FAR	1	.91	.92	.90	272	.19	8
	2	.93	.93	.92	273	.15	9
	3	.91	.92	.90	274	.11	8
	4	.85	.86	.84	274	.11	8
	5	.81	.82	.80	274	.11	8
	6	.75	.76	.74	274	.09	8
	7	.73	.73	.72	274	.11	6
	8	.79	.80	.78	274	.11	5
	9	.83	.84	.82	273	.10	7
	10	.83	.84	.82	271	.09	8
	11	.85	.86	.84	269	.09	7
NEAR	12	.79	.80	.78	267	.03	5

8.9

10:58 - 11:10

Average Angle (°)	8.1

Notes: Flow cyclonic if average angle >15°

APPENDIX 9

Metals Field Data Sheets
(24 pages)

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 1	Particulate/Metals
Test Date	Sept 30, 2015
Test Location	APC Outlet No. 1
Operator Signature	A Murdock

Project No.:	21546
Page	1 of 4
Probe No.:	6 series
Meter Box No.:	Team 1
Impinger Box No.:	~~H~~ 14

Pitot Factor	0.847	
DGMCF	1.017	
Barometric Pressure	~~100.90~~ 29.80	"Hg
Static Pressure	-11.2	"H2O
Nozzle Size	0.2545	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	324.5	g
WCBDA	14.2	g

Combustion Gas Concentration

Oxygen	7.91	%
Carbon Dioxide	11.23	%
Carbon Monoxide	15.5	ppm

Measuring Device	MII Numbers
Probe / Pitot	SP4BO4011
Trendicator	COE 20094
Control Box	Team 1
Incline Manometer	Team 1
Comb.Gas.Analyzer	MSML
Micromanometer	—
Barometer	Env. Can.
Calipers	BO3906

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements	
1	0.2545
2	0.2540
3	0.2550
4	0.2545
Average:	0.2545

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

~~Rev. November 27, 2014~~

Field Data Sheet

Date: Sept 30/15	Plant: Durham-York Energy Centre	Test No.: 1	Particulate/Metals	Page 2 of 4
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F * <170	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	82.81	0.84	0.76	281	247	254	45	203	70	69	1.6	3.0
	2.5	84.73	0.80	0.74	284	247	254	43	212	69	69	1.8	4.0
2	5	86.70	0.82	0.75	284	247	253	42	212	69	69	1.8	4.0
	7.5	88.43	0.82	0.75	283	247	253	42	212	69	69	1.8	4.0
3	10	90.29	0.76	0.72	283	248	254	42	233	70	69	1.8	4.0
	12.5	92.14	0.75	0.72	283	248	254	42	236	70	69	1.6	~~4.0~~ 3.5
4	15	93.92	0.71	0.70	283	248	254	42	236	71	69	1.6	3.5
	17.5	95.67	0.70	0.69	283	248	254	42	236	71	69	1.6	3.5
5	20	97.45	0.64	0.66	283	249	254	43	237	72	69	1.4	3.0
	22.5	99.17	0.64	0.66	284	248	253	43	236	73	69	1.4	3.0
6	25	100.79	0.64	0.66	282	247	256	51	204	69	68	1.5	3.0
	27.5	102.51	0.62	0.65	286	248	255	47	232	69	66	1.4	3.0
7	30	104.17	0.71	0.69	285	248	255	46	238	70	69	1.55	3.5
	32.5	105.91	0.71	0.70	284	248	255	46	239	70	69	1.55	3.5
8	35	107.67	0.71	0.70	284	248	255	46	239	71	70	1.55	3.5
	37.5	109.44	0.71	0.70	284	248	255	46	239	71	69	1.55	3.5
9	40	111.22	0.70	0.69	284	249	255	46	239	73	70	1.5	3.5
	42.5	112.99	0.70	0.69	283	248	255	46	239	73	70	1.5	3.5
10	45	114.71	0.68	0.68	282	248	255	46	239	74	70	1.5	3.5
	47.5	116.43	0.65	0.67	282	249	255	~~48~~ 47	238	74	70	1.5	3.5
11	50	118.13	0.66	0.68	282	249	255	47	238	75	70	1.5	3.5

Traverse: 2					
Start Time: 807	Initial Leak Check:	0.002	cfm@	14.0	"Hg
Finish Time: —	Final Leak Check:	—	cfm@	—	"Hg

Traverse: 3					
Start Time: —	Initial Leak Check:	—	cfm @	—	"Hg
Finish Time: —	Final Leak Check:	—	cfm @	—	"Hg

8:30 pump off
on@ 11:40

Project No.: 21546

Operator : AKM

Rev: April 28, 2005

ORTECH Environmental

Field Data Sheet

Date: Sept.30/15	Plant: Durham-York Energy Centre	Test No.: 1	Particulate/Metals	Page 3 of 4
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	* Clock Time	* Dry Gas Meter ft³	* Pitot Δ P "H_2O	Desired cfm	* Stack Temp °F	Probe Temp °F	Oven Temp °F	* Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	* Meter Temp Outlet °F	* Meter Temp Inlet °F	* Meter Pressure Δ H "H_2O	* Pump Vacuum "Hg Gauge
	52.5	119.81	0.60	0.65	282	252	257	49	239	77	72	1.4	3.5
12	55	121.46	0.55	0.62	277	249	254	47	236	76	71	1.2	3.0
	57.5	123.00	0.50	0.59	277	249	254	47	236	76	71	1.1	3.0
	60	124.52											
												1	
1	0	124.96	0.66	0.68	277	260	~~250~~ 240	257	201	74	72	1.4	3.0
	2.5	126.65	0.68	0.69	280	254	244	50	214	73	72	1.5	3.0
2	5	128.36	0.65	0.67	280	255	258	49	230	73	72	1.5	3.0
	7.5	129.94	0.68	0.69	280	254	252	48	235	74	72	1.5	3.0
3	10	131.79	0.68	0.69	282	253	250	49	236	74	72	1.5	3.0
	12.5	133.50	0.66	0.68	283	253	250	49	235	~~7~~75	72	1.5	3.0
4	15	135.18	0.65	0.67	283	253	250	50	234	76	72	1.5	3.0
	17.5	136.93	0.66	0.68	284	253	250	50	235	76	72	1.5	3.0
5	20	138.67	0.64	0.67	284	253	250	50	233	77	73	1.4	3.5
	22.5	140.37	0.64	0.67	285	253	251	50	233	78	73	1.4	3.5
6	25	142.15	0.64	0.67	285	252	250	50	234	78	73	1.2	3.0
	27.5	143.85	0.63	0.66	286	252	250	49	233	78	73	1.5	3.0
7	30	145.40	0.66	0.66	286	253	251	49	234	79	73	1.8	3.0
	32.5	147.16	0.67	0.68	287	252	251	49	236	79	74	1.6	3.0
8	35	148.98	0.71	0.70	287	253	252	49	~~234~~ 239	80	74	1.5	~~3.0~~ 4.0
	37.5	150.72	0.71	0.70	287	252	252	50	230	79	74	1.6	4.0

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 12:17	Final Leak Check: 0.002	cfm@ 10	"Hg

Traverse: 1			
Start Time: 12:46	Initial Leak Check: 0.002	cfm @ 10	"Hg
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21546

Operator : AKM

Field Data Sheet

Date: Sept 30/15	Plant: Durham-York Energy Centre	Test No.: 21	Particulate/Metals	Page 4 of 4
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
9	40	152.47	0.75	0.72	288	253	252	51	235	80	74	1.8	4.0
	42.5	154.32	0.78	0.74	288	253	253	52	236	80	74	1.7	4.0
10	45	156.15	0.81	0.75	289	253	252	51	236	80	75	1.8	4.0
	47.5	158.02	0.81	0.75	288	253	253	52	236	80	74	1.8	4.0
11	50	159.92	0.80	0.75	288	253	252	53	236	80	75	1.8	4.0
	52.5	161.82	0.81	0.75	288	253	251	53	236	81	75	1.8	4.0
12	55	163.71	0.80	0.75	286	253	253	53	236	81	75	1.8	4.0
	57.5	165.59	0.76	0.73	286	253	252	54	236	81	75	1.8	4.0
	60	167.58											

Traverse:			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg

Traverse: 1			
Start Time: —	Initial Leak Check: —	cfm @ —	"Hg
Finish Time: 13:48	Final Leak Check: 0.003	cfm @ 10	"Hg

Project No.: 21546

Operator : AKM

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 2	Particulate/Metals
Test Date	Sept. 30, 2015
Test Location	APC Outlet No. 1
Operator Signature	A Murdock

Project No.:	21546
Page	1 of 4
Probe No.:	6 series
Meter Box No.:	Team 1
Impinger Box No.:	5

Pitot Factor	0.847	
DGMCF	1.617	
Barometric Pressure	~~101.08~~ 29.83	"Hg
Static Pressure	-11.2	"H2O
Nozzle Size	0.2515	inches
Stack Diameter	4.5	feet
Length	–	feet
Width	–	feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	350.7	g
WCBDA	13.1	g

Combustion Gas Concentration

Oxygen	7.92	%
Carbon Dioxide	11.12	%
Carbon Monoxide	21.3	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST
Incline Manometer	
Comb.Gas.Analyzer	1
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements

1 SEE
2 TEST
3 1
4
Average:

Notes:

Field Data Sheet

Date: Sept 30/15	Plant: Durham-York Energy Centre	Test No.: 2	Particulate/Metals	Page 2 of 4
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	167.94	0.79	0.74	281	257	253	~~60~~ 62	~~64~~ 143	75	75	1.7	2.5
	2.5	169.81	0.81	0.75	285	255	252	59	189	75	74	1.8	2.5
2	5	171.69	0.80	0.75	285	257	253	57	204	76	75	1.8	2.5
	7.5	173.58	0.80	0.75	284	256	254	58	211	~~65~~ 76	75	1.8	2.5
3	10	175.46	0.78	0.74	287	257	254	59	214	77	75	1.8	2.5
	12.5	177.33	0.80	0.75	285	257	254	58	213	77	76	1.8	2.5
4	15	179 ~~179.2~~	0.77	0.73	284	257	255	58	213	78	76	1.8	2.5
	17.5	181.07	0.79	0.74	285	257	255	58	214	80	75	1.8	2.5
5	20	182.94	0.73	0.71	286	257	255	58	213	80	76	1.8	2.5
	22.5	184.81	0.72	0.71	286	257	255	58	214	81	76	1.6	2.5
6	25	186.62	0.68	0.69	286	257	255	58	214	81	76	1.5	2.5
	27.5	188.32	0.75	0.73	286	257	254	58	213	82	76	1.7	2.5
7	30	190.14	0.68	0.69	286	257	255	58	213	81	77	1.6	2.5
	32.5	191.91	0.68	0.69	286	257	255	~~60~~ 58	213	82	77	1.6	2.5
8	35	193.67	0.73	0.72	285	256	255	58	212	82	77	1.7	2.5
	37.5	195.46	0.76	0.73	285	257	255	57	213	82	77	1.7	2.5
9	40	197.30	0.78	0.74	285	257	255	57	213	83	76	1.7	2.5
	42.5	199.14	0.80	0.75	293	261	257	60	214	83	78	1.8	2.5
10	45	201.04	0.80	0.75	285	257	255	58	233	83	78	1.8	3.0
	47.5	202.94	0.76	0.73	285	256	255	58	235	83	78	1.7	3.0
11	50	204.81	0.76	0.73	285	257	256	58	235	83	78	1.7	3.0

Traverse: 1					
Start Time: 14:48	Initial Leak Check: 0.003	cfm@ 10	"Hg		
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg		

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : AKM

Field Data Sheet

Date: Sept 30/15	Plant:	Durham-York Energy Centre	Test No.: 2	Particulate/Metals	Page 3 of 4
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
	52.5	206.65	0.78	0.74	286	257	255	57	235	83	78	1.8	3.0
12	55	208.48	0.77	0.74	285	256	255	57	235	83	78	1.8	3.0
	57.5	210.40	0.77	0.74	284	256	255	57	236	83	78	1.7	3.0
	60	212.25											
1	0	212.71	0.74	0.72	280	255	256	61	219	80	78	1.5	3.0
	2.5	214.48	0.84	0.77	284	255	256	58	230	80	77	1.9	3.0
2	5	216.35	0.81	0.75	284	256	256	56	236	80	77	2.0	3.0
	7.5	218.30	0.78	0.74	284	256	256	57	239	80	78	1.8	3.0
3	10	220.22	0.81	0.76	284	256	256	58	238	81	78	1.7	3.0
	12.5	222.07	0.80	0.75	284	257	256	58	239	81	77	1.9	3.0
4	15	224.00	0.80	0.75	282	257	256	58	246	82	78	1.9	3.0
	17.5	225.94	0.80	0.75	284	257	256	58	239	82	78	1.8	3.0
5	20	227.85	0.79	0.75	284	256	256	59	240	82	78	1.8	3.0
	22.5	229.75	0.70	0.71	280	257	256	58	238	83	78	1.8	3.0
6	25	231.66	0.62	0.66	283	256	256	58	239	83	78	1.5	3.0
	27.5	233.37	0.60	0.65	284	256	256	57	237	83	78	1.4	3.0
7	30	~~234.9~~ 235.03	0.68	0.69	283	257	256	57	236	83	78	1.5	2.5
	32.5	236.76	0.66	0.68	283	256	256	56	236	83	78	1.5	2.5
8	35	238.40	0.70	0.70	283	256	256	56	236	83	78	~~1.75~~	3.0
	37.5	240.16	0.68	0.69	283	256	255	56	237	83	78	1.6	3.0

Traverse:	1				
Start Time:	—	Initial Leak Check:	—	cfm@ —	"Hg
Finish Time:	15:48	Final Leak Check:	0.002	cfm@ 11	"Hg

Traverse:	2				
Start Time:	16:01	Initial Leak Check:	0.002	cfm @ 11	"Hg
Finish Time:	—	Final Leak Check:	—	cfm @ —	"Hg

Project No.: 21546

Operator : AKM

Field Data Sheet

Date: Sept 30/15	Plant: Durham-York Energy Centre	Test No.: 2	Particulate/Metals	Page 4 of 4
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
9	40	241.94	0.67	0.69	283	256	256	55	237	83	78	1.5	3.0
	42.5	243.68	0.71	0.71	287	256	256	56	236	83	78	1.5	3.0
10	45	245.42	0.72	0.71	283	256	256	56	236	83	78	1.6	3.0
	47.5	247.21	0.72	0.71	282	256	256	56	236	83	78	1.6	3.0
11	50	248.99	0.71	0.71	282	256	256	57	236	83	78	1.6	3.0
	52.5	250.81	0.75	0.73	282	256	256	56	240	83	78	1.7	3.0
12	55	252.66	0.70	0.70	283	256	256	56	236	83	78	1.6	3.0
	57.5	254.45	0.71	0.71	282	256	256	56	236	83	78	1.6	3.0
	60	256.26											

Traverse: 3			
Start Time: —	Initial Leak Check:	cfm@	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm @ —	"Hg
Finish Time: 17:01	Final Leak Check: 0.004	cfm @ 10	"Hg

Project No.: 21546

Operator :

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 3	Particulate/Metals
Test Date	October 1, 2015
Test Location	APC Outlet No. 1
Operator Signature	A Murdock

Project No.:	21546
Page	1 of 4
Probe No.:	6 series
Meter Box No.:	Team 1
Impinger Box No.:	14

Pitot Factor	0.847	
DGMCF	1.017	
Barometric Pressure	~~101.76~~ 30.05	"Hg
Static Pressure	-10.9	"H2O
Nozzle Size	0.2545	inches
Stack Diameter	4.5 ~~0.2545~~	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	336.9	g
WCBDA	15.8	g

Combustion Gas Concentration

Oxygen	7.62	%
Carbon Dioxide	11.58	%
Carbon Monoxide	18.3	ppm

Measuring Device	MII Numbers
Probe / Pitot	SP4B04011
Trendicator	COE20094
Control Box	Team 1
Incline Manometer	Team 1
Comb.Gas.Analyzer	MSML
Micromanometer	—
Barometer	Env. Can
Calipers	B03906

Nozzle Measurements	
1	0.2545
2	0.2540
3	0.2550
4	0.2545
Average:	0.2545

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Oct. 1/15	Plant: Durham-York Energy Centre	Test No.: 3	Particulate/Metals	Page 2 of 4
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	258.92	0.80	0.73	266	255	252	47	38	62	62	1.5	3.0
	2.5	260.75	0.81	0.73	283	254	257	44	41	61	61	1.7	3.0
2	5	262.52	0.81	0.73	282	254	257	42	57	61	61	1.8	3.0
	7.5	264.34	0.79	0.72	283	255	253	42	55	61	61	1.7	3.0
3	10	266.15	0.74	0.70	283	254	253	41	56	62	61	1.7	3.0
	12.5	267.93	0.74	0.70	283	254	253	40	58	63	61	1.6	3.0
4	15	269.67	0.71	0.68	284	254	253	40	61	63	61	1.6	3.0
	17.5	271.41	0.71	0.68	282	254	253	40	61	63	61	1.5	3.0
5	20	273.08	0.68	0.67	283	255	253	39	234	64	60	1.5	3.0
	22.5	274.77	0.69	0.67	283	254	252	39	237	65	61	1.5	3.0
6	25	276.42	0.61	0.63	282	254	253	40	237	65	61	1.4	3.0
	27.5	278.06	0.61	0.63	281	254	252	40	236	65	61	1.4	3.0
7	30	279.68	0.66	0.66	281	254	253	40	236	65	61	1.4	3.0
	32.5	281.30	0.65	0.66	281	254	253	40	236	65	61	1.4	3.0
8	35	282.95	0.69	0.67	282	254	253	40	236	65	61	1.4	3.0
	37.5	284.59	0.67	0.66	283	254	253	40	236	65	61	1.5	3.0
9	40	286.27	0.68	0.67	284	254	252	40	236	66	61	1.5	3.0
	42.5	288.0	0.68	0.68	283	254	253	40	237	66	61	1.5	3.0
10	45	289.62	0.67	0.67	282	253	253	40	236	66	61	1.5	3.0
	47.5	291.29	0.67	0.67	282	254	254	41	237	66	61	1.5	3.0
11	50	292.96	0.66	0.66	281	254	253	41	236	66	62	1.5	3.0

Traverse: 2				
Start Time: 7:41	Initial Leak Check: 0.01	cfm@	13	"Hg
Finish Time: —	Final Leak Check: —	cfm@	—	"Hg

Traverse:				
Start Time: —	Initial Leak Check: —	cfm @	—	"Hg
Finish Time: —	Final Leak Check: —	cfm @	—	"Hg

Project No.: 21546

Operator : AKM

Field Data Sheet

Date: Oct. 1/15	Plant:	Durham-York Energy Centre	Test No.: 3	Particulate/Metals	Page 3 of 4
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	* Clock Time	* Dry Gas Meter ft^3	* Pitot ΔP "H_2O	Desired cfm	* Stack Temp °F	Probe Temp °F	Oven Temp °F	* Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	* Meter Temp Outlet °F	* Meter Temp Inlet °F	* Meter Pressure ΔH "H_2O	* Pump Vacuum "Hg Gauge
	52.5	294.66	0.64	0.66	280	253	253	41	237	66	61	1.5	3.0
12	55	296.32	0.67	0.67	279	253	254	42	237	67	62	1.5	3.0
	57.5	298.0	0.64	0.65	280	254	254	42	237	67	62	1.4	3.0
	60	299.73											
1	0	2300.30	0.75	0.76	279	252	255	~~48~~ 43	220	64	62	1.3	3.0
	2.5	~~2~~301.87	0.81	0.73	281	253	255	44	230	64	62	1.6	3.0
2	5	303.56	0.80	0.73	281	253	254	44	236	64	62	1.8	3.0
	7.5	305.43	0.80	0.73	280	254	254	44	240	65	62	2.0	3.0
3	10	307.33	0.80	0.73	281	253	254	45	238	65	62	1.9	3.0
	12.5	309.25	0.81	0.73	281	254	254	45	240	66	62	1.8	3.0
4	15	310.09	0.74	0.70	281	254	254	45	241	66	~~64~~ 62	1.7	3.0
	17.5	~~312.80~~ 312.89	0.70	0.68	281	254	255	45	241	67	62	1.6	3.0
5	20	314.63	0.66	0.66	281	254	255	46	240	67	62	1.4	3.0
	22.5	316.29	0.65	0.66	281	254	254	46	239	67	62	1.4	3.0
6	25	317.92	0.64	0.65	280	253	254	46	238	68	63	1.5	3.0
	27.5	319.62	0.64	0.65	280	254	254	45	238	68	63	1.4	3.0
7	30	321.24	0.65	0.66	281	254	254	46	237	68	63	1.5	3.0
	32.5	322.91	0.65	0.65	281	254	254	45	238	68	63	1.5	3.0
8	35	324.57	0.66	0.66	281	254	254	46	238	68	63	1.5	3.0
	37.5	326.08	0.64	0.65	281	254	253	45	238	68	63	1.5	3.0

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 8:41	Final Leak Check: 0.04	cfm@ 11	"Hg

Traverse: ~~2~~ 1			
Start Time: 8:54	Initial Leak Check: 0.007	cfm @ 11	"Hg
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21546

Operator : AKM

Field Data Sheet

Date: Oct. 1/15	Plant: Durham-York Energy Centre	Test No.: 3	Particulate/Metals	Page 4 of 4
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	* Clock Time	* Dry Gas Meter ft^3	* Pitot ΔP "H_2O	Desired cfm	* Stack Temp °F	Probe Temp °F	Oven Temp °F	* Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	* Meter Temp Outlet °F	* Meter Temp Inlet °F	* Meter Pressure ΔH "H_2O	* Pump Vacuum "Hg Gauge
9	40	327.92	0.64	0.66	280	254	253	45	238	70	63	1.4	3.0
	42.5	329.55	0.64	0.65	280	254	255	45	237	68	63	1.5	3.0
10	45	331.22	0.64	0.65	280	254	254	45	237	69	63	1.5	3.0
	47.5	332.90	0.63	0.65	280	254	254	45	236	68	63	1.5	3.0
11	50	334.54	0.58	0.62	280	254	253	45	236	68	63	1.4	3.0
	52.5	336.17	0.59	0.63	280	254	254	45	236	68	64	1.2	3.0
12	55	337.68	0.66	0.67	272	254	254	47	236	69	64	1.4	3.0
	57.5	339.31	0.63	0.63	274	253	254	47	236	69	64	1.8	3.0
	60	341.05											

Traverse: 2		Traverse:	
Start Time: —	Initial Leak Check: — cfm@ — "Hg	Start Time: —	Initial Leak Check: — cfm @ — "Hg
Finish Time: 9:54	Final Leak Check: 0.002 cfm@ 11 "Hg	Finish Time: —	Final Leak Check: — cfm @ "Hg

Project No.: 21546

Operator : AKM

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 1	Particulate/Metals
Test Date	SEPT 29, 2015
Test Location	APC Outlet No. 2
Operator Signature	A Murdoch

Project No.:	21546
Page	1 of 4
Probe No.:	6D
Meter Box No.:	TEAM 2
Impinger Box No.:	5

Pitot Factor	0.847	
DGMCF	0.985	
Barometric Pressure	29.65	"Hg
Static Pressure	-10.5	"H2O
Nozzle Size	.2545	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	342.8	g
WCBDA	16.3	g

Combustion Gas Concentration

Oxygen	8.18	%
Carbon Dioxide	10.99	%
Carbon Monoxide	21.0	ppm

Measuring Device	MII Numbers
Probe / Pitot	SP4 B04011
Trendicator	COE 20092
Control Box	COE 20092
Incline Manometer	~~TEAM 2~~
Comb.Gas.Analyzer	MSML
Micromanometer	—
Barometer	ENV. CAN.
Calipers	B03906

DUAL 3
COE 200

Nozzle Measurements	
1	.2545
2	.2540
3	.2550
4	.2545
Average:	.2545

Probe Liner Glass / Metal / Teflon / Other________

Nozzle Glass / Metal / Other________

Union None / Metal / Teflon / Other________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

~~Rev. November 27, 2014~~

Field Data Sheet

Date: Sept 29	Plant: Durham-York Energy Centre	Test No.: 1	Particulate/Metals	Page 2 of 4
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2 outlet	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
								<70					
1	0	765.0	~~0.83~~ 0.85	0.81	274	257	259	77	102	81	80	2.0	3
	2.5	767.37	0.85	~~0.83~~ 0.81	274	258	261	60	238	80	80	2.0	3
2	5	769.28	0.85	0.81	274	258	261	63	241	81	81	2.3	3
	7.5	771.31	0.86	0.82	274	258	261	65	242	81	81	2.3	3
3	10	773.36	0.80	0.79	275	258	261	65	242	81	81	2.2	3
	12.5	775.40	0.82	0.79	278	260	263	67	244	82	81	2.1	3
4	15	777.40	0.80	0.79	274	258	262	65	243	81	81	2.1	3
	17.5	779.37	0.80	0.79	274	258	262	66	243	82	81	2.1	3
5	20	781.35	0.81	0.79	275	258	261	65	241	82	81	2.1	3
	22.5	783.32	0.64	0.70	275	258	262	64	242	82	81	1.8	3
6	25	785.19	0.65	0.71	275	258	261	64	242	83	81	1.7	3
	27.5	786.96	0.64	0.70	275	258	262	63	242	83	81	1.7	3
7	30	788.72	0.63	0.70	276	258	262	63	243	83	81	1.7	3
	32.5	790.57	0.62	0.69	275	258	263	63	242	83	81	1.7	3
8	35	792.27	0.66	0.72	276	258	262	63	242	84	81	1.8	3
	37.5	794.07	0.64	0.70	275	258	261	63	241	84	81	1.8	3
9	40	795.90	0.65	0.71	275	258	261	63	241	84	82	1.8	3
	42.5	797.73	0.63	0.70	275	258	262	63	241	84	82	1.7	3
10	45	799.54	0.65	0.71	274	258	262	63	240	84	82	1.7	3
	47.5	801.31	0.65	0.71	274	259	262	63	241	84	82	1.8	3
11	50	803.09	0.61	0.69	271	258	262	63	241	84	82	1.7	3

Traverse: 2			
Start Time: 9:15	Initial Leak Check: .004	cfm@ 15	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg

Traverse:			
Start Time: —	Initial Leak Check: —	cfm @ —	"Hg
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21546

Operator : AKM

Field Data Sheet

Date: Sept.29/15 | Plant: Durham-York Energy Centre | Test No.: 1 | Particulate/Metals

Plant Location: Courtice, Ontario | Test Location: APC Outlet No. 2

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
					~280	250	250	<70					
	52.5	804.89	0.60	0.69	270	258	262	63	240	84	82	1.6	3
12	55	806.62	0.60	0.69	269	258	262	62	241	84	82	1.6	3
	57.5	808.36	0.60	0.69	267	258	262	62	240	84	82	1.6	3
	60	810.09											
1	0	810.37	0.63	0.70	272	257	260	55	221	82	82	1.7	3
	2.5	812.26	0.72	0.75	274	258	260	57	232	82	82	1.8	3
2	5	814.16	0.72	0.75	274	259	262	58	237	82	82	1.9	3
	7.5	816.03	0.72	0.75	275	258	261	57	239	82	82	1.7	3
3	10	818.12	0.70	0.74	275	259	262	57	240	82	82	1.7	3
	12.5	819.91	0.70	0.74	275	259	262	57	241	82	82	1.9	3
4	15	821.74	0.67	0.72	275	260	262	58	241	82	82	1.9	3
	17.5	823.61	0.65	0.71	275	259	262	58	241	83	82	1.8	3
5	20	825.44	0.62	0.69	275	259	262	58	241	83	82	1.7	3
	22.5	827.21	0.63	0.70	275	259	261	57	241	83	82	1.7	3
6	25	828.98	0.59	0.68	276	259	261	52	241	83	82	1.6	3
	27.5	830.71	0.60	0.68	276	259	262	52	241	83	82	1.6	3
7	30	832.44	0.65	0.71	276	259	261	52	241	83	82	1.7	3
	32.5	834.19	0.65	0.71	276	259	262	52	241	84	82	1.8	3
8	35	836.02	0.65	0.71	276	258	262	52	241	84	82	1.8	3
	37.5	837.76	0.65	0.71	276	259	262	53	241	84	82	1.8	3

Traverse: 2				
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 10:15	Final Leak Check: 0.005	cfm@ 10	"Hg

Traverse:				
Start Time: 11:05	Initial Leak Check: 0.006	cfm @ 10	"Hg
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21546

Operator : NKM

Field Data Sheet

Date: Sept. 29/15	Plant: Durham-York Energy Centre	Test No.: 1	Particulate/Metals	
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	* Clock Time	* Dry Gas Meter ft^3	* Pitot ΔP "H_2O	Desired cfm	* Stack Temp °F	Probe Temp °F	Oven Temp °F	* Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	* Meter Temp Outlet °F	* Meter Temp Inlet °F	* Meter Pressure ΔH "H_2O	* Pump Vacuum "Hg Gauge
9	40	839.60	0.64	0.71	276	259	261	~~5~~53	240	84	82	1.7	3
	42.5	841.39	0.67	0.72	276	259	262	53	240	84	82	1.56	3
10	45	843.18	0.74	0.76	278	257	261	54	238	83	82	1.9	3
	47.5	~~844~~ 845.0	0.73	0.75	279	258	261	53	239	83	82	2.0	3
11	50	846.93	0.72	0.75	279	258	261	54	240	83	82	1.9	3
	52.5	848.85	0.72	0.75	278	258	260	55	241	84	82	1.9	3
12	55	850.109	0.70	0.74	278	260	262	56	242	83	82	1.9	3
	57.5	852.57	0.71	0.74	278	257	263	56	242	84	82	1.9	3
	60	854.45											

Traverse:					
Start Time: —	Initial Leak Check: —	cfm@ — "Hg	Start Time: —	Initial Leak Check: —	cfm @ — "Hg
Finish Time: ~~12:5~~ 12:32	Final Leak Check: 0.008	cfm@ 11 "Hg	Finish Time: —	Final Leak Check: —	cfm @ — "Hg

Project No.: 21546

Operator : APM

Stopped 11:48 fire alarm
Started 12:10

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 2	Particulate/Metals
Test Date	Sept. 29, 2015
Test Location	APC Outlet No. 2
Operator Signature	O Murdock

Project No.:	21546	
Page	1 of 4	
Probe No.:	60	
Meter Box No.:	Team 2	
Impinger Box No.:		

Pitot Factor	0.847	
DGMCF	0.985	
Barometric Pressure	29.63	"Hg
Static Pressure	-10.5	"H2O
Nozzle Size	0.2545	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	311.6 ~~326.4~~	g
WCBDA	17.5 ~~12.8~~	g

Combustion Gas Concentration

Oxygen	8.25	%
Carbon Dioxide	10.81	%
Carbon Monoxide	22.2	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST
Incline Manometer	
Comb.Gas.Analyzer	1
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements

1 SEE
2 TEST
3 1
4 ______
Average:

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

~~Rev. November 27, 2014~~

Field Data Sheet

Date: Sept.29/15	Plant: Durham-York Energy Centre	Test No.: 2	Particulate/Metals	Page 2 of 4
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
					275			70					
1	0	854.91	0.71	0.74	~~276~~	259	259	~~60~~ 58	88	83	82	0.75	2.5
	2.5	856.33	0.71	0.74	276	259	259	56	88	83	83	1.9	3
2	5	858.04	0.71	0.74	276	259	261	55	92	83	83	1.9	3
	7.5	859.90	0.74	0.76	276	259	261	55	96	83	83	1.9	3
3	10	861.75	0.76	0.77	276	259	262	55	90	83	83	2.0	3.5
	12.5	863.67	0.71	0.71	275	258	262	56	94	83	83	2.0	3.5
4	15	865.59	0.69	0.73	275	258	262	56	90	83	83	1.9	3.5
	17.5	867.46	0.71	0.74	275	258	261	57	97	83	83	1.9	3.5
5	20	869.31	0.69	0.73	275	258	261	57	95	84	82	1.9	3.5
	22.5	871.19	0.69	0.73	275	258	261	57	99	84	83	1.9	3.5
6	25	873.05	0.67	0.72	275	258	261	57	96	84	83	1.8	3.5
	27.5	~~874.05~~	0.69	0.73	275	260	261	58	91	84	83	1.8	3.5
7	30	876.76	0.62	0.70	275	268	262	55	246	84	83	1.8	3.5
	32.5	878.58	0.6	0.68	275	268	262	53	257	85	83	~~1.8~~ 1.6	3.5
8	35	880.36	0.67	0.72	275	269	262	53	250	85	83	1.8	3.5
	37.5	882.18	0.65	0.71	275	269	262	52	250	85	83	1.8	3.5
9	40	883.98	0.68	0.73	276	269	263	52	250	85	83	1.8	3.5
	42.5	885.81	0.70	0.74	275	270	263	51	251	85	83	1.9	3.5
10	45	887.68	0.70	0.74	275	270	263	51	257	85	83	1.9	3.5
	47.5	889.54	0.72	0.75	275	269	263	51	252	85	83	1.9	3.5
11	50	891.44	0.70	0.77	276	270	263	52	252	85	83	2.0	3.5

Traverse: 1				
Start Time: 1:41	Initial Leak Check: 0.004	cfm@	11	"Hg
Finish Time: —	Final Leak Check: —	cfm@	—	"Hg

Traverse:				
Start Time: —	Initial Leak Check: —	cfm @	—	"Hg
Finish Time: —	Final Leak Check: —	cfm @	—	"Hg

Project No.: 21546

Operator : MM

Field Data Sheet

Date: Sept 29/15	Plant: Durham-York Energy Centre	Test No.: 2	Particulate/Metals	Page 3 of 4
	Plant Location: Courtice, Ontario	Test Location: [illegible]	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
								270					
	52.5	893.34	0.79	0.79	276	276	263	52	252	86	83	2.1	3.5
12	55	895.32	0.77	0.78	276	270	263	52	253	86	83	2.1	3.5
	57.5	897.30	0.78	0.78	276	270	263	52	253	85	83	2.1	4.0
	60	899.28											
1	0	899.58	0.61	0.69	274	269	262	57	203	85	83	1.7	4.0
	2.5	901.44	0.61	0.69	277	269	262	52	244	84	83	~~1.7~~ 1.6	4.0
2	5	903.20	0.62	0.69	277	269	263	57	257	84	83	1.6	4.0
	7.5	904.94	0.62	0.69	277	269	263	52	252	84	83	1.6	3.5
3	10	906.67	0.60	0.68	278	269	263	52	257	84	83	1.6	3.5
	12.5	908.43	0.60	0.68	278	269	263	53	252	85	84	1.6	3.5
4	15	910.18	0.60	0.68	277	268	263	53	257	85	83	1.6	3.5
	17.5	911.92	0.61	0.69	277	269	262	53	257	85	83	1.6	3.5
5	20	913.67	0.64	0.71	278	269	262	53	257	85	83	1.6	3.5
	22.5	915.42	0.61	0.69	278	269	263	53	257	85	83	1.6	3.5
6	25	917.16	0.59	0.68	278	269	263	53	257	85	84	1.6	3.5
	27.5	918.90	0.60	0.68	278	269	263	53	252	85	83	1.6	3.5
7	30	920.65	0.61	0.69	278	269	262	54	252	85	84	1.6	3.5
	32.5	922.39	0.61	0.69	277	269	262	54	252	85	83	1.6	3.5
8	35	~~923~~ 924.1	0.63	0.70	277	269	263	54	252	85	83	1.7	4.0
	37.5	925.91	0.65	0.71	278	269	263	55	252	85	83	1.7	4.0

Traverse:		
Start Time: —	Initial Leak Check: — cfm@ — "Hg	
Finish Time: 2:41 pm	Final Leak Check: 0.002 cfm@ 14 "Hg	

Traverse:	
Start Time: 2:53 pm	Initial Leak Check: 0.002 cfm @ 14 "Hg
Finish Time: —	Final Leak Check: — cfm @ — "Hg

Project No.: 21546

Operator : AKM

Field Data Sheet

Date: Sept. 29/15	Plant: Durham-York Energy Centre	Test No.: 2	Particulate/Metals	Page 4 of 4
	Plant Location: Courtice, Ontario	Test Location: 2	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
9	40	927.69	0.66	0.72	278	269	263	53	251	85	84	1.8	4.0
	42.5	929.50	0.64	0.71	278	269	263	52	251	85	83	1.7	4.0
10	45	931.31	0.71	0.74	278	269	263	52	251	85	83	1.8	4.0
	47.5	933.18	0.72	0.75	278	269	263	52	252	85	83	1.9	4.0
11	50	935.06	0.78	0.78	278	269	262	57	252	85	83	2.0	4.0
	52.5	936.99	0.76	0.77	277	269	263	57	252	85	83	2.1	4.0
12	55	938.96	0.78	0.78	277	269	263	57	253	85	83	2.1	4.0
	57.5	940.96	0.78	0.78	277	269	263	57	253	85	83	2.1	4.0
	60	942.94											

Traverse:				
Start Time: —	Initial Leak Check: —	cfm@	—	"Hg
Finish Time: 3:53pm	Final Leak Check: 0.002	cfm@	14	"Hg

Traverse:				
Start Time: —	Initial Leak Check: —	cfm @	—	"Hg
Finish Time: —	Final Leak Check: —	cfm @	—	"Hg

Project No.: 21546

Operator : ARM

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 3	Particulate/Metals
Test Date	Sept 29 2015
Test Location	APC Outlet No. 2
Operator Signature	A Murdock

Project No.:	21546
Page	1 of 4
Probe No.:	60
Meter Box No.:	Team 2
Impinger Box No.:	5

Pitot Factor	0.847	
DGMCF	0.985	
Barometric Pressure	29.65	"Hg
Static Pressure	-18.5	"H2O
Nozzle Size	0.2545	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	326.4 ~~311.6~~	g
WCBDA	12.5 ~~17.5~~	g

Combustion Gas Concentration

Oxygen	8.41	%
Carbon Dioxide	10.78	%
Carbon Monoxide	18.9	ppm

Measuring Device	MII Numbers
Probe / Pitot	See
Trendicator	Test
Control Box	|
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements

1 See
2 Test
3 |
4 ____
Average:

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

~~Rev. November 27, 2014~~

Field Data Sheet

Date: Sept 29/15	Plant:	Durham-York Energy Centre	Test No.: 3	Particulate/Metals	Page 2 of 4
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
1	0	943.34	0.66	0.71	275	~~272~~ 250	255	68	61	80	80	1.7	3.0
	2.5	945.19	0.67	0.72	278	250	253	69	194	81	80	1.8	3.0
2	5	947.02	0.68	0.72	278	249	255	68	208	81	81	1.8	3.0
	7.5	948.85	0.67	0.72	279	249	260	64	212	80	80	1.8	3.0
3	10	950.69	0.66	0.71	278	269	263	60	213	80	80	1.7	3.0
	12.5	952.48	0.68	0.72	277	267	262	58	213	80	80	1.8	3.0
4	15	954.30	0.67	0.72	278	267	260	56	213	81	80	1.8	3.0
	17.5	956.13	0.67	0.72	278	267	261	55	213	80	80	1.8	3.0
5	20	957.96	0.64	0.70	278	268	261	54	213	81	80	1.7	3.0
	22.5	959.76	0.60	0.68	277	268	263	53	212	81	80	1.6	3.0
6	25	961.57	0.62	0.69	277	268	262	53	212	81	80	1.6	3.0
	27.5	963.22	0.60	0.68	277	268	261	53	212	81	80	1.6	3.0
7	30	964.96	0.60	0.68	277	268	260	53	212	81	80	1.6	3.0
	32.5	966.72	0.59	0.67	278	268	260	53	212	81	80	1.6	3.0
8	35	968.44	0.61	0.68	278	269	261	53	236	81	80	1.6	3.0
	37.5	970.16	0.63	0.70	278	269	261	54	241	81	80	1.6	3.0
9	40	971.88	0.62	0.69	278	269	260	54	241	81	80	1.7	3.0
	42.5	973.65	0.67	0.72	278	269	261	54	242	81	80	1.7	3.0
10	45	975.50	0.66	0.71	277	269	262	55	241	81	80	1.7	3.0
	47.5	977.19	0.68	0.72	278	269	261	55	233	82	80	1.8	3.0
11	50	979.02	0.75	0.70	278	269	261	55	243	82	80	2.0	3.0

Traverse: 2				
Start Time: 16:49	Initial Leak Check: 0.003	cfm@ 14	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg

Traverse:				
Start Time: —	Initial Leak Check: —	cfm @ —	"Hg
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21546

Operator : AKM

Field Data Sheet

Date: Sept 29/15	Plant: Durham-York Energy Centre	Test No.: 3	Particulate/Metals	Page 3 of 4
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	52.5	980.92	0.75	0.76	278	269	261	52	243	82	80	2.0	3.0
12	55	982.83	0.79	0.78	278	269	260	52	243	82	80	2.1	3.0
	57.5	984.80	0.84	0.80	278	269	261	57	244	82	80	2.2	3.0
	60	986.83											
1	0	987.37	0.72	0.75	267	268	260	61	~~199~~ 216	80	79	1.9	3.0
	2.5	989.10	0.73	0.75	278	267	260	53	237	80	79	2.1	3.0
2	5	990.02	0.72	0.74	278	268	260	57	240	81	80	2.2	3.0
	7.5	993.03	0.73	0.75	278	268	261	52	243	80	79	1.9	3.0
3	10	994.92	0.76	0.76	278	268	260	57	243	80	80	2.0	3.0
	12.5	996.82	0.75	0.76	278	268	261	52	244	80	80	2.0	3.0
4	15	998.172	0.72	0.74	278	268	261	52	244	80	80	2.0	3.0
	17.5	1000.63	0.71	0.74	279	268	261	52	244	80	79	1.9	3.0
5	20	1002.60	[illegible]	0.73	278	268	260	51	243	81	79	1.8	3.0
	22.5	1004.34	0.68	0.72	279	268	266	57	243	81	79	1.9	3.0
6	25	1006.21	0.66	0.71	278	268	261	52	243	81	79	1.7	3.0
	27.5	1007.99	0.65	0.71	279	268	261	52	242	81	79	1.7	3.0
7	30	1009.76	0.65	0.71	278	268	260	52	241	81	79	1.7	3.0
	32.5	1011.56	0.65	0.71	278	268	260	52	241	81	79	1.7	3.0
8	35	1013.28	0.71	0.74	277	268	260	52	241	81	79	1.9	3.0
	37.5	1015.11	0.70	0.73	278	267	261	52	241	81	79	1.9	3.0

Traverse:			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 17:49	Final Leak Check: 0.002	cfm@ 12	"Hg

Traverse:			
Start Time: 6:02	Initial Leak Check: 0.002	cfm @ 12	"Hg
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21546

Operator : ARM

Field Data Sheet

Date: Sept 29/15	Plant: Durham-York Energy Centre	Test No.: 2	Particulate/Metals	Page 4 of 4
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
9	40	1016.97	0.75	0.76	278	267	260	52	241	81	79	2.0	3.0
	42.5	1018.90	0.71	0.74	278	268	260	52	241	81	79	1.9	3.0
10	45	1020.77	0.71	0.74	277	267	260	52	241	81	79	1.9	3.0
	47.5	1022.64	0.72	0.74	277	267	260	52	241	81	79	1.9	3.0
11	50	1024.52	0.74	0.75	277	267	260	52	241	81	79	2.0	3.0
	52.5	1026.42	0.73	0.75	277	267	259	52	241	81	79	1.9	3.0
12	55	1028.29	0.72	0.74	277	267	260	53	241	81	79	1.9	3.0
	57.5	1030.16	0.71	0.74	268	267	261	53	241	81	79	1.9	3.0
	60	1032.03											

Traverse:		
Start Time: —	Initial Leak Check: — cfm@ — "Hg	
Finish Time: 19:02	Final Leak Check: 0.002 cfm@ 11 "Hg	

Traverse:		
Start Time: —	Initial Leak Check: — cfm @ — "Hg	
Finish Time: —	Final Leak Check: — cfm @ — "Hg	

Project No.: 21546

Operator : AKM

APPENDIX 10

Particle Size Distribution Field Data Sheets
(18 pages)

ORTECH Environmental

Plant	Covanta
Plant Location	Courtice, ON
Test No.:	1 PSD
Test Date	September 29, 2016
Test Location	Unit / Outlet
Operator Signature	TT

Project No.:	21546	
Page	1 of 4	
Probe No.:	6 Series	
Meter Box No.:		
Impinger Box No.:		

Pitot Factor	.844	
DGMCF	1.017	
Barometric Pressure	~~1004~~ 29.65	"Hg
Static Pressure	− 11.2	"H2O
Nozzle Size	.2410	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	5
Number of Ports	2
Number of Points/Port	6

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	~~540.0~~ 440.9	g
WCBDA	99.7	g

Combustion Gas Concentration

Oxygen	7.67	%
Carbon Dioxide	11.33	%
Carbon Monoxide	16.9	ppm

Measuring Device	MII Numbers
Probe / Pitot 10	
Trendicator	COE 20094
Control Box	COE 20094
Incline Manometer	COE 20094
Comb.Gas Analyzer	
Micromanometer	
Barometer	Env. Canada
Calipers	

Nozzle Measurements

1	.2425
2	.2400
3	.2405
4	.2410
Average:	.2410

Probe Liner Glass / Metal /Teflon / Other

Nozzle Glass / Metal / Other PSD head.

Union None /Metal / Teflon / Other

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Rev. November 27, 2014

Field Data Sheet

Date: Sept. 29 2015	Plant: Covanta	Test No.: 1 - PSD	Page 2 of 3
	Plant Location: Courtice, ON	Test Location: Unit # 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	35.63	.90	.74	~~259~~ 236	258	254	80	81	80	80	1.3	7
	5	38.84	.88	.70	284	259	251	67	92	78	80	1.4	7
	10	42.06	.75	.65	284	264	246	67	86	79	79	1.5	7.5
2	15	45.45	.75	.65	284	264	246	67	86	79	79	1.5	7.5
	20	49.05	.68	.62	287	254	250	58	97	80	80	1.4	8
	25	52.46	.70	.63	288	253	251	60	103	80	80	1.4	8
3	30	55.88	.67	.62	288	253	252	58	96	82	80	1.4	8
	35	59.28	.73	.64	289	253	252	58	104	83	80	1.4	8
	40	62.66	.75	.65	289	253	252	58	102	83	80	1.4	8
4	45	66.01	.78	.66	289	252	252	59	103	83	80	1.45	8
	50	69.46	.78	.66	289	252	252	59	102	84	80	1.45	8
	55	72.89	.75	.65	279	252	252	60	102	84	80	1.45	8
5	60	76.30	.74	.65	279	252	253	61	98	84	80	1.45	8
	65	79.78	.78	.67	279	251	252	62	99	85	81	1.4	8
	70	83.19	.78	.67	279	251	252	63	108	84	80	1.4	8
6	75	86.59	.78	.67	220	251	253	64	105	85	81	1.4	9
	80	89.99	.78	.70	220	250	252	65	105	85	81	1.4	8
	85	93.37	.78	.70	162	251	252	66	105	85	81	1.4	8
	90	96.78											

Traverse: 9:09		Traverse:	
Start Time: [illegible]	Initial Leak Check: < .005 cfm@ 11 "Hg	Start Time:	Initial Leak Check: cfm @ "Hg
Finish Time: 11:	Final Leak Check: cfm@ "Hg	Finish Time:	Final Leak Check: cfm @ "Hg

had power issues, had to run electrical from truck 10:04 restart

Project No.: 21546

Operator :

9:14

.68 cfm PSD

Field Data Sheet

Date: Sept.29/15	Plant: Covanta	Test No.: 1-PSO	Page 3 of 3
	Plant Location: Courtice, ON	Test Location: Unit 1 exhaust	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H₂O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H₂O *	Pump Vacuum "Hg Gauge *
1	0	96.78	.78	.68	266	251	250	74	86	83	81	1.4	7
	5	100.22	.78	.67	276	251	251	59	92	83	81	1.4	7.5
	10	103.63	.78	.67	272	251	255	76	84	82	80	1.4	7.7
2	15	106.92	.76	.66	278	251	253	58	209	82	81	1.4	7
	20	110.24	.76	.66	281	252	254	58	210	83	82	1.4	7.5
	25	113.66	.74	.65	282	252	254	61	210	85	82	1.4	8
3	30	117.09	.72	.64	282	252	254	62	210	85	82	1.4	8
	35	120.51	.73	.65	283	252	253	63	210	86	82	1.4	8
	40	123.92	.73	.65	283	253	253	65	197	87	82	1.4	8
4	45	127.38	.75	.69	224	~~224~~ 252	252	64	223	87	83	1.4	8
	50	130.83	.75	.69	224	252	253	64	220	87	83	1.3	8
	55	134.22	.76	.69	224	251	253	63	219	87	82	1.3	8
5	60	137.63	.70	.67	215	251	253	63	219	87	82	1.3	8
	65	141.01	.71	.67	215	251	253	63	217	87	82	1.3	8
	70	144.35	.72	.68	213	252	253	64	214	88	83	1.3	9
6	75	147.54	.74	.69	213	252	253	62	213	88	84	1.3	10
	80	150.83	.71	.68	212	252	252	60	213	89	84	1.3	11
	85	154.58	.68	.66	211	251	252	57	215	88	84	1.3	10
	90	157.81											

Traverse:			
Start Time: 11:39	Initial Leak Check:	cfm@	"Hg
Finish Time: 13:40	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

12:21 restart pump after evacuation of building.

Project No.: 21546

Operator :

ORTECH Environmental

Plant	Covanta
Plant Location	Courtice, ON
Test No.:	2- PSD
Test Date	September 29, 2015
Test Location	Unit 1 Outlet
Operator Signature	

Project No.:	21546	
Page	1 of 4	
Probe No.:	6 Series	
Meter Box No.:		
Impinger Box No.:		

Pitot Factor	.844	
DGMCF	1.017	
Barometric Pressure	29.64	"Hg
Static Pressure	-11.2	"H2O
Nozzle Size	.2410	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	456.2	g
WCBDA	38.8	g

Combustion Gas Concentration

Oxygen	7.69	%
Carbon Dioxide	11.39	%
Carbon Monoxide	22.4	ppm

Measuring Device	MII Numbers
Probe / Pitot 510	M-03771
Trendicator	cal
Control Box	
Incline Manometer	See
Comb.Gas Analyzer	Test #1
Micromanometer	
Barometer	Env. Canada
Calipers	

Reading Interval	5
Number of Ports	2
Number of Points/Port	6

Nozzle Measurements	
1	
2	See
3	Test #1
4	
Average:	

Probe Liner Glass / Metal /Teflon / Other

Nozzle Glass / Metal / Other PSD head

Union None /Metal / Teflon / Other

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Sept. 29/15	Plant: Covanta	Test No.: 2 - PSD	Page 2 of 3
	Plant Location: Courtice, ON	Test Location: #1 exhaust	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	59.72	.74	.71	161	254	251	80	79	82	82	1.3	5
	5	63.12	.72	.64	279	253	251	69	86	83	82	1.3	5
	10	66.32	.68	.62	282	253	252	66	86	83	82	1.4	5
2	15	69.68	.69	.63	282	253	252	69	88	85	82	1.4	6
	20	73.05	.67	.62	283	253	252	64	83	85	82	1.4	6
	25	76.44	.68	.63	283	253	252	64	88	86	83	1.4	6
3	30	79.83	.61	.59	284	253	253	62	83	87	83	1.4	6
	35	83.25	.61	.57	285	253	252	62	88	87	83	1.4	6
	40	86.63	.62	.60	285	252	252	62	81	87	82	1.4	6
4	45	90.04	.62	.60	151	252	253	63	84	87	82	1.4	6
	50	93.44	.65	.64	220	252	252	63	78	86	82	1.4	6
	55	96.89	.63	.63	220	251	252	64	83	86	82	1.4	6
5	60	100.30	.63	.63	209	251	252	65	79	86	82	1.4	6
	65	103.74	.64	.64	207	250	252	65	81	86	82	1.4	6
	70	107.15	.67	.66	205	251	252	63	80	86	82	1.4	6
6	75	110.53	.66	.65	205	250	252	61	80	86	82	1.4	6
	80	113.92	.65	.65	204	250	252	59	80	86	82	1.4	6
	85	117.30	.66	.65	205	250	253	58	81	85	82	1.4	6
	90	120.66											

Traverse: 1			
Start Time: 14:40	Initial Leak Check: .005	cfm@ 15	"Hg
Finish Time: 16:10	Final Leak Check: —	cfm@ —	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

.68 PSD cfm

Project No.: 21546

Operator :

Field Data Sheet

Date: Sept. 29/15	Plant: Covanta	Test No.: 2 - PSD	Page 3 of 3
	Plant Location: Courtice, ON	Test Location: Unit 1 Exhaust	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	120.66	.69	.63	270	250	256	70	98	83	81	1.4	5.5
	5	124.06	.72	.64	280	250	253	51	223	82	81	1.4	6
	10	127.43	.76	.66	284	250	253	52	228	82	81	1.4	6
2	15	130.84	.76	.66	287	250	254	53	231	83	80	1.4	6
	20	134.19	.67	.62	279	251	254	53	232	83	81	1.4	6
	25	137.63	.67	.62	289	250	253	51	231	83	80	1.4	6
3	30	141.0	.65	.61	289	251	254	52	232	83	80	1.4	6
	35	144.42	.65	.61	289	251	254	52	231	83	80	1.4	6
	40	147.83	.68	.65	220	250	254	52	231	83	80	1.4	6
4	45	151.30	.72	.66	236	251	254	52	229	83	80	1.4	6
	50	154.75	.73	.67	231	251	253	52	226	83	80	1.4	6
	55	158.14	.73	.67	230	251	253	51	226	83	80	1.4	6
5	60	161.65	.71	.67	205	250	253	51	225	83	79	1.4	6
	65	165.03	.71	.67	205	250	252	50	223	82	79	1.4	6
	70	168.41	.70	.67	205	251	252	49	223	83	79	1.4	6
6	75	171.76	.76	.69	205	251	253	49	223	82	79	1.4	6
	80	175.09	.81	.72	206	251	253	49	222	83	79	1.4	6
	85	178.44	.78	.74	206	251	252	49	222	82	79	1.4	6
	90	181.84											

Traverse: 2			
Start Time: 16:20	Initial Leak Check:	cfm@	"Hg
Finish Time: 17:50	Final Leak Check: —	cfm@ —	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator :

ORTECH Environmental

Plant	Covanta
Plant Location	Courtice, ON
Test No.:	3-BSD
Test Date	Oct. 1, 2015
Test Location	Unit / Outlet
Operator Signature	Chris Dolore

Project No.:	21546
Page	1 of 4
Probe No.:	6 Series
Meter Box No.:	TEAM 3
Impinger Box No.:	

Pitot Factor	0.844	
DGMCF	0.981	
Barometric Pressure	30.06	"Hg
Static Pressure	-10.9	"H2O
Nozzle Size	0.2410	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	503.3	g
WCBDA	30.2	g

Combustion Gas Concentration

Oxygen	7.54	%
Carbon Dioxide	11.62	%
Carbon Monoxide	16.0	ppm

Measuring Device	MII Numbers
Probe / Pitot	510
Trendicator	COE 20093
Control Box	Team3
Incline Manometer	Team3
Comb.Gas Analyzer	
Micromanometer	
Barometer	EnvCanada
Calipers	

Reading Interval	5
Number of Ports	2
Number of Points/Port	6

Nozzle Measurements

1	0.2425
2	0.2400
3	0.2405
4	0.2410
Average:	0.2410

Probe Liner Glass / Metal /Teflon / Other

Nozzle Glass / Metal / Other PSD head

Union None /Metal / Teflon / Other

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Oct. 1/15	Plant: Covanta	Test No.: 3 - PSD	Page 2 of 3
	Plant Location: Courtice, ON	Test Location: Unit 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/~~Trap~~ °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	140.75	.83	.73	257	279	250	78	81	75	75	1.6	6
	5	144.40	.83	.73	280	263	248	71	137	71	75	1.6	7
	10	147.80	.84	.71	280	253	242	70	138	76	75	1.6	7
2	15	150.86	.80	.70	280	254	246	70	158	76	75	1.7	7.5
	20	154.19	.78	.69	278	255	246	71	213	76	76	1.7	7.5
	25	157.60	.76	.68	277	255	240	74	218	76	77	1.7	7.5
3	30	161.37	.72	.66	280	256	242	74	219	76	77	1.7	7.5
	35	164.77	.72	.66	281	256	250	71	223	77	77	1.7	7.5
	40	168.52	.76	.68	281	256	249	68	225	77	77	1.7	7.5
4	45	172.28	.68	.64	281	256	249	63	224	77	78	1.6	7.0
	50	175.78	.68	.64	281	256	249	54	223	77	78	1.5	7.0
	55	178.73	.70	.65	281	256	250	52	222	78	78	1.5	7.0
5	60	182.66	.66	.63	280	256	249	50	222	78	78	1.5	7.0
	65	186.02	.66	.63	281	256	248	49	221	78	78	1.5	7.0
	70	189.38	.65	.63	280	255	248	49	221	78	79	1.5	7.0
6	75	192.79	.67	.64	278	256	268	49	222	78	79	1.5	7.0
	80	196.15	.66	.64	277	255	250	49	221	78	79	1.5	7.0
	85	199.51	.66	.64	277	254	249	49	221	78	79	1.5	7.0
	90	202.88											

Traverse: 1				
Start Time: 16:19	Initial Leak Check:	0.004 cfm@	18	"Hg
Finish Time: 17:49	Final Leak Check:	— cfm@	—	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : C. Belore

Field Data Sheet

Date: Oct. 1 /15	Plant: Covanta	Test No.: 3 - PSD	Page 3 of 3
	Plant Location: Courtice, ON	Test Location: UNIT No. 1 OUTLET	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/~~Trap~~ °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
1	0	202.88	.73	.67	277	255	249	56	200	78	78	1.5	7.0
	5	206.04	.76	.68	278	255	250	48	221	79	79	1.5	7.0
	10	209.25	.77	.69	278	256	251	46	224	79	79	1.5	7.0
2	15	212.59	.75	.69	279	256	251	45	227	79	79	1.5	7.0
	20	215.91	.77	.68	280	256	251	44	228	79	78	1.5	7.0
	25	219.23	.77	.68	281	256	250	44	228	79	79	1.5	7.0
3	30	222.65	.77	.68	284	257	251	44	229	78	79	1.5	7.0
	35	225.86	.77	.68	284	256	251	43	228	78	79	1.5	7.0
	40	229.17	.77	.68	284	257	250	44	228	79	79	1.5	7.0
4	45	232.52	.83	.71	283	256	250	44	227	79	79	1.5	7.0
	50	235.90	.84	.71	283	256	250	44	224	79	79	1.5	7.0
	55	239.20	.82	.71	283	255	248	44	223	78	79	1.5	7.0
5	60	242.55	.82	.71	283	255	250	44	223	78	78	1.5	7.0
	65	245.95	.82	.70	284	255	249	44	223	78	79	1.5	7.0
	70	249.25	.82	.70	283	255	250	44	223	78	79	1.5	7.0
6	75	252.59	.82	.70	283	255	250	44	222	78	79	1.5	7.0
	80	255.94	.82	.70	282	255	250	44	223	78	79	1.5	7.0
	85	259.33	.76	.68	282	255	250	44	222	78	79	1.5	7.0
	90	262.74											

Traverse: 2				
Start Time: 18:04	Initial Leak Check:	— cfm@	—	"Hg
Finish Time: 19:34	Final Leak Check:	— cfm@	—	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	~~cfm @~~	"Hg

Project No.: 21546

Operator : C. RELORE

ORTECH Environmental

Plant	Covanta
Plant Location	Courtice, ON
Test No.:	1 - PSD
Test Date	September 30, 2015
Test Location	Unit 2 Outlet
Operator Signature	

Project No.:	21546	
Page	1 of 4	
Probe No.:	6 Series	
Meter Box No.:	Team 2	
Impinger Box No.:	7	

Pitot Factor	.844	
DGMCF	.985	
Barometric Pressure	29.80	"Hg
Static Pressure	- 11.2	"H2O
Nozzle Size	.2410	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	457.6	g
WCBDA	26.7	g

Combustion Gas Concentration

Oxygen	8.38	%
Carbon Dioxide	10.89	%
Carbon Monoxide	13.5	ppm

Measuring Device	MII Numbers
Probe / Pitot S10	B03771
Trendicator	COE 20092
Control Box	COE 20092
Incline Manometer	COE 20008
Comb.Gas Analyzer	
Micromanometer	
Barometer	Env. Canada
Calipers	

Reading Interval	5
Number of Ports	2
Number of Points/Port	6

Nozzle Measurements	
1	.2425
2	.2400
3	.2405
4	.2410
Average:	.2410

Probe Liner Glass / Metal /Teflon / Other________

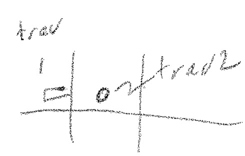
Nozzle Glass / Metal / Other PSD head

Union None /Metal / Teflon / Other________

Pitot Leak Checked? Yes No

Site Diagram

unit #2



Notes:

Rev. November 27, 2014

Field Data Sheet

Date: Sept. 30, 2015	Plant: Covanta	Test No.: 1- PSD	
	Plant Location: Courtice, ON	Test Location: Unit 2 outlet	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	32.74	.85	.71	272	267	255	65	74	70	69	1.5	6
	5	~~36.~~ 35.93	.87	.72	271	266	255	45	226	70	69	1.6	6
	10	39.28	.85	.71	273	267	256	45	232	70	69	1.6	6
2	15	42.70	.75	.66	273	267	257	46	235	70	69	1.6	7
	20	45.48	.80	.69	271	267	256	55	210	71	69	1.65	7
	25	48.93	.80	.69	272	267	256	49	230	71	69	1.65	7
3	30	52.38	.82	.69	278	267	256	48	234	71	69	1.65	7
	35	55.81	.76	.67	278	268	257	48	234	71	70	1.65	7
	40	59.24	.79	.68	278	268	257	49	235	71	70	1.65	7
4	45	62.71	.77	.67	278	268	257	49	235	72	70	1.65	7
	50	66.16	.78	.68	278	268	257	49	235	72	70	1.65	7
	55	69.65	.77	.68	267	267	258	49	230	73	70	1.6	7
5	60	73.01	.83	.70	272	267	257	50	227	73	71	1.6	9
	65	76.30	.83	.70	271	267	257	50	224	74	71	1.6	14
	70	79.59	.82	.70	271	267	257	50	223	74	71	1.6	14.5
6	75	82.98	.84	.71	271	266	257	51	222	74	71	1.6	15
	80	86.43	.87	.72	272	266	257	52	222	74	72	1.6	15.5
	85	89.81	.89	.73	271	266	257	53	222	74	72	1.6	16
	90	93.17											

Traverse: 2				
Start Time: 8:12	Initial Leak Check: .003	cfm@ 15	"Hg	
Finish Time: 12:51	Final Leak Check:	cfm@	"Hg	

Traverse:				
Start Time:	Initial Leak Check:	cfm @	"Hg	
Finish Time:	Final Leak Check:	cfm @	"Hg	

8:30 Pump off due to amonia lances Pump on at 11:39

Project No.: 21546

Operator :

Rev: April 28, 2005

ORTECH Environmental

Field Data Sheet

Date: Sept.30/15	Plant: Covanta	Test No.: 1 - PSD	
	Plant Location: Courtice, ON	Test Location: Unit 2 outlet	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
1	0	93.17	.83	.70	271	268	257	65	99	74	72	1.6	6.5
	5	96.44	.93	.75	274	268	255	50	221	74	73	1.6	6.5
	10	99.80	.90	.73	277	268	258	49	233	74	73	1.6	7
2	15	103.20	.92	.70	278	268	258	48	238	75	73	1.6	7
	20	106.60	.85	.71	278	268	259	49	240	75	73	1.6	7
	25	110.01	.82	.70	278	269	258	49	240	75	73	1.6	7
3	30	113.44	.80	.69	278	260	259	49	240	76	73	1.6	7
	35	116.87	.79	.69	279	269	259	49	240	76	74	1.6	7
	40	120.29	.79	.69	279	269	259	49	240	76	74	1.6	7
4	45	123.69	.86	.72	271	269	259	49	240	77	74	1.6	7
	50	127.12	.81	.70	272	269	259	48	236	77	74	1.6	7
	55	130.56	.86	.72	272	268	258	49	235	77	74	1.6	7
5	60	133.98	.92	.74	272	268	259	49	234	77	74	1.6	7
	65	137.40	.91	.74	272	268	258	49	232	78	75	1.6	7
	70	140.87	.92	.75	272	268	259	49	231	78	75	1.6	7
6	75	144.34	.93	.75	271	268	258	49	232	78	75	1.6	7
	80	147.80	.93	.75	272	268	258	49	231	78	75	1.6	7
	85	151.22	.94	.75	272	268	259	50	232	78	75	1.6	7
	90	154.62											

Traverse: 1		
Start Time: 13:03	Initial Leak Check: cfm@	"Hg
Finish Time: 14:33	Final Leak Check: cfm@	"Hg

Traverse:		
Start Time:	Initial Leak Check: cfm @	"Hg
Finish Time:	Final Leak Check: cfm @	"Hg

Project No.: 21546
Operator :

ORTECH Environmental

Plant	Covanta
Plant Location	Courtice, ON
Test No.:	2 - PSD
Test Date	September 30, 2015
Test Location	Unit 2 Outlet
Operator Signature	[illegible]

Project No.:	21546	
Page	1 of 4	
Probe No.:	6 Series	
Meter Box No.:	Team 2	
Impinger Box No.:	7	

Pitot Factor	.844	
DGMCF	.985	
Barometric Pressure	29.88	"Hg
Static Pressure	-11.2	"H2O
Nozzle Size	.2410	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Reading Interval	5
Number of Ports	2
Number of Points/Port	6

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	467.8	g
WCBDA	25.5	g

Combustion Gas Concentration

Oxygen	8.28	%
Carbon Dioxide	10.98	%
Carbon Monoxide	14.1	ppm

Measuring Device	MII Numbers
Probe / Pitot S10	B03771
Trendicator	COE 20092
Control Box	COE 20092
Incline Manometer	COE 20008
Comb.Gas Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements

1 ________
2 ________
3 ________
4 ________
Average:

Probe Liner Glass / Metal /Teflon / Other________

Nozzle Glass / Metal / Other PSD - Head

Union None /Metal / Teflon / Other________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: sept. 30/15	Plant: Covanta	Test No.: 2 - PSD	Page 2 of 3
	Plant Location: Courtice, ON	Test Location: Unit 2 outlet	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
1	0	154.81	.91	.69	272	270	258	75	90	77	76	1.6	7
	5	158.31	.87	.72	278	269	259	53	234	77	76	1.55	7
	10	161.70	.84	.71	278	270	259	51	237	77	76	1.55	7
2	15	165.07	.77	.68	279	270	260	50	238	77	76	1.55	7
	20	168.43	.77	.68	279	270	260	48	239	77	76	1.55	7
	25	171.78	.78	.68	278	270	260	47	239	78	76	1.6	7
3	30	175.15	.76	.68	278	270	259	46	239	78	76	1.6	7
	35	178.54	.75	.67	279	271	260	46	239	78	76	1.6	7
	40	181.93	.78	.68	279	270	260	46	239	78	76	1.6	7
4	45	185.36	.76	.68	280	271	260	46	239	79	76	1.6	7
	50	188.79	.83	.71	279	270	259	46	237	79	76	1.6	7
	55	192.23	.83	.71	279	270	259	46	235	79	76	1.6	7
5	60	195.68	.87	.72	278	270	259	46	235	79	77	1.6	7
	65	199.18	.91	.74	278	270	259	47	234	79	77	1.6	7
	70	202.62	.90	.74	280	269	259	46	233	79	77	1.6	7
6	75	206.06	.89	.73	278	269	259	47	232	79	77	1.6	7
	80	209.49	.91	.74	277	268	259	47	231	79	76	1.6	7
	85	212.97	.91		278	268	259	47	232	79	77	1.6	7
	90	216.46											

Traverse: 1			
Start Time: 16:01	Initial Leak Check: .004	cfm@ 14	"Hg
Finish Time: 17:31	Final Leak Check: —	cfm@ —	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator :

Field Data Sheet

Date: Sept. 30/15	Plant: Covanta	Test No.: 2 - PSD	Page 3 of 3
	Plant Location: Courtice, ON	Test Location: Unit 2 outlet	

Point	Clock Time	* Dry Gas Meter ft^3	* Pitot ΔP "H_2O	Desired cfm	* Stack Temp °F	Probe Temp °F	Oven Temp °F	* Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	* Meter Temp Outlet °F	* Meter Temp Inlet °F	* Meter Pressure ΔH "H_2O	* Pump Vacuum "Hg Gauge
1	0	216.46	.87	.72	278	269	258	63	113	78	77	1.6	7
	5	219.87	.84	.71	277	268	258	44	228	79	77	1.6	7
	10	223.25	.86	.72	277	269	259	41	233	79	77	1.6	7
2	15	226.39	.83	.71	277	269	258	41	236	79	77	1.6	7
	20	229.81	.76	.68	277	269	258	41	237	79	77	1.6	7
	25	233.27	.78	.69	276	269	258	41	237	79	77	1.6	7
3	30	236.70	.73	.66	277	269	259	42	237	79	77	1.6	7
	35	240.15	.76	.68	278	269	259	42	237	79	77	1.6	7
	40	243.56	.75	.67	278	270	259	42	236	79	77	1.6	7
4	45	246.99	.72	.66	277	269	259	42	236	79	77	1.6	7
	50	250.43	.73	.66	278	269	258	42	235	79	77	1.6	7
	55	253.88	.74	.67	276	269	258	42	232	79	77	1.6	7
5	60	257.30	.79	.69	277	268	258	42	231	79	76	1.6	7
	65	260.80	.82	.70	278	268	258	41	231	79	76	1.6	7
	70	264.29	.84	.71	278	268	258	41	230	78	76	1.6	7
6	75	267.72	.81	.70	278	268	258	41	230	78	76	1.6	7
	80	271.23	.85	.72	277	268	258	41	230	78	76	1.6	7
	85	274.62	.85	.72	278	268	258	41	229	78	76	1.6	7
	90	278.04											

Traverse: 2			
Start Time: 17:39	Initial Leak Check: /	cfm@ /	"Hg
Finish Time: 19:09	Final Leak Check: /	cfm@ /	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator :

ORTECH Environmental

Plant	Covanta
Plant Location	Courtice, ON
Test No.:	3 - PSD
Test Date	October 1, 2015
Test Location	Unit 2 Outlet
Operator Signature	

Project No.:	21546	
Page	1 of 4	
Probe No.:	6 Series	
Meter Box No.:		
Impinger Box No.:		

Pitot Factor	.844	
DGMCF	.985	
Barometric Pressure	30.05	"Hg
Static Pressure	- 11.2	"H2O
Nozzle Size	.2410	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Reading Interval	5
Number of Ports	2
Number of Points/Port	6

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	520.3	g
WCBDA	30.5	g

Combustion Gas Concentration

Oxygen	7.62	%
Carbon Dioxide	11.85	%
Carbon Monoxide	16.8	ppm

Measuring Device	MII Numbers
Probe / Pitot S10	
Trendicator	COE 20092
Control Box	COE 20092
Incline Manometer	COE 20008
Comb.Gas Analyzer	
Micromanometer	
Barometer	Env. Canada
Calipers	

Nozzle Measurements	
1	
2	See
3	Test #1
4	
Average:	

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Oct. 1, 2015	Plant: Covanta	Test No.: 3 - PSD	Page 2 of 3
	Plant Location: Courtice, ON	Test Location: Unit 2 outlet	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
1	0	78.15	.86	.72	225	263	253	56	58	62	61	1.6	7
	5	81.51	.86	.72	274	265	253	42	211	62	61	2	8
	10	85.26	.88	.71	274	266	252	42	227	61	60	2.2	9
2	15	89.10	.88	.71	274	265	254	43	234	62	60	1.8	9
	20	92.70	.81	.68	275	266	255	43	235	62	60	1.8	9
	25	96.31	.79	.67	274	265	255	42	235	62	60	1.8	9
3	30	99.85	.73	.64	274	265	254	42	232	62	60	1.8	9
	35	103.40	.74	.65	275	266	255	42	230	63	60	1.8	9
	40	106.97	.78	.67	275	265	249	42	227	63	61	1.8	9
4	45	110.53	.79	.67	274	265	254	42	229	63	61	1.8	8.5
	50	114.06	.74	.65	275	265	254	42	228	64	61	1.8	8
	55	117.62	.76	.66	276	265	256	42	229	64	61	1.8	8
5	60	121.19	.71	.64	276	265	255	43	229	64	61	1.8	8
	65	124.76	.72	.64	275	265	255	43	229	64	62	1.8	8
	70	128.35	.73	.65	276	265	255	43	229	65	62	1.8	8
6	75	131.93	.68	.62	276	265	255	43	229	65	62	1.8	8
	80	135.49	.65	.61	274	265	256	44	229	65	62	1.8	8
	85	139.07	.64		276	265	255	44	229	65	62	1.8	8
	90	142.62											

Traverse: 2			
Start Time: 7:55	Initial Leak Check: 0.007	cfm@ 11	"Hg
Finish Time: 9:25	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

avg. T2
.71

Project No.: 21546
Operator :

Field Data Sheet

Date: oct. 1, 2015	Plant: Covanta	Test No.: 3 - PSD	Page 3 of 3
	Plant Location: Courtice, ON	Test Location: Unit 2 outlet	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	142.67	.65	.61	276	265	256	49	138	64	62	1.8	8
	5	146.27	.67	.62	271	265	255	43	230	65	63	1.8	8
	10	149.82	.65	.61	271	266	257	43	234	65	63	1.8	8
2	15	153.38	.65	.61	272	266	256	43	236	65	63	1.8	8
	20	156.89	.64	.61	271	266	256	43	236	65	63	1.8	8
	25	160.39	.62	.60	271	266	257	44	236	66	63	1.8	8
3	30	163.92	.58	.58	271	266	256	44	236	66	64	1.8	8
	35	167.51	.59	.59	271	267	256	44	236	67	64	1.8	8
	40	170.95	.65	.62	270	266	257	44	234	67	64	1.8	8
4	45	174.44	.62	.60	270	266	256	44	232	67	64	1.8	8
	50	177.97	.62	.60	270	257	257	45	231	67	65	1.8	8
	55	181.44	.64	.61	267	266	256	45	231	68	65	1.8	8
5	60	184.99	.63	.61	266	266	256	46	230	68	65	1.8	8
	65	188.52	.63	.61	267	266	256	47	230	68	65	1.8	8
	70	192.04	.62	.60	268	265	257	48	231	68	65	1.8	8
6	75	195.56	.67	.62	267	265	257	49	231	69	66	1.8	8
	80	199.06	.68	.63	267	265	257	50	231	69	66	1.8	8
	85	202.60	.71		266	266	257	52	230	69	66	1.8	8
	90	206.12											

Traverse: 1			
Start Time: 9:30	Initial Leak Check: /	cfm@ /	"Hg
Finish Time: 11:00	Final Leak Check: /	cfm@ /	"Hg

Traverse:			
Start Time: /	Initial Leak Check: /	cfm @ /	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : [signature]

APPENDIX 11

Hexavalent Chromium Field Data Sheets
(24 pages)

ORTECH Environmental

Plant	Covanta
Plant Location	Courtice, ON
Test No.:	1- CHROME
Test Date	SEPT 30, 2015
Test Location	Unit Outlet 1
Operator Signature	

Project No.:	21546	
Page	1 of 4	
Probe No.:	6 Series	
Meter Box No.:	TEAM 3	
Impinger Box No.:	16	

Pitot Factor	.846	
DGMCF	.981	
Barometric Pressure	~~1009.0~~ 29.80	"Hg
Static Pressure	-11.2	"H2O
Nozzle Size	.2560	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	212.3	g
WCBDA	49.8	g

Combustion Gas Concentration

Oxygen	7.91	%
Carbon Dioxide	11.23	%
Carbon Monoxide	15.5	ppm

Measuring Device	MII Numbers
Probe / Pitot	D2 COE 20108
Trendicator	COE 20098
Control Box	COE 20093
Incline Manometer	TEAM 3
Comb.Gas Analyzer	MSML
Micromanometer	—
Barometer	ENV. CAN
Calipers	B03906

Nozzle Measurements

1 .2565
2 .2555
3 .2565
4 .2555
Average: .2560

Probe Liner Glass / Metal /Teflon / Other_________

Nozzle Glass / Metal / Other_________

Union None / Metal / Teflon / Other_________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: SEPT 30, 2015	Plant:	Covanta	Test No.:	1 - CHROME	Page 2 of 4
	Plant Location:	Courtice, ON	Test Location:	UNIT 1 OUTLET	

Point	Clock Time	Dry Gas Meter ft³	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
1	0	874.8	.68	.7	285			50	71	69	69	1.8	9
	2.5	876.5	.68	.71	285			45	66	69	69	1.8	9
2	5	878.2	.68	.71	285			45	66	69	69	2	10
	7.5	880.04	.66	.7	284			45	66	69	69	1.9	10
3	10	881.8	.65	.7	284			45	65	69	69	1.9	10
	12.5	883.65	.66	.7	284			45	66	69	69	1.8	10
4	15	885.5	.66	.7	285			45	66	69	69	1.8	9
	17.5	887.3	.68	.71	285			46	67	69	69	1.8	9
5	20	889.1	.65	.7	285			46	67	69	69	1.7	9
	22.5	890.91	.65	.7	285			46	67	69	69	1.7	9
6	25	892.65	.64	.69	287			52	69	69	69	1.8	9
	27.5	894.43	.66	.70	286			47	69	69	69	1.8	9
7	30	896.23	.68	.71	285			46	70	69	69	1.8	9
	32.5	898.01	.665	.7	285			46	71	69	70	1.8	9
8	35	899.77	.67	.71	285			46	70	69	69	1.8	9
	37.5	901.54	.67	.71	285			47	73	69	69	1.8	9
9	40	903.28	.71	.73	284			49	74	69	69	1.8	9
	42.5	905.03	.715	.73	284			49	71	69	78	1.9	9
10	45	906.85	.77	.76	284			50	74	70	70	2	12
	47.5	908.77	.78	.76	283			52	74	70	70	2	12
11	50	910.67	.79	.77	283			53	72	70	70	2.1	12

Traverse:				Traverse:			
Start Time: 8:08	Initial Leak Check:	.008 cfm@	12 "Hg	Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time: –	Final Leak Check:	– cfm@	– "Hg	Finish Time:	Final Leak Check:	cfm @	"Hg

* PUMP OFF @ 8:30
BACK ON @ 11:41

Project No.: 21546
Operator : MT

Field Data Sheet

Date: SEPT 30, 2015	Plant: Covanta	Test No.: 1 - CHROME
	Plant Location: COURTICE, ON	Test Location: UNIT 1 OUTLET

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
	52.5	912.58	.77	.76	283			54	76	70	70	2.1	12
12	55	914.49	.785	.77	282			58	76	70	70	2.1	12
	57.5	916.42	.78	.76	282			60	73	70	70	2.1	13
	60	918.36											
1	0	918.89	.71	.73	282			60	74	70	70	1.9	10
	2.5	920.69	.73	.74	280			53	73	71	71	2	10
2	5	922.51	.71	.73	281			50	73	71	71	2.1	11
	7.5	924.42	.72	.74	282			50	77	71	72	2	11
3	10	926.29	.755	.755	283			51	73	71	73	2	11
	12.5	928.17	.745	.75	284			53	73	71	72	2	11
4	15	930.05	.7	.72	284			55	74	71	72	1.9	12
	17.5	931.93	.7	.72	285			56	74	72	72	1.9	12
5	20	933.77	.7	.72	286			57	73	72	72	1.9	12
	22.5	935.61	.64	.69	286			59	73	72	72	1.7	11
6	25	937.37	.66	.7	286			60	74	72	72	1.7	10
	27.5	939.11	.61	.68	287			62	73	72	73	1.7	10
7	30	940.84	.615	.68	287			63	74	72	73	1.7	10
	32.5	942.6	.64	.69	288			64	74	72	73	1.7	10
8	35	944.32	.675	.71	288			65	74	72	73	1.7	11
	37.5	946.10	.67	.71	288			65	75	73	73		

Traverse: 1				
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg	
Finish Time: 12:18	Final Leak Check: 0.013	cfm@ 22	"Hg	

Traverse: 2				
Start Time: 12:46	Initial Leak Check: 0.013	cfm @ 15	"Hg	
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg	

Project No.: 21546

Operator : MT

Field Data Sheet

Date: SEPT 30, 2015	Plant: Covanta	Test No.: 1- CHROME	4 of 4
	Plant Location: COURTICE, ON	Test Location: UNIT 1 OUTLET	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
9	40	947.83	.68	.71	288			65	75	73	73	1.8	11
	42.5	949.59	.69	.72	289			65	75	73	73	~~1.8~~ 1.9	11
10	45	951.38	.685	.72	288			65	74	73	74	1.9	12
	47.5	953.23	.66	.70	287			65	75	73	74	1.9	12
11	50	955.0	.65	.70	283			64	75	73	74	1.9	12
	52.5	956.89	.66	.71	282			64	75	73	74	1.8	12
12	55	958.77	.62	.69	281			64	75	73	74	1.7	11
	57.5	960.49	.64	.70	277			64	75	73	74	1.7	11
	60	962.34											

Traverse: /			
Start Time: /	Initial Leak Check: /	cfm@ /	"Hg
Finish Time: /	Final Leak Check: /	cfm@ /	"Hg

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm @ —	"Hg
Finish Time: 13:46	Final Leak Check: 0.012	cfm @ 12	"Hg

Project No.: 21546

Operator : MT

ORTECH Environmental

Plant	Covanta	
Plant Location	Courtice, ON	
Test No.:	2 - CHROME	
Test Date	SEPT 30, 2015	
Test Location	Unit Outlet 1	
Operator Signature	MT	

Project No.:	21546	
Page	1 of 4	
Probe No.:	6 Series	
Meter Box No.:	TEAM 3	
Impinger Box No.:	3	

Pitot Factor	.846	
DGMCF	.981	
Barometric Pressure	29.83 ~~101.00~~	"Hg
Static Pressure	~~HG~~ -11.2	"H2O
Nozzle Size	.2560	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	293.5	g
WCBDA	49.2	g

Combustion Gas Concentration

Oxygen	7.92	%
Carbon Dioxide	11.12	%
Carbon Monoxide	21.3	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST
Incline Manometer	
Comb.Gas Analyzer	1
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements

1 SEE
2 TEST
3 1
4
Average:

Probe Liner Glass / Metal / Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None / Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Rev. November 27, 2014

Field Data Sheet

Date: SEPT 30, 2015	Plant: Covanta	Test No.: 2 - CHROME	Page 2 of 4
	Plant Location: Courtice, ON	Test Location: UNIT 1 OUTLET	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	963.68	.73	.74	280			65	69	70	76	1.9	8
	2.5	965.45	.64	.69	276			60	66	73	74	1.9	8
2	5	967.19	.69	.73	277			58	61	74	74	2 1.9	8
	7.5	968.89	.68	.72	280			55	61	74	74	2	8
3	10	970.90	.68	.72	281			54	62	74	74	2	8
	12.5	972.75	.69	.72	279			54	62	75	74	1.9	8
4	15	974.62	.69	.72	284			54	70	74	74	1.9	8
	17.5	976.47	.68	.72	284			54	72	74	75	1.9	8
5	20	978.34	.65	.70	286			54	71	74	75	1.8	8
	22.5	980.17	.66	.70	287			54	75	74	75	1.8	8
6	25	981.98	.67	.71	289			54	72	75	75	1.8	8
	27.5	983.80	.69	.72	287			54	72	75	75	1.8	8
7	30	985.60	.65	.70	287			54	71	75	75	1.8	8
	32.5	987.35	.64	.70	287			56	71	75	76	1.8	8
8	35	989.2	.71	.74	286			56	71	76	76	1.9	9
	37.5	991.07	.71	.75	286			56	73	75	76	1.9	9
9	40	992.93	.76	.76	286			56	74	75	76	1.9	9
	42.5	994.83	.78	.76	286			51	73	75	76	1.9	9
10	45	996.73	.76	.76	286			57	74	76	76	1.9	9
	47.5	998.48	.75	.75	287			58	74	76	76	1.9	9
11	50	1000.35	.79	.78	286			58	75	76	76	2	9

Traverse: 2			
Start Time: 14:49	Initial Leak Check: 0.013	cfm@ 12	"Hg
Finish Time: –	Final Leak Check: –	cfm@ –	"Hg

Traverse: /			
Start Time: /	Initial Leak Check: /	cfm @ /	"Hg
Finish Time: /	Final Leak Check: /	cfm @ /	"Hg

Project No.: 21546

Operator : MT

Field Data Sheet

Date: SEPT 30, 2018	Plant: Covanta	Test No.: 2-CHROME	Page 3 of 4
	Plant Location: COURTICE, ON	Test Location: UNIT 1 OUTLET	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	52.5	1002.24	.785	.77	286			58	75	76	77	2	9
12	55	1004.31	.77	.77	286			59	75	76	77	2.1	10
	57.5	1006.2	.84	.8	286			59	75	76	77	2.3	12
	60	1008.16											
1	0	1008.49	.7	.73	285			60	75	76	77	1.8	8
	2.5	1010.3	.7	.73	282			59	72	76	76	1.9	8
2	5	1012.1	.69	.73	282			56	73	76	77	1.9	8
	7.5	1013.91	.67	.72	282			56	73	76	76	1.9	8
3	10	1015.74	.68	.72	282			56	74	76	77	2	9
	12.5	1017.6	.695	.73	282			58	74	76	77	2	9
4	15	1019.5	.68	.72	282			58	74	76	77	1.9	9
	17.5	1021.36	.68	.72	282			59	74	76	77	1.9	9
5	20	1023.22	.66	.71	284			58	71	76	77	1.8	9
	22.5	1025.07	.68	.72	284			56	72	76	77	1.8	9
6	25	1026.89	.645	.70	285			56	72	76	77	1.7	8
	27.5	1028.65	.66	.71	284			55	73	76	77	1.7	8
7	30	1030.47	.65	.70	284			55	74	76	77	1.7	8
	32.5	1032.19	.65	.70	284			56	74	76	77	1.8	8
8	35	1033.96	.67	.72	284			56	78	76	77	1.8	8
	37.5	1035.74	.66	.72	284			57	78	76	77	1.8	8

Traverse: 2			
Start Time: –	Initial Leak Check: –	cfm@ –	"Hg
Finish Time: 15:49	Final Leak Check: 0.01	cfm@ 16	"Hg

Traverse: 1			
Start Time: 16:02	Initial Leak Check: .01	cfm @ 16	"Hg
Finish Time: –	Final Leak Check: –	cfm @ –	"Hg

Project No.: 21546

Operator : MT

Field Data Sheet

Date: Sept 30, 2005	Plant: Covanta	Test No.: 2-CHROME	4 of 4
	Plant Location: COURTICE, ON	Test Location: UNIT 1 OUTLET	

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
		1037.54											
9	40	~~1000.000~~	.68	.72	284			56		76	77	1.8	8
	42.5	1039.31	.68	.72	284			57		76	77	1.9	9
10	45	1041.11	.71	.74	284			57		76	77	2	9
	47.5	1042.96	.77	.77	284			58		76	77	2.1	10
11	50	1044.81	.755	.76	284			58		76	77	2.1	10
	52.5	1046.82	.76	.76	284			58		77	77	2.1	10
12	55	1048.73	.76	.76	283			58		76	77	2.1	10
	57.5	1050.64	.76	.76	283			58		76	77	2.1	10
	60	1052.58											

Traverse:				
Start Time:	Initial Leak Check:	cfm@	"Hg	
Finish Time:	Final Leak Check:	cfm@	"Hg	

Traverse: X 1			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time: 17:02	Final Leak Check: 0.01	cfm @ 12	"Hg

Project No.: 21546
Operator : MT

ORTECH Environmental

Plant	Covanta
Plant Location	Courtice, ON
Test No.:	3 - CHROME
Test Date	~~SEPT 30~~ OCT 1, 2015
Test Location	Unit Outlet 1
Operator Signature	MT

Project No.:	21546
Page	1 of 4
Probe No.:	6 Series
Meter Box No.:	TEAM 3
Impinger Box No.:	10

Pitot Factor	0.846	
DGMCF	0.981	
Barometric Pressure	~~101.70~~ 30.05	"Hg
Static Pressure	-10.9	"H2O
Nozzle Size	0.2560	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	305.8	g
WCBDA	33.7	g

Combustion Gas Concentration

Oxygen	7.62	%
Carbon Dioxide	11.58	%
Carbon Monoxide	18.3	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST
Incline Manometer	
Comb.Gas Analyzer	1
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements

1 SEE
2 TEST
3 1
4 ______
Average:

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: ~~Sept~~ Oct 1,15	Plant: Covanta	Test No.: 3 - CHROME
	Plant Location: Courtice, ON	Test Location: UNIT 1 OUTLET

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
1	0	54.51	.66	.69	285			65		60	60	1.6	4
	2.5	56.19	.675	.69	283			42		60	60	1.7	6
2	5	57.9	.67	.69	284			41		60	60	1.8	6
	7.5	59.61	.64	.68	284			41		60	61	1.8	6
3	10	61.34	.65	.68	284			41		60	61	1.8	6
	12.5	63.06	.64	.68	284			41		60	61	1.8	6
4	15	64.8	.645	.68	285			41		61	61	1.8	6
	17.5	66.51	.66	.69	284			41		61	61	1.8	6
5	20	68.71	.64	.68	284			42		61	61	1.8	6
	22.5	69.92	.66	.68	284			42		61	61	1.8	6
6	25	71.61	.63	.67	284			43		61	62	1.8	6
	27.5	73.29	.64	.68	283			43		61	62	1.8	6
7	30	74.98	.63	.67	283			43		61	62	1.8	6
	32.5	76.66	.65	.68	283			45		61	62	1.8	6
8	35	78.33	.66	.70	284			45		61	62	1.8	6
	37.5	80.08	.67	.69	285			47		62	63	1.8	6
9	40	81.76	.71	.71	286			48		62	63	2	~~8~~ 7
	42.5	83.64	.71	.71	285			49		62	63	1.9	7
10	45	85.41	.78	.75	285			51		62	63	2.2	9
	47.5	87.35	.75	.73	285			53		62	63	2.1	9
11	50	89.27	.77	.74	284			55		62	63	2.1	9

Traverse: 1				
Start Time: 7:41	Initial Leak Check: .005	cfm@	15	"Hg
Finish Time: —	Final Leak Check: —	cfm@	—	"Hg

Traverse:				
Start Time:	Initial Leak Check:	cfm @		"Hg
Finish Time:	Final Leak Check:	cfm @		"Hg

Project No.: 21546

Operator : NT

Field Data Sheet

Date: Oct 1, 2015	Plant: Covanta	Test No.: 3-Chrome	Page 3 of 4
	Plant Location: Courtice, ON	Test Location: Unit 1 Outlet	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
*	*	*	*		*			*		*	*	*	*
	52.5	91.23	.77	.74	284			57		62	63	2	8
12	55	93.1	.78	.75	283			59		62	63	2	8
	57.5	94.99	.75	.74	283			59		62	63	2	8
	60	96.88											
1	0	97.2	.64	.68	285			65		62	63	1.8	7
	2.5	98.95	.63	.68	276			47		62	63	1.8	7
2	5	100.72	.67	.7	276			47		62	63	1.8	7
	7.5	102.47	.64	.68	277			49		62	63	1.8	7
3	10	104.29	.66	.69	277			51		62	63	1.8	7
	12.5	105.91	.65	.64	277			51		63	63	1.7	7
4	15	107.67	.635	.68	282			52		63	63	1.7	7
	17.5	109.44	.64	.68	282			52		63	64	1.7	7
5	20	111.11	.64	.68	282			53		63	63	1.8	7
	22.5	112.81	.64	.68	282			52		63	64	1.8	7
6	25	114.55	.64	.68	282			54		63	64	1.8	7
	27.5	116.29	.65	.69	283			53		63	64	1.8	7
7	30	118.03	.66	.69	283			55		63	64	1.8	7
	32.5	119.77	.66	.69	282			55		63	64	1.8	7
8	35	121.49	.65	.69	283			56		63	64	1.8	7
	37.5	123.22	.645	.68	283			56		63	64	1.8	7

Traverse: 1			
Start Time: /	Initial Leak Check: /	cfm@ /	"Hg
Finish Time: 8:41	Final Leak Check: .006	cfm@ 15	"Hg

Traverse: 2			
Start Time: 8:56	Initial Leak Check: .004	cfm @ 15	"Hg
Finish Time: /	Final Leak Check: /	cfm @ /	"Hg

Project No.: 21546

Operator : MT

Field Data Sheet

Date: Oct 1, 2015	Plant: Covanta	Test No.: 3- CHROME	4 of 4
	Plant Location: COURTICE, ON	Test Location: UNIT 1 OUTLET	

Point *	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
9	40	124.94	.66	.69	283			57		64	65	1.8	7
	42.5	126.67	.65	.69	282			57		64	65	1.8	7
10	45	128.4	.71	.72	282			57		64	65	1.9	7
	47.5	130.22	.71	.72	282			59		64	65	1.9	8
11	50	131.93	.76	.74	282			60		64	65	2.2	10
	52.5	133.88	.76	.74	282			61		64	65	2.2	10
12	55	135.86	.76	.74	282			63		64	65	2.1	10
	57.5	137.82	.73	.73	282			64		64	65	2	9
	60	139.73											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm @ —	"Hg
Finish Time: 9:56	Final Leak Check: .008	cfm @ 18	"Hg

Project No.: 21546

Operator : MT

ORTECH Environmental

Plant	Covanta
Plant Location	Courtice, ON
Test No.:	1 - CHROME
Test Date	SEPT 29, 2015
Test Location	Unit ~~1~~ 2 Outlet
Operator Signature	MT

Project No.:	21546	
Page	1 of 4	
Probe No.:	6 Series	
Meter Box No.:	TEAM 4	
Impinger Box No.:	3	

Pitot Factor	.846	
DGMCF	1.004	
Barometric Pressure	29.65	"Hg
Static Pressure	-10.5	"H2O
Nozzle Size	.2560	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	222.5	g
WCBDA	46.5	g

Combustion Gas Concentration

Oxygen	8.18	%
Carbon Dioxide	10.99	%
Carbon Monoxide	21.0	ppm

Measuring Device	MII Numbers
Probe / Pitot	DZ COE 20108
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	TEAM 4
Comb.Gas Analyzer	MSML
Micromanometer	—
Barometer	ENV. CAN
Calipers	B03906

Nozzle Measurements	
1	.2565
2	.2555
3	.2565
4	.2555
Average:	.2560

Probe Liner Glass / Metal / Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None / Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Rev. November 27, 2014

Field Data Sheet

Date: Sept 29, 2008	Plant: Covanta	Test No.: 1 - CHROME	
	Plant Location: Courtice, ON	Test Location: UNIT 2 OUTLET	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
		196.07											
1	0	~~95.69~~	.84	.79	273			70	80	80	81	2.2	10
	2.5	198.0	.84	.79	276			69	~~88~~ 72	81	81	2.2	11
2	5	199.97	.82	.79	275			70	75	81	81	2.2	11
	7.5	201.93	.79	.78	275			81	71	83	83	2.0	11
3	10	203.82	.76	.76	275			65	71	81	84	2.2	11
	12.5	205.91	.73	.75	275			69	71	81	85	2.1	12
4	15	207.85	.69	.73	274			69	71	81	86	2	12
	17.5	209.8	.69	.69	274			69	71	81	87	1.9	12
5	20	211.7	.62	.69	274			69	~~82~~ 72	81	87	1.7	12
	22.5	213.43	.62	.69	274			70	85	81	88	1.6	12
6	25	215.3	.63	.7	274			70	84	81	89	1.4	9
	27.5	216.96	.6	.68	273			69	80	81	90	1.4	9
7	30	218.61	.61	.69	273			69	76	82	91	1.5	9
	32.5	220.3	.63	.70	273			70	74	82	91	1.6	10
8	35	222.02	.645	.71	273			69	72	82	92	1.7	10
	37.5	223.78	.65	.71	273			~~70~~ 69	71	82	92	1.7	10
9	40	225.55	.66	.72	274			69	70	82	93	1.8	10
	42.5	227.37	.695	.74	273			69	69	82	93	1.9	10
10	45	229.25	.69	.73	271			68	70	83	93	1.8	10
	47.5	231.1	.69	.73	271			67	71	83	93	1.8	10
11	50	232.97	.66	.72	271			67	71	83	93	1.7	10

Traverse: 1			Traverse:		
Start Time: ~~9:18~~ ~~9:34~~ 9:50	Initial Leak Check: 0.006 cfm@ 17 "Hg		Start Time:	Initial Leak Check:	cfm @ "Hg
Finish Time: –	Final Leak Check: – cfm@ – "Hg		Finish Time:	Final Leak Check:	cfm @ "Hg

* NO PROBE / OVEN HEAT

Project No.: 21546

Operator : MT

Field Data Sheet

Date: SEPT 29, 2015	Plant: Covanta,	Test No.: 1 - CHROME	Page 3 of 4
	Plant Location: COURTICE, ON	Test Location: UNIT 2 OUTLET	

Point *	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	52.5	234.8	.68	.73	266			67	70	83	93	1.8	10
12	55	236.63	.63	.71	252			67	71	83	93	1.7	10
	57.5	238.48	.63	.71	252			66	71	83	93	1.7	10
	60	240.29											
1	0	241.0	.63	.70	271			63	67	83	84	1.7	10
	2.5	242.74	.645	.71	268			61	66	83	85	1.8	10
2	5	244.52	.65	.71	268			53	65	83	86	1.8	10
	7.5	246.34	.625	.70	268			52	65	83	87	1.7	10
3	10	248.11	.64	.71	267			53	67	83	88	1.7	10
	12.5	249.9	.64	.70	271			53	66	82	88	1.7	10
4	15	251.68	.66	.72	273			54	68	83	89	1.7	10
	17.5	253.47	.65	.71	273			54	67	83	89	1.7	10
5	20	255.26	.59	.68	265			55	68	83	90	1.6	10
257.0	22.5	~~256~~	.6	.68	275			55	69	83	90	1.55	10
6	25	258.73	.56	.66	276			55	69	83	91	1.5	10
	27.5	260.4	.58	.67	276			55	70	83	91	1.5	10
7	30	262.09	.625	.70	276			55	71	83	92	1.7	10
	32.5	263.86	.63	.70	276			55	71	83	92	1.7	10
8	35	265.65	.66	.72	276			56	70	83	92	1.7	10
	37.5	267.46	.66	.72	276			56	71	83	92	1.7	10

Traverse: 1			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 10:50	Final Leak Check: .008	cfm@ 15	"Hg

Traverse: 2			
Start Time: 11:06	Initial Leak Check: .012	cfm @ 15	"Hg
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21546
Operator : MT

Field Data Sheet

Date: SEPT 29, 2015	Plant: Covanta	Test No.: 1 - CHROME	4 of 4
	Plant Location: COURTICE, ON	Test Location: UNIT 2 OUTLET	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
9	40	269.28	.67	.72	276			57	71	83	92	1.7	10
	42.5	271.15	.67	.72	276			66	73	83	82	1.7	10
10	45	273.0	.82	.79	279			56	72	82	82	2.1	10
	47.5	274.8	.82	.79	279			53	72	82	83	2.4	~~10~~ 12
11	50	277.0	.8	.78	279			53	72	82	83	2.1	11
	52.5	278.97	.78	.77	279			54	74	82	84	2	11
12	55	280.93	.82	.79	278			56	74	82	85	2.1	12
	57.5	282.91	.82	.79	278			58	75	82	86	2.1	12
	60	284.89											

Traverse: /			Traverse: 2		
Start Time: /	Initial Leak Check: / cfm@ / "Hg		Start Time: /	Initial Leak Check: /	cfm @ / "Hg
Finish Time: /	Final Leak Check: / cfm@ / "Hg		Finish Time: 12:33	Final Leak Check: .01	cfm @ 22 "Hg

* PUMP OFF 11:48 DUE TO FIRE ALARM*
BACK ON 12:16

Project No.: 21546
Operator : MT

ORTECH Environmental

Plant	Covanta
Plant Location	Courtice, ON
Test No.:	2 - CHROME
Test Date	SEPT 29, 2015
Test Location	Unit Outlet 2
Operator Signature	MT

Project No.:	21546	
Page	1 of 4	
Probe No.:	6 Series	
Meter Box No.:	TEAM 4	
Impinger Box No.:	10	

Pitot Factor	.846	
DGMCF	1.004	
Barometric Pressure	29.63	"Hg
Static Pressure	-10.5	"H2O
Nozzle Size	.2560	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	156.1	g
WCBDA	40.2	g

Combustion Gas Concentration

Oxygen	8.25	%
Carbon Dioxide	10.81	%
Carbon Monoxide	22.2	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEG
Trendicator	
Control Box	TEST
Incline Manometer	
Comb.Gas Analyzer	1
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements

1 SEG
2 TEST
3 1
4 ______
Average:

Probe Liner Glass / Metal / Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None / Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Sept 29, 2005	Plant: Covanta	Test No.: 2 - CHROME	Page 2 of 4
	Plant Location: Courtice, ON	Test Location: UNIT 2 OUTLET	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O .79	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
1	0	289.7	~~.78~~	.78	272			~~70~~	78	82	84	1.8	9
	2.5	291.53	.8	.78	276			69	78	82	84	2.1	10
2	5	293.42	.79	.78	276			65	77	82	86	2.1	10
	7.5	295.39	.76	.76	276			66	79	82	87	2	10
3	10	297.34	.76	.77	276			65	79	82	88	2	10
	12.5	299.25	.72	.75	276			65	78	82	89	1.9	10
4	15	301.15	.66	.72	275			65	79	83	90	1.7	9
	17.5	302.98	.68	.73	275			63	80	83	91	1.8	9
5	20	304.8	.64	.70	276			60	79	83	91	1.7	9
	22.5	306.61	.64	.70	277			59	78	83	92	1.7	9
6	25	308.4	.59	.68	276			60	79	83	93	1.6	9
	27.5	310.09	.59	.68	275			58	79	83	93	1.6	9
7	30	311.9	.6	.68	275			58	80	83	93	1.5	9
	32.5	313.6	.6	.68	275			58	80	83	94	1.6	9
8	35	315.33	.57	.67	275			58	80	83	94	1.5	9
	37.5	317.01	.6	.69	275			57	79	84	95	1.7	9
9	40	318.8	.61	.69	275			57	80	84	95	1.6	9
	42.5	320.53	.61	.69	275			57	80	84	95	1.6	9
10	45	322.26	.62	.69	275			56	80	84	95	1.6	9
	47.5	324.00	.62	.69	275			56	81	84	95	1.6	9
11	50	325.72	.62		273			56	80	84	96	1.6	9

Traverse: ~~13:40~~ 2		
Start Time: 13:40	Initial Leak Check: 0.005 cfm@ 11 "Hg	
Finish Time: /	Final Leak Check: / cfm@ / "Hg	

Traverse:		
Start Time: /	Initial Leak Check: /	cfm @ / "Hg
Finish Time:	Final Leak Check: /	cfm @ / "Hg

Project No.: 21546

Operator : MT

Field Data Sheet

Date: SEPT 29, 2015	Plant: Covanta	Test No.: 2 - CHROME	Page 3 of 4
	Plant Location: COURTICE, ON	Test Location: UNIT 2 OUTLET	

Point	Clock Time	Dry Gas Meter ft³	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
*		*	*		*			*		*	*	*	*
	52.5	327.47	.63	.70	272			55	80	84	96	1.6	9
12	55	329.23	.65	.72	273			55	81	84	96	1.8	9
	57.5	331.07	.59	.68	271			55	81	85	96	1.6	9
	60	332.82											
1	0	333.25	.82	.80	276			53	80	84	87	2.2	10
	2.5	335.27	.85	.81	278			52	80	86	88	2.2	10
2	5	337.28	.83	.8	278			50	73	84	89	2.3	10
	7.5	339.2	.84	.81	279			50	74	84	90	2.4	11
3	10	341.29	.77	.77	279			51	74	84	90	2.2	11
	12.5	343.31	.77	.77	278			53	75	84	90	2.1	11
4	15	345.32	.73	.75	278			54	76	84	91	2	10
	17.5	347.23	.74	.76	278			54	76	84	92	2	10
5	20	349.15	.72	.74	278			55	78	84	92	2	10
	22.5	351.05	.7	.74	278			56	80	84	93	1.9	10
6	25	352.93	.65	.71	278			57	80	84	93	1.8	10
	27.5	354.71	.64	.71	278			57	81	85	94	1.8	10
7	30	356.66	.69	.73	278			58	81	85	94	1.7	10
	32.5	358.5	.69	.73	278			59	81	85	94	1.8	10
8	35	360.28	.7	.73	278			60	82	85	94	1.9	10
	37.5	362.12	.72	.73	278			60	82	85	94	1.9	10

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 14:40	Final Leak Check: 0.008	cfm@ 14	"Hg

Traverse: 1			
Start Time: 14:52	Initial Leak Check: .004	cfm @ 12	"Hg
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21546

Operator : MJ

Field Data Sheet

Date: SEPT 29, 2015	Plant: Covanta	Test No.: 2 - CHROME	4 of 4
	Plant Location: COURTICE, ON	Test Location: UNIT 2 OUTLET	

Point	* Clock Time	* Dry Gas Meter ft^3	* Pitot ΔP "H_2O	Desired cfm	* Stack Temp °F	Probe Temp °F	Oven Temp °F	* Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	* Meter Temp Outlet °F	* Meter Temp Inlet °F	* Meter Pressure ΔH "H_2O	* Pump Vacuum "Hg Gauge
9	40	364.0	.73	.76	278			60	82	85	94	1.9	10
	42.5	366.00	.72	.76	279			60	81	85	94	2	10
10	45	367.94	.74	.76	279			61	81	85	94	2	10
	47.5	369.86	.745	.76	277			60	82	85	94	2	10
11	50	371.78	.74	.76	277			57	82	85	94	2	10
	52.5	373.7	.7	.74	273			57	81	85	94	2	10
12	55	375.63	.68	.73	273			56	81	85	94	1.9	10
	57.5	377.51	.66	.72	272			56	81	85	94	1.9	10
	60	~~378~~											
		379.41											

Traverse: /		
Start Time: /	Initial Leak Check: / cfm@ / "Hg	
Finish Time: /	Final Leak Check: / cfm@ / "Hg	

Traverse: 1		
Start Time: —	Initial Leak Check: — cfm @ — "Hg	
Finish Time: 15:52	Final Leak Check: 0.006 cfm @ 11 "Hg	

Project No.: 21546

Operator : MP

ORTECH Environmental

Plant	Covanta
Plant Location	Courtice, ON
Test No.:	3 - CHROME
Test Date	SEPT 29, 2015
Test Location	Unit Outlet 2
Operator Signature	MT

Project No.:	21546
Page	1 of 4
Probe No.:	6 Series
Meter Box No.:	TEAM 4
Impinger Box No.:	

Pitot Factor	0.846	
DGMCF	1.004	
Barometric Pressure	29.65	"Hg
Static Pressure	-10.5	"H2O
Nozzle Size	0.2560	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Probe Liner Glass / Metal /Teflon / Other

Nozzle Glass / Metal / Other

Union None / Metal / Teflon / Other

Pitot Leak Checked? Yes No

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	297.8	g
WCBDA	57.2	g

Combustion Gas Concentration

Oxygen	8.41	%
Carbon Dioxide	10.78	%
Carbon Monoxide	18.9	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST
Incline Manometer	
Comb.Gas Analyzer	1
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements

1 SEE
2 TEST
3 1
4
Average:

Notes:

Field Data Sheet

Date: SEPT 29, 2015	Plant: Covanta	Test No.: 3 - CHROME	Page 2 of 4
	Plant Location: Courtice, ON	Test Location: UNIT 2 OUTLET	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp		Meter Temp		Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
								Outlet °F	Inlet/~~Trap~~ °F	Outlet °F	Inlet °F		
1	0	381.2	.85	.8	277			65	69	80	80	2.2	11
	2.5	383.2	.825	.79	279			69	69	80	80	2.2	11
2	5	385.2	.83	.79	279			70	70	80	80	2.15	11
	7.5	387.21	.84	.80	279			66	77	80	80	2.15	11
3	10	389.32	.82	.79	279			65	79	80	80	2.1	11
	12.5	391.31	.82	.79	279			64	81	80	80	2.1	11
4	15	393.32	.78	.77	278			65	81	80	80	2.0	11
	17.5	395.27	.78	.77	278			66	~~80~~ 81	80	81	2.0	11
5	20	397.2	.78	.77	278			66	80	80	80	2	11
	22.5	399.12	.77	.77	278			59	80	~~84~~ 82	84	2	11
6	25	401.06	.71	.73	278			58	85	80	82	1.9	11
	27.5	402.9	.69	.72	278			58	88	79	82	1.8	10
7	30	404.77	.71	.73	278			58	88	79	83	1.85	10
	32.5	406.6	.71	.74	274			58	89	79	84	1.95	10
8	35	408.53	.7	.73	278			58	90	80	84	1.8	10
	37.5	410.38	.7	.73	278			58	89	80	85	1.8	10
9	40	411.87	.71	.73	278			58	89	80	85	1.9	10
	42.5	414.07	.7	.73	278			58	89	80	85	1.8	10
10	45	415.92	.74	.75	278			58	89	80	85	1.95	11
	47.5	417.86	.735	.75	277			59	89	80	85	1.9	11
11	50	419.74	.75	.76	276			59	88	80	85	1.95	11

Traverse: 1			
Start Time: 16:47	Initial Leak Check: 0.013	cfm@ 11	"Hg
Finish Time: –	Final Leak Check: /	cfm@ /	"Hg

Traverse: /			
Start Time:	Initial Leak Check: /	cfm @ /	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : MT

Field Data Sheet

Date: Sept 29, 2015	Plant: Covanta	Test No.: 3-Chrome	
	Plant Location: Courtice, ON	Test Location: Unit 2 Outlet	

Point	Clock Time	Dry Gas Meter ft³	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
*	*	*	*		*			*		*	*	*	*
	52.5	421.65	.73	.75	276			60	88	80	85	2	11
12	55	423.55	.75	.76	277			60	87	80	85	2	11
	57.5	425.5	.70 ~~.71~~	.73	273			61	89	80	85	1.8	11
	60	427.33											
		4 428.1		.72									
1	0	~~427.6~~	.68	~~.78~~	273			61	78	~~81~~ 78	81	1.8	10
	2.5	429.89	.675	.72	273			58	75	79	81	1.9	10
2	5	431.7	.71	.74	273			54	75	79	83	~~1.9~~2	10
	7.5	433.6	.675	.72	273			53	75	79	85	1.8	10
3	10	435.42	.69	.72	278			53	77	79	86	1.8	10
	12.5	437.29	.695	.73	278			53	77	79	86	1.8	10
4	15	439.09	.69	.73	279			53	79	79	87	1.8	10
	17.5	440.91	.68	.72	279			53	78	79	87	1.8	10
5	20	442.73	.69	.73	279			54	79	79	88	1.8	10
	22.5	444.53	.65	.70	279			54	81	79	88	1.8	10
6	25	446.34	.65	.70	279			54	81	79	88	1.8	10
	27.5	448.15	.65	.70	279			55	82	80	89	1.7	10
7	30	449.95	.66	.71	278			55	81	80	89	1.7	10
	32.5	451.75	.67	.72	278			55	83	80	89	1.7	10
8	35	453.54	.72	.74	278			55	82	80	89	1.7	10
	37.5	455.4	.74	.75	278			56	83	80	89	1.8	11

Traverse: 1		Traverse: 2	
Start Time: /	Initial Leak Check: / cfm@ / "Hg	Start Time: 18:04	Initial Leak Check: 0.01 cfm @ 14 "Hg
Finish Time: 17:47	Final Leak Check: 0.01 cfm@ 14 "Hg	Finish Time: /	Final Leak Check: / cfm @ / "Hg

Project No.: 21546

Operator : MT

Field Data Sheet

Date: SEPT 29, 2015	Plant: Covanta	Test No.: 3 - CHROME	4 of 4
	Plant Location: COURTICE, ON	Test Location: UNIT 2 OUTLET	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
*	*	*	*		*			*		*	*	*	*
9	40	457.22	.75	.76	279			56	84	80	89	1.9	11
	42.5	459.08	.775	.77	278			56	84	80	89	2	11
10	45	461.02	.77	.77	278			57	85	80	89	2	11
	47.5	462.96	.8	.78	278			57	85	80	88	2.1	12
11	50	464.95	.85	.81	278			57	86	80	88	2.2	13
	52.5	466.99	.815	.79	278			57	84	80	87	2.1	14
12	55	469.0	.85	.81	278			58	86	80	87	2.2	15
	57.5	471.11	.86	.81	278			59	78	80	86		
	60	473.19											

Traverse: /			
Start Time: /	Initial Leak Check: /	cfm@ /	"Hg
Finish Time: /	Final Leak Check: /	cfm@ /	"Hg

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm @ /	"Hg
Finish Time: 19:04	Final Leak Check: 0.009	cfm @ 13	"Hg

Project No.: 21546
Operator : MT

APPENDIX 12

SVOC Data Sheets
(108 pages)

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 1	Semi-Volatile Organic Compounds
Test Date	Oct. 1, 2015
Test Location	APC Outlet No. 1
Operator Signature	A Murdock

Project No.:	21546	
Page	1 of 6	
Probe No.:	6 series	
Meter Box No.:	Team 1	
Impinger Box No.:	4	

Pitot Factor	~~0.846~~ 0.847	
DGMCF	1.017	
Barometric Pressure	30.05	"Hg
Static Pressure	-10.9	"H2O
Nozzle Size	0.2545	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	658.4	g
WCBDA	19.0	g

Combustion Gas Concentration

Oxygen	7.57	%
Carbon Dioxide	11.59	%
Carbon Monoxide	16.6	ppm

Measuring Device	MII Numbers
Probe / Pitot	SP4
Trendicator	COE20094
Control Box	Team 1
Incline Manometer	Team 1
Comb.Gas.Analyzer	MSML
Micromanometer	—
Barometer	Env. Can.
Calipers	B03906

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements

1	0.2545
2	0.2540
3	0.2550
4	0.2545
Average:	0.2545

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

~~Rev. November 27, 2014~~

Field Data Sheet

Date: Oct. 1/15	Plant: Durham-York Energy Centre	Test No.: 1 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F <70	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	341.43	0.71	0.71	~~253~~ 252	~~253~~ 254	252	57	40	65	65	1.5	6.0
	2.5	343.09	0.73	0.70	280	255	251	56	41	66	65	1.6	7.0
	5	344.81	0.72	0.69	280	256	253	52	40	66	66	1.7	7.5
	7.5	346.56	0.74	0.70	280	256	255	55	45	67	66	1.8	8.0
2	10	348.36	0.80	0.73	280	256	255	55	45	67	66	1.8	8.0
	12.5	350.17	0.80	0.73	280	256	255	57	43	68	66	2.0	9.0
	15	352.05	0.81	0.74	280	256	255	53	46	68	66	2.0	9.0
	17.5	353.99	0.79	0.73	279	256	255	54	46	69	66	1.8	9.0
3	20	~~356~~ 355.96	0.78	0.73	280	256	254	51	41	69	66	1.5	8.0
	22.5	357.64	0.80	0.73	280	256	255	54	44	69	67	1.7	8.0
	25	359.42	0.79	0.73	280	256	255	56	45	70	69	1.8	8.5
	27.5	361.26	0.79	0.73	280	256	255	53	41	71	66	1.8	8.5
4	30	363.07	0.75	0.71	280	256	255	55	45	71	67	1.8	8.5
	32.5	364.90	0.75	0.71	280	256	255	57	44	72	67	1.7	9.0
	35	366.76	0.73	0.70	280	256	255	53	41	72	67	1.6	8.0
	37.5	368.54	0.76	0.72	280	255	255	56	44	72	67	1.6	8.0
5	40	370.30	0.76	0.72	279	256	255	58	43	73	68	1.7	8.5
	42.5	372.08	0.72	0.70	280	257	256	55	41	73	68	1.7	8.5
	45	373.9	0.70	0.69	279	256	255	57	41	74	68	1.6	8.0
	47.5	375.66	0.70	0.67	279	256	256	57	41	74	68	1.5	8.0
6	50	377.40	0.68	0.68	278	256	256	56	40	74	68	1.5	8.0

Traverse: 1			
Start Time: 10:48	Initial Leak Check: 0.003	cfm@ 11	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg

Traverse: —			
Start Time: —	Initial Leak Check: —	cfm @ —	"Hg
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21546

Operator : AKM

Field Data Sheet

Date: Oct. 1/15	Plant: Durham-York Energy Centre	Test No.: 1	SVOC	Page 3 of 6
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F <70	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	52.5	379.16	0.63	0.66	280	256	256	56	41	73	68	1.4	8.0
	55	380.83	0.61	0.65	279	256	256	57	41	74	69	1.4	7.5
	57.5	382.48	0.60	0.64	278	256	256	54	39	73	68	1.3	7.0
7	60	384.07	0.55	0.61	278	255	255	55	40	73	68	1.2	6.5
	62.5	385.63	0.57	0.62	277	255	255	54	38	73	69	1.2	6.5
	65	387.13	0.56	0.62	278	256	256	54	39	73	69	1.3	6.5
	67.5	388.54	0.58	0.63	277	256	256	54	39	73	69	1.5	7.5
8	70	390.28	0.55	0.61	276	255	255	53	40	73	69	1.2	7.0
	72.5	391.88	0.56	0.62	277	255	256	52	39	73	69	1.2	6.5
	75	393.40	0.58	0.63	276	255	256	52	40	73	69	1.3	7.0
	77.5	394.93	0.59	0.64	276	255	256	52	40	74	69	1.3	7.0
9	80	396.49	0.60	0.64	277	255	256	51	40	74	69	1.3	7.0
	82.5	398.06	0.64	0.66	277	256	256	52	41	74	70	1.4	7.0
	85	399.67	0.63	0.66	278	256	257	50	41	74	70	1.5	7.5
	87.5	401.35	0.61	0.65	277	255	256	48	39	74	70	1.5	8.0
10	90	403.02	0.66	0.67	278	256	256	48	39	75	70	1.5	8.0
	92.5	404.69	0.66	0.67	275	256	257	47	40	75	70	1.6	8.0
	95	406.82	0.68	0.68	279	256	257	47	41	75	70	1.6	8.0
	97.5	408.16	0.70	0.69	279	256	256	48	41	75	70	1.5	8.5
11	100	409.88	0.68	0.68	280	256	256	47	41	75	71	1.6	8.5
	102.5	411.61	0.69		278	256	256	47	41	75	71	1.6	8.5

Traverse:				
Start Time: —	Initial Leak Check: —	cfm@	—	"Hg
Finish Time: —	Final Leak Check: —	cfm@	—	"Hg

Traverse:				
Start Time: —	Initial Leak Check: —	cfm @	—	"Hg
Finish Time: —	Final Leak Check: —	cfm @		"Hg

Project No.: 21546

Operator : [illegible]

Field Data Sheet

Date: Oct 1/15	Plant: Durham-York Energy Centre	Test No.: 1	SVOC	Page 4 of 6
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F <70	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	105	413.35	0.69	0.69	279	256	256	47	40	75	70	1.6	8.5
	107.5	415.08	0.69	0.69	279	256	256	47	40	76	71	1.6	8.5
12	110	416.83	0.63	0.66	279	255	255	47	40	75	71	1.6	8.5
	112.5	418.57	0.70	0.69	279	256	256	47	39	76	71	1.6	8.5
	115	420.31	0.66	0.68	278	256	256	47	40	76	71	1.5	8.5
	117.5	422.05	0.64	0.67	278	256	256	47	40	76	72	1.4	8.5
	120	423.85											
1	0	424.24	0.70	0.70	264	255	256	64	36	72	71	1.4	8.0
	2.5	425.89	0.74	0.71	278	254	256	57	37	72	71	1.6	8.5
	5	427.58	0.73	0.71	278	255	256	47	39	72	71	1.8	9.5
	7.5	429.42	.73	.71	280	256	256	45	41	73	71	1.7	10.0
2	10	431.26	.74	.71	280	256	257	46	40	74	72	1.7	10.0
	12.5	433.07	.73	.71	280	256	257	45	40	74	71	1.7	10.0
	15	434.91	.73	.71	280	256	257	45	40	74	71	1.7	10.0
	17.5	436.75	.72	.70	279	256	257	46	40	73	75	1.7	10.0
3	20	438.56	0.69	0.69	279	256	257	47	39	76	72	1.6	9.5
	22.5	440.40	0.69	0.69	278	256	256	46	38	75	72	1.5	9.0
	25	442.15	0.68	0.69	278	256	256	47	39	76	72	1.5	9.0
	27.5	443.88	0.70	0.70	278	257	256	47	38	76	71	1.5	9.0
4	30	445.59	0.63	0.66	278	257	256	47	38	77	72	1.5	9.0

Traverse:		Traverse: 2	
Start Time: —	Initial Leak Check: — cfm@ ~~13~~ "Hg	Start Time: 13:05	Initial Leak Check: .004 cfm @ 13 "Hg
Finish Time: 12:48	Final Leak Check: 0.002 cfm@ 13 "Hg	Finish Time: —	Final Leak Check: — cfm @ — "Hg

Project No.: 21546

Operator : MCM

Field Data Sheet

Date: Oct. 1/15	Plant: Durham-York Energy Centre	Test No.: 1	SVOC
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F <70	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	32.5	447.32	0.65	0.65	278	256	256	47	38	76	72	1.5	9.0
	35	449.05	0.67	0.66 ~~0.65~~	277	256	256	47	39	77	72	1.5	9.0
	37.5	450.76	0.66	0.68	278	257	257	48	39	77	72	1.4	9.0
5	40	452.43	0.63	0.66	278	257	257	48	39	77	73	1.4	9.0
	42.5	454.14	0.61	0.65	278	257	257	48	39	77	73	1.4	9.0
	45	455.80	0.60	0.65	278	257	258	49	39	77	73	1.4	9.0
	47.5	457.48	0.61	0.65	277	~~255~~ 257	258	48	39	77	73	1.3	8.5
6	50	459.11	0.60	0.65	277	257	257	48	39	77	73	1.3	8.5
	52.5	460.75	0.60	0.65	276	256	256	48	38	77	73	1.3	8.0
	55	462.35	0.56	0.62	277	256	256	49	38	77	73	1.3	8.0
	57.5	463.95	0.55	0.62	277	257	257	49	38	77	73	1.3	8.0
7	60	465.55	0.55	0.62	278	257	257	49	38	78	73	1.2	8.0
	62.5	467.12	0.75	0.73	272	257	257	50	38	78	74	1.6	9.0
	65	468.75	0.80	0.74	272	256	257	49	37	78	74	1.8	10.0
	67.5	470.60	0.76	0.73	271	256	256	48	40	78	73	1.8	10.5
8	70	472.46	0.64	0.67	273	256	256	48	40	78	73	1.5	9.5
	72.5	474.22	0.72	0.71	271	256	256	49	40	78	74	1.5	9.0
	75	475.95	0.64	0.67	278	256	257	49	40	78	74	1.5	9.0
	77.5	477.69	0.64	0.67	279	256	257	49	39	78	74	1.5	9.0
9	80	479.43	0.65	0.67	280	256	256	49	39	78	74	1.4	9.0
	82.5	481.10	0.65	0.67	279	256	257	50	39	79	74	1.4	9.0

Traverse:		
Start Time: —	Initial Leak Check: — cfm@ — "Hg	
Finish Time: —	Final Leak Check: — cfm@ — "Hg	

Traverse:		
Start Time: —	Initial Leak Check: — cfm @ — "Hg	
Finish Time: —	Final Leak Check: — cfm @ — "Hg	

Project No.: 21546

Operator : AKM

Field Data Sheet

Date: Oct. 1/15	Plant: Durham-York Energy Centre	Test No.: 1	SVOC	Page 6 of 6
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F <70	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
	85	482.78	0.65	0.67	278	256	257	49	39	78	74	1.4	9.0
	87.5	484.44	0.64	0.67	278	256	257	50	39	79	74	1.5	9.0
10	90	486.14	0.63	0.67	274	257	257	50	39	79	75	1.5	9.0
	92.5	487.82	0.63	0.67	271	256	256	50	40	79	74	1.5	9.0
	95	489.53	0.63	0.67	270	256	256	50	39	79	75	1.4	9.0
	97.5	491.19	0.65	0.68	270	256	257	49	39	79	75	1.5	9.0
11	100	492.91	0.62	0.66	270	256	256	49	39	79	75	1.5	9.0
	102.5	494.60	0.6	0.65	270	256	257	49	39	80	75	1.1	8.5
	105	496.22	0.52	0.61	269	256	257	50	39	79	75	1.3	8.0
	107.5	497.78	0.61	0.66	~~269~~ 262	256	256	50	39	80	75	1.3	8.0
12	110	499.36	0.60	0.66	257	256	257	51	39	80	76	1.5	8.5
	112.5	501.02	0.66	0.66	256	256	257	50	40	80	75	1.5	9.0
	115	502.69	0.60	0.66	257	256	257	50	40	80	76	1.5	9.0
	117.5	504.30	0.59	0.65	257	257	257	50	41	80	76	1.4	9.0
	120	506.04											

Traverse:			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 15:05	Final Leak Check: 0.002	cfm@ 14	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : AKM

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 2	Semi-Volatile Organic Compounds
Test Date	Oct. 2, 2015
Test Location	APC Outlet No. 1
Operator Signature	[signature]

Project No.:	21546	
Page	1 of 6	
Probe No.:	6 series	
Meter Box No.:	Team 3 1	
Impinger Box No.:	11	

Pitot Factor	0.847	
DGMCF	~~0.984~~ 1.017	
Barometric Pressure	30.16	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	0.2545	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	650.0	g
WCBDA	15.2	g

Combustion Gas Concentration

Oxygen	7.59	%
Carbon Dioxide	11.61	%
Carbon Monoxide	19.6	ppm

Measuring Device	MII Numbers
Probe / Pitot	SP4
Trendicator	COE20094
Control Box	Team 3 1
Incline Manometer	Team 3 1
Comb.Gas.Analyzer	
Micromanometer	B003936
Barometer	Env Can
Calipers	

Nozzle Measurements	
1	0.2545
2	0.2540
3	0.2550
4	0.2545
Average:	0.2545

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

~~Rev. November 27, 2014~~

Field Data Sheet

Date: Oct 2/15	Plant: Durham-York Energy Centre	Test No.: 2	SVOC	
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	* Clock Time	* Dry Gas Meter ft³	* Pitot Δ P "H_2O	Desired cfm	* Stack Temp °F	Probe Temp °F	Oven Temp °F	* Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F <70	* Meter Temp Outlet °F	* Meter Temp Inlet °F	* Meter Pressure Δ H "H_2O	* Pump Vacuum "Hg Gauge
1	0	634.10	0.55	0.61	264	258	253	62	69	65	65	1.5	5
	2.5	635.83	0.65	0.66	272	255	252	63	71	65	65	1.3	5
	5	637.47	0.65	0.66	273	256	252	63	64	65	65	1.3	5
	7.5	639.00	0.67	0.67	274	256	254	61	70	65	65	1.4	5
2	10	640.58	0.68	0.68	274	256	255	62	70	65	64	1.6	5.5
	12.5	642.33	0.69	0.68	274	255	254	60	65	66	65	1.6	5.5
	15	644.08	0.70	0.69	275	256	255	57	70	66	65	1.6	6.0
	17.5	645.66	0.71	0.69	275	256	256	58	70	67	65	1.8	6.0
3	20	647.53	0.72	0.70	274	256	255	55	42	68	65	1.7	6.0
	22.5	649.29	0.74	0.71	276	256	256	52	46	69	65	1.7	6.0
	25	651.07	0.71	0.69	276	255	256	54	46	69	65	1.8	6.5
	27.5	652.91	0.70	0.69	276	256	255	53	41	69	65	1.7	6.0
4	30	654.68	0.70	0.69	276	255	256	50	43	69	65	1.7	6.0
	32.5	656.47	0.69	0.68	276	255	256	53	45	70	65	1.6	6.0
	35	658.20	0.67	0.67	277	255	256	52	40	70	66	1.6	6.0
	37.5	659.93	0.69	0.68	277	256	257	49	43	70	66	1.6	6.0
5	40	661.67	0.66	0.67	277	256	257	49	42	71	66	1.5	6.0
	42.5	663.13	0.65	0.66	277	255	256	50	40	71	66	1.4	6.0
	45	664.79	0.67	0.67	277	255	257	51	42	71	66	1.4	5.5
	47.5	666.46	0.67	0.67	278	255	257	53	42	70	66	1.5	5.5
6	50	668.02	0.52	0.59	277	255	256	50	40	71	66	1.2	5.0

5

Traverse:			
Start Time: 7:40	Initial Leak Check: 0.008	cfm@ 11	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg

Traverse:			
Start Time: —	Initial Leak Check: —	cfm @ —	"Hg
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21546

Operator : NKM

Field Data Sheet

Date: Oct 1/15	Plant: Durham-York Energy Centre	Test No.: 2	SVOC	Page 3 of 6
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F <70	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
*	*	*	*		*			*		*	*	*	*
	52.5	669.58	0.53	0.60	278	255	257	50	41	71	67	1.4	5.5
	55	671.17	0.53	0.60	279	255	257	51	41	71	67	1.2	5.0
	57.5	672.71	0.51	0.59	279	254	257	51	40	71	66	1.1	5.0
7	60	674.19	0.49	0.58	278	255	257	48	39	71	66	1.1	5.0
	62.5	675.68	0.56	0.62	278	255	257	49	40	70	66	1.2	5.0
	65	677.18	0.55	0.61	277	255	257	48	39	70	66	1.4	5.5
	67.5	678.78	0.54	0.61	276	254	257	46	39	70	66	1.3	5.0
8	70	680.33	0.55	0.61	276	254	257	46	40	70	67	1.2	5.0
	72.5	681.86	0.56	0.62	276	255	257	47	39	70	66	1.2	5.0
	75	683.37	~~0.57~~ 0.56	0.62	276	254	257	46	40	70	66	1.3	5.0
	77.5	684.92	0.60	0.64	276	254	257	46	40	70	67	1.3	5.0
9	80	686.47	0.58	0.63	276	254	257	46	41	70	67	1.4	5.5
	82.5	688.12	0.57	0.62	276	254	257	45	41	71	67	1.3	5.5
	85	689.66	0.55	0.61	275	255	258	46	41	71	67	1.3	5.5
	87.5	691.25	0.56	0.62	274	254	257	45	41	70	67	1.3	5.5
10	90	692.82	0.57	0.62	273	254	257	45	41	71	67	1.3	5.5
	92.5	694.41	0.56	0.62	273	255	257	46	43	71	67	1.3	5.5
	95	695.98	0.57	0.63	269	255	~~258~~ 258	46	43	71	67	1.3	5.5
	97.5	697.54	0.56	0.62	268	255	258	46	43	71	67	1.3	5.5
11	100	699.11	0.57	0.63	269	254	257	46	44	71	67	1.3	5.5
	102.5	700.66	0.57	0.59	269	254	257	46	44	71	67	1.2	5.0

10

15

Traverse:		Traverse:	
Start Time:	Initial Leak Check: cfm@ "Hg	Start Time:	Initial Leak Check: cfm @ "Hg
Finish Time:	Final Leak Check: cfm@ "Hg	Finish Time:	Final Leak Check: cfm @ "Hg

Project No.: 21546

Operator : AKM

Field Data Sheet

Date: Oct 2/15	Plant: Durham-York Energy Centre	Test No.: 2 SVOC	Page 4 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H₂O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F <70	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H₂O *	Pump Vacuum "Hg Gauge *
	105	702.17	0.50	0.59	256	254	257	46	45	71	67	1.2	5.0
	107.5	703.67	0.51	0.59	256	254	257	46	46	71	67	1.2	5.0
12	110	705.17	0.49	0.59	256	254	257	46	45	71	68	1.2	5.0
	112.5	706.67	0.50	0.59	256	254	258	46	45	72	68	1.2	5.0
	115	708.17	0.50	0.59	256	254	258	47	43	71	68	1.2	5.0
	117.5	709.71	0.50	0.59	256	254	258	46	43	72	68	1.2	5.0
	120	711.17											
1	0	711.41	0.60	0.64	~~254~~ 262	254	259	58	52	68	67	1.3	6.0
	2.5	713.04	0.67	0.68	268	253	259	49	39	68	67	1.5	6.0
	5	714.76	0.67	0.67	278	254	257	44	39	68	67	1.5	6.0
	7.5	716.41	0.67	0.67	278	254	258	43	39	68	67	~~1.5~~ 1.6	6.0
2	10	718.09	0.68	0.68	278	254	258	42	39	68	67	1.6	6.0
	12.5	719.80	0.65	0.66	278	255	258	42	40	69	68	1.6	6.0
	15	721.5	0.69	0.68	278	255	258	41	39	70	68	1.6	6.0
	17.5	723.21	0.70	0.69	278	255	258	42	39	70	67	1.6	6.5
3	20	724.94	0.68	0.68	278	257	258	41	39	70	68	1.6	6.5
	22.5	726.64	0.66	0.67	278	255	258	41	39	71	68	1.6	7.0
	25	728.39	0.66	0.67	278	255	258	41	39	71	67	1.6	7.0
	27.5	730.15	0.68	0.68	278	256	258	41	40	72	67	1.5	7.0
4	30	731.85	0.67	0.68	279	256	258	41	40	72	68	1.5	7.0

Traverse: 4		
Start Time: —	Initial Leak Check: — cfm@ — "Hg	
Finish Time: 9:40	Final Leak Check: 0.003 cfm@ 12 "Hg	

Traverse: 2		
Start Time: 9:57	Initial Leak Check: 0.003 cfm @ 12 "Hg	
Finish Time: —	Final Leak Check: — cfm @ "Hg	

Project No.: 21546

Operator : ACM

Field Data Sheet

Date: Oct 2/15	Plant: Durham-York Energy Centre	Test No.: 2 SVOC	Page 5 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H₂O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F 270	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H₂O *	Pump Vacuum "Hg Gauge *
	32.5	733.56	0.65	0.67	279	255	258	41	39	72	68	1.5	7.0
	35	735.29	0.66	0.67	279	255	258	41	39	72	68	1.5	7.0
	37.5	736.99	0.64	0.66	279	256	258	41	39	72	68	1.5	7.0
5	40	738.70	0.61	0.64	279	256	258	42	40	72	68	1.4	6.5
	42.5	740.39	0.60	0.64	278	255	258	42	40	72	68	1.3	6.0
	45	741.95	0.60	0.64	278	256	258	42	40	72	68	1.4	6.0
	47.5	743.61	0.60	0.64	279	255	258	42	39	72	68	1.4	6.5
6	50	745.25	0.59	0.63	278	255	258	42	39	72	68	1.3	6.0
	52.5	746.86	0.59	0.63	278	256	258	42	40	72	68	1.3	6.0
	55	748.42	0.62	0.65	278	255	257	43	40	72	68	1.3	6.0
	57.5	749.98	0.59	0.63	278	256	258	42	40	72	68	1.4	6.0
7	60	751.57	0.57	0.62	280	255	258	43	40	72	68	1.4	6.0
	62.5	753.20	0.60	0.64	279	255	258	43	40	72	68	1.4	6.0
	65	754.81	0.58	0.63	278	256	259	43	40	73	69	1.4	6.0
	67.5	756.41	0.57	0.62	278	255	258	43	41	73	69	1.4	6.0
8	70	757.98	0.58	0.63	279	255	258	43	41	72	69	1.4	6.0
	72.5	759.58	0.61	0.65	278	255	258	43	41	73	69	1.4	6.0
	75	761.17	0.61	0.64	278	255	258	44	42	72	68	1.4	6.0
	77.5	762.79	0.60	0.64	278	255	258	43	41	73	69	1.4	6.5
9	80	764.44	0.59	0.64	278	255	259	43	41	73	69	1.4	6.5
	82.5	766.07	0.58	0.63	278	255	259	44	42	73	69	1.3	6.5

Traverse:			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg

Traverse:			
Start Time: —	Initial Leak Check: —	cfm @ —	"Hg
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21546

Operator : AKM

Field Data Sheet

Date: Oct. 2/15	Plant: Durham-York Energy Centre	Test No.: 2	SVOC	Page 6 of 6
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft³	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F <70	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
*	*	*	*		*			*		*	*	*	*
	85	767.67	0.59	0.64	278	255	258	44	42	73	69	1.3	6.0
	87.5	769.28	0.58	0.63	277	255	258	44	42	74	69	1.3	6.0
10	90	770.85	0.58	0.63	277	255	~~22~~258	44	42	73	69	1.4	6.5
	92.5	772.45	0.57	0.63	278	255	258	44	43	74	70	1.4	6.5
	95	774.05	0.57	0.63	279	255	258	44	43	74	70	1.3	6.5
	97.5	775.66	0.58	0.63	280	255	258	45	44	74	70	1.3	6.5
11	100	777.21	0.59	0.64	281	255	258	45	44	74	70	1.3	6.5
	102.5	778.80	0.56	0.62	270	255	258	44	44	74	70	1.3	6.5
	105	780.38	0.56	0.62	270	256	258	44	44	74	70	1.3	6.5
	107.5	781.97	0.55	0.62	269	255	258	44	44	74	70	1.3	6.5
12	110	783.56	0.56	0.62	270	255	258	44	45	74	70	1.3	6.5
	112.5	785.16	0.53	0.61	268	255	258	44	44	74	70	1.3	6.5
	115	786.75	0.54	0.61	268	255	258	44	45	74	70	1.2	6.0
	117.5	788.29	0.55	0.62	268	255	258	44	45	74	70	1.2	6.0
	120	789.79											

Traverse:		
Start Time: —	Initial Leak Check: — cfm@ —	"Hg
Finish Time: 11:57	Final Leak Check: 0.002 cfm@ 11	"Hg

Traverse:		
Start Time: —	Initial Leak Check: — cfm @ —	"Hg
Finish Time: —	Final Leak Check: — cfm @	"Hg

Project No.: 21546

Operator : ARM

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 3	Semi-Volatile Organic Compounds
Test Date	Oct. 2, 2015
Test Location	APC Outlet No. 1
Operator Signature	

Project No.:	21546
Page	1 of 6
Probe No.:	6 series
Meter Box No.:	Team 1
Impinger Box No.:	5

Pitot Factor	0.847	
DGMCF	1.017	
Barometric Pressure	30.14	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	0.2545	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	653.9	g
WCBDA	15.0	g

Combustion Gas Concentration

Oxygen	7.52	%
Carbon Dioxide	11.69	%
Carbon Monoxide	20.9	ppm

Measuring Device	MII Numbers
Probe / Pitot	SP4
Trendicator	COE 20094
Control Box	Team 1
Incline Manometer	Team 1
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Can
Calipers	

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements

1 See Test
2 2
3
4
Average:

Probe Liner Glass / Metal /Teflon / Other

Nozzle Glass / Metal / Other

Union None /Metal / Teflon / Other

Pitot Leak Checked? Yes No

Site Diagram

Notes:

~~Rev. November 27, 2014~~

Field Data Sheet

Date: Oct 2/15	Plant: Durham-York Energy Centre	Test No.: SVOC	Page 2 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No.______	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F <70	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	790.05	0.70	0.69	279	258	258	64	49	71	70	1.2	4.0
	2.5	791.49	0.73	0.71	279	253	256	62	46	71	70	1.6	6.0
	5	793.05	0.73	0.71	279	255	255	60	44	71	70	1.6	6.0
	7.5	794.82	0.75	.72	279	255	255	60	48	71	70	1.65	7.0
2	10	796.60	0.75	.72	279	256	256	58	47	73	70	1.68	7.0
	12.5	798.40	0.75	.72	270	256	256	55	45	73	70	1.65	7.0
	15	800.15	0.75	.72	279	256	256	56	47	74	71	1.70	7.0
	17.5	801.95	0.70	.70	278	256	255	56	48	74	71	1.60	7.0
3	20	803.72	0.71	.70	278	256	257	53	47	74	71	1.60	7.0
	22.5	805.49	0.71	0.70	279	256	257	53	50	75	71	1.60	7.0
	25	807.24	0.70	0.69	279	256	256	54	51	76	71	1.65	7.0
	27.5	809.01	0.73	0.71	279	257	257	51	46	76	71	1.75	7.0
4	30	810.82	0.66	0.68	278	256	257	51	47	76	71	1.60	7.0
	32.5	812.61	0.65	0.67	279	257	258	52	47	76	72	1.50	7.0
	35	814.33	0.65	0.67	279	257	257	52	47	77	72	1.50	7.0
	37.5	816.05	0.65	0.69	279	257	258	49	44	77	72	1.50	7.0
5	40	817.78	0.60	0.64	279	257	258	53	46	77	72	1.35	6.5
	42.5	819.42	0.61	0.65	279	256	257	53	45	77	72	1.40	6.5
	45	821.06	0.61	0.65	281	256	257	48	44	77	72	1.40	6.5
	47.5	822.69	0.61	0.65	281	256	257	52	46	77	72	1.40	6.5
6	50	824.32	0.53		283	257	258	53	46	77	72	1.15	6.0

Traverse: 1			
Start Time: 12:20	Initial Leak Check: 0.004	cfm@ 11	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator :

Field Data Sheet

Date: Oct 2, 2015	Plant:	Durham-York Energy Centre	Test No.:	SVOC	Page 3 of 6
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	52.5	825.90	0.51	.059	283	257	258	49	43	77	73	1.0	5.5
	55	827.41	0.51	0.59	284	256	257	50	42	77	73	1.0	5.5
	57.5	828.91	0.51	0.59	284	257	258	50	41	77	73	1.0	5.5
7	60	830.39	0.56	0.62	284	256	257	50	40	77	73	1.2	5.5
	62.5	831.92	0.56	0.62	284	257	257	49	41	78	~~77~~ 73	1.2	5.5
	65	833.48	0.56	0.62	284	256	258	49	41	77	~~77~~ 73	1.2	5.5
	67.5	835.06	0.58	0.63	284	256	258	49	41	77	73	1.4	5.5
8	70	836.67	0.58	0.63	285	254	258	48	42	78	73	1.4	5.5
	72.5	838.30	0.58	0.63	285	257	258	48	42	78	73	1.4	5.5
	75	839.92	0.57	0.63	285	257	258	48	42	78	74	1.4	6.0
	77.5	841.54	0.56	0.62	285	256	258	48	42	78	74	1.4	6.0
9	80	843.17	0.56	0.62	284	256	257	48	42	78	74	1.3	6.0
	82.5	844.77	0.58	0.63	284	256	258	48	42	79	74	1.3	6.0
	85	846.35	0.59	0.64	285	256	258	47	42	78	74	1.4	6.0
	87.5	847.98	0.59	0.64	285	256	258	48	42	78	74	1.4	6.0
10	90	849.62	0.57	0.63	282	256	258	48	42	78	74	1.4	6.0
	92.5	851.26	0.60	0.65	282	256	258	48	43	78	74	1.4	6.0
	95	852.80	0.58	0.63	282	256	258	48	43	79	74	1.3	6.0
	97.5	854.50	0.58	0.64	282	256	258	48	43	79	75	1.25	6.0
11	100	856.06	0.55	0.62	280	256	258	48	43	79	75	1.2	6.0
	102.5	857.64	0.59	0.64	280	256	257	48	43	78	74	1.3	6.0

Traverse: 1				
Start Time:	Initial Leak Check:	cfm@		"Hg
Finish Time:	Final Leak Check:	cfm@		"Hg

Traverse:				
Start Time:	Initial Leak Check:	cfm @		"Hg
Finish Time:	Final Leak Check:	cfm @		"Hg

Project No.: 21546

Operator :

Field Data Sheet

Date: Oct 2, 2015	Plant: Durham-York Energy Centre	Test No.: SVOC	Page 4 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
	105	859.19	0.59	0.64	280	256	257	48	43	78	74	1.35	6
	107.5	860.8	0.59	0.64	274	256	257	48	44	79	75	1.35	6
12	110	862.40	0.59	0.64	273	256	258	48	45	79	75	1.35	6
	112.5	864.05	0.59	0.64	274	257	258	48	46	79	75	1.35	6
	115	865.66	0.60	0.65	275	256	258	48	45	79	75	1.40	6
	117.5	867.30	0.61	0.65	275	256	258	49	46	79	75	1.4	6
	120	868.96											
1	0	869.24	0.79	0.74	277	257	259	66	46	76	75	1.75	8
	2.5	870.95	0.79	0.74	288	255	258	49	40	76	75	1.80	8
	5	872.80	0.79	0.74	288	256	258	47	41	75	74	1.80	8
	7.5	874.66	0.79	0.74	289	256	259	46	41	76	74	1.80	8
2	10	876.50	0.79	0.74	289	256	259	46	40	76	74	1.80	8
	12.5	878.38	0.79	0.74	289	256	259	47	40	76	74	1.80	8
	15	880.19	0.80	0.74	289	256	258	46	40	77	74	1.80	8
	17.5	882.04	0.76	0.72	288	256	258	47	41	77	74	1.80	8
3	20	883.90	0.76	0.72	288	256	258	47	40	78	74	1.70	8
	22.5	885.73	0.76	0.72	288	256	259	48	40	78	74	1.70	8
	25	887.56	0.75	0.72	288	256	258	49	40	78	74	1.70	8
	27.5	889.41	0.72	0.70	288	256	258	49	40	78	74	1.60	8
4	30	891.20	0.72	0.70	288	257	259	49	40	78	74	1.60	8

Traverse: 1			
Start Time: –	Initial Leak Check: –	cfm@ –	"Hg
Finish Time: 14:20	Final Leak Check: 0.005	cfm@ 10	"Hg

Traverse: 2			
Start Time: 1444	Initial Leak Check: .004	cfm @ 12	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator :

Field Data Sheet

Date: Oct 22 2015	Plant: Durham-York Energy Centre	Test No.: SVOC	Page 5 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
	32.5	892.00	0.68	0.68	288	256	258	49	43	78	74	1.5	8
	35	894.77	0.67	0.68	287	256	258	49	39	78	74	1.45	8
	37.5	896.47	0.65	0.67	287	256	258	49	39	79	74	1.5	8
5	40	898.10	0.60	0.64	286	256	258	50	39	79	74	1.5	8
	42.5	899.91	0.58	0.63	286	256	258	50	38	79	75	1.25	7
	45	901.53	0.58	0.63	285	255	258	50	38	79	74	1.25	7
	47.5	903.13	0.58	0.63	285	256	258	50	38	78	74	1.25	7
6	50	904.69	0.53	0.61	282	256	258	50	38	78	74	1.20	7
	52.5	906.21	0.53	0.61	282	255	258	51	39	78	74	1.20	7
	55	907.83	0.51	0.60	281	256	258	51	39	78	74	1.1	7
	57.5	909.40	0.51	0.60	281	256	258	51	39	78	75	1.1	7
7	60	910.88	0.56	0.62	280	256	258	51	38	78	75	1.25	7
	62.5	912.47	0.56	0.62	279	255	258	50	38	76	75	1.25	7
	65	914.0	0.55	.62	279	255	258	51	38	78	75	1.25	7
	67.5	915.56	0.54	.61	279	255	258	51	37	78	74	1.25	7
8	70	917.12	0.54	.61	279	256	259	51	37	78	75	1.25	7
	72.5	918.69	0.52	.61	279	255	258	51	38	78	75	1.25	7
	75	920.25	0.56	0.62	279	256	258	51	38	78	75	1.3	7
	77.5	921.84	0.53	0.61	280	255	258	51	38	78	75	1.25	7
9	80	923.43	0.55	0.62	280	255	259	51	38	78	75	1.30	7
	82.5	925.04	0.57	0.62	281	255	258	51	38	78	75	1.30	7

Traverse: —			
Start Time: —	Initial Leak Check:	cfm@	"Hg
Finish Time: —	Final Leak Check:	cfm@	"Hg

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm @ —	"Hg
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21546

Operator :

Field Data Sheet

Date: Oct 2, 2015	Plant: Durham-York Energy Centre	Test No.: SVOC	Page 6 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
	85	926.64	0.56	0.62	281	255	259	51	38	78	74	1.3	7
	87.5	928.24	0.59	0.64	282	255	257	52	38	78	75	1.35	7
10	90	929.86	0.61	0.66	282	255	258	52	39	78	75	1.35	7
	92.5	931.50	0.58	0.63	283	255	257	51	39	78	75	1.35	7
	95	933.14	0.59	0.64	283	255	258	52	39	78	75	1.35	7
	97.5	934.76	0.56	0.62	285	255	258	52	39	78	75	1.36	7
11	100	936.37	0.56	0.62	284	256	258	52	39	78	75	1.30	7
	102.5	938.02	0.56	0.62	284	256	258	52	39	78	76	1.2	7
	105	939.55	0.60	0.65	281	256	258	52	39	78	76	1.3	7
	107.5	941.17	0.61	0.65	280	255	258	51	39	78	75	1.3	7
12	110	942.78	0.60	0.65	275	256	258	51	39	78	75	1.35	7
	112.5	944.42	0.58	0.64	273	255	258	51	39	78	75	1.35	7
	115	946.04	0.58	0.64	273	256	260	51	40	78	75	1.35	7
	117.5	947.67	0.58	0.64	272	255	258	51	40	78	75	1.35	
	120	949.29											

Traverse: –	
Start Time: –	Initial Leak Check: – cfm@ – "Hg
Finish Time: –	Final Leak Check: – cfm@ – "Hg

Traverse: 2	
Start Time: –	Initial Leak Check: – cfm @ – "Hg
Finish Time: 16:41	Final Leak Check: .006 cfm @ 15 "Hg

Project No.: 21546

Operator :

Rev: April 28, 2005

ORTECH Environmental

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 1	Semi-Volatile Organic Compounds
Test Date	Oct 1, 2015
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	21546
Page	1 of 6
Probe No.:	
Meter Box No.:	TEAM 4
Impinger Box No.:	

Pitot Factor	0.845	
DGMCF	1.004	
Barometric Pressure	30.04 ~~29.92~~	"Hg
Static Pressure	-11.2	"H2O
Nozzle Size	0.25575	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	667.8	g
WCBDA	34.9	g

Combustion Gas Concentration

Oxygen	7.16	%
Carbon Dioxide	12.43	%
Carbon Monoxide	29.1	ppm

Measuring Device	MII Numbers
Probe / Pitot	B03775
Trendicator	
Control Box	COE 20090
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements

1 0.2550
2 0.2560
3 0.2555
4 0.2565
Average: 0.25575

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Rev. ~~November 27, 2014~~

Field Data Sheet

Date: Oct 1, 2015	Plant: Durham-York Energy Centre	Test No.: 1 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F <70	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	91.11	0.58	0.66	249	253	259	66	61	69	69	1.5	8
	2.5	92.70	0.70	0.71	275	267	255	50	41	69	69	1.8	9
	5	94.44	0.68	0.70	275	269	253	48	43	69	70	1.8	10
	7.5	96.24	0.66	0.69	274	270	252	47	43	69	71	1.8	10
2	10	98.03	0.73	0.73	274	268	255	46	43	69	72	1.8	10
	12.5	99.81	0.78	0.75	274	268	254	45	43	69	73	2.0	10
	15	101.67	0.79	0.76	275	267	253	45	44	69	74	2.1	11
	17.5	103.60	0.71	0.72	275	271	257	45	45	70	75	1.8	10.5
3	20	105.44	0.68	0.70	276	268	252	45	44	70	76	1.8	10.5
	22.5	107.30	0.64	0.68	275	268	255	44	44	70	77	1.6	10
	25	109.02	0.61	0.67	274	270	256	44	43	70	77	1.6	9.5
	27.5	110.74	0.66	0.70	273	271	262	44	43	71	78	1.6	9.5
4	30	112.45	0.64	0.69	272	271	257	44	42	71	79	1.6	9.5
	32.5	114.16	0.65	0.69	272	272	256	44	42	71	80	1.7	10
	35	115.91	0.65	0.69	272	269	252	44	42	71	80	1.7	10
	37.5	117.66	0.66	0.70	273	272	257	44	43	72	81	1.7	10
5	40	119.41	0.66	0.70	274	271	256	44	43	72	81	1.7	10
	42.5	121.15	0.63	0.68	275	271	253	44	43	72	81	1.6	10
	45	122.88	0.61	0.67	275	268	258	44	43	72	82	1.7	10
	47.5	124.65	0.61	0.67	275	268	255	44	43	72	82	1.6	10
6	50	126.37	0.56	0.64	275	268	255	44	42	72	82	1.4	9.5

Traverse:				
Start Time: [illegible] 12:14	Initial Leak Check: 0.006	cfm@	11	"Hg
Finish Time:	Final Leak Check:	cfm@		"Hg

Traverse:				
Start Time:	Initial Leak Check:	cfm @		"Hg
Finish Time:	Final Leak Check:	cfm @		"Hg

Project No.: 21546

Operator : KS

Field Data Sheet

Date: 1/OCT/2015	Plant: Durham-York Energy Centre	Test No.: 1 SVOC	Page 3 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F <70	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	52.5	128.03	0.57	0.65	275	272	257	44	41	73	83	1.4	9.5
	55	129.65	0.57	0.65	276	268	253	45	41	73	83	1.5	9.5
	57.5	131.29	0.58	0.66	276	269	255	44	41	73	83	1.5	9.5
7	60	132.93	0.55	0.64	276	270	257	44	41	73	83	1.5	9.5
	62.5	134.56	0.54	0.63	276	270	254	44	41	73	84	1.5	10
	65	136.20	0.55	0.64	277	270	254	44	41	73	84	1.4	10
	67.5	137.83	0.56	0.65	277	272	258	44	41	74	84	1.4	9.5
8	70	139.46	0.59	0.66	277	270	254	44	41	74	84	1.5	9.5
	72.5	141.11	0.62	0.68	276	267	253	44	41	74	84	1.6	10
	75	142.80	0.61	0.67	277	268	259	44	42	74	84	1.7	10
	77.5	144.52	0.60	0.67	277	268	255	44	44	74	84	1.6	10.5
9	80	146.26	0.63	0.69	277	269	253	44	43	74	84	1.6	10.5
	82.5	147.98	0.63	0.69	273	272	258	44	42	74	84	1.6	10
	85	149.59	0.62	0.68	273	270	255	44	42	75	84	1.7	10
	87.5	151.45	0.61	0.68	272	270	254	44	43	76	84	1.6	10
10	90	153.18	0.60	0.67	272	268	258	44	43	75	84	1.6	10
	92.5	154.89	0.60	0.68	253	268	255	45	43	75	84	1.6	10
	95	156.60	0.60	0.68	252	268	255	45	42	75	84	1.6	10
	97.5	158.30	0.60	0.68	252	267	259	45	43	76	85	1.6	10
11	100	160.01	0.53	0.64	252	268	~~268~~ 255	45	43	75	85	1.4	10
	102.5	161.64	0.53	0.64	252 ~~266~~	266	252	45	42	75	85	1.4	10

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : KS

Field Data Sheet

Date: 1/Oct/2015	Plant: Durham-York Energy Centre	Test No.: 1	SVOC	Page 4 of 6
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

	*	*	*		*			*		*	*	*	*
Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F <70	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	105	163.25	0.53	0.64	252	269	260	46	43	75	85	1.4	10
	107.5	164.87	0.53	0.64	252	267	259	45	42	75	85	1.4	10
12	110	166.49	0.42	0.57	252	269	253	45	42	76	85	1.1	9
	112.5	167.99	0.40	0.56	252	268	258	45	42	76	86	1.0	8.5
	115	169.43	0.43	0.58	252	266	258	46	42	76	86	1.0	8.5
	117.5	170.84	0.41	0.56	252	268	254	46	42	76	86	1.1	8.5
	120	172.32											
1	0	172.67	0.60	0.68	256	266	262	65	44	76	76	1.5	9
	2.5	174.28	0.60	0.67	273	~~263~~ 271	263	49	42	76	78	1.6	9.5
	5	175.97	0.60	0.67	273	271	263	46	43	76	80	1.6	10
	7.5	177.65	0.64	0.69	274	271	259	46	43	76	81	1.6	10
2	10	179.39	0.65	0.70	274	268	253	45	43	76	82	1.6	10
	12.5	181.12	0.65	0.70	273	268	255	44	42	76	82	1.7	10
	15	182.88	0.65	0.70	274	272	259	44	43	76	83	1.7	11
	17.5	184.65	0.66	0.70	274	269	256	44	43	76	84	1.7	11
3	20	186.42	0.65	0.70	274	267	254	45	43	76	84	1.7	11
	22.5	188.19	0.62	0.68	274	270	258	45	43	76	84	1.6	11
	25	189.92	0.64	0.69	273	272	258	45	44	76	85	1.6	11
	27.5	191.67	0.63	0.69	273	270	255	45	44	77	85	1.6	11
4	30	193.39	0.61	0.68	273	271	255	45	45	76	85	1.6	11

Traverse:				
Start Time: ~~[illegible]~~	Initial Leak Check:	cfm@		"Hg
Finish Time: 14:14	Final Leak Check: 0.006	cfm@	13	"Hg

Traverse:				
Start Time: 14:31	Initial Leak Check: 0.004	cfm @	13	"Hg
Finish Time:	Final Leak Check:	cfm @		"Hg

Project No.: 21546

Operator : KS

Field Data Sheet

Date: OCT 1, 2015	Plant: Durham-York Energy Centre	Test No.: 1 SVOC	Page 5 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F 270	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
	32.5	195.13	0.59	0.67	272	273	259	45	46	77	85	1.6	11
	35	196.86	0.59	0.67	272	272	256	46	47	77	86	1.5	11
	37.5	198.42	0.60	0.67	271	270	255	46	47	77	86	1.6	11
5	40	200.27	0.57	0.66	272	270	259	46	48	77	86	1.5	11
	42.5	201.99	0.57	0.66	271	272	259	46	45	77	86	1.5	10
	45	203.66	0.54	0.64	271	271	254	46	43	77	87	1.4	10
	47.5	205.32	0.56	0.65	271	268	256	48	42	78	87	1.4	10
6	50	206.95	0.56	0.65	271	271	260	47	42	78	87	1.4	10
	52.5	208.60	0.50	0.62	271	269	257	47	42	78	88	1.3	10
	55	210.20	0.52	0.62	271	271	253	47	42	78	88	1.3	10
	57.5	211.79	0.52	0.63	271	272	258	47	42	79	89	1.3	10
7	60	213.37	0.51	0.62	272	268	258	47	42	78	89	1.3	10
	62.5	214.95	0.51	0.63	271	270	255	47	42	79	89	1.3	10
	65	216.51	0.56	0.65	271	268	256	47	42	78	89	1.4	10
	67.5	218.11	0.58	0.67	272	269	260	47	43	79	89	1.5	10
8	70	219.75	0.59	0.67	273	270	256	47	44	79	89	1.6	11
	72.5	221.46	0.60	0.68	272	271	254	47	44	79	89	1.6	11
	75	223.17	0.60	0.68	272	268	259	47	45	79	89	1.6	11
	77.5	224.88	0.60	0.68	272	271	259	47	45	79	89	1.6	11
9	80	226.58	0.63	0.69	273	268	254	48	46	79	89	1.7	11
	82.5	228.32	0.63	0.70	271	272	257	46	46	80	89	1.7	11.5

Traverse:		
Start Time:	Initial Leak Check:	cfm@ "Hg
Finish Time:	Final Leak Check:	cfm@ "Hg

Traverse:		
Start Time:	Initial Leak Check:	cfm @ "Hg
Finish Time:	Final Leak Check:	cfm @ "Hg

Project No.: 21546

Operator : KS

Field Data Sheet

Date: 1/Oct/2015	Plant: Durham-York Energy Centre	Test No.: 1	SVOC	Page 6 of 6
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point *	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F <70	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
	85	230.06	0.61	0.68	271	271	260	45	45	79	89	1.7	11.5
	87.5	231.84	0.65	0.71	271	268	257	44	45	80	89	1.7	12
10	90	233.62	0.63	0.70	271	269	254	44	45	80	89	1.7	12
	92.5	235.40	0.64	0.70	271	271	260	44	45	80	89	1.7	12
	95	237.18	0.62	0.69	249	271	259	44	45	80	89	1.7	12
	97.5	238.95	0.62	0.70	247	271	255	44	45	80	89	1.7	12
11	100	240.73	0.64	0.71	247	266	255	44	45	80	89	1.7	12
	102.5	242.50	0.64	0.71	248	270	260	44	45	80	89	1.8	12
	105	244.31	0.63	0.71	247	268	257	45	46	80	89	1.7	12
	107.5	246.11	0.65	0.72	247	268	254	44	47	80	89	1.7	12
12	110	247.90	0.65	0.72	248	271	260	44	48	80	89	1.8	12
	112.5	249.72	0.60	0.69	248	272	260	44	49	80	89	1.6	12
	115	251.57	0.60	0.69	248	271	255	45	50	80	88	1.5	12
	117.5	253.13	0.60	0.69	248	267	255	44	50	80	88	1.6	12
	120	254.81											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time: 16:31	Final Leak Check: 0.009	cfm@ 20	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : KS

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 2	Semi-Volatile Organic Compounds
Test Date	October 2, 2015
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	21546
Page	1 of 6
Probe No.:	
Meter Box No.:	TEAM 4
Impinger Box No.:	3

Pitot Factor	0.845	
DGMCF	1.004	
Barometric Pressure	30.16 ~~29.92~~	"Hg
Static Pressure	-10.0	"H2O
Nozzle Size	.2543	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	674.9	g
WCBDA	13.3	g

Combustion Gas Concentration

Oxygen	7.36	%
Carbon Dioxide	12.03	%
Carbon Monoxide	14.0	ppm

Measuring Device	MII Numbers
Probe / Pitot	15A
Trendicator	TEAM 4
Control Box	COE20090
Incline Manometer	TEAM 4
Comb.Gas.Analyzer	
Micromanometer	B03936
Barometer	Env. Can.
Calipers	

Nozzle Measurements	
1	.2540
2	.2545
3	.2540
4	.2545
Average:	.2543

Probe Liner Glass / Metal / Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None / Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

~~Rev. November 27, 2014~~

Field Data Sheet

Date: Oct 2/2015	Plant: Durham-York Energy Centre	Test No.: 2 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F <70	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	57.73	0.68	0.70	252	267	249	66	40	66	66	1.8	6.5
	2.5	59.53	0.70	0.70	272	269	255	56	42	66	66	1.8	7
	5	61.27	0.71	0.7	272	272	255	53	43	66	66	1.7	7
	7.5	63.02	0.77	0.73	272	270	251	51	44	66	67	1.9	7.5
2	10	64.86	0.71	0.70	272	272	256	49	45	66	68	1.8	7.5
	12.5	66.66	0.71	0.70	272	273	252	48	44	66	70	1.7	7.5
	15	68.42	0.73	0.72	272	270	253	47	44	66	71	1.8	7.5
	17.5	70.22	0.71	0.71	272	274	255	47	44	66	72	1.8	7.5
3	20	71.99	0.71	0.71	272	272	251	46	45	66	73	1.8	7.5
	22.5	73.78	0.70	0.70	271	272	256	46	44	67	74	1.8	7.5
	25	75.50	0.70	0.72	272	272	253	46	44	67	75	1.8	8
	27.5	77.30	0.71	0.71	272	270	251	45	45	67	76	1.8	8
4	30	79.10	0.69	0.70	272	270	255	45	46	67	76	1.8	8
	32.5	80.90	0.68	0.69	271	269	251	45	45	67	76	1.7	8
	35	82.67	0.68	0.69	272	271	255	45	46	67	77	1.7	8
	37.5	84.44	0.69	0.70	271	270	253	45	45	67	77	1.7	8
5	40	86.22	0.67	0.69	271	270	254	45	46	68	77	1.7	8
	42.5	87.96	0.69	0.70	272	274	255	45	46	68	78	1.7	8
	45	89.70	0.69	0.70	272	273	251	45	46	68	78	1.7	8
	47.5	91.46	0.69	0.7	272	273	256	45	46	68	78	1.8	8
6	50	93.24	0.62	0.67	272	273	254	45	46	68	78	1.6	8

Traverse: 1				
Start Time: 7:42	Initial Leak Check: 0.014	cfm@	13	"Hg
Finish Time: —	Final Leak Check: —	cfm@	—	"Hg

Traverse:				
Start Time:	Initial Leak Check:	cfm @		"Hg
Finish Time:	Final Leak Check:	cfm @		"Hg

Project No.: 21546

Operator : KS

Field Data Sheet

Date: OCT. 2/15	Plant: Durham-York Energy Centre	Test No.: 2 SVOC	Page 3 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
	52.5	95.02	.63	.67	272	273	256	45	44	68	79	1.6	8
	55	96.72	.62	.67	272	269	254	45	44	68	79	1.6	8
	57.5	98.40	.62	.67	272	270	255	45	44	68	79	1.6	8
7	60	100.11	.67	.69	272	272	257	46	44	69	79	1.7	8.5
	62.5	101.83	.66	.68	272	272	252	47	44	69	79	1.7	8.5
	65	103.62	.66	.68	272	270	253	47	44	69	79	1.7	8.5
	67.5	105.38	.67	.69	272	271	256	47	43	69	79	1.7	8.5
8	70	107.16	.64	.68	272	270	256	47	43	69	79	1.6	8.5
	72.5	108.90	.63	.67	270	269	256	48	44	69	79	1.6	8.5
	75	110.62	.60	.66	269	269	252	47	44	69	79	1.5	8.5
	77.5	112.31	.60	.66	269	269	253	46	44	69	79	1.5	8.5
9	80	114.00	.60	.66	268	273	254	45	44	69	80	1.5	8.5
	82.5	115.68	.60	.66	268	273	254	45	44	69	80	1.5	8.5
	85	117.38	.58	.65	267	271	256	46	44	69	80	1.4	8
	87.5	119.04	.58	.65	266	270	253	44	45	69	80	1.4	8
10	90	120.68	.58	.65	266	270	253	44	45	69	80	1.4	8
	92.5	122.34	.58	.65	263	270	257	44	45	69	80	1.4	8
	95	124.00	.58	.65	262	268	251	44	45	69	80	1.4	8
	97.5	125.67	.58	.65	262	268	252	44	45	69	80	1.4	8
11	100	127.34	.56	.64	262	268	252	44	45	69	80	1.4	8
	102.5	128.98	.56	.64	263	269	254	45	45	70	80	1.4	8

Traverse:			
Start Time: —	Initial Leak Check:	cfm@	"Hg
Finish Time: —	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : C. BELORE

Field Data Sheet

Date: OCT. 2/15	Plant: Durham-York Energy Centre	Test No.: 2	SVOC	Page 4 of 6
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
*	*	*	*		*			*		*	*	*	*
	105	130.63	.55	.63	263	273	255	45	46	70	80	1.4	7.5
	107.5	132.31	.55	.63	264	268	252	45	48	70	80	1.4	7.5
12	110	133.90	.55	.63	264	268	252	45	48	70	80	1.4	7.5
	112.5	135.52	.55	.63	264	268	252	45	48	70	80	1.4	7.5
	115	137.32	.55	.63	264	270	256	45	53	70	81	1.4	7.5
	117.5	138.95	.55	.63	264	270	256	46	55	70	81	1.4	7.5
	120	140.46											
1	0	140.85	.66	.69	264	268	254	61	55	69	70	1.6	8.5
	2.5	142.53	.67	.69	264	268	254	61	55	69	70	1.6	8.5
	5	144.33	.67	.69	266	273	256	62	45	69	73	1.6	8.5
	7.5	146.00	.68	.69	266	273	256	62	45	69	73	1.6	8.5
2	10	147.67	.67	.69	266	270	254	60	44	69	75	1.6	8.5
	12.5	149.40	.66	.69	266	273	254	59	45	69	77	1.6	8.5
	15	151.00	.67	.69	266	273	254	59	45	69	77	1.6	8.5
	17.5	152.68	.67	.69	266	272	256	61	45	69	78	1.6	8.5
3	20	154.42	.66	.69	267	272	252	62	45	69	78	1.6	8.5
	22.5	156.11	.65	.69	267	272	254	62	45	69	79	1.6	8.5
	25	157.82	.65	.69	267	270	253	62	45	69	79	1.6	8.5
	27.5	159.55	.65	.69	267	273	252	62	45	70	79	1.6	8.5
4	30	161.22	.62	.67	267	273	252	62	45	70	79	1.6	8.5

Traverse: 1				
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 09:42	Final Leak Check: .014	cfm@ 12	"Hg

Traverse: 2				
Start Time: 09:57	Initial Leak Check: 0.006	cfm @ 11	"Hg
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21546

Operator: C. BELORE

Field Data Sheet

Date: OCT. 2/15	Plant: Durham-York Energy Centre	Test No.: 2 SVOC	Page 5 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	* Clock Time	* Dry Gas Meter ft^3	* Pitot ΔP "H_2O	Desired cfm	* Stack Temp °F	Probe Temp °F	Oven Temp °F	* Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	* Meter Temp Outlet °F	* Meter Temp Inlet °F	* Meter Pressure ΔH "H_2O	* Pump Vacuum "Hg Gauge
	32.5	162.92	.62	.67	267	271	256	45	60	70	79	1.6	9.
	35	164.61	.60	.66	267	269	253	45	62	70	80	1.6	9.
	37.5	166.26	.60	.66	267	269	253	45	62	70	80	1.6	9.
5	40	168.01	.58	.65	267	269	253	45	62	70	80	1.6	9.
	42.5	169.66	.54	.63	266	271	256	46	59	70	80	1.4	8.5
	45	171.32	.52	.62	266	270	256	46	59	70	80	1.4	8.5
	47.5	172.94	.52	.62	266	270	255	46	59	70	80	1.4	8.5
6	50	174.56	.50	.61	266	270	255	46	59	70	80	1.4	8.5
	52.5	176.30	.50	.60	267	272	252	46	61	70	80	1.4	8.5
	55	177.87	.50	.60	267	272	252	46	61	70	80	1.4	8.5
	57.5	179.48	.50	.60	268	270	254	47	60	70	81	1.4	8.5
7	60	181.04	.51	.60	268	273	254	46	58	70	81	1.4	8.5
	62.5	182.58	.52	.60	268	273	254	46	58	70	81	1.4	8.5
	65	184.13	.52	.60	269	272	252	46	59	71	81	1.4	8.5
	67.5	185.67	.51	.60	269	272	256	46	59	71	81	1.4	8.5
8	70	187.20	.52	.60	269	272	256	46	59	71	81	1.4	8.5
	72.5	188.74	.58	.65	268	267	252	47	59	71	81	1.5	9.
	75	190.36	.60	.66	268	267	252	47	59	71	81	1.5	9
	77.5	192.21	.60	.66	268	272	254	46	61	71	81	1.5	9
9	80	193.88	.58	.65	267	270	254	46	61	71	81	1.5	9
	82.5	195.55	.58	.65	267	272	257	47	62	71	81	1.5	9

Traverse: 2		Traverse:	
Start Time:	Initial Leak Check: cfm@ "Hg	Start Time:	Initial Leak Check: cfm @ "Hg
Finish Time:	Final Leak Check: cfm@ "Hg	Finish Time:	Final Leak Check: cfm @ "Hg

Project No.: 21546

Operator : C. BELORE

Field Data Sheet

Date: Oct. 2/15	Plant: Durham-York Energy Centre	Test No.: 2 SVOC	Page 6 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
	85	197.23	.58	.65	266	272	256	47	61	71	81	1.5	9
	87.5	198.90	.57	.65	266	271	256	47	61	71	82	1.5	9
10	90	200.56	.56	.64	266	269	256	47	62	71	82	1.5	9
	92.5	202.24	.56	.64	265	272	252	47	62	71	82	1.5	9
	95	203.90	.57	.65	265	272	257	47	62	72	82	1.5	9
	97.5	205.56	.56	.64	265	269	254	48	63	72	82	1.5	9
11	100	207.22	.56	.64	265	270	254	48	63	72	82	1.5	9
	102.5	208.90	.50	.60	266	272	256	48	63	72	82	1.4	9
	105	210.53	.48	.59	266	270	252	48	62	72	82	1.3	8.8
	107.5	212.13	.48	.59	266	270	254	48	61	72	82	1.3	8.5
12	110	213.72	.48	.59	266	273	254	48	61	72	82	1.3	8.5
	112.5	215.26	.47	.59	266	273	255	48	61	72	82	1.3	8.5
	115	216.82	.48	.59	267	270	256	48	61	72	83	1.3	8.5
	117.5	218.37	.48	.59	266	271	252	48	62	72	83	1.3	8.5
	120	219.91											

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 11:57	Final Leak Check: .014	cfm@ 12	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546
Operator : C. Belore

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 3	Semi-Volatile Organic Compounds
Test Date	OCTOBER 2, 2015
Test Location	APC Outlet No. 2
Operator Signature	[signature]

Project No.:	21546
Page	1 of 6
Probe No.:	6
Meter Box No.:	TEAM 4
Impinger Box No.:	4

Pitot Factor	0.845	
DGMCF	1.004	
Barometric Pressure	30.14	"Hg
Static Pressure	-10.1	"H2O
Nozzle Size	.2543	inches
Stack Diameter	4.5	feet
Length	0	feet
Width	0	feet
Port length:	11	inches

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	653.2	g
WCBDA	19.7	g

Combustion Gas Concentration

Oxygen	7.28	%
Carbon Dioxide	12.04	%
Carbon Monoxide	11.8	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	TEST
Control Box	2
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements

1 SEE
2 TEST
3 2
4
Average:

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None / Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Rev. November 27, 2014

Field Data Sheet

Date: Oct 2/15	Plant: Durham-York Energy Centre	Test No.: 3 SVOC
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2

Point	* Clock Time	* Dry Gas Meter ft^3	* Pitot ΔP "H_2O	Desired cfm	* Stack Temp °F	Probe Temp °F	Oven Temp °F	* Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	* Meter Temp Outlet °F	* Meter Temp Inlet °F	* Meter Pressure ΔH "H_2O	* Pump Vacuum "Hg Gauge
1	0	20.20	.70	.71	273	264	259	60	60	71	71	1.8	9
	2.5	21.90	.72	.72	273	266	248	57	53	73	71	1.8	9
	5	23.69	.70	.71	275	268	248	55	52	75	71	1.8	9
	7.5	25.45	.70	.71	275	272	260	55	52	71	76	1.8	9
2	10	26.99	.71	.71	275	270	260	54	52	72	77	1.8	9
	12.5	28.62	.70	.71	275	263	253	53	53	72	78	1.8	9
	15	30.43	.72	.70	275	261	253	53	54	72	78	1.8	9
	17.5	32.23	.71	.71	276	262	253	53	54	72	78	1.8	9
3	20	34.03	.69	.70	276	256	250	52	52	73	80	1.8	9
	22.5	35.85	.67	.69	275	257	251	52	52	73	80	1.7	9
	25	37.69	.68	.70	275	257	251	52	52	73	81	1.7	9
	27.5	39.37	.67	.70	275	257	251	52	53	73	81	1.8	9
4	30	41.16	.67	.70	275	258	258	52	53	74	81	1.8	9
	32.5	42.95	.61	.66	275	258	258	51	53	73	81	1.6	9
	35	44.69	.63	.63	~~264~~ 275	264	259	51	50	73	82	1.6	9
	37.5	46.30	.63	.68	275	260	259	51	51	74	83	1.6	9
5	40	47.99	.59	.65	275	260	258	51	51	74	83	1.6	9
	42.5	49.73	.58	.65	275	260	253	51	50	74	83	1.5	9
	45	51.40	.57	.64	275	260	255	51	50	74	83	1.5	9
	47.5	53.04	.57	.64	275	260	255	51	50	74	83	1.5	9
6	50	54.65	.53	.62	274	260	255	51	50	74	84	1.5	9

Traverse: 1		
Start Time: 1226	Initial Leak Check: .008 cfm@ 12 "Hg	
Finish Time:	Final Leak Check: cfm@ "Hg	

Traverse:		
Start Time:	Initial Leak Check:	cfm @ "Hg
Finish Time:	Final Leak Check:	cfm @ "Hg

Project No.: 21546

Operator : [signature]

Field Data Sheet

Date: OCT 2/15	Plant: Durham-York Energy Centre	Test No.: 3 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H₂O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H₂O *	Pump Vacuum "Hg Gauge *
	52.5	56.35	.51	.61	274	250	251	51	50	74	84	1.3	10
	55	57.93	.51	.61	274	250	251	51	50	75	84	1.3	10
	57.5	59.51	.51	.61	273	251	251	51	50	75	84	1.3	10
7	60	61.06	.52	.62	273	251	255	52	52	75	84	1.3	10
	62.5	62.63	.52	.62	273	251	255	53	54	75	85	1.3	10
	65	64.17	.52	.62	273	251	255	53	55	75	85	1.3	10
	67.5	65.76	.52	.62	273	251	255	53	53	75	85	1.3	10
8	70	67.32	.54	.63	271	261	255	49	49	75	85	1.3	10
	72.5	68.89	.54	.63	271	261	255	48	50	75	85	1.3	10
	75	70.44	.53	.63	271	262	260	48	49	75	85	1.3	10
	77.5	72.00	.53	.62	270	261	260	49	49	75	85	1.3	10
9	80	73.56	.56	.64	267	261	260	49	50	76	86	1.5	11
	82.5	75.19	.57	.65	266	261	256	49	50	76	86	1.6	11
	85	76.87	.56	.64	265	260	261	49	50	76	86	1.6	11
	87.5	78.55	.55	.64	265	260	261	48	50	76	86	1.5	11
10	90	80.15	.58	.66	262	262	262	48	50	76	86	1.6	11
	92.5	81.88	.57	.65	261	258	258	48	50	76	86	1.6	11
	95	83.56	.56	.65	261	258	258	48	50	76	86	1.6	11
	97.5	85.24	.56	.63	261	260	257	49	51	76	85	1.6	11
11	100	86.91	.57	.65	259	252	252	49	51	76	85	1.6	11
	102.5	88.58	.56	.	262	252	252	49	51	76	85	1.6	11

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : [signature]

Field Data Sheet

Date: 0012/15	Plant:	Durham-York Energy Centre	Test No.:	3 SVOC	
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
	105	90.24	.57	.63	263	262	263	49	52	77	86	1.6	11
	107.5	91.91	.58	.66	263	262	259	49	52	~~77~~	86	1.6	11
12	110	93.57	.57	.66	264	262	259	48	52	77	86	1.6	11
	112.5	95.23	.59	.66	264	260	255	49	52	76	85	1.6	11
	115	96.90	.59	.66	264	260	255	49	52	76	85	1.6	11
	117.5	98.53	.60	.67	264	260	260	49	52	77	86	1.6	11
	120	100.20											
1	0	100.50	.69	.72	274	261	256	50	49	77	76	1.9	13
	2.5	102.26	.69	.71	275	260	253	46	49	76	79	1.9	13
	5	104.13	.69	.71	275	260	257	46	52	76	79	1.9	13
	7.5	106.01	.68	.70	276	260	257	45	49	76	80	1.9	13
2	10	107.83	.68	.70	276	260	258	46	53	76	81	1.9	13
	12.5	109.65	.69	.71	276	260	258	46	53	76	82	1.9	13
	15	111.42	.68	.70	276	258	257	47	52	76	82	1.9	13
	17.5	113.30	.68	.70	276	258	257	47	52	76	82	1.9	13
3	20	115.11	.68	.70	275	259	257	48	52	76	82	1.8	13
	22.5	116.92	.67	.70	275	258	257	48	52	76	82	1.8	13
	25	118.72	.67	.70	275	261	255	48	51	76	83	1.7	12.5
	27.5	120.50	.67	.70	275	261	255	48	51	76	83	1.7	12.5
4	30	122.30	.60	.66	275	261	258	49	51	77	84	1.5	12

Traverse: 2		Traverse: 2	
Start Time: —	Initial Leak Check: ~~.002~~ cfm@ ~~12~~ "Hg	Start Time: 1440	Initial Leak Check: .002 cfm @ 12 "Hg
Finish Time: 14:26	Final Leak Check: .002 cfm@ 12 "Hg	Finish Time: —	Final Leak Check: — cfm @ — "Hg

Project No.: 21546

Operator : Du / CB

Field Data Sheet

Date: Oct 2/15	Plant:	Durham-York Energy Centre	Test No.:	3 SVOC	Page 5 of 6
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
*	*	*	*		*			*		*	*	*	*
	32.5	124.00	.60	.66	275	262	253	49	51	76	84	1.6	12
	35	125.73	.60	.66	276	260	254	49	51	76	84	1.6	12
	37.5	127.41	.60	.66	275	261	263	49	53	77	85	1.6	12
5	40	129.12	.58	.65	275	260	262	49	53	77	85	1.6	12
	42.5	130.80	.56	.64	275	260	262	49	53	77	85	1.4	12
	45	132.45	.54	.63	274	262	262	50	54	77	85	1.4	11
	47.5	134.09	.55	.63	274	262	261	49	53	77	85	1.4	11
6	50	135.62	.46	.58	274	263	260	49	53	77	86	1.4	11
	52.5	137.17	.46	.58	274	263	260	49	53	77	86	1.2	10
	55	138.70	.46	.58	273	263	261	49	55	77	86	1.2	10
	57.5	140.24	.46	.58	273	263	262	50	56	77	86	1.2	10
7	60	141.74	.46	.58	273	263	262	49	57	77	86	1.2	10
	62.5	143.27	.46	.58	273	260	254	49	56	77	86	1.2	10
	65	144.77	.46	.58	273	256	255	49	53	77	86	1.2	10
	67.5	146.30	.46	.58	273	257	261	49	53	77	86	1.2	10
8	70	147.82	.45	.58	273	257	261	49	53	77	86	1.2	10
	72.5	149.34	.45	.58	273	259	259	49	51	77	86	1.2	10
	75	150.84	.45	.58	273	259	259	49	51	77	86	1.2	10
	77.5	152.38	.50	.61	273	259	263	49	50	77	86	1.2	10
9	80	153.92	.50	.61	273	260	263	49	50	77	86	1.2	10
	82.5	155.46	.50	.61	273	256	260	50	50	77	86	1.2	10

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 21546

Operator : Du / CB

Field Data Sheet

Date: 2022/15	Plant: Durham-York Energy Centre	Test No.: 3 SVOC	Page 6 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
*	*	*	*		*			*		*	*	*	*
	85	157.01	.50	.61	274	256	255	50	51	77	86	1.2	11
	87.5	158.53	.50	.61	274	260	260	50	51	77	86	1.2	11
10	90	160.07	.55	.64	274	260	260	50	51	77	86	1.2	11
	92.5	161.63	.55	.64	273	260	252	48	52	77	86	1.3	11.5
	95	163.22	.54	.64	274	256	259	48	52	77	86	1.3	11.5
	97.5	164.81	.56	.64	274	261	260	48	53	77	86	1.3	11.5
11	100	166.40	.56	.64	274	257	260	48	53	77	86	1.3	11.5
	102.5	167.92	.55	.64	274	258	260	47	52	77	86	1.4	11.5
	105	169.50	.55	.64	274	258	259	47	52	77	86	1.4	11.5
	107.5	171.20	.54	.63	273	257	258	47	53	78	86	1.4	11.5
12	110	172.87	.50	.61	270	259	253	47	53	77	86	1.2	11
	112.5	174.44	.49	.60	270	258	255	47	51	77	86	1.2	11
	115	175.96	.48	.60	270	260	255	47	52	77	86	1.2	11
	117.5	177.48	.48	.60	270	257	255	47	51	77	86	1.2	11
	120	179.02											

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 16:40	Final Leak Check: .004	cfm@ 15	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 21546

Operator: [illegible] / [illegible]

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 1 -	Semi-Volatile Organic Compounds
Test Date	Oct. 21, 2015
Test Location	APC Outlet No. 1
Operator Signature	DG

Project No.:	21546 - 2
Page	1 of 6
Probe No.:	6 series
Meter Box No.:	Team 3
Impinger Box No.:	2

Pitot Factor	.845	
DGMCF	.967	
Barometric Pressure	29.89 ~~29.3~~	"Hg
Static Pressure	-10.3	"H2O
Nozzle Size	.2573	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	674.4	g
WCBDA	18.3	g

Combustion Gas Concentration

Oxygen	7.48	%
Carbon Dioxide	12.03	%
Carbon Monoxide	23.65	ppm

Measuring Device	MII Numbers
Probe / Pitot	B03775
Trendicator	COE 20093
Control Box	COE 20093
Incline Manometer	COE 20093
Comb.Gas.Analyzer	NOVA
Micromanometer	—
Barometer	Env. Can.
Calipers	CAN - 22136

Nozzle Measurements

1	.2575
2	.2570
3	.2575
4	.2570
Average:	.2573

Probe Liner Glass / Metal /Teflon / Other________

Nozzle Glass / Metal / Other________

Union None /Metal / Teflon / Other________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Rev. November 27, 2014

Field Data Sheet

Date: Oct-21, 2015	Plant: Durham-York Energy Centre	Test No.: 1 – SVOC	Page 2 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	295.37	.67	.75	287	252	245	93	89	96	96	2.0	5.0
	2.5	296.45	.69	.77	287	252	245	68	42	97	96	2.1	6.0
	5	298.26	.70	.77	287	251	245	67	49	96	96	2.1	6.0
	7.5	300.18	.68	.76	287	251	248	67	50	96	97	2.0	6.0
2	10	302.12	.68	.76	287	252	247	67	49	96	97	2.0	6.0
	12.5	304.03	.68	.76	288	251	246	65	48	96	97	2.0	6.0
	15	305.93	.69	.77	288	251	245	63	50	96	97	2.0	6.0
	17.5	307.91	.70	.77	288	251	245	63	50	96	97	2.1	6.0
3	20	309.81	.70	.77	289	251	245	59	45	96	97	2.1	6.0
	22.5	311.72	.68	.76	289	251	245	60	50	96	97	2.1	6.0
	25	313.66	.70	.77	289	251	245	61	50	96	97	2.1	6.0
	27.5	315.62	.71	.78	289	251	245	61	50	96	97	2.2	6.0
4	30	317.61	.65	.74	289	250	250	58	48	96	97	1.9	6.0
	32.5	319.47	.68	.76	289	250	251	61	49	96	97	2.0	6.0
	35	321.37	.70	.77	290	250	250	61	47	96	97	2.1	6.0
	37.5	323.~~40~~35	.70	.77	290	250	250	61	47	96	97	2.1	6.0
5	40	325.30	.62	.72	290	250	251	62	49	96	98	1.9	6.0
	42.5	327.17	.63	.73	290	250	250	63	47	97	97	1.9	6.0
	45	329.04	.60	.71	290	251	249	61	45	97	98	1.8	6.0
	47.5	330.87	.61	.72	290	250	251	59	47	97	98	1.8	6.0
6	50	332.70	.56	.69	290	250	251	59	47	97	98	1.7	6.0

Traverse:					
Start Time: 14:28	Initial Leak Check:	.001	cfm@	15	"Hg
Finish Time: —	Final Leak Check:	—	cfm@	—	"Hg

Traverse: —					
Start Time: —	Initial Leak Check:	—	cfm @	—	"Hg
Finish Time: —	Final Leak Check:	—	cfm @	—	"Hg

Project No.: 21546 – 2

Operator : DG

Field Data Sheet

Date: Oct 21, 2015	Plant: Durham-York Energy Centre	Test No.: 1 - SVOC	Page 3 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	52.5	334.48	.57	.70	290	252	250	57	44	97	98	1.7	6.0
	55	336.24	.57	.70	290	252	250	57	47	97	98	1.7	6.0
	57.5	338.01	.56	.69	289	250	250	58	47	97	98	1.7	6.0
7	60	339.76	.56	.69	289	250	250	58	47	97	98	1.7	6.0
	62.5	341.49	.54	.68	290	250	250	56	46	97	98	1.6	5.0
	65	343.21	.52	.66	289	250	250	56	47	97	98	1.5	5.0
	67.5	344.90	.52	.63	289	250	251	57	47	97	98	1.4	5.0
8	70	346.53	.55	.68	289	250	251	57	46	97	98	1.6	5.0
	72.5	348.24	.55	.68	289	249	251	56	48	97	98	1.6	5.0
	75	349.96	.55	.68	289	248	251	54	48	97	99	1.6	50
	77.5	351.67	.59	.71	289	250	251	53	48	98	98	1.8	6.0
9	80	353.49	.60	.72	290	249	251	52	49	97	99	1.8	6.0
	82.5	355.31	.60	.71	290	250	251	53	50	97	99	1.8	6.0
	85	357.12	.61	.72	291	250	251	53	50	97	99	1.9	6.0
	87.5	358.96	.61	.72	291	250	251	53	50	97	99	1.9	6.0
10	90	360.80	.64	.74	290	250	251	53	53	98	99	2.0	~~6.0~~ 7
	92.5	362.71	.64	.74	290	250	251	53	54	98	99	2.0	7.0
	95	364.60	.64	.74	290	250	251	52	51	98	99	2.0	7.0
	97.5	366.49	.60	.72	290	250	251	52	50	98	99	1.8	6.0
11	100	368.34	.53	.67	211	250	251	52	48	98	99	1.6	6.0
	102.5	370.08	.53	.71	219	250	251	53	46	98	99	1.8	6.0

Traverse:		Traverse:	
Start Time:	Initial Leak Check: — cfm@ — "Hg	Start Time:	Initial Leak Check: — cfm @ — "Hg
Finish Time:	Final Leak Check: — cfm@ — "Hg	Finish Time:	Final Leak Check: — cfm @ — "Hg

Project No.: 21546 - 2

Operator : DG

Field Data Sheet

Date: Oct. 21, 2015	Plant: Durham-York Energy Centre	Test No.: 1- SVOC	Page 4 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
	105	371.89	.52	.70	222	250	251	53	46	98	99	1.7	6.0
	107.5	373.68	.54	.71	223	250	251	53	46	98	99	1.8	6.0
12	110	375.51	.53	.70	223	250	251	54	46	98	99	1.7	6.0
	112.5	377.33	.52	.70	223	250	251	54	47	98	99	1.7	6.0
	115	379.11	.52	.70	223	250	251	54	47	98	99	1.7	6.0
	117.5	380.89	.52	.70	223	250	251	54	47	98	99	1.7	6.0
	120	382.67											
1	0	383.20	.68	.76	290	253	252	89	58	98	98	2.0	7.0
	2.5	385.09	.68	.76	288	251	251	51	43	98	98	2.0	7.0
	5	386.99	.72	.78	288	252	251	49	43	98	98	2.2	7.0
	7.5	389.01	.64	.74	287	251	252	48	41	97	98	2.0	7.0
2	10	390.85	.69	.74	288	252	252	49	41	98	98	2.0	7.0
*	12.5	392.85	.75	.80	289	250	250	64	42	96	96	2.3	8.0
	15	394.95	.75	.80	289	251	251	~~49~~ 53	42	96	96	2.2	8.0
	17.5	397.00	.77	.80	289	251	251	49	~~49~~ 42	96	96	2.2	8.0
3	20	399.05	.77	.81	289	251	251	49	42	96	96	2.2	8.0
	22.5	401.09	.70	.77	290	253	252	49	43	96	96	2.0	7.0
	25	403.03	.70	.77	290	253	252	50	45	96	96	2.0	7.0
	27.5	404.95	.70	.77	290	251	252	50	42	96	96	2.0	7.0
4	30	406.88	.66	.75	290	251	252	51	44	96	96	1.9	7.0

Traverse: 1		
Start Time: –	Initial Leak Check: – cfm@ – "Hg	
Finish Time: 16:28	Final Leak Check: .001 cfm@ 14 "Hg	

Traverse: 2		
Start Time: 16:53	Initial Leak Check: .002 cfm @ 14 "Hg	
Finish Time: –	Final Leak Check: – cfm @ – "Hg	

\# Test Paused@ 17:07:30 (Unit 1 was down - plant error)
\# Test resume @ 17:54:30

Project No.: 21546 - 2
Operator : DG

Field Data Sheet

Date: Oct-21, 2015	Plant: Durham-York Energy Centre	Test No.: 1 - SVOC	Page 5 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	32.5	408.78	.66	.75	290	252	251	51	45	96	96	1.9	7.0
	35	410.67	.68	.76	290	251	252	50	42	96	96	2.0	7.0
	37.5	412.57	.66	.75	290	251	252	51	43	96	96	2.0	7.0
5	40	414.46	.61	.72	290	250	251	50	43	96	96	1.8	7.0
	42.5	416.30	.61	.72	290	250	250	50	43	96	96	1.8	7.0
	45	418.16	.62	.72	290	250	250	51	43	96	96	1.8	7.0
	47.5	420.00	.62	.72	290	250	250	51	43	96	96	1.8	7.0
6	50	421.80	.62	.72	290	250	250	51	43	96	96	1.8	7.0
	52.5	423.64	.55	.68	290	250	250	51	43	96	96	~~1.9~~ 1.6	7.0
	55	425.40	.54	.68	290	250	250	50	43	96	96	1.5	6.0
	57.5	427.11	.57	.69	290	250	250	50	43	96	96	1.6	7.0
7	60	428.82	.59	.71	290	250	250	49	42	96	96	1.8	7.0
	62.5	430.65	.60	.71	290	250	250	49	42	96	96	1.8	7.0
	65	432.47	.58	.70	290	250	250	49	42	96	96	1.7	7.0
	67.5	434.28	.59	.71	290	250	250	49	42	96	96	1.7	7.0
8	70	436.08	.59	.71	289	250	253	50	43	95	96	1.7	7.0
	72.5	437.90	.59	.71	289	250	253	50	43	95	95	1.7	7.0
	75	439.68	.59	.71	289	250	253	50	44	95	95	1.7	7.0
	77.5	441.48	.59	.71	289	250	253	50	44	95	95	1.7	7.0
9	80	443.26	.60	.71	288	250	253	50	44	95	95	1.8	7.0
	82.5	445.06	.60	.71	288	250	253	50	44	95	95	1.8	7.0

Traverse: 2		Traverse: —	
Start Time: —	Initial Leak Check: — cfm@ — "Hg	Start Time: —	Initial Leak Check: — cfm @ — "Hg
Finish Time: —	Final Leak Check: — cfm@ — "Hg	Finish Time: —	Final Leak Check: — cfm @ — "Hg

Project No.: 21546 - 2

Operator : DG

Field Data Sheet

Date: oct. 21, 2013	Plant: Durham-York Energy Centre	Test No.: 1- SVOC	Page 6 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	85	446.86	.60	.71	289	250	253	50	47	94	95	1.8	7.0
	87.5	448.60	.60	.71	289	250	253	50	47	94	95	1.8	7.0
10	90	450.45	.57	.70	279	249	250	50	48	94	95	1.6	7.0
	92.5	452.29	.57	.70	276	250	253	50	45	94	95	1.5	7.0
	95	453.90	.57	.70	276	249	253	51	43	94	95	1.6	7.0
	97.5	455.64	.57	.70	276	249	253	51	43	94	95	1.7	7.0
11	100	457.41	.43	.70	~~276~~ 128	249	253	51	42	94	95	1.3	6.0
	102.5	459.01	.50	.73	126	249	253	51	42	94	95	1.5	7.0
	105	460.69	.61	.72	285	249	253	51	40	94	95	1.8	7.0
	107.5	462.50	.61	.72	286	249	253	51	41	94	95	1.8	7.0
12	110	464.34	.60	.71	286	250	253	51	41	94	95	1.8	7.0
	112.5	466.15	.60	.71	286	250	253	51	41	94	95	1.8	7.0
	115	467.96	.60	.71	286	250	253	51	41	94	95	1.8	7.0
	117.5	469.77	.60	.71	286	250	253	51	41	94	95	1.8	7.0
	120	471.57											

Traverse: 2			
Start Time: –	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 19:42	Final Leak Check: .001	cfm@ 14	"Hg

Traverse: –			
Start Time: –	Initial Leak Check: –	cfm @ –	"Hg
Finish Time: –	Final Leak Check: –	cfm @ –	"Hg

Project No.: 21546 - 2

Operator : DG

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 2-	Semi-Volatile Organic Compounds
Test Date	Oct. 22, 2015
Test Location	APC Outlet No. 1
Operator Signature	DG

Project No.:	21546 - 2
Page	1 of 6
Probe No.:	6 series
Meter Box No.:	G0520093 TEAM3
Impinger Box No.:	15

Pitot Factor	.845	
DGMCF	.967	
Barometric Pressure	29.80	"Hg
Static Pressure	-11.3	"H2O
Nozzle Size	.2573	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	558.8	g
WCBDA	219.6	g

Combustion Gas Concentration

Oxygen	6.90	%
Carbon Dioxide	12.37	%
Carbon Monoxide	15.63	ppm

Measuring Device	MII Numbers See T1
Probe / Pitot	
Trendicator	
Control Box	
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Can.
Calipers	

Nozzle Measurements	
1	See T1
2	
3	
4	
Average:	

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None/Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Rev. November 27, 2014

Field Data Sheet

Date: Oct-22,2015	Plant: Durham-York Energy Centre	Test No.: 2 SVOC	Page 2 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
1	0	472.16	.64	.71	286	248	257	83	54	82	82	1.8	6.0
	2.5	474.01	.64	.71	287	247	257	69	47	83	83	1.8	6.0
	5	475.81	.65	.72	287	248	257	66	42	83	83	1.8	6.0
	7.5	477.61	.65	.72	287	249	258	66	47	83	83	1.8	6.0
2	10	479.40	.73	.76	288	249	258	66	47	83	83	2.0	6.0
	12.5	481.29	.76	.78	288	249	259	62	42	83	83	2.1	7.0
	15	483.25	.76	.78	288	249	258	64	48	83	83	2.1	7.0
	17.5	485.18	.76	.78	288	249	258	64	48	83	83	2.1	7.0
3	20	487.16	.72	.76	289	249	258	61	44	83	83	2.0	7.0
	22.5	489.05	.71	.75	289	249	258	63	46	83	83	2.0	7.0
	25	490.97	.68	.73	289	249	258	65	47	83	83	1.9	7.0
	27.5	492.85	.68	.73	289	249	258	65	47	83	83	1.9	7.0
4	30	494.72	.71	.75	289	249	258	64	46	83	83	2.0	7.0
	32.5	496.63	.64	.71	289	249	258	65	45	83	83	1.8	6.0
	35	498.47	.64	.71	288	249	258	63	42	83	83	1.8	6.0
	37.5	500.30	.60	.69	288	249	258	65	43	83	84	1.7	6.0
5	40	502.06	.60	.69	288	249	258	65	43	83	84	1.7	6.0
	42.5	503.81	.61	.70	288	249	258	65	43	83	84	1.7	6.0
	45	505.100	.61	.70	288	249	258	65	43	83	84	1.7	6.0
	47.5	507.39	.61	.70	287	249	258	65	42	83	84	1.7	6.0
6	50	509.07	.56	.67	287	249	258	62	42	83	84	1.6	6.0

Traverse: 1				
Start Time: 8:42	Initial Leak Check: .001	cfm@	15	"Hg
Finish Time: —	Final Leak Check: —	cfm@	—	"Hg

Traverse: —				
Start Time: —	Initial Leak Check: —	cfm @	—	"Hg
Finish Time: —	Final Leak Check: —	cfm @	—	"Hg

Project No.: 21546-2

Operator : DG

Field Data Sheet

Date: Oct. 22, 2013	Plant: Durham-York Energy Centre	Test No.: 2 - SVOC	Page 3 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	52.5	510.80	.56	.67	288	243	257	62	42	83	84	1.6	6.0
	55	512.51	.56	.67	288	249	258	62	42	83	84	1.6	6.0
	57.5	514.24	.56	.67	288	248	258	62	42	83	84	1.6	6.0
7	60	515.93	.56	.67	287	248	258	57	40	83	84	1.6	6.0
	62.5	517.70	.56	.67	288	248	258	56	41	84	84	1.6	6.0
	65	519.42	.56	.67	288	248	258	56	41	84	84	1.6	6.0
	67.5	521.15	.54	.66	288	248	258	56	41	~~83~~ 84	84	1.6	6.0
8	70	522.84	.58	.68	288	248	258	55	41	84	84	1.6	6.0
	72.5	524.56	.58	.68	288	248	258	55	41	84	84	1.6	6.0
	75	526.30	.56	.67	287	248	258	55	41	84	84	1.6	6.0
	77.5	527.98	.57	.67	287	248	258	55	41	84	84	1.6	6.0
9	80	529.69	.60	.69	287	248	258	54	41	84	84	1.7	6.0
	82.5	531.47	.63	.71	287	248	258	54	41	84	84	1.8	7.0
	85	533.30	.60	.69	287	248	258	53	43	84	84	1.6	6.0
	87.5	535.05	.60	.69	287	248	258	53	43	84	84	1.6	6.0
10	90	536.77	.60	.69	287	248	258	53	42	84	84	~~1.6~~ 1.7	6.0
	92.5	538.52	.63	.71	287	248	258	53	42	84	84	1.8	7.0
	95	540.30	.68	.74	288	248	258	53	42	84	84	2.0	7.0
	97.5	542.18	.61	.70	288	248	258	54	43	84	84	1.6	6.0
11	100	543.92	.59	.69	288	248	258	53	41	84	84	1.6	6.0
	102.5	545.69	.59	.69	288	248	258	53	41	84	84	1.6	6.0

Traverse: 1				
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg

Traverse: —				
Start Time: —	Initial Leak Check: —	cfm @ —	"Hg
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21546-2

Operator : DG

Field Data Sheet

Date: Oct. 22, 2015	Plant: Durham-York Energy Centre	Test No.: 2 - SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	105	547.34	.59	.69	288	248	258	53	41	83	83	1.7	6.0
	107.5	549.08	.61	~~.68~~ .70	288	248	258	53	41	83	83	1.8	7.0
12	110	550.88	.64	.71	288	248	258	53	41	83	83	1.9	7.0
	112.5	552.73	.64	.71	288	248	258	53	41	83	83	1.8	7.0
	115	554.55	.64	.71	288	248	258	53	41	83	83	1.8	7.0
	117.5	556.37	.64	.71	288	248	258	53	41	83	83	1.8	7.0
	120	558.13				~~248~~	~~260~~	~~72~~	~~42~~	~~82~~	~~82~~		
1	0	558.57	.71	.75	288	248	260	72	42	82	82	2.0	8.0
	2.5	560.50	.71	.75	288	248	260	55	42	82	82	2.0	8.0
	5	562.36	.74	.76	290	248	259	55	44	82	82	2.1	8.0
	7.5	564.32	.73	.76	290	249	259	53	46	82	82	2.1	8.0
2	10	566.24	.73	.76	290	249	259	53	46	82	82	2.1	8.0
	12.5	568.17	.81	.80	290	249	259	53	46	82	82	2.3	9.0
	15	570.2	.70	.74	292	249	259	54	47	82	82	2.0	8.0
	17.5	572.11	.70	.74	292	249	259	54	47	82	82	2.0	8.0
3	20	574.01	.63	.70	291	250	259	54	44	82	82	1.8	~~8.0~~ 7.0
	22.5	575.80	.67	.73	290	250	259	54	44	82	82	1.9	7.0
	25	577.63	.72	.75	290	250	259	55	44	82	82	2.1	8.0
	27.5	579.58	.76	.77	290	250	259	55	44	82	82	2.2	9.0
4	30	581.61	.75	.77	290	249	259	55	46	82	82	2.1	8.0

Traverse: 1			
Start Time: –	Initial Leak Check: –	cfm@ –	"Hg
Finish Time: 10:42	Final Leak Check: .002	cfm@ 16	"Hg

Traverse: 2			
Start Time: 11:00	Initial Leak Check: .002	cfm @ 16	"Hg
Finish Time: –	Final Leak Check: –	cfm @ –	"Hg

Project No.: 21546 -2

Operator : DG

Field Data Sheet

Date: Oct. 22, 2015	Plant: Durham-York Energy Centre	Test No.: 2 - SVOC	Page 5 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	* Clock Time	* Dry Gas Meter ft³	* Pitot ΔP "H_2O	Desired cfm	* Stack Temp °F	Probe Temp °F	Oven Temp °F	* Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	* Meter Temp Outlet °F	* Meter Temp Inlet °F	* Meter Pressure ΔH "H_2O	* Pump Vacuum "Hg Gauge
	32.5	583.57	.72	.75	290	249	259	54	45	82	82	2.0	8.0
	35	585.50	.72	.75	290	249	259	54	45	82	82	2.0	8.0
	37.5	587.43	.72	.75	290	249	259	55	44	82	82	2.0	8.0
5	40	589.35	.65	.72	291	249	259	55	44	82	82	1.8	7.0
	42.5	591.18	.65	.72	290	249	258	56	44	82	82	1.8	7.0
	45	593.00	.67	.73	290	249	258	56	44	82	82	1.9	8.0
	47.5	594.82	.67	.73	291	249	259	56	44	82	82	1.9	8.0
6	50	596.65	.61	.69	291	249	259	56	44	82	82	1.7	7.0
	52.5	598.43	.59	.68	291	248	259	55	43	82	83	1.7	7.0
	55	600.19	.59	.68	291	248	259	55	43	82	83	1.7	7.0
	57.5	601.95	.59	.68	291	248	259	55	43	82	83	1.6	7.0
7	60	603.69	.55	.66	291	248	259	~~54~~	43	82	83	1.5	7.0
	62.5	605.38	.60	.69	290	248	258	54	43	82	83	1.7	7.0
	65	607.13	.60	.69	290	248	258	54	43	82	83	1.7	7.0
	67.5	608.90	.61	.69	290	248	258	55	44	83	83	1.7	7.0
8	70	610.67	.60	.69	290	248	258	54	44	83	83	1.7	7.0
	72.5	612.43	.60	.69	289	248	258	54	44	83	83	1.7	7.0
	75	614.19	.60	.69	289	248	258	54	44	83	83	1.7	7.0
	77.5	615.97	.60	.69	289	248	258	54	44	83	83	1.7	7.0
9	80	617.73	.60	.69	~~289~~ 286	248	258	54	44	83	83	1.7	7.0
	82.5	619.48	.62	.70	285	248	258	54	44	83	83	1.7	7.0

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg

Traverse: —			
Start Time: —	Initial Leak Check: —	cfm @ —	"Hg
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21546 - 2

Operator : DG

Field Data Sheet

Date: Oct 22 2015	Plant: Durham-York Energy Centre	Test No.: 2 - SVOC	Page 6 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
	85	621.24	.62	.70	285	248	258	55	45	83	83	1.7	7.0
	87.5	622.99	.62	.70	285	248	258	55	45	83	83	1.7	7.0
10	90	624.66	.62	.70	219	249	258	55	46	83	83	1.7	8.0
	92.5	626.41	.62	.74	211	248	258	55	47	83	83	2.0	10.0
	95	628.31	.54	.69	210	248	258	55	47	83	83	1.7	9.0
	97.5	630.15	.55	.70	213	249	258	57	48	83	83	1.6	9.0
11	100	631.90	.60	.73	275	249	258	57	48	83	83	1.9	9.0
	102.5	633.79	.60	.70	278	249	258	57	47	83	83	1.7	9.0
	105	635.60	.55	.67	278	248	258	57	46	83	83	1.6	8.0
	107.5	637.31	.55	.67	279	248	258	57	46	83	83	1.6	8.0
12	110	639.00	.55	.67	277	248	258	57	46	83	83	1.6	8.0
	112.5	640.71	.55	.67	275	248	258	57	46	83	83	1.6	8.0
	115	642.41	.57	.68	277	248	258	~~57~~ 54	44	83	83	1.6	8.0
	117.5	644.11	.57	.68	276	248	258	54	44	83	83	1.6	8.0
	120	645.82											

Traverse: 2					
Start Time: /	Initial Leak Check: —	cfm@ —	"Hg		
Finish Time: 13:00	Final Leak Check: .001	cfm@ 16	"Hg		

Traverse: —				
Start Time: —	Initial Leak Check: —	cfm @ —	"Hg	
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg	

Project No.: 21546 - 2

Operator : DG

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 3 -	Semi-Volatile Organic Compounds
Test Date	Oct. 22, 2015
Test Location	APC Outlet No. 1
Operator Signature	DG

Project No.:	21546 -2
Page	1 of 6
Probe No.:	6 series
Meter Box No.:	Team 3
Impinger Box No.:	1

Pitot Factor	.845	
DGMCF	.967	
Barometric Pressure	29.86	"Hg
Static Pressure	~~-7.3~~ -10.6	"H2O
Nozzle Size	.2373	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	663	g
WCBDA	16.8	g

Combustion Gas Concentration

Oxygen	7.29	%
Carbon Dioxide	12.15	%
Carbon Monoxide	17.84	ppm

Site Diagram

Measuring Device	MII Numbers
	See T1
Probe / Pitot	
Trendicator	
Control Box	
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Can.
Calipers	

Nozzle Measurements

1	See T1
2	
3	
4	
Average:	

Notes:

Rev. November 27, 2014

Field Data Sheet

Date: Oct.22,2015	Plant: Durham-York Energy Centre	Test No.: 3- SVOC	
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
1	0	649.54	.75	.77	287	248	249	82	46	84	84	2.1	4.0
	2.5	651.47	.74	.77	288	249	261	62	48	83	84	2.1	4.0
	5	653.41	.74	.77	288	249	261	58	44	83	84	2.1	4.0
	7.5	655.33	.74	.77	288	249	249	58	47	83	84	2.1	5.0
2	10	657.26	.74	.77	288	249	245	59	49	84	84	2.1	5.0
	12.5	659.19	.72	.76	288	249	248	57	45	84	84	2.0	5.0
	15	661.11	.72	.76	288	249	249	57	46	84	84	2.0	5.0
	17.5	663.03	.72	.76	288	249	249	57	46	84	84	2.0	5.0
3	20	664.94	.70	.75	288	249	248	59	47	84	84	2.0	5.0
	22.5	666.83	.70	.75	288	249	248	56	44	84	85	2.0	5.0
	25	668.71	.70	.75	288	250	249	59	48	84	85	2.0	5.0
	27.5	670.60	.70	.75	287	249	248	57	44	84	85	2.0	5.0
4	30	672.48	.63	.71	287	249	248	57	44	84	85	1.8	5.0
	32.5	674.31	.65	.72	287	249	248	57	44	84	85	1.8	5.0
	35	676.13	.65	.72	287	249	248	56	42	84	87	1.9	5.0
	37.5	677.97	.65	.72	286	249	248	58	44	84	86	1.9	5.0
5	40	679.82	.62	.70	286	249	249	60	45	84	85	1.8	5.0
	42.5	681.62	0.58	0.68	286	250	248	57	42	85	85	1.65	6.0
	45	683.37	0.58	0.68	286	249	248	59	43	85	85	1.65	5.0
	47.5	685.13	0.58	0.68	286	249	249	61	43	85	86	1.65	5.0
6	50	~~687.0~~ 686.95	0.55	0.66	286	249	249	55	41	85	85	1.55	5.0

Traverse:	1				
Start Time:	14:47	Initial Leak Check:	.01	cfm@ 14	"Hg
Finish Time:	–	Final Leak Check:	–	cfm@ –	"Hg

Traverse:	–				
Start Time:	–	Initial Leak Check:	–	cfm @ –	"Hg
Finish Time:	–	Final Leak Check:	–	cfm @ –	"Hg

Project No.: 21546-2

Operator : DG/SG

Field Data Sheet

Date Oct 22, 2005	Plant: Durham-York Energy Centre	Test No.: 3	SVOC	Page 3 of 6
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H₂O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H₂O *	Pump Vacuum "Hg Gauge *
	52.5	688.58	.56	0.67	286	249	250	53	41	85	85	1.6	4
	55	690.27	0.54	0.66	286	253	249	53	41	85	87	1.6	4
	57.5	691.97	0.54	0.66	284	248	248	52	41	85	86	1.6	4
7	60	693.65	0.52	0.65	284	249	248	52	41	85	86	1.8	4
	62.5	695.30	0.53	0.65	284	249	248	51	41	85	86	1.5	4
	65	696.96	0.53	0.65	284	248	248	50	40	85	86	1.5	4.
	67.5	698.61	0.54	0.66	285	249	248	50	41	85	86	1.55	4.
8	70	700.26	0.54	0.66	286	248	248	50	41	85	86	1.55	4.
	72.5	701.92	.58	.68	286	248	248	50	41	85	86	1.6	4.0
	75	703.64	.56	.67	287	249	248	49	42	85	86	1.6	4.0
	77.5	705.36	.56	.67	287	249	248	49	42	85	86	1.6	4.0
9	80	707.06	.59	.69	285	248	248	49	41	86	86	1.7	4.0
	82.5	708.84	.57	.68	286	248	248	49	41	86	86	1.6	4.0
	85	710.55	.57	.68	286	248	248	50	42	86	86	1.6	4.0
	87.5	712.27	.60	.69	286	248	248	50	42	86	86	1.7	5.0
10	90	714.00	.57	.68	283	248	248	50	42	86	87	1.6	4.0
	92.5	715.74	.56	.67	283	248	248	50	42	86	87	1.6	4.0
	95	717.42	.57	.68	282	248	248	50	43	86	87	1.6	4.0
	97.5	719.12	.57	.68	282	248	248	50	43	86	87	1.6	4.0
11	100	720.82	.54	.70	231	249	248	50	42	86	87	~~1.6~~ 1.7	4.0
	102.5	722.57	.54	.69	229	249	248	50	42	86	87	1.7	~~4.0~~ 5.0

Traverse: (			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg

Traverse: —			
Start Time: —	Initial Leak Check: —	cfm @	"Hg
Finish Time: —	Final Leak Check: —	cfm @	"Hg

Project No.: 21546 – 2

Operator : DG

Field Data Sheet

Date: oct. 22, 2015	Plant: Durham-York Energy Centre	Test No.: 3 - SVOC	Page 4 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
	105	724.35	.55	.69	229	249	248	50	42	86	87	1.7	5.0
	107.5	726.11	.55	.69	230	249	248	50	42	86	87	1.7	5.0
12	110	727.87	.55	.69	228	249	248	50	42	86	87	1.7	5.0
	112.5	729.62	.55	.69	228	249	248	50	42	86	87	1.7	5.0
	115	731.39	.55	.69	228	249	248	50	42	86	87	1.7	5.0
	117.5	733.14	.54	.69	227	249	248	50	42	86	87	1.7	5.0
	120	734.94				~~250~~	~~249~~	~~77~~	~~44~~	~~86~~	~~86~~		
1	0	735.33	.73	.80	290	250	248	77	44	86	86	2.2	6.0
	2.5	737.36	.73	.76	290	249	249	53	46	86	86	2.1	6.0
	5	739.36	.71	.75	290	249	248	53	46	86	86	2.0	5.0
	7.5	741.27	.70	.75	290	249	248	52	46	86	86	2.0	5.0
2	10	743.17	.70	.75	290	249	248	52	45	86	86	2.0	5.0
	12.5	745.05	.70	.75	290	249	248	52	45	86	86	2.0	5.0
	15	746.97	.69	.74	289	249	248	52	45	86	87	2.0	5.0
	17.5	748.86	.68	.74	289	249	248	52	45	86	87	2.0	5.0
3	20	750.75	.61	.70	289	249	248	51	45	86	87	~~2~~1.8	5.0
	22.5	752.56	.64	.72	289	249	248	51	44	86	87	1.9	5.0
	25	754.41	.61	.70	289	249	248	51	44	86	87	1.75	5.0
	27.5	756.23	.60	.69	289	249	248	51	44	86	87	1.6	5.0
4	30	757.94	.64	.72	288	249	249	51	44	66	87	1.9	5.0

Traverse: 1		Traverse: 2	
Start Time: –	Initial Leak Check: – cfm@ – "Hg	Start Time: 17:01	Initial Leak Check: .008 cfm @ 13 "Hg
Finish Time: 16:47	Final Leak Check: .01 cfm@ 13 "Hg	Finish Time: –	Final Leak Check: – cfm @ – "Hg

Project No.: 21546 -2

Operator : DG

Field Data Sheet

Date: Oct 22, 2015	Plant: Durham-York Energy Centre	Test No.: 3 - SVOC	Page 5 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	32.5	759.79	.60	.70	288	249	249	51	45	86	87	1.7	5.0
	35	761.55	.60	.70	288	249	249	51	45	86	87	1.7	5.0
	37.5	763.32	.60	.70	288	249	249	51	45	86	87	1.7	5.0
5	40	765.09	.60	.70	288	249	249	51	45	86	87	1.7	5.0
	42.5	766.88	.57	.68	288	249	249	51	45	86	87	1.6	5.0
	45	768.55	.57	.68	288	249	249	52	45	86	87	1.7	5.0
	47.5	770.29	.56	.67	287	249	249	52	45	86	87	1.6	5.0
6	50	772.03	.50	.63	287	249	249	52	45	86	87	1.4	5.0
	52.5	773.65	.50	.63	287	249	249	52	45	86	87	1.4	5.0
	55	775.26	.50	.63	287	249	249	52	45	86	87	1.4	5.0
	57.5	776.87	.50	.63	287	249	249	52	45	86	87	~~1.5~~ 1.4	5.0
7	60	778.48	.54	.66	287	249	249	52	45	86	87	1.5	5.0
	62.5	780.15	.55	.67	287	249	249	52	46	86	87	1.5	5.0
	65	781.81	.55	.67	287	249	249	52	46	86	87	1.5	5.0
	67.5	783.49	.56	.67	287	249	249	52	47	86	87	1.6	5.0
8	70	785.18	.60	.70	288	249	249	52	48	86	87	~~1.6~~ 1.7	5.0
	72.5	786.93	.60	.70	288	249	249	53	48	86	87	1.7	5.0
	75	788.70	.62	.71	289	249	249	53	48	86	87	1.7	5.0
	77.5	790.50	.62	.71	289	249	249	53	48	86	87	1.7	5.0
9	80	792.27	.57	.68	289	249	249	53	47	86	86	1.7	5.0
	82.5	794.04	.57	.68	287	249	249	53	47	86	86	1.6	5.0

Traverse: 2			
Start Time: –	Initial Leak Check: –	cfm@ –	"Hg
Finish Time: –	Final Leak Check: –	cfm@ –	"Hg

Traverse: –			
Start Time: –	Initial Leak Check: –	cfm @ –	"Hg
Finish Time: –	Final Leak Check: –	cfm @ –	"Hg

Project No.: 21546 - 2

Operator : DG

Field Data Sheet

Date: Oct 22, 2015	Plant: Durham-York Energy Centre	Test No.: 3- SVOC	Page 6 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
	85	795.79	.60	.69	287	249	249	53	46	86	86	1.7	5.0
	87.5	797.56	.60	.69	287	249	249	53	46	86	86	1.7	5.0
10	90	799.29	.60	.69	287	249	249	53	47	86	86	1.7	5.0
	92.5	801.05	.60	.70	286	249	249	53	47	86	86	1.7	5.0
	95	802.81	.60	.70	286	249	249	53	47	86	86	1.7	6.0
	97.5	804.57	.60	.69	287	249	249	54	48	86	86	1.7	6.0
11	100	806.34	.59	.69	287	249	249	54	48	86	86	1.7	6.0
	102.5	808.09	.59	.69	287	249	249	54	48	86	86	1.7	6.0
	105	809.85	.57	.68	271	249	249	54	50	86	86	1.7	6.0
	107.5	811.60	.55	.67	270	249	249	54	50	86	86	1.6	6.0
12	110	813.32	.57	.69	270	249	249	54	48	86	86	1.7	6.0
	112.5	815.08	.55	.67	270	249	249	54	48	86	86	1.7	6.0
	115	816.82	.55	.67	268	249	249	54	46	86	86	~~1.7~~ 1.6	6.0
	117.5	818.53	.55	.67	268	249	249	54	46	86	86	1.6	6.0
	120	820.23											

Traverse: 2		
Start Time: —	Initial Leak Check: — cfm@ — "Hg	
Finish Time: 19:01	Final Leak Check: .005 cfm@ 14 "Hg	

Traverse: —		
Start Time: —	Initial Leak Check: — cfm @ — "Hg	
Finish Time: —	Final Leak Check: — cfm @ — "Hg	

Project No.: 21546 -2

Operator : DG

ORTECH Environmental

Plant	Durham-York Energy Centre	
Plant Location	Courtice, Ontario	
Test No.:	1 - Semi-Volatile Organic Compounds	
Test Date	OCT 21, 2015	
Test Location	APC Outlet No. 2	
Operator Signature	[illegible]	

Project No.:	21546-2	
Page	1 of 6	
Probe No.:	6 series	
Meter Box No.:	TEAM 4	
Impinger Box No.:	3	

Pitot Factor	0.846	
DGMCF	0.989	
Barometric Pressure	29.89	"Hg
Static Pressure	-10.3	"H2O
Nozzle Size	0.2563	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter	Ø	mg
Probe	Ø	mg

Moisture Gain

CWTR	697.11	g
WCBDA	48.4	g

Combustion Gas Concentration

Oxygen	7.00	%
Carbon Dioxide	12.24	%
Carbon Monoxide	11.66	ppm

Measuring Device	MII Numbers
Probe / Pitot	ISD B03778
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	TEAM 4
Comb.Gas.Analyzer	NOVA
Micromanometer	—
Barometer	Env. Can.
Calipers	CAN-22136

Nozzle Measurements	
1	.2565
2	.2560
3	.2560
4	.2565
Average:	.2563

Probe Liner Glass / Metal / Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None / Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Oct 21, 2015	Plant: Durham-York Energy Centre	Test No.: 1 - SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
*	*	*	*		*			*		*	*	*	*
		551.15											
1	0	~~550.64~~	.65	.73	275	240	261	68	49	96	96	1.9	8
	2.5	553.09	.66	.74	277	260	265	67	49	95	95	1.8	8
	5	554.94	.65	.73	277	264	262	65	51	95	93	1.8	8
	7.5	556.8	.67	.74	277	261	260	65	53	95	96	1.9	8
2	10	558.67	.67	.74	278	257	265	64	55	95	96	1.9	8
	12.5	560.58	.71	.76	278	259	265	64	57	96	96	~~2.0~~ 1.9	8
	15	562.48	.71	.76	278	259	265	64	57	96	96	2.0	9
	17.5	564.51	.715	.77	277	258	263	63	43	95	96	1.95	9
3	20	566.42	.72	.77	279	263	261	63	41	96	97	2.0	9
	22.5	568.35	.7	.76	279	261	260	63	42	96	97	2.0	9
	25	570.31	.69	.75	279	261	260	63	42	95	98	1.9	9
	27.5	572.24	.695	.76	279	262	261	63	42	95	98	1.9	9
4	30	574.18	.66	.74	280	261	260	63	42	96	99	1.8	9
	32.5	576.1	.65	.73	280	262	260	63	42	96	99	1.75	8.5
	35	577.91	.65	.73	280	262	260	63	41	96	101	1.85	9
	37.5	579.8	.66	.74	280	262	260	63	41	96	101	1.85	9
5	40	581.7	.65	.73	280	260	263	63	42	96	102	1.8	9
	42.5	583.57	.62	.72	280	260	263	63	42	96	102	1.7	9
	45	585.39	.61	.71	280	~~260~~ 259	263	61	46	96	102	1.7	9
	47.5	587.3	.61	.71	280	259	263	61	46	96	102	1.6	8.5
6	50	~~588.95~~	.63	.72	281	260	260	61	44	96	103	1.8	8.5
		589.04											

Traverse: 1				Traverse:			
Start Time: 14:27	Initial Leak Check: .005	cfm@ 14	"Hg	Start Time: /	Initial Leak Check: /	cfm @ /	"Hg
Finish Time: /	Final Leak Check: /	cfm@ /	"Hg	Finish Time: /	Final Leak Check: /	cfm @ /	"Hg

Project No.: 21546-2

Operator : MT

Field Data Sheet

Date: Oct 21, 2015	Plant:	Durham-York Energy Centre	Test No.: 1	SVOC	Page 3 of 6
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
*	*	*	*		*			*		*	*	*	*
	52.5	590.88	.6	.71	281	261	264	61	43	96	103	1.8	9
	55	592.7	.6	.71	281	261	264	61	43	96	103	1.7	9
	57.5	594.53	.57	.69	281	261	266	61	44	96	103	1.6	8
7	60	596.3	.59	.70	281	260	260	61	44	96	103	1.6	8
	62.5	598.05	.58	.70	281	259	260	61	44	97	104	1.6	8
	65	599.85	.59	.70	281	260	260	61	44	97	104	1.6	8
	67.5	601.61	.595	.70	280	257	263	61	44	97	104	1.6	8
8	70	603.37	.59	.70	281	258	263	61	44	97	104	1.6	8
	72.5	605.14	.6	.71	279	262	263	61	44	97	104	1.7	8
	75	606.91	.6	.71	279	261	261	62	44	97	105	1.7	8
	77.5	608.73	.59	.70	279	259	264	62	44	97	105	1.6	8
9	80	610.81	.615	.72	277	260	260	62	43	97	105	1.75	9
	82.5	612.31	.615	.72	277	260	260	62	43	97	105	1.8	9
	85	614.2	.61	.72	276	256	260	61	44	97	104	1.7	9
	87.5	616.04	.62	.72	276	256	260	61	44	97	104	1.7	9
10	90	617.91	.54	.67	275	259	262	~~60~~ 61	46	97	104	1.5	8
	92.5	619.6	.54	.68	270	259	262	61	46	97	104	1.5	8
	95	621.34	.61	.72	261	261	262	62	47	97	104	1.7	9
	97.5	623.19	.59	.71	261	262	262	62	47	97	104	1.7	9
11	100	624.94	.58	.70	261	257	264	62	49	97	104	1.7	9
	102.5	626.75	.59	.71	265	257	264	62	49	97	104	1.7	9

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse: 1			
Start Time: —	Initial Leak Check: —	cfm @ —	"Hg
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21546-2

Operator : MT

Field Data Sheet

Date: Oct 21, 2015	Plant: Durham-York Energy Centre	Test No.: 1 - SVOC	Page 4 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
	105	628.58	.6	.72	260	261	261	61	49	97	104	1.7	9
	107.5	630.38	.62	.73	260	261	261	61	49	97	104	1.75	9
12	110	632.35	.62	.73	262	257	263	66	46	97	104	1.76	9
	112.5	634.19	.61	.71	262	257	263	60	46	97	104	1.7	9
	115	635.85	.62	.73	262	257	264	60	45	98	104	1.8	9
	117.5	637.72	.625	.73	263	261	261	60	45	98	104	1.8	9
	120	639.58											
						~~260~~	~~264~~	~~66~~	~~54~~	~~96~~	~~96~~		
1	0	640.0	.62	.73	280	260	264	66	54	96	96	1.8	9
	2.5	641.72	.68	.75	281	260	261	70	41	96	96	2.0	9.5
	5	643.7	.68	.75	281	256	262	63	42	96	96	1.9	9.5
	7.5	645.61	.675	.74	281	259	265	59	42	96	96	1.9	9.5
2	10	647.55	.69	.75	281	260	265	51	42	96	97	1.9	9.5
	12.5	649.47	.76	.79	281	257	262	56	42	96	97	2.0	10
	15	651.43	.76	.79	281	262	264	56	42	96	97	2.1	10
	17.5	653.48	.73	.77	281	262	264	56	42	96	97	2.0	10
3	20	655.48	.735	.78	280	262	263	55	42	96	97	2.0	10
	22.5	657.48	.70	.76	280	257	263	55	42	96	97	1.9	10
	25	659.44	.70	.76	280	259	259	55	42	96	98	1.9	10
	27.5	661.38	.69	.75	280	259	259	55	42	96	98	1.9	10
4	30	663.31	.67	.74	280	259	260	55	42	96	98	1.9	10

Traverse: 1				
Start Time: —	Initial Leak Check:	— cfm@	—	"Hg
Finish Time: 16:27	Final Leak Check:	.002 cfm@	21	"Hg

Traverse: 2				
Start Time: 16:52	Initial Leak Check:	.002 cfm @	15	"Hg
Finish Time: —	Final Leak Check:	— cfm @	—	"Hg

Project No.: 21546-2

Operator : MT

Field Data Sheet

Date: Oct 21, 2015	Plant: Durham-York Energy Centre	Test No.: 1- SVOC	Page 5 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	32.5	665.23	.64	.73	280	260	256	55	42	96	98	1.8	10
	35	667.13	.63	.72	281	262	260	56	42	96	98	1.8	10
	37.5	669.04	.64	.73	281	261	260	56	42	96	99	1.7	9
5	40	670.9	.66	.74	275	258	260	56	42	96	99	1.6	9
	42.5	672.7	.6	.71	277	260	264	56	42	96	99	1.6	9
	45	674.43	.59	.70	275	258	263	56	41	96	100	1.7	9
	47.5	676.24	.58	.70	275	260	263	56	41	96	101	1.7	9
6	50	678.03	.58	.70	275	261	265	56	41	96	101	1.7	9
	52.5	679.82	.57	.69	275	260	265	56	41	98	101	1.6	9
	55	681.63	.585	.70	274	256	262	56	41	96	102	1.6	9
	57.5	683.4	.59	.70	275	260	262	56	41	96	102	1.6	9
7	60	685.3	.59	.70	275	258	262	57	41	96	102	1.6	9
	62.5	687.05	.58	.70	276	259	265	57	41	96	102	1.5	9
	65	688.72	.52	.66	276	260	260	57	41	96	102	1.55	9
	67.5	690.38	.53	.67	276	257	262	57	41	96	103	1.6	9
8	70	690.37	.53	.67	276	257	262	57	41	96	103	1.6	9
	72.5	693.90	.53	.67	277	261	262	57	41	96	103	1.6	9
	75	695.62	.545	.67	278	260	260	57	41	96	103	1.6	9
	77.5	697.39	.52	.66	278	258	261	57	41	96	103	1.5	9
9	80	699.13	.57	.69	276	258	261	57	41	96	103	1.55	9
	82.5	701.0	.57	.69	276	255	262	57	41	96	103	1.5	9

Traverse: 2		Traverse: 2	
Start Time: /	Initial Leak Check: ~~.002~~ cfm@ ~~15~~ "Hg	Start Time: /	Initial Leak Check: / cfm @ / "Hg
Finish Time: /	Final Leak Check: / cfm@ / "Hg	Finish Time: /	Final Leak Check: / cfm @ / "Hg

Project No.: 21546 -2

Operator : MJ

Field Data Sheet

Date: Oct 21, 2015	Plant:	Durham-York Energy Centre	Test No.:	1 - SVOC	Page 6 of 6
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
*	*	*	*		*			*		*	*	*	*
	85	702.6	.57	.69	276	260	262	57	41	96	103	1.6	9
	87.5	704.36	.58	.70	277	258	260	57	41	96	103	1.6	9
10	90	706.11	.61	.71	277	259	261	57	41	96	103	1.6	9
	92.5	707.95	.54	.68	266	260	261	57	41	96	103	1.55	9
	95	709.63	.56	.69	266	260	261	57	41	96	103	1.6	9
	97.5	711.43	.55	.68	267	260	261	57	41	96	103	1.6	9
11	100	713.22	.55	.68	265	261	258	57	41	96	103	1.55	9
	102.5	714.96	.54	.68	265	260	258	57	41	96	102	1.55	9
	105	716.7	.55	.68	265	260	264	57	42	96	103	1.55	9
	107.5	718.49	.56	.69	265	260	264	57	42	96	103	1.5	9
12	110	720.15	.575	.70	265	260	264	57	43	96	102	1.6	9
721.9	112.5	~~720~~	.56	.69	260	256	261	57	45	96	102	1.6	9
	115	723.63	.575	.70	260	256	261	57	45	96	102	1.6	9
	117.5	725.4	.58	.70	263	258	264	57	45	96	102	1.6	9
	120	727.21											

Traverse:	/		
Start Time:	/	Initial Leak Check: / cfm@ /	"Hg
Finish Time:	/	Final Leak Check: / cfm@ /	"Hg

Traverse:	2		
Start Time:	—	Initial Leak Check: — cfm @ /	"Hg
Finish Time:	18:52	Final Leak Check: .002 cfm @ 15	"Hg

Project No.: 21546 ~ 2

Operator : MT

Rev: April 28, 2005

ORTECH Environmental

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.:	2- Semi-Volatile Organic Compounds
Test Date	OCT 22, 2015
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	21546 - 2	
Page	1 of 6	
Probe No.:	6 series	
Meter Box No.:	TEAM 4	
Impinger Box No.:	6	

Pitot Factor	0.846	
DGMCF	0.989	
Barometric Pressure	29.80	"Hg
Static Pressure	-10.3	"H2O
Nozzle Size	0.2563	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	749.6	g
WCBDA	19.8	g

Combustion Gas Concentration

Oxygen	6.91	%
Carbon Dioxide	12.10	%
Carbon Monoxide	10.62	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST
Incline Manometer	
Comb.Gas.Analyzer	1
Micromanometer	
Barometer	Env. Can.
Calipers	

Nozzle Measurements

1 SEE
2 TEST
3 1
4
Average:

Probe Liner Glass / Metal /Teflon / Other

Nozzle Glass / Metal / Other

Union None /Metal / Teflon / Other

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Rev. November 27, 2014

Field Data Sheet

Date: Oct 22, 2015	Plant:	Durham-York Energy Centre	Test No.:	2 - SVOC	Page 2 of 6
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
1	0	29.42	.65	.70	283	255	260	70	56	84	84	1.65	6
	2.5	31.2	.65	.70	283	257	260	67	44	84	84	1.65	6
	5	32.95	.72	.74	280	261	262	65	43	84	84	1.8	9
	7.5	34.79	.715	.74	280	259	264	63	44	84	84	1.8	9
2	10	36.64	.71	.73	280	261	265	61	44	84	84	1.8	9
	12.5	38.49	.72	.74	280	261	265	61	44	84	84	1.8	9
	15	40.39	.69	.72	279	259	266	59	43	84	86	1.8	9
	17.5	42.19	.69	.73	279	259	266	59	43	84	86	1.8	9
3	20	44.02	.71	.72	279	259	265	59	43	84	86	1.8	9
	22.5	45.88	.67	.71	280	259	260	59	43	84	86	1.7	9
	25	47.66	.675	.72	278	257	260	56	43	84	88	1.7	9
	27.5	49.47	.70	.73	278	258	260	56	43	84	89	1.8	9
4	30	51.3	.70	.73	278	258	260	56	43	84	89	1.8	9
	32.5	53.12	.685	.72	278	255	258	55	43	84	90	1.8	9
	35	55.0	.70	.73	278	255	258	55	43	84	90	1.8	9
	37.5	56.82	.69	.73	278	255	258	54	44	84	91	1.8	9
5	40	58.68	.62	.69	278	255	258	54	44	84	91	1.65	9
	42.5	60.49	.61	.68	278	257	257	55	44	85	91	1.6	9
	45	62.24	.595	.68	278	256	257	55	44	85	91	1.6	9
	47.5	63.98	.64	.70	278	256	257	55	44	85	91	1.8	9
6	50	65.8	.635	.70	278	256	257	55	44	85	91	1.8	9

Traverse: 1					
Start Time: 8:40	Initial Leak Check:	.001	cfm@	15	"Hg
Finish Time: –	Final Leak Check:	–	cfm@	–	"Hg

Traverse:					
Start Time:	Initial Leak Check:		cfm @		"Hg
Finish Time:	Final Leak Check:		cfm @		"Hg

Project No.: 21546 - 2

Operator : MT

Field Data Sheet

Date: Oct 22, 2015	Plant:	Durham-York Energy Centre	Test No.:	2 - SVOC	Page 3 of 6
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
	52.5	67.6	.61	.69	279	261	260	56	46	85	92	1.6	9
	55	69.39	.61	.68	280	261	260	56	46	85	92	1.55	9
	57.5	71.15	.59	.67	280	261	260	56	46	85	92	1.5	9
7	60	72.85	.56	.66	278	257	258	56	46	86	93	1.5	9
	62.5	74.6	.575	.67	278	257	258	56	46	86	93	1.45	9
	65	76.25	.585	.67	278	257	258	56	46	86	93	1.5	9
	67.5	77.95	.57	.66	278	259	257	57	46	86	93	1.5	9
8	70	79.64	.56	.66	278	259	258	57	46	86	93	1.5	9
	72.5	81.33	.565	.66	277	256	257	58	48	86	94	1.5	9
	75	83.03	.55	.65	277	260	257	58	48	86	94	1.5	9
	77.5	84.72	.575	.67	277	260	258	58	49	86	94	1.5	9
9	80	86.38	.57	.66	277	260	258	58	50	86	94	1.5	9
	82.5	88.07	.575	.67	277	260	258	58	50	86	94	1.5	9
	85	89.8	.585	.67	277	260	258	58	49	86	94	1.5	9
	87.5	91.45	.59	.68	277	259	258	58	46	86	94	1.5	9
10	90	93.15	.595	.68	277	259	258	56	46	86	94	1.5	9
	92.5	94.88	.62	.69	276	259	258	55	44	86	94	1.5	9
	95	96.59	.605	.69	274	260	253	54	44	86	94	1.55	9
	97.5	98.3	.59	.68	274	260	258	54	44	86	93	1.55	9
11	100	100.06	.58	.67	274	258	260	54	44	86	93	1.5	9
	102.5	101.74	.60	.68	275	256	257	54	44	86	93	1.55	9

Traverse:	~~2~~ 1			
Start Time:	/	Initial Leak Check:	/ cfm@ /	"Hg
Finish Time:	/	Final Leak Check:	/ cfm@ /	"Hg

Traverse:	~~2~~ 1			
Start Time:	/	Initial Leak Check:	/ cfm @ /	"Hg
Finish Time:	/	Final Leak Check:	/ cfm @ /	"Hg

Project No.: 21546 - 2

Operator : MT

Field Data Sheet

Date: Oct 22 2018	Plant:	Durham-York Energy Centre	Test No.:	2 - SVOC	
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
	105	103.47	.58	.67	275	257	257	54	44	86	92	1.5	9
	107.5	105.18	.56	.66	275	256	257	54	44	86	92	1.5	9
12	110	106.9	.575	.67	275	256	256	54	44	85	92	1.45	9
	112.5	108.58	.58	.67	275	256	261	54	44	85	92	1.45	9
	115	110.25	.59	.68	275	260	260	55	45	85	92	1.5	9
	117.5	111.98	.595	.68	275	260	260	55	45	85	92	1.5	9
	120	113.62											
			.77										
1	0	114.06	~~.76~~	.76	281	256	262	68	48	84	84	2.0	11
	2.5	115.88	.77	.76	280	259	255	56	48	84	84	2.1	11
	5	117.78	.84	.80	280	259	255	54	44	84	84	2.25	12
	7.5	119.83	.79	.77	282	260	260	52	46	84	86	2.1	12
2	10	121.85	.82	.79	282	259	258	52	46	84	86	2.1	12
	12.5	123.9	.79	.77	282	258	259	52	46	83	87	2.0	12
	15	125.85	.80	.78	282	260	257	52	46	83	88	2.0	12
	17.5	127.79	.80	.78	282	260	257	52	46	83	88	2.0	12
3	20	129.73	.77	.76	282	261	258	52	46	83	88	2.0	12
	22.5	131.67	.77	.76	283	260	256	51	45	83	90	2.0	12
	25	133.61	.77	.76	283	260	258	51	45	83	90	2.0	12
	27.5	135.56	.72	.74	283	260	258	51	45	83	90	1.9	12
4	30	137.41	.72	.74	283	260	258	51	45	83	90	1.9	12

Traverse:	1		
Start Time:	—	Initial Leak Check: — cfm@ — "Hg	
Finish Time:	10:40	Final Leak Check: .002 cfm@ 19 "Hg	

Traverse:	2		
Start Time:	11:03	Initial Leak Check: .001 cfm @ 15 "Hg	
Finish Time:	—	Final Leak Check: — cfm @ — "Hg	

Project No.: 21546-2

Operator : MT

Field Data Sheet

Date: Oct 22, 2015	Plant: Durham-York Energy Centre	Test No.: SVOC - 2	Page 5 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
	32.5	139.26	.71	.73	283	260	260	51	44	83	90	1.9	11
	35	141.2	.69	.73	281	259	256	53	48	84	92	1.8	11
	37.5	143.16	.68	.72	281	258	261	53	45	85	92	1.7	11
5	40	145.02	.60	.68	281	258	261	53	45	85	92	1.5	10
	42.5	146.79	.60	.68	281	258	260	53	45	85	92	1.5	10
	45	148.47	.60	.68	282	259	260	53	45	85	93	1.5	10
	47.5	150.15	.61	.68	282	260	256	54	45	85	94	1.5	10
6	50	151.88	.55	.65	279	261	262	54	45	85	94	1.45	10
	52.5	153.5	.57	.66	279	261	258	53	45	85	95	1.45	10
	55	155.17	.58	.67	279	260	255	53	45	85	95	1.5	10
	57.5	156.87	.56	.66	279	260	256	53	45	85	95	1.5	10
7	60	158.55	.5	.62	279	261	256	53	45	85	95	1.4	10
	62.5	160.22	.51	.63	279	256	261	54	48	85	95	1.3	10
	65	161.84	.525	.64	280	256	260	54	45	86	95	1.3	10
	67.5	163.47	.51	.63	279	261	259	54	45	86	95	1.3	10
8	70	165.1	.54	.65	279	260	260	54	45	86	95	1.5	10
	72.5	166.73	.535	.64	279	257	257	54	46	86	95	1.5	10
	75	168.41	.545	.65	279	257	261	54	46	86	95	1.5	10
	77.5	170.12	.54	.65	280	260	260	54	46	86	96	1.4	10
9	80	171.74	.55	.65	279	257	258	54	47	86	95	1.4	10
	82.5	173.4	.54	.65	279	257	258	54	47	86	95	1.4	10

Traverse: 2			
Start Time: /	Initial Leak Check: /	cfm@ /	"Hg
Finish Time: /	Final Leak Check: /	cfm@ /	"Hg

Traverse: 2			
Start Time: /	Initial Leak Check: /	cfm @ /	"Hg
Finish Time: /	Final Leak Check: /	cfm @ /	"Hg

Project No.: 21546 - 2

Operator : MT

Field Data Sheet

Date: Oct 22, 2015	Plant: Durham-York Energy Centre	Test No.: 2 – SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	85	175.08	.59	.68	279	256	258	55	46	86	95	1.5	10
	87.5	176.8	.60	.68	280	260	262	55	45	86	95	1.5	10
10	90	178.4	.59	.68	260	260	258	55	45	86	95	1.55	10
	92.5	180.11	.575	.68	259	260	259	55	45	86	95	1.55	10
	95	181.82	.585	.68	258	256	260	55	47	86	95	1.55	10
	97.5	183.38	.585	.68	260	260	258	55	47	86	95	1.55	10
11	100	185.28	.59	.68	265	260	258	55	47	86	95	1.55	10
	102.5	187.0	.59	.68	267	261	259	55	47	86	95	1.55	10
	105	188.7	.58	.68	267	260	258	55	47	86	95	1.55	10
	107.5	190.41	.57	.67	267	260	258	56	47	86	95	1.5	10
12	110	192.20	.57	.67	268	260	259	55	47	86	95	1.5	10
	112.5	193.84	.59	.68	270	262	257	~~55~~ 56	47	86	95	1.5	10
	115	195.55	.60	.69	271	260	258	56	47	86	95	1.5	10
	117.5	197.3	.60	.69	272	261	258	56	47	86	95	1.5	10
	120	199.05											

Traverse:	
Start Time: /	Initial Leak Check: / cfm@ / "Hg
Finish Time: /	Final Leak Check: / cfm@ / "Hg

Traverse: 2	
Start Time: —	Initial Leak Check: — cfm @ — "Hg
Finish Time: 13:03	Final Leak Check: .002 cfm @ 14 "Hg

Project No.: 21546-2

Operator : MT

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.:	3 Semi-Volatile Organic Compounds
Test Date	Oct 22, 2015
Test Location	APC Outlet No. 2
Operator Signature	[signature]

Project No.:	21546	
Page	1 of 6	
Probe No.:	6 series	
Meter Box No.:	TEAM 4	
Impinger Box No.:	2	

Pitot Factor	0.846	
DGMCF	0.989	
Barometric Pressure	29.86	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	.2563	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Particulate Gain

Filter	∅	mg
Probe	∅	mg

Moisture Gain

CWTR	671.5	g
WCBDA	24.7	g

Combustion Gas Concentration

Oxygen	7.03	%
Carbon Dioxide	12.07	%
Carbon Monoxide	11.63	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	TEST
Control Box	1
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Can.
Calipers	

Nozzle Measurements

1 SEE
2 TEST
3 1
4 ______

Average:

Notes:

Field Data Sheet

Date: Oct 22, 2015	Plant: Durham-York Energy Centre	Test No.: 3 - SVOC	Page 2 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
		0.69											
1	0	~~.69~~	.65	.70	280	260	260	68	44	85	85	1.7	7
	2.5	1.38	.74	.74	280	258	257	49	42	85	85	1.9	7
	5	3.24	.74	.75	280	258	257	49	42	85	85	1.9	7.5
	7.5	5.17	.75	.76	279	257	260	49	44	85	86	1.9	7.5
2	10	7.05	.765	.76	279	258	260	48	43	85	88	1.9	7.5
	12.5	9.07	.745	.76	280	257	259	48	43	85	88	1.9	7.5
	15	10.96	.73	.75	279	259	260	48	43	85	91	1.9	7.5
	17.5	12.8	.77	.77	279	259	261	48	43	85	92	2.0	8
3	20	14.73	.72	.75	279	257	261	48	42	85	92	1.9	8
	22.5	16.66	.675	.72	279	257	260	48	42	85	93	1.8	8
	25	18.55	.66	.72	278	258	262	48	43	86	94	1.7	7.5
	27.5	20.41	.66	.72	278	260	261	49	43	86	95	1.7	7.5
4	30	22.21	.59	.68	278	259	257	49	43	86	95	1.6	7
	32.5	23.99	.59	.69	278	259	258	49	42	86	96	1.5	7
	35	25.72	.59	.68	277	258	257	49	42	86	96	1.5	7
	37.5	27.46	.595	.68	276	258	257	49	42	86	96	1.5	7
5	40	29.2	.56	.66	275	257	257	49	42	87	97	1.45	7
	42.5	30.9	.53	.65	275	258	258	49	42	87	97	1.45	7
	45	32.58	.54	.68	~~287~~ 275	257	260	49	42	87	97	1.4	7
	47.5	34.25	.535	.65	275	259	261	50	42	87	98	1.4	7
6	50	35.92	.515	.64	274	259	260	50	42	87	98	1.35	7

Traverse: 1			
Start Time: 19:38	Initial Leak Check:	cfm@	"Hg
Finish Time: —	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546-12

Operator: MT

Field Data Sheet

Date: Oct 22, 2012	Plant: Durham-York Energy Centre	Test No.: ~~1~~ - SVOC - 3	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
	52.5	37.55	.51	.63	274	260	260	47	43	88	98	1.3	6.5
	55	39.18	.51	.63	273	256	261	46	42	88	98	1.3	6.5
	57.5	40.8	.52	.64	273	258	257	46	42	88	99	1.3	6
7	60	42.42	.535	.65	273	261	262	46	42	88	99	1.3	6
	62.5	44.03	.54	.65	273	260	257	45	43	88	99	1.4	6.5
	65	45.66	.53	.65	273	261	260	45	43	88	99	1.45	7
	67.5	47.33	.53	.65	274	258	259	45	43	88	99	1.4	7
8	70	49.0	.54	.65	274	259	257	45	44	88	99	1.4	7
	72.5	50.64	.535	.65	274	260	261	46	44	88	99	1.4	7
	75	52.3	.55	.66	273	256	261	46	45	89	99	1.4	7
	77.5	54.0	.56	.67	274	260	260	46	45	89	99	1.4	7
9	80	55.6	.57	.67	275	256	262	46	46	89	99	1.5	7
	82.5	57.27	.565	.67	275	258	262	46	46	89	99	1.55	7
	85	58.98	.57	.67	275	259	260	46	48	89	99	1.5	7
	87.5	60.7	.565	.67	275	260	261	46	48	89	99	1.5	7
10	90	62.4	.565	.67	275	258	260	47	48	89	99	1.5	7
	92.5	64.10	.61	.69	277	259	260	47	49	89	99	1.6	7
	95	65.9	.61	.69	279	259	261	47	49	89	99	1.55	7
	97.5	67.62	.58	.68	279	260	258	47	49	89	100	1.35	7
11	100	69.35	.62	.70	279	256	258	47	49	89	100	1.6	7
	102.5	71.12	.62	.70	279	256	258	47	49	90	100	1.6	7

Traverse: 1		
Start Time: /	Initial Leak Check: / cfm@	/ "Hg
Finish Time: /	Final Leak Check: / cfm@	/ "Hg

Traverse: /		
Start Time: /	Initial Leak Check: / cfm @	/ "Hg
Finish Time: /	Final Leak Check: / cfm @	/ "Hg

Project No.: 21546 - 2

Operator : MT

Field Data Sheet

Date: Oct 22, 2015	Plant: Durham-York Energy Centre	Test No.: ~~2~~ SVOC - 3	Page 4 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
*	*	*	*		*			*		*	*	*	*
	105	72.9	.62	.70	279	259	258	47	48	90	100	1.6	7
	107.5	74.65	.61	.69	279	259	258	47	48	90	100	1.6	7
12	110	76.46	.62	.70	275	261	258	48	49	90	100	1.6	7
	112.5	78.23	.63	.71	275	260	258	48	49	90	100	1.6	7
	115	80.01	.635	.71	275	260	257	48	49	90	100	1.6	7
	117.5	81.76	.635	.71	275	260	257	48	49	90	100	1.6	7
	120	83.54											
1	0	84.01	0.77	0.77	275	263	263	80	96	88	88	2.2	9
	2.5	85.42	0.77	0.77	281	259	255	56	54	88	88	2.2	9
	5	87.34	.73	.75	281	260	259	52	57	89	88	2.0	9
	7.5	89.39	.73	.75	280	260	262	50	45	88	90	2.0	9
2	10	91.3	.71	.74	280	259	260	49	43	88	92	1.9	9
	12.5	93.22	.71	.74	280	260	261	49	43	88	93	1.8	9
	15	95.10	.715	.74	280	259	260	49	43	88	93	1.8	9
	17.5	97.0	.74	.76	281	262	256	49	44	88	95	1.8	9
3	20	98.87	.76	.77	280	261	260	49	44	88	96	1.9	9
	22.5	100.73	.725	.75	280	261	260	49	44	88	96	1.9	9
	25	102.65	.725	.75	281	261	258	49	45	88	97	1.9	9
	27.5	104.6	.74	.76	281	261	260	48	45	88	97	1.9	9
4	30	106.52	.715	.75	280	257	257	48	45	88	97	1.9	9

Traverse: 1		
Start Time: —	Initial Leak Check: — cfm@ — "Hg	
Finish Time: 16:38	Final Leak Check: 0.012 cfm@ 16 "Hg	

Traverse: 2		
Start Time: 17:03	Initial Leak Check: .005 cfm @ 15 "Hg	
Finish Time: —	Final Leak Check: / cfm @ / "Hg	

Project No.: 21546 -2

Operator : MT

Field Data Sheet

Date: Oct 22, 2015	Plant: Durham-York Energy Centre	Test No.: SVOC - 3	Page 5 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
	32.5	108.47	0.55	.71	280	257	261	48	46	88	98	1.7	9
	35	110.3	.60	.72	280	262	261	48	46	88	98	1.7	9
	37.5	112.17	.65	.66	280	260	259	48	44	88	98	1.7	9
5	40	113.94	.64	.71	280	260	259	48	44	88	98	1.75	9
	42.5	115.75	.64	.71	280	260	258	48	44	89	98	1.75	9
	45	117.57	.57	.67	279	262	262	49	43	89	98	1.55	9
	47.5	119.32	.57	.67	279	261	261	49	43	89	98	1.5	8
6	50	121.01	.56	.66	279	261	261	49	43	89	98	1.5	8
	52.5	122.36	.57	.67	279	261	262	49	42	89	98	1.5	8
	55	124.4	.55	.66	280	260	259	49	42	89	99	1.4	8
	57.5	126.09	.56	.66	280	257	258	49	42	89	99	1.4	8
7	60	127.74	.48	.62	278	262	262	50	42	89	99	1.25	8
	62.5	129.3	.495	.62	278	262	261	50	42	89	99	1.3	8
	65	130.85	.48	.61	278	262	260	50	42	89	99	1.3	8
	67.5	132.41	.495	.62	279	257	259	51	42	89	99	1.35	8
8	70	134.0	.47	.61	279	258	260	50	42	89	99	1.35	8
	72.5	135.60	.49	.62	278	257	258	50	42	89	99	1.3	8
	75	137.18	.495	.62	277	258	262	48	42	89	99	1.3	8
	77.5	138.75	.49	.62	277	258	260	48	42	89	99	1.3	8
9	80	140.35	.485	.62	277	260	262	47	42	89	99	1.3	8
	82.5	141.95	.49	.62	277	260	260	47	42	89	99	1.3	8

Traverse: 2			
Start Time: /	Initial Leak Check: /	cfm@	"Hg
Finish Time: /	Final Leak Check: /	cfm@	/ "Hg

Traverse: 2			
Start Time: /	Initial Leak Check: /	cfm @ /	"Hg
Finish Time: /	Final Leak Check: /	cfm @ /	"Hg

Project No.: 21546 - 2

Operator : MT

Field Data Sheet

Date: Oct 22,2015	Plant: Durham-York Energy Centre	Test No.: SVOC - 3	Page 6 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
	85	143.51	.56	.66	277	257	260	47	42	89	99	1.45	8
	87.5	145.18	.57	.67	274	260	257	47	43	88	98	1.5	8
10	90	146.87	.565	.67	274	260	257	47	43	88	98	1.5	8
	92.5	148.54	.57	.67	275	261	257	47	43	88	98	1.5	8
	95	150.22	.565	.67	275	261	258	47	43	88	98	1.5	8
	97.5	151.92	.57	.67	275	261	258	47	43	88	98	1.5	8
11	100	153.6	.565	.67	275	261	259	47	43	88	98	1.5	8
	102.5	155.3	.53	.65	274	260	258	47	43	88	98	1.45	8
	105	156.98	.54	.65	274	260	258	47	43	88	98	1.45	8
	107.5	158.67	.57	.67	274	261	259	47	42	88	98	1.6	8
12	110	160.4	.54	.65	275	261	259	47	42	88	98	1.5	8
	112.5	162.06	.56	.66	275	260	260	47	42	88	98	1.5	8
	115	163.75	.545	.65	275	257	260	49	42	88	98	1.5	8
	117.5	165.36	.55	.66	275	257	261	49	42	88	98	1.5	8
	120	167.12											

Traverse: 1			
Start Time: ✓	Initial Leak Check: ✓	cfm@ ✓	"Hg
Finish Time: ✓	Final Leak Check: ✓	cfm@ ✓	"Hg

Traverse: 2			
Start Time: ✓	Initial Leak Check: ✓	cfm @ ✓	"Hg
Finish Time: 19:03	Final Leak Check: .001	cfm @ 15	"Hg

Project No.: 21546 - 2

Operator : MT

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 4	Semi-Volatile Organic Compounds
Test Date	October 28, 2015
Test Location	APC Outlet No. 21
Operator Signature	CHRIS BELORE

Project No.:	21546	
Page	1 of 6	
Probe No.:	6 series	
Meter Box No.:	TEAM 3	
Impinger Box No.:	3	

Measuring Device	MII Numbers
Probe / Pitot ISA	B03775
Trendicator T3	COE20093
Control Box T3	COE20093
Incline Manometer	COE20093
Comb.Gas.Analyzer	
Micromanometer	COE 20030
Barometer	Env. Can.
Calipers	

Pitot Factor	.845	
DGMCF	0.967	
Barometric Pressure	29.25	"Hg
Static Pressure	-11.2	"H2O
Nozzle Size	.2573	inches
Stack Diameter	4.5	feet
Length	Ø	feet
Width	Ø	feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	630.5	g
WCBDA	21.7	g

Combustion Gas Concentration

Oxygen	7.04	%
Carbon Dioxide	12.17	%
Carbon Monoxide	6.49	ppm

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements

1 SEE
2 TEST
3
4 #1
Average:

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Rev. November 27, 2014

Field Data Sheet

Date: Oct. 28/15	Plant:	Durham-York Energy Centre	Test No.: 4	SVOC	Page 2 of 6
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
1	0	21.73	.63	.72	285	248	250	58	55	80	80	1.7	6
	2.5	23.48	.68	.74	285	247	250	57	43	80	80	1.7	6
	5	25.26	.67	.74	284	247	249	56	41	80	80	1.65	6.5
	7.5	26.95	.67	.74	284	247	250	55	42	80	80	1.7	7
2	10	28.71	.70	.75	284	247	250	55	42	80	80	1.8	7.5
	12.5	30.55	.72	.76	285	248	250	56	42	80	80	1.8	7.5
	15	32.38	.75	.78	286	248	251	56	43	80	80	1.8	7.5
	17.5	34.27	.75	.78	286	248	251	56	43	80	80	1.8	7.5
3	20	36.22	.73	.76	288	248	250	56	44	80	80	1.8	7.5
	22.5	38.12	.74	.77	288	248	250	58	45	80	81	1.8	8.0
	25	40.05	.74	.77	288	248	250	58	45	80	80	1.8	8.0
	27.5	41.98	.74	.77	288	248	250	58	44	80	81	1.8	8.0
4	30	43.90	.66	.73	288	248	250	59	46	80	81	1.8	8.0
	32.5	45.80	.67	.73	288	248	250	59	46	80	81	1.8	8.0
	35	47.71	.65	.72	288	248	250	59	43	80	81	1.8	8.0
	37.5	49.55	.65	.72	288	248	250	59	42	80	81	1.8	8.0
5	40	51.47	.60	.70	288	248	250	63	44	81	81	1.7	7.5
	42.5	53.30	.61	.70	288	248	250	61	43	81	81	1.7	7.5
	45	55.06	.61	.70	288	248	250	61	43	81	81	1.7	7.5
	47.5	56.85	.63	.70	288	247	250	64	44	81	81	1.7	7.5
6	50	58.56	.58	.68	288	247	250	64	44	81	81	1.7	7.5

Traverse: 1			
Start Time: 13:15	Initial Leak Check: .006	cfm@ 12	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : C. Beloge

Field Data Sheet

Date: Oct. 28/15	Plant: Durham-York Energy Centre	Test No.: 4 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	52.5	60.42	.56	.67	288	248	250	60	43	81	81	1.6	7.0
	55	62.08	.56	.67	288	248	250	59	42	81	82	1.6	7.0
	57.5	63.78	.56	.67	288	248	250	59	42	81	82	1.6	7.0
7	60	65.48	.52	.65	288	248	250	56	41	81	82	1.5	7.0
	62.5	67.13	.54	.66	288	248	250	56	41	81	82	1.5	7.0
	65	68.82	.54	.66	288	247	250	55	39	81	82	1.5	7.0
	67.5	70.50	.54	.66	288	247	250	55	39	81	82	1.5	7.0
8	70	72.15	.55	.66	288	247	250	55	39	81	82	1.5	7.0
	72.5	73.85	.55	.66	288	247	250	55	39	81	82	1.5	7.0
	75	75.48	.55	.66	289	248	250	55	41	81	82	1.5	7.0
	77.5	77.15	.56	.66	289	248	250	55	41	81	82	1.5	7.0
9	80	78.82	.60	.70	289	247	250	54	40	81	82	1.7	7.0
	82.5	80.56	.57	.68	289	247	250	54	41	81	82	1.7	7.0
	85	82.36	.57	.68	289	247	250	54	41	81	82	1.7	7.0
	87.5	84.15	.61	.68	289	247	250	54	40	81	82	1.7	7.0
10	90	85.97	.60	.68	289	247	250	54	40	81	82	1.7	7.0
	92.5	87.83	.56	.67	289	247	250	54	40	81	82	1.7	7.0
	95	89.53	.56	.67	289	247	250	54	40	81	82	1.6	7.0
	97.5	91.27	.54	.66	289	249	249	54	38	82	82	1.6	7.0
11	100	93.03	.46	.61	288	249	249	54	38	82	82	1.3	6.2
	102.5	94.60	.46	.61	288	249	249	54	38	82	82	1.3	6.2

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 21546

Operator : C. BELORE

Field Data Sheet

Date: Oct. 28/15	Plant: Durham-York Energy Centre	Test No.: 4 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point *	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	105	96.13	.46	.61	288	247	249	55	37	82	82	1.3	6.3
	107.5	97.67	.46	.61	288	247	249	55	37	82	82	1.3	6.3
12	110	99.24	.44	.60	288	247	250	55	37	82	82	1.3	6.3
	112.5	100.74	.44	.60	288	247	250	55	37	82	82	1.3	6.3
	115	102.27	.44	.60	288	247	250	55	37	82	82	1.3	6.3
	117.5	103.82	.43	.60	288	247	249	55	38	82	82	1.3	6.3
	120	105.36											
1	0	105.88	.65	.73	282	248	251	58	40	82	82	1.9	8.0
	2.5	107.57	.65	.73	285	247	249	57	40	82	82	1.9	8.0
	5	109.38	.65	.73	285	249	249	55	40	82	82	1.9	8.0
	7.5	111.22	.64	.73	285	248	250	55	40	82	82	1.9	8.0
2	10	113.06	.65	.73	286	248	250	55	41	82	82	1.9	8.0
	12.5	114.90	.66	.73	286	249	250	55	41	82	82	1.9	8.0
	15	116.76	.67	.74	286	249	250	55	41	82	82	1.9	8.0
	17.5	118.56	.66	.73	286	249	251	56	42	82	82	1.9	8.0
3	20	120.37	0.66	0.73	286	248	251	56	43	82	82	2.0	8.0
	22.5	122.22	0.64	0.72	286	249	250	56	43	82	82	2.0	8.0
	25	124.08	0.66	0.73	287	248	251	56	42	82	83	2.0	8.0
	27.5	125.94	0.68	0.74	287	249	251	56	42	82	83	2.05	8.0
4	30	127.86	0.62	0.71	287	249	252	56	42	82	83	1.9	8.0

Traverse: 1					
Start Time: —	Initial Leak Check: —	cfm@	—	"Hg	
Finish Time: 15:15	Final Leak Check: .003	cfm@	12	"Hg	

Traverse: 2					
Start Time: 15:28	Initial Leak Check: .005	cfm @	12	"Hg	
Finish Time: —	Final Leak Check: —	cfm @	—	"Hg	

Project No.: 21546

Operator : C. BELORE

Field Data Sheet

Date: Oct. 28/15	Plant: Durham-York Energy Centre	Test No.: 4 SVOC	Page 5 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	32.5	129.70	0.63	0.72	287	249	253	57	42	82	83	1.9	8.0
	35	131.63	0.62	0.71	286	249	253	57	42	82	83	1.8	8.0
	37.5	133.50	0.62	0.71	287	249	253	57	42	82	83	1.75	8.0
5	40	135.30	0.59	0.69	288	249	253	58	42	82	83	1.70	~~8~~ 8.0
	42.5	137.07	0.59	0.69	289	253	253	58	42	83	84	1.70	8.0
	45	138.84	0.60	0.70	288	252	250	57	42	82	83	1.70	8.0
	47.5	140.62	0.58	0.69	288	250	252	57	41	82	83	1.70	8.0
6	50	142.39	0.52	0.65	287	250	251	57	41	82	83	1.60	8.0
	52.5	144.11	0.53	0.66	287	249	252	57	41	82	83	1.60	8.0
	55	145.76	0.51	0.64	288	250	252	57	41	83	83	1.60	8.0
	57.5	147.42	0.52	.64	288	249	252	57	41	83	83	1.5	8.0
7	60	149.07	.52	.64	287	250	252	57	41	83	83	1.5	8.0
	62.5	150.73	.53	.64	287	249	252	57	41	83	83	1.5	8.0
	65	152.37	.54	.64	287	249	252	57	41	83	83	1.5	8.0
	67.5	154.03	.54	.64	287	249	252	57	41	83	83	1.5	8.0
8	70	155.71	.55	.66	287	249	252	58	42	83	84	1.5	8.0
	72.5	157.36	.55	.66	287	249	252	58	42	83	84	1.5	8.0
	75	159.06	.55	.66	287	249	252	59	44	83	84	1.5	8.0
	77.5	160.66	.54	.66	287	249	252	60	45	83	84	1.5	8.0
9	80	162.26	.55	.66	286	249	252	60	46	83	84	1.5	8.0
	82.5	163.98	.55	.66	286	249	252	60	46	83	84	1.5	8.0

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse: 2			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator :

Field Data Sheet

Date: Oct. 28/15	Plant: Durham-York Energy Centre	Test No.: 4 SVOC	Page 6 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	85	165.55	.55	.67	285	249	252	60	47	83	84	1.6	8.0
	87.5	167.22	.57	.68	285	248	252	61	49	83	84	1.6	8.0
10	90	168.92	.56	.67	285	249	252	61	49	83	84	1.6	8.0
	92.5	170.57	.57	.68	285	248	252	61	47	84	84	1.6	8.0
	95	172.26	.58	.69	285	248	252	62	43	84	84	1.6	8.0
	97.5	173.99	.57	.68	285	248	251	62	40	84	84	1.6	8.0
11	100	175.74	.57	.68	285	248	251	62	40	84	84	1.6	8.0
	102.5	177.48	.56	.68	285	247	251	59	38	84	84	1.6	8.0
	105	179.22	.55	.67	285	248	251	57	38	84	84	1.6	8.0
	107.5	180.96	.56	.68	285	248	251	56	38	84	84	1.6	8.0
12	110	182.69	.50	.64	285	247	252	55	38	84	84	1.4	7.5
	112.5	184.38	.50	.64	285	247	251	54	38	84	84	1.4	7.5
	115	186.05	.50	.64	285	247	251	54	38	84	84	1.4	7.5
	117.5	187.73	.50	.64	285	247	251	54	38	84	84	1.4	7.5
	120	189.37											

Traverse: 2		
Start Time: —	Initial Leak Check: — cfm@ — "Hg	
Finish Time: 17:28	Final Leak Check: .004 cfm@ 14 "Hg	

Traverse:		
Start Time:	Initial Leak Check:	cfm@ "Hg
Finish Time:	Final Leak Check:	cfm @ "Hg

Project No.: 21546

Operator : C. BELORE

ORTECH Environmental

Plant	Durham-York Energy Centre	
Plant Location	Courtice, Ontario	
Test No.:	5	Semi-Volatile Organic Compounds
Test Date	OCTOBER 29, 2015	
Test Location	APC Outlet No. 1	
Operator Signature	CHRIS BELORE	

Project No.:	21546
Page	1 of 6
Probe No.:	6 series
Meter Box No.:	TEAM 3
Impinger Box No.:	—

Pitot Factor	.845	
DGMCF	0.967	
Barometric Pressure	29.20	"Hg
Static Pressure	-10.6	"H2O
Nozzle Size	.2553	inches
Stack Diameter	4.5	feet
Length	Ø	feet
Width	Ø	feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	583.2	g
WCBDA	153.3	g

Combustion Gas Concentration

Oxygen	7.32	%
Carbon Dioxide	11.95	%
Carbon Monoxide	9.15	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE TEST #4
Trendicator	
Control Box	
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Can.
Calipers	CAN 22136

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements	
1	.2555
2	.2545
3	.2550
4	.2560
Average:	.2553

Probe Liner Glass / Metal / Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None / Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Rev. November 27, 2014

Field Data Sheet

Date: OCT. 29/15	Plant: Durham-York Energy Centre	Test No.: 5 SVOC	Page 2 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
1	0	90.19	.61	.69	267	249	251	76	47	79	79	1.7	4
	2.5	92.19	.61	.69	283	247	250	64	45	79	78	1.6	4
	5	93.96	.61	.69	282	248	251	64	46	77	78	1.6	4
	7.5	95.66	.61	.68	282	248	251	65	46	78	77	1.6	4
2	10	97.36	.64	.70	282	248	251	65	45	78	77	1.7	4.5
	12.5	99.12	.67	.72	284	248	252	64	46	77	76	1.8	5
	15	100.98	.66	.72	284	249	252	64	46	77	76	1.8	5
	17.5	102.83	.67	.72	285	249	252	63	42	77	76	1.8	5
3	20	104.70	.66	.71	285	249	252	63	42	77	76	1.7	5
	22.5	106.46	.66	.71	286	248	252	62	44	75	76	1.7	5
	25	108.22	.70	.73	286	248	252	60	41	75	76	1.9	5.3
	27.5	110.05	.72	.74	286	248	252	60	41	75	76	2.0	5.5
4	30	111.96	.72	.74	288	249	252	59	42	75	75	2.0	5.5
	32.5	113.86	.72	.74	289	248	252	58	42	75	75	2.0	5.5
	35	115.74	.72	.74	290	250	253	58	43	75	75	2.0	5.5
	37.5	117.62	.72	.74	290	250	253	58	44	75	75	2.0	5.5
5	40	119.50	.65	.70	291	250	253	56	43	74	74	1.7	5
	42.5	121.30	.67	.72	291	250	253	57	43	74	74	1.8	5
	45	123.13	.67	.72	291	249	253	57	43	74	74	1.8	5
	47.5	124.94	.67	.72	292	250	253	58	44	74	74	1.8	5
6	50	126.75	.65	.70	292	250	252	55	44	74	74	1.8	5

Traverse: 1 FW			
Start Time: 08:36	Initial Leak Check: .003	cfm@ 14	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 21546

Operator : CHRIS BELORE

Field Data Sheet

Date: Oct. 29/15	Plant: Durham-York Energy Centre	Test No.: 5 SVOC	Page 3 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
	52.5	128.55	.64	.69	292	248	252	58	45	~~58~~ 73	73	1.6	4.8
	55	130.30	.64	.69	292	248	252	55	44	73	73	1.6	4.8
	57.5	132.02	.64	.69	292	248	252	55	44	73	73	1.6	4.8
7	60	133.76	.58	.66	292	248	253	53	45	72	72	1.5	4.8
	62.5	135.43	.58	.66	292	248	253	51	45	72	72	1.5	4.8
	65	137.10	.60	.67	293	248	253	50	44	72	72	1.5	4.8
	67.5	138.74	.60	.67	293	248	253	50	44	72	72	1.5	4.8
8	70	140.39	.63	.68	293	247	251	47	44	72	72	1.5	5
	72.5	142.07	.65	.69	293	247	251	47	44	72	72	1.6	5
	75	143.80	.65	.69	292	247	251	47	44	72	72	1.7	5
	77.5	145.54	.64	.68	292	247	252	46	44	71	71	1.6	5
9	80	147.26	.63	.68	292	247	252	46	44	71	71	1.6	5
	82.5	148.98	.62	.67	292	246	252	45	45	71	71	1.6	5
	85	150.70	.60	.67	292	246	252	45	45	71	71	1.6	5
	87.5	152.40	.60	.67	291	247	252	45	45	71	71	1.6	5
10	90	154.10	.60	.67	289	246	252	45	45	71	71	1.6	5
	92.5	155.82	.60	.67	289	247	252	45	45	71	71	1.6	5
	95	157.50	.60	.67	289	247	252	45	45	70	70	1.6	5
	97.5	159.19	.60	.67	289	246	252	45	45	70	70	1.6	5
11	100	160.88	.60	.67	289	246	252	45	46	70	70	1.6	5
	102.5	162.55	.60	.67	289	246	252	45	46	70	70	1.6	5

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : CHRIS BELORE

Field Data Sheet

Date: OCT. 29/15	Plant:	Durham-York Energy Centre	Test No.:	5 SVOC	Page 4 of 6
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	105	164.25	.60	.67	289	245	252	45	46	70	70	1.6	5
	107.5	165.95	.60	.67	289	246	252	45	46	70	70	1.6	5
12	110	167.61	.57	.65	289	246	252	45	47	70	70	1.5	5
	112.5	169.28	.57	.65	289	246	252	45	47	70	70	1.5	5
	115	171.00	.58	.66	286	247	253	54	37	66	66	1.5	5
	117.5	172.68	.58	.66	286	247	253	48	38	66	66	1.5	5
	120	174.36											
1	0	174.70	.79	.76	286	247	253	55	39	66	66	2	6.3
	2.5	176.54	.79	.76	290	246	252	48	39	67	66	2	6.3
	5	178.43	.78	.76	290	246	252	48	39	67	66	2	6.3
	7.5	180.36	.78	.76	292	248	253	46	40	67	66	2	6.3
2	10	182.27	.80	.76	292	246	253	46	40	67	66	2	6.3
	12.5	184.13	.80	.76	293	247	254	44	40	67	66	2	6.3
	15	186.09	.80	.76	293	248	254	44	39	67	66	2	6.3
	17.5	187.91	.80	.76	293	248	254	44	39	67	66	2	6.3
3	20	189.84	.76	.74	292	248	253	44	39	67	67	1.8	6
	22.5	191.74	.76	.74	292	248	253	44	39	67	67	1.8	6
	25	193.55	.77	.75	292	248	253	43	39	67	67	1.8	6
	27.5	195.48	.76	.74	291	248	252	43	39	68	67	1.8	6
4	30	197.28	.75	.74	291	248	253	43	39	68	67	1.8	6

Traverse: 1					
Start Time: —	Initial Leak Check:	—	cfm@	—	"Hg
Finish Time: 11:44	Final Leak Check:	.006	cfm@	12	"Hg

Traverse: 2					
Start Time: 11:50	Initial Leak Check:	.006	cfm @	12	"Hg
Finish Time: —	Final Leak Check:	—	cfm @	—	"Hg

- TURBINES WENT DOWN (OFF WITH 7.5 min. left in trav.)
- BACK ON AT 11:37

Project No.: 21546

Operator : CHRIS BELORE

Rev: April 28, 2005

ORTECH Environmental

Field Data Sheet

Date: OCT. 29/15	Plant:	Durham-York Energy Centre	Test No.:	5 SVOC	Page 5 of 6
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
	32.5	199.16	.68	.71	290	248	253	43	39	67	68	1.8	6.0
	35	201.02	.71	.72	290	248	253	43	39	68	68	1.8	6.0
	37.5	202.83	.71	.72	289	248	253	44	39	68	67	1.8	6.0
5	40	204.68	.67	.70	289	248	253	44	38	68	67	1.7	6.0
	42.5	206.47	.66	.70	289	248	253	44	39	68	68	1.7	6.0
	45	208.31	.66	.70	289	248	253	44	39	68	68	1.7	6.0
	47.5	210.00	.66	.70	289	248	253	44	38	68	68	1.7	6.0
6	50	211.74	.60	.66	290	248	253	44	39	69	68	1.6	6.0
	52.5	213.46	.60	.66	290	248	253	44	39	69	68	1.6	6.0
	55	215.15	.60	.66	290	248	253	44	39	69	68	1.6	6.0
	57.5	216.86	.60	.66	291	248	253	45	39	68	68	1.6	6.0
7	60	218.57	.60	.66	291	247	252	45	39	69	68	1.6	6.0
	62.5	220.28	.60	.66	291	247	252	45	39	69	68	1.6	6.0
	65	221.95	.60	.66	290	248	253	44	39	68	69	1.6	6.0
	67.5	223.58	.61	.66	290	248	253	44	39	68	69	1.6	6.0
8	70	225.25	.64	.69	290	248	253	44	41	68	69	1.6	6.0
	72.5	226.97	.64	.69	290	248	253	44	41	68	69	1.6	6.0
	75	228.67	.64	.69	288	248	253	45	42	68	69	1.6	6.0
	77.5	230.42	.64	.69	288	248	253	45	42	68	69	1.6	6.0
9	80	232.07	.63	.69	286	247	253	46	43	68	69	1.6	6.0
	82.5	233.77	.60	.66	284	247	253	47	44	68	69	1.6	6.0

Traverse: 2			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : CHRIS BELORE

Field Data Sheet

Date: Oct. 29 / 15	Plant: Durham-York Energy Centre	Test No.: 5 SVOC	Page 6 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
	85	235.46	.60	.66	284	247	253	49	41	69	68	1.6	6.0
	87.5	237.17	.60	.66	283	247	252	48	38	69	68	1.6	6.0
10	90	238.86	.57	.65	282	247	252	48	38	69	68	1.6	6.0
	92.5	240.56	.58	.66	283	247	252	47	38	69	68	1.5	6.0
	95	242.24	.58	.66	283	247	252	47	38	69	68	1.5	6.0
	97.5	243.90	.58	.66	283	247	253	50	38	69	69	1.5	6.0
11	100	245.58	.40	.55	283	247	252	50	38	69	69	1.5	6.0
	102.5	246.99	.40	.55	283	247	252	52	38	69	69	0.95	5.0
	105	248.42	.40	.55	283	247	252	50	38	69	69	0.95	5.0
	107.5	249.75	.40	.55	283	247	252	49	38	69	69	0.95	5.0
12	110	251.11	.40	.55	282	247	252	49	38	70	69	0.95	5.0
	112.5	252.50	.40	.55	282	247	252	49	38	70	69	0.95	5.0
	115	253.84	.40	.55	282	247	252	49	38	70	69	0.95	5.0
	117.5	255.20	.40	.55	282	248	251	48	40	70	69	0.95	5.0
	120	256.55											

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 13:50	Final Leak Check: .002	cfm@ 12	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : Chris Belore

Rev: April 28, 2005

ORTECH Environmental

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.:	6 Semi-Volatile Organic Compounds
Test Date	OCT. 29, 2015
Test Location	APC Outlet No. 1
Operator Signature	CHRIS BELORE

Project No.:	21546	
Page	1 of 6	
Probe No.:	6 series	
Meter Box No.:	TEAM 3	
Impinger Box No.:	—	

Pitot Factor	.845	
DGMCF	.967	
Barometric Pressure	29.29	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	.2553	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	704.6	g
WCBDA	16.9	g

Combustion Gas Concentration

Oxygen	7.98	%
Carbon Dioxide	12.05	%
Carbon Monoxide	12.02	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST
Incline Manometer	
Comb.Gas.Analyzer	#4
Micromanometer	
Barometer	Env. Can.
Calipers	

Nozzle Measurements

1 SEE
2 TEST
3 #5
4
Average: .2553

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Rev. November 27, 2014

Field Data Sheet

Date: Oct. 29/15	Plant:	Durham-York Energy Centre	Test No.:	6	SVOC	Page 2 of 6
	Plant Location:	Courtice, Ontario	Test Location:		APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
*	*	*	*		*			*		*	*	*	*
1	0	57.21	.65	.69	283	245	252	60	39	67	67	1.5	5.0
	2.5	59.61	.65	.69	284	245	255	47	38	68	68	1.4	5.0
	5	61.25	.66	.70	284	245	255	46	38	68	68	1.6	5.3
	7.5	62.92	.66	.70	285	247	256	48	41	68	68	1.7	5.5
2	10	64.57	.72	.73	285	247	256	49	44	68	68	1.8	6.0
	12.5	66.47	.72	.73	286	247	256	51	46	68	68	1.8	6.0
	15	68.18	.73	.73	286	247	257	48	47	68	68	1.8	6.0
	17.5	70.01	.74	.74	286	247	257	48	47	68	68	1.8	6.0
3	20	71.82	.74	.74	287	247	256	51	46	68	69	1.8	6.0
	22.5	73.63	.75	.74	288	247	256	48	43	68	69	2.0	6.3
	25	75.51	.75	.74	288	247	256	48	43	68	69	2.0	6.3
	27.5	77.40	.74	.74	289	247	256	52	46	69	69	2.0	6.3
4	30	79.33	.64	.69	288	247	257	47	44	68	69	1.7	6.0
	32.5	81.06	.64	.69	288	247	257	47	44	68	69	1.7	6.0
	35	82.86	.64	.69	288	246	256	52	44	68	69	1.7	6.0
	37.5	84.67	.64	.69	288	246	256	50	42	68	69	1.7	6.0
5	40	86.43	.62	.68	285	247	256	50	42	68	69	1.6	5.5
	42.5	88.20	.62	.68	285	247	256	50	42	68	69	1.6	5.5
	45	89.86	.62	.68	284	247	256	48	41	68	69	1.6	5.5
91.66	47.5	~~91.65~~	0.57	0.65	284	247	257	50	42	68	69	1.6	5.5
6	50	93.25	0.57	0.66	284	246	256	50	42	68	69	1.5	5.5

Traverse: 1				
Start Time: 15:25	Initial Leak Check:	.005	cfm@ 12	"Hg
Finish Time: —	Final Leak Check:	—	cfm@ —	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : C. Belore

Field Data Sheet

Date: Oct. 29/15	Plant: Durham-York Energy Centre	Test No.: 6 SVOC	Page 3 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	52.5	94.92	0.57	0.65	284	246	256	48	41	68	69	1.5	5.5
	55	96.58	0.58	0.66	284	247	257	47	41	68	69	1.45	5.0
	57.5	98.22	0.56	0.64	285	247	257	50	42	68	69	1.45	5.0
7	60	99.85	0.56	0.64	287	251	258	48	41	69	70	1.45	5.0
	62.5	101.47	0.56	0.64	286	247	256	46	40	68	69	1.46	5.0
	65	103.10	0.54	0.63	287	246	256	45	39	68	68	1.45	5.0
	67.5	104.73	0.53	0.63	287	246	256	44	38	68	68	1.40	5.0
8	70	106.34	0.56	0.64	287	245	256	44	39	68	68	1.46	5.0
	72.5	107.94	0.54	0.63	287	246	256	43	39	68	68	1.45	5.0
109.56	75	~~105.95~~	0.54	0.63	286	246	257	43	39	68	68	1.45	5.0
	77.5	111.16	0.54	0.63	285	246	256	43	38	68	68	1.45	5.0
9	80	112.77	0.57	.65	284	246	256	43	39	68	68	1.45	5.0
	82.5	114.42	.58	.65	284	246	258	42	39	68	68	1.45	5.0
	85	116.12	.58	.65	283	246	257	43	39	67	67	1.45	5.0
	87.5	117.76	.58	.65	283	246	257	43	39	67	67	1.45	5.0
10	90	119.37	.60	.67	283	246	257	43	39	67	67	1.60	6.0
	92.5	120.93	.60	.67	283	246	256	43	40	67	67	1.60	6.0
	95	122.62	.60	.67	283	246	256	43	40	67	67	1.60	6.0
	97.5	124.30	.60	.67	284	246	257	43	40	67	67	1.60	6.0
11	100	126.00	.55	.64	283	246	257	43	40	67	67	1.4	5
	102.5	127.65	.54	.64	283	246	257	43	40	67	67	1.4	5

Traverse:				
Start Time:	Initial Leak Check:	cfm@		"Hg
Finish Time:	Final Leak Check:	cfm@		"Hg

Traverse:				
Start Time:	Initial Leak Check:	cfm @		"Hg
Finish Time:	Final Leak Check:	cfm @		"Hg

Project No.: 21546

Operator : C. Belcore

Field Data Sheet

Date: Oct. 29/15	Plant: Durham-York Energy Centre	Test No.: 6 SVOC	Page 4 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	105	129.27	.54	.63	283	246	257	43	40	67	68	1.4	5.
	107.5	130.88	.54	.63	283	246	257	43	40	67	68	1.4	5.
12	110	132.49	.54	.63	283	246	257	43	40	67	68	1.4	5.
	112.5	134.11	.54	.63	283	246	257	43	40	67	68	1.4	5.
	115	135.74	.53	.63	283	246	257	43	40	67	68	1.4	5.
	117.5	137.36	.53	.63	283	246	257	43	40	67	68	1.4	5.
	120	139.02											
1	0	139.28	.70	.72	286	247	257	60	39	66	66	1.8	6.5
	2.5	141.09	.70	.72	286	245	257	43	41	66	66	1.8	6.5
	5	142.90	.70	.72	286	247	255	42	41	66	66	1.8	6.5
	7.5	144.71	.70	.72	285	246	257	43	42	67	66	1.8	6.5
2	10	146.50	.72	.73	285	246	257	43	42	67	66	1.8	6.5
	12.5	148.35	.72	.73	286	248	257	43	42	66	66	1.8	6.5
	15	150.20	.72	.73	286	248	257	43	42	66	66	1.8	6.5
	17.5	151.97	.72	.73	288	247	257	43	42	66	66	1.8	6.5
3	20	153.70	.70	.72	288	248	256	43	42	66	66	1.8	6.5
	22.5	155.50	.70	.72	289	247	257	43	42	67	66	1.8	6.5
	25	157.20	.70	.72	289	248	257	43	42	66	66	1.8	6.5
	27.5	159.00	.70	.72	289	248	257	43	42	66	66	1.8	6.5
4	30	160.82	.68	.70	289	247	256	43	42	66	66	1.7	6.5

Traverse: 1				Traverse: 2			
Start Time: —	Initial Leak Check: — cfm@ — "Hg			Start Time: 17:45	Initial Leak Check: .005 cfm @ 12 "Hg		
Finish Time: 17:25	Final Leak Check: .006 cfm@ 11 "Hg			Finish Time: —	Final Leak Check: — cfm @ — "Hg		

Project No.: 21546

Operator : C. Belcourt

Field Data Sheet

Date: OCT. 29/15	Plant:	Durham-York Energy Centre	Test No.:	6 SVOC	Page 5 of 6
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	32.5	162.56	.67	.70	289	247	256	43	42	66	66	1.7	6.5
	35	164.33	.67	.70	289	247	256	43	42	66	66	1.7	6.5
	37.5	166.11	.67	.70	288	246	256	43	42	66	66	1.7	6.5
5	40	167.90	.62	.67	288	246	256	43	42	66	66	1.5	6.3
	42.5	169.62	.62	.67	288	246	256	43	42	66	66	1.5	6.3
	45	171.27	.63	.67	286	247	256	43	42	66	66	1.5	6.3
	47.5	172.98	.63	.67	286	247	256	43	42	66	66	1.5	6.3
6	50	174.66	.60	.66	287	247	257	44	43	66	66	1.5	6.3
	52.5	176.31	.60	.66	287	247	257	44	44	66	66	1.5	6.3
	55	177.98	.60	.66	289	247	257	44	40	66	66	1.5	6.3
	57.5	179.67	.60	.66	289	248	257	44	40	66	66	1.5	6.3
7	60	181.36	.62	.67	289	247	257	44	40	66	66	1.5	6.3
	62.5	183.04	.62	.67	289	246	258	44	41	66	66	1.5	6.3
	65	184.71	.62	.67	288	247	257	44	41	66	66	1.5	6.3
	67.5	186.37	.63	.67	288	247	258	44	42	66	66	1.5	6.3
8	70	188.05	.67	.70	288	247	257	44	42	66	66	1.7	7.0
	72.5	189.80	.65	.69	288	246	257	44	44	66	66	1.7	7.0
	75	191.55	.65	.69	287	247	257	44	44	66	66	1.7	7.0
	77.5	193.30	.65	.69	287	247	257	44	44	66	66	1.7	7.0
9	80	195.07	.64	.68	286	246	257	44	44	66	66	1.7	7.0
	82.5	196.82	.64	.68	286	247	256	44	44	66	66	1.7	7.0

Traverse: 2					
Start Time: —	Initial Leak Check:	—	cfm@	—	"Hg
Finish Time: —	Final Leak Check:	—	cfm@	—	"Hg

Traverse:				
Start Time:		Initial Leak Check:	cfm @	"Hg
Finish Time:		Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : C. BELORE

Field Data Sheet

Date: OCT. 29/15	Plant: Durham-York Energy Centre	Test No.: 6 SVOC	Page 6 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
	85	198.57	.64	.68	286	246	257	44	44	66	66	1.7	7.0
	87.5	200.33	.65	.69	286	247	257	44	44	66	66	1.7	7.0
10	90	202.06	.65	.69	285	246	257	44	43	66	66	1.7	7.0
	92.5	203.82	.65	.69	285	246	258	44	42	66	66	1.7	7.0
	95	205.57	.66	.70	284	246	257	44	41	66	66	1.7	7.0
	97.5	207.34	.64	.68	284	246	257	44	41	66	66	1.7	7.0
11	100	209.10	.56	.64	283	245	257	44	40	66	66	1.4	6.0
	102.5	210.74	.56	.64	283	246	257	44	39	66	66	1.4	6.0
	105	212.36	.56	.64	283	246	257	44	39	66	66	1.4	6.0
	107.5	213.98	.54	.63	283	246	257	44	39	66	66	1.4	6.0
12	110	215.61	.50	.61	283	246	258	44	39	66	66	1.4	6.0
	112.5	217.18	.50	.61	283	246	258	44	39	66	66	1.4	6.0
	115	218.74	.49	.60	283	246	257	44	39	65	66	1.4	6.0
	117.5	220.30	.49	.60	283	247	258	44	39	65	66	1.4	6.0
	120	221.86											

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 1945	Final Leak Check: .004	cfm@ 13	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 21546

Operator : C. BELORE

Rev: April 28, 2005

ORTECH Environmental

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 4	Semi-Volatile Organic Compounds
Test Date	October 28, 2015
Test Location	APC Outlet No. 2
Operator Signature	Angela McLean

Project No.:	21546	
Page	1 of 6	
Probe No.:	6 series	
Meter Box No.:	TEAM 4	
Impinger Box No.:	10	

Measuring Device	MII Numbers
Probe / Pitot ISD	B03778
Trendicator T4	COE20090
Control Box T4	COE20090
Incline Manometer	COE20090
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Can.
Calipers	

Pitot Factor	.846	
DGMCF	0.989	
Barometric Pressure	29.25	"Hg
Static Pressure	-10.3	"H2O
Nozzle Size	.2563	inches
Stack Diameter	4.5	feet
Length	Ø	feet
Width	Ø	feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	676.7	g
WCBDA	19.1	g

Combustion Gas Concentration

Oxygen	6.89	%
Carbon Dioxide	11.70	%
Carbon Monoxide	9.35	ppm

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements

1	SEE
2	
3	TEST
4	
Average:	#1

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Rev. November 27, 2014

Field Data Sheet

Date: Oct. 28/15	Plant: Durham-York Energy Centre	Test No.: 4 SVOC	Page 2 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
1	0	68.05	2.2	1.29	275	252	270	75	47	81	81	5.0	8.5
	2.5	70.43	.72	.74	278	252	256	46	47	81	81	1.9	7.5
	5	72.60	.72	.74	278	254	252	46	43	81	81	1.9	7.5
	7.5	74.22	.72	.74	278	253	249	46	41	81	81	2.1	9.0
2	10	76.15	.75	.75	278	253	259	45	43	81	82	2.1	9.0
	12.5	78.17	.75	.75	278	256	262	45	44	81	82	2.0	9.0
	15	80.16	.75	.75	278	257	260	45	44	81	82	1.9	9.0
	17.5	82.12	.73	.74	278	258	255	45	43	81	83	1.8	9.0
3	20	84.03	.75	.75	278	257	250	45	43	81	83	1.9	9.0
	22.5	85.95	.74	.75	278	258	254	44	42	81	84	1.9	9.0
	25	87.85	.74	.75	278	258	261	44	43	80	85	1.8	9.0
	27.5	89.75	.71	.74	277	257	257	45	43	82	85	1.7	9.0
4	30	91.61	.71	.74	277	257	254	45	43	82	86	1.7	9.0
	32.5	93.44	.69	.73	277	257	249	45	43	82	86	1.7	9.0
	35	95.28	.69	.73	277	257	252	45	43	82	87	1.7	9.0
	37.5	97.11	.68	.72	277	255	261	45	43	82	87	1.7	9.0
5	40	98.92	.68	.72	277	253	259	45	43	82	88	1.7	9.0
	42.5	100.75	.64	.70	277	254	254	45	43	82	88	1.6	8.5
	45	102.54	.62	.69	277	253	249	45	43	82	88	1.5	8.0
	47.5	104.30	.64	.70	276	255	253	45	43	82	89	1.5	8.0
6	50	106.01	.62	.69	277	252	261	45	44	83	89	1.5	8.0

Traverse: NORTH FW				
Start Time: 12:28	Initial Leak Check: .003	cfm@ 15	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : AN

Field Data Sheet

Date: OCT. 28/15	Plant: Durham-York Energy Centre	Test No.: 4 SVOC	Page 3 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
	52.5	107.74	.160	.169	277	257	259	46	45	83	90	1.5	8.5
	55	109.49	.160	.168	277	257	255	46	45	83	90	1.5	8.5
	57.5	111.23	.159	.168	277	256	249	46	46	83	90	1.5	8.5
7	60	112.94	.156	.166	276	256	254	46	46	83	90	1.3	8.0
	62.5	114.59	.157	.166	276	257	262	46	46	83	91	1.3	8.0
	65	116.22	.157	.166	277	256	260	46	46	83	91	1.4	8.0
	67.5	117.88	.157	.166	277	256	255	46	47	83	91	1.4	8.0
8	70	119.54	.163	.170	276	252	249	47	47	83	91	1.6	9.0
	72.5	121.30	.161	.169	275	252	253	46	48	83	91	1.6	9.0
	75	123.06	.164	.170	276	252	261	46	48	84	91	1.6	9.0
	77.5	124.83	.165	.171	276	252	260	47	49	84	91	1.7	9.0
9	80	126.64	.162	.170	264	256	255	46	49	84	91	1.6	9.0
	82.5	128.43	.160	.169	262	250	250	47	51	84	91	1.5	9.0
	85	130.19	.160	.169	260	253	253	47	51	84	91	1.5	9.0
	87.5	131.92	.163	.171	261	255	261	47	52	84	91	1.6	9.0
10	90	133.68	.152	.164	261	254	259	47	54	84	91	1.3	8.5
	92.5	135.37	.152	.164	259	256	254	47	55	84	91	1.3	8.0
	95	136.98	.155	.166	258	253	249	48	56	84	91	1.4	8.5
	97.5	138.64	.153	.165	258	251	253	48	57	84	91	1.4	8.5
11	100	140.33	.163	.171	259	255	261	48	58	84	92	1.6	9.0
	102.5	142.06	.163	.171	259	256	259	48	52	84	92	1.7	9.0

Traverse: NORTH			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : AN

Field Data Sheet

Date: Oct. 28/15	Plant: Durham-York Energy Centre	Test No.: 4 SVOC	Page 4 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	105	143.91	.62	.70	260	253	254	47	50	84	91	1.6	9.0
	107.5	145.73	.61	.69	262	256	249	47	47	84	91	1.5	9.0
12	110	147.49	.62	.70	262	253	255	48	46	84	91	1.6	9.0
	112.5	149.28	.60	.69	262	256	261	48	46	84	91	1.5	9.0
	115	151.01	.62	.70	262	256	258	48	46	84	91	1.6	9.0
	117.5	152.80	.60	.69	262	251	251	48	46	84	91	1.5	9.0
	120	154.53											
1	0	155.06	.69	.73	262	251	259	67	46	84	85	1.9	10
	2.5	156.98	.71	.74	277	251	247	48	41	84	85	2.0	10
	5	158.97	.69	.73	278	255	247	45	41	84	86	1.8	10
	7.5	160.89	.69	.73	278	251	259	44	40	84	86	1.7	9.5
2	10	162.73	.70	.73	278	256	265	44	41	84	87	1.7	9.5
	12.5	164.57	.70	.73	277	251	262	44	40	84	88	1.7	9.5
	15	166.42	.70	.73	277	254	258	44	41	84	88	1.7	9.5
	17.5	168.26	.72	.75	278	252	252	44	41	84	89	1.8	9.5
3	20	170.12	.77	.77	278	255	250	44	41	84	89	2.0	10
	22.5	172.08	.78	.78	278	254	257	44	42	84	90	2.0	10
	25	174.07	.78	.78	278	258	261	44	41	84	90	1.9	10
	27.5	176.04	.78	.78	278	258	258	45	42	84	90	1.9	10
4	30	178.01	.75	.76	278	255	253	45	42	84	90	1.8	10

Traverse: NORTH		
Start Time: —	Initial Leak Check: —	cfm@ — "Hg
Finish Time: 14:28	Final Leak Check: 0.007	cfm@ 19 "Hg

Traverse: EAST FW		
Start Time: 14:40	Initial Leak Check: .006	cfm @ 19 "Hg
Finish Time: —	Final Leak Check: —	cfm @ — "Hg

Project No.: 21546

Operator : AN

Field Data Sheet

Date: Oct. 28/15	Plant: Durham-York Energy Centre	Test No.: 4 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	32.5	179.93	.75	.76	278	256	250	45	42	84	90	1.8	10
	35	181.84	.74	.76	278	253	258	45	41	84	90	1.8	10
	37.5	183.74	.74	.76	278	253	260	45	41	84	90	1.8	10
5	40	185.66	.69	.73	278	253	257	45	41	84	90	1.7	10
	42.5	187.50	.67	.72	278	255	250	46	42	84	90	1.7	10
	45	189.33	.67	.72	278	253	250	46	41	84	90	1.7	10
	47.5	191.17	.67	.72	278	254	259	46	41	84	91	1.6	9.5
6	50	192.97	.67	.72	278	258	261	47	42	84	91	1.6	9.5
	52.5	194.77	.61	.69	278	258	257	47	42	85	91	1.4	9.0
	55	196.49	.62	.69	278	257	252	47	42	85	92	1.4	9.0
	57.5	198.18	.62	.69	278	256	250	47	42	84	92	1.5	9.0
7	60	199.93	.61	.69	278	257	259	47	42	85	92	1.5	9.0
	62.5	201.67	.61	.69	275	253	261	47	42	85	92	1.5	9.0
	65	203.40	.60	.68	277	255	257	47	42	85	93	1.5	9.0
	67.5	205.15	.61	.69	277	252	252	47	42	85	93	1.5	9.5
8	70	206.91	.61	.69	276	255	250	47	42	85	93	1.5	9.5
	72.5	208.62	.59	.68	276	251	259	48	41	85	93	1.5	9.5
	75	210.34	.58	.67	276	257	261	48	41	85	93	1.4	9.0
	77.5	212.03	.63	.70	276	252	258	48	41	85	93	1.6	9.5
9	80	213.78	.62	.70	276	252	252	48	41	85	93	1.6	9.5
	82.5	215.58	.63	.70	275	254	250	47	41	85	93	1.5	9.5

Traverse: EAST				
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg	
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg	

Traverse:				
Start Time:	Initial Leak Check:	cfm @	"Hg	
Finish Time:	Final Leak Check:	cfm @	"Hg	

Project No.: 21546

Operator : AN

Field Data Sheet

Date: Oct. 28/15	Plant: Durham-York Energy Centre	Test No.: 4 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	* Clock Time	* Dry Gas Meter ft³	* Pitot Δ P "H_2O	Desired cfm	* Stack Temp °F	Probe Temp °F	Oven Temp °F	* Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	* Meter Temp Outlet °F	* Meter Temp Inlet °F	* Meter Pressure Δ H "H_2O	* Pump Vacuum "Hg Gauge
	85	217.36	.63	.70	275	257	258	47	41	85	93	1.6	9.5
	87.5	219.10	.64	.71	275	257	261	48	41	85	93	1.6	10
10	90	220.93	.63	.70	275	257	257	47	42	85	93	1.6	10
	92.5	222.70	.63	.70	276	257	252	47	41	86	93	1.6	10
	95	224.48	.65	.71	276	253	252	46	41	85	93	1.7	10
	97.5	226.29	.64	.71	276	256	259	46	41	86	93	1.6	10
11	100	228.10	.55	.66	276	257	261	46	42	86	93	1.4	9.0
	102.5	229.80	.55	.66	276	255	257	47	41	86	93	1.3	9.0
	105	231.44	.55	.66	276	254	251	47	41	86	93	1.3	9.0
	107.5	233.06	.54	.65	276	251	251	46	40	86	93	1.3	9.0
12	110	234.69	.55	.66	274	257	261	47	41	86	94	1.4	9.0
	112.5	236.35	.57	.67	274	255	261	47	41	86	94	1.4	9.0
	115	238.04	.54	.65	274	254	257	46	41	86	94	1.3	9.0
	117.5	239.70	.55	.66	275	255	251	47	41	86	94	1.4	9.0
	120	241.35											

Traverse: EAST				
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg	
Finish Time: 16:40	Final Leak Check: .006	cfm@ 19	"Hg	

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : AN

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 5	Semi-Volatile Organic Compounds
Test Date	October 29, 2015
Test Location	APC Outlet No. 2
Operator Signature	Angela Nolan

Project No.:	21546
Page	1 of 6
Probe No.:	6 series
Meter Box No.:	TEAM 4
Impinger Box No.:	6

Pitot Factor	.846	
DGMCF	0.989	
Barometric Pressure	29.20	"Hg
Static Pressure	-10.3	"H2O
Nozzle Size	.2563	inches
Stack Diameter	4.5	feet
Length	Ø	feet
Width	Ø	feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	657.1	g
WCBDA	125.2	g

Combustion Gas Concentration

Oxygen	6.95	%
Carbon Dioxide	11.53	%
Carbon Monoxide	12.12	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	
Incline Manometer	TEST
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Can.
Calipers	#4

Nozzle Measurements

1 SEE
2
3 TEST
4
Average: #1

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Rev. November 27, 2014

Field Data Sheet

Date: Oct. 29/15	Plant: Durham-York Energy Centre	Test No.: 5 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
1	0	42.31	.76	.77	269	255	251	64	48	80	81	2.0	8.5
	2.5	44.18	.77	.76	278	255	250	53	45	79	78	2.2	9.5
	5	46.29	.77	.76	278	254	254	52	44	79	78	2.1	9.0
	7.5	48.34	.80	.78	278	255	250	51	43	79	78	2.1	9.0
2	10	50.36	.81	.78	[illegible]	255	252	51	43	78	78	2.0	9.0
	12.5	52.39	.79	.77	279	254	253	49	43	78	78	2.0	9.0
	15	54.40	.79	.77	279	255	249	47	42	78	79	2.0	9.0
	17.5	56.37	.77	.76	278	256	253	47	41	78	80	1.9	9.0
3	20	58.31	.78	.77	278	256	252	47	41	78	80	1.9	9.0
	22.5	60.27	.77	.76	278	252	250	47	41	77	81	1.8	9.0
	25	62.17	.76	.76	278	254	252	47	41	77	81	1.9	9.0
	27.5	64.10	.78	.77	278	254	248	46	41	77	82	1.9	9.0
4	30	66.04	.73	.74	278	252	253	46	42	77	82	1.7	8.5
	32.5	67.92	.75	.75	279	254	250	46	42	77	82	1.8	8.5
	35	69.81	.77	.76	279	254	252	46	42	76	82	1.9	9.0
	37.5	71.72	.81	.78	280	255	251	46	43	76	82	1.9	9.0
5	40	73.65	.76	.76	281	256	248	46	43	76	82	1.9	9.0
	42.5	75.60	.71	.73	281	257	252	46	43	76	82	1.7	9.0
	45	77.47	.68	.72	281	255	251	46	42	76	82	1.6	8.5
	47.5	79.27	.69	.72	281	253	249	46	41	75	82	1.6	8.5
6	50	81.07	.66	.71	281	256	252	46	42	75	82	1.7	8.5

Traverse: NORTH	FW		
Start Time: 08:42	Initial Leak Check: .007	cfm@ 20	"Hg
Finish Time: ——	Final Leak Check: ——	cfm@ ——	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : AN

Field Data Sheet

Date: Oct. 29/15	Plant: Durham-York Energy Centre	Test No.: 5 SVOC	Page 3 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
	52.5	82.88	.65	.70	281	254	248	46	42	75	82	1.6	8.5
	55	84.66	.65	.70	281	256	252	46	42	75	82	1.6	8.5
	57.5	86.46	.65	.70	281	256	250	46	42	75	82	1.6	8.5
7	60	88.19	.64	.70	280	251	250	46	42	75	82	1.6	8.5
	62.5	89.97	.64	.69	281	256	251	46	43	75	82	1.6	8.5
	65	91.73	.64	.69	281	254	248	46	43	74	82	1.6	8.5
	67.5	93.48	.66	.70	281	251	252	46	44	74	82	1.6	8.5
8	70	95.24	.67	.71	281	252	248	45	45	74	82	1.7	9.0
	72.5	97.05	.68	.72	281	251	252	45	45	74	82	1.7	9.0
	75	98.89	.70	.73	281	250	250	44	45	74	82	1.7	9.0
	77.5	100.70	.66	.70	281	251	248	44	44	74	82	1.6	9.0
9	80	102.53	.68	.72	280	255	252	44	43	74	81	1.7	9.0
	82.5	104.34	.70	.73	279	251	249	44	42	74	81	1.7	9.0
	85	100.17	.70	.73	279	250	250	44	43	73	81	1.7	9.0
	87.5	107.99	.71	.73	279	251	251	44	43	73	81	1.7	9.0
10	90	109.85	.66	.71	271	253	248	44	43	73	81	1.6	9.0
	92.5	111.67	.68	.72	271	250	252	44	43	73	81	1.7	9.0
	95	113.47	.67	.71	270	250	249	44	43	73	81	1.7	9.0
	97.5	115.28	.67	.71	269	249	249	44	43	73	81	1.7	9.0
11	100	117.08	.60	.68	271	253	251	44	43	73	81	1.4	8.5
	102.5	118.79	.60	.67	272	249	247	45	43	73	81	1.4	8.5

Traverse:				
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse:				
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : AN

Field Data Sheet

Date: Oct. 29/15	Plant: Durham-York Energy Centre	Test No.: 5 SVOC	Page 4 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	* Clock Time	* Dry Gas Meter ft^3	* Pitot Δ P "H_2O	Desired cfm	* Stack Temp °F	Probe Temp °F	Oven Temp °F	* Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	* Meter Temp Outlet °F	* Meter Temp Inlet °F	* Meter Pressure Δ H "H_2O	* Pump Vacuum "Hg Gauge
	105	120.47	.60	.67	273	253	251	45	43	72	81	1.5	8.5
*	107.5	122.19	.59	.67	273	254	248	45	44	72	81	1.5	8.5
12	110	123.94	.59	.66	273	253	248	50	48	68	68	1.4	8.5
	112.5	125.55	.58	.65	273	253	251	46	39	68	68	1.4	8.5
	115	127.22	.58	.65	273	254	247	44	39	68	68	1.4	8.5
	117.5	128.85	.60	.66	273	254	247	44	39	68	69	1.4	8.5
	120	130.51											
1	0	131.16	.79	.77	263	249	250	50	38	68	69	2.2	11.0
	2.5	133.09	.81	.77	275	251	246	45	40	68	70	2.1	11.0
	5	135.14	.78	.76	275	254	251	44	42	68	70	1.9	10.0
	7.5	137.07	.81	.77	276	254	248	45	41	68	71	1.9	10.0
2	10	138.99	.81	.77	277	251	249	45	42	68	71	2.0	10.0
	12.5	140.94	.86	.79	278	255	250	45	42	68	72	2.1	10.5
	15	142.93	.86	.79	279	254	246	45	42	68	73	2.1	10.5
	17.5	144.94	.86	.79	279	253	251	45	41	68	73	2.1	10.5
3	20	146.94	.85	.79	280	254	250	45	42	68	73	2.1	10.5
	22.5	148.94	0.85	0.79	280	252	246	46	42	68	74	2.1	10.5
	25	150.93	0.85	0.79	281	252	251	46	42	68	74	2.1	10.5
	27.5	152.94	0.84	0.78	282	250	249	46	42	68	74	2.0	10.5
4	30	154.90	0.81	0.77	282	256	250	46	42	68	74	1.95	10.5

Traverse: NORTH			
Start Time: ——	Initial Leak Check: ——	cfm@ ——	"Hg
Finish Time: 11:25	Final Leak Check: .004	cfm@ 15	"Hg

Traverse: EAST FW			
Start Time: 11:32	Initial Leak Check: .004	cfm @ 15	"Hg
Finish Time: ——	Final Leak Check: ——	cfm @ ——	"Hg

*Shut off @ 10:30 due to turbine shutdown.
on @ 11:14

Project No.: 21546

Operator : AN

Field Data Sheet

Date: Oct 29/15	Plant: Durham-York Energy Centre	Test No.: 5 SVOC	Page 5 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	32.5	156.87	0.83	0.78	282	252	250	46	42	69	75	2.0	10.5
	35	158.80	0.83	0.78	283	264	242	46	43	69	75	2.0	10.5
	37.5	160.76	0.83	0.78	284	252	252	46	43	69	75	2.0	10.5
5	40	162.63	0.75	0.74	284	253	249	46	44	69	76	2.0	10.5
	42.5	164.54	0.77	0.75	285	255	248	46	44	69	76	1.9	10.5
	45	166.47	0.79	0.76	285	256	251	46	44	69	76	1.9	10.5
	47.5	168.38	.79	.76	286	252	247	46	45	69	76	1.9	10.5
6	50	170.30	.77	.75	286	255	250	46	45	69	76	1.8	10.5
	52.5	172.20	.74	.74	286	257	249	45	43	69	77	1.7	10.0
	55	174.05	.74	.74	287	251	247	43	40	70	77	1.7	10.0
	57.5	175.89	.73	.73	287	253	251	43	40	70	77	1.7	10.0
7	60	177.74	.71	.72	286	256	248	43	40	70	77	1.6	10.0
	62.5	179.54	.72	.73	286	251	251	43	39	70	78	1.7	10.0
	65	181.37	.72	.73	285	255	247	43	40	70	78	1.7	10.0
	67.5	183.21	.71	.72	285	252	250	43	40	70	78	1.6	10.0
8	70	185.00	.73	.73	284	255	249	43	40	70	78	1.8	10.0
	72.5	186.86	.74	.74	284	251	247	43	40	70	78	1.9	10.5
	75	188.76	.72	.73	284	251	251	43	41	70	78	1.8	10.5
	77.5	190.66	.72	.73	284	255	248	43	40	70	78	1.7	10.0
9	80	192.57	.74	.74	281	254	249	43	40	70	78	1.8	10.5
	82.5	194.39	.74		280	255	250	43	40	70	78	1.8	10.5

Traverse:			
Start Time: /	Initial Leak Check: /	cfm@ /	"Hg
Finish Time: /	Final Leak Check: /	cfm@ /	"Hg

Traverse:			
Start Time: /	Initial Leak Check: /	cfm @ /	"Hg
Finish Time: /	Final Leak Check: /	cfm @ /	"Hg

Project No.: 21546

Operator : AN

Field Data Sheet

Date: Oct. 29/15	Plant: Durham-York Energy Centre	Test No.: 5 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
*	*	*	*		*			*		*	*	*	*
	85	196.28	.75	.75	280	251	247	44	40	70	78	1.8	10.5
	87.5	198.15	.72	.73	280	254	252	44	40	71	78	1.6	11.0
10	90	199.92	.73	.74	281	255	248	44	39	71	78	1.7	12.0
	92.5	201.71	.73	.74	281	254	250	44	39	71	78	1.8	12.0
	95	203.57	.75	.75	281	254	250	44	40	71	77	1.9	13.0
	97.5	205.48	.73	.74	280	249	247	44	41	71	77	1.9	13.0
11	100	207.40	.70	.72	280	253	252	44	40	71	77	1.7	13.0
	102.5	209.30	.69	.71	281	254	248	45	40	71	76	1.6	12.0
	105	211.11	.69	.71	281	251	251	48	40	71	76	1.6	12.0
	107.5	212.88	.69	.71	281	250	250	49	40	71	76	1.6	12.0
12	110	214.69	.58	.66	281	249	248	49	40	71	76	1.3	10.0
	112.5	216.33	.58	.66	280	251	252	50	39	71	76	1.3	10.0
	115	217.92	.58	.66	280	252	247	52	39	71	77	1.4	10.5
	117.5	219.49	.58	.66	280	254	252	52	39	71	77	1.5	11.0
	120	221.30											

Traverse: EAST		
Start Time: —	Initial Leak Check: — cfm@ — "Hg	
Finish Time: 13:32	Final Leak Check: 0.004 cfm@ 14 "Hg	

Traverse:		
Start Time:	Initial Leak Check:	cfm @ "Hg
Finish Time:	Final Leak Check:	cfm @ "Hg

Project No.: 21546

Operator : AN

Rev: April 28, 2005

ORTECH Environmental

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 6	Semi-Volatile Organic Compounds
Test Date	October 29, 2015
Test Location	APC Outlet No. 2
Operator Signature	Angela McLean

Project No.:	21546
Page	1 of 6
Probe No.:	6 series
Meter Box No.:	TEAM 4
Impinger Box No.:	15

Pitot Factor	.846	
DGMCF	0.989	
Barometric Pressure	29.29	"Hg
Static Pressure	-10.3	"H2O
Nozzle Size	.2563	inches
Stack Diameter	4.5	feet
Length	Ø	feet
Width	Ø	feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	755.0	g
WCBDA	17.6	g

Combustion Gas Concentration

Oxygen	7.05	%
Carbon Dioxide	11.55	%
Carbon Monoxide	12.60	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	
Incline Manometer	TEST
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Can.
Calipers	#4

Nozzle Measurements	
1	SEE
2	
3	TEST
4	
Average:	#1

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Oct. 29/15	Plant: Durham-York Energy Centre	Test No.: 6 SVOC
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
1	0	25.20	.69	.72	266	250	248	61	40	69	69	1.7	6.0
	2.5	27.07	.71	.72	274	254	242	48	40	69	69	1.7	6.0
	5	28.96	.74	.74	276	254	250	47	40	69	69	1.7	6.0
	7.5	30.61	.72	.73	276	255	248	47	40	69	70	1.7	6.0
2	10	32.40	.79	.76	277	255	248	46	40	69	72	1.8	6.5
	12.5	34.27	.78	.76	277	254	249	46	41	69	73	1.8	7.0
	15	36.16	.79	.76	277	257	247	46	41	69	75	1.9	7.0
	17.5	38.09	.78	.76	278	256	250	45	41	69	76	1.9	7.0
3	20	39.99	.77	.76	278	253	245	45	41	69	76	1.8	7.0
	22.5	41.87	.77	.76	278	256	250	45	41	70	77	1.9	7.0
	25	43.77	.79	.77	278	257	247	45	42	70	78	2.0	7.0
	27.5	45.73	.77	.76	278	253	250	45	42	70	78	1.9	7.0
4	30	47.67	.70	.72	278	252	250	44	42	70	79	1.6	6.5
	32.5	49.44	.70	.72	278	257	251	44	41	70	79	1.7	6.5
	35	51.25	.71	.73	278	256	246	44	40	70	79	1.8	6.5
	37.5	53.11	.72	.73	278	255	250	43	40	70	80	1.8	7.0
5	40	54.98	.65	.70	278	255	249	43	40	71	81	1.5	6.5
	42.5	56.74	.67	.71	279	252	246	43	40	71	80	1.6	6.5
	45	58.54	.67	.71	279	251	250	43	40	71	80	1.6	6.5
	47.5	60.34	.66	.70	279	252	246	43	40	71	81	1.6	6.5
6	50	62.11	.64	.69	279	252	251	43	40	71	81	1.5	6.5

Traverse: NORTH FW			
Start Time: 15:30	Initial Leak Check: .005	cfm@ 14	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : AN

Field Data Sheet

Date: Oct. 29/15	Plant: Durham-York Energy Centre	Test No.: 6 SVOC	Page 3 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
	52.5	63.85	.64	.69	279	253	247	43	40	71	81	1.6	6.5
	55	65.59	.65	.70	279	251	250	43	40	71	81	1.7	7.0
	57.5	67.38	.66	.70	280	252	246	43	41	71	81	1.7	7.0
7	60	69.19	.62	.68	280	256	257	43	42	71	81	1.5	7.0
	62.5	70.94	.61	.68	280	251	249	43	42	71	81	1.5	7.0
	65	72.67	.61	.68	280	251	247	43	41	71	81	1.5	6.5
	67.5	74.36	.62	.68	280	255	250	43	42	71	81	1.5	6.5
8	70	76.08	.66	.70	280	254	247	43	42	71	81	1.6	7.0
	72.5	77.86	.66	.70	280	255	248	43	43	71	81	1.6	7.0
	75	79.64	.66	.70	280	254	250	43	44	71	81	1.6	7.0
	77.5	81.43	.66	.70	280	250	248	43	44	71	81	1.6	7.0
9	80	83.21	.66	.70	278	253	249	42	44	70	80	1.6	7.0
	82.5	84.98	.66	.70	278	251	247	42	43	70	80	1.6	7.0
	85	86.76	.67	.71	278	250	249	41	40	70	80	1.7	7.0
	87.5	88.58	.66	.70	277	253	249	41	40	70	80	1.6	7.0
10	90	90.36	.67	.71	277	254	247	41	39	70	80	1.6	7.0
	92.5	92.16	.68	.71	277	249	251	41	39	70	80	1.6	7.0
	95	93.96	.65	.70	278	252	246	41	39	70	80	1.6	7.0
	97.5	95.74	.65	.70	277	254	251	41	39	70	80	1.6	7.0
11	100	97.51	.60	.67	277	250	247	41	39	70	80	1.5	7.0
	102.5	99.24	.61	.68	277	254	251	41	39	70	80	1.5	7.0

Traverse: NORTH			
Start Time: ——	Initial Leak Check: ——	cfm@ ——	"Hg
Finish Time: ——	Final Leak Check: ——	cfm@ ——	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : AN

Field Data Sheet

Date: Oct. 29/15	Plant: Durham-York Energy Centre	Test No.: 6 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
	105	100.97	.61	.68	277	253	246	41	39	70	80	1.5	7.0
	107.5	102.68	.61	.68	277	253	250	41	40	70	80	1.5	7.0
12	110	104.38	.49	.61	275	255	247	42	39	70	80	1.1	6.0
	112.5	105.94	.49	.61	275	251	248	41	38	70	80	1.1	6.0
	115	107.44	.49	.61	275	252	248	41	38	70	81	1.1	6.0
	117.5	108.97	.48	.60	275	254	249	41	38	70	80	1.1	6.0
	120	110.46											
1	0	110.87	.77	.76	271	248	246	51	39	69	74	1.9	7.5
	2.5	112.74	.72	.73	277	250	248	44	40	70	76	1.8	7.5
	5	114.64	.73	.74	278	250	246	43	41	70	76	1.8	7.5
	7.5	116.52	.71	.73	278	251	250	44	41	70	77	1.8	7.5
2	10	118.37	.81	.78	279	251	245	44	42	70	77	2.0	8.0
	12.5	120.31	.83	.78	280	253	250	43	42	70	77	2.0	8.0
	15	122.28	.81	.78	280	251	249	44	43	70	78	2.0	8.0
	17.5	124.24	.83	.79	280	252	246	44	43	70	78	2.0	8.0
3	20	126.18	.83	.79	280	251	251	44	43	70	78	2.0	8.0
	22.5	128.18	.83	.79	280	255	246	44	43	70	78	2.0	8.0
	25	130.17	.82	.78	280	255	248	44	44	69	78	2.0	8.0
	27.5	132.11	.83	.79	280	256	249	45	44	70	79	2.0	8.0
4	30	134.10	.76	.75	280	254	247	45	44	70	78	1.8	8.0

Traverse: NORTH				
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 17:30	Final Leak Check: .005	cfm@ 13	"Hg

Traverse: EAST			
Start Time: 17:36	Initial Leak Check: .005	cfm @ 13	"Hg
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21546

Operator : AN

Rev: April 28, 2005

ORTECH Environmental

Field Data Sheet

Date: Oct. 29/15	Plant: Durham-York Energy Centre	Test No.: 6 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
	32.5	136.01	.77	.76	280	254	250	45	44	70	78	1.8	8.0
	35	137.91	.78	.76	280	255	246	45	44	70	78	1.9	8.0
	37.5	139.83	.78	.76	280	255	251	45	45	69	79	1.9	8.0
5	40	141.74	.78	.76	281	253	247	45	46	70	78	1.9	8.0
	42.5	143.65	.81	.77	281	253	245	44	46	69	78	2.0	8.5
	45	145.62	.80	.77	281	251	250	43	44	69	78	2.0	8.5
	47.5	147.59	.80	.77	281	256	248	43	44	70	78	1.9	8.5
6	50	149.52	.71	.72	281	253	250	43	43	69	78	1.7	8.0
	52.5	151.37	.72	.73	282	254	250	43	42	69	78	1.7	8.0
	55	153.18	.72	.73	281	254	245	43	41	69	78	1.7	8.0
	57.5	155.03	.72	.73	281	251	250	43	41	69	78	1.7	8.0
7	60	156.88	.65	.69	281	253	248	43	41	69	78	1.6	8.0
	62.5	158.68	.67	.70	281	253	248	43	40	69	78	1.6	7.5
	65	160.47	.65	.69	282	254	248	43	41	69	78	1.5	7.5
	67.5	162.22	.66	.70	281	249	249	43	40	69	79	1.6	7.5
8	70	163.98	.68	.71	281	254	246	43	40	69	79	1.7	8.0
	72.5	165.80	.68	.71	280	254	249	43	41	69	79	1.7	8.0
	75	167.61	.67	.70	281	250	248	43	41	69	79	1.6	8.0
	77.5	169.40	.68	.71	281	250	247	43	41	69	78	1.7	8.0
9	80	171.20	.68	.71	280	249	249	43	41	69	79	1.7	8.0
	82.5	173.02	.69		280	251	246	43	42	69	79	1.7	8.0

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : AN

Field Data Sheet

Date: Oct.29/15	Plant: Durham-York Energy Centre	Test No.: 6 SVOC	Page 6 of 6
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
*	*	*	*		*			*		*	*	*	*
	85	174.85	0.71	0.73	280	251	251	43	42	69	79	1.9	8.0
	87.5	176.76	0.71	0.73	280	249	246	43	42	69	78	1.9	8.0
10	90	178.68	0.71	0.73	280	251	248	43	42	69	78	1.8	8.0
	92.5	180.53	.71	.73	280	254	246	43	43	69	78	1.7	8.0
	95	182.33	.71	.74	277	254	250	43	43	69	79	1.7	8.0
	97.5	184.16	.70	.72	276	250	246	44	44	69	78	1.7	8.0
11	100	185.98	.70	.72	276	251	250	44	44	69	78	1.7	8.0
	102.5	187.79	.70	.72	276	253	247	44	44	69	78	1.7	8.0
	105	189.62	.69	.72	277	253	250	44	45	69	78	1.6	8.0
	107.5	191.43	.70	.72	276	249	246	44	45	69	78	1.7	8.0
12	110	193.23	.55	.64	276	251	252	44	46	69	78	1.3	7.5
	112.5	194.90	.56	.65	274	254	248	45	44	69	78	1.3	7.5
	115	196.57	.58	.66	275	252	247	45	43	69	78	1.4	7.5
	117.5	198.17	.58	.66	275	255	250	45	42	69	79	1.4	7.5
	120	199.97											

Traverse: EAST			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 19:36	Final Leak Check: .004	cfm@ 14	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : AN

APPENDIX 13

Particulate and Acid Gas Field Data Sheets
(30 pages)

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 1	Particulate/Hydrogen Fluoride
Test Date	Sept 29, 2015
Test Location	APC Outlet No. 1
Operator Signature	KS

Project No.:	21546
Page	1 of 5
Probe No.:	
Meter Box No.:	
Impinger Box No.:	

Pitot Factor	0.845 ~~0.846~~	
DGMCF	0.981	
Barometric Pressure	29.65 ~~29.92~~	"Hg
Static Pressure	-11.2	"H2O
Nozzle Size	0.25575	inches
Stack Diameter	4.5	feet
Length	—	feet
Width		feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	511.7	g
WCBDA	35.9	g

Combustion Gas Concentration

Oxygen	7.67	%
Carbon Dioxide	11.33	%
Carbon Monoxide	16.9	ppm

Measuring Device	MII Numbers
Probe / Pitot	B03775
Trendicator	COE 20093
Control Box	
Incline Manometer	TEAM 3
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Enucan
Calipers	B03906

Nozzle Measurements	
1	0.2550
2	0.2560
3	0.2555
4	0.2565
Average:	0.25575

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

~~Rev. November 27, 2014~~

Field Data Sheet

Date: Sept 29, 2015	Plant: Durham-York Energy Centre	Test No.: 1 (Unit 1) Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
1	0	97.86	~~0.8~~ 0.84	0.76	82	250	245	81	147	80	81	0.9	2
	2.5	99.18	0.58	0.73	177	254	245	64	234	81	81	1.8	2
	5	100.91	0.59	0.73	175	250	~~239~~ 244	62	239	81	81	1.8	2
2	7.5	102.70	0.74	0.79	222	255	244	62	237	81	80	2.0	2
	10	104.57	0.78	0.82	221	250	244	63	238	81	81	2.1	2.5
	12.5	106.51	0.78	0.81	222	253	244	64	238	81	81	2.1	2.5
3	15	108.45	0.85	0.82	275	254	244	67	238	81	81	2.2	2.5
	17.5	110.43	0.85	0.82	276	254	243	69	239	81	81	2.2	2.5
	20	112.43	0.87	0.83	278	253	244	70	238	81	81	2.3	2.5
4	22.5	114.49	0.83	0.81	278	251	244	72	238	81	81	2.3	2.5
	25	116.53	0.80	0.80	286	253	244	71	232	81	81	2.2	2.5
	27.5	118.56	0.80	0.79	285	254	244	70	234	81	81	2.1	2.5
5	30	120.57	0.70	0.74	284	250	244	68	235	81	81	2.0	2.5
	32.5	122.53	0.75	0.76	287	253	246	56	233	81	81	2.0	2.5
	35	124.47	0.75	0.76	289	252	246	52	238	81	81	2.0	2.5
6	37.5	126.42	0.73	0.73	290	251	245	52	239	81	81	2.0	2.5
	40	128.30	0.74	0.76	290	255	245	52	238	81	81	1.95	2.5
	42.5	130.19	0.70	0.74	291	255	244	53	238	81	81	1.90	2.5
7	45	132.06	0.70	0.74	290	254	245	53	238	81	81	1.9	2.5
	47.5	133.94	0.68	0.73	289	254	244	54	238	81	82	1.9	2.5
	50	135.81	0.70	0.74	288	254	245	55	238	81	81	1.9	2.5

Traverse: 1	
Start Time: 9:11am	Initial Leak Check: 0.001 cfm@ 9 "Hg
Finish Time:	Final Leak Check: cfm@ "Hg

Traverse:	
Start Time:	Initial Leak Check: cfm @ "Hg
Finish Time:	Final Leak Check: cfm @ "Hg

stopped @ 30 min due to power outage on other box

Project No.: 21546

Operator : KS

Field Data Sheet

Date: Sept 29, 2015	Plant: Durham-York Energy Centre	Test No.: 1	Particulate/Metals
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
8	52.5	137.68	0.72	0.75	288	254	245	55	238	81	82	1.9	2.5
	55	139.55	0.74	0.76	287	252	245	57	237	81	82	1.95	2.5
	57.5	141.44	0.74	0.76	286	252	245	58	237	81	82	2.0	2.5
9	60	143.35	0.76	0.77	285	256	245	59	237	81	82	2.0	2.5
	62.5	145.28	0.77	0.78	285	255	245	60	234	81	82	2.1	2.5
	65	147.23	0.75	0.76	285	251	246	62	232	81	82	2.1	3.0
10	67.5	149.18	0.75	0.77	285	255	245	63	232	82	82	2.1	3.0
	70	151.13	0.76	0.77	286	256	244	62	237	82	82	2.1	3.0
	72.5	153.09	0.76	0.77	286	254	246	63	211	82	82	2.1	3.0
11	75	155.05	0.78	0.78	286	251	245	65	213	82	82	2.15	3.0
	77.5	157.04	0.76	0.77	286	253	244	64	213	82	82	2.1	3.0
	80	159.03	0.77	0.78	286	256	244	64	213	82	82	2.1	3.0
12	82.5	161.00	0.78	0.78	285	252	245	67	214	82	82	2.1	3.0
	85	162.98	0.78	0.78	284	252	244	67	214	82	82	2.1	3.0
	87.5	164.96	0.77	0.78	283	251	244	64	213	82	82	2.1	3.0
	90	167.33											

Traverse:	
Start Time:	Initial Leak Check: cfm@ "Hg
Finish Time:	Final Leak Check: 0.001 cfm@ 17 "Hg

Traverse:	
Start Time:	Initial Leak Check: cfm @ "Hg
Finish Time:	Final Leak Check: cfm @ "Hg

Project No.: 21546

Operator : KS

Field Data Sheet

Date: 29/Sep/2015	Plant: Durham-York Energy Centre	Test No.: 1	Particulate/Metals	
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	167.81	0.57	0.78	79	251	245	72	155	82	82	2.0	2.5
	2.5	169.70	0.60	0.77	127	254	245	60	233	82	82	2.1	2.5
	5	171.64	0.60	0.77	128	255	245	56	238	82	82	2.1	2.5
2	7.5	173.65	0.65	0.73	249	255	245	56	240	82	82	2.1	3.0
	10	175.53	0.73	0.77	248	257	245	62	231	82	82	2.2	3.0
	12.5	177.55	0.71	0.76	250	257	246	56	237	82	82	2.1	3.0
3	15	179.54	0.72	0.77	251	256	245	55	238	82	82	2.1	3.0
	17.5	181.53	0.74	0.77	276	256	245	55	239	82	82	2.1	3.0
	20	183.52	0.74	0.76	277	256	245	55	238	82	82	2.1	3.0
4	22.5	185.48	0.73	0.77	282	257	244	55	238	82	82	2.1	3.0
	25	187.44	0.73	0.76	283	255	245	55	238	82	82	2.1	3.0
	27.5	189.39	0.73	0.76	284	256	245	55	239	82	82	2.0	3.0
5	30	191.31	0.70	0.74	284	256	245	56	239	82	82	2.0	3.0
	32.5	193.22	0.70	0.74	285	253	245	56	239	82	82	1.9	3.0
	35	195.11	0.69	0.73	285	255	245	57	239	82	82	1.9	3.0
6	37.5	196.98	0.68	0.73	284	254	245	57	238	82	82	1.9	3.0
	40	198.86	0.68	0.73	285	252	245	58	238	82	82	1.9	3.0
	42.5	200.73	0.67	0.72	285	255	245	59	238	82	83	1.8	3.0
7	45	202.56	0.67	0.72	285	257	245	61	238	82	83	1.8	3.0
	47.5	204.40	0.65	0.71	285	253	245	61	238	82	83	1.8	3.0
	50	206.23	0.65	0.71	286	257	244	62	238	82	83	1.8	3.0

Traverse: 2			
Start Time:	Initial Leak Check: .006	cfm@ 17	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

stopped @ 7.5 min for fire alarm; started @ 12:21pm.

Project No.: 21546

Operator : KS

Field Data Sheet

Date: Sept 29, 2015	Plant:	Durham-York Energy Centre	Test No.: 1	Particulate/Metals	
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
8	52.5	208.05	0.66	0.72	286	258	245	64	237	83	83	1.8	3
	55	209.87	0.65	0.71	286	256	244	65	237	82	83	1.8	3
	57.5	211.74	0.68	0.73	285	257	244	65	237	83	83	1.8	3
9	60	213.53	0.68	0.73	285	252	245	67	237	83	83	1.9	3
	62.5	215.38	0.69	0.74	284	254	244	68	238	83	83	1.9	3
	65	217.24	0.69	0.74	285	257	245	69	238	83	83	1.9	3
10	67.5	219.10	0.75	0.77	285	254	244	70	238	83	83	2.1	3
	70	221.05	0.76	0.77	285	253	244	68	213	83	83	2.1	3
	72.5	223.02	0.75	0.77	285	259	244	65	213	83	83	2.0	3
11	75	224.95	0.77	0.78	285	257	244	64	213	83	83	2.1	3
	77.5	226.92	0.74	0.76	285	259	244	63	213	83	83	2.0	3
	80	228.85	0.73	0.76	284	255	244	61	213	83	83	2.0	3
12	82.5	230.78	0.73	0.76	284	258	245	61	213	83	83	2.0	3
	85	232.70	0.78	0.78	284	257	244	61	231	83	83	2.1	3
	87.5	234.66	0.78	0.78	283	255	245	61	240	83	83	2.1	3
	90	236.72											

Traverse:		Traverse:	
Start Time:	Initial Leak Check: cfm@ "Hg	Start Time:	Initial Leak Check: cfm @ "Hg
Finish Time: 13:41	Final Leak Check: 0.002 cfm@ 13 "Hg	Finish Time:	Final Leak Check: cfm @ "Hg

Project No.: 21546

Operator : KS

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 2	Particulate/Hydrogen Fluoride
Test Date	Sept 29, 2015
Test Location	APC Outlet No. 1
Operator Signature	Kathleen Spence

Project No.:	21546
Page	1 of 5
Probe No.:	
Meter Box No.:	
Impinger Box No.:	

Pitot Factor	0.845	
DGMCF	0.981	
Barometric Pressure	29.64 ~~29.42~~	"Hg
Static Pressure	-11.2	"H2O
Nozzle Size	0.2557	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:		inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	488.8	g
WCBDA	37.4	g

Combustion Gas Concentration

Oxygen	7.69	%
Carbon Dioxide	11.39	%
Carbon Monoxide	22.4	ppm

Measuring Device	MII Numbers
Probe / Pitot	B03775
Trendicator	CDE20093
Control Box	
Incline Manometer	TGAM3
Comb.Gas.Analyzer	
Micromanometer	
Barometer	EnvCan
Calipers	B03966

Nozzle Measurements

1	0.2250
2	0.2560
3	0.2555
4	0.2565
Average:	0.25575

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Rev. November 27, 2014

Field Data Sheet

Date: Sept 29, 2015	Plant: Durham-York Energy Centre	Test No.: 2	Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. Unit 1	

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
1	0	37.23	0.68	~~39.37~~ 0.77	80	254	242	78	142	82	82	2.2	3.5
	2.5	39.10	0.72	0.79	205	252	244	61	212	82	82	2.3	3.5
	5	41.17	0.70	0.78	206	253	245	60	214	82	82	2.2	3.5
2	7.5	43.20	0.69	0.78	207	257	245	60	215	82	82	2.1	3.5
	10	45.19	0.66	0.76	207	255	245	60	215	82	82	2.0	3.5
	12.5	47.14	0.68	0.77	207	253	244	61	214	82	82	2.1	3.5
3	15	49.11	0.69	0.78	207	254	244	63	214	82	82	2.1	3.5
	17.5	51.06	0.68	0.76	223	252	244	66	215	82	82	2.1	3.5
	20	53.02	0.64	0.74	222	256	244	68	215	82	82	2.0	3.5
4	22.5	54.95	0.64	0.74	223	253	244	71	215	82	82	2.0	3.5
	25	56.86	0.66	0.72	282	258	244	67	214	82	82	2.0	3
	27.5	58.77	0.64	0.71	282	257	244	67	214	82	82	1.9	3
5	30	60.64	0.65	0.71	283	251	244	65	214	82	83	1.8	3
	32.5	62.48	0.64	0.71	285	256	244	64	214	82	82	1.8	3
	35	64.30	0.65	0.71	285	252	244	59	214	82	83	1.8	3
6	37.5	66.12	0.65	0.71	285	255	244	57	214	82	83	1.8	3
	40	67.93	0.64	0.71	287	256	244	56	214	82	83	1.8	3
	42.5	69.74	0.61	0.69	287	252	244	55	214	82	83	1.7	3
7	45	71.52	0.63	0.70	288	255	245	55	215	82	83	1.7	3
	47.5	73.29	0.63	0.70	288	254	244	55	214	82	83	1.7	3
	50	75.05	0.63	0.70	289	251	244	55	214	82	83	1.7	3

Traverse: 2				
Start Time: 2:41pm	Initial Leak Check: 0.005	cfm@	15	"Hg
Finish Time:	Final Leak Check:	cfm@		"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : KS

Field Data Sheet

Date: 29/Sep/2015	Plant: Durham-York Energy Centre	Test No.: 2	Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. Unit 1	

Point	* Clock Time	* Dry Gas Meter ft^3	* Pitot ΔP "H_2O	Desired cfm	* Stack Temp °F	Probe Temp °F	Oven Temp °F	* Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	* Meter Temp Outlet °F	* Meter Temp Inlet °F	* Meter Pressure ΔH "H_2O	* Pump Vacuum "Hg Gauge
8	52.5	76.82	0.65	0.71	287	256	244	55	214	82	83	1.7	3
	55	78.59	0.65	0.71	288	257	245	55	214	82	83	1.8	3
	57.5	80.40	0.68	0.73	287	253	245	55	214	82	83	1.9	3
9	60	82.26	0.65	0.71	287	254	245	53	216	82	83	1.8	3
	62.5	84.09	0.70	0.74	288	255	244	52	216	82	83	1.9	3
	65	85.95	0.71	0.74	287	253	245	52	216	82	83	1.9	3
10	67.5	87.83	0.75	0.76	288	253	245	51	216	82	83	2.0	3
	70	89.74	0.73	0.75	288	253	245	51	217	82	83	2.0	3.5
	72.5	91.66	0.74	0.76	287	258	245	51	217	82	83	2.0	3.5
11	75	93.57	0.74	0.76	287	257	245	51	218	82	83	2.0	3.5
	77.5	95.49	0.74	0.76	287	259	245	52	218	82	83	2.0	3.5
	80	97.42	0.73	0.76	287	255	245	52	218	82	83	2.0	3.5
12	82.5	99.33	0.70	0.74	287	258	246	52	218	82	82	1.9	3.5
	85	101.21	0.70	0.74	287	258	246	53	218	82	83	1.9	3.5
	87.5	103.09	0.71	0.74	287	255	246	54	218	82	82	1.9	3.5
	90	105.01											

Traverse: 2		
Start Time:	Initial Leak Check:	cfm@ "Hg
Finish Time: 16:11	Final Leak Check: 0.005	cfm@ 15 "Hg

Traverse:		
Start Time:	Initial Leak Check:	cfm @ "Hg
Finish Time:	Final Leak Check:	cfm @ "Hg

Project No.: 21546

Operator : KS

Field Data Sheet

Date: 29/Sep/2015	Plant: Durham-York Energy Centre	Test No.: 2	Particulate/Metals
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. Unit 1

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	105.50	0.64	0.82	89	254	245	67	174	82	81	1.9	3.5
	2.5	107.37	0.65	0.75	203	255	245	60	210	81	81	2	3.5
	5	109.27	0.68	0.77	206	253	245	59	215	81	81	2.1	3.5
2	7.5	111.22	0.68	0.77	208	258	245	54	216	81	81	2.1	4
	10	113.16	0.70	0.78	209	257	245	52	216	81	81	2.1	4
	12.5	115.11	0.72	0.79	210	253	245	52	217	81	81	2.2	4
3	15	117.12	0.71	0.78	211	255	244	53	217	81	81	2.2	4
	17.5	119.13	0.73	0.76	275	253	245	53	217	81	81	2.1	4
	20	121.11	0.73	0.76	282	254	245	53	216	81	81	2.1	4
4	22.5	123.09	0.72	0.75	282	252	245	53	217	81	81	2.0	4
	25	125.02	0.71	0.74	288	256	245	53	217	81	81	2.0	4
	27.5	~~122~~ 126.94	0.69	0.73	289	255	245	53	216	81	81	1.9	4
5	30	128.83	0.68	0.73	288	252	245	54	216	80	81	1.9	4
	32.5	130.69	0.69	0.73	288	252	244	54	216	80	81	1.9	4
	35	132.56	0.68	0.73	287	255	244	54	216	80	81	1.9	4
6	37.5	134.43	0.60	0.68	290	252	244	54	216	80	80	1.7	4
	40	136.23	0.61	0.69	290	256	244	53	215	80	80	1.6	4
	42.5	137.96	0.61	0.69	290	256	245	52	215	80	80	1.6	3.5
7	45	139.69	0.66	0.71	290	254	244	52	214	80	80	1.7	3.5
	47.5	141.47	0.66	0.71	289	252	244	52	215	80	80	1.7	3.5
	50	143.24	0.66	0.71	289	253	245	52	215	80	80	1.7	3.5

Traverse: 1			
Start Time: 16:23	Initial Leak Check: 0.002	cfm@ 15	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : KS

Field Data Sheet

Date: 29/Sep/2015	Plant: Durham-York Energy Centre	Test No.: 2	Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. Unit 1	

Point *	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
8	52.5	145.02	0.66	0.71	290	254	245	52	215	80	80	1.8	3.5
	55	146.82	0.70	0.73	290	255	244	52	217	80	80	1.9	3.5
	57.5	148.68	0.68	0.72	289	257	245	53	216	80	80	1.9	4
9	60	150.55	0.70	0.74	289	251	244	52	215	80	80	1.9	4
	62.5	152.42	0.66	0.72	289	255	245	53	215	80	80	1.8	4
	65	154.25	0.67	0.72	289	252	245	54	216	79	80	1.8	4
10	67.5	156.08	0.78	0.78	289	257	244	54	216	80	80	2.1	4
	70	158.01	0.80	0.79	289	254	245	54	217	79	80	2.1	4
	72.5	159.99	0.85	0.81	288	256	245	57	216	79	80	2.2	4
11	75	162.03	0.86	0.81	288	256	245	59	217	79	80	2.2	4
	77.5	164.06	0.88	0.82	287	253	244	56	218	79	80	2.3	4.5
	80	166.15	0.85	0.81	287	252	246	58	217	79	80	2.3	4.5
12	82.5	168.23	0.69	0.73	287	253	245	59	217	79	80	1.9	4
	85	170.11	0.68	0.73	286	254	243	58	217	79	80	1.8	4
	87.5	172.04	0.55	0.65	286	258	245	58	216	79	80	1.7	4
	90	173.73											

Traverse: 1		
Start Time:	Initial Leak Check: cfm@	"Hg
Finish Time: 17:53	Final Leak Check: cfm@	"Hg

Traverse:		
Start Time:	Initial Leak Check: cfm @	"Hg
Finish Time:	Final Leak Check: cfm @	"Hg

Project No.: 21546

Operator : KS

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 3	Particulate/Hydrogen Fluoride
Test Date	Oct 1, 2015
Test Location	APC Outlet No. 1
Operator Signature	A Murdock

Project No.:	21546	
Page	1 of 5	
Probe No.:	6 series	
Meter Box No.:	Team 1	
Impinger Box No.:	2	

Pitot Factor	0.847	
DGMCF	1.017	
Barometric Pressure	30.06	"Hg
Static Pressure	-10.9	"H2O
Nozzle Size	0.2545	inches
Stack Diameter	4.5	feet
Length	–	feet
Width	–	feet
Port length:	11	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	542.4	g
WCBDA	29.3	g

Combustion Gas Concentration

Oxygen	7.54	%
Carbon Dioxide	11.62	%
Carbon Monoxide	16.0	ppm

Measuring Device	MII Numbers
Probe / Pitot	SP4
Trendicator	COE20094
Control Box	Team 1
Incline Manometer	Team 1
Comb.Gas.Analyzer	MSML
Micromanometer	—
Barometer	Env. Can
Calipers	B039106

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements	
1	0.2545
2	0.2540
3	0.2550
4	0.2545
Average:	0.2545

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Rev. November 27, 2014

Field Data Sheet

Date: Oct 1/15	Plant:	Durham-York Energy Centre	Test No.: 3	Particulate/Metals	Page 2 of 5
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	506.40	0.55	0.62	~~288~~	256	256	64	153	76	76	1.5	3.0
	2.5	508.10	0.65	0.67	280	255	256	~~170~~ 55	173	76	76	1.3	2.0
	5	509.85	0.61	0.65	279	255	256	53	173	76	76	1.4	2.0
2	7.5	511.50	0.62	0.66	279	256	255	51	173	77	76	1.4	2.0
	10	513.15	0.59	0.64	279	255	255	50	176	77	76	1.3	2.0
	12.5	514.74	0.61	0.66	273	255	255	50	179	78	76	1.4	2.0
3	15	516.36	0.59	0.64	273	256	255	50	182	78	76	1.4	2.0
	17.5	518.02	0.60	0.65	271	256	255	50	181	79	76	1.4	2.0
	20	519.66	0.62	0.66	270	256	255	49	178	79	76	1.4	2.0
4	22.5	521.39	0.62	0.66	274	256	254	49	184	80	76	1.4	2.0
	25	522.93	0.63	0.67	275	255	255	50	181	80	76	1.5	2.5
	27.5	524.65	0.63	0.67	276	256	255	50	184	81	77	1.5	2.5
5	30	526.37	0.63	0.67	276	256	255	50	181	81	76	1.4	2.5
	32.5	528.04	0.65	0.68	278	255	255	50	184	81	76	1.4	2.5
	35	529.69	0.64	0.67	278	256	255	49	223	81	76	1.5	2.5
6	37.5	531.41	0.66	0.68	278	256	255	50	228	81	76	1.5	2.5
	40	533.10	0.67	0.69	278	256	254	49	229	81	76	1.5	2.5
	42.5	534.82	0.63	0.67	278	256	254	50	229	82	76	1.5	2.0
7	45	536.53	0.55	0.62	278	256	255	50	229	81	77	1.2	2.0
	47.5	538.04	0.58	0.64	277	257	256	50	229	81	77	1.4	2.0
	50	539.66	0.55	0.62	276	256	255	50	229	81	77	1.3	2.5

Traverse:				
Start Time: 16:22	Initial Leak Check: 0.003	cfm@ 14	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg

Traverse:			
Start Time: —	Initial Leak Check: —	cfm @ —	"Hg
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21546

Operator : ACM

Field Data Sheet

Date: Oct 1/15	Plant: Durham-York Energy Centre	Test No.: 3	Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
8	52.5	541.25	0.64	0.67	275	256	255	50	229	82	77	1.3	2.5
	55	542.83	0.63	0.67	275	257	255	49	230	82	77	1.5	3.0
	57.5	544.54	0.64	0.67	275	256	256	49	230	82	77	1.5	3.0
9	60	546.26	0.66	0.68	274	256	254	48	230	82	77	1.5	3.0
	62.5	547.97	0.65	0.68	274	256	255	48	231	82	78	1.5	3.0
	65	549.69	0.65	0.68	273	257	255	49	231	82	77	1.5	3.0
10	67.5	551.41	0.67	0.69	273	257	256	49	231	82	78	1.5	3.0
	70	553.12	0.68	0.69	274	257	256	50	231	82	77	1.6	3.0
	72.5	554.80	0.67	0.69	275	257	256	50	231	82	78	1.6	3.0
11	75	556.65	0.73	0.72	275	257	256	50	232	83	78	1.5	3.0
	77.5	558.43	0.78	0.75	275	257	256	50	232	83	78	1.5	3.0
	80	560.12	0.72	0.72	276	257	256	50	232	83	78	1.7	3.0
12	82.5	561.93	0.74	0.73	275	257	255	50	232	83	78	1.8	3.0
	85	563.81	0.74	0.73	274	257	255	51	234	84	78	1.7	3.0
	87.5	565.65	0.71	0.71	274	257	256	51	233	83	78	1.7	3.0
	90	567.46											

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 17:52	Final Leak Check: 0.002	cfm@ 11	"Hg

Traverse:			
Start Time: —	Initial Leak Check: ~~0.004~~	cfm @ ~~17~~	"Hg
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21546

Operator :

Field Data Sheet

Date: Oct 1/15	Plant: Durham-York Energy Centre	Test No.: 3	Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	567.87	0.55	0.63	258	256	257	60	221	79	77	1.5	3.0
	2.5	569.60	0.57	0.64	258	255	258	53	228	80	77	1.4	3.0
	5	571.29	0.60	0.66	259	256	257	53	228	80	77	1.3	3.0
2	7.5	572.87	0.60	0.66	258	256	257	53	228	79	77	1.4	3.0
	10	574.51	0.67	0.70	259	255	255	52	228	80	78	1.5	3.0
	12.5	576.21	0.60	0.66	260	256	255	51	229	80	77	1.6	3.0
3	15	577.96	0.60	0.65	270	255	255	52	229	80	77	1.4	3.0
	17.5	579.67	0.61	0.66	269	256	255	52	229	81	78	1.4	3.0
	20	581.31	0.63	0.67	271	256	255	52	229	81	77	1.4	3.0
4	22.5	582.96	0.63	0.67	271	255	255	52	229	81	77	1.4	3.0
	25	584.57	0.70	0.71	270	255	255	52	229	81	77	1.[illegible]	3.5
	27.5	586.42	0.72	0.71	280	256	255	52	230	81	77	1.6	3.0
5	30	588.20	0.71	0.71	281	255	255	53	231	82	78	1.6	3.0
	32.5	589.98	0.70	0.70	281	256	255	52	229	82	78	1.6	3.0
	35	591.78	0.69	0.70	281	255	254	52	230	82	78	1.6	3.0
6	37.5	593.60	0.70	0.70	281	256	256	52	230	83	78	1.6	3.0
	40	595.32	0.71	0.71	280	256	255	52	230	82	78	1.6	3.0
	42.5	597.1	0.70	0.70	281	255	254	51	230	82	78	1.6	3.0
7	45	598.87	0.70	0.70	281	255	254	54	227	83	78	1.6	3.0
	47.5	600.66	0.75	0.73	282	256	255	56	227	81	78	1.9	4.0
	50	602.53	0.73	0.72	281	256	255	57	228	81	77	1.6	4.0

Traverse: 1			
Start Time: 18:07	Initial Leak Check: 0.004	cfm@ 11	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg

Traverse:			
Start Time: —	Initial Leak Check: ~~0.004~~	cfm @ —	"Hg
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21546

Operator : AKM

Field Data Sheet

Date: Oct 1/15	Plant: Durham-York Energy Centre	Test No.: 3	Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
8	52.5	604.31	0.78	0.74	281	255	256	57	224	82	78	1.6	3.0
	55	606.06	0.79	0.75	281	255	256	59	223	82	78	1.8	3.0
	57.5	607.92	0.80	0.75	280	255	255	61	224	82	77	1.9	3.0
9	60	609.85	.83	.77	281	256	255	58	231	82	77	2	4
	62.5	611.82	.84	.77	280	255	255	61	227	82	78	2	4
	65	613.78	.85	.77	281	256	255	63	228	82	78	2	4
10	67.5	615.87	.84	.77	281	257	256	61	233	82	78	2	4
	70	617.7	.86	.78	281	256	256	60	227	82	78	2.1	4
	72.5	619.80	.85	.77	281	256	256	61	227	82	78	2	4
11	75	621.81	.845	.77	280	256	258	59	231	82	78	2	4
	77.5	623.7	.84	.75	280	256	255	58	229	82	78	2	4
	80	625.76	.81	.76	280	256	255	60	227	82	78	1.9	4
12	82.5	627.7	.79	.75	280	257	258	59	224	82	78	1.9	4
	85	629.65	.78	.74	280	256	255	58	228	82	78	1.8	4
	87.5	631.51	.78	.74	279	256	255	59	225	82	78	1.8	4
	90	633.50											

Traverse: 1				
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 19:37	Final Leak Check: 0.002	cfm@ 11	"Hg

Traverse:				
Start Time: —	Initial Leak Check: —	cfm @ —	"Hg
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21546

Operator : AKM

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 1	Particulate/Hydrogen Fluoride
Test Date	Sept 30, 2015
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	21546
Page	1 of 5
Probe No.:	
Meter Box No.:	
Impinger Box No.:	

Pitot Factor	0.845	
DGMCF	1.004	
Barometric Pressure	29.80 ~~29.72~~ ~~29.22~~	"Hg
Static Pressure	-11.2	"H2O
Nozzle Size	0.25575	inches
Stack Diameter	4.5	feet
Length	-	feet
Width	-	feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	517.5	g
WCBDA	37.7	g

Combustion Gas Concentration

Oxygen	8.38	%
Carbon Dioxide	10.89	%
Carbon Monoxide	13.5	ppm

Measuring Device	MII Numbers
Probe / Pitot	B03775
Trendicator	
Control Box	COE20090
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements

1	0.2550
2	0.2560
3	0.2555
4	0.2565
Average:	0.25575

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

~~Rev. November 27, 2014~~

Field Data Sheet

Date: 30/Sep/2015	Plant: Durham-York Energy Centre	Test No.: 1	Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	* 0.68		* 272			*		*	*	*	*
1	0	76.3863	~~0.87~~	0.89	~~140~~	272	256	~~66~~ 81	66	71	71	2.0	5
	2.5	78.79	0.74	0.74	272	268	251	47	234	72	72	1.7	5
	5	80.56	0.72	0.72	271	271	251	46	233	70	71	1.7	5
2	7.5	82.32	0.66	0.69	271	268	251	46	234	70	71	1.6	4.5
	10	84.04	0.68	0.71	271	269	253	46	241	70	73	1.7	4.5
	12.5	85.79	0.68	0.71	271	271	257	48	247	70	74	1.7	4.5
3	15	87.57	0.78	0.76	261	269	266	49	246	71	76	1.9	5
	17.5	89.42	0.80	0.77	270	269	255	50	243	71	77	~~1.9~~ 2.0	5
	20	91.33	0.81	0.77	267	271	257	58	239	70	70	2.0	5
4	22.5	93.25	0.76	0.74	271	273	256	52	244	70	70	1.9	5
	25	95.13	0.78	0.75	273	271	254	48	241	70	71	1.9	5
	27.5	97.00	0.78	0.75	274	272	251	47	237	70	72	2.0	5
5	30	98.89	0.79	0.76	278	270	252	47	240	70	74	2.0	5
	32.5	100.79	0.75	0.74	278	269	256	48	246	70	76	1.9	5
	35	102.66	0.77	0.75	277	272	257	48	248	71	77	1.9	5
6	37.5	104.54	0.77	0.75	277	273	256	49	247	71	78	1.9	5
	40	106.42	0.75	0.74	277	272	254	50	241	71	80	1.9	5
	42.5	108.29	0.74	0.74	277	271	262	49	238	71	80	1.9	5
7	45	110.17	0.75	0.74	277	271	251	49	240	71	81	1.9	5
	47.5	112.04	0.71	0.73	277	273	256	50	246	72	82	1.8	5
	50	113.87	0.71	0.73	278	273	258	50	250	72	83	1.8	5

Traverse:			
Start Time: 8:13am	Initial Leak Check: 0.005	cfm@ 17	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

8:30 pump off, started @ 11:40

Project No.: 21546

Operator: KS

Field Data Sheet

Date: 30/Sep/2015	Plant: Durham-York Energy Centre	Test No.: 1	Particulate/Metals	
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
8	52.5	115.71	0.75	0.75	277	269	257	49	248	73	84	1.9	5
	55	117.60	0.76	0.75	278	271	255	50	244	73	84	1.9	5
	57.5	119.50	0.77	0.76	278	271	252	49	241	73	85	1.9	5
9	60	121.40	0.82	0.78	278	271	252	49	242	73	85	2.1	5
	62.5	123.37	0.84	0.79	278	273	257	49	248	74	86	2.1	5
	65	125.35	0.88	0.81	278	271	259	50	252	74	86	2.2	5
10	67.5	127.40	0.89	0.82	278	273	258	50	251	74	87	2.2	5.5
	70	129.44	0.89	0.82	278	270	256	51	246	75	87	2.2	5.5
	72.5	131.49	0.89	0.82	278	269	253	52	243	75	87	2.2	5.5
11	75	133.55	0.87	0.81	278	270	253	52	241	75	87	2.2	5.5
	77.5	135.59	0.90	0.82	278	274	255	53	246	75	88	2.2	5.5
	80	137.64	0.90	0.82	278	270	259	56	252	76	88	2.3	5.5
12	82.5	139.74	0.83	0.79	279	274	259	58	252	76	88	2.1	5.5
	85	141.72	0.83	0.79	279	274	258	60	248	76	88	2.1	5.5
	87.5	143.69	0.83	0.79	278	270	254	63	244	76	88	2.1	5.5
	90	145.80											

Traverse:				
Start Time:	Initial Leak Check:	cfm@		"Hg
Finish Time: 12:53	Final Leak Check: 0.005	cfm@	10	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : KS

Field Data Sheet

Date: ~~30/Sept/2015~~ sept 30, 2015	Plant: Durham-York Energy Centre	Test No.: 1	Particulate/Metals	
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
1	0	146.25	0.75	0.75	271	269	258	70	172	76	78	2	5.5
	2.5	148.11	0.75	0.75	271	272	253	58	236	76	80	2	5.5
	5	150.04	0.75	0.75	271	267	253	54	239	76	81	2	5.5
2	7.5	151.97	0.78	0.76	274	269	253	53	242	76	82	2.0	5.5
	10	153.88	0.75	0.75	274	272	258	52	250	76	83	1.9	5.5
	12.5	155.77	0.75	0.75	277	270	259	52	252	76	85	1.9	5.5
3	15	157.65	0.80	0.78	277	272	257	52	248	76	86	2.1	5.5
	17.5	159.63	0.79	0.77	272	269	254	51	244	76	86	2.1	5.5
	20	161.60	0.78	0.77	272	270	252	51	241	76	87	2.0	5.5
4	22.5	163.54	0.79	0.77	272	271	254	50	246	76	87	2.0	5.5
	25	165.48	0.73	0.74	273	273	258	50	251	77	88	1.9	5.5
	27.5	167.38	0.72	0.72	273	270	258	51	251	77	88	1.9	5.5
5	30	169.27	0.70	0.73	273	270	256	51	248	77	88	1.8	5.5
	32.5	171.11	0.71	0.73	278	271	253	49	242	77	88	1.8	5.5
	35	172.94	0.72	0.74	278	271	252	49	242	77	88	1.9	5.5
6	37.5	174.81	0.69	0.72	278	269	256	48	247	77	89	1.8	5.5
	40	176.65	0.73	0.74	278	272	260	48	252	78	89	1.9	5.5
	42.5	178.54	0.73	0.74	279	272	258	48	251	78	89	1.9	5.5
7	45	180.42	0.74	0.75	278	270	256	48	247	78	89	1.9	5.5
	47.5	182.30	0.74	0.75	279	268	254	49	242	78	89	1.9	5.5
	50	184.18	0.76	0.76	279	271	252	49	242	78	89	2.0	5.5

Traverse:			
Start Time: 13:05	Initial Leak Check: 0.005	cfm@ 19	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : KS

Field Data Sheet

Date: 29 30/Sept/2015	Plant: Durham-York Energy Centre	Test No.: 1	Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
8	52.5	186.10	0.82	0.79	279	268	257	50	249	78	90	2.1	5.5
	55	188.08	0.80	0.78	279	274	260	50	253	78	90	2.0	5.5
	57.5	190.02	0.91	0.83	279	269	258	51	251	79	90	2.3	5.5
9	60	192.11	0.95	0.85	279	274	257	52	249	79	90	2.4	5.5
	62.5	194.26	0.90	0.83	280	268	254	53	244	79	90	2.3	6
	65	196.37	0.90	0.83	279	273	253	54	243	79	90	2.3	6
10	67.5	198.48	0.90	0.83	279	267	256	55	249	79	91	2.3	6
	70	200.59	0.92	0.84	279	273	259	57	253	79	91	2.3	6
	72.5	202.70	0.93	0.84	279	269	258	59	251	79	91	2.3	6
11	75	204.80	0.97	0.86	279	272	257	60	248	80	91	2.4	6
	77.5	206.97	0.96	0.85	279	269	253	62	243	79	91	2.4	6
	80	209.15	0.99	0.87	279	272	253	63	244	79	91	2.4	6
12	82.5	211.33	0.99	0.87	279	270	258	65	251	79	91	2.4	6
	85	213.50	0.99	0.87	280	271	260	68	255	80	91	2.5	6
	87.5	215.71	0.96	0.85	280	273	259	66	254	80	91	2.4	6
	90	218.60											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time: 14:34	Final Leak Check: 0.003	cfm@ 13	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : KS

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 2	Particulate/Hydrogen Fluoride
Test Date Sept	30, 2015
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	21546
Page	1 of 5
Probe No.:	
Meter Box No.:	
Impinger Box No.:	

Pitot Factor	0.845	
DGMCF	1.004	
Barometric Pressure	29.88 ~~29.92~~	"Hg
Static Pressure	-11.2	"H2O
Nozzle Size	0.25575	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	534.1	g
WCBDA	29.9	g

Combustion Gas Concentration

Oxygen	8.28	%
Carbon Dioxide	10.98	%
Carbon Monoxide	14.1	ppm

Measuring Device	MII Numbers
Probe / Pitot	B03775
Trendicator	
Control Box	COE20090
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	0.2550
2	0.2560
3	0.2555
4	0.2565
Average:	0.25575

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Rev. November 27, 2014

Field Data Sheet

Date: 30-Sep-2015	Plant: Durham-York Energy Centre	Test No.: 2	Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	18.49	0.15	0.75	272	266	249	74	95	77	77	1.8	4
	2.5	20.43	0.70	0.72	272	274	256	58	212	77	77	1.8	4.5
	5	22.29	0.71	0.73	272	271	259	54	225	77	78	1.8	4.5
2	7.5	24.13	0.75	0.77	235	272	252	51	224	77	79	1.9	4.5
	10	26.01	0.73	0.76	239	272	255	50	226	77	81	1.9	4.5
	12.5	27.91	0.73	0.76	239	273	257	50	230	77	83	1.9	4.5
3	15	29.78	0.81	0.79	264	271	253	50	229	78	84	2.1	4.5
	17.5	31.74	0.78	0.77	268	268	258	50	229	78	85	2.1	4.5
	20	33.72	0.78	0.77	267	274	257	50	232	78	86	2.0	5.0
4	22.5	35.66	0.79	0.78	268	268	254	50	229	78	87	2.0	5
	25	37.60	0.77	0.77	273	271	258	50	230	78	88	2.0	5
	27.5	39.54	0.77	0.77	274	269	257	50	232	79	88	2.0	5
5	30	41.49	0.75	0.76	276	272	254	50	230	79	89	1.9	5
	32.5	43.39	0.75	0.76	276	270	258	50	232	79	89	1.9	5
	35	45.29	0.76	0.76	276	269	257	50	233	79	90	1.9	5
6	37.5	47.18	0.75	0.76	276	269	254	50	230	79	90	1.95	5
	40	49.10	0.76	0.76	276	272	257	50	231	79	90	1.95	5
	42.5	51.02	0.75	0.76	277	272	257	50	232	80	91	1.95	5
7	45	52.93	0.77	0.77	277	270	254	51	231	80	91	2	5
	47.5	54.86	0.74	0.75	279	268	256	51	232	80	91	1.9	5
	50	56.76	0.72	0.74	279	270	258	51	234	80	91	1.9	5

Traverse:			
Start Time: 16:02	Initial Leak Check: 0.007	cfm@ 13	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : KS

Field Data Sheet

Date: 30/Sep/2015	Plant: Durham-York Energy Centre	Test No.: 2 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
8	52.5	58.64	0.71	0.74	278	272	254	51	231	80	91	1.9	5
	55	60.53	0.78	0.77	279	271	256	51	230	80	91	2.0	5
	57.5	62.47	0.77	0.77	279	270	257	51	233	80	91	2.0	5
9	60	64.40	0.86	0.86	279	273	255	52	232	80	92	2.2	5
	62.5	66.47	0.87	0.82	279	269	258	51	226	80	92	2.2	5
	65	68.54	0.85	0.81	280	275	257	51	230	81	92	2.15	5
10	67.5	70.58	0.86	0.81	280	272	255	51	226	81	92	2.15	5
	70	72.62	0.88	0.82	280	271	257	51	229	81	92	2.2	5
	72.5	74.68	0.86	0.81	280	272	255	51	227	81	92	2.2	5
11	75	76.74	0.88	0.82	280	274	258	51	228	81	92	2.2	5
	77.5	78.80	0.91	0.83	280	271	257	51	231	81	93	2.3	5
	80	80.91	0.88	0.82	280	272	255	51	230	81	93	2.2	5
12	82.5	82.99	0.87	0.82	281	273	258	52	231	81	93	2.2	5
	85	85.04	0.86	0.81	280	270	255	52	232	81	93	2.2	5
	87.5	87.23	0.85	0.81	280	272	256	52	232	81	93	2.1	5
	90	89.09											

Traverse:			
Start Time:	Initial Leak Check: cfm@ "Hg	Start Time:	Initial Leak Check: cfm @ "Hg
Finish Time: 17:32	Final Leak Check: 0.006 cfm@ 11 "Hg	Finish Time:	Final Leak Check: cfm @ "Hg

Project No.: 21546

Operator : KS

Field Data Sheet

Date:	Plant:	Durham-York Energy Centre	Test No.:	2	Particulate/Metals	Page 4 of 5
30/Sep/2015	Plant Location:	Courtice, Ontario	Test Location:		APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	89.62	0.65	0.7	272	268	254	63	153	80	82	1.7	5
	2.5	91.45	0.70	0.73	277	269	258	53	205	80	83	1.7	5
	5	93.24	0.72	0.74	277	271	258	53	207	80	85	1.8	5
2	7.5	95.08	0.70	0.73	277	271	254	52	206	80	86	1.8	5
	10	96.92	0.69	0.72	277	270	257	52	206	80	87	1.8	5
	12.5	98.76	0.69	0.72	277	270	257	53	209	80	89	1.8	5
3	15	100.60	0.71	0.74	277	273	254	53	206	80	90	1.8	5
	17.5	102.44	0.71	0.76	237	271	258	53	210	80	91	1.8	5
	20	104.28	0.72	0.76	235	270	258	53	209	80	91	1.9	5
4	22.5	106.16	0.72	0.75	261	271	254	54	210	80	91	2.0	5
	25	108.07	0.72	0.75	261	273	257	53	212	80	91	2.0	5
	27.5	110.01	0.73	0.76	262	271	258	54	214	80	92	1.9	5
5	30	111.90	0.74	0.76	263	271	254	54	211	80	92	1.9	5
	32.5	113.82	0.72	0.75	264	269	257	54	212	80	92	1.9	5
	35	115.71	0.72	0.75	263	274	258	55	214	81	92	1.9	5
6	37.5	117.60	0.73	0.75	276	272	254	55	210	81	92	1.9	5
	40	119.48	0.73	0.75	277	272	256	55	207	81	92	1.9	5
	42.5	121.36	0.72	0.74	277	270	258	55	208	81	92	1.9	5
7	45	123.27	0.69	0.73	277	269	254	54	204	81	92	1.8	5
	47.5	125.09	0.69	0.73	278	272	256	54	210	81	92	1.9	5
	50	126.96	0.69	0.73	278	271	258	53	212	81	93	1.8	5

Traverse:				
Start Time: 17:44	Initial Leak Check:	.005	cfm@ 13	"Hg
Finish Time:	Final Leak Check:		cfm@	"Hg

Traverse:				
Start Time:	Initial Leak Check:		cfm @	"Hg
Finish Time:	Final Leak Check:		cfm @	"Hg

Project No.: 21546

Operator : KS

Field Data Sheet

Date: 30/Sep/2005	Plant:	Durham-York Energy Centre	Test No.: 2	Particulate/Metals	Page 4 of 4
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
~~9~~ 8	~~40~~ 52.5	128.80	0.75	0.76	278	273	255	53	209	81	92	1.9	5
	~~42.5~~ 55	130.70	0.74	0.75	278	272	257	53	211	81	93	2.0	5
~~10~~	~~45~~ 57.5	132.63	0.75	0.76	278	271	258	53	215	81	93	2.0	5
9	~~47.5~~ 60	134.57	0.82	0.79	278	273	255	54	212	81	93	2.15	5
~~11~~	~~50~~ 62.5	136.59	0.80	0.78	278	271	255	54	212	81	93	2.15	5.5
	~~52.5~~ 65	138.61	0.84	0.80	277	272	258	54	214	81	93	2.1	5.5
10 ~~12~~	~~55~~ 67.5	140.61	0.83	0.80	278	274	255	54	209	81	92	2.1	5.5
	~~57.5~~ 70	142.61	0.88	0.82	278	270	256	54	211	81	92	2.2	5.5
	~~60~~ 72.5	144.68	0.86	0.81	278	271	258	54	215	81	92	2.2	5.5
11	75	146.73	0.90	0.83	279	272	255	54	213	81	92	2.3	5.5
	77.5	148.83	0.90	0.83	279	272	256	54	212	81	92	2.3	5.5
	80	150.94	0.90	0.83	279	272	257	54	213	81	92	2.3	6
12	82.5	153.05	0.88	0.82	279	273	254	54	213	81	92	2.2	6
	85	155.12	0.89	0.83	279	270	256	54	212	81	92	2.2	6
	87.5	157.20	0.86	0.81	279	273	257	54	213	81	92	2.1	5.5
	90	159.35											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time: 19:14	Final Leak Check: 0.005	cfm@ 11	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : KS

ORTECH Environmental

Plant	Durham-York Energy Centre
Plant Location	Courtice, Ontario
Test No.: 3	Particulate/Hydrogen Fluoride
Test Date	October 1, 2015
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	21546	
Page	1 of 5	
Probe No.:		
Meter Box No.:	TEAM 4	
Impinger Box No.:		

Pitot Factor	0.845	
DGMCF	1.004	
Barometric Pressure	30.05 ~~29.42~~	"Hg
Static Pressure	-11.2	"H2O
Nozzle Size	0.25575	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	504.2	g
WCBDA	39.9	g

Combustion Gas Concentration

Oxygen	7.62	%
Carbon Dioxide	11.85	%
Carbon Monoxide	16.8	ppm

Measuring Device	MII Numbers
Probe / Pitot	B03775
Trendicator	
Control Box	OE 20090
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	0.2550
2	0.2560
3	0.2555
4	0.2565
Average:	0.25575

Probe Liner Glass / Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None /Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Field Data Sheet

Date: Oct 1, 2015	Plant: Durham-York Energy Centre	Test No.: 3	Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	60.03	0.8	0.75	~~228~~ 225	270	254	61	60	63	63	1.9	5.5
	2.5	61.86	0.8	0.78	225	268	250	50	233	63	62	2.1	5.5
	5	63.81	0.77	0.76	225	266	250	49	239	63	63	2.1	5.5
2	7.5	65.76	0.83	0.77	265	271	254	49	245	63	64	2.1	5.5
	10	67.71	0.83	0.77	267	268	254	49	246	63	65	2.1	5.5
	12.5	69.65	0.86	0.79	267	270	253	51	243	63	67	2.2	5
3	15	71.64	0.83	0.77	267	267	250	52	239	63	68	2.1	5.5
	17.5	73.61	0.83	0.77	267	266	249	54	238	63	69	2.1	6
	20	75.56	0.82	0.77	267	266	251	56	242	63	71	2.1	6
4	22.5	77.51	0.81	0.77	267	270	255	59	248	64	72	2.1	6
	25	79.45	0.80	0.76	273	267	255	60	247	64	72	2.1	6
	27.5	81.39	0.80	0.76	273	268	253	58	243	64	73	2.1	6
5	30	83.32	0.80	0.76	273	268	250	58	239	64	74	2.1	6
	32.5	85.24	0.78	0.75	275	266	249	56	239	64	74	2.0	6
	35	87.15	0.77	0.75	274	266	252	55	243	64	75	2.0	6
6	37.5	89.06	0.76	0.74	275	266	256	55	248	65	75	1.9	5.5
	40	90.93	0.72	0.72	276	267	255	55	246	65	75	1.9	5.5
	42.5	92.80	0.72	0.72	276	267	252	55	241	65	76	1.8	5.5
7	45	94.62	0.76	0.74	276	266	250	54	237	65	76	1.9	5.5
	47.5	96.49	0.76	0.74	276	266	250	53	239	65	76	1.9	5.5
	50	98.35	0.75	0.74	276	268	254	52	244	65	77	1.9	5.5

Traverse:				
Start Time: 7:42	Initial Leak Check: 0.003	cfm@	15	"Hg
Finish Time:	Final Leak Check:	cfm@		"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : KS

Field Data Sheet

Date: Oct 1, 2015	Plant: Durham-York Energy Centre	Test No.: 3	Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
8	52.5	100.22	0.80	0.76	276	271	256	52	247	65	77	1.9	5.5
	55	102.07	0.80	0.76	276	271	255	52	245	66	77	2.0	5.5
	57.5	103.96	0.81	0.77	276	268	253	51	241	66	77	2.1	6
9	60	105.91	0.78	0.75	276	266	250	50	237	66	77	2.1	6
	62.5	107.87	0.74	0.73	276	267	250	50	237	66	77	2.0	6
	65	109.79	0.73	0.73	276	267	253	50	243	66	77	1.9	6
10	67.5	111.66	0.71	0.72	275	269	256	51	247	66	78	1.8	5.5
	70	113.46	0.78	0.75	276	268	256	51	230	66	78	2.0	5.5
	72.5	115.37	0.79	0.76	276	264	254	51	242	66	78	2.0	5.5
11	75	117.28	0.83	0.78	276	271	250	52	238	66	78	2.1	6
	77.5	119.24	0.82	0.77	275	266	250	51	236	68	78	2.1	6
	80	121.20	0.81	0.76	274	266	251	51	240	66	78	2.1	6
12	82.5	123.17	0.81	0.77	275	270	256	52	247	67	79	2.0	6
	85	125.10	0.80	0.76	274	271	256	52	248	67	78	2.0	6
	87.5	127.03	0.80	0.76	275	272	255	52	245	67	78	2.0	6
	90	129.09											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time: 9:12	Final Leak Check: 0.006	cfm@ 11	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : KS

Field Data Sheet

Date: 24/OCT/2013	Plant: Durham-York Energy Centre	Test No.: 3	Particulate/Metals	
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
1	0	129.35	0.54	0.62	~~276~~ 276	267	249	~~164~~ 59	164	65	66	1.7	5.5
	2.5	130.17	0.52	0.61	276	268	249	50	228	65	67	1.4	5
	5	132.79	0.50	0.60	276	266	252	48	238	65	68	1.3	5
2	7.5	134.32	0.49	0.59	~~269~~ 271	269	256	46	244	66	70	1.2	5
	10	135.80	0.58	0.66	249	268	256	47	244	66	72	1.6	5
	12.5	137.45	0.60	0.67	258	267	253	47	241	66	73	1.7	5
3	15	139.18	0.61	0.67	256	266	250	47	236	66	75	1.6	5
	17.5	140.90	0.61	0.67	271	265	249	47	236	66	76	1.6	5.5
	20	142.60	0.60	0.66	271	269	251	47	241	66	76	1.6	5.5
4	22.5	144.29	0.59	0.66	271	270	256	47	246	66	77	1.6	5.5
	25	145.99	0.54	0.63	272	270	255	46	245	66	77	1.4	5.5
	27.5	147.61	0.56	0.64	272	271	253	48	241	67	78	1.4	5
5	30	149.20	0.55	0.63	272	265	251	46	236	67	78	1.4	5
	32.5	150.79	0.54	0.63	271	266	250	48	235	67	79	1.4	5
	35	152.37	0.54	0.63	272	268	253	48	242	67	79	1.4	5
6	37.5	153.94	0.54	0.63	272	271	256	49	246	68	80	1.4	5
	40	155.56	0.57	0.65	273	266	256	49	245	68	80	1.5	5.5
	42.5	157.20	0.57	0.65	273	270	254	50	242	68	80	1.5	5.5
7	45	158.83	0.56	0.65	273	265	251	50	236	68	81	1.5	5.5
	47.5	160.45	0.55	0.64	272	266	250	51	235	68	81	1.5	5.5
	50	162.11	0.53	0.63	272	269	252	52	240	68	81	1.5	5.5

Traverse: 2			
Start Time: 9:31	Initial Leak Check: 0.002	cfm@ 11	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : KS

Field Data Sheet

Date: OCT 1, 2015	Plant: Durham-York Energy Centre	Test No.: 3	Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure ΔH "H_2O *	Pump Vacuum "Hg Gauge *
8	52.5	163.76	0.64	0.69	273	270	256	53	245	69	81	1.7	5.5
	55	165.48	0.63	0.68	273	271	256	56	245	69	82	1.7	6
	57.5	167.23	0.64	0.69	273	270	254	57	242	69	82	1.7	6
9	60	168.97	0.63	0.68	273	269	251	58	237	69	82	1.7	6
	62.5	170.72	0.62	0.68	273	268	251	59	236	69	82	1.7	6
	65	172.46	0.62	0.68	273	269	253	61	242	69	82	1.7	6
10	67.5	174.19	0.66	0.70	273	269	257	63	246	70	82	1.7	6
	70	175.95	0.67	0.70	274	268	257	65	246	70	82	1.8	6
	72.5	177.76	0.69	0.71	274	268	255	66	243	70	82	1.8	6
11	75	179.55	0.71	0.73	274	267	252	68	239	70	82	1.9	6
	77.5	181.36	0.72	0.73	275	266	251	70	238	70	83	1.9	6
	80	183.24	0.71	0.73	275	269	253	72	243	70	83	1.9	6
12	82.5	185.10	0.72	0.73	275	268	257	74	247	71	82	1.8	6
	85	186.92	0.80	0.77	275	268	257	76	246	71	82	2.1	6
	87.5	188.87	0.72	0.73	275	270	255	77	244	71	82	1.9	6
	90	190.76											

Traverse: 2			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time: 11:01	Final Leak Check: 0.003	cfm@ 12	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21546

Operator : KS

APPENDIX 14

VOST Field Data Sheets
(25 pages)

VOST Field Data Sheet

Plant: Durham-York Energy Centre	Test Location: APC Outlet No. 1		Test No. : 1
Plant Location: Courtice, Ontario	Test Condition: COMPLIANCE		Tube Pair No.: 1
Date: OCTOBER 1, 2015			
Project No. : 21546			

VOST Tube Identification	Field ID	Lab ID
Tenax	1A	1A
Tenax/Charcoal	1B	1B

Field Blank Tube Identification	Field ID	Lab ID
Tenax		
Tenax/Charcoal		

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	4773.60	130	138	4	17	2.5	12
5	78.6	131	138	7	22	2.5	12.5
10	84.2	132	137	7	19	2.5	12.5
15	89.7	130	137	7	20	2.5	12.5
20	95.90	130	136	4	20	2.5	12.5
25							
30							
35							
40							

Start Time :	11 20
Finish Time:	11 40
Initial Leak Check:	NDL "Hg drop in 60 sec @ 12 "Hg
Final Leak Check:	NDL "Hg drop in 60 sec @ 16 "Hg

Control Box	VOST 2	Device	MII
DGMCF	0.993	Control Box	A1017
Pb ("Hg)	30.05	Barometer	EnvCan

Comments : NDL - No Discernable Leak

Actual Volume	22.3
Average T_{DGM}	~~5.8~~ 19.6
Average ΔH_{DGM}	2.5
Average Vacuum	12.5

Operator: [signature]

VOST Field Data Sheet

Plant:	Durham-York Energy Centre	Test Location:	APC Outlet No. 1	Test No. :	1
Plant Location:	Courtice, Ontario	Test Condition:	COMPLIANCE	Tube Pair No.:	2
Date:	OCT 1 2015				
Project No. :	21546				

VOST Tube Identification	Field ID	Lab ID
Tenax	2A	2A
Tenax/Charcoal	2B	2B

Field Blank Tube Identification	Field ID	Lab ID
Tenax		
Tenax/Charcoal		

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	96.51	133	135	9	19	2.5	7
5	101.8	130	136	7	20	2.5	7
10	107.2	130	136	8	22	2.5	7
15	102.5	130	136	9	22	2.5	7
20	~~158~~ 117.90	130	139	8	22	2.5	7
25							
30							
35							
40							

Start Time :	1157
Finish Time:	1217
Initial Leak Check:	NDL " Hg drop in 60 sec @ 12 "Hg
Final Leak Check:	NDL " Hg drop in 60 sec @ 14 "Hg

Control Box	VOST2	Device	MII
DGMCF	.993	Control Box	10117
Pb ("Hg)	30.05	Barometer	Env Can

Comments : NDL - No Discernable Leak

Actual Volume	21.39
Average T_{DGM}	~~9.2~~ 21.0
Average ΔH_{DGM}	2.5
Average Vacuum	7

Operator: [signature]

VOST Field Data Sheet

Plant:	Durham-York Energy Centre	Test Location:	APC Outlet No. 1	Test No. :	1
Plant Location:	Courtice, Ontario	Test Condition:	COMPLIANCE	Tube Pair No.:	3
Date:	OCT 1 2015				
Project No. :	21546				

VOST Tube Identification

	Field ID	Lab ID
Tenax	3A	3A
Tenax/Charcoal	3B1	3B

Field Blank Tube Identification

	Field ID	Lab ID
Tenax		
Tenax/Charcoal		

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	18.02	130	137	18	20	2.5	4
5	23.2	134	137	~~19~~ 9	22	2.5	4
10	28.0	147	136	8	22	2.5	5
15	33.1	147	136	9	22	2.5	5.5
20	38.64	135	136	9	22	2.5	5.5
25							
30							
35							
40							

Start Time :	1225
Finish Time:	1245
Initial Leak Check:	NDL " Hg drop in 60 sec @ 10 "Hg
Final Leak Check:	NDL " Hg drop in 60 sec @ 10 "Hg

Control Box	VOST 2	Device	MII
DGMCF	0.993	Control Box	10117
Pb ("Hg)	30.05	Barometer	Envcan

Comments : NDL - No Discernable Leak

Actual Volume	20.62
Average T_{DGM}	21.6
Average ΔH_{DGM}	2.5
Average Vacuum	4.8

Operator: [signature]

VOST Field Data Sheet

Plant:	Durham-York Energy Centre	Test Location:	APC Outlet No. 1	Test No. :	1
Plant Location:	Courtice, Ontario	Test Condition:	COMPLIANCE	Tube Pair No.:	4
Date:	OCT 1 /15				
Project No. :	21546				

VOST Tube Identification

	Field ID	Lab ID
Tenax	4A	4A
Tenax/Charcoal	4B	4B

Field Blank Tube Identification

	Field ID	Lab ID
Tenax	4	
Tenax/Charcoal		

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	38.76	135	136	8	21	2.5	12.5
5	43.9	135	136	9	22	2.5	13
10	49.90	136	135	9	22	2.5	13
15	55.50	136	136	9	22	2.5	13
20	61.48	136	136	9	22	2.5	13
25							
30							
35							
40							

Start Time :	12:58
Finish Time:	~~1308~~ 1318
Initial Leak Check:	NDL " Hg drop in 60 sec @ 10 "Hg
Final Leak Check:	NDL " Hg drop in 60 sec @ 16.5 "Hg

Control Box	VOST 2	Device	MII
DGMCF	6.993	Control Box	10117
Pb ("Hg)	30.05	Barometer	EnvCan

Comments : NDL - No Discernable Leak

Actual Volume	22.72
Average T_{DGM}	21.8
Average ΔH_{DGM}	2.5
Average Vacuum	~~13~~ 12.9

Operator: DM

VOST Field Data Sheet

Plant:	Durham-York Energy Centre	Test Location:	APC Outlet No. 1	Test No. :	2
Plant Location:	Courtice, Ontario	Test Condition:	Compliance	Tube Pair No.:	1
Date:	Oct 2/2015				
Project No. :	21546				

VOST Tube Identification	Field ID	Lab ID
Tenax	5A	5A
Tenax/Charcoal	5B	5B

Field Blank Tube Identification	Field ID	Lab ID
Tenax	21A	21A
Tenax/Charcoal	21B	21B

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	25.87	116	135	17	18	2.5	2
5	31.68	126	135	11	19	2.5	2
10	37.48	126	136	7	20	2.5	2
15	42.57	129	136	6	20	2.0	2.5
20	47.55	128	135	6	20	2.0	2.5
25							
30							
35							
40							

Start Time :	9:24
Finish Time:	9:44
Initial Leak Check:	NDL " Hg drop in 60 sec @ 14 "Hg
Final Leak Check:	NDL " Hg drop in 60 sec @ 14 "Hg

Control Box	VOST 2	Device	MII
DGMCF	0.993	Control Box	A 10115
Pb ("Hg)	30.17	Barometer	EnvCan

Comments : NDL - No Discernable Leak

Actual Volume	21.68
Average T_{DGM}	19.4
Average ΔH_{DGM}	2.3
Average Vacuum	2.2

Operator: RW

VOST Field Data Sheet

Plant:	Durham-York Energy Centre	Test Location:	APC Outlet No. 1	Test No. :	2
Plant Location:	Courtice, Ontario	Test Condition:	Compliance	Tube Pair No.:	2
Date:	Oct 2/15				
Project No. :	21546				

VOST Tube Identification	Field ID	Lab ID
Tenax	6A	6A
Tenax/Charcoal	6B	6B

Field Blank Tube Identification	Field ID	Lab ID
Tenax		
Tenax/Charcoal		

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	47.77	129	136	6	19	2.2	2.5
5	53.07	127	137	6	19	2.2	2.5
10	58.39	129	136	6	19	2.2	2.5
15	63.65	130	137	6	19	2.2	3.0
20	69.03	129	136	6	20	2.2	3.0
25							
30							
35							
40							

Start Time :	9:52
Finish Time:	10:12
Initial Leak Check:	NDL " Hg drop in 60 sec @ 14.5 "Hg
Final Leak Check:	NDL " Hg drop in 60 sec @ 14 "Hg

Control Box	Vost 2	Device	MII
DGMCF	0.993	Control Box	A 1018
Pb ("Hg)		Barometer	

Comments : NDL - No Discernable Leak

Broke sample tube

Actual Volume	21.26
Average T_{DGM}	19.2
Average ΔH_{DGM}	2.2
Average Vacuum	2.7

Operator: RV

VOST Field Data Sheet

Plant:	Durham-York Energy Centre	Test Location:	APC Outlet No. 1	Test No. :	2
Plant Location:	Courtice, Ontario	Test Condition:	Compliance	Tube Pair No.:	2
Date:	Oct. 2/2015				
Project No. :	21546				

VOST Tube Identification	Field ID	Lab ID
Tenax	30A	30A
Tenax/Charcoal	30B	30B

Field Blank Tube Identification	Field ID	Lab ID
Tenax	21A	21A
Tenax/Charcoal	21B	21B

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	69.20	127	136	7	19	2.2	2.5
5	74.51	129	136	7	19	2.2	2.5
10	79.83	132	136	7	19	2.2	3.0
15	85.28	130	137	6	19	2.2	3.0
20	90.70	129	137	6	19	2.2	3.0
25							
30							
35							
40							

Start Time :	10:23
Finish Time:	10:43
Initial Leak Check:	NDL " Hg drop in 60 sec @ 14.5 "Hg
Final Leak Check:	NDL " Hg drop in 60 sec @ 14 "Hg

Control Box	Vost 2	Device	MII
DGMCF	0.993	Control Box	A 1011$
Pb ("Hg)	30.17	Barometer	Envcan

Comments : NDL - No Discernable Leak

Actual Volume	21.50
Average T_{DGM}	19
Average ΔH_{DGM}	2.2
Average Vacuum	2.8

Operator: RW

VOST Field Data Sheet

Plant:	Durham-York Energy Centre	Test Location:	APC Outlet No. 1	Test No. :	2
Plant Location:	Courtice, Ontario	Test Condition:	Compliance	Tube Pair No.:	3
Date:	Oct. 2/2015				
Project No. :	21546				

VOST Tube Identification

	Field ID	Lab ID
Tenax	7A	7A
Tenax/Charcoal	7B	7B

Field Blank Tube Identification

	Field ID	Lab ID
Tenax	21A	21A
Tenax/Charcoal	21B	21B

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	91.08	116	137	6	19	2.2	2.5
5	96.22	116	136	6	19	2.2	2.5
10	101.42	121	137	6	20	2.2	2.5
15	106.54	125	137	6	20	2.2	3.0
20	111.66	125	137	6	20	2.2	3.0
25							
30							
35							
40							

Start Time :	10:52
Finish Time:	11:12
Initial Leak Check:	NDL" Hg drop in 60 sec @ 14.5 "Hg
Final Leak Check:	NDL" Hg drop in 60 sec @ 14 "Hg

Control Box	Vost 2	Device	MII
DGMCF	0.993	Control Box	A 1017
Pb ("Hg)	30.17	Barometer	Envcan

Comments : NDL - No Discernable Leak

Actual Volume	20.58
Average T_{DGM}	19.6
Average ΔH_{DGM}	2.2
Average Vacuum	2.7

Operator: RW

VOST Field Data Sheet

Plant: Durham-York Energy Centre	Test Location: APC Outlet No. 1		Test No. : 2
Plant Location: Courtice, Ontario	Test Condition: Compliance		Tube Pair No.: 4
Date: Oct. 2/2015			
Project No. : 21546			

VOST Tube Identification	Field ID	Lab ID
Tenax	8A	8A
Tenax/Charcoal	8B	8B

Field Blank Tube Identification	Field ID	Lab ID
Tenax	21A	21A
Tenax/Charcoal	21B	21B

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	112.20	119	136	7	20	2.2	~~4.5~~ 3
5	117.32	126	137	6	20	2.2	~~4.0~~ 3.5
10	122.40	126	137	6	21	2.2	4.0
15	127.65	126	138	6	21	2.2	5.0
20	133.29	124	139	6	21	2.2	5.0
25							
30							
35							
40							

Start Time :	11:21
Finish Time:	11:41
Initial Leak Check:	NDL " Hg drop in 60 sec @ 14 "Hg
Final Leak Check:	NDL " Hg drop in 60 sec @ 14 "Hg

Control Box	Vost 2	Device	MII
DGMCF	0.993	Control Box	1018
Pb ("Hg)	30.17	Barometer	EnvCan

Comments : NDL - No Discernable Leak

Actual Volume	21.09
Average T_{DGM}	20.6
Average ΔH_{DGM}	2.2
Average Vacuum	~~3.3~~ 4.1

Operator: RW

VOST Field Data Sheet

Plant:	Durham-York Energy Centre	Test Location:	APC Outlet No. 1	Test No. :	3
Plant Location:	Courtice, Ontario	Test Condition:	Compliance	Tube Pair No.:	1
Date:	Oct. 2/15				
Project No. :	21546				

VOST Tube Identification	Field ID	Lab ID
Tenax	9A	9B
Tenax/Charcoal	9B	9B

Field Blank Tube Identification	Field ID	Lab ID
Tenax	26A	26A
Tenax/Charcoal	26B	26B

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	33.46	116	137	4	19	2.2	3.0
5	38.92	126	137	4	20	2.2	3.5
10	44.38	126	137	4	21	2.2	4.0
15	49.74	127	137	4	22	2.2	4.0
20	55.13	124	137	5	22	2.2	4.0
25							
30							
35							
40							

Start Time :	12:30
Finish Time:	12:50
Initial Leak Check:	NDL " Hg drop in 60 sec @ 14 "Hg
Final Leak Check:	NDL " Hg drop in 60 sec @ 14 "Hg

Control Box	Vost 2	Device	MII
DGMCF	0.993	Control Box	A 10118
Pb ("Hg)	30.14	Barometer	Envcan

Comments : NDL - No Discernable Leak

Actual Volume	21.67
Average T_{DGM}	20.8
Average ΔH_{DGM}	2.2
Average Vacuum	3.7

Operator: RW

VOST Field Data Sheet

Plant:	Durham-York Energy Centre	Test Location:	APC Outlet No. 1	Test No. :	3
Plant Location:	Courtice, Ontario	Test Condition:	Compliance	Tube Pair No.:	2
Date:	Oct 2				
Project No. :	21546				

VOST Tube Identification	Field ID	Lab ID
Tenax	10A	10A
Tenax/Charcoal	10B	10B

Field Blank Tube Identification	Field ID	Lab ID
Tenax	26A	26A
Tenax/Charcoal	26B	26B

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	56.25	116	138	6	21	2.2	2
5	61.50	114	139	6	22	2.2	3
10	67.00	126	139	6	22	2.2	3
15	72.45	127	140	6	22	2.2	3
20	77.70	124	140	6	23	2.2	3
25							
30							
35							
40							

Start Time :	13:12
Finish Time:	13:32
Initial Leak Check:	NDL " Hg drop in 60 sec @ 15 "Hg
Final Leak Check:	NDL " Hg drop in 60 sec @ 14 "Hg

Control Box	Vost 2	Device	MII
DGMCF	0.993	Control Box	1011B
Pb ("Hg)	30.14	Barometer	Env Can

Actual Volume	21.45
Average T_{DGM}	22
Average ΔH_{DGM}	2.2
Average Vacuum	2.8

Comments : NDL - No Discernable Leak

Operator: RW

Rev: April 28, 2005

ORTECH Environmental

VOST Field Data Sheet

Plant: Durham-York Energy Centre	Test Location:	APC Outlet No. 1	Test No. : 3
Plant Location: Courtice, Ontario	Test Condition:	Compliance	Tube Pair No.: 3
Date: Oct 2/15			
Project No. : 21546			

VOST Tube Identification	Field ID	Lab ID
Tenax	11A	11A
Tenax/Charcoal	11B	11B

Field Blank Tube Identification	Field ID	Lab ID
Tenax	26A	26A
Tenax/Charcoal	26B	26B

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	77.93	133	140	6	22	2.2	4
5	83.35	122	140	5	23	2.2	5
10	88.55	124	140	5	23	2.2	5
15	93.66	123	140	5	23	2.2	5
20	98.72	126	140	5	23	2.2	5
25							
30							
35							
40							

Start Time :	13:40
Finish Time:	14:00
Initial Leak Check:	NDL " Hg drop in 60 sec @ 14 "Hg
Final Leak Check:	NDL " Hg drop in 60 sec @ 14 "Hg

Control Box	Vost 2	Device	MII
DGMCF	0.993	Control Box	A 10113
Pb ("Hg)	30.14	Barometer	Env Can

Comments : NDL - No Discernable Leak

Actual Volume	20.79
Average T_{DGM}	22.8
Average ΔH_{DGM}	2.2
Average Vacuum	4.8

Operator: RW

VOST Field Data Sheet

Plant:	Durham-York Energy Centre	Test Location:	APC Outlet No. 1	Test No. :	3
Plant Location:	Courtice, Ontario	Test Condition:	Compliance	Tube Pair No.:	4
Date:	Oct 2/15				
Project No. :	21546				

VOST Tube Identification

	Field ID	Lab ID
Tenax	29A	29A
Tenax/Charcoal	29B	29B

Field Blank Tube Identification

	Field ID	Lab ID
Tenax	26A	26A
Tenax/Charcoal	26B	26B

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	98.83	120	140	6	22	2.2	3
5	103.52	122	141	6	23	2.2	3.5
10	109.90	124	141	6	23	2.2	~~4~~ 3.5
15	115.27	125	141	6	23	2.2	3.5
20	120.57	125	141	5	23	2.2	4
25							
30							
35							
40							

Start Time :	14:09
Finish Time:	14:29
Initial Leak Check:	NDL " Hg drop in 60 sec @ 14 "Hg
Final Leak Check:	NDL " Hg drop in 60 sec @ 14 "Hg

Control Box	Vost 2	Device	MII
DGMCF	0.993	Control Box	A 10117
Pb ("Hg)	30.14	Barometer	EnvCan

Comments : NDL - No Discernable Leak

Actual Volume	~~5.8~~ 21.74
Average T_{DGM}	22.8
Average ΔH_{DGM}	2.2
Average Vacuum	3.5

Operator: RW

VOST Field Data Sheet

Plant:	Durham-York Energy Centre	Test Location:	APC Outlet No. 2	Test No. :	1
Plant Location:	Courtice, Ontario	Test Condition:	COMPLIANCE	Tube Pair No.:	1
Date:	OCT 1, 2015				
Project No. :	21546				

VOST Tube Identification	Field ID	Lab ID
Tenax	12A	12A
Tenax/Charcoal	12B	12B

Field Blank Tube Identification	Field ID	Lab ID
Tenax	16A	16A
Tenax/Charcoal	16B	16B

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	53.1	125	135	7	21	1.6	3
5	57.2	129	135	7	~~20~~ 22	1.6	3
10	62.0	128	136	7	22	1.6	4
15	68.0	130	136	7	22	1.8	4
20	72.9	130	136	7	22	1.8	4
25							
30							
35							
40							

Start Time :	13:13
Finish Time:	13:33
Initial Leak Check:	NDL " Hg drop in 60 sec @ 24 "Hg
Final Leak Check:	NDL " Hg drop in 60 sec @ 24 "Hg

Control Box	VOST 5	Device	MII
DGMCF	.984	Control Box	COE 20018
Pb ("Hg)	30.04	Barometer	ENV. CAN

Comments : NDL - No Discernable Leak

Actual Volume	19.8
Average T_{DGM}	21.8
Average ΔH_{DGM}	1.68
Average Vacuum	3.6

Operator: MT

VOST Field Data Sheet

Plant:	Durham-York Energy Centre	Test Location:	APC Outlet No. 2	Test No. :	1
Plant Location:	Courtice, Ontario	Test Condition:	COMPLIANCE	Tube Pair No.:	2
Date:	OCT 1, 2015				
Project No. :	21546				

VOST Tube Identification	Field ID	Lab ID
Tenax	13A	13A
Tenax/Charcoal	13B	13B

Field Blank Tube Identification	Field ID	Lab ID
Tenax	~~16A~~	~~16A~~
Tenax/Charcoal	~~16B~~	~~16B~~

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	73.5	130	130	7	21	1.8	7
5	78.4	130	136	8	23	1.8	~~7~~ 5
10	83.12	130	136	7	25	1.8	5
15	87.72	131	135	8	23	1.8	10
20	93.58	130	135	8	23	2.0	9.5
25							
30							
35							
40							

Start Time :	13:43
Finish Time:	14:03
Initial Leak Check:	NDL " Hg drop in 60 sec @ 24 "Hg
Final Leak Check:	NDL " Hg drop in 60 sec @ 24 "Hg

Control Box	VOST 5	Device	MII
DGMCF	0.984	Control Box	CDE 20018
Pb ("Hg)	30.04	Barometer	ENV. CAN

Comments : NDL - No Discernable Leak

Actual Volume	20.08
Average T_{DGM}	~~22.8~~ 22.6
Average ΔH_{DGM}	1.84
Average Vacuum	7.3

Operator: MT

VOST Field Data Sheet

Plant:	Durham-York Energy Centre	Test Location:	APC Outlet No. 2	Test No. :	1
Plant Location:	Courtice, Ontario	Test Condition:	COMPLIANCE	Tube Pair No.:	3
Date:	OCT 1, 2015				
Project No. :	21546				

VOST Tube Identification	Field ID	Lab ID
Tenax	14A	14A
Tenax/Charcoal	14B	14B

Field Blank Tube Identification	Field ID	Lab ID
Tenax	16A	16A
Tenax/Charcoal	16B	16B

Test Time (min.)	Dry Gas Meter (L)	Probe Temp (°C)	Stack Temp (°C)	Condenser Outlet Temp (°C)	Avg DGM Temp (°C)	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	94.5	130	134	8	24	2.0	7
5	99.2	130	134	8	24	2.0	7
10	105.2	130	134	8	23	2.0	8
15	110.3	131	136	8	23	2.0	8
20	116.5	131	135	8	24	2.0	8
25							
30							
35							
40							

Start Time :	14:14
Finish Time:	14:34
Initial Leak Check:	NDL " Hg drop in 60 sec @ 24 "Hg
Final Leak Check:	NDL " Hg drop in 60 sec @ 24 "Hg

Control Box	VOST C	Device	MII
DGMCF	0.984	Control Box	COE 20018
Pb ("Hg)	30.04	Barometer	ENV. CAN

Comments : NDL - No Discernable Leak

Actual Volume	~~7~~ 22.0
Average T_{DGM}	23.6
Average ΔH_{DGM}	2.0
Average Vacuum	7.6

Operator: MT

Rev: April 28, 2005

ORTECH Environmental

VOST Field Data Sheet

Plant:	Durham-York Energy Centre	Test Location:	APC Outlet No. 2	Test No. :	1
Plant Location:	Courtice, Ontario	Test Condition:	COMPLIANCE	Tube Pair No.:	4
Date:	Oct 1, 2015				
Project No. :	21546				

VOST Tube Identification	Field ID	Lab ID
Tenax	15 A	15A
Tenax/Charcoal	15B	15B

Field Blank Tube Identification	Field ID	Lab ID
Tenax	16A	16A
Tenax/Charcoal	16B	16B

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	17.6	130	134	9	24	2.0	6
5	23.2	130	134	9	24	2.0	6
10	29.0	129	134	9	24	2.0	6
15	35.31	129	134	9	25	2.0	5.5
20	40.8	130	134	9	25	2.2	5.5
25							
30							
35							
40							

Start Time :	14:41
Finish Time:	15:01
Initial Leak Check:	NDL " Hg drop in 60 sec @ "Hg
Final Leak Check:	" Hg drop in 60 sec @ "Hg

Control Box	VOST 5	Device	MII
DGMCF	0.984	Control Box	OG 20018
Pb ("Hg)	30.04	Barometer	ENV. CAN

Comments : NDL - No Discernable Leak

Actual Volume	23.2
Average T_{DGM}	24.4
Average ΔH_{DGM}	2.04
Average Vacuum	5.8

Operator: MT

VOST Field Data Sheet

Plant:	Durham-York Energy Centre	Test Location:	ARC Outlet No. 2	Test No. :	2
Plant Location:	Courtice, Ontario	Test Condition:	COMPLIANCE	Tube Pair No.:	1
Date:	Oct 2, 2015				
Project No. :	21546				

VOST Tube Identification	Field ID	Lab ID
Tenax	17A	17A
Tenax/Charcoal	17B	17B

Field Blank Tube Identification	Field ID	Lab ID
Tenax	21A	21A
Tenax/Charcoal	21B	21B

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	631.0	127	130	19	19	2.0	8
5	635.4	128	130	18	18	2.0	8
10	641.6	128	133	18	19 ~~18~~	2.0	8
15	647.5	127	130	18	20	2.0	8
20	652.5	130	131	18	20	2.0	8
25							
30							
35							
40							

Start Time :	9:17
Finish Time:	9:37
Initial Leak Check:	NDL " Hg drop in 60 sec @ 24 "Hg
Final Leak Check:	NDL " Hg drop in 60 sec @ 24 "Hg

Control Box	VOST 5	Device	MII
DGMCF	0.984	Control Box	COE 20018
Pb ("Hg)	30.17	Barometer	ENV. CAN

Comments : NDL - No Discernable Leak

Actual Volume	21.5
Average T_{DGM}	19.2
Average ΔH_{DGM}	2.0
Average Vacuum	8

Operator: MT

VOST Field Data Sheet

Plant:	Durham-York Energy Centre	Test Location:	APC Outlet No. 2	Test No. :	2
Plant Location:	Courtice, Ontario	Test Condition:	COMPLIANCE	Tube Pair No.:	2
Date:	OCT 2, 2015				
Project No. :	21546				

VOST Tube Identification	Field ID	Lab ID
Tenax	18A	18A
Tenax/Charcoal	18B	18B

Field Blank Tube Identification	Field ID	Lab ID
Tenax	21A	21A
Tenax/Charcoal	21B	21B

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	654.0	128	130	16	20	2.0	4.0
5	660.0	129	130	16	20	2.0	4.0
10	665.3	130	131	16	20	2.0	4.0
15	670.0	128	131	11	21	2.0	4.0
20	675.1	129	131	11	21	2.0	4.0
25							
30							
35							
40							

Start Time :	9:50
Finish Time:	10:10
Initial Leak Check:	NDL " Hg drop in 60 sec @ 24 "Hg
Final Leak Check:	NDL " Hg drop in 60 sec @ 24 "Hg

Control Box	VOST 5	Device	MII
DGMCF	0.984	Control Box	COE 20018
Pb ("Hg)	30.17	Barometer	ENV. CAN

Comments : NDL - No Discernable Leak

Actual Volume	21.1
Average T_{DGM}	20.4
Average ΔH_{DGM}	2.0
Average Vacuum	4.0

Operator: MT

VOST Field Data Sheet

Plant:	Durham-York Energy Centre	Test Location:	APC Outlet No. 2	Test No. :	2
Plant Location:	Courtice, Ontario	Test Condition:	COMPLIANCE	Tube Pair No.:	3
Date:	OCT 2, 2015				
Project No. :	21546				

VOST Tube Identification	Field ID	Lab ID
Tenax	19A	19A
Tenax/Charcoal	19B	19B

Field Blank Tube Identification	Field ID	Lab ID
Tenax	21A	21A
Tenax/Charcoal	21B	21B

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	75.8	129	131	8	21	2.0	4
5	80.8	129	131	11	20	2.0	4
10	86.3	129	131	10	21	2.0	4.5
15	91.7	128	131	9	21	2.0	4.5
20	96.7				21	2.0	4.5
25							
30							
35							
40							

Start Time :	10:17
Finish Time:	10:37
Initial Leak Check:	NDL " Hg drop in 60 sec @ 24 "Hg
Final Leak Check:	NDL " Hg drop in 60 sec @ 24 "Hg

Control Box	VOST 5	Device	MII
DGMCF	0.984	Control Box	OE 10018
Pb ("Hg)	30.17	Barometer	ENVI. CAN

Comments : NDL - No Discernable Leak

Actual Volume	20.9
Average T_{DGM}	20.8
Average ΔH_{DGM}	2.0
Average Vacuum	4.3

Operator: MT

VOST Field Data Sheet

Plant:	Durham-York Energy Centre	Test Location:	APC Outlet No. 2	Test No. :	2
Plant Location:	Courtice, Ontario	Test Condition:	COMPLIANCE	Tube Pair No.:	24
Date:	OCT 2, 2015				
Project No. :	21546				

VOST Tube Identification	Field ID	Lab ID
Tenax	20A	20A
Tenax/Charcoal	20B	20B

Field Blank Tube Identification	Field ID	Lab ID
Tenax	21A	21A
Tenax/Charcoal	21B	21B

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	698.0	129	130	10	21	2.0	3
5	703.9	129	131	16	21	2.0	3
10	710.1	129	131	10	21	2.0	3
15	715.3	129	133	10	21	2.0	3
20	720.2	130	131	10	21	2.0	3
25							
30							
35							
40							

Start Time :	10:43
Finish Time:	11:03
Initial Leak Check:	NDL " Hg drop in 60 sec @ 24 "Hg
Final Leak Check:	NDL " Hg drop in 60 sec @ 24 "Hg

Control Box	VOST 5	Device	MII
DGMCF	0.984	Control Box	OE 2001B
Pb ("Hg)	30.17	Barometer	ENV. CAN

Comments : NDL - No Discernable Leak

Actual Volume	22.2
Average T_{DGM}	21.0
Average ΔH_{DGM}	2.0
Average Vacuum	3.0

Operator: MT

VOST Field Data Sheet

Plant:	Durham-York Energy Centre	Test Location:	APC Outlet No. 2	Test No. :	3
Plant Location:	Courtice, Ontario	Test Condition:	COMPLIANCE	Tube Pair No.:	1
Date:	Oct 2, 2015				
Project No. :	21546				

VOST Tube Identification

	Field ID	Lab ID
Tenax	22A	22A
Tenax/Charcoal	22B	22B

Field Blank Tube Identification

	Field ID	Lab ID
Tenax	25A	25A
Tenax/Charcoal	25B	25B

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	724.0	129	135	16	21	2.0	4
5	730.1	130	135	16	21	2.0	4
10	737.0	130	133	18	21	2.0	4
15	743.0	130	130	9	21	2.0	4
20	747.8	129	130	9	22	2.0	4
25							
30							
35							
40							

Start Time :	12:29
Finish Time:	12:49
Initial Leak Check:	NDL " Hg drop in 60 sec @ 24 "Hg
Final Leak Check:	NDL " Hg drop in 60 sec @ 24 "Hg

Control Box	VOST 5	Device	MII
DGMCF	0.984	Control Box	COE 20018
Pb ("Hg)	30.14	Barometer	ENV. CAN

Comments : NDL - No Discernable Leak

Actual Volume	23.8
Average T_{DGM}	~~21~~ 21.2
Average ΔH_{DGM}	2.0
Average Vacuum	4.0

Operator: MT

VOST Field Data Sheet

Plant:	Durham-York Energy Centre	Test Location:	APC Outlet No. 2	Test No. :	3
Plant Location:	Courtice, Ontario	Test Condition:	COMPLIANCE	Tube Pair No.:	2
Date:	Oct 2, 2015				
Project No. :	21546				

VOST Tube Identification	Field ID	Lab ID
Tenax	23A	23A
Tenax/Charcoal	23B	23B

Field Blank Tube Identification	Field ID	Lab ID
Tenax	25A	25A
Tenax/Charcoal	25B	25B

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	748.0	129	131	7	22	1.8	4
5	753.4	129	131	7	23	1.8	4
10	759.5	128	130	7	23	1.8	4
15	764.7	128	130	7	23	1.8	4
20	770.5	128	131	8	23	1.8	4
25							
30							
35							
40							

Start Time :	12:57
Finish Time:	13:17
Initial Leak Check:	NDL " Hg drop in 60 sec @ 24 "Hg
Final Leak Check:	NDL " Hg drop in 60 sec @ 24 "Hg

Control Box	VOST 5	Device	MII
DGMCF	0.984	Control Box	COE 20018
Pb ("Hg)	30.14	Barometer	ENV. CAN

Comments : NDL - No Discernable Leak

Actual Volume	22.8
Average T_{DGM}	22.8
Average ΔH_{DGM}	1.8
Average Vacuum	4.0

Operator: MT

VOST Field Data Sheet

Plant:	Durham-York Energy Centre	Test Location:	APC Outlet No. 2	Test No. :	3
Plant Location:	Courtice, Ontario	Test Condition:		Tube Pair No.:	3
Date:	Oct 2, 2015				
Project No. :	21546				

VOST Tube Identification	Field ID	Lab ID
Tenax	24A	24A
Tenax/Charcoal	24B	24B

Field Blank Tube Identification	Field ID	Lab ID
Tenax	25A	25A
Tenax/Charcoal	25B	25B

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	773.9	128	130	7	24	1.8	3
5	779.2	128	131	7	24	1.8	3
10	785.6	129	130	7	24	1.8	3
15	791.9	128	130	7	24	1.8	3
20	795.3	128	130	7	24	1.8	3
25							
30							
35							
40							

Start Time :	13:24
Finish Time:	13:44
Initial Leak Check:	NDL " Hg drop in 60 sec @ 24 "Hg
Final Leak Check:	NDL " Hg drop in 60 sec @ 24 "Hg

Control Box	VOST 5	Device	MII
DGMCF	0.964	Control Box	COE 20018
Pb ("Hg)	30.14	Barometer	Env. Can

Comments : NDL - No Discernable Leak

Actual Volume	21.4
Average T_{DGM}	24
Average ΔH_{DGM}	1.8
Average Vacuum	3.0

Operator: MT

VOST Field Data Sheet

Plant:	Durham-York Energy Centre	Test Location:	APC Outlet No. 2	Test No. :	3
Plant Location:	Courtice, Ontario	Test Condition:	COMPLIANCE	Tube Pair No.:	4
Date:	OCT 2, 2015				
Project No. :	21546				

VOST Tube Identification	Field ID	Lab ID
Tenax	27A	27A
Tenax/Charcoal	27B	27B

Field Blank Tube Identification	Field ID	Lab ID
Tenax	25A	25A
Tenax/Charcoal	25B	25B

Test Time min.	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Condenser Outlet Temp °C	Avg DGM Temp °C	Meter Pressure ΔH H_2O	Pump Vacuum (Gauge) Hg
0	796.4	130	131	8	24	1.6	9
5	801.4	130	131	8	24	1.6	9
10	806.7	129	133	8	24	1.6	9
15	811.4	130	131	9	24	1.6	9
20	817.8				24	1.6	9
25							
30							
35							
40							

Start Time :	13:51
Finish Time:	~~14:14~~ ~~14:14~~ 14:11
Initial Leak Check:	NDL " Hg drop in 60 sec @ ~~NDL~~ "Hg 24"
Final Leak Check:	NDL " Hg drop in 60 sec @ 24 "Hg

Control Box	VOST 5	Device	MII
DGMCF	0.984	Control Box	COE 2001B
Pb ("Hg)	30.14	Barometer	ENV. CAN

Comments : NDL - No Discernable Leak

Actual Volume	21.4
Average T_{DGM}	~~.4~~ 24
Average ΔH_{DGM}	1.6
Average Vacuum	9.0

✓

Operator: MT

APPENDIX 15

Aldehydes Field Data Sheets
(6 pages)

ORTECH Environmental
CARB 430

Plant:	Durham-York Energy Centre
Plant Location:	Courtice, Ontario
Test No.:	1
Test location:	APC Outlet No. 1
Date:	OCTOBER 1, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	A1017
NOVA	PLANT CEM
Barometer	ENV. CAN

P_{Bar}	30.03

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temperature ~~Outlet~~ AVG °C	Meter Temperature Inlet °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	61.82	130	138	130	12	21		1.0	0
5	63.3	145	138	145	12	22		1.0	0
10	67.3	134	138	143	12	22		1.0	0
15	69.9	130	138	140	11	22		1.0	0
20	73.2	131	137	141	11	22		1.0	0
25	75.8	132	138	142	11	22		1.0	0
30	78.0	131	138	143	11	22		1.0	0
35	80.5	131	138	143	11	23		1.0	0
40	83.0	131	138	143	11	24		1.0	0
45	85.5	131	138	143	11	24		1.0	0
50	89.7	131	137	143	11	24		1.0	0
55	91.7	131	137	142	11	24		1.0	0
60	~~93~~ 94.20	131	137	142	11	24		1.0	0

Start Time:	1417		
Finish Time:	1517		
Initial Leak Check:	<.01 Lpm @	17	" Hg
Final Leak Check:	<.01 Lpm @	10	" Hg

DGMCF:	1.005
Sample Volume:	32.38
Average DGM Temp:	22.8
Average DGM Δ H:	1.0

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator : [signature]

ORTECH Environmental
CARB 430

Plant:	Durham-York Energy Centre
Plant Location:	Courtice, Ontario
Test No.:	2
Test location:	APC Outlet No. 1
Date:	Oct. 2 /15
Project No.:	21546

Measuring Device	MII Number
Control Module	A10117 #2
NOVA	Plant CEM
Barometer	Env. Can.

P_{Bar}	30.15

	Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temperature Outlet Avg. °C	Meter Temperature Inlet °C	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
	0	94.60	131	134	143	13	17		1.0	0
97.1	5	96.70	124	135	143	12	17		1.0	0
99.6	10	99.52	124	135	143	14	18		1.0	0
	15	102.65	125	135	142	13	18		1.0	0
104.6	20	105.31	125	136	142	11	19		1.0	0
	25	108.02	124	136	140	11	19		1.0	0
109.6	30	110.30	126	136	141	11	19		1.0	0
	35	112.97	125	136	142	11	19		1.0	0
114.6	40	115.40	126	137	139	11	19		1.0	0
	45	117.81	123	137	140	11	20		1.0	0
119.6	50	120.26	123	137	140	11	19		1.0	0
	55	122.74	124	137	140	11	19		1.0	0
124.6	60	125.43	124	136	142	11	20		1.0	0

Start Time:	7:45			
Finish Time:	8:45			
Initial Leak Check:	<.01	Lpm @	15	" Hg
Final Leak Check:	<.01	Lpm @	15	" Hg

DGMCF:	1.005
Sample Volume:	30.83
Average DGM Temp:	18.7
Average DGM ΔH:	1.0

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator : RW

ORTECH Environmental
CARB 430

Plant:	Durham-York Energy Centre
Plant Location:	Courtice, Ontario
Test No.:	3
Test location:	APC Outlet No. 1
Date:	Oct. 2/2015
Project No.:	21546

Measuring Device	MII Number
Control Module	A-10117 #2
NOVA	Plant CEMs
Barometer	Env Can

P_{Bar}	30.13

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temperature Outlet °C	Meter Temperature Inlet °C	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	21.13	124	138	158	11	22		1.0	0
5	24.63	127	138	152	12	22		1.0	0
10	28.17	131	137	154	11	22		1.0	0
15	31.69	126	138	155	11	23		1.0	0
20	35.21	126	137	154	11	23		1.0	0
25	38.73	130	137	156	11	23		1.6	0
30	42.25	125	137	155	11	23		1.0	0
35	45.77	127	137	154	11	23		1.0	0
40	48.29	131	137	152	11	24		1.0	0
45	50.81	126	137	153	11	24		1.0	0
50	51.92	128	137	152	11	24		1.0	0
55	53.10	134	137	152	11	24		1.0	0
60	56.02	133	137	151	11	24		1.0	0

Start Time:	14:53	
Finish Time:	15:53	
Initial Leak Check:	<.01	Lpm @ 20 " Hg
Final Leak Check:	<.01	Lpm @ 20 " Hg

DGMCF:	1.005
Sample Volume:	34.89
Average DGM Temp:	23.15
Average DGM Δ H:	1.0

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator : DW

ORTECH Environmental
CARB 430

Plant:	Durham-York Energy Centre
Plant Location:	Courtice, Ontario
Test No.:	1
Test location:	APC Outlet No. 2
Date:	Oct 1, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	VOST 5 COG 20018
NOVA	
Barometer	ENV - CAN

P_{Bar}	30.03

Clock Time	Dry Gas Meter 562.0 L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temperature ~~Outlet~~ AVG °C	Meter Temperature Inlet °C	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	~~560.2~~	130	135	158	20	26		1.4	1
5	564.2	127	130	134	20	26		1.4	1
10	566.3	128	135	143	19	26		1.4	1
15	568.8	133	126	140	20	26		1.4	1
20	571.2	135	133	141	18	26		1.4	1
25	573.7	136	130	142	18	26		1.4	1
30	575.9	136	131	144	18	26		1.4	1
35	578.1	135	131	144	18	27		1.4	1
40	580.4	136	132	140	18	27		1.4	1
45	583.5	129	129	147	19	27		1.4	1
50	585.9	135	130	147	20	27		1.4	1
55	588.5	140	133	145	20	27		1.4	1
60	589.8	138	133	145	20	27		1.4	1

Start Time:	16:39		
Finish Time:	17:39		
Initial Leak Check:	<0.005	Lpm @ 5	" Hg
Final Leak Check:	0.001	Lpm @ 5	" Hg

DGMCF:	1.016
Sample Volume:	27.8
Average DGM Temp:	26.5
Average DGM Δ H:	1.4

Comments: * NEED TO POST CAL

: sample @ ~0.5 lpm for 60 minutes.

Operator : MT

ORTECH Environmental
CARB 430

Plant:	Durham-York Energy Centre
Plant Location:	Courtice, Ontario
Test No.:	2
Test location:	APC Outlet No. 2
Date:	~~Sept~~ Oct 2, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	VOST 5
NOVA	—
Barometer	ENV. CAN

P_{Bar}	30.15

Clock Time	Dry Gas Meter L 594.2	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temperature ~~Outlet~~ AVG °C	Meter Temperature Inlet °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	~~594~~	131	130	130	17	17		1.4	1
5	596.1	122	130	131	17	18		1.4	1
10	599.2	123	134	140	16	18		1.4	1
15	603.1	135	132	141	16	19		1.4	1
20	606.0	135	132	155	16	19		1.4	1
25	609.7	130	134	148	16	19		1.4	1
30	612.9	132	134	142	16	19		1.4	1
35	615.4	134	136	140	16	19		1.4	1
40	619.1	128	134	138	16	20		1.4	1
45	622.4	130	135	139	16	20		1.4	1
50	625.3	130	135	139	16	20		1.4	1
55	628.0	130	133	137	17	20		1.4	1
60	629.9	130	133	137	17	20		1.4	1

Start Time:	7:49		
Finish Time:	8:49		
Initial Leak Check:	< 0.001	Lpm @ 6	" Hg
Final Leak Check:	< 0.001	Lpm @ 5	" Hg

DGMCF:	1.016
Sample Volume:	35.7
Average DGM Temp:	~~19.5~~ 19.1
Average DGM Δ H:	1.4

Comments: ☆ Post Cal

: sample @ ~0.5 lpm for 60 minutes.

Operator : MT

ORTECH Environmental
CARB 430

Plant:	Durham-York Energy Centre
Plant Location:	Courtice, Ontario
Test No.:	3
Test location:	APC Outlet No. 2
Date:	Oct 2, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	VOST 5 C0620018
NOVA	—
Barometer	ENV. CAN

P_{Bar}	30.13

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temperature ~~Outlet~~ AVG °C	Meter Temperature Inlet °C	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	816.7	131	131	135	15	24		~~1.8~~ 0.8	1
5	819.8	130	131	135	15	24		1.0	1
10	821.7	129	130	135	16	24		0.8	1
15	823.9	130	131	138	18	24		0.8	1
20	825.8	131	131	136	20	25		1.0	1
25	827.7	133	136	136	18	25		1.0	1
30	829.0	133	135	136	18	25		1.0	1
35	831.0	133	135	137	18	25		1.0	1
40	833.5	133	135	137	18	25		1.0	1
45	836.1	131	135	137	19	25		1.0	1
50	838.8	133	135	139	20	26		1.0	1
55	844.9	131	136	135	20	26		1.0	1
60	847.8	131	135	136	20	26		1.0	1

Start Time:	~~14:27~~ 14:33		
Finish Time:	15:33		
Initial Leak Check:	<0.001	Lpm @ 7	" Hg
Final Leak Check:	<0.001	Lpm @ 6	" Hg

DGMCF:	1.016
Sample Volume:	31.1
Average DGM Temp:	24.9
Average DGM ΔH:	0.95

Comments: * POST CAL @ 0.5 LPM *

: sample @ ~0.5 lpm for 60 minutes.

Operator : MJ

APPENDIX 16

ORTECH Sample Log
(14 pages)

ORTECH Environmental Sample Log
Particulate & Acid Gases
Covanta

RUSH ANALYSIS (5 DAY)

Client: Covanta
Job/Report Number: 21546
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
PO : 21546-J2014

Location	Test No.	ORTECH Sample ID 15-21546-M26A-	Sample Date	Sample Description	Media	Initial Volume(ml)	Final Volume(ml)	Sample Analysis
#1 APC Outlet	1	1	29-Sep-15	Filter	Filter			Part.
#1 APC Outlet	1	2	29-Sep-15	Probe Rinse	Acetone			Part.
#1 APC Outlet	1	3	29-Sep-15	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	763.2	Acid Gases
#1 APC Outlet	2	4	29-Sep-15	Filter	Filter			Part.
#1 APC Outlet	2	5	29-Sep-15	Probe Rinse	Acetone			Part.
#1 APC Outlet	2	6	29-Sep-15	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	729.5	Acid Gases
#1 APC Outlet	3	7	01-Oct-15	Filter	Filter			Part.
#1 APC Outlet	3	8	01-Oct-15	Probe Rinse	Acetone			Part.
#1 APC Outlet	3	9	01-Oct-15	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	802.2	Acid Gases
#1 APC Outlet	Blank	10	30-Sep-15	Filter	Filter			Part.
#1 APC Outlet	Blank	11	30-Sep-15	Probe Rinse	Acetone			Part.
#1 APC Outlet	Blank	12	30-Sep-15	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	300.2	Acid Gases

Note: ALS to weigh the filters & probe rinses for particulate matter
Analyze impinger solution for HF, HCl and NH3

Relinquished By: [signature] Date: Oct 2, 15

Relinquished To: AARON BURTON Date: 2-Oct-2015 13:30

ORTECH Environmental Sample Log

Particulate & Acid Gases

Covanta

RUSH ANALYSIS (5 DAY)

Client: Covanta
Job/Report Number: 21546
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
PO : 21546-J2014

Location	Test No.	ORTECH Sample ID 15-21546-M26A-	Sample Date	Sample Description	Media	Initial Volume(ml)	Final Volume(ml)	Sample Analysis
#2 APC Outlet	1	21	30-Sep-15	Filter	Filter			Part.
#2 APC Outlet	1	22	30-Sep-15	Probe Rinse	Acetone			Part.
#2 APC Outlet	1	23	30-Sep-15	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	776.4	Acid Gases
#2 APC Outlet	2	24	30-Sep-15	Filter	Filter			Part.
#2 APC Outlet	2	25	30-Sep-15	Probe Rinse	Acetone			Part.
#2 APC Outlet	2	26	30-Sep-15	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	786.3	Acid Gases
#2 APC Outlet	3	27	01-Oct-15	Filter	Filter			Part.
#2 APC Outlet	3	28	01-Oct-15	Probe Rinse	Acetone			Part.
#2 APC Outlet	3	29	01-Oct-15	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	753.2	Acid Gases
#2 APC Outlet	Blank	30	01-Oct-15	Filter	Filter			Part.
#2 APC Outlet	Blank	31	01-Oct-15	Probe Rinse	Acetone			Part.
#2 APC Outlet	Blank	32	01-Oct-15	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	302.1	Acid Gases

Note: ALS to weigh the filters & probe rinses for particulate matter
Analyze impinger solution for HF, HCl and NH3

Relinquished By: [signature] Date: Oct 2/15

Relinquished To: Aaron Burton Date: 2-Oct-2015 13:30

ORTECH Environmental Sample Log

~~Condensable Particulate Matter~~

Covanta

RUSH ANALYSIS (5 DAY)

Client: Covanta
Job/Report Number: 21546
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
PO : 21546-J2014

Location	Test No.	ORTECH Sample ID 15-21546-M202-	Sample Date	Sample Description	Media	Sample Analysis
#1 APC Outlet	1	2	29-Sep-15	Imp. 1, 2 & Rinse	Water	Inorganic Fraction
#1 APC Outlet	1	3	29-Sep-15	Imp. Rinse	Acetone/Hexane	Organic Fraction
#1 APC Outlet	2	6	29-Sep-15	Imp. 1, 2 & Rinse	Water	Inorganic Fraction
#1 APC Outlet	2	7	29-Sep-15	Imp. Rinse	Acetone/Hexane	Organic Fraction
#1 APC Outlet	3	10 ~~8~~*	01-Oct-15	Imp. 1, 2 & Rinse	Water	Inorganic Fraction
#1 APC Outlet	3	11 ~~8~~*	01-Oct-15	Imp. Rinse	Acetone/Hexane	Organic Fraction
#1 APC Outlet	Blank	30	01-Oct-15	Imp. 1, 2 & Rinse	Water	Inorganic Fraction
#1 APC Outlet	Blank	31	01-Oct-15	Imp. Rinse	Acetone/Hexane	Organic Fraction

* Portion of Acetone/Hexane rinse inadvertantly added to water sample. Please decant top phase and add to sample #9 (Acetone/Hexane).

Relinquished By: [signature] Date: oct 2/15

Relinquished To: AARON BURTON Date: 2-Oct-2015 13:30

ORTECH Environmental Sample Log
Condensable Particulate Matter
Covanta

RUSH ANALYSIS (5 DAY)

Client: Covanta
Job/Report Number: 21546
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
PO : 21546-J2014

Location	Test No.	ORTECH Sample ID 15-21546-M202-	Sample Date	Sample Description	Media	Sample Analysis
#2 APC Outlet	1	14	30-Sep-15	Imp. 1, 2 & Rinse	Water	Inorganic Fraction
#2 APC Outlet	1	15	30-Sep-15	Imp. Rinse	Acetone/Hexane	Organic Fraction
#2 APC Outlet	2	18	30-Sep-15	Imp. 1, 2 & Rinse	Water	Inorganic Fraction
#2 APC Outlet	2	19	30-Sep-15	Imp. Rinse	Acetone/Hexane	Organic Fraction
#2 APC Outlet	3	22	01-Oct-15	Imp. 1, 2 & Rinse	Water	Inorganic Fraction
#2 APC Outlet	3	23	01-Oct-15	Imp. Rinse	Acetone/Hexane	Organic Fraction
#2 APC Outlet	Blank	26	30-Sep-15	Imp. 1, 2 & Rinse	Water	Inorganic Fraction
#2 APC Outlet	Blank	27	30-Sep-15	Imp. Rinse	Acetone/Hexane	Organic Fraction

Relinquished By: [signature] Date: oct 2, 15

Relinquished To: AARON BURTON Date: 2-Oct-2015 13:30

ORTECH Environmental Sample Log

Particulate and Metals Samples (Method 29)

Covanta - #1 APC OUTLET

RUSH ANALYSIS (5 DAY)

Client: Covanta
Job/Report Number: 21546
Received By: C Belore
How Received: Train recovery
Job Assigned To: ALS
Project Manager: Chris Belore

ORTECH Sample ID 15-21546-PM-	Sample Description	Sample Media	Date Sampled	Sample Analysis
1	Test 1 Probe Rinse Acetone	Acetone	30-Sep-15	particulate / metals
2	Test 1 Probe Rinse Nitric	0.1N Nitric	30-Sep-15	metals
3	Test 1 Filter	Particulate	30-Sep-15	metals
4	Test 1 Impinger 1-4 Solution	Nitric/Peroxide	30-Sep-15	metals
5	Test 1 Impinger 5 & 6 Solution	Acid. KMnO4	30-Sep-15	mercury
6	Test 1 Impinger 5 & 6 Rinse	8N HCl	30-Sep-15	mercury
7	Test 2 Probe Rinse Acetone	Acetone	30-Sep-15	particulate / metals
8	Test 2 Probe Rinse Nitric	0.1N Nitric	30-Sep-15	metals
9	Test 2 Filter	Particulate	30-Sep-15	metals
10	Test 2 Impinger 1-4 Solution	Nitric/Peroxide	30-Sep-15	metals
11	Test 2 Impinger 5 & 6 Solution	Acid. KMnO4	30-Sep-15	mercury
12	Test 2 Impinger 5 & 6 Rinse	8N HCl	30-Sep-15	mercury
13	Test 3 Probe Rinse Acetone	Acetone	1-Oct-15	particulate / metals
14	Test 3 Probe Rinse Nitric	0.1N Nitric	1-Oct-15	metals
15	Test 3 Filter	Particulate	1-Oct-15	metals
16	Test 3 Impinger 1-4 Solution	Nitric/Peroxide	1-Oct-15	metals
17	Test 3 Impinger 5 & 6 Solution	Acid. KMnO4	1-Oct-15	mercury
18	Test 3 Impinger 5 & 6 Rinse	8N HCl	1-Oct-15	mercury

Particulate weights required on the Acetone Probe Rinse.
Particulate weight completed by ORTECH for the filters.
Single digest (HF) required on front half.
Analyze 2 fractions separately (FH HF Digest and BH).
FILTERS TO FOLLOW

ORTECH Environmental Sample Log
Particulate and Metals Samples (Method 29)
Covanta - #1 APC OUTLET

Client: Covanta
Job/Report Number: 21546
Received By: C Belore
How Received: Train recovery
Job Assigned To: ALS
Project Manager: Chris Belore

ORTECH Sample ID 15-21546-PM-	Sample Description	Sample Media	Date Sampled	Sample Analysis
19	Blank Probe Rinse Acetone	Acetone	30-Sep-15	particulate / metals
20	Blank Probe Rinse Nitric	0.1N Nitric	30-Sep-15	metals
21	Blank Filter	Particulate	30-Sep-15	metals
22	Blank Impinger 1-4 Solution	Nitric/Peroxide	30-Sep-15	metals
23	Blank Impinger 5,6 Solution	Acid. KMnO4	30-Sep-15	mercury
24	Blank Impinger 5 & 6 Rinse	8N HCl	30-Sep-15	mercury

Particulate weights required on the Acetone Probe Rinse.
Particulate weight completed by ORTECH for the filters.
Single digest (HF) required on front half.
Analyze 2 fractions separately (FH HF Digest and BH).

Relinquished By: [signature] Date: 1 Oct 15

Relinquished To: ______ Date: ______

ORTECH Environmental Sample Log

Particulate and Metals Samples (Method 29)

Covanta - #2 APC OUTLET

Client: Covanta
Job/Report Number: 21546
Received By: C Belore
How Received: Train recovery
Job Assigned To: ALS
Project Manager: Chris Belore

ORTECH Sample ID 15-21546-PM-	Sample Description	Sample Media	Date Sampled	Sample Analysis
25	Test 1 Probe Rinse Acetone	Acetone	29-Sep-15	particulate / metals
26	Test 1 Probe Rinse Nitric	0.1N Nitric	29-Sep-15	metals
27	Test 1 Filter	Particulate	29-Sep-15	metals
28	Test 1 Impinger 1-4 Solution	Nitric/Peroxide	29-Sep-15	metals
29	Test 1 Impinger 4, 5 Solution	Acid. KMnO4	29-Sep-15	mercury
30	Test 1 Impinger 5 & 6 Rinse	8N HCl	29-Sep-15	mercury
31	Test 2 Probe Rinse Acetone	Acetone	29-Sep-15	particulate / metals
32	Test 2 Probe Rinse Nitric	0.1N Nitric	29-Sep-15	metals
33	Test 2 Filter	Particulate	29-Sep-15	metals
34	Test 2 Impinger 1-4 Solution	Nitric/Peroxide	29-Sep-15	metals
35	Test 2 Impinger 4, 5 Solution	Acid. KMnO4	29-Sep-15	mercury
36	Test 2 Impinger 5 & 6 Rinse	8N HCl	29-Sep-15	mercury
37	Test 3 Probe Rinse Acetone	Acetone	29-Sep-15	particulate / metals
38	Test 3 Probe Rinse Nitric	0.1N Nitric	29-Sep-15	metals
39	Test 3 Filter	Particulate	29-Sep-15	metals
40	Test 3 Impinger 1-4 Solution	Nitric/Peroxide	29-Sep-15	metals
41	Test 3 Impinger 4, 5 Solution	Acid. KMnO4	29-Sep-15	mercury
42	Test 3 Impinger 5 & 6 Rinse	8N HCl	29-Sep-15	mercury

Particulate weights required on the Acetone Probe Rinse.
Particulate weight completed by ORTECH for the filters.
Single digest (HF) required on front half.
Analyze 2 fractions separately (FH HF Digest and BH).
FILTERS TO FOLLOW

ORTECH Environmental Sample Log

Particulate and Metals Samples (Method 29)

Covanta - #2 APC OUTLET

Client: Covanta
Job/Report Number: 21546
Received By: C Belore
How Received: Train recovery
Job Assigned To: ALS
Project Manager: Chris Belore

ORTECH Sample ID 15-21546-PM-	Sample Description	Sample Media	Date Sampled	Sample Analysis
43	Blank Probe Rinse Acetone	Acetone	29-Sep-15	particulate / metals
44	Blank Probe Rinse Nitric	0.1N Nitric	29-Sep-15	metals
45	Blank Filter	Particulate	29-Sep-15	metals
46	Blank Impinger 1-4 Solution	Nitric/Peroxide	29-Sep-15	metals
47	Blank Impinger 5 & 6 Solution	Acid. KMnO4	29-Sep-15	mercury
48	Blank Impinger 5 & 6 Rinse	8N HCl	29-Sep-15	mercury

Particulate weights required on the Acetone Probe Rinse.
Particulate weight completed by ORTECH for the filters.
Single digest (HF) required on front half.
Analyze 2 fractions separately (FH HF Digest and BH).

Relinquished By: [signature] Date: 1 Oct 15

Relinquished To: Greg Boydell Date: 01-OCT-15

ORTECH Environmental Sample Log
Particulate and Metals Samples (Method 29)

RUSH ANALYSIS (5 DAY)

Client: Covanta
Job/Report Number: 21546
Received By: C Belore
How Received: Train recovery
Job Assigned To: ALS
Project Manager: Chris Belore

ORTECH Sample ID 15-21546-PM-	Sample Location	Sample Description	Sample Media	Date Sampled	Sample Analysis
3	#1 APC Outlet	Test 1 Filter	Particulate	30-Sep-15	metals
9	#1 APC Outlet	Test 2 Filter	Particulate	30-Sep-15	metals
15	#1 APC Outlet	Test 3 Filter	Particulate	1-Oct-15	metals
21	#1 APC Outlet	Blank Filter	Particulate	30-Sep-15	metals
27	#2 APC Outlet	Test 1 Filter	Particulate	29-Sep-15	metals
33	#2 APC Outlet	Test 2 Filter	Particulate	29-Sep-15	metals
39	#2 APC Outlet	Test 3 Filter	Particulate	29-Sep-15	metals
45	#2 APC Outlet	Blank Filter	Particulate	29-Sep-15	metals

Particulate weight completed by ORTECH for the filters.

Relinquished To: Aaron Burton   Date: 3-Oct-2015

Relinquished By: [signature]   Date: 3 Oct 15

RUSH ANALYSIS (5 DAY)

ORTECH Environmental Sample Log

Hexavalent Chormium & Total Chromium

Covanta

Client: Covanta
Job/Report Number: 21546
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
PO : 21546-J2014

Location	Test No.	ORTECH Sample ID 15-21546-M0061-	Sample Date	Sample Description	Media	Sample Analysis
#1 APC Outlet	1	1	30-Sep-15	Impinger Soln & rinse	0.1M KOH	Cr6
#1 APC Outlet	1	2	30-Sep-15	Rinse	0.1N HNO3	Total Cr
#1 APC Outlet	2	3	30-Sep-15	Impinger Soln & rinse	0.1M KOH	Cr6
#1 APC Outlet	2	4	30-Sep-15	Rinse	0.1N HNO3	Total Cr
#1 APC Outlet	3	5	01-Oct-15	Impinger Soln & rinse	0.1M KOH	Cr6
#1 APC Outlet	3	6	01-Oct-15	Rinse	0.1N HNO3	Total Cr
#1 APC Outlet	Blank	7	30-Sep-15	Impinger Soln	0.1M KOH	Cr6
#1 APC Outlet	Blank	8	30-Sep-15	Rinse	H2O	Cr6
#1 APC Outlet	Blank	9	30-Sep-15	Rinse	0.1N HNO3	Total Cr
#2 APC Outlet	1	11	29-Sep-15	Impinger Soln & rinse	0.1M KOH	Cr6
#2 APC Outlet	1	12	29-Sep-15	Rinse	0.1N HNO3	Total Cr
#2 APC Outlet	2	13	29-Sep-15	Impinger Soln & rinse	0.1M KOH	Cr6
#2 APC Outlet	2	14	29-Sep-15	Rinse	0.1N HNO3	Total Cr
#2 APC Outlet	3	15	29-Sep-15	Impinger Soln & rinse	0.1M KOH	Cr6
#2 APC Outlet	3	16	29-Sep-15	Rinse	0.1N HNO3	Total Cr
#2 APC Outlet	Blank	17	29-Sep-15	Impinger Soln	0.1M KOH	Cr6
#2 APC Outlet	Blank	18	29-Sep-15	Rinse	H2O	Cr6
#2 APC Outlet	Blank	19	29-Sep-15	Rinse	0.1N HNO3	Total Cr

Relinquished By: [signature] Date: 1 Oct 15

Relinquished To: Greg Boydell Date: 01-OCT-15

ORTECH Environmental Sample Log

Semi-Volatile Organics Samples

#2 APC Outlet

RUSH ANALYSIS (5 DAY)

Client: Covanta

Job/Report Number: 21546

Received By: Chris Belore

How Received: Train recovery

Job Assigned To: ALS

Project Manager: Chris Belore

ORTECH Sample ID 15-21546-SVOC-	Sample Description	Sample Media	Date Sampled	Sample Analysis
21	Test 1 Probe Rinse	Hexane/Acetone	01-Oct-15	SVOC
22	Test 1 Filter	Particulate	01-Oct-15	SVOC
23	Test 1 XAD-II Trap	N.A.	01-Oct-15	SVOC
24	Test 1 Impinger Solution	Ethylene Glycol	01-Oct-15	SVOC
25	Test 1 Impinger Rinse	Hexane/Acetone	01-Oct-15	SVOC
26	Test 2 Probe Rinse	Hexane/Acetone	02-Oct-15	SVOC
27	Test 2 Filter	Particulate	02-Oct-15	SVOC
28	Test 2 XAD-II Trap	N.A.	02-Oct-15	SVOC
29	Test 2 Impinger Solution	Ethylene Glycol	02-Oct-15	SVOC
30	Test 2 Impinger Rinse	Hexane/Acetone	02-Oct-15	SVOC
31	Test 3 Probe Rinse	Hexane/Acetone	02-Oct-15	SVOC
32	Test 3 Filter	Particulate	02-Oct-15	SVOC
33	Test 3 XAD-II Trap	N.A.	02-Oct-15	SVOC
34	Test 3 Impinger Solution	Ethylene Glycol	02-Oct-15	SVOC
35	Test 3 Impinger Rinse	Hexane/Acetone	02-Oct-15	SVOC
36	Blank Probe Rinse	Hexane/Acetone	01-Oct-15	SVOC
37	Blank Filter	Particulate	01-Oct-15	SVOC
38	Blank XAD-II Trap	N.A.	01-Oct-15	SVOC
39	Blank Impinger Solution	Ethylene Glycol	01-Oct-15	SVOC
40	Blank Impinger Rinse	Hexane/Acetone	01-Oct-15	SVOC

Relinquished To: Aaron Burton   Date: 3-Oct-2015

Relinquished By: [signature]   Date: 3 Oct 15

ORTECH Environmental Sample Log
Semi-Volatile Organics Samples
#1 APC Outlet

RUSH ANALYSIS (5 DAY)

Client: Covanta
Job/Report Number: 21546
Received By: Chris Belore
How Received: Train recovery
Job Assigned To: ALS
Project Manager: Chris Belore

ORTECH Sample ID 15-21546-SVOC-	Sample Description	Sample Media	Date Sampled	Sample Analysis
1	Test 1 Probe Rinse	Hexane/Acetone	01-Oct-15	SVOC
2	Test 1 Filter	Particulate	01-Oct-15	SVOC
3	Test 1 XAD-II Trap	N.A.	01-Oct-15	SVOC
4	Test 1 Impinger Solution	Ethylene Glycol	01-Oct-15	SVOC
5	Test 1 Impinger Rinse	Hexane/Acetone	01-Oct-15	SVOC
6	Test 2 Probe Rinse	Hexane/Acetone	02-Oct-15	SVOC
7	Test 2 Filter	Particulate	02-Oct-15	SVOC
8	Test 2 XAD-II Trap	N.A.	02-Oct-15	SVOC
9	Test 2 Impinger Solution	Ethylene Glycol	02-Oct-15	SVOC
10	Test 2 Impinger Rinse	Hexane/Acetone	02-Oct-15	SVOC
11	Test 3 Probe Rinse	Hexane/Acetone	02-Oct-15	SVOC
12	Test 3 Filter	Particulate	02-Oct-15	SVOC
13	Test 3 XAD-II Trap	N.A.	02-Oct-15	SVOC
14	Test 3 Impinger Solution	Ethylene Glycol	02-Oct-15	SVOC
15	Test 3 Impinger Rinse	Hexane/Acetone	02-Oct-15	SVOC
16	Blank Probe Rinse	Hexane/Acetone	01-Oct-15	SVOC
17	Blank Filter	Particulate	01-Oct-15	SVOC
18	Blank XAD-II Trap	N.A.	01-Oct-15	SVOC
19	Blank Impinger Solution	Ethylene Glycol	01-Oct-15	SVOC
20	Blank Impinger Rinse	Hexane/Acetone	01-Oct-15	SVOC

Relinquished To: AARON BURTON Date: 3-Oct-2015

Relinquished By: [signature] Date: 3 Oct 15

RUSH ANALYSIS (5 DAYS)

ORTECH Environmental
Vost Sample List
Covanta

Sample Location	Test Number	ORTECH Sample ID 15-21546-VOST-	Sample Date	Sample Description	Sample Analysis
#1 APC Outlet	1	1A/1B	1-Oct-15	Tenax and Tenax/Charcoal (Pair 1)	VOCs
#1 APC Outlet	1	2A/2B	1-Oct-15	Tenax and Tenax/Charcoal (Pair 2)	VOCs
#1 APC Outlet	1	3A/3B	1-Oct-15	Tenax and Tenax/Charcoal (Pair 3)	VOCs
#1 APC Outlet	1	4A/4B	1-Oct-15	Tenax and Tenax/Charcoal (Pair 4)	Archived
#1 APC Outlet	2	5A/5B	2-Oct-15	Tenax and Tenax/Charcoal (Pair 1)	VOCs
#1 APC Outlet	2	30A/30B	2-Oct-15	Tenax and Tenax/Charcoal (Pair 2)	VOCs
#1 APC Outlet	2	7A/7B	2-Oct-15	Tenax and Tenax/Charcoal (Pair 3)	VOCs
#1 APC Outlet	2	8A/8B	2-Oct-15	Tenax and Tenax/Charcoal (Pair 4)	Archived
#1 APC Outlet	3	9A/9B	2-Oct-15	Tenax and Tenax/Charcoal (Pair 1)	VOCs
#1 APC Outlet	3	10A/10B	2-Oct-15	Tenax and Tenax/Charcoal (Pair 2)	VOCs
#1 APC Outlet	3	11A/11B	2-Oct-15	Tenax and Tenax/Charcoal (Pair 3)	VOCs
#1 APC Outlet	3	29A/29B	2-Oct-15	Tenax and Tenax/Charcoal (Pair 4)	Archived
#2 APC Outlet	1	12A/12B	1-Oct-15	Tenax and Tenax/Charcoal (Pair 1)	VOCs
#2 APC Outlet	1	13A/13B	1-Oct-15	Tenax and Tenax/Charcoal (Pair 2)	Archived
#2 APC Outlet	1	14A/14B	1-Oct-15	Tenax and Tenax/Charcoal (Pair 3)	VOCs
#2 APC Outlet	1	15A/15B	1-Oct-15	Tenax and Tenax/Charcoal (Pair 4)	VOCs
#2 APC Outlet	1	16A/16B	1-Oct-15	Field Blank	VOCs
#2 APC Outlet	2	17A/17B	2-Oct-15	Tenax and Tenax/Charcoal (Pair 1)	Archived
#2 APC Outlet	2	18A/18B	2-Oct-15	Tenax and Tenax/Charcoal (Pair 2)	VOCs
#2 APC Outlet	2	19A/19B	2-Oct-15	Tenax and Tenax/Charcoal (Pair 3)	VOCs
#2 APC Outlet	2	20A/20B	2-Oct-15	Tenax and Tenax/Charcoal (Pair 4)	VOCs
#2 APC Outlet	2	21A/21B	2-Oct-15	Field Blank	VOCs
#2 APC Outlet	3	22A/22B	2-Oct-15	Tenax and Tenax/Charcoal (Pair 1)	VOCs
#2 APC Outlet	3	23A/23B	2-Oct-15	Tenax and Tenax/Charcoal (Pair 2)	VOCs
#2 APC Outlet	3	24A/24B	2-Oct-15	Tenax and Tenax/Charcoal (Pair 3)	VOCs
#2 APC Outlet	3	27A/27B	2-Oct-15	Tenax and Tenax/Charcoal (Pair 4)	Archived
#2 APC Outlet	3	25A/25B	2-Oct-15	Field Blank	VOCs
		28A/28B		Travel Blank	VOCs

Note: Archived samples were delivered to ALS with the test samples. Only analyze archive sample if one of the test sample is lost during extraction/analysis. Analyze a total of 3 tube pairs per test.

Custody Relinquished by: [signature] Date: 3 Oct 15

Custody Received by: AARON BURTON Date: 3-Oct-2015 8:00

ORTECH Environmental Sample Log
Aldehydes (CARB 430)
Covanta

RUSH ANALYSIS (5 DAY)

Client: Covanta
Job/Report Number: 21546
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
PO : 21546-J2014

Location	Test No.	ORTECH Sample ID 15-21546-M430-	Sample Date	Sample Description	Media	Sample Analysis
#1 APC Outlet	1	1	01-Oct-15	Probe & Imp. 1 w/ rinse	DNPH/H2O	Aldehydes
#1 APC Outlet	1	2	01-Oct-15	Imp. 2 & 3 w/ rinse	DNPH/H2O	Aldehydes
#1 APC Outlet	2	3	02-Oct-15	Probe & Imp. 1 w/ rinse	DNPH/H2O	Aldehydes
#1 APC Outlet	2	4	02-Oct-15	Imp. 2 & 3 w/ rinse	DNPH/H2O	Aldehydes
#1 APC Outlet	3	5	02-Oct-15	Probe & Imp. 1 w/ rinse	DNPH/H2O	Aldehydes
#1 APC Outlet	3	6	02-Oct-15	Imp. 2 & 3 w/ rinse	DNPH/H2O	Aldehydes
#1 APC Outlet	Blank	7	01-Oct-15	Probe & Imp. 1 w/ rinse	DNPH/H2O	Aldehydes
#1 APC Outlet	Blank	8	01-Oct-15	Imp. 2 & 3 w/ rinse	DNPH/H2O	Aldehydes
#2 APC Outlet	1	11	01-Oct-15	Probe & Imp. 1 w/ rinse	DNPH/H2O	Aldehydes
#2 APC Outlet	1	12	01-Oct-15	Imp. 2 & 3 w/ rinse	DNPH/H2O	Aldehydes
#2 APC Outlet	2	13	02-Oct-15	Probe & Imp. 1 w/ rinse	DNPH/H2O	Aldehydes
#2 APC Outlet	2	14	02-Oct-15	Imp. 2 & 3 w/ rinse	DNPH/H2O	Aldehydes
#2 APC Outlet	3	15	02-Oct-15	Probe & Imp. 1 w/ rinse	DNPH/H2O	Aldehydes
#2 APC Outlet	3	16	02-Oct-15	Imp. 2 & 3 w/ rinse	DNPH/H2O	Aldehydes
#2 APC Outlet	Blank	17	01-Oct-15	Probe & Imp. 1 w/ rinse	DNPH/H2O	Aldehydes
#2 APC Outlet	Blank	18	01-Oct-15	Imp. 2 & 3 w/ rinse	DNPH/H2O	Aldehydes

Analyze samples for Acetaldehyde, Formaldehyde & Acrolein

Relinquished By: [signature] Date: 3 Oct 15

Relinquished To: Aaron Burton Date: 3-Oct-2015

APPENDIX 17

Metals Train Recovery Data Sheets
(8 pages)

Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21546
Date:	30 Sep15
Test No.:	1
Test Location:	Unit 1 - Outlet

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	277.5
After Act. Rinse:	394.7
Total TS1:	117.2

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	284.9
After 0.1N HNO_3 Rinse:	445.4
Total TS2:	~~128~~ 160.5

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: 15@66

CONTAINER TS3

Initial Wt:	0.7861
Final Wt:	0.7854
Gain:	-0.7
Colour:	white

Seal and label container TS3

Impingers 1, 2, 3, 4 and 5

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	671.2
Final Wt:	924.3
1 Gain:	253.1
Colour:	Clear

Impinger #2 Empty (Knock-out)	
~~Empty Wt:~~	~~6~~
~~Final Wt:~~	
2 ~~Gain:~~	
~~Colour:~~	

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	669.6
Initial Wt:	765.3
Final Wt:	824.6
3 Gain:	59.3
Colour:	Clear

Impinger #4 HNO_3/H_2O_2	
Empty Wt:	670.7
Initial Wt:	781.9
Final Wt:	791.2
4 Gain:	9.3
Colour:	Clear

Impinger #5 Empty	
Empty Wt:	612.2
Final Wt:	613.6
5 Gain:	1.4
Colour:	Clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	415.6
w/ Imp. 1-5 Soln:	947.3
Imp. 1 to 5 Volume:	531.7
After HNO_3 Rinse:	1052.7
Total TS4:	637.1

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 6 & 7

Impinger #6 $KMnO_4/H_2SO_4$	
Empty Wt:	674.0
Initial Wt:	789.3
Final Wt:	789.7
6 Gain:	0.4
Colour:	purple

Impinger # 7 $KMnO_4/H_2SO_4$	
Empty Wt:	549.3
Initial Wt:	665.0
Final Wt:	666.0
7 Gain:	1.0
Colour:	purple

CWTR = 1 to 7:	324.5
WCBDA= 8:	14.2

Impinger 6 & 7

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	413.0
With Imp. 6&7 Soln:	641.9
Imp. 6&7 Volume:	228.9
After $KMnO_4$ Rinse:	745.2
After100g H_2O Rinse:	844.8
Total TS5-A:	431.8

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	415.6
With 150 mL DI H_2O:	570.3
After HCl Rinse:	597.8
After DI H_2O Rinse:	697.6
Total TS5-B:	282.0

MARK FLUID LEVEL

SEAL & LABEL TS5-B

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

Impinger 8

Impinger #8 Silica Gel	
Initial Wt:	842.7
Final Wt:	856.9
8 Gain:	14.2

Box 14

SAMPLE IDENTIFICATION	15-21546-PM
TS1 (Probe Rinse-Acetone)	1
TS2 (Probe Rinse-0.1N HNO_3)	2
TS3 (Filter)	3
TS4 (Impinger 1-5 Sol'n-HNO_3)	4
TS5-A (Impinger 6, 7 Sol'n-$KMnO_4$)	5
TS5-B (Impinger 6, 7 Rinse-HCl)	6

Train Loaded By:	TS
Train Recovered By:	TS
Recovery Witnessed By:	—
Date:	30 Sep 15.

ORTECH Enivronmental

Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21546
Date:	30 Sep 15
Test No.:	2
Test Location:	PM #1 APC Outlet

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	273.1
After Act. Rinse:	440.7
Total TS1:	167.6

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	285.4
After 0.1N HNO_3 Rinse:	504.9
Total TS2:	219.6

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: 150 55

CONTAINER TS3

Initial Wt:	0.8103
Final Wt:	0.8098
Gain:	-0.5
Colour:	white

Seal and label container TS3

Impingers 1, 2, 3, 4 and 5

CONTAINER TS4

	Impinger #1 Empty	
	Empty Wt:	663.8
	Final Wt:	842.6
1	Gain:	178.8
	Colour:	clear

	~~Impinger #2 Empty (Knock-out)~~	
	~~Empty Wt:~~	
	~~Final Wt:~~	
2	~~Gain:~~	
	~~Colour:~~	

	Impinger #3 HNO_3/H_2O_2	
	Empty Wt:	680.4
	Initial Wt:	788.2
	Final Wt:	932.3
3	Gain:	144.1
	Colour:	clear

	Impinger #4 HNO_3/H_2O_2	
	Empty Wt:	681.2
	Initial Wt:	786.4
	Final Wt:	809.1
4	Gain:	22.7
	Colour:	clear

	Impinger #5 Empty (Knockout)	
	Empty Wt:	604.8
	Final Wt:	607.7
5	Gain:	2.9
	Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	413.9
w/ Imp. 1-5 Soln:	~~96~~ 976.7
Imp. 1 to 5 Volume:	562.8
After HNO_3 Rinse:	1072.8
Total TS4:	658.9

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 6 & 7

	Impinger #6 $KMnO_4/H_2SO_4$	
	Empty Wt:	679.5
	Initial Wt:	789.2
	Final Wt:	791.6
6	Gain:	2.4
	Colour:	purple

	Impinger # 7 $KMnO_4/H_2SO_4$	
	Empty Wt:	659.9
	Initial Wt:	772.0
	Final Wt:	771.8
7	Gain:	-0.2
	Colour:	purple

CWTR = 1 to 7:	350.7 ✓
WCBDA= 8:	13.1 ✓

Impinger 6 & 7

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	412.7
With Imp. 6&7 Soln:	633.3
Imp. 6&7 Volume:	220.6
After $KMnO_4$ Rinse:	734.9
After100g H_2O Rinse:	836.0
Total TS5-A:	423.3

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	414.9
With 150 mL DI H_2O:	566.3
After HCl Rinse:	589.4
After DI H_2O Rinse:	685.5
Total TS5-B:	270.6

MARK FLUID LEVEL

SEAL & LABEL TS5-B

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

Impinger 8

	Impinger #8 Silica Gel	
	Initial Wt:	775.4
	Final Wt:	788.5
8	Gain:	13.1

Box 5

SAMPLE IDENTIFICATION	15-21546-PM
TS1 (Probe Rinse-Acetone)	7
TS2 (Probe Rinse-0.1N HNO_3)	8
TS3 (Filter)	9
TS4 (Impinger 1-5 Sol'n-HNO_3)	10
TS5-A (Impinger 6, 7 Sol'n-$KMnO_4$)	11
TS5-B (Impinger 6, 7 Rinse-HCl)	12

Train Loaded By:	TJ
Train Recovered By:	TS
Recovery Witnessed By:	—
Date:	30 Sep 15

ORTECH Enivronmental

Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21546
Date:	1 Oct 15
Test No.:	3
Test Location:	#1 APC outlet

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	276.0
After Act. Rinse:	432.6
Total TS1:	156.6

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	284.9
After 0.1N HNO_3 Rinse:	445.4
Total TS2:	160.5

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: 15 Q 49

CONTAINER TS3

Initial Wt:	0.8449
Final Wt:	0.8418
Gain:	-3.1
Colour:	White

Seal and label container TS3

Filter edge stuck to filter housing - some filter material lost.

Impingers 1, 2, 3, 4 and 5

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	673.6
Final Wt:	943.0
1 Gain:	269.4
Colour:	clear

Impinger #2 Empty (Knock-out)	
Empty Wt:	
Final Wt:	
2 Gain:	
Colour:	

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	670.0
Initial Wt:	775.8
Final Wt:	832.4
3 Gain:	56.6
Colour:	clear

Impinger #4 HNO_3/H_2O_2	
Empty Wt:	669.7
Initial Wt:	771.4
Final Wt:	780.7
4 Gain:	9.3
Colour:	clear

Impinger #5 Empty	
Empty Wt:	611.5
Final Wt:	612.4
5 Gain:	0.9
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	414.3
w/ Imp. 1-5 Soln:	959.9
Imp. 1 to 5 Volume:	545.6
After HNO_3 Rinse:	1049.1
Total TS4:	634.8

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 6 & 7

Impinger #6 $KMnO_4/H_2SO_4$	
Empty Wt:	674.6
Initial Wt:	784.7
Final Wt:	785.7
6 Gain:	1.0
Colour:	purple

Impinger # 7 $KMnO_4/H_2SO_4$	
Empty Wt:	550.5
Initial Wt:	667.3
Final Wt:	667.0
7 Gain:	-0.3
Colour:	purple

CWTR = 1 to 7:	336.9 ~~336.8~~
WCBDA= 8:	15.8

Impinger 6 & 7

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	414.4
With Imp. 6&7 Soln:	614.3
Imp. 6&7 Volume:	199.9
After $KMnO_4$ Rinse:	748.7
After100g H_2O Rinse:	845.2
Total TS5-A:	430.8

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	414.1
With 150 mL DI H_2O:	567.8
After HCl Rinse:	599.5
After DI H_2O Rinse:	694.5
Total TS5-B:	280.4

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 8

Impinger #8 Silica Gel	
Initial Wt:	832.7
Final Wt:	848.5
8 Gain:	15.8

SAMPLE IDENTIFICATION	15-21546-PM
TS1 (Probe Rinse-Acetone)	13
TS2 (Probe Rinse-0.1N HNO_3)	14
TS3 (Filter)	15
TS4 (Impinger 1-5 Sol'n-HNO_3)	16
TS5-A (Impinger 6, 7 Sol'n-$KMnO_4$)	17
TS5-B (Impinger 6, 7 Rinse-HCl)	18

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

Box 14

Train Loaded By:	TS
Train Recovered By:	TS
Recovery Witnessed By:	—
Date:	1 Oct 15

ORTECH Enivronmental

Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21546
Date:	30 Sep 15
Test No.:	Blank
Test Location:	#1 APC outlet

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.5
After Act. Rinse:	435.0
Total TS1:	152.5

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	285.3
After 0.1N HNO_3 Rinse:	437.9
Total TS2:	152.6

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: 15Q20

CONTAINER TS3

Initial Wt:	0.8228
Final Wt:	0.8235
Gain:	0.7
Colour:	white

Seal and label container TS3

Impingers 1, 2, 3, 4 and 5

CONTAINER TS4

	Impinger #1 Empty	
	Empty Wt:	
	Final Wt:	
1	Gain:	
	Colour:	

	Impinger #2 Empty (Knock-out)	
	Empty Wt:	
	Final Wt:	
2	Gain:	
	Colour:	

	Impinger #3 HNO_3/H_2O_2	
	Empty Wt:	
	Initial Wt:	
	Final Wt:	
3	Gain:	
	Colour:	

	Impinger #4 HNO_3/H_2O_2	
	Empty Wt:	
	Initial Wt:	
	Final Wt:	
4	Gain:	
	Colour:	

	Impinger #5 Empty	
	Empty Wt:	
	Final Wt:	
5	Gain:	
	Colour:	

CONTAINER TS4 WEIGHTS	
Empty Wt:	413.4
w/ Imp. 1-5 Soln:	621.7
Imp. 1 to 5 Volume:	208.3
After HNO_3 Rinse:	723.4
Total TS4:	310.0

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 6 & 7

	Impinger #6 $KMnO_4/H_2SO_4$	
	Empty Wt:	
	Initial Wt:	
	Final Wt:	
6	Gain:	
	Colour:	

	Impinger # 7 $KMnO_4/H_2SO_4$	
	Empty Wt:	
	Initial Wt:	
	Final Wt:	
7	Gain:	
	Colour:	

CWTR = 1 to 7:

WCBDA= 8:

Impinger 6 & 7

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	413.7
With Imp. 6&7 Soln:	637.5
Imp. 6&7 Volume:	223.8
After $KMnO_4$ Rinse:	752.2
After100g H_2O Rinse:	853.3
Total TS5-A:	439.6

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	415.5
With 150 mL DI H_2O:	566.1
After HCl Rinse:	596.4
After DI H_2O Rinse:	699.4
Total TS5-B:	283.9

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 8

	Impinger #8 Silica Gel	
	Initial Wt:	
	Final Wt:	
8	Gain:	

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

SAMPLE IDENTIFICATION	15-21546-PM
TS1 (Probe Rinse-Acetone)	19
TS2 (Probe Rinse-0.1N HNO_3)	20
TS3 (Filter)	21
TS4 (Impinger 1-5 Sol'n-HNO_3)	22
TS5-A (Impinger 6, 7 Sol'n-$KMnO_4$)	23
TS5-B (Impinger 6, 7 Rinse-HCl)	24

Train Loaded By:	TS
Train Recovered By:	TS
Recovery Witnessed By:	—
Date:	30 Sep 15

ORTECH Enivronmental

Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21546
Date:	29 Sep 15
Test No.:	1
Test Location:	Unit 2 BH outlet

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	280.2
After Act. Rinse:	445.0
Total TS1:	164.8

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	277.1
After 0.1N HNO_3 Rinse:	443.5
Total TS2:	166.4

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: 15Q - 38

CONTAINER TS3

Initial Wt:	0.7658
Final Wt:	0.7668
Gain:	1.0
Colour:	white

Seal and label container TS3

Impingers 1, 2, 3, 4 and 5

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	662.2
Final Wt:	880.9
1 Gain:	218.7
Colour:	clear

Impinger #2 Empty (Knock-out)	
Empty Wt:	
Final Wt:	
2 Gain:	
Colour:	

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	679.1
Initial Wt:	782.4
Final Wt:	875.9
3 Gain:	93.5
Colour:	Clear

Impinger #4 HNO_3/H_2O_2	
Empty Wt:	678.4
Initial Wt:	783.9
Final Wt:	806.3
4 Gain:	22.4
Colour:	clear

Impinger #5 Empty (Knock-out)	
Empty Wt:	603.4
Final Wt:	606.3
5 Gain:	2.9
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	415.5
w/ Imp. 1-5 Soln:	957.0
Imp. 1 to 5 Volume:	~~4~~ 541.5
After HNO_3 Rinse:	1053.3
Total TS4:	637.8

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 6 & 7

Impinger #6 $KMnO_4/H_2SO_4$	
Empty Wt:	675.7
Initial Wt:	785.8
Final Wt:	788.9
6 Gain:	3.1
Colour:	purple

Impinger # 7 $KMnO_4/H_2SO_4$	
Empty Wt:	656.4
Initial Wt:	769.1
Final Wt:	771.3
7 Gain:	2.2
Colour:	purple

CWTR = 1 to 7:	342.8 ✓
WCBDA= 8:	16.3 ✓

Impinger 6 & 7

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	419.3
With Imp. 6&7 Soln:	635.8
Imp. 6&7 Volume:	216.5
After $KMnO_4$ Rinse:	752.9
After100g H_2O Rinse:	848.5
Total TS5-A:	429.2

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	414.1
With 150 mL DI H_2O:	566.3
After HCl Rinse:	594.3
After DI H_2O Rinse:	686.5
Total TS5-B:	272.4

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 8

Impinger #8 Silica Gel	
Initial Wt:	~~[illegible]~~ 799.6
Final Wt:	815.9
8 Gain:	16.3

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

Box 5

SAMPLE IDENTIFICATION	15-21546-PM
TS1 (Probe Rinse-Acetone)	25
TS2 (Probe Rinse-0.1N HNO_3)	26
TS3 (Filter)	27
TS4 (Impinger 1-5 Sol'n-HNO_3)	28
TS5-A (Impinger 6, 7 Sol'n-$KMnO_4$)	29
TS5-B (Impinger 6, 7 Rinse-HCl)	30

Train Loaded By:	TS
Train Recovered By:	TS
Recovery Witnessed By:	—
Date:	29 Sep 15

Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 21546
Date: 29 Sep 15
Test No.: 2
Test Location: Unit 2-Outlet

Nozzle, Probe Liner, Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.2
After Act. Rinse:	464.3
Total TS1:	182.1

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	281.9
After 0.1N HNO_3 Rinse:	439.4
Total TS2:	157.5

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: 15Q-68

CONTAINER TS3

Initial Wt:	0.7577
Final Wt:	0.7591
Gain:	1.4
Colour:	white

Seal and label container TS3

Impingers 1, 2, 3, 4 and 5

CONTAINER TS4

	Impinger #1 Empty	
	Empty Wt:	670.3
	Final Wt:	887.6
1	Gain:	217.3
	Colour:	clear

	Impinger #2 Empty (Knock-out)	
	Empty Wt:	
	Final Wt:	
2	Gain:	
	Colour:	

	Impinger #3 HNO_3/H_2O_2	
	Empty Wt:	668.2
	Initial Wt:	780.5
	Final Wt:	854.7
3	Gain:	74.2
	Colour:	clear

	Impinger #4 HNO_3/H_2O_2	
	Empty Wt:	668.8
	Initial Wt:	764.8
	Final Wt:	780.7
4	Gain:	15.9
	Colour:	clear

	Impinger #5 Empty (Knock-out)	
	Empty Wt:	611.0
	Final Wt:	613.3
5	Gain:	2.3
	Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	419.4
w/ Imp. 1-5 Soln:	932.1
Imp. 1 to 5 Volume:	512.7
After HNO_3 Rinse:	1035.7
Total TS4:	616.3

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 6 & 7

	Impinger #6 $KMnO_4/H_2SO_4$	
	Empty Wt:	671.9
	Initial Wt:	788.1
	Final Wt:	787.4
6	Gain:	-0.7
	Colour:	purple

	Impinger # 7 $KMnO_4/H_2SO_4$	
	Empty Wt:	547.9
	Initial Wt:	657.6
	Final Wt:	660.2
7	Gain:	2.6
	Colour:	purple

CWTR = 1 to 7: 311.6

WCBDA= 8: 17.5

Impinger 6 & 7

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	419.1
With Imp. 6&7 Soln:	635.9
Imp. 6&7 Volume:	216.8
After $KMnO_4$ Rinse:	753.6
After100g H_2O Rinse:	851.7
Total TS5-A:	432.6

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	413.6
With 150 mL DI H_2O:	564.6
After HCl Rinse:	599.7
After DI H_2O Rinse:	704.0
Total TS5-B:	290.4

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 8

	Impinger #8 Silica Gel	
	Initial Wt:	864.9
	Final Wt:	882.4
8	Gain:	17.5

SAMPLE IDENTIFICATION	15-21546-PM
TS1 (Probe Rinse-Acetone)	31
TS2 (Probe Rinse-0.1N HNO_3)	32
TS3 (Filter)	33
TS4 (Impinger 1-5 Sol'n-HNO_3)	34
TS5-A (Impinger 6, 7 Sol'n-$KMnO_4$)	35
TS5-B (Impinger 6, 7 Rinse-HCl)	36

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

Box 14

Train Loaded By: TS
Train Recovered By: TD
Recovery Witnessed By: —
Date: 29 Sep 15

ORTECH Enivronmental

Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 21546
Date: 29 Sep 15
Test No.: 3
Test Location: Unit 2 - Outlet

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	285.6
After Act. Rinse:	441.4
Total TS1:	155.8

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	280.8
After 0.1N HNO_3 Rinse:	435.0
Total TS2:	154.2

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: 1521

CONTAINER TS3

Initial Wt:	0.8406
Final Wt:	0.8403
Gain:	-0.3
Colour:	white

Seal and label container TS3

Impingers 1, 2, 3, 4 and 5

CONTAINER TS4

1

Impinger #1 Empty	
Empty Wt:	663.2
Final Wt:	886.4
Gain:	223.2
Colour:	clear

2

~~Impinger #2 Empty (Knock-out)~~	
~~Empty Wt:~~	
~~Final Wt:~~	
~~Gain:~~	
~~Colour:~~	

3

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	679.2
Initial Wt:	779.1
Final Wt:	856.3
Gain:	77.2
Colour:	clear

4

Impinger #4 HNO_3/H_2O_2	
Empty Wt:	679.4
Initial Wt:	786.6
Final Wt:	803.9
Gain:	17.3
Colour:	clear

5

Impinger #5 Empty (Knock-out)	
Empty Wt:	603.6
Final Wt:	605.6
Gain:	2.0
Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	414.0
w/ Imp. 1-5 Soln:	937.9
Imp. 1 to 5 Volume:	523.9
After HNO_3 Rinse:	1040.2
Total TS4:	626.2

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 6 & 7

6

Impinger #6 $KMnO_4/H_2SO_4$	
Empty Wt:	679.2
Initial Wt:	784.9
Final Wt:	788.1
Gain:	3.2
Colour:	purple

7

Impinger # 7 $KMnO_4/H_2SO_4$	
Empty Wt:	661.1
Initial Wt:	778.8
Final Wt:	782.3
Gain:	3.5
Colour:	purple

CWTR = 1 to 7: 326.4 ✓

WCBDA= 8: 12.5 ✓

Impinger 6 & 7

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	412.1
With Imp. 6&7 Soln:	639.5
Imp. 6&7 Volume:	227.4
After $KMnO_4$ Rinse:	751.3
After100g H_2O Rinse:	848.3
Total TS5-A:	436.2

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	412.4
With 150 mL DI H_2O:	567.3
After HCl Rinse:	588.9
After DI H_2O Rinse:	682.9
Total TS5-B:	270.5

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 8

8

Impinger #8 Silica Gel	
Initial Wt:	744.9
Final Wt:	757.4
Gain:	12.5

SAMPLE IDENTIFICATION	15-21546-PM-
TS1 (Probe Rinse-Acetone)	37
TS2 (Probe Rinse-0.1N HNO_3)	38
TS3 (Filter)	39
TS4 (Impinger 1-5 Sol'n-HNO_3)	40
TS5-A (Impinger 6, 7 Sol'n-$KMnO_4$)	41
TS5-B (Impinger 6, 7 Rinse-HCl)	42

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

Box 5

Train Loaded By: TD
Train Recovered By: TD
Recovery Witnessed By: —
Date: 29 Sep 15

ORTECH Enivronmental

Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21546
Date:	29 Sep 15
Test No.:	Blank
Test Location:	Unit 2 - outlet

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	278.6
After Act. Rinse:	437.4
Total TS1:	158.8

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	278.7
After 0.1N HNO_3 Rinse:	435.5
Total TS2:	156.8

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: 15 02

CONTAINER TS3

Initial Wt:	0.8157
Final Wt:	0.8177
Gain:	2.0
Colour:	white

Seal and label container TS3

Impingers 1, 2, 3, 4 and 5

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #2 Empty (Knock-out)	
Empty Wt:	
Final Wt:	
2 Gain:	
Colour:	

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	
Initial Wt:	
Final Wt:	
3 Gain:	
Colour:	

Impinger #4 HNO_3/H_2O_2	
Empty Wt:	
Initial Wt:	
Final Wt:	
4 Gain:	
Colour:	

Impinger #5 Empty	
Empty Wt:	
Final Wt:	
5 Gain:	
Colour:	

CONTAINER TS4 WEIGHTS	
Empty Wt:	418.1
w/ Imp. 1-5 Soln:	626.3
Imp. 1 to 5 Volume:	208.2
After HNO_3 Rinse:	721.8
Total TS4:	303.7

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 6 & 7

Impinger #6 $KMnO_4/H_2SO_4$	
Empty Wt:	
Initial Wt:	
Final Wt:	
6 Gain:	
Colour:	

Impinger # 7 $KMnO_4/H_2SO_4$	
Empty Wt:	
Initial Wt:	
Final Wt:	
7 Gain:	
Colour:	

CWTR = 1 to 7: —

WCBDA= 8: —

Impinger 6 & 7

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	414.3
With Imp. 6&7 Soln:	643.0
Imp. 6&7 Volume:	228.7
After $KMnO_4$ Rinse:	766.8
After100g H_2O Rinse:	861.9
Total TS5-A:	447.6

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	413.2
With 150 mL DI H_2O:	564.2
After HCl Rinse:	595.5
After DI H_2O Rinse:	695.6
Total TS5-B:	282.4

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 8

Impinger #8 Silica Gel	
Initial Wt:	
Final Wt:	
8 Gain:	

SAMPLE IDENTIFICATION	15-21546- PM-
TS1 (Probe Rinse-Acetone)	43
TS2 (Probe Rinse-0.1N HNO_3)	44
TS3 (Filter)	45
TS4 (Impinger 1-5 Sol'n-HNO_3)	46
TS5-A (Impinger 6, 7 Sol'n-$KMnO_4$)	47
TS5-B (Impinger 6, 7 Rinse-HCl)	48

TS1,TS2- 500 ml Glass Bottle
TS3- Petri Dish
TS4- 4 L Amber Glass Bottle
TS5-A - 1000 ml Amber Glass Bottle
TS5-B - 500 ml Amber Glass Bottle

Train Loaded By:	TS
Train Recovered By:	TS
Recovery Witnessed By:	
Date:	29 Sep 15

ORTECH Enivronmental

APPENDIX 18

Metals Analytical Reports
(13 pages)

ALS Environmental

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 SOUTHDOWN ROAD MISSISSAUGA, ON L5J 2Y4 Canada
ALS WO#:	L1681904		
Date of Report	7-Oct-15		
Date of Sample Receipt	1-Oct-15	**Client Contact:**	Chris Belore
		Client Project ID:	21546, COVANTA

COMMENTS:

Sample Particulate Analysis via Gravimetric USEPA Method 5 (SA 06-Oct-2015)

REPORT FLAGS:

J - The value is uncertain and below what can be reliably identified as positive with a ≥99% confidence limit (i.e. below the laboratory determined MDL).

LCB = Laboratory Control Blank
LCS = Laboratory Control Sample
LCSD = Laboratory Control Sample Duplicate
LOR = Limit of Reporting

Certified by: R. Stolys

Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name		15-21546-PM-(1 THRU 6) #1 APC OUTLET TEST#1	15-21546-PM-(7 THRU 12) #1 APC OUTLET TEST#2	15-21546-PM-(13 THRU 18) #1 APC OUTLET TEST#3	15-21546-PM-(19 THRU 24) #1 APC OUTLET BLANK	15-21546-PM-(25 THRU 30) #2 APC OUTLET TEST#1
ALS Sample ID		L1681904-1	L1681904-2	L1681904-3	L1681904-4	L1681904-5
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		30-Sep-15	30-Sep-15	1-Oct-15	30-Sep-15	29-Sep-15
Date of Receipt		1-Oct-15	1-Oct-15	1-Oct-15	1-Oct-15	1-Oct-15
PM via Gravimetric Analysis	**LOR**					
Method 5	**mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Acetone Particulate Matter	0.4	1.1	0.8	1.8	0.5	1.5
	g	g	g	g	g	g
Acetone Mass	0.02	116.1	194.3	156.3	152.1	164.6

ALS Environmental

Sample Analysis Summary Report

Sample Name		15-21546-PM-(31 THRU 36) #2 APC OUTLET TEST#2	15-21546-PM-(37 THRU 42) #2 APC OUTLET TEST#3	15-21546-PM-(43 THRU 48) #2 APC OUTLET BLANK	Laboratory Contol Blank
ALS Sample ID		L1681904-6	L1681904-7	L1681904-8	L1681904-LCB
Matrix		Stack	Stack	Stack	Acetone
Analysis type		Sample	Sample	Sample	Sample
Sampling Date/Time		29-Sep-15	29-Sep-15	29-Sep-15	#N/A
Date of Receipt		1-Oct-15	1-Oct-15	1-Oct-15	#N/A
PM via Gravimetric Analysis	**LOR**				
Method 5	**mg**	**mg**	**mg**	**mg**	**mg**
Acetone Particulate Matter	0.4	1.4	2.1	0.1 J	<
	g	**g**	**g**	**g**	**g**
Acetone Mass	0.02	181.4	155.0	158.5	31.2

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Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road Mississauga, ON L5J 2Y4 Canada
ALS WO#:	L1681904	**Client Contact:**	Chris Belore
Date of Report	7-Oct-15	**Client Project ID:**	21546, Covanta
Date of Sample Receipt	1-Oct-15		

COMMENTS:

Metals analysed via ICP-MS (MC 6-Oct-15)

Sample Preparation (SA 6-Oct-15)

ANALYST COMMENTS:

1A

-Mo detected in LCB at 3x the LOR. Although sample results are much higher than this background, data may be biased slightly high for this target.

-Low MS/MSD recoveries for Ba (approximately 40%). Suspected issue with spiking intermediate. All other QC within acceptable limits, including LCS and LCSD.

-High MS/MSD recoveries for Be. No Be found in samples. No impact on data.

2A

-Mo detected in LCB at a level similar to the samples. Sample data is likely biased high.

-Low MS/MSD recoveries for Ba (approximately 40%). Suspected issue with spiking intermediate. All other QC within acceptable limits, including LCS and LCSD.

PE 7-Oct-15

LCB = Laboratory Control Blank

LCS = Laboratory Control Sample

LCSD = Laboratory Control Sample Duplicate

LOR = Limit of Reporting

Certified by: R. Stolys

Rachael Stolys

Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name		15-21546-PM-(1 THRU 6) #1 APC OUTLET TEST#1	15-21546-PM-(7 THRU 12) #1 APC OUTLET TEST#2	15-21546-PM-(13 THRU 18) #1 APC OUTLET TEST#3	15-21546-PM-(19 THRU 24) #1 APC OUTLET BLANK	15-21546-PM-(25 THRU 30) #2 APC OUTLET TEST#1	15-21546-PM-(31 THRU 36) #2 APC OUTLET TEST#2
ALS Sample ID		L1681904-1	L1681904-2	L1681904-3	L1681904-4	L1681904-5	L1681904-6
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis Type		Sample	Sample	Sample	Sample	Sample	Sample
Sampling Date		30-Sep-15	30-Sep-15	1-Oct-15	30-Sep-15	29-Sep-15	29-Sep-15
Date of Receipt		1-Oct-15	1-Oct-15	1-Oct-15	1-Oct-15	1-Oct-15	1-Oct-15
Multi-Metals via ICP-MS	**LOR**						
	ug	**ug**	**ug**	**ug**	**ug**	**ug**	**ug**
Front Half HF Fraction 1A							
Antimony	0.2	<	<	<	<	0.852	<
Arsenic	1	<	<	<	<	<	<
Barium	5	<	<	<	<	<	<
Beryllium	0.2	<	<	<	<	<	<
Cadmium	0.1	0.794	0.134	0.212	<	0.441	0.195
Chromium	1	7.22	8.68	6.66	5.15	5.55	5.52
Cobalt	0.2	<	<	<	<	<	<
Copper	1	3.14	3.05	2.43	5.53	2.09	1.47
Lead	0.5	0.644	0.564	3.46	<	1.43	0.520
Manganese	0.5	2.71	2.02	4.71	1.54	2.18	1.80
Molybdenum	0.2	45.9	50.3	49.5	50.4	45.8	46.9
Nickel	0.2	18.8	20.3	19.4	19.7	17.4	17.9
Selenium	2	<	<	<	<	<	<
Silver	0.2	<	<	<	<	<	<
Thallium	0.2	<	<	<	<	<	<
Vanadium	1	<	<	<	<	<	<
Zinc	6	8.81	<	9.62	6.40	19.1	9.04
Back Half (HNO3 / H2O2) Fraction 2A							
Antimony	0.1	<	<	<	<	<	<
Arsenic	0.2	<	<	<	<	<	<
Barium	0.5	0.589	0.721	0.592	0.704	0.752	0.747
Beryllium	0.1	<	<	<	<	<	<
Cadmium	0.05	<	0.0502	<	<	0.137	0.0819
Chromium	0.15	0.393	0.909	0.224	0.548	0.838	1.18
Cobalt	0.1	<	<	<	<	<	<
Copper	0.3	4.00	7.37	4.02	5.28	5.03	5.63
Lead	0.05	0.252	0.407	0.220	0.183	0.622	0.805
Manganese	0.15	3.14	1.60	0.565	0.530	12.1	4.27
Molybdenum	0.1	0.736	0.132	0.132	0.118	0.242	0.299
Nickel	0.1	0.373	0.974	0.234	0.599	0.873	0.875
Selenium	1	<	<	<	<	<	<
Silver	0.1	<	<	<	<	<	<
Thallium	0.05	<	<	<	<	<	<
Vanadium	0.1	<	<	<	<	<	0.192
Zinc	3	3.48	4.19	4.69	<	4.58	7.61

ALS Environmental

Sample Analysis Summary Report

Sample Name		**15-21546-PM-(37 THRU 42) #2 APC OUTLET TEST#3**	**15-21546-PM-(43 THRU 48) #2 APC OUTLET BLANK**
ALS Sample ID		L1681904-7	L1681904-8
Matrix		Stack	Stack
Analysis Type		Sample	Sample
Sampling Date		29-Sep-15	29-Sep-15
Date of Receipt		1-Oct-15	1-Oct-15
Multi-Metals via ICP-MS	**LOR ug**	**ug**	**ug**
Front Half HF Fraction 1A			
Antimony	0.2	0.330	<
Arsenic	1	<	<
Barium	5	<	<
Beryllium	0.2	<	<
Cadmium	0.1	0.413	<
Chromium	1	44.5	4.96
Cobalt	0.2	0.298	<
Copper	1	3.08	<
Lead	0.5	0.818	<
Manganese	0.5	4.64	1.57
Molybdenum	0.2	52.8	47.9
Nickel	0.2	31.3	18.8
Selenium	2	<	<
Silver	0.2	<	<
Thallium	0.2	<	<
Vanadium	1	<	<
Zinc	6	15.4	<
Back Half (HNO3 / H2O2) Fraction 2A			
Antimony	0.1	<	<
Arsenic	0.2	0.248	<
Barium	0.5	1.34	1.02
Beryllium	0.1	<	<
Cadmium	0.05	0.143	<
Chromium	0.15	1.83	0.492
Cobalt	0.1	<	<
Copper	0.3	11.9	8.33
Lead	0.05	0.584	0.358
Manganese	0.15	9.03	0.540
Molybdenum	0.1	0.820	1.78
Nickel	0.1	1.57	0.294
Selenium	1	<	<
Silver	0.1	<	<
Thallium	0.05	<	<
Vanadium	0.1	<	<
Zinc	3	6.30	<

ALS Environmental

Sample QC Summary Report

Sample Name		**LCB**	**LCS**	**LCS**	**LCSD**	**LCSD**
ALS Sample ID		LCB	LCS	LCS	LCSD	LCSD
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis Type		Blank	LCS	LCS	LCS	LCS
Sampling Date		n/a	n/a	n/a	n/a	n/a
Date of Receipt		n/a	n/a	n/a	n/a	n/a
Multi-Metals via ICP-MS	**LOR ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Front Half HF Fraction 1A						
Antimony	0.2	<	11.4	95	11.4	95
Arsenic	1	<	58.5	97	58.3	97
Barium	5	<	54.7	91	54.5	91
Beryllium	0.2	<	58.1	97	59.6	99
Cadmium	0.1	<	28.8	96	29.0	96
Chromium	1	<	58.3	97	58.1	97
Cobalt	0.2	<	58.3	97	58.4	97
Copper	1	<	58.6	98	58.4	98
Lead	0.5	<	59.8	100	59.5	99
Manganese	0.5	<	58.2	97	58.3	97
Molybdenum	0.2	0.680	29.0	95	28.9	94
Nickel	0.2	<	57.6	96	57.7	96
Selenium	2	<	59.2	98	61.9	102
Silver	0.2	<	29.3	98	26.2	88
Thallium	0.2	<	60.9	102	60.6	101
Vanadium	1	<	57.1	95	57.2	96
Zinc	6	<	118	99	118	99
Back Half (HNO3 / H2O2) Fraction 2A						
Antimony	0.1	<	5.60	94	5.73	96
Arsenic	0.2	<	28.8	96	29.3	98
Barium	0.5	<	27.2	91	28.0	94
Beryllium	0.1	<	27.8	93	27.6	92
Cadmium	0.05	<	14.4	96	14.8	98
Chromium	0.15	<	28.1	94	28.7	96
Cobalt	0.1	<	28.3	94	28.5	95
Copper	0.3	<	28.4	95	28.8	96
Lead	0.05	<	30.1	100	30.2	101
Manganese	0.15	<	29.0	97	28.5	95
Molybdenum	0.1	0.222	14.4	94	14.6	96
Nickel	0.1	<	27.8	93	28.3	94
Selenium	1	<	28.8	96	29.6	99
Silver	0.1	<	14.6	97	14.7	98
Thallium	0.05	<	26.7	89	26.9	90
Vanadium	0.1	<	27.8	93	28.3	94
Zinc	3	<	56.5	95	57.6	97

ALS Environmental

Sample QC Summary Report

Sample Name		15-21546-PM-(1 THRU 6) #1 APC OUTLET TEST#1	15-21546-PM-(1 THRU 6) #1 APC OUTLET TEST#1	15-21546-PM-(1 THRU 6) #1 APC OUTLET TEST#1	15-21546-PM-(1 THRU 6) #1 APC OUTLET TEST#1	15-21546-PM-(1 THRU 6) #1 APC OUTLET TEST#1	15-21546-PM-(1 THRU 6) #1 APC OUTLET TEST#1
ALS Sample ID		L1681904-1	L1681904-1	MS	MS	MSD	MSD
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis Type		Sample	Duplicate	Matrix Spike	Matrix Spike	Matrix Spike Dup	Matrix Spike Dup
Sampling Date		30-Sep-15	30-Sep-15	30-Sep-15	30-Sep-15	30-Sep-15	30-Sep-15
Date of Receipt		1-Oct-15	1-Oct-15	1-Oct-15	1-Oct-15	1-Oct-15	1-Oct-15
Multi-Metals via ICP-MS	**LOR ug**	**ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Front Half HF Fraction 1A							
Antimony	0.2	<	<	23.5	98	22.9	95
Arsenic	1	<	<	113	94	111	92
Barium	5	<	<	52.1	41	51.7	40
Beryllium	0.2	<	<	150	125	147	123
Cadmium	0.1	0.794	0.715	59.0	97	58.0	95
Chromium	1	7.22	6.88	121	95	122	95
Cobalt	0.2	<	<	113	95	113	94
Copper	1	3.14	2.97	115	93	114	93
Lead	0.5	0.644	0.644	104	86	102	84
Manganese	0.5	2.71	2.58	120	98	120	98
Molybdenum	0.2	45.9	45.4	103	95	104	97
Nickel	0.2	18.8	18.4	129	92	130	92
Selenium	2	<	<	116	97	114	95
Silver	0.2	<	<	57.6	96	57.7	96
Thallium	0.2	<	<	128	106	126	105
Vanadium	1	<	<	111	92	111	93
Zinc	6	8.81	8.66	243	98	241	97
Back Half (HNO3 / H2O2) Fraction 2A							
Antimony	0.1	<	<	11.1	93	11.4	96
Arsenic	0.2	<	<	55.5	92	55.2	92
Barium	0.5	0.589	0.592	24.9	40	25.7	42
Beryllium	0.1	<	<	55.0	92	56.2	94
Cadmium	0.05	<	<	28.2	94	28.9	96
Chromium	0.15	0.393	0.473	58.7	97	59.1	98
Cobalt	0.1	<	<	57.8	96	58.7	98
Copper	0.3	4.00	4.10	61.7	96	62.6	98
Lead	0.05	0.252	0.246	48.6	81	49.5	82
Manganese	0.15	3.14	3.24	61.6	97	62.0	98
Molybdenum	0.1	0.736	0.327	29.4	95	29.5	96
Nickel	0.1	0.373	0.372	57.9	96	58.0	96
Selenium	1	<	<	53.9	89	53.1	88
Silver	0.1	<	<	29.3	98	29.7	99
Thallium	0.05	<	<	53.0	88	53.7	89
Vanadium	0.1	<	<	57.4	96	57.8	96
Zinc	3	3.48	3.29	113	91	113	91

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L1681904		Mississauga, ON L5J 2Y4
Date of Report	9-Oct-15		Canada
Date of Sample Receipt	1-Oct-15	**Client Contact:**	Chris Belore
		Client Project ID:	21546, Covanta

COMMENTS:

Mercury Analysis via CVAA using Method USEPA 7470A (NOB 2015-10-06) Fractions 2B,3B,3C
Mercury Analysis via CVAA using Method USEPA 7470A (NOB 2015-10-09) Fraction 1B

ANALYST COMMENTS:

LCS, LCSD for fraction 1B show low recoveries (observed: 85,87% limits: 90-110%). All other QC are within acceptable range. This is likely a spiking error and is not expected to have an effect on data quality. **PE 9-Oct-15**

MS, MSD for 3B show low recovery (obseved: 72%, limits: 75-125%). Samples were post-spiked and re-analyzed to recover within limits. Data may be biased low for this fraction. **PE 9-Oct-15**

LOR = Limit of Reporting
LCB = Laboratory Control Blank (limits: <LOR)
LCS = Laboratory Control Sample
MS = Matrix Spike Sample
RPD = Relative Percent Difference

R. Stolys

Certified by: ______________________
Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name		15-21546-PM-(1 THRU 6) #1 APC OUTLET TEST#1	15-21546-PM-(7 THRU 12) #1 APC OUTLET TEST#2	15-21546-PM-(13 THRU 18) #1 APC OUTLET TEST#3	15-21546-PM-(19 THRU 24) #1 APC OUTLET BLANK	15-21546-PM-(25 THRU 30) #2 APC OUTLET TEST#1
ALS Sample ID		L1681904-1	L1681904-2	L1681904-3	L1681904-4	L1681904-5
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		30-Sep-15	30-Sep-15	1-Oct-15	30-Sep-15	29-Sep-15
Date of Receipt		1-Oct-15	1-Oct-15	1-Oct-15	1-Oct-15	1-Oct-15
Mercury via FIMS CVAA	**LOR**					
Method 29	**ug**	**ug**	**ug**	**ug**	**ug**	**ug**
Analytical Fraction 1B	0.015	<	<	<	<	0.026
Analytical Fraction 2B	0.050	2.34	2.98	4.42	<	2.76
Analytical Fraction 3B	0.025	<	<	0.065	<	0.066
Analytical Fraction 3C	0.025	1.50	<0.25	<	<	<

ALS Environmental

Sample Analysis Summary Report

Sample Name		15-21546-PM-(31 THRU 36) #2 APC OUTLET TEST#2	15-21546-PM-(37 THRU 42) #2 APC OUTLET TEST#3	15-21546-PM-(43 THRU 48) #2 APC OUTLET BLANK
ALS Sample ID		L1681904-6	L1681904-7	L1681904-8
Matrix		Stack	Stack	Stack
Analysis type		Sample	Sample	Sample
Sampling Date/Time		29-Sep-15	29-Sep-15	29-Sep-15
Date of Receipt		1-Oct-15	1-Oct-15	1-Oct-15
Mercury via FIMS CVAA	**LOR**			
Method 29	**ug**	**ug**	**ug**	**ug**
Analytical Fraction 1B	0.015	<	<	<
Analytical Fraction 2B	0.050	1.87	1.95	<0.145
Analytical Fraction 3B	0.025	<	<	<
Analytical Fraction 3C	0.025	<0.25	<	<

ALS Environmental

Sample Analysis Summary Report

Sample Name		LCB	LCS	LCS	LCSD	LCSD
ALS Sample ID		LCB	LCS	LCS	LCSD	LCSD
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Method Blank	Blank Spike	Blank Spike	Blank Spike Dup	Blank Spike Dup
Sampling Date/Time		N/A	N/A	N/A	N/A	N/A
Date of Receipt		N/A	N/A	N/A	N/A	N/A
Mercury via FIMS CVAA	**LOR**					
Method 29	**ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Analytical Fraction 1B	0.015	<	0.259	85%	0.265	87%
Analytical Fraction 2B	0.050	<	1.038	103%	1.042	104%
Analytical Fraction 3B	0.025	<	0.523	104%	0.529	106%
Analytical Fraction 3C	0.025	<	0.511	101%	0.503	100%

ALS Environmental

Sample Analysis Summary Report

Sample Name		15-21546-PM-(1 THRU 6) #1 APC OUTLET TEST#1	15-21546-PM-(1 THRU 6) #1 APC OUTLET TEST#1	15-21546-PM-(1 THRU 6) #1 APC OUTLET TEST#1	15-21546-PM-(1 THRU 6) #1 APC OUTLET TEST#1	15-21546-PM-(1 THRU 6) #1 APC OUTLET TEST#1	15-21546-PM-(1 THRU 6) #1 APC OUTLET TEST#1
ALS Sample ID		L1681904-1	L1681904-1DUP	L1681904-1MS	L1681904-1MS	L1681904-1MSD	L1681904-1MSD
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Duplicate	Matrix Spike	Matrix Spike	Matrix Spike Dup	Matrix Spike Dup
Sampling Date/Time		30-Sep-15	30-Sep-15	30-Sep-15	30-Sep-15	30-Sep-15	30-Sep-15
Date of Receipt		1-Oct-15	1-Oct-15	1-Oct-15	1-Oct-15	1-Oct-15	1-Oct-15
Mercury via FIMS CVAA	**LOR**						
Method 29	**ug**	**ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Analytical Fraction 1B	0.015	<	<	0.292	94%	0.300	96%
Analytical Fraction 2B	0.050	2.34	2.40	7.56	85%	7.79	88%
Analytical Fraction 3B	0.025	<	<	0.425	81%	0.435	83%
Analytical Fraction 3C	0.025	1.50	1.49	6.36	97%	6.36	97%

APPENDIX 19

Particle Size Distribution Recovery Data Sheets
(16 pages)

Particulate and Method 202 Condensibles Train Recovery Data Sheet

Client.: Covanta DYEC
Project No.: 21546
Date: September 29, 2015

Test No.: 1
Test Location: Unit 1

Nozzle, Precutter Stage Zero

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	283.2
After Act. Rinse:	336.7
Total TS1:	53.5

MARK FLUID LEVEL

Seal and Label Container TS1

Acetone Probe Rinse Mass Gain	
Beaker Initial Wt:	
Final Wt:	
Probe Rinse Gain:	

Filter Set

Filter Set ID: 15-S

CONTAINER TS2

Impingers 1, 2, 3, 4

1

Impinger #1 Knock Out	
Empty Wt:	490.8
Final Wt:	960.0
Gain:	469.2 ✓
Colour:	clear

2

Impinger #2 Empty	
Empty Wt:	613.6
Final Wt:	668.2
Gain:	54.6 ✓
Colour:	clear

3

Impinger #3 Empty	
Empty Wt:	
Final Wt:	
Gain:	
Colour:	

4

Impinger #4 H_2O_2	
Empty Wt:	675.0
Initial Wt:	776.1
Final Wt:	693.2
Gain:	-82.9 ✓
Colour:	clear

5

Impinger #5 Silica Gel	
Initial Wt:	776.1
Final Wt:	875.8
Gain:	99.7 ✓
% Spent:	80

CONTAINER TS3

Transfer impinger #1 to impinger #2 and purge with nitrogen 14 lpm for 1 hr
Note: add H2O if impinger stem is not submerged 1 cm.

Purge On:	
Purge Off:	

Rinse all glassware from filter to 2nd u-tube with di H_2O into TS3

CONTAINER TS3	
Empty Wt:	418.7
With Imp 2:	—
After H_2O Rinse:	969.6
Total Volume TS3:	550.9

CONTAINER TS4

Rinse all glassware from filter to 2nd u-tube with Acetone&Hexane into TS4

Acetone/Hexane Rinse	
Empty Wt:	279.3
After Acetone Rinse:	394.7
After Hexane Rinse:	486.0
Total TS4:	206.7

Mark Fluid Level and Seal and Label Container

SAMPLE IDENTIFICATION	
TS1 (Probe Rinse-Acetone)	
TS2 (Filter)	
TS3 (H_2O)	
TS4 (Acetone Hexane rinse)	

CWTR=1+2+3:	440.9 ✓
WCBDA=4:	99.7 ✓

Train Loaded By: OB
Train Recovered By: JG
Recovery Witnessed By:

Rev: April 22, 2008

ORTECH Environmental

ORTECH Environmental
Anderson PSD Filter Data

Plant : COVANTA	Test : 1
Location : UNIT #1	Test Date : SEPTEMBER 29, 2015
Project No. : 21546	Filter Set ID : 15 - 5

Stage		Final (g)	Initial (g)	Gain (mg)
0	Weight 1			
	Weight 2			
	Weight 3			
	Final wt:			
1	Weight 1	0.1572	0.1562	
	Weight 2	0.1573	0.1560	
	Weight 3			
	Final wt:			1.3
2	Weight 1	0.1386	0.1375	
	Weight 2	0.1386	0.1377	
	Weight 3			
	Final wt:			0.9
3	Weight 1	0.1566	0.1556	
	Weight 2	0.1563	0.1553	
	Weight 3			
	Final wt:			1.0
4	Weight 1	0.1383	0.1373	
	Weight 2	0.1382	0.1373	
	Weight 3			
	Final wt:			0.9
5	Weight 1	0.1563	0.1552	
	Weight 2	0.1564	0.1553	
	Weight 3			
	Final wt:			1.1
6	Weight 1	0.1389	0.1379	
	Weight 2	0.1386	0.1378	
	Weight 3			
	Final wt:			0.8
7	Weight 1	0.1582	0.1568	
	Weight 2	0.1580	0.1567	
	Weight 3			
	Final wt:			1.3
8	Weight 1	0.1377	0.1367	
	Weight 2	0.1376	0.1367	
	Weight 3			
	Final wt:			0.9
Back Up	Weight 1	0.1263	0.1244	
	Weight 2	0.1262 ~~0.1241~~	0.1247	
	Weight 3			
	Final wt:			1.8

Particulate and Method 202 Condensibles Train Recovery Data Sheet

Client.: Covanta DYEC
Project No.: 21546
Date: SEPTEMBER 29, 2015

Test No.: 2
Test Location: UNIT #1

Nozzle, Precutter Stage Zero

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	279.6
After Act. Rinse:	
Total TS1:	

MARK FLUID LEVEL

Seal and Label Container TS1

Acetone Probe Rinse Mass Gain	
Beaker Initial Wt:	
Final Wt:	
Probe Rinse Gain:	

Filter Set

Filter Set ID: 15 AI.

CONTAINER TS2

Impingers 1, 2, 3, 4

1	Impinger #1 Knock Out	
	Empty Wt:	475.3
	Final Wt:	940.5
	Gain:	465.2
	Colour:	CLEAR.

2	Impinger #2 Empty	
	Empty Wt:	657.7
	Final Wt:	662.8
	Gain:	5.1
	Colour:	CLEAR

3	Impinger #3 Empty	
	Empty Wt:	
	Final Wt:	
	Gain:	
	Colour:	

4	Impinger #4 H_2O_2	
	Empty Wt:	681.9
	Initial Wt:	786.2
	Final Wt:	772.1
	Gain:	-14.1
	Colour:	CLEAR

5	Impinger #5 Silica Gel	
	Initial Wt:	706.2
	Final Wt:	745.0
	Gain:	38.8
	% Spent:	70

CONTAINER TS3

Transfer impinger #1 to impinger #2 and purge with nitrogen 14 lpm for 1 hr
Note: add H2O if impinger stem is not submerged 1 cm.

Purge On:	
Purge Off:	

Rinse all glassware from filter to 2nd u-tube with di H_2O into TS3

CONTAINER TS3	
Empty Wt:	415.5
With Imp 2:	881.7
After H_2O Rinse:	991.3
Total Volume TS3:	575.8

CONTAINER TS4

Rinse all glassware from filter to 2nd u-tube with Acetone&Hexane into TS4

Acetone/Hexane Rinse	
Empty Wt:	278.4
After Acetone Rinse:	354.6
After Hexane Rinse:	430.9
Total TS4:	152.5

Mark Fluid Level and Seal and Label Container

SAMPLE IDENTIFICATION	15-21546-H202
TS1 (Probe Rinse-Acetone)	5
TS2 (Filter)	
TS3 (H_2O)	6
TS4 (Acetone Hexane rinse)	7

T2 Bucket.

CWTR=1+2+3:	456.2 ✓
WCBDA=4:	38.8 ✓

Train Loaded By: JG
Train Recovered By: JG.
Recovery Witnessed By:

Rev: April 22, 2008

ORTECH Environmental

ORTECH Environmental
Anderson PSD Filter Data

Plant : Covanta	Test : 2
Location : Unit #1	Test Date : September 29, 2015
Project No. : 21546	Filter Set ID : 15 AI

Stage	Final (g)	Initial (g)	Gain (mg)
0			
1	0.1568 0.1568 .1569	0.1564 0.1560	0.9
2	0.1381 0.1378 .1379	0.1375 0.1372	0.7
3	0.1565 0.1566 .1564	0.1555 0.1556	0.8
4	0.1377 0.1377 .1378	0.1367 0.1370	0.8
5	0.1566 0.1565 .1565	0.1556 0.1557	0.8
6	0.1385 0.1381 .1385	0.1373 0.1373	1.0
7	0.1570 0.1569 .1570	0.1560 0.1558	1.0
8	0.1381 0.1382 .1381	0.1372 0.1373	0.8
Back Up	0.1245 0.1245 .1244	0.1242 0.1242	0.2

Particulate and Method 202 Condensibles Train Recovery Data Sheet

Client.: Covanta DYEC
Project No.: 21546
Date: OCTOBER 1, 2015

Test No.: 3
Test Location: UNIT #1

Nozzle, Precutter Stage Zero

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	276.6
After Act. Rinse:	300.6
Total TS1:	24.0

MARK FLUID LEVEL

Seal and Label Container TS1

Acetone Probe Rinse Mass Gain	
Beaker Initial Wt:	
Final Wt:	
Probe Rinse Gain:	

Filter Set

Filter Set ID: 15T

CONTAINER TS2

Impingers 1, 2, 3, 4

1

Impinger #1 Knock Out	
Empty Wt:	477.6
Final Wt:	960.9
Gain:	483.3
Colour:	CLEAR

2

Impinger #2 Empty	
Empty Wt:	659.9
Final Wt:	709.9
Gain:	50.0
Colour:	CLEAR

3

Impinger #3 Empty	
Empty Wt:	
Final Wt:	
Gain:	
Colour:	

4

Impinger #4 H_2O	
Empty Wt:	782.3
Initial Wt:	752.3
Final Wt:	
Gain: -30.	78.2
Colour:	CLEAR

5

Impinger #5 Silica Gel	
Initial Wt:	795.4
Final Wt:	825.6
Gain:	30.2
% Spent:	40

CONTAINER TS3

Transfer impinger #1 to impinger #2 and purge with nitrogen 14 lpm for 1 hr
Note: add H2O if impinger stem is not submerged 1 cm.

Purge On:	
Purge Off:	

Rinse all glassware from filter to 2nd u-tube with di H_2O into TS3

CONTAINER TS3	
Empty Wt:	413.3.
With Imp 2:	898.2.
After H_2O Rinse:	1000.1
Total Volume TS3:	~~586.8~~

weight w Acetone : 1054.2.
weight w HEXANE : 1071.9.
→ 658.6

CONTAINER TS4

Rinse all glassware from filter to 2nd u-tube with Acetone&Hexane into TS4

Acetone/Hexane Rinse	
Empty Wt:	273.2
After Acetone Rinse:	~~1054.2~~ 32[illegible]
After Hexane Rinse:	363.7.
Total TS4:	90.5.
Mark Fluid Level and Seal and Label Container	

BLACK BUCKET.

SAMPLE IDENTIFICATION	
TS1 (Probe Rinse-Acetone)	
TS2 (Filter)	
TS3 (H_2O)	
TS4 (Acetone Hexane rinse)	

CWTR=1+2+3:	503.3
WCBDA=4:	30.2

Train Loaded By: JG
Train Recovered By: JG
Recovery Witnessed By:

Rev: April 22, 2008

ORTECH Environmental

ORTECH Environmental
Anderson PSD Filter Data

Plant : COVANTA	Test : 3
Location : UNIT #1	Test Date : OCTOBER 1, 2015
Project No. : 21546	Filter Set ID : 15-7

Stage		Final (g)	Initial (g)	Gain (mg)
0	Weight 1		~~0.1232~~	
	Weight 2			
	Weight 3			
	Final wt:			
1	Weight 1	0.1578	0.1568	
	Weight 2	0.1574	0.1565	
	Weight 3	.1577		
	Final wt:			1.2
2	Weight 1	0.1397	0.1393	
	Weight 2	0.1395	0.1389	
	Weight 3	.1396		
	Final wt:			0.7
3	Weight 1	0.1563	0.1552	
	Weight 2	0.1561	0.1552	
	Weight 3	.1563		
	Final wt:			1.1
4	Weight 1	0.1390	0.1383	
	Weight 2	0.1391	0.1381	
	Weight 3	.1391		
	Final wt:			1.0
5	Weight 1	~~0.1510~~	0.1555	
	Weight 2	0.1566	0.1553	
	Weight 3	0.1566		
	Final wt:	.1567		1.4
6	Weight 1	0.1397	0.1384	
	Weight 2	0.1397	0.1386	
	Weight 3	.1399		
	Final wt:			1.3
7	Weight 1	0.1568	0.1560	
	Weight 2	0.1569	0.1558	
	Weight 3	.1570		
	Final wt:			1.2
8	Weight 1	0.1383	0.1380	
	Weight 2	0.1384	0.1378	
	Weight 3	.1385	~~0.138~~	
	Final wt:			0.7
Back Up	Weight 1	0.1246	0.1232	
	Weight 2	0.1242	0.1233	
	Weight 3	.1244	~~0.1246~~	
	Final wt:			1.1

Particulate and Method 202 Condensibles Train Recovery Data Sheet

Client.: Covanta DYEC
Project No.: 21546
Date: SEPT 30, 2015

Test No.: BLANK
Test Location: UNIT #1

Nozzle, Precutter Stage Zero

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	280.0
After Act. Rinse:	381.5
Total TS1:	101.5

MARK FLUID LEVEL

Seal and Label Container TS1

Acetone Probe Rinse Mass Gain	
Beaker Initial Wt:	
Final Wt:	
Probe Rinse Gain:	

Filter Set
Filter Set ID: 15-17

CONTAINER TS2

Impingers 1, 2, 3, 4

1

Impinger #1 Knock Out	
Empty Wt:	
Final Wt:	
Gain:	
Colour:	

2

Impinger #2 Empty	
Empty Wt:	
Final Wt:	
Gain:	
Colour:	

3

Impinger #3 Empty	
Empty Wt:	
Final Wt:	
Gain:	
Colour:	

4

Impinger #4 H_2O_2	
Empty Wt:	
Initial Wt:	
Final Wt:	
Gain:	
Colour:	

5

Impinger #5 Silica Gel	
Initial Wt:	
Final Wt:	
Gain:	
% Spent:	

CONTAINER TS3

Transfer impinger #1 to impinger #2 and purge with nitrogen 14 lpm for 1 hr
Note: add H2O if impinger stem is not submerged 1 cm.

Purge On:	
Purge Off:	

Rinse all glassware from filter to 2nd u-tube with di H_2O into TS3

CONTAINER TS3	
Empty Wt:	278.4
With Imp 2:	—
After H_2O Rinse:	387.1
Total Volume TS3:	108.7

CONTAINER TS4

Rinse all glassware from filter to 2nd u-tube with Acetone&Hexane into TS4

Acetone/Hexane Rinse	
Empty Wt:	279.0
After Acetone Rinse:	369.9
After Hexane Rinse:	414.0
Total TS4:	135.0
Mark Fluid Level and Seal and Label Container	

BLANK

SAMPLE IDENTIFICATION	15-21546-M202
TS1 (Probe Rinse-Acetone)	25
TS2 (Filter)	~~26~~
TS3 (H_2O)	26
TS4 (Acetone Hexane rinse)	27

CWTR=1+2+3:	
WCBDA=4:	

Train Loaded By: JG
Train Recovered By: JG
Recovery Witnessed By:

Rev: April 22, 2008

ORTECH Environmental

ORTECH Environmental
Anderson PSD Filter Data

*DESICCATED

Plant :	COVANTA
Location :	UNIT #1
Project No. :	21546

Test :	BLANK.
Test Date :	SEPT 30, 2015.
Filter Set ID :	15 H.

Stage		Final (g)	Initial (g)	Gain (mg)
0	Weight 1			
	Weight 2			
	Weight 3			
	Final wt:			
1	Weight 1	0.1558	0.1557	
	Weight 2	0.1557	0.1562	
	Weight 3			
	Final wt:			0.5
2	Weight 1	0.1364	0.1365	
	Weight 2	0.1362	0.1368	
	Weight 3			
	Final wt:			0.6
3	Weight 1	0.1551	0.1550	
	Weight 2	0.1551	0.1555	
	Weight 3			
	Final wt:			-0.4
4	Weight 1	0.1363	0.1363	
	Weight 2	0.1363	0.1365	
	Weight 3			
	Final wt:			-0.2
5	Weight 1	0.1558	0.1558	
	Weight 2	0.1558	0.1559	
	Weight 3			
	Final wt:			-0.1
6	Weight 1	0.1362	0.1362	
	Weight 2	0.1358	0.1362	
	Weight 3			
	Final wt:			-0.4
7	Weight 1	0.1561	0.1559	
	Weight 2	0.1563	0.1562	
	Weight 3			
	Final wt:			0.1
8	Weight 1	0.1371	0.1372	
	Weight 2	0.1370	0.1371	
	Weight 3			
	Final wt:			-0.1
Back Up	Weight 1	0.1241	0.1238	
	Weight 2	0.1240	0.1239	
	Weight 3			
	Final wt:			0.1

Particulate and Method 202 Condensibles Train Recovery Data Sheet

Client.: Covanta DYEC
Project No.: 21546
Date: SEPTEMBER 30,2015

Test No.: ~~2~~ 1
Test Location: UNIT #2

Nozzle, Precutter Stage Zero

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	280.9
After Act. Rinse:	~~338.3~~ 355.6
Total TS1:	~~57.4~~ 74.7.

MARK FLUID LEVEL

Seal and Label Container TS1

Acetone Probe Rinse Mass Gain	
Beaker Initial Wt:	
Final Wt:	
Probe Rinse Gain:	

Filter Set

Filter Set ID: 15-F

CONTAINER TS2

Impingers 1, 2, 3, 4

	Impinger #1 Knock Out	
1	Empty Wt:	493.8
	Final Wt:	951.8
	Gain:	458.0
	Colour:	CLEAR

	Impinger #2 Empty	
2	Empty Wt:	675.6
	Final Wt:	674.7
	Gain:	-0.9
	Colour:	CLEAR.

	Impinger #3 Empty	
3	Empty Wt:	614.9
	Final Wt:	615.4
	Gain:	0.5
	Colour:	CLEAR

	Impinger #4 H_2O_2	
4	Empty Wt:	
	Initial Wt:	
	Final Wt:	
	Gain:	
	Colour:	

	Impinger #5 Silica Gel	
5	Initial Wt:	883.1
	Final Wt:	909.8
	Gain:	26.7.
	% Spent:	60

CONTAINER TS3

Transfer impinger #1 to impinger #2 and purge with nitrogen 14 lpm for 1 hr
Note: add H2O if impinger stem is not submerged 1 cm.

Purge On:	
~~Purge Off:~~	

Rinse all glassware from filter to 2nd u-tube with di H_2O into TS3

CONTAINER TS3	
Empty Wt:	419.6
With Imp 2:	879.7
After H_2O Rinse:	970.0
Total Volume TS3:	550.4

CONTAINER TS4

Rinse all glassware from filter to 2nd u-tube with Acetone&Hexane into TS4

Acetone/Hexane Rinse	
Empty Wt:	282.7.
After Acetone Rinse:	371.2
After Hexane Rinse:	456.0
Total TS4:	173.3

Mark Fluid Level and Seal and Label Container

BUCKET.

SAMPLE IDENTIFICATION	15-21546-M202-
TS1 (Probe Rinse-Acetone)	13
TS2 (Filter)	
TS3 (H_2O)	14
TS4 (Acetone Hexane rinse)	15

CWTR=1+2+3:	457.6
WCBDA=4:	26.7.

Train Loaded By: JG.
Train Recovered By: JG.
Recovery Witnessed By:

Rev: April 22, 2008

ORTECH Environmental

ORTECH Environmental
Anderson PSD Filter Data

*DESICCATED

Plant : COVANTA	Test : 1
Location : UNIT #2	Test Date : SEPTEMBER 30, 2015
Project No. : 21546	Filter Set ID : 15F

Stage	Final (g)	Initial (g)	Gain (mg)
0			
1	0.1567	0.1566	
	0.1566	0.1560	
	.1566	~~.1560~~	
			0.6
2	0.1376	0.1368	
	0.1377	0.1371	
	.1377		
			0.6
3	0.1560	0.1550	
	0.1560	0.1551	
	.1561		
			1.0
4	0.1388	0.1377	
	0.1386	0.1381	
	.1385		
			0.4
5	0.1566	0.1606	
	0.1564	0.1559	
	.1568		
			0.4
6	0.1394	~~0.1390~~	
	0.1396	0.1388	
	.1395	0.1391	
			0.4
7	0.1574	0.1564	
	0.1572	0.1564	
	.1574		
			1.0
8	0.1391	0.1385	
	0.1390	0.1384	
	.1389		
			0.5
Back Up	0.1215	0.1235	
	0.1215	0.1236	
	.1212	~~.1212~~	
			-2.4

Particulate and Method 202 Condensibles Train Recovery Data Sheet

Client.: Covanta DYEC
Project No.: 21546
Date: SEPTEMBER 30 2015

Test No.: 2
Test Location: UNIT #2

Nozzle, Precutter Stage Zero

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	276.8
After Act. Rinse:	346.3
Total TS1:	69.5

MARK FLUID LEVEL

Seal and Label Container TS1

Acetone Probe Rinse Mass Gain	
Beaker Initial Wt:	
Final Wt:	
Probe Rinse Gain:	

Filter Set

Filter Set ID: 14-2

CONTAINER TS2

Impingers 1, 2, 3, 4

1

Impinger #1 Knock Out	
Empty Wt:	477.4
Final Wt:	945.8
Gain:	468.4
Colour:	CLEAR

2

Impinger #2 Empty	
Empty Wt:	660.0
Final Wt:	862.1
Gain:	2.1
Colour:	CLEAR

3

Impinger #3 Empty	
Empty Wt:	~~684.0~~
Final Wt:	
Gain:	
Colour:	

4

Impinger #4 H_2O_2	
Empty Wt:	684.
Initial Wt:	785.0
Final Wt:	782.3
Gain:	-2.7
Colour:	CLEAR

5

Impinger #5 Silica Gel	
Initial Wt:	~~817.9~~ 792.4
Final Wt:	817.9
Gain:	25.5
% Spent:	70

CONTAINER TS3

Transfer impinger #1 to impinger #2 and purge with nitrogen 14 lpm for 1 hr
Note: add H2O if impinger stem is not submerged 1 cm.

Purge On:	
Purge Off:	

Rinse all glassware from filter to 2nd u-tube with di H_2O into TS3

CONTAINER TS3	
Empty Wt:	~~792.4~~ 418.1
With Imp 2:	~~887.0~~ 888.7.
After H_2O Rinse:	1013.0
Total Volume TS3:	594.9

CONTAINER TS4

Rinse all glassware from filter to 2nd u-tube with Acetone&Hexane into TS4

Acetone/Hexane Rinse	
Empty Wt:	281.3
After Acetone Rinse:	391.2
After Hexane Rinse:	471.3
Total TS4:	190.0
Mark Fluid Level and Seal and Label Container	

T1 BUCKET.

SAMPLE IDENTIFICATION	
TS1 (Probe Rinse-Acetone)	
TS2 (Filter)	
TS3 (H_2O)	
TS4 (Acetone Hexane rinse)	

CWTR=1+2+3:	467.8 ✓
WCBDA=4:	25.5 ✓

Train Loaded By: JG
Train Recovered By: JG.
Recovery Witnessed By:

Rev: April 22, 2008

ORTECH Environmental

*DESICCATED

ORTECH Environmental
Anderson PSD Filter Data

Plant : COVANTA	Test : 2
Location : UNIT 2	Test Date : SEPT 30/15
Project No. : 21546	Filter Set ID : 14 2

Stage	Final (g)	Initial (g)	Gain (mg)
0			
1	0.1561 0.1560	0.1552 0.1553	0.7
2	0.1378 0.1378	0.1372 0.1369	0.9
3	0.1575 0.1571	0.1565 0.1564	0.7
4	0.1375 0.1373	0.1366 0.1365	0.8
5	0.1558 0.1558	0.1547 0.1544	1.4
6	0.1373 0.1373	0.1365 0.1363	1.0
7	0.1562 0.1559	0.1553 0.1549	1.0
8	0.1367 0.1368	0.1364 0.1361	0.7
Back Up	0.1232 0.1232	.1234 0.1232	Ø

Particulate and Method 202 Condensibles Train Recovery Data Sheet

Client.: Covanta DYEC
Project No.: 21546
Date: OCTOBER 1, 2015

Test No.: 3
Test Location: UNIT #2

Nozzle, Precutter Stage Zero

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	284.5
After Act. Rinse:	335.9
Total TS1:	71.4

MARK FLUID LEVEL

Seal and Label Container TS1

Acetone Probe Rinse Mass Gain	
Beaker Initial Wt:	
Final Wt:	
Probe Rinse Gain:	

Filter Set

Filter Set ID: 15-L

CONTAINER TS2

Impingers 1, 2, 3, 4

1

Impinger #1 Knock Out	
Empty Wt:	493.2
Final Wt:	1017.1
Gain:	523.9
Colour:	CLEAR.

2

Impinger #2 Empty	
Empty Wt:	615.3
Final Wt:	617.1
Gain:	1.8
Colour:	CLEAR.

3

Impinger #3 Empty	
Empty Wt:	
Final Wt:	
Gain:	
Colour:	

4

Impinger #4 H_2O_2	
Empty Wt:	675.1
Initial Wt:	775.7
Final Wt:	770.3
Gain:	-5.4
Colour:	CLEAR.

5

Impinger #5 Silica Gel	
Initial Wt:	877.9
Final Wt:	908.4
Gain:	30.5
% Spent:	40

CONTAINER TS3

Transfer impinger #1 to impinger #2 and purge with nitrogen 14 lpm for 1 hr
Note: add H2O if impinger stem is not submerged 1 cm.

Purge On:	
~~Purge Off:~~	

Rinse all glassware from filter to 2nd u-tube with di H_2O into TS3

CONTAINER TS3	
Empty Wt:	414.6
With Imp 2:	939.9
After H_2O Rinse:	1045.7
Total Volume TS3:	631.1

CONTAINER TS4

Rinse all glassware from filter to 2nd u-tube with Acetone&Hexane into TS4

Acetone/Hexane Rinse	
Empty Wt:	277.0
After Acetone Rinse:	390.0
After Hexane Rinse:	497.8
Total TS4:	220.8
Mark Fluid Level and Seal and Label Container	

CT-A-

SAMPLE IDENTIFICATION	15-21546-M202.
TS1 (Probe Rinse-Acetone)	21
TS2 (Filter)	
TS3 (H_2O)	22
TS4 (Acetone Hexane rinse)	23.

CWTR=1+2+3:	520.3
WCBDA=4:	30.5

Train Loaded By: JG
Train Recovered By: JG.
Recovery Witnessed By:

Rev: April 22, 2008

ORTECH Environmental

ORTECH Environmental
Anderson PSD Filter Data

*DESICCATED

Plant : COVALUTA	Test : 3
Location : UNIT #2	Test Date : OCTOBER 1, 2015
Project No. : 21546	Filter Set ID : 15C

Stage		Final (g)	Initial (g)	Gain (mg)
0	Weight 1			
	Weight 2			
	Weight 3			
	Final wt:			
1	Weight 1	0.1560	0.1550	
	Weight 2	0.1560	0.1553	
	Weight 3			
	Final wt:			0.7
2	Weight 1	0.1379	0.1379	
	Weight 2	0.1376	0.1377	
	Weight 3			
	Final wt:			-0.1
3	Weight 1	0.1559	0.1552	
	Weight 2	0.1557	0.1549	
	Weight 3			
	Final wt:			0.8
4	Weight 1	0.1384	0.1380	
	Weight 2	0.1383	0.1375	
	Weight 3			
	Final wt:			0.8
5	Weight 1	0.1566	0.1559	
	Weight 2	0.1563	0.1555	
	Weight 3			
	Final wt:			0.8
6	Weight 1	0.1379	0.1373	
	Weight 2	0.1375	0.1372	
	Weight 3			
	Final wt:			0.3
7	Weight 1	0.1562	0.1553	
	Weight 2	0.1559	0.1552	
	Weight 3			
	Final wt:			0.7
8	Weight 1	0.1377	0.1372	
	Weight 2	0.1374	0.1371	
	Weight 3			
	Final wt:			0.3
Back Up	Weight 1	0.1233	0.1232	
	Weight 2	0.1231	0.1231	
	Weight 3			
	Final wt:			Ø

Particulate and Method 202 Condensibles Train Recovery Data Sheet

Client.: Covanta DYEC
Project No.: 21546
Date: OCTOBER 1, 2015.

Test No.: BLANK
Test Location: UNIT #2.

Nozzle, Precutter Stage Zero

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	284.4
After Act. Rinse:	382.2
Total TS1:	97.8

MARK FLUID LEVEL

Seal and Label Container TS1

Acetone Probe Rinse Mass Gain	
Beaker Initial Wt:	
Final Wt:	
Probe Rinse Gain:	

Filter Set

Filter Set ID: 1512

CONTAINER TS2

Impingers 1, 2, 3, 4

1

Impinger #1 Knock Out	
Empty Wt:	
Final Wt:	
Gain:	
Colour:	

2

Impinger #2 Empty	
Empty Wt:	
Final Wt:	
Gain:	
Colour:	

3

Impinger #3 Empty	
Empty Wt:	
Final Wt:	
Gain:	
Colour:	

4

Impinger #4 H_2O_2	
Empty Wt:	
Initial Wt:	
Final Wt:	
Gain:	
Colour:	

5

Impinger #5 Silica Gel	
Initial Wt:	
Final Wt:	
Gain:	
% Spent:	

CONTAINER TS3

Transfer impinger #1 to impinger #2 and purge with nitrogen 14 lpm for 1 hr Note: add H2O if impinger stem is not submerged 1 cm.

Purge On:	
Purge Off:	

Rinse all glassware from filter to 2nd u-tube with di H_2O into TS3

CONTAINER TS3	
Empty Wt:	279.3
With Imp 2:	—
After H_2O Rinse:	429.9
Total Volume TS3:	150.6

CONTAINER TS4

Rinse all glassware from filter to 2nd u-tube with Acetone&Hexane into TS4

Acetone/Hexane Rinse	
Empty Wt:	280.5.
After Acetone Rinse:	375.2
After Hexane Rinse:	406.5
Total TS4:	126.0
Mark Fluid Level and Seal and Label Container	

BLANK

SAMPLE IDENTIFICATION	
TS1 (Probe Rinse-Acetone)	
TS2 (Filter)	
TS3 (H_2O)	
TS4 (Acetone Hexane rinse)	

CWTR=1+2+3:	
WCBDA=4:	

Train Loaded By: JG
Train Recovered By: JG
Recovery Witnessed By:

ORTECH Environmental

Anderson PSD Filter Data

*DESICCATED

Plant :	COVANTA	Test :	BLANK
Location :	UNIT #2	Test Date :	OCT 1, 2015
Project No. :	21546	Filter Set ID :	15 K

Stage		Final (g)	Initial (g)	Gain (mg)
0	Weight 1			
	Weight 2			
	Weight 3			
	Final wt:			
1	Weight 1	0.1561	0.1561	
	Weight 2	0.1560	0.1564	
	Weight 3			
	Final wt:			-0.4
2	Weight 1	0.1382	0.1385	
	Weight 2	0.1382	0.1386	
	Weight 3			
	Final wt:			-0.4
3	Weight 1	0.1555	0.1559	
	Weight 2	0.1556	0.1557	
	Weight 3			
	Final wt:			-0.1
4	Weight 1	0.1381	0.1382	
	Weight 2	0.1378	0.1381	
	Weight 3			
	Final wt:			-0.3
5	Weight 1	0.1549	0.1552	
	Weight 2	0.1549	0.1550	
	Weight 3			
	Final wt:			-0.1
6	Weight 1	0.1378	0.1380	
	Weight 2	0.1378	0.1376	
	Weight 3			
	Final wt:			0.2
7	Weight 1	0.1560	0.1559	
	Weight 2	0.1556	0.1558	
	Weight 3			
	Final wt:			-0.2
8	Weight 1	0.1386	0.1390	
	Weight 2	0.1390	0.1389	
	Weight 3			
	Final wt:			0.1
Back Up	Weight 1	0.1238	0.1238	
	Weight 2	0.1238	0.1237	
	Weight 3			
	Final wt:			0.1

APPENDIX 20

Condensable Particulate Analytical Report
(3 pages)

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L1682480 r1		Mississauga, ON L5J 2Y4
Date of Report	12-Nov-15		(905)822-4120
Date of Sample Receipt	2-Oct-15	**Client Contact:**	Chris Belore
		Client Project ID:	21546, COVANTA

COMMENTS:
Sample Particulate Analysis via Gravimetric USEPA Method 202 (SA 16-Oct-15)

*** **Revised Report** ***
The aqueous or non-extractable fractions were compromised during the titration process. Data are not available for these analytical portions.
NQ = Not quantifiable

*** **Original Report Remarks** ***
- Samples -1, -2, -3, and -7 showed heavy non-extractable particulates after titration. Typical ALS DQOs of < 0.5 mg for were not met. Instead, and as is typically done in cases of heavy loading, repeat weighings of <1% are deemed acceptable. In this case, the difference is below 0.5% of the total loading, however the data may be slightly biased. **PE 16-Oct-15**

LCB = Laboratory Control Blank
LCS = Laboratory Control Sample
LCSD = Laboratory Control Sample Duplicate
LOR = Limit of Reporting

Certified by: R. Stolys
Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name		15-21546-M202-(2,3) #1 APC OUTLET TEST#1	15-21546-M202-(6,7) #1 APC OUTLET TEST#2	15-21546-M202-(10,11) #1 APC OUTLET TEST#3	15-21546-M202-(30,31) #1 APC OUTLET BLANK	15-21546-M202-(14,15) #2 APC OUTLET TEST#1
ALS Sample ID		L1682480-1	L1682480-2	L1682480-3	L1682480-4	L1682480-5
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		29-Sep-15	29-Sep-15	1-Oct-15	1-Oct-15	30-Sep-15
Date of Receipt		2-Oct-15	2-Oct-15	2-Oct-15	2-Oct-15	2-Oct-15
PM via Gravimetric Analysis Method 202	**LOR mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensible Particulates	0.4	6.0	3.1	1.9	1.4	3.0
Non-Extractale Condensible Particulates	0.4	NQ	NQ	NQ	NQ	NQ
	g	**g**	**g**	**g**	**g**	**g**
Water Mass	0.02	550	573	656	149	548

ALS Environmental

Sample Analysis Summary Report

Sample Name		15-21546-M202-(18,19) #2 APC OUTLET TEST#2	15-21546-M202-(22,23) #2 APC OUTLET TEST#3	15-21546-M202-(26,27) #2 APC OUTLET BLANK	LCB
ALS Sample ID		L1682480-6	L1682480-7	L1682480-8	L1682480-MB
Matrix		Stack	Stack	Stack	n/a
Analysis type		Sample	Sample	Sample	Sample
Sampling Date/Time		30-Sep-15	1-Oct-15	30-Sep-15	n/a
Date of Receipt		2-Oct-15	2-Oct-15	2-Oct-15	n/a
PM via Gravimetric Analysis Method 202	**LOR mg**	**mg**	**mg**	**mg**	**mg**
Extractable Condensible Particulates	0.4	2.1	2.4	1.3	1.0
Non-Extractale Condensible Particulates	0.4	NQ	NQ	NQ	NQ
	g	**g**	**g**	**g**	**g**
Water Mass	0.02	593	629	107	233

APPENDIX 21

Hexavalent Chromium Train Recovery Data Sheets
(8 pages)

ORTECH Environmental
Total & Hexavalent Chromium

Client : Covanta
Project No.: 21546
Date: 30 Sep 15
Test Location: Unit 1 Outlet
Test No.: 1

** Purge 1/2hr @ 10 lpm with N2 **
on 14:24
off 14:54
Nozzle, Probe, Recirculation Lines, Impingers, Connecting Tubes

1

Impinger #1 140mL 0.1N KOH	
Empty wt:	594.3
Initial wt:	734.2
Final wt:	750.0
Gain:	15.8
Colour:	clear
pH:	9.5

*Determine pH of Impinger #1 sol'n must be greater than 8.5

4

Impinger #4 Empty	
Empty wt:	506.1
Final wt:	589.4
Gain:	83.3
Colour:	clear

Cr+6 - rinses performed with H2O x4

CONTAINER TS1 WEIGHTS	
Empty Wt:	88.2
With Imp. 1 - 4 Soln:	663.0
Imp. Vol:	574.8
After H2O Rinse:	821.7
Total TS1:	733.5

SEAL CONTAINER TS1

2

Impinger #2 80mL 0.1N KOH	
Empty wt:	506.1
Initial wt:	586.7
Final wt:	654.8
Gain:	68.1
Colour:	clear

Drying Agent

5

Impinger #5 Silica Gel	
Initial Wt:	804.8
Final Wt:	854.6
Gain:	49.8

Total Cr - rinse with ~100ml 0.1N HNO3

CONTAINER TS2 WEIGHTS	
Empty Wt:	32.9
After HNO3 Rinse:	176.6
Total TS2:	143.7

SEAL CONTAINER TS2

3

Impinger #3 80mL 0.1N KOH	
Empty wt:	501.6
Initial wt:	582.3
Final wt:	627.4
Gain:	45.1
Colour:	clear

CWTR = 1+2+3+4:	212.3 ✓
WCBDA= 5:	49.8 ✓

SAMPLE IDENTIFICATION	15-21546-md61-
TS1 (0.1N KOH)	1
TS2 (0.1N HNO3)	2

Container TS1 - 1000ml HDPE
Container TS2 - 250ml HDPE

Train Loaded By: DU
Train Recovered By: TS

16

ORTECH

ORTECH Environmental
Total & Hexavalent Chromium

Client : Covanta
Project No.: 21546
Date: 30 Sep 15
Test Location: Unit 1 - Outlet
Test No.: 2

** Purge 1/2hr @ 10 lpm with N2 **

ON 17:34
OFF 18:04

Nozzle, Probe, Recirculation Lines, Impingers, Connecting Tubes

Impinger #1 140mL 0.1N KOH	
Empty wt:	544.2
Initial wt:	684.6
Final wt:	725.6
Gain:	41.0
Colour:	clear
pH:	9.5

1

*Determine pH of Impinger #1 sol'n must be greater than 8.5

Impinger #4 Empty	
Empty wt:	497.7
Final wt:	607.2
Gain:	109.5
Colour:	clear

4

Cr+6 - rinses performed with H2O x4

CONTAINER TS1 WEIGHTS	
Empty Wt:	88.7
With Imp. 1 - 4 Soln:	681.0
Imp. Vol:	592.3
After H2O Rinse:	880.7
Total TS1:	792.0

SEAL CONTAINER TS1

Impinger #2 80mL 0.1N KOH	
Empty wt:	502.9
Initial wt:	583.0
Final wt:	662.1
Gain:	79.1
Colour:	clear

2

Drying Agent

Impinger #5 Silica Gel	
Initial Wt:	768.3
Final Wt:	817.5
Gain:	49.2

5

Total Cr - rinse with ~100ml 0.1N HNO3

CONTAINER TS2 WEIGHTS	
Empty Wt:	32.9
After HNO3 Rinse:	159.4
Total TS2:	126.5

SEAL CONTAINER TS2

Impinger #3 80mL 0.1N KOH	
Empty wt:	502.6
Initial wt:	583.4
Final wt:	647.3
Gain:	~~63.8~~ 63.9
Colour:	clear

3

CWTR = 1+2+3+4:	293.5 ✓
WCBDA= 5:	49.2 ✓

Box 3

SAMPLE IDENTIFICATION	15-21546-M061-
TS1 (0.1N KOH)	3
TS2 (0.1N HNO3)	4

Container TS1 - 1000ml HDPE
Container TS2 - 250ml HDPE

Train Loaded By: TS
Train Recovered By: TS

ORTECH

ORTECH Environmental
Total & Hexavalent Chromium

Client : Covanta

Project No.: 21546

Date: 1 Oct 15

Test Location: Unit #1 Outlet

Test No.: 3

** Purge 1/2hr @ 10 lpm with N2 **

ON 10:40
OFF 11:10

Nozzle, Probe, Recirculation Lines, Impingers, Connecting Tubes

Impinger #1 140mL 0.1N KOH	
Empty wt:	541.3
Initial wt:	680.9
Final wt:	752.4
1 Gain:	71.5
Colour:	clear
pH:	9.5

*Determine pH of Impinger #1 sol'n must be greater than 8.5

Impinger #4 Empty	
Empty wt:	495.6
Final wt:	608.6
4 Gain:	113.0
Colour:	clear

Cr+6 - rinses performed with H2O x4

CONTAINER TS1 WEIGHTS	
Empty Wt:	88.3
With Imp. 1 - 4 Soln:	~~831.5~~ 689.5
Imp. Vol:	~~743.2~~ 601.2
After H2O Rinse:	873.4
Total TS1:	785.1

SEAL CONTAINER TS1

Impinger #2 80mL 0.1N KOH	
Empty wt:	499.0
Initial wt:	579.4
Final wt:	641.1
2 Gain:	61.7
Colour:	clear

Drying Agent

Impinger #5 Silica Gel	
Initial Wt:	719.1
Final Wt:	752.8
5 Gain:	33.7

Total Cr - rinse with ~100ml 0.1N HNO3

CONTAINER TS2 WEIGHTS	
Empty Wt:	33.0
After HNO3 Rinse:	182.4
Total TS2:	149.4

SEAL CONTAINER TS2

Impinger #3 80mL 0.1N KOH	
Empty wt:	502.3
Initial wt:	580.6
Final wt:	640.2
3 Gain:	59.6
Colour:	clear

CWTR = 1+2+3+4:	305.8 ✓
WCBDA= 5:	33.7 ✓

Box 10

SAMPLE IDENTIFICATION	15- 21546 - M061
TS1 (0.1N KOH)	5
TS2 (0.1N HNO3)	6

Container TS1 - 1000ml HDPE
Container TS2 - 250ml HDPE

Train Loaded By: TS

Train Recovered By: TS

ORTECH

ORTECH Environmental
Total & Hexavalent Chromium

Client : Covanta
Project No.: 21546
Date: 30 Sep 15
Test Location: Unit 1 - Outlet
Test No.: Blank

** Purge 1/2hr @ 10 lpm with N2 **

Nozzle, Probe, Recirculation Lines, Impingers, Connecting Tubes

Cr+6 - rinses performed with H2O x4

Impinger #1 140mL 0.1N KOH	
Empty wt:	
Initial wt:	
Final wt:	
1 Gain:	
Colour:	
pH:	

*Determine pH of Impinger #1 sol'n must be greater than 8.5

Impinger #4 Empty	
Empty wt:	
Final wt:	
4 Gain:	
Colour:	

CONTAINER TS1 WEIGHTS	
Empty Wt:	88.3
With Imp. 1 - 4 Soln:	390.4
Imp. Vol:	302.1
After H2O Rinse:	—
Total TS1:	302.1

SEAL CONTAINER TS1

Impinger #2 80mL 0.1N KOH	
Empty wt:	
Initial wt:	
Final wt:	
2 Gain:	
Colour:	

Drying Agent

Impinger #5 Silica Gel	
Initial Wt:	
Final Wt:	
5 Gain:	

Total Cr - rinse with ~100ml 0.1N HNO3

CONTAINER TS2 WEIGHTS	
Empty Wt:	33.4
After HNO3 Rinse:	183.5
Total TS2:	150.1

SEAL CONTAINER TS2

Impinger #3 80mL 0.1N KOH	
Empty wt:	
Initial wt:	
Final wt:	
3 Gain:	
Colour:	

CWTR = 1+2+3+4:

WCBDA= 5:

H_2O
MT : 33.3
w/ H_2O : 183.7
Total : 150.4

SAMPLE IDENTIFICATION	IS - 21546 - M061 -
TS1 (0.1N KOH)	7
TS2 (0.1N HNO3)	8
T3 (H_2O)	9

Container TS1 - 1000ml HDPE
Container TS2 - 250ml HDPE

Train Loaded By: TJ
Train Recovered By: TJ

ORTECH

ORTECH Environmental
Total & Hexavalent Chromium

Client : COVANTA.

Project No.: 21546

Date: SEPTEMBER 29, 2015 pH -> 9.5

Test Location: UNIT #2

Test No.: 1

** Purge 1/2hr @ 10 lpm with N2 **

ON 13:05
OFF 13:35

Nozzle, Probe, Recirculation Lines, Impingers, Connecting Tubes

Impinger #1 140mL 0.1N KOH	
Empty wt:	605.8
Initial wt:	747.1
Final wt:	~~755.7~~ ~~690.8~~
Gain:	~~355.7~~ ~~56.3~~ 8.6
Colour:	CLEAR
pH:	9.5

*Determine pH of Impinger #1 sol'n must be greater than 8.5

Impinger #4 Empty	
Empty wt:	569.6
Final wt:	661.3
Gain:	91.7
Colour:	CLEAR

Cr+6 - rinses performed with H2O x4

CONTAINER TS1 WEIGHTS	
Empty Wt:	88.8
With Imp. 1 - 4 Soln:	612.5
Imp. Vol:	523.7
After H2O Rinse:	879.1
Total TS1:	790.3

SEAL CONTAINER TS1

Impinger #2 80mL 0.1N KOH	
Empty wt:	502.6
Initial wt:	582.9
Final wt:	651.8
Gain:	68.9
Colour:	CLEAR

Drying Agent

Impinger #5 Silica Gel	
Initial Wt:	816.9
Final Wt:	863.4
Gain:	46.5

Total Cr - rinse with ~100ml 0.1N HNO3

CONTAINER TS2 WEIGHTS	
Empty Wt:	57.77
After HNO3 Rinse:	326.8
Total TS2:	269.03

SEAL CONTAINER TS2

Impinger #3 80mL 0.1N KOH	
Empty wt:	~~506.0~~ 502.0
Initial wt:	582.5
Final wt:	635.8
Gain:	53.3
Colour:	CLEAR

CWTR = 1+2+3+4:	222.5 ✓
WCBDA= 5:	46.5 ✓

SAMPLE IDENTIFICATION	
TS1 (0.1N KOH)	11
TS2 (0.1N HNO3)	12

Container TS1 - 1000ml HDPE
Container TS2 - 250ml HDPE

Box 3

Train Loaded By: JG

Train Recovered By: JG.

ORTECH

ORTECH Environmental
Total & Hexavalent Chromium

Client : covanta
Project No.: 21546
Date: 29 Sep 15
Test Location: Unit 2 - outlet
Test No.: 2

** Purge 1/2hr @ 10 lpm with N2 **

ON 16:33
OFF 17:03

Nozzle, Probe, Recirculation Lines, Impingers, Connecting Tubes

Cr+6 - rinses performed with H2O x4

1

Impinger #1 140mL 0.1N KOH	
Empty wt:	603.0
Initial wt:	743.8
Final wt:	741.3
Gain:	-2.5
Colour:	clear
pH:	9.5

*Determine pH of Impinger #1 sol'n must be greater than 8.5

4

Impinger #4 Empty	
Empty wt:	566.5
Final wt:	575.6
Gain:	9.1
Colour:	clear

CONTAINER TS1 WEIGHTS	
Empty Wt:	88.8
With Imp. 1 - 4 Soln:	673.0
Imp. Vol:	584.2
After H2O Rinse:	900.8
Total TS1:	812.0

SEAL CONTAINER TS1

2

Impinger #2 80mL 0.1N KOH	
Empty wt:	499.5
Initial wt:	579.4
Final wt:	664.9
Gain:	85.5
Colour:	clear

Drying Agent

5

Impinger #5 Silica Gel	
Initial Wt:	794.5
Final Wt:	834.7
Gain:	40.2

Total Cr - rinse with ~100ml 0.1N HNO3

CONTAINER TS2 WEIGHTS	
Empty Wt:	32.9
After HNO3 Rinse:	236.7
Total TS2:	203.8

SEAL CONTAINER TS2

3

Impinger #3 80mL 0.1N KOH	
Empty wt:	502.7
Initial wt:	584.0
Final wt:	648.0
Gain:	64.0
Colour:	clear

CWTR = 1+2+3+4:	156.1 ✓
WCBDA= 5:	40.2 ✓

Box 10

SAMPLE IDENTIFICATION	15 - 21546 - M061
TS1 (0.1N KOH)	~~[illegible]~~ 13
TS2 (0.1N HNO3)	~~[illegible]~~ 14

Container TS1 - 1000ml HDPE
Container TS2 - 250ml HDPE

Train Loaded By: TS / JG
Train Recovered By: TS

ORTECH

ORTECH Environmental
Total & Hexavalent Chromium

Client : Coralta
Project No.: 21546
Date: 29 Sep 15
Test Location: Unit 2 - outlet
Test No.: 3

** Purge 1/2hr @ 10 lpm with N2 **
ON ~~18:33~~ 19:26
OFF 19:56
Nozzle, Probe, Recirculation Lines, Impingers, Connecting Tubes

1

Impinger #1 140mL 0.1N KOH	
Empty wt:	528.7
Initial wt:	681.0
Final wt:	732.6
Gain:	51.6
Colour:	clear
pH:	9.5

*Determine pH of Impinger #1 sol'n must be greater than 8.5

4

Impinger #4 Empty	
Empty wt:	498.0
Final wt:	603.6
Gain:	105.6
Colour:	clear

Cr+6 - rinses performed with H2O x4

CONTAINER TS1 WEIGHTS	
Empty Wt:	88.6
With Imp. 1 - 4 Soln:	673.2
Imp. Vol:	584.6
After H2O Rinse:	901.3
Total TS1:	~~[illegible]~~ 812.7

SEAL CONTAINER TS1

2

Impinger #2 80mL 0.1N KOH	
Empty wt:	504.3
Initial wt:	579.6
Final wt:	658.3
Gain:	78.7
Colour:	clear

Drying Agent

5

Impinger #5 Silica Gel	
Initial Wt:	776.1
Final Wt:	833.3
Gain:	57.2

Total Cr - rinse with ~100ml 0.1N HNO3

CONTAINER TS2 WEIGHTS	
Empty Wt:	32.8
After HNO3 Rinse:	204.6
Total TS2:	171.8

SEAL CONTAINER TS2

3

Impinger #3 80mL 0.1N KOH	
Empty wt:	503.0
Initial wt:	579.6
Final wt:	641.5
Gain:	61.9
Colour:	clear

CWTR = 1+2+3+4:	297.8 ✓
WCBDA= 5:	57.2 ✓

SAMPLE IDENTIFICATION	15-21546-M061-3
TS1 (0.1N KOH)	M 15
TS2 (0.1N HNO3)	M 16

Container TS1 - 1000ml HDPE
Container TS2 - 250ml HDPE

Train Loaded By: TS
Train Recovered By: TS

Box 3.

ORTECH

ORTECH Environmental
Total & Hexavalent Chromium

Client : Covanta

Project No.: 21546

Date: 29 Sep 15

Test Location: Unit 2 - outlet

Test No.: Blank

** Purge 1/2hr @ 10 lpm with N2 **

Nozzle, Probe, Recirculation Lines, Impingers, Connecting Tubes

Cr+6 - rinses performed with H2O x4

Impinger #1 140mL 0.1N KOH	
Empty wt:	
Initial wt:	
Final wt:	
Gain:	
Colour:	
pH:	

1

*Determine pH of Impinger #1 sol'n must be greater than 8.5

Impinger #4 Empty	
Empty wt:	
Final wt:	
Gain:	
Colour:	

4

CONTAINER TS1 WEIGHTS	
Empty Wt:	88.4
With Imp. 1 - 4 Soln:	391.4
Imp. Vol:	303.0
After H2O Rinse:	—
Total TS1:	303.0

SEAL CONTAINER TS1

Impinger #2 80mL 0.1N KOH	
Empty wt:	
Initial wt:	
Final wt:	
Gain:	
Colour:	

2

Drying Agent

Impinger #5 Silica Gel	
Initial Wt:	
Final Wt:	
Gain:	

5

Total Cr - rinse with ~100ml 0.1N HNO3

CONTAINER TS2 WEIGHTS	
Empty Wt:	33.5
After HNO3 Rinse:	240.0
Total TS2:	206.5

SEAL CONTAINER TS2

Impinger #3 80mL 0.1N KOH	
Empty wt:	
Initial wt:	
Final wt:	
Gain:	
Colour:	

3

CWTR = 1+2+3+4:

WCBDA= 5:

H_2O

MT : 32.9

w/ H_2O : 261.4

Total : 228.5

SAMPLE IDENTIFICATION	15-21546-M061-
TS1 (0.1N KOH)	17
TS2 (0.1N HNO3)	18
TS3 (H_2O)	19

Container TS1 - 1000ml HDPE

Container TS2 - 250ml HDPE

Train Loaded By: TS

Train Recovered By: TS

ORTECH

APPENDIX 22

Hexavalent Chromium Analytical Report
(9 pages)

ORTECH CONSULTING INC.
ATTN: Chris Belore
804 SOUTHDOWN ROAD
MISSISSAUGA ON L5J 2Y4

Date Received: 01-OCT-15
Report Date: 07-OCT-15 13:20 (MT)
Version: FINAL

Client Phone: 905-822-4120

Certificate of Analysis

Lab Work Order #: L1681970
Project P.O. #: 21546-J2014
Job Reference: 21546, COVANTA
C of C Numbers:
Legal Site Desc:

Rachael Stolys

Rachael Stolys, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1681970-1 15-21546-M0061-1 #1 APC OUTLET TEST#1 Sampled By: Client on 30-SEP-15 Matrix: Stack **Miscellaneous Parameters**							
Chromium, Hexavalent	<1.0		1.0	ug/L		06-OCT-15	R3284811
L1681970-3 15-21546-M0061-3 #1 APC OUTLET TEST#2 Sampled By: Client on 30-SEP-15 Matrix: Stack **Miscellaneous Parameters**							
Chromium, Hexavalent	<1.0		1.0	ug/L		06-OCT-15	R3284811
L1681970-5 15-21546-M0061-5 #1 APC OUTLET TEST#3 Sampled By: Client on 01-OCT-15 Matrix: Stack **Miscellaneous Parameters**							
Chromium, Hexavalent	<1.0		1.0	ug/L		06-OCT-15	R3284811
L1681970-7 15-21546-M0061-7 #1 APC OUTLET BLANK Sampled By: Client on 30-SEP-15 Matrix: Stack **Miscellaneous Parameters**							
Chromium, Hexavalent	<1.0		1.0	ug/L		06-OCT-15	R3284811
L1681970-9 15-21546-M0061-9 #1 APC OUTLET BLANK Sampled By: Client on 30-SEP-15 Matrix: Stack **Miscellaneous Parameters**							
Chromium, Hexavalent	<1.0		1.0	ug/L		06-OCT-15	R3284811
L1681970-10 15-21546-M0061-11 #2 APC OUTLET TEST#1 Sampled By: Client on 29-SEP-15 Matrix: Stack **Miscellaneous Parameters**							
Chromium, Hexavalent	<1.0		1.0	ug/L		06-OCT-15	R3284811
L1681970-12 15-21546-M0061-13 #2 APC OUTLET TEST#2 Sampled By: Client on 29-SEP-15 Matrix: Stack **Miscellaneous Parameters**							
Chromium, Hexavalent	<1.0		1.0	ug/L		06-OCT-15	R3284811
L1681970-14 15-21546-M0061-15 #2 APC OUTLET TEST#3 Sampled By: Client on 29-SEP-15 Matrix: Stack **Miscellaneous Parameters**							
Chromium, Hexavalent	<1.0		1.0	ug/L		06-OCT-15	R3284811
L1681970-16 15-21546-M0061-17 #2 APC OUTLET BLANK Sampled By: Client on 29-SEP-15 Matrix: Stack **Miscellaneous Parameters**							
Chromium, Hexavalent	<1.0		1.0	ug/L		06-OCT-15	R3284811
L1681970-18 15-21546-M0061-19 #2 APC OUTLET BLANK Sampled By: Client on 29-SEP-15 Matrix: Stack **Miscellaneous Parameters**							
Chromium, Hexavalent	<1.0		1.0	ug/L		06-OCT-15	R3284811

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CR-CR6-PWQO-IC-WT	Water	Chromium +6 - Low Level	EPA 7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental

Quality Control Report

Workorder: L1681970 Report Date: 07-OCT-15

Client: ORTECH CONSULTING INC.
804 SOUTHDOWN ROAD
MISSISSAUGA ON L5J 2Y4
Contact: Chris Belore

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CR-CR6-PWQO-IC-WT	Water							
Batch R3284811								
WG2186451-11 DUP		**L1681970-10**						
Chromium, Hexavalent		<1.0	<1.0	RPD-NA	ug/L	N/A	20	06-OCT-15
WG2186451-13 DUP		**L1681970-12**						
Chromium, Hexavalent		<1.0	<1.0	RPD-NA	ug/L	N/A	20	06-OCT-15
WG2186451-14 DUP		**L1681970-14**						
Chromium, Hexavalent		<1.0	<1.0	RPD-NA	ug/L	N/A	20	06-OCT-15
WG2186451-15 DUP		**L1681970-16**						
Chromium, Hexavalent		<1.0	<1.0	RPD-NA	ug/L	N/A	20	06-OCT-15
WG2186451-16 DUP		**L1681970-18**						
Chromium, Hexavalent		<1.0	<1.0	RPD-NA	ug/L	N/A	20	06-OCT-15
WG2186451-3 DUP		**L1681970-1**						
Chromium, Hexavalent		<1.0	<1.0	RPD-NA	ug/L	N/A	20	06-OCT-15
WG2186451-5 DUP		**L1681970-3**						
Chromium, Hexavalent		<1.0	<1.0	RPD-NA	ug/L	N/A	20	06-OCT-15
WG2186451-6 DUP		**L1681970-5**						
Chromium, Hexavalent		<1.0	<1.0	RPD-NA	ug/L	N/A	20	06-OCT-15
WG2186451-7 DUP		**L1681970-7**						
Chromium, Hexavalent		<1.0	<1.0	RPD-NA	ug/L	N/A	20	06-OCT-15
WG2186451-8 DUP		**L1681970-9**						
Chromium, Hexavalent		<1.0	<1.0	RPD-NA	ug/L	N/A	20	06-OCT-15
WG2186451-10 LCS								
Chromium, Hexavalent			97.2		%		80-120	06-OCT-15
WG2186451-2 LCS								
Chromium, Hexavalent			98.6		%		80-120	06-OCT-15
WG2186451-1 MB								
Chromium, Hexavalent			<1.0		ug/L		1	06-OCT-15
WG2186451-9 MB								
Chromium, Hexavalent			<1.0		ug/L		1	06-OCT-15
WG2186451-12 MS		**L1681970-14**						
Chromium, Hexavalent			98.7		%		70-130	06-OCT-15
WG2186451-4 MS		**L1681970-1**						
Chromium, Hexavalent			98.5		%		70-130	06-OCT-15

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

L1681970

ORTECH Environmental Sample Log

Hexavalent Chormium & Total Chromium

Covanta

Rush Analysis (5 day)

Client: Covanta
Job/Report Number: 21546
Received By: Chris Belore
How Received: Train Recovery
Job Assigned To: ALS
PO : 21546-J2014

Location	Test No.	ORTECH Sample ID 15-21546-M0061-	Sample Date	Sample Description	Media	Sample Analysis	
#1 APC Outlet	1	1	30-Sep-15	Impinger Soln & rinse	0.1M KOH	Cr6	1
#1 APC Outlet	1	2	30-Sep-15	Rinse	0.1N HNO3	Total Cr	2
#1 APC Outlet	2	3	30-Sep-15	Impinger Soln & rinse	0.1M KOH	Cr6	3
#1 APC Outlet	2	4	30-Sep-15	Rinse	0.1N HNO3	Total Cr	4
#1 APC Outlet	3	5	01-Oct-15	Impinger Soln & rinse	0.1M KOH	Cr6	5
#1 APC Outlet	3	6	01-Oct-15	Rinse	0.1N HNO3	Total Cr	6
#1 APC Outlet	Blank	7	30-Sep-15	Impinger Soln	0.1M KOH	Cr6	7
#1 APC Outlet	Blank	8	30-Sep-15	Rinse	H2O	Cr6	8
#1 APC Outlet	Blank	9	30-Sep-15	Rinse	0.1N HNO3	Total Cr	9
#2 APC Outlet	1	11	29-Sep-15	Impinger Soln & rinse	0.1M KOH	Cr6	10
#2 APC Outlet	1	12	29-Sep-15	Rinse	0.1N HNO3	Total Cr	11
#2 APC Outlet	2	13	29-Sep-15	Impinger Soln & rinse	0.1M KOH	Cr6	12
#2 APC Outlet	2	14	29-Sep-15	Rinse	0.1N HNO3	Total Cr	13
#2 APC Outlet	3	15	29-Sep-15	Impinger Soln & rinse	0.1M KOH	Cr6	14
#2 APC Outlet	3	16	29-Sep-15	Rinse	0.1N HNO3	Total Cr	15
#2 APC Outlet	Blank	17	29-Sep-15	Impinger Soln	0.1M KOH	Cr6	16
#2 APC Outlet	Blank	18	29-Sep-15	Rinse	H2O	Cr6	17
#2 APC Outlet	Blank	19	29-Sep-15	Rinse	0.1N HNO3	Total Cr	18

Relinquished By: [signature] Date: 1 Oct 15

Relinquished To: Greg Baydell Date: 01-OCT-15

Received by
Aaron Burton
1-Oct-2015
15:30
15.8°C

Results Summary L1681970

Job Reference	21546, COVANTA
Report To	Chris Belore, ORTECH CONSULTING INC.
Date Received	1-Oct-2015 15:30
Report Date	7-Oct-2015 13:20
Report Version	1

Client Sample ID			15-21546-M0061-1 #1 APC OUTLET TEST#1	15-21546-M0061-3 #1 APC OUTLET TEST#2	15-21546-M0061-5 #1 APC OUTLET TEST#3	15-21546-M0061-7 #1 APC OUTLET BLANK
Date Sampled			30-Sep-2015	30-Sep-2015	1-Oct-2015	30-Sep-2015
Time Sampled			0:00	0:00	0:00	0:00
ALS Sample ID			L1681970-1	L1681970-3	L1681970-5	L1681970-7
Parameter	Lowest Detection Limit	Units	Water	Water	Water	Water
Speciated Metals (Water)						
Chromium, Hexavalent	1.0	ug/L	<1.0	<1.0	<1.0	<1.0
Chromium, Hexavalent		ug	<0.74	<0.79	<0.79	<0.30
Sample Volume		ml	735	793	790	300

Results Summary L1681970

Job Reference 21546, COVANTA
Report To Chris Belore, ORTECH CONSULTING
Date Received 1-Oct-2015 15:30
Report Date 7-Oct-2015 13:20
Report Version 1

Client Sample ID			15-21546-M0061-9 #1 APC OUTLET BLANK	15-21546-M0061-11 #2 APC OUTLET TEST#1	15-21546-M0061-13 #2 APC OUTLET TEST#2	15-21546-M0061-15 #2 APC OUTLET TEST#3
Date Sampled			30-Sep-2015	29-Sep-2015	29-Sep-2015	29-Sep-2015
Time Sampled			0:00	0:00	0:00	0:00
ALS Sample ID			L1681970-9	L1681970-10	L1681970-12	L1681970-14
Parameter	Lowest Detection Limit	Units	Water	Water	Water	Water
Speciated Metals (Water)						
Chromium, Hexavalent	1.0	ug/L	<1.0	<1.0	<1.0	<1.0
Chromium, Hexavalent		ug	<0.14	<0.79	<0.81	<0.81
Sample Volume		ml	140	790	810	813

Results Summary L1681970

Job Reference 21546, COVANTA
Report To Chris Belore, ORTECH CONSULTING
Date Received 1-Oct-2015 15:30
Report Date 7-Oct-2015 13:20
Report Version 1

Client Sample ID			15-21546-M0061-17 #2 APC OUTLET BLANK	15-21546-M0061-19 #2 APC OUTLET BLANK
Date Sampled			29-Sep-2015	29-Sep-2015
Time Sampled			0:00	0:00
ALS Sample ID			L1681970-16	L1681970-18
Parameter	Lowest Detection Limit	Units	Water	Water
Speciated Metals (Water)				
Chromium, Hexavalent	1.0	ug/L	<1.0	<1.0
Chromium, Hexavalent		ug	<0.303	<0.22
Sample Volume		ml	303	220

APPENDIX 23

SVOC Train Recovery Data Sheets
(24 pages)

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21546
Sample Batch No.: 15-21546-SVOC-

Test No.: 1
Test Date: 1 Oct 15
Test Location: #1 APC Outlet

Sample ID 1 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	414.0
After Acetone/ Hexane Rinse:	632.0
Total TS1:	218.0

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 2 — Filter

CONTAINER TS2

Colour: white

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 3 — XAD-II Trap

CONTAINER TS3

Initial Wt:	343.9
Final Wt:	350.1
1 Gain:	6.2
Colour:	white

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 4 — Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	669.9
Final Wt:	1009.4
2 Gain:	339.5
Colour:	clear

Impinger #2 Ethylene Glycol	
Empty Wt:	663.6
Initial Wt:	787.0
Final Wt:	874.3
3 Gain:	87.3
Colour:	Clear

Impinger #3 Empty	
Empty Wt:	570.6
Final Wt:	796.0
4 Gain:	225.4
Colour:	clear

Container TS4 Weights	
Empty Wt:	416.3
With Imp Soln:	1173.9
Imp Volume:	757.6
After ~100g H_2O Rinse:	1276.3
Total TS4:	860.0

CWTR = 1 + 2 + 3 + 4: 658.4

WCBDA=5: 19.0

Sample ID 5 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	415.3
After Acetone Rinse:	523.4
Acetone Rinse Gain:	108.1
After Hexane Rinse:	629.4
Hexane Rinse Gain:	106.0
Total TS5:	214.1

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 4

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	775.2
Final Wt:	794.2
5 Gain:	19.0
% Spent:	40%

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	K
Trap ID:	16
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	153713
Hexane Batch No.:	92352
Acetone Batch No.:	91405

Train Loaded By: TS
Train Recovered By: TS
Recovery Witnessed By:
Date: 1 Oct 15

✓ TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21546
Sample Batch No.: 15-21546-SVOC-

Test No.: 2
Test Date: 2 Oct 15
Test Location: #1 APC Outlet

Sample ID 6

Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	414.4
After Acetone/ Hexane Rinse:	714.3
Total TS1:	299.9

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 7

Filter

CONTAINER TS2

Colour: white

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 8

XAD-II Trap

CONTAINER TS3

Initial Wt:	393.5
Final Wt:	400.8
1 Gain:	7.3
Colour:	white

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 9

Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	654.7
Final Wt:	1016.7
2 Gain:	362.0
Colour:	clear

Impinger #2 Ethylene Glycol	
Empty Wt:	671.4
Initial Wt:	792.7
Final Wt:	971.2
3 Gain:	178.5
Colour:	Clear

Impinger #3 Empty	
Empty Wt:	687.5
Final Wt:	789.7
4 Gain:	102.2
Colour:	clear

Container TS4 Weights	
Empty Wt:	415.5
With Imp Soln:	1160.4
Imp Volume:	744.9
After ~100g H_2O Rinse:	1258.7
Total TS4:	843.2

CWTR = 1 + 2 + 3 + 4: 650.0

WCBDA=5: 15.2

Sample ID 10

Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	414.4
After Acetone Rinse:	533.3
Acetone Rinse Gain:	118.9
After Hexane Rinse:	639.9
Hexane Rinse Gain:	106.6
Total TS5:	225.5

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 11

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	785.7
Final Wt:	800.9
5 Gain:	15.2
% Spent:	40%

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	I
Trap ID:	4
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	153713
Hexane Batch No.:	92350
Acetone Batch No.:	91405

Train Loaded By: TS
Train Recovered By: TS
Recovery Witnessed By: —
Date: 2 Oct 15

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21546
Sample Batch No.: 15-21546-SVOC-

Test No.: 3
Test Date: 2 Oct 15
Test Location: #1 APC Outlet

Sample ID 11

Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	414.8
After Acetone/ Hexane Rinse:	866.4
Total TS1:	451.6

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 12

Filter

CONTAINER TS2

Colour: white

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 13

XAD-II Trap

CONTAINER TS3

Initial Wt:	363.3
Final Wt:	371.0
1 Gain:	7.7
Colour:	white

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 14

Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	653.3
Final Wt:	981.5
2 Gain:	328.2
Colour:	clear

Impinger #2 Ethylene Glycol	
Empty Wt:	643.9
Initial Wt:	768.8
Final Wt:	918.4
3 Gain:	149.6
Colour:	clear

Impinger #3 Empty	
Empty Wt:	647.3
Final Wt:	815.7
4 Gain:	168.4
Colour:	clear

Container TS4 Weights	
Empty Wt:	415.4
With Imp Soln:	1167.5
Imp Volume:	752.1
After ~100g H_2O Rinse:	1257.6
Total TS4:	822.2

CWTR = 1 + 2 + 3 + 4: 653.9

WCBDA=5: 15.0

Sample ID 15

Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	415.2
After Acetone Rinse:	558.5
Acetone Rinse Gain:	143.3
After Hexane Rinse:	657.5
Hexane Rinse Gain:	99.0
Total TS5:	242.3

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 5

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	751.7
Final Wt:	766.7
5 Gain:	15.0
% Spent:	40%

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	V
Trap ID:	8
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	153743
Hexane Batch No.:	92352
Acetone Batch No.:	91405

Train Loaded By: TD
Train Recovered By: TS
Recovery Witnessed By:
Date: 2 Oct 15

✓ TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21546
Sample Batch No.: 15-21546-SVOC-

Test No.: Blank
Test Date: 1 Oct 15
Test Location: #1 APC outlet

Sample ID 16 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	414.2
After Acetone/ Hexane Rinse:	625.2
Total TS1:	211.0

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 17 — Filter

CONTAINER TS2

Colour: white.

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 18 — XAD-II Trap

CONTAINER TS3

Initial Wt:	412.1
Final Wt:	412.1
Gain:	—
Colour:	white

1

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 19 — Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	660.9
Final Wt:	660.8
Gain:	-0.1
Colour:	—

2

Impinger #2 Ethylene Glycol	
Empty Wt:	649.5
Initial Wt:	776.6
Final Wt:	776.8
Gain:	0.2
Colour:	clear

3

Impinger #3 Empty	
Empty Wt:	647.4
Final Wt:	647.4
Gain:	—
Colour:	—

4

Container TS4 Weights	
Empty Wt:	413.7
With Imp Soln:	529.1
Imp Volume:	116.4
After ~100g H_2O Rinse:	628.8
Total TS4:	215.1

Sample ID 20 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	414.4
After Acetone Rinse:	520.9
Acetone Rinse Gain:	106.5
After Hexane Rinse:	624.2
Hexane Rinse Gain:	103.3
Total TS5:	209.8

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	796.4
Final Wt:	796.5
Gain:	0.1
% Spent:	—

5

Impinger Box ID: 5

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	R
Trap ID:	11
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	153713
Hexane Batch No.:	92352
Acetone Batch No.:	91405

CWTR = 1 + 2 + 3 + 4: 0.1

WCBDA=5: 0.1

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Train Loaded By: TS
Train Recovered By: TS
Recovery Witnessed By: —
Date: 1 Oct 15

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21546
Sample Batch No.: 15-21546-SVOC-

Test No.: 1
Test Date: 1 Oct 15
Test Location: #2 APC outlet

Sample ID 21

Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	417.6
After Acetone/ Hexane Rinse:	699.5
Total TS1:	281.9

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 22

Filter

CONTAINER TS2

Colour: white

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 23

XAD-II Trap

CONTAINER TS3

Initial Wt:	368.3
Final Wt:	375.7
1 Gain:	7.4
Colour:	white

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 24

Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	653.8
Final Wt:	972.5
2 Gain:	318.7
Colour:	clear

Impinger #2 Ethylene Glycol	
Empty Wt:	663.5
Initial Wt:	768.5
Final Wt:	861.7
3 Gain:	93.2
Colour:	Clear

Impinger #3 Empty	
Empty Wt:	657.7
Final Wt:	906.2
4 Gain:	248.5
Colour:	Clear

Container TS4 Weights	
Empty Wt:	416.5
With Imp Soln:	1160.2
Imp Volume:	743.7
After ~100g H_2O Rinse:	1260.3
Total TS4:	843.8

Sample ID 25

Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	414.8
After Acetone Rinse:	528.7
Acetone Rinse Gain:	113.9
After Hexane Rinse:	632.9
Hexane Rinse Gain:	104.2
Total TS5:	218.1

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	794.3
Final Wt:	829.2
5 Gain:	34.9
% Spent:	50%

Impinger Box ID: 12

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	J
Trap ID:	10
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	153713
Hexane Batch No.:	92352
Acetone Batch No.:	~~9#~~ 91405

CWTR = 1 + 2 + 3 + 4: 667.8

WCBDA=5: 34.9

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Train Loaded By: TS
Train Recovered By: TS
Recovery Witnessed By: —
Date: 1 Oct 15

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21546
Sample Batch No.: 15-21546-SVOC-

Test No.: 2
Test Date: 2 Oct 15
Test Location: #2 APC Outlet

Sample ID	26
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	
CONTAINER TS1	
Empty Wt:	413.6
After Acetone/ Hexane Rinse:	690.8
Total TS1:	277.2

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID	27
Filter	
CONTAINER TS2	
Colour:	white

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID	28
XAD-II Trap	
CONTAINER TS3	
Initial Wt:	349.2
Final Wt:	354.6
1 Gain:	5.4
Colour:	white

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID	29
Impingers 1, 2 & 3	
CONTAINER TS4	

Impinger #1 Empty	
Empty Wt:	671.8
Final Wt:	1038.9
2 Gain:	367.1
Colour:	clear

Impinger #2 Ethylene Glycol	
Empty Wt:	639.4
Initial Wt:	773.6
Final Wt:	969.1
3 Gain:	195.5
Colour:	clear

Impinger #3 Empty	
Empty Wt:	650.5
Final Wt:	757.4
4 Gain:	~~[illegible]~~ 106.9
Colour:	clear

Container TS4 Weights	
Empty Wt:	414.2
With Imp Soln:	1180.2
Imp Volume:	766.0
After ~100g H_2O Rinse:	1277.4
Total TS4:	863.2

Sample ID	30
Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	
CONTAINER TS5	
Empty Wt:	414.0
After Acetone Rinse:	519.7
Acetone Rinse Gain:	105.7
After Hexane Rinse:	633.5
Hexane Rinse Gain:	113.8
Total TS5:	219.5

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 3

Impinger 4 Silica Gel	
CONTAINER TS6 (Impinger)	
Initial Wt:	777.9
Final Wt:	791.2
5 Gain:	13.3
% Spent:	40%

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	2
Trap ID:	19
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	153713
Hexane Batch No.:	92352
Acetone Batch No.:	91405

Train Loaded By: TS
Train Recovered By: TS
Recovery Witnessed By: –
Date: 2 Oct 15

CWTR = 1 + 2 + 3 + 4:	674.9
WCBDA=5:	13.3

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21546
Sample Batch No.: 15-21546-SVOC-

Test No.: 3
Test Date: 2 Oct 15
Test Location: #2 APC Outlet

Sample ID 31 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	413.8
After Acetone/ Hexane Rinse:	663.8
Total TS1:	250.0

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 32 — Filter

CONTAINER TS2

Colour: white

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 33 — XAD-II Trap

CONTAINER TS3

Initial Wt:	354.9
Final Wt:	364.0
1 Gain:	9.1
Colour:	White

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 34 — Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	657.6
Final Wt:	990.2
2 Gain:	332.6
Colour:	clear

Impinger #2 Ethylene Glycol	
Empty Wt:	654.9
Initial Wt:	765.3
Final Wt:	865.1
3 Gain:	99.8
Colour:	clear

Impinger #3 Empty	
Empty Wt:	677.2
Final Wt:	888.9
4 Gain:	211.7
Colour:	clear

Container TS4 Weights	
Empty Wt:	413.4
With Imp Soln:	1149.2
Imp Volume:	735.8
After ~100g H_2O Rinse:	1236.4
Total TS4:	823.0

CWTR = 1 + 2 + 3 + 4: 653.2 ✓

WCBDA=5: 19.7

Sample ID 35 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	415.5
After Acetone Rinse:	517.1
Acetone Rinse Gain:	101.6
After Hexane Rinse:	622.9
Hexane Rinse Gain:	105.8
Total TS5:	207.4

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 4

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	796.3
Final Wt:	816.0
5 Gain:	19.7
% Spent:	50%

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	L
Trap ID:	15
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	153713
Hexane Batch No.:	92352
Acetone Batch No.:	91405

Train Loaded By: TS
Train Recovered By: TS
Recovery Witnessed By: —
Date: 2 Oct 15

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21546
Sample Batch No.: 15-21546-SVOC-

Test No.: Blank
Test Date: 2 Oct 15
Test Location: #2 APC outlet

Sample ID 36 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	416.2
After Acetone/ Hexane Rinse:	629.3
Total TS1:	213.1

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 37 — Filter

CONTAINER TS2

Colour: white

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 38 — XAD-II Trap

CONTAINER TS3

Initial Wt:	353.0
Final Wt:	353.0
Gain:	—
Colour:	white

1

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 39 — Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	660.5
Final Wt:	660.6
Gain:	0.1
Colour:	—

2

Impinger #2 Ethylene Glycol	
Empty Wt:	654.4
Initial Wt:	780.4
Final Wt:	780.3
Gain:	-0.1
Colour:	clear

3

Impinger #3 Empty	
Empty Wt:	662.9
Final Wt:	662.9
Gain:	—
Colour:	—

4

Container TS4 Weights	
Empty Wt:	415.3
With Imp Soln:	532.0
Imp Volume:	116.7
After ~100g H_2O Rinse:	631.8
Total TS4:	216.5

Sample ID 40 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	415.9
After Acetone Rinse:	517.2
Acetone Rinse Gain:	101.3
After Hexane Rinse:	624.3
Hexane Rinse Gain:	107.1
Total TS5:	208.4

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	793.8
Final Wt:	793.9
Gain:	0.1
% Spent:	8

5

Impinger Box ID: 12

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	U
Trap ID:	
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	153713
Hexane Batch No.:	92352
Acetone Batch No.:	91405

Train Loaded By: TS
Train Recovered By: TS
Recovery Witnessed By: —
Date: 2 Oct 15

CWTR = 1 + 2 + 3 + 4: Ø
WCBDA=5: 0.1

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta
Project No.: 21546 -2
Sample Batch No.: 15-21546-2-SVOC

Test No.: 1
Test Date: Oct 21, 2015
Test Location: Unit #1 - OUTLET

Sample ID 1 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	415.4
After Acetone/ Hexane Rinse:	641.1
Total TS1:	225.7

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 2 — Filter

CONTAINER TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 3 — XAD-II Trap

CONTAINER TS3

Initial Wt:	393.3
Final Wt:	397.9
1 Gain:	4.6
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 4 — Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	677.2
Final Wt:	1013.4
2 Gain:	336.2
Colour:	CLEAR

Impinger #2 Ethylene Glycol	
Empty Wt:	650.0
Initial Wt:	744.7
Final Wt:	945.4
3 Gain:	200.7
Colour:	CLEAR

Impinger #3 Empty	
Empty Wt:	654.2
Final Wt:	787.1
4 Gain:	132.9
Colour:	CLEAR

Container TS4 Weights	
Empty Wt:	417.7
With Imp Soln:	1169.4
Imp Volume:	751.7
After ~100g H_2O Rinse:	1297.3
Total TS4:	879.6

CWTR = 1 + 2 + 3 + 4: 674.4

WCBDA=S: 18.3

Sample ID 5 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	419.7
After Acetone Rinse:	589.5
Acetone Rinse Gain:	169.8
After Hexane Rinse:	697.8
Hexane Rinse Gain:	108.3
Total TS5:	278.1

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 2.

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	786.4
Final Wt:	804.7
5 Gain:	18.3
% Spent:	

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	H
Trap ID:	G
HPLC Batch No.:	~~153713~~ ALS
Ethylene Gylcol Batch No.:	153713
Hexane Batch No.:	92567
Acetone Batch No.:	93035

Train Loaded By: AW
Train Recovered By: JG
Recovery Witnessed By:
Date: Oct 21. 2015

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta
Project No.: 21546 -2
Sample Batch No.: 15-21546-2-SVOC

Test No.: 2
Test Date: Oct 22, 2015
Test Location: UNIT #1 OUTLET

Sample ID 6	Sample ID 7	Sample ID 8	Sample ID 9	Sample ID 10	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	CONTAINER TS6 (Impinger)

Container TS1

Empty Wt:	415.6
After Acetone/ Hexane Rinse:	732.6
Total TS1:	317.0

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Container TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Container TS3

Initial Wt:	405.3
Final Wt:	411.7
1 Gain:	6.4
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Container TS4

Impinger #1 Empty	
Empty Wt:	637.8
Final Wt:	971.7
2 Gain:	333.9
Colour:	CLEAR

Impinger #2 Ethylene Glycol	
Empty Wt:	653.5
Initial Wt:	757.9
Final Wt:	801.3
3 Gain:	043.4
Colour:	CLEAR

Impinger #3 Empty	
Empty Wt:	668.6
Final Wt:	843.7
4 Gain:	175.1
Colour:	CLEAR

Container TS4 Weights	
Empty Wt:	414.1
With Imp Soln:	1058.7
Imp Volume:	644.6
After ~100g H_2O Rinse:	1178.1
Total TS4:	764.0

CWTR = 1 + 2 + 3 + 4: 558.8

WCBDA=5: 219.6

Container TS5

Empty Wt:	414.5
After Acetone Rinse:	514.2
Acetone Rinse Gain:	99.7
After Hexane Rinse:	624.6
Hexane Rinse Gain:	110.4
Total TS5:	210.1

→1016.3

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 15

Container TS6 (Impinger)

Initial Wt:	796.7
Final Wt:	843.3 1016.3
5 Gain:	219.6
% Spent:	

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	G
Trap ID:	11
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	153715
Hexane Batch No.:	92567
Acetone Batch No.:	93035

Train Loaded By: JG
Train Recovered By: JG
Recovery Witnessed By:
Date: Oct 22, 2015

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta
Project No.: 21546
Sample Batch No.: 70-21546-2-SVOC.

Test No.: 3
Test Date: Oct 22, 2015
Test Location: UNIT #1 OUTLET

Sample ID 11 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser — CONTAINER TS1

Empty Wt:	413.6
After Acetone/ Hexane Rinse:	706.7
Total TS1:	293.1 ✓

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 12 — Filter — CONTAINER TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 13 — XAD-II Trap — CONTAINER TS3

Initial Wt:	324.7.
Final Wt:	332.2
1 Gain:	7.5 ✓
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 14 — Impingers 1, 2 & 3 — CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	675.3
Final Wt:	1030.6
2 Gain:	355.3 ✓
Colour:	CLEAR.

Impinger #2 Ethylene Glycol	
Empty Wt:	673.7.
Initial Wt:	782.7.
Final Wt:	982.2
3 Gain:	199.5 ✓
Colour:	CLEAR

Impinger #3 Empty	
Empty Wt:	677.0
Final Wt:	777.7
4 Gain:	100.7 ✓
Colour:	CLEAR.

Container TS4 Weights	
Empty Wt:	418.4
With Imp Soln:	1166.9
Imp Volume:	748.5 ✓
After ~100g H_2O Rinse:	1323.3
Total TS4:	904.9 ✓

CWTR = 1 + 2 + 3 + 4: 663. ✓

WCBDA=5: 16.8 ✓

Sample ID 15 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers — CONTAINER TS5

Empty Wt:	418.8
After Acetone Rinse:	546.7.
Acetone Rinse Gain:	127.9 ✓
After Hexane Rinse:	651.6
Hexane Rinse Gain:	104.8 ✓
Total TS5:	232.7 ✓

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 13

Impinger 4 Silica Gel — CONTAINER TS6 (Impinger)

Initial Wt:	214.7
Final Wt:	731.5
5 Gain:	16.8 ✓
% Spent:	

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	F
Trap ID:	12.
HPLC Batch No.:	ALS.
Ethylene Gylcol Batch No.:	153713.
Hexane Batch No.:	92567.
Acetone Batch No.:	93036 -

Train Loaded By: JG.
Train Recovered By: JG
Recovery Witnessed By:
Date: Oct 22, 2015

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta
Project No.: 21546 -2
Sample Batch No.: 15-21546-2-SVOC

Test No.: BLANK
Test Date: Oct 21, 2015
Test Location:

Sample ID 16 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	413.3
After Acetone/ Hexane Rinse:	648.0
Total TS1:	234.7 ✓

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 17 — Filter

CONTAINER TS2

Colour:

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 18 — XAD-II Trap

CONTAINER TS3

Initial Wt:	~~394.3~~ 393.0
Final Wt:	
1 Gain:	
Colour:	

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 19 — Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	649.3
Final Wt:	
2 Gain:	
Colour:	

Impinger #2 Ethylene Glycol	
Empty Wt:	657.8
Initial Wt:	758.2
Final Wt:	
3 Gain:	100.4 ✓
Colour:	

Impinger #3 Empty	
Empty Wt:	667.2
Final Wt:	
4 Gain:	
Colour:	

Container TS4 Weights	
Empty Wt:	416.3
With Imp Soln:	~~502.1~~ 508.8
Imp Volume:	92.5 ✓
After ~100g H_2O Rinse:	643.8
Total TS4:	227.5 ✓

Sample ID 20 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	419.4
After Acetone Rinse:	527.8
Acetone Rinse Gain:	108.4 ✓
After Hexane Rinse:	637.0
Hexane Rinse Gain:	109.2 ✓
Total TS5:	217.6 ✓

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	
Final Wt:	
5 Gain:	
% Spent:	

Impinger Box ID: BLANK.

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	E
Trap ID:	B5
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	153713
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: JG
Train Recovered By: JG
Recovery Witnessed By:
Date: Oct 21, 2015

CWTR = 1 + 2 + 3 + 4:

WCBDA=5:

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta
Project No.: 21546 -2
Sample Batch No.: 15-21546-2-SVOC.

Test No.: 1
Test Date: Oct 21, 2015
Test Location: UNIT 2 - OUTLET

Sample ID 21 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser — CONTAINER TS1

Empty Wt:	417.9
After Acetone/ Hexane Rinse:	660.8
Total TS1:	242.9

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 22 — Filter — CONTAINER TS2

Colour:

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 23 — XAD-II Trap — CONTAINER TS3

Initial Wt:	393.2
Final Wt:	398.1
1 Gain:	4.9
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 24 — Impingers 1, 2 & 3 — CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	655.7
Final Wt:	996.9
2 Gain:	341.2
Colour:	CLEAR

Impinger #2 Ethylene Glycol	
Empty Wt:	656.6
Initial Wt:	766.0
Final Wt:	838.8
3 Gain:	72.8
Colour:	CLEAR

Impinger #3 Empty	
Empty Wt:	659.4
Final Wt:	937.6
4 Gain:	278.2
Colour:	CLEAR

Container TS4 Weights	
Empty Wt:	417.9
With Imp Soln:	1202.8
Imp Volume:	785.4
After ~100g H_2O Rinse:	1323.2
Total TS4:	905.8

Sample ID 25 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers — CONTAINER TS5

Empty Wt:	418.3
After Acetone Rinse:	550.8
Acetone Rinse Gain:	132.5
After Hexane Rinse:	648.6
Hexane Rinse Gain:	97.8
Total TS5:	230.3

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 3

Impinger 4 Silica Gel — CONTAINER TS6 (Impinger)

Initial Wt:	725.4
Final Wt:	773.8
5 Gain:	48.4
% Spent:	

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	I
Trap ID:	10
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	153713
Hexane Batch No.:	92567
Acetone Batch No.:	93035

Train Loaded By: AU
Train Recovered By: JG
Recovery Witnessed By:
Date: Oct 21, 2015.

CWTR = 1 + 2 + 3 + 4: 697.1
WCBDA=5: 48.4

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta 2
Project No.: 21546 -2
Sample Batch No.: 15-21546-2-SVOC

Test No.: 2
Test Date: Oct 22, 2015
Test Location: Unit #2 Outlet

Sample ID 26 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	419.2
After Acetone/ Hexane Rinse:	820.8
Total TS1:	401.6 ✓

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 27 — Filter

CONTAINER TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 28 — XAD-II Trap

CONTAINER TS3

Initial Wt:	~~393.1~~ 394.8 JH
Final Wt:	401.1
1 Gain:	6.3 ✓
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 29 — Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	654.8
Final Wt:	1028.3
2 Gain:	373.5 ✓
Colour:	CLEAR

Impinger #2 Ethylene Glycol	
Empty Wt:	669.5
Initial Wt:	764.7
Final Wt:	861.5 ~~66.8~~
3 Gain:	96.8 ✓
Colour:	CLEAR

Impinger #3 Empty	
Empty Wt:	644.5
Final Wt:	917.5
4 Gain:	273.0 ✓
Colour:	CLEAR

Container TS4 Weights	
Empty Wt:	417.0
With Imp Soln:	1275.5
Imp Volume:	858.5 ✓
After ~100g H_2O Rinse:	1369.2
Total TS4:	952.2 ✓

CWTR = 1 + 2 + 3 + 4: 749.6 ✓

WCBDA=5: 19.8 ✓

Sample ID 30 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	418.1
After Acetone Rinse:	523.3
Acetone Rinse Gain:	105.2 ✓
After Hexane Rinse:	649.5
Hexane Rinse Gain:	126.2 ✓
Total TS5:	231.4 ✓

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 6

Impinger 4 — Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	774.5
Final Wt:	794.3
5 Gain:	19.8 ✓
% Spent:	

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	J
Trap ID:	~~JH~~ 13
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	153313
Hexane Batch No.:	925667
Acetone Batch No.:	43035

Train Loaded By: JG
Train Recovered By: JG
Recovery Witnessed By:
Date: Oct 22, 2015

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta
Project No.: 21546
Sample Batch No.: 15-21546-2-SVOC-

Test No.: 3
Test Date: OCT 22, 2015
Test Location: OUTLET 2

Sample ID 31

Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	415.9
After Acetone/ Hexane Rinse:	646.8
Total TS1:	230.9 ✓

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 32

Filter

CONTAINER TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 33

XAD-II Trap

CONTAINER TS3

	Initial Wt:	412.3
	Final Wt:	418.9
1	Gain:	6.6 ✓
	Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 34

Impingers 1, 2 & 3

CONTAINER TS4

	Impinger #1 Empty	
	Empty Wt:	653.3
	Final Wt:	1001.0
2	Gain:	347.7 ✓
	Colour:	CLEAR

	Impinger #2 Ethylene Glycol	
	Empty Wt:	688.1
	Initial Wt:	758.2
	Final Wt:	826.3
3	Gain:	68.1 ✓
	Colour:	CLEAR

	Impinger #3 Empty	
	Empty Wt:	654.4
	Final Wt:	903.5
4	Gain:	249.1 ✓
	Colour:	CLEAR

Container TS4 Weights	
Empty Wt:	415.0
With Imp Soln:	1163.5
Imp Volume:	748.5 ✓
After ~100g H_2O Rinse:	1280.6
Total TS4:	865.6 ✓

CWTR = 1 + 2 + 3 + 4: 671.5 ✓

WCBDA=5: 24.7 ✓

Sample ID 35

Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	414.9
After Acetone Rinse:	518.5
Acetone Rinse Gain:	103.6 ✓
After Hexane Rinse:	624.6
Hexane Rinse Gain:	106.1 ✓
Total TS5:	209.7 ✓

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 2

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

	Initial Wt:	783.9
	Final Wt:	808.6
5	Gain:	24.7 ✓
	% Spent:	5 %

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	15
Trap ID:	14
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	# 153713
Hexane Batch No.:	92567
Acetone Batch No.:	93035

Train Loaded By: JG
Train Recovered By: JG
Recovery Witnessed By:
Date: Oct 22, 2015

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta
Project No.: 21546-2
Sample Batch No.: 15-21546-2-SVOC

Test No.: BLANK
Test Date: Oct 22, 2015
Test Location: [illegible] #2 OUTLET

Sample ID 36	Sample ID 37	Sample ID 38	Sample ID 39	Sample ID 40	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	CONTAINER TS6 (Impinger)

TS1

Empty Wt:	419.3
After Acetone/ Hexane Rinse:	582.9
Total TS1:	163.6 ✓

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

TS2

Colour:	WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

TS3

	Initial Wt:	354.6
	Final Wt:	
1	Gain:	
	Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

TS4

	Impinger #1 Empty	
	Empty Wt:	657.9
	Final Wt:	
2	Gain:	
	Colour:	

	Impinger #2 Ethylene Glycol	
	Empty Wt:	669.4
	Initial Wt:	758.9
	Final Wt:	—
3	Gain:	89.5 ✓
	Colour:	CLEAR

	Impinger #3 Empty	
	Empty Wt:	
	Final Wt:	
4	Gain:	
	Colour:	

Container TS4 Weights	
Empty Wt:	418.2
With Imp Soln:	491.9
Imp Volume:	73.7 ✓
After ~100g H_2O Rinse:	645.1
Total TS4:	226.9 ✓

TS5

Empty Wt:	419.4
After Acetone Rinse:	520.6
Acetone Rinse Gain:	101.2 ✓
After Hexane Rinse:	627.2
Hexane Rinse Gain:	106.6 ✓
Total TS5:	207.8 ✓

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID:

TS6

	Initial Wt:	
	Final Wt:	
5	Gain:	
	% Spent:	

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	U
Trap ID:	16
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	153713
Hexane Batch No.:	92567
Acetone Batch No.:	93035

Train Loaded By: JG
Train Recovered By: JG
Recovery Witnessed By:
Date: Oct 22, 2015

CWTR = 1 + 2 + 3 + 4:

WCBDA=5:

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21546-2
Sample Batch No.: 15-21546-2-SVOC-

Test No.: 4 - UNIT 1
Test Date: Oct. 28/15
Test Location: UNIT 1

Sample ID 1
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser
CONTAINER TS1

Empty Wt:	~~414.5~~ 416.0
After Acetone/ Hexane Rinse:	727.4
Total TS1:	311.4 ✓

MARK FLUID LEVEL
SEAL AND LABEL CONTAINER TS1

Sample ID 2
Filter
CONTAINER TS2
Colour: WHITE
FOLD IN FOIL
SEAL AND LABEL CONTAINER TS2

Sample ID 3
XAD-II Trap
CONTAINER TS3

Initial Wt:	419.9
Final Wt:	424.9
1 Gain:	5.0 ✓
Colour:	WHITE

SEAL TRAP
WRAP IN FOIL
LABEL AS CONTAINER TS3

Sample ID 4
Impingers 1, 2 & 3
CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	655.9
Final Wt:	995.3
2 Gain:	339.4 ✓
Colour:	CLEAR

Impinger #2 Ethylene Glycol	
Empty Wt:	689.9
Initial Wt:	798.6
Final Wt:	999.9
3 Gain:	201.3 ✓
Colour:	CLEAR

Impinger #3 Empty	
Empty Wt:	648.1
Final Wt:	732.9
4 Gain:	84.8 ✓
Colour:	CLEAR

Container TS4 Weights	
Empty Wt:	414.8
With Imp Soln:	1128.5
Imp Volume:	713.7 ✓
After ~100g H_2O Rinse:	1276.3
Total TS4:	~~862.6~~ 861.5

CWTR = 1 + 2 + 3 + 4:	630.5 ✓

WCBDA=5:	21.7 ✓

Sample ID 5
Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers
CONTAINER TS5

Empty Wt:	417.6
After Acetone Rinse:	543.3
Acetone Rinse Gain:	125.7 ✓
After Hexane Rinse:	678.7
Hexane Rinse Gain:	135.4 ✓
Total TS5:	261.1 ✓

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 3

Impinger 4 Silica Gel
CONTAINER TS6 (Impinger)

Initial Wt:	806.9
Final Wt:	828.6
5 Gain:	21.7 ✓
% Spent:	20%

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	L
Trap ID:	6
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	157713
Hexane Batch No.:	92567
Acetone Batch No.:	93035

Train Loaded By: CB/LG.
Train Recovered By: AN
Recovery Witnessed By:
Date: Oct. 28/15

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21546-2
Sample Batch No.: 15-21546-2-SVOC-

Test No.: 5
Test Date: 05 29, 2015
Test Location: UNIT #1

Sample ID 6 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	416.7
After Acetone/ Hexane Rinse:	656.1
Total TS1:	239.4 ✓

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 7 — Filter

CONTAINER TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 8 — XAD-II Trap

CONTAINER TS3

Initial Wt:	398.3
Final Wt:	403.6
1 Gain:	5.3 ✓
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 9 — Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	658.9
Final Wt:	975.6
2 Gain:	316.7 ✓
Colour:	CLEAR

Impinger #2 Ethylene Glycol	
Empty Wt:	656.5
Initial Wt:	773.7
Final Wt:	947.9
3 Gain:	174.2 ✓
Colour:	CLEAR

Impinger #3 Empty	
Empty Wt:	652.8
Final Wt:	739.8
4 Gain:	87.0 ✓
Colour:	CLEAR

Container TS4 Weights	
Empty Wt:	414.6
With Imp Soln:	1096.3
Imp Volume:	681.7 ✓
After ~100g H_2O Rinse:	1201.8
Total TS4:	787.2 ✓

CWTR = 1 + 2 + 3 + 4: 583.2 ✓

WCBDA=5: 153.3 ✓

Sample ID 10 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	414.0
After Acetone Rinse:	533.5
Acetone Rinse Gain:	119.5 ✓
After Hexane Rinse:	646.7
Hexane Rinse Gain:	113.2 ✓
Total TSS:	232.7 ✓

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 2

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	730.6
Final Wt:	883.9
5 Gain:	153.3 ✓
% Spent:	

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	9
Trap ID:	7
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	133713
Hexane Batch No.:	92567
Acetone Batch No.:	93035

Train Loaded By: SG
Train Recovered By: SG
Recovery Witnessed By:
Date: 05 29, 2015

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21546-2
Sample Batch No.: 15-21546-2-SVOC-

Test No.: 6
Test Date: Oct. 29/15
Test Location: UNIT 1

Sample ID 11 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	416.4
After Acetone/ Hexane Rinse:	786.6
Total TS1:	370.2 ✓

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 12 — Filter

CONTAINER TS2

Colour:	WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 13 — XAD-II Trap

CONTAINER TS3

Initial Wt:	353.8
Final Wt:	359.5
Gain:	5.7 ✓
Colour:	WHITE

1

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 14 — Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	655.9
Final Wt:	1008.3
Gain:	352.4 ✓
Colour:	CLEAR

2

Impinger #2 Ethylene Glycol	
Empty Wt:	672.6
Initial Wt:	781.7
Final Wt:	936.7
Gain:	155.0 ✓
Colour:	CLEAR

3

Impinger #3 Empty	
Empty Wt:	661.6
Final Wt:	853.1
Gain:	191.5 ✓
Colour:	CLEAR

4

Container TS4 Weights	
Empty Wt:	415.7
With Imp Soln:	1200.3
Imp Volume:	784.6 ✓
After ~100g H_2O Rinse:	1336.4
Total TS4:	920.7 ✓

CWTR = 1 + 2 + 3 + 4:	704.6 ✓

WCBDA=5:	16.9 ✓

Sample ID 15 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	414.4
After Acetone Rinse:	553.0
Acetone Rinse Gain:	138.6 ✓
After Hexane Rinse:	664.5
Hexane Rinse Gain:	111.5 ✓
Total TS5:	250.1 ✓

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 1

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	743.0
Final Wt:	759.9
Gain:	16.9 ✓
% Spent:	20%

5

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	P
Trap ID:	5
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	163713
Hexane Batch No.:	92567
Acetone Batch No.:	93035

Train Loaded By: JG
Train Recovered By: AN
Recovery Witnessed By:
Date: Oct. 29/15

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21546-2
Sample Batch No.: 15-21546-2-SVOC-

Test No.: BLANK
Test Date: Oct 28, 2015
Test Location: UNIT 1

Sample ID 16

Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	414.5
After Acetone/ Hexane Rinse:	616.9
Total TS1:	202.4

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 17

Filter

CONTAINER TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 18

XAD-II Trap

CONTAINER TS3

Initial Wt:	332.2
Final Wt:	
Gain:	
Colour:	

1

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 19

Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	668.1
Final Wt:	
Gain:	
Colour:	

2

Impinger #2 Ethylene Glycol	
Empty Wt:	661.3
Initial Wt:	782.8
Final Wt:	
Gain:	121.5
Colour:	CLEAR

3

Impinger #3 Empty	
Empty Wt:	669.8
Final Wt:	
Gain:	
Colour:	

4

Container TS4 Weights	
Empty Wt:	414.8
With Imp Soln:	530.2
Imp Volume:	115.4
After ~100g H_2O Rinse:	674.3
Total TS4:	259.5

CWTR = 1 + 2 + 3 + 4:

WCBDA=5:

Sample ID 20

Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	414.2
After Acetone Rinse:	575.3
Acetone Rinse Gain:	161.1
After Hexane Rinse:	664.0
Hexane Rinse Gain:	88.7
Total TS5:	249.8

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID:

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	
Final Wt:	
Gain:	
% Spent:	

5

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	U
Trap ID:	2
HPLC Batch No.:	ACS
Ethylene Gylcol Batch No.:	163713
Hexane Batch No.:	92567
Acetone Batch No.:	93035

Train Loaded By: JG
Train Recovered By: JG
Recovery Witnessed By:
Date: Oct 28, 2015

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21546-2
Sample Batch No.: 15-21546-2-SVOC-

Test No.: 4
Test Date: Oct 28 2015
Test Location: UNIT #2

Sample ID 21	Sample ID 22	Sample ID 23	Sample ID 24	Sample ID 25	
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser	Filter	XAD-II Trap	Impingers 1, 2 & 3	Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	CONTAINER TS6 (Impinger)

TS1

Empty Wt:	416.5
After Acetone/ Hexane Rinse:	656.3
Total TS1:	239.8

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

TS3

Initial Wt:	383.8
Final Wt:	388.7
1 Gain:	4.9
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

TS4

Impinger #1 Empty	
Empty Wt:	659.1
Final Wt:	987.3
2 Gain:	328.2
Colour:	CLEAR.

Impinger #2 Ethylene Glycol	
Empty Wt:	663.5
Initial Wt:	768.9
Final Wt:	970.4
3 Gain:	201.5
Colour:	CLEAR.

Impinger #3 Empty	
Empty Wt:	661.6
Final Wt:	793.7.
4 Gain:	142.1
Colour:	CLEAR.

Container TS4 Weights	
Empty Wt:	414.8
With Imp Soln:	1178.9
Imp Volume:	764.1
After ~100g H_2O Rinse:	1336.5
Total TS4:	921.7

CWTR = 1 + 2 + 3 + 4: 676.7

WCBDA=5: 19.1

TS5

Empty Wt:	413.7.
After Acetone Rinse:	567.0
Acetone Rinse Gain:	153.3
After Hexane Rinse:	664.5
Hexane Rinse Gain:	97.5
Total TSS:	250.8

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 10

TS6

Initial Wt:	852.3
Final Wt:	871.4
5 Gain:	19.1
% Spent:	

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ACS
Glassware Train ID:	M
Trap ID:	8
HPLC Batch No.:	ACS.
Ethylene Gylcol Batch No.:	153713
Hexane Batch No.:	92567.
Acetone Batch No.:	93035.

Train Loaded By: JG
Train Recovered By: JG
Recovery Witnessed By:
Date: Oct 28, 2015.

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21546-2
Sample Batch No.: 15-21546-2-SVOC-

Test No.: 5
Test Date: Oct 29, 2015
Test Location: Unit #2

Sample ID 26 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser — CONTAINER TS1

Empty Wt:	417.0
After Acetone/ Hexane Rinse:	646.8
Total TS1:	229.8

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 27 — Filter — CONTAINER TS2

Colour:	

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 28 — XAD-II Trap — CONTAINER TS3

Initial Wt:	379.4
Final Wt:	386.8
1 Gain:	7.4
Colour:	White

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 29 — Impingers 1, 2 & 3 — CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	659.3
Final Wt:	995.7
2 Gain:	336.4
Colour:	CLEAR

Impinger #2 Ethylene Glycol	
Empty Wt:	670.5
Initial Wt:	782.0
Final Wt:	838.8
3 Gain:	56.8
Colour:	CLEAR

Impinger #3 Empty	
Empty Wt:	659.4
Final Wt:	915.9
4 Gain:	256.5
Colour:	CLEAR

Container TS4 Weights	
Empty Wt:	414.9
With Imp Soln:	1161.3
Imp Volume:	746.4
After ~100g H_2O Rinse:	~~1263.5~~ 1269.8
Total TS4:	~~848.6~~ 854.9

CWTR = 1 + 2 + 3 + 4:	~~656.7~~ 657.1
WCBDA=5:	125.2

Sample ID 30 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers — CONTAINER TS5

Empty Wt:	415.6
After Acetone Rinse:	569.8
Acetone Rinse Gain:	154.2
After Hexane Rinse:	663.6
Hexane Rinse Gain:	93.8
Total TS5:	248.0

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger 4 Silica Gel — CONTAINER TS6 (Impinger)

Initial Wt:	768.6
Final Wt:	893.8
5 Gain:	125.2
% Spent:	

Impinger Box ID: 6

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	Q
Trap ID:	3
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	153713
Hexane Batch No.:	92567
Acetone Batch No.:	93036

Train Loaded By: JG
Train Recovered By: JG
Recovery Witnessed By:
Date: Oct 29, 2015

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21546-2
Sample Batch No.: 15-21546-2-SVOC-

Test No.: 6
Test Date: Oct. 29/15
Test Location: UNIT 2

Sample ID 31 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	418.1
After Acetone/ Hexane Rinse:	790.5
Total TS1:	372.4 ✓

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 32 — Filter

CONTAINER TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 33 — XAD-II Trap

CONTAINER TS3

Initial Wt:	385.9
Final Wt:	392.9
1 Gain:	7.0 ✓
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 34 — Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	657.9
Final Wt:	990.8
2 Gain:	332.9 ✓
Colour:	CLEAR

Impinger #2 Ethylene Glycol	
Empty Wt:	667.0
Initial Wt:	778.4
Final Wt:	983.1
3 Gain:	204.7 ✓
Colour:	CLEAR

Impinger #3 Empty	
Empty Wt:	~~568.8~~ 670.4
Final Wt:	880.8
4 Gain:	210.4 ✓
Colour:	CLEAR

Container TS4 Weights	
Empty Wt:	414.6
With Imp Soln:	1251.3
Imp Volume:	836.7 ✓
After ~100g H_2O Rinse:	1387.2
Total TS4:	972.6 ✓

CWTR = 1 + 2 + 3 + 4: 755.0 ✓

WCBDA=5: 17.6 ✓

Sample ID 35 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	414.8
After Acetone Rinse:	574.5
Acetone Rinse Gain:	~~574.5~~ 159.7 ✓
After Hexane Rinse:	702.9
Hexane Rinse Gain:	128.4 ✓
Total TS5:	288.1 ✓

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 15

Impinger 4 — Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	812.6
Final Wt:	830.2 ✓
5 Gain:	17.6 ✓
% Spent:	20%

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	~~N2~~ D
Trap ID:	
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	153713
Hexane Batch No.:	92567
Acetone Batch No.:	93085

Train Loaded By: JG.
Train Recovered By: AN
Recovery Witnessed By:
Date: Oct.29/15

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21546-2
Sample Batch No.: 15-21546-2-SVOC-

Test No.: BLANK
Test Date: Oct 29, 2015
Test Location: UNIT #2

Sample ID 36 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser — CONTAINER TS1

Empty Wt:	419.6
After Acetone/ Hexane Rinse:	696.9
Total TS1:	277.3

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 37 — Filter — CONTAINER TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 38 — XAD-II Trap — CONTAINER TS3

Initial Wt:	389.1
Final Wt:	
1 Gain:	
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 39 — Impingers 1, 2 & 3 — CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	658.4
Final Wt:	
2 Gain:	
Colour:	

Impinger #2 Ethylene Glycol	
Empty Wt:	668.8
Initial Wt:	766.0
Final Wt:	
3 Gain:	
Colour:	CLEAR

Impinger #3 Empty	
Empty Wt:	648.8
Final Wt:	
4 Gain:	
Colour:	

Container TS4 Weights	
Empty Wt:	413.5
With Imp Soln:	502.3
Imp Volume:	88.8
After ~100g H_2O Rinse:	662.3
Total TS4:	248.8

CWTR = 1 + 2 + 3 + 4:

WCBDA=5:

Sample ID 40 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers — CONTAINER TS5

Empty Wt:	417.4
After Acetone Rinse:	543.5
Acetone Rinse Gain:	126.1
After Hexane Rinse:	629.1
Hexane Rinse Gain:	85.6
Total TS5:	211.7

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID:

Impinger 4 Silica Gel — CONTAINER TS6 (Impinger)

Initial Wt:	
Final Wt:	
5 Gain:	
% Spent:	

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	E
Trap ID:	
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	153713
Hexane Batch No.:	92567
Acetone Batch No.:	43035

Train Loaded By: KG
Train Recovered By: KG
Recovery Witnessed By:
Date: Oct 29, 2015

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

APPENDIX 24

SVOC Analytical Reports
(198 pages)

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Steve Kennedy	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Rd.
ALS WO#:	L1682779		Mississauga, ON
Date of Report	14-Oct-15		LYJ 2Y4
Date of Sample Receipt	3-Oct-15	**Client Contact:**	Chris Belore
		Client Project ID:	21546, Covanta

COMMENTS: **PCDD/F by EPA M23A**

The results have been reported from the analysis of extracts that have received additional laboratory processing in order to reduce interferences. Despite the additional work, there were still peaks at the diphenylether monitoring mass indicating the possibility that the results for 1,2,3,4,7,8-HxCDF and 1,2,3,6,7,8-HxCDF may be elevated. The concentrations of these two targets contribute approximately 15% of the TEQ

Steve Kennedy
Technical Supervisor

ALS Life sciences

Sample Analysis summary Report

Sample Name	15-21546-SVOC-(1 THRU 5) #1 APC OUTLET TEST#1	15-21546-SVOC-(6 THRU 10) #1 APC OUTLET TEST#2	15-21546-SVOC-(11 THRU 15) #1 APC OUTLET TEST#3	15-21546-SVOC-(16 THRU 20) #1 APC OUTLET BLANK
ALS Sample ID	L1682779-1	L1682779-2	L1682779-3	L1682779-4
Sample Size	1	1	1	1
Sample size units	Train	Train	Train	Train
Percent Moisture	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack
Sampling Date	1-Oct-15	2-Oct-15	2-Oct-15	1-Oct-15
Extraction Date	5-Oct-15	5-Oct-15	5-Oct-15	5-Oct-15
Target Analytes	pg	pg	pg	pg
2,3,7,8-TCDD	<6.1	<5.1	<8.0	<3.7
1,2,3,7,8-PeCDD	180	<140	220	<3.0
1,2,3,4,7,8-HxCDD	597	613	927	<2.0
1,2,3,6,7,8-HxCDD	2090	1810	2710	<2.1
1,2,3,7,8,9-HxCDD	1140	897	1250	<2.1
1,2,3,4,6,7,8-HpCDD	16600	13900	23000	<2.8
OCDD	12200	10800	17600	<3.1
2,3,7,8-TCDF	<35	31.4	43.9	<2.7
1,2,3,7,8-PeCDF	111	111	148	<1.9
2,3,4,7,8-PeCDF	599	510	735	<1.9
1,2,3,4,7,8-HxCDF	725	613	911	<1.4
1,2,3,6,7,8-HxCDF	913	759	1150	1.90
2,3,4,6,7,8-HxCDF	1810	1560	2170	2.63
1,2,3,7,8,9-HxCDF	492	430	612	<1.5
1,2,3,4,6,7,8-HpCDF	4480	3880	6720	11.7
1,2,3,4,7,8,9-HpCDF	912	833	1320	<2.6
OCDF	3140	2780	4400	119
Field Spike Standards	% Rec	% Rec	% Rec	% Rec
37Cl4-2,3,7,8-TCDD	97	95	93	96
13C12-1,2,3,4,7,8-HxCDD	82	93	75	85
13C12-2,3,4,7,8-PeCDF	108	110	109	106
13C12-1,2,3,4,7,8-HxCDF	91	94	84	87
13C12-1,2,3,4,7,8,9-HpCDF	100	97	104	99
Extraction Standards				
13C12-2,3,7,8-TCDD	78	75	72	84
13C12-1,2,3,7,8-PeCDD	84	88	82	96
13C12-1,2,3,6,7,8-HxCDD	106	103	103	96
13C12-1,2,3,4,6,7,8-HpCDD	95	98	91	89
13C12-OCDD	86	87	80	80
13C12-2,3,7,8-TCDF	79	80	73	88
13C12-1,2,3,7,8-PeCDF	81	82	76	91
13C12-1,2,3,6,7,8-HxCDF	101	102	101	94
13C12-1,2,3,4,6,7,8-HpCDF	94	96	87	88
Cleanup Standard				
13C12-1,2,3,7,8,9-HxCDF	45	46	42	43
Homologue Group Totals	pg	pg	pg	pg
Total-TCDD	1210	1410	1410	4.86
Total-PeCDD	8410	6890	9460	<3.0
Total-HxCDD	28500	25800	38200	3.46
Total-HpCDD	34200	29200	49400	<2.8
Total-TCDF	1490	2100	2590	<2.7
Total-PeCDF	4920	4690	6800	<1.9
Total-HxCDF	9270	8120	12100	4.54
Total-HpCDF	8620	7540	12800	11.7
Toxic Equivalency - (WHO 2005)				
Lower Bound PCDD/F TEQ (WHO 2005)	1360	1020	1740	0.606
Mid Point PCDD/F TEQ (WHO 2005)	1370	1160	1740	4.90
Upper Bound PCDD/F TEQ (WHO 2005)	1370	1160	1750	9.17

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Sample Analysis summary Report

Sample Name	**15-21546-SVOC-(21 THRU 25) #2 APC OUTLET TEST#1**	**15-21546-SVOC-(26 THRU 30) #2 APC OUTLET TEST#2**	**15-21546-SVOC-(31 THRU 35) #2 APC OUTLET TEST#3**	**15-21546-SVOC-(36 THRU 40) #2 APC OUTLET BLANK**
ALS Sample ID	L1682779-5	L1682779-6	L1682779-7	L1682779-8
Sample Size	1	1	1	1
Sample size units	Train	Train	Train	Train
Percent Moisture	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack
Sampling Date	1-Oct-15	2-Oct-15	2-Oct-15	1-Oct-15
Extraction Date	5-Oct-15	5-Oct-15	5-Oct-15	5-Oct-15
Target Analytes	**pg**	**pg**	**pg**	**pg**
2,3,7,8-TCDD	<6.1	<4.1	<7.0	<4.5
1,2,3,7,8-PeCDD	150	90.5	122	<2.4
1,2,3,4,7,8-HxCDD	288	195	262	<2.1
1,2,3,6,7,8-HxCDD	1050	652	897	<2.1
1,2,3,7,8,9-HxCDD	510	324	494	<2.1
1,2,3,4,6,7,8-HpCDD	5280	3300	4740	<2.6
OCDD	2920	1960	2880	<2.6
2,3,7,8-TCDF	44.8	24.4	32.9	<2.9
1,2,3,7,8-PeCDF	123	71.3	111	<2.1
2,3,4,7,8-PeCDF	528	297	419	<2.0
1,2,3,4,7,8-HxCDF	356	214	309	<1.9
1,2,3,6,7,8-HxCDF	509	309	438	<1.8
2,3,4,6,7,8-HxCDF	883	534	727	2.88
1,2,3,7,8,9-HxCDF	292	169	235	<2.0
1,2,3,4,6,7,8-HpCDF	1440	817	1230	9.68
1,2,3,4,7,8,9-HpCDF	391	252	351	<2.6
OCDF	992	694	961	<110
Field Spike Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	97	96	94	95
13C12-1,2,3,4,7,8-HxCDD	89	96	77	96
13C12-2,3,4,7,8-PeCDF	105	108	103	106
13C12-1,2,3,4,7,8-HxCDF	89	93	84	86
13C12-1,2,3,4,7,8,9-HpCDF	98	104	101	97
Extraction Standards				
13C12-2,3,7,8-TCDD	74	76	76	76
13C12-1,2,3,7,8-PeCDD	80	85	83	85
13C12-1,2,3,6,7,8-HxCDD	100	100	103	89
13C12-1,2,3,4,6,7,8-HpCDD	91	94	90	83
13C12-OCDD	84	88	78	82
13C12-2,3,7,8-TCDF	75	78	77	79
13C12-1,2,3,7,8-PeCDF	76	80	80	84
13C12-1,2,3,6,7,8-HxCDF	102	102	99	93
13C12-1,2,3,4,6,7,8-HpCDF	92	94	87	85
Cleanup Standard				
13C12-1,2,3,7,8,9-HxCDF	47	48	44	43
Homologue Group Totals	**pg**	**pg**	**pg**	**pg**
Total-TCDD	1490	838	1070	5.41
Total-PeCDD	7090	3960	6040	<2.4
Total-HxCDD	14000	7990	11900	<2.1
Total-HpCDD	10300	6460	9410	<2.6
Total-TCDF	1760	1090	1610	<2.9
Total-PeCDF	4220	2590	3400	<2.1
Total-HxCDF	4670	2680	3860	4.62
Total-HpCDF	2930	1680	2620	9.68
Toxic Equivalency - (WHO 2005)				
Lower Bound PCDD/F TEQ (WHO 2005)	778	468	655	0.385
Mid Point PCDD/F TEQ (WHO 2005)	781	472	658	4.97
Upper Bound PCDD/F TEQ (WHO 2005)	784	472	662	9.52

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Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG2185607-1	WG2185607-2
Sample Size	1.00	1.00
Sample size units	Train	n/a
Percent Moisture	n/a	n/a
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	5-Oct-15	5-Oct-15
Target Analytes	**pg**	**% Rec**
2,3,7,8-TCDD	<3.5	105
1,2,3,7,8-PeCDD	2.10	110
1,2,3,4,7,8-HxCDD	<1.9	87
1,2,3,6,7,8-HxCDD	<2.7	111
1,2,3,7,8,9-HxCDD	2.54	114
1,2,3,4,6,7,8-HpCDD	<2.7	108
OCDD	<8.3	100
2,3,7,8-TCDF	<2.9	98
1,2,3,7,8-PeCDF	<4.0	104
2,3,4,7,8-PeCDF	<1.8	96
1,2,3,4,7,8-HxCDF	<2.1	95
1,2,3,6,7,8-HxCDF	<3.1	115
2,3,4,6,7,8-HxCDF	<3.6	101
1,2,3,7,8,9-HxCDF	<1.6	102
1,2,3,4,6,7,8-HpCDF	<11	98
1,2,3,4,7,8,9-HpCDF	<3.3	95
OCDF	115	106
Field Spike Standards	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	NS	NS
13C12-1,2,3,4,7,8-HxCDD	NS	NS
13C12-2,3,4,7,8-PeCDF	NS	NS
13C12-1,2,3,4,7,8-HxCDF	NS	NS
13C12-1,2,3,4,7,8,9-HpCDF	NS	NS
Extraction Standards		
13C12-2,3,7,8-TCDD	80	78
13C12-1,2,3,7,8-PeCDD	100	87
13C12-1,2,3,6,7,8-HxCDD	94	86
13C12-1,2,3,4,6,7,8-HpCDD	101	89
13C12-OCDD	91	87
13C12-2,3,7,8-TCDF	85	81
13C12-1,2,3,7,8-PeCDF	91	83
13C12-1,2,3,6,7,8-HxCDF	92	84
13C12-1,2,3,4,6,7,8-HpCDF	102	90
Cleanup Standard		
13C12-1,2,3,7,8,9-HxCDF	47	44
Homologue Group Totals	**pg**	
Total-TCDD	<3.5	
Total-PeCDD	2.10	
Total-HxCDD	2.54	
Total-HpCDD	<2.1	
Total-TCDF	<2.9	
Total-PeCDF	<1.8	
Total-HxCDF	2.63	
Total-HpCDF	<2.6	
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	2.39	
Mid Point PCDD/F TEQ (WHO 2005)	6.17	
Upper Bound PCDD/F TEQ (WHO 2005)	8.51	

ALS Life sciences

Sample Analysis Report

Sample Name	**15-21546-SVOC-(1 THRU 5) #1 APC OUTLET TEST#1**	Sampling Date	1-Oct-15	
ALS Sample ID	L1682779-1	Extraction Date	5-Oct-15	
Analysis Method	EPA M23A	Sample Size	1	Train
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Stack	Split Ratio	5	

Approved:
T. Patterson
--e-signature--
14-Oct-2015

Run Information	**Run 1**
Filename	7-151013A09
Run Date	13-Oct-15 20:31
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<6.1	6.1	U		63
1,2,3,7,8-PeCDD	1	31.87	180	6.9	J		310
1,2,3,4,7,8-HxCDD	0.1	33.95	597	10			310
1,2,3,6,7,8-HxCDD	0.1	33.99	2090	11			310
1,2,3,7,8,9-HxCDD	0.1	34.12	1140	10			310
1,2,3,4,6,7,8-HpCDD	0.01	35.58	16600	23			310
OCDD	0.0003	37.05	12200	13			630
2,3,7,8-TCDF	0.1	26.64	<35	6.9	J,R	35	63
1,2,3,7,8-PeCDF	0.03	30.90	111	6.2	J		310
2,3,4,7,8-PeCDF	0.3	31.65	599	6.1			310
1,2,3,4,7,8-HxCDF	0.1	33.45	725	8.0			310
1,2,3,6,7,8-HxCDF	0.1	33.51	913	7.8			310
2,3,4,6,7,8-HxCDF	0.1	33.85	1810	7.7			310
1,2,3,7,8,9-HxCDF	0.1	34.29	492	8.6			310
1,2,3,4,6,7,8-HpCDF	0.01	35.04	4480	11			310
1,2,3,4,7,8,9-HpCDF	0.01	35.83	912	14			310
OCDF	0.0003	37.14	3140	14			630

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1000	27.55	97	70-130
13C12-1,2,3,4,7,8-HxCDD	10000	33.94	82	70-130
13C12-2,3,4,7,8-PeCDF	10000	31.64	108	70-130
13C12-1,2,3,4,7,8-HxCDF	10000	33.44	91	70-130
13C12-1,2,3,4,7,8,9-HpCDF	10000	35.82	100	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	10000	27.52	78	40-130
13C12-1,2,3,7,8-PeCDD	10000	31.85	84	40-130
13C12-1,2,3,6,7,8-HxCDD	10000	33.99	106	40-130
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.58	95	25-130
13C12-OCDD	20000	37.04	86	25-130
13C12-2,3,7,8-TCDF	10000	26.62	79	40-130
13C12-1,2,3,7,8-PeCDF	10000	30.89	81	40-130
13C12-1,2,3,6,7,8-HxCDF	10000	33.50	101	40-130
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.03	94	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	10000	34.26	45	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	7	1210	6.1	63
Total-PeCDD	9	8410	6.9	310
Total-HxCDD	7	28500	11	310
Total-HpCDD	3	34200	23	310
Total-TCDF	13	1490	6.9	63
Total-PeCDF	13	4920	6.2	310
Total-HxCDF	12	9270	8.6	310
Total-HpCDF	4	8620	14	310

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	1360
Mid Point PCDD/F TEQ (WHO 2005)	1370
Upper Bound PCDD/F TEQ (WHO 2005)	1370

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency

U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life sciences

Sample Analysis Report

Sample Name	**15-21546-SVOC-(6 THRU 10) #1 APC OUTLET TEST#2**	Sampling Date	2-Oct-15		
ALS Sample ID	L1682779-2	Extraction Date	5-Oct-15		Approved:
Analysis Method	EPA M23A	Sample Size	1	Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	5		14-Oct-2015

Run Information	**Run 1**
Filename	7-151013A10
Run Date	13-Oct-15 21:13
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	27.54	<5.1	3.6	J,R	5.1	63
1,2,3,7,8-PeCDD	1	31.85	<140	3.7	M,J,R	140	310
1,2,3,4,7,8-HxCDD	0.1	33.93	613	5.6			310
1,2,3,6,7,8-HxCDD	0.1	33.98	1810	5.8			310
1,2,3,7,8,9-HxCDD	0.1	34.11	897	5.7			310
1,2,3,4,6,7,8-HpCDD	0.01	35.57	13900	14			310
OCDD	0.0003	37.03	10800	7.9			630
2,3,7,8-TCDF	0.1	26.62	31.4	2.8	J		63
1,2,3,7,8-PeCDF	0.03	30.89	111	4.1	J		310
2,3,4,7,8-PeCDF	0.3	31.64	510	4.1			310
1,2,3,4,7,8-HxCDF	0.1	33.43	613	4.6			310
1,2,3,6,7,8-HxCDF	0.1	33.50	759	4.5			310
2,3,4,6,7,8-HxCDF	0.1	33.83	1560	4.5			310
1,2,3,7,8,9-HxCDF	0.1	34.28	430	5.0			310
1,2,3,4,6,7,8-HpCDF	0.01	35.01	3880	6.8			310
1,2,3,4,7,8,9-HpCDF	0.01	35.82	833	8.2			310
OCDF	0.0003	37.12	2780	5.4			630

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1000	27.54	95	70-130
13C12-1,2,3,4,7,8-HxCDD	10000	33.92	93	70-130
13C12-2,3,4,7,8-PeCDF	10000	31.63	110	70-130
13C12-1,2,3,4,7,8-HxCDF	10000	33.42	94	70-130
13C12-1,2,3,4,7,8,9-HpCDF	10000	35.81	97	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	10000	27.52	75	40-130
13C12-1,2,3,7,8-PeCDD	10000	31.84	88	40-130
13C12-1,2,3,6,7,8-HxCDD	10000	33.97	103	40-130
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.56	98	25-130
13C12-OCDD	20000	37.03	87	25-130
13C12-2,3,7,8-TCDF	10000	26.61	80	40-130
13C12-1,2,3,7,8-PeCDF	10000	30.88	82	40-130
13C12-1,2,3,6,7,8-HxCDF	10000	33.49	102	40-130
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.01	96	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	10000	34.25	46	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	8	1410	3.6	63
Total-PeCDD	8	6890	3.7	310
Total-HxCDD	7	25800	5.8	310
Total-HpCDD	3	29200	14	310
Total-TCDF	18	2100	2.8	63
Total-PeCDF	17	4690	4.1	310
Total-HxCDF	14	8120	5.0	310
Total-HpCDF	4	7540	8.2	310

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	1020
Mid Point PCDD/F TEQ (WHO 2005)	1160
Upper Bound PCDD/F TEQ (WHO 2005)	1160

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor   TEQ Indicates the Toxic Equivalency
M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life sciences

Sample Analysis Report

Sample Name	**15-21546-SVOC-(11 THRU 15) #1 APC OUTLET TEST#3**	Sampling Date	2-Oct-15	
ALS Sample ID	L1682779-3	Extraction Date	5-Oct-15	Approved:
Analysis Method	EPA M23A	Sample Size	1 Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	14-Oct-2015

Run Information	**Run 1**
Filename	7-151013A11
Run Date	13-Oct-15 21:54
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<8.0	8.0	U		63
1,2,3,7,8-PeCDD	1	31.87	220	9.8	J		310
1,2,3,4,7,8-HxCDD	0.1	33.94	927	13			310
1,2,3,6,7,8-HxCDD	0.1	33.99	2710	13			310
1,2,3,7,8,9-HxCDD	0.1	34.11	1250	13			310
1,2,3,4,6,7,8-HpCDD	0.01	35.58	23000	28			310
OCDD	0.0003	37.04	17600	16			630
2,3,7,8-TCDF	0.1	26.62	43.9	9.6	M,J		63
1,2,3,7,8-PeCDF	0.03	30.90	148	8.9	J		310
2,3,4,7,8-PeCDF	0.3	31.64	735	8.7			310
1,2,3,4,7,8-HxCDF	0.1	33.44	911	11			310
1,2,3,6,7,8-HxCDF	0.1	33.51	1150	11			310
2,3,4,6,7,8-HxCDF	0.1	33.84	2170	11			310
1,2,3,7,8,9-HxCDF	0.1	34.28	612	12			310
1,2,3,4,6,7,8-HpCDF	0.01	35.03	6720	14			310
1,2,3,4,7,8,9-HpCDF	0.01	35.82	1320	17			310
OCDF	0.0003	37.13	4400	15			630

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1000	27.57	93	70-130
13C12-1,2,3,4,7,8-HxCDD	10000	33.93	75	70-130
13C12-2,3,4,7,8-PeCDF	10000	31.63	109	70-130
13C12-1,2,3,4,7,8-HxCDF	10000	33.43	84	70-130
13C12-1,2,3,4,7,8,9-HpCDF	10000	35.81	104	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	10000	27.54	72	40-130
13C12-1,2,3,7,8-PeCDD	10000	31.85	82	40-130
13C12-1,2,3,6,7,8-HxCDD	10000	33.98	103	40-130
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.57	91	25-130
13C12-OCDD	20000	37.03	80	25-130
13C12-2,3,7,8-TCDF	10000	26.62	73	40-130
13C12-1,2,3,7,8-PeCDF	10000	30.89	76	40-130
13C12-1,2,3,6,7,8-HxCDF	10000	33.50	101	40-130
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.01	87	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	10000	34.26	42	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	6	1410	8.0	63
Total-PeCDD	8	9460	9.8	310
Total-HxCDD	9	38200	13	310
Total-HpCDD	2	49400	28	310
Total-TCDF	18	2590	9.6	63
Total-PeCDF	15	6800	8.9	310
Total-HxCDF	14	12100	12	310
Total-HpCDF	4	12800	17	310

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	1740
Mid Point PCDD/F TEQ (WHO 2005)	1740
Upper Bound PCDD/F TEQ (WHO 2005)	1750

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
J	indicates that a target analyte was detected below the calibrated range.

ALS Life sciences

Sample Analysis Report

Sample Name	**15-21546-SVOC-(16 THRU 20) #1 APC OUTLET BLANK**	Sampling Date	1-Oct-15
ALS Sample ID	L1682779-4	Extraction Date	5-Oct-15
Analysis Method	EPA M23A	Sample Size	1 Train
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	5

Approved:
T.Patterson
--e-signature--
14-Oct-2015

Run Information	**Run 1**
Filename	7-151013A07
Run Date	13-Oct-15 19:07
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<3.7	3.7	U		63
1,2,3,7,8-PeCDD	1	NotFnd	<3.0	3.0	U		310
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<2.0	2.0	U		310
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<2.1	2.1	U		310
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<2.1	2.1	U		310
1,2,3,4,6,7,8-HpCDD	0.01	NotFnd	<2.8	2.8	U		310
OCDD	0.0003	37.05	<3.1	2.3	M,J,R	3.1	630
2,3,7,8-TCDF	0.1	NotFnd	<2.7	2.7	U		63
1,2,3,7,8-PeCDF	0.03	NotFnd	<1.9	1.9	U		310
2,3,4,7,8-PeCDF	0.3	NotFnd	<1.9	1.9	U		310
1,2,3,4,7,8-HxCDF	0.1	33.44	<1.4	1.4	M,U	1.1	310
1,2,3,6,7,8-HxCDF	0.1	33.50	1.90	1.3	M,J		310
2,3,4,6,7,8-HxCDF	0.1	33.82	2.63	1.3	J		310
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<1.5	1.5	U		310
1,2,3,4,6,7,8-HpCDF	0.01	35.03	11.7	1.9	M,J		310
1,2,3,4,7,8,9-HpCDF	0.01	35.80	<2.6	2.3	M,J,R	2.6	310
OCDF	0.0003	37.13	119	3.0	J,B		630

Field Spike Standards	**pg**	Ret. Time	**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1000	27.54	96	70-130
13C12-1,2,3,4,7,8-HxCDD	10000	33.93	85	70-130
13C12-2,3,4,7,8-PeCDF	10000	31.63	106	70-130
13C12-1,2,3,4,7,8-HxCDF	10000	33.43	87	70-130
13C12-1,2,3,4,7,8,9-HpCDF	10000	35.81	99	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	10000	27.51	84	40-130
13C12-1,2,3,7,8-PeCDD	10000	31.84	96	40-130
13C12-1,2,3,6,7,8-HxCDD	10000	33.98	96	40-130
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.57	89	25-130
13C12-OCDD	20000	37.03	80	25-130
13C12-2,3,7,8-TCDF	10000	26.61	88	40-130
13C12-1,2,3,7,8-PeCDF	10000	30.88	91	40-130
13C12-1,2,3,6,7,8-HxCDF	10000	33.50	94	40-130
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.01	88	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	10000	34.25	43	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	Flags	LQL
Total-TCDD	1	4.86	3.7		63
Total-PeCDD	0	<3.0	3.0	U	310
Total-HxCDD	1	3.46	2.1		310
Total-HpCDD	0	<2.8	2.8	U	310
Total-TCDF	0	<2.7	2.7	U	63
Total-PeCDF	0	<1.9	1.9	U	310
Total-HxCDF	2	4.54	1.5		310
Total-HpCDF	1	11.7	2.3		310

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.606
Mid Point PCDD/F TEQ (WHO 2005)	4.90
Upper Bound PCDD/F TEQ (WHO 2005)	9.17

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life sciences

Sample Analysis Report

Sample Name	**15-21546-SVOC-(21 THRU 25) #2 APC OUTLET TEST#1**	Sampling Date	1-Oct-15
ALS Sample ID	L1682779-5	Extraction Date	5-Oct-15
Analysis Method	EPA M23A	Sample Size	1 Train
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	5

Approved:
T. Patterson
--e-signature--
14-Oct-2015

Run Information	**Run 1**
Filename	7-151013A12
Run Date	13-Oct-15 22:36
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<6.1	6.1	U		63
1,2,3,7,8-PeCDD	1	31.87	150	6.5	J		310
1,2,3,4,7,8-HxCDD	0.1	33.94	288	9.9	J		310
1,2,3,6,7,8-HxCDD	0.1	33.99	1050	10			310
1,2,3,7,8,9-HxCDD	0.1	34.12	510	10			310
1,2,3,4,6,7,8-HpCDD	0.01	35.58	5280	16			310
OCDD	0.0003	37.04	2920	11			630
2,3,7,8-TCDF	0.1	26.64	44.8	7.1	J		63
1,2,3,7,8-PeCDF	0.03	30.90	123	8.0	J		310
2,3,4,7,8-PeCDF	0.3	31.65	528	7.9			310
1,2,3,4,7,8-HxCDF	0.1	33.44	356	6.4			310
1,2,3,6,7,8-HxCDF	0.1	33.51	509	6.2			310
2,3,4,6,7,8-HxCDF	0.1	33.84	883	6.2			310
1,2,3,7,8,9-HxCDF	0.1	34.29	292	6.9	J		310
1,2,3,4,6,7,8-HpCDF	0.01	35.03	1440	6.8			310
1,2,3,4,7,8,9-HpCDF	0.01	35.83	391	8.2			310
OCDF	0.0003	37.14	992	6.4	B		630
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	1000	27.55	97	70-130			
13C12-1,2,3,4,7,8-HxCDD	10000	33.93	89	70-130			
13C12-2,3,4,7,8-PeCDF	10000	31.64	105	70-130			
13C12-1,2,3,4,7,8-HxCDF	10000	33.44	89	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	10000	35.82	98	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	10000	27.52	74	40-130			
13C12-1,2,3,7,8-PeCDD	10000	31.85	80	40-130			
13C12-1,2,3,6,7,8-HxCDD	10000	33.98	100	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.57	91	25-130			
13C12-OCDD	20000	37.04	84	25-130			
13C12-2,3,7,8-TCDF	10000	26.62	75	40-130			
13C12-1,2,3,7,8-PeCDF	10000	30.89	76	40-130			
13C12-1,2,3,6,7,8-HxCDF	10000	33.50	102	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.03	92	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	10000	34.26	47	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	8	1490	6.1	63
Total-PeCDD	9	7090	6.5	310
Total-HxCDD	7	14000	10	310
Total-HpCDD	2	10300	16	310
Total-TCDF	12	1760	7.1	63
Total-PeCDF	14	4220	8.0	310
Total-HxCDF	12	4670	6.9	310
Total-HpCDF	4	2930	8.2	310

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	778
Mid Point PCDD/F TEQ (WHO 2005)	781
Upper Bound PCDD/F TEQ (WHO 2005)	784

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency

U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the calibrated range.

B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life sciences

Sample Analysis Report

Sample Name	**15-21546-SVOC-(26 THRU 30) #2 APC OUTLET TEST#2**	Sampling Date	2-Oct-15
ALS Sample ID	L1682779-6	Extraction Date	5-Oct-15
Analysis Method	EPA M23A	Sample Size	1 Train
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	5

Approved:
T.Patterson
--e-signature--
14-Oct-2015

Run Information	**Run 1**
Filename	7-151013A13
Run Date	13-Oct-15 23:18
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	27.52	<4.1	4.0	J,R	4.1	63
1,2,3,7,8-PeCDD	1	31.85	90.5	2.7	J		310
1,2,3,4,7,8-HxCDD	0.1	33.93	195	7.0	J		310
1,2,3,6,7,8-HxCDD	0.1	33.98	652	7.2			310
1,2,3,7,8,9-HxCDD	0.1	34.11	324	7.1			310
1,2,3,4,6,7,8-HpCDD	0.01	35.57	3300	7.8			310
OCDD	0.0003	37.03	1960	5.5			630
2,3,7,8-TCDF	0.1	26.61	24.4	3.0	J		63
1,2,3,7,8-PeCDF	0.03	30.89	71.3	5.5	J		310
2,3,4,7,8-PeCDF	0.3	31.63	297	5.4	J		310
1,2,3,4,7,8-HxCDF	0.1	33.43	214	2.7	J		310
1,2,3,6,7,8-HxCDF	0.1	33.50	309	2.6	J		310
2,3,4,6,7,8-HxCDF	0.1	33.83	534	2.6			310
1,2,3,7,8,9-HxCDF	0.1	34.28	169	2.9	J		310
1,2,3,4,6,7,8-HpCDF	0.01	35.01	817	3.5			310
1,2,3,4,7,8,9-HpCDF	0.01	35.81	252	4.2	J		310
OCDF	0.0003	37.12	694	3.5	B		630

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1000	27.54	96	70-130
13C12-1,2,3,4,7,8-HxCDD	10000	33.92	96	70-130
13C12-2,3,4,7,8-PeCDF	10000	31.63	108	70-130
13C12-1,2,3,4,7,8-HxCDF	10000	33.42	93	70-130
13C12-1,2,3,4,7,8,9-HpCDF	10000	35.81	104	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	10000	27.51	76	40-130
13C12-1,2,3,7,8-PeCDD	10000	31.84	85	40-130
13C12-1,2,3,6,7,8-HxCDD	10000	33.97	100	40-130
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.56	94	25-130
13C12-OCDD	20000	37.03	88	25-130
13C12-2,3,7,8-TCDF	10000	26.61	78	40-130
13C12-1,2,3,7,8-PeCDF	10000	30.88	80	40-130
13C12-1,2,3,6,7,8-HxCDF	10000	33.49	102	40-130
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.01	94	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	10000	34.25	48	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	8	838	4.0	63
Total-PeCDD	9	3960	2.7	310
Total-HxCDD	6	7990	7.2	310
Total-HpCDD	2	6460	7.8	310
Total-TCDF	15	1090	3.0	63
Total-PeCDF	14	2590	5.5	310
Total-HxCDF	12	2680	2.9	310
Total-HpCDF	4	1680	4.2	310

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	468
Mid Point PCDD/F TEQ (WHO 2005)	472
Upper Bound PCDD/F TEQ (WHO 2005)	472

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor   TEQ Indicates the Toxic Equivalency

J Indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life sciences

Sample Analysis Report

Sample Name	**15-21546-SVOC-(31 THRU 35) #2 APC OUTLET TEST#3**	Sampling Date	2-Oct-15	
ALS Sample ID	L1682779-7	Extraction Date	5-Oct-15	Approved:
Analysis Method	EPA M23A	Sample Size	1 Train	*T. Patterson*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	14-Oct-2015

Run Information	**Run 1**
Filename	7-151013A14
Run Date	14-Oct-15 00:00
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	27.54	<7.0	7.0	M,U		63
1,2,3,7,8-PeCDD	1	31.87	122	4.5	J		310
1,2,3,4,7,8-HxCDD	0.1	33.94	262	5.5	J		310
1,2,3,6,7,8-HxCDD	0.1	33.99	897	5.7			310
1,2,3,7,8,9-HxCDD	0.1	34.11	494	5.6			310
1,2,3,4,6,7,8-HpCDD	0.01	35.58	4740	12			310
OCDD	0.0003	37.04	2880	9.5			630
2,3,7,8-TCDF	0.1	26.61	32.9	6.5	M,J		63
1,2,3,7,8-PeCDF	0.03	30.90	111	5.9	J		310
2,3,4,7,8-PeCDF	0.3	31.64	419	5.8			310
1,2,3,4,7,8-HxCDF	0.1	33.44	309	7.0	J		310
1,2,3,6,7,8-HxCDF	0.1	33.51	438	6.8			310
2,3,4,6,7,8-HxCDF	0.1	33.84	727	6.8			310
1,2,3,7,8,9-HxCDF	0.1	34.28	235	7.5	J		310
1,2,3,4,6,7,8-HpCDF	0.01	35.03	1230	7.5			310
1,2,3,4,7,8,9-HpCDF	0.01	35.82	351	9.1			310
OCDF	0.0003	37.13	961	5.4	B		630

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1000	27.55	94	70-130
13C12-1,2,3,4,7,8-HxCDD	10000	33.93	77	70-130
13C12-2,3,4,7,8-PeCDF	10000	31.63	103	70-130
13C12-1,2,3,4,7,8-HxCDF	10000	33.43	84	70-130
13C12-1,2,3,4,7,8,9-HpCDF	10000	35.82	101	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	10000	27.52	76	40-130
13C12-1,2,3,7,8-PeCDD	10000	31.84	83	40-130
13C12-1,2,3,6,7,8-HxCDD	10000	33.98	103	40-130
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.57	90	25-130
13C12-OCDD	20000	37.03	78	25-130
13C12-2,3,7,8-TCDF	10000	26.61	77	40-130
13C12-1,2,3,7,8-PeCDF	10000	30.88	80	40-130
13C12-1,2,3,6,7,8-HxCDF	10000	33.50	99	40-130
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.01	87	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	10000	34.26	44	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	8	1070	7.0	63
Total-PeCDD	9	6040	4.5	310
Total-HxCDD	8	11900	5.7	310
Total-HpCDD	2	9410	12	310
Total-TCDF	15	1610	6.5	63
Total-PeCDF	14	3400	5.9	310
Total-HxCDF	12	3860	7.5	310
Total-HpCDF	4	2620	9.1	310

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	655
Mid Point PCDD/F TEQ (WHO 2005)	658
Upper Bound PCDD/F TEQ (WHO 2005)	662

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life sciences

Sample Analysis Report

Sample Name	**15-21546-SVOC-(36 THRU 40) #2 APC OUTLET BLANK**	Sampling Date	1-Oct-15	
ALS Sample ID	L1682779-8	Extraction Date	5-Oct-15	Approved:
Analysis Method	EPA M23A	Sample Size	1 Train	*T. Patterson*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	14-Oct-2015

Run Information	**Run 1**
Filename	7-151013A08
Run Date	13-Oct-15 19:49
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<4.5	4.5	U		63
1,2,3,7,8-PeCDD	1	NotFnd	<2.4	2.4	U		310
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<2.1	2.1	U		310
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<2.1	2.1	U		310
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<2.1	2.1	U		310
1,2,3,4,6,7,8-HpCDD	0.01	35.57	<2.6	2.6	M,U	1.9	310
OCDD	0.0003	37.03	<2.6	1.7	M,J,R	2.6	630
2,3,7,8-TCDF	0.1	NotFnd	<2.9	2.9	U		63
1,2,3,7,8-PeCDF	0.03	NotFnd	<2.1	2.1	U		310
2,3,4,7,8-PeCDF	0.3	NotFnd	<2.0	2.0	U		310
1,2,3,4,7,8-HxCDF	0.1	33.43	<1.9	1.9	M,U	1.2	310
1,2,3,6,7,8-HxCDF	0.1	33.51	<1.8	1.8	M,U		310
2,3,4,6,7,8-HxCDF	0.1	33.83	2.88	1.8	J		310
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<2.0	2.0	U		310
1,2,3,4,6,7,8-HpCDF	0.01	35.01	9.68	2.1	J		310
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<2.6	2.6	U		310
OCDF	0.0003	37.12	<110	3.4	J,R	110	630

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	1000	27.52	95	70-130
13C12-1,2,3,4,7,8-HxCDD	10000	33.92	96	70-130
13C12-2,3,4,7,8-PeCDF	10000	31.61	106	70-130
13C12-1,2,3,4,7,8-HxCDF	10000	33.42	86	70-130
13C12-1,2,3,4,7,8,9-HpCDF	10000	35.81	97	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	10000	27.51	76	40-130
13C12-1,2,3,7,8-PeCDD	10000	31.84	85	40-130
13C12-1,2,3,6,7,8-HxCDD	10000	33.97	89	40-130
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.56	83	25-130
13C12-OCDD	20000	37.03	82	25-130
13C12-2,3,7,8-TCDF	10000	26.59	79	40-130
13C12-1,2,3,7,8-PeCDF	10000	30.87	84	40-130
13C12-1,2,3,6,7,8-HxCDF	10000	33.49	93	40-130
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.01	85	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	10000	34.25	43	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	1	5.41	4.5		63
Total-PeCDD	0	<2.4	2.4	U	310
Total-HxCDD	0	<2.1	2.1	U	310
Total-HpCDD	0	<2.6	2.6	U	310
Total-TCDF	0	<2.9	2.9	U	63
Total-PeCDF	0	<2.1	2.1	U	310
Total-HxCDF	2	4.62	2.0		310
Total-HpCDF	1	9.68	2.6		310

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.385
Mid Point PCDD/F TEQ (WHO 2005)	4.97
Upper Bound PCDD/F TEQ (WHO 2005)	9.52

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a	
ALS Sample ID	WG2185607-1	Extraction Date	5-Oct-15	Approved:
Analysis Method	EPA M23A	Sample Size	1 Train	*T. Patterson*
Analysis Type	Blank	Percent Moisture	n/a	--e-signature--
Sample Matrix	QC	Split Ratio	5	14-Oct-2015

Run Information	**Run 1**
Filename	7-151013A06
Run Date	13-Oct-15 18:25
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<3.5	3.5	U		63
1,2,3,7,8-PeCDD	1	31.87	2.10	1.7	M,J		310
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<1.9	1.9	U		310
1,2,3,6,7,8-HxCDD	0.1	33.99	<2.7	2.0	M,J,R	2.7	310
1,2,3,7,8,9-HxCDD	0.1	34.12	2.54	2.0	M,J		310
1,2,3,4,6,7,8-HpCDD	0.01	35.58	<2.7	2.1	M,J,R	2.7	310
OCDD	0.0003	37.05	<8.3	1.9	J,R	8.3	630
2,3,7,8-TCDF	0.1	NotFnd	<2.9	2.9	U		63
1,2,3,7,8-PeCDF	0.03	30.90	<4.0	1.8	J,R	4.0	310
2,3,4,7,8-PeCDF	0.3	NotFnd	<1.8	1.8	U		310
1,2,3,4,7,8-HxCDF	0.1	33.45	<2.1	1.5	M,J,R	2.1	310
1,2,3,6,7,8-HxCDF	0.1	33.51	<3.1	1.4	J,R	3.1	310
2,3,4,6,7,8-HxCDF	0.1	33.85	<3.6	1.4	J,R	3.6	310
1,2,3,7,8,9-HxCDF	0.1	34.27	<1.6	1.6	M,U	1.5	310
1,2,3,4,6,7,8-HpCDF	0.01	35.04	<11	2.1	J,R	11	310
1,2,3,4,7,8,9-HpCDF	0.01	35.83	<3.3	2.6	M,J,R	3.3	310
OCDF	0.0003	37.14	115	2.8	J		630

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	0		NS	
13C12-1,2,3,4,7,8-HxCDD	0		NS	
13C12-2,3,4,7,8-PeCDF	0		NS	
13C12-1,2,3,4,7,8-HxCDF	0		NS	
13C12-1,2,3,4,7,8,9-HpCDF	0		NS	
Extraction Standards				
13C12-2,3,7,8-TCDD	10000	27.52	80	40-130
13C12-1,2,3,7,8-PeCDD	10000	31.85	100	40-130
13C12-1,2,3,6,7,8-HxCDD	10000	33.98	94	40-130
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.57	101	25-130
13C12-OCDD	20000	37.04	91	25-130
13C12-2,3,7,8-TCDF	10000	26.61	85	40-130
13C12-1,2,3,7,8-PeCDF	10000	30.89	91	40-130
13C12-1,2,3,6,7,8-HxCDF	10000	33.50	92	40-130
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.03	102	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	10000	34.26	47	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	0	<3.5	3.5	U	63
Total-PeCDD	1	2.10	1.7		310
Total-HxCDD	1	2.54	2.0		310
Total-HpCDD	0	<2.1	2.1	U	310
Total-TCDF	0	<2.9	2.9	U	63
Total-PeCDF	0	<1.8	1.8	U	310
Total-HxCDF	1	2.63	1.6		310
Total-HpCDF	0	<2.6	2.6	U	310

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	2.39
Mid Point PCDD/F TEQ (WHO 2005)	6.17
Upper Bound PCDD/F TEQ (WHO 2005)	8.51

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

J Indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG2185607-2	Extraction Date	5-Oct-15
Analysis Method	EPA M23A	Sample Size	1 n/a
Analysis Type	LCS	Percent Moisture	n/a
Sample Matrix	QC	Split Ratio	5

Approved:
T.Patterson
--e-signature--
14-Oct-2015

Run Information	**Run 1**
Filename	7-151013A03
Run Date	13-Oct-15 16:19
Final Volume	25 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,3,7,8-TCDD	1000	27.52	105	70-130	
1,2,3,7,8-PeCDD	5000	31.85	110	70-130	
1,2,3,4,7,8-HxCDD	5000	33.93	87	70-130	
1,2,3,6,7,8-HxCDD	5000	33.98	111	70-130	
1,2,3,7,8,9-HxCDD	5000	34.11	114	70-130	
1,2,3,4,6,7,8-HpCDD	5000	35.57	108	70-130	
OCDD	10000	37.03	100	70-130	
2,3,7,8-TCDF	1000	26.61	98	70-130	
1,2,3,7,8-PeCDF	5000	30.89	104	70-130	
2,3,4,7,8-PeCDF	5000	31.64	96	70-130	
1,2,3,4,7,8-HxCDF	5000	33.43	95	70-130	
1,2,3,6,7,8-HxCDF	5000	33.50	115	70-130	
2,3,4,6,7,8-HxCDF	5000	33.83	101	70-130	
1,2,3,7,8,9-HxCDF	5000	34.26	102	70-130	
1,2,3,4,6,7,8-HpCDF	5000	35.03	98	70-130	
1,2,3,4,7,8,9-HpCDF	5000	35.82	95	70-130	
OCDF	10000	37.13	106	70-130	

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	0		NS	
13C12-1,2,3,4,7,8-HxCDD	0		NS	
13C12-2,3,4,7,8-PeCDF	0		NS	
13C12-1,2,3,4,7,8-HxCDF	0		NS	
13C12-1,2,3,4,7,8,9-HpCDF	0		NS	

Extraction Standards				
13C12-2,3,7,8-TCDD	10000	27.51	78	40-130
13C12-1,2,3,7,8-PeCDD	10000	31.84	87	40-130
13C12-1,2,3,6,7,8-HxCDD	10000	33.98	86	40-130
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.57	89	25-130
13C12-OCDD	20000	37.03	87	25-130
13C12-2,3,7,8-TCDF	10000	26.59	81	40-130
13C12-1,2,3,7,8-PeCDF	10000	30.88	83	40-130
13C12-1,2,3,6,7,8-HxCDF	10000	33.49	84	40-130
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.01	90	25-130

Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	10000	34.25	44	40-130

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Steve Kennedy	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L1692397		Mississauga, ON
Date of Report	29-Oct-15		LYJ 2Y4
Date of Sample Receipt	23-Oct-15	**Client Contact:**	Chris Belore
		Client Project ID:	21546-2, Covanta

COMMENTS: **PCDD/F by EPA M23A**

Samples L1692397-2,3 and 5 all show low level responses in the chlorinated diphenyl ether channel that elute at similar retention times to 1,2,3,4,7,8-HxCDF and 1,2,3,6,7,8-HxCDF. These responses are not judged to be from chlorinated diphenyl ethers since (a) they are not removed by florisil nor carbon column clean-ups and (b) do not elute at the common retention times for known chlorinated diphenyl ether peaks. In the analyst's judgment these responses are not from chlorinated diphenyl ethers and therefore there is no negative impact to the reported PCDD/F values from these co-eluting compounds.
Florisil clean-up was used as an added step to improve the quality of the extract.

R. Stolys

Rachael Stolys
Account Manager

ALS Life sciences

Sample Analysis summary Report

Sample Name	15-21546-2-SVOC-(1 THRU 5) TEST #1 UNIT #1	15-21546-2-SVOC-(6 THRU 10) TEST #2 UNIT #1	15-21546-2-SVOC-(11 THRU 15) TEST #3 UNIT #1	15-21546-2-SVOC-(16 THRU 20) BLANK UNIT #1	15-21546-2-SVOC-(21 THRU 25) TEST #1 UNIT #2	15-21546-2-SVOC-(26 THRU 30) TEST #2 UNIT #2
ALS Sample ID	L1692397-1	L1692397-2	L1692397-3	L1692397-4	L1692397-5	L1692397-6
Sample Size	1	1	1	1	1	1
Sample size units	Train	Train	Train	Train	Train	Train
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack	Stack	Stack
Sampling Date	21-Oct-15	22-Oct-15	22-Oct-15	21-Oct-15	21-Oct-15	22-Oct-15
Extraction Date	26-Oct-15	26-Oct-15	26-Oct-15	26-Oct-15	26-Oct-15	26-Oct-15
Target Analytes	**pg**	**pg**	**pg**	**pg**	**pg**	**pg**
2,3,7,8-TCDD	<20	<14	<11	<10	<11	<14
1,2,3,7,8-PeCDD	21.2	22.1	<21	<6.0	25.9	33.3
1,2,3,4,7,8-HxCDD	81.5	<86	62.5	<6.7	<91	70.0
1,2,3,6,7,8-HxCDD	357	310	264	<6.9	398	353
1,2,3,7,8,9-HxCDD	168	143	<110	<6.8	168	154
1,2,3,4,6,7,8-HpCDD	5690	5080	4130	23.6	3110	2350
OCDD	9370	8680	6740	<20	2450	1640
2,3,7,8-TCDF	<35	30.6	<16	<13	<14	<17
1,2,3,7,8-PeCDF	31.2	38.1	<22	<5.4	<19	27.0
2,3,4,7,8-PeCDF	85.5	<60	66.5	<5.3	83.3	72.4
1,2,3,4,7,8-HxCDF	91.0	72.7	59.7	<4.2	113	86.3
1,2,3,6,7,8-HxCDF	<100	105	90.4	<4.1	147	139
2,3,4,6,7,8-HxCDF	221	195	159	<4.0	276	187
1,2,3,7,8,9-HxCDF	<50	<38	35.2	<4.5	70.3	55.2
1,2,3,4,6,7,8-HpCDF	1300	1270	1010	<5.1	743	698
1,2,3,4,7,8,9-HpCDF	170	197	149	<6.2	154	131
OCDF	1770	1660	1250	<6.8	669	489
Field Spike Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	95	97	97	97	97	95
13C12-1,2,3,4,7,8-HxCDD	92	78	90	84	79	90
13C12-2,3,4,7,8-PeCDF	105	101	103	101	104	103
13C12-1,2,3,4,7,8-HxCDF	92	85	94	89	88	91
13C12-1,2,3,4,7,8,9-HpCDF	100	94	96	93	102	98
Extraction Standards						
13C12-2,3,7,8-TCDD	71	60	78	73	72	83
13C12-1,2,3,7,8-PeCDD	76	61	78	72	74	83
13C12-1,2,3,6,7,8-HxCDD	79	67	83	81	85	93
13C12-1,2,3,4,6,7,8-HpCDD	81	63	81	74	82	88
13C12-OCDD	80	56	74	71	75	81
13C12-2,3,7,8-TCDF	75	64	81	77	77	88
13C12-1,2,3,7,8-PeCDF	79	64	82	78	79	87
13C12-1,2,3,6,7,8-HxCDF	90	76	95	92	94	105
13C12-1,2,3,4,6,7,8-HpCDF	91	67	87	85	86	94
Cleanup Standard						
13C12-1,2,3,7,8,9-HxCDF	86	81	84	83	88	83
Homologue Group Totals	**pg**	**pg**	**pg**	**pg**	**pg**	**pg**
Total-TCDD	506	501	528	<10	245	205
Total-PeCDD	1500	1440	1070	<6.0	1480	1300
Total-HxCDD	6050	5560	4590	15.1	5470	4930
Total-HpCDD	13300	12300	9730	47.4	6300	4970
Total-TCDF	805	1100	670	<13	27.2	336
Total-PeCDF	705	760	190	<5.4	746	843
Total-HxCDF	1140	1170	1060	<4.5	1450	1370
Total-HpCDF	1470	2400	1830	<6.2	1500	1330
Toxic Equivalency - (WHO 2005)						
Lower Bound PCDD/F TEQ (WHO 2005)	215	177	142	0.236	209	193
Mid Point PCDD/F TEQ (WHO 2005)	241	215	181	11.7	225	201
Upper Bound PCDD/F TEQ (WHO 2005)	253	222	188	23.1	231	208

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Sample Analysis summary Report

Sample Name	**15-21546-2-SVOC-(31 THRU 35) TEST #3 UNIT #2**	**15-21546-2-SVOC-(36 THRU 40) BLANK UNIT #2**
ALS Sample ID	L1692397-7	L1692397-8
Sample Size	1	1
Sample size units	Train	Train
Percent Moisture	n/a	n/a
Sample Matrix	Stack	Stack
Sampling Date	22-Oct-15	22-Oct-15
Extraction Date	26-Oct-15	26-Oct-15
Target Analytes	**pg**	**pg**
2,3,7,8-TCDD	<11	<11
1,2,3,7,8-PeCDD	<15	<7.4
1,2,3,4,7,8-HxCDD	73.8	<9.0
1,2,3,6,7,8-HxCDD	340	<9.2
1,2,3,7,8,9-HxCDD	141	<9.1
1,2,3,4,6,7,8-HpCDD	2550	<8.7
OCDD	2080	<8.0
2,3,7,8-TCDF	<15	<13
1,2,3,7,8-PeCDF	22.5	<7.1
2,3,4,7,8-PeCDF	61.2	<6.9
1,2,3,4,7,8-HxCDF	88.6	<4.5
1,2,3,6,7,8-HxCDF	114	<4.4
2,3,4,6,7,8-HxCDF	215	<4.4
1,2,3,7,8,9-HxCDF	51.9	<4.8
1,2,3,4,6,7,8-HpCDF	646	<5.3
1,2,3,4,7,8,9-HpCDF	134	<6.4
OCDF	584	<11
Field Spike Standards	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	94	94
13C12-1,2,3,4,7,8-HxCDD	84	70
13C12-2,3,4,7,8-PeCDF	102	97
13C12-1,2,3,4,7,8-HxCDF	90	95
13C12-1,2,3,4,7,8,9-HpCDF	101	92
Extraction Standards		
13C12-2,3,7,8-TCDD	76	71
13C12-1,2,3,7,8-PeCDD	76	67
13C12-1,2,3,6,7,8-HxCDD	81	87
13C12-1,2,3,4,6,7,8-HpCDD	78	74
13C12-OCDD	76	68
13C12-2,3,7,8-TCDF	81	75
13C12-1,2,3,7,8-PeCDF	83	74
13C12-1,2,3,6,7,8-HxCDF	90	93
13C12-1,2,3,4,6,7,8-HpCDF	82	84
Cleanup Standard		
13C12-1,2,3,7,8,9-HxCDF	86	86
Homologue Group Totals	**pg**	**pg**
Total-TCDD	152	<11
Total-PeCDD	1120	<7.4
Total-HxCDD	4560	10.9
Total-HpCDD	5410	<8.7
Total-TCDF	121	<13
Total-PeCDF	553	<7.1
Total-HxCDF	1250	<4.8
Total-HpCDF	1060	<6.4
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	156	0.00
Mid Point PCDD/F TEQ (WHO 2005)	177	13.4
Upper Bound PCDD/F TEQ (WHO 2005)	183	26.7

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Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG2199699-1	WG2199699-2
Sample Size	1.00	1.00
Sample size units	0	n/a
Percent Moisture	n/a	n/a
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	26-Oct-15	26-Oct-15
Target Analytes	**pg**	**% Rec**
2,3,7,8-TCDD	<11	108
1,2,3,7,8-PeCDD	<6.1	111
1,2,3,4,7,8-HxCDD	<5.3	84
1,2,3,6,7,8-HxCDD	<5.4	126
1,2,3,7,8,9-HxCDD	<5.4	120
1,2,3,4,6,7,8-HpCDD	5.96	106
OCDD	<8.0	99
2,3,7,8-TCDF	<12	101
1,2,3,7,8-PeCDF	<4.8	105
2,3,4,7,8-PeCDF	<4.7	96
1,2,3,4,7,8-HxCDF	<4.6	97
1,2,3,6,7,8-HxCDF	<4.5	117
2,3,4,6,7,8-HxCDF	<4.5	101
1,2,3,7,8,9-HxCDF	<5.0	97
1,2,3,4,6,7,8-HpCDF	<5.2	95
1,2,3,4,7,8,9-HpCDF	<6.4	88
OCDF	<8.4	102
Field Spike Standards	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	NS	NS
13C12-1,2,3,4,7,8-HxCDD	NS	NS
13C12-2,3,4,7,8-PeCDF	NS	NS
13C12-1,2,3,4,7,8-HxCDF	NS	NS
13C12-1,2,3,4,7,8,9-HpCDF	NS	NS
Extraction Standards		
13C12-2,3,7,8-TCDD	66	65
13C12-1,2,3,7,8-PeCDD	69	68
13C12-1,2,3,6,7,8-HxCDD	67	67
13C12-1,2,3,4,6,7,8-HpCDD	73	70
13C12-OCDD	68	70
13C12-2,3,7,8-TCDF	71	70
13C12-1,2,3,7,8-PeCDF	73	72
13C12-1,2,3,6,7,8-HxCDF	75	72
13C12-1,2,3,4,6,7,8-HpCDF	79	77
Cleanup Standard		
13C12-1,2,3,7,8,9-HxCDF	86	85
Homologue Group Totals	**pg**	
Total-TCDD	<11	
Total-PeCDD	<6.1	
Total-HxCDD	<5.4	
Total-HpCDD	5.96	
Total-TCDF	<12	
Total-PeCDF	<4.8	
Total-HxCDF	<5.0	
Total-HpCDF	<6.4	
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	0.0596	
Mid Point PCDD/F TEQ (WHO 2005)	11.8	
Upper Bound PCDD/F TEQ (WHO 2005)	23.5	

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Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(1 THRU 5) TEST #1 UNIT #1**	Sampling Date	21-Oct-15
ALS Sample ID	L1692397-1	Extraction Date	26-Oct-15
Analysis Method	EPA M23A	Sample Size	1 Train
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
T.Patterson
--e-signature--
29-Oct-2015

Run Information	**Run 1**
Filename	7-151028A07
Run Date	28-Oct-15 19:40
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<20	20	U		60
1,2,3,7,8-PeCDD	1	31.87	21.2	11	M,J		300
1,2,3,4,7,8-HxCDD	0.1	33.94	81.5	17	J		300
1,2,3,6,7,8-HxCDD	0.1	33.99	357	18			300
1,2,3,7,8,9-HxCDD	0.1	34.11	168	18	J		300
1,2,3,4,6,7,8-HpCDD	0.01	35.59	5690	45			300
OCDD	0.0003	37.05	9370	34			600
2,3,7,8-TCDF	0.1	26.67	<35	35	M,U	16	60
1,2,3,7,8-PeCDF	0.03	30.90	31.2	23	M,J		300
2,3,4,7,8-PeCDF	0.3	31.65	85.5	23	J		300
1,2,3,4,7,8-HxCDF	0.1	33.44	91.0	8.1	J		300
1,2,3,6,7,8-HxCDF	0.1	33.51	<100	7.9	J,R	100	300
2,3,4,6,7,8-HxCDF	0.1	33.84	221	7.9	J		300
1,2,3,7,8,9-HxCDF	0.1	34.29	<50	8.7	J,R	50	300
1,2,3,4,6,7,8-HpCDF	0.01	35.03	1300	17			300
1,2,3,4,7,8,9-HpCDF	0.01	35.84	170	21	J		300
OCDF	0.0003	37.14	1770	19			600

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	600	27.58	93	70-130
13C12-1,2,3,4,7,8-HxCDD	6000	33.93	82	70-130
13C12-2,3,4,7,8-PeCDF	6000	31.64	101	70-130
13C12-1,2,3,4,7,8-HxCDF	6000	33.43	79	70-130
13C12-1,2,3,4,7,8,9-HpCDF	6000	35.83	90	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.55	71	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.85	76	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.98	79	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.57	81	25-130
13C12-OCDD	24000	37.04	80	25-130
13C12-2,3,7,8-TCDF	12000	26.65	75	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.89	79	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.51	90	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.02	91	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.26	86	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	3	506	20	60
Total-PeCDD	6	1500	11	300
Total-HxCDD	6	6050	18	300
Total-HpCDD	2	13300	45	300
Total-TCDF	5	805	35	60
Total-PeCDF	8	705	23	300
Total-HxCDF	7	1140	8.7	300
Total-HpCDF	2	1470	21	300

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	215
Mid Point PCDD/F TEQ (WHO 2005)	241
Upper Bound PCDD/F TEQ (WHO 2005)	253

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalenc
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(6 THRU 10) TEST #2 UNIT #1**	Sampling Date	22-Oct-15	
ALS Sample ID	L1692397-2	Extraction Date	26-Oct-15	Approved:
Analysis Method	EPA M23A	Sample Size	1 Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	29-Oct-2015

Run Information	**Run 1**
Filename	7-151028A08
Run Date	28-Oct-15 20:22
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	27.54	<14	14	M,U	7.9	60
1,2,3,7,8-PeCDD	1	31.87	22.1	14	M,J		300
1,2,3,4,7,8-HxCDD	0.1	33.94	<86	9.3	J,R	86	300
1,2,3,6,7,8-HxCDD	0.1	33.99	310	9.6			300
1,2,3,7,8,9-HxCDD	0.1	34.11	143	9.4	M,J		300
1,2,3,4,6,7,8-HpCDD	0.01	35.59	5080	28			300
OCDD	0.0003	37.06	8680	29			600
2,3,7,8-TCDF	0.1	26.59	30.6	23	M,J		60
1,2,3,7,8-PeCDF	0.03	30.91	38.1	16	J		300
2,3,4,7,8-PeCDF	0.3	31.65	<60	16	J,R	60	300
1,2,3,4,7,8-HxCDF	0.1	33.44	72.7	8.2	M,J		300
1,2,3,6,7,8-HxCDF	0.1	33.52	105	8.0	M,J		300
2,3,4,6,7,8-HxCDF	0.1	33.86	195	8.0	J		300
1,2,3,7,8,9-HxCDF	0.1	34.29	<38	8.8	J,R	38	300
1,2,3,4,6,7,8-HpCDF	0.01	35.04	1270	13			300
1,2,3,4,7,8,9-HpCDF	0.01	35.84	197	15	M,J		300
OCDF	0.0003	37.15	1660	16			600

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	600	27.57	95	70-130
13C12-1,2,3,4,7,8-HxCDD	6000	33.93	69	70-130
13C12-2,3,4,7,8-PeCDF	6000	31.64	97	70-130
13C12-1,2,3,4,7,8-HxCDF	6000	33.43	73	70-130
13C12-1,2,3,4,7,8,9-HpCDF	6000	35.83	85	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.52	60	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.85	61	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.98	67	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.59	63	25-130
13C12-OCDD	24000	37.05	56	25-130
13C12-2,3,7,8-TCDF	12000	26.62	64	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.89	64	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.51	76	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.03	67	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.26	81	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	2	501	14	60
Total-PeCDD	5	1440	14	300
Total-HxCDD	7	5560	9.6	300
Total-HpCDD	2	12300	28	300
Total-TCDF	10	1100	23	60
Total-PeCDF	8	760	16	300
Total-HxCDF	9	1170	8.8	300
Total-HpCDF	4	2400	15	300

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	177
Mid Point PCDD/F TEQ (WHO 2005)	215
Upper Bound PCDD/F TEQ (WHO 2005)	222

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalenc
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(11 THRU 15) TEST #3 UNIT #1**	Sampling Date	22-Oct-15
ALS Sample ID	L1692397-3	Extraction Date	26-Oct-15
Analysis Method	EPA M23A	Sample Size	1 Train
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
T.Patterson
--e-signature--
29-Oct-2015

Run Information	**Run 1**
Filename	7-151028A09
Run Date	28-Oct-15 21:04
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<11	11	U		60
1,2,3,7,8-PeCDD	1	31.87	<21	11	M,J,R	21	300
1,2,3,4,7,8-HxCDD	0.1	33.93	62.5	6.4	M,J		300
1,2,3,6,7,8-HxCDD	0.1	33.98	264	6.6	M,J		300
1,2,3,7,8,9-HxCDD	0.1	34.10	<110	6.5	J,R	110	300
1,2,3,4,6,7,8-HpCDD	0.01	35.57	4130	32			300
OCDD	0.0003	37.04	6740	23			600
2,3,7,8-TCDF	0.1	NotFnd	<16	16	U		60
1,2,3,7,8-PeCDF	0.03	30.90	<22	11	J,R	22	300
2,3,4,7,8-PeCDF	0.3	31.64	66.5	11	J		300
1,2,3,4,7,8-HxCDF	0.1	33.43	59.7	8.0	J		300
1,2,3,6,7,8-HxCDF	0.1	33.51	90.4	7.9	J		300
2,3,4,6,7,8-HxCDF	0.1	33.83	159	7.8	M,J		300
1,2,3,7,8,9-HxCDF	0.1	34.28	35.2	8.7	J		300
1,2,3,4,6,7,8-HpCDF	0.01	35.02	1010	6.6			300
1,2,3,4,7,8,9-HpCDF	0.01	35.83	149	8.0	J		300
OCDF	0.0003	37.13	1250	11			600

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	600	27.54	95	70-130
13C12-1,2,3,4,7,8-HxCDD	6000	33.92	80	70-130
13C12-2,3,4,7,8-PeCDF	6000	31.63	99	70-130
13C12-1,2,3,4,7,8-HxCDF	6000	33.42	80	70-130
13C12-1,2,3,4,7,8,9-HpCDF	6000	35.81	86	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.52	78	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.84	78	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.97	83	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.56	81	25-130
13C12-OCDD	24000	37.04	74	25-130
13C12-2,3,7,8-TCDF	12000	26.61	81	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.88	82	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.49	95	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.02	87	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.25	84	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	5	528	11	60
Total-PeCDD	5	1070	11	300
Total-HxCDD	6	4590	6.6	300
Total-HpCDD	2	9730	32	300
Total-TCDF	9	670	16	60
Total-PeCDF	2	190	11	300
Total-HxCDF	12	1060	8.7	300
Total-HpCDF	4	1830	8.0	300

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	142
Mid Point PCDD/F TEQ (WHO 2005)	181
Upper Bound PCDD/F TEQ (WHO 2005)	188

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor — TEQ Indicates the Toxic Equivalenc
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life sciences

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(16 THRU 20) BLANK UNIT #1**	Sampling Date	21-Oct-15	
ALS Sample ID	L1692397-4	Extraction Date	26-Oct-15	Approved:
Analysis Method	EPA M23A	Sample Size	1 Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	29-Oct-2015

Run Information	**Run 1**
Filename	7-151028A10
Run Date	28-Oct-15 21:46
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<10	10	U		60
1,2,3,7,8-PeCDD	1	NotFnd	<6.0	6.0	U		300
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<6.7	6.7	U		300
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<6.9	6.9	U		300
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<6.8	6.8	U		300
1,2,3,4,6,7,8-HpCDD	0.01	35.57	23.6	6.6	J,B		300
OCDD	0.0003	37.05	<20	6.2	M,J,R	20	600
2,3,7,8-TCDF	0.1	NotFnd	<13	13	U		60
1,2,3,7,8-PeCDF	0.03	NotFnd	<5.4	5.4	U		300
2,3,4,7,8-PeCDF	0.3	NotFnd	<5.3	5.3	U		300
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<4.2	4.2	U		300
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<4.1	4.1	U		300
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<4.0	4.0	U		300
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<4.5	4.5	U		300
1,2,3,4,6,7,8-HpCDF	0.01	NotFnd	<5.1	5.1	U		300
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<6.2	6.2	U		300
OCDF	0.0003	NotFnd	<6.8	6.8	U		600

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	600	27.54	95	70-130
13C12-1,2,3,4,7,8-HxCDD	6000	33.92	75	70-130
13C12-2,3,4,7,8-PeCDF	6000	31.63	97	70-130
13C12-1,2,3,4,7,8-HxCDF	6000	33.42	76	70-130
13C12-1,2,3,4,7,8,9-HpCDF	6000	35.81	84	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.52	73	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.84	72	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.97	81	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.57	74	25-130
13C12-OCDD	24000	37.04	71	25-130
13C12-2,3,7,8-TCDF	12000	26.61	77	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.88	78	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.49	92	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.02	85	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.25	83	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	0	<10	10	U	60
Total-PeCDD	0	<6.0	6.0	U	300
Total-HxCDD	2	15.1	6.9		300
Total-HpCDD	2	47.4	6.6		300
Total-TCDF	0	<13	13	U	60
Total-PeCDF	0	<5.4	5.4	U	300
Total-HxCDF	0	<4.5	4.5	U	300
Total-HpCDF	0	<6.2	6.2	U	300

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.236
Mid Point PCDD/F TEQ (WHO 2005)	11.7
Upper Bound PCDD/F TEQ (WHO 2005)	23.1

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalenc
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

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Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(21 THRU 25) TEST #1 UNIT #2**	Sampling Date	21-Oct-15	
ALS Sample ID	L1692397-5	Extraction Date	26-Oct-15	Approved:
Analysis Method	EPA M23A	Sample Size	1 Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	29-Oct-2015

Run Information	**Run 1**
Filename	7-151028A11
Run Date	28-Oct-15 22:28
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<11	11	U		60
1,2,3,7,8-PeCDD	1	31.87	25.9	7.0	J		300
1,2,3,4,7,8-HxCDD	0.1	33.96	<91	16	M,J,R	91	300
1,2,3,6,7,8-HxCDD	0.1	33.99	398	17	M		300
1,2,3,7,8,9-HxCDD	0.1	34.11	168	17	M,J		300
1,2,3,4,6,7,8-HpCDD	0.01	35.59	3110	18			300
OCDD	0.0003	37.06	2450	15			600
2,3,7,8-TCDF	0.1	26.59	<14	14	M,U	4.1	60
1,2,3,7,8-PeCDF	0.03	30.91	<19	8.6	J,R	19	300
2,3,4,7,8-PeCDF	0.3	31.65	83.3	8.5	J		300
1,2,3,4,7,8-HxCDF	0.1	33.44	113	4.8	J		300
1,2,3,6,7,8-HxCDF	0.1	33.52	147	4.7	J		300
2,3,4,6,7,8-HxCDF	0.1	33.85	276	4.6	M,J		300
1,2,3,7,8,9-HxCDF	0.1	34.29	70.3	5.1	J		300
1,2,3,4,6,7,8-HpCDF	0.01	35.04	743	9.0			300
1,2,3,4,7,8,9-HpCDF	0.01	35.84	154	11	M,J		300
OCDF	0.0003	37.15	669	10			600

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	600	27.57	95	70-130
13C12-1,2,3,4,7,8-HxCDD	6000	33.93	70	70-130
13C12-2,3,4,7,8-PeCDF	6000	31.64	100	70-130
13C12-1,2,3,4,7,8-HxCDF	6000	33.44	75	70-130
13C12-1,2,3,4,7,8,9-HpCDF	6000	35.83	92	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.54	72	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.85	74	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.98	85	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.59	82	25-130
13C12-OCDD	24000	37.05	75	25-130
13C12-2,3,7,8-TCDF	12000	26.62	77	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.89	79	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.51	94	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.03	86	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.26	88	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	3	245	11	60
Total-PeCDD	7	1480	7.0	300
Total-HxCDD	6	5470	17	300
Total-HpCDD	2	6300	18	300
Total-TCDF	1	27.2	14	60
Total-PeCDF	8	746	8.6	300
Total-HxCDF	9	1450	5.1	300
Total-HpCDF	4	1500	11	300

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	209
Mid Point PCDD/F TEQ (WHO 2005)	225
Upper Bound PCDD/F TEQ (WHO 2005)	231

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalenc
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(26 THRU 30) TEST #2 UNIT #2**	Sampling Date	22-Oct-15	
ALS Sample ID	L1692397-6	Extraction Date	26-Oct-15	Approved:
Analysis Method	EPA M23A	Sample Size	1 Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	29-Oct-2015

Run Information	**Run 1**
Filename	7-151028A12
Run Date	28-Oct-15 23:09
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<14	14	U		60
1,2,3,7,8-PeCDD	1	31.88	33.3	8.7	M,J		300
1,2,3,4,7,8-HxCDD	0.1	33.94	70.0	8.7	J		300
1,2,3,6,7,8-HxCDD	0.1	33.99	353	9.0			300
1,2,3,7,8,9-HxCDD	0.1	34.12	154	8.8	J		300
1,2,3,4,6,7,8-HpCDD	0.01	35.59	2350	20			300
OCDD	0.0003	37.05	1640	15			600
2,3,7,8-TCDF	0.1	NotFnd	<17	17	U		60
1,2,3,7,8-PeCDF	0.03	30.91	27.0	13	J		300
2,3,4,7,8-PeCDF	0.3	31.65	72.4	12	J		300
1,2,3,4,7,8-HxCDF	0.1	33.44	86.3	16	J		300
1,2,3,6,7,8-HxCDF	0.1	33.52	139	16	J		300
2,3,4,6,7,8-HxCDF	0.1	33.84	187	16	J		300
1,2,3,7,8,9-HxCDF	0.1	34.29	55.2	17	J		300
1,2,3,4,6,7,8-HpCDF	0.01	35.03	698	9.4			300
1,2,3,4,7,8,9-HpCDF	0.01	35.84	131	11	J		300
OCDF	0.0003	37.15	489	11	J		600

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	600	27.57	93	70-130
13C12-1,2,3,4,7,8-HxCDD	6000	33.93	80	70-130
13C12-2,3,4,7,8-PeCDF	6000	31.64	99	70-130
13C12-1,2,3,4,7,8-HxCDF	6000	33.43	78	70-130
13C12-1,2,3,4,7,8,9-HpCDF	6000	35.83	88	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.55	83	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.85	83	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.98	93	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.57	88	25-130
13C12-OCDD	24000	37.05	81	25-130
13C12-2,3,7,8-TCDF	12000	26.64	88	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.89	87	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.51	105	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.03	94	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.26	83	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	2	205	14	60
Total-PeCDD	5	1300	8.7	300
Total-HxCDD	6	4930	9.0	300
Total-HpCDD	2	4970	20	300
Total-TCDF	5	336	17	60
Total-PeCDF	10	843	13	300
Total-HxCDF	12	1370	17	300
Total-HpCDF	4	1330	11	300

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	193
Mid Point PCDD/F TEQ (WHO 2005)	201
Upper Bound PCDD/F TEQ (WHO 2005)	208

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalenc
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
J	indicates that a target analyte was detected below the calibrated range.

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Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(31 THRU 35) TEST #3 UNIT #2**	Sampling Date	22-Oct-15
ALS Sample ID	L1692397-7	Extraction Date	26-Oct-15
Analysis Method	EPA M23A	Sample Size	1 Train
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
T.Patterson
--e-signature--
29-Oct-2015

Run Information	**Run 1**
Filename	7-151028A13
Run Date	28-Oct-15 23:51
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<11	11	U		60
1,2,3,7,8-PeCDD	1	31.87	<15	8.5	M,J,R	15	300
1,2,3,4,7,8-HxCDD	0.1	33.94	73.8	6.8	J		300
1,2,3,6,7,8-HxCDD	0.1	33.99	340	7.0			300
1,2,3,7,8,9-HxCDD	0.1	34.11	141	6.9	J		300
1,2,3,4,6,7,8-HpCDD	0.01	35.59	2550	21			300
OCDD	0.0003	37.06	2080	20			600
2,3,7,8-TCDF	0.1	NotFnd	<15	15	U		60
1,2,3,7,8-PeCDF	0.03	30.91	22.5	9.5	M,J		300
2,3,4,7,8-PeCDF	0.3	31.65	61.2	9.3	J		300
1,2,3,4,7,8-HxCDF	0.1	33.44	88.6	6.0	J		300
1,2,3,6,7,8-HxCDF	0.1	33.52	114	5.9	J		300
2,3,4,6,7,8-HxCDF	0.1	33.84	215	5.9	J		300
1,2,3,7,8,9-HxCDF	0.1	34.29	51.9	6.5	J		300
1,2,3,4,6,7,8-HpCDF	0.01	35.03	646	4.5			300
1,2,3,4,7,8,9-HpCDF	0.01	35.84	134	5.4	M,J		300
OCDF	0.0003	37.15	584	7.8	J		600

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	600	27.55	92	70-130
13C12-1,2,3,4,7,8-HxCDD	6000	33.93	75	70-130
13C12-2,3,4,7,8-PeCDF	6000	31.64	98	70-130
13C12-1,2,3,4,7,8-HxCDF	6000	33.43	77	70-130
13C12-1,2,3,4,7,8,9-HpCDF	6000	35.83	91	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.52	76	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.85	76	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.98	81	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.59	78	25-130
13C12-OCDD	24000	37.05	76	25-130
13C12-2,3,7,8-TCDF	12000	26.62	81	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.89	83	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.51	90	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.03	82	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.26	86	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	1	152	11	60
Total-PeCDD	4	1120	8.5	300
Total-HxCDD	6	4560	7.0	300
Total-HpCDD	4	5410	21	300
Total-TCDF	3	121	15	60
Total-PeCDF	7	553	9.5	300
Total-HxCDF	12	1250	6.5	300
Total-HpCDF	3	1060	5.4	300

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	156
Mid Point PCDD/F TEQ (WHO 2005)	177
Upper Bound PCDD/F TEQ (WHO 2005)	183

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalenc
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(36 THRU 40) BLANK UNIT #2**	Sampling Date	22-Oct-15	
ALS Sample ID	L1692397-8	Extraction Date	26-Oct-15	Approved:
Analysis Method	EPA M23A	Sample Size	1 Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	29-Oct-2015

Run Information	**Run 1**
Filename	7-151028A14
Run Date	29-Oct-15 00:33
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<11	11	U		60
1,2,3,7,8-PeCDD	1	NotFnd	<7.4	7.4	U		300
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<9.0	9.0	U		300
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<9.2	9.2	U		300
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<9.1	9.1	U		300
1,2,3,4,6,7,8-HpCDD	0.01	NotFnd	<8.7	8.7	U		300
OCDD	0.0003	37.05	<8.0	8.0	M,U	6.7	600
2,3,7,8-TCDF	0.1	NotFnd	<13	13	U		60
1,2,3,7,8-PeCDF	0.03	NotFnd	<7.1	7.1	U		300
2,3,4,7,8-PeCDF	0.3	NotFnd	<6.9	6.9	U		300
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<4.5	4.5	U		300
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<4.4	4.4	U		300
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<4.4	4.4	U		300
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<4.8	4.8	U		300
1,2,3,4,6,7,8-HpCDF	0.01	NotFnd	<5.3	5.3	U		300
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<6.4	6.4	U		300
OCDF	0.0003	NotFnd	<11	11	U		600

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	600	27.57	92	70-130
13C12-1,2,3,4,7,8-HxCDD	6000	33.93	62	70-130
13C12-2,3,4,7,8-PeCDF	6000	31.64	94	70-130
13C12-1,2,3,4,7,8-HxCDF	6000	33.43	81	70-130
13C12-1,2,3,4,7,8,9-HpCDF	6000	35.83	83	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.54	71	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.85	67	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.98	87	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.57	74	25-130
13C12-OCDD	24000	37.04	68	25-130
13C12-2,3,7,8-TCDF	12000	26.64	75	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.89	74	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.49	93	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.02	84	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.25	86	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	0	<11	11	U	60
Total-PeCDD	0	<7.4	7.4	U	300
Total-HxCDD	1	10.9	9.2		300
Total-HpCDD	0	<8.7	8.7	U	300
Total-TCDF	0	<13	13	U	60
Total-PeCDF	0	<7.1	7.1	U	300
Total-HxCDF	0	<4.8	4.8	U	300
Total-HpCDF	0	<6.4	6.4	U	300

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.00
Mid Point PCDD/F TEQ (WHO 2005)	13.4
Upper Bound PCDD/F TEQ (WHO 2005)	26.7

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalenc
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.

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Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a	
ALS Sample ID	WG2199699-1	Extraction Date	26-Oct-15	Approved:
Analysis Method	EPA M23A	Sample Size	1 0	T.Patterson
Analysis Type	Blank	Percent Moisture	n/a	--e-signature--
Sample Matrix	QC	Split Ratio	6	29-Oct-2015

Run Information	**Run 1**
Filename	7-151028A06
Run Date	28-Oct-15 18:58
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<11	11	U		60
1,2,3,7,8-PeCDD	1	NotFnd	<6.1	6.1	U		300
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<5.3	5.3	U		300
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<5.4	5.4	U		300
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<5.4	5.4	U		300
1,2,3,4,6,7,8-HpCDD	0.01	35.60	5.96	5.3	M,J		300
OCDD	0.0003	37.06	<8.0	7.9	M,J,R	8.0	600
2,3,7,8-TCDF	0.1	NotFnd	<12	12	U		60
1,2,3,7,8-PeCDF	0.03	NotFnd	<4.8	4.8	U		300
2,3,4,7,8-PeCDF	0.3	NotFnd	<4.7	4.7	U		300
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<4.6	4.6	U		300
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<4.5	4.5	U		300
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<4.5	4.5	U		300
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<5.0	5.0	U		300
1,2,3,4,6,7,8-HpCDF	0.01	NotFnd	<5.2	5.2	U		300
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<6.4	6.4	U		300
OCDF	0.0003	NotFnd	<8.4	8.4	U		600

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	600		NS	
13C12-1,2,3,4,7,8-HxCDD	6000		NS	
13C12-2,3,4,7,8-PeCDF	6000		NS	
13C12-1,2,3,4,7,8-HxCDF	6000		NS	
13C12-1,2,3,4,7,8,9-HpCDF	6000		NS	
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.54	66	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.85	69	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	33.98	67	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.59	73	25-130
13C12-OCDD	24000	37.05	68	25-130
13C12-2,3,7,8-TCDF	12000	26.62	71	40-130
13C12-1,2,3,7,8-PeCDF	12000	30.89	73	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.51	75	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.03	79	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.26	86	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	0	<11	11	U	60
Total-PeCDD	0	<6.1	6.1	U	300
Total-HxCDD	0	<5.4	5.4	U	300
Total-HpCDD	1	5.96	5.3		300
Total-TCDF	0	<12	12	U	60
Total-PeCDF	0	<4.8	4.8	U	300
Total-HxCDF	0	<5.0	5.0	U	300
Total-HpCDF	0	<6.4	6.4	U	300

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.0596
Mid Point PCDD/F TEQ (WHO 2005)	11.8
Upper Bound PCDD/F TEQ (WHO 2005)	23.5

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalenc
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG2199699-2	Extraction Date	26-Oct-15
Analysis Method	EPA M23A	Sample Size	1 n/a
Analysis Type	LCS	Percent Moisture	n/a
Sample Matrix	QC	Split Ratio	6

Approved:
T.Patterson
--e-signature--
29-Oct-2015

Run Information	**Run 1**
Filename	7-151028A03
Run Date	28-Oct-15 16:52
Final Volume	20 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,3,7,8-TCDD	1200	27.55	108	70-130	
1,2,3,7,8-PeCDD	6000	31.87	111	70-130	
1,2,3,4,7,8-HxCDD	6000	33.94	84	70-130	
1,2,3,6,7,8-HxCDD	6000	33.99	126	70-130	
1,2,3,7,8,9-HxCDD	6000	34.12	120	70-130	
1,2,3,4,6,7,8-HpCDD	6000	35.59	106	70-130	
OCDD	12000	37.06	99	70-130	
2,3,7,8-TCDF	1200	26.64	101	70-130	
1,2,3,7,8-PeCDF	6000	30.90	105	70-130	
2,3,4,7,8-PeCDF	6000	31.65	96	70-130	
1,2,3,4,7,8-HxCDF	6000	33.45	97	70-130	
1,2,3,6,7,8-HxCDF	6000	33.52	117	70-130	
2,3,4,6,7,8-HxCDF	6000	33.84	101	70-130	
1,2,3,7,8,9-HxCDF	6000	34.27	97	70-130	
1,2,3,4,6,7,8-HpCDF	6000	35.04	95	70-130	
1,2,3,4,7,8,9-HpCDF	6000	35.84	88	70-130	
OCDF	12000	37.15	102	70-130	
Field Spike Standards	**pg**		**% Rec**	**Limits**	
37Cl4-2,3,7,8-TCDD	600		NS		
13C12-1,2,3,4,7,8-HxCDD	6000		NS		
13C12-2,3,4,7,8-PeCDF	6000		NS		
13C12-1,2,3,4,7,8-HxCDF	6000		NS		
13C12-1,2,3,4,7,8,9-HpCDF	6000		NS		
Extraction Standards					
13C12-2,3,7,8-TCDD	12000	27.52	65	40-130	
13C12-1,2,3,7,8-PeCDD	12000	31.85	68	40-130	
13C12-1,2,3,6,7,8-HxCDD	12000	33.98	67	40-130	
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.59	70	25-130	
13C12-OCDD	24000	37.05	70	25-130	
13C12-2,3,7,8-TCDF	12000	26.62	70	40-130	
13C12-1,2,3,7,8-PeCDF	12000	30.89	72	40-130	
13C12-1,2,3,6,7,8-HxCDF	12000	33.51	72	40-130	
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.03	77	25-130	
Cleanup Standard	**pg**				
13C12-1,2,3,7,8,9-HxCDF	12000	34.26	85	40-130	

ALS Life Sciences
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Certificate of Analysis

ALS Project Contact:	Steve Kennedy	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Rd.
ALS WO#:	L1695738		Mississauga, ON
Date of Report	5-Nov-15		L5J 2Y4
Date of Sample Receipt	30-Oct-15	**Client Contact:**	Chris Belore
		Client Project ID:	21546-2

COMMENTS: **PCDD/F by EPA M23A**

Samples L1695738-1,2,3,5,6,7 all show low level responses in the chlorinated diphenyl ether channel that elute at similar retention times to 1,2,3,4,7,8-HxCDF and 1,2,3,6,7,8-HxCDF. These responses are not judged to be from chlorinated diphenyl ethers since (a) they are not removed by florisil nor carbon column clean-ups and (b) do not elute at the common retention times for known chlorinated diphenyl ether peaks. In the analyst's judgment these responses are not from chlorinated diphenyl ethers and therefore there is no negative impact to the reported PCDD/F values from these co-eluting compounds.
Florisil clean-up was used as an added step to improve the quality of the extract.

Ron McLeod, PhD
Technical Director

ALS Life sciences

Sample Analysis summary Report

Sample Name	15-21546-2-SVOC-(1 THRU 5) UNIT#1 TEST#4	15-21546-2-SVOC-(6 THRU 10) UNIT#1 TEST#5	15-21546-2-SVOC-(11 THRU 15) UNIT#1 TEST#6	15-21546-2-SVOC-(16 THRU 20) UNIT#1 BLANK
ALS Sample ID	L1695738-1	L1695738-2	L1695738-3	L1695738-4
Sample Size	1	1	1	1
Sample size units	Train	Train	Train	Train
Percent Moisture	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack
Sampling Date	28-Oct-15	29-Oct-15	29-Oct-15	28-Oct-15
Extraction Date	2-Nov-15	2-Nov-15	2-Nov-15	2-Nov-15
Target Analytes	**pg**	**pg**	**pg**	**pg**
2,3,7,8-TCDD	<7.6	8.50	<6.7	<7.6
1,2,3,7,8-PeCDD	27.0	33.1	22.8	<3.4
1,2,3,4,7,8-HxCDD	62.1	64.2	51.1	<3.3
1,2,3,6,7,8-HxCDD	183	205	164	<3.4
1,2,3,7,8,9-HxCDD	94.6	<97	97.6	<3.4
1,2,3,4,6,7,8-HpCDD	2700	3180	2320	<4.2
OCDD	5110	6440	4420	3.71
2,3,7,8-TCDF	<30	<27	<25	<5.3
1,2,3,7,8-PeCDF	43.3	<37	47.4	<2.8
2,3,4,7,8-PeCDF	69.9	79.1	74.1	<2.7
1,2,3,4,7,8-HxCDF	54.3	56.5	<44	<2.1
1,2,3,6,7,8-HxCDF	69.8	77.9	61.4	<2.0
2,3,4,6,7,8-HxCDF	113	129	105	<2.0
1,2,3,7,8,9-HxCDF	28.7	29.8	27.0	<2.2
1,2,3,4,6,7,8-HpCDF	585	773	532	<2.8
1,2,3,4,7,8,9-HpCDF	101	104	75.0	<3.4
OCDF	956	1180	825	<3.5
Field Spike Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	96	92	93	94
13C12-1,2,3,4,7,8-HxCDD	90	75	101	91
13C12-2,3,4,7,8-PeCDF	102	98	101	98
13C12-1,2,3,4,7,8-HxCDF	101	91	96	106
13C12-1,2,3,4,7,8,9-HpCDF	93	88	90	83
Extraction Standards				
13C12-2,3,7,8-TCDD	74	76	93	62
13C12-1,2,3,7,8-PeCDD	76	79	97	65
13C12-1,2,3,6,7,8-HxCDD	81	94	104	71
13C12-1,2,3,4,6,7,8-HpCDD	87	94	108	71
13C12-OCDD	87	92	105	77
13C12-2,3,7,8-TCDF	78	79	98	65
13C12-1,2,3,7,8-PeCDF	82	81	101	68
13C12-1,2,3,6,7,8-HxCDF	85	96	113	70
13C12-1,2,3,4,6,7,8-HpCDF	88	94	111	74
Cleanup Standard				
13C12-1,2,3,7,8,9-HxCDF	84	86	87	66
Homologue Group Totals	**pg**	**pg**	**pg**	**pg**
Total-TCDD	754	860	677	<7.6
Total-PeCDD	1390	1440	1220	<3.4
Total-HxCDD	3150	3490	2960	<3.4
Total-HpCDD	6270	7560	5480	<4.2
Total-TCDF	1690	2270	1980	<5.3
Total-PeCDF	860	1100	1040	<2.8
Total-HxCDF	751	893	664	<2.2
Total-HpCDF	1100	1400	783	<3.4
Toxic Equivalency - (WHO 2005)				
Lower Bound PCDD/F TEQ (WHO 2005)	145	164	128	0.00111
Mid Point PCDD/F TEQ (WHO 2005)	152	178	138	7.19
Upper Bound PCDD/F TEQ (WHO 2005)	156	178	142	14.4

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Sample Analysis summary Report

Sample Name	15-21546-2-SVOC- (21 THRU 25) UNIT#2 TEST#4	15-21546-2-SVOC- (26 THRU 30) UNIT#2 TEST#5	15-21546-2-SVOC- (31 THRU 35) UNIT#2 TEST#6	15-21546-2-SVOC- (36 THRU 40) UNIT#2 BLANK
ALS Sample ID	L1695738-5	L1695738-6	L1695738-7	L1695738-8
Sample Size	1	1	1	1
Sample size units	Train	Train	Train	Train
Percent Moisture	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack
Sampling Date	28-Oct-15	29-Oct-15	29-Oct-15	28-Oct-15
Extraction Date	2-Nov-15	2-Nov-15	2-Nov-15	2-Nov-15
Target Analytes	pg	pg	pg	pg
2,3,7,8-TCDD	<7.2	<10	<8.9	<8.3
1,2,3,7,8-PeCDD	15.3	<18	<18	<4.3
1,2,3,4,7,8-HxCDD	<47	87.3	69.2	<4.2
1,2,3,6,7,8-HxCDD	215	274	256	<4.3
1,2,3,7,8,9-HxCDD	<80	118	109	<4.3
1,2,3,4,6,7,8-HpCDD	1710	2430	2370	<3.7
OCDD	1660	2270	2330	<3.0
2,3,7,8-TCDF	12.1	13.2	<14	<6.8
1,2,3,7,8-PeCDF	<14	17.4	<15	<3.9
2,3,4,7,8-PeCDF	46.7	<42	48.3	<3.8
1,2,3,4,7,8-HxCDF	56.6	70.4	61.6	<3.0
1,2,3,6,7,8-HxCDF	78.0	106	86.0	<2.9
2,3,4,6,7,8-HxCDF	133	182	173	<2.9
1,2,3,7,8,9-HxCDF	31.9	40.8	<34	<3.2
1,2,3,4,6,7,8-HpCDF	428	625	594	<2.2
1,2,3,4,7,8,9-HpCDF	95.2	139	123	<2.7
OCDF	453	610	611	<4.0
Field Spike Standards	% Rec	% Rec	% Rec	% Rec
37Cl4-2,3,7,8-TCDD	92	93	90	93
13C12-1,2,3,4,7,8-HxCDD	91	85	76	81
13C12-2,3,4,7,8-PeCDF	102	99	103	101
13C12-1,2,3,4,7,8-HxCDF	105	98	93	96
13C12-1,2,3,4,7,8,9-HpCDF	86	90	91	83
Extraction Standards				
13C12-2,3,7,8-TCDD	66	57	59	66
13C12-1,2,3,7,8-PeCDD	70	60	62	71
13C12-1,2,3,6,7,8-HxCDD	74	68	70	79
13C12-1,2,3,4,6,7,8-HpCDD	78	71	69	78
13C12-OCDD	76	71	65	83
13C12-2,3,7,8-TCDF	71	59	62	70
13C12-1,2,3,7,8-PeCDF	74	63	65	74
13C12-1,2,3,6,7,8-HxCDF	75	71	72	81
13C12-1,2,3,4,6,7,8-HpCDF	81	73	72	83
Cleanup Standard				
13C12-1,2,3,7,8,9-HxCDF	80	79	79	81
Homologue Group Totals	pg	pg	pg	pg
Total-TCDD	192	298	235	<8.3
Total-PeCDD	816	681	964	<4.3
Total-HxCDD	2690	4060	3530	<4.3
Total-HpCDD	3520	5030	4910	<3.7
Total-TCDF	341	713	310	<6.8
Total-PeCDF	279	544	404	<3.9
Total-HxCDF	853	1150	977	<3.2
Total-HpCDF	892	999	1190	<2.7
Toxic Equivalency - (WHO 2005)				
Lower Bound PCDD/F TEQ (WHO 2005)	105	122	122	0.00
Mid Point PCDD/F TEQ (WHO 2005)	122	158	149	8.55
Upper Bound PCDD/F TEQ (WHO 2005)	125	163	154	17.1

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Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG2204674-1	WG2204674-2
Sample Size	1.00	1.00
Sample size units	Train	n/a
Percent Moisture	n/a	n/a
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	2-Nov-15	2-Nov-15
Target Analytes	**pg**	**% Rec**
2,3,7,8-TCDD	<5.3	107
1,2,3,7,8-PeCDD	<2.4	114
1,2,3,4,7,8-HxCDD	<2.7	98
1,2,3,6,7,8-HxCDD	<2.8	117
1,2,3,7,8,9-HxCDD	<2.8	119
1,2,3,4,6,7,8-HpCDD	<2.9	107
OCDD	<3.2	100
2,3,7,8-TCDF	<4.0	101
1,2,3,7,8-PeCDF	<2.4	105
2,3,4,7,8-PeCDF	<2.3	97
1,2,3,4,7,8-HxCDF	<1.9	98
1,2,3,6,7,8-HxCDF	<1.8	114
2,3,4,6,7,8-HxCDF	<1.8	100
1,2,3,7,8,9-HxCDF	<2.0	103
1,2,3,4,6,7,8-HpCDF	<1.8	100
1,2,3,4,7,8,9-HpCDF	<2.1	99
OCDF	<3.4	105
Field Spike Standards	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	NS	NS
13C12-1,2,3,4,7,8-HxCDD	NS	NS
13C12-2,3,4,7,8-PeCDF	NS	NS
13C12-1,2,3,4,7,8-HxCDF	NS	NS
13C12-1,2,3,4,7,8,9-HpCDF	NS	NS
Extraction Standards		
13C12-2,3,7,8-TCDD	74	69
13C12-1,2,3,7,8-PeCDD	81	73
13C12-1,2,3,6,7,8-HxCDD	75	72
13C12-1,2,3,4,6,7,8-HpCDD	83	85
13C12-OCDD	75	85
13C12-2,3,7,8-TCDF	78	73
13C12-1,2,3,7,8-PeCDF	85	78
13C12-1,2,3,6,7,8-HxCDF	81	76
13C12-1,2,3,4,6,7,8-HpCDF	86	89
Cleanup Standard		
13C12-1,2,3,7,8,9-HxCDF	83	89
Homologue Group Totals	**pg**	
Total-TCDD	<5.3	
Total-PeCDD	<2.4	
Total-HxCDD	<2.8	
Total-HpCDD	<2.9	
Total-TCDF	<4.0	
Total-PeCDF	<2.4	
Total-HxCDF	<2.0	
Total-HpCDF	<2.1	
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	0.00	
Mid Point PCDD/F TEQ (WHO 2005)	5.26	
Upper Bound PCDD/F TEQ (WHO 2005)	10.5	

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Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(1 THRU 5) UNIT#1 TEST#4**	Sampling Date	28-Oct-15	
ALS Sample ID	L1695738-1	Extraction Date	2-Nov-15	Approved:
Analysis Method	EPA M23A	Sample Size	1 Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	05-Nov-2015

Run Information	**Run 1**
Filename	7-151104A20
Run Date	05-Nov-15 03:34
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 Db5MSUSE700124H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<7.6	7.6	U		60
1,2,3,7,8-PeCDD	1	31.99	27.0	3.9	J		300
1,2,3,4,7,8-HxCDD	0.1	34.03	62.1	6.5	J		300
1,2,3,6,7,8-HxCDD	0.1	34.08	183	6.7	J		300
1,2,3,7,8,9-HxCDD	0.1	34.20	94.6	6.6	J		300
1,2,3,4,6,7,8-HpCDD	0.01	35.66	2700	10			300
OCDD	0.0003	37.14	5110	8.9			600
2,3,7,8-TCDF	0.1	26.88	<30	8.5	M,J,R	30	60
1,2,3,7,8-PeCDF	0.03	31.05	43.3	4.9	J		300
2,3,4,7,8-PeCDF	0.3	31.77	69.9	4.8	J		300
1,2,3,4,7,8-HxCDF	0.1	33.54	54.3	2.7	J		300
1,2,3,6,7,8-HxCDF	0.1	33.60	69.8	2.7	J		300
2,3,4,6,7,8-HxCDF	0.1	33.93	113	2.6	J		300
1,2,3,7,8,9-HxCDF	0.1	34.37	28.7	2.9	J		300
1,2,3,4,6,7,8-HpCDF	0.01	35.11	585	6.3			300
1,2,3,4,7,8,9-HpCDF	0.01	35.92	101	7.6	J		300
OCDF	0.0003	37.23	956	4.2			600

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	600	27.82	98	70-130
13C12-1,2,3,4,7,8-HxCDD	6000	34.02	83	70-130
13C12-2,3,4,7,8-PeCDF	6000	31.76	100	70-130
13C12-1,2,3,4,7,8-HxCDF	6000	33.53	88	70-130
13C12-1,2,3,4,7,8,9-HpCDF	6000	35.91	104	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.80	74	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.98	76	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	34.07	81	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.65	87	25-130
13C12-OCDD	24000	37.14	87	25-130
13C12-2,3,7,8-TCDF	12000	26.88	78	40-130
13C12-1,2,3,7,8-PeCDF	12000	31.03	82	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.59	85	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.11	88	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.34	84	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	5	754	7.6	60
Total-PeCDD	8	1390	3.9	300
Total-HxCDD	6	3150	6.7	300
Total-HpCDD	2	6270	10	300
Total-TCDF	14	1690	8.5	60
Total-PeCDF	8	860	4.9	300
Total-HxCDF	11	751	2.9	300
Total-HpCDF	4	1100	7.6	300

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	145
Mid Point PCDD/F TEQ (WHO 2005)	152
Upper Bound PCDD/F TEQ (WHO 2005)	156

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(6 THRU 10) UNIT#1 TEST#5**	Sampling Date	29-Oct-15
ALS Sample ID	L1695738-2	Extraction Date	2-Nov-15
Analysis Method	EPA M23A	Sample Size	1 Train
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
T.Patterson
--e-signature--
05-Nov-2015

Run Information	**Run 1**
Filename	7-151104A21
Run Date	05-Nov-15 04:15
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 Db5MSUSE700124H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	27.84	8.50	7.5	M,J		60
1,2,3,7,8-PeCDD	1	31.99	33.1	5.7	J		300
1,2,3,4,7,8-HxCDD	0.1	34.02	64.2	6.9	J		300
1,2,3,6,7,8-HxCDD	0.1	34.07	205	7.1	J		300
1,2,3,7,8,9-HxCDD	0.1	34.20	<97	7.0	J,R	97	300
1,2,3,4,6,7,8-HpCDD	0.01	35.66	3180	8.9			300
OCDD	0.0003	37.14	6440	13			600
2,3,7,8-TCDF	0.1	26.93	<27	7.2	J,R	27	60
1,2,3,7,8-PeCDF	0.03	31.05	<37	5.5	J,R	37	300
2,3,4,7,8-PeCDF	0.3	31.77	79.1	5.4	J		300
1,2,3,4,7,8-HxCDF	0.1	33.53	56.5	3.5	J		300
1,2,3,6,7,8-HxCDF	0.1	33.60	77.9	3.4	J		300
2,3,4,6,7,8-HxCDF	0.1	33.93	129	3.4	J		300
1,2,3,7,8,9-HxCDF	0.1	34.37	29.8	3.8	J		300
1,2,3,4,6,7,8-HpCDF	0.01	35.11	773	4.8			300
1,2,3,4,7,8,9-HpCDF	0.01	35.91	104	5.9	J		300
OCDF	0.0003	37.22	1180	6.5			600

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	600	27.83	94	70-130
13C12-1,2,3,4,7,8-HxCDD	6000	34.02	69	70-130
13C12-2,3,4,7,8-PeCDF	6000	31.76	97	70-130
13C12-1,2,3,4,7,8-HxCDF	6000	33.52	80	70-130
13C12-1,2,3,4,7,8,9-HpCDF	6000	35.91	98	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.82	76	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.98	79	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	34.06	94	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.65	94	25-130
13C12-OCDD	24000	37.13	92	25-130
13C12-2,3,7,8-TCDF	12000	26.90	79	40-130
13C12-1,2,3,7,8-PeCDF	12000	31.03	81	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.59	96	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.10	94	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.34	86	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	7	860	7.5	60
Total-PeCDD	8	1440	5.7	300
Total-HxCDD	5	3490	7.1	300
Total-HpCDD	2	7560	8.9	300
Total-TCDF	18	2270	7.2	60
Total-PeCDF	13	1100	5.5	300
Total-HxCDF	12	893	3.8	300
Total-HpCDF	4	1400	5.9	300

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	164
Mid Point PCDD/F TEQ (WHO 2005)	178
Upper Bound PCDD/F TEQ (WHO 2005)	178

EDL — Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF — Indicates the Toxic Equivalency Factor — TEQ — Indicates the Toxic Equivalency
M — Indicates that a peak has been manually integrated.

J — indicates that a target analyte was detected below the calibrated range.
R — Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(11 THRU 15) UNIT#1 TEST#6**	Sampling Date	29-Oct-15		
ALS Sample ID	L1695738-3	Extraction Date	2-Nov-15		Approved:
Analysis Method	EPA M23A	Sample Size	1	Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	6		05-Nov-2015

Run Information	**Run 1**
Filename	7-151104A22
Run Date	05-Nov-15 04:57
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 Db5MSUSE700124H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<6.7	6.7	U		60
1,2,3,7,8-PeCDD	1	31.99	22.8	3.9	J		300
1,2,3,4,7,8-HxCDD	0.1	34.03	51.1	6.1	J		300
1,2,3,6,7,8-HxCDD	0.1	34.07	164	6.3	J		300
1,2,3,7,8,9-HxCDD	0.1	34.20	97.6	6.2	J		300
1,2,3,4,6,7,8-HpCDD	0.01	35.66	2320	13			300
OCDD	0.0003	37.14	4420	8.1			600
2,3,7,8-TCDF	0.1	26.88	<25	5.2	J,R	25	60
1,2,3,7,8-PeCDF	0.03	31.05	47.4	3.7	J		300
2,3,4,7,8-PeCDF	0.3	31.77	74.1	3.6	J		300
1,2,3,4,7,8-HxCDF	0.1	33.54	<44	3.4	J,R	44	300
1,2,3,6,7,8-HxCDF	0.1	33.60	61.4	3.3	J		300
2,3,4,6,7,8-HxCDF	0.1	33.93	105	3.3	J		300
1,2,3,7,8,9-HxCDF	0.1	34.37	27.0	3.7	J		300
1,2,3,4,6,7,8-HpCDF	0.01	35.11	532	4.3			300
1,2,3,4,7,8,9-HpCDF	0.01	35.91	75.0	5.3	J		300
OCDF	0.0003	37.23	825	3.7			600

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	600	27.82	95	70-130
13C12-1,2,3,4,7,8-HxCDD	6000	34.02	93	70-130
13C12-2,3,4,7,8-PeCDF	6000	31.76	99	70-130
13C12-1,2,3,4,7,8-HxCDF	6000	33.53	84	70-130
13C12-1,2,3,4,7,8,9-HpCDF	6000	35.91	100	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.80	93	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.98	97	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	34.07	104	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.65	108	25-130
13C12-OCDD	24000	37.14	105	25-130
13C12-2,3,7,8-TCDF	12000	26.88	98	40-130
13C12-1,2,3,7,8-PeCDF	12000	31.03	101	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.59	113	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.11	111	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.34	87	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	**LQL**
Total-TCDD	4	677	6.7	60
Total-PeCDD	7	1220	3.9	300
Total-HxCDD	7	2960	6.3	300
Total-HpCDD	2	5480	13	300
Total-TCDF	15	1980	5.2	60
Total-PeCDF	10	1040	3.7	300
Total-HxCDF	10	664	3.7	300
Total-HpCDF	3	783	5.3	300

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	128
Mid Point PCDD/F TEQ (WHO 2005)	138
Upper Bound PCDD/F TEQ (WHO 2005)	142

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency

U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(16 THRU 20) UNIT#1 BLANK**	Sampling Date	28-Oct-15	
ALS Sample ID	L1695738-4	Extraction Date	2-Nov-15	Approved:
Analysis Method	EPA M23A	Sample Size	1 Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	05-Nov-2015

Run Information	**Run 1**
Filename	7-151104A18
Run Date	05-Nov-15 02:10
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 Db5MSUSE700124H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<7.6	7.6	U		60
1,2,3,7,8-PeCDD	1	NotFnd	<3.4	3.4	U		300
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<3.3	3.3	U		300
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<3.4	3.4	U		300
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<3.4	3.4	U		300
1,2,3,4,6,7,8-HpCDD	0.01	NotFnd	<4.2	4.2	U		300
OCDD	0.0003	37.14	3.71	2.2	M,J		600
2,3,7,8-TCDF	0.1	NotFnd	<5.3	5.3	U		60
1,2,3,7,8-PeCDF	0.03	NotFnd	<2.8	2.8	U		300
2,3,4,7,8-PeCDF	0.3	NotFnd	<2.7	2.7	U		300
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<2.1	2.1	U		300
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<2.0	2.0	U		300
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<2.0	2.0	U		300
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<2.2	2.2	U		300
1,2,3,4,6,7,8-HpCDF	0.01	NotFnd	<2.8	2.8	U		300
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<3.4	3.4	U		300
OCDF	0.0003	NotFnd	<3.5	3.5	U		600

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	600	27.83	96	70-130
13C12-1,2,3,4,7,8-HxCDD	6000	34.02	84	70-130
13C12-2,3,4,7,8-PeCDF	6000	31.76	97	70-130
13C12-1,2,3,4,7,8-HxCDF	6000	33.53	93	70-130
13C12-1,2,3,4,7,8,9-HpCDF	6000	35.91	92	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.80	62	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.98	65	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	34.07	71	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.65	71	25-130
13C12-OCDD	24000	37.14	77	25-130
13C12-2,3,7,8-TCDF	12000	26.88	65	40-130
13C12-1,2,3,7,8-PeCDF	12000	31.03	68	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.59	70	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.11	74	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.34	66	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	0	<7.6	7.6	U	60
Total-PeCDD	0	<3.4	3.4	U	300
Total-HxCDD	0	<3.4	3.4	U	300
Total-HpCDD	0	<4.2	4.2	U	300
Total-TCDF	0	<5.3	5.3	U	60
Total-PeCDF	0	<2.8	2.8	U	300
Total-HxCDF	0	<2.2	2.2	U	300
Total-HpCDF	0	<3.4	3.4	U	300

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.00111
Mid Point PCDD/F TEQ (WHO 2005)	7.19
Upper Bound PCDD/F TEQ (WHO 2005)	14.4

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
J	indicates that a target analyte was detected below the calibrated range.

ALS Life sciences

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(21 THRU 25) UNIT#2 TEST#4**	Sampling Date	28-Oct-15	
ALS Sample ID	L1695738-5	Extraction Date	2-Nov-15	Approved:
Analysis Method	EPA M23A	Sample Size	1 Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	05-Nov-2015

Run Information	**Run 1**
Filename	7-151104A23
Run Date	05-Nov-15 05:39
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 Db5MSUSE700124H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<7.2	7.2	U		60
1,2,3,7,8-PeCDD	1	31.98	15.3	8.3	J		300
1,2,3,4,7,8-HxCDD	0.1	34.02	<47	5.1	J,R	47	300
1,2,3,6,7,8-HxCDD	0.1	34.07	215	5.3	J		300
1,2,3,7,8,9-HxCDD	0.1	34.19	<80	5.2	J,R	80	300
1,2,3,4,6,7,8-HpCDD	0.01	35.65	1710	8.8			300
OCDD	0.0003	37.14	1660	5.8			600
2,3,7,8-TCDF	0.1	26.88	12.1	6.5	J		60
1,2,3,7,8-PeCDF	0.03	31.03	<14	5.7	J,R	14	300
2,3,4,7,8-PeCDF	0.3	31.76	46.7	5.6	J		300
1,2,3,4,7,8-HxCDF	0.1	33.53	56.6	7.0	J		300
1,2,3,6,7,8-HxCDF	0.1	33.59	78.0	6.9	J		300
2,3,4,6,7,8-HxCDF	0.1	33.92	133	6.8	J		300
1,2,3,7,8,9-HxCDF	0.1	34.36	31.9	7.6	J		300
1,2,3,4,6,7,8-HpCDF	0.01	35.10	428	4.3			300
1,2,3,4,7,8,9-HpCDF	0.01	35.91	95.2	5.2	J		300
OCDF	0.0003	37.22	453	4.5	J		600

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	600	27.80	94	70-130
13C12-1,2,3,4,7,8-HxCDD	6000	34.01	84	70-130
13C12-2,3,4,7,8-PeCDF	6000	31.75	100	70-130
13C12-1,2,3,4,7,8-HxCDF	6000	33.52	92	70-130
13C12-1,2,3,4,7,8,9-HpCDF	6000	35.89	96	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.79	66	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.96	70	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	34.06	74	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.64	78	25-130
13C12-OCDD	24000	37.13	76	25-130
13C12-2,3,7,8-TCDF	12000	26.87	71	40-130
13C12-1,2,3,7,8-PeCDF	12000	31.02	74	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.58	75	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.10	81	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.32	80	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	2	192	7.2	60
Total-PeCDD	6	816	8.3	300
Total-HxCDD	4	2690	5.3	300
Total-HpCDD	2	3520	8.8	300
Total-TCDF	10	341	6.5	60
Total-PeCDF	5	279	5.7	300
Total-HxCDF	13	853	7.6	300
Total-HpCDF	4	892	5.2	300

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	105
Mid Point PCDD/F TEQ (WHO 2005)	122
Upper Bound PCDD/F TEQ (WHO 2005)	125

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency

U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life sciences

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(26 THRU 30) UNIT#2 TEST#5**	Sampling Date	29-Oct-15	
ALS Sample ID	L1695738-6	Extraction Date	2-Nov-15	
Analysis Method	EPA M23A	Sample Size	1	Train
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Stack	Split Ratio	6	

Approved:
T.Patterson
--e-signature--
05-Nov-2015

Run Information	**Run 1**
Filename	7-151104A24
Run Date	05-Nov-15 06:21
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 Db5MSUSE700124H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<10	10	U		60
1,2,3,7,8-PeCDD	1	31.98	<18	8.2	M,J,R	18	300
1,2,3,4,7,8-HxCDD	0.1	34.02	87.3	8.0	J		300
1,2,3,6,7,8-HxCDD	0.1	34.07	274	8.3	J		300
1,2,3,7,8,9-HxCDD	0.1	34.19	118	8.1	J		300
1,2,3,4,6,7,8-HpCDD	0.01	35.65	2430	15			300
OCDD	0.0003	37.13	2270	12			600
2,3,7,8-TCDF	0.1	26.93	13.2	9.3	M,J		60
1,2,3,7,8-PeCDF	0.03	31.05	17.4	8.7	M,J		300
2,3,4,7,8-PeCDF	0.3	31.76	<42	8.6	M,J,R	42	300
1,2,3,4,7,8-HxCDF	0.1	33.53	70.4	11	J		300
1,2,3,6,7,8-HxCDF	0.1	33.59	106	10	J		300
2,3,4,6,7,8-HxCDF	0.1	33.92	182	10	J		300
1,2,3,7,8,9-HxCDF	0.1	34.36	40.8	11	J		300
1,2,3,4,6,7,8-HpCDF	0.01	35.11	625	5.9			300
1,2,3,4,7,8,9-HpCDF	0.01	35.91	139	7.2	J		300
OCDF	0.0003	37.22	610	6.1			600

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	600	27.83	95	70-130
13C12-1,2,3,4,7,8-HxCDD	6000	34.01	79	70-130
13C12-2,3,4,7,8-PeCDF	6000	31.76	98	70-130
13C12-1,2,3,4,7,8-HxCDF	6000	33.52	86	70-130
13C12-1,2,3,4,7,8,9-HpCDF	6000	35.89	100	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.80	57	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.96	60	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	34.06	68	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.65	71	25-130
13C12-OCDD	24000	37.13	71	25-130
13C12-2,3,7,8-TCDF	12000	26.90	59	40-130
13C12-1,2,3,7,8-PeCDF	12000	31.03	63	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.59	71	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.10	73	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.34	79	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	3	298	10	60
Total-PeCDD	3	681	8.2	300
Total-HxCDD	7	4060	8.3	300
Total-HpCDD	2	5030	15	300
Total-TCDF	14	713	9.3	60
Total-PeCDF	8	544	8.7	300
Total-HxCDF	12	1150	11	300
Total-HpCDF	3	999	7.2	300

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	122
Mid Point PCDD/F TEQ (WHO 2005)	158
Upper Bound PCDD/F TEQ (WHO 2005)	163

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life sciences

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(31 THRU 35) UNIT#2 TEST#6**	Sampling Date	29-Oct-15
ALS Sample ID	L1695738-7	Extraction Date	2-Nov-15
Analysis Method	EPA M23A	Sample Size	1 Train
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
T.Patterson
--e-signature--
05-Nov-2015

Run Information	**Run 1**
Filename	7-151104A25
Run Date	05-Nov-15 07:03
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 Db5MSUSE700124H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<8.9	8.9	U		60
1,2,3,7,8-PeCDD	1	31.98	<18	7.8	J,R	18	300
1,2,3,4,7,8-HxCDD	0.1	34.03	69.2	6.0	J		300
1,2,3,6,7,8-HxCDD	0.1	34.07	256	6.2	J		300
1,2,3,7,8,9-HxCDD	0.1	34.20	109	6.1	J		300
1,2,3,4,6,7,8-HpCDD	0.01	35.66	2370	12			300
OCDD	0.0003	37.14	2330	8.1			600
2,3,7,8-TCDF	0.1	26.87	<14	13	M,J,R	14	60
1,2,3,7,8-PeCDF	0.03	31.05	<15	8.2	J,R	15	300
2,3,4,7,8-PeCDF	0.3	31.77	48.3	8.0	M,J		300
1,2,3,4,7,8-HxCDF	0.1	33.53	61.6	6.0	J		300
1,2,3,6,7,8-HxCDF	0.1	33.60	86.0	5.9	J		300
2,3,4,6,7,8-HxCDF	0.1	33.93	173	5.8	J		300
1,2,3,7,8,9-HxCDF	0.1	34.37	<34	6.5	J,R	34	300
1,2,3,4,6,7,8-HpCDF	0.01	35.11	594	5.7			300
1,2,3,4,7,8,9-HpCDF	0.01	35.91	123	7.0	J		300
OCDF	0.0003	37.22	611	6.0			600

Field Spike Standards	**pg**	**Ret. Time**	**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	600	27.82	92	70-130
13C12-1,2,3,4,7,8-HxCDD	6000	34.02	70	70-130
13C12-2,3,4,7,8-PeCDF	6000	31.76	101	70-130
13C12-1,2,3,4,7,8-HxCDF	6000	33.52	81	70-130
13C12-1,2,3,4,7,8,9-HpCDF	6000	35.91	101	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.80	59	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.96	62	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	34.07	70	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.65	69	25-130
13C12-OCDD	24000	37.13	65	25-130
13C12-2,3,7,8-TCDF	12000	26.88	62	40-130
13C12-1,2,3,7,8-PeCDF	12000	31.02	65	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.59	72	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.10	72	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.34	79	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	**LQL**
Total-TCDD	4	235	8.9	60
Total-PeCDD	5	964	7.8	300
Total-HxCDD	6	3530	6.2	300
Total-HpCDD	2	4910	12	300
Total-TCDF	3	310	13	60
Total-PeCDF	8	404	8.2	300
Total-HxCDF	11	977	6.5	300
Total-HpCDF	4	1190	7.0	300

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	122
Mid Point PCDD/F TEQ (WHO 2005)	149
Upper Bound PCDD/F TEQ (WHO 2005)	154

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life sciences

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(36 THRU 40) UNIT#2 BLANK**	Sampling Date	28-Oct-15	
ALS Sample ID	L1695738-8	Extraction Date	2-Nov-15	Approved:
Analysis Method	EPA M23A	Sample Size	1 Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	05-Nov-2015

Run Information	**Run 1**
Filename	7-151104A19
Run Date	05-Nov-15 02:52
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 Db5MSUSE700124H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<8.3	8.3	U		60
1,2,3,7,8-PeCDD	1	NotFnd	<4.3	4.3	U		300
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<4.2	4.2	U		300
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<4.3	4.3	U		300
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<4.3	4.3	U		300
1,2,3,4,6,7,8-HpCDD	0.01	NotFnd	<3.7	3.7	U		300
OCDD	0.0003	NotFnd	<3.0	3.0	U		600
2,3,7,8-TCDF	0.1	NotFnd	<6.8	6.8	U		60
1,2,3,7,8-PeCDF	0.03	NotFnd	<3.9	3.9	U		300
2,3,4,7,8-PeCDF	0.3	NotFnd	<3.8	3.8	U		300
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<3.0	3.0	U		300
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<2.9	2.9	U		300
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<2.9	2.9	U		300
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<3.2	3.2	U		300
1,2,3,4,6,7,8-HpCDF	0.01	NotFnd	<2.2	2.2	U		300
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<2.7	2.7	U		300
OCDF	0.0003	NotFnd	<4.0	4.0	U		600

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	600	27.83	95	70-130
13C12-1,2,3,4,7,8-HxCDD	6000	34.01	75	70-130
13C12-2,3,4,7,8-PeCDF	6000	31.76	99	70-130
13C12-1,2,3,4,7,8-HxCDF	6000	33.52	84	70-130
13C12-1,2,3,4,7,8,9-HpCDF	6000	35.89	92	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	12000	27.82	66	40-130
13C12-1,2,3,7,8-PeCDD	12000	31.96	71	40-130
13C12-1,2,3,6,7,8-HxCDD	12000	34.06	79	40-130
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.65	78	25-130
13C12-OCDD	24000	37.13	83	25-130
13C12-2,3,7,8-TCDF	12000	26.90	70	40-130
13C12-1,2,3,7,8-PeCDF	12000	31.03	74	40-130
13C12-1,2,3,6,7,8-HxCDF	12000	33.59	81	40-130
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.10	83	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	12000	34.34	81	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	0	<8.3	8.3	U	60
Total-PeCDD	0	<4.3	4.3	U	300
Total-HxCDD	0	<4.3	4.3	U	300
Total-HpCDD	0	<3.7	3.7	U	300
Total-TCDF	0	<6.8	6.8	U	60
Total-PeCDF	0	<3.9	3.9	U	300
Total-HxCDF	0	<3.2	3.2	U	300
Total-HpCDF	0	<2.7	2.7	U	300

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.00
Mid Point PCDD/F TEQ (WHO 2005)	8.55
Upper Bound PCDD/F TEQ (WHO 2005)	17.1

EDL — Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF — Indicates the Toxic Equivalency Factor; TEQ — Indicates the Toxic Equivalency

U — Indicates that this compound was not detected above the MDL.

ALS Life sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a	
ALS Sample ID	WG2204674-1	Extraction Date	2-Nov-15	Approved:
Analysis Method	EPA M23A	Sample Size	1 Train	*T.Patterson*
Analysis Type	Blank	Percent Moisture	n/a	--e-signature--
Sample Matrix	QC	Split Ratio	6	05-Nov-2015

Run Information	**Run 1**
Filename	7-151104A17
Run Date	05-Nov-15 01:28
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 Db5MSUSE700124H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<5.3	5.3	U		60
1,2,3,7,8-PeCDD	1	NotFnd	<2.4	2.4	U		300
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<2.7	2.7	U		300
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<2.8	2.8	U		300
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<2.8	2.8	U		300
1,2,3,4,6,7,8-HpCDD	0.01	35.66	<2.9	2.9	M,U	1.8	300
OCDD	0.0003	37.14	<3.2	3.2	M,U	1.4	600
2,3,7,8-TCDF	0.1	NotFnd	<4.0	4.0	U		60
1,2,3,7,8-PeCDF	0.03	NotFnd	<2.4	2.4	U		300
2,3,4,7,8-PeCDF	0.3	NotFnd	<2.3	2.3	U		300
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<1.9	1.9	U		300
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<1.8	1.8	U		300
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<1.8	1.8	U		300
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<2.0	2.0	U		300
1,2,3,4,6,7,8-HpCDF	0.01	35.12	<1.8	1.7	M,J,R	1.8	300
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<2.1	2.1	U		300
OCDF	0.0003	NotFnd	<3.4	3.4	U		600
Field Spike Standards	**pg**		**% Rec**				
37Cl4-2,3,7,8-TCDD	600		NS				
13C12-1,2,3,4,7,8-HxCDD	6000		NS				
13C12-2,3,4,7,8-PeCDF	6000		NS				
13C12-1,2,3,4,7,8-HxCDF	6000		NS				
13C12-1,2,3,4,7,8,9-HpCDF	6000		NS				
Extraction Standards							
13C12-2,3,7,8-TCDD	12000	27.80	74	40-130			
13C12-1,2,3,7,8-PeCDD	12000	31.98	81	40-130			
13C12-1,2,3,6,7,8-HxCDD	12000	34.07	75	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.66	83	25-130			
13C12-OCDD	24000	37.14	75	25-130			
13C12-2,3,7,8-TCDF	12000	26.88	78	40-130			
13C12-1,2,3,7,8-PeCDF	12000	31.03	85	40-130			
13C12-1,2,3,6,7,8-HxCDF	12000	33.60	81	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.11	86	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	12000	34.35	83	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	0	<5.3	5.3	U	60
Total-PeCDD	0	<2.4	2.4	U	300
Total-HxCDD	0	<2.8	2.8	U	300
Total-HpCDD	0	<2.9	2.9	U	300
Total-TCDF	0	<4.0	4.0	U	60
Total-PeCDF	0	<2.4	2.4	U	300
Total-HxCDF	0	<2.0	2.0	U	300
Total-HpCDF	0	<2.1	2.1	U	300

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.00
Mid Point PCDD/F TEQ (WHO 2005)	5.26
Upper Bound PCDD/F TEQ (WHO 2005)	10.5

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG2204674-2	Extraction Date	2-Nov-15
Analysis Method	EPA M23A	Sample Size	1 n/a
Analysis Type	LCS	Percent Moisture	n/a
Sample Matrix	QC	Split Ratio	6

Approved:
T.Patterson
--e-signature--
05-Nov-2015

Run Information	**Run 1**
Filename	7-151104A13
Run Date	04-Nov-15 22:42
Final Volume	20 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-7 Db5MSUSE700124H

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,3,7,8-TCDD	1200	27.83	107	70-130	
1,2,3,7,8-PeCDD	6000	31.99	114	70-130	
1,2,3,4,7,8-HxCDD	6000	34.03	98	70-130	
1,2,3,6,7,8-HxCDD	6000	34.08	117	70-130	
1,2,3,7,8,9-HxCDD	6000	34.20	119	70-130	
1,2,3,4,6,7,8-HpCDD	6000	35.66	107	70-130	
OCDD	12000	37.14	100	70-130	
2,3,7,8-TCDF	1200	26.91	101	70-130	
1,2,3,7,8-PeCDF	6000	31.05	105	70-130	
2,3,4,7,8-PeCDF	6000	31.77	97	70-130	
1,2,3,4,7,8-HxCDF	6000	33.54	98	70-130	
1,2,3,6,7,8-HxCDF	6000	33.60	114	70-130	
2,3,4,6,7,8-HxCDF	6000	33.93	100	70-130	
1,2,3,7,8,9-HxCDF	6000	34.35	103	70-130	
1,2,3,4,6,7,8-HpCDF	6000	35.11	100	70-130	
1,2,3,4,7,8,9-HpCDF	6000	35.92	99	70-130	
OCDF	12000	37.23	105	70-130	
Field Spike Standards	**pg**		**% Rec**		
37Cl4-2,3,7,8-TCDD	600		NS		
13C12-1,2,3,4,7,8-HxCDD	6000		NS		
13C12-2,3,4,7,8-PeCDF	6000		NS		
13C12-1,2,3,4,7,8-HxCDF	6000		NS		
13C12-1,2,3,4,7,8,9-HpCDF	6000		NS		
Extraction Standards					
13C12-2,3,7,8-TCDD	12000	27.80	69	40-130	
13C12-1,2,3,7,8-PeCDD	12000	31.98	73	40-130	
13C12-1,2,3,6,7,8-HxCDD	12000	34.07	72	40-130	
13C12-1,2,3,4,6,7,8-HpCDD	12000	35.65	85	25-130	
13C12-OCDD	24000	37.14	85	25-130	
13C12-2,3,7,8-TCDF	12000	26.90	73	40-130	
13C12-1,2,3,7,8-PeCDF	12000	31.03	78	40-130	
13C12-1,2,3,6,7,8-HxCDF	12000	33.59	76	40-130	
13C12-1,2,3,4,6,7,8-HpCDF	12000	35.11	89	25-130	
Cleanup Standard	**pg**				
13C12-1,2,3,7,8,9-HxCDF	12000	34.34	89	40-130	

M Indicates that a peak has been manually integrated.

ALS Life Sciences

1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Rachael Stolys	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 SOUTHDOWN ROAD MISSISSAUGA, ON L5J 2Y4 CANADA
ALS WO#:	L1682779		
Date of Report	9-Oct-15		
Date of Sample Receipt	3-Oct-15	**Client Contact:**	Chris Belore
		Client Project ID:	21546, Covanta

COMMENTS: **WHO Toxic PCB Congeners by EPA Method 1668A**

Co-elutions may cause a high bias to selected PCB analytical results. Secondary column confirmations to uniquely define the toxic congeners for PCB targets is recommended where it is of value to resolve such sources of potential high bias.

Certified by:

Ron McLeod, Ph.D.
Director, Air Toxics and Special Chemistries

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank	15-21546-SVOC-(1 THRU 5) #1 APC OUTLET TEST#1	15-21546-SVOC-(6 THRU 10) #1 APC OUTLET TEST#2	15-21546-SVOC-(11 THRU 15) #1 APC OUTLET TEST#3	15-21546-SVOC-(16 THRU 20) #1 APC OUTLET BLANK	15-21546-SVOC-(21 THRU 25) #2 APC OUTLET TEST#1
ALS Sample ID	WG2185607-1	L1682779-1	L1682779-2	L1682779-3	L1682779-4	L1682779-5
Sample Size	1	1	1	1	1	1
Sample units	Stack	Stack	Stack	Stack	Stack	Stack
Lipid Content	n/a	n/a	n/a	n/a	n/a	n/a
Matrix	QC	Stack	Stack	Stack	Stack	Stack
Sampling Date	n/a	1-Oct-15	2-Oct-15	2-Oct-15	1-Oct-15	1-Oct-15
Extraction Date	5-Oct-15	5-Oct-15	5-Oct-15	5-Oct-15	5-Oct-15	5-Oct-15
Target Analytes	**pg**	**pg**	**pg**	**pg**	**pg**	**pg**
PCB 81	3.17	<140	<140	<120	<10	57.4
PCB 77	5.50	479	218	240	<11	166
PCB 123	<3.3	695	434	521	63.4	161
PCB 118	<6.3	4630	2620	3090	440	892
PCB 114	<2.9	267	174	190	<18	<92
PCB 105	<2.9	1510	1060	1100	159	377
PCB 126	<3.3	169	138	179	<11	244
PCB 167	<2.4	70.4	68.0	83.5	<4.0	57.0
PCB 156	<2.4	239	193	311	<13	156
PCB 157	<2.5	112	125	142	<3.9	133
PCB 169	<3.8	164	157	187	<12	217
PCB 189	<2.4	245	213	366	<3.0	190
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
13C12 PCB 81	69	70	72	69	78	71
13C12 PCB 77	80	81	81	78	86	81
13C12 PCB 123	91	86	83	83	91	85
13C12 PCB 118	95	99	106	97	116	106
13C12 PCB 114	97	97	101	94	109	98
13C12 PCB 105	94	95	97	91	107	97
13C12 PCB 126	94	93	87	86	105	93
13C12 PCB 167	97	102	102	97	111	102
13C12 PCB 156	101	104	110	98	121	113
13C12 PCB 157	102	112	104	109	114	103
13C12 PCB 169	96	104	105	102	110	104
13C12 PCB 189	91	97	94	88	102	96
Toxic Equivalency WHO 2005						
Lower Bound PCB TEQ	0.00150	22.1	18.7	23.7	0.0199	31.0
Upper Bound PCB TEQ	0.446	22.1	18.7	23.7	1.49	31.0

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	15-21546-SVOC-(26 THRU 30) #2 APC OUTLET TEST#2	15-21546-SVOC-(31 THRU 35) #2 APC OUTLET TEST#3	15-21546-SVOC-(36 THRU 40) #2 APC OUTLET BLANK	Laboratory Control Sample
ALS Sample ID	L1682779-6	L1682779-7	L1682779-8	WG2185607-2
Sample Size	1	1	1	1
Sample units	Stack	Stack	Stack	n/a
Lipid Content	n/a	n/a	n/a	n/a
Matrix	Stack	Stack	Stack	QC
Sampling Date	2-Oct-15	2-Oct-15	1-Oct-15	
Extraction Date	5-Oct-15	5-Oct-15	5-Oct-15	5-Oct-15
Target Analytes	**pg**	**pg**	**pg**	**% Rec**
PCB 81	61.5	57.9	<4.8	124
PCB 77	122	162	<4.9	118
PCB 123	<200	150	8.91	126
PCB 118	1580	998	89.8	97
PCB 114	108	95.6	<3.7	113
PCB 105	577	400	<28	109
PCB 126	<120	<160	<4.2	116
PCB 167	40.8	51.5	<3.0	111
PCB 156	109	165	<3.0	110
PCB 157	70.4	105	<3.1	104
PCB 169	134	191	<9.7	113
PCB 189	100	165	<2.0	116
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**
13C12 PCB 81	67	66	68	68
13C12 PCB 77	76	76	77	77
13C12 PCB 123	86	85	88	89
13C12 PCB 118	92	92	92	97
13C12 PCB 114	94	93	95	95
13C12 PCB 105	93	92	90	92
13C12 PCB 126	85	89	93	92
13C12 PCB 167	96	95	96	96
13C12 PCB 156	105	100	99	103
13C12 PCB 157	100	104	101	107
13C12 PCB 169	100	98	97	96
13C12 PCB 189	89	87	90	93
Toxic Equivalency WHO 2005				
Lower Bound PCB TEQ	4.13	5.83	0.00296	
Upper Bound PCB TEQ	16.1	21.8	0.717	

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date		
ALS Sample ID	WG2185607-1	Extraction Date	5-Oct-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 Stack	*A.Ali*
Analysis Type	Blank	Lipid Content	n/a	--e-signature--
Sample Matrix	QC	Split Ratio	5	09-Oct-2015

Run Information	**Run 1**
Filename	1-151008B S:5
Run Date	8-OCT-15 16:21:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	6:58	3.17	2.8	M J	0.0003
PCB 77	7:07	5.50	2.6	M J	0.0001
PCB 123	NotFnd	<3.3	3.3	U	0.00003
PCB 118	7:29	<6.3	2.6	M J R	0.00003
PCB 114	NotFnd	<2.9	2.9	U	0.00003
PCB 105	NotFnd	<2.9	2.9	U	0.00003
PCB 126	NotFnd	<3.3	3.3	U	0.1
PCB 167	NotFnd	<2.4	2.4	U	0.00003
PCB 156	NotFnd	<2.4	2.4	U	0.00003
PCB 157	NotFnd	<2.5	2.5	U	0.00003
PCB 169	9:40	<3.8	2.8	M J R	0.03
PCB 189	NotFnd	<2.4	2.4	U	0.00003

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:58	69	25-150
13C12 PCB 77	7:07	80	25-150
13C12 PCB 123	7:25	91	25-150
13C12 PCB 118	7:28	95	25-150
13C12 PCB 114	7:38	97	25-150
13C12 PCB 105	7:51	94	25-150
13C12 PCB 126	8:23	94	25-150
13C12 PCB 167	8:40	97	25-150
13C12 PCB 156	9:01	101	25-150
13C12 PCB 157	9:06	102	25-150
13C12 PCB 169	9:40	96	25-150
13C12 PCB 189	10:14	91	25-150

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	0.00150
Upper Bound PCB TEQ (WHO 2005)	0.446

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the LQL.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**15-21546-SVOC-(1 THRU 5) #1 APC OUTLET TEST#1**	Sampling Date	1-Oct-15	
ALS Sample ID	L1682779-1	Extraction Date	5-Oct-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 Stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	09-Oct-2015

Run Information	**Run 1**
Filename	1-151008B S:8
Run Date	8-OCT-15 17:15:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	6:58	<140	110	R	0.0003
PCB 77	7:07	479	100		0.0001
PCB 123	7:23	695	110	M	0.00003
PCB 118	7:28	4630	91		0.00003
PCB 114	7:38	267	94	M	0.00003
PCB 105	7:50	1510	100		0.00003
PCB 126	8:23	169	110	M	0.1
PCB 167	8:40	70.4	33		0.00003
PCB 156	9:01	239	31	M	0.00003
PCB 157	9:06	112	32	M	0.00003
PCB 169	9:40	164	36	M	0.03
PCB 189	10:14	245	18		0.00003

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:57	70	25-150
13C12 PCB 77	7:06	81	25-150
13C12 PCB 123	7:24	86	25-150
13C12 PCB 118	7:28	99	25-150
13C12 PCB 114	7:37	97	25-150
13C12 PCB 105	7:50	95	25-150
13C12 PCB 126	8:23	93	25-150
13C12 PCB 167	8:40	102	25-150
13C12 PCB 156	9:01	104	25-150
13C12 PCB 157	9:05	112	25-150
13C12 PCB 169	9:39	104	25-150
13C12 PCB 189	10:14	97	25-150

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	22.1
Upper Bound PCB TEQ (WHO 2005)	22.1

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**15-21546-SVOC-(6 THRU 10) #1 APC OUTLET TEST#2**	Sampling Date	2-Oct-15	
ALS Sample ID	L1682779-2	Extraction Date	5-Oct-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 Stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	09-Oct-2015

Run Information	**Run 1**
Filename	1-151008B S:9
Run Date	8-OCT-15 17:33:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	6:59	<140	140	U	0.0003
PCB 77	7:07	218	140		0.0001
PCB 123	7:24	434	99	M	0.00003
PCB 118	7:29	2620	77		0.00003
PCB 114	7:38	174	82		0.00003
PCB 105	7:51	1060	86		0.00003
PCB 126	8:24	138	100	M	0.1
PCB 167	8:41	68.0	27		0.00003
PCB 156	9:02	193	26		0.00003
PCB 157	9:06	125	27		0.00003
PCB 169	9:41	157	31	M	0.03
PCB 189	10:15	213	11		0.00003

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:58	72	25-150
13C12 PCB 77	7:07	81	25-150
13C12 PCB 123	7:25	83	25-150
13C12 PCB 118	7:28	106	25-150
13C12 PCB 114	7:37	101	25-150
13C12 PCB 105	7:51	97	25-150
13C12 PCB 126	8:24	87	25-150
13C12 PCB 167	8:41	102	25-150
13C12 PCB 156	9:02	110	25-150
13C12 PCB 157	9:06	104	25-150
13C12 PCB 169	9:41	105	25-150
13C12 PCB 189	10:14	94	25-150

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	18.7
Upper Bound PCB TEQ (WHO 2005)	18.7

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
U Indicates that this compound was not detected above the MDL.

ALS Life Sciences

Sample Analysis Report

Sample Name	**15-21546-SVOC-(11 THRU 15) #1 APC OUTLET TEST#3**	Sampling Date	2-Oct-15	
ALS Sample ID	L1682779-3	Extraction Date	5-Oct-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 Stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	09-Oct-2015

Run Information	**Run 1**
Filename	1-151008B S:10
Run Date	8-OCT-15 17:51:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	6:59	<120	120	U R	0.0003
PCB 77	7:07	240	120		0.0001
PCB 123	7:24	521	75	M	0.00003
PCB 118	7:28	3090	61		0.00003
PCB 114	7:38	190	66	M	0.00003
PCB 105	7:51	1100	70		0.00003
PCB 126	8:24	179	80	M	0.1
PCB 167	8:41	83.5	44		0.00003
PCB 156	9:02	311	39		0.00003
PCB 157	9:06	142	41	M	0.00003
PCB 169	9:41	187	48	M	0.03
PCB 189	10:15	366	26		0.00003

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:58	69	25-150
13C12 PCB 77	7:07	78	25-150
13C12 PCB 123	7:25	83	25-150
13C12 PCB 118	7:28	97	25-150
13C12 PCB 114	7:37	94	25-150
13C12 PCB 105	7:51	91	25-150
13C12 PCB 126	8:24	86	25-150
13C12 PCB 167	8:41	97	25-150
13C12 PCB 156	9:02	98	25-150
13C12 PCB 157	9:06	109	25-150
13C12 PCB 169	9:41	102	25-150
13C12 PCB 189	10:14	88	25-150

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	23.7
Upper Bound PCB TEQ (WHO 2005)	23.7

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
U Indicates that this compound was not detected above the MDL.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**15-21546-SVOC-(16 THRU 20) #1 APC OUTLET BLANK**	Sampling Date	1-Oct-15	
ALS Sample ID	L1682779-4	Extraction Date	5-Oct-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 Stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	09-Oct-2015

Run Information	**Run 1**
Filename	1-151008B S:11
Run Date	8-OCT-15 18:10:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	6:59	<10	10	U	0.0003
PCB 77	7:07	<11	11	U R	0.0001
PCB 123	7:24	63.4	12	M	0.00003
PCB 118	7:29	440	9.3	M	0.00003
PCB 114	7:38	<18	10	M J R	0.00003
PCB 105	7:52	159	10	M	0.00003
PCB 126	8:24	<11	11	M U R	0.1
PCB 167	NotFnd	<4.0	4.0	U	0.00003
PCB 156	9:02	<13	3.8	M J R	0.00003
PCB 157	NotFnd	<3.9	3.9	U	0.00003
PCB 169	9:43	<12	4.7	M J R	0.03
PCB 189	10:15	<3.0	3.0	M U R	0.00003

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:58	78	25-150
13C12 PCB 77	7:07	86	25-150
13C12 PCB 123	7:25	91	25-150
13C12 PCB 118	7:28	116	25-150
13C12 PCB 114	7:37	109	25-150
13C12 PCB 105	7:51	107	25-150
13C12 PCB 126	8:24	105	25-150
13C12 PCB 167	8:41	111	25-150
13C12 PCB 156	9:02	121	25-150
13C12 PCB 157	9:06	114	25-150
13C12 PCB 169	9:41	110	25-150
13C12 PCB 189	10:14	102	25-150

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	0.0199
Upper Bound PCB TEQ (WHO 2005)	1.49

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the LQL.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**15-21546-SVOC-(21 THRU 25) #2 APC OUTLET TEST#1**	Sampling Date	1-Oct-15	
ALS Sample ID	L1682779-5	Extraction Date	5-Oct-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 Stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	09-Oct-2015

Run Information	**Run 1**
Filename	1-151008B S:12
Run Date	8-OCT-15 18:28:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**		**TEF WHO 2005**
PCB 81	6:59	57.4	35			0.0003
PCB 77	7:07	166	35			0.0001
PCB 123	7:24	161	17	M		0.00003
PCB 118	7:29	892	13	M		0.00003
PCB 114	7:38	<92	15	M	R	0.00003
PCB 105	7:52	377	15	M		0.00003
PCB 126	8:24	244	17	M		0.1
PCB 167	8:41	57.0	19	M		0.00003
PCB 156	9:02	156	17			0.00003
PCB 157	9:06	133	18			0.00003
PCB 169	9:41	217	21	M		0.03
PCB 189	10:15	190	13			0.00003

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:58	71	25-150
13C12 PCB 77	7:07	81	25-150
13C12 PCB 123	7:25	85	25-150
13C12 PCB 118	7:28	106	25-150
13C12 PCB 114	7:37	98	25-150
13C12 PCB 105	7:51	97	25-150
13C12 PCB 126	8:24	93	25-150
13C12 PCB 167	8:41	102	25-150
13C12 PCB 156	9:02	113	25-150
13C12 PCB 157	9:06	103	25-150
13C12 PCB 169	9:41	104	25-150
13C12 PCB 189	10:14	96	25-150

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	31.0
Upper Bound PCB TEQ (WHO 2005)	31.0

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**15-21546-SVOC-(26 THRU 30) #2 APC OUTLET TEST#2**	Sampling Date	2-Oct-15
ALS Sample ID	L1682779-6	Extraction Date	5-Oct-15
Analysis Method	EPA 1668A	Sample Size	1 Stack
Analysis Type	Sample	Lipid Content	n/a
Sample Matrix	Stack	Split Ratio	5

Approved:
A.Ali
--e-signature--
09-Oct-2015

Run Information	**Run 1**
Filename	1-151008B S:13
Run Date	8-OCT-15 18:46:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**		**TEF WHO 2005**
PCB 81	6:59	61.5	25	M		0.0003
PCB 77	7:07	122	24			0.0001
PCB 123	7:24	<200	48	M	R	0.00003
PCB 118	7:29	1580	36	M		0.00003
PCB 114	7:38	108	40	M		0.00003
PCB 105	7:52	577	40			0.00003
PCB 126	8:24	<120	47		R	0.1
PCB 167	8:41	40.8	20	M		0.00003
PCB 156	9:02	109	19	M		0.00003
PCB 157	9:06	70.4	21	M		0.00003
PCB 169	9:41	134	23	M		0.03
PCB 189	10:15	100	7.4	M		0.00003

Extraction Standards		**% Rec**		**Limits**
13C12 PCB 81	6:58	67		25-150
13C12 PCB 77	7:07	76		25-150
13C12 PCB 123	7:25	86	M	25-150
13C12 PCB 118	7:28	92	M	25-150
13C12 PCB 114	7:37	94		25-150
13C12 PCB 105	7:51	93		25-150
13C12 PCB 126	8:24	85		25-150
13C12 PCB 167	8:41	96		25-150
13C12 PCB 156	9:02	105		25-150
13C12 PCB 157	9:06	100		25-150
13C12 PCB 169	9:41	100		25-150
13C12 PCB 189	10:14	89		25-150

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	4.13
Upper Bound PCB TEQ (WHO 2005)	16.1

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	15-21546-SVOC-(31 THRU 35) #2 APC OUTLET TEST#3	Sampling Date	2-Oct-15	
ALS Sample ID	L1682779-7	Extraction Date	5-Oct-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 Stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	09-Oct-2015

Run Information	**Run 1**
Filename	1-151008B S:6
Run Date	8-OCT-15 16:39:
Final Volume	25 µL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**		**TEF WHO 2005**
PCB 81	6:57	57.9	39			0.0003
PCB 77	7:07	162	35			0.0001
PCB 123	7:22	150	39	M		0.00003
PCB 118	7:28	998	31	M		0.00003
PCB 114	7:38	95.6	35	M		0.00003
PCB 105	7:50	400	35	M		0.00003
PCB 126	8:23	<160	41	M	R	0.1
PCB 167	8:40	51.5	18			0.00003
PCB 156	9:01	165	18			0.00003
PCB 157	9:05	105	18			0.00003
PCB 169	9:40	191	20	M		0.03
PCB 189	10:14	165	21	M		0.00003

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:57	66	25-150
13C12 PCB 77	7:06	76	25-150
13C12 PCB 123	7:24	85	25-150
13C12 PCB 118	7:27	92	25-150
13C12 PCB 114	7:37	93	25-150
13C12 PCB 105	7:50	92	25-150
13C12 PCB 126	8:23	89	25-150
13C12 PCB 167	8:40	95	25-150
13C12 PCB 156	9:01	100	25-150
13C12 PCB 157	9:05	104	25-150
13C12 PCB 169	9:39	98	25-150
13C12 PCB 189	10:13	87	25-150

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	5.83
Upper Bound PCB TEQ (WHO 2005)	21.8

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	**15-21546-SVOC-(36 THRU 40) #2 APC OUTLET BLANK**	Sampling Date	1-Oct-15	
ALS Sample ID	L1682779-8	Extraction Date	5-Oct-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 Stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	09-Oct-2015

Run Information	**Run 1**
Filename	1-151008B S:7
Run Date	8-OCT-15 16:57:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	6:59	<4.8	4.8	M U	0.0003
PCB 77	7:07	<4.9	4.6	M J R	0.0001
PCB 123	7:23	8.91	4.2	M J	0.00003
PCB 118	7:28	89.8	3.4		0.00003
PCB 114	NotFnd	<3.7	3.7	U	0.00003
PCB 105	7:51	<28	3.8	R	0.00003
PCB 126	NotFnd	<4.2	4.2	U	0.1
PCB 167	NotFnd	<3.0	3.0	U	0.00003
PCB 156	NotFnd	<3.0	3.0	U	0.00003
PCB 157	NotFnd	<3.1	3.1	U	0.00003
PCB 169	9:43	<9.7	3.4	M J R	0.03
PCB 189	NotFnd	<2.0	2.0	U	0.00003

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:57	68	25-150
13C12 PCB 77	7:07	77	25-150
13C12 PCB 123	7:25	88	25-150
13C12 PCB 118	7:28	92	25-150
13C12 PCB 114	7:38	95	25-150
13C12 PCB 105	7:50	90	25-150
13C12 PCB 126	8:23	93	25-150
13C12 PCB 167	8:40	96	25-150
13C12 PCB 156	9:01	99	25-150
13C12 PCB 157	9:06	101	25-150
13C12 PCB 169	9:40	97	25-150
13C12 PCB 189	10:14	90	25-150

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	0.00296
Upper Bound PCB TEQ (WHO 2005)	0.717

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the LQL.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date		Approved:
ALS Sample ID	WG2185607-2	Extraction Date	5-Oct-15	*A.Ali*
Analysis Method	EPA 1668A	Sample Size	1 n/a	--e-signature--
Analysis Type	LCS	Lipid Content	n/a	09-Oct-2015
Sample Matrix	QC	Split Ratio	5	

Run Information	**Run 1**
Filename	1-151008B S:2
Run Date	8-OCT-15 15:26:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**% Rec**	**Limits**
PCB 81	6:58	124	50-150
PCB 77	7:08	118	50-150
PCB 123	7:25	126	50-150
PCB 118	7:29	97	50-150
PCB 114	7:38	113	50-150
PCB 105	7:52	109	50-150
PCB 126	8:24	116	50-150
PCB 167	8:42	111	50-150
PCB 156	9:02	110	50-150
PCB 157	9:06	104	50-150
PCB 169	9:41	113	50-150
PCB 189	10:15	116	50-150

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:58	68	30-140
13C12 PCB 77	7:07	77	30-140
13C12 PCB 123	7:25	89	30-140
13C12 PCB 118	7:28	97	30-140
13C12 PCB 114	7:38	95	30-140
13C12 PCB 105	7:51	92	30-140
13C12 PCB 126	8:23	92	30-140
13C12 PCB 167	8:41	96	30-140
13C12 PCB 156	9:02	103	30-140
13C12 PCB 157	9:06	107	30-140
13C12 PCB 169	9:40	96	30-140
13C12 PCB 189	10:14	93	30-140

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Steve Kennedy	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 SOUTHDOWN ROAD MISSISSAUGA, ON L5J 2Y4 CANADA
ALS WO#:	L1692397	**Client Contact:**	Chris Belore
Date of Report	30-Oct-15	**Client Project ID:**	21546-2, COVANTA
Date of Sample Receipt	23-Oct-15		

COMMENTS: **WHO Toxic PCB Congeners by EPA Method 1668A**

Co-elutions may cause a high bias to selected PCB analytical results. Secondary column confirmations to uniquely define the toxic congeners for PCB targets is recommended where it is of value to resolve such sources of potential high bias.

Certified by: R. Stolys

Rachael Stolys
Account Manager

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank	15-21546-2-SVOC-(1 THRU 5) TEST #1 UNIT #1	15-21546-2-SVOC-(6 THRU 10) TEST #2 UNIT #1	15-21546-2-SVOC-(11 THRU 15) TEST #3 UNIT #1	15-21546-2-SVOC-(16 THRU 20) BLANK UNIT #1	15-21546-2-SVOC-(21 THRU 25) TEST #1 UNIT #2
ALS Sample ID	WG2199699-1	L1692397-1	L1692397-2	L1692397-3	L1692397-4	L1692397-5
Sample Size	1	1	1	1	1	1
Sample units	stack	stack	stack	stack	stack	stack
Matrix	QC	Stack	Stack	Stack	Stack	Stack
Sampling Date	n/a	21-Oct-15	22-Oct-15	22-Oct-15	21-Oct-15	21-Oct-15
Extraction Date	26-Oct-15	26-Oct-15	26-Oct-15	26-Oct-15	26-Oct-15	26-Oct-15
Target Analytes	**pg**	**pg**	**pg**	**pg**	**pg**	**pg**
PCB 81	<3.0	<1100	<91	<75	<5.8	<73
PCB 77	<4.0	<620	278	221	<6.4	219
PCB 123	2.97	19200	<260	195	<6.2	262
PCB 118	<7.2	16200	2140	1310	<50	2420
PCB 114	<1.3	677	<120	<94	<5.6	<110
PCB 105	5.51	5730	913	485	19.5	734
PCB 126	<2.2	<170	<94	<65	<6.5	<56
PCB 167	<2.6	271	<37	<28	<5.8	31.0
PCB 156	3.60	502	<69	90.1	<5.8	<59
PCB 157	<2.5	136	66.5	41.6	<6.3	38.5
PCB 169	<3.0	25.7	<30	<15	<6.6	<14
PCB 189	<2.0	<54	62.5	57.0	<4.2	<73
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
13C12 PCB 81	80	37	61	60	57	65
13C12 PCB 77	90	60	91	72	62	82
13C12 PCB 123	103	108	99	81	66	95
13C12 PCB 118	106	103	108	89	74	93
13C12 PCB 114	106	107	108	86	71	96
13C12 PCB 105	104	103	102	83	71	92
13C12 PCB 126	100	91	87	67	71	79
13C12 PCB 167	107	107	108	89	71	92
13C12 PCB 156	108	106	119	94	76	96
13C12 PCB 157	118	116	100	87	70	100
13C12 PCB 169	103	110	106	86	73	94
13C12 PCB 189	111	110	110	89	74	96
Cleanup Standards						
13C12 PCB 28	81	131	119	118	104	122
13C12 PCB 111	81	59	78	73	59	75
Toxic Equivalency WHO 2005						
Lower Bound PCB TEQ	0.000362	2.05	0.123	0.0875	0.000585	0.126
Upper Bound PCB TEQ	0.312	19.4	10.5	7.06	0.853	6.18

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	15-21546-2-SVOC-(26 THRU 30) TEST #2 UNIT #2	15-21546-2-SVOC-(31 THRU 35) TEST #3 UNIT #2	15-21546-2-SVOC-(36 THRU 40) BLANK UNIT #2	Laboratory Control Sample
ALS Sample ID	L1692397-6	L1692397-7	L1692397-8	WG2199699-2
Sample Size	1	1	1	1
Sample units	stack	stack	stack	n/a
Matrix	Stack	Stack	Stack	QC
Sampling Date	22-Oct-15	22-Oct-15	22-Oct-15	n/a
Extraction Date	26-Oct-15	26-Oct-15	26-Oct-15	26-Oct-15
Target Analytes	**pg**	**pg**	**pg**	**% Rec**
PCB 81	<3200	<26	<3.9	119
PCB 77	<230	84.2	<4.6	117
PCB 123	1120	63.0	<4.7	132
PCB 118	8750	531	<41	111
PCB 114	<390	33.8	<4.2	117
PCB 105	2710	187	13.9	116
PCB 126	<230	<29	<5.0	123
PCB 167	<62	<10	<2.4	116
PCB 156	205	<26	<1.0	104
PCB 157	62.9	26.8	<1.1	113
PCB 169	<32	<11	<1.2	117
PCB 189	83.9	68.9	<2.2	119
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**
13C12 PCB 81	19	77	84	57
13C12 PCB 77	58	87	93	63
13C12 PCB 123	111	96	98	80
13C12 PCB 118	112	105	112	76
13C12 PCB 114	117	106	107	76
13C12 PCB 105	114	101	104	75
13C12 PCB 126	91	90	101	74
13C12 PCB 167	113	103	109	76
13C12 PCB 156	124	111	116	85
13C12 PCB 157	119	99	109	81
13C12 PCB 169	111	105	107	77
13C12 PCB 189	116	107	110	81
Cleanup Standards				
13C12 PCB 28	153	121	138	70
13C12 PCB 111	49	74	86	64
Toxic Equivalency WHO 2005				
Lower Bound PCB TEQ	0.388	0.0357	0.000417	
Upper Bound PCB TEQ	25.3	3.27	0.540	

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Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date		
ALS Sample ID	WG2199699-1	Extraction Date	26-Oct-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 stack	*A.Ali*
Analysis Type	Blank	Lipid Content	n/a	--e-signature--
Sample Matrix	QC	Split Ratio	6	30-Oct-2015

Run Information	**Run 1**
Filename	1-151030A S:3
Run Date	30-Oct-15 10:17
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	7:00	<3.0	3.0	M U R	0.0003
PCB 77	7:09	<4.0	2.9	M J R	0.0001
PCB 123	7:27	2.97	1.4	M J	0.00003
PCB 118	7:30	<7.2	1.1	M J R	0.00003
PCB 114	NotFnd	<1.3	1.3	U	0.00003
PCB 105	7:53	5.51	1.3	M J	0.00003
PCB 126	8:26	<2.2	1.5	M J R	0.1
PCB 167	NotFnd	<2.6	2.6	U	0.00003
PCB 156	9:04	3.60	2.5	M J	0.00003
PCB 157	NotFnd	<2.5	2.5	U	0.00003
PCB 169	NotFnd	<3.0	3.0	U	0.03
PCB 189	10:17	<2.0	2.0	M U R	0.00003

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	7:00	80	25-150
13C12 PCB 77	7:08	90	25-150
13C12 PCB 123	7:26	103	25-150
13C12 PCB 118	7:29	106	25-150
13C12 PCB 114	7:38	106	25-150
13C12 PCB 105	7:52	104	25-150
13C12 PCB 126	8:25	100	25-150
13C12 PCB 167	8:42	107	25-150
13C12 PCB 156	9:04	108	25-150
13C12 PCB 157	9:08	118	25-150
13C12 PCB 169	9:42	103	25-150
13C12 PCB 189	10:16	111	25-150
Cleanup Standard		**% Rec**	
13C12 PCB 28	5:04	81	30-135
13C12 PCB 111	6:55	81	30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	0.000362
Upper Bound PCB TEQ (WHO 2005)	0.312

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the LQL.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(1 THRU 5) TEST #1 UNIT #1**	Sampling Date	21-Oct-15	
ALS Sample ID	L1692397-1	Extraction Date	26-Oct-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	30-Oct-2015

Run Information	**Run 1**	**Run 2**
Filename	1-151029C S:12	1-151030A S:4
Run Date	29-Oct-15 21:11	30-Oct-15 10:35
Final Volume	25 uL	25 uL
Dilution Factor	1	2
Analysis Units	pg	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**	**Ret. Time.**	**Conc. pg**	**EDL pg**	**Flags**
PCB 81					0.0003	6:59	<1100	200	R
PCB 77					0.0001	7:08	<620	150	R
PCB 123	7:29	19200	140		0.00003				
PCB 118	7:29	16200	120		0.00003				
PCB 114	7:38	677	130	M	0.00003				
PCB 105	7:52	5730	140		0.00003				
PCB 126	NotFnd	<170	170	U	0.1				
PCB 167	8:42	271	15		0.00003				
PCB 156	9:03	502	14		0.00003				
PCB 157	9:07	136	14		0.00003				
PCB 169	9:42	25.7	16	M J	0.03				
PCB 189	10:16	<54	11	R	0.00003				

Extraction Standards		**% Rec**	**Limits**		**% Rec**
13C12 PCB 81			25-150	6:59	37
13C12 PCB 77			25-150	7:08	60
13C12 PCB 123	7:28	108	25-150		
13C12 PCB 118	7:28	103	25-150		
13C12 PCB 114	7:38	107	25-150		
13C12 PCB 105	7:51	103	25-150		
13C12 PCB 126	8:25	91	25-150		
13C12 PCB 167	8:42	107	25-150		
13C12 PCB 156	9:03	106	25-150		
13C12 PCB 157	9:07	116	25-150		
13C12 PCB 169	9:41	110	25-150		
13C12 PCB 189	10:16	110	25-150		
Cleanup Standard		**% Rec**			**% Rec**
13C12 PCB 28	5:02	131	30-135		
13C12 PCB 111			30-135	6:55	59

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	2.05
Upper Bound PCB TEQ (WHO 2005)	19.4

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the LQL.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(6 THRU 10) TEST #2 UNIT #1**	Sampling Date	22-Oct-15	
ALS Sample ID	L1692397-2	Extraction Date	26-Oct-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	30-Oct-2015

Run Information	**Run 1**
Filename	1-151030A S:5
Run Date	30-Oct-15 10:53
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	6:59	<91	74	R	0.0003
PCB 77	7:08	278	54		0.0001
PCB 123	7:25	<260	75	M R	0.00003
PCB 118	7:29	2140	63		0.00003
PCB 114	7:38	<120	67	M R	0.00003
PCB 105	7:52	913	73		0.00003
PCB 126	8:25	<94	94	M U	0.1
PCB 167	8:42	<37	18	R	0.00003
PCB 156	9:03	<69	17	R	0.00003
PCB 157	9:07	66.5	20	M	0.00003
PCB 169	9:42	<30	21	M J R	0.03
PCB 189	10:16	62.5	5.7		0.00003

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:59	61	25-150
13C12 PCB 77	7:07	91	25-150
13C12 PCB 123	7:25	99	25-150
13C12 PCB 118	7:28	108	25-150
13C12 PCB 114	7:38	108	25-150
13C12 PCB 105	7:51	102	25-150
13C12 PCB 126	8:25	87	25-150
13C12 PCB 167	8:42	108	25-150
13C12 PCB 156	9:03	119	25-150
13C12 PCB 157	9:07	100	25-150
13C12 PCB 169	9:41	106	25-150
13C12 PCB 189	10:16	110	25-150
Cleanup Standard		**% Rec**	
13C12 PCB 28	5:03	119	30-135
13C12 PCB 111	6:55	78	30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	0.123
Upper Bound PCB TEQ (WHO 2005)	10.5

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the LQL.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(11 THRU 15) TEST #3 UNIT #1**	Sampling Date	22-Oct-15
ALS Sample ID	L1692397-3	Extraction Date	26-Oct-15
Analysis Method	EPA 1668A	Sample Size	1 stack
Analysis Type	Sample	Lipid Content	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
A.Ali
--e-signature--
30-Oct-2015

Run Information	**Run 1**
Filename	1-151030A S:6
Run Date	30-Oct-15 11:11
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	6:60	<75	75	U	0.0003
PCB 77	7:09	221	72		0.0001
PCB 123	7:25	195	48	M	0.00003
PCB 118	7:30	1310	41		0.00003
PCB 114	7:40	<94	43	M R	0.00003
PCB 105	7:53	485	47	M	0.00003
PCB 126	8:26	<65	65	U	0.1
PCB 167	8:44	<28	12	M J R	0.00003
PCB 156	9:04	90.1	12	M	0.00003
PCB 157	9:08	41.6	12	M	0.00003
PCB 169	9:43	<15	15	M U R	0.03
PCB 189	10:17	57.0	8.4		0.00003

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:60	60	25-150
13C12 PCB 77	7:09	72	25-150
13C12 PCB 123	7:26	81	25-150
13C12 PCB 118	7:30	89	25-150
13C12 PCB 114	7:39	86	25-150
13C12 PCB 105	7:52	83	25-150
13C12 PCB 126	8:25	67	25-150
13C12 PCB 167	8:43	89	25-150
13C12 PCB 156	9:03	94	25-150
13C12 PCB 157	9:07	87	25-150
13C12 PCB 169	9:42	86	25-150
13C12 PCB 189	10:16	89	25-150
Cleanup Standard		**% Rec**	
13C12 PCB 28	5:04	118	30-135
13C12 PCB 111	6:56	73	30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	0.0875
Upper Bound PCB TEQ (WHO 2005)	7.06

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the LQL.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(16 THRU 20) BLANK UNIT #1**	Sampling Date	21-Oct-15	
ALS Sample ID	L1692397-4	Extraction Date	26-Oct-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	30-Oct-2015

Run Information	**Run 1**
Filename	1-151029C S:11
Run Date	29-Oct-15 20:53
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	NotFnd	<5.8	5.8	U	0.0003
PCB 77	NotFnd	<6.4	6.4	U	0.0001
PCB 123	NotFnd	<6.2	6.2	U	0.00003
PCB 118	7:29	<50	5.3	R	0.00003
PCB 114	NotFnd	<5.6	5.6	U	0.00003
PCB 105	7:53	19.5	5.9	M J B	0.00003
PCB 126	NotFnd	<6.5	6.5	U	0.1
PCB 167	NotFnd	<5.8	5.8	U	0.00003
PCB 156	NotFnd	<5.8	5.8	U	0.00003
PCB 157	NotFnd	<6.3	6.3	U	0.00003
PCB 169	NotFnd	<6.6	6.6	U	0.03
PCB 189	NotFnd	<4.2	4.2	U	0.00003

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:59	57	25-150
13C12 PCB 77	7:07	62	25-150
13C12 PCB 123	7:25	66	25-150
13C12 PCB 118	7:29	74	25-150
13C12 PCB 114	7:38	71	25-150
13C12 PCB 105	7:52	71	25-150
13C12 PCB 126	8:25	71	25-150
13C12 PCB 167	8:42	71	25-150
13C12 PCB 156	9:03	76	25-150
13C12 PCB 157	9:07	70	25-150
13C12 PCB 169	9:42	73	25-150
13C12 PCB 189	10:16	74	25-150
Cleanup Standard		**% Rec**	
13C12 PCB 28	5:03	104	30-135
13C12 PCB 111	6:55	59	30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	0.000585
Upper Bound PCB TEQ (WHO 2005)	0.853

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the LQL.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life Sciences

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(21 THRU 25) TEST #1 UNIT #2**	Sampling Date	21-Oct-15	Approved:
ALS Sample ID	L1692397-5	Extraction Date	26-Oct-15	*A.Ali*
Analysis Method	EPA 1668A	Sample Size	1 stack	--e-signature--
Analysis Type	Sample	Lipid Content	n/a	30-Oct-2015
Sample Matrix	Stack	Split Ratio	6	

Run Information	**Run 1**
Filename	1-151030A S:7
Run Date	30-Oct-15 11:30
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	6:60	<73	73	U	0.0003
PCB 77	7:09	219	64		0.0001
PCB 123	7:25	262	47	M	0.00003
PCB 118	7:30	2420	36		0.00003
PCB 114	7:39	<110	40	M R	0.00003
PCB 105	7:53	734	42		0.00003
PCB 126	8:25	<56	56	M U	0.1
PCB 167	8:43	31.0	10	M	0.00003
PCB 156	9:03	<59	9.8	R	0.00003
PCB 157	9:07	38.5	10	M	0.00003
PCB 169	9:43	<14	11	M J R	0.03
PCB 189	10:17	<73	7.0	R	0.00003

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:59	65	25-150
13C12 PCB 77	7:08	82	25-150
13C12 PCB 123	7:26	95	25-150
13C12 PCB 118	7:29	93	25-150
13C12 PCB 114	7:38	96	25-150
13C12 PCB 105	7:52	92	25-150
13C12 PCB 126	8:25	79	25-150
13C12 PCB 167	8:42	92	25-150
13C12 PCB 156	9:03	96	25-150
13C12 PCB 157	9:07	100	25-150
13C12 PCB 169	9:42	94	25-150
13C12 PCB 189	10:16	96	25-150
Cleanup Standard		**% Rec**	
13C12 PCB 28	5:03	122	30-135
13C12 PCB 111	6:55	75	30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	0.126
Upper Bound PCB TEQ (WHO 2005)	6.18

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
U Indicates that this compound was not detected above the MDL.
J indicates that a target analyte was detected below the LQL.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(26 THRU 30) TEST #2 UNIT #2**	Sampling Date	22-Oct-15	
ALS Sample ID	L1692397-6	Extraction Date	26-Oct-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	30-Oct-2015

Run Information	**Run 1**	**Run 2**
Filename	1-151030A S:8	1-151030A S:11
Run Date	30-Oct-15 11:48	30-Oct-15 12:42
Final Volume	25 uL	25 uL
Dilution Factor	1	2
Analysis Units	pg	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**	**Ret. Time.**	**Conc. pg**	**EDL pg**	**Flags**
PCB 81					0.0003	7:00	<3200	260	R
PCB 77					0.0001	7:09	<230	100	R
PCB 123	7:25	1120	170	M	0.00003				
PCB 118	7:30	8750	140		0.00003				
PCB 114	7:39	<390	150	M R	0.00003				
PCB 105	7:52	2710	160		0.00003				
PCB 126	NotFnd	<230	230	U	0.1				
PCB 167	8:43	<62	16	R	0.00003				
PCB 156	9:03	205	15		0.00003				
PCB 157	9:07	62.9	16	M	0.00003				
PCB 169	9:42	<32	19	M R	0.03				
PCB 189	10:17	83.9	2.1		0.00003				

Extraction Standards		**% Rec**	**Limits**		**% Rec**	
13C12 PCB 81	6:59	[illegible]	25-150	6:59	19	R
13C12 PCB 77	7:09	[illegible]	25-150	7:09	58	
13C12 PCB 123	7:25	111	25-150			
13C12 PCB 118	7:29	112	25-150			
13C12 PCB 114	7:38	117	25-150			
13C12 PCB 105	7:52	114	25-150			
13C12 PCB 126	8:25	91	25-150			
13C12 PCB 167	8:42	113	25-150			
13C12 PCB 156	9:03	124	25-150			
13C12 PCB 157	9:07	119	25-150			
13C12 PCB 169	9:42	111	25-150			
13C12 PCB 189	10:16	116	25-150			
Cleanup Standard		**% Rec**			**% Rec**	
13C12 PCB 28			30-135	5:04	153	
13C12 PCB 111			30-135	6:56	49	

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	0.388
Upper Bound PCB TEQ (WHO 2005)	25.3

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
U Indicates that this compound was not detected above the MDL.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(31 THRU 35) TEST #3 UNIT #2**	Sampling Date	22-Oct-15	
ALS Sample ID	L1692397-7	Extraction Date	26-Oct-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	30-Oct-2015

Run Information	**Run 1**
Filename	1-151030A S:9
Run Date	30-Oct-15 12:06
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	6:59	<26	26	U	0.0003
PCB 77	7:08	84.2	27	M	0.0001
PCB 123	7:24	63.0	25	M	0.00003
PCB 118	7:29	531	21		0.00003
PCB 114	7:38	33.8	22	M	0.00003
PCB 105	7:52	187	23	M	0.00003
PCB 126	8:25	<29	29	M U R	0.1
PCB 167	8:42	<10	6.9	M J R	0.00003
PCB 156	9:03	<26	6.6	M J R	0.00003
PCB 157	9:07	26.8	7.0	M J	0.00003
PCB 169	9:42	<11	7.8	M J R	0.03
PCB 189	10:16	68.9	3.1	M	0.00003

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:59	77	25-150
13C12 PCB 77	7:07	87	25-150
13C12 PCB 123	7:25	96	25-150
13C12 PCB 118	7:28	105	25-150
13C12 PCB 114	7:38	106	25-150
13C12 PCB 105	7:51	101	25-150
13C12 PCB 126	8:25	90	25-150
13C12 PCB 167	8:42	103	25-150
13C12 PCB 156	9:03	111	25-150
13C12 PCB 157	9:07	99	25-150
13C12 PCB 169	9:41	105	25-150
13C12 PCB 189	10:16	107	25-150
Cleanup Standard		**% Rec**	
13C12 PCB 28	5:03	121	30-135
13C12 PCB 111	6:55	74	30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	0.0357
Upper Bound PCB TEQ (WHO 2005)	3.27

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor   TEQ Indicates the Toxic Equivalency.
U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the LQL.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(36 THRU 40) BLANK UNIT #2**	Sampling Date	22-Oct-15	
ALS Sample ID	L1692397-8	Extraction Date	26-Oct-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	30-Oct-2015

Run Information	**Run 1**
Filename	1-151029C S:10
Run Date	29-Oct-15 20:34
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	NotFnd	<3.9	3.9	U	0.0003
PCB 77	7:09	<4.6	4.1	M J R	0.0001
PCB 123	NotFnd	<4.7	4.7	U	0.00003
PCB 118	7:30	<41	3.8	R	0.00003
PCB 114	NotFnd	<4.2	4.2	U	0.00003
PCB 105	7:53	13.9	4.5	M J B	0.00003
PCB 126	NotFnd	<5.0	5.0	U	0.1
PCB 167	8:43	<2.4	1.0	M J R	0.00003
PCB 156	NotFnd	<1.0	1.0	U	0.00003
PCB 157	NotFnd	<1.1	1.1	U	0.00003
PCB 169	NotFnd	<1.2	1.2	M U	0.03
PCB 189	NotFnd	<2.2	2.2	U	0.00003

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:59	84	25-150
13C12 PCB 77	7:09	93	25-150
13C12 PCB 123	7:26	98	25-150
13C12 PCB 118	7:30	112	25-150
13C12 PCB 114	7:39	107	25-150
13C12 PCB 105	7:53	104	25-150
13C12 PCB 126	8:25	101	25-150
13C12 PCB 167	8:43	109	25-150
13C12 PCB 156	9:03	116	25-150
13C12 PCB 157	9:07	109	25-150
13C12 PCB 169	9:42	107	25-150
13C12 PCB 189	10:16	110	25-150
Cleanup Standard		**% Rec**	
13C12 PCB 28	5:04	138	30-135
13C12 PCB 111	6:56	86	30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	0.000417
Upper Bound PCB TEQ (WHO 2005)	0.540

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the LQL.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

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Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date		
ALS Sample ID	WG2199699-2	Extraction Date	26-Oct-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 n/a	*A.Ali*
Analysis Type	LCS	Lipid Content	n/a	--e-signature--
Sample Matrix	QC	Split Ratio	6	30-Oct-2015

Run Information	**Run 1**
Filename	1-151029C S:2
Run Date	29-Oct-15 18:09
Final Volume	25 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**% Rec**	**Limits**
PCB 81	6:59	119	50-150
PCB 77	7:08	117	50-150
PCB 123	7:29	132	50-150
PCB 118	7:29	111	50-150
PCB 114	7:39	117	50-150
PCB 105	7:52	116	50-150
PCB 126	8:26	123	50-150
PCB 167	8:42	116	50-150
PCB 156	9:04	104	50-150
PCB 157	9:08	113	50-150
PCB 169	9:42	117	50-150
PCB 189	10:16	119	50-150

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:59	57	30-140
13C12 PCB 77	7:08	63	30-140
13C12 PCB 123	7:29	80	30-140
13C12 PCB 118	7:29	76	30-140
13C12 PCB 114	7:39	76	30-140
13C12 PCB 105	7:51	75	30-140
13C12 PCB 126	8:25	74	30-140
13C12 PCB 167	8:42	76	30-140
13C12 PCB 156	9:03	85	30-140
13C12 PCB 157	9:07	81	30-140
13C12 PCB 169	9:42	77	30-140
13C12 PCB 189	10:16	81	30-140

Cleanup Standard		**% Rec**	
13C12 PCB 28	5:03	70	40-125
13C12 PCB 111	6:55	64	40-125

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Steve Kennedy	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 SOUTHDOWN ROAD MISSISSAUGA, ON L5J 2Y4 CANADA
ALS WO#:	L1695738		
Date of Report	6-Nov-15		
Date of Sample Receipt	30-Oct-15	**Client Contact:**	Chris Belore
		Client Project ID:	21546-2

COMMENTS: **WHO Toxic PCB Congeners by EPA Method 1668A**

Co-elutions may cause a high bias to selected PCB analytical results. Secondary column confirmations to uniquely define the toxic congeners for PCB targets is recommended where it is of value to resolve such sources of potential high bias.

Certified by: R. Stolys

Rachael Stolys
Account Manager

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank	15-21546-2-SVOC- (1 THRU 5) UNIT#1 TEST#4	15-21546-2-SVOC- (6 THRU 10) UNIT#1 TEST#5	15-21546-2-SVOC- (11 THRU 15) UNIT#1 TEST#6	15-21546-2-SVOC- (16 THRU 20) UNIT#1 BLANK
ALS Sample ID	WG2204674-1	L1695738-1	L1695738-2	L1695738-3	L1695738-4
Sample Size	1	1	1	1	1
Sample units	stack	stack	stack	stack	stack
Lipid Content	n/a	n/a	n/a	n/a	n/a
Matrix	QC	Stack	Stack	Stack	Stack
Sampling Date	n/a	28-Oct-15	29-Oct-15	29-Oct-15	28-Oct-15
Extraction Date	2-Nov-15	2-Nov-15	2-Nov-15	2-Nov-15	2-Nov-15
Target Analytes	**pg**	**pg**	**pg**	**pg**	**pg**
PCB 81	<3.0	<65	<66	<89	<12
PCB 77	<3.0	279	299	240	19.1
PCB 123	<2.7	<180	149	<120	40.9
PCB 118	<2.2	<150	1110	1160	304
PCB 114	<2.3	111	82.4	104	<8.0
PCB 105	<2.4	466	<370	474	91.0
PCB 126	<2.7	<93	<91	<86	<8.6
PCB 167	<2.9	<33	<32	<26	<4.8
PCB 156	<2.7	92.0	96.3	<52	<4.3
PCB 157	<2.9	<45	<47	<47	<4.8
PCB 169	<3.2	<14	27.4	<31	<5.2
PCB 189	<2.5	<42	<50	49.4	<1.6
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
13C12 PCB 81	66	75	43	79	72
13C12 PCB 77	77	85	51	91	79
13C12 PCB 123	86	99	54	100	91
13C12 PCB 118	86	95	56	100	89
13C12 PCB 114	89	101	57	103	91
13C12 PCB 105	86	96	57	93	91
13C12 PCB 126	87	103	60	104	95
13C12 PCB 167	95	98	59	100	97
13C12 PCB 156	103	101	64	115	105
13C12 PCB 157	96	110	61	104	100
13C12 PCB 169	95	110	65	110	100
13C12 PCB 189	93	106	61	105	97
Cleanup Standards					
13C12 PCB 28	70	131	80	142	121
13C12 PCB 111	56	65	40	70	64
Toxic Equivalency WHO 2005					
Lower Bound PCB TEQ	0.00	0.0480	0.895	0.0776	0.0150
Upper Bound PCB TEQ	0.368	9.80	10.0	9.64	1.04

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Sample Analysis Summary Report

Sample Name	15-21546-2-SVOC- (21 THRU 25) UNIT#2 TEST#4	15-21546-2-SVOC- (26 THRU 30) UNIT#2 TEST#5	15-21546-2-SVOC- (31 THRU 35) UNIT#2 TEST#6	15-21546-2-SVOC- (36 THRU 40) UNIT#2 BLANK	Laboratory Control Sample
ALS Sample ID	L1695738-5	L1695738-6	L1695738-7	L1695738-8	WG2204674-2
Sample Size	1	1	1	1	1
Sample units	stack	Stack	Stack	Stack	n/a
Lipid Content	n/a	n/a	n/a	n/a	n/a
Matrix	Stack	Stack	Stack	Stack	QC
Sampling Date	28-Oct-15	29-Oct-15	29-Oct-15	28-Oct-15	n/a
Extraction Date	2-Nov-15	2-Nov-15	2-Nov-15	2-Nov-15	n/a
Target Analytes	**pg**	**pg**	**pg**	**pg**	**% Rec**
PCB 81	<28	48.5	<68	<38	119
PCB 77	92.2	121	232	<38	119
PCB 123	<62	<92	<320	<150	112
PCB 118	<52	1430	5060	1420	121
PCB 114	<52	79.4	<200	<36	118
PCB 105	389	513	2500	507	114
PCB 126	<61	<38	<170	<39	122
PCB 167	<18	<11	190	<11	113
PCB 156	<39	<28	457	<21	99
PCB 157	<20	<23	132	<7.2	119
PCB 169	<15	25.5	<37	<7.9	117
PCB 189	<38	<51	45.2	<1.8	119
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
13C12 PCB 81	81	66	59	56	63
13C12 PCB 77	87	85	71	66	73
13C12 PCB 123	104	94	80	67	81
13C12 PCB 118	99	97	79	78	82
13C12 PCB 114	106	100	81	76	85
13C12 PCB 105	101	95	80	71	82
13C12 PCB 126	101	100	84	80	89
13C12 PCB 167	101	98	81	77	87
13C12 PCB 156	110	112	91	81	98
13C12 PCB 157	118	104	83	83	90
13C12 PCB 169	116	110	84	80	91
13C12 PCB 189	108	99	83	79	89
Cleanup Standards					
13C12 PCB 28	130	122	116	111	63
13C12 PCB 111	67	65	57	54	51
Toxic Equivalency WHO 2005					
Lower Bound PCB TEQ	0.0209	0.852	0.275	0.0578	
Upper Bound PCB TEQ	6.59	4.66	18.4	4.22	

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Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date		Approved:
ALS Sample ID	WG2204674-1	Extraction Date	2-Nov-15	*A.Ali*
Analysis Method	EPA 1668A	Sample Size	1 stack	--e-signature--
Analysis Type	Blank	Lipid Content	n/a	06-Nov-2015
Sample Matrix	QC	Split Ratio	6	

Run Information	**Run 1**
Filename	1-151105C S:9
Run Date	5-NOV-15 21:37:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	NotFnd	<3.0	3.0	U	0.0003
PCB 77	NotFnd	<3.0	3.0	U	0.0001
PCB 123	NotFnd	<2.7	2.7	U	0.00003
PCB 118	7:23	<2.2	2.1	M J R	0.00003
PCB 114	NotFnd	<2.3	2.3	U	0.00003
PCB 105	NotFnd	<2.4	2.4	U	0.00003
PCB 126	NotFnd	<2.7	2.7	U	0.1
PCB 167	NotFnd	<2.9	2.9	U	0.00003
PCB 156	NotFnd	<2.7	2.7	U	0.00003
PCB 157	NotFnd	<2.9	2.9	U	0.00003
PCB 169	NotFnd	<3.2	3.2	U	0.03
PCB 189	10:08	<2.5	2.5	M U R	0.00003

Extraction Standards		**% Rec**		**Limits**
13C12 PCB 81	6:53	66		25-150
13C12 PCB 77	7:02	77		25-150
13C12 PCB 123	7:19	86		25-150
13C12 PCB 118	7:22	86		25-150
13C12 PCB 114	7:32	89		25-150
13C12 PCB 105	7:45	86		25-150
13C12 PCB 126	8:18	87		25-150
13C12 PCB 167	8:35	95	M	25-150
13C12 PCB 156	8:59	103		25-150
13C12 PCB 157	8:59	96		25-150
13C12 PCB 169	9:34	95		25-150
13C12 PCB 189	10:08	93		25-150
Cleanup Standard		**% Rec**		
13C12 PCB 28	4:59	70		30-135
13C12 PCB 111	6:49	56		30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	0.00
Upper Bound PCB TEQ (WHO 2005)	0.368

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the LQL.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(1 THRU 5) UNIT#1 TEST#4**	Sampling Date	28-Oct-15	
ALS Sample ID	L1695738-1	Extraction Date	2-Nov-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	06-Nov-2015

Run Information	**Run 1**
Filename	1-151105C S:10
Run Date	5-NOV-15 21:55:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	6:53	<65	65	M U	0.0003
PCB 77	7:02	279	65	M	0.0001
PCB 123	7:18	<180	16	M R	0.00003
PCB 118	7:18	<150	14	M R	0.00003
PCB 114	7:32	111	14	M	0.00003
PCB 105	7:46	466	15	M	0.00003
PCB 126	8:18	<93	16	R	0.1
PCB 167	8:35	<33	4.7	M R	0.00003
PCB 156	8:55	92.0	4.3	M	0.00003
PCB 157	8:59	<45	4.4	M R	0.00003
PCB 169	9:34	<14	4.6	M J R	0.03
PCB 189	10:08	<42	6.0	R	0.00003

Extraction Standards		**% Rec**		**Limits**
13C12 PCB 81	6:53	75		25-150
13C12 PCB 77	7:01	85		25-150
13C12 PCB 123	7:19	99		25-150
13C12 PCB 118	7:19	95		25-150
13C12 PCB 114	7:31	101		25-150
13C12 PCB 105	7:45	96		25-150
13C12 PCB 126	8:18	103		25-150
13C12 PCB 167	8:34	98	M	25-150
13C12 PCB 156	8:55	101		25-150
13C12 PCB 157	8:59	110		25-150
13C12 PCB 169	9:34	110		25-150
13C12 PCB 189	10:08	106		25-150
Cleanup Standard		**% Rec**		
13C12 PCB 28	4:58	131		30-135
13C12 PCB 111	6:49	65		30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	0.0480
Upper Bound PCB TEQ (WHO 2005)	9.80

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the LQL.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(6 THRU 10) UNIT#1 TEST#5**	Sampling Date	29-Oct-15	
ALS Sample ID	L1695738-2	Extraction Date	2-Nov-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	06-Nov-2015

Run Information	**Run 1**
Filename	1-151105C S:11
Run Date	5-NOV-15 22:13:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	6:54	<66	66	U	0.0003
PCB 77	7:03	299	62		0.0001
PCB 123	7:19	149	59	M	0.00003
PCB 118	7:24	1110	47		0.00003
PCB 114	7:34	82.4	54	M	0.00003
PCB 105	7:46	<370	52	R	0.00003
PCB 126	8:19	<91	54	M R	0.1
PCB 167	8:35	<32	19	M R	0.00003
PCB 156	8:56	96.3	18	M	0.00003
PCB 157	9:01	<47	20	M R	0.00003
PCB 169	9:35	27.4	20	M J	0.03
PCB 189	10:09	<50	7.2	R	0.00003

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:53	43	25-150
13C12 PCB 77	7:02	51	25-150
13C12 PCB 123	7:20	54	25-150
13C12 PCB 118	7:23	56	25-150
13C12 PCB 114	7:32	57	25-150
13C12 PCB 105	7:46	57	25-150
13C12 PCB 126	8:18	60	25-150
13C12 PCB 167	8:35	59	25-150
13C12 PCB 156	8:56	64	25-150
13C12 PCB 157	9:00	61	25-150
13C12 PCB 169	9:35	65	25-150
13C12 PCB 189	10:09	61	25-150
Cleanup Standard		**% Rec**	
13C12 PCB 28	4:59	80	30-135
13C12 PCB 111	6:49	40	30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	0.895
Upper Bound PCB TEQ (WHO 2005)	10.0

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the LQL.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(11 THRU 15) UNIT#1 TEST#6**	Sampling Date	29-Oct-15	
ALS Sample ID	L1695738-3	Extraction Date	2-Nov-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	06-Nov-2015

Run Information	**Run 1**
Filename	1-151105C S:12
Run Date	5-NOV-15 22:31:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	6:54	<89	89	M U	0.0003
PCB 77	7:02	240	91	M	0.0001
PCB 123	NotFnd	<120	120	M U	0.00003
PCB 118	7:24	1160	42		0.00003
PCB 114	7:33	104	47	M	0.00003
PCB 105	7:46	474	52	M	0.00003
PCB 126	8:18	<86	52	M R	0.1
PCB 167	8:35	<26	9.8	M J R	0.00003
PCB 156	8:56	<52	8.8	M R	0.00003
PCB 157	9:01	<47	9.4	M R	0.00003
PCB 169	9:35	<31	10	M R	0.03
PCB 189	10:09	49.4	4.8	M	0.00003

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:53	79	25-150
13C12 PCB 77	7:02	91	25-150
13C12 PCB 123	7:20	100	25-150
13C12 PCB 118	7:23	100	25-150
13C12 PCB 114	7:32	103	25-150
13C12 PCB 105	7:46	93	25-150
13C12 PCB 126	8:18	104	25-150
13C12 PCB 167	8:35	100	25-150
13C12 PCB 156	8:56	115	25-150
13C12 PCB 157	9:00	104	25-150
13C12 PCB 169	9:34	110	25-150
13C12 PCB 189	10:08	105	25-150
Cleanup Standard		**% Rec**	
13C12 PCB 28	4:59	142	30-135
13C12 PCB 111	6:49	70	30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	0.0776
Upper Bound PCB TEQ (WHO 2005)	9.64

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the LQL.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(16 THRU 20) UNIT#1 BLANK**	Sampling Date	28-Oct-15
ALS Sample ID	L1695738-4	Extraction Date	2-Nov-15
Analysis Method	EPA 1668A	Sample Size	1 stack
Analysis Type	Sample	Lipid Content	n/a
Sample Matrix	Stack	Split Ratio	6

Approved:
A.Ali
--e-signature--
06-Nov-2015

Run Information	**Run 1**
Filename	1-151105C S:13
Run Date	5-NOV-15 22:49:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	6:53	<12	12	M U	0.0003
PCB 77	7:02	19.1	13	M J	0.0001
PCB 123	7:18	40.9	9.2	M	0.00003
PCB 118	7:23	304	7.0		0.00003
PCB 114	NotFnd	<8.0	8.0	U	0.00003
PCB 105	7:45	91.0	7.9	M	0.00003
PCB 126	8:19	<8.6	8.6	M U R	0.1
PCB 167	NotFnd	<4.8	4.8	U	0.00003
PCB 156	NotFnd	<4.3	4.3	U	0.00003
PCB 157	NotFnd	<4.8	4.8	U	0.00003
PCB 169	NotFnd	<5.2	5.2	U	0.03
PCB 189	NotFnd	<1.6	1.6	U	0.00003

Extraction Standards		**% Rec**		**Limits**
13C12 PCB 81	6:52	72		25-150
13C12 PCB 77	7:01	79		25-150
13C12 PCB 123	7:19	91		25-150
13C12 PCB 118	7:22	89		25-150
13C12 PCB 114	7:31	91		25-150
13C12 PCB 105	7:45	91		25-150
13C12 PCB 126	8:18	95		25-150
13C12 PCB 167	8:35	97	M	25-150
13C12 PCB 156	8:55	105		25-150
13C12 PCB 157	8:59	100		25-150
13C12 PCB 169	9:33	100		25-150
13C12 PCB 189	10:08	97		25-150
Cleanup Standard		**% Rec**		
13C12 PCB 28	4:58	121		30-135
13C12 PCB 111	6:49	64		30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	0.0150
Upper Bound PCB TEQ (WHO 2005)	1.04

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the LQL.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(21 THRU 25) UNIT#2 TEST#4**	Sampling Date	28-Oct-15	
ALS Sample ID	L1695738-5	Extraction Date	2-Nov-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	06-Nov-2015

Run Information	**Run 1**
Filename	1-151105C S:14
Run Date	5-NOV-15 23:08:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	6:53	<28	28	U	0.0003
PCB 77	7:02	92.2	30		0.0001
PCB 123	NotFnd	<62	62	U	0.00003
PCB 118	NotFnd	<52	52	U	0.00003
PCB 114	NotFnd	<52	52	U	0.00003
PCB 105	7:45	389	55	M	0.00003
PCB 126	8:19	<61	61	M U	0.1
PCB 167	8:35	<18	8.8	M J R	0.00003
PCB 156	8:55	<39	7.9	M R	0.00003
PCB 157	8:59	<20	8.4	M J R	0.00003
PCB 169	9:34	<15	8.9	M J R	0.03
PCB 189	10:08	<38	7.2	M R	0.00003

Extraction Standards		**% Rec**		**Limits**
13C12 PCB 81	6:52	81		25-150
13C12 PCB 77	7:01	87		25-150
13C12 PCB 123	7:19	104		25-150
13C12 PCB 118	7:19	99		25-150
13C12 PCB 114	7:31	106		25-150
13C12 PCB 105	7:45	101		25-150
13C12 PCB 126	8:18	101		25-150
13C12 PCB 167	8:35	101	M	25-150
13C12 PCB 156	8:55	110		25-150
13C12 PCB 157	8:59	118		25-150
13C12 PCB 169	9:34	116		25-150
13C12 PCB 189	10:08	108		25-150
Cleanup Standard		**% Rec**		
13C12 PCB 28	4:58	130		30-135
13C12 PCB 111	6:49	67		30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	0.0209
Upper Bound PCB TEQ (WHO 2005)	6.59

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the LQL.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(26 THRU 30) UNIT#2 TEST#5**	Sampling Date	29-Oct-15	
ALS Sample ID	L1695738-6	Extraction Date	2-Nov-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 Stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	06-Nov-2015

Run Information	**Run 1**
Filename	1-151105C S:15
Run Date	5-NOV-15 23:26:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	6:54	48.5	42		0.0003
PCB 77	7:02	121	36		0.0001
PCB 123	NotFnd	<92	92	M U	0.00003
PCB 118	7:24	1430	21		0.00003
PCB 114	7:33	79.4	24	M	0.00003
PCB 105	7:46	513	24		0.00003
PCB 126	8:19	<38	25	M R	0.1
PCB 167	8:35	<11	8.5	M J R	0.00003
PCB 156	8:56	<28	8.0	M J R	0.00003
PCB 157	9:00	<23	8.5	M J R	0.00003
PCB 169	9:36	25.5	9.0	M J	0.03
PCB 189	10:09	<51	2.7	M R	0.00003

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:53	66	25-150
13C12 PCB 77	7:02	85	25-150
13C12 PCB 123	7:20	94	25-150
13C12 PCB 118	7:23	97	25-150
13C12 PCB 114	7:32	100	25-150
13C12 PCB 105	7:46	95	25-150
13C12 PCB 126	8:18	100	25-150
13C12 PCB 167	8:35	98	25-150
13C12 PCB 156	9:00	112	25-150
13C12 PCB 157	9:00	104	25-150
13C12 PCB 169	9:35	110	25-150
13C12 PCB 189	10:08	99	25-150
Cleanup Standard		**% Rec**	
13C12 PCB 28	4:59	122	30-135
13C12 PCB 111	6:49	65	30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	0.852
Upper Bound PCB TEQ (WHO 2005)	4.66

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the LQL.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(31 THRU 35) UNIT#2 TEST#6**	Sampling Date	29-Oct-15	
ALS Sample ID	L1695738-7	Extraction Date	2-Nov-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 Stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	06-Nov-2015

Run Information	**Run 1**
Filename	1-151105C S:16
Run Date	5-NOV-15 23:44:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	6:54	<68	62	R	0.0003
PCB 77	7:02	232	61		0.0001
PCB 123	NotFnd	<320	320	U	0.00003
PCB 118	7:24	5060	140	M	0.00003
PCB 114	7:33	<200	160	M R	0.00003
PCB 105	7:46	2500	160		0.00003
PCB 126	NotFnd	<170	170	U	0.1
PCB 167	8:35	190	33		0.00003
PCB 156	8:57	457	31		0.00003
PCB 157	9:01	132	33	M	0.00003
PCB 169	NotFnd	<37	37	M U	0.03
PCB 189	10:09	45.2	6.8	M	0.00003

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:53	59	25-150
13C12 PCB 77	7:02	71	25-150
13C12 PCB 123	7:20	80	25-150
13C12 PCB 118	7:23	79	25-150
13C12 PCB 114	7:32	81	25-150
13C12 PCB 105	7:46	80	25-150
13C12 PCB 126	8:18	84	25-150
13C12 PCB 167	8:35	81	25-150
13C12 PCB 156	8:56	91	25-150
13C12 PCB 157	9:00	83	25-150
13C12 PCB 169	9:34	84	25-150
13C12 PCB 189	10:09	83	25-150
Cleanup Standard		**% Rec**	
13C12 PCB 28	4:59	116	30-135
13C12 PCB 111	6:49	57	30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	0.275
Upper Bound PCB TEQ (WHO 2005)	18.4

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
U Indicates that this compound was not detected above the MDL.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(36 THRU 40) UNIT#2 BLANK**	Sampling Date	28-Oct-15	
ALS Sample ID	L1695738-8	Extraction Date	2-Nov-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 Stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	6	06-Nov-2015

Run Information	**Run 1**
Filename	1-151105C S:17
Run Date	6-NOV-15 00:02:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	6:53	<38	38	U	0.0003
PCB 77	7:02	<38	36	R	0.0001
PCB 123	7:18	<150	41	M R	0.00003
PCB 118	7:23	1420	35		0.00003
PCB 114	NotFnd	<36	36	U	0.00003
PCB 105	7:46	507	41		0.00003
PCB 126	NotFnd	<39	39	U	0.1
PCB 167	8:35	<11	7.2	M J R	0.00003
PCB 156	8:56	<21	7.1	M J R	0.00003
PCB 157	9:00	<7.2	7.2	M U	0.00003
PCB 169	NotFnd	<7.9	7.9	U	0.03
PCB 189	NotFnd	<1.8	1.8	U	0.00003

Extraction Standards		**% Rec**		**Limits**
13C12 PCB 81	6:53	56		25-150
13C12 PCB 77	7:02	66		25-150
13C12 PCB 123	7:19	67		25-150
13C12 PCB 118	7:23	78		25-150
13C12 PCB 114	7:32	76		25-150
13C12 PCB 105	7:45	71		25-150
13C12 PCB 126	8:18	80		25-150
13C12 PCB 167	8:35	77	M	25-150
13C12 PCB 156	8:56	81		25-150
13C12 PCB 157	9:00	83		25-150
13C12 PCB 169	9:34	80		25-150
13C12 PCB 189	10:08	79		25-150
Cleanup Standard		**% Rec**		
13C12 PCB 28	4:59	111		30-135
13C12 PCB 111	6:49	54		30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	0.0578
Upper Bound PCB TEQ (WHO 2005)	4.22

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the LQL.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date		
ALS Sample ID	WG2204674-2	Extraction Date	n/a	
Analysis Method	EPA 1668A	Sample Size	1	n/a
Analysis Type	LCS	Lipid Content	n/a	
Sample Matrix	QC	Split Ratio	6	

Approved:
A.Ali
--e-signature--
06-Nov-2015

Run Information	**Run 1**
Filename	1-151105C S:3
Run Date	5-NOV-15 19:48:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**% Rec**	**Limits**
PCB 81	6:54	119	50-150
PCB 77	7:02	119	50-150
PCB 123	7:20	112	50-150
PCB 118	7:24	121	50-150
PCB 114	7:33	118	50-150
PCB 105	7:47	114	50-150
PCB 126	8:19	122	50-150
PCB 167	8:36	113	50-150
PCB 156	8:57	99	50-150
PCB 157	9:01	119	50-150
PCB 169	9:35	117	50-150
PCB 189	10:09	119	50-150

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:53	63	30-140
13C12 PCB 77	7:02	73	30-140
13C12 PCB 123	7:20	81	30-140
13C12 PCB 118	7:23	82	30-140
13C12 PCB 114	7:32	85	30-140
13C12 PCB 105	7:46	82	30-140
13C12 PCB 126	8:19	89	30-140
13C12 PCB 167	8:36	87	30-140
13C12 PCB 156	8:56	98	30-140
13C12 PCB 157	9:00	90	30-140
13C12 PCB 169	9:34	91	30-140
13C12 PCB 189	10:08	89	30-140
Cleanup Standard		**% Rec**	
13C12 PCB 28	4:60	63	40-125
13C12 PCB 111	6:50	51	40-125

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L1682779		Mississauga, On
Date of Report	10-Oct-15		LYJ 2Y4
Date of Sample Receipt	3-Oct-15	**Client Contact:**	Chris Belore
		Client Project ID:	21546, Covanta

COMMENTS: **CBPCB by Low Res SIM GCMS**

Data has not been corrected for extraction standard recoveries.

Certified by: R. Stolys

Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank	15-21546-SVOC-(1 THRU 5) #1 APC OUTLET TEST#1	15-21546-SVOC-(6 THRU 10) #1 APC OUTLET TEST#2	15-21546-SVOC-(11 THRU 15) #1 APC OUTLET TEST#3	15-21546-SVOC-(16 THRU 20) #1 APC OUTLET BLANK	15-21546-SVOC-(21 THRU 25) #2 APC OUTLET TEST#1
ALS Sample ID	WG2185607-1	L1682779-1	L1682779-2	L1682779-3	L1682779-4	L1682779-5
Sample Size	1	1	1	1	1	1
Sample units	sample	sample	sample	sample	sample	sample
Moisture Content	n/a	n/a	n/a	n/a	n/a	n/a
Matrix	QC	Stack	Stack	Stack	Stack	Stack
Sampling Date	n/a	1-Oct-15	2-Oct-15	2-Oct-15	1-Oct-15	1-Oct-15
Extraction Date	5-Oct-15	5-Oct-15	5-Oct-15	5-Oct-15	5-Oct-15	5-Oct-15
Target Analytes	**ng/sample**	**ng/sample**	**ng/sample**	**ng/sample**	**ng/sample**	**ng/sample**
1,3-Dichlorobenzene	<25 U	188	244	232	<25 U	214
1,4-Dichlorobenzene	<25 U	138	175	162	<25 U	156
1,2-Dichlorobenzene	<25 U	157	199	180	<25 U	188
1,3,5-Trichlorobenzene	<25 U	33.2	48	29.9	<25 U	36.1
1,2,4-Trichlorobenzene	<25 U	110	167	108	<25 U	142
1,2,3-Trichlorobenzene	<25 U	34	51.1	31	<25 U	43.4
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<25 U	39.7	62.8	42.1	<25 U	49.7
1,2,3,4-Tetrachlorobenzene	<25 U	<25 U	<25 U	<25 U	<25 U	<25 U
Pentachlorobenzene	<25 U	<25 U	30.3	25.3	<25 U	<25 U
Hexachlorobenzene	<25 U	<25 U	<25 U	<25 U	<25 U	<25 U
Field Sampling Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
1-Bromo-2,3-dichlorobenzene	NS	78	76	90	85	78
Extraction Standards						
1,3-Dichloro-4-Fluorobenzene	57	54	56	64	62	61
1,2-Dichlorobenzene-d4	59	57	59	67	65	64
Hexachlorobenzene-13C6	73	77	81	90	84	79

U Indicates that this compound was not detected above the LOD.
NS Indicates that this compound was not spiked in.

ALS Environmental

Sample Analysis Summary Report

Sample Name	15-21546-SVOC- (26 THRU 30) #2 APC OUTLET TEST#2		15-21546-SVOC- (31 THRU 35) #2 APC OUTLET TEST#3		15-21546-SVOC- (36 THRU 40) #2 APC OUTLET BLANK		Laboratory Control Sample
ALS Sample ID	L1682779-6		L1682779-7		L1682779-8		WG2185607-2
Sample Size	1		1		1		1
Sample units	sample		sample		sample		n/a
Moisture Content	n/a		n/a		n/a		n/a
Matrix	Stack		Stack		Stack		QC
Sampling Date	2-Oct-15		2-Oct-15		1-Oct-15		n/a
Extraction Date	5-Oct-15		5-Oct-15		5-Oct-15		5-Oct-15
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**% Recovery**
1,3-Dichlorobenzene	152		152		<25	U	52
1,4-Dichlorobenzene	113		118		<25	U	55
1,2-Dichlorobenzene	130		137		<25	U	59
1,3,5-Trichlorobenzene	29.7		25.4		<25	U	70
1,2,4-Trichlorobenzene	127		100		<25	U	72
1,2,3-Trichlorobenzene	39.6		29.7		<25	U	73
1,2,3,5/1,2,4,5-Tetrachlorobenzene	51.6		39.4		<25	U	77
1,2,3,4-Tetrachlorobenzene	<25	U	<25	U	<25	U	78
Pentachlorobenzene	<25	U	<25	U	<25	U	87
Hexachlorobenzene	<25	U	<25	U	<25	U	78
Field Sampling Standards	**% Rec**		**% Rec**		**% Rec**		
1-Bromo-2,3-dichlorobenzene	77		85		74		NS
Extraction Standards							
1,3-Dichloro-4-Fluorobenzene	52		60		50		59
1,2-Dichlorobenzene-d4	54		64		53		61
Hexachlorobenzene-13C6	79		84		74		73

U Indicates that this compound was not detected above the LOD.
NS Indicates that this compound was not spiked in.

ALS Environmental

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**		Sampling Date	n/a
ALS Sample ID	WG2185607-1		Extraction Date	5-Oct-15
Analysis Method	SIM GC/MS			
Analysis Type	Blank			
Sample Matrix	QC			
Sample Size	1	sample		
Percent Moisture	n/a			
Split Ratio	5			

Approved:
Anusha Bayyarapu
--e-signature--
10-Oct-2015

Run Information	**Run 1**
Filename	15100916.D
Run Date	10/9/2015 20:19
Final Volume	0.5 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USC160412H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene	NotFnd	<25	U
1,4-Dichlorobenzene	5.67	<25	U
1,2-Dichlorobenzene	NotFnd	<25	U
1,3,5-Trichlorobenzene	NotFnd	<25	U
1,2,4-Trichlorobenzene	NotFnd	<25	U
1,2,3-Trichlorobenzene	NotFnd	<25	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<25	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<25	U
Pentachlorobenzene	NotFnd	<25	U
Hexachlorobenzene	NotFnd	<25	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-dichlorobenzene	NS		
Extraction Standards			
1,3-Dichloro-4-Fluorobenzene	1000	5.59	57
1,2-Dichlorobenzene-d4	1000	5.94	59
Hexachlorobenzene-13C6	1000	12.69	73

U   Indicates that this compound was not detected above the LOD

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(1 THRU 5) #1 APC OUTLET TEST#1**	Sampling Date	1-Oct-15
ALS Sample ID	L1682779-1	Extraction Date	5-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Anusha Bayyarapu
--e-signature--
10-Oct-2015

Run Information	**Run 1**
Filename	15100917.D
Run Date	10/9/2015 20:50
Final Volume	0.5 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USC160412H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		5.58	188	
1,4-Dichlorobenzene		5.66	138	M
1,2-Dichlorobenzene		5.96	157	
1,3,5-Trichlorobenzene		7.15	33.2	
1,2,4-Trichlorobenzene		7.66	110	
1,2,3-Trichlorobenzene		8.07	34	
1,2,3,5/1,2,4,5-Tetrachlorobenzen		9.26	39.7	
1,2,3,4-Tetrachlorobenzene		9.76	<25	U
Pentachlorobenzene		11.08	<25	U
Hexachlorobenzene		12.69	<25	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-dichlorobenzene	500	9.05	78	
Extraction Standards				
1,3-Dichloro-4-Fluorobenzene	1000	5.59	54	
1,2-Dichlorobenzene-d4	1000	5.94	57	
Hexachlorobenzene-13C6	1000	12.69	77	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the LOD

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(6 THRU 10) #1 APC OUTLET TEST#2**	Sampling Date	2-Oct-15
ALS Sample ID	L1682779-2	Extraction Date	5-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Anusha Bayyarapu
--e-signature--
10-Oct-2015

Run Information	**Run 1**
Filename	15100918.D
Run Date	10/9/2015 21:21
Final Volume	0.5 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USC160412H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		5.59	244	
1,4-Dichlorobenzene		5.67	175	M
1,2-Dichlorobenzene		5.96	199	
1,3,5-Trichlorobenzene		7.15	48	
1,2,4-Trichlorobenzene		7.66	167	
1,2,3-Trichlorobenzene		8.07	51.1	
1,2,3,5/1,2,4,5-Tetrachlorobenzen		9.26	62.8	
1,2,3,4-Tetrachlorobenzene		9.76	<25	U
Pentachlorobenzene		11.08	30.3	M
Hexachlorobenzene		12.69	<25	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-dichlorobenzene	500	9.06	76	
Extraction Standards				
1,3-Dichloro-4-Fluorobenzene	1000	5.59	56	
1,2-Dichlorobenzene-d4	1000	5.94	59	
Hexachlorobenzene-13C6	1000	12.69	81	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the LOD

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(11 THRU 15) #1 APC OUTLET TEST#3**	Sampling Date	2-Oct-15
ALS Sample ID	L1682779-3	Extraction Date	5-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Anusha Bayyarapu
--e-signature--
10-Oct-2015

Run Information	**Run 1**
Filename	15100919.D
Run Date	10/9/2015 21:52
Final Volume	0.5 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USC160412H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		5.59	232	
1,4-Dichlorobenzene		5.67	162	
1,2-Dichlorobenzene		5.96	180	
1,3,5-Trichlorobenzene		7.15	29.9	
1,2,4-Trichlorobenzene		7.66	108	
1,2,3-Trichlorobenzene		8.07	31	
1,2,3,5/1,2,4,5-Tetrachlorobenzen		9.26	42.1	
1,2,3,4-Tetrachlorobenzene		9.76	<25	U
Pentachlorobenzene		11.08	25.3	
Hexachlorobenzene		12.69	<25	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-dichlorobenzene	500	9.05	90	
Extraction Standards				
1,3-Dichloro-4-Fluorobenzene	1000	5.59	64	
1,2-Dichlorobenzene-d4	1000	5.94	67	
Hexachlorobenzene-13C6	1000	12.69	90	

U Indicates that this compound was not detected above the LOD

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(16 THRU 20) #1 APC OUTLET BLANK**	Sampling Date	1-Oct-15
ALS Sample ID	L1682779-4	Extraction Date	5-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Anusha Bayyarapu
--e-signature--
10-Oct-2015

Run Information	**Run 1**
Filename	15100920.D
Run Date	10/9/2015 22:23
Final Volume	0.5 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USC160412H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene	5.58	<25	U
1,4-Dichlorobenzene	5.66	<25	U
1,2-Dichlorobenzene	5.96	<25	U
1,3,5-Trichlorobenzene	NotFnd	<25	U
1,2,4-Trichlorobenzene	NotFnd	<25	U
1,2,3-Trichlorobenzene	NotFnd	<25	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<25	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<25	U
Pentachlorobenzene	NotFnd	<25	U
Hexachlorobenzene	NotFnd	<25	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-dichlorobenzene	500	9.06	85
Extraction Standards			
1,3-Dichloro-4-Fluorobenzene	1000	5.59	62
1,2-Dichlorobenzene-d4	1000	5.94	65
Hexachlorobenzene-13C6	1000	12.69	84

U Indicates that this compound was not detected above the LOD

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(21 THRU 25) #2 APC OUTLET TEST#1**	Sampling Date	1-Oct-15
ALS Sample ID	L1682779-5	Extraction Date	5-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Anusha Bayyarapu
--e-signature--
10-Oct-2015

Run Information	**Run 1**
Filename	15100921.D
Run Date	10/9/2015 22:54
Final Volume	0.5 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USC160412H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		5.59	214	
1,4-Dichlorobenzene		5.67	156	
1,2-Dichlorobenzene		5.96	188	
1,3,5-Trichlorobenzene		7.15	36.1	
1,2,4-Trichlorobenzene		7.66	142	
1,2,3-Trichlorobenzene		8.06	43.4	
1,2,3,5/1,2,4,5-Tetrachlorobenzen		9.26	49.7	
1,2,3,4-Tetrachlorobenzene		9.76	<25	U
Pentachlorobenzene		11.08	<25	U
Hexachlorobenzene		12.69	<25	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-dichlorobenzene	500	9.06	78	
Extraction Standards				
1,3-Dichloro-4-Fluorobenzene	1000	5.59	61	
1,2-Dichlorobenzene-d4	1000	5.94	64	
Hexachlorobenzene-13C6	1000	12.69	79	

U Indicates that this compound was not detected above the LOD

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(26 THRU 30) #2 APC OUTLET TEST#2**	Sampling Date	2-Oct-15
ALS Sample ID	L1682779-6	Extraction Date	5-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Anusha Bayyarapu
--e-signature--
10-Oct-2015

Run Information	**Run 1**
Filename	15100922.D
Run Date	10/9/2015 23:24
Final Volume	0.5 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USC160412H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		5.59	152	
1,4-Dichlorobenzene		5.67	113	
1,2-Dichlorobenzene		5.96	130	
1,3,5-Trichlorobenzene		7.15	29.7	
1,2,4-Trichlorobenzene		7.66	127	
1,2,3-Trichlorobenzene		8.06	39.6	
1,2,3,5/1,2,4,5-Tetrachlorobenzen		9.26	51.6	
1,2,3,4-Tetrachlorobenzene		9.76	<25	U
Pentachlorobenzene		11.08	<25	U
Hexachlorobenzene		12.69	<25	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-dichlorobenzene	500	9.05	77	
Extraction Standards				
1,3-Dichloro-4-Fluorobenzene	1000	5.59	52	
1,2-Dichlorobenzene-d4	1000	5.94	54	
Hexachlorobenzene-13C6	1000	12.69	79	

U Indicates that this compound was not detected above the LOD

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(31 THRU 35) #2 APC OUTLET TEST#3**	Sampling Date	2-Oct-15
ALS Sample ID	L1682779-7	Extraction Date	5-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Anusha Bayyarapu
--e-signature--
10-Oct-2015

Run Information	**Run 1**
Filename	15100923.D
Run Date	10/9/2015 23:55
Final Volume	0.5 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USC160412H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		5.58	152	
1,4-Dichlorobenzene		5.66	118	M
1,2-Dichlorobenzene		5.96	137	
1,3,5-Trichlorobenzene		7.15	25.4	M
1,2,4-Trichlorobenzene		7.66	100	
1,2,3-Trichlorobenzene		8.07	29.7	
1,2,3,5/1,2,4,5-Tetrachlorobenzen		9.26	39.4	
1,2,3,4-Tetrachlorobenzene		9.76	<25	U
Pentachlorobenzene		11.08	<25	U
Hexachlorobenzene		12.69	<25	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-dichlorobenzene	500	9.06	85	
Extraction Standards				
1,3-Dichloro-4-Fluorobenzene	1000	5.59	60	
1,2-Dichlorobenzene-d4	1000	5.94	64	
Hexachlorobenzene-13C6	1000	12.69	84	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the LOD

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(36 THRU 40) #2 APC OUTLET BLANK**	Sampling Date	1-Oct-15
ALS Sample ID	L1682779-8	Extraction Date	5-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Anusha Bayyarapu
--e-signature--
10-Oct-2015

Run Information	**Run 1**
Filename	15100924.D
Run Date	10/10/2015 0:26
Final Volume	0.5 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USC160412H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene	NotFnd	<25	U
1,4-Dichlorobenzene	5.66	<25	U
1,2-Dichlorobenzene	NotFnd	<25	U
1,3,5-Trichlorobenzene	NotFnd	<25	U
1,2,4-Trichlorobenzene	NotFnd	<25	U
1,2,3-Trichlorobenzene	NotFnd	<25	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<25	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<25	U
Pentachlorobenzene	NotFnd	<25	U
Hexachlorobenzene	NotFnd	<25	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-dichlorobenzene	500	9.06	74
Extraction Standards			
1,3-Dichloro-4-Fluorobenzene	1000	5.59	50
1,2-Dichlorobenzene-d4	1000	5.94	53
Hexachlorobenzene-13C6	1000	12.69	74

U Indicates that this compound was not detected above the LOD

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG2185607-2	Extraction Date	5-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Anusha Bayyarapu
--e-signature--
10-Oct-2015

Run Information	**Run 1**
Filename	15100911.D
Run Date	10/9/2015 17:45
Final Volume	0.5 mL
Dilution Factor	1
Analysis Units	%Rec
Instrument	MSD-2
Column	HP-5MS USC160412H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**
1,3-Dichlorobenzene	250	5.58	52	M
1,4-Dichlorobenzene	250	5.67	55	M
1,2-Dichlorobenzene	250	5.96	59	M
1,3,5-Trichlorobenzene	250	7.15	70	
1,2,4-Trichlorobenzene	250	7.66	72	
1,2,3-Trichlorobenzene	250	8.06	73	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	500	9.28	77	
1,2,3,4-Tetrachlorobenzene	250	9.76	78	
Pentachlorobenzene	250	11.08	87	
Hexachlorobenzene	250	12.69	78	
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-dichlorobenzene	NS			
Extraction Standards				
1,3-Dichloro-4-Fluorobenzene	1000	5.59	59	
1,2-Dichlorobenzene-d4	1000	5.94	61	
Hexachlorobenzene-13C6	1000	12.69	73	

M Indicates that a peak has been manually integrated.
NS Indicates that this compound was not spiked in.

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L1692397 Revision 1		Mississauga, On
Date of Report	4-Nov-15		L5J 2Y4
Date of Sample Receipt	23-Oct-15	**Client Contact:**	Chris Belore
		Client Project ID:	21546-2

COMMENTS: **CBPCB by Low Res SIM GCMS**

REVISED REPORT: To include the 1,3,5-Trichlorobenzene data results

1,3,5-Trichlorobenzene was found to be in the alumina fraction A column cleanup portion of the extract while the other chlorobenzenes were in the normal Fraction B portion. The prior data was from the analysis of the Fraction B only and did not include the 1,3,5-trichlorobenzene results. This report includes the data analysis from both fractions.

ORIGINAL REPORT REMARKS

Based upon the very low LCS recovery of 1,3,5-Trichlorobenzene, this target appears to have been lost in the 1st eluting fraction from alumina column cleanup - likely also impacting the recovery of this target in the samples. Based upon the recent and prior data from these same sources, the levels of 1,3,5-tirchlorobenzene are expected to be a factory of 3 to 4 lower that the levels observed for 1,2,4-trichlorobenzene, which for these samples is below the reporting limit of 30ug per sample.

Certified by: R. Stolys

Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		15-21546-2-SVOC-(1 THRU 5) TEST #1 UNIT #1		15-21546-2-SVOC-(6 THRU 10) TEST #2 UNIT #1		15-21546-2-SVOC-(11 THRU 15) TEST #3 UNIT #1		15-21546-2-SVOC-(16 THRU 20) BLANK UNIT #1		15-21546-2-SVOC-(21 THRU 25) TEST #1 UNIT #2	
ALS Sample ID	WG2199699-1		L1692397-1		L1692397-2		L1692397-3		L1692397-4		L1692397-5	
Sample Size	1		1		1		1		1		1	
Sample units	sample		sample		sample		sample		sample		sample	
Moisture Content	n/a		n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack		Stack	
Sampling Date	n/a		21-Oct-15		22-Oct-15		22-Oct-15		21-Oct-15		21-Oct-15	
Extraction Date	26-Oct-15		26-Oct-15		26-Oct-15		26-Oct-15		26-Oct-15		26-Oct-15	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
1,3-Dichlorobenzene	<30	U	122		123		80.2		<30	U	67.1	
1,4-Dichlorobenzene	<30	U	91		91.6		68.5		<30	U	48.6	
1,2-Dichlorobenzene	<30	U	121		113		88.4		<30	U	81.3	
1,3,5-Trichlorobenzene	<30	U	<30	U	<30	U	<30	U	<30	U	<30	U
1,2,4-Trichlorobenzene	<30	U	45.9		45.9		32.9		<30	U	<30	U
1,2,3-Trichlorobenzene	<30	U	<30	U	<30	U	<30	U	<30	U	<30	U
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<30	U	<30	U	<30	U	<30	U	<30	U	<30	U
1,2,3,4-Tetrachlorobenzene	<30	U	<30	U	<30	U	<30	U	<30	U	<30	U
Pentachlorobenzene	<30	U	<30	U	<30	U	<30	U	<30	U	<30	U
Hexachlorobenzene	<30	U	<30	U	<30	U	<30	U	<30	U	<30	U
Field Sampling Standards	% Rec		% Rec		% Rec		% Rec		% Rec		% Rec	
1-Bromo-2,3-dichlorobenzene	NS		71		67		54		68		60	
Extraction Standards												
1,3-Dichloro-4-Fluorobenzene	54		61		57		44		58		49	
1,2-Dichlorobenzene-d4	59		66		60		46		63		53	
Hexachlorobenzene-13C6	41		50		47		41		44		48	

U Indicates that this compound was not detected above the LOD.

ALS Environmental

Sample Analysis Summary Report

Sample Name	15-21546-2-SVOC-(26 THRU 30) TEST #2 UNIT #2		15-21546-2-SVOC-(31 THRU 35) TEST #3 UNIT #2		15-21546-2-SVOC-(36 THRU 40) BLANK UNIT #2		Laboratory Control Sample
ALS Sample ID	L1692397-6		L1692397-7		L1692397-8		WG2199699-2
Sample Size	1		1		1		1
Sample units	sample		sample		sample		n/a
Moisture Content	n/a		n/a		n/a		n/a
Matrix	Stack		Stack		Stack		QC
Sampling Date	22-Oct-15		22-Oct-15		22-Oct-15		n/a
Extraction Date	26-Oct-15		26-Oct-15		26-Oct-15		26-Oct-15
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**% Recovery**
1,3-Dichlorobenzene	114		40.4		<30	U	40
1,4-Dichlorobenzene	63.9		33.4		<30	U	43
1,2-Dichlorobenzene	80.8		59.4		<30	U	51
1,3,5-Trichlorobenzene	<30	U	<30	U	<30	U	93
1,2,4-Trichlorobenzene	34.2		<30	U	<30	U	60
1,2,3-Trichlorobenzene	<30	U	<30	U	<30	U	65
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<30	U	<30	U	<30	U	48
1,2,3,4-Tetrachlorobenzene	<30	U	<30	U	<30	U	71
Pentachlorobenzene	<30	U	<30	U	<30	U	64
Hexachlorobenzene	<30	U	<30	U	<30	U	64
Field Sampling Standards	% Rec		% Rec		% Rec		% Rec
1-Bromo-2,3-dichlorobenzene	66		69		54		NS
Extraction Standards							
1,3-Dichloro-4-Fluorobenzene	46		46		38		52
1,2-Dichlorobenzene-d4	51		55		43		56
Hexachlorobenzene-13C6	47		34		34		41

U — Indicates that this compound was not detected above the LOD.

NS — Indicates that this compound was not spiked in.

ALS Environmental

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG2199699-1	Extraction Date	26-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Blank		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Anusha Bayyarapu
--e-signature--
04-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15102908.D	15110241.D
Run Date	10/29/2015 18:38	03-Nov-15 11:33
Final Volume	0.5 mL	0.5 mL
Dilution Factor	1	1
Analysis Units	ng/sample	ng/sample
Instrument	MSD-2	MSD-2
Column	HP-5MS USF319233H	HP-5MS USF319233H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene	NotFnd	<30	U	NotFnd	<30	U
1,4-Dichlorobenzene	5.69	<30	U	[illegible]	<30	U
1,2-Dichlorobenzene	NotFnd	<30	U	[illegible]	<30	U
1,3,5-Trichlorobenzene	NotFnd	<30	U	NotFnd	<30	U
1,2,4-Trichlorobenzene	NotFnd	<30	U	NotFnd	<30	U
1,2,3-Trichlorobenzene	NotFnd	<30	U	NotFnd	<30	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<30	U	NotFnd	<30	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<30	U	NotFnd	<30	U
Pentachlorobenzene	NotFnd	<30	U	NotFnd	<30	U
Hexachlorobenzene	NotFnd	<30	U	NotFnd	<30	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-dichlorobenzene	500	NotFnd	NS
Extraction Standards			
1,3-Dichloro-4-Fluorobenzene	1200	5.62	54
1,2-Dichlorobenzene-d4	1200	5.96	59
Hexachlorobenzene-13C6	1200	12.71	41

U Indicates that this compound was not detected above the MDL.
NS Indicates that this compound was not spiked in.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(1 THRU 5) TEST #1 UNIT #1**	Sampling Date	21-Oct-15
ALS Sample ID	L1692397-1	Extraction Date	26-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Anusha Bayyarapu
--e-signature--
04-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15102911.D	15110246.D
Run Date	10/29/2015 20:11	03-Nov-15 13:17
Final Volume	0.5 mL	0.5 mL
Dilution Factor	1	1
Analysis Units	ng/sample	ng/sample
Instrument	MSD-2	MSD-2
Column	HP-5MS USF319233H	HP-5MS USF319233H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene	5.61	122		5.79	<30	U
1,4-Dichlorobenzene	5.69	91	M	5.86	<30	U
1,2-Dichlorobenzene	5.98	121		6.12	<30	U
1,3,5-Trichlorobenzene	NotFnd	<30	U	7.22	<30	U
1,2,4-Trichlorobenzene	7.70	45.9		7.72	<30	U
1,2,3-Trichlorobenzene	8.10	<30	U	NotFnd	<30	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	9.31	<30	U	9.29	<30	U
1,2,3,4-Tetrachlorobenzene	9.79	<30	U	NotFnd	<30	U
Pentachlorobenzene	11.11	<30	U	11.10	<30	U
Hexachlorobenzene	12.71	<30	U	12.71	<30	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-dichlorobenzene	500	9.09	71
Extraction Standards			
1,3-Dichloro-4-Fluorobenzene	1200	5.61	61
1,2-Dichlorobenzene-d4	1200	5.96	66
Hexachlorobenzene-13C6	1200	12.71	50

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(6 THRU 10) TEST #2 UNIT #1**	Sampling Date	22-Oct-15
ALS Sample ID	L1692397-2	Extraction Date	26-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Anusha Bayyarapu
--e-signature--
04-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15102912.D	15110247.D
Run Date	10/29/2015 20:42	03-Nov-15 13:37
Final Volume	0.5 mL	0.5 mL
Dilution Factor	1	1
Analysis Units	ng/sample	ng/sample
Instrument	MSD-2	MSD-2
Column	HP-5MS USF319233H	HP-5MS USF319233H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		5.61	123	M	5.77	<30	U
1,4-Dichlorobenzene		5.69	91.6	M	5.94	<30	U
1,2-Dichlorobenzene		5.98	113	M	6.10	<30	U
1,3,5-Trichlorobenzene		NotFnd	<30	U	7.21	<30	U
1,2,4-Trichlorobenzene		7.70	45.9		7.72	<30	U
1,2,3-Trichlorobenzene		8.09	<30	U	NotFnd	<30	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen		9.31	<30	U	9.29	<30	U
1,2,3,4-Tetrachlorobenzene		9.79	<30	U	NotFnd	<30	U
Pentachlorobenzene		11.11	<30	U	11.10	<30	U
Hexachlorobenzene		12.72	<30	U	NotFnd	<30	U
Field Sampling Standards	**ng spiked**		**%Rec**				
1-Bromo-2,3-dichlorobenzene	500	9.09	67				
Extraction Standards							
1,3-Dichloro-4-Fluorobenzene	1200	5.62	57				
1,2-Dichlorobenzene-d4	1200	5.96	60				
Hexachlorobenzene-13C6	1200	12.71	47				

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(11 THRU 15) TEST #3 UNIT #1**	Sampling Date	22-Oct-15
ALS Sample ID	L1692397-3	Extraction Date	26-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Anusha Bayyarapu
--e-signature--
04-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15102913.D	15110248.D
Run Date	10/29/2015 21:13	03-Nov-15 13:58
Final Volume	0.5 mL	0.5 mL
Dilution Factor	1	1
Analysis Units	ng/sample	ng/sample
Instrument	MSD-2	MSD-2
Column	HP-5MS USF319233H	HP-5MS USF319233H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene	5.61	80.2		5.74	<30	U
1,4-Dichlorobenzene	5.69	68.5	M	5.81	<30	U
1,2-Dichlorobenzene	5.98	88.4	M	6.08	<30	U
1,3,5-Trichlorobenzene	NotFnd	<30	U	7.21	<30	U
1,2,4-Trichlorobenzene	7.70	32.9		7.71	<30	U
1,2,3-Trichlorobenzene	8.10	<30	U	NotFnd	<30	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	9.31	<30	U	9.29	<30	U
1,2,3,4-Tetrachlorobenzene	9.79	<30	U	NotFnd	<30	U
Pentachlorobenzene	11.11	<30	U	11.10	<30	U
Hexachlorobenzene	12.71	<30	U	NotFnd	<30	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-dichlorobenzene	500	9.09	54
Extraction Standards			
1,3-Dichloro-4-Fluorobenzene	1200	5.61	44
1,2-Dichlorobenzene-d4	1200	5.96	46
Hexachlorobenzene-13C6	1200	12.71	41

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(16 THRU 20) BLANK UNIT #1**	Sampling Date	21-Oct-15
ALS Sample ID	L1692397-4	Extraction Date	26-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Anusha Bayyarapu
--e-signature--
04-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15102909.D	15110244.D
Run Date	10/29/2015 19:09	03-Nov-15 12:36
Final Volume	0.5 mL	0.5 mL
Dilution Factor	1	1
Analysis Units	ng/sample	ng/sample
Instrument	MSD-2	MSD-2
Column	HP-5MS USF319233H	HP-5MS USF319233H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene	5.61	<30	U	[illegible]	<30	U
1,4-Dichlorobenzene	5.69	<30	U	[illegible]	<30	U
1,2-Dichlorobenzene	5.98	<30	U	[illegible]	<30	U
1,3,5-Trichlorobenzene	NotFnd	<30	U	NotFnd	<30	U
1,2,4-Trichlorobenzene	NotFnd	<30	U	NotFnd	<30	U
1,2,3-Trichlorobenzene	NotFnd	<30	U	NotFnd	<30	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<30	U	NotFnd	<30	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<30	U	NotFnd	<30	U
Pentachlorobenzene	NotFnd	<30	U	NotFnd	<30	U
Hexachlorobenzene	NotFnd	<30	U	NotFnd	<30	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-dichlorobenzene	500	9.09	68
Extraction Standards			
1,3-Dichloro-4-Fluorobenzene	1200	5.62	58
1,2-Dichlorobenzene-d4	1200	5.97	63
Hexachlorobenzene-13C6	1200	12.71	44

U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(21 THRU 25) TEST #1 UNIT #2**	Sampling Date	21-Oct-15
ALS Sample ID	L1692397-5	Extraction Date	26-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Anusha Bayyarapu
--e-signature--
04-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15102914.D	15110249.D
Run Date	10/29/2015 21:43	03-Nov-15 14:19
Final Volume	0.5 mL	0.5 mL
Dilution Factor	1	1
Analysis Units	ng/sample	ng/sample
Instrument	MSD-2	MSD-2
Column	HP-5MS USF319233H	HP-5MS USF319233H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		5.61	67.1	M	5.75	<30	U
1,4-Dichlorobenzene		5.69	48.6	M	5.82	<30	U
1,2-Dichlorobenzene		5.98	81.3	M	6.09	<30	U
1,3,5-Trichlorobenzene		NotFnd	<30	U	7.21	<30	U
1,2,4-Trichlorobenzene		7.70	<30	U	7.21	<30	U
1,2,3-Trichlorobenzene		8.09	<30	U	NotFnd	<30	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen		9.31	<30	U	9.29	<30	U
1,2,3,4-Tetrachlorobenzene		9.79	<30	U	NotFnd	<30	U
Pentachlorobenzene		11.11	<30	U	11.10	<30	U
Hexachlorobenzene		12.72	<30	U	12.71	<30	U
Field Sampling Standards	**ng spiked**		**%Rec**				
1-Bromo-2,3-dichlorobenzene	500	9.09	60				
Extraction Standards							
1,3-Dichloro-4-Fluorobenzene	1200	5.62	49				
1,2-Dichlorobenzene-d4	1200	5.97	53				
Hexachlorobenzene-13C6	1200	12.71	48				

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(26 THRU 30) TEST #2 UNIT #2**	Sampling Date	22-Oct-15
ALS Sample ID	L1692397-6	Extraction Date	26-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Anusha Bayyarapu
--e-signature--
04-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15102915.D	15110250.D
Run Date	10/29/2015 22:14	03-Nov-15 14:39
Final Volume	0.5 mL	0.5 mL
Dilution Factor	1	1
Analysis Units	ng/sample	ng/sample
Instrument	MSD-2	MSD-2
Column	HP-5MS USF319233H	HP-5MS USF319233H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene	5.61	114		5.79	<30	U
1,4-Dichlorobenzene	5.69	63.9		5.86	<30	U
1,2-Dichlorobenzene	5.98	80.8		6.12	<30	U
1,3,5-Trichlorobenzene	NotFnd	<30	U	7.22	<30	U
1,2,4-Trichlorobenzene	7.70	34.2		7.73	<30	U
1,2,3-Trichlorobenzene	8.10	<30	U	NotFnd	<30	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	9.31	<30	U	9.29	<30	U
1,2,3,4-Tetrachlorobenzene	9.79	<30	U	NotFnd	<30	U
Pentachlorobenzene	11.11	<30	U	11.10	<30	U
Hexachlorobenzene	12.72	<30	U	12.71	<30	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-dichlorobenzene	500	9.09	66
Extraction Standards			
1,3-Dichloro-4-Fluorobenzene	1200	5.62	46
1,2-Dichlorobenzene-d4	1200	5.97	51
Hexachlorobenzene-13C6	1200	12.71	47

U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(31 THRU 35) TEST #3 UNIT #2**	Sampling Date	22-Oct-15
ALS Sample ID	L1692397-7	Extraction Date	26-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Anusha Bayyarapu
--e-signature--
04-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15102916.D	15110251.D
Run Date	10/29/2015 22:45	03-Nov-15 15:00
Final Volume	0.5 mL	0.5 mL
Dilution Factor	1	1
Analysis Units	ng/sample	ng/sample
Instrument	MSD-2	MSD-2
Column	HP-5MS USF319233H	HP-5MS USF319233H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		5.60	40.4		[illegible]	52	
1,4-Dichlorobenzene		5.69	33.4		[illegible]	<30	U
1,2-Dichlorobenzene		5.98	59.4		[illegible]	<30	U
1,3,5-Trichlorobenzene		NotFnd	<30	U	7.22	<30	U
1,2,4-Trichlorobenzene		7.70	<30	U	[illegible]	<30	U
1,2,3-Trichlorobenzene		8.10	<30	U	NotFnd	<30	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen		9.31	<30	U	[illegible]	<30	U
1,2,3,4-Tetrachlorobenzene		9.79	<30	U	NotFnd	<30	U
Pentachlorobenzene		11.11	<30	U	[illegible]	<30	U
Hexachlorobenzene		12.72	<30	U	[illegible]	<30	U
Field Sampling Standards	**ng spiked**		**%Rec**				
1-Bromo-2,3-dichlorobenzene	500	9.09	69				
Extraction Standards							
1,3-Dichloro-4-Fluorobenzene	1200	5.61	46				
1,2-Dichlorobenzene-d4	1200	5.96	55				
Hexachlorobenzene-13C6	1200	12.72	34				

U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(36 THRU 40) BLANK UNIT #2**	Sampling Date	22-Oct-15
ALS Sample ID	L1692397-8	Extraction Date	26-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Anusha Bayyarapu
--e-signature--
04-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15102910.D	15110243.D
Run Date	10/29/2015 19:40	03-Nov-15 12:15
Final Volume	0.5 mL	0.5 mL
Dilution Factor	1	1
Analysis Units	ng/sample	ng/sample
Instrument	MSD-2	MSD-2
Column	HP-5MS USF319233H	HP-5MS USF319233H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene	NotFnd	<30	U	NotFnd	<30	U
1,4-Dichlorobenzene	5.69	<30	U	5.94	<30	U
1,2-Dichlorobenzene	5.98	<30	U	6.10	<30	U
1,3,5-Trichlorobenzene	NotFnd	<30	U	NotFnd	<30	U
1,2,4-Trichlorobenzene	NotFnd	<30	U	NotFnd	<30	U
1,2,3-Trichlorobenzene	NotFnd	<30	U	NotFnd	<30	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<30	U	NotFnd	<30	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<30	U	NotFnd	<30	U
Pentachlorobenzene	NotFnd	<30	U	NotFnd	<30	U
Hexachlorobenzene	12.72	<30	U	NotFnd	<30	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-dichlorobenzene	500	9.09	54
Extraction Standards			
1,3-Dichloro-4-Fluorobenzene	1200	5.62	38
1,2-Dichlorobenzene-d4	1200	5.96	43
Hexachlorobenzene-13C6	1200	12.71	34

U Indicates that this compound was not detected above the MDL.

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG2199699-2	Extraction Date	26-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Anusha Bayyarapu
--e-signature--
04-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15102904.D	15110235.D
Run Date	10/29/2015 16:35	03-Nov-15 09:30
Final Volume	0.5 mL	0.5 mL
Dilution Factor	1	1
Analysis Units	%Rec	%Rec
Instrument	MSD-2	MSD-2
Column	HP-5MS USF319233H	HP-5MS USF319233H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**	**Ret. Time.**	**% Recovery**	**Flags**
1,3-Dichlorobenzene	300	5.61	40		5.75	4	
1,4-Dichlorobenzene	300	5.69	43		5.82	5	M
1,2-Dichlorobenzene	300	5.98	51		6.09	1	M
1,3,5-Trichlorobenzene	300	7.15	1		7.21	93	
1,2,4-Trichlorobenzene	300	7.70	60		7.71	4	
1,2,3-Trichlorobenzene	300	8.10	65		NotFnd	0	M
1,2,3,5/1,2,4,5-Tetrachlorobenzen	600	9.31	48		9.29	31	
1,2,3,4-Tetrachlorobenzene	300	9.79	71		NotFnd	0	
Pentachlorobenzene	300	11.10	64		11.10	7	M
Hexachlorobenzene	300	12.72	64		12.71	5	
Field Sampling Standards	**ng spiked**		**%Rec**				
1-Bromo-2,3-dichlorobenzene	500	NotFnd	NS				
Extraction Standards							
1,3-Dichloro-4-Fluorobenzene	1200	5.62	52				
1,2-Dichlorobenzene-d4	1200	5.96	56				
Hexachlorobenzene-13C6	1200	12.72	41				

NS Indicates that this compound was not spiked in.

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L1695738		Mississauga, On
Date of Report	6-Nov-15		L5J 2Y4
Date of Sample Receipt	30-Oct-15	**Client Contact:**	Chris Belore
		Client Project ID:	21546-2

COMMENTS: **CBPCB by Low Res SIM GCMS**

Certified by: R. Stolys
Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		15-21546-2-SVOC- (1 THRU 5) UNIT#1 TEST#4		15-21546-2-SVOC- (6 THRU 10) UNIT#1 TEST#5		15-21546-2-SVOC- (11 THRU 15) UNIT#1 TEST#6		15-21546-2-SVOC- (16 THRU 20) UNIT#1 BLANK		15-21546-2-SVOC- (21 THRU 25) UNIT#2 TEST#4	
ALS Sample ID	WG2204674-1		L1695738-1		L1695738-2		L1695738-3		L1695738-4		L1695738-5	
Sample Size	1		1		1		1		1		1	
Sample units	sample		sample		sample		sample		sample		sample	
Moisture Content	n/a		n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack		Stack	
Sampling Date	n/a		28-Oct-15		29-Oct-15		29-Oct-15		28-Oct-15		28-Oct-15	
Extraction Date	2-Nov-15		2-Nov-15		2-Nov-15		2-Nov-15		2-Nov-15		2-Nov-15	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
1,3-Dichlorobenzene	<30	U	105		229		122		<30	U	88.9	
1,4-Dichlorobenzene	<30	U	76.4		134		81.5		<30	U	61.7	
1,2-Dichlorobenzene	<30	U	85.4		182		102		<30	U	70.9	
1,3,5-Trichlorobenzene	<30	U	<30	U	<30	U	<30	U	<30	U	<30	U
1,2,4-Trichlorobenzene	<30	U	47		97		54.4		<30	U	37.3	
1,2,3-Trichlorobenzene	<30	U	<30	U	30.5		<30	U	<30	U	<30	U
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<30	U	<30	U	39.8		<30	U	<30	U	<30	U
1,2,3,4-Tetrachlorobenzene	<30	U	<30	U	<30	U	<30	U	<30	U	<30	U
Pentachlorobenzene	<30	U	<30	U	32.2		<30	U	<30	U	<30	U
Hexachlorobenzene	<30	U	<30	U	<30	U	<30	U	<30	U	<30	U
Field Sampling Standards	% Rec		% Rec		% Rec		% Rec		% Rec		% Rec	
1-Bromo-2,3-dichlorobenzene	NS		78		89		64		67		78	
Extraction Standards												
1,3-Dichloro-4-Fluorobenzene	49		53		58		44		47		54	
1,2-Dichlorobenzene-d4	50		54		60		45		48		56	
Hexachlorobenzene-13C6	70		77		91		66		64		74	

U Indicates that this compound was not detected above the LOD.
NS Indicates that this compound was not spiked in.

ALS Environmental

Sample Analysis Summary Report

Sample Name	15-21546-2-SVOC-(26 THRU 30) UNIT#2 TEST#5		15-21546-2-SVOC-(31 THRU 35) UNIT#2 TEST#6		15-21546-2-SVOC-(36 THRU 40) UNIT#2 BLANK		Laboratory Control Sample
ALS Sample ID	L1695738-6		L1695738-7		L1695738-8		WG2204674-2
Sample Size	1		1		1		1
Sample units	sample		sample		sample		n/a
Moisture Content	n/a		n/a		n/a		n/a
Matrix	Stack		Stack		Stack		QC
Sampling Date	29-Oct-15		29-Oct-15		28-Oct-15		n/a
Extraction Date	2-Nov-15		2-Nov-15		2-Nov-15		2-Nov-15
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**% Recovery**
1,3-Dichlorobenzene	127		119		<30	U	52
1,4-Dichlorobenzene	79.5		80.7		<30	U	63
1,2-Dichlorobenzene	104		99.1		<30	U	63
1,3,5-Trichlorobenzene	<30	U	<30	U	<30	U	73
1,2,4-Trichlorobenzene	50		51.9		<30	U	85
1,2,3-Trichlorobenzene	<30	U	<30	U	<30	U	85
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<30	U	<30	U	<30	U	92
1,2,3,4-Tetrachlorobenzene	<30	U	<30	U	<30	U	94
Pentachlorobenzene	<30	U	<30	U	<30	U	93
Hexachlorobenzene	<30	U	<30	U	<30	U	98
Field Sampling Standards	% Rec		% Rec		% Rec		% Rec
1-Bromo-2,3-dichlorobenzene	72		76		58		NS
Extraction Standards							
1,3-Dichloro-4-Fluorobenzene	48		54		38		58
1,2-Dichlorobenzene-d4	49		54		39		59
Hexachlorobenzene-13C6	72		79		60		83

U Indicates that this compound was not detected above the LOD.
NS Indicates that this compound was not spiked in.

ALS Environmental

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**		Sampling Date	n/a
ALS Sample ID	WG2204674-1		Extraction Date	2-Nov-15
Analysis Method	SIM GC/MS			
Analysis Type	Blank			
Sample Matrix	QC			
Sample Size	1	sample		
Percent Moisture	n/a			
Split Ratio	6			

Approved:
Anusha Bayyarapu
--e-signature--
06-Nov-2015

Run Information	**Run 1**
Filename	15110518.D
Run Date	11/5/2015 21:10
Final Volume	0.5 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USF319233H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		NotFnd	<30	U
1,4-Dichlorobenzene		5.69	<30	U
1,2-Dichlorobenzene		NotFnd	<30	U
1,3,5-Trichlorobenzene		NotFnd	<30	U
1,2,4-Trichlorobenzene		NotFnd	<30	U
1,2,3-Trichlorobenzene		NotFnd	<30	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen		NotFnd	<30	U
1,2,3,4-Tetrachlorobenzene		NotFnd	<30	U
Pentachlorobenzene		NotFnd	<30	U
Hexachlorobenzene		NotFnd	<30	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-dichlorobenzene		NotFnd	NS	
Extraction Standards				
1,3-Dichloro-4-Fluorobenzene	1200	5.62	49	
1,2-Dichlorobenzene-d4	1200	5.97	50	
Hexachlorobenzene-13C6	1200	12.71	70	

U Indicates that this compound was not detected above the MDL.
NS Indicates that this compound was not spiked in.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(1 THRU 5) UNIT#1 TEST#4**	Sampling Date	28-Oct-15
ALS Sample ID	L1695738-1	Extraction Date	2-Nov-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Anusha Bayyarapu
--e-signature--
06-Nov-2015

Run Information	**Run 1**
Filename	15110524.D
Run Date	11/5/2015 23:14
Final Volume	0.5 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USF319233H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		5.61	105	
1,4-Dichlorobenzene		5.69	76.4	
1,2-Dichlorobenzene		5.99	85.4	
1,3,5-Trichlorobenzene		7.18	<30	U
1,2,4-Trichlorobenzene		7.69	47	
1,2,3-Trichlorobenzene		8.09	<30	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen		9.29	<30	U
1,2,3,4-Tetrachlorobenzene		9.79	<30	U
Pentachlorobenzene		11.10	<30	U
Hexachlorobenzene		12.71	<30	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-dichlorobenzene	1000	9.08	78	
Extraction Standards				
1,3-Dichloro-4-Fluorobenzene	1200	5.62	53	
1,2-Dichlorobenzene-d4	1200	5.97	54	
Hexachlorobenzene-13C6	1200	12.71	77	

U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(6 THRU 10) UNIT#1 TEST#5**	Sampling Date	29-Oct-15
ALS Sample ID	L1695738-2	Extraction Date	2-Nov-15
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Anusha Bayyarapu
--e-signature--
06-Nov-2015

Run Information	**Run 1**
Filename	15110526.D
Run Date	11/5/2015 23:55
Final Volume	0.5 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USF319233H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		5.61	229	
1,4-Dichlorobenzene		5.69	134	
1,2-Dichlorobenzene		5.99	182	
1,3,5-Trichlorobenzene		7.18	<30	U
1,2,4-Trichlorobenzene		7.69	97	
1,2,3-Trichlorobenzene		8.09	30.5	
1,2,3,5/1,2,4,5-Tetrachlorobenzen		9.29	39.8	
1,2,3,4-Tetrachlorobenzene		9.79	<30	U
Pentachlorobenzene		11.10	32.2	
Hexachlorobenzene		12.71	<30	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-dichlorobenzene	1000	9.08	89	
Extraction Standards				
1,3-Dichloro-4-Fluorobenzene	1200	5.62	58	
1,2-Dichlorobenzene-d4	1200	5.97	60	
Hexachlorobenzene-13C6	1200	12.71	91	

U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(11 THRU 15) UNIT#1 TEST#6**	Sampling Date	29-Oct-15
ALS Sample ID	L1695738-3	Extraction Date	2-Nov-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Anusha Bayyarapu
--e-signature--
06-Nov-2015

Run Information	**Run 1**
Filename	15110528.D
Run Date	11/6/2015 0:37
Final Volume	0.5 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USF319233H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		5.61	122	
1,4-Dichlorobenzene		5.69	81.5	
1,2-Dichlorobenzene		5.99	102	
1,3,5-Trichlorobenzene		7.18	<30	U
1,2,4-Trichlorobenzene		7.69	54.4	
1,2,3-Trichlorobenzene		8.09	<30	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen		9.29	<30	U
1,2,3,4-Tetrachlorobenzene		9.79	<30	U
Pentachlorobenzene		11.10	<30	U
Hexachlorobenzene		12.71	<30	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-dichlorobenzene	1000	9.08	64	
Extraction Standards				
1,3-Dichloro-4-Fluorobenzene	1200	5.62	44	
1,2-Dichlorobenzene-d4	1200	5.97	45	
Hexachlorobenzene-13C6	1200	12.71	66	

U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(16 THRU 20) UNIT#1 BLANK**	Sampling Date	28-Oct-15
ALS Sample ID	L1695738-4	Extraction Date	2-Nov-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Anusha Bayyarapu
--e-signature--
06-Nov-2015

Run Information	**Run 1**
Filename	15110520.D
Run Date	11/5/2015 21:52
Final Volume	0.5 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USF319233H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		5.62	<30	U
1,4-Dichlorobenzene		5.70	<30	U
1,2-Dichlorobenzene		5.99	<30	U
1,3,5-Trichlorobenzene		NotFnd	<30	U
1,2,4-Trichlorobenzene		NotFnd	<30	U
1,2,3-Trichlorobenzene		NotFnd	<30	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen		NotFnd	<30	U
1,2,3,4-Tetrachlorobenzene		NotFnd	<30	U
Pentachlorobenzene		NotFnd	<30	U
Hexachlorobenzene		NotFnd	<30	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-dichlorobenzene	1000	9.08	67	
Extraction Standards				
1,3-Dichloro-4-Fluorobenzene	1200	5.62	47	
1,2-Dichlorobenzene-d4	1200	5.97	48	
Hexachlorobenzene-13C6	1200	12.71	64	

U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(21 THRU 25) UNIT#2 TEST#4**	Sampling Date	28-Oct-15
ALS Sample ID	L1695738-5	Extraction Date	2-Nov-15
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Anusha Bayyarapu
--e-signature--
06-Nov-2015

Run Information	**Run 1**
Filename	15110530.D
Run Date	11/6/2015 1:18
Final Volume	0.5 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USF319233H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		5.61	88.9	
1,4-Dichlorobenzene		5.70	61.7	
1,2-Dichlorobenzene		5.99	70.9	
1,3,5-Trichlorobenzene		7.18	<30	U
1,2,4-Trichlorobenzene		7.69	37.3	
1,2,3-Trichlorobenzene		8.10	<30	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen		9.29	<30	U
1,2,3,4-Tetrachlorobenzene		9.79	<30	U
Pentachlorobenzene		11.10	<30	U
Hexachlorobenzene		12.71	<30	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-dichlorobenzene	1000	9.08	78	
Extraction Standards				
1,3-Dichloro-4-Fluorobenzene	1200	5.62	54	
1,2-Dichlorobenzene-d4	1200	5.97	56	
Hexachlorobenzene-13C6	1200	12.71	74	

U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(26 THRU 30) UNIT#2 TEST#5**	Sampling Date	29-Oct-15
ALS Sample ID	L1695738-6	Extraction Date	2-Nov-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Anusha Bayyarapu
--e-signature--
06-Nov-2015

Run Information	**Run 1**
Filename	15110532.D
Run Date	11/6/2015 1:59
Final Volume	0.5 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USF319233H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		5.61	127	
1,4-Dichlorobenzene		5.69	79.5	
1,2-Dichlorobenzene		5.99	104	
1,3,5-Trichlorobenzene		7.18	<30	U
1,2,4-Trichlorobenzene		7.70	50	
1,2,3-Trichlorobenzene		8.09	<30	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen		9.30	<30	U
1,2,3,4-Tetrachlorobenzene		9.79	<30	U
Pentachlorobenzene		11.11	<30	U
Hexachlorobenzene		12.71	<30	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-dichlorobenzene	1000	9.08	72	
Extraction Standards				
1,3-Dichloro-4-Fluorobenzene	1200	5.62	48	
1,2-Dichlorobenzene-d4	1200	5.97	49	
Hexachlorobenzene-13C6	1200	12.71	72	

U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(31 THRU 35) UNIT#2 TEST#6**		Sampling Date	29-Oct-15
ALS Sample ID	L1695738-7		Extraction Date	2-Nov-15
Analysis Method	SIM GC/MS			
Analysis Type	sample			
Sample Matrix	Stack			
Sample Size	1	sample		
Percent Moisture	n/a			
Split Ratio	6			

Approved:
Anusha Bayyarapu
--e-signature--
06-Nov-2015

Run Information	**Run 1**
Filename	15110534.D
Run Date	11/6/2015 2:41
Final Volume	0.5 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USF319233H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		5.61	119	
1,4-Dichlorobenzene		5.69	80.7	
1,2-Dichlorobenzene		5.99	99.1	
1,3,5-Trichlorobenzene		7.18	<30	U
1,2,4-Trichlorobenzene		7.69	51.9	
1,2,3-Trichlorobenzene		8.10	<30	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen		9.29	<30	U
1,2,3,4-Tetrachlorobenzene		9.79	<30	U
Pentachlorobenzene		11.11	<30	U
Hexachlorobenzene		12.71	<30	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-dichlorobenzene	1000	9.08	76	
Extraction Standards				
1,3-Dichloro-4-Fluorobenzene	1200	5.62	54	
1,2-Dichlorobenzene-d4	1200	5.97	54	
Hexachlorobenzene-13C6	1200	12.71	79	

U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(36 THRU 40) UNIT#2 BLANK**	Sampling Date	28-Oct-15
ALS Sample ID	L1695738-8	Extraction Date	2-Nov-15
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
Anusha Bayyarapu
--e-signature--
06-Nov-2015

Run Information	**Run 1**
Filename	15110522.D
Run Date	11/5/2015 22:33
Final Volume	0.5 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USF319233H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
1,3-Dichlorobenzene		NotFnd	<30	U
1,4-Dichlorobenzene		5.70	<30	U
1,2-Dichlorobenzene		5.99	<30	U
1,3,5-Trichlorobenzene		NotFnd	<30	U
1,2,4-Trichlorobenzene		NotFnd	<30	U
1,2,3-Trichlorobenzene		8.09	<30	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen		NotFnd	<30	U
1,2,3,4-Tetrachlorobenzene		NotFnd	<30	U
Pentachlorobenzene		NotFnd	<30	U
Hexachlorobenzene		NotFnd	<30	U
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-dichlorobenzene	1000	9.08	58	
Extraction Standards				
1,3-Dichloro-4-Fluorobenzene	1200	5.62	38	
1,2-Dichlorobenzene-d4	1200	5.97	39	
Hexachlorobenzene-13C6	1200	12.71	60	

U   Indicates that this compound was not detected above the MDL.

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**		Sampling Date	n/a
ALS Sample ID	WG2204674-2		Extraction Date	2-Nov-15
Analysis Method	SIM GC/MS			
Analysis Type	LCS			
Sample Matrix	QC			
Sample Size	1	n/a		
Percent Moisture	n/a			
Split Ratio	6			

Approved:
Anusha Bayyarapu
--e-signature--
06-Nov-2015

Run Information	**Run 1**
Filename	15110513.D
Run Date	11/5/2015 19:27
Final Volume	0.5 mL
Dilution Factor	1
Analysis Units	%Rec
Instrument	MSD-2
Column	HP-5MS USF319233H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**
1,3-Dichlorobenzene	300	5.61	52	
1,4-Dichlorobenzene	300	5.69	63	
1,2-Dichlorobenzene	300	5.98	63	
1,3,5-Trichlorobenzene	300	7.18	73	
1,2,4-Trichlorobenzene	300	7.69	85	
1,2,3-Trichlorobenzene	300	8.09	85	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	600	9.31	92	
1,2,3,4-Tetrachlorobenzene	300	9.79	94	
Pentachlorobenzene	300	11.10	93	
Hexachlorobenzene	300	12.71	98	
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-dichlorobenzene		NotFnd	NS	
Extraction Standards				
1,3-Dichloro-4-Fluorobenzene	1200	5.62	58	
1,2-Dichlorobenzene-d4	1200	5.97	59	
Hexachlorobenzene-13C6	1200	12.71	83	

NS Indicates that this compound was not spiked in.

ALS Environmental

5420 Mainway Drive, Unit 5, Burlington ON, L7L 6A4
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 SOUTHDOWN ROAD
ALS WO#:	L1682779		MISSISSAUGA, ON L5J 2Y4
Date of Report	9-Oct-15		CANADA
Date of Sample Receipt	3-Oct-15	**Client Contact:**	Chris Belore
		Client Project ID:	21546, Covanta

COMMENTS: **Chlorophenols as acetate derivatives by SIM GC/MS**

Data is not corrected for extraction standard recoveries.

Low phenolics extraction standard recoveries on sample L1682779-7 indicates that the target data on this sample is likely biased low.

R. Stolys

Certified by: ______________________

Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		15-21546-SVOC-(1 THRU 5) #1 APC OUTLET TEST#1		15-21546-SVOC-(6 THRU 10) #1 APC OUTLET TEST#2		15-21546-SVOC-(11 THRU 15) #1 APC OUTLET TEST#3		15-21546-SVOC-(16 THRU 20) #1 APC OUTLET BLANK		15-21546-SVOC-(21 THRU 25) #2 APC OUTLET TEST#1	
ALS Sample ID	WG2185607-1		L1682779-1		L1682779-2		L1682779-3		L1682779-4		L1682779-5	
Sample Size	1		1		1		1		1		1	
Sample units	Train		Train		Train		Train		Train		Train	
Moisture Content	n/a		n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack		Stack	
Sampling Date	n/a		1-Oct-15		2-Oct-15		2-Oct-15		1-Oct-15		1-Oct-15	
Extraction Date	5-Oct-15		5-Oct-15		5-Oct-15		5-Oct-15		5-Oct-15		5-Oct-15	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
2-Chlorophenol	<50	U	275		237		84.9		63.2		209	
3-Chlorophenol	<50	U	<50	U	<50	U	66.8	R	<50	U	<50	U
4-Chlorophenol	<50	U	205		191		391		<50	U	144	
2,6-Dichlorophenol	<50	U	<50	U	<50	U	105	R	<50	U	<50	U
2,4/2,5-Dichlorophenol	<50	U	155		162		274		<50	U	105	
3,5-Dichlorophenol	<50	U	101	R	<50	U	115	R	<50	U	78.6	R
2,3-Dichlorophenol	<50	U	<50	U	<50	U	<50	U	<50	U	<50	U
3,4-Dichlorophenol	<50	U	<50	U	<50	U	<50	U	<50	U	<50	U
2,4,6-Trichlorophenol	<50	U	575		392		458		<50	U	64.1	
2,3,6-Trichlorophenol	<50	U	<50	U	<50	U	<50	U	<50	U	<50	U
2,3,5-Trichlorophenol	<50	U	<50	U	<50	U	<50	U	<50	U	<50	U
2,4,5-Trichlorophenol	<50	U	<50	U	<50	U	<50	U	<50	U	<50	U
2,3,4-Trichlorophenol	<50	U	<50	U	<50	U	<50	U	<50	U	<50	
3,4,5-Trichlorophenol	<50	U	<50	U	<50	U	<50	U	<50	U	<50	
2,3,5,6/2,3,4,6-Tetrachlorophenol	<50	U	109		122		108		<50	U	<50	
2,3,4,5-Tetrachlorophenol	<50	U	<50	U	<50	U	<50	U	<50	U	<50	
Pentachlorophenol	<50	U	105		133		107		<50	U	<50	
Extraction Standards	**% Recovery**		**% Recovery**		**% Recovery**		**% Recovery**		**% Recovery**		**% Recovery**	
2-Fluorophenol	60		68		55		47		42		35	
d5-Phenol	72		65		59		52		43		40	
d4-2-Chlorophenol	72		81		81		62		65		58	
2,4,6-Tribromophenol	70		79		54		43		51		21	
13C-Pentachlorophenol	73		76		64		43		53		51	
Field Spike												
2,6-Dichloro-4-Fluorophenol(FS)	NS		39		9		12		49		2	

U Indicates that this compound was not detected above the LOD.
R Indicates that this compound failed for ion abundance ratios.
NS Indicates that this compound is not spiked in.

ALS Environmental

Sample Analysis Summary Report

Sample Name	15-21546-SVOC-(26 THRU 30) #2 APC OUTLET TEST#2		15-21546-SVOC-(31 THRU 35) #2 APC OUTLET TEST#3		15-21546-SVOC-(36 THRU 40) #2 APC OUTLET BLANK		Laboratory Control Sample
ALS Sample ID	L1682779-6		L1682779-7		L1682779-8		WG2185607-2
Sample Size	1		1		1		1
Sample units	Train		Train		Train		Train
Moisture Content	n/a		n/a		n/a		n/a
Matrix	Stack		Stack		Stack		QC
Sampling Date	2-Oct-15		2-Oct-15		1-Oct-15		n/a
Extraction Date	5-Oct-15		5-Oct-15		5-Oct-15		5-Oct-15
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**% Recovery**
2-Chlorophenol	216		105		59		95
3-Chlorophenol	<50	U	<50	U	<50	U	89
4-Chlorophenol	139		56.2		<50	U	92
2,6-Dichlorophenol	<50	U	<50	U	<50	U	89
2,4/2,5-Dichlorophenol	126		<50	U	<50	U	83
3,5-Dichlorophenol	<50	U	55.7		<50	U	89
2,3-Dichlorophenol	<50	U	<50	U	<50	U	86
3,4-Dichlorophenol	<50	U	<50	U	<50	U	86
2,4,6-Trichlorophenol	180		<50	U	<50	U	86
2,3,6-Trichlorophenol	<50	U	<50	U	<50	U	87
2,3,5-Trichlorophenol	<50	U	<50	U	<50	U	88
2,4,5-Trichlorophenol	<50	U	<50	U	<50	U	85
2,3,4-Trichlorophenol	<50	U	<50	U	<50	U	85
3,4,5-Trichlorophenol	<50	U	<50	U	<50	U	84
2,3,5,6/2,3,4,6-Tetrachlorophenol	52.6		<50	U	<50	U	84
2,3,4,5-Tetrachlorophenol	<50	U	<50	U	<50	U	90
Pentachlorophenol	<50	U	<50	U	<50	U	79
Extraction Standards	**% Recovery**		**% Recovery**		**% Recovery**		
2-Fluorophenol	43		12		77		63
d5-Phenol	43		22		82		72
d4-2-Chlorophenol	54		13		99		71
2,4,6-Tribromophenol	46		1		92		75
13C-Pentachlorophenol	55		23		90		74
Field Spike							
2,6-Dichloro-4-Fluorophenol(FS)	22		1		88		NS

U — Indicates that this compound was not detected above the LOD.
NS — Indicates that this compound is not spiked in.

ALS Environmental

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**		Sampling Date	n/a
ALS Sample ID	WG2185607-1		Extraction Date	5-Oct-15
Analysis Method	SIM GC/MS			
Analysis Type	Blank			
Sample Matrix	QC			
Sample Size	1	Train		
Percent Moisture	n/a			
Split Ratio	5			

Approved:
S.Gupta
--e-signature--
09-Oct-2015

Run Information	**Run 1**
Filename	15100813.D
Run Date	10/8/2015 21:59
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol		8.16	<50	U
3-Chlorophenol		NotFnd	<50	U
4-Chlorophenol		8.48	<50	U
2,6-Dichlorophenol		9.49	<50	U
2,4/2,5-Dichlorophenol		9.67	<50	U
3,5-Dichlorophenol		9.79	<50	U
2,3-Dichlorophenol		NotFnd	<50	U
3,4-Dichlorophenol		NotFnd	<50	U
2,4,6-Trichlorophenol		10.59	<50	U
2,3,6-Trichlorophenol		NotFnd	<50	U
2,3,5-Trichlorophenol		NotFnd	<50	U
2,4,5-Trichlorophenol		NotFnd	<50	U
2,3,4-Trichlorophenol		11.57	<50	U
3,4,5-Trichlorophenol		NotFnd	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol		NotFnd	<50	U
2,3,4,5-Tetrachlorophenol		NotFnd	<50	U
Pentachlorophenol		NotFnd	<50	U
Hexachlorophene		NotFnd	<100	U
Extraction Standards			**% Recovery**	
2-Fluorophenol	1000	6.42	60	
d5-Phenol	1000	6.52	72	
d4-2-Chlorophenol	1000	8.13	72	
2,4,6-Tribromophenol	1000	13.06	70	
13C-Pentachlorophenol	1000	13.71	73	
Field Spike				
2,6-Dichloro-4-Fluorophenol(FS)	1000	NotFnd	0	

U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(1 THRU 5) #1 APC OUTLET TEST#1**	Sampling Date	1-Oct-15
ALS Sample ID	L1682779-1	Extraction Date	5-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
S.Gupta
--e-signature--
09-Oct-2015

Run Information	**Run 1**
Filename	15100814.D
Run Date	10/8/2015 22:24
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol		8.17	275 M	
3-Chlorophenol		8.44	<50	U
4-Chlorophenol		8.51	205	
2,6-Dichlorophenol		9.48	<50	U
2,4/2,5-Dichlorophenol		9.67	155	
3,5-Dichlorophenol		9.79	101 M	,R
2,3-Dichlorophenol		9.99	<50	U
3,4-Dichlorophenol		10.23	<50	U
2,4,6-Trichlorophenol		10.60	575	
2,3,6-Trichlorophenol		11.01	<50	U
2,3,5-Trichlorophenol		11.08	<50	U
2,4,5-Trichlorophenol		11.13	<50	U
2,3,4-Trichlorophenol		11.53	<50	U
3,4,5-Trichlorophenol		11.62	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol		12.25	109	
2,3,4,5-Tetrachlorophenol		12.74	<50	U
Pentachlorophenol		13.71	105 M	
Hexachlorophene		NotFnd	<100	U
Extraction Standards			**% Recovery**	
2-Fluorophenol	1000	6.52	68 M	
d5-Phenol	1000	6.62	65 M	
d4-2-Chlorophenol	1000	8.15	81	
2,4,6-Tribromophenol	1000	13.06	79	
13C-Pentachlorophenol	1000	13.71	76	
Field Spike				
2,6-Dichloro-4-Fluorophenol(FS)	1000	8.78	39 M	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(6 THRU 10) #1 APC OUTLET TEST#2**	Sampling Date	2-Oct-15
ALS Sample ID	L1682779-2	Extraction Date	5-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
S.Gupta
--e-signature--
09-Oct-2015

Run Information	**Run 1**
Filename	15100815.D
Run Date	10/8/2015 22:49
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol		8.17	237	
3-Chlorophenol		8.44	<50	U
4-Chlorophenol		8.51	191	
2,6-Dichlorophenol		9.47	<50	U
2,4/2,5-Dichlorophenol		9.67	162	
3,5-Dichlorophenol		9.79	<50	U
2,3-Dichlorophenol		9.99	<50	U
3,4-Dichlorophenol		10.22	<50	U
2,4,6-Trichlorophenol		10.60	392	
2,3,6-Trichlorophenol		11.01	<50	U
2,3,5-Trichlorophenol		11.08	<50	U
2,4,5-Trichlorophenol		11.13	<50	U
2,3,4-Trichlorophenol		11.53	<50	U
3,4,5-Trichlorophenol		11.65	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol		12.25	122	
2,3,4,5-Tetrachlorophenol		12.74	<50	U
Pentachlorophenol		13.71	133	
Hexachlorophene		NotFnd	<100	U
Extraction Standards			**% Recovery**	
2-Fluorophenol	1000	6.52	55	M
d5-Phenol	1000	6.62	59	M
d4-2-Chlorophenol	1000	8.15	81	M
2,4,6-Tribromophenol	1000	13.06	54	
13C-Pentachlorophenol	1000	13.71	64	
Field Spike				
2,6-Dichloro-4-Fluorophenol(FS)	1000	8.78	9	M

M — Indicates that a peak has been manually integrated.
U — Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(11 THRU 15) #1 APC OUTLET TEST#3**	Sampling Date	2-Oct-15
ALS Sample ID	L1682779-3	Extraction Date	5-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
S.Gupta
--e-signature--
09-Oct-2015

Run Information	**Run 1**
Filename	15100816.D
Run Date	10/8/2015 23:14
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol		8.17	84.9	
3-Chlorophenol		8.48	66.8	M
4-Chlorophenol		8.55	391	
2,6-Dichlorophenol		9.49	105	
2,4/2,5-Dichlorophenol		9.69	274	
3,5-Dichlorophenol		9.81	115	M ,R
2,3-Dichlorophenol		10.00	<50	U
3,4-Dichlorophenol		10.23	<50	U
2,4,6-Trichlorophenol		10.60	458	
2,3,6-Trichlorophenol		11.02	<50	U
2,3,5-Trichlorophenol		11.09	<50	U
2,4,5-Trichlorophenol		11.13	<50	U
2,3,4-Trichlorophenol		11.54	<50	U
3,4,5-Trichlorophenol		11.68	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol		12.25	108	
2,3,4,5-Tetrachlorophenol		12.74	<50	U
Pentachlorophenol		13.71	107	M
Hexachlorophene		NotFnd	<100	U
Extraction Standards			**% Recovery**	
2-Fluorophenol	1400	6.68	47	
d5-Phenol	1400	6.76	52	M
d4-2-Chlorophenol	1400	8.21	62	
2,4,6-Tribromophenol	1400	13.06	43	
13C-Pentachlorophenol	1400	13.71	43	M
Field Spike				
2,6-Dichloro-4-Fluorophenol(FS)	1000	8.81	12	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(16 THRU 20) #1 APC OUTLET BLANK**	Sampling Date	1-Oct-15
ALS Sample ID	L1682779-4	Extraction Date	5-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
S.Gupta
--e-signature--
09-Oct-2015

Run Information	**Run 1**
Filename	15100817.D
Run Date	10/8/2015 23:39
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol		8.17	63.2	M
3-Chlorophenol		NotFnd	<50	U
4-Chlorophenol		8.48	<50	U
2,6-Dichlorophenol		9.49	<50	U
2,4/2,5-Dichlorophenol		9.65	<50	U
3,5-Dichlorophenol		9.79	<50	U
2,3-Dichlorophenol		10.00	<50	U
3,4-Dichlorophenol		NotFnd	<50	U
2,4,6-Trichlorophenol		10.59	<50	U
2,3,6-Trichlorophenol		NotFnd	<50	U
2,3,5-Trichlorophenol		11.06	<50	U
2,4,5-Trichlorophenol		NotFnd	<50	U
2,3,4-Trichlorophenol		NotFnd	<50	U
3,4,5-Trichlorophenol		11.62	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol		NotFnd	<50	U
2,3,4,5-Tetrachlorophenol		NotFnd	<50	U
Pentachlorophenol		NotFnd	<50	U
Hexachlorophene		NotFnd	<50	U
Extraction Standards			**% Recovery**	
2-Fluorophenol	1400	6.43	42	M
d5-Phenol	1400	6.54	43	M
d4-2-Chlorophenol	1400	8.14	65	
2,4,6-Tribromophenol	1400	13.06	51	
13C-Pentachlorophenol	1400	13.71	53	
Field Spike				
2,6-Dichloro-4-Fluorophenol(FS)	1000	8.77	49	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(21 THRU 25) #2 APC OUTLET TEST#1**	Sampling Date	1-Oct-15
ALS Sample ID	L1682779-5	Extraction Date	5-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
S.Gupta
--e-signature--
09-Oct-2015

Run Information	**Run 1**
Filename	15100818.D
Run Date	10/9/2015 0:04
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%Rec
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration %Rec**	**Flags**
2-Chlorophenol		8.16	209 M	
3-Chlorophenol		8.43	<50	U
4-Chlorophenol		8.50	144	
2,6-Dichlorophenol		9.47	<50	U
2,4/2,5-Dichlorophenol		9.67	105	
3,5-Dichlorophenol		9.79	78.6 M	,R
2,3-Dichlorophenol		9.99	<50	U
3,4-Dichlorophenol		10.22	<50	U
2,4,6-Trichlorophenol		10.60	64.1	
2,3,6-Trichlorophenol		11.01	<50	U
2,3,5-Trichlorophenol		11.08	<50	U
2,4,5-Trichlorophenol		11.13	<50	U
2,3,4-Trichlorophenol		11.53	8.15	
3,4,5-Trichlorophenol		11.67	2.95	
2,3,5,6/2,3,4,6-Tetrachlorophenol		12.25	32.1	
2,3,4,5-Tetrachlorophenol		12.74	16.6	
Pentachlorophenol		13.71	33.8	
Hexachlorophene		NotFnd	<50	U
Extraction Standards			**% Recovery**	
2-Fluorophenol	1400	6.49	35 M	
d5-Phenol	1400	6.60	40	
d4-2-Chlorophenol	1400	8.15	58 M	
2,4,6-Tribromophenol	1400	13.06	21	
13C-Pentachlorophenol	1400	13.71	51	
Field Spike				
2,6-Dichloro-4-Fluorophenol(FS)	1000	8.77	2 M	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(26 THRU 30) #2 APC OUTLET TEST#2**	Sampling Date	2-Oct-15
ALS Sample ID	L1682779-6	Extraction Date	5-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 % Rec		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
S.Gupta
--e-signature--
09-Oct-2015

Run Information	**Run 1**
Filename	15100819.D
Run Date	10/9/2015 0:29
Final Volume	1 mL
Dilution Factor	1
Analysis Units	% Rec
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration % Rec**	**Flags**
2-Chlorophenol		8.16	216	
3-Chlorophenol		8.43	<50	U
4-Chlorophenol		8.50	139	
2,6-Dichlorophenol		9.47	<50	U
2,4/2,5-Dichlorophenol		9.67	126	
3,5-Dichlorophenol		9.79	<50	U
2,3-Dichlorophenol		9.99	<50	U
3,4-Dichlorophenol		10.22	<50	U
2,4,6-Trichlorophenol		10.60	180	
2,3,6-Trichlorophenol		11.01	<50	U
2,3,5-Trichlorophenol		11.08	<50	U
2,4,5-Trichlorophenol		11.13	<50	U
2,3,4-Trichlorophenol		11.53	<50	U
3,4,5-Trichlorophenol		NotFnd	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol		12.25	52.6	
2,3,4,5-Tetrachlorophenol		NotFnd	<50	U
Pentachlorophenol		13.71	<50	U
Hexachlorophene		NotFnd	<50	U
Extraction Standards			**% Recovery**	
2-Fluorophenol	1400	6.50	43	M
d5-Phenol	1400	6.60	43	M
d4-2-Chlorophenol	1400	8.15	54	
2,4,6-Tribromophenol	1400	13.06	46	
13C-Pentachlorophenol	1400	13.71	55	
Field Spike				
2,6-Dichloro-4-Fluorophenol(FS)	1000	8.77	22	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(31 THRU 35) #2 APC OUTLET TEST#3**	Sampling Date	2-Oct-15
ALS Sample ID	L1682779-7	Extraction Date	5-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 % Rec		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
S.Gupta
--e-signature--
09-Oct-2015

Run Information	**Run 1**
Filename	15100820.D
Run Date	10/9/2015 0:54
Final Volume	1 mL
Dilution Factor	1
Analysis Units	% Rec
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration % Rec**	**Flags**
2-Chlorophenol		8.17	105	M
3-Chlorophenol		8.43	<50	U
4-Chlorophenol		8.51	56.2	M
2,6-Dichlorophenol		9.47	<50	U
2,4/2,5-Dichlorophenol		9.67	<50	U
3,5-Dichlorophenol		9.79	55.7	M
2,3-Dichlorophenol		9.99	<50	U
3,4-Dichlorophenol		10.22	<50	U
2,4,6-Trichlorophenol		10.59	<50	U
2,3,6-Trichlorophenol		11.00	<50	U
2,3,5-Trichlorophenol		11.08	<50	U
2,4,5-Trichlorophenol		11.13	<50	U
2,3,4-Trichlorophenol		11.53	<50	U
3,4,5-Trichlorophenol		NotFnd	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol		NotFnd	<50	U
2,3,4,5-Tetrachlorophenol		12.74	<50	U
Pentachlorophenol		13.71	<50	U
Hexachlorophene		NotFnd	<50	U
Extraction Standards			**% Recovery**	
2-Fluorophenol	1400	6.51	12	M
d5-Phenol	1400	6.61	22	M
d4-2-Chlorophenol	1400	8.15	13	M
2,4,6-Tribromophenol	1400	13.05	1	
13C-Pentachlorophenol	1400	13.71	23	
Field Spike				
2,6-Dichloro-4-Fluorophenol(FS)	1000	8.77	1	M

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(36 THRU 40) #2 APC OUTLET BLANK**	Sampling Date	1-Oct-15
ALS Sample ID	L1682779-8	Extraction Date	5-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 grams dry weight		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
S.Gupta
--e-signature--
09-Oct-2015

Run Information	**Run 1**
Filename	15100821.D
Run Date	10/9/2015 1:19
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/g
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/g**	**Flags**
2-Chlorophenol		8.18	59	M
3-Chlorophenol		8.50	<50	U
4-Chlorophenol		8.50	<50	U
2,6-Dichlorophenol		9.47	<50	U
2,4/2,5-Dichlorophenol		9.65	<50	U
3,5-Dichlorophenol		9.79	<50	U
2,3-Dichlorophenol		10.00	<50	U
3,4-Dichlorophenol		10.24	<50	U
2,4,6-Trichlorophenol		10.60	<50	U
2,3,6-Trichlorophenol		11.01	<50	U
2,3,5-Trichlorophenol		11.06	<50	U
2,4,5-Trichlorophenol		11.24	<50	U
2,3,4-Trichlorophenol		11.57	<50	U
3,4,5-Trichlorophenol		11.70	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol		12.34	<50	U
2,3,4,5-Tetrachlorophenol		NotFnd	<50	U
Pentachlorophenol		13.70	<50	U
Hexachlorophene		NotFnd	<50	U
Extraction Standards			**% Recovery**	
2-Fluorophenol	800	6.57	77	M
d5-Phenol	800	6.66	82	M
d4-2-Chlorophenol	800	8.16	99	
2,4,6-Tribromophenol	800	13.05	92	
13C-Pentachlorophenol	800	13.71	90	
Field Spike				
2,6-Dichloro-4-Fluorophenol(FS)	800	8.78	88	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG2185607-2	Extraction Date	5-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 grams dry weight		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
S.Gupta
--e-signature--
09-Oct-2015

Run Information	**Run 1**
Filename	15100811.D
Run Date	10/8/2015 21:09
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/g
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**
2-Chlorophenol	1000	8.15	95	
3-Chlorophenol	1000	8.43	89	
4-Chlorophenol	1000	8.49	92	
2,6-Dichlorophenol	1000	9.47	89	
2,4/2,5-Dichlorophenol	2000	9.67	83	
3,5-Dichlorophenol	1000	9.79	89	
2,3-Dichlorophenol	1000	9.98	86	
3,4-Dichlorophenol	1000	10.22	86	
2,4,6-Trichlorophenol	1000	10.59	86	
2,3,6-Trichlorophenol	1000	11.01	87	
2,3,5-Trichlorophenol	1000	11.08	88	
2,4,5-Trichlorophenol	1000	11.13	85	
2,3,4-Trichlorophenol	1000	11.53	85	
3,4,5-Trichlorophenol	1000	11.64	84	
2,3,5,6/2,3,4,6-Tetrachlorophenol	2000	12.24	84	M
2,3,4,5-Tetrachlorophenol	1000	12.73	90	
Pentachlorophenol	1000	13.71	79	
Hexachlorophene	1000	NotFnd	0	M
Extraction Standards				
2-Fluorophenol	1000	6.43	63	
d5-Phenol	1000	6.54	72	
d4-2-Chlorophenol	1000	8.14	71	
2,4,6-Tribromophenol	1000	13.05	75	
13C-Pentachlorophenol	1000	13.71	74	
Field Spike				
2,6-Dichloro-4-Fluorophenol(FS)	800	NotFnd	0	

M Indicates that a peak has been manually integrated.

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 SOUTHDOWN ROAD MISSISSAUGA, ON L5J 2Y4 Canada
ALS WO#:	L1692397		
Date of Report	30-Oct-15		
Date of Sample Receipt	23-Oct-15	**Client Contact:**	Chris Belore
		Client Project ID:	21546-2, Covanta

COMMENTS: **Chlorophenols as acetate derivatives by SIM GC/MS**

R. Stolys

Certified by: ______________________
Rachael Stolys
Account Manager

Results in this certificate relate only to the samples as submitted to the laboratory.

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		15-21546-2-SVOC-(1 THRU 5) TEST #1 UNIT #1		15-21546-2-SVOC-(6 THRU 10) TEST #2 UNIT #1		15-21546-2-SVOC-(11 THRU 15) TEST #3 UNIT #1		15-21546-2-SVOC-(16 THRU 20) BLANK UNIT #1		15-21546-2-SVOC-(21 THRU 25) TEST #1 UNIT #2	
ALS Sample ID	WG2199699-1		L1692397-1		L1692397-2		L1692397-3		L1692397-4		L1692397-5	
Sample Size	1		1		1		1		1		1	
Sample units	n/a		Train		Train		Train		Train		Train	
Moisture Content	n/a		n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack		Stack	
Sampling Date	n/a		21-Oct-15		22-Oct-15		22-Oct-15		21-Oct-15		21-Oct-15	
Extraction Date	26-Oct-15		26-Oct-15		26-Oct-15		26-Oct-15		26-Oct-15		26-Oct-15	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
2-Chlorophenol	<60	U	63		<60	U	<60	U	<60	U	<60	U
3-Chlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U	<60	U
4-Chlorophenol	<60	U	258		252		215		<60	U	98.5	
2,6-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U	<60	U
2,4/2,5-Dichlorophenol	<60	U	106		134		102		<60	U	<60	U
3,5-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U	<60	U
2,3-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U	<60	U
3,4-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U	<60	U
2,4,6-Trichlorophenol	<60	U	807		941		795		<60	U	266	
2,3,6-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U	<60	U
2,3,5-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U	<60	U
2,4,5-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U	<60	U
2,3,4-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U	<60	U
3,4,5-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	<60	U	145		177		135		<60	U	<60	U
2,3,4,5-Tetrachlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U	<60	U
Pentachlorophenol	<60	U	204		263		208		<60	U	<60	U
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
2-Fluorophenol	51		63		67		58		55		48	
d5-Phenol	59		62		66		53		47		38	
d4-2-Chlorophenol	64		71		78		65		58		59	
2,4,6-Tribromophenol	58		92		106		95		73		78	
13C-Pentachlorophenol	61		67		77		70		69		62	
Field Spike												
2,6-Dichloro-4-Fluorophenol(FS)	NS		69		74		65		68		59	

U Indicates that this compound was not detected above the LOD.
NS Indicates that this compound was not spiked in.

ALS Environmental

Sample Analysis Summary Report

Sample Name	15-21546-2-SVOC-(26 THRU 30) TEST #2 UNIT #2		15-21546-2-SVOC-(31 THRU 35) TEST #3 UNIT #2		15-21546-2-SVOC-(36 THRU 40) BLANK UNIT #2		Laboratory Control Sample
ALS Sample ID	L1692397-6		L1692397-7		L1692397-8		WG2199699-2
Sample Size	1		1		1		1
Sample units	Train		Train		Train		n/a
Moisture Content	n/a		n/a		n/a		n/a
Matrix	Stack		Stack		Stack		QC
Sampling Date	22-Oct-15		22-Oct-15		22-Oct-15		n/a
Extraction Date	26-Oct-15		26-Oct-15		26-Oct-15		26-Oct-15
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**% Recovery**
2-Chlorophenol	<60	U	<60	U	<60	U	96
3-Chlorophenol	164		<60	U	<60	U	93
4-Chlorophenol	130		89.3		<60	U	91
2,6-Dichlorophenol	<60	U	<60	U	<60	U	72
2,4/2,5-Dichlorophenol	122		<60	U	<60	U	78
3,5-Dichlorophenol	<60	U	<60	U	<60	U	90
2,3-Dichlorophenol	<60	U	<60	U	<60	U	82
3,4-Dichlorophenol	<60	U	<60	U	<60	U	90
2,4,6-Trichlorophenol	186		221		<60	U	53
2,3,6-Trichlorophenol	<60	U	<60	U	<60	U	59
2,3,5-Trichlorophenol	<60	U	<60	U	<60	U	69
2,4,5-Trichlorophenol	<60	U	<60	U	<60	U	71
2,3,4-Trichlorophenol	<60	U	<60	U	<60	U	73
3,4,5-Trichlorophenol	<60	U	<60	U	<60	U	82
2,3,5,6/2,3,4,6-Tetrachlorophenol	<60	U	<60	U	<60	U	61
2,3,4,5-Tetrachlorophenol	<60	U	<60	U	<60	U	68
Pentachlorophenol	<60	U	<60	U	<60	U	64
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**
2-Fluorophenol	44		31		33		47
d5-Phenol	43		30		35		67
d4-2-Chlorophenol	54		50		56		70
2,4,6-Tribromophenol	58		70		73		57
13C-Pentachlorophenol	52		56		69		58
Field Spike							
2,6-Dichloro-4-Fluorophenol(FS)	28		53		63		NS

U Indicates that this compound was not detected above the LOD.
NS Indicates that this compound was not spiked in.

ALS Environmental

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG2199699-1	Extraction Date	26-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Blank		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
S. Jin
--e-signature--
30-Oct-2015

Run Information	**Run 1**
Filename	15102912.D
Run Date	10/29/2015 18:00
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol		8.01	<60	U
3-Chlorophenol		NotFnd	<60	U
4-Chlorophenol		8.32	<60	U
2,6-Dichlorophenol		NotFnd	<60	U
2,4/2,5-Dichlorophenol		9.51	<60	U
3,5-Dichlorophenol		9.62	<60	U
2,3-Dichlorophenol		9.82	<60	U
3,4-Dichlorophenol		NotFnd	<60	U
2,4,6-Trichlorophenol		NotFnd	<60	U
2,3,6-Trichlorophenol		NotFnd	<60	U
2,3,5-Trichlorophenol		NotFnd	<60	U
2,4,5-Trichlorophenol		NotFnd	<60	U
2,3,4-Trichlorophenol		NotFnd	<60	U
3,4,5-Trichlorophenol		NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol		NotFnd	<60	U
2,3,4,5-Tetrachlorophenol		NotFnd	<60	U
Pentachlorophenol		13.52	<60	U
Extraction Standards			**% Rec**	
2-Fluorophenol	1200	6.26	51	M
d5-Phenol	1200	6.37	59	M
d4-2-Chlorophenol	1200	7.97	64	
2,4,6-Tribromophenol	1200	12.88	58	
13C-Pentachlorophenol	1200	13.53	61	

Field Spike

2,6-Dichloro-4-Fluorophenol(FS) NS

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
NS	Indicates that this compound was not spiked in.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(1 THRU 5) TEST #1 UNIT #1**	Sampling Date	21-Oct-15
ALS Sample ID	L1692397-1	Extraction Date	26-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
S. Jin
--e-signature--
30-Oct-2015

Run Information	**Run 1**
Filename	15102915.D
Run Date	10/29/2015 19:15
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol		8.00	63	M
3-Chlorophenol		8.26	<60	U
4-Chlorophenol		8.33	258	
2,6-Dichlorophenol		9.30	<60	U
2,4/2,5-Dichlorophenol		9.50	106	
3,5-Dichlorophenol		9.62	<60	U
2,3-Dichlorophenol		9.82	<60	U
3,4-Dichlorophenol		NotFnd	<60	U
2,4,6-Trichlorophenol		10.42	807	
2,3,6-Trichlorophenol		10.85	<60	U
2,3,5-Trichlorophenol		10.90	<60	U
2,4,5-Trichlorophenol		10.96	<60	U
2,3,4-Trichlorophenol		11.36	<60	U
3,4,5-Trichlorophenol		11.46	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol		12.07	145	M
2,3,4,5-Tetrachlorophenol		NotFnd	<60	U
Pentachlorophenol		13.53	204	M
Extraction Standards			**% Rec**	
2-Fluorophenol	1200	6.29	63	M
d5-Phenol	1200	6.39	62	M
d4-2-Chlorophenol	1200	7.97	71	M
2,4,6-Tribromophenol	1200	12.88	92	
13C-Pentachlorophenol	1200	13.53	67	
Field Spike				
2,6-Dichloro-4-Fluorophenol(FS)	1000	8.60	69	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(6 THRU 10) TEST #2 UNIT #1**	Sampling Date	22-Oct-15
ALS Sample ID	L1692397-2	Extraction Date	26-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
S. Jin
--e-signature--
30-Oct-2015

Run Information	**Run 1**
Filename	15102916.D
Run Date	10/29/2015 19:41
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol		8.00	<60	U
3-Chlorophenol		8.26	<60	U
4-Chlorophenol		8.33	252	
2,6-Dichlorophenol		9.30	<60	U
2,4/2,5-Dichlorophenol		9.50	134	
3,5-Dichlorophenol		9.62	<60	U
2,3-Dichlorophenol		9.82	<60	U
3,4-Dichlorophenol		NotFnd	<60	U
2,4,6-Trichlorophenol		10.42	941	
2,3,6-Trichlorophenol		10.84	<60	U
2,3,5-Trichlorophenol		10.90	<60	U
2,4,5-Trichlorophenol		10.96	<60	U
2,3,4-Trichlorophenol		11.35	<60	U
3,4,5-Trichlorophenol		11.46	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol		12.07	177	M
2,3,4,5-Tetrachlorophenol		NotFnd	<60	U
Pentachlorophenol		13.53	263	
Extraction Standards			**% Rec**	
2-Fluorophenol	1200	6.28	67	M
d5-Phenol	1200	6.38	66	M
d4-2-Chlorophenol	1200	7.97	78	M
2,4,6-Tribromophenol	1200	12.88	106	
13C-Pentachlorophenol	1200	13.53	77	
Field Spike				
2,6-Dichloro-4-Fluorophenol(FS)	1000	8.60	74	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(11 THRU 15) TEST #3 UNIT #1**	Sampling Date	22-Oct-15
ALS Sample ID	L1692397-3	Extraction Date	26-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
S. Jin
--e-signature--
30-Oct-2015

Run Information	**Run 1**
Filename	15102917.D
Run Date	10/29/2015 20:06
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol		8.00	<60	U
3-Chlorophenol		8.26	<60	U
4-Chlorophenol		8.33	215	
2,6-Dichlorophenol		9.30	<60	U
2,4/2,5-Dichlorophenol		9.50	102	
3,5-Dichlorophenol		9.62	<60	U
2,3-Dichlorophenol		9.82	<60	U
3,4-Dichlorophenol		NotFnd	<60	U
2,4,6-Trichlorophenol		10.42	795	
2,3,6-Trichlorophenol		NotFnd	<60	U
2,3,5-Trichlorophenol		NotFnd	<60	U
2,4,5-Trichlorophenol		10.96	<60	U
2,3,4-Trichlorophenol		11.35	<60	U
3,4,5-Trichlorophenol		11.46	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol		12.07	135	M
2,3,4,5-Tetrachlorophenol		NotFnd	<60	U
Pentachlorophenol		13.53	208	
Extraction Standards			**% Rec**	
2-Fluorophenol	1200	6.30	58	
d5-Phenol	1200	6.40	53	M
d4-2-Chlorophenol	1200	7.97	65	M
2,4,6-Tribromophenol	1200	12.87	95	M
13C-Pentachlorophenol	1200	13.53	70	
Field Spike				
2,6-Dichloro-4-Fluorophenol(FS)	1000	8.60	65	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(16 THRU 20) BLANK UNIT #1**	Sampling Date	21-Oct-15
ALS Sample ID	L1692397-4	Extraction Date	26-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
S. Jin
--e-signature--
30-Oct-2015

Run Information	**Run 1**
Filename	15102913.D
Run Date	10/29/2015 18:25
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol		8.01	<60	U
3-Chlorophenol		NotFnd	<60	U
4-Chlorophenol		8.32	<60	U
2,6-Dichlorophenol		NotFnd	<60	U
2,4/2,5-Dichlorophenol		9.50	<60	U
3,5-Dichlorophenol		9.62	<60	U
2,3-Dichlorophenol		NotFnd	<60	U
3,4-Dichlorophenol		NotFnd	<60	U
2,4,6-Trichlorophenol		10.42	<60	U
2,3,6-Trichlorophenol		NotFnd	<60	U
2,3,5-Trichlorophenol		10.90	<60	U
2,4,5-Trichlorophenol		NotFnd	<60	U
2,3,4-Trichlorophenol		NotFnd	<60	U
3,4,5-Trichlorophenol		NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol		NotFnd	<60	U
2,3,4,5-Tetrachlorophenol		NotFnd	<60	U
Pentachlorophenol		13.52	<60	U
Extraction Standards			**% Rec**	
2-Fluorophenol	1200	6.26	55	M
d5-Phenol	1200	6.37	47	M
d4-2-Chlorophenol	1200	7.97	58	M
2,4,6-Tribromophenol	1200	12.88	73	
13C-Pentachlorophenol	1200	13.53	69	
Field Spike				
2,6-Dichloro-4-Fluorophenol(FS)	1000	8.60	68	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(21 THRU 25) TEST #1 UNIT #2**	Sampling Date	21-Oct-15
ALS Sample ID	L1692397-5	Extraction Date	26-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
S. Jin
--e-signature--
30-Oct-2015

Run Information	**Run 1**
Filename	15102918.D
Run Date	10/29/2015 20:31
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol		8.00	<60	U
3-Chlorophenol		NotFnd	<60	U
4-Chlorophenol		8.33	98.5	
2,6-Dichlorophenol		NotFnd	<60	U
2,4/2,5-Dichlorophenol		9.50	<60	U
3,5-Dichlorophenol		9.62	<60	U
2,3-Dichlorophenol		9.82	<60	U
3,4-Dichlorophenol		NotFnd	<60	U
2,4,6-Trichlorophenol		10.42	266	
2,3,6-Trichlorophenol		10.85	<60	U
2,3,5-Trichlorophenol		NotFnd	<60	U
2,4,5-Trichlorophenol		NotFnd	<60	U
2,3,4-Trichlorophenol		11.35	<60	U
3,4,5-Trichlorophenol		11.46	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol		12.07	<60	U
2,3,4,5-Tetrachlorophenol		NotFnd	<60	U
Pentachlorophenol		13.53	<60	U
Extraction Standards			**% Rec**	
2-Fluorophenol	1200	6.26	48	M
d5-Phenol	1200	6.37	38	M
d4-2-Chlorophenol	1200	7.97	59	M
2,4,6-Tribromophenol	1200	12.88	78	
13C-Pentachlorophenol	1200	13.53	62	
Field Spike				
2,6-Dichloro-4-Fluorophenol(FS)	1000	8.60	59	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(26 THRU 30) TEST #2 UNIT #2**	Sampling Date	22-Oct-15
ALS Sample ID	L1692397-6	Extraction Date	26-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
S. Jin
--e-signature--
30-Oct-2015

Run Information	**Run 1**
Filename	15102919.D
Run Date	10/29/2015 20:56
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol		8.00	<60	U
3-Chlorophenol		8.26	164	
4-Chlorophenol		8.33	130	
2,6-Dichlorophenol		NotFnd	<60	U
2,4/2,5-Dichlorophenol		9.50	122	
3,5-Dichlorophenol		9.62	<60	U
2,3-Dichlorophenol		9.82	<60	U
3,4-Dichlorophenol		NotFnd	<60	U
2,4,6-Trichlorophenol		10.42	186	
2,3,6-Trichlorophenol		NotFnd	<60	U
2,3,5-Trichlorophenol		NotFnd	<60	U
2,4,5-Trichlorophenol		NotFnd	<60	U
2,3,4-Trichlorophenol		NotFnd	<60	U
3,4,5-Trichlorophenol		11.46	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol		12.07	<60	U
2,3,4,5-Tetrachlorophenol		NotFnd	<60	U
Pentachlorophenol		13.53	<60	U
Extraction Standards			**% Rec**	
2-Fluorophenol	1200	6.26	44	M
d5-Phenol	1200	6.37	43	M
d4-2-Chlorophenol	1200	7.97	54	M
2,4,6-Tribromophenol	1200	12.88	58	
13C-Pentachlorophenol	1200	13.53	52	
Field Spike				
2,6-Dichloro-4-Fluorophenol(FS)	1000	8.60	28	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(31 THRU 35) TEST #3 UNIT #2**	Sampling Date	22-Oct-15
ALS Sample ID	L1692397-7	Extraction Date	26-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
S. Jin
--e-signature--
30-Oct-2015

Run Information	**Run 1**
Filename	15102920.D
Run Date	10/29/2015 21:21
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol		8.00	<60	U
3-Chlorophenol		NotFnd	<60	U
4-Chlorophenol		8.33	89.3	
2,6-Dichlorophenol		NotFnd	<60	U
2,4/2,5-Dichlorophenol		9.50	<60	U
3,5-Dichlorophenol		9.62	<60	U
2,3-Dichlorophenol		9.82	<60	U
3,4-Dichlorophenol		NotFnd	<60	U
2,4,6-Trichlorophenol		10.42	221	
2,3,6-Trichlorophenol		NotFnd	<60	U
2,3,5-Trichlorophenol		NotFnd	<60	U
2,4,5-Trichlorophenol		NotFnd	<60	U
2,3,4-Trichlorophenol		NotFnd	<60	U
3,4,5-Trichlorophenol		11.46	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol		12.07	<60	U
2,3,4,5-Tetrachlorophenol		NotFnd	<60	U
Pentachlorophenol		13.53	<60	U
Extraction Standards			**% Rec**	
2-Fluorophenol	1200	6.25	31	M
d5-Phenol	1200	6.36	30	M
d4-2-Chlorophenol	1200	7.97	50	M
2,4,6-Tribromophenol	1200	12.88	70	
13C-Pentachlorophenol	1200	13.53	56	
Field Spike				
2,6-Dichloro-4-Fluorophenol(FS)	1000	8.60	53	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(36 THRU 40) BLANK UNIT #2**	Sampling Date	22-Oct-15
ALS Sample ID	L1692397-8	Extraction Date	26-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
S. Jin
--e-signature--
30-Oct-2015

Run Information	**Run 1**
Filename	15102914.D
Run Date	10/29/2015 18:50
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol		8.01	<60	U
3-Chlorophenol		NotFnd	<60	U
4-Chlorophenol		8.32	<60	U
2,6-Dichlorophenol		NotFnd	<60	U
2,4/2,5-Dichlorophenol		9.50	<60	U
3,5-Dichlorophenol		9.62	<60	U
2,3-Dichlorophenol		NotFnd	<60	U
3,4-Dichlorophenol		NotFnd	<60	U
2,4,6-Trichlorophenol		10.42	<60	U
2,3,6-Trichlorophenol		NotFnd	<60	U
2,3,5-Trichlorophenol		10.89	<60	U
2,4,5-Trichlorophenol		NotFnd	<60	U
2,3,4-Trichlorophenol		NotFnd	<60	U
3,4,5-Trichlorophenol		NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol		NotFnd	<60	U
2,3,4,5-Tetrachlorophenol		NotFnd	<60	U
Pentachlorophenol		13.52	<60	U
Extraction Standards			**% Rec**	
2-Fluorophenol	1200	6.26	33	M
d5-Phenol	1200	6.37	35	M
d4-2-Chlorophenol	1200	7.97	56	M
2,4,6-Tribromophenol	1200	12.87	73	
13C-Pentachlorophenol	1200	13.53	69	
Field Spike				
2,6-Dichloro-4-Fluorophenol(FS)	1000	8.60	63	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG2199699-2	Extraction Date	26-Oct-15
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
S. Jin
--e-signature--
30-Oct-2015

Run Information	**Run 1**
Filename	15102908.D
Run Date	10/29/2015 16:19
Final Volume	1 mL
Dilution Factor	1
Analysis Units	%Rec
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**
2-Chlorophenol	1200	7.99	96	
3-Chlorophenol	1200	8.26	93	
4-Chlorophenol	1200	8.33	91	
2,6-Dichlorophenol	1200	9.30	72	
2,4/2,5-Dichlorophenol	2400	9.49	78	
3,5-Dichlorophenol	1200	9.62	90	
2,3-Dichlorophenol	1200	9.81	82	
3,4-Dichlorophenol	1200	10.05	90	
2,4,6-Trichlorophenol	1200	10.42	53	
2,3,6-Trichlorophenol	1200	10.83	59	
2,3,5-Trichlorophenol	1200	10.91	69	
2,4,5-Trichlorophenol	1200	10.96	71	
2,3,4-Trichlorophenol	1200	11.35	73	
3,4,5-Trichlorophenol	1200	11.47	82	
2,3,5,6/2,3,4,6-Tetrachlorophenol	2400	12.07	61	M
2,3,4,5-Tetrachlorophenol	1200	12.56	68	
Pentachlorophenol	1200	13.53	64	
Extraction Standards				
2-Fluorophenol	1200	6.29	47	
d5-Phenol	1200	6.39	67	M
d4-2-Chlorophenol	1200	7.97	70	
2,4,6-Tribromophenol	1200	12.87	57	
13C-Pentachlorophenol	1200	13.53	58	
Field Spike				
2,6-Dichloro-4-Fluorophenol(FS)	NS			

M Indicates that a peak has been manually integrated.

NS Indicates that this compound was not spiked in.

ALS Environmental

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Rachael Stolys	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 SOUTHDOWN ROAD MISSISSAUGA, ON L5J 2Y4 Canada
ALS WO#:	L1695738		
Date of Report	10-Nov-15		
Date of Sample Receipt	30-Oct-15	**Client Contact:**	Chris Belore
		Client Project ID:	21546-2, COVANTA

COMMENTS: **Chlorophenols as acetate derivatives by SIM GC/MS**

The recoveries of the extraction standards and field standards are generally below the method control limits. The recoveries for the lab QC and for the un-sampled trip blanks were much higher than the sampled trains. It is noted that the 2,4,6-substituted extraction/field standards 2,4,6-tribromiphenol, and 2,6-dichloro-4-fluorophenol were not recovered from the sampled trains. As a result, selected target chlorophenol data may be biased low perhaps in particular the 2,4,6-trichlorophenol due to its structural similarity to the 2,4,6-tribromophenol and the 2,6-dichloro-4-fluorophenol.
Nevertheless, there is an absence of evidence to support concerns for significant levels of chlorophenol source emissions in general.

Certified by: S Kennedy

Steve Kennedy
Technical Supervisor

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		15-21546-2-SVOC-(1 THRU 5) UNIT#1 TEST#4		15-21546-2-SVOC-(6 THRU 10) UNIT#1 TEST#5		15-21546-2-SVOC-(11 THRU 15) UNIT#1 TEST#6		15-21546-2-SVOC-(16 THRU 20) UNIT#1 BLANK	
ALS Sample ID	WG2204674-1		L1695738-1		L1695738-2		L1695738-3		L1695738-4	
Sample Size	1		1		1		1		1	
Sample units	n/a		Train		Train		Train		Train	
Moisture Content	n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack	
Sampling Date	n/a		28-Oct-15		29-Oct-15		29-Oct-15		28-Oct-15	
Extraction Date	2-Nov-15		2-Nov-15		2-Nov-15		2-Nov-15		2-Nov-15	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
2-Chlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
3-Chlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
4-Chlorophenol	<60	U	62.7		129		<60	U	<60	U
2,6-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,4/2,5-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
3,5-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,3-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
3,4-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,4,6-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,3,6-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,3,5-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,4,5-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,3,4-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
3,4,5-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
2,3,4,5-Tetrachlorophenol	<60	U	<60	U	<60	U	<60	U	<60	U
Pentachlorophenol	<60	U	<60	U	122		<60	U	<60	U
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
2-Fluorophenol	47		13		32		15		71	
d5-Phenol	35		16		28		13		41	
d4-2-Chlorophenol	45		10		26		9		66	
2,4,6-Tribromophenol	56		0		6		0		60	
13C-Pentachlorophenol	41		74		61		73		63	
Field Spike										
2,6-Dichloro-4-Fluorophenol(FS)	NS		0		0		0		27	

U Indicates that this compound was not detected above the LOD.
NS Indicates that this compound was not spiked in.

ALS Environmental

Sample Analysis Summary Report

Sample Name	15-21546-2-SVOC- (21 THRU 25) UNIT#2 TEST#4		15-21546-2-SVOC- (26 THRU 30) UNIT#2 TEST#5		15-21546-2-SVOC- (31 THRU 35) UNIT#2 TEST#6		15-21546-2-SVOC- (36 THRU 40) UNIT#2 BLANK		Laboratory Control Sample
ALS Sample ID	L1695738-5		L1695738-6		L1695738-7		L1695738-8		WG2204674-2
Sample Size	1		1		1		1		1
Sample units	Train		Train		Train		Train		n/a
Moisture Content	n/a		n/a		n/a		n/a		n/a
Matrix	Stack		Stack		Stack		Stack		QC
Sampling Date	28-Oct-15		29-Oct-15		29-Oct-15		28-Oct-15		n/a
Extraction Date	2-Nov-15		2-Nov-15		2-Nov-15		2-Nov-15		2-Nov-15
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**% Recovery**
2-Chlorophenol	<60	U	<60	U	<60	U	<60	U	63
3-Chlorophenol	<60	U	<60	U	<60	U	<60	U	58
4-Chlorophenol	60.2		<60	U	80.3		<60	U	59
2,6-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	69
2,4/2,5-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	56
3,5-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	65
2,3-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	59
3,4-Dichlorophenol	<60	U	<60	U	<60	U	<60	U	65
2,4,6-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	42
2,3,6-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	42
2,3,5-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	52
2,4,5-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	56
2,3,4-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	58
3,4,5-Trichlorophenol	<60	U	<60	U	<60	U	<60	U	66
2,3,5,6/2,3,4,6-Tetrachlorophenol	<60	U	<60	U	<60	U	<60	U	49
2,3,4,5-Tetrachlorophenol	<60	U	<60	U	<60	U	<60	U	56
Pentachlorophenol	<60	U	<60	U	<60	U	<60	U	54
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		
2-Fluorophenol	26		22		28		54		50
d5-Phenol	28		20		26		42		37
d4-2-Chlorophenol	22		14		28		62		46
2,4,6-Tribromophenol	10		1		4		70		61
13C-Pentachlorophenol	76		82		81		78		70
Field Spike									
2,6-Dichloro-4-Fluorophenol(FS)	0		0		0		48		NS

U Indicates that this compound was not detected above the LOD.
NS Indicates that this compound was not spiked in.

ALS Environmental

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG2204674-1	Extraction Date	2-Nov-15
Analysis Method	SIM GC/MS		
Analysis Type	Blank		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
S. Jin
--e-signature--
10-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15110505.D	15110908.D
Run Date	11/5/2015 18:49	09-Nov-15 18:10
Final Volume	1 mL	1 mL
Dilution Factor	1	1
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
2-Chlorophenol					7.91	<60	U
3-Chlorophenol					NotFnd	<60	U
4-Chlorophenol					8.23	<60	U
2,6-Dichlorophenol		NotFnd	<60	U			
2,4/2,5-Dichlorophenol					NotFnd	<60	U
3,5-Dichlorophenol					9.53	<60	U
2,3-Dichlorophenol					NotFnd	<60	U
3,4-Dichlorophenol					NotFnd	<60	U
2,4,6-Trichlorophenol					NotFnd	<60	U
2,3,6-Trichlorophenol					NotFnd	<60	U
2,3,5-Trichlorophenol					NotFnd	<60	U
2,4,5-Trichlorophenol					NotFnd	<60	U
2,3,4-Trichlorophenol					NotFnd	<60	U
3,4,5-Trichlorophenol					NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol					NotFnd	<60	U
2,3,4,5-Tetrachlorophenol					NotFnd	<60	U
Pentachlorophenol					NotFnd	<60	U
Extraction Standards			**% Rec**			**% Rec**	
2-Fluorophenol	1200	6.20	47				
d5-Phenol	1200				6.27	35	
d4-2-Chlorophenol	1200				7.87	45	
2,4,6-Tribromophenol	1200	12.81	56				
13C-Pentachlorophenol	1200				13.43	41	
Field Spike							
2,6-Dichloro-4-Fluorophenol(FS)	NS						

U Indicates that this compound was not detected above the MDL.
NS Indicates that this compound was not spiked in.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(1 THRU 5) UNIT#1 TEST#4**	Sampling Date	28-Oct-15
ALS Sample ID	L1695738-1	Extraction Date	2-Nov-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
S. Jin
--e-signature--
10-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15110508.D	15110911.D
Run Date	11/5/2015 20:04	09-Nov-15 19:25
Final Volume	1 mL	1 mL
Dilution Factor	1	1
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
2-Chlorophenol					7.91	<60	U
3-Chlorophenol					NotFnd	<60	U
4-Chlorophenol					8.24	62.7	M
2,6-Dichlorophenol		9.24	<60	U			
2,4/2,5-Dichlorophenol					9.40	<60	U
3,5-Dichlorophenol					9.52	<60	U
2,3-Dichlorophenol					NotFnd	<60	U
3,4-Dichlorophenol					NotFnd	<60	U
2,4,6-Trichlorophenol					NotFnd	<60	U
2,3,6-Trichlorophenol					10.75	<60	U
2,3,5-Trichlorophenol					NotFnd	<60	U
2,4,5-Trichlorophenol					NotFnd	<60	U
2,3,4-Trichlorophenol					NotFnd	<60	U
3,4,5-Trichlorophenol					11.37	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol					NotFnd	<60	U
2,3,4,5-Tetrachlorophenol					NotFnd	<60	U
Pentachlorophenol					13.43	<60	U
Extraction Standards			**% Rec**			**% Rec**	
2-Fluorophenol	1200	6.27	13	M			
d5-Phenol	1200				6.28	16	M
d4-2-Chlorophenol	1200				7.88	10	M
2,4,6-Tribromophenol	1200	12.81	0				
13C-Pentachlorophenol	1200				13.43	74	
Field Spike							
2,6-Dichloro-4-Fluorophenol(FS)	1000				NotFnd	0	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(6 THRU 10) UNIT#1 TEST#5**	Sampling Date	29-Oct-15
ALS Sample ID	L1695738-2	Extraction Date	2-Nov-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
S. Jin
--e-signature--
10-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15110509.D	15110912.D
Run Date	11/5/2015 20:29	09-Nov-15 19:50
Final Volume	1 mL	1 mL
Dilution Factor	1	1
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
2-Chlorophenol					7.92	<60	U
3-Chlorophenol					8.17	<60	U
4-Chlorophenol					8.24	129	
2,6-Dichlorophenol		9.24	<60	U			
2,4/2,5-Dichlorophenol					9.40	<60	U
3,5-Dichlorophenol					9.52	<60	U
2,3-Dichlorophenol					9.72	<60	U
3,4-Dichlorophenol					NotFnd	<60	U
2,4,6-Trichlorophenol					NotFnd	<60	U
2,3,6-Trichlorophenol					NotFnd	<60	U
2,3,5-Trichlorophenol					NotFnd	<60	U
2,4,5-Trichlorophenol					10.86	<60	U
2,3,4-Trichlorophenol					NotFnd	<60	U
3,4,5-Trichlorophenol					11.37	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol					11.97	<60	U
2,3,4,5-Tetrachlorophenol					12.46	<60	U
Pentachlorophenol					13.43	122	
Extraction Standards			**% Rec**			**% Rec**	
2-Fluorophenol	1200	6.27	32 M				
d5-Phenol	1200				6.27	28 M	
d4-2-Chlorophenol	1200				7.87	26 M	
2,4,6-Tribromophenol	1200	12.80	6				
13C-Pentachlorophenol	1200				13.43	61	
Field Spike							
2,6-Dichloro-4-Fluorophenol(FS)	1000				NotFnd	0	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(11 THRU 15) UNIT#1 TEST#6**	Sampling Date	29-Oct-15
ALS Sample ID	L1695738-3	Extraction Date	2-Nov-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
S. Jin
--e-signature--
10-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15110510.D	15110913.D
Run Date	11/5/2015 20:55	09-Nov-15 20:15
Final Volume	1 mL	1 mL
Dilution Factor	1	1
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
2-Chlorophenol					7.92	<60	U
3-Chlorophenol					NotFnd	<60	U
4-Chlorophenol					8.24	<60	U
2,6-Dichlorophenol		9.24	<60	U			
2,4/2,5-Dichlorophenol					9.39	<60	U
3,5-Dichlorophenol					9.52	<60	U
2,3-Dichlorophenol					NotFnd	<60	U
3,4-Dichlorophenol					NotFnd	<60	U
2,4,6-Trichlorophenol					NotFnd	<60	U
2,3,6-Trichlorophenol					NotFnd	<60	U
2,3,5-Trichlorophenol					NotFnd	<60	U
2,4,5-Trichlorophenol					NotFnd	<60	U
2,3,4-Trichlorophenol					NotFnd	<60	U
3,4,5-Trichlorophenol					11.37	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol					NotFnd	<60	U
2,3,4,5-Tetrachlorophenol					12.46	<60	U
Pentachlorophenol					13.43	<60	U
Extraction Standards			**% Rec**			**% Rec**	
2-Fluorophenol	1200	6.27	15	M			
d5-Phenol	1200				6.28	13	M
d4-2-Chlorophenol	1200				7.88	9	M
2,4,6-Tribromophenol	1200	12.81	0	M			
13C-Pentachlorophenol	1200				13.43	73	
Field Spike							
2,6-Dichloro-4-Fluorophenol(FS)	1000				NotFnd	0	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(16 THRU 20) UNIT#1 BLANK**	Sampling Date	28-Oct-15
ALS Sample ID	L1695738-4	Extraction Date	2-Nov-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
S. Jin
--e-signature--
10-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15110506.D	15110909.D
Run Date	11/5/2015 19:14	09-Nov-15 18:35
Final Volume	1 mL	1 mL
Dilution Factor	1	1
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
2-Chlorophenol					7.92	<60	U
3-Chlorophenol					NotFnd	<60	U
4-Chlorophenol					8.23	<60	U
2,6-Dichlorophenol		NotFnd	<60	U			
2,4/2,5-Dichlorophenol					9.39	<60	U
3,5-Dichlorophenol					9.52	<60	U
2,3-Dichlorophenol					NotFnd	<60	U
3,4-Dichlorophenol					NotFnd	<60	U
2,4,6-Trichlorophenol					NotFnd	<60	U
2,3,6-Trichlorophenol					NotFnd	<60	U
2,3,5-Trichlorophenol					10.80	<60	U
2,4,5-Trichlorophenol					NotFnd	<60	U
2,3,4-Trichlorophenol					NotFnd	<60	U
3,4,5-Trichlorophenol					NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol					NotFnd	<60	U
2,3,4,5-Tetrachlorophenol					NotFnd	<60	U
Pentachlorophenol					13.41	<60	U
Extraction Standards			**% Rec**			**% Rec**	
2-Fluorophenol	1200	6.30	71	M			
d5-Phenol	1200				6.29	41	M
d4-2-Chlorophenol	1200				7.87	66	M
2,4,6-Tribromophenol	1200	12.81	60				
13C-Pentachlorophenol	1200				13.43	63	
Field Spike							
2,6-Dichloro-4-Fluorophenol(FS)	1000				8.51	27	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(21 THRU 25) UNIT#2 TEST#4**	Sampling Date	28-Oct-15
ALS Sample ID	L1695738-5	Extraction Date	2-Nov-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
S. Jin
--e-signature--
10-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15110511.D	15110914.D
Run Date	11/5/2015 21:19	09-Nov-15 20:40
Final Volume	1 mL	1 mL
Dilution Factor	1	1
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
2-Chlorophenol					7.92	<60	U
3-Chlorophenol					NotFnd	<60	U
4-Chlorophenol					8.24	60.2	
2,6-Dichlorophenol		NotFnd	<60	U			
2,4/2,5-Dichlorophenol					9.41	<60	U
3,5-Dichlorophenol					9.52	<60	U
2,3-Dichlorophenol					9.73	<60	U
3,4-Dichlorophenol					NotFnd	<60	U
2,4,6-Trichlorophenol					NotFnd	<60	U
2,3,6-Trichlorophenol					NotFnd	<60	U
2,3,5-Trichlorophenol					NotFnd	<60	U
2,4,5-Trichlorophenol					NotFnd	<60	U
2,3,4-Trichlorophenol					NotFnd	<60	U
3,4,5-Trichlorophenol					NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol					11.97	<60	U
2,3,4,5-Tetrachlorophenol					NotFnd	<60	U
Pentachlorophenol					13.43	<60	U
Extraction Standards			**% Rec**			**% Rec**	
2-Fluorophenol	1200	6.21	26				
d5-Phenol	1200				6.26	28	M
d4-2-Chlorophenol	1200				7.87	22	M
2,4,6-Tribromophenol	1200	12.80	10				
13C-Pentachlorophenol	1200				13.43	76	
Field Spike							
2,6-Dichloro-4-Fluorophenol(FS)	1000				NotFnd	0	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(26 THRU 30) UNIT#2 TEST#5**	Sampling Date	29-Oct-15
ALS Sample ID	L1695738-6	Extraction Date	2-Nov-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
S. Jin
--e-signature--
10-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15110512.D	15110915.D
Run Date	11/5/2015 21:45	09-Nov-15 21:05
Final Volume	1 mL	1 mL
Dilution Factor	1	1
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
2-Chlorophenol					7.92	<60	U
3-Chlorophenol					8.18	<60	U
4-Chlorophenol					8.24	<60	U
2,6-Dichlorophenol		9.25	<60	U			
2,4/2,5-Dichlorophenol					9.41	<60	U
3,5-Dichlorophenol					9.52	<60	U
2,3-Dichlorophenol					NotFnd	<60	U
3,4-Dichlorophenol					NotFnd	<60	U
2,4,6-Trichlorophenol					NotFnd	<60	U
2,3,6-Trichlorophenol					NotFnd	<60	U
2,3,5-Trichlorophenol					NotFnd	<60	U
2,4,5-Trichlorophenol					NotFnd	<60	U
2,3,4-Trichlorophenol					NotFnd	<60	U
3,4,5-Trichlorophenol					11.37	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol					NotFnd	<60	U
2,3,4,5-Tetrachlorophenol					NotFnd	<60	U
Pentachlorophenol					13.43	<60	U
Extraction Standards			**% Rec**			**% Rec**	
2-Fluorophenol	1200	6.28	22 M				
d5-Phenol	1200				6.27	20 M	
d4-2-Chlorophenol	1200				7.88	14 M	
2,4,6-Tribromophenol	1200	12.80	1				
13C-Pentachlorophenol	1200				13.43	82	
Field Spike							
2,6-Dichloro-4-Fluorophenol(FS)	1000				NotFnd	0	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(31 THRU 35) UNIT#2 TEST#6**	Sampling Date	29-Oct-15
ALS Sample ID	L1695738-7	Extraction Date	2-Nov-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
S. Jin
--e-signature--
10-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15110513.D	15110916.D
Run Date	11/5/2015 22:09	09-Nov-15 21:30
Final Volume	1 mL	1 mL
Dilution Factor	1	1
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
2-Chlorophenol					7.92	<60	U
3-Chlorophenol					NotFnd	<60	U
4-Chlorophenol					8.24	80.3	M
2,6-Dichlorophenol		9.26	<60	U			
2,4/2,5-Dichlorophenol					9.41	<60	U
3,5-Dichlorophenol					9.52	<60	U
2,3-Dichlorophenol					NotFnd	<60	U
3,4-Dichlorophenol					NotFnd	<60	U
2,4,6-Trichlorophenol					NotFnd	<60	U
2,3,6-Trichlorophenol					10.75	<60	U
2,3,5-Trichlorophenol					NotFnd	<60	U
2,4,5-Trichlorophenol					NotFnd	<60	U
2,3,4-Trichlorophenol					NotFnd	<60	U
3,4,5-Trichlorophenol					11.37	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol					11.97	<60	U
2,3,4,5-Tetrachlorophenol					NotFnd	<60	U
Pentachlorophenol					13.42	<60	U
Extraction Standards			**% Rec**			**% Rec**	
2-Fluorophenol	1200	6.31	28	M			
d5-Phenol	1200				6.27	26	M
d4-2-Chlorophenol	1200				7.87	28	M
2,4,6-Tribromophenol	1200	12.81	4				
13C-Pentachlorophenol	1200				13.42	81	
Field Spike							
2,6-Dichloro-4-Fluorophenol(FS)	1000				NotFnd	0	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(36 THRU 40) UNIT#2 BLANK**	Sampling Date	28-Oct-15
ALS Sample ID	L1695738-8	Extraction Date	2-Nov-15
Analysis Method	SIM GC/MS		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 Train		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
S. Jin
--e-signature--
10-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15110507.D	15110910.D
Run Date	11/5/2015 19:40	09-Nov-15 19:00
Final Volume	1 mL	1 mL
Dilution Factor	1	1
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
2-Chlorophenol					7.91	<60	U
3-Chlorophenol					NotFnd	<60	U
4-Chlorophenol					8.23	<60	U
2,6-Dichlorophenol		NotFnd	<60	U			
2,4/2,5-Dichlorophenol					9.38	<60	U
3,5-Dichlorophenol					9.52	<60	U
2,3-Dichlorophenol					NotFnd	<60	U
3,4-Dichlorophenol					NotFnd	<60	U
2,4,6-Trichlorophenol					10.33	<60	U
2,3,6-Trichlorophenol					NotFnd	<60	U
2,3,5-Trichlorophenol					10.80	<60	U
2,4,5-Trichlorophenol					NotFnd	<60	U
2,3,4-Trichlorophenol					NotFnd	<60	U
3,4,5-Trichlorophenol					NotFnd	<60	U
2,3,5,6/2,3,4,6-Tetrachlorophenol					NotFnd	<60	U
2,3,4,5-Tetrachlorophenol					NotFnd	<60	U
Pentachlorophenol					13.41	<60	U
Extraction Standards			**% Rec**			**% Rec**	
2-Fluorophenol	1200	6.22	54				
d5-Phenol	1200				6.27	42	M
d4-2-Chlorophenol	1200				7.87	62	M
2,4,6-Tribromophenol	1200	12.81	70				
13C-Pentachlorophenol	1200				13.42	78	
Field Spike							
2,6-Dichloro-4-Fluorophenol(FS)	1000				8.51	48	

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG2204674-2	Extraction Date	2-Nov-15
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6		

Approved:
S. Jin
--e-signature--
10-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15110503.D	15110905.D
Run Date	11/5/2015 17:59	09-Nov-15 16:59
Final Volume	1 mL	1 mL
Dilution Factor	1	1
Analysis Units	%Rec	%Rec
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**	**Ret. Time.**	**% Recovery**	**Flags**
2-Chlorophenol	1200				7.90	63	
3-Chlorophenol	1200				8.18	58	
4-Chlorophenol	1200				8.24	59	
2,6-Dichlorophenol	1200	9.24	69				
2,4/2,5-Dichlorophenol	2400				9.40	56	
3,5-Dichlorophenol	1200				9.53	65	
2,3-Dichlorophenol	1200				9.72	59	
3,4-Dichlorophenol	1200				9.97	65	
2,4,6-Trichlorophenol	1200				10.33	42	
2,3,6-Trichlorophenol	1200				10.74	42	
2,3,5-Trichlorophenol	1200				10.82	52	
2,4,5-Trichlorophenol	1200				10.86	56	
2,3,4-Trichlorophenol	1200				11.26	58	
3,4,5-Trichlorophenol	1200				11.38	66	
2,3,5,6/2,3,4,6-Tetrachlorophenol	2400				11.98	49	M
2,3,4,5-Tetrachlorophenol	1200				12.46	56	
Pentachlorophenol	1200				13.43	54	
Extraction Standards							
2-Fluorophenol	1200	6.21	50				
d5-Phenol	1200				6.29	37	M
d4-2-Chlorophenol	1200				7.88	46	
2,4,6-Tribromophenol	1200	12.80	61				
13C-Pentachlorophenol	1200				13.43	70	
Field Spike							
2,6-Dichloro-4-Fluorophenol(FS)	NS						

M Indicates that a peak has been manually integrated.

NS Indicates that this compound was not spiked in.

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L1682779		Mississauga, On
Date of Report	16-Oct-15		LYJ 2Y4
Date of Sample Receipt	3-Oct-15	**Client Contact:**	Chris Belore
		Client Project ID:	21546

COMMENTS: **PAH by CARB method 429 (LR option)- Isotope dilution**

The values for 9-methylphenanthrene have been calculated using the relative response factor of 1-methylphenanthrene.

The absent field standard recoveries for the sample 15-21546-SVOC-(6 THRU 10) #1 APC OUTLET TEST#2, indicate that this trap has likely not been spiked.

A representative portion of sampling medium has not been used for the method blank or laboratory control sample (LCS).

The field blank results indicate that there is a significant contribution from the sampling medium of selected targets, particularly naphthalene and tetralin. Reported sample values are expected to be elevated as a result.

The results for selected targets have been reported from the analysis of diluted extracts due to interferences or target levels.

Certified by: R. Stolys
Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		15-21546-SVOC-(1 THRU 5) #1 APC OUTLET TEST#1		15-21546-SVOC-(6 THRU 10) #1 APC OUTLET TEST#2		15-21546-SVOC-(11 THRU 15) #1 APC OUTLET TEST#3		15-21546-SVOC-(16 THRU 20) #1 APC OUTLET BLANK	
ALS Sample ID	WG2185607-1		L1682779-1		L1682779-2		L1682779-3		L1682779-4	
Sample Size	1		1		1		1		1	
Sample units	n/a		n/a		n/a		n/a		n/a	
Moisture Content	n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack	
Sampling Date	n/a		1-Oct-15		2-Oct-15		2-Oct-15		1-Oct-15	
Extraction Date	5-Oct-15		5-Oct-15		5-Oct-15		5-Oct-15		5-Oct-15	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
Naphthalene	13.7	M	2860		995		1310	M	1050	
2-Methylnaphthalene	<10	U	545	M	48.2	M	103	M	17	M
1-Methylnaphthalene	<10	U	278		29.8	M	65.5		13.3	M
Acenaphthylene	<10	U	71.8	M	<10	U	<10	U	<10	U
Acenaphthene	<10	U	358	M	22.5	R	51.1	R	<10	U
Fluorene	<10	U	188		21.7	M	47.4		<10	U
Phenanthrene	<10	U	393		125		160		19.3	
Anthracene	<10	U	48.8	M	24.6	M	31.5	M	18.2	
Fluoranthene	<10	U	58.8		40.8	M,R	60.6	R	18	M
Pyrene	<10	U	55.5		40.2	M	66.4		44.7	M,R
Benzo(a)Anthracene	<10	U	<10	U	<10	U	<10	U	<10	U
Chrysene/Triphenylene	<10	U	15.8	M,R	12.2	M,R	21.1	M,R	<10	U
Benzo(b)Fluoranthene	<10	U	11.4	M,R	<10	U	<10	U	<10	U
Benzo(k)Fluoranthene	<10	U	<10	U	<10	U	<10	U	<10	U
Benzo(e)Pyrene	<10	U	18.5	M	14.7	M	44.3	M	<10	U
Benzo(a)Pyrene	<10	U	<10	U	<10	U	<10	U	<10	U
Perylene	<10	U	66.1	R	107	R	137	R	119	R
Indeno(1,2,3-cd)Pyrene	<10	U	<10	U	<10	U	27.5		<10	U
Dibenzo(a,c/a,h)Anthracene	<10	U	<10	U	<10	U	<10	U	<10	U
Benzo(g,h,i)Perylene	<10	U	30.8		35.4		164		41.2	
Additional Analytes										
Tetralin	<10	U	3640		4980		6030		6080	
2-Chloronaphthalene	<10	U	<10	U	<10	U	<10	U	<10	U
Biphenyl	<10	U	816		352		1820		27.6	M
o-Terphenyl	<10	U	13.5	M,R	<10	U	98.9		<10	U
1-Methylphenanthrene	<10	U	<10	U,R	45.7	M,R	20.6	M,R	<10	U
9-Methylphenanthrene	<10	U	44.8	M	16.9	M,R	19.6	M	<10	U
2-methylanthracene	<10	U	37.4	M	14.6	M	19.1	M,R	<10	U
9,10-dimethylanthracene	<10	U	<10	U	<10	U	<10	U	<100	U
m-terphenyl	<10	U	12.7	M	16.6	M	36.3	M	<10	U
p-terphenyl	<10	U	<10	U	10.5	M	21.8	M	<10	U
Benzo(a)fluorene	<10	U	<10	U	<10	U	<10	U	<10	U
Benzo(b)fluorene	<10	U	<10	U	<10	U	<10	U	<10	U
7,12-Dimethylbenzo(a)anthracene	<10	U	<10	U	<10	U	<10	U	<10	U
3-Methylcholanthrene	<10	U	<10	U	<10	U	<10	U	<10	U
Picene	<10	U	<10	U	<10	U	<10	U	<10	U
Dibenzo(a,e)pyrene	<10	U	<10	U	<10	U	<10	U	<10	U
Coronene	<10	U	<10	U	<10	U	137		<10	U
Field Sampling Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
1-Methylnaphthalene-D10	NS		109		1		111		110	
Fluorene D10	NS		104		1		104		104	
Terphenyl D14(Surr.)	NS		109		1		114		111	
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
Naphthalene D8	94		88		74		75		83	
2-Methylnaphthalene-D10	91		84		79		81		88	
Acenaphthylene D8	85		83		81		76		85	
Phenanthrene D10	85		82		85		79		79	
Anthracene-D10	85		81		79		75		79	
Fluoranthene D10	91		90		90		89		90	
Benz(a)Anthracene-D12	90		98		102		103		106	
Chrysene D12	89		89		90		92		93	
Benzo(b)Fluoranthene-D12	103		101		100		99		99	
Benzo(k)Fluoranthene-D12	101		96		92		94		96	
Benzo(a)Pyrene D12	97		93		92		88		95	
Perylene D12	91		96		95		94		101	
Indeno(1,2,3,cd)Pyrene-D12	84		98		99		102		97	
Dibenz(a,h)Anthracene-D14	75		87		94		97		89	
Benzo(g,h,i)Perylene D12	67		68		67		67		64	

U	Indicates that this compound was not detected above the LOD.
M	Indicates that a peak has been manually integrated.
NS	Indicates that this compound is not spiked in.
R	Indicates that this compound failed for ion abundance ratio

ALS Environmental

Sample Analysis Summary Report

Sample Name	15-21546-SVOC-(21 THRU 25) #2 APC OUTLET TEST#1		15-21546-SVOC-(26 THRU 30) #2 APC OUTLET TEST#2		15-21546-SVOC-(31 THRU 35) #2 APC OUTLET TEST#3		15-21546-SVOC-(36 THRU 40) #2 APC OUTLET BLANK		Laboratory Control Sample	
ALS Sample ID	L1682779-5		L1682779-6		L1682779-7		L1682779-8		WG2185607-2	
Sample Size	1		1		1		1		1	
Sample units	n/a		n/a		n/a		n/a		n/a	
Moisture Content	n/a		n/a		n/a		n/a		n/a	
Matrix	Stack		Stack		Stack		Stack		QC	
Sampling Date	1-Oct-15		2-Oct-15		2-Oct-15		1-Oct-15		n/a	
Extraction Date	5-Oct-15		5-Oct-15		5-Oct-15		5-Oct-15		5-Oct-15	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**%Rec**		**%**	
Naphthalene	1650	M	1400	M	1090		775		125	
2-Methylnaphthalene	41.5	M	38.2		35.5		14.7	M	NS	M
1-Methylnaphthalene	28.2	M	26.9		21.5	M	10.3	M	NS	
Acenaphthylene	<10	U	<10	U	<10	U	<10	U	123	
Acenaphthene	17.4	R	18.7	R	34.9	M,R	11.7	M,R	129	
Fluorene	16.1	R	14.4	M	14.7	M	<10	U	131	
Phenanthrene	118		108		95.1		13		125	
Anthracene	35.2		27.9	M	23.3	M	13.1		131	
Fluoranthene	64.6		41.7	R	51.9		14.9	M,R	129	
Pyrene	101		56.2		85.1		19.9	M	121	
Benzo(a)Anthracene	<10	U	<10	U	<10	U	<10	U	130	
Chrysene/Triphenylene	25.5	R	14.6	M,R	23.1	M,R	<10	U	125	
Benzo(b)Fluoranthene	35.6	M,R	17.6	M,R	28.6	M,R	<10	U	128	
Benzo(k)Fluoranthene	16.5	R	13.3	M,R	16.9	M,R	<10	U	124	
Benzo(e)Pyrene	65.1		50	M	57.6		<10	U	NS	M
Benzo(a)Pyrene	16.6	M,R	11.3	R	12.3	M,R	<10	U	120	
Perylene	190	R	155	R	110	R	86.1	R	NS	
Indeno(1,2,3-cd)Pyrene	22.1		18.8		20		<10	U	120	
Dibenzo(a,h)Anthracene	<10	U	<10	U	<10	U	<10	U	124	
Benzo(g,h,i)Perylene	57.8		67.1		52.5		<10	U	128	
Additional Analytes										
Tetralin	8210		7450		5600		4490		NS	
2-Chloronaphthalene	<10	U	<10	U	<10	U	<10	U	NS	
Biphenyl	915		2270		599		25		NS	
o-Terphenyl	<10	U	<10	U	<10	U	<10	U	NS	
1-Methylphenanthrene	11.7	M,R	13.9	M,R	10.4	M,R	<10	U	NS	
9-Methylphenanthrene	<10	U	12.4	M,R	12.3	M	<10	U	NS	
2-methylanthracene	10.2	M	11.5	M,R	<10	U	<10	U	NS	
9,10-dimethylanthracene	<10	U	<10	U	<10	U	<10	U	NS	
m-terphenyl	10.5	M	<10	U	<10	U	<10	U	NS	
p-terphenyl	<10	U	<10	U	<10	U	<10	U	NS	
Benzo(a)fluorene	<10	U	<10	U	<10	U	<10	U	NS	
Benzo(b)fluorene	<10	U	<10	U	<10	U	<10	U	NS	
7,12-Dimethylbenzo(a)anthracene	<10	U	<10	U	<10	U	<10	U	NS	
3-Methylcholanthrene	<10	U	<10	U	<10	U	<10	U	NS	
Picene	<10	U	<10	U	<10	U	<10	U	NS	
Dibenzo(a,e)pyrene	<10	U	<10	U	<10	U	<10	U	NS	
Coronene	<10	U	18.1	R	<10	U	<10	U	NS	
Field Sampling Standards	**% Rec**	50-1	**% Rec**		**% Rec**		**% Rec**		**% Rec**	
1-Methylnaphthalene-D10	109.3		113		108		109		NS	
Fluorene D10	107.6		105		105		107		NS	
Terphenyl D14(Surr.)	112.1		116		109		106		NS	
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
Naphthalene D8	82		80		81		88		98	
2-Methylnaphthalene-D10	89		86		86		91		97	
Acenaphthylene D8	89		87		87		93		91	
Phenanthrene D10	85		80		92		89		96	
Anthracene-D10	84		80		89		89		93	
Fluoranthene D10	93		92		91		94		98	
Benz(a)Anthracene-D12	102		104		91		101		90	
Chrysene D12	93		95		83		95		93	
Benzo(b)Fluoranthene-D12	102		103		98		103		109	
Benzo(k)Fluoranthene-D12	94		94		97		100		104	
Benzo(a)Pyrene D12	91		95		92		97		91	
Perylene D12	100		100		96		101		84	
Indeno(1,2,3,cd)Pyrene-D12	96		105		99		94		88	
Dibenz(a,h)Anthracene-D14	87		90		86		93		92	
Benzo(g,h,i)Perylene D12	64		66		68		69		78	

U	Indicates that this compound was not detected above the LOD.
M	Indicates that a peak has been manually integrated.
NS	Indicates that this compound is not spiked in.
R	Indicates that this compound failed for ion abundance ratio

ALS Environmental

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG2185607-1	Extraction Date	5-Oct-15
Analysis Method	PAH by CARB 429		
Analysis Type	Blank		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	5	Workgroup	WG2185607

Approved:
Setu Gupta
--e-signature--
15-Oct-2015

Run Information	**Run 1**
Filename	15101323.D
Run Date	10/14/2015 4:43
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	9.02	13.7	M
2-Methylnaphthalene	10.21	<10	U
1-Methylnaphthalene	10.39	<10	U
Acenaphthylene	11.76	<10	U
Acenaphthene	12.07	<10	U
Fluorene	12.95	<10	U
Phenanthrene	14.58	<10	U
Anthracene	NotFnd	<10	U
Fluoranthene	16.69	<10	U
Pyrene	17.09	<10	U
Benzo(a)Anthracene	19.60	<10	U
Chrysene/Triphenylene	19.67	<10	U
Benzo(b)Fluoranthene	21.85	<10	U
Benzo(k)Fluoranthene	NotFnd	<10	U
Benzo(e)Pyrene	22.36	<10	U
Benzo(a)Pyrene	NotFnd	<10	U
Perylene	NotFnd	<10	U
Indeno(1,2,3-cd)Pyrene	24.49	<10	U
Dibenzo(a,h)Anthracene	24.54	<10	U
Benzo(g,h,i)Perylene	24.87	<10	U
Additional Analytes			
Tetralin	8.76	<10	U
2-Chloronaphthalene	NotFnd	<10	U
Biphenyl	11.06	<10	U
o-Terphenyl	NotFnd	<10	U
1-Methylphenanthrene	NotFnd	<10	U
9-Methylphenanthrene	NotFnd	<10	U
2-methylanthracene	NotFnd	<10	U
9,10-dimethylanthracene	NotFnd	<10	U
m-terphenyl	NotFnd	<10	U
p-terphenyl	17.59	<10	U
Benzo(a)fluorene	17.81	<10	U
Benzo(b)fluorene	17.90	<10	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<10	U
3-Methylcholanthrene	NotFnd	<10	U
Picene	NotFnd	<10	U
Dibenzo(a,e)pyrene	NotFnd	<10	U
Coronene	NotFnd	<10	U

Field Sampling Standards	**ng spiked**	**% Rec**
1-Methylnaphthalene-D10		NS
Fluorene D10		NS
Terphenyl D14(Surr.)		NS

Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	500	8.99	93.8		50-150
2-Methylnaphthalene-D10	500	10.16	91.0		50-150
Acenaphthylene D8	500	11.73	84.8		50-150
Phenanthrene D10	500	14.53	85.1		50-150
Anthracene-D10	500	14.62	85.2		50-150
Fluoranthene D10	500	16.65	90.5		50-150
Benz(a)Anthracene-D12	500	19.53	89.8		50-150
Chrysene D12	500	19.61	88.5		50-150
Benzo(b)Fluoranthene-D12	500	21.79	103.3		50-150
Benzo(k)Fluoranthene-D12	500	21.85	101.3		50-150
Benzo(a)Pyrene D12	500	22.41	96.6		50-150
Perylene D12	500	22.57	90.6		50-150
Indeno(1,2,3,cd)Pyrene-D12	500	24.46	83.7	M	50-150
Dibenz(a,h)Anthracene-D14	500	24.50	74.9		50-150
Benzo(g,h,i)Perylene D12	500	24.87	67.0	M	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(1 THRU 5) #1 APC OUTLET TEST#1**	Sampling Date	01-Oct-15 00:00
ALS Sample ID	L1682779-1	Extraction Date	5-Oct-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	5	Workgroup	WG2185607

Approved:
Setu Gupta
--e-signature--
15-Oct-2015

Run Information	**Run 1**	**Run 2**
Filename	15101326.D	15101441.D
Run Date	10/14/2015 6:28	15-Oct-15 03:30
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene	9.02	2520	E	9.01	2860	
2-Methylnaphthalene	10.21	545 M				
1-Methylnaphthalene	10.38	278				
Acenaphthylene	11.75	71.8 M				
Acenaphthene	12.08	358 M				
Fluorene	12.94	188				
Phenanthrene	14.57	393				
Anthracene	14.65	48.8 M				
Fluoranthene	16.69	58.8				
Pyrene	17.09	55.5				
Benzo(a)Anthracene	19.58	<10	U			
Chrysene/Triphenylene	19.66	15.8 M	,R			
Benzo(b)Fluoranthene	21.84	11.4 M	,R			
Benzo(k)Fluoranthene	21.88	<10	U			
Benzo(e)Pyrene	22.36	18.5 M				
Benzo(a)Pyrene	22.47	<10	U			
Perylene	22.62	66.1	R			
Indeno(1,2,3-cd)Pyrene	24.50	<10	U			
Dibenzo(a,h)Anthracene	24.57	<10	U			
Benzo(g,h,i)Perylene	24.91	30.8				
Additional Analytes						
Tetralin	8.76	3200	E	8.75	3640	
2-Chloronaphthalene	11.04	<10	U			
Biphenyl	11.05	816				
o-Terphenyl	15.37	13.5 M	,R			
1-Methylphenanthrene	15.58	<10	U ,R			
9-Methylphenanthrene	15.63	44.8 M				
2-methylanthracene	15.67	37.4 M				
9,10-dimethylanthracene	NotFnd	<10	U			
m-terphenyl	17.28	12.7 M				
p-terphenyl	17.58	<10	U			
Benzo(a)fluorene	17.81	<10	U			
Benzo(b)fluorene	NotFnd	<10	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<10	U			
3-Methylcholanthrene	NotFnd	<10	U			
Picene	NotFnd	<10	U			
Dibenzo(a,e)pyrene	NotFnd	<10	U			
Coronene	NotFnd	<10	U			

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	500	10.33	109
Fluorene D10	500	12.90	103.9
Terphenyl D14(Surr.)	500	17.54	109.4

Extraction Standards			**% Rec**	**Limits**		
Naphthalene D8	500	8.99	78.8	50-150	8.98	88.2
2-Methylnaphthalene-D10	500	10.16	83.7	50-150		
Acenaphthylene D8	500	11.72	82.8	50-150		
Phenanthrene D10	500	14.53	82.3	50-150		
Anthracene-D10	500	14.62	81.1	50-150		
Fluoranthene D10	500	16.65	89.7	50-150		
Benz(a)Anthracene-D12	500	19.53	97.6	50-150		
Chrysene D12	500	19.61	89.3	50-150		
Benzo(b)Fluoranthene-D12	500	21.79	101.4	50-150		
Benzo(k)Fluoranthene-D12	500	21.85	96.1	50-150		
Benzo(a)Pyrene D12	500	22.41	93.2	50-150		
Perylene D12	500	22.57	95.7	50-150		
Indeno(1,2,3,cd)Pyrene-D12	500	24.46	98.2 M	50-150		
Dibenz(a,h)Anthracene-D14	500	24.50	87.1	50-150		
Benzo(g,h,i)Perylene D12	500	24.87	67.8 M	50-150		

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.
E Indicates that this compound was detected above the calibrated range.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(6 THRU 10) #1 APC OUTLET TEST#2**	Sampling Date	02-Oct-15 00:00
ALS Sample ID	L1682779-2	Extraction Date	5-Oct-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	5	Workgroup	WG2185607

Approved:
Setu Gupta
--e-signature--
15-Oct-2015

Run Information	**Run 1**	**Run 2**
Filename	15101327.D	15101327.D
Run Date	10/14/2015 7:03	14-Oct-15 07:03
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene	9.02	995				
2-Methylnaphthalene	10.20	48.2 M				
1-Methylnaphthalene	10.39	29.8 M				
Acenaphthylene	11.74	<10	U			
Acenaphthene	12.08	22.5	R			
Fluorene	12.94	21.7 M				
Phenanthrene	14.57	125				
Anthracene	14.65	24.6 M				
Fluoranthene	16.69	40.8 M	,R			
Pyrene	17.09	40.2 M				
Benzo(a)Anthracene	19.58	<10	U			
Chrysene/Triphenylene	19.65	12.2 M	,R			
Benzo(b)Fluoranthene	21.80	<10	U			
Benzo(k)Fluoranthene	21.87	<10	U			
Benzo(e)Pyrene	22.36	14.7 M				
Benzo(a)Pyrene	22.47	<10	U			
Perylene	22.62	107	R			
Indeno(1,2,3-cd)Pyrene	24.50	<10	U			
Dibenzo(a,h)Anthracene	24.57	<10	U			
Benzo(g,h,i)Perylene	24.91	35.4				
Additional Analytes						
Tetralin	8.76	4480	E	8.75	4980	
2-Chloronaphthalene	11.04	<10	U			
Biphenyl	11.05	352				
o-Terphenyl	15.37	<10	U			
1-Methylphenanthrene	15.58	45.7 M	,R			
9-Methylphenanthrene	15.63	16.9 M	,R			
2-methylanthracene	15.67	14.6 M				
9,10-dimethylanthracene	17.22	<10	U			
m-terphenyl	17.28	16.6 M				
p-terphenyl	17.58	10.5 M				
Benzo(a)fluorene	17.81	<10	U			
Benzo(b)fluorene	NotFnd	<10	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<10	U			
3-Methylcholanthrene	NotFnd	<10	U			
Picene	NotFnd	<10	U			
Dibenzo(a,e)pyrene	NotFnd	<10	U			
Coronene	27.67	<10	U			

Field Sampling Standards	**ng spiked**		**% Rec**	
1-Methylnaphthalene-D10	500	10.33	1.4 M	
Fluorene D10	500	12.90	0.8 M	
Terphenyl D14(Surr.)	500	17.54	0.6 M	
Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	500	8.99	73.9	50-150
2-Methylnaphthalene-D10	500	10.16	79.0	50-150
Acenaphthylene D8	500	11.72	81.0 M	50-150
Phenanthrene D10	500	14.53	84.5	50-150
Anthracene-D10	500	14.62	79.3	50-150
Fluoranthene D10	500	16.65	89.7	50-150
Benz(a)Anthracene-D12	500	19.53	101.8	50-150
Chrysene D12	500	19.61	89.6	50-150
Benzo(b)Fluoranthene-D12	500	21.79	100.1	50-150
Benzo(k)Fluoranthene-D12	500	21.85	91.9	50-150
Benzo(a)Pyrene D12	500	22.41	91.6	50-150
Perylene D12	500	22.57	95.1	50-150
Indeno(1,2,3,cd)Pyrene-D12	500	24.46	98.5 M	50-150
Dibenz(a,h)Anthracene-D14	500	24.50	94.4 M	50-150
Benzo(g,h,i)Perylene D12	500	24.87	66.7 M	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(11 THRU 15) #1 APC OUTLET TEST#3**	Sampling Date	02-Oct-15 00:00
ALS Sample ID	L1682779-3	Extraction Date	5-Oct-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	5	Workgroup	WG2185607

Approved:
Setu Gupta
--e-signature--
15-Oct-2015

Run Information	**Run 1**	**Run 2**
Filename	15101328.D	15101443.D
Run Date	10/14/2015 7:38	15-Oct-15 04:39
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene	9.02	1310 M				
2-Methylnaphthalene	10.20	103 M				
1-Methylnaphthalene	10.38	65.5				
Acenaphthylene	11.74	<10	U			
Acenaphthene	12.07	51.1	R			
Fluorene	12.94	47.4				
Phenanthrene	14.58	160				
Anthracene	14.65	31.5 M				
Fluoranthene	16.68	60.6	R			
Pyrene	17.09	66.4				
Benzo(a)Anthracene	19.58	<10	U			
Chrysene/Triphenylene	19.65	21.1 M	,R			
Benzo(b)Fluoranthene	21.80	<10	U			
Benzo(k)Fluoranthene	21.86	<10	U			
Benzo(e)Pyrene	22.36	44.3 M				
Benzo(a)Pyrene	22.46	<10	U			
Perylene	22.62	137	R			
Indeno(1,2,3-cd)Pyrene	24.50	27.5				
Dibenzo(a,h)Anthracene	24.57	<10	U			
Benzo(g,h,i)Perylene	24.90	164				
Additional Analytes						
Tetralin	8.76	5320	E	8.75	6030	
2-Chloronaphthalene	11.04	<10	U			
Biphenyl	11.05	1820				
o-Terphenyl	15.36	98.9				
1-Methylphenanthrene	15.58	20.6 M	,R			
9-Methylphenanthrene	15.63	19.6 M				
2-methylanthracene	15.67	19.1 M	,R			
9,10-dimethylanthracene	17.22	<10	U			
m-terphenyl	17.27	36.3 M				
p-terphenyl	17.58	21.8 M				
Benzo(a)fluorene	17.81	<10	U			
Benzo(b)fluorene	17.93	<10	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<10	U			
3-Methylcholanthrene	NotFnd	<10	U			
Picene	NotFnd	<10	U			
Dibenzo(a,e)pyrene	NotFnd	<10	U			
Coronene	27.64	137				

Field Sampling Standards	**ng spiked**		**% Rec**	
1-Methylnaphthalene-D10	500	10.33	111.4	
Fluorene D10	500	12.90	104.2	
Terphenyl D14(Surr.)	500	17.53	113.6	
Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	500	8.99	75.2	50-150
2-Methylnaphthalene-D10	500	10.16	80.8	50-150
Acenaphthylene D8	500	11.72	75.6	50-150
Phenanthrene D10	500	14.53	78.8	50-150
Anthracene-D10	500	14.62	75.3	50-150
Fluoranthene D10	500	16.65	89.4 M	50-150
Benz(a)Anthracene-D12	500	19.53	102.5	50-150
Chrysene D12	500	19.61	91.9	50-150
Benzo(b)Fluoranthene-D12	500	21.79	98.8	50-150
Benzo(k)Fluoranthene-D12	500	21.84	93.9	50-150
Benzo(a)Pyrene D12	500	22.41	88.0	50-150
Perylene D12	500	22.57	94.0	50-150
Indeno(1,2,3,cd)Pyrene-D12	500	24.45	101.7 M	50-150
Dibenz(a,h)Anthracene-D14	500	24.50	97.4 M	50-150
Benzo(g,h,i)Perylene D12	500	24.86	67.1 M	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(16 THRU 20) #1 APC OUTLET BLANK**	Sampling Date	01-Oct-15 00:00
ALS Sample ID	L1682779-4	Extraction Date	5-Oct-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	5	Workgroup	WG2185607

Approved:
Setu Gupta
--e-signature--
15-Oct-2015

Run Information	**Run 1**	**Run 2**
Filename	15101324.D	15101439.D
Run Date	10/14/2015 5:18	15-Oct-15 02:21
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene	9.02	1050				
2-Methylnaphthalene	10.21	17	M			
1-Methylnaphthalene	10.39	13.3	M			
Acenaphthylene	11.75	<10	U			
Acenaphthene	12.07	<10	U			
Fluorene	12.95	<10	U			
Phenanthrene	14.58	19.3				
Anthracene	14.65	18.2				
Fluoranthene	16.69	18	M			
Pyrene	17.09	44.7	M ,R			
Benzo(a)Anthracene	19.59	<10	U			
Chrysene/Triphenylene	19.67	<10	U			
Benzo(b)Fluoranthene	21.84	<10	U			
Benzo(k)Fluoranthene	21.89	<10	U			
Benzo(e)Pyrene	NotFnd	<10	U			
Benzo(a)Pyrene	NotFnd	<10	U			
Perylene	22.63	119	R			
Indeno(1,2,3-cd)Pyrene	24.50	<10	U			
Dibenzo(a,h)Anthracene	24.58	<10	U			
Benzo(g,h,i)Perylene	24.91	41.2				
Additional Analytes						
Tetralin	8.76	5310	E	8.75	6080	
2-Chloronaphthalene	11.05	<10	U			
Biphenyl	11.05	27.6	M			
o-Terphenyl	NotFnd	<10	U			
1-Methylphenanthrene	NotFnd	<10	U			
9-Methylphenanthrene	NotFnd	<10	U			
2-methylanthracene	NotFnd	<10	U			
9,10-dimethylanthracene				NotFnd	<100	
m-terphenyl	17.28	<10	U			
p-terphenyl	17.59	<10	U			
Benzo(a)fluorene	17.81	<10	U			
Benzo(b)fluorene	17.91	<10	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<10	U			
3-Methylcholanthrene	NotFnd	<10	U			
Picene	NotFnd	<10	U			
Dibenzo(a,e)pyrene	NotFnd	<10	U			
Coronene	NotFnd	<10	U			

Field Sampling Standards	**ng spiked**		**% Rec**	
1-Methylnaphthalene-D10	500	10.33	110.1	
Fluorene D10	500	12.90	104.4	
Terphenyl D14(Surr.)	500	17.54	111.4	

Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	500	9.00	83.4		50-150
2-Methylnaphthalene-D10	500	10.16	87.9		50-150
Acenaphthylene D8	500	11.73	85.1		50-150
Phenanthrene D10	500	14.53	78.9		50-150
Anthracene-D10	500	14.62	79.4		50-150
Fluoranthene D10	500	16.65	90.2		50-150
Benz(a)Anthracene-D12	500	19.54	105.8		50-150
Chrysene D12	500	19.61	93.2		50-150
Benzo(b)Fluoranthene-D12	500	21.79	98.5		50-150
Benzo(k)Fluoranthene-D12	500	21.85	95.8		50-150
Benzo(a)Pyrene D12	500	22.41	95.3		50-150
Perylene D12	500	22.57	100.7		50-150
Indeno(1,2,3,cd)Pyrene-D12	500	24.46	97.1	M	50-150
Dibenz(a,h)Anthracene-D14	500	24.50	89.0	M	50-150
Benzo(g,h,i)Perylene D12	500	24.87	64.4	M	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-5VOC-(21 THRU 25) #2 APC OUTLET TEST#1**	Sampling Date	01-Oct-15 00:00
ALS Sample ID	L1682779-5	Extraction Date	5-Oct-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	5	Workgroup	WG2185607

Approved:
Setu Gupta
--e-signature--
15-Oct-2015

Run Information	**Run 1**	**Run 2**
Filename	15101329.D	15101444.D
Run Date	10/14/2015 8:13	15-Oct-15 05:14
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene	9.02	1650 M				
2-Methylnaphthalene	10.20	41.5 M				
1-Methylnaphthalene	10.39	28.2 M				
Acenaphthylene	11.74	<10	U			
Acenaphthene	12.07	17.4	R			
Fluorene	12.94	16.1	R			
Phenanthrene	14.57	118				
Anthracene	14.65	35.2				
Fluoranthene	16.68	64.6				
Pyrene	17.09	101				
Benzo(a)Anthracene	19.58	<10	U			
Chrysene/Triphenylene	19.66	25.5	R			
Benzo(b)Fluoranthene	21.84	35.6 M	,R			
Benzo(k)Fluoranthene	21.87	16.5	R			
Benzo(e)Pyrene	22.36	65.1				
Benzo(a)Pyrene	22.46	16.6 M	,R			
Perylene	22.62	190	R			
Indeno(1,2,3-cd)Pyrene	24.50	22.1				
Dibenzo(a,h)Anthracene	24.57	<10	U			
Benzo(g,h,i)Perylene	24.90	57.8				
Additional Analytes						
Tetralin	8.76	7370	E	8.75	8210	
2-Chloronaphthalene	11.04	<10	U			
Biphenyl	11.05	915				
o-Terphenyl	15.36	<10	U			
1-Methylphenanthrene	15.58	11.7 M	,R			
9-Methylphenanthrene	15.63	<10	U			
2-methylanthracene	15.67	10.2 M				
9,10-dimethylanthracene	17.22	<10	U			
m-terphenyl	17.27	10.5 M				
p-terphenyl	17.58	<10	U			
Benzo(a)fluorene	17.81	<10	U			
Benzo(b)fluorene	17.91	<10	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<10	U			
3-Methylcholanthrene	NotFnd	<10	U			
Picene	NotFnd	<10	U			
Dibenzo(a,e)pyrene	NotFnd	<10	U			
Coronene	NotFnd	<10	U			

Field Sampling Standards	**ng spiked**		**% Rec**	
1-Methylnaphthalene-D10	500	10.33	109.3	
Fluorene D10	500	12.90	107.6	
Terphenyl D14(Surr.)	500	17.53	112.1	
Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	500	8.98	82.4	50-150
2-Methylnaphthalene-D10	500	10.15	88.9	50-150
Acenaphthylene D8	500	11.72	89.4	50-150
Phenanthrene D10	500	14.53	84.5	50-150
Anthracene-D10	500	14.62	84.1	50-150
Fluoranthene D10	500	16.65	92.5	50-150
Benz(a)Anthracene-D12	500	19.53	101.8	50-150
Chrysene D12	500	19.61	92.5	50-150
Benzo(b)Fluoranthene-D12	500	21.79	101.5	50-150
Benzo(k)Fluoranthene-D12	500	21.84	94.2	50-150
Benzo(a)Pyrene D12	500	22.41	91.1	50-150
Perylene D12	500	22.57	100.3	50-150
Indeno(1,2,3,cd)Pyrene-D12	500	24.46	96.2 M	50-150
Dibenz(a,h)Anthracene-D14	500	24.50	87.4 M	50-150
Benzo(g,h,i)Perylene D12	500	24.86	63.7 M	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(26 THRU 30) #2 APC OUTLET TEST#2**	Sampling Date	02-Oct-15 00:00	
ALS Sample ID	L1682779-6	Extraction Date	5-Oct-15	
Analysis Method	PAH by CARB 429			
Analysis Type	Sample			Approved:
Sample Matrix	Stack			*Setu Gupta*
Sample Size	1 n/a			--e-signature--
Percent Moisture	n/a			15-Oct-2015
Split Ratio	5	Workgroup	WG2185607	

Run Information	**Run 1**	**Run 2**
Filename	15101330.D	15101445.D
Run Date	10/14/2015 8:48	15-Oct-15 05:49
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USC160412H	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene	9.02	1400 M				
2-Methylnaphthalene	10.20	38.2				
1-Methylnaphthalene	10.39	26.9				
Acenaphthylene	11.74	<10	U			
Acenaphthene	12.07	18.7	R			
Fluorene	12.94	14.4 M				
Phenanthrene	14.57	108				
Anthracene	14.65	27.9 M				
Fluoranthene	16.68	41.7	R			
Pyrene	17.09	56.2				
Benzo(a)Anthracene	19.58	<10	U			
Chrysene/Triphenylene	19.66	14.6 M	,R			
Benzo(b)Fluoranthene	21.84	17.6 M	,R			
Benzo(k)Fluoranthene	21.85	13.3 M	,R			
Benzo(e)Pyrene	22.36	50 M				
Benzo(a)Pyrene	22.46	11.3	R			
Perylene	22.62	155	R			
Indeno(1,2,3-cd)Pyrene	24.49	18.8				
Dibenzo(a,h)Anthracene	NotFnd	<10	U			
Benzo(g,h,i)Perylene	24.90	67.1				
Additional Analytes						
Tetralin	8.76	6330	E	8.75	7450	
2-Chloronaphthalene	11.04	<10	U			
Biphenyl	11.05	2270				
o-Terphenyl	15.36	<10	U			
1-Methylphenanthrene	15.58	13.9 M	,R			
9-Methylphenanthrene	15.63	12.4 M	,R			
2-methylanthracene	15.67	11.5 M	,R			
9,10-dimethylanthracene	17.22	<10	U			
m-terphenyl	17.27	<10	U			
p-terphenyl	17.58	<10	U			
Benzo(a)fluorene	17.81	<10	U			
Benzo(b)fluorene	NotFnd	<10	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<10	U			
3-Methylcholanthrene	NotFnd	<10	U			
Picene	NotFnd	<10	U			
Dibenzo(a,e)pyrene	NotFnd	<10	U			
Coronene	27.65	18.1	R			

Field Sampling Standards	**ng spiked**		**% Rec**	
1-Methylnaphthalene-D10	500	10.33	112.6	
Fluorene D10	500	12.90	105.3	
Terphenyl D14(Surr.)	500	17.53	115.9	
Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	500	8.98	80.2	50-150
2-Methylnaphthalene-D10	500	10.15	85.9	50-150
Acenaphthylene D8	500	11.72	87.4 M	50-150
Phenanthrene D10	500	14.53	80.3	50-150
Anthracene-D10	500	14.61	80.1	50-150
Fluoranthene D10	500	16.65	91.9	50-150
Benz(a)Anthracene-D12	500	19.53	103.9	50-150
Chrysene D12	500	19.60	95.4	50-150
Benzo(b)Fluoranthene-D12	500	21.79	102.7	50-150
Benzo(k)Fluoranthene-D12	500	21.84	93.8	50-150
Benzo(a)Pyrene D12	500	22.41	94.5	50-150
Perylene D12	500	22.57	99.5	50-150
Indeno(1,2,3,cd)Pyrene-D12	500	24.45	105.1 M	50-150
Dibenz(a,h)Anthracene-D14	500	24.50	89.8	50-150
Benzo(g,h,i)Perylene D12	500	24.86	65.8 M	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(31 THRU 35) #2 APC OUTLET TEST#3**	Sampling Date	02-Oct-15 00:00
ALS Sample ID	L1682779-7	Extraction Date	5-Oct-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	5	Workgroup	WG2185607

Approved:
Setu Gupta
--e-signature--
15-Oct-2015

Run Information	**Run 1**	**Run 2**
Filename	15101331.D	15101446.D
Run Date	10/14/2015 9:23	15-Oct-15 06:23
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USC160412H	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene	9.02	1090				
2-Methylnaphthalene	10.20	35.5				
1-Methylnaphthalene	10.39	21.5 M				
Acenaphthylene	11.74	<10	U			
Acenaphthene	12.07	34.9 M	,R			
Fluorene	12.94	14.7 M				
Phenanthrene	14.57	95.1				
Anthracene	14.64	23.3 M				
Fluoranthene	16.69	51.9				
Pyrene	17.08	85.1				
Benzo(a)Anthracene	19.58	<10	U			
Chrysene/Triphenylene	19.66	23.1 M	,R			
Benzo(b)Fluoranthene	21.83	28.6 M	,R			
Benzo(k)Fluoranthene	21.85	16.9 M	,R			
Benzo(e)Pyrene	22.35	57.6				
Benzo(a)Pyrene	22.46	12.3 M	,R			
Perylene	22.62	110	R			
Indeno(1,2,3-cd)Pyrene	24.50	20				
Dibenzo(a,h)Anthracene	NotFnd	<10	U			
Benzo(g,h,i)Perylene	24.91	52.5				
Additional Analytes						
Tetralin	8.76	4730	E	8.75	5600	
2-Chloronaphthalene	11.04	<10	U			
Biphenyl	11.05	599				
o-Terphenyl	15.36	<10	U			
1-Methylphenanthrene	15.57	10.4 M	,R			
9-Methylphenanthrene	15.62	12.3 M				
2-methylanthracene	15.67	<10	U			
9,10-dimethylanthracene	17.22	<10	U			
m-terphenyl	17.27	<10	U			
p-terphenyl	17.58	<10	U			
Benzo(a)fluorene	17.81	<10	U			
Benzo(b)fluorene	17.93	<10	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<10	U			
3-Methylcholanthrene	NotFnd	<10	U			
Picene	NotFnd	<10	U			
Dibenzo(a,e)pyrene	NotFnd	<10	U			
Coronene	NotFnd	<10	U			

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	500	10.33	107.6
Fluorene D10	500	12.90	104.9
Terphenyl D14(Surr.)	500	17.54	108.5

Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	500	8.98	80.9	50-150
2-Methylnaphthalene-D10	500	10.15	86.4	50-150
Acenaphthylene D8	500	11.72	86.7	50-150
Phenanthrene D10	500	14.53	91.9	50-150
Anthracene-D10	500	14.62	89.4	50-150
Fluoranthene D10	500	16.65	90.7	50-150
Benz(a)Anthracene-D12	500	19.53	91.2	50-150
Chrysene D12	500	19.60	83.3	50-150
Benzo(b)Fluoranthene-D12	500	21.79	98.1	50-150
Benzo(k)Fluoranthene-D12	500	21.85	96.9	50-150
Benzo(a)Pyrene D12	500	22.41	92.2	50-150
Perylene D12	500	22.56	95.8	50-150
Indeno(1,2,3,cd)Pyrene-D12	500	24.46	99.1 M	50-150
Dibenz(a,h)Anthracene-D14	500	24.50	85.9	50-150
Benzo(g,h,i)Perylene D12	500	24.87	67.8 M	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-SVOC-(36 THRU 40) #2 APC OUTLET BLANK**	Sampling Date	01-Oct-15 00:00
ALS Sample ID	L1682779-8	Extraction Date	5-Oct-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	5	Workgroup	WG2185607

Approved:
Setu Gupta
--e-signature--
15-Oct-2015

Run Information	**Run 1**	**Run 2**
Filename	15101325.D	15101440.D
Run Date	10/14/2015 5:53	15-Oct-15 02:55
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USC160412H	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration %Rec**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene	9.02	775				
2-Methylnaphthalene	10.21	14.7 M				
1-Methylnaphthalene	10.39	10.3 M				
Acenaphthylene	11.75	<10	U			
Acenaphthene	12.07	11.7 M	,R			
Fluorene	12.95	<10	U			
Phenanthrene	14.58	13				
Anthracene	14.65	13.1				
Fluoranthene	16.69	14.9 M	,R			
Pyrene	17.09	19.9 M				
Benzo(a)Anthracene	NotFnd	<10	U			
Chrysene/Triphenylene	19.66	<10	U			
Benzo(b)Fluoranthene	21.85	<10	U			
Benzo(k)Fluoranthene	21.89	<10	U			
Benzo(e)Pyrene	NotFnd	<10	U			
Benzo(a)Pyrene	NotFnd	<10	U			
Perylene	22.62	86.1	R			
Indeno(1,2,3-cd)Pyrene	24.50	<10	U			
Dibenzo(a,h)Anthracene	24.60	<10	U			
Benzo(g,h,i)Perylene	24.91	<10	U			
Additional Analytes						
Tetralin	8.76	3980	E	8.75	4490	
2-Chloronaphthalene	11.02	<10	U			
Biphenyl	11.05	25				
o-Terphenyl	NotFnd	<10	U			
1-Methylphenanthrene	NotFnd	<10	U			
9-Methylphenanthrene	NotFnd	<10	U			
2-methylanthracene	NotFnd	<10	U			
9,10-dimethylanthracene	17.22	<10	U			
m-terphenyl	17.28	<10	U			
p-terphenyl	NotFnd	<10	U			
Benzo(a)fluorene	NotFnd	<10	U			
Benzo(b)fluorene	NotFnd	<10	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<10	U			
3-Methylcholanthrene	NotFnd	<10	U			
Picene	NotFnd	<10	U			
Dibenzo(a,e)pyrene	NotFnd	<10	U			
Coronene	NotFnd	<10	U			

Field Sampling Standards	**ng spiked**		**% Rec**	**Limits**
1-Methylnaphthalene-D10	500	10.33	109	
Fluorene D10	500	12.90	107.4	
Terphenyl D14(Surr.)	500	17.54	105.8	
Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	500	9.00	87.6	50-150
2-Methylnaphthalene-D10	500	10.16	90.7	50-150
Acenaphthylene D8	500	11.73	93.1	50-150
Phenanthrene D10	500	14.54	88.7	50-150
Anthracene-D10	500	14.62	89.3	50-150
Fluoranthene D10	500	16.65	93.5	50-150
Benz(a)Anthracene-D12	500	19.54	101.0	50-150
Chrysene D12	500	19.61	95.0	50-150
Benzo(b)Fluoranthene-D12	500	21.79	102.8	50-150
Benzo(k)Fluoranthene-D12	500	21.85	100.1	50-150
Benzo(a)Pyrene D12	500	22.41	96.9	50-150
Perylene D12	500	22.57	101.1	50-150
Indeno(1,2,3,cd)Pyrene-D12	500	24.46	93.7 M	50-150
Dibenz(a,h)Anthracene-D14	500	24.51	93.3 M	50-150
Benzo(g,h,i)Perylene D12	500	24.87	69.1 M	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG2185607-2	Extraction Date	5-Oct-15
Analysis Method	PAH by CARB 429		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	5	Workgroup	WG2185607

Approved:
Setu Gupta
--e-signature--
15-Oct-2015

Run Information	**Run 1**
Filename	15101320.D
Run Date	10/14/2015 2:58
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USC160412H

Target Analytes	**ug spiked**	**Ret. Time**	**%**	**Flags**	**Limits**
Naphthalene	500	9.03	125		50-150
2-Methylnaphthalene	0		NS		
1-Methylnaphthalene	0		NS		
Acenaphthylene	500	11.75	123		50-150
Acenaphthene	500	12.08	129		50-150
Fluorene	500	12.94	131		50-150
Phenanthrene	500	14.57	125		50-150
Anthracene	500	14.65	131		50-150
Fluoranthene	500	16.69	129		50-150
Pyrene	500	17.09	121		50-150
Benzo(a)Anthracene	500	19.58	130		50-150
Chrysene/Triphenylene	500	19.66	125		50-150
Benzo(b)Fluoranthene	500	21.84	128		50-150
Benzo(k)Fluoranthene	500	21.89	124		50-150
Benzo(e)Pyrene	0		NS		
Benzo(a)Pyrene	500	22.46	120		50-150
Perylene	0		NS		
Indeno(1,2,3-cd)Pyrene	500	24.50	120		50-150
Dibenzo(a,h)Anthracene	500	24.56	124		50-150
Benzo(g,h,i)Perylene	500	24.91	128		50-150
Additional Analytes					
Tetralin			NS		
2-Chloronaphthalene			NS		
Biphenyl			NS		
o-Terphenyl			NS		
1-Methylphenanthrene			NS		
9-Methylphenanthrene			NS		
2-methylanthracene			NS		
9,10-dimethylanthracene			NS		
m-terphenyl			NS		
p-terphenyl			NS		
Benzo(a)fluorene			NS		
Benzo(b)fluorene			NS		
7,12-Dimethylbenzo(a)anthracene			NS		
3-Methylcholanthrene			NS		
Picene			NS		
Dibenzo(a,e)pyrene			NS		
Coronene			NS		
Field Sampling Standards	**ng spiked**		**% Rec**		
1-Methylnaphthalene-D10			NS		
Fluorene D10			NS		
Terphenyl D14(Surr.)			NS		
Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	500	9.00	97.6		30-150
2-Methylnaphthalene-D10	500	10.16	96.6		30-150
Acenaphthylene D8	500	11.73	90.8		30-150
Phenanthrene D10	500	14.54	96.2		50-150
Anthracene-D10	500	14.62	93.3		50-150
Fluoranthene D10	500	16.65	98.3		50-150
Benz(a)Anthracene-D12	500	19.54	89.5		50-150
Chrysene D12	500	19.61	92.6		50-150
Benzo(b)Fluoranthene-D12	500	21.79	109.2		50-150
Benzo(k)Fluoranthene-D12	500	21.85	103.6		50-150
Benzo(a)Pyrene D12	500	22.41	90.9		30-150
Perylene D12	500	22.57	84.2		50-150
Indeno(1,2,3,cd)Pyrene-D12	500	24.46	87.6	M	50-150
Dibenz(a,h)Anthracene-D14	500	24.50	91.5	M	50-150
Benzo(g,h,i)Perylene D12	500	24.87	77.6	M	50-150

M Indicates that a peak has been manually integrated.

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 SOUTHDOWN ROAD
ALS WO#:	L1692397		MISSISSAUGA, ON L5J 2Y4
Date of Report	29-Oct-15		Canada
Date of Sample Receipt	23-Oct-15	**Client Contact:**	Chris Belore
		Client Project ID:	21643-2, Covanta

COMMENTS: **PAH by CARB method 429 (LR option)- Isotope dilution**

Certified by: R. Stolys
Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		15-21546-2-SVOC-(1 THRU 5) TEST #1 UNIT #1		15-21546-2-SVOC-(6 THRU 10) TEST #2 UNIT #1		15-21546-2-SVOC-(11 THRU 15) TEST #3 UNIT #1		15-21546-2-SVOC-(16 THRU 20) BLANK UNIT #1		15-21546-2-SVOC-(21 THRU 25) TEST #1 UNIT #2	
ALS Sample ID	WG2199699-1		L1692397-1		L1692397-2		L1692397-3		L1692397-4		L1692397-5	
Sample Size	1		1		1		1		1		1	
Sample units	sample		sample		sample		sample		sample		sample	
Moisture Content	n/a		n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack		Stack	
Sampling Date	n/a		21-Oct-15		22-Oct-15		22-Oct-15		21-Oct-15		21-Oct-15	
Extraction Date	26-Oct-15		26-Oct-15		26-Oct-15		26-Oct-15		26-Oct-15		26-Oct-15	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
Naphthalene	36.1		5140		4300		3700		3440		4930	
2-Methylnaphthalene	<12	U	291		147		109		22.4		260	
1-Methylnaphthalene	<12	U	149		80		58.9		16.7		130	
Acenaphthylene	<12	U	50.3	M	24.5	M	18.8	M	<12	U	33.8	M
Acenaphthene	<12	U	154		72.5		53.4		<12	U	122	
Fluorene	<12	U	94		46.9		40.4		<12	U	79.7	
Phenanthrene	<12	U	272		143		154		15.7		213	
Anthracene	<12	U	70.1		60.8	M	54.2		44.4		67.3	
Fluoranthene	<12	U	50.6	M	29.3	M	45.8	M	<12	U	47.6	M
Pyrene	<12	U	47.9	M	46.4	M	60.7	M	<12	U	64.1	M
Benzo(a)Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Chrysene/Triphenylene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(b)Fluoranthene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(j/k)Fluoranthene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(e)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(a)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Perylene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Indeno(1,2,3-cd)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Dibenzo(a,c/a,h)Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(g,h,i)Perylene	<12	U	39.5		19		41		<12	U	60.5	
Additional Analytes												
Tetralin	<12	U	19200		17900		16100		16200		18800	
2-Chloronaphthalene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Biphenyl	<12	U	160		519		78.3		38.9		158	
o-Terphenyl	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
1-Methylphenanthrene	<12	U	14.1	M	<12	U	12.7	M	<12	U	12.8	M
9-Methylphenanthrene	<12	U	25.9	M	<12	U	<12	U	<12	U	16.2	M
2-methylanthracene	<12	U	31.6		12.5	M	<12	U	<12	U	18.5	M
9,10-dimethylanthracene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
m-terphenyl	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
p-terphenyl	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(a)fluorene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(b)fluorene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
7,12-Dimethylbenzo(a)anthracene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
3-Methylcholanthrene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Picene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Dibenzo(a,e)pyrene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Coronene	<12	U	25.1		<12	U	24.8		<12	U	38.3	
Field Sampling Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	50-150
1-Methylnaphthalene-D10	NS		118.2		112.3		107.4		113.4		110.6	
Fluorene D10	NS		110.0		106.4		103.4		104.5		101.6	
Terphenyl D14(Surr.)	NS		125.3		121.5		115.5		119.1		119.4	
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
Naphthalene D8	81.3		77.2		84.2		83.5		85.4		75.3	
2-Methylnaphthalene-D10	78.2		77.1		81.9		77.7		84.0		74.9	
Acenaphthylene D8	83.2		85.9		90.1		85.5		93.1		85.3	
Phenanthrene D10	75.6		70.8		74.4		72.2		80.7		71.5	
Anthracene-D10	78.2		75.1		81.4		78.4		86.5		74.1	
Fluoranthene D10	84.3		80.7		86.6		83.7		91.5		82.0	
Benz(a)Anthracene-D12	92.0		101.6		110.2		107.1		108.8		107.1	
Chrysene D12	92.0		87.0		94.0		92.2		99.8		88.6	
Benzo(b)Fluoranthene-D12	91.5		81.8		83.1		85.1		88.8		82.5	
Benzo(k)Fluoranthene-D12	87.5		75.6		75.0		69.5		88.4		68.3	
Benzo(a)Pyrene D12	89.1		84.8		90.3		88.9		92.3		87.3	
Perylene D12	85.5		91.1		98.3		94.0		100.2		94.3	
Indeno(1,2,3,cd)Pyrene-D12	73.6		86.6		94.1		94.3		101.7		87.7	
Dibenz(a,h)Anthracene-D14	76.1		86.9		92.8		92.5		102.1		89.6	
Benzo(g,h,i)Perylene D12	74.1		70.9		74.3		71.1		83.8		67.7	

U Indicates that this compound was not detected above the LOD.
NS Indicates that this compound was not spiked in.
M Indicates that a peak has been manually integrated.

ALS Environmental

Sample Analysis Summary Report

Sample Name	15-21546-2-SVOC-(26 THRU 30) TEST #2 UNIT #2		15-21546-2-SVOC-(31 THRU 35) TEST #3 UNIT #2		15-21546-2-SVOC-(36 THRU 40) BLANK UNIT #2		Laboratory Control Sample
ALS Sample ID	L1692397-6		L1692397-7		L1692397-8		WG2199699-2
Sample Size	1		1		1		1
Sample units	sample		sample		sample		n/a
Moisture Content	n/a		n/a		n/a		n/a
Matrix	Stack		Stack		Stack		QC
Sampling Date	22-Oct-15		22-Oct-15		22-Oct-15		n/a
Extraction Date	26-Oct-15		26-Oct-15		26-Oct-15		26-Oct-15
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**%**
Naphthalene	4230		4290		2800		127
2-Methylnaphthalene	196		102		18.8		NS
1-Methylnaphthalene	123		59.5		16.9		NS
Acenaphthylene	28.9		17.5	M	<12	U	122
Acenaphthene	126		43.2		<12	U	121
Fluorene	133		26.5	M	<12	U	122
Phenanthrene	468		97.1		14.1		125
Anthracene	62.5		60.2		35.3		128
Fluoranthene	108	M	44.2	M	<12	U	129
Pyrene	84.7	M	101		<12	U	124
Benzo(a)Anthracene	<12	U	<12	U	<12	U	127
Chrysene/Triphenylene	<12	U	<12	U	<12	U	123
Benzo(b)Fluoranthene	<12	U	<12	U	<12	U	127
Benzo(j/k)Fluoranthene	<12	U	<12	U	<12	U	125
Benzo(e)Pyrene	<12	U	<12	U	<12	U	NS
Benzo(a)Pyrene	<12	U	<12	U	<12	U	117
Perylene	<12	U	<12	U	<12	U	NS
Indeno(1,2,3-cd)Pyrene	<12	U	<12	U	<12	U	113
Dibenzo(a,c/a,h)Anthracene	<12	U	<12	U	<12	U	123
Benzo(g,h,i)Perylene	34.9		89.2		<12	U	123
Additional Analytes							
Tetralin	18100		18800		13500		NS
2-Chloronaphthalene	<12	U	<12	U	<12	U	NS
Biphenyl	1320		78.8		31.3		NS
o-Terphenyl	15.2		<12	U	<12	U	NS
1-Methylphenanthrene	22.3		12.4	M	<12	U	NS
9-Methylphenanthrene	26	M	<12	U	<12	U	NS
2-methylanthracene	31.9		<12	U	<12	U	NS
9,10-dimethylanthracene	<12	U	<12	U	<12	U	NS
m-terphenyl	16	M	<12	U	<12	U	NS
p-terphenyl	<12	U	<12	U	<12	U	NS
Benzo(a)fluorene	<12	U	<12	U	<12	U	NS
Benzo(b)fluorene	<12	U	<12	U	<12	U	NS
7,12-Dimethylbenzo(a)anthracene	<12	U	<12	U	<12	U	NS
3-Methylcholanthrene	<12	U	<12	U	<12	U	NS
Picene	<12	U	<12	U	<12	U	NS
Dibenzo(a,e)pyrene	<12	U	<12	U	<12	U	NS
Coronene	18.2		60.6		<12	U	NS
Field Sampling Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**
1-Methylnaphthalene-D10	112.7		113.9		111.2		NS
Fluorene D10	103.9		103.6		104.7		NS
Terphenyl D14(Surr.)	118.9		124.0		121.1		NS
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**
Naphthalene D8	80.0		88.3		86.3		81.9
2-Methylnaphthalene-D10	74.6		83.5		82.2		79.3
Acenaphthylene D8	84.9		95.7		91.3		85.9
Phenanthrene D10	71.2		77.9		75.6		74.9
Anthracene-D10	76.5		83.7		81.0		78.1
Fluoranthene D10	83.7		92.0		87.2		83.4
Benz(a)Anthracene-D12	107.3		123.7		108.5		94.0
Chrysene D12	93.7		107.4		97.1		87.8
Benzo(b)Fluoranthene-D12	81.4		91.4		86.2		91.1
Benzo(k)Fluoranthene-D12	71.5		78.6		86.9		86.1
Benzo(a)Pyrene D12	86.3		94.4		91.1		88.8
Perylene D12	92.5		103.7		96.7		87.4
Indeno(1,2,3,cd)Pyrene-D12	95.6		97.1		96.9		97.7
Dibenz(a,h)Anthracene-D14	88.6		99.8		93.8		89.1
Benzo(g,h,i)Perylene D12	73.3		72.7		78.4		77.5

U Indicates that this compound was not detected above the LOD.
NS Indicates that this compound was not spiked in.
M Indicates that a peak has been manually integrated.

ALS Environmental

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a	
ALS Sample ID	WG2199699-1	Extraction Date	26-Oct-15	
Analysis Method	PAH by CARB 429			
Analysis Type	Blank			
Sample Matrix	QC			Approved:
Sample Size	1 sample			*S. Jin*
Percent Moisture	n/a			--e-signature--
Split Ratio	6	Workgroup	WG2199699	29-Oct-2015

Run Information	**Run 1**
Filename	15102723.D
Run Date	10/28/2015 1:22
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	8.87	36.1	
2-Methylnaphthalene	10.06	<12	U
1-Methylnaphthalene	10.24	<12	U
Acenaphthylene	NotFnd	<12	U
Acenaphthene	11.92	<12	U
Fluorene	12.80	<12	U
Phenanthrene	14.41	<12	U
Anthracene	NotFnd	<12	U
Fluoranthene	16.50	<12	U
Pyrene	16.90	<12	U
Benzo(a)Anthracene	NotFnd	<12	U
Chrysene/Triphenylene	19.46	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(j/k)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	NotFnd	<12	U
Benzo(a)Pyrene	NotFnd	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U
Dibenzo(a,c/a,h)Anthracene	NotFnd	<12	U
Benzo(g,h,i)Perylene	NotFnd	<12	U
Additional Analytes			
Tetralin	8.61	<12	U
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	10.91	<12	U
o-Terphenyl	NotFnd	<12	U
1-Methylphenanthrene	15.37	<12	U
9-Methylphenanthrene	NotFnd	<12	U
2-methylanthracene	NotFnd	<12	U
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	NotFnd	<12	U
p-terphenyl	NotFnd	<12	U
Benzo(a)fluorene	NotFnd	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<12	U
Picene	NotFnd	<12	U
Dibenzo(a,e)pyrene	NotFnd	<12	U
Coronene	NotFnd	<12	U

Field Sampling Standards	**ng spiked**		**% Rec**	
1-Methylnaphthalene-D10	NS			
Fluorene D10	NS			
Terphenyl D14(Surr.)	NS			
Extraction Standards			**% Rec**	**Limits**
Naphthalene D8	600	8.84	81.3	50-150
2-Methylnaphthalene-D10	600	10.01	78.2	50-150
Acenaphthylene D8	600	11.57	83.2	50-150
Phenanthrene D10	600	14.38	75.6	50-150
Anthracene-D10	600	14.46	78.2	50-150
Fluoranthene D10	600	16.48	84.3	50-150
Benz(a)Anthracene-D12	600	19.33	92.0	50-150
Chrysene D12	600	19.40	92.0	50-150
Benzo(b)Fluoranthene-D12	600	21.57	91.5	50-150
Benzo(k)Fluoranthene-D12	600	21.63	87.5	50-150
Benzo(a)Pyrene D12	600	22.19	89.1	50-150
Perylene D12	600	22.34	85.5	50-150
Indeno(1,2,3,cd)Pyrene-D12	600	24.23	73.6 M	50-150
Dibenz(a,h)Anthracene-D14	600	24.28	76.1 M	50-150
Benzo(g,h,i)Perylene D12	600	24.64	74.1 M	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.
NS Indicates that this compound was not spiked in.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(1 THRU 5) TEST #1 UNIT #1**	Sampling Date	21-Oct-15
ALS Sample ID	L1692397-1	Extraction Date	26-Oct-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG2199699

Approved:
S. Jin
--e-signature--
29-Oct-2015

Run Information	**Run 1**	**Run 2**
Filename	15102726.D	15102737.D
Run Date	10/28/2015 3:08	28-Oct-15 11:13
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes		**Ret. Time**	**Concentration ng/sample**	**Flags**		**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene		8.87	4690	E		8.88	5140	
2-Methylnaphthalene		10.06	291					
1-Methylnaphthalene		10.24	149					
Acenaphthylene		11.60	50.3 M					
Acenaphthene		11.92	154					
Fluorene		12.79	94					
Phenanthrene		14.41	272					
Anthracene		14.49	70.1					
Fluoranthene		16.51	50.6 M					
Pyrene		16.91	47.9 M					
Benzo(a)Anthracene		19.38	<12	U				
Chrysene/Triphenylene		19.46	<12	U				
Benzo(b)Fluoranthene		NotFnd	<12	U				
Benzo(j/k)Fluoranthene		NotFnd	<12	U				
Benzo(e)Pyrene		NotFnd	<12	U				
Benzo(a)Pyrene		NotFnd	<12	U				
Perylene		NotFnd	<12	U				
Indeno(1,2,3-cd)Pyrene		24.29	<12	U				
Dibenzo(a,c/a,h)Anthracene		NotFnd	<12	U				
Benzo(g,h,i)Perylene		24.69	39.5					
Additional Analytes								
Tetralin		8.62	16500	E		8.62	19200	
2-Chloronaphthalene		NotFnd	<12	U				
Biphenyl		10.90	160					
o-Terphenyl		15.21	<12	U				
1-Methylphenanthrene		15.37	14.1 M					
9-Methylphenanthrene		15.46	25.9 M					
2-methylanthracene		15.50	31.6					
9,10-dimethylanthracene		NotFnd	<12	U				
m-terphenyl		17.10	<12	U				
p-terphenyl		17.40	<12	U				
Benzo(a)fluorene		17.62	<12	U				
Benzo(b)fluorene		NotFnd	<12	U				
7,12-Dimethylbenzo(a)anthracene		NotFnd	<12	U				
3-Methylcholanthrene		NotFnd	<12	U				
Picene		NotFnd	<12	U				
Dibenzo(a,e)pyrene		NotFnd	<12	U				
Coronene		27.32	25.1					
Field Sampling Standards	**ng spiked**		**% Rec**					
1-Methylnaphthalene-D10	500	10.19	118.2					
Fluorene D10	500	12.75	110					
Terphenyl D14(Surr.)	500	17.36	125.3					
Extraction Standards			**% Rec**		**Limits**			
Naphthalene D8	600				50-150	8.85	77.2	
2-Methylnaphthalene-D10	600	10.01	77.1		50-150			
Acenaphthylene D8	600	11.58	85.9		50-150			
Phenanthrene D10	600	14.37	70.8		50-150			
Anthracene-D10	600	14.46	75.1		50-150			
Fluoranthene D10	600	16.47	80.7		50-150			
Benz(a)Anthracene-D12	600	19.34	101.6		50-150			
Chrysene D12	600	19.41	87.0		50-150			
Benzo(b)Fluoranthene-D12	600	21.58	81.8		50-150			
Benzo(k)Fluoranthene-D12	600	21.63	75.6		50-150			
Benzo(a)Pyrene D12	600	22.20	84.8		50-150			
Perylene D12	600	22.35	91.1		50-150			
Indeno(1,2,3,cd)Pyrene-D12	600	24.24	86.6 M		50-150			
Dibenz(a,h)Anthracene-D14	600	24.29	86.9 M		50-150			
Benzo(g,h,i)Perylene D12	600	24.64	70.9 M		50-150			

M Indicates that a peak has been manually integrated.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(6 THRU 10) TEST #2 UNIT #1**	Sampling Date	22-Oct-15
ALS Sample ID	L1692397-2	Extraction Date	26-Oct-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG2199699

Approved:
S. Jin
--e-signature--
29-Oct-2015

Run Information	**Run 1**	**Run 2**
Filename	15102727.D	15102738.D
Run Date	10/28/2015 3:43	28-Oct-15 11:48
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene	8.87	4000	E	8.88	4300	
2-Methylnaphthalene	10.06	147				
1-Methylnaphthalene	10.24	80				
Acenaphthylene	11.60	24.5 M				
Acenaphthene	11.92	72.5				
Fluorene	12.79	46.9				
Phenanthrene	14.41	143				
Anthracene	14.49	60.8 M				
Fluoranthene	16.51	29.3 M				
Pyrene	16.91	46.4 M				
Benzo(a)Anthracene	19.38	<12	U			
Chrysene/Triphenylene	19.46	<12	U			
Benzo(b)Fluoranthene	NotFnd	<12	U			
Benzo(j/k)Fluoranthene	NotFnd	<12	U			
Benzo(e)Pyrene	NotFnd	<12	U			
Benzo(a)Pyrene	NotFnd	<12	U			
Perylene	NotFnd	<12	U			
Indeno(1,2,3-cd)Pyrene	24.28	<12	U			
Dibenzo(a,c/a,h)Anthracene	NotFnd	<12	U			
Benzo(g,h,i)Perylene	24.68	19				
Additional Analytes						
Tetralin	8.62	15400	E	8.62	17900	
2-Chloronaphthalene	NotFnd	<12	U			
Biphenyl	10.90	519				
o-Terphenyl	15.21	<12	U			
1-Methylphenanthrene	15.37	<12	U			
9-Methylphenanthrene	15.47	<12	U			
2-methylanthracene	15.50	12.5 M				
9,10-dimethylanthracene	NotFnd	<12	U			
m-terphenyl	17.10	<12	U			
p-terphenyl	17.41	<12	U			
Benzo(a)fluorene	NotFnd	<12	U			
Benzo(b)fluorene	NotFnd	<12	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U			
3-Methylcholanthrene	NotFnd	<12	U			
Picene	NotFnd	<12	U			
Dibenzo(a,e)pyrene	NotFnd	<12	U			
Coronene	27.33	<12	U			

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	500	10.19	112.3
Fluorene D10	500	12.75	106.4
Terphenyl D14(Surr.)	500	17.36	121.5

Extraction Standards			**% Rec**	**Limits**		
Naphthalene D8	600			50-150	8.86	84.2
2-Methylnaphthalene-D10	600	10.01	81.9	50-150		
Acenaphthylene D8	600	11.58	90.1	50-150		
Phenanthrene D10	600	14.38	74.4	50-150		
Anthracene-D10	600	14.46	81.4	50-150		
Fluoranthene D10	600	16.48	86.6	50-150		
Benz(a)Anthracene-D12	600	19.33	110.2	50-150		
Chrysene D12	600	19.41	94.0	50-150		
Benzo(b)Fluoranthene-D12	600	21.58	83.1	50-150		
Benzo(k)Fluoranthene-D12	600	21.64	75.0	50-150		
Benzo(a)Pyrene D12	600	22.19	90.3	50-150		
Perylene D12	600	22.35	98.3	50-150		
Indeno(1,2,3,cd)Pyrene-D12	600	24.24	94.1 M	50-150		
Dibenz(a,h)Anthracene-D14	600	24.29	92.8 M	50-150		
Benzo(g,h,i)Perylene D12	600	24.64	74.3 M	50-150		

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.
E Indicates that this compound was detected above the calibrated range.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(11 THRU 15) TEST #3 UNIT #1**	Sampling Date	22-Oct-15
ALS Sample ID	L1692397-3	Extraction Date	26-Oct-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG2199699

Approved:
S. Jin
--e-signature--
29-Oct-2015

Run Information	Run 1	Run 2
Filename	15102728.D	15102739.D
Run Date	10/28/2015 4:19	28-Oct-15 12:24
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes	Ret. Time	Concentration ng/sample	Flags	Ret. Time.	Concentration ng/sample	Flags
Naphthalene	8.88	3530	E	8.89	3700	
2-Methylnaphthalene	10.06	109				
1-Methylnaphthalene	10.24	58.9				
Acenaphthylene	11.60	18.8	M			
Acenaphthene	11.92	53.4				
Fluorene	12.79	40.4				
Phenanthrene	14.41	154				
Anthracene	14.49	54.2				
Fluoranthene	16.51	45.8	M			
Pyrene	16.91	60.7	M			
Benzo(a)Anthracene	19.38	<12	U			
Chrysene/Triphenylene	19.46	<12	U			
Benzo(b)Fluoranthene	NotFnd	<12	U			
Benzo(j/k)Fluoranthene	NotFnd	<12	U			
Benzo(e)Pyrene	NotFnd	<12	U			
Benzo(a)Pyrene	NotFnd	<12	U			
Perylene	NotFnd	<12	U			
Indeno(1,2,3-cd)Pyrene	24.28	<12	U			
Dibenzo(a,c/a,h)Anthracene	NotFnd	<12	U			
Benzo(g,h,i)Perylene	24.68	41				
Additional Analytes						
Tetralin	8.62	13900	E	8.63	16100	
2-Chloronaphthalene	NotFnd	<12	U			
Biphenyl	10.90	78.3				
o-Terphenyl	15.21	<12	U			
1-Methylphenanthrene	15.37	12.7	M			
9-Methylphenanthrene	15.47	<12	U			
2-methylanthracene	15.50	<12	U			
9,10-dimethylanthracene	NotFnd	<12	U			
m-terphenyl	17.10	<12	U			
p-terphenyl	17.41	<12	U			
Benzo(a)fluorene	NotFnd	<12	U			
Benzo(b)fluorene	NotFnd	<12	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U			
3-Methylcholanthrene	NotFnd	<12	U			
Picene	NotFnd	<12	U			
Dibenzo(a,e)pyrene	NotFnd	<12	U			
Coronene	27.32	24.8				

Field Sampling Standards	ng spiked	Ret. Time	% Rec
1-Methylnaphthalene-D10	500	10.19	107.4
Fluorene D10	500	12.75	103.4
Terphenyl D14(Surr.)	500	17.36	115.5

Extraction Standards	ng spiked	Ret. Time	% Rec	Flags	Limits	Ret. Time	% Rec
Naphthalene D8	600				50-150	8.86	83.5
2-Methylnaphthalene-D10	600	10.01	77.7		50-150		
Acenaphthylene D8	600	11.58	85.5		50-150		
Phenanthrene D10	600	14.38	72.2		50-150		
Anthracene-D10	600	14.46	78.4		50-150		
Fluoranthene D10	600	16.48	83.7		50-150		
Benz(a)Anthracene-D12	600	19.33	107.1		50-150		
Chrysene D12	600	19.41	92.2		50-150		
Benzo(b)Fluoranthene-D12	600	21.58	85.1		50-150		
Benzo(k)Fluoranthene-D12	600	21.64	69.5		50-150		
Benzo(a)Pyrene D12	600	22.19	88.9		50-150		
Perylene D12	600	22.35	94.0		50-150		
Indeno(1,2,3,cd)Pyrene-D12	600	24.24	94.3	M	50-150		
Dibenz(a,h)Anthracene-D14	600	24.29	92.5	M	50-150		
Benzo(g,h,i)Perylene D12	600	24.64	71.1	M	50-150		

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.
E Indicates that this compound was detected above the calibrated range.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(16 THRU 20) BLANK UNIT #1**	Sampling Date	21-Oct-15
ALS Sample ID	L1692397-4	Extraction Date	26-Oct-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG2199699

Approved:
S. Jin
--e-signature--
29-Oct-2015

Run Information	**Run 1**	**Run 2**
Filename	15102724.D	15102735.D
Run Date	10/28/2015 1:57	28-Oct-15 10:02
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene	8.87	3260	E	8.88	3440	
2-Methylnaphthalene	10.06	22.4				
1-Methylnaphthalene	10.24	16.7				
Acenaphthylene	NotFnd	<12	U			
Acenaphthene	11.91	<12	U			
Fluorene	12.79	<12	U			
Phenanthrene	14.41	15.7				
Anthracene	14.49	44.4				
Fluoranthene	16.50	<12	U			
Pyrene	16.91	<12	U			
Benzo(a)Anthracene	NotFnd	<12	U			
Chrysene/Triphenylene	NotFnd	<12	U			
Benzo(b)Fluoranthene	21.61	<12	U			
Benzo(j/k)Fluoranthene	NotFnd	<12	U			
Benzo(e)Pyrene	NotFnd	<12	U			
Benzo(a)Pyrene	NotFnd	<12	U			
Perylene	NotFnd	<12	U			
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U			
Dibenzo(a,c/a,h)Anthracene	NotFnd	<12	U			
Benzo(g,h,i)Perylene	24.68	<12	U			
Additional Analytes						
Tetralin	8.62	14100	E	8.62	16200	
2-Chloronaphthalene	NotFnd	<12	U			
Biphenyl	10.90	38.9				
o-Terphenyl	NotFnd	<12	U			
1-Methylphenanthrene	15.37	<12	U			
9-Methylphenanthrene	NotFnd	<12	U			
2-methylanthracene	NotFnd	<12	U			
9,10-dimethylanthracene	NotFnd	<12	U			
m-terphenyl	NotFnd	<12	U			
p-terphenyl	NotFnd	<12	U			
Benzo(a)fluorene	NotFnd	<12	U			
Benzo(b)fluorene	NotFnd	<12	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U			
3-Methylcholanthrene	NotFnd	<12	U			
Picene	NotFnd	<12	U			
Dibenzo(a,e)pyrene	NotFnd	<12	U			
Coronene	27.32	<12	U			

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	500	10.18	113.4
Fluorene D10	500	12.75	104.5
Terphenyl D14(Surr.)	500	17.35	119.1

Extraction Standards			**% Rec**		**Limits**		
Naphthalene D8	600				50-150	8.85	85.4
2-Methylnaphthalene-D10	600	10.01	84.0		50-150		
Acenaphthylene D8	600	11.57	93.1		50-150		
Phenanthrene D10	600	14.37	80.7		50-150		
Anthracene-D10	600	14.46	86.5		50-150		
Fluoranthene D10	600	16.47	91.5		50-150		
Benz(a)Anthracene-D12	600	19.33	108.8		50-150		
Chrysene D12	600	19.40	99.8		50-150		
Benzo(b)Fluoranthene-D12	600	21.57	88.8		50-150		
Benzo(k)Fluoranthene-D12	600	21.63	88.4		50-150		
Benzo(a)Pyrene D12	600	22.19	92.3		50-150		
Perylene D12	600	22.35	100.2		50-150		
Indeno(1,2,3,cd)Pyrene-D12	600	24.24	101.7	M	50-150		
Dibenz(a,h)Anthracene-D14	600	24.29	102.1	M	50-150		
Benzo(g,h,i)Perylene D12	600	24.64	83.8	M	50-150		

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.
E Indicates that this compound was detected above the calibrated range.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(21 THRU 25) TEST #1 UNIT #2**	Sampling Date	21-Oct-15
ALS Sample ID	L1692397-5	Extraction Date	26-Oct-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG2199699

Approved:
S. Jin
--e-signature--
29-Oct-2015

Run Information	**Run 1**	**Run 2**
Filename	15102729.D	15102740.D
Run Date	10/28/2015 4:55	28-Oct-15 12:59
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene	8.87	4410	E	8.89	4930	
2-Methylnaphthalene	10.06	260				
1-Methylnaphthalene	10.24	130				
Acenaphthylene	11.60	33.8	M			
Acenaphthene	11.92	122				
Fluorene	12.80	79.7				
Phenanthrene	14.41	213				
Anthracene	14.50	67.3				
Fluoranthene	16.51	47.6	M			
Pyrene	16.91	64.1	M			
Benzo(a)Anthracene	19.39	<12	U			
Chrysene/Triphenylene	19.46	<12	U			
Benzo(b)Fluoranthene	NotFnd	<12	U			
Benzo(j/k)Fluoranthene	NotFnd	<12	U			
Benzo(e)Pyrene	NotFnd	<12	U			
Benzo(a)Pyrene	NotFnd	<12	U			
Perylene	NotFnd	<12	U			
Indeno(1,2,3-cd)Pyrene	24.28	<12	U			
Dibenzo(a,c/a,h)Anthracene	NotFnd	<12	U			
Benzo(g,h,i)Perylene	24.69	60.5				
Additional Analytes						
Tetralin	8.62	15600	E	8.63	18800	
2-Chloronaphthalene	NotFnd	<12	U			
Biphenyl	10.91	158				
o-Terphenyl	15.21	<12	U			
1-Methylphenanthrene	15.38	12.8	M			
9-Methylphenanthrene	15.47	16.2	M			
2-methylanthracene	15.50	18.5	M			
9,10-dimethylanthracene	NotFnd	<12	U			
m-terphenyl	17.10	<12	U			
p-terphenyl	17.41	<12	U			
Benzo(a)fluorene	NotFnd	<12	U			
Benzo(b)fluorene	NotFnd	<12	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U			
3-Methylcholanthrene	NotFnd	<12	U			
Picene	NotFnd	<12	U			
Dibenzo(a,e)pyrene	NotFnd	<12	U			
Coronene	27.33	38.3				

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	500	10.19	110.6
Fluorene D10	500	12.75	101.6
Terphenyl D14(Surr.)	500	17.36	119.4

Extraction Standards			**% Rec**		**Limits**		
Naphthalene D8	600				50-150	8.86	75.3
2-Methylnaphthalene-D10	600	10.01	74.9		50-150		
Acenaphthylene D8	600	11.58	85.3		50-150		
Phenanthrene D10	600	14.38	71.5		50-150		
Anthracene-D10	600	14.47	74.1		50-150		
Fluoranthene D10	600	16.48	82.0		50-150		
Benz(a)Anthracene-D12	600	19.34	107.1		50-150		
Chrysene D12	600	19.41	88.6		50-150		
Benzo(b)Fluoranthene-D12	600	21.58	82.5		50-150		
Benzo(k)Fluoranthene-D12	600	21.64	68.3		50-150		
Benzo(a)Pyrene D12	600	22.19	87.3		50-150		
Perylene D12	600	22.35	94.3		50-150		
Indeno(1,2,3,cd)Pyrene-D12	600	24.24	87.7	M	50-150		
Dibenz(a,h)Anthracene-D14	600	24.29	89.6	M	50-150		
Benzo(g,h,i)Perylene D12	600	24.64	67.7	M	50-150		

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.
E Indicates that this compound was detected above the calibrated range.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(26 THRU 30) TEST #2 UNIT #2**	Sampling Date	22-Oct-15
ALS Sample ID	L1692397-6	Extraction Date	26-Oct-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG2199699

Approved:
S. Jin
--e-signature--
29-Oct-2015

Run Information	**Run 1**	**Run 2**
Filename	15102730.D	15102741.D
Run Date	10/28/2015 5:30	28-Oct-15 13:35
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene	8.88	3970	E	8.89	4230	
2-Methylnaphthalene	10.07	196				
1-Methylnaphthalene	10.24	123				
Acenaphthylene	11.60	28.9				
Acenaphthene	11.92	126				
Fluorene	12.80	133				
Phenanthrene	14.42	468				
Anthracene	14.49	62.5				
Fluoranthene	16.51	108 M				
Pyrene	16.92	84.7 M				
Benzo(a)Anthracene	19.39	<12	U			
Chrysene/Triphenylene	19.46	<12	U			
Benzo(b)Fluoranthene	21.62	<12	U			
Benzo(j/k)Fluoranthene	NotFnd	<12	U			
Benzo(e)Pyrene	NotFnd	<12	U			
Benzo(a)Pyrene	NotFnd	<12	U			
Perylene	NotFnd	<12	U			
Indeno(1,2,3-cd)Pyrene	24.29	<12	U			
Dibenzo(a,c/a,h)Anthracene	NotFnd	<12	U			
Benzo(g,h,i)Perylene	24.69	34.9				
Additional Analytes						
Tetralin	8.62	15400	E	8.63	18100	
2-Chloronaphthalene	NotFnd	<12	U			
Biphenyl	10.91	1320				
o-Terphenyl	15.21	15.2				
1-Methylphenanthrene	15.38	22.3				
9-Methylphenanthrene	15.47	26 M				
2-methylanthracene	15.51	31.9				
9,10-dimethylanthracene	NotFnd	<12	U			
m-terphenyl	17.10	16 M				
p-terphenyl	17.40	<12	U			
Benzo(a)fluorene	NotFnd	<12	U			
Benzo(b)fluorene	NotFnd	<12	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U			
3-Methylcholanthrene	NotFnd	<12	U			
Picene	NotFnd	<12	U			
Dibenzo(a,e)pyrene	NotFnd	<12	U			
Coronene	27.33	18.2				

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	500	10.19	112.7
Fluorene D10	500	12.75	103.9
Terphenyl D14(Surr.)	500	17.36	118.9

Extraction Standards			**% Rec**	**Limits**		
Naphthalene D8	600			50-150	8.86	80
2-Methylnaphthalene-D10	600	10.01	74.6	50-150		
Acenaphthylene D8	600	11.58	84.9	50-150		
Phenanthrene D10	600	14.38	71.2	50-150		
Anthracene-D10	600	14.46	76.5	50-150		
Fluoranthene D10	600	16.48	83.7	50-150		
Benz(a)Anthracene-D12	600	19.34	107.3	50-150		
Chrysene D12	600	19.41	93.7	50-150		
Benzo(b)Fluoranthene-D12	600	21.58	81.4	50-150		
Benzo(k)Fluoranthene-D12	600	21.63	71.5	50-150		
Benzo(a)Pyrene D12	600	22.20	86.3	50-150		
Perylene D12	600	22.36	92.5	50-150		
Indeno(1,2,3,cd)Pyrene-D12	600	24.25	95.6 M	50-150		
Dibenz(a,h)Anthracene-D14	600	24.29	88.6 M	50-150		
Benzo(g,h,i)Perylene D12	600	24.65	73.3 M	50-150		

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.
E Indicates that this compound was detected above the calibrated range.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(31 THRU 35) TEST #3 UNIT #2**	Sampling Date	22-Oct-15
ALS Sample ID	L1692397-7	Extraction Date	26-Oct-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG2199699

Approved:
S. Jin
--e-signature--
29-Oct-2015

Run Information	**Run 1**	**Run 2**
Filename	15102731.D	15102742.D
Run Date	10/28/2015 6:06	28-Oct-15 14:10
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene	8.88	4080	E	8.89	4290	
2-Methylnaphthalene	10.07	102				
1-Methylnaphthalene	10.24	59.5				
Acenaphthylene	11.60	17.5	M			
Acenaphthene	11.92	43.2				
Fluorene	12.80	26.5	M			
Phenanthrene	14.42	97.1				
Anthracene	14.50	60.2				
Fluoranthene	16.51	44.2	M			
Pyrene	16.91	101				
Benzo(a)Anthracene	19.38	<12	U			
Chrysene/Triphenylene	19.47	<12	U			
Benzo(b)Fluoranthene	21.62	<12	U			
Benzo(j/k)Fluoranthene	21.65	<12	U			
Benzo(e)Pyrene	NotFnd	<12	U			
Benzo(a)Pyrene	NotFnd	<12	U			
Perylene	NotFnd	<12	U			
Indeno(1,2,3-cd)Pyrene	24.28	<12	U			
Dibenzo(a,c/a,h)Anthracene	NotFnd	<12	U			
Benzo(g,h,i)Perylene	24.69	89.2				
Additional Analytes						
Tetralin	8.62	16600	E	8.63	18800	
2-Chloronaphthalene	NotFnd	<12	U			
Biphenyl	10.91	78.8				
o-Terphenyl	NotFnd	<12	U			
1-Methylphenanthrene	15.37	12.4	M			
9-Methylphenanthrene	15.47	<12	U			
2-methylanthracene	15.50	<12	U			
9,10-dimethylanthracene	NotFnd	<12	U			
m-terphenyl	NotFnd	<12	U			
p-terphenyl	17.41	<12	U			
Benzo(a)fluorene	NotFnd	<12	U			
Benzo(b)fluorene	NotFnd	<12	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U			
3-Methylcholanthrene	NotFnd	<12	U			
Picene	NotFnd	<12	U			
Dibenzo(a,e)pyrene	NotFnd	<12	U			
Coronene	27.32	60.6				

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	500	10.19	113.9
Fluorene D10	500	12.75	103.6
Terphenyl D14(Surr.)	500	17.36	124

Extraction Standards			**% Rec**		**Limits**		
Naphthalene D8	600				50-150	8.86	88.3
2-Methylnaphthalene-D10	600	10.01	83.5		50-150		
Acenaphthylene D8	600	11.58	95.7		50-150		
Phenanthrene D10	600	14.38	77.9		50-150		
Anthracene-D10	600	14.47	83.7		50-150		
Fluoranthene D10	600	16.48	92.0		50-150		
Benz(a)Anthracene-D12	600	19.34	123.7		50-150		
Chrysene D12	600	19.41	107.4		50-150		
Benzo(b)Fluoranthene-D12	600	21.58	91.4		50-150		
Benzo(k)Fluoranthene-D12	600	21.64	78.6		50-150		
Benzo(a)Pyrene D12	600	22.20	94.4		50-150		
Perylene D12	600	22.36	103.7		50-150		
Indeno(1,2,3,cd)Pyrene-D12	600	24.24	97.1	M	50-150		
Dibenz(a,h)Anthracene-D14	600	24.29	99.8	M	50-150		
Benzo(g,h,i)Perylene D12	600	24.64	72.7	M	50-150		

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.
E Indicates that this compound was detected above the calibrated range.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(36 THRU 40) BLANK UNIT #2**	Sampling Date	22-Oct-15
ALS Sample ID	L1692397-8	Extraction Date	26-Oct-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG2199699

Approved:
S. Jin
--e-signature--
29-Oct-2015

Run Information	**Run 1**	**Run 2**
Filename	15102725.D	15102736.D
Run Date	10/28/2015 2:32	28-Oct-15 10:37
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene	8.87	2730		8.88	2800	
2-Methylnaphthalene	10.06	18.8				
1-Methylnaphthalene	10.24	16.9				
Acenaphthylene	NotFnd	<12	U			
Acenaphthene	11.92	<12	U			
Fluorene	12.79	<12	U			
Phenanthrene	14.42	14.1				
Anthracene	14.49	35.3				
Fluoranthene	16.51	<12	U			
Pyrene	16.91	<12	U			
Benzo(a)Anthracene	NotFnd	<12	U			
Chrysene/Triphenylene	NotFnd	<12	U			
Benzo(b)Fluoranthene	NotFnd	<12	U			
Benzo(j/k)Fluoranthene	NotFnd	<12	U			
Benzo(e)Pyrene	NotFnd	<12	U			
Benzo(a)Pyrene	NotFnd	<12	U			
Perylene	NotFnd	<12	U			
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U			
Dibenzo(a,c/a,h)Anthracene	NotFnd	<12	U			
Benzo(g,h,i)Perylene	24.68	<12	U			
Additional Analytes						
Tetralin	8.62	11800	E	8.62	13500	
2-Chloronaphthalene	NotFnd	<12	U			
Biphenyl	10.90	31.3				
o-Terphenyl	NotFnd	<12	U			
1-Methylphenanthrene	15.37	<12	U			
9-Methylphenanthrene	NotFnd	<12	U			
2-methylanthracene	NotFnd	<12	U			
9,10-dimethylanthracene	NotFnd	<12	U			
m-terphenyl	NotFnd	<12	U			
p-terphenyl	NotFnd	<12	U			
Benzo(a)fluorene	NotFnd	<12	U			
Benzo(b)fluorene	NotFnd	<12	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U			
3-Methylcholanthrene	NotFnd	<12	U			
Picene	NotFnd	<12	U			
Dibenzo(a,e)pyrene	NotFnd	<12	U			
Coronene	NotFnd	<12	U			

Field Sampling Standards	**ng spiked**		**% Rec**
1-Methylnaphthalene-D10	500	10.18	111.2
Fluorene D10	500	12.75	104.7
Terphenyl D14(Surr.)	500	17.35	121.1

Extraction Standards			**% Rec**	**Limits**		
Naphthalene D8	600			50-150	8.85	86.3
2-Methylnaphthalene-D10	600	10.01	82.2	50-150		
Acenaphthylene D8	600	11.57	91.3	50-150		
Phenanthrene D10	600	14.37	75.6	50-150		
Anthracene-D10	600	14.46	81.0	50-150		
Fluoranthene D10	600	16.47	87.2	50-150		
Benz(a)Anthracene-D12	600	19.33	108.5	50-150		
Chrysene D12	600	19.41	97.1	50-150		
Benzo(b)Fluoranthene-D12	600	21.58	86.2	50-150		
Benzo(k)Fluoranthene-D12	600	21.63	86.9	50-150		
Benzo(a)Pyrene D12	600	22.19	91.1	50-150		
Perylene D12	600	22.35	96.7	50-150		
Indeno(1,2,3,cd)Pyrene-D12	600	24.24	96.9 M	50-150		
Dibenz(a,h)Anthracene-D14	600	24.29	93.8 M	50-150		
Benzo(g,h,i)Perylene D12	600	24.64	78.4 M	50-150		

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG2199699-2	Extraction Date	26-Oct-15
Analysis Method	PAH by CARB 429		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG2199699

Approved:
S. Jin
--e-signature--
29-Oct-2015

Run Information	**Run 1**
Filename	15102720.D
Run Date	10/27/2015 23:35
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes	**ug spiked**	**Ret. Time**	**%**	**Flags**	**Limits**
Naphthalene	600	8.87	127		50-150
2-Methylnaphthalene	NS				50-150
1-Methylnaphthalene	NS				50-150
Acenaphthylene	600	11.59	122		50-150
Acenaphthene	600	11.91	121		50-150
Fluorene	600	12.79	122		50-150
Phenanthrene	600	14.41	125		50-150
Anthracene	600	14.48	128		50-150
Fluoranthene	600	16.50	129		50-150
Pyrene	600	16.90	124		50-150
Benzo(a)Anthracene	600	19.37	127		50-150
Chrysene/Triphenylene	600	19.45	123		50-150
Benzo(b)Fluoranthene	600	21.61	127		50-150
Benzo(j/k)Fluoranthene	600	21.66	125		50-150
Benzo(e)Pyrene	NS				50-150
Benzo(a)Pyrene	600	22.23	117		50-150
Perylene	NS				50-150
Indeno(1,2,3-cd)Pyrene	600	24.26	113		50-150
Dibenzo(a,c/a,h)Anthracene	600	24.33	123		50-150
Benzo(g,h,i)Perylene	600	24.67	123		50-150

Field Sampling Standards	**ng spiked**	**% Rec**
1-Methylnaphthalene-D10	NS	
Fluorene D10	NS	
Terphenyl D14(Surr.)	NS	

Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	8.84	81.9		30-150
2-Methylnaphthalene-D10	600	10.00	79.3		30-150
Acenaphthylene D8	600	11.57	85.9		30-150
Phenanthrene D10	600	14.37	74.9		50-150
Anthracene-D10	600	14.45	78.1		50-150
Fluoranthene D10	600	16.47	83.4		50-150
Benz(a)Anthracene-D12	600	19.33	94.0		50-150
Chrysene D12	600	19.40	87.8		50-150
Benzo(b)Fluoranthene-D12	600	21.57	91.1		50-150
Benzo(k)Fluoranthene-D12	600	21.63	86.1		50-150
Benzo(a)Pyrene D12	600	22.18	88.8		30-150
Perylene D12	600	22.34	87.4		50-150
Indeno(1,2,3,cd)Pyrene-D12	600	24.23	97.7	M	50-150
Dibenz(a,h)Anthracene-D14	600	24.28	89.1	M	50-150
Benzo(g,h,i)Perylene D12	600	24.63	77.5	M	50-150

M Indicates that a peak has been manually integrated.

NS Indicates that this compound was not spiked in.

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 SOUTHDOWN ROAD
ALS WO#:	L1695738		MISSISSAUGA, ON L5J 2Y4
Date of Report	6-Nov-15		Canada
Date of Sample Receipt	30-Oct-15	**Client Contact:**	Chris Belore
		Client Project ID:	21546-2

COMMENTS: **PAH by CARB method 429 (LR option)- Isotope dilution**

Certified by: R. Stolys

Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		15-21546-2-SVOC-(1 THRU 5) UNIT#1 TEST#4		15-21546-2-SVOC-(6 THRU 10) UNIT#1 TEST#5		15-21546-2-SVOC-(11 THRU 15) UNIT#1 TEST#6		15-21546-2-SVOC-(16 THRU 20) UNIT#1 BLANK		15-21546-2-SVOC-(21 THRU 25) UNIT#2 TEST#4	
ALS Sample ID	WG2204674-1		L1695738-1		L1695738-2		L1695738-3		L1695738-4		L1695738-5	
Sample Size	1		1		1		1		1		1	
Sample units	n/a		n/a		n/a		n/a		n/a		n/a	
Moisture Content	n/a		n/a		n/a		n/a		n/a		n/a	
Matrix	QC		Stack		Stack		Stack		Stack		Stack	
Sampling Date	n/a		28-Oct-15		29-Oct-15		29-Oct-15		28-Oct-15		28-Oct-15	
Extraction Date	2-Nov-15		2-Nov-15		2-Nov-15		2-Nov-15		2-Nov-15		2-Nov-15	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
Naphthalene	25.3	M	4420		4860		4120		3550		4180	
2-Methylnaphthalene	<12	U	162		146		107	M	20.8	M	87.1	
1-Methylnaphthalene	<12	U	85.5		76.1		59.1		15.5	M	52.7	
Acenaphthylene	<12	U	30.2	M	23.6	M	19	M,R	<12	U	18.1	M,R
Acenaphthene	<12	U	76.8		66	R	51.7		<12	U	25	M
Fluorene	<12	U	43.7	M	43.1	M	34.2	M	<12	U	17.8	M
Phenanthrene	<12	U	150		203		120		32.6		70.7	
Anthracene	<12	U	60.7	M,R	66.1	M,R	54.6	R	42.8	M,R	52.9	M,R
Fluoranthene	<12	U	28.3	M,R	37.6	M,R	38.6	M,R	16.7	M	19.2	
Pyrene	<12	U	30.6	M,R	32.2	M,R	82.3	M,R	45.2	M	27.6	M,R
Benzo(a)Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Chrysene/Triphenylene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(b)Fluoranthene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(J/k)Fluoranthene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(e)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(a)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Perylene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Indeno(1,2,3-cd)Pyrene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Dibenzo(ac/a,h)Anthracene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(g,h,i)Perylene	<12	U	23.3		21		35.6		55.9		30.4	
Additional Analytes												
Tetralin	<12	U	19800		22600		19100		18200		20000	
2-Chloronaphthalene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Biphenyl	<12	U	116		391		83.8		34.4		120	
o-Terphenyl	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
1-Methylphenanthrene	<12	U	24.9	M,R	16.8	M,R	19.7	M,R	18	M,R	14.6	R
9-Methylphenanthrene	<12	U	12.4	M,R	<12	U	<12	U	<12	U	<12	U
2-methylanthracene	<12	U	13.5	M,R	<12	U	<12	U	<12	U	<12	U
9,10-dimethylanthracene	<12	U	12.8	R	12.7	R	<12	U	<12	U	<12	U
m-terphenyl	<12	U	13.4	M	<12	U	<12	U	<12	U	<12	U
p-terphenyl	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(a)fluorene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Benzo(b)fluorene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
7,12-Dimethylbenzo(a)anthracene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
3-Methylcholanthrene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Picene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Dibenzo(a,e)pyrene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Coronene	<12	U	<12	U	<12	U	<12	U	<12	U	<12	U
Field Sampling Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	50-150
1-Methylnaphthalene-D10	NS		117.2		121.4		114.8		112		116.7	
Fluorene D10	NS		107.9		108.8		110.8		109.4		109.3	
Terphenyl D14(Surr.)	NS		114.7		114.2		113.4		114.7		115.9	
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
Naphthalene D8	74.6		105.4		90.3		81.1		82.8		92.6	
2-Methylnaphthalene-D10	67.9		86.7		76		70.8		76.3		77.7	
Acenaphthylene D8	64.3		97.4		90.4		76.8		80.2		86.6	
Phenanthrene D10	82.2		90.7		85.7		78.4		77.1		82.1	
Anthracene-D10	76.6		94.8		86.5		77.2		78.1		84.8	
Fluoranthene D10	71.1		95.8		86.5		76.5		80.9		84.2	
Benz(a)Anthracene-D12	48		101.4		85.9		73.7		80.5		86.6	
Chrysene D12	57.6		89.2		75.8		64.9		77.5		80.8	
Benzo(b)Fluoranthene-D12	66.9		107.4		95.2		85.4		74.6		94.2	
Benzo(k)Fluoranthene-D12	69.9		110.2		101.3		86.9		79.4		98.5	
Benzo(a)Pyrene D12	67.4		110.8		100.7		86.5		78.8		97.7	
Perylene D12	58.9		119.3		107.3		90.3		79.7		101.7	
Indeno(1,2,3,cd)Pyrene-D12	52.4		111.1		97.5		84.1		71.6		95.5	
Dibenz(a,h)Anthracene-D14	64.8		122.7		107.9		95.9		81.9		108.2	
Benzo(g,h,i)Perylene D12	64.2		103.6		89.2		75.2		68		86	

U Indicates that this compound was not detected above the LOD.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
NS Indicates that this compound was not spiked in.
M Indicates that a peak has been manually integrated.

ALS Environmental

Sample Analysis Summary Report

Sample Name	15-21546-2-SVOC- (26 THRU 30) UNIT#2 TEST#5		15-21546-2-SVOC- (31 THRU 35) UNIT#2 TEST#6		15-21546-2-SVOC- (36 THRU 40) UNIT#2 BLANK		Laboratory Control Sample
ALS Sample ID	L1695738-6		L1695738-7		L1695738-8		WG2204674-2
Sample Size	1		1		1		1
Sample units	n/a		n/a		n/a		n/a
Moisture Content	n/a		n/a		n/a		n/a
Matrix	Stack		Stack		Stack		QC
Sampling Date	29-Oct-15		29-Oct-15		28-Oct-15		n/a
Extraction Date	2-Nov-15		2-Nov-15		2-Nov-15		2-Nov-15
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**%**
Naphthalene	4480		3690		3510		131
2-Methylnaphthalene	96.7		133		19.9	M	NS
1-Methylnaphthalene	59.3		70.8		16.7	M	NS
Acenaphthylene	71.6	M	27.8	M	<12	U	127
Acenaphthene	30.7	M,R	57.2	M,R	<12	U	131
Fluorene	41.6	M	37.2	M	<12	U	130
Phenanthrene	128		134		27.4		128
Anthracene	64.6	M,R	48.3	R	43.9	M,R	134
Fluoranthene	32.6	M	38.3		18.8	M	134
Pyrene	38.8	M,R	51.8	M,R	45.3	M	126
Benzo(a)Anthracene	<12	U	<12	U	<12	U	136
Chrysene/Triphenylene	<12	U	<12	U	<12	U	126
Benzo(b)Fluoranthene	<12	U	<12	U	<12	U	138
Benzo(J/k)Fluoranthene	<12	U	<12	U	<12	U	126
Benzo(e)Pyrene	<12	U	<12	U	<12	U	NS
Benzo(a)Pyrene	<12	U	<12	U	<12	U	116
Perylene	<12	U	<12	U	<12	U	NS
Indeno(1,2,3-cd)Pyrene	<12	U	24.7	R	<12	U	144
Dibenzo(ac/a,h)Anthracene	<12	U	<12	U	<12	U	120
Benzo(g,h,i)Perylene	33.7	R	141	R	23.5	R	118
Additional Analytes							
Tetralin	20800		16700		18300		NS
2-Chloronaphthalene	<12	U	<12	U	<12	U	NS
Biphenyl	66.7		104		39.1		NS
o-Terphenyl	<12	U	<12	U	<12	U	NS
1-Methylphenanthrene	18.1	M,R	19.9	R	<12	U	NS
9-Methylphenanthrene	<12	U	<12	U	<12	U	NS
2-methylanthracene	<12	U	18.3	R	<12	U	NS
9,10-dimethylanthracene	<12	U	<12	U	<12	U	NS
m-terphenyl	<12	U	<12	U	<12	U	NS
p-terphenyl	<12	U	<12	U	<12	U	NS
Benzo(a)fluorene	<12	U	<12	U	<12	U	NS
Benzo(b)fluorene	<12	U	<12	U	<12	U	NS
7,12-Dimethylbenzo(a)anthracene	<12	U	<12	U	<12	U	NS
3-Methylcholanthrene	<12	U	<12	U	<12	U	NS
Picene	<12	U	<12	U	<12	U	NS
Dibenzo(a,e)pyrene	<12	U	<12	U	<12	U	NS
Coronene	<12	U	133		<12	U	NS
1-Methylnaphthalene-D10	113.8		123.8		119.5		NS
Fluorene D10	107.5		107.6		108.7		NS
Terphenyl D14(Surr.)	115.6		113.9		116.2		NS
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**
Naphthalene D8	85.4		103.9		102.2		79
2-Methylnaphthalene-D10	76.8		83.5		84.9		72.9
Acenaphthylene D8	83.6		97		94.9		75.6
Phenanthrene D10	80.7		95.7		92.9		79.4
Anthracene-D10	81.9		94.6		95		77.5
Fluoranthene D10	82.8		94.8		93.8		78.5
Benz(a)Anthracene-D12	81.2		99.4		93.7		64.9
Chrysene D12	75		86.9		89.4		71.4
Benzo(b)Fluoranthene-D12	93.6		91.9		87.8		78.6
Benzo(k)Fluoranthene-D12	94.8		89.5		94.2		83.3
Benzo(a)Pyrene D12	90.6		83.2		92		79.1
Perylene D12	96.1		95.9		96.2		73
Indeno(1,2,3,cd)Pyrene-D12	85.6		106		92.6		72.9
Dibenz(a,h)Anthracene-D14	94.5		111.3		106.5		83.3
Benzo(g,h,i)Perylene D12	75.7		90.1		87.8		76.1

U	Indicates that this compound was not detected above the LOD.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
NS	Indicates that this compound was not spiked in.
M	Indicates that a peak has been manually integrated.

ALS Environmental

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG2204674-1	Extraction Date	2-Nov-15
Analysis Method	PAH by CARB 429		
Analysis Type	Blank		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG2204674

Approved:
K.Sirisena
--e-signature--
05-Nov-2015

Run Information	**Run 1**
Filename	15110417.D
Run Date	11/4/2015 22:28
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	8.80	25.3	M
2-Methylnaphthalene	10.00	<12	U
1-Methylnaphthalene	10.17	<12	U
Acenaphthylene	NotFnd	<12	U
Acenaphthene	11.85	<12	U
Fluorene	12.73	<12	U
Phenanthrene	14.34	<12	U
Anthracene	NotFnd	<12	U
Fluoranthene	NotFnd	<12	U
Pyrene	16.82	<12	U
Benzo(a)Anthracene	NotFnd	<12	U
Chrysene/Triphenylene	NotFnd	<12	U
Benzo(b)Fluoranthene	NotFnd	<12	U
Benzo(j/k)Fluoranthene	NotFnd	<12	U
Benzo(e)Pyrene	NotFnd	<12	U
Benzo(a)Pyrene	NotFnd	<12	U
Perylene	NotFnd	<12	U
Indeno(1,2,3-cd)Pyrene	NotFnd	<12	U
Dibenzo(a,c/a,h)Anthracene	NotFnd	<12	U
Benzo(g,h,i)Perylene	NotFnd	<12	U
Additional Analytes			
Tetralin	8.54	<12	U
2-Chloronaphthalene	NotFnd	<12	U
Biphenyl	10.85	<12	U
o-Terphenyl	NotFnd	<12	U
1-Methylphenanthrene	NotFnd	<12	U
9-Methylphenanthrene	NotFnd	<12	U
2-methylanthracene	NotFnd	<12	U
9,10-dimethylanthracene	NotFnd	<12	U
m-terphenyl	NotFnd	<12	U
p-terphenyl	NotFnd	<12	U
Benzo(a)fluorene	NotFnd	<12	U
Benzo(b)fluorene	NotFnd	<12	U
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U
3-Methylcholanthrene	NotFnd	<12	U
Picene	NotFnd	<12	U
Dibenzo(a,e)pyrene	NotFnd	<12	U
Coronene	NotFnd	<12	U

Field Sampling Standards	**ng spiked**	**% Rec**
1-Methylnaphthalene-D10	NS	
Fluorene D10	NS	
Terphenyl D14(Surr.)	NS	

Extraction Standards			**% Rec**		**Limits**
Naphthalene D8	600	8.77	74.6		50-150
2-Methylnaphthalene-D10	600	9.94	67.9		50-150
Acenaphthylene D8	600	11.50	64.3		50-150
Phenanthrene D10	600	14.31	82.2		50-150
Anthracene-D10	600	14.39	76.6		50-150
Fluoranthene D10	600	16.40	71.1		50-150
Benz(a)Anthracene-D12	600	19.24	48		50-150
Chrysene D12	600	19.31	57.6		50-150
Benzo(b)Fluoranthene-D12	600	21.47	66.9		50-150
Benzo(k)Fluoranthene-D12	600	21.53	69.9		50-150
Benzo(a)Pyrene D12	600	22.08	67.4		50-150
Perylene D12	600	22.24	58.9		50-150
Indeno(1,2,3,cd)Pyrene-D12	600	24.13	52.4	M	50-150
Dibenz(a,h)Anthracene-D14	600	24.18	64.8	M	50-150
Benzo(g,h,i)Perylene D12	600	24.53	64.2	M	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
NS	Indicates that this compound was not spiked in.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(1 THRU 5) UNIT#1 TEST#4**	Sampling Date	28-Oct-15 00:00
ALS Sample ID	L1695738-1	Extraction Date	2-Nov-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG2204674

Approved:
K.Sirisena
--e-signature--
05-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15110420.D	15110433.D
Run Date	11/5/2015 0:12	05-Nov-15 07:46
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene	8.80	4180	E	8.79	4420	
2-Methylnaphthalene	9.99	162				
1-Methylnaphthalene	10.17	85.5				
Acenaphthylene	11.52	30.2 M				
Acenaphthene	11.84	76.8				
Fluorene	12.72	43.7 M				
Phenanthrene	14.34	150				
Anthracene	14.41	60.7 M	,R			
Fluoranthene	16.42	28.3 M	,R			
Pyrene	16.82	30.6 M	,R			
Benzo(a)Anthracene	19.28	<12	U			
Chrysene/Triphenylene	19.35	<12	U			
Benzo(b)Fluoranthene	NotFnd	<12	U			
Benzo(j/k)Fluoranthene	NotFnd	<12	U			
Benzo(e)Pyrene	NotFnd	<12	U			
Benzo(a)Pyrene	NotFnd	<12	U			
Perylene	NotFnd	<12	U			
Indeno(1,2,3-cd)Pyrene	24.17	<12	U			
Dibenzo(a,c/a,h)Anthracene	NotFnd	<12	U			
Benzo(g,h,i)Perylene	24.57	23.3				
Additional Analytes						
Tetralin	8.54	17200	E	8.53	19800	
2-Chloronaphthalene	10.81	<12	U			
Biphenyl	10.83	116				
o-Terphenyl	15.13	<12	U			
1-Methylphenanthrene	15.30	24.9 M	,R			
9-Methylphenanthrene	15.38	12.4 M	,R			
2-methylanthracene	15.42	13.5 M	,R			
9,10-dimethylanthracene	16.96	12.8	R			
m-terphenyl	17.01	13.4 M				
p-terphenyl	17.31	<12	U			
Benzo(a)fluorene	NotFnd	<12	U			
Benzo(b)fluorene	NotFnd	<12	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U			
3-Methylcholanthrene	NotFnd	<12	U			
Picene	NotFnd	<12	U			
Dibenzo(a,e)pyrene	NotFnd	<12	U			
Coronene	NotFnd	<12	U			

Field Sampling Standards	**ng spiked**		**% Rec**			
1-Methylnaphthalene-D10	500	10.11	117.2		10.11	114.7
Fluorene D10	500	12.67	107.9		12.67	111.9
Terphenyl D14(Surr.)	500	17.27	114.7		17.28	115.9
Extraction Standards			**% Rec**	**Limits**		
Naphthalene D8	600			50-150	8.76	105.4 M
2-Methylnaphthalene-D10	600	9.93	86.7	50-150		
Acenaphthylene D8	600	11.50	97.4	50-150		
Phenanthrene D10	600	14.30	90.7	50-150		
Anthracene-D10	600	14.38	94.8	50-150		
Fluoranthene D10	600	16.39	95.8	50-150		
Benz(a)Anthracene-D12	600	19.23	101.4	50-150		
Chrysene D12	600	19.31	89.2	50-150		
Benzo(b)Fluoranthene-D12	600	21.47	107.4	50-150		
Benzo(k)Fluoranthene-D12	600	21.52	110.2	50-150		
Benzo(a)Pyrene D12	600	22.09	110.8	50-150		
Perylene D12	600	22.25	119.3	50-150		
Indeno(1,2,3,cd)Pyrene-D12	600	24.13	111.1	50-150		
Dibenz(a,h)Anthracene-D14	600	24.18	122.7	50-150		
Benzo(g,h,i)Perylene D12	600	24.53	103.6	50-150		

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
E	Indicates that this compound was detected above the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(6 THRU 10) UNIT#1 TEST#5**	Sampling Date	29-Oct-15 00:00
ALS Sample ID	L1695738-2	Extraction Date	2-Nov-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG2204674

Approved:
K.Sirisena
--e-signature--
05-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15110421.D	15110434.D
Run Date	11/5/2015 0:47	05-Nov-15 08:21
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene	8.80	4350	E	8.80	4860	
2-Methylnaphthalene	9.99	146				
1-Methylnaphthalene	10.17	76.1				
Acenaphthylene	11.52	23.6 M				
Acenaphthene	11.84	66	R			
Fluorene	12.72	43.1 M				
Phenanthrene	14.34	203				
Anthracene	14.41	66.1 M	,R			
Fluoranthene	16.42	37.6 M	,R			
Pyrene	16.82	32.2 M	,R			
Benzo(a)Anthracene	19.28	<12	U			
Chrysene/Triphenylene	19.36	<12	U			
Benzo(b)Fluoranthene	NotFnd	<12	U			
Benzo(j/k)Fluoranthene	NotFnd	<12	U			
Benzo(e)Pyrene	NotFnd	<12	U			
Benzo(a)Pyrene	NotFnd	<12	U			
Perylene	NotFnd	<12	U			
Indeno(1,2,3-cd)Pyrene	24.17	<12	U			
Dibenzo(a,c/a,h)Anthracene	NotFnd	<12	U			
Benzo(g,h,i)Perylene	24.57	21				
Additional Analytes						
Tetralin	8.54	18100	E	8.53	22600	
2-Chloronaphthalene	10.80	<12	U			
Biphenyl	10.83	391				
o-Terphenyl	15.13	<12	U			
1-Methylphenanthrene	15.29	16.8 M	,R			
9-Methylphenanthrene	15.38	<12	U			
2-methylanthracene	15.42	<12	U			
9,10-dimethylanthracene	16.96	12.7	R			
m-terphenyl	17.01	<12	U			
p-terphenyl	17.31	<12	U			
Benzo(a)fluorene	NotFnd	<12	U			
Benzo(b)fluorene	NotFnd	<12	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U			
3-Methylcholanthrene	NotFnd	<12	U			
Picene	NotFnd	<12	U			
Dibenzo(a,e)pyrene	NotFnd	<12	U			
Coronene	NotFnd	<12	U			

Field Sampling Standards	**ng spiked**		**% Rec**			
1-Methylnaphthalene-D10	500	10.10	121.4		10.11	120.2
Fluorene D10	500	12.67	108.8		12.67	119.5
Terphenyl D14(Surr.)	500	17.26	114.2		17.28	111.2

Extraction Standards			**% Rec**	**Limits**		
Naphthalene D8	600			50-150	8.76	90.3 M
2-Methylnaphthalene-D10	600	9.93	76	50-150		
Acenaphthylene D8	600	11.50	90.4	50-150		
Phenanthrene D10	600	14.30	85.7	50-150		
Anthracene-D10	600	14.38	86.5	50-150		
Fluoranthene D10	600	16.39	86.5	50-150		
Benz(a)Anthracene-D12	600	19.23	85.9	50-150		
Chrysene D12	600	19.30	75.8	50-150		
Benzo(b)Fluoranthene-D12	600	21.47	95.2	50-150		
Benzo(k)Fluoranthene-D12	600	21.52	101.3	50-150		
Benzo(a)Pyrene D12	600	22.08	100.7	50-150		
Perylene D12	600	22.25	107.3	50-150		
Indeno(1,2,3,cd)Pyrene-D12	600	24.12	97.5	50-150		
Dibenz(a,h)Anthracene-D14	600	24.17	107.9	50-150		
Benzo(g,h,i)Perylene D12	600	24.53	89.2	50-150		

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.
E Indicates that this compound was detected above the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(11 THRU 15) UNIT#1 TEST#6**	Sampling Date	29-Oct-15 00:00
ALS Sample ID	L1695738-3	Extraction Date	2-Nov-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG2204674

Approved:
K.Sirisena
--e-signature--
05-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15110422.D	15110435.D
Run Date	11/5/2015 1:22	05-Nov-15 08:56
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene	8.80	3830	E	8.79	4120	
2-Methylnaphthalene	9.99	107 M				
1-Methylnaphthalene	10.17	59.1				
Acenaphthylene	11.52	19 M	,R			
Acenaphthene	11.84	51.7				
Fluorene	12.72	34.2 M				
Phenanthrene	14.34	120				
Anthracene	14.41	54.6	R			
Fluoranthene	16.42	38.6 M	,R			
Pyrene	16.82	82.3 M	,R			
Benzo(a)Anthracene	NotFnd	<12	U			
Chrysene/Triphenylene	NotFnd	<12	U			
Benzo(b)Fluoranthene	NotFnd	<12	U			
Benzo(j/k)Fluoranthene	NotFnd	<12	U			
Benzo(e)Pyrene	NotFnd	<12	U			
Benzo(a)Pyrene	NotFnd	<12	U			
Perylene	NotFnd	<12	U			
Indeno(1,2,3-cd)Pyrene	24.17	<12	U			
Dibenzo(a,c/a,h)Anthracene	NotFnd	<12	U			
Benzo(g,h,i)Perylene	24.57	35.6				
Additional Analytes						
Tetralin	8.54	16200	E	8.53	19100	
2-Chloronaphthalene	10.81	<12	U			
Biphenyl	10.83	83.8				
o-Terphenyl	15.13	<12	U			
1-Methylphenanthrene	15.30	19.7 M	,R			
9-Methylphenanthrene	15.38	<12	U			
2-methylanthracene	15.42	<12	U			
9,10-dimethylanthracene	16.96	<12	U			
m-terphenyl	17.01	<12	U			
p-terphenyl	17.31	<12	U			
Benzo(a)fluorene	NotFnd	<12	U			
Benzo(b)fluorene	NotFnd	<12	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U			
3-Methylcholanthrene	NotFnd	<12	U			
Picene	NotFnd	<12	U			
Dibenzo(a,e)pyrene	NotFnd	<12	U			
Coronene	NotFnd	<12	U			

Field Sampling Standards	**ng spiked**		**% Rec**	**Limits**		
1-Methylnaphthalene-D10	500	10.10	114.8		10.11	113.2
Fluorene D10	500	12.67	110.8		12.67	114.5
Terphenyl D14(Surr.)	500	17.27	113.4		17.27	119.4
Extraction Standards			**% Rec**	**Limits**		
Naphthalene D8	600			50-150	8.76	81.1
2-Methylnaphthalene-D10	600	9.93	70.8	50-150		
Acenaphthylene D8	600	11.50	76.8	50-150		
Phenanthrene D10	600	14.30	78.4	50-150		
Anthracene-D10	600	14.38	77.2	50-150		
Fluoranthene D10	600	16.39	76.5	50-150		
Benz(a)Anthracene-D12	600	19.23	73.7	50-150		
Chrysene D12	600	19.31	64.9	50-150		
Benzo(b)Fluoranthene-D12	600	21.47	85.4	50-150		
Benzo(k)Fluoranthene-D12	600	21.52	86.9	50-150		
Benzo(a)Pyrene D12	600	22.09	86.5	50-150		
Perylene D12	600	22.25	90.3	50-150		
Indeno(1,2,3,cd)Pyrene-D12	600	24.13	84.1	50-150		
Dibenz(a,h)Anthracene-D14	600	24.18	95.9	50-150		
Benzo(g,h,i)Perylene D12	600	24.53	75.2	50-150		

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
E	Indicates that this compound was detected above the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(16 THRU 20) UNIT#1 BLANK**	Sampling Date	28-Oct-15 00:00
ALS Sample ID	L1695738-4	Extraction Date	2-Nov-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG2204674

Approved:
K.Sirisena
--e-signature--
05-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename .	15110418.D	15110431.D
Run Date	11/4/2015 23:03	05-Nov-15 06:36
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene	8.80	3180	E	8.80	3550	
2-Methylnaphthalene	9.99	20.8 M				
1-Methylnaphthalene	10.17	15.5 M				
Acenaphthylene	11.52	<12	U			
Acenaphthene	11.85	<12	U			
Fluorene	12.72	<12	U			
Phenanthrene	14.34	32.6				
Anthracene	14.41	42.8 M	,R			
Fluoranthene	16.42	16.7 M				
Pyrene	16.82	45.2 M				
Benzo(a)Anthracene	NotFnd	<12	U			
Chrysene/Triphenylene	NotFnd	<12	U			
Benzo(b)Fluoranthene	21.52	<12	U			
Benzo(j/k)Fluoranthene	NotFnd	<12	U			
Benzo(e)Pyrene	NotFnd	<12	U			
Benzo(a)Pyrene	NotFnd	<12	U			
Perylene	NotFnd	<12	U			
Indeno(1,2,3-cd)Pyrene	24.17	<12	U			
Dibenzo(a,c/a,h)Anthracene	NotFnd	<12	U			
Benzo(g,h,i)Perylene	24.57	55.9				
Additional Analytes						
Tetralin	8.54	14600	E	8.54	18200	
2-Chloronaphthalene	NotFnd	<12	U			
Biphenyl	10.84	34.4				
o-Terphenyl	NotFnd	<12	U			
1-Methylphenanthrene	15.30	18 M	,R			
9-Methylphenanthrene	15.39	<12	U			
2-methylanthracene	15.43	<12	U			
9,10-dimethylanthracene	16.96	<12	U			
m-terphenyl	NotFnd	<12	U			
p-terphenyl	NotFnd	<12	U			
Benzo(a)fluorene	NotFnd	<12	U			
Benzo(b)fluorene	NotFnd	<12	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U			
3-Methylcholanthrene	NotFnd	<12	U			
Picene	NotFnd	<12	U			
Dibenzo(a,e)pyrene	NotFnd	<12	U			
Coronene	27.16	<12	U			

Field Sampling Standards	**ng spiked**		**% Rec**	**Limits**		
1-Methylnaphthalene-D10	500	10.11	112		10.11	112
Fluorene D10	500	12.67	109.4		12.67	115.8
Terphenyl D14(Surr.)	500	17.27	114.7		17.27	115.9
Extraction Standards			**% Rec**	**Limits**		
Naphthalene D8	600			50-150	8.76	82.8
2-Methylnaphthalene-D10	600	9.93	76.3	50-150		
Acenaphthylene D8	600	11.50	80.2	50-150		
Phenanthrene D10	600	14.30	77.1	50-150		
Anthracene-D10	600	14.38	78.1	50-150		
Fluoranthene D10	600	16.39	80.9	50-150		
Benz(a)Anthracene-D12	600	19.23	80.5	50-150		
Chrysene D12	600	19.31	77.5	50-150		
Benzo(b)Fluoranthene-D12	600	21.47	74.6	50-150		
Benzo(k)Fluoranthene-D12	600	21.52	79.4	50-150		
Benzo(a)Pyrene D12	600	22.09	78.8	50-150		
Perylene D12	600	22.25	79.7	50-150		
Indeno(1,2,3,cd)Pyrene-D12	600	24.13	71.6 M	50-150		
Dibenz(a,h)Anthracene-D14	600	24.18	81.9 M	50-150		
Benzo(g,h,i)Perylene D12	600	24.53	68 M	50-150		

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
E	Indicates that this compound was detected above the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(21 THRU 25) UNIT#2 TEST#4**	Sampling Date	28-Oct-15 00:00
ALS Sample ID	L1695738-5	Extraction Date	2-Nov-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG2204674

Approved:
K.Sirisena
--e-signature--
05-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15110423.D	15110436.D
Run Date	11/5/2015 1:57	05-Nov-15 09:32
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene	8.80	4010	E	8.79	4180	
2-Methylnaphthalene	9.99	87.1				
1-Methylnaphthalene	10.17	52.7				
Acenaphthylene	11.52	18.1	M ,R			
Acenaphthene	11.84	25	M			
Fluorene	12.72	17.8	M			
Phenanthrene	14.34	70.7				
Anthracene	14.41	52.9	M ,R			
Fluoranthene	16.42	19.2				
Pyrene	16.82	27.6	M ,R			
Benzo(a)Anthracene	19.28	<12	U			
Chrysene/Triphenylene	19.36	<12	U			
Benzo(b)Fluoranthene	NotFnd	<12	U			
Benzo(j/k)Fluoranthene	NotFnd	<12	U			
Benzo(e)Pyrene	NotFnd	<12	U			
Benzo(a)Pyrene	NotFnd	<12	U			
Perylene	NotFnd	<12	U			
Indeno(1,2,3-cd)Pyrene	24.17	<12	U			
Dibenzo(a,c/a,h)Anthracene	NotFnd	<12	U			
Benzo(g,h,i)Perylene	24.57	30.4				
Additional Analytes						
Tetralin	8.54	17600	E	8.53	20000	
2-Chloronaphthalene	10.80	<12	U			
Biphenyl	10.83	120				
o-Terphenyl	15.13	<12	U			
1-Methylphenanthrene	15.29	14.6	R			
9-Methylphenanthrene	15.36	<12	U			
2-methylanthracene	15.43	<12	U			
9,10-dimethylanthracene	16.96	<12	U			
m-terphenyl	17.01	<12	U			
p-terphenyl	17.32	<12	U			
Benzo(a)fluorene	NotFnd	<12	U			
Benzo(b)fluorene	NotFnd	<12	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U			
3-Methylcholanthrene	NotFnd	<12	U			
Picene	NotFnd	<12	U			
Dibenzo(a,e)pyrene	NotFnd	<12	U			
Coronene	NotFnd	<12	U			

Field Sampling Standards	**ng spiked**		**% Rec**			
1-Methylnaphthalene-D10	500	10.11	116.7		10.11	120.5
Fluorene D10	500	12.67	109.3		12.67	114.1
Terphenyl D14(Surr.)	500	17.26	115.9		17.28	118.2
Extraction Standards			**% Rec**	**Limits**		
Naphthalene D8	600			50-150	8.76	92.6
2-Methylnaphthalene-D10	600	9.93	77.7	50-150		
Acenaphthylene D8	600	11.50	86.6	50-150		
Phenanthrene D10	600	14.30	82.1	50-150		
Anthracene-D10	600	14.38	84.8	50-150		
Fluoranthene D10	600	16.39	84.2	50-150		
Benz(a)Anthracene-D12	600	19.23	86.6	50-150		
Chrysene D12	600	19.30	80.8	50-150		
Benzo(b)Fluoranthene-D12	600	21.47	94.2	50-150		
Benzo(k)Fluoranthene-D12	600	21.52	98.5	50-150		
Benzo(a)Pyrene D12	600	22.08	97.7	50-150		
Perylene D12	600	22.24	101.7	50-150		
Indeno(1,2,3,cd)Pyrene-D12	600	24.12	95.5	50-150		
Dibenz(a,h)Anthracene-D14	600	24.17	108.2	50-150		
Benzo(g,h,i)Perylene D12	600	24.53	86	50-150		

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
E	Indicates that this compound was detected above the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(26 THRU 30) UNIT#2 TEST#5**	Sampling Date	29-Oct-15 00:00
ALS Sample ID	L1695738-6	Extraction Date	2-Nov-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG2204674

Approved:
K.Sirisena
--e-signature--
05-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15110424.D	15110437.D
Run Date	11/5/2015 2:32	05-Nov-15 10:07
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene	8.80	4100	E	8.79	4480	
2-Methylnaphthalene	9.99	96.7				
1-Methylnaphthalene	10.17	59.3				
Acenaphthylene	11.52	71.6 M				
Acenaphthene	11.84	30.7 M	,R			
Fluorene	12.72	41.6 M				
Phenanthrene	14.34	128				
Anthracene	14.41	64.6 M	,R			
Fluoranthene	16.42	32.6 M				
Pyrene	16.82	38.8 M	,R			
Benzo(a)Anthracene	19.28	<12	U			
Chrysene/Triphenylene	19.36	<12	U			
Benzo(b)Fluoranthene	NotFnd	<12	U			
Benzo(j/k)Fluoranthene	NotFnd	<12	U			
Benzo(e)Pyrene	NotFnd	<12	U			
Benzo(a)Pyrene	NotFnd	<12	U			
Perylene	NotFnd	<12	U			
Indeno(1,2,3-cd)Pyrene	24.17	<12	U			
Dibenzo(a,c/a,h)Anthracene	NotFnd	<12	U			
Benzo(g,h,i)Perylene	24.57	33.7	R			
Additional Analytes						
Tetralin	8.54	17200	E	8.53	20800	
2-Chloronaphthalene	10.81	<12	U			
Biphenyl	10.83	66.7				
o-Terphenyl	15.13	<12	U			
1-Methylphenanthrene	15.30	18.1 M	,R			
9-Methylphenanthrene	15.38	<12	U			
2-methylanthracene	15.42	<12	U			
9,10-dimethylanthracene	16.96	<12	U			
m-terphenyl	17.01	<12	U			
p-terphenyl	17.32	<12	U			
Benzo(a)fluorene	NotFnd	<12	U			
Benzo(b)fluorene	NotFnd	<12	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U			
3-Methylcholanthrene	NotFnd	<12	U			
Picene	NotFnd	<12	U			
Dibenzo(a,e)pyrene	NotFnd	<12	U			
Coronene	NotFnd	<12	U			

Field Sampling Standards	**ng spiked**		**% Rec**	**Limits**		
1-Methylnaphthalene-D10	500	10.10	113.8		10.11	115.9
Fluorene D10	500	12.67	107.5		12.67	110.5
Terphenyl D14(Surr.)	500	17.27	115.6		17.27	114.1
Extraction Standards			**% Rec**	**Limits**		
Naphthalene D8	600			50-150	8.76	85.4 M
2-Methylnaphthalene-D10	600	9.93	76.8	50-150		
Acenaphthylene D8	600	11.50	83.6	50-150		
Phenanthrene D10	600	14.30	80.7	50-150		
Anthracene-D10	600	14.38	81.9	50-150		
Fluoranthene D10	600	16.39	82.8	50-150		
Benz(a)Anthracene-D12	600	19.23	81.2	50-150		
Chrysene D12	600	19.31	75	50-150		
Benzo(b)Fluoranthene-D12	600	21.47	93.6	50-150		
Benzo(k)Fluoranthene-D12	600	21.52	94.8	50-150		
Benzo(a)Pyrene D12	600	22.09	90.6	50-150		
Perylene D12	600	22.24	96.1	50-150		
Indeno(1,2,3,cd)Pyrene-D12	600	24.13	85.6	50-150		
Dibenz(a,h)Anthracene-D14	600	24.18	94.5	50-150		
Benzo(g,h,i)Perylene D12	600	24.53	75.7	50-150		

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.
E Indicates that this compound was detected above the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(31 THRU 35) UNIT#2 TEST#6**	Sampling Date	29-Oct-15 00:00
ALS Sample ID	L1695738-7	Extraction Date	2-Nov-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG2204674

Approved:
K.Sirisena
--e-signature--
05-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15110425.D	15110438.D
Run Date	11/5/2015 3:07	05-Nov-15 10:42
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene	8.80	3610	E	8.80	3690	
2-Methylnaphthalene	9.99	133				
1-Methylnaphthalene	10.17	70.8				
Acenaphthylene	11.52	27.8 M				
Acenaphthene	11.84	57.2 M	,R			
Fluorene	12.72	37.2 M				
Phenanthrene	14.34	134				
Anthracene	14.41	48.3	R			
Fluoranthene	16.42	38.3				
Pyrene	16.82	51.8 M	,R			
Benzo(a)Anthracene	19.27	<12	U			
Chrysene/Triphenylene	19.35	<12	U			
Benzo(b)Fluoranthene	NotFnd	<12	U			
Benzo(j/k)Fluoranthene	NotFnd	<12	U			
Benzo(e)Pyrene	NotFnd	<12	U			
Benzo(a)Pyrene	NotFnd	<12	U			
Perylene	NotFnd	<12	U			
Indeno(1,2,3-cd)Pyrene	24.16	24.7	R			
Dibenzo(a,c/a,h)Anthracene	NotFnd	<12	U			
Benzo(g,h,i)Perylene	24.57	141	R			
Additional Analytes						
Tetralin	8.54	14800	E	8.54	16700	
2-Chloronaphthalene	10.82	<12	U			
Biphenyl	10.83	104				
o-Terphenyl	15.13	<12	U			
1-Methylphenanthrene	15.30	19.9	R			
9-Methylphenanthrene	15.36	<12	U			
2-methylanthracene	15.42	18.3	R			
9,10-dimethylanthracene	16.96	<12	U			
m-terphenyl	17.01	<12	U			
p-terphenyl	17.31	<12	U			
Benzo(a)fluorene	NotFnd	<12	U			
Benzo(b)fluorene	17.66	<12	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U			
3-Methylcholanthrene	NotFnd	<12	U			
Picene	NotFnd	<12	U			
Dibenzo(a,e)pyrene	NotFnd	<12	U			
Coronene	27.15	133				

Field Sampling Standards	**ng spiked**		**% Rec**			
1-Methylnaphthalene-D10	500	10.10	123.8		10.11	121.5
Fluorene D10	500	12.67	107.6		12.67	108.5
Terphenyl D14(Surr.)	500	17.27	113.9		17.28	120.6
Extraction Standards			**% Rec**	**Limits**		
Naphthalene D8	600			50-150	8.76	103.9
2-Methylnaphthalene-D10	600	9.93	83.5	50-150		
Acenaphthylene D8	600	11.50	97	50-150		
Phenanthrene D10	600	14.30	95.7	50-150		
Anthracene-D10	600	14.38	94.6	50-150		
Fluoranthene D10	600	16.39	94.8	50-150		
Benz(a)Anthracene-D12	600	19.23	99.4	50-150		
Chrysene D12	600	19.31	86.9	50-150		
Benzo(b)Fluoranthene-D12	600	21.47	91.9	50-150		
Benzo(k)Fluoranthene-D12	600	21.52	89.5	50-150		
Benzo(a)Pyrene D12	600	22.08	83.2	50-150		
Perylene D12	600	22.24	95.9	50-150		
Indeno(1,2,3,cd)Pyrene-D12	600	24.13	106 M	50-150		
Dibenz(a,h)Anthracene-D14	600	24.18	111.3 M	50-150		
Benzo(g,h,i)Perylene D12	600	24.52	90.1 M	50-150		

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
E	Indicates that this compound was detected above the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Sample Analysis Report

Sample Name	**15-21546-2-SVOC-(36 THRU 40) UNIT#2 BLANK**	Sampling Date	28-Oct-15 00:00
ALS Sample ID	L1695738-8	Extraction Date	2-Nov-15
Analysis Method	PAH by CARB 429		
Analysis Type	Sample		
Sample Matrix	Stack		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG2204674

Approved:
K.Sirisena
--e-signature--
05-Nov-2015

Run Information	**Run 1**	**Run 2**
Filename	15110419.D	15110432.D
Run Date	11/4/2015 23:37	05-Nov-15 07:11
Final Volume	1 mL	1 mL
Dilution Factor	1	10
Analysis Units	ng/sample	ng/sample
Instrument	MSD-1	MSD-1
Column	HP-5MS USF235523H	HP-5MS USF235523H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	**Ret. Time.**	**Concentration ng/sample**	**Flags**
Naphthalene	8.80	3320	E	8.79	3510	
2-Methylnaphthalene	9.99	19.9 M				
1-Methylnaphthalene	10.17	16.7 M				
Acenaphthylene	11.52	<12	U			
Acenaphthene	11.84	<12	U			
Fluorene	12.72	<12	U			
Phenanthrene	14.34	27.4				
Anthracene	14.41	43.9 M	,R			
Fluoranthene	16.42	18.8 M				
Pyrene	16.82	45.3 M				
Benzo(a)Anthracene	NotFnd	<12	U			
Chrysene/Triphenylene	19.36	<12	U			
Benzo(b)Fluoranthene	21.52	<12	U			
Benzo(j/k)Fluoranthene	NotFnd	<12	U			
Benzo(e)Pyrene	NotFnd	<12	U			
Benzo(a)Pyrene	NotFnd	<12	U			
Perylene	NotFnd	<12	U			
Indeno(1,2,3-cd)Pyrene	24.17	<12	U			
Dibenzo(a,c/a,h)Anthracene	NotFnd	<12	U			
Benzo(g,h,i)Perylene	24.58	23.5	R			
Additional Analytes						
Tetralin	8.54	15600	E	8.53	18300	
2-Chloronaphthalene	NotFnd	<12	U			
Biphenyl	10.83	39.1				
o-Terphenyl	NotFnd	<12	U			
1-Methylphenanthrene	15.30	<12	U			
9-Methylphenanthrene	15.38	<12	U			
2-methylanthracene	15.42	<12	U			
9,10-dimethylanthracene	16.96	<12	U			
m-terphenyl	17.01	<12	U			
p-terphenyl	NotFnd	<12	U			
Benzo(a)fluorene	NotFnd	<12	U			
7,12-Dimethylbenzo(a)anthracene	NotFnd	<12	U			
3-Methylcholanthrene	NotFnd	<12	U			
Picene	NotFnd	<12	U			
Dibenzo(a,e)pyrene	NotFnd	<12	U			
Coronene	NotFnd	<12	U			

Field Sampling Standards	**ng spiked**		**% Rec**			
1-Methylnaphthalene-D10	500	10.10	119.5		10.11	115.5
Fluorene D10	500	12.67	108.7		12.68	122
Terphenyl D14(Surr.)	500	17.27	116.2		17.28	111.6
Extraction Standards			**% Rec**	**Limits**		
Naphthalene D8	600			50-150	8.76	102.2
2-Methylnaphthalene-D10	600	9.93	84.9	50-150		
Acenaphthylene D8	600	11.50	94.9	50-150		
Phenanthrene D10	600	14.30	92.9	50-150		
Anthracene-D10	600	14.38	95	50-150		
Fluoranthene D10	600	16.39	93.8	50-150		
Benz(a)Anthracene-D12	600	19.23	93.7	50-150		
Chrysene D12	600	19.31	89.4	50-150		
Benzo(b)Fluoranthene-D12	600	21.47	87.8	50-150		
Benzo(k)Fluoranthene-D12	600	21.52	94.2	50-150		
Benzo(a)Pyrene D12	600	22.09	92	50-150		
Perylene D12	600	22.25	96.2	50-150		
Indeno(1,2,3,cd)Pyrene-D12	600	24.13	92.6 M	50-150		
Dibenz(a,h)Anthracene-D14	600	24.18	106.5 M	50-150		
Benzo(g,h,i)Perylene D12	600	24.53	87.8 M	50-150		

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
E	Indicates that this compound was detected above the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG2204674-2	Extraction Date	2-Nov-15
Analysis Method	PAH by CARB 429		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 n/a		
Percent Moisture	n/a		
Split Ratio	6	Workgroup	WG2204674

Approved:
K.Sirisena
--e-signature--
05-Nov-2015

Run Information	**Run 1**
Filename	15110414.D
Run Date	11/4/2015 20:43
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USF235523H

Target Analytes	**ug spiked**	**Ret. Time**	**%**	**Flags**	**Limits**
Naphthalene	600	8.80	131		50-150
2-Methylnaphthalene	NS				50-150
1-Methylnaphthalene	NS				50-150
Acenaphthylene	600	11.52	127		50-150
Acenaphthene	600	11.84	131		50-150
Fluorene	600	12.72	130		50-150
Phenanthrene	600	14.34	128		50-150
Anthracene	600	14.41	134		50-150
Fluoranthene	600	16.42	134		50-150
Pyrene	600	16.81	126		50-150
Benzo(a)Anthracene	600	19.27	136		50-150
Chrysene/Triphenylene	600	19.36	126		50-150
Benzo(b)Fluoranthene	600	21.51	138		50-150
Benzo(j/k)Fluoranthene	600	21.56	126		50-150
Benzo(e)Pyrene	NS				50-150
Benzo(a)Pyrene	600	22.12	116		50-150
Perylene	NS				50-150
Indeno(1,2,3-cd)Pyrene	600	24.16	144		50-150
Dibenzo(a,c/a,h)Anthracene	600	24.22	120		50-150
Benzo(g,h,i)Perylene	600	24.57	118		50-150
Additional Analytes					
Tetralin	NS				
2-Chloronaphthalene	NS				
Biphenyl	NS				
o-Terphenyl	NS				
1-Methylphenanthrene	NS				
9-Methylphenanthrene	NS				
2-methylanthracene	NS				
9,10-dimethylanthracene	NS				
m-terphenyl	NS				
p-terphenyl	NS				
Benzo(a)fluorene	NS				
Benzo(b)fluorene	NS				
Benzo(b)anthracene	NS				
Benzo(j)fluoranthene	NS				
Dibenz(a,j)acridine	NS				
7H-Dibenzo(c,g)carbazole	NS				
Dibenzo(a,e)pyrene	NS				
dibenzo(a,i)pyrene	NS				
Coronene	NS				
1-Methylnaphthalene-D10	NS				
Fluorene D10	NS				
Terphenyl D14(Surr.)	NS				
Naphthalene D8	600	8.78	79		30-150
2-Methylnaphthalene-D10	600	9.94	72.9		30-150
Acenaphthylene D8	600	11.50	75.6		30-150
Phenanthrene D10	600	14.30	79.4		50-150
Anthracene-D10	600	14.38	77.5		50-150
Fluoranthene D10	600	16.39	78.5		50-150
Benz(a)Anthracene-D12	600	19.23	64.9		50-150
Chrysene D12	600	19.30	71.4		50-150
Benzo(b)Fluoranthene-D12	600	21.47	78.6		50-150
Benzo(k)Fluoranthene-D12	600	21.52	83.3		50-150
Benzo(a)Pyrene D12	600	22.08	79.1		30-150
Perylene D12	600	22.24	73		50-150
Indeno(1,2,3,cd)Pyrene-D12	600	24.12	72.9	M	50-150
Dibenz(a,h)Anthracene-D14	600	24.17	83.3	M	50-150
Benzo(g,h,i)Perylene D12	600	24.53	76.1	M	50-150

M Indicates that a peak has been manually integrated.

APPENDIX 25

Particulate and Acid Gas Recovery Data Sheets
(8 page)

Method 26A Recovery Sheet

Client : Covanta DYEC
Project No.: 21546
Date: SEPT. 29 /2015
Test No.: 1
Test Location: Unit 1 - Outlet

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing	Filter	Impingers 1, 2, 3	Impinger 4
	COVANTA QF1		
	Filter ID: ~~450 47~~		
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	

Container TS1 Weights	
Empty Wt:	283.5
After Acetone Rinse:	410.0
Total TS1:	126.5

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS1a Probe Rinse Residue	
Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Filter	
Initial Wt:	~~0.8202~~
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	white.

SEAL CONTAINER TS2

	Impinger #1 0.1 N H_2SO4	
	Empty Wt:	678.3
	Initial Wt:	779.4
	Final Wt:	968.8
1	Gain:	189.4
	Colour:	clear

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	676.2
	Initial Wt:	777.9
	Final Wt:	949.4
2	Gain:	~~171.6~~ 171.5
	Colour:	Clear

	Impinger #3 EMPTY	
	Empty Wt:	628.6
	Final Wt:	779.4
3	Gain:	150.8
	Colour:	Clear

	Impinger #4 Silica Gel	
	Initial Wt:	767.1
	Final Wt:	803.0
4	Gain:	35.9

SAMPLE IDENTIFICATION	15-21546-M26A
TS1(Probe Rinse-Acetone)	2
TS2(Filter)	1
TS3(Impinger 1,2,3 Sol'n)	3

CONTAINER TS3 WEIGHTS	
Empty Wt:	418.0
With Imp. 1,2,3 Soln:	1130.8
Imp. 1,2,3 Volume:	712.8
After Rinse:	1181.2
Total TS3:	763.2

Bottle

Train Loaded By: C.R.
Train Recovered By: TS
Recovery Witnessed By:
Date: 29 Sep 15

CWTR = 1+2+3: 511.7
WCBDA= 4: 35.9

ORTECH Environmental

Revision: Jan 16, 2006

Method 26A Recovery Sheet

Client : Covanta DYEC
Project No.: 21546
Date: 29 Sep 15
Test No.: 2
Test Location: Unit 1 - Outlet

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing	Filter	Impingers 1, 2, 3	Impinger 4
	Filter ID: Covanta QF-2		
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	

Container TS1 Weights	
Empty Wt:	277.2
After Acetone Rinse:	428.7
Total TS1:	151.5

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS1a Probe Rinse Residue	
Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	white

SEAL CONTAINER TS2

	Impinger #1 0.1 N H_2SO4	
	Empty Wt:	668.2
	Initial Wt:	768.5
	Final Wt:	977.8
1	Gain:	209.3
	Colour:	Clear

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	604.8
	Initial Wt:	705.1
	Final Wt:	917.3
2	Gain:	212.2
	Colour:	Clear

	Impinger #3 EMPTY	
	Empty Wt:	626.9
	Final Wt:	694.2
3	Gain:	67.3
	Colour:	Clear

	Impinger #4 Silica Gel	
	Initial Wt:	776.8
	Final Wt:	814.2
4	Gain:	37.4

SAMPLE IDENTIFICATION	15-21546-M26A
TS1(Probe Rinse-Acetone)	5
TS2(Filter)	4
TS3(Impinger 1,2,3 Sol'n)	6 ~~3~~.

CONTAINER TS3 WEIGHTS		
Empty Wt:	418.2	
With Imp. 1,2,3 Soln:	1098.6	
Imp. 1,2,3 Volume:	~~1144.7~~	680.4
After Rinse:	1147.7	
Total TS3:	729.5	

Box 2

Train Loaded By:	TS
Train Recovered By:	TS
Recovery Witnessed By:	—
Date:	29 Sep 15

CWTR = 1+2+3:	488.8
WCBDA= 4:	37.4

Revision: Jan 16, 2006

ORTECH Environmental

Method 26A Recovery Sheet

Client : Covanta DYEC
Project No.: 21546
Date: 1 Oct 15
Test No.: 3
Test Location: Unit #1 - outlet

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	276.8
After Acetone Rinse:	414.2
Total TS1:	137.4

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS1a Probe Rinse Residue	
Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Filter

Filter ID: Calanta 9F7

CONTAINER TS2

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	white.

SEAL CONTAINER TS2

Impingers 1, 2, 3

CONTAINER TS3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	669.9
Initial Wt:	769.7
Final Wt:	984.5
1 Gain:	214.8
Colour:	clear

Impinger #2 0.1 N H_2SO4	
Empty Wt:	607.5
Initial Wt:	707.5
Final Wt:	948.1
2 Gain:	240.6
Colour:	clear

Impinger #3 EMPTY	
Empty Wt:	630.3
Final Wt:	717.3
3 Gain:	87.0
Colour:	clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	416.2
With Imp. 1,2,3 Soln:	1159.4
Imp. 1,2,3 Volume:	743.2
After Rinse:	1218.4
Total TS3:	802.2

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	757.3
Final Wt:	786.6
4 Gain:	29.3

Box 2

SAMPLE IDENTIFICATION	15-21546-M26A
TS1(Probe Rinse-Acetone)	8
TS2(Filter)	7
TS3(Impinger 1,2,3 Sol'n)	9

Train Loaded By: TS
Train Recovered By: TS
Recovery Witnessed By: —
Date: 31 Oct 15

CWTR = 1+2+3:	542.4
WCBDA= 4:	29.3

Revision: Jan 16, 2006

ORTECH Environmental

Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	21546
Date:	Blank
Test No.:	30 Sep 15
Test Location:	Unit 1 - Outlet

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.4
After Acetone Rinse:	437.8
Total TS1:	155.4

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS1a
Probe Rinse Residue

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Filter

Filter ID: Covanta - QFS

CONTAINER TS2

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

SEAL CONTAINER TS2

Impingers 1, 2, 3

CONTAINER TS3

	Impinger #1 0.1 N H_2SO4	
	Empty Wt:	
	Initial Wt:	
	Final Wt:	
1	Gain:	
	Colour:	

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	
	Initial Wt:	
	Final Wt:	
2	Gain:	
	Colour:	

	Impinger #3 EMPTY	
	Empty Wt:	
	Final Wt:	
3	Gain:	
	Colour:	

CONTAINER TS3 WEIGHTS	
Empty Wt:	415.8
With Imp. 1,2,3 Soln:	615.8
Imp. 1,2,3 Volume:	200.0
After Rinse:	716.0
Total TS3:	300.2

Impinger 4

	Impinger #4 Silica Gel	
	Initial Wt:	
	Final Wt:	
4	Gain:	

SAMPLE IDENTIFICATION	15-21546-M26A-
TS1(Probe Rinse-Acetone)	~~10~~ 11
TS2(Filter)	~~11~~ 10
TS3(Impinger 1,2,3 Sol'n)	12

Train Loaded By:	TJ
Train Recovered By:	TS
Recovery Witnessed By:	—
Date:	30 Sep 15

CWTR = 1+2+3:

WCBDA= 4:

Revision: Jan 16, 2006

ORTECH Environmental

Method 26A Recovery Sheet

Client : Covanta DYEC
Project No.: 21546
Date: 30 Sep 15
Test No.: 1
Test Location: Unit 2 - Outlet

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing	Filter	Impingers 1, 2, 3	Impinger 4
	Filter ID: Calcuta QF3		
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	

Container TS1 Weights	
Empty Wt:	278.2
After Acetone Rinse:	458.0
Total TS1:	179.8

MARK FLUID LEVEL

Seal and label container TS1

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	White.

SEAL CONTAINER TS2

	Impinger #1 0.1 N H_2SO4	
	Empty Wt:	676.5
	Initial Wt:	778.4
	Final Wt:	978.8
1	Gain:	200.4
	Colour:	Clear

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	676.9
	Initial Wt:	777.0
	Final Wt:	995.8
2	Gain:	218.8
	Colour:	Clear

	Impinger #3 EMPTY	
	Empty Wt:	629.9
	Final Wt:	728.2
3	Gain:	98.3
	Colour:	Clear

CONTAINER TS3 WEIGHTS	
Empty Wt:	414.7
With Imp. 1,2,3 Soln:	1135.0
Imp. 1,2,3 Volume:	720.3
After Rinse:	1191.1
Total TS3:	776.4

	Impinger #4 Silica Gel	
	Initial Wt:	~~753.0~~ 747.8
	Final Wt:	285.5
4	Gain:	37.7

CONTAINER TS1a
Probe Rinse Residue

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

SAMPLE IDENTIFICATION	15-21546-M26A
TS1(Probe Rinse-Acetone)	22
TS2(Filter)	21
TS3(Impinger 1,2,3 Sol'n)	23

Box 6

Train Loaded By: TS
Train Recovered By: —
Recovery Witnessed By: TS
Date: 30 ~~29~~ Sep 15

CWTR = 1+2+3: 517.5

WCBDA= 4: 37.7

Revision: Jan 16, 2006

ORTECH Environmental

Method 26A Recovery Sheet

Client : Covanta DYEC

Project No.: 21546

Date: 30 Sep 15

Test No.: 2

Test Location: Unit 2 - Outlet

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing	Filter	Impingers 1, 2, 3	Impinger 4
	Filter ID: Solaita QF4		
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	

Container TS1 Weights	
Empty Wt:	281.4
After Acetone Rinse:	405.0
Total TS1:	123.6

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS1a Probe Rinse Residue	
Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

CONTAINER TS2	
Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	white.

SEAL CONTAINER TS2

	Impinger #1 0.1 N H_2SO4	
	Empty Wt:	671.2
	Initial Wt:	771.5
	Final Wt:	994.3
1	Gain:	222.8
	Colour:	clear

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	608.0
	Initial Wt:	708.6
	Final Wt:	944.1
2	Gain:	235.5
	Colour:	clear

	Impinger #3 EMPTY	
	Empty Wt:	630.9
	Final Wt:	706.7
3	Gain:	75.8
	Colour:	clear

	Impinger #4 Silica Gel	
	Initial Wt:	737.2
	Final Wt:	767.1
4	Gain:	29.9

SAMPLE IDENTIFICATION	15-21546-M26A-
TS1(Probe Rinse-Acetone)	25
TS2(Filter)	24
TS3(Impinger 1,2,3 Sol'n)	26

CONTAINER TS3 WEIGHTS	
Empty Wt:	413.7
With Imp. 1,2,3 Soln:	1151.1
Imp. 1,2,3 Volume:	737.4
After Rinse:	1200.0
Total TS3:	786.3

Box 2

Train Loaded By: TS

Train Recovered By: TS

Recovery Witnessed By: —

Date: 30 Sep 15

CWTR = 1+2+3: 534.1

WCBDA= 4: 29.9

Revision: Jan 16, 2006

ORTECH Environmental

Method 26A Recovery Sheet

Client : Covanta DYEC
Project No.: 21546
Date: 1 Oct 15
Test No.: 3
Test Location: #2 APC outlet

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing	Filter	Impingers 1, 2, 3	Impinger 4
	Filter ID: Covanta QF6		
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	

Container TS1 Weights	
Empty Wt:	277.9
After Acetone Rinse:	390.0
Total TS1:	112.1

MARK FLUID LEVEL

Seal and label container TS1

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

SEAL CONTAINER TS2

	Impinger #1 0.1 N H_2SO4	
	Empty Wt:	677.5
	Initial Wt:	780.0
	Final Wt:	997.4
1	Gain:	217.4
	Colour:	clear

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	676.2
	Initial Wt:	777.9
	Final Wt:	1002.5
2	Gain:	224.6
	Colour:	clear

	Impinger #3 EMPTY	
	Empty Wt:	629.8
	Final Wt:	692.0
3	Gain:	62.2
	Colour:	clear

	Impinger #4 Silica Gel	
	Initial Wt:	740.8
	Final Wt:	780.7
4	Gain:	39.9

CONTAINER TS1a Probe Rinse Residue	
Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

SAMPLE IDENTIFICATION	15-21546-M26A
TS1(Probe Rinse-Acetone)	28
TS2(Filter)	27
TS3(Impinger 1,2,3 Sol'n)	29

CONTAINER TS3 WEIGHTS	
Empty Wt:	415.0
With Imp. 1,2,3 Soln:	1126.8
Imp. 1,2,3 Volume:	711.8
After Rinse:	1168.2
Total TS3:	753.2

Box 6

Train Loaded By: TS
Train Recovered By: TS
Recovery Witnessed By: —
Date: 1 Oct 15

CWTR = 1+2+3: 504.2

WCBDA= 4: 39.9

Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	21546
Date:	1 Oct 15
Test No.:	Blank
Test Location:	Unit 2 - Outlet

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing	Filter	Impingers 1, 2, 3	Impinger 4
	Filter ID: Covanta QF 8		
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	

Container TS1 Weights	
Empty Wt:	276.9
After Acetone Rinse:	428.3
Total TS1:	151.4

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS1a Probe Rinse Residue	
Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

CONTAINER TS2	
Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

SEAL CONTAINER TS2

	Impinger #1 0.1 N H_2SO4	
	Empty Wt:	
	Initial Wt:	
	Final Wt:	
1	Gain:	
	Colour:	

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	
	Initial Wt:	
	Final Wt:	
2	Gain:	
	Colour:	

	Impinger #3 EMPTY	
	Empty Wt:	
	Final Wt:	
3	Gain:	
	Colour:	

	Impinger #4 Silica Gel	
	Initial Wt:	
	Final Wt:	
4	Gain:	

CONTAINER TS3 WEIGHTS	
Empty Wt:	415.8
With Imp. 1,2,3 Soln:	617.0
Imp. 1,2,3 Volume:	201.2
After Rinse:	717.9
Total TS3:	302.1

SAMPLE IDENTIFICATION	15-21546-M26A
TS1(Probe Rinse-Acetone)	31
TS2(Filter)	30
TS3(Impinger 1,2,3 Sol'n)	32

Train Loaded By:	TS
Train Recovered By:	TS
Recovery Witnessed By:	—
Date:	1 Oct 15

CWTR = 1+2+3:

WCBDA= 4:

APPENDIX 26

Particulate and Acid Gas Analytical Reports
(10 pages)

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 SOUTHDOWN ROAD MISSISSAUGA, ON L5J 2Y4 (905)822-4120
ALS WO#:	L1681904		
Date of Report	9-Oct-15		
Date of Sample Receipt	2-Oct-15	**Client Contact:**	Chris Belore
		Client Project ID:	21546, COVANTA

COMMENTS:
Sample Particulate Analysis via Gravimetric USEPA Method 5 (SA 08-Oct-2015)

REPORT FLAGS:
J - The value is uncertain and below what can be reliably identified as positive with a ≥99% confidence limit (i.e. below the laboratory determined MDL).

LCB = Laboratory Control Blank
LCS = Laboratory Control Sample
LCSD = Laboratory Control Sample Duplicate
LOR = Limit of Reporting

Certified by: R. Stolys

Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name		15-21546-M26A-1 #1 APC OUTLET TEST#1	15-21546-M26A-2 #1 APC OUTLET TEST#1	15-21546-M26A-4 #1 APC OUTLET TEST#2	15-21546-M26A-5 #1 APC OUTLET TEST#2	15-21546-M26A-7 #1 APC OUTLET TEST#3
ALS Sample ID		L1682406-1	L1682406-2	L1682406-3	L1682406-4	L1682406-5
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		29-Sep-15	29-Sep-15	29-Sep-15	29-Sep-15	1-Oct-15
Date of Receipt		2-Oct-15	2-Oct-15	2-Oct-15	2-Oct-15	2-Oct-15
PM via Gravimetric Analysis Method 5	**LOR** mg	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	0.3 J	-	0.3 J	-	0.1 J
Acetone Particulate Matter	0.4	-	1.7	-	2.2	-
	g	g	g	g	g	g
Acetone Mass	0.02	-	126	-	151	-

ALS Environmental

Sample Analysis Summary Report

Sample Name		15-21546-M26A-8 #1 APC OUTLET TEST#3	15-21546-M26A-10 #1 APC OUTLET BLANK	15-21546-M26A-11 #1 APC OUTLET BLANK	15-21546-M26A-21 #2 APC OUTLET TEST#1	15-21546-M26A-22 #2 APC OUTLET TEST#1
ALS Sample ID		L1682406-6	L1682406-7	L1682406-8	L1682406-9	L1682406-10
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		1-Oct-15	30-Sep-15	30-Sep-15	30-Sep-15	30-Sep-15
Date of Receipt		2-Oct-15	2-Oct-15	2-Oct-15	2-Oct-15	2-Oct-15
PM via Gravimetric Analysis	**LOR**					
Method 5	**mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	-	0.9	-	<0.1 J	-
Acetone Particulate Matter	0.4	3.3	-	0.2 J	-	2.2
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	136	-	155	-	178

ALS Environmental

Sample Analysis Summary Report

Sample Name		15-21546-M26A-24 #2 APC OUTLET TEST#2	15-21546-M26A-25 #2 APC OUTLET TEST#2	15-21546-M26A-27 #2 APC OUTLET TEST#3	15-21546-M26A-28 #2 APC OUTLET TEST#3	15-21546-M26A-30 #2 APC OUTLET BLANK
ALS Sample ID		L1682406-11	L1682406-12	L1682406-13	L1682406-14	L1682406-15
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		30-Sep-15	30-Sep-15	1-Oct-15	1-Oct-15	1-Oct-15
Date of Receipt		2-Oct-15	2-Oct-15	2-Oct-15	2-Oct-15	2-Oct-15
PM via Gravimetric Analysis Method 5	**LOR mg**	**mg**	**mg**	**mg**	**mg**	**mg**
Filter Particulate Matter	0.8	<0.1 J	-	0.2 J	-	0.5 J
Acetone Particulate Matter	0.4	-	1.3	-	2.3	-
	g	**g**	**g**	**g**	**g**	**g**
Acetone Mass	0.02	-	123	-	111	-

ALS Environmental

Sample Analysis Summary Report

Sample Name		15-21546-M26A-31 #2 APC OUTLET BLANK	LCB
ALS Sample ID		L1682406-16	L1682406-LCB
Matrix		Stack	Acetone
Analysis type		Sample	Sample
Sampling Date/Time		1-Oct-15	N/A
Date of Receipt		2-Oct-15	N/A

PM via Gravimetric Analysis Method 5	LOR mg	mg	mg
Filter Particulate Matter	0.8	-	-
Acetone Particulate Matter	0.4	0.4	0.4
	g	g	g
Acetone Mass	0.02	150	31.4

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road Mississauga, ON L5J 2Y4 Canada
ALS WO#:	L1682412	**Client Contact:**	Chris Belore
Date of Report	7-Oct-15	**Client Project ID:**	21546, COVANTA
Date of Sample Receipt	2-Oct-15		

COMMENTS:

Cl as HCl Anion Analysed via Ion Chromatography Method USEPA 26 (FE 6-Oct-2015)
F as HF Anion Analysed via Ion Chromatography Method USEPA 26 (FE 6-Oct-2015)
Ammonia, Total (as NH_3) via Ion Chromatography Method USEPA CTM-027 (FE 5-Oct-2015)

LOR = Limit of Reporting
LCB = Laboratory Control Blank (limits: <LOR)
LCS = Laboratory Control Sample (limits: 90-110%)
MS = Matrix Spike Sample (limits: 90-110%, NH_3: 85-115%)
RPD = Relative Percent Difference (limits: <20% for sample duplicate, <10% for duplicate injection)
CVS = Calibration Verification Standard (limits: 90-110%)

Certified by: R. Stolys

Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name	15-21546-M26A-3 #1 APC OUTLET TEST#1	15-21546-M26A-6 #1 APC OUTLET TEST#2	15-21546-M26A-9 #1 APC OUTLET TEST#3	15-21546-M26A-12 #1 APC OUTLET BLANK	15-21546-M26A-23 #2 APC OUTLET TEST#1
ALS Sample ID	L1682412-1	L1682412-2	L1682412-3	L1682412-4	L1682412-5
Matrix	Stack	Stack	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample	Sample	Sample
Sampling Date/Time	29-Sep-15	29-Sep-15	1-Oct-15	30-Sep-15	30-Sep-15
Date of Receipt	2-Oct-15	2-Oct-15	2-Oct-15	2-Oct-15	2-Oct-15
Ion Chromatography Analysis Method 26A	**mg**	**mg**	**mg**	**mg**	**mg**
Total F^- as HF (ave)	<0.274	<0.263	<0.288	<0.112	<0.279
Analysis 1	<0.274	<0.263	<0.288	<0.112	<0.279
Analysis 2	<0.274	<0.263	<0.288	<0.112	<0.279
Total Cl^- as HCl (ave)	32.8	25.9	37.4	<0.197	21.3
Analysis 1	32.8	25.9	37.4	<0.197	21.3
Analysis 2	32.8	25.9	37.4	<0.197	21.4
Ion Chromatography Analysis CTM-027 Ammonia	**mg**	**mg**	**mg**	**mg**	**mg**
Total Ammonia as NH_3	7.26	8.86	5.98	<0.283	5.16

ALS Environmental

Sample Analysis Summary Report

Sample Name	15-21546-M26A-26 #2 APC OUTLET TEST#2	15-21546-M26A-29 #2 APC OUTLET TEST#3	15-21546-M26A-32 #2 APC OUTLET BLANK
ALS Sample ID	L1682412-6	L1682412-7	L1682412-8
Matrix	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample
Sampling Date/Time	30-Sep-15	1-Oct-15	1-Oct-15
Date of Receipt	2-Oct-15	2-Oct-15	2-Oct-15
Ion Chromatography Analysis Method 26A	**mg**	**mg**	**mg**
Total F^- as HF (ave)	<0.282	<0.270	<0.112
Analysis 1	<0.282	<0.270	<0.112
Analysis 2	<0.282	<0.270	<0.112
Total Cl^- as HCl (ave)	24.4	34.7	<0.197
Analysis 1	24.4	34.7	<0.197
Analysis 2	24.4	34.7	<0.197
Ion Chromatography Analysis CTM-027 Ammonia	**mg**	**mg**	**mg**
Total Ammonia as NH_3	5.37	3.09	<0.283

ALS Environmental

Sample Analysis Summary Report

Sample Name	LCB	LCS	LCS
ALS Sample ID	LCB	LCS	LCS
Matrix	Stack	Stack	Stack
Analysis type	Method Blank	Blank Spike	Blank Spike
Sampling Date/Time	N/A	N/A	N/A
Date of Receipt	N/A	N/A	N/A
Ion Chromatography Analysis Method 26A	**mg**	**mg**	**% Rec**
Total F^- as HF (ave)	<0.0175	0.513	94%
Analysis 1	<0.0175	0.517	
Analysis 2	<0.0175	0.509	
Total Cl^- as HCl (ave)	<0.0309	0.740	93%
Analysis 1	<0.0309	0.746	
Analysis 2	<0.0309	0.734	
Ion Chromatography Analysis CTM-027 Ammonia	**mg**	**mg**	**% Rec**
Ammonia, Total (as NH_3)	<0.0472	0.513	109%

ALS Environmental

Sample Analysis Summary Report

Sample Name	15-21546-M26A-3 #1 APC OUTLET TEST#1	15-21546-M26A-3 #1 APC OUTLET TEST#1	15-21546-M26A-3 #1 APC OUTLET TEST#1	15-21546-M26A-3 #1 APC OUTLET TEST#1
ALS Sample ID	L1682412-1	L1682412-1DUP	L1682412-1MS	L1682412-1MS
Matrix	Stack	Stack	Stack	Stack
Analysis type	Sample	Duplicate	Matrix Spike	Matrix Spike
Sampling Date/Time	29-Sep-15	29-Sep-15	29-Sep-15	29-Sep-15
Date of Receipt	2-Oct-15	2-Oct-15	2-Oct-15	2-Oct-15
Ion Chromatography Analysis Method 26A	**mg**	**mg**	**mg**	**% Rec**
Total F^- as HF (ave)	<0.274	<0.274	7.80	94%
Analysis 1	<0.274	<0.274	7.80	
Analysis 2	<0.274	<0.274	7.80	
Total Cl^- as HCl (ave)	32.8	32.3	43.7	91%
Analysis 1	32.8	32.3	43.7	
Analysis 2	32.8	32.3	43.8	
Ion Chromatography Analysis CTM-027 Ammonia	**mg**	**mg**	**mg**	**% Rec**
Ammonia, Total (as NH_3)	7.26	7.38	14.8	106%

APPENDIX 27

VOST Analytical Reports
(6 pages)

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	ORTECH Environmental
ALS Project ID:	L1682777	**Client Address:**	804 SOUTHDOWN ROAD
ALS WO#:	ORT100		MISSISSAUGA, ON L5J 2Y4
Date of Report	15-Oct-15 Revision 2		CANADA
Date of Sample Receipt	3-Oct-15	**Client Contact:**	Chris Belore
		Client Project ID:	21546, Covanta

COMMENTS: **VOCs via SW846 Method 5041A/8260B**

Run Date; Oct 3rd 2015

Revision 2 Comment: to include the Trichlorotrifluoroethane data as a target

Revision 1 Comment: to include the chlorobenzene data as a target.

B = Target analyte observed in the laboratory method blank

NS = Not spiked

E = Estimated value. Instrument response exceeds instrument calibration range of 1.0 ug.

INT = Concentration reported represents estimated maximum possible due to interference from siloxanes

Ketone data by VOST analyses are estimated values only

For samples run with a dilution factor of 1, the entire trap pair was desorbed directly for instrumental analysis.

For samples with a diluiton factor of >1, the trap pair was desorbed into an air bag and a sub-sample taken and injected into the analytical trap for instrument injection via a gas tight syringe. This is done for samples anticipated to have levels above the 1ug instrument calibration range for a full entire sample injection.

Certified by: R. Stolys

Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Instrument: MSD-3
Column: Rxi-624Sil MS 1099869
Acquisition Start Date: 10/3/2015

Sample Matrix: VOST Tube
Analysis Units: ug/sample

Client Sample ID		**Laboratory Method Blank**	**Laboratory Control Sample**	**15-21546-VOST-28A/28B TRAVEL BLANK**	**15-21546-VOST-1A/1B #1 APC OUTLET TEST#1**	**15-21546-VOST-12A/12B #2 APC OUTLET TEST#1**	**15-21546-VOST-2A/2B #1 APC OUTLET TEST#1**	**15-21546-VOST-14A/14B #2 APC OUTLET TEST#1**	**15-21546-VOST-3A/3B #1 APC OUTLET TEST#1**	**15-21546-VOST-19A/19B #2 APC OUTLET TEST#2**	**15-21546-VOST-22A/22B #2 APC OUTLET TEST#3**	**15-21546-VOST-15A/15B #2 APC OUTLET TEST#1**	**5-21546-VOST-18A/18B #2 APC OUTLET TEST#2**	**Recovery Control Limits**
ALS Sample ID		VOST-blank	VOST-RS	L1682777-28	L1682777-1	L1682777-13	L1682777-2	L1682777-15	L1682777-3	L1682777-20	L1682777-23	L1682777-16	L1682777-19	
Filename		15100306.D	15100304.D	15100307.D	15100308.D	15100309.D	15100310.D	15100311.D	15100312.D	15100313.D	15100314.D	15100315.D	15100316.D	
Dilution Factor		1	1	1	1	1	10	1	10	1	1	1	1	
Acquisition Time		10/3/2015 15:47	10/3/2015 14:30	10/3/2015 16:26	10/3/2015 16:51	10/3/2015 17:17	10/3/2015 17:55	10/3/2015 18:21	10/3/2015 18:46	10/3/2015 19:12	10/3/2015 19:37	10/3/2015 20:03	10/3/2015 20:28	
Target Analyte	**RL ug/sample**	**Conc. ug/sample**	**% Rec**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	
Dichlorodifluoromethane	0.02	<	90	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	
Vinyl Chloride	0.02	<	77	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	
Bromomethane	0.09	<	98	<0.09	0.248	<0.09	<0.9	<0.09	<0.9	<0.09	<0.09	<0.09	<0.09	
Trichlorofluoromethane	0.02	<	76	<0.02	<0.02	0.028	<0.2	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	
1,1-Dichloroethene	0.01	<	73	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	
Acetone	0.1	<	61	<0.1	0.491	<0.1	<1	<0.1	<1	<0.1	<0.1	<0.1	<0.1	
Methylene Chloride	0.1	<	70	<0.1	1.40 E	0.559	1.13	<0.1	<1	<0.1	0.129	<0.1	<0.1	
trans,1,2-Dichloroethene	0.01	<	62	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	
2-Butanone	0.01	<	84	<0.01	0.568	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	
Chloroform	0.01	<	65	<0.01	0.018	0.017	<0.1	<0.01	<0.1	0.016	0.019	0.020	0.016	
1,1,1-Trichloroethane	0.01	<	75	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	
Carbon Tetrachloride	0.01	<	74	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	
Benzene	0.05	<	74	<0.05	0.098	0.051	<0.5	<0.05	<0.5	<0.05	0.066	0.054	0.061	
1,2-Dichloroethane	0.01	<	70	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	
Trichloroethene	0.01	<	72	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	
1,2-Dichloropropane	0.01	<	72	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	
Bromodichloromethane	0.01	<	75	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	0.011	<0.01	
Toluene	0.05	<	79	<0.05	3.32 E	0.065	1.76	0.053	<0.5	0.054	0.095	0.326	0.075	
1,1,2-Trichloroethane	0.02	<	93	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	
Tetrachloroethene	0.01	<	74	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	
Chlorodibromomethane	0.01	<	102	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	
Ethylene Dibromide	0.02	<	106	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	
Chlorobenzene	0.01	<	84	<0.01	0.014	0.010	<0.1	<0.01	<0.1	<0.01	0.010	0.014	<0.01	
Ethylbenzene	0.01	<	82	<0.01	0.843	<0.01	<0.1	<0.01	<0.1	<0.01	0.022	<0.01	<0.01	
M&P-Xylene	0.03	<	122	<0.03	2.38 E	<0.03	<0.3	<0.03	<0.3	<0.03	0.082	<0.03	0.041	
O-Xylene	0.01	<	117	<0.01	0.885	<0.01	<0.1	<0.01	<0.1	<0.01	0.022	<0.01	<0.01	
Styrene	0.02	<	87	<0.02	0.201	0.047	<0.2	<0.02	<0.2	<0.02	0.059	0.053	0.055	
Bromoform	0.01	<	77	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	
Isopropylbenzene	0.02	<	90	<0.02	0.022	<0.02	<0.2	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	
1,3,5-Trimethylbenzene	0.02	<	89	<0.02	0.078	<0.02	<0.2	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	
1,3-Butadiene	0.02	<	NS	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	
Trichlorotrifluoroethane	0.02	<	NS	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	
Field Standard		**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	
d10-Ethylbenzene		116	78	102	104	62	89	62	93	41	112	57	67	
Surrogate Standards		**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
d4-1,2-Dichloroethane		110	94	114	99	104	103	105	104	105	105	105	102	50-150
d8-Toluene		98	105	118	106	108	118	108	119	104	103	112	104	50-150
4-Bromofluorobenzene		101	99	80	114	80	67	84	75	87	89	82	83	50-150
Internal Standards		**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
Bromochloromethane		92	122	123	152	179	119	151	150	134	138	150	135	50-200
1,4-Difluorobenzene		103	126	135	165	185	126	161	163	142	147	158	146	50-200
d5-Chlorobenzene		127	123	123	176	177	106	157	140	142	153	148	147	50-200

ALS Environmental

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Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	ORTECH Environmental
ALS Project ID:	L1682777	**Client Address:**	804 SOUTHDOWN ROAD MISSISSAUGA, ON L5J 2Y4 CANADA
ALS WO#:	ORT100		
Date of Report	15-Oct-15 Revision 3		
Date of Sample Receipt	3-Oct-15	**Client Contact:**	Chris Belore
		Client Project ID:	21546, Covanta

COMMENTS: **VOCs via SW846 Method 5041A/8260B**

Run Date; Oct 6th 2015

Revision 3 Comment: Tolune results for 15-21546-VOST-5A/5B #1 APC OUTLET Test #2 reported

Revision 2 Comment: to include the Trichlorotrifluoroethane data as a target

Revision 1 Comment: to include chlorobenzene the data as a target

B = Target analyte observed in the laboratory method blank
NS = Not spiked
E = Estimated value. Instrument response exceeds instrument calibration range of 1.0 ug undiluted or 10 ug 10-fold dilution.
INT = Concentration reported represents estimated maximum possible due to interference from siloxanes
Ketone data by VOST analyses are estimated values only
L = Recovery below the normal control limits

For samples run with a dilution factor of 1, the entire trap pair was desorbed directly for instrumental analysis.
For samples with a dilution factor of >1, the trap pair was desorbed into an air bag and a sub-sample taken and injected into the analytical trap for instrument injection via a gas tight syringe. This is done for samples anticipated to have levels above the 1ug instrument calibration range for a full entire sample injection.

Certified by: R. Stolys

Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Instrument	MSD-3	Sample Matrix	VOST Tube
Column	Rxi-624Sil MS 1099869	Analysis Units	ug/sample
Acquisition Start Date	10/6/2015		

Client Sample ID		Laboratory Method Blank	Laboratory Control Sample	15-21546-VOST-16A/16B #2 APC OUTLET FIELD BLANK	15-21546-VOST-21A/21B #2 APC OUTLET FIELD BLANK	15-21546-VOST-25A/25B #2 APC OUTLET FIELD BLANK	15-21546-VOST-5A/5B #1 APC OUTLET TEST#2	15-21546-VOST-20A/20B #2 APC OUTLET TEST#2	15-21546-VOST-23A/23B #2 APC OUTLET TEST#3	15-21546-VOST-24A/24B #2 APC OUTLET TEST#3	Recovery Control Limtis
ALS Sample ID		VOST-blank	VOST-RS	L1682777-17	L1682777-22	L1682777-27	L1682777-5	L1682777-21	L1682777-24	L1682777-25	
Filename		15100610.D	15100609.D	15100611.D	15100612.D	15100613.D	15100614.D	15100615.D	15100616.D	15100617.D	
Dilution Factor		1	1	1	1	1	10	1	1	1	
Acquisition Time		10/6/2015 15:49	10/6/2015 15:11	10/6/2015 16:28	10/6/2015 16:53	10/6/2015 17:18	10/6/2015 17:43	10/6/2015 18:08	10/6/2015 18:34	10/6/2015 18:59	
Target Analyte	**RL ug/sample**	**Conc. ug/sample**	**% Rec**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	
Dichlorodifluoromethane	0.02	<	110	<0.02	<0.02	<0.02	<0.2	<0.02	<0.02	<0.02	
Vinyl Chloride	0.02	<	103	<0.02	<0.02	<0.02	<0.2	<0.02	<0.02	<0.02	
Bromomethane	0.09	<	106	<0.09	<0.09	<0.09	<0.9	<0.09	<0.09	<0.09	
Trichlorofluoromethane	0.02	<	98	<0.02	<0.02	<0.02	<0.2	<0.02	<0.02	<0.02	
1,1-Dichloroethene	0.01	<	104	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	
Acetone	0.1	<	80	<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0.1	
Methylene Chloride	0.1	<	106	<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0.1	
trans,1,2-Dichloroethene	0.01	<	92	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	
2-Butanone	0.01	<	57	<0.01	0.013	<0.01	<0.1	<0.01	<0.01	<0.01	
Chloroform	0.01	<	84	<0.01	<0.01	<0.01	<0.1	0.021	0.019	0.022	
1,1,1-Trichloroethane	0.01	<	89	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	
Carbon Tetrachloride	0.01	<	83	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	
Benzene	0.05	<	87	<0.05	<0.05	<0.05	<0.5	0.076	0.075	0.063	
1,2-Dichloroethane	0.01	<	78	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	
Trichloroethene	0.01	<	81	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	
1,2-Dichloropropane	0.01	<	87	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	
Bromodichloromethane	0.01	<	80	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	
Toluene	0.05	<	99	<0.05	<0.05	<0.05	12.9 E	0.078	0.068	0.053	
1,1,2-Trichloroethane	0.02	<	104	<0.02	<0.02	<0.02	<0.2	<0.02	<0.02	<0.02	
Tetrachloroethene	0.01	<	76	<0.01	<0.01	<0.01	<0.1	0.012	<0.01	<0.01	
Chlorodibromomethane	0.01	<	104	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	
Ethylene Dibromide	0.02	<	117	<0.02	<0.02	<0.02	<0.2	<0.02	<0.02	<0.02	
Chlorobenzene	0.01	<	105	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	
Ethylbenzene	0.01	<	114	<0.01	<0.01	<0.01	<0.1	<0.01	0.014	0.015	
M&P-Xylene	0.03	<	126	<0.03	<0.03	<0.03	<0.3	<0.03	0.049	0.047	
O-Xylene	0.01	<	117	<0.01	<0.01	<0.01	<0.1	<0.01	0.012	0.015	
Styrene	0.02	<	116	<0.02	<0.02	<0.02	<0.2	0.087	0.088	<0.02	
Bromoform	0.01	<	77	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	
Isopropylbenzene	0.02	<	129	<0.02	<0.02	<0.02	<0.2	<0.02	<0.02	<0.02	
1,3,5-Trimethylbenzene	0.02	<	133	<0.02	<0.02	<0.02	<0.2	<0.02	<0.02	<0.02	
1,3-Butadiene	0.02	<	NS	<0.02	<0.02	<0.02	<0.2	<0.02	<0.02	<0.02	
Trichlorotrifluoroethane	0.02	<	NS	<0.02	<0.02	<0.02	<0.2	<0.02	<0.02	<0.02	
Field Standard		**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	
d10-Ethylbenzene		61	81	73	98	124	80	93	73	94	
Surrogate Standards		**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
d4-1,2-Dichloroethane		111	92	110	112	114	110	117	111	109	50-150
d8-Toluene		116	119	116	107	110	129	120	115	121	50-150
4-Bromofluorobenzene		89	104	90	105	102	76	76	83	82	50-150
Internal Standards		**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
Bromochloromethane		86	88	83	24 L	40 L	54	107	123	128	50-200
1,4-Difluorobenzene		111	84	103	33 L	50	71	118	136	141	50-200
d5-Chlorobenzene		117	79	103	35 L	54	67	111	134	128	50-200

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Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	ORTECH Environmental
ALS Project ID:	L1682777	**Client Address:**	804 SOUTHDOWN ROAD MISSISSAUGA, ON L5J 2Y4 CANADA
ALS WO#:	ORT100		
Date of Report	15-Oct-15 Revision 3		
Date of Sample Receipt	3-Oct-15	**Client Contact:**	Chris Belore
		Client Project ID:	21546, Covanta

COMMENTS: **VOCs via SW846 Method 5041A/8260B**

Run Date; Oct 7th 2015

Revison 3 Comment: COA comments amended.

Revision 2 Comment: to include the Trichlorotrifluoroethane data as a target

Revision 1 Comment: to include chlorobenzene the data as a target

B = Target analyte observed in the laboratory method blank

NS = Not spiked

E = Estimated value. Instrument response exceeds instrument calibration range of 1.0 ug.

INT = Concentration reported represents estimated maximum possible due to interference from siloxanes

Ketone data by VOST analyses are estimated values only

Y = Estimated value based upon instrument response below the diluted reporting limit of 2.5ug

For samples run with a dilution factor of 1, the entire trap pair was desorbed directly for instrumental analysis.
For samples with a dilution factor of >1, the trap pair was desorbed into an air bag and a sub-sample taken and injected into the analytical trap for instrument injection via a gas tight syringe. This is done for samples anticipated to have levels above the 1ug instrument calibration range for a full entire sample injection.

R. Stolys

Certified by: ______________________

Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Instrument	MSD-3	Sample Matrix	VOST Tube
Column	Rxi-624Sil MS 1099869	Analysis Units	ug/sample
Acquisition Start Date	10/7/2015		

Client Sample ID		**Laboratory Method Blank**	**Laboratory Control Sample**	**15-21546-VOST-9A/9B #1 APC OUTLET TEST#3**	**15-21546-VOST-10A/10B #1 APC OUTLET TEST#3**	**15-21546-VOST-30A/30B #1 APC OUTLET TEST#2**	**15-21546-VOST-11A/11B #1 APC OUTLET TEST#3**	**OUTLET 15-21546-VOST-7A/7B #1 APC OUTLET TEST#2**	**Recovery Control Limtis**
ALS Sample ID		VOST-blank	VOST-RS	L1682777-9	L1682777-10	L1682777-6	L1682777-11	L1682777-7	
Filename		15100711.D	15100710.D	15100712.D	15100714.D	15100716.D	15100718.D	15100719.D	
Dilution Factor		1	1	10	10	50	10	50	
Acquisition Time		10/7/2015 16:41	10/7/2015 16:03	10/7/2015 17:27	10/7/2015 18:17	10/7/2015 19:21	10/7/2015 20:11	10/7/2015 20:36	
Target Analyte	**RL ug/sample**	**Conc. ug/sample**	**% Rec**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	
Dichlorodifluoromethane	0.02	<	72	<0.2	<0.2	<1	<0.2	<1	
Vinyl Chloride	0.02	<	83	<0.2	<0.2	<1	<0.2	<1	
Bromomethane	0.09	<	99	<0.9	<0.9	<4.5	<0.9	<4.5	
Trichlorofluoromethane	0.02	<	74	<0.2	<0.2	<1	<0.2	<1	
1,1-Dichloroethene	0.01	<	88	<0.1	<0.1	<0.5	<0.1	<0.5	
Acetone	0.1	<	94	<1	<1	<5	<1	<5	
Methylene Chloride	0.1	<	93	<1	<1	<5	<1	<5	
trans,1,2-Dichloroethene	0.01	<	91	<0.1	<0.1	<0.5	<0.1	<0.5	
2-Butanone	0.01	<	70	<0.1	<0.1	<0.5	<0.1	<0.5	
Chloroform	0.01	<	83	<0.1	<0.1	<0.5	<0.1	<0.5	
1,1,1-Trichloroethane	0.01	<	92	<0.1	<0.1	<0.5	<0.1	<0.5	
Carbon Tetrachloride	0.01	<	88	<0.1	<0.1	<0.5	<0.1	<0.5	
Benzene	0.05	<	86	<0.5	<0.5	<2.5	<0.5	<2.5	
1,2-Dichloroethane	0.01	<	92	<0.1	<0.1	<0.5	<0.1	<0.5	
Trichloroethene	0.01	<	82	<0.1	<0.1	<0.5	<0.1	<0.5	
1,2-Dichloropropane	0.01	<	92	<0.1	<0.1	<0.5	<0.1	<0.5	
Bromodichloromethane	0.01	<	87	<0.1	<0.1	<0.5	<0.1	<0.5	
Toluene	0.05	<	84	2.69	3.74	1.50 Y	4.00	3.35	
1,1,2-Trichloroethane	0.02	<	92	<0.2	<0.2	<1	<0.2	<1	
Tetrachloroethene	0.01	<	70	<0.1	<0.1	<0.5	<0.1	<0.5	
Chlorodibromomethane	0.01	<	94	<0.1	<0.1	<0.5	<0.1	<0.5	
Ethylene Dibromide	0.02	<	98	<0.2	<0.2	<1	<0.2	<1	
Chlorobenzene	0.01	<	90	<0.1	<0.1	<0.5	<0.1	<0.5	
Ethylbenzene	0.01	<	95	<0.1	<0.1	<0.5	<0.1	<0.5	
M&P-Xylene	0.03	<	122	<0.3	<0.3	<1.5	<0.3	<1.5	
O-Xylene	0.01	<	117	<0.1	<0.1	<0.5	<0.1	<0.5	
Styrene	0.02	<	95	<0.2	<0.2	<1	<0.2	<1	
Bromoform	0.01	<	69	<0.1	<0.1	<0.5	<0.1	<0.5	
Isopropylbenzene	0.02	<	108	<0.2	<0.2	<1	<0.2	<1	
1,3,5-Trimethylbenzene	0.02	<	112	<0.2	<0.2	<1	<0.2	<1	
1,3-Butadiene	0.02	<	NS	<0.02	<0.02	<0.02	<0.2	<0.02	
Trichlorotrifluoroethane	0.02	<	NS	<0.2	<0.2	<1	<0.2	<1	
Field Standard		**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	
d10-Ethylbenzene		75	62	66	91	39	116	118	
Surrogate Standards		**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
d4-1,2-Dichloroethane		122	116	126	126	120	128	127	50-150
d8-Toluene		122	111	116	120	120	128	125	50-150
4-Bromofluorobenzene		80	106	82	87	84	76	79	50-150
Internal Standards		**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
Bromochloromethane		116	125	134	70	96	77	90	50-200
1,4-Difluorobenzene		136	117	137	79	94	86	104	50-200
d5-Chlorobenzene		127	121	127	79	73	79	98	50-200

APPENDIX 28

Aldehydes Recovery Data Sheets
(8 page)

Method 430 Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21546
Test No.:	1
Test Location:	#1 APC Outlet
Test Date:	1 oct 15

Impingers 1, 2, 3 & 4

Impinger 1 (10 ml DNPH)	
Empty Mass:	88.0
Initial Mass:	97.8
Final Mass:	101.8
Gain:	4.0

Impinger 2 (10 ml DNPH)	
Empty Mass:	102.4
Initial Mass:	112.4
Final Mass:	112.6
Gain:	0.2

Impinger 3 (Empty)	
Initial Mass:	99.8
Final Mass:	100.0
Gain:	0.2

Impinger 4 (Silica Gel)	
Initial Mass:	111.8
Final Mass:	112.4
Gain:	0.6

Sample ID: 15-21546-M430-1

Probe, Imp. 1 plus rinsings	
Colour:	Yellow
Bottle empty:	176.8
Mass with impingers:	190.0
With DNPH rinse:	193.8
With H2O rinse:	195.6
Total sample:	18.8

Sample ID: 15-21546-M430-2

Imp. 2&3 plus rinsings	
Colour:	Yellow
Bottle empty:	175.3
Mass with impingers:	184.6
With DNPH rinse:	188.4
With H2O rinse:	191.2
Total sample:	15.9

Total Moisture Gain: 5.0 ✓

Train Loaded By:	TS
Train Recovered By:	TS
Recovery Witnessed By:	–
Date:	1 oct 15

Method 430 Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21546
Test No.:	2
Test Location:	#1 APC outlet
Test Date:	2 Oct 15

Impingers 1, 2, 3 & 4

Impinger 1 (10 ml DNPH)	
Empty Mass:	88.2
Initial Mass:	98.2
Final Mass:	102.1
Gain:	3.9

Impinger 2 (10 ml DNPH)	
Empty Mass:	102.3
Initial Mass:	112.3
Final Mass:	112.3
Gain:	—

Impinger 3 (Empty)	
Initial Mass:	99.9
Final Mass:	99.9
Gain:	—

Impinger 4 (Silica Gel)	
Initial Mass:	112.3
Final Mass:	112.5
Gain:	0.2

Sample ID: 15-21546-M430-3

Probe, Imp. 1 plus rinsings	
Colour:	Yellow
Bottle empty:	28.4
Mass with impingers:	42.1
With DNPH rinse:	46.2
With H2O rinse:	48.4
Total sample:	20.0

Sample ID: 15-21546-M430-4

Imp. 2&3 plus rinsings	
Colour:	Yellow
Bottle empty:	29.0
Mass with impingers:	39.1
With DNPH rinse:	43.0
With H2O rinse:	45.0
Total sample:	16.0

Total Moisture Gain: 4.1 ✓

Train Loaded By:	TJ
Train Recovered By:	TS
Recovery Witnessed By:	—
Date:	2 Oct 15

Method 430 Train Recovery Data Sheet

Client:	**Covanta DYEC**
Project No.:	**21546**
Test No.:	3
Test Location:	#1 APC outlet
Test Date:	2 Oct 15

Impingers 1, 2, 3 & 4

Impinger 1 (10 ml DNPH)	
Empty Mass:	88.4
Initial Mass:	98.4
Final Mass:	102.5
Gain:	4.1

Impinger 2 (10 ml DNPH)	
Empty Mass:	102.0
Initial Mass:	111.8
Final Mass:	111.8
Gain:	—

Impinger 3 (Empty)	
Initial Mass:	99.5
Final Mass:	99.5
Gain:	—

Impinger 4 (Silica Gel)	
Initial Mass:	112.5
Final Mass:	112.9
Gain:	0.4

Sample ID: 15-21546-M430-5

Probe, Imp. 1 plus rinsings	
Colour:	Yellow
Bottle empty:	28.0
Mass with impingers:	42.2
With DNPH rinse:	46.1
With H2O rinse:	48.1
Total sample:	

Sample ID: 15-21546-M430-6

Imp. 2&3 plus rinsings	
Colour:	Yellow
Bottle empty:	28.0
Mass with impingers:	37.2
With DNPH rinse:	40.9
With H2O rinse:	42.8
Total sample:	14.8

Total Moisture Gain: 4.5 ✓

Train Loaded By:	TS
Train Recovered By:	TS
Recovery Witnessed By:	—
Date:	2 Oct 15

Method 430 Train Recovery Data Sheet

Client:	**Covanta DYEC**
Project No.:	**21546**
Test No.:	Blank
Test Location:	#1 APC Outlet
Test Date:	1 Oct 15

Impingers 1, 2, 3 & 4	

Impinger 1 (10 ml DNPH)	
Empty Mass:	88.3
Initial Mass:	98.3
Final Mass:	98.3
Gain:	—

Impinger 2 (10 ml DNPH)	
Empty Mass:	102.0
Initial Mass:	111.8
Final Mass:	111.8
Gain:	—

Impinger 3 (Empty)	
Initial Mass:	99.2
Final Mass:	99.2
Gain:	—

Impinger 4 (Silica Gel)	
Initial Mass:	111.8
Final Mass:	111.8
Gain:	—

Sample ID: 15-21546-M430-7

Probe, Imp. 1 plus rinsings	
Colour:	~~123.7~~ Yellow
Bottle empty:	123.7
Mass with impingers:	133.6
With DNPH rinse:	137.3
With H2O rinse:	139.2
Total sample:	15.5

Sample ID: 15-21546-M430-8

Imp. 2&3 plus rinsings	
Colour:	Yellow
Bottle empty:	123.8
Mass with impingers:	133.2
With DNPH rinse:	137.2
With H2O rinse:	139.3
Total sample:	15.5

Total Moisture Gain:	—

Train Loaded By:	TS
Train Recovered By:	TS
Recovery Witnessed By:	—
Date:	1 Oct 15

Method 430 Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21546
Test No.:	1
Test Location:	#2 APC Outlet
Test Date:	1 Oct 15

Impingers 1, 2, 3 & 4

Impinger 1 (10 ml DNPH)	
Empty Mass:	88.9
Initial Mass:	98.8
Final Mass:	104.4
Gain:	5.6

Impinger 2 (10 ml DNPH)	
Empty Mass:	90.2
Initial Mass:	100.3
Final Mass:	101.5
Gain:	1.2

Impinger 3 (Empty)	
Initial Mass:	91.6
Final Mass:	
Gain:	

Impinger 4 (Silica Gel)	
Initial Mass:	120.7
Final Mass:	121.5
Gain:	0.8

Sample ID: 15 - 21546 - M430 - 11

Probe, Imp. 1 plus rinsings	
Colour:	Yellow
Bottle empty:	166.9
Mass with impingers:	181.4
With DNPH rinse:	187.0
With H2O rinse:	189.2
Total sample:	22.3

Sample ID: 15 - 21546 - M430 - 12

Imp. 2&3 plus rinsings	
Colour:	Yellow
Bottle empty:	174.0
Mass with impingers:	183.8
With DNPH rinse:	185.7
With H2O rinse:	187.1
Total sample:	13.1

Total Moisture Gain: 7.6 ✓

Train Loaded By:	TD
Train Recovered By:	TD
Recovery Witnessed By:	—
Date:	1 Oct 15

Method 430 Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21546
Test No.:	2
Test Location:	#2 mpc outlet
Test Date:	2 oct 15

Impingers 1, 2, 3 & 4

Impinger 1 (10 ml DNPH)	
Empty Mass:	89.7
Initial Mass:	99.5
Final Mass:	105.3
Gain:	5.8

Impinger 2 (10 ml DNPH)	
Empty Mass:	91.7
Initial Mass:	101.6
Final Mass:	101.7
Gain:	0.1

Impinger 3 (Empty)	
Initial Mass:	99.4
Final Mass:	99.4
Gain:	—

Impinger 4 (Silica Gel)	
Initial Mass:	121.5
Final Mass:	121.7
Gain:	0.2

Sample ID: 15-21546-M430-13

Probe, Imp. 1 plus rinsings	
Colour:	Yellow
Bottle empty:	28.2
Mass with impingers:	43.8
With DNPH rinse:	48.2
With H2O rinse:	50.8
Total sample:	22.6

Sample ID: 15-21546-M430-14

Imp. 2&3 plus rinsings	
Colour:	Yellow
Bottle empty:	28.1
Mass with impingers:	38.2
With DNPH rinse:	43.0
With H2O rinse:	44.9
Total sample:	16.8

Total Moisture Gain: 6.1 ✓

Train Loaded By:	TS
Train Recovered By:	TS
Recovery Witnessed By:	—
Date:	2 Oct 15

Method 430 Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21546
Test No.:	3
Test Location:	#2 APC Outlet
Test Date:	2 oct 15

Impingers 1, 2, 3 & 4

Impinger 1 (10 ml DNPH)	
Empty Mass:	89.6
Initial Mass:	99.8
Final Mass:	101.4
Gain:	1.6

Impinger 2 (10 ml DNPH)	
Empty Mass:	91.4
Initial Mass:	101.9
Final Mass:	102.1
Gain:	0.2

Impinger 3 (Empty)	
Initial Mass:	99.7
Final Mass:	99.7
Gain:	—

Impinger 4 (Silica Gel)	
Initial Mass:	121.7
Final Mass:	121.9
Gain:	0.2

Sample ID: 15-21546-M430-15

Probe, Imp. 1 plus rinsings	
Colour:	Yellow
Bottle empty:	27.9
Mass with impingers:	39.1
With DNPH rinse:	43.8
With H2O rinse:	46.9
Total sample:	19.0

Sample ID: 15-21546-M430-16

Imp. 2&3 plus rinsings	
Colour:	Yellow
Bottle empty:	28.0
Mass with impingers:	38.0
With DNPH rinse:	41.6
With H2O rinse:	43.9
Total sample:	15.9

Total Moisture Gain: 2.0 ✓

Train Loaded By:	TS
Train Recovered By:	TS
Recovery Witnessed By:	—
Date:	2 oct 15

Method 430 Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21546
Test No.:	Blank
Test Location:	#2 APC Outlet
Test Date:	1 Oct 15

Impingers 1, 2, 3 & 4

Impinger 1 (10 ml DNPH)	
Empty Mass:	88.4
Initial Mass:	98.3
Final Mass:	98.3
Gain:	—

Impinger 2 (10 ml DNPH)	
Empty Mass:	89.2
Initial Mass:	99.1
Final Mass:	99.1
Gain:	—

Impinger 3 (Empty)	
Initial Mass:	91.0
Final Mass:	91.0
Gain:	—

Impinger 4 (Silica Gel)	
Initial Mass:	120.7
Final Mass:	120.7
Gain:	—

Sample ID: 15-21546-M430-17

Probe, Imp. 1 plus rinsings	
Colour:	Yellow
Bottle empty:	77.9
Mass with impingers:	87.4
With DNPH rinse:	91.2
With H2O rinse:	93.2
Total sample:	15.3

Sample ID: 15-21546-M430-18

Imp. 2&3 plus rinsings	
Colour:	~~73~~ Yellow
Bottle empty:	77.8
Mass with impingers:	87.8
With DNPH rinse:	91.9
With H2O rinse:	93.5
Total sample:	15.7

Total Moistur Gain: —

Train Loaded By: TS

Train Recovered By: TS

Recovery Witnessed By: —

Date: 1 Oct 15

APPENDIX 29

Aldehydes Analytical Reports
(22 pages)

ALS Environmental

12-Oct-2015

Rachael Stolys
ALS
1435 Norjohn Court
Unit 1
Burlington, Ontario L7L0E6

Tel: (905) 331-3111
Fax:

Re: L1682778 Work Order: **1510238**

Dear Rachael,

ALS Environmental received 16 samples on 06-Oct-2015 10:29 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 22.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Shawn Smythe

Electronically approved by: Shawn Smythe

Shawn Smythe
Project Manager

ALS Environmental

Date: 12-Oct-15

Client: ALS
Project: L1682778
Work Order: 1510238

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1510238-01	1	Liquid		10/1/2015	10/6/2015 10:29	☐
1510238-02	2	Liquid		10/1/2015	10/6/2015 10:29	☐
1510238-03	3	Liquid		10/2/2015	10/6/2015 10:29	☐
1510238-04	4	Liquid		10/2/2015	10/6/2015 10:29	☐
1510238-05	5	Liquid		10/2/2015	10/6/2015 10:29	☐
1510238-06	6	Liquid		10/2/2015	10/6/2015 10:29	☐
1510238-07	7	Liquid		10/1/2015	10/6/2015 10:29	☐
1510238-08	8	Liquid		10/1/2015	10/6/2015 10:29	☐
1510238-09	11	Liquid		10/1/2015	10/6/2015 10:29	☐
1510238-10	12	Liquid		10/1/2015	10/6/2015 10:29	☐
1510238-11	13	Liquid		10/2/2015	10/6/2015 10:29	☐
1510238-12	14	Liquid		10/2/2015	10/6/2015 10:29	☐
1510238-13	15	Liquid		10/2/2015	10/6/2015 10:29	☐
1510238-14	16	Liquid		10/2/2015	10/6/2015 10:29	☐
1510238-15	17	Liquid		10/1/2015	10/6/2015 10:29	☐
1510238-16	18	Liquid		10/1/2015	10/6/2015 10:29	☐

Client:	ALS
Project:	L1682778
Work Order:	1510238

Case Narrative

The analytical data provided relates directly to the samples received by ALS Laboratory Group and for only the analyses requested.

Results relate only to the items tested and are not blank corrected unless indicated.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

ALS Environmental

Date: *12-Oct-15*

Client: ALS
Project: L1682778
Sample ID: 1
Collection Date: 10/1/2015

Work Order: 1510238
Lab ID: 1510238-01
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			**CARB430**		Prep Date: **10/11/2015**	Analyst: **MHW**
Acetaldehyde	**7.9**		**1.8**	**µg/sample**	1	10/11/2015 11:06 PM
Acrolein	ND		1.8	µg/sample	1	10/11/2015 11:06 PM
formaldehyde	**7.2**		**1.8**	**µg/sample**	1	10/11/2015 11:06 PM

Note:

ALS Environmental

Date: *12-Oct-15*

Client: ALS
Project: L1682778
Sample ID: 2
Collection Date: 10/1/2015

Work Order: 1510238
Lab ID: 1510238-02
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			**CARB430**		Prep Date: **10/11/2015**	Analyst: **MHW**
Acetaldehyde	**8.7**		**1.6**	**µg/sample**	1	10/11/2015 11:26 PM
Acrolein	ND		1.6	µg/sample	1	10/11/2015 11:26 PM
formaldehyde	**8.2**		**1.6**	**µg/sample**	1	10/11/2015 11:26 PM

Note:

ALS Environmental

Date: *12-Oct-15*

Client:	ALS		
Project:	L1682778	**Work Order:**	1510238
Sample ID:	3	**Lab ID:**	1510238-03
Collection Date:	10/2/2015	**Matrix:**	LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			**CARB430**		Prep Date: **10/11/2015**	Analyst: **MHW**
Acetaldehyde	**12**		**2.0**	**µg/sample**	1	10/11/2015 11:47 PM
Acrolein	ND		2.0	µg/sample	1	10/11/2015 11:47 PM
formaldehyde	**14**		**2.0**	**µg/sample**	1	10/11/2015 11:47 PM

Note:

ALS Environmental

Date: *12-Oct-15*

Client: ALS
Project: L1682778
Sample ID: 4
Collection Date: 10/2/2015

Work Order: 1510238
Lab ID: 1510238-04
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			**CARB430**		Prep Date: **10/11/2015**	Analyst: **MHW**
Acetaldehyde	**8.9**		**1.6**	**µg/sample**	1	10/12/2015 12:08 AM
Acrolein	ND		1.6	µg/sample	1	10/12/2015 12:08 AM
formaldehyde	**6.6**		**1.6**	**µg/sample**	1	10/12/2015 12:08 AM

Note:

ALS Environmental

Date: *12-Oct-15*

Client:	ALS		
Project:	L1682778	**Work Order:**	1510238
Sample ID:	5	**Lab ID:**	1510238-05
Collection Date:	10/2/2015	**Matrix:**	LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			**CARB430**		Prep Date: **10/11/2015**	Analyst: **MHW**
Acetaldehyde	**15**		**2.0**	**µg/sample**	1	10/12/2015 12:29 AM
Acrolein	ND		2.0	µg/sample	1	10/12/2015 12:29 AM
formaldehyde	**20**		**2.0**	**µg/sample**	1	10/12/2015 12:29 AM

Note:

ALS Environmental

Date: *12-Oct-15*

Client: ALS
Project: L1682778 **Work Order:** 1510238
Sample ID: 6 **Lab ID:** 1510238-06
Collection Date: 10/2/2015 **Matrix:** LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			**CARB430**		Prep Date: **10/11/2015**	Analyst: **MHW**
Acetaldehyde	**5.7**		**1.5**	**µg/sample**	1	10/12/2015 12:49 AM
Acrolein	ND		1.5	µg/sample	1	10/12/2015 12:49 AM
formaldehyde	**3.9**		**1.5**	**µg/sample**	1	10/12/2015 12:49 AM

Note:

Client:	ALS		
Project:	L1682778	**Work Order:**	1510238
Sample ID:	7	**Lab ID:**	1510238-07
Collection Date:	10/1/2015	**Matrix:**	LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			**CARB430**		Prep Date: **10/11/2015**	Analyst: **MHW**
Acetaldehyde	**6.5**		**1.6**	**µg/sample**	1	10/12/2015 01:10 AM
Acrolein	ND		1.6	µg/sample	1	10/12/2015 01:10 AM
formaldehyde	**6.0**		**1.6**	**µg/sample**	1	10/12/2015 01:10 AM

Note:

ALS Environmental

Date: *12-Oct-15*

Client: ALS
Project: L1682778
Sample ID: 8
Collection Date: 10/1/2015

Work Order: 1510238
Lab ID: 1510238-08
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			**CARB430**		Prep Date: **10/11/2015**	Analyst: **MHW**
Acetaldehyde	**7.7**		**1.6**	**µg/sample**	1	10/12/2015 01:51 AM
Acrolein	ND		1.6	µg/sample	1	10/12/2015 01:51 AM
formaldehyde	**13**		**1.6**	**µg/sample**	1	10/12/2015 01:51 AM

Note:

ALS Environmental

Date: *12-Oct-15*

Client: ALS
Project: L1682778
Sample ID: 11
Collection Date: 10/1/2015

Work Order: 1510238
Lab ID: 1510238-09
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			CARB430		Prep Date: **10/11/2015**	Analyst: **MHW**
Acetaldehyde	**23**		**2.2**	**µg/sample**	1	10/12/2015 02:12 AM
Acrolein	ND		2.2	µg/sample	1	10/12/2015 02:12 AM
formaldehyde	**68**		**2.2**	**µg/sample**	1	10/12/2015 02:12 AM

Note:

ALS Environmental

Date: *12-Oct-15*

Client: ALS
Project: L1682778
Sample ID: 12
Collection Date: 10/1/2015

Work Order: 1510238
Lab ID: 1510238-10
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			CARB430		Prep Date: **10/11/2015**	Analyst: **MHW**
Acetaldehyde	**9.9**		**1.4**	**µg/sample**	1	10/12/2015 02:33 AM
Acrolein	ND		1.4	µg/sample	1	10/12/2015 02:33 AM
formaldehyde	**9.8**		**1.4**	**µg/sample**	1	10/12/2015 02:33 AM

Note:

ALS Environmental

Date: *12-Oct-15*

Client: ALS
Project: L1682778
Sample ID: 13
Collection Date: 10/2/2015

Work Order: 1510238
Lab ID: 1510238-11
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			**CARB430**		Prep Date: **10/11/2015**	Analyst: **MHW**
Acetaldehyde	**14**		**2.2**	**µg/sample**	1	10/12/2015 02:54 AM
Acrolein	ND		2.2	µg/sample	1	10/12/2015 02:54 AM
formaldehyde	**16**		**2.2**	**µg/sample**	1	10/12/2015 02:54 AM

Note:

ALS Environmental

Date: *12-Oct-15*

Client: ALS
Project: L1682778
Sample ID: 14
Collection Date: 10/2/2015

Work Order: 1510238
Lab ID: 1510238-12
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			**CARB430**		Prep Date: **10/11/2015**	Analyst: **MHW**
Acetaldehyde	**10**		**1.7**	**µg/sample**	1	10/12/2015 03:14 AM
Acrolein	ND		1.7	µg/sample	1	10/12/2015 03:14 AM
formaldehyde	**23**		**1.7**	**µg/sample**	1	10/12/2015 03:14 AM

Note:

ALS Environmental

Date: *12-Oct-15*

Client:	ALS		
Project:	L1682778	**Work Order:**	1510238
Sample ID:	15	**Lab ID:**	1510238-13
Collection Date:	10/2/2015	**Matrix:**	LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			**CARB430**		Prep Date: **10/11/2015**	Analyst: **MHW**
Acetaldehyde	**10**		**1.9**	**µg/sample**	1	10/12/2015 03:35 AM
Acrolein	ND		1.9	µg/sample	1	10/12/2015 03:35 AM
formaldehyde	**11**		**1.9**	**µg/sample**	1	10/12/2015 03:35 AM

Note:

ALS Environmental

Date: *12-Oct-15*

Client:	ALS		
Project:	L1682778	**Work Order:**	1510238
Sample ID:	16	**Lab ID:**	1510238-14
Collection Date:	10/2/2015	**Matrix:**	LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			**CARB430**		Prep Date: **10/11/2015**	Analyst: **MHW**
Acetaldehyde	**6.6**		**1.6**	**µg/sample**	1	10/12/2015 03:56 AM
Acrolein	ND		1.6	µg/sample	1	10/12/2015 03:56 AM
formaldehyde	**4.8**		**1.6**	**µg/sample**	1	10/12/2015 03:56 AM

Note:

ALS Environmental

Date: *12-Oct-15*

Client: ALS
Project: L1682778
Sample ID: 17
Collection Date: 10/1/2015

Work Order: 1510238
Lab ID: 1510238-15
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			CARB430		Prep Date: **10/11/2015**	Analyst: **MHW**
Acetaldehyde	**6.6**		**1.5**	**µg/sample**	1	10/12/2015 04:16 AM
Acrolein	ND		1.5	µg/sample	1	10/12/2015 04:16 AM
formaldehyde	**11**		**1.5**	**µg/sample**	1	10/12/2015 04:16 AM

Note:

ALS Environmental

Date: *12-Oct-15*

Client: ALS
Project: L1682778
Sample ID: 18
Collection Date: 10/1/2015

Work Order: 1510238
Lab ID: 1510238-16
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			**CARB430**		Prep Date: **10/11/2015**	Analyst: **MHW**
Acetaldehyde	**7.9**		**1.7**	**µg/sample**	1	10/12/2015 04:37 AM
Acrolein	ND		1.7	µg/sample	1	10/12/2015 04:37 AM
formaldehyde	**21**		**1.7**	**µg/sample**	1	10/12/2015 04:37 AM

Note:

ALS Environmental

Client: ALS
Work Order: 1510238
Project: L1682778

Date: 12-Oct-15

QC BATCH REPORT

Batch ID: **31220** Instrument ID: **HPLC2** Method: **CARB430**

MBLK Sample ID: **MBLK-31220-31220** Units: **µg/sample** Analysis Date: **10/11/2015 10:45 PM**
Client ID: Run ID: **HPLC2_151011A** SeqNo: **1149679** Prep Date: **10/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acetaldehyde	0.3057	0.10								
Acrolein	ND	0.10								
formaldehyde	ND	0.10								

LCS Sample ID: **LCS-31220-31220** Units: **µg/sample** Analysis Date: **10/11/2015 10:03 PM**
Client ID: Run ID: **HPLC2_151011A** SeqNo: **1149677** Prep Date: **10/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acetaldehyde	0.8641	0.10	2	0	43.2	70-130	0			S
formaldehyde	1.704	0.10	2	0	85.2	70-130	0			

LCSD Sample ID: **LCSD-31220-31220** Units: **µg/sample** Analysis Date: **10/11/2015 10:24 PM**
Client ID: Run ID: **HPLC2_151011A** SeqNo: **1149678** Prep Date: **10/11/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acetaldehyde	1.2	0.10	2	0	60	70-130	0.8641	32.5	20	SR
formaldehyde	1.707	0.10	2	0	85.4	70-130	1.704	0.164	20	

The following samples were analyzed in this batch:

1510238-01A	1510238-02A	1510238-03A
1510238-04A	1510238-05A	1510238-06A
1510238-07A	1510238-08A	1510238-09A
1510238-10A	1510238-11A	1510238-12A
1510238-13A	1510238-14A	1510238-15A
1510238-16A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Environmental

Date: 12-Oct-15

Client: ALS
Project: L1682778
WorkOrder: 1510238

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
E	EPA Method
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SDL	Sample Detection Limit
SW	SW-846 Method

Units Reported	Description
µg/sample	

ALS Environmental

Sample Receipt Checklist

Client Name: **ALS-BURLINGTON**

Date/Time Received: **06-Oct-15 10:29**

Work Order: **1510238**

Received by: **SNH**

Checklist completed by: Shiloh Greenwald (eSignature) 08-Oct-15 (Date)

Reviewed by: Shawn Smythe (eSignature) 08-Oct-15 (Date)

Matrices:

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	4.1		
Cooler(s)/Kit(s):			
Water - VOA vials have zero headspace?	Yes ☐	No ☑	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:

APPENDIX 30

SVOC and VOST Proof Data
(13 pages)

ALS Environmental
1435 Norjohn Court Unit 1 Burlington ON
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L1588374		Mississauga, ON L5J 2Y4
Date of Report	1-Oct-15		Canada
		Client Contact:	Chris Belore
		Client Project ID:	21546

COMMENTS:

Toxic PCDD/F and PCB Congeners by GC/HRMS
PCB Congeners by GC/MS
Chlorophenols as acetate derivatives by SIM GC/MS
CB by Low Res SIM GCMS
PAH by CARB method 429 (LR option)- Isotope dilution
VOCs via SW846 Method 5041A/8260B

Certified by: R.A. McLeod

Ron McLeod, PhD
Director, Air Toxics and Special Chemistries, Eastern Canada

Results in this certificate relate only to the samples as submitted to the laboratory.

ALS Environmental

Sample Analysis Summary Report

Sample Name	**GLASSWARE PROOF**
ALS Sample ID	L1588374-64
Matrix	Stack

Target Analyte	pg/train
2,3,7,8-TCDD	<50
1,2,3,7,8-PeCDD	<50
1,2,3,4,7,8-HxCDD	<50
1,2,3,6,7,8-HxCDD	<50
1,2,3,7,8,9-HxCDD	<50
1,2,3,4,6,7,8-HpCDD	<50
OCDD	<50
2,3,7,8-TCDF	<50
1,2,3,7,8-PeCDF	<50
2,3,4,7,8-PeCDF	<50
1,2,3,4,7,8-HxCDF	<50
1,2,3,6,7,8-HxCDF	<50
2,3,4,6,7,8-HxCDF	<50
1,2,3,7,8,9-HxCDF	<50
1,2,3,4,6,7,8-HpCDF	<50
1,2,3,4,7,8,9-HpCDF	<50
OCDF	<50

ALS Environmental

Sample Analysis Summary Report

Sample Name	**GLASSWARE PROOF**
ALS Sample ID	L1588374-64
Matrix	Stack

Target Analytes	**ng/train**
Monochlorobiphenyls	<50
Dichlorobiphenyls	<50
Trichlorobiphenyls	<50
Tetrachlorobiphenyls	<50
Pentachlorobiphenyls	<50
Hexachlorobiphenyls	<50
Heptachlorobiphenyls	<50
Octachlorobiphenyls	<50
Nonachlorobiphenyls	<50
Decachlorobiphenyl	<50

ALS Environmental

Sample Analysis Summary Report

Sample Name	**GLASSWARE PROOF**
ALS Sample ID	L1588374-64
Matrix	Stack

Target Analytes	**ng/train**
2-Chlorophenol	<50
3-Chlorophenol	<50
4-Chlorophenol	<50
2,6-Dichlorophenol	<50
2,4/2,5-Dichlorophenol	<50
3,5-Dichlorophenol	<50
2,3-Dichlorophenol	<50
3,4-Dichlorophenol	<50
2,4,6-Trichlorophenol	<50
2,3,6-Trichlorophenol	<50
2,3,5-Trichlorophenol	<50
2,4,5-Trichlorophenol	<50
2,3,4-Trichlorophenol	<50
3,4,5-Trichlorophenol	<50
2,3,5,6/2,3,4,6-Tetrachlorophenol	<50
2,3,4,5-Tetrachlorophenol	<50
Pentachlorophenol	<50

ALS Environmental

Sample Analysis Summary Report

Sample Name	**GLASSWARE PROOF**
ALS Sample ID	L1588374-64
Matrix	Stack

Target Analytes	**ng/sample**
1,3-Dichlorobenzene	<50
1,4-Dichlorobenzene	<50
1,2-Dichlorobenzene	<50
1,3,5-Trichlorobenzene	<50
1,2,4-Trichlorobenzene	<50
1,2,3-Trichlorobenzene	<50
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<50
1,2,3,4-Tetrachlorobenzene	<50
Pentachlorobenzene	<50
Hexachlorobenzene	<50

ALS Environmental

Sample Analysis Summary Report

Sample Name	GLASSWARE PROOF
ALS Sample ID	L1588374-64

Target Analytes	ng/train
Naphthalene	<50
2-Methylnaphthalene	<50
1-Methylnaphthalene	<50
Acenaphthylene	<50
Acenaphthene	<50
Fluorene	<50
Phenanthrene	<50
Anthracene	<50
Fluoranthene	<50
Pyrene	<50
Benzo(a)Anthracene	<50
Chrysene	<50
Benzo(b)Fluoranthene	<50
Benzo(k)Fluoranthene	<50
Benzo(e)Pyrene	<50
Benzo(a)Pyrene	<50
Perylene	<50
Indeno(1,2,3-cd)Pyrene	<50
Dibenzo(a,h)Anthracene	<50
Benzo(g,h,i)Perylene	<50
Tetralin	<50
Quinoline	<50
2-Chloronaphthalene	<50
Biphenyl	<50
o-Terphenyl	<50
1-Methylphenanthrene	<50
9-Methylphenanthrene	<50
2-methylanthracene	<50
9,10-dimethylanthracene	<50
m-terphenyl	<50
p-terphenyl	<50
Benzo(a)fluorene	<50
Benzo(b)fluorene	<50
Benzo(b)anthracene	<50
Benzo(j)fluoranthene	<50
7,12-Dimethylbenzo(a)anthracene	<50
3-Methylcholanthrene	<50
Picene	<50
Dibenzo(a,e)pyrene	<50
Coronene	<50

ALS Environmental

Sample Analysis Summary Report

Instrument		MSD-3			Sample Matrix	VOST Tube	
Column		Rxi-624Sil MS 1099869			Analysis Units	ug/sample	
Acquisition Start Date		9/17/2015				ug/sample	
Sample Name		**Laboratory Method Blank**	**Laboratory Control Sample**	**sample**	**sample**	**sample**	**Recovery Control Limtis**
Client Sample ID							
ALS Sample ID		VOST-blank	VOST-RS	VOST-proof	VOST-proof	VOST-proof	
Filename		15091711.D	15091707.D	15091713.D	15091714.D	15091715.D	
		Blank	LCS	sample	sample	sample	
Sampling date							
Acquisition Time		##########	9/17/2015 16:59	9/17/2015 20:09	9/17/2015 20:35	9/17/2015 21:01	
Target Analyte	**RL ug/sample**	**Conc. ug/sample**	**% Rec**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	
Dichlorodifluoromethane	0.02	<	118	<0.02	<0.02	<0.02	
Vinyl Chloride	0.02	<	105	<0.02	<0.02	<0.02	
Bromomethane	0.09	<	102	<0.09	<0.09	<0.09	
Trichlorofluoromethane	0.02	<	110	<0.02	<0.02	<0.02	
1,1-Dichloroethene	0.01	<	110	<0.01	<0.01	<0.01	
Acetone	0.1	<	128	<0.1	<0.1	<0.1	
Methylene Chloride	0.1	<	104	<0.1	<0.1	<0.1	
trans,1,2-Dichloroethene	0.01	<	84	<0.01	<0.01	<0.01	
2-Butanone	0.01	<	139	<0.01	<0.01	<0.01	
Chloroform	0.01	<	79	<0.01	<0.01	<0.01	
1,1,1-Trichloroethane	0.01	<	87	<0.01	<0.01	<0.01	
Carbon Tetrachloride	0.01	<	93	<0.01	<0.01	<0.01	
Benzene	0.05	<	99	<0.05	<0.05	<0.05	
1,2-Dichloroethane	0.01	<	87	<0.01	<0.01	<0.01	
Trichloroethene	0.01	<	97	<0.01	<0.01	<0.01	
1,2-Dichloropropane	0.01	<	104	<0.01	<0.01	<0.01	
Bromodichloromethane	0.01	<	90	<0.01	<0.01	<0.01	
Toluene	0.05	<	109	<0.05	<0.05	<0.05	
1,1,2-Trichloroethane	0.02	<	118	<0.02	<0.02	<0.02	
Tetrachloroethene	0.01	<	118	<0.01	<0.01	<0.01	
Chlorodibromomethane	0.01	<	122	<0.01	<0.01	<0.01	
Ethylene Dibromide	0.02	<	127	<0.02	<0.02	<0.02	
Ethylbenzene	0.01	<	114	<0.01	<0.01	<0.01	
M&P-Xylene	0.03	<	122	<0.03	<0.03	<0.03	
O-Xylene	0.01	<	124	<0.01	<0.01	<0.01	
Styrene	0.02	<	119	<0.02	<0.02	<0.02	
Bromoform	0.01	<	114	<0.01	<0.01	<0.01	
Isopropylbenzene	0.02	<	124	<0.02	<0.02	<0.02	
1,3,5-Trimethylbenzene	0.02	<	126	<0.02	<0.02	<0.02	
n-Propylbenzene	0.02	<	NS	<0.02	<0.02	<0.02	
1,3-Butadiene	0.02	<	NS	<0.02	<0.02	<0.02	
Field Standard		**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	
d10-Ethylbenzene		97	100	99	125	97	
Surrogate Standards		**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
d4-1,2-Dichloroethane		123	87	118	117	118	50-150
d8-Toluene		139	118	125	126	118	50-150
4-Bromofluorobenzene		57	85	59	65	62	50-150
Internal Standards		**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
Bromochloromethane		127	110	118	109	139	50-200
1,4-Difluorobenzene		101	107	112	110	132	50-200
d5-Chlorobenzene		87	108	98	100	125	50-200

ALS Environmental

5420 Mainway Drive, Unit 5, Burlington ON, L7L 6A4
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road Mississauga, ON L5J 2Y4 Canada
ALS WO#:	L1688793	**Client Contact:**	Chris Belore
Date of Report	20-Oct-15	**Client Project ID:**	21546-2

COMMENTS:

Toxic PCDD/F and PCB Congeners by GC/HRMS
PCB Congeners by GC/MS
Chlorophenols as acetate derivatives by SIM GC/MS
CB by Low Res SIM GCMS
PAH by CARB method 429 (LR option)- Isotope dilution

Certified by: R.A. McLeod

Ron McLeod, PhD
Director, Air Toxics and Special Chemistries, Eastern Canada

ALS Environmental

Sample Analysis Summary Report

Sample Name	**GLASSWARE PROOF**
ALS Sample ID	L1688793-15
Matrix	Stack

Target Analyte	pg/train
2,3,7,8-TCDD	<50
1,2,3,7,8-PeCDD	<50
1,2,3,4,7,8-HxCDD	<50
1,2,3,6,7,8-HxCDD	<50
1,2,3,7,8,9-HxCDD	<50
1,2,3,4,6,7,8-HpCDD	<50
OCDD	<50
2,3,7,8-TCDF	<50
1,2,3,7,8-PeCDF	<50
2,3,4,7,8-PeCDF	<50
1,2,3,4,7,8-HxCDF	<50
1,2,3,6,7,8-HxCDF	<50
2,3,4,6,7,8-HxCDF	<50
1,2,3,7,8,9-HxCDF	<50
1,2,3,4,6,7,8-HpCDF	<50
1,2,3,4,7,8,9-HpCDF	<50
OCDF	<50

ALS Environmental

Sample Analysis Summary Report

Sample Name	**GLASSWARE PROOF**
ALS Sample ID	L1688793-15
Matrix	Stack

Target Analytes

WHO Toxic PCBs	**ng**
PCB-81	<50
PCB-77	<50
PCB-123	<50
PCB-118	<50
PCB-114	<50
PCB-105	<50
PCB-126	<50
PCB-167	<50
PCB-156	<50
PCB-157	<50
PCB-169	<50
PCB-189	<50

ALS Environmental

Sample Analysis Summary Report

Sample Name	GLASSWARE PROOF
ALS Sample ID	L1688793-15
Matrix	Stack

Target Analytes	ng/train
2-Chlorophenol	<50
3-Chlorophenol	<50
4-Chlorophenol	<50
2,6-Dichlorophenol	<50
2,4/2,5-Dichlorophenol	<50
3,5-Dichlorophenol	<50
2,3-Dichlorophenol	<50
3,4-Dichlorophenol	<50
2,4,6-Trichlorophenol	<50
2,3,6-Trichlorophenol	<50
2,3,5-Trichlorophenol	<50
2,4,5-Trichlorophenol	<50
2,3,4-Trichlorophenol	<50
3,4,5-Trichlorophenol	<50
2,3,5,6/2,3,4,6-Tetrachlorophenol	<50
2,3,4,5-Tetrachlorophenol	<50
Pentachlorophenol	<50

ALS Environmental

Sample Analysis Summary Report

Sample Name	**GLASSWARE PROOF**
ALS Sample ID	L1688793-15
Matrix	Stack

Target Analytes	**ng/sample**
1,3-Dichlorobenzene	<50
1,4-Dichlorobenzene	<50
1,2-Dichlorobenzene	<50
1,3,5-Trichlorobenzene	<50
1,2,4-Trichlorobenzene	<50
1,2,3-Trichlorobenzene	<50
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<50
1,2,3,4-Tetrachlorobenzene	<50
Pentachlorobenzene	<50
Hexachlorobenzene	<50

ALS Environmental

Sample Analysis Summary Report

Sample Name	GLASSWARE PROOF
ALS Sample ID	L1688793-15
Target Analytes	**ng/train**
Naphthalene	<50
2-Methylnaphthalene	<50
1-Methylnaphthalene	<50
Acenaphthylene	<50
Acenaphthene	<50
Fluorene	<50
Phenanthrene	<50
Anthracene	<50
Fluoranthene	<50
Pyrene	<50
Benzo(a)Anthracene	<50
Chrysene	<50
Benzo(b)Fluoranthene	<50
Benzo(k)Fluoranthene	<50
Benzo(e)Pyrene	<50
Benzo(a)Pyrene	<50
Perylene	<50
Indeno(1,2,3-cd)Pyrene	<50
Dibenzo(a,h)Anthracene	<50
Benzo(g,h,i)Perylene	<50

APPENDIX 31

ORTECH Equipment Calibration Data
(33 pages)

ORTECH Environmental
Pitot Tube Calibration

Date	January 19, 2015
Probe/Pitot ID	(D2)
MII Number	COE20108
Calibrated Against	B02911
Cp standard	0.99948
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Environmental
Calibrated By	David Utley
Signature	D Utley
Reviewed/Accepted By	

$$Cp = Cpstd \; * \; \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	8.06	0.157	0.218	0.848	0.0018
(0.25")	9.96	0.240	0.337	0.843	0.0029
	12.29	0.365	0.510	0.846	0.0008
	14.79	0.529	0.723	0.855	0.0086
	15.78	0.602	0.853	0.840	0.0067
			Mean	0.846	0.0042
Without Nozzle	7.88	0.150	0.206	0.853	0.0043
	9.71	0.228	0.310	0.857	0.0086
	12.45	0.375	0.519	0.850	0.0011
	14.66	0.520	0.733	0.842	0.0067
	15.75	0.600	0.847	0.841	0.0073
			Mean	0.849	0.0056

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the MOE Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated.
(Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Environmental
Pitot Tube Calibration

Date	January 19, 2015
Probe/Pitot ID	15A
MII Number	B03775
Calibrated Against	B02911
Cp standard	0.99948
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Environmental
Calibrated By	David Utley
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	7.88	0.150	0.210	0.845	0.0008
(0.25")	9.67	0.226	0.310	0.853	0.0079
	11.57	0.324	0.458	0.841	0.0048
	14.09	0.480	0.660	0.852	0.0069
	15.78	0.602	0.860	0.836	0.0092
			Mean	0.845	0.0059

Without Nozzle	7.74	0.145	0.206	0.839	0.0024
	9.54	0.220	0.308	0.845	0.0038
	11.72	0.332	0.472	0.838	0.0027
	14.23	0.490	0.680	0.848	0.0075
	15.75	0.600	0.860	0.835	0.0061
			Mean	0.841	0.0045

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the MOE Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6)..

ORTECH Environmental
Pitot Tube Calibration

Date	January 20, 2015
Probe/Pitot ID	SP4
MII Number	B04011
Calibrated Against	B02911
Cp standard	0.99948
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Environmental
Calibrated By	David Utley
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd \ * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	7.88	0.150	0.208	0.849	0.0013
(0.25")	9.79	0.232	0.326	0.843	0.0043
	11.68	0.330	0.460	0.847	0.0009
	14.38	0.500	0.688	0.852	0.0046
	15.70	0.596	0.830	0.847	0.0005
			Mean	0.847	0.0023

Without Nozzle	7.74	0.145	0.205	0.841	0.0056
	9.54	0.220	0.304	0.850	0.0041
	11.65	0.328	0.460	0.844	0.0022
	14.32	0.496	0.680	0.854	0.0074
	15.80	0.604	0.850	0.843	0.0037
			Mean	0.846	0.0046

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the MOE Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Environmental
Pitot Tube Calibration

Date	January 19, 2015
Probe/Pitot ID	S10
MII Number	B03771
Calibrated Against	B02911
Cp standard	0.99948
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Environmental
Calibrated By	David Utley
Signature	D. Utley
Reviewed/Accepted By	[illegible]

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	7.88	0.150	0.210	0.845	0.0006
(0.25")	9.75	0.230	0.324	0.842	0.0021
	11.93	0.344	0.478	0.848	0.0037
	14.41	0.502	0.704	0.844	0.0002
	15.78	0.602	0.848	0.842	0.0020
			Mean	0.844	0.0017

Without Nozzle	7.98	0.154	0.214	0.848	0.0024
	9.96	0.240	0.335	0.846	0.0005
	11.65	0.328	0.456	0.848	0.0022
	14.38	0.500	0.696	0.847	0.0017
	15.62	0.590	0.838	0.839	0.0068
			Mean	0.845	0.0027

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the MOE Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Environmental
Dry Gas Meter Calibration Data

Calibration Procedure	03 - J004
Meter Number	Team 1
Date	August 20, 2015
Barometric Pressure	29.50
System Leak Check	< .001 cfm @ 20 "Hg

MII NUMBERS	
DGM	COE 20094
Gasometer	A01463
Barometer	COE 20028

Calibrated By	Devin Golub
Signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^oF+460}{Tstd\ ^oF+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading ft^3		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration Factor	Time
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°F	in. H_2O	°F		min.
88.70	24.10	64.60	3.039	23.0	795.025	798.040	3.015	75	0.7	74	1.009	6
88.50	23.80	64.70	3.043	23.0	807.290	810.325	3.035	75.5	0.7	75	1.005	6
88.30	23.30	65.00	3.058	23.0	804.260	807.290	3.030	75.5	0.7	75	1.011	6
88.50	23.20	65.30	3.072	23.0	810.590	813.620	3.030	75.5	1.7	75	1.013	4
87.80	23.50	64.30	3.025	23.0	813.620	816.620	3.000	75.5	1.7	75	1.008	4
88.00	22.80	65.20	3.067	23.0	822.635	825.640	3.005	77	1.7	76	1.023	4
88.50	23.20	65.30	3.072	23.0	826.165	829.160	2.995	77	3	76	1.025	3
88.40	22.80	65.60	3.086	23.0	829.160	832.160	3.000	77	3	76	1.028	3
88.00	22.80	65.20	3.067	23.0	832.160	835.140	2.980	77	3	76	1.028	3

DGMCF AVERAGE 1.017

BEFORE 1.009

Acceptance Criteria:
Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0.05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Team 1
MII	COE 20094
Date	August 20, 2015
Calibrated By	Devin Golub
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference
	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32	NA	0.0
70	70		0.0
100	100		0.0
200	201		-0.5
250	252		-0.8
300	301		-0.3
400	400		0.0
500	500		0.0
600	601		-0.2
700	700		0.0
800	800		0.0
900	900		0.0
1000	1000		0.0
1100	1100		0.0
1200	1200		0.0
1250	1250		0.0

$$\% \text{ Difference} = \frac{\text{(micromite - after adjustment reading)}}{\text{micromite}} \times 100$$

Acceptance Criteria:
Trendicator display must read within ± 1.5% of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

ORTECH Environmental
Manometer Calibration Data

Date	August 20, 2015	Calibrated By	Devin Golub
Manometer Number	Team 1	Signature	
Manometer MII Number	COE 20094	Reviewed/Accepted By	
Calibrated Against	Omega HHP		
MII Number	B02679		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale "H_2O	Manometer Reading "H_2O Before Adjustment	After Adjustment	Reference Manometer Reading "H_2O	Percent Difference %
	0.915	NA	0.911	-0.4
0-1.0	0.540		0.544	0.7
	0.260		0.261	0.4
	8.15		8.12	-0.4
1.0-10.0	5.00		4.97	-0.6
	2.30		2.34	1.7

$$\text{Percent Difference} = \frac{\text{(Ref. Manometer - Instrument Reading)}}{\text{Ref. Manometer}} \times 100$$

Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 0 to 1 inch scale, and 0.05 "H_2O on the 1 to 10 inch scales. (Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH Environmental

Dry Gas Meter Calibration Data

Calibration Procedure	03 - J004
Meter Number	Team 2
Date	August 21, 2015
Barometric Pressure	29.60
System Leak Check	< .001 cfm @ 21 "Hg

MII NUMBERS	
DGM	COE 20092
Gasometer	A01463
Barometer	COE20028

Calibrated By	Devin Golub
Signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^oF+460}{Tstd\ ^oF+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading ft^3		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration Factor	Time
Initial	Final	cm	ft^3	^oC	Initial	Final	ft^3	^oF	in. H_2O	^oF		min.
88.30	26.50	61.80	2.907	23.0	102.760	105.730	2.970	76	0.75	74	0.982	6
87.70	25.60	62.10	2.921	23.0	105.730	108.705	2.975	76.5	0.75	75	0.986	6
88.20	26.20	62.00	2.916	23.0	108.705	111.690	2.985	76.5	0.75	75	0.981	6
88.30	25.00	63.30	2.978	23.0	111.985	115.030	3.045	76.5	1.8	75	0.979	4
87.80	24.60	63.20	2.973	23.0	115.030	118.055	3.025	77	1.8	76	0.985	4
88.00	25.00	63.00	2.963	23.0	118.055	121.065	3.010	77.5	1.8	76	0.988	4
88.30	23.80	64.50	3.034	23.0	121.485	124.575	3.090	77.5	3.3	76	0.981	3
87.70	23.30	64.40	3.029	23.0	124.575	127.635	3.060	77.5	3.3	77	0.989	3
88.00	23.80	64.20	3.020	23.0	127.635	130.680	3.045	77.5	3.3	77	0.991	3

DGMCF AVERAGE: 0.985

BEFORE: 0.970

Acceptance Criteria:
Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0.05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	**03 - J005**
Trendicator Type	**Team 2**
MII	**COE 20092**
Date	**August 21, 2015**
Calibrated By	**Devin Golub**
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°F)	**Tredicator Display Value**		**Percent Difference (%)**
	Before Adjustment (°F)	**After Adjustment (°F)**	
32	32	NA	0.0
70	70		0.0
100	100		0.0
200	201		-0.5
250	251		-0.4
300	301		-0.3
400	400		0.0
500	499		0.2
600	600		0.0
700	699		0.1
800	799		0.1
900	899		0.1
1000	999		0.1
1100	1099		0.1
1200	1199		0.1
1250	1248		0.2

$$\% \text{ Difference} = \frac{(\text{micromite - after adjustment reading})}{\text{micromite}} \times 100$$

Acceptance Criteria:
Trendicator display must read within ± 1.5% of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

ORTECH Environmental
Manometer Calibration Data

Date	August 21, 2015	Calibrated By	Devin Golub
Manometer Number	Team 2	Signature	
Manometer MII Number	COE 20092	Reviewed/Accepted By	
Calibrated Against	Omega HHP		
MII Number	B02679		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale	Manometer Reading "H_2O		Reference Manometer Reading	Percent Difference
"H_20	Before Adjustment	After Adjustment	"H_2O	%
	0.870	NA	0.874	0.5
0-1.0	0.520		0.527	1.3
	0.235		0.244	3.7
	8.90		8.87	-0.3
1.0-10.0	4.95		4.93	-0.4
	2.40		2.41	0.4

$$\text{Percent Difference} = \frac{\text{(Ref. Manometer - Instrument Reading)}}{\text{Ref. Manometer}} \times 100$$

Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 0 to 1 inch scale, and 0.05 "H_2O on the 1 to 10 inch scales.
(Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH Environmental
Dry Gas Meter Calibration Data

Calibration Procedure	03 - J004
Meter Number	Team 3
Date	August 20, 2015
Barometric Pressure	29.50
System Leak Check	<.001 cfm @ 24 "Hg

MII NUMBERS	
DGM	COE 20093
Gasometer	A01463
Barometer	COE 20028

Calibrated By	Devin Golub
signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^oF+460}{Tstd\ ^oF+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading ft^3		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration	Time
Initial	Final	cm	ft^3	^oC	Initial	Final	ft^3	^oF	in. H_2O	^oF	Factor	min.
88.50	26.20	62.30	2.931	23.0	89.970	92.985	3.015	76	0.83	76	0.975	6
88.40	26.20	62.20	2.926	23.0	92.985	95.985	3.000	76.5	0.83	76	0.979	6
88.60	26.50	62.10	2.921	23.0	95.985	98.970	2.985	77	0.83	76	0.983	6
88.60	28.50	60.10	2.827	23.0	99.250	102.160	2.910	77	1.8	77	0.974	4
88.60	28.00	60.60	2.851	23.0	102.160	105.050	2.890	77.5	1.8	77	0.990	4
88.00	27.30	60.70	2.855	23.0	105.050	107.970	2.920	77.5	1.8	77	0.981	4
88.60	25.00	63.60	2.992	23.0	108.300	111.355	3.055	77.5	3.4	77	0.979	3
88.50	24.90	63.60	2.992	23.0	111.355	114.395	3.040	78.5	3.4	77	0.985	3
88.50	24.90	63.60	2.992	23.0	114.395	117.425	3.030	77.5	3.4	77	0.987	3

DGMCF AVERAGE: 0.981

BEFORE: 0.970

Acceptance Criteria:
Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0.05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Team 3
MII	COE 20093
Date	August 20, 2015
Calibrated By	Devin Golub
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference
	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32	NA	0.0
70	70		0.0
100	100		0.0
200	201		-0.5
250	251		-0.4
300	301		-0.3
400	400		0.0
500	499		0.2
600	600		0.0
700	702		-0.3
800	801		-0.1
900	901		-0.1
1000	1002		-0.2
1100	1102		-0.2
1200	1202		-0.2
1250	1252		-0.2

% Difference = (micromite - after adjustment reading) x 100 / micromite

Acceptance Criteria:
Trendicator display must read within ± 1.5% of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

ORTECH Environmental

Manometer Calibration Data

Date	August 20, 2015	Calibrated By	Devin Golub
Manometer Number	Team 3	Signature	
Manometer MII Number	COE 20093	Reviewed/Accepted By	
Calibrated Against	Omega HHP		
MII Number	B02679		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale	Manometer Reading "H_2O		Reference Manometer Reading	Percent Difference
"H_20	Before Adjustment	After Adjustment	"H_2O	%
	0.930	NA	0.925	-0.5
0-1.0	0.525		0.524	-0.2
	0.200		0.198	-1.0
	7.70		7.66	-0.5
1.0-10.0	5.20		5.17	-0.6
	2.25		2.22	-1.4

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer - Instrument Reading})}{\text{Ref. Manometer}} \times 100$$

Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 0 to 1 inch scale, and 0.05 "H_2O on the 1 to 10 inch scales. (Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH Environmental
Dry Gas Meter Calibration Data

Calibration Procedure	03 - J004
Meter Number	Team 4
Date	August 21, 2015
Barometric Pressure	29.60
System Leak Check	< .001 cfm @ 22 "Hg

MII NUMBERS	
DGM	COE 20090
Gasometer	A01463
Barometer	COE20028

Calibrated By	Devin Golub
signature	Chris Belore
Reviewed and Accepted By	CHRIS BELORE

$ft^3 =$ cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^oF+460}{Tstd\ ^oF+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg + DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading ft^3		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration Factor	Time
Initial	Final	cm	ft^3	^oC	Initial	Final	ft^3	^oF	in. H_2O	^oF		min.
87.80	23.90	63.90	3.006	23.0	175.285	178.325	3.040	80	0.8	77	0.999	6
88.30	24.60	63.70	2.996	23.0	143.240	146.265	3.025	79.5	0.8	75	1.000	6
88.30	24.70	63.60	2.992	23.0	146.265	149.280	3.015	80.5	0.8	76	1.003	6
88.10	23.80	64.30	3.025	23.0	153.035	156.070	3.035	81	1.9	76	1.006	4
88.00	23.70	64.30	3.025	23.0	156.070	159.120	3.050	82	1.9	77	1.003	4
88.00	23.50	64.50	3.034	23.0	159.120	162.175	3.055	81.5	1.9	77	1.003	4
87.80	21.00	66.80	3.142	23.0	171.950	175.080	3.130	80.5	3.5	77	1.008	3
87.90	21.00	66.90	3.147	23.0	165.675	168.820	3.145	79.5	3.5	77	1.003	3
88.00	21.30	66.70	3.138	23.0	168.820	171.950	3.130	79.5	3.5	77	1.005	3

DGMCF AVERAGE 1.004

BEFORE 0.976

Acceptance Criteria:
Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0:05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Omega DP116
MII	COE 20090
Date	August 21, 2015
Calibrated By	Devin Golub
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference
	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32	N/A	0.0
70	70		0.0
100	100		0.0
200	201		-0.5
250	251		-0.4
300	301		-0.3
400	400		0.0
500	499		0.2
600	600		0.0
700	701		-0.1
800	800		0.0
900	900		0.0
1000	1001		-0.1
1100	1101		-0.1
1200	1201		-0.1
1250	1250		0.0

$$\% \text{ Difference} = \frac{(\text{micromite - after adjustment reading})}{\text{micromite}} \times 100$$

Acceptance Criteria:
Trendicator display must read within ± 1.5% of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

ORTECH Environmental
Manometer Calibration Data

Date	August 21, 2015	Calibrated By	Devin Golub
Manometer Number	Team 4	Signature	
Manometer MII Number	COE 20090	Reviewed/Accepted By	
Calibrated Against	Omega HHP		
MII Number	B02679		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale "$H_2$0	Manometer Reading "H_2O Before Adjustment	Manometer Reading "H_2O After Adjustment	Reference Manometer Reading "H_2O	Percent Difference %
	0.850	NA	0.840	-1.2
0-1.0	0.505		0.500	-1.0
	0.240		0.233	-3.0
	8.50		8.500	0.0
1.0-10.0	4.85		4.870	0.4
	2.00		1.950	-2.6

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer - Instrument Reading})}{\text{Ref. Manometer}} \times 100$$

Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 0 to 1 inch scale, and 0.05 "H_2O on the 1 to 10 inch scales.
(Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH Environmental
Dry Gas Meter Calibration Data

Calibration Procedure	03-J004
Meter Number	Vost 2
Date	October 6, 2015
Barometric Pressure	29.65
System Leak Check	NDL @ 21"Hg

MII NUMBERS	
DGM	A10117
Gasometer	A01463
Barometer	COE20028

Calibrated By	Mike Traynor
Signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^{\circ}F+460}{Tstd\ ^{\circ}F+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading L		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration	Time	Flow Rate
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°C	in. H_2O	°C	Factor	min.	lpm
87.60	60.00	27.60	1.298	20.0	2878.800	2915.000	1.278	22.0	5.4	22.0	1.009	19	1.9
88.30	60.60	27.70	1.303	21.0	2915.000	2951.450	1.287	23.0	5.4	23.0	1.006	19	1.9
89.20	70.00	19.20	0.903	21.0	3049.455	3074.900	0.899	26.0	5.4	26.0	1.009	13	2.0
87.90	66.40	21.50	1.011	21.0	3075.450	3104.350	1.021	26.0	2.5	26.0	1.002	26	1.1
88.00	69.00	19.00	0.894	20.0	3104.350	3129.950	0.904	26.0	2.5	26.0	1.003	23	1.1
89.20	73.30	15.90	0.748	20.0	3130.000	3151.400	0.756	26.0	2.5	26.0	1.004	19	1.1
86.60	70.50	16.10	0.757	21.0	3151.550	3173.250	0.766	26.0	1.3	26.0	1.002	38	0.6
70.50	56.40	14.10	0.663	21.0	3173.250	3192.100	0.666	26.0	1.3	27.0	1.010	33	0.6
87.00	76.50	10.50	0.494	21.0	3192.100	3206.250	0.500	26.0	1.3	26.0	1.002	24	0.6

Acceptance Criteria:
Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0.05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

DGMCF AVERAGE	
2 Lpm	1.008
1Lpm	1.003
0.5 Lpm	1.005

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	03-J005
Trendicator Type	Nutech
MII	A10117
Date	October 6, 2015
Calibrated By	Mike Traynor
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°C)	Tredicator Display Value		Percent Difference
	Before Adjustment (°C)	After Adjustment (°C)	(%)
0	0	NA	0.0
10	10		0.0
20	20		0.0
50	50		0.0
75	75		0.0
100	100		0.0
125	125		0.0
150	150		0.0
200	200		0.0
300	300		0.0
400	400		0.0
500	500		0.0
600	600		0.0

$$\% \text{ Difference} = \frac{(\text{micromite - after adjustment reading})}{\text{micromite}} \times 100$$

Acceptance Criteria:
Trendicator display must read within ± 1.5% of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

ORTECH Environmental

Dry Gas Meter Calibration Data

Calibration Procedure	03-J004
Meter Number	Vost 2
Date	September 2, 2015
Barometric Pressure	29.70
System Leak Check	NDL @ 21"Hg

MII NUMBERS	
DGM	A10117
Gasometer	A01463
Barometer	COE20028

Calibrated By	Thomas Timar
Signature	
Reviewed and Accepted By	

$ft^3 =$ cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{V_{std}\ ft^3}{V_{dgm}\ ft^3} \quad \frac{T_{dgm}\ ^\circ F+460}{T_{std}\ ^\circ F+460} \quad \frac{P_{bar}\ (in.\ Hg)}{(P_{bar}\ in.\ Hg + DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading L		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration Factor	Time	Flow Rate
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°C	in. H_2O	°C		min.	lpm
72.30	50.00	22.30	1.049	24.0	150.270	179.890	1.046	26.0	5.2	26.0	0.997	15	2.0
83.00	60.80	22.20	1.044	23.0	53.120	82.520	1.038	27.0	5.2	27.0	1.006	15	2.0
79.90	50.80	29.10	1.369	24.0	82.520	121.350	1.371	27.0	5.2	27.0	0.995	20	1.9
80.60	65.00	15.60	0.734	24.0	181.750	202.760	0.742	26.0	2.3	26.0	0.990	20	1.1
87.00	70.00	17.00	0.800	24.0	202.850	225.760	0.809	27.0	2.5	27.0	0.992	20	1.1
86.00	69.00	17.00	0.800	24.0	225.830	248.630	0.805	27.0	2.5	27.0	0.997	20	1.1

Acceptance Criteria:
Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0.05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

DGMCF AVERAGE

2 Lpm	1.000
1Lpm	0.993

ORTECH Environmental

Dry Gas Meter Calibration Data

Calibration Procedure	03-J004
Meter Number	Vost 5
Date	October 7, 2015
Barometric Pressure	29.56
System Leak Check	NDL @ 24"Hg

MII NUMBERS	
DGM	COE 20018
Gasometer	A01463
Barometer	COE 20028

Calibrated By	Mike Traynor
Signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^oF+460}{Tstd\ ^oF+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading L		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration Factor	Time	Flow Rate
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°C	in. H_2O	°C		min.	lpm
87.90	45.10	42.80	2.013	22.0	4038.64	4095.74	2.016	27.0	3.5	27.0	1.007	27	2.1
86.20	46.50	39.70	1.867	22.0	4095.74	4148.45	1.861	27.0	3.5	27.0	1.011	25	2.1
88.40	31.30	57.10	2.686	22.0	3962.76	4038.64	2.680	27.0	3.5	27.0	1.011	36	2.1
88.50	70.80	17.70	0.833	23.0	4148.80	4172.24	0.828	27.0	1.6	27.0	1.015	20	1.2
70.80	50.90	19.90	0.936	23.0	4172.24	4198.90	0.941	27.0	1.6	27.0	1.004	22	1.2
87.20	70.60	16.60	0.781	23.0	4198.90	4221.00	0.780	27.0	1.6	27.0	1.010	19	1.2
84.00	63.00	21.00	0.988	22.0	4289.05	4316.60	0.973	23.0	1.0	23.0	1.016	52	0.5
64.00	55.00	9.00	0.423	21.0	4248.10	4260.00	0.420	23.0	1.1	23.0	1.011	20	0.6
53.00	31.40	21.60	1.016	21.0	4260.75	4289.05	0.999	23.0	1.0	23.0	1.021	56	0.5

Acceptance Criteria:
Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0.05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

DGMCF AVERAGE	
2Lpm	1.009
1Lpm	1.010
0.5Lpm	1.016

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	03-J005
Trendicator Type	Jenco 765
MII	COE 20018
Date	October 7, 2015
Calibrated By	Mike Traynor
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°C)	Tredicator Display Value		Percent Difference
	Before Adjustment (°C)	After Adjustment (°C)	(%)
0	0	NA	0.0
10	10		0.0
20	20		0.0
50	50		0.0
75	75		0.0
100	100		0.0
125	125		0.0
150	150		0.0
200	200		0.0
300	300		0.0
400	400		0.0
500	500		0.0
600	600		0.0

$$\% \text{ Difference} = \frac{(\text{micromite - after adjustment reading})}{\text{micromite}} \times 100$$

Acceptance Criteria:
Trendicator display must read within ± 1.5% of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

ORTECH Environmental

Dry Gas Meter Calibration Data

Calibration Procedure	03-J004
Meter Number	Vost 5
Date	September 2, 2015
Barometric Pressure	29.70
System Leak Check	<.001 lpm @ 24 "Hg

MII NUMBERS	
DGM	COE 20018
Gasometer	A01463
Barometer	COE 20028

Calibrated By	Thomas Timar
Signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF= \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^oF+460}{Tstd\ ^oF+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading L		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration Factor	Time	Flow Rate
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°C	in. H_2O	°C		min.	lpm
71.10	46.00	25.10	1.181	23.0	719.10	753.19	1.204	27.0	3.5	27.0	0.985	20	1.7
68.50	31.00	37.50	1.764	23.0	753.19	804.39	1.808	27.0	3.5	27.0	0.980	25	2.0
60.10	31.00	29.10	1.369	23.0	804.39	843.91	1.396	27.0	3.5	27.0	0.986	20	2.0
59.80	46.70	13.10	0.616	23.0	949.66	967.60	0.634	28.0	1.6	28.0	0.985	15	1.2
78.20	60.40	17.80	0.837	23.0	875.26	899.72	0.864	28.0	1.6	28.0	0.982	20	1.2
84.50	66.50	18.00	0.847	23.0	900.10	924.78	0.872	28.0	1.6	28.0	0.984	20	1.2

Acceptance Criteria:

Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0.05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

DGMCF AVERAGE

2Lpm	0.984
1Lpm	0.984

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	**03-J005**
Trendicator Type	**Jenco 765**
MII	**COE 20018**
Date	**May 13, 2015**
Calibrated By	**Thomas Timar**
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°C)	**Tredicator Display Value**		**Percent Difference**
	Before Adjustment (°C)	**After Adjustment (°C)**	**(%)**
0	0	NA	0.0
10	10		0.0
20	20		0.0
50	50		0.0
75	75		0.0
100	101		-1.0
125	126		-0.8
150	151		-0.7
200	200		0.0
300	300		0.0
400	400		0.0
500	500		0.0
600	600		0.0

$$\% \text{ Difference} = \frac{(\text{micromite - after adjustment reading})}{\text{micromite}} \times 100$$

Acceptance Criteria:
Trendicator display must read within ± 1.5% of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

Cal-Matrix
a TRANSCAT Company

CERTIFICATE OF CALIBRATION

Customer: ORTECH ENVIRONMENTAL
804 SOUTHDOWN ROAD
MISSISSAUGA, ON L5J 2Y4

Customer Nbr: 9-321995-000
PO Nbr: 20000-J2001
Date Received: December 18, 2014

Cert/SO Nbr: 9-8100R-41-1
Manufacturer: Mitutoyo
Model Nbr: 500-196

Date Completed: December 19, 2014
Due Date: December 19, 2015

Specification: Manufacturer Specification
Procedure: 1-AC12178-4
Item Received: In Tolerance
Item Returned: In Tolerance

Description: Digital Caliper
Serial Nbr: 0140143
ID Nbr: B03906
Unit Barcode: 471A0022134

Cal-Matrix certifies that the equipment listed, meets or exceeds published specification(s) or the customer's requested specifications, unless noted otherwise.

UNCERTAINTY STATEMENT: Reported measurement uncertainties conform to a Test Uncertainty Ratio(TUR) of 4:1, for a confidence interval of 95% with a coverage factor of k=2, unless noted otherwise.

TRACEABILITY STATEMENT: Traceability, includes no less than an unbroken chain of comparisons, realization(s) of the SI units, measurement uncertainty, documentation, competence, periodic recalibrations and measurements to the SI units of measurement through the National Research Council of Canada (NRC) or the National Institute of Standards (NIST), or other recognized national measurement institutes (NMI's) or international standard bodies, or to measurable conditions created in our laboratory, or accepted fundamental and/or natural physical constants, ratio type of calibrations, or by comparison to consensus standards. The specific path of traceability for the reported measurement results is maintained at the Cal-Matrix facility and is available there for review.

This calibration report is comprised of a certificate of calibration, measurement data and/or certificate appendices. Each report section may be numbered separately.

Notes: Received in tolerance. No adjustments made.

Calibrated At:
916 Gateway
Burlington, ON L7L 5K7
By: Steve Snelling
Digitally Signed On December 19, 2014

Facility Responsible:
916 Gateway
Burlington, ON L7L 5K7
905-632-5869

Digitally Signed By Murray Allen for
Date: December 19, 2014

Robert Whittaker
Lab Manager

F0170R1 04/23/14

Revision 0

Cal-Matrix
a TRANSCAT Company

TRANSCAT.COM
800.828.1470

SUPPLEMENTAL REPORT FOR 9-8100R-41-1

CALIBRATION LAB DATA AS FOUND / AS LEFT

Service Order Nbr: 9-8100R-41-1
Description: Digital Caliper
Serial: 0140143
Customer: ORTECH ENVIRONMENTAL
Calibrated: December 19, 2014
Date Due: December 19, 2015
Service Type: R5

Mfg: Mitutoyo
Model: 500-196
ID Nbr: B03906
PO Nbr: 20000-J2001
Calibration Proc: 1-AC12178-4

Description	Setpoints	Accuracy	Low Limit	High Limit	As Found / As Left	OOT	TUR
Function Check							
Parallelism Check			P	P	P		
Length Measure							
Scale Linearity	0.0000in	±(0.001 in)	-0.0010	0.0010	0.0000 in		
	1.5000in	±(0.001 in)	1.4990	1.5010	1.5000 in		
	3.0000in	±(0.001 in)	2.9990	3.0010	3.0000 in		
	4.5000in	±(0.001 in)	4.4990	4.5010	4.5000 in		
	6.0000in	±(0.001 in)	5.9990	6.0010	6.0000 in		
Length Measure I.D.	1.0000in	±(0.001 in)	0.9990	1.0010	1.0010 in		
Length Measure Depth	1.0000in	±(0.001 in)	0.9990	1.0010	1.0000 in		
Length Measure Step	1.0000in	±(0.001 in)	0.9990	1.0010	1.0000 in		
Function Check							
Inch to mm conversion			P	P	P		

As Found and As Left Data recorded on December 19, 2014

Temperature: 66.9°F / 19.4°C   Relative Humidity: 26%   Temp/RH Asset: LEM-0001

Asset	Manufacturer	Model	Description	Cal Date	Due Date	Traceability Number
M004	Coventry Gauge Ltd	C-84	Gage Block Set, 84 pcs.	August 20, 2014	August 20, 2015	&M004-2-1
M457	Starrett Tru-Stone Tech. Div.	80942	Granite Surface Plate	November 11, 2014	November 30, 2015	9-&M457-3-1

Remarks:

Received in tolerance, No adjustments made.

ORTECH Environmental
Dry Gas Meter Calibration Data

Calibration Procedure	03 - J004
Meter Number	Team 3
Date	October 3, 2015
Barometric Pressure	29.80
System Leak Check	<.001 cfm @ 21 "Hg

MII NUMBERS	
DGM	COE 20093
Gasometer	A01463
Barometer	COE 20028

Calibrated By	Devin Golub
signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^oF+460}{Tstd\ ^oF+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading ft^3		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration	Time
Initial	Final	cm	ft^3	^oC	Initial	Final	ft^3	^oF	in. H_2O	^oF	Factor	min.
89.60	27.20	62.40	2.935	20.0	66.720	69.765	3.045	69	0.83	69	0.964	6
89.30	27.30	62.00	2.916	20.0	69.765	72.795	3.030	69	0.83	69	0.962	6
89.00	27.30	61.70	2.902	20.0	72.795	75.800	3.005	69.5	0.83	69	0.967	6
89.30	29.70	59.60	2.804	20.0	76.060	78.970	2.910	70	1.8	70	0.963	4
89.20	29.60	59.60	2.804	20.0	78.970	81.855	2.885	70	1.8	70	0.971	4
89.00	27.30	61.70	2.902	20.0	81.855	84.850	2.995	70	1.8	70	0.968	4
88.80	26.30	62.50	2.940	20.0	85.210	88.235	3.025	70	3.4	70	0.967	3
88.90	26.40	62.50	2.940	20.0	88.235	91.240	3.005	70	3.4	70	0.974	3
89.20	26.50	62.70	2.949	20.0	91.240	94.270	3.030	70	3.4	70	0.969	3

DGMCF AVERAGE 0.967

BEFORE 0.981

Acceptance Criteria:
Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0.05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

ORTECH Environmental

Manometer Calibration Data

Date	October 5, 2015	Calibrated By	Devin Golub
Manometer Number	Team 3	Signature	
Manometer MII Number	COE 20093	Reviewed/Accepted By	
Calibrated Against	Omega HHP		
MII Number	B02679		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale "H_20	Manometer Reading "H_2O Before Adjustment	Manometer Reading "H_2O After Adjustment	Reference Manometer Reading "H_2O	Percent Difference %
	0.900	NA	0.910	1.1
0-1.0	0.500		0.510	2.0
	0.225		0.230	2.2
	7.40		7.42	0.3
1.0-10.0	4.20		4.24	0.9
	2.05		2.03	-1.0

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer - Instrument Reading})}{\text{Ref. Manometer}} \times 100$$

Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 0 to 1 inch scale, and 0.05 "H_2O on the 1 to 10 inch scales.
(Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Team 3
MII	COE 20093
Date	October 5, 2015
Calibrated By	Devin Golub
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference (%)
	Before Adjustment (°F)	After Adjustment (°F)	
32	32	NA	0.0
70	70		0.0
100	100		0.0
200	201		-0.5
250	251		-0.4
300	301		-0.3
400	400		0.0
500	500		0.0
600	600		0.0
700	702		-0.3
800	801		-0.1
900	901		-0.1
1000	1002		-0.2
1100	1102		-0.2
1200	1202		-0.2
1250	1252		-0.2

$$\% \text{ Difference} = \frac{(\text{micromite - after adjustment reading})}{\text{micromite}} \times 100$$

Acceptance Criteria:
Trendicator display must read within ± 1.5% of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

ORTECH Environmental
Pitot Tube Calibration

Date	January 19, 2015
Probe/Pitot ID	15A
MII Number	B03775
Calibrated Against	B02911
Cp standard	0.99948
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Environmental
Calibrated By	David Utley
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	7.88	0.150	0.210	0.845	0.0008
(0.25")	9.67	0.226	0.310	0.853	0.0079
	11.57	0.324	0.458	0.841	0.0048
	14.09	0.480	0.660	0.852	0.0069
	15.78	0.602	0.860	0.836	0.0092
			Mean	0.845	0.0059

Without Nozzle	7.74	0.145	0.206	0.839	0.0024
	9.54	0.220	0.308	0.845	0.0038
	11.72	0.332	0.472	0.838	0.0027
	14.23	0.490	0.680	0.848	0.0075
	15.75	0.600	0.860	0.835	0.0061
			Mean	0.841	0.0045

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the MOE Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6)..

ORTECH Environmental
Dry Gas Meter Calibration Data

Calibration Procedure	03 - J004
Meter Number	Team 4
Date	October 8, 2015
Barometric Pressure	29.80
System Leak Check	< .001 cfm @ 21 "Hg

MII NUMBERS	
DGM	COE 20090
Gasometer	A01463
Barometer	COE20028

Calibrated By	Devin Golub
signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^oF+460}{Tstd\ ^oF+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading ft^3		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration Factor	Time
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°F	in. H_2O	°F		min.
89.20	25.00	64.20	3.020	21.0	20.730	23.790	3.060	68.5	0.8	69	0.983	6
89.00	25.50	63.50	2.987	21.0	23.790	26.810	3.020	69.5	0.8	69	0.987	6
88.20	25.00	63.20	2.973	21.0	26.810	29.820	3.010	71	0.8	70	0.988	6
88.90	25.40	63.50	2.987	21.0	30.035	33.055	3.020	71.5	1.9	70	0.988	4
88.60	25.00	63.60	2.992	21.0	33.055	36.065	3.010	71.5	1.9	70	0.992	4
88.90	25.80	63.10	2.968	21.0	36.065	39.060	2.995	71.5	1.9	70	0.990	4
89.00	23.20	65.80	3.095	21.0	39.315	42.445	3.130	72	3.5	70	0.984	3
88.80	22.90	65.90	3.100	21.0	42.445	45.550	3.105	72.5	3.5	71	0.995	3
88.90	22.90	66.00	3.105	21.0	45.550	48.660	3.110	72.5	3.5	71	0.995	3

DGMCF AVERAGE 0.989

BEFORE 1.003

Acceptance Criteria:
Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0.05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Omega OP116
MII	COE 20090
Date	October 8, 2015
Calibrated By	Devin Golub
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference
	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32	NA	0.0
70	70		0.0
100	100		0.0
200	201		-0.5
250	251		-0.4
300	301		-0.3
400	400		0.0
500	499		0.2
600	600		0.0
700	701		-0.1
800	800		0.0
900	900		0.0
1000	1001		-0.1
1100	1101		-0.1
1200	1201		-0.1
1250	1251		-0.1

$$\% \text{ Difference} = \frac{(\text{micromite - after adjustment reading})}{\text{micromite}} \times 100$$

Acceptance Criteria:
Trendicator display must read within ± 1.5% of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

ORTECH Environmental
Manometer Calibration Data

Date	October 8, 2015	Calibrated By	Devin Golub
Manometer Number	Team 4	Signature	
Manometer MII Number	COE 20090	Reviewed/Accepted By	
Calibrated Against	Omega HHP		
MII Number	B02679		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale $''H_20$	Manometer Reading $''H_2O$ Before Adjustment	Manometer Reading $''H_2O$ After Adjustment	Reference Manometer Reading $''H_2O$	Percent Difference %
	0.930	NA	0.910	-2.2
0-1.0	0.530		0.530	0.0
	0.220		0.221	0.5
	7.80		7.810	0.1
1.0-10.0	4.95		4.930	-0.4
	2.45		2.490	1.6

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer - Instrument Reading})}{\text{Ref. Manometer}} \times 100$$

Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 $''H_2O$ on the 0 to 1 inch scale, and 0.05 $''H_2O$ on the 1 to 10 inch scales. (Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH Environmental
Pitot Tube Calibration

Date	January 20, 2015
Probe/Pitot ID	15D
MII Number	B03778
Calibrated Against	B02911
Cp standard	0.99948
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Environmental
Calibrated By	David Utley
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O Pstd	Velocity Head S-Type Pitot in. H_2O Ps	S-Type Pitot Coefficient Cp_s	Deviation From The Mean
With Nozzle	8.13	0.160	0.225	0.843	0.0032
(0.25")	9.71	0.228	0.320	0.844	0.0023
	11.68	0.330	0.450	0.856	0.0099
	14.18	0.486	0.680	0.845	0.0010
	15.62	0.590	0.830	0.843	0.0033
			Mean	0.846	0.0040

Without Nozzle	8.01	0.155	0.220	0.839	0.0041
	10.07	0.245	0.345	0.842	0.0007
	11.75	0.334	0.470	0.843	0.0005
	14.23	0.490	0.675	0.852	0.0086
	15.75	0.600	0.850	0.840	0.0033
			Mean	0.843	0.0034

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the MOE Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

APPENDIX 32

Particulate and Acid Gas Test Emission Calculations at the Boiler No. 1 BH Outlet (12 pages)

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particulate & Acid Gases	**Test Location:**	Boiler No. 1 BH Outlet
Date:	September 29, 2015	**Operator:**	KS

Pitot Factor	0.845	**Filter (mg)**	0.3
DGMCF	0.981	**Probe (mg)**	1.7
Barometric Pressure	29.65 "Hg	**CWTR (g)**	511.7
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	35.9
Nozzle	0.25575 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.48 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.67
CO2%	11.33
COppm	16.9

Measured H2O
16.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	97.86	0.54	82	81	80	81	0.9	2.0		13.18	
	2.5	99.18	0.58	177	64	81	81	1.7	2.0		14.81	69.2
	5	100.91	0.59	175	62	81	81	1.8	2.0		14.91	95.0
2	7.5	102.70	0.74	222	62	81	80	2	2.0		17.31	97.3
	10	104.57	0.78	221	63	81	81	2.1	2.5		17.76	94.2
	12.5	106.51	0.78	222	64	81	81	2.1	2.5		17.77	95.1
3	15	108.45	0.85	275	67	81	81	2.2	2.5		19.26	95.1
	17.5	110.43	0.85	276	69	81	81	2.2	2.5		19.27	96.6
	20	112.43	0.87	278	70	81	81	2.3	2.5		19.52	97.6
4	22.5	114.49	0.83	278	72	81	81	2.3	2.5		19.07	99.6
	25	116.53	0.8	286	71	81	81	2.2	2.5		18.82	100.9
	27.5	118.56	0.8	285	70	81	81	2.1	2.5		18.81	102.8
5	30	120.57	0.7	284	68	81	81	2	2.5		17.58	101.7
	32.5	122.53	0.75	287	56	81	81	2	2.5		18.24	105.9
	35	124.47	0.75	289	52	81	81	2	2.5		18.26	101.5
6	37.5	126.42	0.73	290	52	81	81	2	2.5		18.03	102.2
	40	128.30	0.74	290	52	81	81	1.95	2.5		18.15	99.9
	42.5	130.19	0.7	291	53	81	81	1.9	2.5		17.67	99.7
7	45	132.06	0.7	290	53	81	81	1.9	2.5		17.65	101.5
	47.5	133.94	0.68	289	54	81	82	1.9	2.5		17.39	102.0
	50	135.81	0.7	288	55	81	81	1.9	2.5		17.63	102.8
8	52.5	137.68	0.72	288	55	81	82	1.9	2.5		17.88	101.3
	55	139.55	0.74	287	57	81	82	1.95	2.5		18.11	99.8
	57.5	141.44	0.74	286	58	81	82	2	2.5		18.10	99.5
9	60	143.35	0.76	285	59	81	82	2	2.5		18.33	100.5
	62.5	145.28	0.77	285	60	81	82	2.1	2.5		18.45	100.1
	65	147.23	0.75	285	62	81	82	2.1	3.0		18.21	100.5
10	67.5	149.18	0.75	285	63	82	82	2.1	3.0		18.21	101.8
	70	151.13	0.76	286	62	82	82	2.1	3.0		18.35	101.7
	72.5	153.09	0.76	286	63	82	82	2.1	3.0		18.35	101.7
11	75	155.05	0.78	286	65	82	82	2.15	3.0		18.59	101.7

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particulate & Acid Gases	**Test Location:**	Boiler No. 1 BH Outlet
Date:	September 29, 2015	**Operator:**	KS

Pitot Factor	0.845	**Filter (mg)**	0.3
DGMCF	0.981	**Probe (mg)**	1.7
Barometric Pressure	29.65 "Hg	**CWTR (g)**	511.7
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	35.9
Nozzle	0.25575 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.48 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.67
CO2%	11.33
COppm	16.9

Measured H2O
16.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	157.04	0.76	286	64	82	82	2.1	3.0		18.35	101.9
	80	159.03	0.77	286	64	82	82	2.1	3.0		18.47	103.2
12	82.5	161.00	0.78	285	67	82	82	2.1	3.0		18.57	101.5
	85	162.98	0.78	284	67	82	82	2.1	3.0		18.56	101.3
	87.5	164.96	0.77	283	64	82	82	2.1	3.0		18.43	101.2
	90	167.33								0.48		121.9
1	0	167.81	0.57	79	72	82	82	2	2.5		13.50	
	2.5	169.70	0.6	127	60	82	82	2.1	2.5		14.46	96.2
	5	171.64	0.6	128	56	82	82	2.1	2.5		14.47	100.4
2	7.5	173.65	0.65	249	56	82	82	2.1	3.0		16.54	104.2
	10	175.53	0.73	248	62	82	82	2.2	3.0		17.52	102.8
	12.5	177.55	0.71	250	56	82	82	2.1	3.0		17.30	104.2
3	15	179.54	0.72	251	55	82	82	2.1	3.0		17.43	104.2
	17.5	181.53	0.74	276	55	82	82	2.1	3.0		17.98	103.5
	20	183.52	0.74	277	55	82	82	2.1	3.0		17.99	103.9
4	22.5	185.48	0.73	257	55	82	82	2.1	3.0		17.63	102.4
	25	187.44	0.73	283	55	82	82	2.1	3.0		17.94	101.7
	27.5	189.39	0.73	284	55	82	82	2	3.0		17.96	103.0
5	30	191.31	0.7	284	56	82	82	2	3.0		17.58	101.4
	32.5	193.22	0.7	285	56	82	82	1.9	3.0		17.59	103.1
	35	195.11	0.69	285	57	82	82	1.9	3.0		17.47	102.0
6	37.5	196.98	0.68	284	57	82	82	1.9	3.0		17.33	101.7
	40	198.86	0.68	285	58	82	82	1.9	3.0		17.34	102.9
	42.5	200.73	0.67	285	59	82	83	1.8	3.0		17.21	102.4
7	45	202.56	0.67	285	61	82	83	1.8	3.0		17.21	100.8
	47.5	204.40	0.65	285	61	82	83	1.8	3.0		16.95	101.4
	50	206.23	0.65	286	62	82	83	1.8	3.0		16.97	102.4
8	52.5	208.05	0.66	286	64	83	83	1.8	3.0		17.10	101.9
	55	209.87	0.65	286	65	82	83	1.8	3.0		16.97	101.0
	57.5	211.74	0.68	285	65	83	83	1.8	3.0		17.34	104.7
9	60	213.53	0.68	285	67	83	83	1.9	3.0		17.34	97.8

Plant: Covanta - DYEC
Test No.: 1 - Particulate & Acid Gases
Date: September 29, 2015

Plant Location: Courtice, ON
Test Location: Boiler No. 1 BH Outlet
Operator: KS

Pitot Factor	0.845
DGMCF	0.981
Barometric Pressure	29.65 "Hg
Static Pressure	-11.200 "H_2O
Nozzle	0.25575 inches
Stack Diameter	4.500 ft
Length	0.000 ft
Width	0.000 ft

Filter (mg)	0.3
Probe (mg)	1.7
CWTR (g)	511.7
WCBDA (g)	35.9
Leak Check Volume	0.48 ft^3
Reading Interval	2.5 minutes
Number of Ports	2
Number of points / Port	12

Combustion Gases	
O2%	7.67
CO2%	11.33
COppm	16.9

Measured H2O
16.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	215.38	0.69	284	68	83	83	1.9	3.0		17.46	**101.1**
	65	217.24	0.69	285	69	83	83	1.9	3.0		17.47	**100.9**
10	67.5	219.10	0.75	285	70	83	83	2.1	3.0		18.21	**100.9**
	70	221.05	0.76	285	68	83	83	2.1	3.0		18.33	**101.5**
	72.5	223.02	0.75	285	65	83	83	2	3.0		18.21	**101.9**
11	75	224.95	0.77	285	64	83	83	2.1	3.0		18.45	**100.5**
	77.5	226.92	0.74	285	63	83	83	2	3.0		18.09	**101.2**
	80	228.85	0.73	284	61	83	83	2	3.0		17.96	**101.2**
12	82.5	230.78	0.73	284	61	83	83	2	3.0		17.96	**101.8**
	85	232.70	0.78	284	61	83	83	2.1	3.0		18.56	**101.3**
	87.5	234.66	0.78	283	61	83	83	2.1	3.0		18.55	**100.0**
	90	236.72										**105.1**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 1 BH Outlet
Test No.:	1 - Particulate & Acid Gases
Date:	September 29, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.845
DGM CORRECTION FACTOR	0.981
NOZZLE DIAMETER	6.50 mm
DRY REF GAS VOLUME SAMPLED	3.796 m^3
AVGERGE ISOKINETICITY	100.9 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	130.4 °C
AVERAGE GAS MOISTURE BY VOLUME	16.4 %
AVERAGE GAS VELOCITY	17.64 m/s
BAROMETRIC PRESSURE (Station)	100.406 Kpa
STATIC PRESSURE	-2.789 Kpa
ABSOLUTE GAS PRESSURE	97.618 Kpa
OXYGEN CONCENTRATION	7.67 %
CARBON DIOXIDE CONCENTRATION	11.33 %
CARBON MONOXIDE CONCENTRATION	16.9 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.07 m^3/s
DRY REF GAS FLOWRATE	15.51 Rm^3/s
DRY ADJ GAS FLOWRATE	20.73 Rm^3/s
WET REF GAS FLOWRATE	18.56 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1.7 mg
	-FILTER	0.3 mg
	-TOTAL	2 mg
DRY REF GAS VOLUME SAMPLED		3.796 m^3
PARTICULATE CONC. - ACTUAL		0.313 mg/m^3
PARTICULATE CONC. - DRY REF		0.527 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.394 mg/m^4
PARTICULATE CONC. - WET REF		0.440 mg/m^3
PARTICULATE EMISSION RATE		0.00817 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Acid Gases	**Test Location:**	Boiler No. 1 BH Outlet
Date:	September 29, 2015	**Operator:**	KS

Pitot Factor	0.845	**Filter (mg)**	0.3
DGMCF	0.981	**Probe (mg)**	2.2
Barometric Pressure	29.64 "Hg	**CWTR (g)**	488.8
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	37.4
Nozzle	0.25575 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.49 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.69
CO2%	11.39
COppm	22.4

Measured H2O
16.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	37.23	0.68	80	78	82	82	2.2	3.5		14.75	
	2.5	39.10	0.72	205	61	82	82	2.3	3.5		16.85	87.0
	5	41.17	0.7	206	60	82	82	2.2	3.5		16.62	103.9
2	7.5	43.20	0.69	207	60	82	82	2.1	3.5		16.52	103.4
	10	45.19	0.66	207	60	82	82	2	3.5		16.15	102.1
	12.5	47.14	0.68	207	61	82	82	2.1	3.5		16.40	102.3
3	15	49.11	0.69	207	63	82	82	2.1	3.5		16.52	101.8
	17.5	51.06	0.68	223	66	82	82	2.1	3.5		16.59	100.0
	20	53.02	0.64	222	68	82	82	2	3.5		16.09	102.5
4	22.5	54.95	0.64	223	71	82	82	2	3.5		16.10	103.9
	25	56.86	0.66	282	67	82	82	2	3.0		17.04	102.9
	27.5	58.77	0.64	282	67	82	82	1.9	3.0		16.78	105.7
5	30	60.64	0.65	283	65	82	83	1.8	3.0		16.92	105.0
	32.5	62.48	0.64	285	64	82	82	1.8	3.0		16.81	102.5
	35	64.30	0.65	285	59	82	83	1.8	3.0		16.94	102.4
6	37.5	66.12	0.65	285	57	82	83	1.8	3.0		16.94	101.5
	40	67.93	0.64	287	56	82	83	1.8	3.0		16.84	101.0
	42.5	69.74	0.61	287	55	82	83	1.7	3.0		16.44	101.9
7	45	71.52	0.63	288	55	82	83	1.7	3.0		16.71	102.6
	47.5	73.29	0.63	288	55	82	83	1.7	3.0		16.71	100.5
	50	75.05	0.63	289	55	82	83	1.7	3.0		16.73	99.9
8	52.5	76.82	0.65	287	55	82	83	1.7	3.0		16.97	100.5
	55	78.59	0.65	288	55	82	83	1.8	3.0		16.98	98.8
	57.5	80.40	0.68	287	55	82	83	1.9	3.0		17.35	101.2
9	60	82.26	0.65	287	53	82	83	1.8	3.0		16.97	101.6
	62.5	84.09	0.7	288	52	82	83	1.9	3.0		17.62	102.2
	65	85.95	0.71	287	52	82	83	1.9	3.0		17.73	100.2
10	67.5	87.83	0.75	288	51	82	83	2	3.0		18.24	100.5
	70	89.74	0.73	288	51	82	83	2	3.5		17.99	99.4
	72.5	91.66	0.74	287	51	82	83	2	3.5		18.10	101.3
11	75	93.57	0.74	287	51	82	83	2	3.5		18.10	100.0

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Acid Gases	**Test Location:**	Boiler No. 1 BH Outlet
Date:	September 29, 2015	**Operator:**	KS

Pitot Factor	0.845	**Filter (mg)**	0.3
DGMCF	0.981	**Probe (mg)**	2.2
Barometric Pressure	29.64 "Hg	**CWTR (g)**	488.8
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	37.4
Nozzle	0.25575 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.49 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.69
CO2%	11.39
COppm	22.4

Measured H2O
16.1 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	95.49	0.74	287	52	82	83	2	3.5		18.10	**100.5**
	80	97.42	0.73	287	52	82	83	2	3.5		17.98	**101.1**
12	82.5	99.33	0.7	287	52	82	82	1.9	3.5		17.61	**100.7**
	85	101.21	0.7	287	53	82	83	1.9	3.5		17.61	**101.3**
	87.5	103.09	0.71	287	54	82	82	1.9	3.5		17.73	**101.2**
	90	105.01								0.49		**102.7**
1	0	105.50	0.64	89	67	82	71	1.9	3.5		14.43	
	2.5	107.37	0.65	203	60	81	81	2	3.5		15.98	**91.3**
	5	109.27	0.68	206	59	81	81	2.1	3.5		16.39	**100.3**
2	7.5	111.22	0.68	208	54	81	81	2.1	4.0		16.41	**100.9**
	10	113.16	0.7	209	52	81	81	2.1	4.0		16.66	**100.5**
	12.5	115.11	0.72	210	52	81	81	2.2	4.0		16.91	**99.7**
3	15	117.12	0.71	211	53	81	81	2.2	4.0		16.81	**101.4**
	17.5	119.13	0.73	275	53	81	81	2.1	4.0		17.83	**102.2**
	20	121.11	0.73	282	53	81	81	2.1	4.0		17.92	**103.9**
4	22.5	123.09	0.72	282	53	81	81	2	4.0		17.80	**104.4**
	25	125.02	0.71	288	53	81	81	2	4.0		17.74	**102.4**
	27.5	126.94	0.69	289	53	81	81	1.9	4.0		17.50	**103.0**
5	30	128.83	0.68	288	54	80	81	1.9	4.0		17.36	**102.9**
	32.5	130.69	0.69	288	54	80	81	1.9	4.0		17.49	**102.0**
	35	132.56	0.68	287	54	80	81	1.9	4.0		17.35	**101.8**
6	37.5	134.43	0.6	290	54	80	80	1.7	4.0		16.33	**102.5**
	40	136.23	0.61	290	53	80	80	1.6	4.0		16.47	**105.3**
	42.5	137.96	0.61	290	52	80	80	1.6	3.5		16.47	**100.4**
7	45	139.69	0.66	290	52	80	80	1.7	3.5		17.13	**100.4**
	47.5	141.47	0.66	289	52	80	80	1.7	3.5		17.12	**99.3**
	50	143.24	0.66	289	52	80	80	1.7	3.5		17.12	**98.7**
8	52.5	145.02	0.66	290	52	80	80	1.8	3.5		17.13	**99.2**
	55	146.82	0.7	290	52	80	80	1.9	3.5		17.64	**100.4**
	57.5	148.68	0.68	289	53	80	80	1.9	4.0		17.38	**100.8**
9	60	150.55	0.7	289	52	80	80	1.9	4.0		17.63	**102.7**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Acid Gases	**Test Location:**	Boiler No. 1 BH Outlet
Date:	September 29, 2015	**Operator:**	KS

Pitot Factor	0.845	**Filter (mg)**	0.3
DGMCF	0.981	**Probe (mg)**	2.2
Barometric Pressure	29.64 "Hg	**CWTR (g)**	488.8
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	37.4
Nozzle	0.25575 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.49 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.69
CO2%	11.39
COppm	22.4

Measured H2O
16.1 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	152.42	0.68	289	53	80	80	1.8	4.0		17.38	**101.3**
	65	154.25	0.67	289	54	79	80	1.8	4.0		17.25	**100.5**
10	67.5	156.08	0.78	289	54	80	80	2.1	4.0		18.61	**101.4**
	70	158.01	0.8	289	54	79	80	2.1	4.0		18.85	**99.1**
	72.5	159.99	0.85	288	57	79	80	2.2	4.0		19.41	**100.4**
11	75	162.03	0.86	288	59	79	80	2.2	4.0		19.53	**100.4**
	77.5	164.06	0.88	287	56	79	80	2.3	4.5		19.74	**99.3**
	80	166.15	0.85	287	58	79	80	2.3	4.5		19.40	**101.0**
12	82.5	168.23	0.69	287	59	79	80	1.9	4.0		17.48	**102.3**
	85	170.11	0.68	286	58	79	80	1.8	4.0		17.34	**102.5**
	87.5	172.04	0.55	286	58	79	80	1.7	4.0		15.60	**105.9**
	90	173.73										**103.1**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 1 BH Outlet
Test No.:	2 - Particulate & Acid Gases
Date:	September 29, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.845
DGM CORRECTION FACTOR	0.981
NOZZLE DIAMETER	6.50 mm
DRY REF GAS VOLUME SAMPLED	3.734 m^3
AVGERGE ISOKINETICITY	101.2 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	129.7 °C
AVERAGE GAS MOISTURE BY VOLUME	16.1 %
AVERAGE GAS VELOCITY	17.20 m/s
BAROMETRIC PRESSURE (Station)	100.373 Kpa
STATIC PRESSURE	-2.789 Kpa
ABSOLUTE GAS PRESSURE	97.584 Kpa
OXYGEN CONCENTRATION	7.69 %
CARBON DIOXIDE CONCENTRATION	11.39 %
CARBON MONOXIDE CONCENTRATION	22.4 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.41 m^3/s
DRY REF GAS FLOWRATE	15.20 Rm^3/s
DRY ADJ GAS FLOWRATE	20.28 Rm^3/s
WET REF GAS FLOWRATE	18.11 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	2.2 mg
	-FILTER	0.3 mg
	-TOTAL	2.5 mg
DRY REF GAS VOLUME SAMPLED		3.734 m^3
PARTICULATE CONC. - ACTUAL		0.400 mg/m^3
PARTICULATE CONC. - DRY REF		0.670 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.502 mg/m^4
PARTICULATE CONC. - WET REF		0.562 mg/m^3
PARTICULATE EMISSION RATE		0.01017 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)
Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Acid Gases	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 1, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	0.1
DGMCF	1.017	**Probe (mg)**	3.3
Barometric Pressure	30.06 "Hg	**CWTR (g)**	542.4
Static Pressure	-10.900 "H_2O	**WCBDA (g)**	29.3
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.41 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.54
CO2%	11.62
COppm	16.0

Measured H2O
17.5 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	506.40	0.55	280	64	76	76	1.5	3.0		15.49	
	2.5	508.10	0.65	280	55	76	76	1.3	2.0		16.84	110.8
	5	509.85	0.61	279	53	76	76	1.4	2.0		16.30	104.9
2	7.5	511.50	0.62	279	51	77	76	1.4	2.0		16.44	102.0
	10	513.15	0.59	279	50	77	76	1.3	2.0		16.04	101.1
	12.5	514.74	0.61	273	50	78	76	1.4	3.0		16.24	99.8
3	15	516.36	0.59	273	50	78	76	1.4	2.0		15.97	99.6
	17.5	518.02	0.6	271	50	79	76	1.4	2.0		16.08	103.7
	20	519.66	0.62	270	49	79	76	1.4	2.0		16.34	101.4
4	22.5	521.39	0.62	274	49	80	76	1.4	2.0		16.38	105.1
	25	522.93	0.63	275	50	80	76	1.5	2.5		16.52	93.8
	27.5	524.65	0.63	276	50	81	77	1.5	2.5		16.54	104.0
5	30	526.37	0.63	276	50	81	76	1.4	2.5		16.54	103.9
	32.5	528.04	0.65	278	50	81	76	1.4	2.5		16.82	100.9
	35	529.69	0.64	278	49	81	76	1.5	2.5		16.69	98.3
6	37.5	531.41	0.66	278	50	81	76	1.5	2.5		16.95	103.3
	40	533.10	0.67	278	49	81	76	1.5	2.5		17.08	99.9
	42.5	534.82	0.63	278	50	82	76	1.5	2.0		16.56	101.0
7	45	536.53	0.55	278	50	81	77	1.2	2.0		15.47	103.4
	47.5	538.04	0.58	277	50	81	77	1.4	2.0		15.88	97.7
	50	539.66	0.55	276	50	81	77	1.3	2.5		15.45	102.0
8	52.5	541.25	0.64	275	50	82	77	1.3	2.5		16.66	102.7
	55	542.83	0.63	275	49	82	77	1.5	3.0		16.52	94.5
	57.5	544.54	0.64	275	49	82	77	1.5	3.0		16.66	103.1
9	60	546.26	0.66	274	48	82	77	1.5	3.0		16.90	102.9
	62.5	547.97	0.65	274	48	82	78	1.5	3.0		16.77	100.7
	65	549.69	0.65	273	49	82	77	1.5	3.0		16.76	101.9
10	67.5	551.41	0.67	273	49	82	78	1.5	3.0		17.02	102.0
	70	553.12	0.68	274	50	82	77	1.6	3.0		17.16	99.7
	72.5	554.80	0.67	275	50	82	78	1.6	3.0		17.04	97.5
11	75	556.65	0.73	275	50	83	78	1.5	3.0		17.79	108.1

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Acid Gases	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 1, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	0.1
DGMCF	1.017	**Probe (mg)**	3.3
Barometric Pressure	30.06 "Hg	**CWTR (g)**	542.4
Static Pressure	-10.900 "H_2O	**WCBDA (g)**	29.3
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.41 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.54
CO2%	11.62
COppm	16.0

Measured H2O
17.5 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	558.43	0.78	275	50	83	78	1.5	3.0		18.39	99.5
	80	560.12	0.72	276	50	83	78	1.7	3.0		17.68	91.4
12	82.5	561.93	0.74	275	50	83	78	1.8	3.0		17.91	102.0
	85	563.81	0.74	274	51	84	78	1.7	3.0		17.90	104.5
	87.5	565.65	0.71	274	51	83	78	1.7	3.0		17.53	102.1
	90	567.46								0.41		102.6
1	0	567.87	0.55	258	60	79	77	1.5	3.0		15.26	
	2.5	569.60	0.57	258	53	80	77	1.4	3.0		15.54	110.6
	5	571.29	0.6	259	53	80	77	1.3	3.0		15.95	106.0
2	7.5	572.87	0.6	258	53	79	77	1.4	3.0		15.94	96.7
	10	574.51	0.67	259	52	80	78	1.5	3.0		16.85	100.4
	12.5	576.21	0.6	260	51	80	77	1.6	3.0		15.96	98.4
3	15	577.96	0.6	270	52	80	77	1.4	3.0		16.07	107.2
	17.5	579.67	0.61	269	52	81	78	1.4	3.0		16.19	105.5
	20	581.31	0.63	271	52	81	77	1.4	3.0		16.48	100.1
4	22.5	582.96	0.63	271	52	81	77	1.4	3.0		16.48	99.3
	25	584.57	0.7	270	52	81	77	1.7	3.5		17.36	96.9
	27.5	586.42	0.72	280	52	81	77	1.6	3.0		17.73	105.6
5	30	588.20	0.71	281	53	82	78	1.6	3.0		17.61	100.8
	32.5	589.98	0.7	281	52	82	78	1.6	3.0		17.49	101.4
	35	591.78	0.69	281	52	82	78	1.6	3.0		17.36	103.3
6	37.5	593.60	0.7	281	52	83	78	1.6	3.0		17.49	105.2
	40	595.32	0.71	280	52	82	78	1.6	3.0		17.60	98.6
	42.5	597.10	0.7	281	51	82	78	1.6	3.0		17.49	101.4
7	45	598.87	0.7	281	54	83	78	1.6	3.0		17.49	101.6
	47.5	600.66	0.75	282	56	81	78	1.9	4.0		18.12	102.6
	50	602.53	0.73	281	57	81	77	1.6	4.0		17.86	103.9
8	52.5	604.31	0.78	281	57	82	78	1.6	3.0		18.46	100.2
	55	606.06	0.79	281	59	82	78	1.8	3.0		18.58	95.1
	57.5	607.92	0.8	280	61	82	78	1.9	4.0		18.68	100.5
9	60	609.85	0.83	281	58	82	77	2	4.0		19.04	103.6

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Acid Gases	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 1, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	0.1
DGMCF	1.017	**Probe (mg)**	3.3
Barometric Pressure	30.06 "Hg	**CWTR (g)**	542.4
Static Pressure	-10.900 "H_2O	**WCBDA (g)**	29.3
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.41 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.54
CO2%	11.62
COppm	16.0

Measured H2O
17.5 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	611.82	0.84	280	61	82	78	2	4.0		19.15	**104.0**
	65	613.78	0.85	281	63	82	78	2	4.0		19.27	**102.7**
10	67.5	615.81	0.84	281	61	82	78	2	4.0		19.16	**105.8**
	70	617.70	0.86	281	60	82	78	2.1	4.0		19.39	**99.1**
	72.5	619.80	0.85	281	61	82	78	2	4.0		19.27	**108.9**
11	75	621.81	0.845	280	59	82	78	2	4.0		19.20	**104.8**
	77.5	623.70	0.84	280	58	82	78	2	4.0		19.15	**98.8**
	80	625.76	0.81	280	60	82	78	1.9	4.0		18.80	**108.0**
12	82.5	627.70	0.79	280	59	82	78	1.9	4.0		18.57	**103.5**
	85	629.65	0.785	280	58	82	78	1.8	4.0		18.51	**105.4**
	87.5	631.51	0.78	279	59	82	78	1.8	4.0		18.44	**100.8**
	90	633.50										**108.1**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 1 BH Outlet
Test No.:	3 - Particulate & Acid Gases
Date:	October 1, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.847
DGM CORRECTION FACTOR	1.017
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	3.668 m^3
AVGERGE ISOKINETICITY	102.0 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	135.3 °C
AVERAGE GAS MOISTURE BY VOLUME	17.5 %
AVERAGE GAS VELOCITY	17.21 m/s
BAROMETRIC PRESSURE (Station)	101.795 Kpa
STATIC PRESSURE	-2.714 Kpa
ABSOLUTE GAS PRESSURE	99.081 Kpa
OXYGEN CONCENTRATION	7.54 %
CARBON DIOXIDE CONCENTRATION	11.62 %
CARBON MONOXIDE CONCENTRATION	16.0 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.43 m^3/s
DRY REF GAS FLOWRATE	14.98 Rm^3/s
DRY ADJ GAS FLOWRATE	20.21 Rm^3/s
WET REF GAS FLOWRATE	18.16 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	3.3 mg
	-FILTER	0.1 mg
	-TOTAL	3.4 mg
DRY REF GAS VOLUME SAMPLED		3.668 m^3
PARTICULATE CONC. - ACTUAL		0.546 mg/m^3
PARTICULATE CONC. - DRY REF		0.927 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.687 mg/m^4
PARTICULATE CONC. - WET REF		0.765 mg/m^3
PARTICULATE EMISSION RATE		0.01388 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)
Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

APPENDIX 33

Particle Size Distribution Test Emission Calculations
at the Boiler No. 1 BH Outlet
(12 pages)

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particle Size Distribution	**Test Location:**	Boiler No. 1 BH Outlet
Date:	September 29, 2015	**Operator:**	TT

Pitot Factor	0.844	**Filter (mg)**	10
DGMCF	1.017	**Probe (mg)**	0.7
Barometric Pressure	29.65 "Hg	**CWTR (g)**	440.9
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	99.7
Nozzle	0.241 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0 ft^3
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	1
		Number of points / Port	6

Combustion Gases	
O2%	7.67
CO2%	11.33
COppm	16.9

Measured H2O
17.5 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	35.63	0.9	236	80	80	80	1.3	7.0		19.31	
	5	38.84	0.88	284	67	78	80	1.3	7.0		19.74	87.5
	10	42.06	0.75	284	67	79	79	1.5	7.5		18.22	91.9
2	15	45.45	0.75	284	67	79	79	1.5	7.5		18.22	104.9
	20	49.05	0.68	287	58	80	80	1.4	8.0		17.39	111.3
	25	52.46	0.7	288	60	80	80	1.4	8.0		17.65	110.8
3	30	55.88	0.67	288	58	82	80	1.4	8.0		17.27	109.6
	35	59.28	0.73	289	58	83	80	1.4	8.0		18.04	111.1
	40	62.66	0.75	289	58	83	80	1.4	8.0		18.28	105.8
4	45	66.01	0.78	289	59	83	80	1.45	8.0		18.65	103.5
	50	69.46	0.78	289	59	84	80	1.45	8.0		18.65	104.5
	55	72.89	0.75	279	60	84	80	1.45	8.0		18.16	103.8
5	60	76.30	0.74	279	61	84	80	1.45	8.0		18.04	104.5
	65	79.78	0.78	279	62	85	81	1.4	8.0		18.52	107.4
	70	83.19	0.78	279	63	84	80	1.4	8.0		18.52	102.3
6	75	86.59	0.78	220	64	85	81	1.4	8.0		17.77	102.2
	80	89.99	0.78	220	65	85	81	1.4	8.0		17.77	97.8
	85	93.37	0.78	162	66	85	81	1.4	8.0		16.99	97.3
1	90	96.78	0.78	266	74	83	81	1.4	7.0		18.36	93.8
	95	100.22	0.78	276	59	83	81	1.4	7.5		18.48	102.5
	100	103.63	0.78	272	76	82	80	1.4	7.5		18.43	102.3
2	105	106.92	0.76	278	58	82	81	1.4	7.0		18.27	98.6
	110	110.24	0.76	281	58	83	82	1.4	7.5		18.31	101.1
	115	113.66	0.74	282	61	85	82	1.4	8.0		18.08	104.2
3	120	117.09	0.72	282	62	85	82	1.4	8.0		17.83	105.8
	125	120.51	0.73	283	63	86	82	1.4	8.0		17.97	106.9
	130	123.92	0.73	283	65	87	82	1.4	8.0		17.97	105.8
4	135	127.38	0.75	224	64	87	83	1.4	8.0		17.47	107.3
	140	130.83	0.75	224	64	87	83	1.3	8.0		17.47	101.2

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particle Size Distribution	**Test Location:**	Boiler No. 1 BH Outlet
Date:	September 29, 2015	**Operator:**	TT

Pitot Factor	0.844	**Filter (mg)**	10
DGMCF	1.017	**Probe (mg)**	0.7
Barometric Pressure	29.65 "Hg	**CWTR (g)**	440.9
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	99.7
Nozzle	0.241 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0 ft^3
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	1
		Number of points / Port	6

Combustion Gases	
O2%	7.67
CO2%	11.33
COppm	16.9

Measured H2O
17.5 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	145	134.22	0.76	224	63	87	82	1.3	8.0		17.59	**99.4**
5	150	137.63	0.7	215	63	87	82	1.3	8.0		16.77	**99.4**
	155	141.01	0.71	215	63	87	82	1.3	8.0		16.89	**102.0**
	160	144.35	0.72	213	64	88	83	1.3	9.0		16.98	**100.1**
6	165	147.54	0.74	213	62	88	84	1.3	10.0		17.21	**94.6**
	170	150.83	0.71	212	60	89	84	1.3	11.0		16.85	**96.1**
	175	154.58	0.68	211	57	88	84	1.3	10.0		16.48	**111.7**
	180	157.81										**98.3**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 1 BH Outlet
Test No.:	1 - Particle Size Distribution
Date:	September 29, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.844
DGM CORRECTION FACTOR	1.017
NOZZLE DIAMETER	6.12 mm
DRY REF GAS VOLUME SAMPLED	3.465 m^3
AVGERGE ISOKINETICITY	102.4 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	125.4 °C
AVERAGE GAS MOISTURE BY VOLUME	17.5 %
AVERAGE GAS VELOCITY	17.90 m/s
BAROMETRIC PRESSURE (Station)	100.406 Kpa
STATIC PRESSURE	-2.789 Kpa
ABSOLUTE GAS PRESSURE	97.618 Kpa
OXYGEN CONCENTRATION	7.67 %
CARBON DIOXIDE CONCENTRATION	11.33 %
CARBON MONOXIDE CONCENTRATION	16.9 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.46 m^3/s
DRY REF GAS FLOWRATE	15.73 Rm^3/s
DRY ADJ GAS FLOWRATE	21.02 Rm^3/s
WET REF GAS FLOWRATE	19.07 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0.7 mg
	-FILTER	10 mg
	-TOTAL	10.7 mg
DRY REF GAS VOLUME SAMPLED		3.465 m^3
PARTICULATE CONC. - ACTUAL		1.836 mg/m^3
PARTICULATE CONC. - DRY REF		3.088 mg/m^3
PARTICULATE CONC. - DRY ADJ		2.311 mg/m^4
PARTICULATE CONC. - WET REF		2.548 mg/m^3
PARTICULATE EMISSION RATE		0.04857 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Boiler No. 1 BH Outlet

Test No.: 1 - Particle Size Distributior
Date: September 29, 2015

PARTICLE SIZE DATA

PLATE NUMBER	WEIGHT COLLECTED (mg)	PERCENT OF TOTAL MATERIAL	CUMULATIVE PERCENT	EFFECTIVE CUT OFF DIAMETER (µm)
0	0.7	**6.54**	**6.54**	**13.99**
1	1.3	**12.15**	**18.69**	**13.99**
2	0.9	**8.41**	**27.10**	**8.71**
3	1	**9.35**	**36.45**	**5.83**
4	0.9	**8.41**	**44.86**	**4.05**
5	1.1	**10.28**	**55.14**	**2.55**
6	0.8	**7.48**	**62.62**	**1.31**
7	1.3	**12.15**	**74.77**	**0.79**
8	0.9	**8.41**	**83.18**	**0.54**
9	1.8	**16.82**	**100.00**	**0.54**

Total Weight Collected **10.70** mg
Flow Rate 0.6798 cfm
Plate 0= Probe Rinse
Plate 9= Back up Filter

Density= *1.00 G/CC*

	Cut-Off Diameter (µm)	Weight Percent < Cut Off Diameter
PM_{10}	**10**	**75.0**
$PM_{2.5}$	**2.5**	**44.6**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particle Size Distribution	**Test Location:**	Boiler No. 1 BH Outlet
Date:	September 29, 2015	**Operator:**	TT

Pitot Factor	0.844	**Filter (mg)**	7.4
DGMCF	1.017	**Probe (mg)**	0
Barometric Pressure	29.64 "Hg	**CWTR (g)**	456.2
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	38.8
Nozzle	0.241 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0 ft^3
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	1
		Number of points / Port	6

Combustion Gases	
O2%	7.69
CO2%	11.39
COppm	22.4

Measured H2O
16.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	59.72	0.74	161	80	82	82	1.3	5.0		16.49	
	5	63.12	0.72	279	69	83	82	1.3	5.0		17.75	**95.0**
	10	66.32	0.68	282	66	83	82	1.4	5.0		17.28	**98.8**
2	15	69.68	0.69	282	69	85	82	1.4	6.0		17.41	**107.0**
	20	73.05	0.67	283	64	85	82	1.4	6.0		17.17	**106.3**
	25	76.44	0.68	283	64	86	83	1.4	6.0		17.29	**108.6**
3	30	79.83	0.61	284	62	87	83	1.4	6.0		16.39	**107.6**
	35	83.25	0.61	285	62	87	83	1.4	6.0		16.40	114.6
	40	86.63	0.62	285	62	87	82	1.4	6.0		16.54	113.3
4	45	90.04	0.62	151	63	87	82	1.4	6.0		14.97	113.5
	50	93.44	0.65	220	63	86	82	1.4	6.0		16.17	**102.5**
	55	96.89	0.63	220	64	86	82	1.4	6.0		15.92	**107.2**
5	60	100.30	0.63	209	65	86	82	1.4	6.0		15.79	**107.7**
	65	103.74	0.64	207	65	86	82	1.4	6.0		15.90	**107.7**
	70	107.15	0.67	205	63	86	82	1.4	6.0		16.24	**105.8**
6	75	110.53	0.66	205	61	86	82	1.4	6.0		16.12	**102.3**
	80	113.92	0.65	204	59	86	82	1.4	6.0		15.98	**103.4**
	85	117.30	0.66	205	58	85	82	1.4	6.0		16.12	**103.8**
1	90	120.66	0.69	270	70	83	81	1.4	5.5		17.27	**102.6**
	95	124.06	0.72	280	51	82	81	1.4	6.0		17.76	**106.7**
	100	127.43	0.76	284	52	82	81	1.4	6.0		18.29	**104.3**
2	105	130.84	0.76	287	53	83	80	1.4	6.0		18.33	**103.0**
	110	134.19	0.67	279	53	83	81	1.4	6.0		17.12	**101.4**
	115	137.63	0.67	289	51	83	80	1.4	6.0		17.24	110.2
3	120	141.00	0.65	289	52	83	80	1.4	6.0		16.98	**108.8**
	125	144.42	0.65	289	52	83	80	1.4	6.0		16.98	112.1
	130	147.83	0.68	220	52	83	80	1.4	6.0		16.54	111.8
4	135	151.30	0.72	236	52	83	80	1.4	6.0		17.22	**105.9**
	140	154.75	0.73	231	52	83	80	1.4	6.0		17.28	**103.6**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particle Size Distribution	**Test Location:**	Boiler No. 1 BH Outlet
Date:	September 29, 2015	**Operator:**	TT

Pitot Factor	0.844	**Filter (mg)**	7.4
DGMCF	1.017	**Probe (mg)**	0
Barometric Pressure	29.64 "Hg	**CWTR (g)**	456.2
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	38.8
Nozzle	0.241 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0 ft^3
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	1
		Number of points / Port	6

Combustion Gases	
O2%	7.69
CO2%	11.39
COppm	22.4

Measured H2O
16.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	145	158.14	0.73	230	51	83	80	1.4	6.0		17.27	**100.7**
5	150	161.65	0.71	205	51	83	79	1.4	6.0		16.72	**104.2**
	155	165.03	0.71	205	50	82	79	1.4	6.0		16.72	**100.0**
	160	168.41	0.7	205	49	83	79	1.4	6.0		16.60	**100.1**
6	165	171.76	0.76	205	49	82	79	1.4	6.0		17.30	**99.8**
	170	175.09	0.81	206	49	83	79	1.4	6.0		17.87	**95.3**
	175	178.44	0.78	206	49	82	79	1.4	6.0		17.54	**92.8**
	180	181.84										**96.1**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 1 BH Outlet
Test No.:	2 - Particle Size Distribution
Date:	September 29, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.844
DGM CORRECTION FACTOR	1.017
NOZZLE DIAMETER	6.12 mm
DRY REF GAS VOLUME SAMPLED	3.462 m^3
AVGERGE ISOKINETICITY	104.6 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	116.0 °C
AVERAGE GAS MOISTURE BY VOLUME	16.3 %
AVERAGE GAS VELOCITY	16.86 m/s
BAROMETRIC PRESSURE (Station)	100.373 Kpa
STATIC PRESSURE	-2.789 Kpa
ABSOLUTE GAS PRESSURE	97.584 Kpa
OXYGEN CONCENTRATION	7.69 %
CARBON DIOXIDE CONCENTRATION	11.39 %
CARBON MONOXIDE CONCENTRATION	22.4 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	24.91 m^3/s
DRY REF GAS FLOWRATE	15.39 Rm^3/s
DRY ADJ GAS FLOWRATE	20.53 Rm^3/s
WET REF GAS FLOWRATE	18.39 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	7.4 mg
	-TOTAL	7.4 mg
DRY REF GAS VOLUME SAMPLED		3.462 m^3
PARTICULATE CONC. - ACTUAL		1.320 mg/m^3
PARTICULATE CONC. - DRY REF		2.137 mg/m^3
PARTICULATE CONC. - DRY ADJ		1.602 mg/m^4
PARTICULATE CONC. - WET REF		1.789 mg/m^3
PARTICULATE EMISSION RATE		0.03289 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)
Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Boiler No. 1 BH Outlet

Test No.: 2 - Particle Size Distributior
Date: September 29, 2015

PARTICLE SIZE DATA

PLATE NUMBER	WEIGHT COLLECTED (mg)	PERCENT OF TOTAL MATERIAL	CUMULATIVE PERCENT	EFFECTIVE CUT OFF DIAMETER (μm)
0	0	**0.00**	**0.00**	**13.87**
1	0.9	**12.16**	**12.16**	**13.87**
2	0.7	**9.46**	**21.62**	**8.64**
3	0.8	**10.81**	**32.43**	**5.79**
4	0.8	**10.81**	**43.24**	**4.02**
5	0.8	**10.81**	**54.05**	**2.53**
6	1.2	**16.22**	**70.27**	**1.30**
7	1.2	**16.22**	**86.49**	**0.79**
8	0.8	**10.81**	**97.30**	**0.53**
9	0.2	**2.70**	**100.00**	**0.53**

Total Weight Collected **7.40** mg

Density= 1.00 G/CC

Flow Rate 0.6793 cfm

Plate 0= Probe Rinse

Plate 9= Back up Filter

	Cut-Off Diameter (μm)	Weight Percent < Cut Off Diameter
PM_{10}	**10**	**80.8**
$PM_{2.5}$	**2.5**	**45.5**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particle Size Distribution	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 1, 2015	**Operator:**	CB

Pitot Factor	0.844	**Filter (mg)**	9.7
DGMCF	0.981	**Probe (mg)**	0
Barometric Pressure	30.06 "Hg	**CWTR (g)**	503.3
Static Pressure	-10.900 "H_2O	**WCBDA (g)**	30.2
Nozzle	0.241 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0 ft^3
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	1
		Number of points / Port	6

Combustion Gases	
O2%	7.54
CO2%	11.62
COppm	16.0

Measured H2O
17.5 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	140.75	0.85	257	78	75	75	1.6	6.0		18.89	
	5	144.40	0.83	280	71	71	75	1.6	7.0		18.97	101.9
	10	147.80	0.84	280	70	76	75	1.6	7.0		19.08	98.0
2	15	150.86	0.8	280	70	76	75	1.7	7.5		18.62	87.2
	20	154.19	0.78	278	71	76	76	1.7	7.5		18.36	97.3
	25	157.60	0.76	277	70	76	77	1.7	7.5		18.11	100.7
3	30	161.32	0.72	280	74	76	77	1.7	7.5		17.66	111.1
	35	164.77	0.72	281	71	77	77	1.7	7.5		17.68	106.1
	40	168.52	0.76	281	68	77	77	1.7	7.5		18.16	115.2
4	45	172.28	0.68	281	63	77	78	1.6	7.0		17.18	112.5
	50	175.78	0.68	281	54	77	78	1.5	7.0		17.18	110.6
	55	178.73	0.7	281	52	78	78	1.5	7.0		17.43	93.2
5	60	182.66	0.66	280	50	78	78	1.5	7.0		16.91	122.2
	65	186.07	0.66	281	49	78	78	1.5	7.0		16.92	109.1
	70	189.38	0.65	280	49	78	79	1.5	7.0		16.78	106.0
6	75	192.79	0.67	278	49	78	79	1.5	7.0		17.02	109.9
	80	196.15	0.66	277	49	78	79	1.5	7.0		16.88	106.5
	85	199.51	0.66	277	49	79	79	1.5	7.0		16.88	107.2
1	90	202.88	0.73	277	56	78	78	1.5	7.0		17.75	107.4
	95	206.04	0.76	278	48	79	79	1.5	7.0		18.12	96.0
	100	209.25	0.77	278	46	79	79	1.5	7.0		18.24	95.4
2	105	212.59	0.75	279	45	79	79	1.5	7.0		18.02	98.6
	110	215.91	0.77	280	44	79	78	1.5	7.0		18.27	99.4
	115	219.23	0.77	281	44	79	79	1.5	7.0		18.28	98.3
3	120	222.65	0.77	284	44	78	79	1.5	7.0		18.32	101.2
	125	225.86	0.77	284	46	78	79	1.5	7.0		18.32	95.3
	130	229.17	0.77	284	44	79	79	1.5	7.0		18.32	98.2
4	135	232.52	0.83	283	44	79	79	1.5	7.0		19.00	99.3
	140	235.90	0.84	283	44	79	79	1.5	7.0		19.12	96.5

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particle Size Distribution	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 1, 2015	**Operator:**	CB

Pitot Factor	0.844	**Filter (mg)**	9.7
DGMCF	0.981	**Probe (mg)**	0
Barometric Pressure	30.06 "Hg	**CWTR (g)**	503.3
Static Pressure	-10.900 "H_2O	**WCBDA (g)**	30.2
Nozzle	0.241 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0 ft^3
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	1
		Number of points / Port	6

Combustion Gases	
O2%	7.54
CO2%	11.62
COppm	16.0

Measured H2O
17.5 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	145	239.20	0.82	283	44	78	79	1.5	7.0		18.89	**93.6**
5	150	242.55	0.82	283	44	78	78	1.5	7.0		18.89	**96.3**
	155	245.95	0.82	284	44	78	79	1.5	7.0		18.90	**97.8**
	160	249.25	0.82	283	44	78	79	1.5	7.0		18.89	**94.9**
6	165	252.59	0.82	283	44	78	79	1.5	7.0		18.89	**96.0**
	170	255.94	0.82	282	44	78	79	1.5	7.0		18.88	**96.3**
	175	259.33	0.76	282	44	78	79	1.5	7.0		18.17	**97.4**
	180	262.74										101.7

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 1 BH Outlet
Test No.:	3 - Particle Size Distribution
Date:	October 1, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.844
DGM CORRECTION FACTOR	0.981
NOZZLE DIAMETER	6.12 mm
DRY REF GAS VOLUME SAMPLED	3.415 m^3
AVGERGE ISOKINETICITY	101.5 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	137.8 °C
AVERAGE GAS MOISTURE BY VOLUME	17.5 %
AVERAGE GAS VELOCITY	18.11 m/s
BAROMETRIC PRESSURE (Station)	101.795 Kpa
STATIC PRESSURE	-2.714 Kpa
ABSOLUTE GAS PRESSURE	99.081 Kpa
OXYGEN CONCENTRATION	7.54 %
CARBON DIOXIDE CONCENTRATION	11.62 %
CARBON MONOXIDE CONCENTRATION	16.0 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.76 m^3/s
DRY REF GAS FLOWRATE	15.66 Rm^3/s
DRY ADJ GAS FLOWRATE	21.13 Rm^3/s
WET REF GAS FLOWRATE	18.99 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	9.7 mg
	-TOTAL	9.7 mg
DRY REF GAS VOLUME SAMPLED		3.415 m^3
PARTICULATE CONC. - ACTUAL		1.662 mg/m^3
PARTICULATE CONC. - DRY REF		2.841 mg/m^3
PARTICULATE CONC. - DRY ADJ		2.105 mg/m^4
PARTICULATE CONC. - WET REF		2.343 mg/m^3
PARTICULATE EMISSION RATE		0.04447 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)
Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Boiler No. 1 BH Outlet

Test No.: 3 - Particle Size Distributior
Date: October 1, 2015

PARTICLE SIZE DATA

PLATE NUMBER	WEIGHT COLLECTED (mg)	PERCENT OF TOTAL MATERIAL	CUMULATIVE PERCENT	EFFECTIVE CUT OFF DIAMETER (µm)
0	0	**0.00**	**0.00**	**14.24**
1	1.2	**12.37**	**12.37**	**14.24**
2	0.7	**7.22**	**19.59**	**8.87**
3	1.1	**11.34**	**30.93**	**5.94**
4	1	**10.31**	**41.24**	**4.13**
5	1.4	**14.43**	**55.67**	**2.60**
6	1.3	**13.40**	**69.07**	**1.34**
7	1.2	**12.37**	**81.44**	**0.81**
8	0.7	**7.22**	**88.66**	**0.55**
9	1.1	**11.34**	**100.00**	**0.55**

Total Weight Collected **9.70** mg

Density= 1.00 G/CC

Flow Rate 0.6699 cfm

Plate 0= Probe Rinse

Plate 9= Back up Filter

	Cut-Off Diameter (µm)	Weight Percent < Cut Off Diameter
PM_{10}	**10**	**81.9**
$PM_{2.5}$	**2.5**	**43.2**

APPENDIX 34

Metals Test Emission Calculations at the Boiler No. 1 BH Outlet (9 pages)

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Metals	**Test Location:**	Boiler No. 1 BH Outlet
Date:	September 30, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	1.017	**Probe (mg)**	1.1
Barometric Pressure	29.8 "Hg	**CWTR (g)**	324.5
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	14.2
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.44 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.91
CO2%	11.23
COppm	15.5

Measured H2O
15.9 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	82.81	0.84	281	45	70	69	1.6	3.0		19.20	
	2.5	84.73	0.8	284	43	69	69	1.8	4.0		18.77	**100.5**
2	5	86.70	0.82	284	42	69	69	1.8	4.0		19.01	**106.0**
	7.5	88.43	0.82	283	42	69	69	1.8	4.0		18.99	**92.0**
3	10	90.29	0.76	283	42	70	69	1.8	4.0		18.28	**98.8**
	12.5	92.14	0.75	283	42	70	69	1.6	3.5		18.16	**102.0**
4	15	93.92	0.71	283	42	71	69	1.6	3.5		17.67	**98.7**
	17.5	95.67	0.7	283	42	71	69	1.6	3.5		17.55	**99.7**
5	20	97.45	0.64	283	43	72	69	1.4	3.0		16.78	**102.1**
	22.5	99.17	0.64	284	43	73	69	1.4	3.0		16.79	**103.0**
6	25	100.79	0.64	282	51	69	68	1.5	3.0		16.77	**97.0**
	27.5	102.51	0.62	286	47	69	66	1.4	3.0		16.55	**103.4**
7	30	104.17	0.71	285	46	70	69	1.55	3.5		17.70	**101.8**
	32.5	105.91	0.71	284	46	70	69	1.55	3.5		17.68	**99.3**
8	35	107.67	0.71	284	46	71	70	1.55	3.5		17.68	**100.4**
	37.5	109.44	0.71	284	46	71	69	1.55	3.5		17.68	**100.8**
9	40	111.22	0.7	284	46	73	70	1.5	3.5		17.56	**101.4**
	42.5	112.99	0.7	283	46	73	70	1.5	3.5		17.55	**101.3**
10	45	114.71	0.68	282	46	74	70	1.5	3.5		17.28	**98.4**
	47.5	116.43	0.65	282	47	74	70	1.5	3.5		16.90	**99.6**
11	50	118.13	0.66	282	47	75	70	1.5	3.5		17.03	**100.7**
	52.5	119.81	0.6	282	49	77	72	1.4	3.5		16.24	**98.7**
12	55	121.46	0.55	277	47	76	71	1.2	3.0		15.49	**101.2**
	57.5	123.00	0.5	277	47	76	71	1.1	3.0		14.77	**98.5**
	60	124.52								0.44		**101.9**
1	0	124.96	0.66	277	51	74	72	1.4	3.0		16.97	
	2.5	126.65	0.68	280	5	73	72	1.5	3.0		17.26	**98.8**
2	5	128.36	0.65	280	49	73	72	1.5	3.0		16.88	**98.8**
	7.5	129.94	0.68	280	48	74	72	1.5	3.0		17.26	**93.4**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Metals	**Test Location:**	Boiler No. 1 BH Outlet
Date:	September 30, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	1.017	**Probe (mg)**	1.1
Barometric Pressure	29.8 "Hg	**CWTR (g)**	324.5
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	14.2
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.44 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.91
CO2%	11.23
COppm	15.5

Measured H2O
15.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
3	10	131.79	0.68	282	49	74	72	1.5	3.0		17.28	**106.8**
	12.5	133.50	0.66	283	49	75	72	1.5	3.0		17.04	**98.9**
4	15	135.18	0.65	283	50	76	72	1.5	3.0		16.91	**98.6**
	17.5	136.93	0.66	284	50	76	72	1.5	3.0		17.05	**103.4**
5	20	138.67	0.64	284	50	77	73	1.4	3.5		16.79	**102.1**
	22.5	140.37	0.64	285	50	78	73	1.4	3.5		16.80	**101.0**
6	25	142.15	0.64	285	50	78	73	1.2	3.0		16.80	**105.8**
	27.5	143.85	0.63	286	49	78	73	1.5	3.0		16.68	**101.0**
7	30	145.40	0.66	286	49	79	73	1.8	3.0		17.07	**92.9**
	32.5	147.16	0.67	287	49	79	74	1.6	3.0		17.21	**103.1**
8	35	148.98	0.71	287	49	80	74	1.5	4.0		17.72	**105.7**
	37.5	150.72	0.71	287	50	79	74	1.6	4.0		17.72	**98.0**
9	40	152.47	0.75	288	51	80	74	1.8	4.0		18.22	**98.7**
	42.5	154.32	0.78	288	52	80	74	1.7	4.0		18.59	**101.6**
10	45	156.15	0.81	289	51	80	75	1.8	4.0		18.95	**98.5**
	47.5	158.02	0.81	288	52	80	74	1.8	4.0		18.94	**98.8**
11	50	159.92	0.8	288	53	80	75	1.8	4.0		18.82	**100.4**
	52.5	161.82	0.81	288	53	81	75	1.8	4.0		18.94	**100.9**
12	55	163.71	0.8	286	53	81	75	1.8	4.0		18.80	**99.7**
	57.5	165.59	0.76	286	54	81	75	1.8	4.0		18.32	**99.6**
	60	167.50										**103.8**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 1 BH Outlet
Test No.:	1 - Metals
Date:	September 30, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.847
DGM CORRECTION FACTOR	1.017
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	2.445 m^3
AVGERGE ISOKINETICITY	100.4 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	139.9 °C
AVERAGE GAS MOISTURE BY VOLUME	15.9 %
AVERAGE GAS VELOCITY	17.52 m/s
BAROMETRIC PRESSURE (Station)	100.914 Kpa
STATIC PRESSURE	-2.789 Kpa
ABSOLUTE GAS PRESSURE	98.126 Kpa
OXYGEN CONCENTRATION	7.91 %
CARBON DIOXIDE CONCENTRATION	11.23 %
CARBON MONOXIDE CONCENTRATION	15.5 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.89 m^3/s
DRY REF GAS FLOWRATE	15.23 Rm^3/s
DRY ADJ GAS FLOWRATE	19.98 Rm^3/s
WET REF GAS FLOWRATE	18.10 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1.1 mg
	-FILTER	0 mg
	-TOTAL	1.1 mg
DRY REF GAS VOLUME SAMPLED		2.445 m^3
PARTICULATE CONC. - ACTUAL		0.265 mg/m^3
PARTICULATE CONC. - DRY REF		0.450 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.343 mg/m^4
PARTICULATE CONC. - WET REF		0.379 mg/m^3
PARTICULATE EMISSION RATE		0.00685 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)
Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Metals	**Test Location:**	Boiler No. 1 BH Outlet
Date:	September 30, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	1.017	**Probe (mg)**	0.8
Barometric Pressure	29.83 "Hg	**CWTR (g)**	350.7
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	13.1
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.46 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.92
CO2%	11.12
COppm	21.3

Measured H2O
16.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	167.94	0.79	281	62	75	75	1.7	2.5		18.63	
	2.5	169.81	0.81	285	59	75	74	1.8	2.5		18.92	**100.5**
2	5	171.69	0.8	285	57	76	75	1.8	2.5		18.80	**100.1**
	7.5	173.58	0.8	284	58	76	75	1.8	2.5		18.79	**101.1**
3	10	175.46	0.78	287	59	77	75	1.8	2.5		18.59	**100.5**
	12.5	177.33	0.8	285	58	77	76	1.8	2.5		18.80	**101.3**
4	15	179.20	0.77	284	58	78	76	1.8	2.5		18.43	**99.8**
	17.5	181.07	0.79	285	58	80	75	1.8	2.5		18.68	**101.6**
5	20	182.94	0.73	286	58	80	76	1.8	2.5		17.97	**100.3**
	22.5	184.81	0.72	286	58	81	76	1.6	2.5		17.85	**104.3**
6	25	186.62	0.68	286	58	81	76	1.5	2.5		17.35	**101.5**
	27.5	188.32	0.75	286	58	82	76	1.7	2.5		18.22	**98.1**
7	30	190.14	0.68	286	58	81	77	1.6	2.5		17.35	**99.9**
	32.5	191.91	0.68	286	58	82	77	1.6	2.5		17.35	**102.0**
8	35	193.67	0.73	285	58	82	77	1.7	2.5		17.96	**101.4**
	37.5	195.46	0.76	285	57	82	77	1.7	2.5		18.33	**99.5**
9	40	197.30	0.78	285	57	83	76	1.7	2.5		18.57	**100.2**
	42.5	199.14	0.8	293	60	83	78	1.8	2.5		18.90	**98.9**
10	45	201.04	0.8	285	58	83	78	1.8	3.0		18.80	**101.2**
	47.5	202.94	0.76	285	58	83	78	1.7	3.0		18.33	**100.7**
11	50	204.81	0.76	285	58	83	78	1.7	3.0		18.33	**101.7**
	52.5	206.65	0.78	286	57	83	78	1.8	3.0		18.58	**100.0**
12	55	208.48	0.77	285	57	83	78	1.8	3.0		18.45	**98.3**
	57.5	210.40	0.77	284	57	83	78	1.7	3.0		18.43	**103.7**
	60	212.25								0.46		**99.8**
1	0	212.71	0.74	280	61	80	78	1.5	3.0		18.02	
	2.5	214.48	0.84	284	58	80	77	1.8	3.0		19.25	**97.4**
2	5	216.35	0.81	284	56	80	77	2	3.0		18.91	**97.0**
	7.5	218.30	0.78	284	57	80	78	1.8	3.0		18.55	**103.1**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Metals	**Test Location:**	Boiler No. 1 BH Outlet
Date:	September 30, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	1.017	**Probe (mg)**	0.8
Barometric Pressure	29.83 "Hg	**CWTR (g)**	350.7
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	13.1
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.46 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.92
CO2%	11.12
COppm	21.3

Measured H2O
16.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
3	10	220.22	0.81	284	58	81	78	1.7	3.0		18.91	**103.3**
	12.5	222.07	0.86	284	58	81	77	1.9	3.0		19.48	**97.5**
4	15	224.00	0.8	282	58	82	78	1.9	3.0		18.76	**98.9**
	17.5	225.94	0.8	284	58	82	78	1.8	3.0		18.79	**102.7**
5	20	227.85	0.79	284	59	82	78	1.8	3.0		18.67	**101.2**
	22.5	229.75	0.7	280	58	83	78	1.8	3.0		17.53	**101.4**
6	25	231.66	0.62	283	58	83	78	1.5	3.0		16.53	**107.8**
	27.5	233.37	0.6	284	57	83	78	1.4	3.0		16.27	**102.7**
7	30	235.03	0.68	283	57	83	78	1.5	2.5		17.31	**101.4**
	32.5	236.76	0.66	283	56	83	78	1.5	2.5		17.05	**99.2**
8	35	238.40	0.7	283	56	83	78	1.7	3.0		17.56	**95.5**
	37.5	240.16	0.68	283	56	83	78	1.6	3.0		17.31	**99.6**
9	40	241.94	0.67	283	55	83	78	1.5	3.0		17.18	**102.1**
	42.5	243.68	0.71	282	56	83	78	1.5	3.0		17.68	**100.6**
10	45	245.42	0.72	283	56	83	78	1.6	3.0		17.81	**97.6**
	47.5	247.21	0.72	282	56	83	78	1.6	3.0		17.80	**99.8**
11	50	248.99	0.71	282	57	83	78	1.6	3.0		17.68	**99.2**
	52.5	250.81	0.75	282	56	83	78	1.7	3.0		18.17	**102.1**
12	55	252.66	0.7	283	56	83	78	1.6	3.0		17.56	**101.0**
	57.5	254.45	0.71	282	56	83	78	1.6	3.0		17.68	**101.2**
	60	256.26										**101.6**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 1 BH Outlet
Test No.:	2 - Metals
Date:	September 30, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.847
DGM CORRECTION FACTOR	1.017
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	2.524 m^3
AVGERGE ISOKINETICITY	100.6 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.1 °C
AVERAGE GAS MOISTURE BY VOLUME	16.4 %
AVERAGE GAS VELOCITY	18.14 m/s
BAROMETRIC PRESSURE (Station)	101.016 Kpa
STATIC PRESSURE	-2.789 Kpa
ABSOLUTE GAS PRESSURE	98.227 Kpa
OXYGEN CONCENTRATION	7.92 %
CARBON DIOXIDE CONCENTRATION	11.12 %
CARBON MONOXIDE CONCENTRATION	21.3 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.81 m^3/s
DRY REF GAS FLOWRATE	15.68 Rm^3/s
DRY ADJ GAS FLOWRATE	20.55 Rm^3/s
WET REF GAS FLOWRATE	18.75 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0.8 mg
	-FILTER	0 mg
	-TOTAL	0.8 mg
DRY REF GAS VOLUME SAMPLED		2.524 m^3
PARTICULATE CONC. - ACTUAL		0.185 mg/m^3
PARTICULATE CONC. - DRY REF		0.317 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.242 mg/m^4
PARTICULATE CONC. - WET REF		0.265 mg/m^3
PARTICULATE EMISSION RATE		0.00497 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Metals	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 1, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	1.017	**Probe (mg)**	1.8
Barometric Pressure	30.05 "Hg	**CWTR (g)**	336.9
Static Pressure	-10.900 "H_2O	**WCBDA (g)**	15.8
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.57 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.62
CO2%	11.58
COppm	18.3

Measured H2O
16.5 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	258.92	0.8	266	47	62	62	1.5	3.0		18.47	
	2.5	260.75	0.81	283	44	61	61	1.7	3.0		18.80	**99.6**
2	5	262.52	0.81	282	42	61	61	1.8	3.0		18.79	**97.1**
	7.5	264.34	0.79	283	42	61	61	1.7	3.0		18.57	**99.8**
3	10	266.15	0.74	283	41	62	61	1.7	3.0		17.97	**100.5**
	12.5	267.93	0.74	283	40	63	61	1.6	3.0		17.97	**102.0**
4	15	269.67	0.71	284	40	63	61	1.6	3.0		17.62	**99.6**
	17.5	271.41	0.71	282	40	63	61	1.5	3.0		17.59	**101.8**
5	20	273.08	0.68	283	39	64	60	1.5	3.0		17.23	**97.5**
	22.5	274.77	0.69	283	39	65	61	1.5	3.0		17.35	**100.9**
6	25	276.42	0.61	282	40	65	61	1.4	3.0		16.31	**97.6**
	27.5	278.06	0.61	281	40	65	61	1.4	3.0		16.29	**103.1**
7	30	279.68	0.66	281	40	65	61	1.4	3.0		16.95	**101.8**
	32.5	281.30	0.65	281	40	65	61	1.4	3.0		16.82	**97.8**
8	35	282.95	0.69	282	40	65	61	1.4	3.0		17.34	**100.4**
	37.5	284.59	0.67	283	40	65	61	1.5	3.0		17.10	**96.9**
9	40	286.27	0.68	284	40	66	61	1.5	3.0		17.24	**100.8**
	42.5	288.00	0.7	283	40	66	61	1.5	3.0		17.48	**103.1**
10	45	289.62	0.67	282	40	66	61	1.5	3.0		17.09	**95.1**
	47.5	291.29	0.67	282	41	66	61	1.5	3.0		17.09	**100.1**
11	50	292.96	0.66	281	41	66	62	1.5	3.0		16.95	**100.1**
	52.5	294.66	0.64	280	41	66	61	1.5	3.0		16.68	**102.5**
12	55	296.32	0.67	278	42	67	61	1.5	3.0		17.04	**101.7**
	57.5	298.00	0.64	280	42	67	62	1.4	3.0		16.68	**100.3**
	60	299.73								0.57		**105.7**
1	0	300.30	0.75	279	43	64	62	1.3	3.0		18.04	
	2.5	301.87	0.81	281	44	64	62	1.6	3.0		18.78	88.8
2	5	303.56	0.8	281	44	64	62	1.9	3.0		18.66	**92.2**
	7.5	305.43	0.8	280	44	65	62	2	3.0		18.65	**102.7**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Metals	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 1, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	1.017	**Probe (mg)**	1.8
Barometric Pressure	30.05 "Hg	**CWTR (g)**	336.9
Static Pressure	-10.900 "H_2O	**WCBDA (g)**	15.8
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.57 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.62
CO2%	11.58
COppm	18.3

Measured H2O
16.5 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
3	10	307.33	0.8	281	45	65	62	1.9	3.0		18.66	**104.2**
	12.5	309.25	0.81	281	45	66	62	1.8	3.0		18.78	**105.3**
4	15	311.09	0.74	281	45	66	62	1.7	3.0		17.95	**100.2**
	17.5	312.89	0.7	281	45	67	62	1.6	3.0		17.46	**102.5**
5	20	314.63	0.66	281	46	67	62	1.4	3.0		16.95	**101.8**
	22.5	316.29	0.65	281	46	67	62	1.4	3.0		16.82	**100.0**
6	25	317.92	0.64	280	46	68	63	1.5	3.0		16.68	**98.9**
	27.5	319.62	0.64	280	45	68	63	1.4	3.0		16.68	**103.7**
7	30	321.24	0.65	281	46	68	63	1.5	3.0		16.82	**98.8**
	32.5	322.91	0.65	281	45	68	63	1.5	3.0		16.82	**101.2**
8	35	324.57	0.66	281	46	68	63	1.5	3.0		16.95	**100.6**
	37.5	326.18	0.64	281	45	68	63	1.5	3.0		16.69	**96.8**
9	40	327.92	0.64	280	45	70	63	1.4	3.0		16.68	**106.2**
	42.5	329.55	0.64	280	45	68	63	1.5	3.0		16.68	**99.2**
10	45	331.22	0.64	280	45	69	63	1.5	3.0		16.68	**101.9**
	47.5	332.90	0.63	280	45	68	63	1.5	3.0		16.55	**102.4**
11	50	334.54	0.58	280	45	68	63	1.4	3.0		15.88	**100.8**
	52.5	336.17	0.59	280	45	68	64	1.2	3.0		16.01	**104.4**
12	55	337.68	0.66	272	47	69	64	1.4	3.0		16.85	**95.8**
	57.5	339.31	0.63	274	47	69	64	1.6	3.0		16.48	**97.2**
	60	341.05										**106.4**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 1 BH Outlet
Test No.:	3 - Metals
Date:	October 1, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.847
DGM CORRECTION FACTOR	1.017
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	2.429 m^3
AVGERGE ISOKINETICITY	100.4 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	138.1 °C
AVERAGE GAS MOISTURE BY VOLUME	16.5 %
AVERAGE GAS VELOCITY	17.30 m/s
BAROMETRIC PRESSURE (Station)	101.761 Kpa
STATIC PRESSURE	-2.714 Kpa
ABSOLUTE GAS PRESSURE	99.047 Kpa
OXYGEN CONCENTRATION	7.62 %
CARBON DIOXIDE CONCENTRATION	11.58 %
CARBON MONOXIDE CONCENTRATION	18.3 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.57 m^3/s
DRY REF GAS FLOWRATE	15.13 Rm^3/s
DRY ADJ GAS FLOWRATE	20.29 Rm^3/s
WET REF GAS FLOWRATE	18.12 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1.8 mg
	-FILTER	0 mg
	-TOTAL	1.8 mg
DRY REF GAS VOLUME SAMPLED		2.429 m^3
PARTICULATE CONC. - ACTUAL		0.438 mg/m^3
PARTICULATE CONC. - DRY REF		0.741 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.552 mg/m^4
PARTICULATE CONC. - WET REF		0.619 mg/m^3
PARTICULATE EMISSION RATE		0.01121 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

APPENDIX 35

Hexavalent Chromium Test Emission Calculations
at the Boiler No. 1 BH Outlet
(9 pages)

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Hexavalent Chromium	**Test Location:**	Boiler No. 1 BH Outlet
Date:	September 30, 2015	**Operator:**	MT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.981	**Probe (mg)**	0
Barometric Pressure	29.8 "Hg	**CWTR (g)**	212.3
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	49.8
Nozzle	0.256 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.53 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.91
CO2%	11.23
COppm	15.5

Measured H2O
15.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	874.80	0.68	285	50	69	69	1.8	9.0		17.30	
	2.5	876.50	0.68	285	50	69	69	1.8	9.0		17.30	**94.8**
2	5	878.20	0.68	285	45	69	69	2	10.0		17.30	**94.8**
	7.5	880.04	0.66	284	45	69	69	1.9	10.0		17.03	**102.7**
3	10	881.80	0.65	284	45	69	69	1.8	10.0		16.90	**99.6**
	12.5	883.65	0.66	284	45	69	69	1.8	10.0		17.03	**105.5**
4	15	885.50	0.66	285	45	69	69	1.8	9.0		17.04	**104.7**
	17.5	887.30	0.68	285	46	69	69	1.8	9.0		17.30	**101.9**
5	20	889.10	0.65	285	46	69	69	1.7	9.0		16.91	**100.4**
	22.5	890.91	0.65	285	46	69	69	1.7	9.0		16.91	**103.2**
6	25	892.65	0.64	287	52	69	69	1.8	9.0		16.81	**99.2**
	27.5	894.43	0.66	286	47	69	69	1.8	9.0		17.06	**102.5**
7	30	896.23	0.68	285	46	69	69	1.8	9.0		17.30	**102.0**
	32.5	898.01	0.665	285	46	69	70	1.8	9.0		17.11	**99.3**
8	35	899.77	0.67	285	46	69	69	1.8	9.0		17.17	**99.2**
	37.5	901.54	0.67	285	47	69	69	1.8	9.0		17.17	**99.5**
9	40	903.28	0.71	284	49	69	69	1.8	9.0		17.67	**97.8**
	42.5	905.03	0.715	284	49	69	70	1.9	9.0		17.73	**95.5**
10	45	906.85	0.77	284	50	70	70	2	12.0		18.40	**98.9**
	47.5	908.77	0.78	283	52	70	70	2	12.0		18.50	**100.4**
11	50	910.67	0.79	283	53	70	70	2.1	12.0		18.62	**98.7**
	52.5	912.58	0.77	283	54	70	70	2.1	12.0		18.38	**98.6**
12	55	914.49	0.785	282	58	70	70	2.1	12.0		18.55	**99.9**
	57.5	916.42	0.78	282	60	70	70	2.1	13.0		18.49	**99.9**
	60	918.36								0.53		**100.7**
1	0	918.89	0.71	282	60	70	70	1.9	10.0		17.64	
	2.5	920.69	0.73	280	53	71	71	2	10.0		17.86	**97.9**
2	5	922.51	0.71	281	50	71	71	2.1	11.0		17.63	**97.3**
	7.5	924.42	0.72	282	50	71	72	2	11.0		17.77	**103.7**

ORTECH Environmental

Plant: Covanta - DYEC
Test No.: 1 - Hexavalent Chromium
Date: September 30, 2015

Plant Location: Courtice, ON
Test Location: Boiler No. 1 BH Outlet
Operator: MT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.981	**Probe (mg)**	0
Barometric Pressure	29.8 "Hg	**CWTR (g)**	212.3
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	49.8
Nozzle	0.256 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.53 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.91
CO2%	11.23
COppm	15.5

Measured H2O
15.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
3	10	926.29	0.755	283	51	71	73	2	11.0		18.20	**100.7**
	12.5	928.17	0.745	284	53	71	72	2	11.0		18.10	**98.9**
4	15	930.05	0.7	284	55	71	72	1.9	12.0		17.54	**99.7**
	17.5	931.93	0.7	285	56	72	72	1.9	12.0		17.55	**102.8**
5	20	933.77	0.7	286	57	72	72	1.9	12.0		17.56	**100.6**
	22.5	935.61	0.64	286	59	72	72	1.7	11.0		16.79	**100.7**
6	25	937.37	0.66	286	60	72	72	1.7	10.0		17.06	**100.7**
	27.5	939.11	0.61	287	62	72	73	1.7	10.0		16.41	**98.0**
7	30	940.84	0.615	287	63	72	73	1.7	10.0		16.47	**101.3**
	32.5	942.60	0.64	288	64	72	73	1.7	10.0		16.82	**102.7**
8	35	944.32	0.675	288	65	72	73	1.7	11.0		17.27	**98.4**
	37.5	946.10	0.67	288	65	73	73	1.7	11.0		17.21	**99.2**
9	40	947.83	0.68	288	65	73	73	1.8	11.0		17.33	**96.7**
	42.5	949.59	0.69	289	65	73	73	1.9	11.0		17.47	**97.6**
10	45	951.38	0.685	288	65	73	74	1.9	12.0		17.40	**98.7**
	47.5	953.23	0.66	287	65	73	74	1.9	12.0		17.07	**102.2**
11	50	955.00	0.65	283	64	73	74	1.9	12.0		16.89	**99.5**
	52.5	956.89	0.66	282	64	73	74	1.8	12.0		17.01	**106.8**
12	55	958.77	0.62	281	64	73	74	1.7	11.0		16.47	**105.3**
	57.5	960.49	0.64	277	64	73	74	1.7	11.0		16.69	**99.3**
	60	962.34										**104.9**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 1 BH Outlet
Test No.:	1 - Hexavalent Chromium
Date:	September 30, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846
DGM CORRECTION FACTOR	0.981
NOZZLE DIAMETER	6.50 mm
DRY REF GAS VOLUME SAMPLED	2.448 m^3
AVGERGE ISOKINETICITY	100.3 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.3 °C
AVERAGE GAS MOISTURE BY VOLUME	15.9 %
AVERAGE GAS VELOCITY	17.38 m/s
BAROMETRIC PRESSURE (Station)	100.914 Kpa
STATIC PRESSURE	-2.789 Kpa
ABSOLUTE GAS PRESSURE	98.126 Kpa
OXYGEN CONCENTRATION	7.91 %
CARBON DIOXIDE CONCENTRATION	11.23 %
CARBON MONOXIDE CONCENTRATION	15.5 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.68 m^3/s
DRY REF GAS FLOWRATE	15.08 Rm^3/s
DRY ADJ GAS FLOWRATE	19.79 Rm^3/s
WET REF GAS FLOWRATE	17.94 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		2.448 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Hexavalent Chromium	**Test Location:**	Boiler No. 1 BH Outlet
Date:	September 30, 2015	**Operator:**	MT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.981	**Probe (mg)**	0
Barometric Pressure	29.83 "Hg	**CWTR (g)**	293.5
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	49.2
Nozzle	0.256 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.33 ft³
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.92
CO2%	11.12
COppm	21.3

Measured H2O
16.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	963.68	0.73	280	65	70	70	1.9	8.0		17.88	
	2.5	965.45	0.64	276	60	73	74	1.9	8.0		16.70	**95.3**
2	5	967.19	0.69	277	58	74	74	2	8.0		17.35	**99.1**
	7.5	968.99	0.68	280	55	74	74	2	8.0		17.26	**98.8**
3	10	970.90	0.68	281	54	74	74	2	8.0		17.27	**105.8**
	12.5	972.75	0.69	279	54	75	74	1.9	8.0		17.37	**102.5**
4	15	974.62	0.69	284	54	74	74	1.9	8.0		17.43	**102.6**
	17.5	976.47	0.68	284	54	74	75	1.9	8.0		17.30	**102.0**
5	20	978.34	0.65	286	54	74	75	1.8	8.0		16.94	**103.7**
	22.5	980.17	0.66	287	54	74	75	1.8	8.0		17.08	**103.9**
6	25	981.98	0.67	289	54	75	75	1.8	8.0		17.23	**102.1**
	27.5	983.80	0.69	287	54	75	75	1.8	8.0		17.46	**101.9**
7	30	985.60	0.65	287	54	75	75	1.8	8.0		16.95	**99.2**
	32.5	987.35	0.64	287	56	75	76	1.8	8.0		16.82	**99.4**
8	35	989.20	0.71	286	56	76	76	1.9	9.0		17.70	**105.8**
	37.5	991.07	0.71	286	56	75	76	1.9	9.0		17.70	**101.4**
9	40	992.93	0.76	286	56	75	76	1.9	9.0		18.32	**100.9**
	42.5	994.83	0.76	286	51	75	76	1.9	9.0		18.32	**99.6**
10	45	996.73	0.76	286	57	76	76	1.9	9.0		18.32	**99.6**
	47.5	998.48	0.75	287	58	76	76	1.9	9.0		18.21	**91.7**
11	50	1000.35	0.79	286	58	76	76	2	9.0		18.67	**98.7**
	52.5	1002.40	0.785	286	58	76	77	2	9.0		18.62	**105.4**
12	55	1004.31	0.77	286	59	76	77	2.1	10.0		18.44	**98.4**
	57.5	1006.20	0.84	286	59	76	77	2.3	12.0		19.26	**98.3**
	60	1008.16								0.33		**97.7**
1	0	1008.49	0.7	285	60	76	77	1.8	8.0		17.57	
	2.5	1010.30	0.7	282	59	76	76	1.9	8.0		17.53	**98.6**
2	5	1012.10	0.69	282	56	76	77	1.9	8.0		17.41	**98.0**
	7.5	1013.91	0.67	282	56	76	76	1.9	8.0		17.15	**99.2**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Hexavalent Chromium	**Test Location:**	Boiler No. 1 BH Outlet
Date:	September 30, 2015	**Operator:**	MT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.981	**Probe (mg)**	0
Barometric Pressure	29.83 "Hg	**CWTR (g)**	293.5
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	49.2
Nozzle	0.256 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.33 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.92
CO2%	11.12
COppm	21.3

Measured H2O
16.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
3	10	1015.74	0.68	282	56	76	77	2	9.0		17.28	**101.8**
	12.5	1017.60	0.695	282	58	76	77	2	9.0		17.47	**102.7**
4	15	1019.50	0.68	282	58	76	77	1.9	9.0		17.28	**103.7**
	17.5	1021.36	0.68	282	59	76	77	1.9	9.0		17.28	**102.6**
5	20	1023.22	0.66	284	58	76	77	1.8	9.0		17.05	**102.6**
	22.5	1025.07	0.68	284	56	76	77	1.8	9.0		17.30	**103.7**
6	25	1026.89	0.645	285	56	76	77	1.7	8.0		16.86	**100.5**
	27.5	1028.65	0.66	284	55	76	77	1.7	8.0		17.05	**99.9**
7	30	1030.47	0.65	284	55	76	77	1.7	8.0		16.92	**102.0**
	32.5	1032.19	0.65	284	56	76	77	1.8	8.0		16.92	**97.2**
8	35	1033.96	0.67	284	56	76	77	1.8	8.0		17.18	**100.0**
	37.5	1035.74	0.68	284	57	76	77	1.8	8.0		17.30	**99.1**
9	40	1037.54	0.68	284	58	76	77	1.8	8.0		17.30	**99.4**
	42.5	1039.31	0.68	284	57	76	77	1.9	9.0		17.30	**97.8**
10	45	1041.11	0.71	284	57	76	77	2	9.0		17.68	**99.5**
	47.5	1042.96	0.77	284	58	76	77	2.1	10.0		18.41	**100.1**
11	50	1044.91	0.755	284	58	76	77	2.1	10.0		18.23	**101.3**
	52.5	1046.82	0.76	284	58	77	77	2.1	10.0		18.29	**100.2**
12	55	1048.73	0.76	283	58	76	77	2.1	10.0		18.28	**99.8**
	57.5	1050.64	0.76	283	58	76	77	2.1	10.0		18.28	**99.8**
	60	1052.58										**101.4**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 1 BH Outlet
Test No.:	2 - Hexavalent Chromium
Date:	September 30, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846
DGM CORRECTION FACTOR	0.981
NOZZLE DIAMETER	6.50 mm
DRY REF GAS VOLUME SAMPLED	2.472 m^3
AVGERGE ISOKINETICITY	100.5 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	139.9 °C
AVERAGE GAS MOISTURE BY VOLUME	16.4 %
AVERAGE GAS VELOCITY	17.58 m/s
BAROMETRIC PRESSURE (Station)	101.016 Kpa
STATIC PRESSURE	-2.789 Kpa
ABSOLUTE GAS PRESSURE	98.227 Kpa
OXYGEN CONCENTRATION	7.92 %
CARBON DIOXIDE CONCENTRATION	11.12 %
CARBON MONOXIDE CONCENTRATION	21.3 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.98 m^3/s
DRY REF GAS FLOWRATE	15.19 Rm^3/s
DRY ADJ GAS FLOWRATE	19.92 Rm^3/s
WET REF GAS FLOWRATE	18.18 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		2.472 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)
Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Hexavalent Chromium	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 1, 2015	**Operator:**	MT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.981	**Probe (mg)**	0
Barometric Pressure	30.05 "Hg	**CWTR (g)**	305.8
Static Pressure	-10.900 "H_2O	**WCBDA (g)**	33.7
Nozzle	0.256 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.32 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.62
CO2%	11.58
COppm	18.3

Measured H2O
16.5 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	54.51	0.66	285	65	60	60	1.6	4.0		16.98	
	2.5	56.19	0.675	283	42	60	60	1.7	6.0		17.14	**97.7**
2	5	57.93	0.67	284	41	60	60	1.8	6.0		17.09	**100.0**
	7.5	59.61	0.64	284	41	60	61	1.8	6.0		16.70	**97.0**
3	10	61.34	0.65	284	41	60	61	1.8	6.0		16.83	**102.1**
	12.5	63.06	0.64	284	41	60	61	1.8	6.0		16.70	**100.7**
4	15	64.80	0.645	285	41	61	61	1.8	6.0		16.78	**102.6**
	17.5	66.51	0.66	284	41	61	61	1.8	6.0		16.96	**100.5**
5	20	68.21	0.64	284	42	61	61	1.8	6.0		16.70	**98.7**
	22.5	69.92	0.65	284	42	61	61	1.8	6.0		16.83	**100.8**
6	25	71.61	0.63	284	43	61	62	1.8	6.0		16.57	**98.8**
	27.5	73.29	0.64	283	43	61	62	1.8	6.0		16.69	**99.7**
7	30	74.98	0.63	283	43	61	62	1.8	6.0		16.56	**99.4**
	32.5	76.66	0.65	283	45	61	62	1.8	6.0		16.82	**99.6**
8	35	78.33	0.66	284	45	61	62	1.8	6.0		16.96	**97.5**
	37.5	80.05	0.67	285	47	62	63	1.8	6.0		17.10	**99.7**
9	40	81.76	0.71	286	48	62	63	2	7.0		17.62	**98.3**
	42.5	83.64	0.71	285	49	62	63	1.9	7.0		17.61	**105.1**
10	45	85.41	0.78	285	51	62	63	2.2	9.0		18.45	**98.8**
	47.5	87.35	0.75	285	53	62	63	2.1	9.0		18.10	**103.4**
11	50	89.27	0.77	284	55	62	63	2.1	9.0		18.32	**104.4**
	52.5	91.23	0.77	284	57	62	63	2	8.0		18.32	**105.1**
12	55	93.10	0.78	283	59	62	63	2	8.0		18.43	**100.2**
	57.5	94.99	0.75	283	59	62	63	2	8.0		18.07	**100.6**
	60	96.88								0.32		**102.6**
1	0	97.20	0.64	285	65	62	63	1.8	7.0		16.72	
	2.5	98.95	0.63	276	47	62	63	1.8	7.0		16.48	**102.9**
2	5	100.72	0.67	276	47	62	63	1.8	7.0		17.00	**104.3**
	7.5	102.47	0.64	277	49	62	63	1.8	7.0		16.63	**100.0**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Hexavalent Chromium	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 1, 2015	**Operator:**	MT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.981	**Probe (mg)**	0
Barometric Pressure	30.05 "Hg	**CWTR (g)**	305.8
Static Pressure	-10.900 "H_2O	**WCBDA (g)**	33.7
Nozzle	0.256 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.32 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.62
CO2%	11.58
COppm	18.3

Measured H2O
16.5 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
3	10	104.29	0.66	277	51	62	63	1.8	7.0		16.88	**106.5**
	12.5	105.91	0.65	277	51	63	63	1.7	7.0		16.76	**93.3**
4	15	107.67	0.635	282	52	63	63	1.7	7.0		16.62	**102.0**
	17.5	109.44	0.64	282	52	63	64	1.7	7.0		16.68	**104.2**
5	20	111.11	0.64	282	53	63	63	1.8	7.0		16.68	**97.8**
	22.5	112.81	0.64	282	52	63	64	1.8	7.0		16.68	**99.7**
6	25	114.55	0.64	282	54	63	64	1.8	7.0		16.68	**101.9**
	27.5	116.29	0.65	283	53	63	64	1.8	7.0		16.82	**101.9**
7	30	118.03	0.66	283	55	63	64	1.8	7.0		16.95	**101.2**
	32.5	119.77	0.66	282	55	63	64	1.8	7.0		16.94	**100.4**
8	35	121.49	0.65	283	56	63	64	1.8	7.0		16.82	**99.2**
	37.5	123.22	0.645	283	56	63	64	1.8	7.0		16.76	**100.6**
9	40	124.94	0.66	283	57	64	65	1.8	7.0		16.95	**100.4**
	42.5	126.67	0.65	282	57	64	65	1.8	7.0		16.81	**99.7**
10	45	128.40	0.71	282	57	64	65	1.8	7.0		17.57	**100.4**
	47.5	130.22	0.71	282	59	64	65	1.9	8.0		17.57	**101.0**
11	50	131.93	0.76	282	60	64	65	2.2	10.0		18.18	**94.9**
	52.5	133.88	0.76	282	61	64	65	2.2	10.0		18.18	**104.7**
12	55	135.86	0.76	282	63	64	65	2.1	10.0		18.18	**106.3**
	57.5	137.82	0.73	282	64	64	65	2	9.0		17.82	**105.2**
	60	139.73										**104.6**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 1 BH Outlet
Test No.:	3 - Hexavalent Chromium
Date:	October 1, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846
DGM CORRECTION FACTOR	0.981
NOZZLE DIAMETER	6.50 mm
DRY REF GAS VOLUME SAMPLED	2.447 m^3
AVGERGE ISOKINETICITY	101.0 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	139.2 °C
AVERAGE GAS MOISTURE BY VOLUME	16.5 %
AVERAGE GAS VELOCITY	17.16 m/s
BAROMETRIC PRESSURE (Station)	101.761 Kpa
STATIC PRESSURE	-2.714 Kpa
ABSOLUTE GAS PRESSURE	99.047 Kpa
OXYGEN CONCENTRATION	7.62 %
CARBON DIOXIDE CONCENTRATION	11.58 %
CARBON MONOXIDE CONCENTRATION	18.3 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.36 m^3/s
DRY REF GAS FLOWRATE	14.96 Rm^3/s
DRY ADJ GAS FLOWRATE	20.07 Rm^3/s
WET REF GAS FLOWRATE	17.92 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		2.447 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

APPENDIX 36

SVOC Test Emission Calculations
at the Boiler No. 1 BH Outlet
(36 pages)

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 1, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	1.017	**Probe (mg)**	0
Barometric Pressure	30.05 "Hg	**CWTR (g)**	658.4
Static Pressure	-10.900 "H_2O	**WCBDA (g)**	19
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.39 ft³
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.57
CO2%	11.59
COppm	16.6

Measured H2O
16.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	341.43	0.71	232	57	65	65	1.5	6.0		16.97	
	2.5	343.09	0.73	280	56	65	65	1.6	7.0		17.80	**92.7**
	5	344.81	0.72	280	52	66	66	1.7	7.5		17.68	**98.0**
	7.5	346.56	0.74	280	55	67	66	1.8	8.0		17.92	**100.2**
2	10	348.36	0.8	280	55	67	66	1.8	8.0		18.63	**101.6**
	12.5	350.17	0.8	280	51	68	66	2	9.0		18.63	**98.2**
	15	352.05	0.81	280	53	68	66	2	9.0		18.75	**102.0**
	17.5	353.99	0.79	279	54	69	66	1.8	9.0		18.50	**104.6**
3	20	355.96	0.78	280	51	69	69	1.5	8.0		18.40	**107.3**
	22.5	357.64	0.8	280	54	69	67	1.7	8.0		18.63	**91.8**
	25	359.42	0.79	280	56	70	69	1.8	8.5		18.51	**96.3**
	27.5	361.26	0.79	280	53	71	66	1.8	8.5		18.51	**99.9**
4	30	363.07	0.75	280	55	71	67	1.8	8.5		18.04	**98.5**
	32.5	364.90	0.75	280	57	72	67	1.7	9.0		18.04	**102.1**
	35	366.76	0.73	280	53	72	67	1.6	8.0		17.80	**103.7**
	37.5	368.54	0.76	280	56	72	67	1.6	8.0		18.16	**100.5**
5	40	370.30	0.76	279	58	73	68	1.7	8.5		18.15	**97.4**
	42.5	372.08	0.72	280	55	73	68	1.7	8.5		17.68	**98.3**
	45	373.90	0.7	279	57	74	68	1.6	8.5		17.42	**103.3**
	47.5	375.66	0.66	279	57	74	68	1.5	8.0		16.91	**101.1**
6	50	377.40	0.68	278	56	74	68	1.5	8.0		17.15	**103.0**
	52.5	379.16	0.63	280	56	73	68	1.4	8.0		16.53	**102.5**
	55	380.83	0.61	279	57	74	69	1.4	7.5		16.26	**101.3**
	57.5	382.48	0.6	278	54	73	68	1.3	7.0		16.11	**101.4**
7	60	384.07	0.55	278	55	73	68	1.2	6.5		15.43	**98.6**
	62.5	385.63	0.57	278	54	73	69	1.2	6.5		15.71	**101.1**
	65	387.13	0.56	278	54	73	69	1.3	6.5		15.57	**95.4**
	67.5	388.54	0.58	277	54	73	69	1.5	7.5		15.83	**90.5**
8	70	390.28	0.55	276	53	73	69	1.2	7.0		15.41	**109.7**
	72.5	391.88	0.56	277	52	73	69	1.2	6.5		15.56	**103.4**
	75	393.40	0.58	276	52	73	69	1.3	7.0		15.82	**97.4**
	77.5	394.93	0.59	276	52	74	69	1.3	7.0		15.96	**96.3**
9	80	396.49	0.6	277	51	74	69	1.3	7.0		16.10	**97.3**
	82.5	398.06	0.64	277	52	74	70	1.4	7.0		16.63	**97.2**
	85	399.67	0.63	278	50	74	70	1.5	7.5		16.51	**96.4**
	87.5	401.35	0.61	277	48	74	70	1.5	8.0		16.24	**101.5**
10	90	403.02	0.66	278	48	75	70	1.5	8.0		16.90	**102.4**
	92.5	404.69	0.66	278	47	75	70	1.6	8.0		16.90	**98.5**
	95	406.42	0.68	279	47	47	75	1.6	8.0		17.17	**102.0**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 1, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	1.017	**Probe (mg)**	0
Barometric Pressure	30.05 "Hg	**CWTR (g)**	658.4
Static Pressure	-10.900 "H_2O	**WCBDA (g)**	19
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.39 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.57
CO2%	11.59
COppm	16.6

Measured H2O
16.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	97.5	408.16	0.7	279	48	75	70	1.5	8.5		17.42	103.4
11	100	409.88	0.68	280	47	75	71	1.6	8.5		17.18	98.5
	102.5	411.61	0.69	278	47	75	71	1.6	8.5		17.28	100.6
	105	413.35	0.69	279	47	75	70	1.6	8.5		17.29	100.3
	107.5	415.08	0.69	279	47	76	71	1.6	8.5		17.29	99.9
12	110	416.83	0.63	279	47	75	71	1.6	8.5		16.52	100.8
	112.5	418.51	0.7	279	47	76	71	1.6	8.5		17.42	101.4
	115	420.31	0.66	278	47	76	71	1.5	8.5		16.90	103.0
	117.5	422.05	0.64	278	47	76	72	1.4	8.5		16.64	102.4
	120	423.85								0.39		107.4
1	0	424.24	0.7	264	64	72	71	1.4	8.0		17.24	
	2.5	425.89	0.74	278	51	72	71	1.6	8.5		17.89	93.7
	5	427.58	0.73	278	47	72	71	1.8	9.5		17.77	94.3
	7.5	429.42	0.73	280	45	73	71	1.7	10.0		17.80	103.4
2	10	431.24	0.74	280	46	74	72	1.7	10.0		17.92	102.3
	12.5	433.07	0.73	280	45	74	71	1.7	10.0		17.80	102.0
	15	434.91	0.73	280	45	74	71	1.7	10.0		17.80	103.3
	17.5	436.75	0.72	278	46	73	75	1.7	10.0		17.65	103.3
3	20	438.56	0.69	279	47	76	72	1.6	9.5		17.29	101.9
	22.5	440.40	0.69	278	46	75	72	1.5	9.0		17.28	105.9
	25	442.15	0.68	278	47	76	72	1.5	9.0		17.15	100.7
	27.5	443.88	0.7	278	47	76	71	1.5	9.0		17.40	100.2
4	30	445.59	0.63	278	47	77	72	1.5	9.0		16.51	97.7
	32.5	447.32	0.65	278	47	76	72	1.5	9.0		16.77	104.0
	35	449.05	0.67	277	47	39	77	1.5	72.0		17.02	102.5
	37.5	450.76	0.66	278	48	77	72	1.4	9.0		16.90	102.8
5	40	452.43	0.63	278	48	77	73	1.4	9.0		16.51	98.1
	42.5	454.14	0.61	278	48	77	73	1.4	9.0		16.25	102.7
	45	455.80	0.6	278	49	77	73	1.4	9.0		16.11	101.3
	47.5	457.48	0.61	277	48	77	73	1.3	8.5		16.24	103.4
6	50	459.11	0.6	277	48	77	73	1.3	8.5		16.10	99.4
	52.5	460.75	0.6	276	48	77	73	1.3	8.0		16.09	100.8
	55	462.35	0.56	277	49	77	73	1.3	8.0		15.56	98.3
	57.5	463.95	0.55	277	49	77	73	1.3	8.0		15.42	101.8
7	60	465.55	0.55	278	49	78	73	1.2	8.0		15.43	102.7
	62.5	467.12	0.75	272	50	78	74	1.6	9.0		17.94	100.8
	65	468.75	0.78	272	49	78	74	1.8	10.0		18.30	89.2
	67.5	470.60	0.76	271	48	78	73	1.8	10.5		18.05	99.3
8	70	472.46	0.64	273	48	78	73	1.5	9.5		16.59	101.2

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 1, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	1.017	**Probe (mg)**	0
Barometric Pressure	30.05 "Hg	**CWTR (g)**	658.4
Static Pressure	-10.900 "H_2O	**WCBDA (g)**	19
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.39 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.57
CO2%	11.59
COppm	16.6

Measured H2O
16.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	72.5	474.22	0.72	271	49	78	74	1.5	9.0		17.57	104.4
	75	475.95	0.64	278	49	78	74	1.5	9.0		16.64	96.6
	77.5	477.69	0.64	279	49	78	74	1.5	9.0		16.65	103.5
9	80	479.43	0.65	280	49	78	74	1.4	9.0		16.79	103.6
	82.5	481.10	0.65	279	50	78	74	1.4	9.0		16.78	98.7
	85	482.78	0.65	278	49	78	74	1.4	9.0		16.77	99.2
	87.5	484.44	0.64	278	50	79	74	1.5	9.0		16.64	98.0
10	90	486.14	0.63	274	50	79	75	1.5	9.0		16.47	101.0
	92.5	487.82	0.63	271	50	79	74	1.5	9.0		16.43	100.3
	95	489.53	0.63	270	50	79	75	1.4	9.0		16.42	101.9
	97.5	491.19	0.65	270	49	79	75	1.5	9.0		16.68	98.8
11	100	492.91	0.62	270	49	79	75	1.5	9.0		16.29	100.8
	102.5	494.60	0.6	270	49	80	75	1.1	8.5		16.03	101.4
	105	496.22	0.52	269	50	79	75	1.3	8.0		14.91	98.6
	107.5	497.78	0.61	262	50	80	75	1.3	8.0		16.07	102.1
12	110	499.36	0.6	257	51	80	76	1.5	8.5		15.88	94.9
	112.5	501.02	0.6	256	50	80	75	1.5	9.0		15.87	100.1
	115	502.69	0.6	257	50	80	76	1.5	9.0		15.88	100.8
	117.5	504.30	0.59	257	50	80	76	1.4	9.0		15.75	97.1
	120	506.04										105.8

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 1 BH Outlet
Test No.:	1 - SVOC
Date:	October 1, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.847
DGM CORRECTION FACTOR	1.017
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	4.811 m^3
AVGERGE ISOKINETICITY	100.4 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	135.5 °C
AVERAGE GAS MOISTURE BY VOLUME	16.1 %
AVERAGE GAS VELOCITY	16.94 m/s
BAROMETRIC PRESSURE (Station)	101.761 Kpa
STATIC PRESSURE	-2.714 Kpa
ABSOLUTE GAS PRESSURE	99.047 Kpa
OXYGEN CONCENTRATION	7.57 %
CARBON DIOXIDE CONCENTRATION	11.59 %
CARBON MONOXIDE CONCENTRATION	16.6 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.03 m^3/s
DRY REF GAS FLOWRATE	14.98 Rm^3/s
DRY ADJ GAS FLOWRATE	20.17 Rm^3/s
WET REF GAS FLOWRATE	17.85 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.811 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)
Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 2, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	1.017	**Probe (mg)**	0
Barometric Pressure	30.16 "Hg	**CWTR (g)**	650
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	15.2
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.24 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.59
CO2%	11.61
COppm	19.6

Measured H2O
16.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	634.10	0.55	264	258	69	65	1.5	5.0		15.26	
	2.5	635.83	0.65	272	63	65	65	1.3	5.0		16.68	112.4
	5	637.47	0.65	273	63	65	65	1.3	5.0		16.69	98.9
	7.5	639.00	0.67	274	61	65	65	1.4	5.0		16.96	92.3
2	10	640.58	0.68	274	62	65	64	1.6	5.5		17.09	94.0
	12.5	642.33	0.69	274	60	66	65	1.6	5.5		17.21	103.5
	15	644.08	0.7	275	57	66	65	1.6	6.0		17.35	102.5
	17.5	645.66	0.71	275	58	67	65	1.8	6.0		17.47	92.0
3	20	647.53	0.72	274	55	68	65	1.7	6.0		17.58	108.0
	22.5	649.29	0.74	276	52	69	65	1.7	6.0		17.85	100.8
	25	651.07	0.71	276	54	69	65	1.8	6.5		17.48	100.6
	27.5	652.91	0.7	276	53	69	65	1.7	6.0		17.36	106.2
4	30	654.68	0.7	276	50	69	65	1.7	6.0		17.36	102.8
	32.5	656.47	0.69	276	53	70	65	1.6	6.0		17.23	104.0
	35	658.20	0.67	277	52	70	66	1.6	6.0		16.99	101.1
	37.5	659.93	0.69	277	49	70	66	1.6	6.0		17.25	102.6
5	40	661.67	0.66	277	49	71	66	1.5	6.0		16.87	101.7
	42.5	663.13	0.65	277	50	71	66	1.4	6.0		16.74	87.1
	45	664.79	0.67	277	51	71	66	1.4	5.5		16.99	99.8
	47.5	666.46	0.67	278	53	70	66	1.5	5.5		17.01	98.9
6	50	668.12	0.52	277	50	71	66	1.2	5.0		14.97	98.5
	52.5	669.58	0.53	278	50	71	67	1.4	5.5		15.13	98.1
	55	671.17	0.53	279	51	71	67	1.2	5.0		15.14	105.8
	57.5	672.71	0.51	279	51	71	66	1.1	5.0		14.85	102.5
7	60	674.19	0.49	278	48	71	66	1.1	5.0		14.54	100.5
	62.5	675.68	0.56	278	49	70	66	1.2	5.0		15.55	103.2
	65	677.18	0.55	277	48	70	66	1.4	5.5		15.40	97.3
	67.5	678.78	0.54	276	46	70	66	1.3	5.0		15.25	104.7
8	70	680.33	0.55	276	46	70	67	1.2	5.0		15.39	102.2
	72.5	681.86	0.56	276	47	70	66	1.2	5.0		15.53	99.9
	75	683.37	0.56	276	46	70	66	1.3	5.0		15.53	97.8
	77.5	684.92	0.6	276	46	70	67	1.3	5.0		16.07	100.4
9	80	686.47	0.58	276	46	70	67	1.4	5.5		15.80	96.9
	82.5	688.12	0.57	276	45	71	67	1.3	5.5		15.66	104.9
	85	689.66	0.55	275	46	71	67	1.3	5.5		15.38	98.7
	87.5	691.25	0.56	274	45	70	67	1.3	5.5		15.50	103.7
10	90	692.82	0.57	273	45	71	67	1.3	5.5		15.63	101.5
	92.5	694.41	0.56	273	46	71	67	1.3	5.5		15.49	101.7
	95	695.98	0.57	269	46	71	67	1.3	5.5		15.59	101.3

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 2, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	1.017	**Probe (mg)**	0
Barometric Pressure	30.16 "Hg	**CWTR (g)**	650
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	15.2
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.24 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.59
CO2%	11.61
COppm	19.6

Measured H2O
16.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	97.5	697.54	0.56	268	46	71	67	1.3	5.5		15.44	99.5
11	100	699.11	0.57	269	46	71	67	1.3	5.5		15.59	101.0
	102.5	700.66	0.51	269	46	71	67	1.2	5.0		14.75	98.9
	105	702.17	0.5	256	46	71	67	1.2	5.0		14.47	101.8
	107.5	703.67	0.51	256	46	71	67	1.2	5.0		14.61	101.2
12	110	705.17	0.49	256	46	71	68	1.2	5.0		14.32	100.2
	112.5	706.67	0.5	256	46	72	68	1.2	5.0		14.47	102.1
	115	708.17	0.5	256	47	71	68	1.2	5.0		14.47	101.0
	117.5	709.71	0.5	256	46	72	68	1.2	5.0		14.47	103.8
	120	711.17								0.24		98.3
1	0	711.41	0.6	262	58	68	67	1.3	6.0		15.92	
	2.5	713.04	0.67	268	49	68	67	1.5	6.0		16.89	101.1
	5	714.76	0.67	278	44	68	67	1.5	6.0		17.01	101.4
	7.5	716.41	0.67	278	43	68	67	1.6	6.0		17.01	98.0
2	10	718.09	0.68	278	42	68	67	1.6	6.0		17.13	99.8
	12.5	719.80	0.65	278	42	69	68	1.6	6.0		16.75	100.8
	15	721.50	0.69	278	41	70	68	1.6	6.0		17.26	102.3
	17.5	723.21	0.7	278	42	70	67	1.6	6.5		17.38	99.8
3	20	724.94	0.68	278	41	70	68	1.6	6.5		17.13	100.3
	22.5	726.64	0.66	278	41	71	67	1.6	7.0		16.88	100.0
	25	728.39	0.66	278	41	71	67	1.6	7.0		16.88	104.4
	27.5	730.15	0.68	278	41	72	67	1.5	7.0		17.13	105.0
4	30	731.85	0.67	277	41	72	68	1.5	7.0		16.99	99.8
	32.5	733.56	0.65	279	41	72	68	1.5	7.0		16.76	101.0
	35	735.29	0.66	279	41	72	68	1.5	7.0		16.89	103.9
	37.5	736.99	0.64	279	41	72	68	1.5	7.0		16.63	101.3
5	40	738.70	0.61	279	42	72	68	1.4	6.5		16.24	103.5
	42.5	740.39	0.6	278	42	72	68	1.3	6.0		16.09	104.7
	45	741.95	0.6	278	42	72	68	1.4	6.0		16.09	97.4
	47.5	743.61	0.6	279	42	72	68	1.4	5.5		16.10	103.7
6	50	745.25	0.59	278	42	72	68	1.3	6.0		15.96	102.5
	52.5	746.86	0.59	278	42	72	68	1.3	6.0		15.96	101.4
	55	748.42	0.62	278	43	72	68	1.3	6.0		16.36	98.2
	57.5	749.98	0.59	278	42	72	68	1.4	6.0		15.96	95.8
7	60	751.59	0.57	280	43	72	68	1.4	6.0		15.71	101.4
	62.5	753.20	0.6	279	43	72	68	1.4	6.0		16.10	103.3
	65	754.81	0.58	278	43	73	69	1.4	6.0		15.82	100.6
	67.5	756.41	0.57	278	41	73	69	1.4	6.0		15.69	101.4
8	70	757.98	0.58	279	43	72	69	1.4	6.0		15.83	100.4

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 2, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	1.017	**Probe (mg)**	0
Barometric Pressure	30.16 "Hg	**CWTR (g)**	650
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	15.2
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.24 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.59
CO2%	11.61
COppm	19.6

Measured H2O
16.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	72.5	759.58	0.61	278	43	73	69	1.4	6.0		16.23	**101.6**
	75	761.17	0.61	278	44	72	68	1.4	6.0		16.23	**98.3**
	77.5	762.79	0.6	278	43	73	69	1.4	6.5		16.09	**100.3**
9	80	764.44	0.59	278	43	73	69	1.4	6.5		15.96	**102.8**
	82.5	766.07	0.58	278	44	73	69	1.3	6.5		15.82	**102.4**
	85	767.67	0.59	278	44	73	69	1.3	6.0		15.96	**101.4**
	87.5	769.28	0.58	277	44	74	69	1.3	6.0		15.81	**101.2**
10	90	770.85	0.58	277	44	73	69	1.4	6.5		15.81	**99.3**
	92.5	772.45	0.57	278	44	74	70	1.4	6.5		15.69	**101.4**
	95	774.05	0.57	279	44	74	70	1.3	6.5		15.70	**102.1**
	97.5	775.66	0.58	280	45	74	70	1.3	6.5		15.84	**102.8**
11	100	777.21	0.59	281	45	74	70	1.3	6.5		15.99	**98.2**
	102.5	778.80	0.56	270	44	74	70	1.3	6.5		15.46	**99.9**
	105	780.38	0.56	270	44	74	70	1.3	6.5		15.46	**101.2**
	107.5	781.97	0.55	269	44	74	70	1.3	6.5		15.31	**101.8**
12	110	783.56	0.56	270	44	74	70	1.3	6.5		15.46	**102.7**
	112.5	785.16	0.53	268	44	74	70	1.3	6.5		15.02	**102.4**
	115	786.75	0.54	268	44	74	70	1.2	6.0		15.16	**104.5**
	117.5	788.29	0.55	268	44	74	70	1.2	6.0		15.30	**100.2**
	120	789.79										**96.8**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 1 BH Outlet
Test No.:	2 - SVOC
Date:	October 2, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.847
DGM CORRECTION FACTOR	1.017
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	4.599 m^3
AVGERGE ISOKINETICITY	101.0 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	134.7 °C
AVERAGE GAS MOISTURE BY VOLUME	16.4 %
AVERAGE GAS VELOCITY	16.08 m/s
BAROMETRIC PRESSURE (Station)	102.133 Kpa
STATIC PRESSURE	-2.689 Kpa
ABSOLUTE GAS PRESSURE	99.444 Kpa
OXYGEN CONCENTRATION	7.59 %
CARBON DIOXIDE CONCENTRATION	11.61 %
CARBON MONOXIDE CONCENTRATION	19.6 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	23.75 m^3/s
DRY REF GAS FLOWRATE	14.24 Rm^3/s
DRY ADJ GAS FLOWRATE	19.14 Rm^3/s
WET REF GAS FLOWRATE	17.04 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.599 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 2, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	1.017	**Probe (mg)**	0
Barometric Pressure	30.14 "Hg	**CWTR (g)**	653.9
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	15
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.28 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.52
CO2%	11.69
COppm	20.9

Measured H2O
16.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	790.05	0.7	279	64	71	70	1.2	4.0		17.40	
	2.5	791.49	0.73	279	62	71	70	1.6	6.0		17.76	83.1
	5	793.05	0.73	279	60	71	70	1.6	6.0		17.76	88.3
	7.5	794.82	0.75	279	60	71	70	1.65	7.0		18.01	100.1
2	10	796.60	0.75	279	58	73	70	1.65	7.0		18.01	99.4
	12.5	798.40	0.75	270	55	73	70	1.7	7.0		17.90	100.3
	15	800.15	0.75	279	56	74	71	1.7	7.0		18.01	96.9
	17.5	801.95	0.7	278	56	74	71	1.6	7.0		17.38	100.1
3	20	803.72	0.71	278	53	74	71	1.6	7.0		17.51	101.8
	22.5	805.49	0.71	279	53	75	71	1.6	7.0		17.52	101.1
	25	807.24	0.7	279	54	76	71	1.65	7.0		17.40	99.9
	27.5	809.01	0.73	279	51	76	71	1.75	7.0		17.76	101.7
4	30	810.82	0.66	278	51	76	71	1.6	7.0		16.88	101.9
	32.5	812.61	0.65	279	52	76	72	1.5	7.0		16.76	105.8
	35	814.33	0.65	279	52	77	72	1.5	7.0		16.76	102.4
	37.5	816.05	0.68	279	49	77	72	1.5	7.0		17.14	102.3
5	40	817.78	0.6	279	53	77	72	1.35	6.5		16.10	100.6
	42.5	819.42	0.61	279	53	77	72	1.4	6.5		16.24	101.5
	45	821.06	0.61	281	48	77	72	1.4	6.5		16.26	100.7
	47.5	822.69	0.61	281	52	77	72	1.4	6.5		16.26	100.2
6	50	824.32	0.53	283	53	77	72	1.15	6.0		15.18	100.2
	52.5	825.90	0.51	283	49	77	73	1	5.5		14.89	104.3
	55	827.41	0.51	284	50	77	73	1	5.5		14.90	101.5
	57.5	828.91	0.51	284	50	77	73	1	5.5		14.90	100.9
7	60	830.39	0.56	284	50	77	73	1.2	5.5		15.61	99.5
	62.5	831.92	0.56	284	49	78	77	1.2	5.5		15.61	98.2
	65	833.48	0.56	284	49	77	77	1.2	5.5		15.61	99.7
	67.5	835.06	0.58	284	49	77	73	1.4	5.5		15.89	101.1
8	70	836.67	0.58	285	48	78	73	1.4	5.5		15.90	101.6
	72.5	838.30	0.58	285	48	78	73	1.4	5.5		15.90	102.9
	75	839.92	0.57	285	48	78	74	1.4	6.0		15.76	102.2
	77.5	841.54	0.56	285	48	78	74	1.4	6.0		15.62	103.0
9	80	843.17	0.56	284	48	78	74	1.3	6.0		15.61	104.6
	82.5	844.77	0.58	284	48	79	74	1.3	6.0		15.89	102.6
	85	846.35	0.59	285	47	78	74	1.4	6.0		16.03	99.4
	87.5	847.98	0.59	285	48	78	74	1.4	6.0		16.03	101.9
10	90	849.62	0.57	282	42	78	74	1.4	6.0		15.73	102.5
	92.5	851.26	0.6	282	48	78	74	1.4	6.0		16.14	104.1
	95	852.80	0.58	282	48	79	74	1.3	6.0		15.87	95.3

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 2, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	1.017	**Probe (mg)**	0
Barometric Pressure	30.14 "Hg	**CWTR (g)**	653.9
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	15
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.28 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.52
CO2%	11.69
COppm	20.9

Measured H2O
16.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	97.5	854.50	0.58	282	48	79	75	1.25	6.0		15.87	**106.8**
11	100	856.06	0.55	280	48	79	75	1.2	6.0		15.43	**97.9**
	102.5	857.61	0.59	280	48	78	74	1.3	6.0		15.98	**99.8**
	105	859.19	0.59	280	48	78	74	1.35	6.0		15.98	**98.4**
	107.5	860.80	0.59	274	48	79	75	1.35	6.0		15.92	**100.3**
12	110	862.40	0.59	273	48	79	75	1.35	6.0		15.91	**99.1**
	112.5	864.05	0.59	274	48	79	75	1.35	6.0		15.92	**102.1**
	115	865.66	0.6	275	48	79	75	1.4	6.0		16.06	**99.7**
	117.5	867.30	0.61	275	49	79	75	1.4	6.0		16.19	**100.8**
	120	868.96								0.28		**101.2**
1	0	869.24	0.79	277	66	76	75	1.7	8.0		18.45	
	2.5	870.95	0.79	288	49	76	75	1.8	8.0		18.59	**92.0**
	5	872.80	0.79	288	47	75	74	1.8	8.0		18.59	**100.3**
	7.5	874.66	0.79	289	46	76	74	1.8	8.0		18.60	**101.1**
2	10	876.50	0.79	289	46	76	74	1.8	8.0		18.60	**100.0**
	12.5	878.38	0.79	289	47	76	74	1.8	8.0		18.60	**102.1**
	15	880.19	0.8	289	46	77	74	1.8	8.0		18.72	**98.3**
	17.5	882.04	0.76	289	47	77	74	1.8	8.0		18.25	**99.8**
3	20	883.90	0.76	288	47	78	74	1.7	8.0		18.24	**102.9**
	22.5	885.73	0.76	288	48	75	74	1.7	8.0		18.24	**101.1**
	25	887.56	0.75	288	49	78	74	1.7	8.0		18.12	**101.4**
	27.5	889.41	0.72	288	49	78	74	1.6	8.0		17.75	**102.9**
4	30	891.20	0.72	288	49	78	74	1.6	8.0		17.75	**101.5**
	32.5	893.00	0.68	288	49	78	74	1.5	8.0		17.25	**102.1**
	35	894.77	0.67	287	49	78	74	1.45	8.0		17.11	**103.3**
	37.5	896.47	0.65	287	49	79	74	1.5	8.0		16.85	**99.9**
5	40	898.10	0.6	286	50	79	74	1.5	8.0		16.18	**97.1**
	42.5	899.91	0.58	286	50	79	75	1.25	8.0		15.91	**112.2**
	45	901.53	0.58	285	50	79	74	1.25	7.0		15.90	**102.0**
	47.5	903.13	0.58	285	50	78	74	1.25	7.0		15.90	**100.7**
6	50	904.69	0.53	282	50	78	74	1.2	7.0		15.17	**98.3**
	52.5	906.21	0.53	282	51	78	74	1.2	7.0		15.17	**100.0**
	55	907.83	0.51	281	51	78	74	1.1	7.0		14.87	**106.6**
	57.5	909.40	0.51	281	51	78	75	1.1	7.0		14.87	**105.2**
7	60	910.89	0.56	280	51	78	75	1.25	7.0		15.57	**99.7**
	62.5	912.43	0.56	279	50	75	76	1.25	7.0		15.56	**98.4**
	65	914.00	0.55	279	51	78	75	1.25	7.0		15.42	**100.4**
	67.5	915.56	0.54	279	51	78	74	1.25	7.0		15.28	**100.5**
8	70	917.13	0.54	279	51	78	75	1.25	7.0		15.28	**102.1**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 2, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	1.017	**Probe (mg)**	0
Barometric Pressure	30.14 "Hg	**CWTR (g)**	653.9
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	15
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.28 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.52
CO2%	11.69
COppm	20.9

Measured H2O
16.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	72.5	918.69	0.53	279	51	78	75	1.25	7.0		15.14	**101.4**
	75	920.25	0.56	279	51	78	75	1.3	7.0		15.56	**102.3**
	77.5	921.84	0.53	280	51	78	75	1.25	7.0		15.15	**101.5**
9	80	923.43	0.55	280	51	78	75	1.3	7.0		15.43	**104.4**
	82.5	925.04	0.57	281	51	78	75	1.3	7.0		15.72	**103.8**
	85	926.64	0.56	281	51	78	74	1.3	7.0		15.58	**101.4**
	87.5	928.24	0.59	282	52	78	75	1.35	7.0		16.00	**102.4**
10	90	929.86	0.61	282	52	78	75	1.35	7.0		16.27	**101.0**
	92.5	931.50	0.58	283	51	78	75	1.35	7.0		15.88	**100.5**
	95	933.14	0.59	283	52	78	75	1.35	7.0		16.01	**103.2**
	97.5	934.76	0.56	285	52	78	75	1.35	7.0		15.62	**101.0**
11	100	936.37	0.56	284	52	78	75	1.3	7.0		15.61	**103.2**
	102.5	938.02	0.56	284	52	78	75	1.2	7.0		15.61	**105.7**
	105	939.55	0.6	281	52	78	75	1.3	7.0		16.13	**98.0**
	107.5	941.17	0.61	280	51	78	75	1.3	7.0		16.25	**100.0**
12	110	942.78	0.6	275	51	78	75	1.35	7.0		16.06	**98.5**
	112.5	944.42	0.58	273	51	78	75	1.35	7.0		15.77	**100.9**
	115	946.04	0.58	273	51	78	75	1.35	7.0		15.77	**101.2**
	117.5	947.67	0.58	272	51	78	75	1.35	7.0		15.76	**101.8**
	120	949.29										**101.1**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 1 BH Outlet
Test No.:	3 - SVOC
Date:	October 2, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.847
DGM CORRECTION FACTOR	1.017
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	4.644 m^3
AVGERGE ISOKINETICITY	100.9 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	138.7 °C
AVERAGE GAS MOISTURE BY VOLUME	16.4 %
AVERAGE GAS VELOCITY	16.41 m/s
BAROMETRIC PRESSURE (Station)	102.066 Kpa
STATIC PRESSURE	-2.689 Kpa
ABSOLUTE GAS PRESSURE	99.377 Kpa
OXYGEN CONCENTRATION	7.52 %
CARBON DIOXIDE CONCENTRATION	11.69 %
CARBON MONOXIDE CONCENTRATION	20.9 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	24.24 m^3/s
DRY REF GAS FLOWRATE	14.39 Rm^3/s
DRY ADJ GAS FLOWRATE	19.45 Rm^3/s
WET REF GAS FLOWRATE	17.22 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.644 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)
Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 21, 2015	**Operator:**	DG

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	0.967	**Probe (mg)**	0
Barometric Pressure	29.89 "Hg	**CWTR (g)**	674.4
Static Pressure	-10.300 "H_2O	**WCBDA (g)**	18.3
Nozzle	0.2573 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.53 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.43
CO2%	12.03
COppm	23.7

Measured H2O
16.8 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	295.37	0.67	287	93	96	96	2	5.0		17.14	
	2.5	296.45	0.69	287	68	97	96	2.1	6.0		17.39	57.1
	5	298.26	0.7	287	67	96	96	2.1	6.0		17.51	94.3
	7.5	300.18	0.68	287	67	96	97	2	6.0		17.26	99.4
2	10	302.12	0.68	287	67	96	97	2	6.0		17.26	101.8
	12.5	304.03	0.68	288	65	96	97	2	6.0		17.27	100.2
	15	305.93	0.69	288	50	96	97	2	6.0		17.40	99.7
	17.5	307.91	0.7	288	63	96	97	2.1	6.0		17.53	103.2
3	20	309.81	0.7	289	59	96	97	2.1	6.0		17.54	98.3
	22.5	311.72	0.68	289	60	96	97	2.1	6.0		17.29	98.9
	25	313.66	0.7	289	61	96	97	2.1	6.0		17.54	101.9
	27.5	315.62	0.71	289	61	96	97	2.2	6.0		17.66	101.5
4	30	317.61	0.65	289	58	96	97	1.9	6.0		16.90	102.3
	32.5	319.47	0.68	289	61	96	97	2	6.0		17.29	99.9
	35	321.37	0.7	290	61	96	97	2.1	6.0		17.55	99.8
	37.5	323.35	0.7	290	61	96	97	2.1	6.0		17.55	102.6
5	40	325.30	0.62	290	62	96	98	1.9	6.0		16.52	101.0
	42.5	327.17	0.63	290	63	97	97	1.9	6.0		16.65	102.8
	45	329.04	0.6	290	61	97	98	1.8	6.0		16.25	102.0
	47.5	330.87	0.61	290	59	97	98	1.8	6.0		16.38	102.2
6	50	332.70	0.56	290	59	97	98	1.7	6.0		15.70	101.3
	52.5	334.48	0.57	290	57	97	98	1.7	6.0		15.84	102.8
	55	336.24	0.57	290	57	97	98	1.7	6.0		15.84	100.8
	57.5	338.01	0.56	289	58	97	98	1.7	6.0		15.69	101.4
7	60	339.76	0.56	289	58	97	98	1.7	6.0		15.69	101.0
	62.5	341.49	0.54	290	56	97	98	1.6	5.0		15.41	99.9
	65	343.21	0.52	289	56	47	97	1.5	5.0		15.12	101.2
	67.5	344.90	0.52	289	57	97	98	1.4	5.0		15.12	106.1
8	70	346.53	0.55	289	57	97	98	1.6	5.0		15.55	97.6
	72.5	348.24	0.55	289	56	97	98	1.6	5.0		15.55	99.6
	75	349.96	0.55	289	54	97	99	1.6	5.0		15.55	100.2
	77.5	351.67	0.59	289	53	98	98	1.8	5.0		16.10	99.5
9	80	353.49	0.6	290	52	97	99	1.8	6.0		16.25	102.3
	82.5	355.31	0.6	290	53	97	99	1.8	6.0		16.25	101.5
	85	357.12	0.61	291	53	97	99	1.9	6.0		16.39	101.0
	87.5	358.96	0.61	291	53	97	99	1.9	6.0		16.39	101.9
10	90	360.80	0.64	290	53	98	99	2	7.0		16.78	101.9
	92.5	362.71	0.64	290	53	98	99	2	7.0		16.78	103.1
	95	364.60	0.64	290	52	98	99	2	7.0		16.78	102.0

Plant: Covanta - DYEC
Test No.: 1 - SVOC
Date: October 21, 2015

Plant Location: Courtice, ON
Test Location: Boiler No. 1 BH Outlet
Operator: DG

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	0.967	**Probe (mg)**	0
Barometric Pressure	29.89 "Hg	**CWTR (g)**	674.4
Static Pressure	-10.300 "H_2O	**WCBDA (g)**	18.3
Nozzle	0.2573 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.53 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.43
CO2%	12.03
COppm	23.7

Measured H2O
16.8 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	97.5	366.49	0.6	290	52	98	99	1.8	6.0		16.25	**102.0**
11	100	368.34	0.53	211	52	98	99	1.6	6.0		14.44	**103.1**
	102.5	370.08	0.53	219	53	98	99	1.8	6.0		14.53	**97.5**
	105	371.89	0.52	222	53	98	99	1.7	6.0		14.42	**102.1**
	107.5	373.68	0.54	223	53	98	99	1.8	6.0		14.71	**102.2**
12	110	375.51	0.53	223	54	98	99	1.7	6.0		14.57	**102.6**
	112.5	377.33	0.52	223	54	98	99	1.7	6.0		14.43	**103.0**
	115	379.11	0.52	223	54	98	99	1.7	6.0		14.43	**101.7**
	117.5	380.89	0.52	223	54	98	99	1.7	6.0		14.43	**101.7**
	120	382.67								0.53		**101.7**
1	0	383.20	0.68	290	89	98	98	2	7.0		17.30	
	2.5	385.09	0.68	288	51	98	98	2	7.0		17.27	**99.1**
	5	386.99	0.72	288	49	98	98	2.2	7.0		17.78	**99.5**
	7.5	389.01	0.64	287	48	98	97	2	7.0		16.75	**102.8**
2	10	390.85	0.64	288	49	98	98	2	7.0		16.76	**99.3**
	12.5	392.85	0.75	289	64	96	96	2.3	8.0		18.15	**107.9**
	15	394.95	0.75	289	53	96	96	2.2	8.0		18.15	**105.2**
	17.5	397.00	0.77	289	49	96	96	2.2	8.0		18.39	**102.7**
3	20	399.05	0.77	289	49	96	96	2.2	8.0		18.39	**101.3**
	22.5	401.09	0.7	290	49	96	96	2	7.0		17.55	**100.8**
	25	403.03	0.7	290	50	96	96	2	7.0		17.55	**100.6**
	27.5	404.95	0.7	290	50	96	96	2	7.0		17.55	**99.6**
4	30	406.88	0.66	290	51	96	96	1.9	7.0		17.04	**100.1**
	32.5	408.78	0.66	290	51	96	96	1.9	7.0		17.04	**101.4**
	35	410.67	0.68	290	50	96	96	2	7.0		17.30	**100.9**
	37.5	412.57	0.66	290	51	96	96	2	7.0		17.04	**100.0**
5	40	414.46	0.61	290	50	96	96	1.8	7.0		16.38	**100.9**
	42.5	416.30	0.61	290	50	96	96	1.8	7.0		16.38	**102.2**
	45	418.16	0.62	290	51	96	96	1.8	7.0		16.52	**103.3**
	47.5	420.00	0.62	290	51	96	96	1.8	7.0		16.52	**101.3**
6	50	421.80	0.62	290	51	96	96	1.8	7.0		16.52	**99.1**
	52.5	423.64	0.55	290	51	96	96	1.6	7.0		15.56	**101.3**
	55	425.40	0.54	290	50	96	96	1.5	6.0		15.41	**102.9**
	57.5	427.11	0.57	290	50	96	96	1.6	7.0		15.84	**100.8**
7	60	428.82	0.59	290	49	96	96	1.8	7.0		16.11	**98.2**
	62.5	430.65	0.6	290	49	96	96	1.8	7.0		16.25	**103.3**
	65	432.47	0.58	290	49	96	96	1.7	7.0		15.98	**101.9**
	67.5	434.28	0.59	290	49	96	96	1.7	7.0		16.11	**103.0**
8	70	436.08	0.59	289	50	95	96	1.7	7.0		16.10	**101.6**

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 21, 2015	**Operator:**	DG

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	0.967	**Probe (mg)**	0
Barometric Pressure	29.89 "Hg	**CWTR (g)**	674.4
Static Pressure	-10.300 "H_2O	**WCBDA (g)**	18.3
Nozzle	0.2573 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.53 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.43
CO2%	12.03
COppm	23.7

Measured H2O
16.8 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	72.5	437.90	0.59	289	50	95	95	1.7	7.0		16.10	**102.7**
	75	439.68	0.59	289	50	95	95	1.7	7.0		16.10	**100.6**
	77.5	441.48	0.59	289	50	95	95	1.7	7.0		16.10	**101.7**
9	80	443.26	0.6	288	50	95	95	1.8	7.0		16.23	**100.6**
	82.5	445.06	0.6	288	50	95	95	1.8	7.0		16.23	**100.8**
	85	446.86	0.6	289	50	94	95	1.8	7.0		16.24	**100.8**
	87.5	448.66	0.6	289	50	94	95	1.8	7.0		16.24	**101.0**
10	90	450.45	0.57	279	50	94	95	1.6	7.0		15.72	**100.4**
	92.5	452.29	0.57	276	50	94	95	1.5	7.0		15.69	**105.1**
	95	453.90	0.57	276	51	94	95	1.6	7.0		15.69	**91.8**
	97.5	455.64	0.57	276	51	94	95	1.7	7.0		15.69	**99.2**
11	100	457.41	0.45	128	51	94	95	1.3	6.0		12.46	**101.0**
	102.5	459.01	0.5	126	51	94	95	1.5	7.0		13.11	**91.7**
	105	460.69	0.61	285	51	94	95	1.8	7.0		16.33	**91.2**
	107.5	462.50	0.61	286	51	94	95	1.8	7.0		16.34	**100.4**
12	110	464.34	0.6	286	51	94	95	1.8	7.0		16.20	**102.2**
	112.5	466.15	0.6	286	51	94	95	1.8	7.0		16.20	**101.3**
	115	467.96	0.6	286	51	94	95	1.8	7.0		16.20	**101.3**
	117.5	469.77	0.6	286	51	94	95	1.8	7.0		16.20	**101.3**
	120	471.57										**100.8**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 1 BH Outlet
Test No.:	1 - SVOC
Date:	October 21, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.845
DGM CORRECTION FACTOR	0.967
NOZZLE DIAMETER	6.54 mm
DRY REF GAS VOLUME SAMPLED	4.663 m^3
AVGERGE ISOKINETICITY	100.5 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	137.5 °C
AVERAGE GAS MOISTURE BY VOLUME	16.8 %
AVERAGE GAS VELOCITY	16.33 m/s
BAROMETRIC PRESSURE (Station)	101.219 Kpa
STATIC PRESSURE	-2.565 Kpa
ABSOLUTE GAS PRESSURE	98.654 Kpa
OXYGEN CONCENTRATION	7.43 %
CARBON DIOXIDE CONCENTRATION	12.03 %
CARBON MONOXIDE CONCENTRATION	23.7 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	24.13 m^3/s
DRY REF GAS FLOWRATE	14.19 Rm^3/s
DRY ADJ GAS FLOWRATE	19.30 Rm^3/s
WET REF GAS FLOWRATE	17.06 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.663 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)
Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 22, 2015	**Operator:**	DG

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	0.967	**Probe (mg)**	0
Barometric Pressure	29.8 "Hg	**CWTR (g)**	558.8
Static Pressure	-11.300 "H_2O	**WCBDA (g)**	219.6
Nozzle	0.2573 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.44 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	6.9
CO2%	12.37
COppm	15.6

Measured H2O
18.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	472.16	0.64	286	83	82	82	1.8	6.0		16.83	
	2.5	474.01	0.64	287	69	83	83	1.8	6.0		16.84	**104.3**
	5	475.81	0.65	287	66	83	83	1.8	6.0		16.98	**101.3**
	7.5	477.61	0.65	287	66	83	83	1.8	6.0		16.98	**100.5**
2	10	479.40	0.73	288	66	83	83	2	6.0		18.00	**100.0**
	12.5	481.29	0.76	288	62	83	83	2.1	7.0		18.37	**99.7**
	15	483.25	0.76	288	64	83	83	2.1	7.0		18.37	**101.4**
	17.5	485.18	0.76	288	64	83	83	2.1	7.0		18.37	**99.8**
3	20	487.16	0.72	289	61	83	83	2	7.0		17.89	**102.4**
	22.5	489.05	0.71	289	63	83	83	2	7.0		17.77	**100.5**
	25	490.97	0.68	289	65	83	83	1.9	7.0		17.39	**102.8**
	27.5	492.85	0.68	289	65	83	83	1.9	7.0		17.39	**102.8**
4	30	494.72	0.71	289	64	83	83	2	7.0		17.77	**102.3**
	32.5	496.63	0.64	289	65	83	83	1.8	6.0		16.87	**102.3**
	35	498.47	0.64	288	63	83	83	1.8	6.0		16.86	**103.7**
	37.5	500.30	0.6	288	65	83	84	1.7	6.0		16.32	**103.1**
5	40	502.06	0.6	288	65	83	84	1.7	6.0		16.32	**102.3**
	42.5	503.81	0.61	288	65	83	84	1.7	6.0		16.46	**101.7**
	45	505.60	0.61	288	65	83	84	1.7	6.0		16.46	**103.2**
	47.5	507.39	0.61	287	65	83	84	1.7	6.0		16.45	**103.2**
6	50	509.07	0.56	287	62	83	84	1.6	6.0		15.76	**96.7**
	52.5	510.80	0.56	288	62	83	84	1.6	6.0		15.77	**104.0**
	55	512.51	0.56	288	62	83	84	1.6	6.0		15.77	**102.8**
	57.5	514.24	0.56	288	62	83	84	1.6	6.0		15.77	**104.0**
7	60	515.93	0.56	287	57	83	84	1.6	6.0		15.76	**101.6**
	62.5	517.70	0.56	288	56	84	84	1.6	6.0		15.77	**106.4**
	65	519.42	0.56	288	56	84	84	1.6	6.0		15.77	**103.3**
	67.5	521.15	0.54	288	56	84	84	1.6	6.0		15.48	**103.9**
8	70	522.84	0.58	288	55	84	84	1.6	6.0		16.05	**103.4**
	72.5	524.56	0.58	288	55	84	84	1.6	6.0		16.05	**101.5**
	75	526.30	0.56	287	55	84	84	1.6	6.0		15.76	**102.7**
	77.5	527.98	0.57	287	55	84	84	1.6	6.0		15.90	**100.9**
9	80	529.69	0.6	287	54	84	84	1.7	6.0		16.31	**101.8**
	82.5	531.47	0.63	287	54	84	84	1.8	7.0		16.71	**103.3**
	85	533.30	0.6	287	53	84	84	1.6	6.0		16.31	**103.6**
	87.5	535.05	0.6	287	53	84	84	1.6	6.0		16.31	**101.5**
10	90	536.77	0.6	287	53	84	84	1.6	6.0		16.31	**99.8**
	92.5	538.52	0.63	287	53	84	84	1.8	7.0		16.71	**101.5**
	95	540.30	0.68	288	53	84	84	2	7.0		17.37	**100.8**

Plant: Covanta - DYEC
Test No.: 2 - SVOC
Date: October 22, 2015

Plant Location: Courtice, ON
Test Location: Boiler No. 1 BH Outlet
Operator: DG

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	0.967	**Probe (mg)**	0
Barometric Pressure	29.8 "Hg	**CWTR (g)**	558.8
Static Pressure	-11.300 "H_2O	**WCBDA (g)**	219.6
Nozzle	0.2573 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.44 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	6.9
CO2%	12.37
COppm	15.6

Measured H2O
18.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	97.5	542.18	0.61	288	54	84	84	1.6	6.0		16.46	**102.6**
11	100	543.92	0.59	288	53	84	84	1.6	6.0		16.18	**100.2**
	102.5	545.69	0.59	288	53	84	84	1.6	6.0		16.18	**103.6**
	105	547.34	0.59	288	53	83	83	1.7	6.0		16.18	**96.6**
	107.5	549.08	0.61	288	53	83	83	1.8	7.0		16.46	**102.1**
12	110	550.88	0.64	288	53	83	83	1.9	7.0		16.86	**103.9**
	112.5	552.73	0.64	288	53	83	83	1.8	7.0		16.86	**104.2**
	115	554.55	0.64	288	53	83	83	1.8	7.0		16.86	**102.5**
	117.5	556.37	0.64	288	53	83	83	1.8	7.0		16.86	**102.5**
	120	558.13								0.44		**99.1**
1	0	558.57	0.71	288	72	82	82	2	8.0		17.75	
	2.5	560.50	0.71	288	55	82	82	2	8.0		17.75	**103.5**
	5	562.36	0.74	290	55	82	82	2.1	8.0		18.15	**99.7**
	7.5	564.32	0.73	290	53	82	82	2.1	8.0		18.03	**103.1**
2	10	566.24	0.73	290	53	82	82	2.1	8.0		18.03	**101.7**
	12.5	568.17	0.81	290	53	82	82	2.3	9.0		18.99	**102.2**
	15	570.20	0.7	292	54	82	82	2	8.0		17.68	**102.1**
	17.5	572.11	0.7	292	54	82	82	2	8.0		17.68	**103.4**
3	20	574.01	0.63	291	54	82	82	1.8	7.0		16.76	**102.8**
	22.5	575.80	0.67	290	54	82	82	1.9	7.0		17.27	**102.0**
	25	577.63	0.72	290	55	82	82	2.1	8.0		17.90	**101.1**
	27.5	579.58	0.76	290	55	82	82	2.2	9.0		18.39	**104.0**
4	30	581.61	0.75	290	55	82	82	2.1	8.0		18.27	**105.4**
	32.5	583.57	0.72	290	54	82	82	2	8.0		17.90	**102.4**
	35	585.50	0.72	290	54	82	82	2	8.0		17.90	**102.9**
	37.5	587.43	0.72	290	55	82	82	2	8.0		17.90	**102.9**
5	40	589.35	0.65	291	55	82	82	1.8	7.0		17.02	**102.3**
	42.5	591.18	0.65	290	56	82	82	1.8	7.0		17.01	**102.7**
	45	593.00	0.67	290	56	82	82	1.9	8.0		17.27	**102.0**
	47.5	594.82	0.67	291	56	82	82	1.9	8.0		17.28	**100.5**
6	50	596.65	0.61	291	56	82	82	1.7	7.0		16.49	**101.2**
	52.5	598.43	0.59	291	55	82	83	1.7	7.0		16.22	**103.1**
	55	600.19	0.59	291	55	82	83	1.7	7.0		16.22	**103.5**
	57.5	601.95	0.59	291	55	82	83	1.6	7.0		16.22	**103.5**
7	60	603.69	0.55	291	54	82	83	1.5	7.0		15.66	**102.3**
	62.5	605.38	0.6	290	54	82	83	1.7	7.0		16.34	**102.9**
	65	607.13	0.6	290	54	82	83	1.7	7.0		16.34	**102.0**
	67.5	608.90	0.61	290	55	83	83	1.7	7.0		16.48	**103.2**
8	70	610.67	0.6	290	54	83	83	1.7	7.0		16.34	**102.2**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 22, 2015	**Operator:**	DG

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	0.967	**Probe (mg)**	0
Barometric Pressure	29.8 "Hg	**CWTR (g)**	558.8
Static Pressure	-11.300 "H_2O	**WCBDA (g)**	219.6
Nozzle	0.2573 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.44 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	6.9
CO2%	12.37
COppm	15.6

Measured H2O
18.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	72.5	612.43	0.6	289	54	83	83	1.7	7.0		16.33	**102.5**
	75	614.19	0.6	289	54	83	83	1.7	7.0		16.33	**102.4**
	77.5	615.97	0.6	289	54	83	83	1.7	7.0		16.33	**103.6**
9	80	617.73	0.6	286	54	83	83	1.7	7.0		16.30	**102.4**
	82.5	619.48	0.62	285	54	83	83	1.7	7.0		16.56	**101.6**
	85	621.24	0.62	285	55	83	83	1.7	7.0		16.56	**100.5**
	87.5	622.99	0.62	285	55	83	83	1.7	7.0		16.56	**99.9**
10	90	624.66	0.62	219	55	83	83	1.7	7.0		15.81	**95.4**
	92.5	626.41	0.62	211	55	83	83	2	10.0		15.71	**95.4**
	95	628.31	0.54	210	55	83	83	1.7	9.0		14.65	**103.0**
	97.5	630.15	0.55	213	57	83	83	1.6	9.0		14.82	**106.8**
11	100	631.90	0.6	275	57	83	83	2	9.0		16.18	**100.8**
	102.5	633.79	0.6	278	57	83	83	1.7	9.0		16.21	**109.0**
	105	635.60	0.55	278	57	83	83	1.6	8.0		15.52	**104.6**
	107.5	637.31	0.55	279	57	83	83	1.6	8.0		15.53	**103.2**
12	110	639.00	0.55	277	57	83	83	1.6	8.0		15.51	**102.0**
	112.5	640.71	0.55	275	57	83	83	1.6	8.0		15.49	**103.1**
	115	642.41	0.57	277	54	83	83	1.6	8.0		15.79	**102.3**
	117.5	644.11	0.57	276	54	83	83	1.6	8.0		15.78	**100.7**
	120	645.82										**101.2**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 1 BH Outlet
Test No.:	2 - SVOC
Date:	October 22, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.845
DGM CORRECTION FACTOR	0.967
NOZZLE DIAMETER	6.54 mm
DRY REF GAS VOLUME SAMPLED	4.696 m^3
AVGERGE ISOKINETICITY	102.2 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	140.3 °C
AVERAGE GAS MOISTURE BY VOLUME	18.4 %
AVERAGE GAS VELOCITY	16.69 m/s
BAROMETRIC PRESSURE (Station)	100.914 Kpa
STATIC PRESSURE	-2.814 Kpa
ABSOLUTE GAS PRESSURE	98.101 Kpa
OXYGEN CONCENTRATION	6.9 %
CARBON DIOXIDE CONCENTRATION	12.37 %
CARBON MONOXIDE CONCENTRATION	15.6 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	24.66 m^3/s
DRY REF GAS FLOWRATE	14.05 Rm^3/s
DRY ADJ GAS FLOWRATE	19.87 Rm^3/s
WET REF GAS FLOWRATE	17.22 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.696 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 22, 2015	**Operator:**	DG

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	0.967	**Probe (mg)**	0
Barometric Pressure	29.86 "Hg	**CWTR (g)**	663
Static Pressure	-10.600 "H_2O	**WCBDA (g)**	16.8
Nozzle	0.2573 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.39 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.29
CO2%	12.15
COppm	17.8

Measured H2O
16.7 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	649.54	0.75	287	82	84	84	2.1	4.0		18.14	
	2.5	651.47	0.74	288	62	83	84	2.1	4.0		18.03	**98.6**
	5	653.41	0.74	288	58	83	84	2.1	4.0		18.03	**99.9**
	7.5	655.33	0.74	288	58	83	84	2.1	5.0		18.03	**98.9**
2	10	657.26	0.74	288	59	84	84	2.1	5.0		18.03	**99.4**
	12.5	659.19	0.72	288	57	84	84	2	5.0		17.78	**99.3**
	15	661.11	0.72	288	57	84	84	2	5.0		17.78	**100.1**
	17.5	663.03	0.72	288	57	84	84	2	5.0		17.78	**100.1**
3	20	664.94	0.7	288	59	84	84	2	5.0		17.54	**99.6**
	22.5	666.83	0.7	288	56	84	85	2	5.0		17.54	**100.0**
	25	668.71	0.7	288	59	84	85	2	5.0		17.54	**99.3**
	27.5	670.60	0.7	287	57	84	85	2	5.0		17.52	**99.9**
4	30	672.48	0.63	287	57	84	85	1.8	5.0		16.62	**99.3**
	32.5	674.31	0.65	287	57	84	85	1.8	5.0		16.89	**101.8**
	35	676.13	0.65	287	56	84	87	1.9	5.0		16.89	**99.7**
	37.5	677.97	0.65	286	58	84	85	1.9	5.0		16.88	**100.6**
5	40	679.82	0.62	286	60	84	85	1.8	5.0		16.48	**101.3**
	42.5	681.62	0.58	286	57	85	85	1.65	5.0		15.94	**100.9**
	45	683.37	0.58	286	59	85	85	1.65	5.0		15.94	**101.3**
	47.5	685.13	0.58	286	61	85	85	1.65	5.0		15.94	**101.9**
6	50	686.95	0.55	286	55	85	85	1.55	5.0		15.52	**105.3**
	52.5	688.58	0.56	286	53	85	85	1.6	4.0		15.66	**96.8**
	55	690.27	0.54	286	53	85	87	1.6	4.0		15.38	**99.5**
	57.5	691.97	0.54	284	52	85	86	1.6	4.0		15.36	**101.8**
7	60	693.65	0.52	284	52	85	86	1.5	4.0		15.07	**100.5**
	62.5	695.30	0.53	284	51	85	86	1.5	4.0		15.22	**100.6**
	65	696.96	0.53	284	50	85	86	1.5	4.0		15.22	**100.2**
	67.5	698.61	0.54	285	50	85	86	1.55	4.0		15.37	**99.6**
8	70	700.26	0.54	286	50	85	86	1.55	4.0		15.38	**98.8**
	72.5	701.92	0.58	286	50	85	86	1.6	4.0		15.94	**99.4**
	75	703.64	0.56	287	49	85	86	1.6	4.0		15.67	**99.4**
	77.5	705.36	0.56	287	49	85	86	1.6	4.0		15.67	**101.3**
9	80	707.06	0.59	285	49	86	86	1.7	4.0		16.07	**100.1**
	82.5	708.84	0.57	286	49	86	86	1.6	4.0		15.80	**101.9**
	85	710.55	0.57	286	50	86	86	1.6	4.0		15.80	**99.6**
	87.5	712.27	0.6	286	50	86	86	1.7	5.0		16.21	**100.2**
10	90	714.00	0.57	283	50	86	87	1.6	4.0		15.77	**98.3**
	92.5	715.74	0.56	283	50	86	87	1.6	4.0		15.63	**101.1**
	95	717.42	0.57	282	50	86	87	1.6	4.0		15.76	**98.5**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 22, 2015	**Operator:**	DG

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	0.967	**Probe (mg)**	0
Barometric Pressure	29.86 "Hg	**CWTR (g)**	663
Static Pressure	-10.600 "H_2O	**WCBDA (g)**	16.8
Nozzle	0.2573 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.39 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.29
CO2%	12.15
COppm	17.8

Measured H2O
16.7 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	97.5	719.12	0.57	282	50	86	87	1.6	4.0		15.76	**98.7**
11	100	720.82	0.57	231	50	86	87	1.7	4.0		15.21	**98.7**
	102.5	722.57	0.54	229	50	86	87	1.7	5.0		14.78	**98.1**
	105	724.35	0.55	229	50	86	87	1.7	5.0		14.92	**102.3**
	107.5	726.11	0.55	230	50	86	87	1.7	5.0		14.93	**100.3**
12	110	727.87	0.55	228	50	86	87	1.7	5.0		14.91	**100.3**
	112.5	729.62	0.55	228	50	86	87	1.7	5.0		14.91	**99.6**
	115	731.39	0.55	228	50	86	87	1.7	5.0		14.91	**100.8**
	117.5	733.14	0.54	227	50	86	87	1.7	5.0		14.76	**99.6**
	120	734.94								0.39		**103.3**
1	0	735.33	0.73	290	77	86	86	2.2	6.0		17.93	
	2.5	737.36	0.73	290	53	86	86	2.1	6.0		17.93	**104.9**
	5	739.36	0.71	290	53	86	86	2	5.0		17.68	**103.4**
	7.5	741.27	0.7	290	52	86	86	2	5.0		17.56	**100.1**
2	10	743.17	0.7	290	52	86	86	2	5.0		17.56	**100.3**
	12.5	745.05	0.7	290	52	86	86	2	5.0		17.56	**99.2**
	15	746.97	0.69	289	52	86	87	2	5.0		17.42	**101.3**
	17.5	748.86	0.68	289	52	86	87	2	5.0		17.29	**100.3**
3	20	750.75	0.61	289	51	86	87	1.8	5.0		16.38	**101.0**
	22.5	752.56	0.64	289	51	86	87	1.9	5.0		16.78	**102.1**
	25	754.41	0.61	289	51	86	87	1.75	5.0		16.38	**101.9**
	27.5	756.23	0.6	289	51	86	87	1.6	5.0		16.25	**102.7**
4	30	757.94	0.64	288	51	86	87	1.9	5.0		16.77	**97.2**
	32.5	759.79	0.6	288	51	86	87	1.7	5.0		16.23	**101.8**
	35	761.55	0.6	288	51	86	87	1.7	5.0		16.23	**100.0**
	37.5	763.32	0.6	288	51	86	87	1.7	5.0		16.23	**100.6**
5	40	765.09	0.6	288	51	86	87	1.7	5.0		16.23	**100.6**
	42.5	766.88	0.57	288	51	86	87	1.6	5.0		15.82	**101.7**
	45	768.55	0.57	288	52	86	87	1.7	5.0		15.82	**97.3**
	47.5	770.29	0.56	287	52	86	87	1.6	5.0		15.67	**101.4**
6	50	772.03	0.5	287	52	86	87	1.4	5.0		14.81	**102.3**
	52.5	773.65	0.5	287	52	86	87	1.4	5.0		14.81	**100.7**
	55	775.26	0.5	287	52	86	87	1.4	5.0		14.81	**100.1**
	57.5	776.87	0.5	287	52	86	87	1.4	5.0		14.81	**100.1**
7	60	778.48	0.54	287	52	86	87	1.5	5.0		15.39	**100.1**
	62.5	780.15	0.55	287	52	86	87	1.5	5.0		15.53	**99.9**
	65	781.81	0.55	287	52	86	87	1.5	5.0		15.53	**98.4**
	67.5	783.49	0.56	287	52	86	87	1.6	5.0		15.67	**99.6**
8	70	785.18	0.6	288	52	86	87	1.7	5.0		16.23	**99.3**

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 22, 2015	**Operator:**	DG

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	0.967	**Probe (mg)**	0
Barometric Pressure	29.86 "Hg	**CWTR (g)**	663
Static Pressure	-10.600 "H_2O	**WCBDA (g)**	16.8
Nozzle	0.2573 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.39 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.29
CO2%	12.15
COppm	17.8

Measured H2O
16.7 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	72.5	786.93	0.6	288	53	86	87	1.7	5.0		16.23	**99.4**
	75	788.70	0.62	289	53	86	87	1.7	5.0		16.51	**100.6**
	77.5	790.50	0.62	289	53	86	87	1.7	5.0		16.51	**100.7**
9	80	792.27	0.57	289	53	86	86	1.7	5.0		15.83	**99.0**
	82.5	794.04	0.57	287	53	86	86	1.6	5.0		15.81	**103.4**
	85	795.79	0.6	287	53	86	86	1.7	5.0		16.22	**102.0**
	87.5	797.56	0.6	287	53	86	86	1.7	5.0		16.22	**100.6**
10	90	799.29	0.6	287	53	86	86	1.7	5.0		16.22	**98.3**
	92.5	801.05	0.6	286	53	86	86	1.7	5.0		16.21	**100.0**
	95	802.81	0.6	286	53	86	86	1.7	6.0		16.21	**100.0**
	97.5	804.57	0.6	287	54	86	86	1.7	6.0		16.22	**100.0**
11	100	806.34	0.59	287	54	86	86	1.7	6.0		16.09	**100.6**
	102.5	808.09	0.59	287	54	86	86	1.7	6.0		16.09	**100.3**
	105	809.85	0.57	271	54	86	86	1.7	6.0		15.64	**100.9**
	107.5	811.60	0.55	270	54	86	86	1.6	6.0		15.36	**101.0**
12	110	813.32	0.57	270	54	86	86	1.7	6.0		15.63	**100.9**
	112.5	815.08	0.55	270	54	86	86	1.7	6.0		15.36	**101.5**
	115	816.82	0.55	268	54	86	86	1.6	6.0		15.33	**102.1**
	117.5	818.53	0.55	268	54	86	86	1.6	6.0		15.33	**100.2**
	120	820.23										**99.6**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 1 BH Outlet
Test No.:	3 - SVOC
Date:	October 22, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.845
DGM CORRECTION FACTOR	0.967
NOZZLE DIAMETER	6.54 mm
DRY REF GAS VOLUME SAMPLED	4.602 m^3
AVGERGE ISOKINETICITY	100.4 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	138.4 °C
AVERAGE GAS MOISTURE BY VOLUME	16.7 %
AVERAGE GAS VELOCITY	16.18 m/s
BAROMETRIC PRESSURE (Station)	101.118 Kpa
STATIC PRESSURE	-2.639 Kpa
ABSOLUTE GAS PRESSURE	98.478 Kpa
OXYGEN CONCENTRATION	7.29 %
CARBON DIOXIDE CONCENTRATION	12.15 %
CARBON MONOXIDE CONCENTRATION	17.8 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	23.91 m^3/s
DRY REF GAS FLOWRATE	14.02 Rm^3/s
DRY ADJ GAS FLOWRATE	19.27 Rm^3/s
WET REF GAS FLOWRATE	16.84 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.602 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

Plant: Covanta - DYEC
Test No.: 4 - SVOC
Date: October 28, 2015

Plant Location: Courtice, ON
Test Location: Boiler No. 1 BH Outlet
Operator: CB

Pitot Factor	0.845	
DGMCF	0.967	
Barometric Pressure	29.25	"Hg
Static Pressure	-11.200	"H_2O
Nozzle	0.2573	inches
Stack Diameter	4.500	ft
Length	0.000	ft
Width	0.000	ft

Filter (mg)	0
Probe (mg)	0
CWTR (g)	630.5
WCBDA (g)	21.7

Leak Check Volume	0.52	ft^3
Reading Interval	2.5	minutes
Number of Ports	2	
Number of points / Port	12	

Combustion Gases	
O2%	7.04
CO2%	12.17
COppm	6.5

Measured H2O
16.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	21.73	0.63	285	78	80	80	1.7	6.0		16.79	
	2.5	23.48	0.68	285	57	80	80	1.7	6.0		17.44	97.0
	5	25.26	0.67	284	56	80	80	1.65	6.5		17.30	95.0
	7.5	26.95	0.67	284	55	80	80	1.7	7.0		17.30	90.8
2	10	28.71	0.7	284	55	80	80	1.8	7.5		17.69	94.5
	12.5	30.55	0.72	285	56	80	80	1.8	7.5		17.95	96.7
	15	32.38	0.75	286	56	80	80	1.8	7.5		18.33	94.9
	17.5	34.27	0.75	286	56	80	80	1.8	7.5		18.33	96.1
3	20	36.22	0.73	288	56	80	80	1.8	7.5		18.11	99.2
	22.5	38.12	0.74	288	58	80	81	1.8	8.0		18.23	98.1
	25	40.05	0.74	288	58	80	80	1.8	8.0		18.23	98.8
	27.5	41.98	0.74	288	58	80	81	1.8	8.0		18.23	98.9
4	30	43.90	0.66	288	59	80	81	1.8	8.0		17.22	98.3
	32.5	45.80	0.67	288	59	80	81	1.8	8.0		17.35	103.0
	35	47.71	0.65	288	59	80	81	1.8	8.0		17.09	102.8
	37.5	49.55	0.65	288	59	80	81	1.8	8.0		17.09	100.5
5	40	51.47	0.6	288	63	81	81	1.7	7.5		16.42	104.9
	42.5	53.30	0.61	288	61	81	81	1.7	7.5		16.55	104.0
	45	55.06	0.61	288	61	81	81	1.7	7.5		16.55	99.2
	47.5	56.85	0.63	288	64	81	81	1.7	7.5		16.82	100.8
6	50	58.56	0.58	288	64	81	81	1.7	7.5		16.14	94.8
	52.5	60.42	0.56	288	60	81	81	1.6	7.0		15.86	107.5
	55	62.08	0.56	288	59	81	82	1.6	7.0		15.86	97.6
	57.5	63.78	0.56	288	59	81	82	1.6	7.0		15.86	99.8
7	60	65.48	0.52	288	56	81	82	1.5	7.0		15.28	99.8
	62.5	67.13	0.54	288	56	81	82	1.5	7.0		15.58	100.5
	65	68.82	0.54	288	55	81	82	1.5	7.0		15.58	101.1
	67.5	70.50	0.54	288	55	81	82	1.5	7.0		15.58	100.5
8	70	72.15	0.55	288	55	81	82	1.5	7.0		15.72	98.7
	72.5	73.85	0.55	288	55	81	82	1.5	7.0		15.72	100.7
	75	75.48	0.55	289	55	81	82	1.5	7.0		15.73	96.6
	77.5	77.15	0.56	289	55	81	82	1.5	7.0		15.87	99.0
9	80	78.82	0.6	289	54	81	82	1.7	7.0		16.43	98.1
	82.5	80.56	0.57	289	54	81	82	1.7	7.0		16.01	98.8
	85	82.36	0.57	289	54	81	82	1.7	7.0		16.01	104.9
	87.5	84.15	0.61	289	54	81	81	1.7	7.0		16.57	104.3
10	90	85.97	0.6	289	54	81	82	1.7	7.0		16.43	102.6
	92.5	87.83	0.56	289	54	81	82	1.7	7.0		15.87	105.6
	95	89.53	0.56	289	54	81	82	1.6	7.0		15.87	99.9

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	4 - SVOC	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 28, 2015	**Operator:**	CB

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	0.967	**Probe (mg)**	0
Barometric Pressure	29.25 "Hg	**CWTR (g)**	630.5
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	21.7
Nozzle	0.2573 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.52 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.04
CO2%	12.17
COppm	6.5

Measured H2O
16.6 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	97.5	91.27	0.54	289	54	82	82	1.6	7.0		15.59	**102.3**
11	100	93.03	0.46	288	54	82	82	1.3	6.2		14.38	**105.2**
	102.5	94.60	0.46	288	54	82	82	1.3	6.2		14.38	**101.6**
	105	96.13	0.46	288	55	82	82	1.3	6.3		14.38	**99.0**
	107.5	97.67	0.46	288	55	82	82	1.3	6.3		14.38	**99.6**
12	110	99.24	0.44	288	55	82	82	1.3	6.3		14.06	**101.6**
	112.5	100.74	0.44	288	55	82	82	1.3	6.3		14.06	**99.2**
	115	102.27	0.44	288	55	82	82	1.3	6.3		14.06	**101.2**
	117.5	103.82	0.43	288	55	82	82	1.3	6.3		13.90	**102.5**
	120	105.36								0.52		**103.0**
1	0	105.88	0.65	282	58	82	82	1.9	8.0		17.02	
	2.5	107.57	0.65	285	57	82	82	1.9	8.0		17.05	**91.7**
	5	109.38	0.65	285	55	82	82	1.9	8.0		17.05	**98.5**
	7.5	111.22	0.64	285	55	82	82	1.9	8.0		16.92	**100.1**
2	10	113.06	0.65	286	55	82	82	1.9	8.0		17.07	**100.9**
	12.5	114.90	0.66	286	55	82	82	1.9	8.0		17.20	**100.2**
	15	116.76	0.67	286	55	82	82	1.9	8.0		17.33	**100.5**
	17.5	118.56	0.66	286	56	82	82	1.9	8.0		17.20	**96.5**
3	20	120.37	0.66	286	56	82	82	2	8.0		17.20	**97.8**
	22.5	122.22	0.64	286	56	82	82	2	8.0		16.93	**100.0**
	25	124.08	0.66	287	56	82	83	2	8.0		17.21	**102.1**
	27.5	125.94	0.68	287	56	82	83	2.05	8.0		17.47	**100.5**
4	30	127.86	0.62	287	56	82	83	1.9	8.0		16.68	**102.2**
	32.5	129.70	0.63	287	57	82	83	1.9	8.0		16.81	**102.5**
	35	131.63	0.62	286	57	82	83	1.8	8.0		16.67	**106.7**
	37.5	133.50	0.62	287	57	82	83	1.75	8.0		16.68	**104.1**
5	40	135.30	0.59	288	58	82	83	1.7	8.0		16.28	**100.3**
	42.5	137.07	0.59	289	58	83	84	1.7	8.0		16.29	**101.1**
	45	138.84	0.6	288	57	82	83	1.7	8.0		16.42	**101.0**
	47.5	140.62	0.58	288	57	82	83	1.7	8.0		16.14	**100.8**
6	50	142.39	0.52	287	57	82	83	1.5	8.0		15.27	**102.0**
	52.5	144.11	0.53	287	57	82	83	1.5	8.0		15.42	**104.5**
	55	145.76	0.51	288	57	83	83	1.5	8.0		15.14	**99.3**
	57.5	147.42	0.52	288	57	83	83	1.5	8.0		15.28	**101.9**
7	60	149.07	0.52	287	57	83	83	1.5	8.0		15.27	**100.3**
	62.5	150.73	0.53	287	57	83	83	1.5	8.0		15.42	**100.8**
	65	152.37	0.54	287	57	83	83	1.5	8.0		15.57	**98.6**
	67.5	154.03	0.54	287	57	83	83	1.5	8.0		15.57	**98.9**
8	70	155.71	0.55	287	58	83	84	1.5	8.0		15.71	**100.1**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	4 - SVOC	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 28, 2015	**Operator:**	CB

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	0.967	**Probe (mg)**	0
Barometric Pressure	29.25 "Hg	**CWTR (g)**	630.5
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	21.7
Nozzle	0.2573 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.52 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.04
CO2%	12.17
COppm	6.5

Measured H2O
16.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	72.5	157.36	0.55	287	58	83	84	1.5	8.0		15.71	**97.3**
	75	159.06	0.55	287	59	83	84	1.5	8.0		15.71	**100.3**
	77.5	160.66	0.54	287	60	83	84	1.5	8.0		15.57	**94.4**
9	80	162.26	0.55	286	60	83	84	1.5	8.0		15.70	**95.3**
	82.5	163.92	0.55	286	60	83	84	1.5	8.0		15.70	**97.9**
	85	165.55	0.55	285	60	83	84	1.6	8.0		15.69	**96.1**
	87.5	167.22	0.57	285	61	83	84	1.6	8.0		15.97	**98.4**
10	90	168.92	0.56	285	61	83	84	1.6	8.0		15.83	**98.4**
	92.5	170.57	0.57	285	61	84	84	1.6	8.0		15.97	**96.4**
	95	172.26	0.58	285	62	84	84	1.6	8.0		16.11	**97.7**
	97.5	173.99	0.57	285	62	84	84	1.6	8.0		15.97	**99.2**
11	100	175.74	0.57	285	62	84	84	1.6	8.0		15.97	**101.2**
	102.5	177.48	0.56	285	59	84	84	1.6	8.0		15.83	**100.6**
	105	179.22	0.55	285	57	84	84	1.6	8.0		15.69	**101.5**
	107.5	180.96	0.56	285	56	84	84	1.6	8.0		15.83	**102.4**
12	110	182.69	0.5	285	55	84	84	1.4	7.5		14.96	**100.9**
	112.5	184.38	0.5	285	54	84	84	1.4	7.5		14.96	**104.3**
	115	186.05	0.5	285	54	84	84	1.4	7.5		14.96	**103.1**
	117.5	187.73	0.5	285	54	84	84	1.4	7.5		14.96	**103.7**
	120	189.37										**101.2**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 1 BH Outlet
Test No.:	4 - SVOC
Date:	October 28, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.845
DGM CORRECTION FACTOR	0.967
NOZZLE DIAMETER	6.54 mm
DRY REF GAS VOLUME SAMPLED	4.453 m^3
AVGERGE ISOKINETICITY	100.0 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.6 °C
AVERAGE GAS MOISTURE BY VOLUME	16.6 %
AVERAGE GAS VELOCITY	16.18 m/s
BAROMETRIC PRESSURE (Station)	99.052 Kpa
STATIC PRESSURE	-2.789 Kpa
ABSOLUTE GAS PRESSURE	96.263 Kpa
OXYGEN CONCENTRATION	7.04 %
CARBON DIOXIDE CONCENTRATION	12.17 %
CARBON MONOXIDE CONCENTRATION	6.5 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	23.91 m^3/s
DRY REF GAS FLOWRATE	13.61 Rm^3/s
DRY ADJ GAS FLOWRATE	19.06 Rm^3/s
WET REF GAS FLOWRATE	16.33 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.453 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)
Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	5 - SVOC	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 29, 2015	**Operator:**	CB

Pitot Factor	0.845	**Filter (mg)**	0		
DGMCF	0.967	**Probe (mg)**	0		
Barometric Pressure	29.2 "Hg	**CWTR (g)**	583.2		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	153.3		
Nozzle	0.2553 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.34 ft^3	
Length	0.000 ft	**Reading Interval**		2.5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	7.32
CO2%	11.95
COppm	9.2

Measured H2O
18.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	90.18	0.61	267	76	79	79	1.7	4.0		16.39	
	2.5	92.19	0.61	283	64	79	78	1.6	4.0		16.57	115.4
	5	93.96	0.61	282	64	77	78	1.6	4.0		16.56	102.8
	7.5	95.66	0.61	282	65	78	77	1.6	4.0		16.56	98.8
2	10	97.36	0.64	282	65	78	77	1.7	4.5		16.96	98.8
	12.5	99.12	0.67	284	64	77	76	1.8	5.0		17.37	99.9
	15	100.98	0.66	284	64	77	76	1.8	5.0		17.24	103.6
	17.5	102.83	0.67	285	63	77	76	1.8	5.0		17.39	103.8
3	20	104.70	0.66	285	63	77	76	1.7	5.0		17.26	104.2
	22.5	106.46	0.66	286	62	75	76	1.7	5.0		17.27	98.8
	25	108.22	0.7	286	60	75	76	1.9	5.3		17.78	99.0
	27.5	110.05	0.72	286	60	75	76	2	5.5		18.03	100.0
4	30	111.96	0.72	288	59	75	75	2	5.5		18.06	103.0
	32.5	113.86	0.72	289	58	75	75	2	5.5		18.07	102.7
	35	115.74	0.72	290	58	75	75	2	5.5		18.08	101.7
	37.5	117.62	0.72	290	58	75	75	2	5.5		18.08	101.7
5	40	119.50	0.65	291	56	74	74	1.7	5.0		17.19	101.7
	42.5	121.30	0.67	291	57	74	74	1.8	5.0		17.46	102.7
	45	123.13	0.67	291	57	74	74	1.8	5.0		17.46	102.9
	47.5	124.94	0.67	292	55	74	74	1.8	5.0		17.47	101.7
6	50	126.75	0.65	292	55	74	74	1.8	5.0		17.20	101.8
	52.5	128.55	0.64	292	58	73	73	1.6	4.8		17.07	102.8
	55	130.30	0.64	292	55	73	73	1.6	4.8		17.07	100.9
	57.5	132.02	0.64	292	55	73	73	1.6	4.8		17.07	99.1
7	60	133.76	0.58	292	53	72	72	1.5	4.8		16.25	100.3
	62.5	135.43	0.58	292	51	72	72	1.5	4.8		16.25	101.3
	65	137.10	0.6	293	50	72	72	1.5	4.8		16.54	101.3
	67.5	138.74	0.6	293	50	72	72	1.5	4.8		16.54	97.8
8	70	140.39	0.63	293	47	72	72	1.5	5.0		16.95	98.4
	72.5	142.07	0.65	293	47	72	72	1.6	5.0		17.22	97.8
	75	143.80	0.65	293	47	72	72	1.7	5.0		17.22	99.2
	77.5	145.54	0.64	292	46	71	71	1.6	5.0		17.07	99.8
9	80	147.26	0.63	292	46	71	71	1.6	5.0		16.94	99.5
	82.5	148.98	0.62	292	45	71	71	1.6	5.0		16.80	100.3
	85	150.67	0.6	292	45	71	71	1.6	5.0		16.53	99.3
	87.5	152.40	0.6	291	45	71	71	1.6	5.0		16.52	103.4
10	90	154.10	0.6	289	45	71	71	1.6	5.0		16.50	101.5
	92.5	155.82	0.6	289	45	71	71	1.6	5.0		16.50	102.6
	95	157.50	0.6	289	45	70	70	1.6	5.0		16.50	100.2

Plant: Covanta - DYEC
Test No.: 5 - SVOC
Date: October 29, 2015

Plant Location: Courtice, ON
Test Location: Boiler No. 1 BH Outlet
Operator: CB

Pitot Factor	0.845	
DGMCF	0.967	
Barometric Pressure	29.2	"Hg
Static Pressure	-10.800	"H_2O
Nozzle	0.2553	inches
Stack Diameter	4.500	ft
Length	0.000	ft
Width	0.000	ft

Filter (mg)	0	
Probe (mg)	0	
CWTR (g)	583.2	
WCBDA (g)	153.3	
Leak Check Volume	0.34	ft^3
Reading Interval	2.5	minutes
Number of Ports	2	
Number of points / Port	12	

Combustion Gases	
O2%	7.32
CO2%	11.95
COppm	9.2

Measured H2O
18.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	97.5	159.19	0.6	289	45	70	70	1.6	5.0		16.50	**101.0**
11	100	160.88	0.6	289	45	70	70	1.6	5.0		16.50	**101.0**
	102.5	162.55	0.6	289	45	70	70	1.6	5.0		16.50	**99.8**
	105	164.25	0.6	289	45	70	70	1.6	5.0		16.50	**101.6**
	107.5	165.95	0.6	289	45	70	70	1.6	5.0		16.50	**101.6**
12	110	167.61	0.57	289	45	70	70	1.5	5.0		16.08	**99.2**
	112.5	169.28	0.57	289	45	70	70	1.5	5.0		16.08	**102.3**
	115	171.00	0.58	286	54	66	66	1.5	5.0		16.19	**105.4**
	117.5	172.68	0.58	286	48	66	66	1.5	5.0		16.19	**102.6**
	120	174.36								0.34		**102.6**
1	0	174.70	0.79	286	55	66	66	2	6.3		18.89	
	2.5	176.54	0.79	290	48	67	66	2	6.3		18.94	**96.4**
	5	178.43	0.78	290	48	67	66	2	6.3		18.82	**99.2**
	7.5	180.36	0.78	292	46	67	66	2	6.3		18.85	**102.0**
2	10	182.27	0.8	292	46	67	66	2	6.3		19.09	**101.0**
	12.5	184.13	0.8	293	44	67	66	2	6.3		19.10	**97.2**
	15	186.02	0.8	293	44	67	66	2	6.3		19.10	**98.8**
	17.5	187.91	0.8	293	44	67	66	2	6.3		19.10	**98.8**
3	20	189.84	0.76	292	44	67	67	1.8	6.0		18.60	**100.9**
	22.5	191.74	0.76	292	44	67	67	1.8	6.0		18.60	**101.7**
	25	193.55	0.77	292	43	67	67	1.8	6.0		18.73	**96.9**
	27.5	195.42	0.76	291	43	68	67	1.8	6.0		18.59	**99.4**
4	30	197.28	0.75	291	43	68	67	1.8	6.0		18.47	**99.4**
	32.5	199.16	0.68	290	43	67	68	1.8	6.0		17.57	**101.1**
	35	201.02	0.71	290	43	68	68	1.8	6.0		17.96	**105.0**
	37.5	202.83	0.71	289	44	68	67	1.8	6.0		17.95	**99.9**
5	40	204.68	0.67	289	44	68	67	1.7	6.0		17.43	**102.1**
	42.5	206.47	0.66	289	44	68	68	1.7	6.0		17.30	**101.7**
	45	208.31	0.66	289	44	68	68	1.7	6.0		17.30	**105.2**
	47.5	210.00	0.66	289	44	68	68	1.7	6.0		17.30	**96.6**
6	50	211.74	0.6	290	44	69	68	1.6	6.0		16.51	**99.5**
	52.5	213.46	0.6	290	44	69	68	1.6	6.0		16.51	**103.1**
	55	215.15	0.6	290	44	69	68	1.6	6.0		16.51	**101.3**
	57.5	216.86	0.6	291	45	68	68	1.6	6.0		16.52	**102.5**
7	60	218.57	0.6	291	45	69	68	1.6	6.0		16.52	**102.7**
	62.5	220.28	0.6	291	45	69	68	1.6	6.0		16.52	**102.6**
	65	221.95	0.6	290	44	68	69	1.6	6.0		16.51	**100.2**
	67.5	223.58	0.61	290	44	68	69	1.6	6.0		16.64	**97.7**
8	70	225.25	0.64	290	44	68	69	1.6	6.0		17.05	**99.3**

Plant: Covanta - DYEC
Test No.: 5 - SVOC
Date: October 29, 2015

Plant Location: Courtice, ON
Test Location: Boiler No. 1 BH Outlet
Operator: CB

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	0.967	**Probe (mg)**	0
Barometric Pressure	29.2 "Hg	**CWTR (g)**	583.2
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	153.3
Nozzle	0.2553 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.34 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.32
CO2%	11.95
COppm	9.2

Measured H2O
18.2 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	72.5	226.97	0.64	290	44	68	69	1.6	6.0		17.05	**99.8**
	75	228.67	0.64	288	45	68	69	1.6	6.0		17.03	**98.7**
	77.5	230.42	0.64	288	45	68	69	1.6	6.0		17.03	**101.4**
9	80	232.07	0.63	286	46	68	69	1.6	6.0		16.87	**95.6**
	82.5	233.77	0.6	284	47	68	69	1.6	6.0		16.44	**99.2**
	85	235.46	0.6	284	48	69	68	1.6	6.0		16.44	**100.9**
	87.5	237.17	0.6	283	48	69	68	1.6	6.0		16.43	**102.1**
10	90	238.86	0.57	283	48	69	68	1.6	6.0		16.01	**100.8**
	92.5	240.56	0.58	283	47	69	68	1.5	6.0		16.15	**104.1**
	95	242.24	0.58	283	47	69	68	1.5	6.0		16.15	**101.9**
	97.5	243.90	0.58	283	50	69	69	1.5	6.0		16.15	**100.7**
11	100	245.58	0.4	283	50	69	69	1.5	6.0		13.42	**101.8**
	102.5	246.99	0.4	283	52	69	69	0.95	5.0		13.42	**102.9**
	105	248.42	0.4	283	50	69	69	0.95	5.0		13.42	**104.2**
	107.5	249.75	0.4	283	49	69	69	0.95	5.0		13.42	**96.9**
12	110	251.11	0.4	282	49	70	69	0.95	5.0		13.41	**99.1**
	112.5	252.50	0.4	282	49	70	69	0.95	5.0		13.41	**101.2**
	115	253.84	0.4	282	49	70	69	0.95	5.0		13.41	**97.5**
	117.5	255.20	0.4	282	48	70	69	0.95	5.0		13.41	**99.0**
	120	256.55										**98.2**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 1 BH Outlet
Test No.:	5 - SVOC
Date:	October 29, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.845
DGM CORRECTION FACTOR	0.967
NOZZLE DIAMETER	6.48 mm
DRY REF GAS VOLUME SAMPLED	4.513 m^3
AVGERGE ISOKINETICITY	100.9 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	142.4 ^{o}C
AVERAGE GAS MOISTURE BY VOLUME	18.2 %
AVERAGE GAS VELOCITY	16.86 m/s
BAROMETRIC PRESSURE (Station)	98.883 Kpa
STATIC PRESSURE	-2.689 Kpa
ABSOLUTE GAS PRESSURE	96.193 Kpa
OXYGEN CONCENTRATION	7.32 %
CARBON DIOXIDE CONCENTRATION	11.95 %
CARBON MONOXIDE CONCENTRATION	9.2 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	24.92 m^3/s
DRY REF GAS FLOWRATE	13.89 Rm^3/s
DRY ADJ GAS FLOWRATE	19.05 Rm^3/s
WET REF GAS FLOWRATE	16.98 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.513 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

Plant: Covanta - DYEC
Test No.: 6 - SVOC
Date: October 29, 2015

Plant Location: Courtice, ON
Test Location: Boiler No. 1 BH Outlet
Operator: CB

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	0.967	**Probe (mg)**	0
Barometric Pressure	29.29 "Hg	**CWTR (g)**	704.6
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	16.9
Nozzle	0.2553 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.26 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.98
CO2%	12.05
COppm	12.0

Measured H2O
17.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	57.21	0.65	283	60	67	67	1.5	5.0		17.05	
	2.5	59.61	0.65	284	47	68	68	1.4	5.0		17.06	137.8
	5	61.25	0.66	284	46	68	68	1.6	5.3		17.20	94.0
	7.5	62.92	0.66	285	48	68	68	1.7	5.5		17.21	95.1
2	10	64.57	0.72	285	49	68	68	1.8	6.0		17.97	94.0
	12.5	66.42	0.72	286	51	68	68	1.8	6.0		17.98	101.0
	15	68.18	0.73	286	48	68	68	1.8	6.0		18.11	96.1
	17.5	70.01	0.74	286	48	68	68	1.8	6.0		18.23	99.2
3	20	71.82	0.74	287	51	68	69	1.8	6.0		18.24	97.5
	22.5	73.63	0.75	288	48	68	69	2	6.3		18.38	97.5
	25	75.51	0.75	288	48	68	69	2	6.3		18.38	100.7
	27.5	77.40	0.74	289	52	69	69	2	6.3		18.27	101.2
4	30	79.33	0.64	288	47	68	69	1.7	6.0		16.98	104.0
	32.5	81.08	0.64	288	47	68	69	1.7	6.0		16.98	101.4
	35	82.86	0.64	288	52	68	69	1.7	6.0		16.98	103.1
	37.5	84.62	0.64	288	50	68	69	1.7	6.0		16.98	102.0
5	40	86.43	0.62	285	50	68	69	1.6	5.5		16.68	104.8
	42.5	88.20	0.62	285	50	68	69	1.6	5.5		16.68	103.9
	45	89.86	0.62	284	48	68	69	1.6	5.5		16.67	97.5
	47.5	91.55	0.57	284	50	68	69	1.6	5.5		15.98	99.2
6	50	93.25	0.57	284	50	68	69	1.5	5.5		15.98	104.0
	52.5	94.92	0.57	284	48	68	69	1.5	5.5		15.98	102.2
	55	96.58	0.58	284	47	68	69	1.45	5.0		16.12	101.6
	57.5	98.22	0.56	285	50	68	69	1.45	5.0		15.85	99.5
7	60	99.85	0.56	287	48	69	70	1.45	5.0		15.87	100.7
	62.5	101.47	0.56	286	46	68	69	1.45	5.0		15.86	100.0
	65	103.10	0.54	287	45	68	68	1.45	5.0		15.58	100.7
	67.5	104.73	0.53	287	44	68	68	1.4	5.0		15.44	102.8
8	70	106.34	0.56	287	44	68	68	1.45	5.0		15.87	102.4
	72.5	107.94	0.54	287	43	68	68	1.45	5.0		15.58	99.0
	75	109.55	0.54	286	43	68	68	1.45	5.0		15.57	101.5
	77.5	111.16	0.54	285	43	68	68	1.45	5.0		15.56	101.4
9	80	112.77	0.57	284	43	68	68	1.45	5.0		15.98	101.4
	82.5	114.42	0.58	284	42	68	68	1.45	5.0		16.12	101.0
	85	116.12	0.58	283	43	67	67	1.45	5.0		16.11	103.2
	87.5	117.76	0.58	283	43	67	67	1.45	5.0		16.11	99.7
10	90	119.37	0.6	283	43	67	67	1.6	6.0		16.38	97.9
	92.5	120.93	0.6	283	43	67	67	1.6	6.0		16.38	93.3
	95	122.62	0.6	283	43	67	67	1.6	6.0		16.38	101.0

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	6 - SVOC	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 29, 2015	**Operator:**	CB

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	0.967	**Probe (mg)**	0
Barometric Pressure	29.29 "Hg	**CWTR (g)**	704.6
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	16.9
Nozzle	0.2553 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.26 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.98
CO2%	12.05
COppm	12.0

Measured H2O
17.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	97.5	124.30	0.6	284	43	67	67	1.6	6.0		16.39	**100.4**
11	100	126.00	0.55	283	43	67	67	1.4	5.0		15.69	**101.7**
	102.5	127.65	0.54	283	43	67	67	1.4	5.0		15.54	**103.0**
	105	129.27	0.54	283	43	67	68	1.4	5.0		15.54	**102.0**
	107.5	130.88	0.54	283	43	67	68	1.4	5.0		15.54	**101.3**
12	110	132.49	0.54	283	43	67	68	1.4	5.0		15.54	**101.3**
	112.5	134.11	0.54	283	43	67	68	1.4	5.0		15.54	**101.9**
	115	135.74	0.53	283	43	67	68	1.4	5.0		15.40	**102.6**
	117.5	137.36	0.53	283	43	67	68	1.4	5.0		15.40	**102.9**
	120	139.02								0.26		**105.4**
1	0	139.28	0.7	286	60	66	66	1.8	6.5		17.73	
	2.5	141.09	0.7	286	43	66	66	1.8	6.5		17.73	**100.6**
	5	142.90	0.7	286	42	66	66	1.8	6.5		17.73	**100.6**
	7.5	144.71	0.7	285	43	67	66	1.8	6.5		17.72	**100.6**
2	10	146.50	0.72	285	43	67	66	1.8	6.5		17.97	**99.3**
	12.5	148.35	0.72	286	43	66	66	1.8	6.5		17.98	**101.2**
	15	150.20	0.72	286	43	66	66	1.8	6.5		17.98	**101.4**
	17.5	151.97	0.72	288	43	66	66	1.8	6.5		18.01	**97.0**
3	20	153.70	0.7	288	43	66	66	1.8	6.5		17.76	**95.0**
	22.5	155.50	0.7	289	43	67	66	1.8	6.5		17.77	**100.2**
	25	157.20	0.7	289	43	66	66	1.8	6.5		17.77	**94.6**
	27.5	159.00	0.7	289	43	66	66	1.8	6.5		17.77	**100.3**
4	30	160.82	0.68	289	43	66	66	1.7	6.5		17.51	**101.4**
	32.5	162.56	0.67	289	43	66	66	1.7	6.5		17.38	**98.3**
	35	164.33	0.67	289	43	66	66	1.7	6.5		17.38	**100.8**
	37.5	166.11	0.67	288	43	66	66	1.7	6.5		17.37	**101.3**
5	40	167.90	0.62	288	43	66	66	1.5	6.3		16.71	**101.8**
	42.5	169.62	0.62	288	43	66	66	1.5	6.3		16.71	**101.7**
	45	171.27	0.63	286	43	66	66	1.5	6.3		16.82	**97.5**
	47.5	172.98	0.63	286	43	66	66	1.5	6.3		16.82	**100.1**
6	50	174.66	0.6	287	44	66	66	1.5	6.3		16.43	**98.4**
	52.5	176.31	0.6	287	44	66	66	1.5	6.3		16.43	**99.1**
	55	177.98	0.6	289	44	66	66	1.5	6.3		16.45	**100.3**
	57.5	179.67	0.6	289	44	66	66	1.5	6.3		16.45	**101.6**
7	60	181.36	0.62	289	44	66	66	1.5	6.3		16.72	**101.6**
	62.5	183.04	0.62	289	44	66	66	1.5	6.3		16.72	**99.4**
	65	184.71	0.62	288	44	66	66	1.5	6.3		16.71	**98.8**
	67.5	186.37	0.63	288	44	66	66	1.5	6.3		16.84	**98.1**
8	70	188.05	0.67	288	44	66	66	1.7	7.0		17.37	**98.5**

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	6 - SVOC	**Test Location:**	Boiler No. 1 BH Outlet
Date:	October 29, 2015	**Operator:**	CB

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	0.967	**Probe (mg)**	0
Barometric Pressure	29.29 "Hg	**CWTR (g)**	704.6
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	16.9
Nozzle	0.2553 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.26 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.98
CO2%	12.05
COppm	12.0

Measured H2O
17.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	72.5	189.80	0.65	288	44	66	66	1.7	7.0		17.11	**99.5**
	75	191.55	0.65	287	44	66	66	1.7	7.0		17.10	**101.1**
	77.5	193.30	0.65	287	44	66	66	1.7	7.0		17.10	**101.0**
9	80	195.07	0.64	286	44	66	66	1.7	7.0		16.96	**102.2**
	82.5	196.82	0.64	286	44	66	66	1.7	7.0		16.96	**101.7**
	85	198.57	0.64	286	44	66	66	1.7	7.0		16.96	**101.7**
	87.5	200.33	0.65	286	44	66	66	1.7	7.0		17.09	**102.3**
10	90	202.06	0.65	285	44	66	66	1.7	7.0		17.08	**99.8**
	92.5	203.82	0.65	285	44	66	66	1.7	7.0		17.08	**101.4**
	95	205.57	0.66	284	44	66	66	1.7	7.0		17.20	**100.9**
	97.5	207.34	0.64	284	44	66	66	1.7	7.0		16.93	**101.2**
11	100	209.10	0.56	283	44	66	66	1.4	6.0		15.83	**102.2**
	102.5	210.74	0.56	283	44	66	66	1.4	6.0		15.83	**101.6**
	105	212.36	0.56	283	44	66	66	1.4	6.0		15.83	**100.4**
	107.5	213.98	0.54	283	44	66	66	1.4	6.0		15.54	**100.4**
12	110	215.61	0.5	283	44	66	66	1.4	6.0		14.96	**102.9**
	112.5	217.18	0.5	283	44	66	66	1.4	6.0		14.96	**103.0**
	115	218.74	0.49	283	44	65	66	1.4	6.0		14.81	**102.3**
	117.5	220.30	0.49	283	44	65	66	1.4	6.0		14.81	**103.4**
	120	221.86										**103.4**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 1 BH Outlet
Test No.:	6 - SVOC
Date:	October 29, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.845
DGM CORRECTION FACTOR	0.967
NOZZLE DIAMETER	6.48 mm
DRY REF GAS VOLUME SAMPLED	4.511 m^3
AVGERGE ISOKINETICITY	100.9 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.0 °C
AVERAGE GAS MOISTURE BY VOLUME	17.9 %
AVERAGE GAS VELOCITY	16.69 m/s
BAROMETRIC PRESSURE (Station)	99.187 Kpa
STATIC PRESSURE	-2.689 Kpa
ABSOLUTE GAS PRESSURE	96.498 Kpa
OXYGEN CONCENTRATION	7.98 %
CARBON DIOXIDE CONCENTRATION	12.05 %
CARBON MONOXIDE CONCENTRATION	12.0 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	24.66 m^3/s
DRY REF GAS FLOWRATE	13.89 Rm^3/s
DRY ADJ GAS FLOWRATE	18.12 Rm^3/s
WET REF GAS FLOWRATE	16.91 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.511 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

APPENDIX 37

Particulate and Acid Gas Test Emission Calculations at the Boiler No. 2 BH Outlet (12 pages)

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particulate & Acid Gases	**Test Location:**	Boiler No. 2 BH Outlet
Date:	September 30, 2015	**Operator:**	KS

Pitot Factor	0.845	**Filter (mg)**	0.1
DGMCF	1.004	**Probe (mg)**	2.2
Barometric Pressure	29.8 "Hg	**CWTR (g)**	517.5
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	37.7
Nozzle	0.25575 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.45 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.38
CO2%	10.89
COppm	13.5

Measured H2O
15.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	76.63	0.68	272	81	71	71	2	5.0		17.14	
	2.5	78.79	0.74	272	47	72	72	1.7	5.0		17.88	122.1
	5	80.56	0.72	271	46	70	71	1.7	5.0		17.62	95.7
2	7.5	82.32	0.66	271	46	70	71	1.6	4.5		16.87	96.7
	10	84.04	0.68	271	46	70	73	1.7	4.5		17.13	98.7
	12.5	85.79	0.68	271	48	70	74	1.7	4.5		17.13	98.7
3	15	87.57	0.78	261	49	71	76	1.9	5.0		18.22	100.3
	17.5	89.42	0.8	270	50	71	77	2	5.0		18.56	96.5
	20	91.33	0.81	267	58	70	70	2	5.0		18.64	98.9
4	22.5	93.25	0.76	271	52	70	70	1.9	5.0		18.10	99.3
	25	95.13	0.78	273	48	70	71	1.9	5.0		18.37	100.7
	27.5	97.00	0.78	274	47	70	72	2	5.0		18.38	98.9
5	30	98.89	0.79	278	47	70	74	2	5.0		18.55	99.9
	32.5	100.79	0.75	278	48	70	76	1.9	5.0		18.07	99.9
	35	102.66	0.77	277	48	71	77	1.9	5.0		18.30	100.7
6	37.5	104.54	0.77	277	49	71	78	1.9	5.0		18.30	99.7
	40	106.42	0.75	277	50	71	80	1.9	5.0		18.06	99.6
	42.5	108.29	0.74	277	49	71	80	1.9	5.0		17.94	100.2
7	45	110.17	0.75	277	49	71	81	1.9	5.0		18.06	101.4
	47.5	112.04	0.71	277	50	72	82	1.8	5.0		17.57	100.1
	50	113.87	0.71	278	50	72	83	1.8	5.0		17.58	100.4
8	52.5	115.71	0.75	277	49	73	84	1.9	5.0		18.06	101.0
	55	117.60	0.76	278	50	73	84	1.9	5.0		18.19	100.7
	57.5	119.50	0.77	278	49	73	85	1.9	5.0		18.31	100.6
9	60	121.40	0.82	279	49	73	85	2.1	5.0		18.91	99.8
	62.5	123.37	0.84	278	49	74	86	2.1	5.0		19.12	100.4
	65	125.35	0.88	278	50	74	86	2.2	5.0		19.57	99.5
10	67.5	127.40	0.89	278	50	74	87	2.2	5.5		19.69	100.7
	70	129.44	0.89	278	51	75	87	2.2	5.5		19.69	99.5
	72.5	131.49	0.89	278	52	75	87	2.2	5.5		19.69	99.9
11	75	133.55	0.87	278	52	75	87	2.2	5.5		19.46	100.4

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particulate & Acid Gases	**Test Location:**	Boiler No. 2 BH Outlet
Date:	September 30, 2015	**Operator:**	KS

Pitot Factor	0.845	**Filter (mg)**	0.1
DGMCF	1.004	**Probe (mg)**	2.2
Barometric Pressure	29.8 "Hg	**CWTR (g)**	517.5
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	37.7
Nozzle	0.25575 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.45 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.38
CO2%	10.89
COppm	13.5

Measured H2O
15.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	135.59	0.9	278	53	75	88	2.2	5.5		19.80	**100.6**
	80	137.64	0.9	278	56	76	88	2.3	5.5		19.80	**99.3**
12	82.5	139.74	0.83	279	58	76	88	2.1	5.5		19.02	**101.6**
	85	141.72	0.83	279	60	76	88	2.1	5.5		19.02	**99.8**
	87.5	143.69	0.83	278	63	76	88	2.1	5.5		19.01	**99.3**
	90	145.80								0.45		**106.3**
1	0	146.25	0.75	271	70	76	78	2	5.5		17.99	
	2.5	148.11	0.75	271	58	76	80	2	5.5		17.99	**99.0**
	5	150.04	0.75	271	54	76	81	2	5.5		17.99	**102.5**
2	7.5	151.97	0.78	274	53	76	82	2	5.5		18.38	**102.4**
	10	153.88	0.75	274	52	76	83	1.9	5.5		18.02	**99.5**
	12.5	155.77	0.75	277	52	76	85	1.9	5.5		18.06	**100.3**
3	15	157.65	0.8	277	52	76	86	2.1	5.5		18.65	**99.8**
	17.5	159.63	0.79	272	51	76	86	2.1	5.5		18.47	**101.7**
	20	161.60	0.78	272	51	76	87	2	5.5		18.35	**101.5**
4	22.5	163.54	0.79	272	50	76	87	2	5.5		18.47	**100.4**
	25	165.48	0.73	273	50	77	88	1.9	5.5		17.77	**99.8**
	27.5	167.38	0.72	273	51	77	88	1.9	5.5		17.65	**101.5**
5	30	169.27	0.7	273	51	77	88	1.8	5.5		17.40	**101.7**
	32.5	171.11	0.71	278	49	77	88	1.8	5.5		17.58	**100.4**
	35	172.94	0.72	278	49	77	88	1.9	5.5		17.71	**99.5**
6	37.5	174.81	0.69	278	48	77	89	1.8	5.5		17.33	**101.0**
	40	176.65	0.73	278	48	78	89	1.9	5.5		17.83	**101.4**
	42.5	178.54	0.73	279	48	78	89	1.9	5.5		17.84	**101.2**
7	45	180.42	0.74	278	48	78	89	1.9	5.5		17.95	**100.7**
	47.5	182.30	0.74	279	49	78	89	1.9	5.5		17.96	**99.9**
	50	184.18	0.76	279	49	78	89	2	5.5		18.20	**100.0**
8	52.5	186.10	0.82	279	50	78	90	2.1	5.5		18.91	**100.8**
	55	188.08	0.8	279	50	78	90	2	5.5		18.68	**100.0**
	57.5	190.02	0.91	279	51	79	90	2.3	5.5		19.92	**99.2**
9	60	192.11	0.95	279	52	79	90	2.4	5.5		20.35	**100.2**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particulate & Acid Gases	**Test Location:**	Boiler No. 2 BH Outlet
Date:	September 30, 2015	**Operator:**	KS

Pitot Factor	0.845	**Filter (mg)**	0.1
DGMCF	1.004	**Probe (mg)**	2.2
Barometric Pressure	29.8 "Hg	**CWTR (g)**	517.5
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	37.7
Nozzle	0.25575 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.45 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.38
CO2%	10.89
COppm	13.5

Measured H2O
15.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	194.26	0.9	280	53	79	90	2.3	6.0		19.82	**100.9**
	65	196.37	0.9	279	54	79	90	2.3	6.0		19.81	**101.8**
10	67.5	198.48	0.9	279	55	79	91	2.3	6.0		19.81	**101.7**
	70	200.59	0.92	279	57	79	91	2.3	6.0		20.03	**101.6**
	72.5	202.70	0.93	279	59	79	91	2.3	6.0		20.14	**100.5**
11	75	204.80	0.97	279	60	80	91	2.4	6.0		20.57	**99.5**
	77.5	206.97	0.96	279	62	79	91	2.4	6.0		20.46	**100.6**
	80	209.15	0.99	279	63	79	91	2.4	6.0		20.78	**101.7**
12	82.5	211.33	0.99	279	65	79	91	2.4	6.0		20.78	**100.1**
	85	213.50	0.99	280	68	80	91	2.5	6.0		20.79	**99.7**
	87.5	215.71	0.96	280	66	80	91	2.4	6.0		20.47	**101.5**
	90	218.00										**106.8**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 2 BH Outlet
Test No.:	1 - Particulate & Acid Gases
Date:	September 30, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.845
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.50 mm
DRY REF GAS VOLUME SAMPLED	3.995 m^3
AVGERGE ISOKINETICITY	100.7 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	135.6 °C
AVERAGE GAS MOISTURE BY VOLUME	15.9 %
AVERAGE GAS VELOCITY	18.65 m/s
BAROMETRIC PRESSURE (Station)	100.914 Kpa
STATIC PRESSURE	-2.789 Kpa
ABSOLUTE GAS PRESSURE	98.126 Kpa
OXYGEN CONCENTRATION	8.38 %
CARBON DIOXIDE CONCENTRATION	10.89 %
CARBON MONOXIDE CONCENTRATION	13.5 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.55 m^3/s
DRY REF GAS FLOWRATE	16.37 Rm^3/s
DRY ADJ GAS FLOWRATE	20.70 Rm^3/s
WET REF GAS FLOWRATE	19.47 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	2.2 mg
	-FILTER	0.1 mg
	-TOTAL	2.3 mg
DRY REF GAS VOLUME SAMPLED		3.995 m^3
PARTICULATE CONC. - ACTUAL		0.342 mg/m^3
PARTICULATE CONC. - DRY REF		0.576 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.455 mg/m^4
PARTICULATE CONC. - WET REF		0.484 mg/m^3
PARTICULATE EMISSION RATE		0.00942 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Acid Gases	**Test Location:**	Boiler No. 2 BH Outlet
Date:	September 30, 2015	**Operator:**	KS

Pitot Factor	0.845	**Filter (mg)**	0.1
DGMCF	1.004	**Probe (mg)**	1.3
Barometric Pressure	29.88 "Hg	**CWTR (g)**	534.1
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	29.9
Nozzle	0.25575 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.53 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.28
CO2%	10.98
COppm	14.1

Measured H2O
16.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	18.49	0.75	272	74	77	77	1.8	4.0		17.98	
	2.5	20.43	0.7	272	58	77	77	1.8	4.5		17.37	**103.8**
	5	22.29	0.71	272	54	77	78	1.8	4.5		17.50	**103.0**
2	7.5	24.13	0.75	235	51	77	79	1.9	4.5		17.52	**101.0**
	10	26.01	0.73	239	50	77	81	1.9	4.5		17.34	**97.8**
	12.5	27.91	0.73	239	50	77	83	1.9	4.5		17.34	**100.3**
3	15	29.78	0.81	264	50	78	84	2.1	4.5		18.59	**98.5**
	17.5	31.74	0.78	268	50	78	85	2.1	4.5		18.29	**99.6**
	20	33.72	0.78	267	50	78	86	2	5.0		18.28	**102.8**
4	22.5	35.66	0.79	268	50	78	87	2	5.0		18.41	**100.5**
	25	37.60	0.77	273	50	78	88	2	5.0		18.24	**99.8**
	27.5	39.54	0.77	274	50	79	88	2	5.0		18.25	**101.4**
5	30	41.49	0.75	276	50	79	89	1.9	5.0		18.03	**101.9**
	32.5	43.39	0.75	276	50	79	89	1.9	5.0		18.03	**100.6**
	35	45.29	0.76	276	50	79	90	1.9	5.0		18.15	**100.6**
6	37.5	47.18	0.75	276	50	79	90	1.95	5.0		18.03	**99.3**
	40	49.10	0.76	276	50	79	90	1.95	5.0		18.15	**101.6**
	42.5	51.02	0.75	277	50	80	91	1.95	5.0		18.05	**100.9**
7	45	52.93	0.77	270	51	80	91	2	5.0		18.20	**100.9**
	47.5	54.86	0.74	279	51	80	91	1.9	5.0		17.95	**100.2**
	50	56.76	0.72	279	51	80	91	1.9	5.0		17.71	**101.2**
8	52.5	58.64	0.71	278	51	80	91	1.9	5.0		17.57	**101.5**
	55	60.53	0.78	279	51	80	91	2	5.0		18.43	**102.7**
	57.5	62.47	0.77	279	51	80	91	2	5.0		18.31	**100.7**
9	60	64.40	0.86	279	52	80	92	2.2	5.0		19.35	**100.8**
	62.5	66.47	0.87	279	51	80	92	2.2	5.0		19.46	**102.3**
	65	68.54	0.85	280	51	81	92	2.15	5.0		19.25	**101.7**
10	67.5	70.58	0.86	280	51	81	92	2.15	5.0		19.36	**101.3**
	70	72.62	0.88	280	51	81	92	2.2	5.0		19.59	**100.7**
	72.5	74.68	0.86	280	51	81	92	2.2	5.0		19.36	**100.6**
11	75	76.74	0.88	280	51	81	92	2.2	5.0		19.59	**101.8**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Acid Gases	**Test Location:**	Boiler No. 2 BH Outlet
Date:	September 30, 2015	**Operator:**	KS

Pitot Factor	0.845	**Filter (mg)**	0.1
DGMCF	1.004	**Probe (mg)**	1.3
Barometric Pressure	29.88 "Hg	**CWTR (g)**	534.1
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	29.9
Nozzle	0.25575 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.53 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.28
CO2%	10.98
COppm	14.1

Measured H2O
16.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	78.80	0.91	280	51	81	93	2.3	5.0		19.92	100.6
	80	80.91	0.88	280	51	81	93	2.2	5.0		19.59	101.2
12	82.5	82.99	0.87	281	52	81	93	2.2	5.0		19.49	101.5
	85	85.04	0.86	280	52	81	93	2.2	5.0		19.36	100.6
	87.5	87.23	0.85	280	52	81	93	2.1	5.0		19.25	108.1
	90	89.09								0.53		92.3
1	0	89.62	0.65	272	63	80	82	1.7	5.0		16.74	
	2.5	91.45	0.7	277	53	80	83	1.7	5.0		17.43	104.3
	5	93.24	0.72	277	53	80	85	1.8	5.0		17.68	98.6
2	7.5	95.08	0.7	277	52	80	86	1.8	5.0		17.43	99.8
	10	96.92	0.69	277	52	80	87	1.8	5.0		17.31	101.1
	12.5	98.76	0.69	277	53	80	89	1.8	5.0		17.31	101.7
3	15	100.60	0.71	277	53	80	90	1.8	5.0		17.56	101.5
	17.5	102.44	0.71	237	53	80	91	1.8	5.0		17.07	100.0
	20	104.28	0.72	235	53	80	91	1.9	5.0		17.17	97.2
4	22.5	106.16	0.72	261	54	80	91	2	5.0		17.49	98.5
	25	108.07	0.72	261	53	80	91	2	5.0		17.49	101.9
	27.5	110.01	0.73	262	54	80	92	1.9	5.0		17.62	103.5
5	30	111.90	0.74	263	54	80	92	1.9	5.0		17.75	100.1
	32.5	113.82	0.72	264	54	80	92	1.9	5.0		17.52	101.1
	35	115.71	0.72	263	55	81	92	1.9	5.0		17.51	100.9
6	37.5	117.60	0.73	276	55	81	92	1.9	5.0		17.79	100.8
	40	119.48	0.73	277	55	81	92	1.9	5.0		17.80	100.4
	42.5	121.36	0.72	277	55	81	92	1.9	5.0		17.68	100.5
7	45	123.27	0.69	277	54	81	92	1.8	5.0		17.31	102.8
	47.5	125.09	0.69	278	54	81	92	1.9	5.0		17.32	100.1
	50	126.96	0.69	278	53	81	93	1.8	5.0		17.32	102.9
8	52.5	128.80	0.75	278	53	81	92	1.9	5.0		18.06	101.1
	55	130.70	0.74	278	53	81	93	2	5.0		17.94	100.3
	57.5	132.63	0.75	278	53	81	93	2	5.0		18.06	102.5
9	60	134.57	0.82	278	54	81	93	2.15	5.0		18.88	102.3

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Acid Gases	**Test Location:**	Boiler No. 2 BH Outlet
Date:	September 30, 2015	**Operator:**	KS

Pitot Factor	0.845	**Filter (mg)**	0.1
DGMCF	1.004	**Probe (mg)**	1.3
Barometric Pressure	29.88 "Hg	**CWTR (g)**	534.1
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	29.9
Nozzle	0.25575 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.53 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.28
CO2%	10.98
COppm	14.1

Measured H2O
16.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	136.59	0.8	278	54	81	93	2.15	5.5		18.65	101.9
	65	138.61	0.84	277	54	81	93	2.1	5.5		19.10	103.2
10	67.5	140.61	0.83	278	54	81	92	2.1	5.5		19.00	99.6
	70	142.61	0.88	278	54	81	92	2.2	5.5		19.56	100.4
	72.5	144.68	0.86	278	54	81	92	2.2	5.5		19.34	100.9
11	75	146.73	0.9	279	54	81	92	2.3	5.5		19.79	101.1
	77.5	148.83	0.9	279	54	81	92	2.3	5.5		19.79	101.4
	80	150.94	0.9	279	54	81	92	2.3	6.0		19.79	101.8
12	82.5	153.05	0.88	279	54	81	92	2.2	6.0		19.57	101.8
	85	155.12	0.89	279	54	81	92	2.2	6.0		19.68	101.0
	87.5	157.20	0.86	279	54	81	92	2.1	5.5		19.35	100.9
	90	159.35										106.1

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 2 BH Outlet
Test No.:	2 - Particulate & Acid Gases
Date:	September 30, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.845
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.50 mm
DRY REF GAS VOLUME SAMPLED	3.949 m^3
AVGERGE ISOKINETICITY	101.1 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	133.8 °C
AVERAGE GAS MOISTURE BY VOLUME	16.3 %
AVERAGE GAS VELOCITY	18.31 m/s
BAROMETRIC PRESSURE (Station)	101.185 Kpa
STATIC PRESSURE	-2.789 Kpa
ABSOLUTE GAS PRESSURE	98.396 Kpa
OXYGEN CONCENTRATION	8.28 %
CARBON DIOXIDE CONCENTRATION	10.98 %
CARBON MONOXIDE CONCENTRATION	14.1 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.05 m^3/s
DRY REF GAS FLOWRATE	16.11 Rm^3/s
DRY ADJ GAS FLOWRATE	20.54 Rm^3/s
WET REF GAS FLOWRATE	19.25 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1.3 mg
	-FILTER	0.1 mg
	-TOTAL	1.4 mg
DRY REF GAS VOLUME SAMPLED		3.949 m^3
PARTICULATE CONC. - ACTUAL		0.211 mg/m^3
PARTICULATE CONC. - DRY REF		0.355 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.278 mg/m^4
PARTICULATE CONC. - WET REF		0.297 mg/m^3
PARTICULATE EMISSION RATE		0.00571 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Acid Gases	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 1, 2015	**Operator:**	KS

Pitot Factor	0.845	**Filter (mg)**	0.2
DGMCF	1.004	**Probe (mg)**	2.3
Barometric Pressure	29.92 "Hg	**CWTR (g)**	504.2
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	39.9
Nozzle	0.25575 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.26 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.62
CO2%	11.85
COppm	16.8

Measured H2O
16.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	60.03	0.8	225	61	63	63	1.9	5.5		17.93	
	2.5	61.86	0.8	225	50	63	62	2.1	5.5		17.93	**94.5**
	5	63.81	0.77	225	49	63	63	2.1	5.5		17.59	**100.8**
2	7.5	65.76	0.83	265	49	63	64	2.1	5.5		18.79	**102.7**
	10	67.71	0.83	267	49	63	65	2.1	5.5		18.82	**101.7**
	12.5	69.65	0.86	267	51	63	67	2.2	5.0		19.15	**101.2**
3	15	71.64	0.83	267	52	63	68	2.1	5.5		18.82	**101.8**
	17.5	73.61	0.83	267	54	63	69	2.1	6.0		18.82	**102.5**
	20	75.56	0.82	267	56	63	71	2.1	6.0		18.70	**101.3**
4	22.5	77.51	0.81	267	59	64	72	2.1	6.0		18.59	**101.7**
	25	79.45	0.8	273	60	64	72	2.1	6.0		18.55	**101.7**
	27.5	81.39	0.8	273	58	64	73	2.1	6.0		18.55	**102.7**
5	30	83.32	0.8	273	58	64	74	2.1	6.0		18.55	**102.1**
	32.5	85.24	0.78	275	56	64	74	2	6.0		18.34	**101.5**
	35	87.15	0.77	274	55	64	75	2	6.0		18.21	**102.3**
6	37.5	89.06	0.76	275	55	65	75	1.9	5.5		18.10	**102.8**
	40	90.93	0.72	276	55	65	75	1.9	5.5		17.63	**101.3**
	42.5	92.80	0.72	276	55	65	76	1.8	5.5		17.63	**104.1**
7	45	94.62	0.76	276	54	65	76	1.9	5.5		18.12	**101.2**
	47.5	96.49	0.76	276	53	65	76	1.9	5.5		18.12	**101.2**
	50	98.35	0.75	276	52	65	77	1.9	5.5		18.00	**100.7**
8	52.5	100.22	0.8	276	52	65	77	1.9	5.5		18.59	**101.8**
	55	102.07	0.8	276	52	66	77	2	5.5		18.59	**97.5**
	57.5	103.96	0.81	276	51	66	77	2.1	6.0		18.70	**99.6**
9	60	105.91	0.78	276	50	66	77	2.1	6.0		18.35	**102.1**
	62.5	107.87	0.74	276	50	66	77	2	6.0		17.88	**104.6**
	65	109.79	0.73	276	50	66	77	1.9	6.0		17.76	**105.2**
10	67.5	111.66	0.71	275	51	66	78	1.8	5.5		17.50	**103.1**
	70	113.46	0.78	276	51	66	78	2	5.5		18.35	**100.5**
	72.5	115.37	0.79	276	51	66	78	2	5.5		18.47	**101.8**
11	75	117.28	0.83	276	52	66	78	2.1	6.0		18.93	**101.2**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Acid Gases	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 1, 2015	**Operator:**	KS

Pitot Factor	0.845	**Filter (mg)**	0.2
DGMCF	1.004	**Probe (mg)**	2.3
Barometric Pressure	29.92 "Hg	**CWTR (g)**	504.2
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	39.9
Nozzle	0.25575 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.26 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.62
CO2%	11.85
COppm	16.8

Measured H2O
16.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	119.24	0.82	275	51	68	78	2.1	6.0		18.81	**101.3**
	80	121.20	0.8	274	51	66	78	2.1	6.0		18.56	**101.7**
12	82.5	123.17	0.81	275	52	67	79	2	6.0		18.69	**103.6**
	85	125.10	0.8	274	52	67	78	2	6.0		18.56	**100.7**
	87.5	127.03	0.8	275	52	67	78	2	6.0		18.57	**101.4**
	90	129.09								0.26		**108.3**
1	0	129.35	0.54	276	59	65	66	1.7	5.5		15.27	
	2.5	131.17	0.52	276	50	65	67	1.4	5.0		14.99	118.0
	5	132.79	0.5	276	48	65	68	1.3	5.0		14.69	**106.8**
2	7.5	134.32	0.49	271	48	66	70	1.2	5.0		14.50	**102.8**
	10	135.80	0.58	249	47	66	72	1.6	5.0		15.53	**99.8**
	12.5	137.45	0.6	258	47	66	73	1.7	5.0		15.90	**100.6**
3	15	139.18	0.61	256	47	66	73	1.6	5.0		16.01	**104.3**
	17.5	140.90	0.61	271	47	66	76	1.6	5.5		16.18	**102.6**
	20	142.60	0.6	271	47	66	76	1.6	5.5		16.04	**102.2**
4	22.5	144.29	0.59	271	47	66	77	1.6	5.5		15.91	**102.5**
	25	145.99	0.54	272	48	66	77	1.4	5.5		15.23	**103.8**
	27.5	147.61	0.56	272	48	67	78	1.4	5.0		15.51	**103.5**
5	30	149.20	0.55	272	48	67	78	1.4	5.0		15.37	**99.5**
	32.5	150.79	0.54	271	48	67	79	1.4	5.0		15.22	**100.4**
	35	152.37	0.54	272	48	67	79	1.4	5.0		15.23	**100.5**
6	37.5	153.98	0.54	272	49	68	80	1.4	5.0		15.23	**102.5**
	40	155.56	0.57	273	49	68	80	1.5	5.5		15.66	**100.4**
	42.5	157.20	0.57	273	50	68	80	1.5	5.5		15.66	**101.6**
7	45	158.83	0.58	273	50	68	81	1.5	5.5		15.79	**100.9**
	47.5	160.45	0.55	272	51	68	81	1.5	5.5		15.37	**99.4**
	50	162.11	0.53	272	52	68	81	1.5	5.5		15.09	**104.5**
8	52.5	163.76	0.64	273	53	69	81	1.7	5.5		16.59	**105.8**
	55	165.48	0.63	273	56	69	82	1.7	6.0		16.46	**100.4**
	57.5	167.23	0.64	273	57	69	82	1.7	6.0		16.59	**102.8**
9	60	168.97	0.63	273	58	69	82	1.7	6.0		16.46	**101.4**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Acid Gases	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 1, 2015	**Operator:**	KS

Pitot Factor	0.845	**Filter (mg)**	0.2
DGMCF	1.004	**Probe (mg)**	2.3
Barometric Pressure	29.92 "Hg	**CWTR (g)**	504.2
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	39.9
Nozzle	0.25575 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.26 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.62
CO2%	11.85
COppm	16.8

Measured H2O
16.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	170.72	0.62	273	59	69	82	1.7	6.0		16.33	**102.8**
	65	172.46	0.62	273	61	69	82	1.7	6.0		16.33	**103.1**
10	67.5	174.19	0.66	273	63	70	82	1.7	6.0		16.85	**102.5**
	70	175.95	0.67	274	65	70	82	1.8	6.0		16.99	**101.0**
	72.5	177.76	0.69	274	66	70	82	1.8	6.0		17.24	**103.1**
11	75	179.55	0.71	274	68	70	82	1.9	6.0		17.49	**100.5**
	77.5	181.36	0.72	275	70	70	83	1.9	6.0		17.62	**100.2**
	80	183.24	0.71	275	72	70	83	1.9	6.0		17.50	**103.3**
12	82.5	185.10	0.72	275	74	71	82	1.8	6.0		17.62	**103.0**
	85	186.92	0.8	275	76	71	82	2.1	6.0		18.57	**100.0**
	87.5	188.87	0.72	275	77	71	82	1.9	6.0		17.62	**101.7**
	90	190.76										**103.9**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 2 BH Outlet
Test No.:	3 - Particulate & Acid Gases
Date:	October 1, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.845
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.50 mm
DRY REF GAS VOLUME SAMPLED	3.769 m^3
AVGERGE ISOKINETICITY	102.2 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	132.5 ^oC
AVERAGE GAS MOISTURE BY VOLUME	16.4 %
AVERAGE GAS VELOCITY	17.25 m/s
BAROMETRIC PRESSURE (Station)	101.321 Kpa
STATIC PRESSURE	-2.789 Kpa
ABSOLUTE GAS PRESSURE	98.532 Kpa
OXYGEN CONCENTRATION	7.62 %
CARBON DIOXIDE CONCENTRATION	11.85 %
CARBON MONOXIDE CONCENTRATION	16.8 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.49 m^3/s
DRY REF GAS FLOWRATE	15.22 Rm^3/s
DRY ADJ GAS FLOWRATE	20.42 Rm^3/s
WET REF GAS FLOWRATE	18.22 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	2.3 mg
	-FILTER	0.2 mg
	-TOTAL	2.5 mg
DRY REF GAS VOLUME SAMPLED		3.769 m^3
PARTICULATE CONC. - ACTUAL		0.396 mg/m^3
PARTICULATE CONC. - DRY REF		0.663 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.494 mg/m^4
PARTICULATE CONC. - WET REF		0.554 mg/m^3
PARTICULATE EMISSION RATE		0.01010 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

APPENDIX 38

Particle Size Distribution Test Emission Calculations at the Boiler No. 2 BH Outlet (12 pages)

ORTECH Environmental

Plant: Covanta - DYEC
Test No.: 1 - Particle Size Distribution
Date: September 30, 2015

Plant Location: Courtice, ON
Test Location: Boiler No. 2 BH Outlet
Operator: TT

Pitot Factor	0.844	**Filter (mg)**	4.9
DGMCF	0.985	**Probe (mg)**	0
Barometric Pressure	29.8 "Hg	**CWTR (g)**	457.6
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	26.7
Nozzle	0.241 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0 ft^3
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	1
		Number of points / Port	6

Combustion Gases	
O2%	8.38
CO2%	10.89
COppm	13.5

Measured H2O
16.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	32.74	0.85	272	65	70	69	1.5	6.0		19.15	
	5	35.93	0.87	271	45	70	69	1.6	6.0		19.36	89.6
	10	39.28	0.85	273	45	70	69	1.6	6.0		19.16	92.9
2	15	42.70	0.75	273	46	70	69	1.6	7.0		18.00	96.1
	20	45.48	0.8	271	55	71	69	1.65	7.0		18.56	83.2
	25	48.93	0.8	277	49	71	69	1.65	7.0		18.64	99.7
3	30	52.38	0.82	278	48	71	69	1.65	7.0		18.88	100.1
	35	55.81	0.76	278	48	71	70	1.65	7.0		18.18	98.4
	40	59.24	0.79	278	49	71	70	1.65	7.0		18.53	102.1
4	45	62.71	0.77	278	49	72	70	1.65	7.0		18.30	101.3
	50	66.16	0.78	278	49	72	70	1.65	7.0		18.42	101.9
	55	69.65	0.77	267	49	73	70	1.6	7.0		18.16	102.5
5	60	73.01	0.83	272	50	73	71	1.6	9.0		18.92	98.4
	65	76.30	0.83	271	50	74	71	1.6	14.0		18.91	93.1
	70	79.59	0.82	271	50	74	71	1.6	14.5		18.79	92.9
6	75	82.98	0.84	271	51	74	71	1.6	15.0		19.02	96.3
	80	86.43	0.87	272	52	74	72	1.6	15.5		19.37	96.9
	85	89.81	0.89	271	53	74	72	1.6	16.0		19.58	93.2
1	90	93.17	0.83	271	65	74	72	1.6	6.5		18.91	91.6
	95	96.44	0.93	274	50	74	73	1.6	6.5		20.05	92.3
	100	99.80	0.9	277	49	74	73	1.6	7.0		19.77	89.7
2	105	103.20	0.82	278	48	75	73	1.6	7.0		18.88	92.4
	110	106.60	0.85	278	49	75	73	1.6	7.0		19.22	96.8
	115	110.01	0.82	278	49	75	73	1.6	7.0		18.88	95.4
3	120	113.44	0.8	278	49	76	73	1.6	7.0		18.65	97.7
	125	116.87	0.79	279	49	76	74	1.6	7.0		18.55	98.8
	130	120.29	0.79	279	49	76	74	1.6	7.0		18.55	99.1
4	135	123.69	0.86	271	49	77	74	1.6	7.0		19.25	98.5
	140	127.12	0.81	272	48	77	74	1.6	7.0		18.69	94.6

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particle Size Distribution	**Test Location:**	Boiler No. 2 BH Outlet
Date:	September 30, 2015	**Operator:**	TT

Pitot Factor	0.844	**Filter (mg)**	4.9
DGMCF	0.985	**Probe (mg)**	0
Barometric Pressure	29.8 "Hg	**CWTR (g)**	457.6
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	26.7
Nozzle	0.241 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0 ft^3
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	1
		Number of points / Port	6

Combustion Gases	
O2%	8.38
CO2%	10.89
COppm	13.5

Measured H2O
16.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	145	130.56	0.86	272	49	77	74	1.6	7.0		19.26	**97.9**
5	150	133.98	0.92	272	49	77	74	1.6	7.0		19.92	**94.4**
	155	137.40	0.91	272	49	78	75	1.6	7.0		19.81	**91.3**
	160	140.87	0.92	272	49	78	75	1.6	7.0		19.92	**93.0**
6	165	144.34	0.93	271	49	78	75	1.6	7.0		20.01	**92.5**
	170	147.80	0.93	272	49	78	75	1.6	7.0		20.03	**91.6**
	175	151.22	0.94	272	50	78	75	1.6	7.0		20.13	**90.6**
	180	154.62										89.6

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 2 BH Outlet
Test No.:	1 - Particle Size Distribution
Date:	September 30, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.844
DGM CORRECTION FACTOR	0.985
NOZZLE DIAMETER	6.12 mm
DRY REF GAS VOLUME SAMPLED	3.427 m^3
AVGERGE ISOKINETICITY	95.2 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	134.4 °C
AVERAGE GAS MOISTURE BY VOLUME	16.1 %
AVERAGE GAS VELOCITY	19.07 m/s
BAROMETRIC PRESSURE (Station)	100.914 Kpa
STATIC PRESSURE	-2.789 Kpa
ABSOLUTE GAS PRESSURE	98.126 Kpa
OXYGEN CONCENTRATION	8.38 %
CARBON DIOXIDE CONCENTRATION	10.89 %
CARBON MONOXIDE CONCENTRATION	13.5 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	28.17 m^3/s
DRY REF GAS FLOWRATE	16.74 Rm^3/s
DRY ADJ GAS FLOWRATE	21.17 Rm^3/s
WET REF GAS FLOWRATE	19.96 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	4.9 mg
	-TOTAL	4.9 mg
DRY REF GAS VOLUME SAMPLED		3.427 m^3
PARTICULATE CONC. - ACTUAL		0.850 mg/m^3
PARTICULATE CONC. - DRY REF		1.430 mg/m^3
PARTICULATE CONC. - DRY ADJ		1.131 mg/m^4
PARTICULATE CONC. - WET REF		1.199 mg/m^3
PARTICULATE EMISSION RATE		0.02394 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)
Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Boiler No. 2 BH Outlet

Test No.: 1 - Particle Size Distributior
Date: September 30, 2015

PARTICLE SIZE DATA

PLATE NUMBER	WEIGHT COLLECTED (mg)	PERCENT OF TOTAL MATERIAL	CUMULATIVE PERCENT	EFFECTIVE CUT OFF DIAMETER (µm)
0	0	**0.00**	**0.00**	**14.17**
1	0.6	**12.24**	**12.24**	**14.17**
2	0.6	**12.24**	**24.49**	**8.83**
3	1	**20.41**	**44.90**	**5.91**
4	0.4	**8.16**	**53.06**	**4.11**
5	0.4	**8.16**	**61.22**	**2.59**
6	0.4	**8.16**	**69.39**	**1.33**
7	1	**20.41**	**89.80**	**0.81**
8	0.5	**10.20**	**100.00**	**0.55**
9	0	**0.00**	**100.00**	**0.55**

Total Weight Collected **4.90** mg

Density= *1.00 G/CC*

Flow Rate 0.6723 cfm

Plate 0= Probe Rinse

Plate 9= Back up Filter

	Cut-Off Diameter (µm)	Weight Percent < Cut Off Diameter
PM_{10}	**10**	**78.2**
$PM_{2.5}$	**2.5**	**38.2**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particle Size Distribution	**Test Location:**	Boiler No. 2 BH Outlet
Date:	September 30, 2015	**Operator:**	TT

Pitot Factor	0.844	**Filter (mg)**	7.2
DGMCF	0.985	**Probe (mg)**	0
Barometric Pressure	29.88 "Hg	**CWTR (g)**	467.8
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	25.5
Nozzle	0.241 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0 ft^3
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	1
		Number of points / Port	6

Combustion Gases	
O2%	8.28
CO2%	10.98
COppm	14.1

Measured H2O
16.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	154.81	0.91	272	7577	76	1.6	1.6	7.0		19.79	
	5	158.31	0.87	278	53	77	76	1.55	7.0		19.43	101.2
	10	161.70	0.84	278	51	77	76	1.55	7.0		19.09	93.5
2	15	165.07	0.77	279	50	77	76	1.55	7.0		18.29	94.6
	20	168.43	0.77	279	48	77	76	1.55	7.0		18.29	98.6
	25	171.78	0.78	278	47	78	76	1.6	7.0		18.39	98.3
3	30	175.15	0.76	278	46	78	76	1.6	7.0		18.16	98.1
	35	178.54	0.75	279	46	78	76	1.6	7.0		18.05	100.0
	40	181.93	0.78	279	46	78	76	1.6	7.0		18.41	100.7
4	45	185.36	0.76	280	46	79	76	1.6	7.0		18.18	99.9
	50	188.79	0.83	279	46	79	76	1.6	7.0		18.99	101.2
	55	192.23	0.83	279	46	79	76	1.6	7.0		18.99	97.1
5	60	195.68	0.87	278	46	79	77	1.6	7.0		19.43	97.3
	65	199.18	0.91	278	47	79	77	1.6	7.0		19.87	96.3
	70	202.62	0.9	280	46	79	77	1.6	7.0		19.79	92.5
6	75	206.06	0.89	278	47	79	77	1.6	7.0		19.65	93.2
	80	209.49	0.91	277	47	79	76	1.6	7.0		19.85	93.3
	85	212.97	0.91	278	47	79	77	1.6	7.0		19.87	93.6
1	90	216.46	0.87	278	63	78	77	1.6	7.0		19.43	93.9
	95	219.87	0.84	277	44	79	77	1.6	7.0		19.08	93.9
	100	223.25	0.86	277	41	79	77	1.6	7.0		19.30	94.6
2	105	226.39	0.83	277	41	79	77	1.6	7.0		18.96	86.8
	110	229.81	0.76	277	41	79	77	1.6	7.0		18.14	96.3
	115	233.27	0.78	276	41	79	77	1.6	7.0		18.37	101.8
3	120	236.70	0.73	277	42	79	77	1.6	7.0		17.78	99.5
	125	240.15	0.76	278	42	79	77	1.6	7.0		18.16	103.6
	130	243.56	0.75	278	42	79	77	1.6	7.0		18.04	100.4
4	135	246.99	0.72	277	42	79	77	1.6	7.0		17.66	101.6
	140	250.43	0.73	278	42	79	77	1.6	7.0		17.79	104.0

ORTECH Environmental

Plant: Covanta - DYEC
Test No.: 2 - Particle Size Distribution
Date: September 30, 2015

Plant Location: Courtice, ON
Test Location: Boiler No. 2 BH Outlet
Operator: TT

Pitot Factor	0.844	
DGMCF	0.985	
Barometric Pressure	29.88	"Hg
Static Pressure	-11.200	"H_2O
Nozzle	0.241	inches
Stack Diameter	4.500	ft
Length	0.000	ft
Width	0.000	ft

Filter (mg)	7.2
Probe (mg)	0
CWTR (g)	467.8
WCBDA (g)	25.5
Leak Check Volume	0 ft^3
Reading Interval	5 minutes
Number of Ports	1
Number of points / Port	6

Combustion Gases	
O2%	8.28
CO2%	10.98
COppm	14.1

Measured H2O
16.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	145	253.88	0.74	276	42	79	77	1.6	7.0		17.89	**103.6**
5	150	257.30	0.79	277	42	79	76	1.6	7.0		18.50	**101.9**
	155	260.80	0.82	278	41	79	76	1.6	7.0		18.86	**101.1**
	160	264.29	0.84	278	41	78	76	1.6	7.0		19.09	**99.0**
6	165	267.72	0.81	278	41	78	76	1.6	7.0		18.74	**96.2**
	170	271.23	0.85	277	41	78	76	1.6	7.0		19.19	**100.3**
	175	274.62	0.85	278	41	78	76	1.6	7.0		19.20	**94.5**
	180	278.04										**95.4**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 2 BH Outlet
Test No.:	2 - Particle Size Distribution
Date:	September 30, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.844
DGM CORRECTION FACTOR	0.985
NOZZLE DIAMETER	6.12 mm
DRY REF GAS VOLUME SAMPLED	3.452 m^3
AVGERGE ISOKINETICITY	97.7 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	136.5 °C
AVERAGE GAS MOISTURE BY VOLUME	16.3 %
AVERAGE GAS VELOCITY	18.80 m/s
BAROMETRIC PRESSURE (Station)	101.185 Kpa
STATIC PRESSURE	-2.789 Kpa
ABSOLUTE GAS PRESSURE	98.396 Kpa
OXYGEN CONCENTRATION	8.28 %
CARBON DIOXIDE CONCENTRATION	10.98 %
CARBON MONOXIDE CONCENTRATION	14.1 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.77 m^3/s
DRY REF GAS FLOWRATE	16.43 Rm^3/s
DRY ADJ GAS FLOWRATE	20.95 Rm^3/s
WET REF GAS FLOWRATE	19.63 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	7.2 mg
	-TOTAL	7.2 mg
DRY REF GAS VOLUME SAMPLED		3.452 m^3
PARTICULATE CONC. - ACTUAL		1.234 mg/m^3
PARTICULATE CONC. - DRY REF		2.086 mg/m^3
PARTICULATE CONC. - DRY ADJ		1.636 mg/m^4
PARTICULATE CONC. - WET REF		1.746 mg/m^3
PARTICULATE EMISSION RATE		0.03427 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Boiler No. 2 BH Outlet

Test No.: 2 - Particle Size Distributior
Date: September 30, 2015

PARTICLE SIZE DATA

PLATE NUMBER	WEIGHT COLLECTED (mg)	PERCENT OF TOTAL MATERIAL	CUMULATIVE PERCENT	EFFECTIVE CUT OFF DIAMETER (μm)
0	0	**0.00**	**0.00**	**14.15**
1	0.7	**9.72**	**9.72**	**14.15**
2	0.9	**12.50**	**22.22**	**8.81**
3	0.7	**9.72**	**31.94**	**5.90**
4	0.8	**11.11**	**43.06**	**4.10**
5	1.4	**19.44**	**62.50**	**2.58**
6	1	**13.89**	**76.39**	**1.33**
7	1	**13.89**	**90.28**	**0.80**
8	0.7	**9.72**	**100.00**	**0.54**
9	0	**0.00**	**100.00**	**0.54**

Total Weight Collected **7.20** mg

Density= 1.00 G/CC

Flow Rate 0.6773 cfm

Plate 0= Probe Rinse

Plate 9= Back up Filter

	Cut-Off Diameter (μm)	Weight Percent < Cut Off Diameter
PM_{10}	**10**	**80.6**
$PM_{2.5}$	**2.5**	**36.6**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particle Size Distribution	**Test Location:**	Unit No. 2 BH Outlet
Date:	October 1, 2015	**Operator:**	TT

Pitot Factor	0.844	**Filter (mg)**	4.4
DGMCF	0.985	**Probe (mg)**	0
Barometric Pressure	30.05 "Hg	**CWTR (g)**	520.3
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	30.5
Nozzle	0.241 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0 ft^3
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	1
		Number of points / Port	6

Combustion Gases	
O2%	7.62
CO2%	11.85
COppm	16.8

Measured H2O
16.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	78.15	0.86	225	56	62	61	1.6	7.0		18.55	
	5	81.51	0.86	274	42	62	61	2	8.0		19.20	**93.4**
	10	85.26	0.88	274	42	61	60	2.2	9.0		19.42	**108.0**
2	15	89.10	0.88	274	43	62	60	1.8	9.0		19.42	**109.6**
	20	92.70	0.81	275	43	62	60	1.8	9.0		18.64	**102.5**
	25	96.31	0.79	274	42	62	60	1.8	9.0		18.40	**107.2**
3	30	99.85	0.73	274	42	62	60	1.8	9.0		17.69	**106.4**
	35	103.40	0.74	275	42	63	60	1.8	9.0		17.82	111.0
	40	106.97	0.78	275	42	63	61	1.8	9.0		18.30	110.8
4	45	110.53	0.79	274	42	63	61	1.8	8.5		18.40	**107.5**
	50	114.06	0.74	275	42	64	61	1.8	8.0		17.82	**105.9**
	55	117.62	0.76	276	42	64	61	1.8	8.0		18.07	110.3
5	60	121.19	0.71	276	43	64	61	1.8	8.0		17.47	**109.2**
	65	124.76	0.72	275	43	64	62	1.8	8.0		17.58	113.0
	70	128.35	0.73	276	43	65	62	1.8	8.0		17.71	112.7
6	75	131.93	0.68	276	43	65	62	1.8	8.0		17.09	111.5
	80	135.49	0.65	274	44	65	62	1.8	8.0		16.69	114.9
	85	139.07	0.64	276	44	65	62	1.8	8.0		16.58	118.0
1	90	142.62	0.65	276	49	64	62	1.8	8.0		16.71	118.1
	95	146.27	0.67	271	43	65	63	1.8	8.0		16.91	120.6
	100	149.82	0.65	271	43	65	63	1.8	8.0		16.66	115.0
2	105	153.38	0.65	272	43	65	63	1.8	8.0		16.67	117.0
	110	156.89	0.64	271	43	65	63	1.8	8.0		16.53	115.5
	115	160.39	0.62	271	44	66	63	1.8	8.0		16.27	116.0
3	120	163.92	0.58	271	44	66	64	1.8	8.0		15.73	118.7
	125	167.51	0.59	271	44	67	64	1.8	8.0		15.87	124.7
	130	170.95	0.65	270	44	67	64	1.8	8.0		16.65	118.4
4	135	174.44	0.62	270	44	67	64	1.8	8.0		16.26	114.3
	140	177.97	0.62	270	45	67	65	1.8	8.0		16.26	118.4

ORTECH Environmental

Plant: Covanta - DYEC
Test No.: 3 - Particle Size Distribution
Date: October 1, 2015

Plant Location: Courtice, ON
Test Location: Unit No. 2 BH Outlet
Operator: TT

Pitot Factor	0.844	**Filter (mg)**	4.4
DGMCF	0.985	**Probe (mg)**	0
Barometric Pressure	30.05 "Hg	**CWTR (g)**	520.3
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	30.5
Nozzle	0.241 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0 ft^3
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	1
		Number of points / Port	6

Combustion Gases	
O2%	7.62
CO2%	11.85
COppm	16.8

Measured H2O
16.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	145	181.44	0.64	267	45	68	65	1.8	8.0		16.48	116.3
5	150	184.99	0.63	266	46	68	65	1.8	8.0		16.34	116.7
	155	188.52	0.63	267	47	68	65	1.8	8.0		16.35	116.9
	160	192.04	0.62	268	48	68	65	1.8	8.0		16.23	116.7
6	165	195.56	0.67	267	49	69	60	1.8	8.0		16.86	117.7
	170	199.06	0.68	267	50	69	66	1.8	8.0		16.99	112.9
	175	202.60	0.71	266	52	69	66	1.8	8.0		17.35	112.7
	180	206.12										**109.6**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Unit No. 2 BH Outlet
Test No.:	3 - Particle Size Distribution
Date:	October 1, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.844
DGM CORRECTION FACTOR	0.985
NOZZLE DIAMETER	6.12 mm
DRY REF GAS VOLUME SAMPLED	3.695 m^3
AVGERGE ISOKINETICITY	113.0 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	132.7 °C
AVERAGE GAS MOISTURE BY VOLUME	16.9 %
AVERAGE GAS VELOCITY	17.28 m/s
BAROMETRIC PRESSURE (Station)	101.761 Kpa
STATIC PRESSURE	-2.789 Kpa
ABSOLUTE GAS PRESSURE	98.972 Kpa
OXYGEN CONCENTRATION	7.62 %
CARBON DIOXIDE CONCENTRATION	11.85 %
CARBON MONOXIDE CONCENTRATION	16.8 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.53 m^3/s
DRY REF GAS FLOWRATE	15.23 Rm^3/s
DRY ADJ GAS FLOWRATE	20.43 Rm^3/s
WET REF GAS FLOWRATE	18.32 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	4.4 mg
	-TOTAL	4.4 mg
DRY REF GAS VOLUME SAMPLED		3.695 m^3
PARTICULATE CONC. - ACTUAL		0.710 mg/m^3
PARTICULATE CONC. - DRY REF		1.191 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.888 mg/m^4
PARTICULATE CONC. - WET REF		0.990 mg/m^3
PARTICULATE EMISSION RATE		0.01814 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)
Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Unit No. 2 BH Outlet

Test No.: 3 - Particle Size Distributior
Date: October 1, 2015

PARTICLE SIZE DATA

PLATE NUMBER	WEIGHT COLLECTED (mg)	PERCENT OF TOTAL MATERIAL	CUMULATIVE PERCENT	EFFECTIVE CUT OFF DIAMETER (µm)
0	0	**0.00**	**0.00**	**13.62**
1	0.7	**15.91**	**15.91**	**13.62**
2	0	**0.00**	**15.91**	**8.49**
3	0.8	**18.18**	**34.09**	**5.68**
4	0.8	**18.18**	**52.27**	**3.95**
5	0.8	**18.18**	**70.45**	**2.49**
6	0.3	**6.82**	**77.27**	**1.28**
7	0.7	**15.91**	**93.18**	**0.77**
8	0.3	**6.82**	**100.00**	**0.52**
9	0	**0.00**	**100.00**	**0.52**

Total Weight Collected **4.40** mg

Density= 1.00 G/CC

Flow Rate 0.7249 cfm

Plate 0= Probe Rinse

Plate 9= Back up Filter

	Cut-Off Diameter (µm)	Weight Percent < Cut Off Diameter
PM_{10}	**10**	**84.1**
$PM_{2.5}$	**2.5**	**29.6**

APPENDIX 39

Metals Test Emission Calculations
at the Boiler No. 2 BH Outlet
(9 pages)

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Metals	**Test Location:**	Boiler No. 2 BH Outlet
Date:	September 29, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	1
DGMCF	0.985	**Probe (mg)**	1.5
Barometric Pressure	29.65 "Hg	**CWTR (g)**	342.8
Static Pressure	-10.500 "H_2O	**WCBDA (g)**	16.3
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.28 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.18
CO2%	10.99
COppm	21.0

Measured H2O
16.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	765.00	0.85	274	102	81	80	2	3.0		19.29	
	2.5	767.37	0.85	274	60	80	80	2	3.0		19.29	117.0
2	5	769.28	0.85	274	63	81	81	2.3	3.0		19.29	**94.4**
	7.5	771.31	0.86	274	65	81	81	2.3	3.0		19.40	**100.2**
3	10	773.36	0.8	275	65	81	81	2.2	3.0		18.73	**100.6**
	12.5	775.40	0.82	278	67	82	81	2.1	3.0		19.00	**103.8**
4	15	777.40	0.8	274	65	81	81	2.1	3.0		18.72	**100.6**
	17.5	779.37	0.8	274	66	82	81	2.1	3.0		18.72	**100.2**
5	20	781.35	0.81	275	65	82	81	2.1	3.0		18.84	**100.6**
	22.5	783.32	0.64	275	64	82	81	1.8	3.0		16.75	**99.5**
6	25	785.19	0.65	275	64	83	81	1.7	3.0		16.88	**106.2**
	27.5	786.96	0.64	275	63	83	81	1.7	3.0		16.75	**99.6**
7	30	788.72	0.63	275	63	83	81	1.7	3.0		16.62	**99.8**
	32.5	790.51	0.62	275	63	83	81	1.7	3.0		16.49	**102.3**
8	35	792.27	0.66	275	63	84	81	1.8	3.0		17.01	**101.4**
	37.5	794.08	0.64	275	63	84	81	1.8	3.0		16.75	**101.0**
9	40	795.90	0.65	275	63	84	82	1.8	3.0		16.88	**103.2**
	42.5	797.73	0.63	275	63	84	82	1.7	3.0		16.62	**102.8**
10	45	799.54	0.65	274	63	84	82	1.7	3.0		16.87	**103.3**
	47.5	801.31	0.65	274	63	84	82	1.8	3.0		16.87	**99.4**
11	50	803.09	0.61	271	63	84	82	1.7	3.0		16.31	**100.0**
	52.5	804.89	0.6	270	63	84	82	1.6	3.0		16.16	**104.1**
12	55	806.62	0.6	269	62	84	82	1.6	3.0		16.15	**100.8**
	57.5	808.36	0.6	267	62	84	82	1.6	3.0		16.13	**101.3**
	60	810.09								0.28		**100.6**
1	0	810.37	0.63	272	55	82	82	1.7	3.0		16.59	
	2.5	812.26	0.72	274	51	82	82	1.8	3.0		17.75	**107.8**
2	5	814.16	0.72	274	50	82	82	1.9	3.0		17.75	**101.6**
	7.5	816.23	0.72	275	51	82	82	1.7	3.0		17.77	110.7

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Metals	**Test Location:**	Boiler No. 2 BH Outlet
Date:	September 29, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	1
DGMCF	0.985	**Probe (mg)**	1.5
Barometric Pressure	29.65 "Hg	**CWTR (g)**	342.8
Static Pressure	-10.500 "H_2O	**WCBDA (g)**	16.3
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.28 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.18
CO2%	10.99
COppm	21.0

Measured H2O
16.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
3	10	818.12	0.7	275	51	82	82	1.7	3.0		17.52	**101.1**
	12.5	819.91	0.7	275	51	82	82	1.9	3.0		17.52	**97.1**
4	15	821.74	0.67	275	50	82	82	1.9	3.0		17.14	**99.3**
	17.5	823.61	0.65	275	50	83	82	1.8	3.0		16.88	**103.7**
5	20	825.44	0.62	275	50	83	82	1.7	3.0		16.49	**102.9**
	22.5	827.21	0.63	275	51	83	82	1.7	3.0		16.62	**101.9**
6	25	828.98	0.59	276	52	83	82	1.6	3.0		16.09	**101.1**
	27.5	830.71	0.6	276	52	83	82	1.6	3.0		16.23	**102.2**
7	30	832.44	0.65	276	52	83	82	1.7	3.0		16.89	**101.3**
	32.5	834.19	0.65	276	52	84	82	1.8	3.0		16.89	**98.5**
8	35	836.02	0.65	276	52	84	82	1.8	3.0		16.89	**102.9**
	37.5	837.76	0.65	276	53	84	82	1.8	3.0		16.89	**97.8**
9	40	839.60	0.64	276	53	84	82	1.7	3.0		16.76	**103.5**
	42.5	841.39	0.67	276	53	84	82	1.8	3.0		17.15	**101.4**
10	45	843.18	0.74	278	54	83	82	1.9	3.0		18.05	**99.1**
	47.5	845.00	0.73	279	52	83	82	2	3.0		17.94	**96.2**
11	50	846.93	0.72	279	54	83	82	1.9	3.0		17.82	**102.8**
	52.5	848.85	0.72	278	55	84	82	1.9	3.0		17.80	**102.9**
12	55	850.69	0.7	278	56	83	82	1.9	3.0		17.55	**98.5**
	57.5	852.57	0.71	278	56	84	82	1.9	3.0		17.68	**102.1**
	60	854.45										**101.3**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 2 BH Outlet
Test No.:	1 - Metals
Date:	September 29, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.847
DGM CORRECTION FACTOR	0.985
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	2.454 m^3
AVGERGE ISOKINETICITY	101.7 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	134.9 °C
AVERAGE GAS MOISTURE BY VOLUME	16.6 %
AVERAGE GAS VELOCITY	17.36 m/s
BAROMETRIC PRESSURE (Station)	100.406 Kpa
STATIC PRESSURE	-2.614 Kpa
ABSOLUTE GAS PRESSURE	97.792 Kpa
OXYGEN CONCENTRATION	8.18 %
CARBON DIOXIDE CONCENTRATION	10.99 %
CARBON MONOXIDE CONCENTRATION	21.0 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.65 m^3/s
DRY REF GAS FLOWRATE	15.08 Rm^3/s
DRY ADJ GAS FLOWRATE	19.38 Rm^3/s
WET REF GAS FLOWRATE	18.09 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1.5 mg
	-FILTER	1 mg
	-TOTAL	2.5 mg
DRY REF GAS VOLUME SAMPLED		2.454 m^3
PARTICULATE CONC. - ACTUAL		0.599 mg/m^3
PARTICULATE CONC. - DRY REF		1.019 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.793 mg/m^4
PARTICULATE CONC. - WET REF		0.850 mg/m^3
PARTICULATE EMISSION RATE		0.01537 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)
Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Metals	**Test Location:**	Boiler No. 2 BH Outlet
Date:	September 29, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	1.4
DGMCF	0.985	**Probe (mg)**	1.4
Barometric Pressure	29.63 "Hg	**CWTR (g)**	311.6
Static Pressure	-10.500 "H_2O	**WCBDA (g)**	17.5
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.3 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.25
CO2%	10.81
COppm	22.2

Measured H2O
15.7 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	854.91	0.71	258	66	83	82	0.75	2.5		17.42	
	2.5	856.33	0.71	276	56	83	83	1.9	3.0		17.63	74.6
2	5	858.04	0.71	276	55	83	83	1.9	3.0		17.63	91.1
	7.5	859.90	0.74	276	55	83	83	1.9	3.0		18.00	99.1
3	10	861.75	0.76	276	55	83	83	2	3.5		18.24	96.6
	12.5	863.67	0.71	275	56	83	83	2	3.5		17.62	98.9
4	15	865.59	0.69	275	56	83	83	1.9	3.5		17.37	102.3
	17.5	867.46	0.71	275	57	83	83	1.9	3.5		17.62	101.0
5	20	869.31	0.69	275	57	84	82	1.9	3.5		17.37	98.5
	22.5	871.19	0.69	275	57	84	83	1.9	3.5		17.37	101.6
6	25	873.05	0.67	275	57	84	73	1.8	3.5		17.12	100.4
	27.5	875.00	0.69	275	58	84	83	1.8	3.5		17.37	107.8
7	30	876.76	0.62	275	55	84	83	1.8	3.5		16.47	95.0
	32.5	878.58	0.6	275	53	83	83	1.6	3.5		16.20	103.6
8	35	880.36	0.67	275	53	85	83	1.8	3.5		17.12	103.1
	37.5	882.18	0.65	275	52	85	83	1.8	3.5		16.86	99.6
9	40	883.98	0.68	276	52	85	83	1.8	3.5		17.26	100.0
	42.5	885.81	0.7	275	51	85	83	1.9	3.5		17.50	99.5
10	45	887.68	0.7	275	51	85	83	1.9	3.5		17.50	100.1
	47.5	889.54	0.72	275	51	85	83	1.9	3.5		17.74	99.6
11	50	891.44	0.76	276	52	85	83	2	3.5		18.24	100.3
	52.5	893.34	0.79	276	52	86	83	2.1	3.5		18.60	97.7
12	55	895.32	0.77	276	52	86	83	2.1	3.5		18.36	99.8
	57.5	897.30	0.78	276	52	85	83	2.1	4.0		18.48	101.1
	60	899.28								0.3		100.6
1	0	899.58	0.61	274	57	85	83	1.7	4.0		16.32	
	2.5	901.44	0.61	277	52	84	83	1.6	4.0		16.36	106.6
2	5	903.20	0.62	277	51	84	83	1.6	4.0		16.49	101.1
	7.5	904.94	0.62	277	52	84	83	1.6	3.5		16.49	99.2

ORTECH Environmental

Plant: Covanta - DYEC
Test No.: 2 - Metals
Date: September 29, 2015

Plant Location: Courtice, ON
Test Location: Boiler No. 2 BH Outlet
Operator: AM

Pitot Factor	0.847	
DGMCF	0.985	
Barometric Pressure	29.63	"Hg
Static Pressure	-10.500	"H_2O
Nozzle	0.2545	inches
Stack Diameter	4.500	ft
Length	0.000	ft
Width	0.000	ft

Filter (mg)	1.4	
Probe (mg)	1.4	
CWTR (g)	311.6	
WCBDA (g)	17.5	
Leak Check Volume	0.3	ft^3
Reading Interval	2.5	minutes
Number of Ports	2	
Number of points / Port	12	

Combustion Gases	
O2%	8.25
CO2%	10.81
COppm	22.2

Measured H2O
15.7 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
3	10	906.67	0.6	278	52	84	83	1.6	3.5		16.23	**98.6**
	12.5	908.43	0.6	278	53	85	84	1.6	3.5		16.23	**102.0**
4	15	910.18	0.6	277	53	85	83	1.6	3.5		16.22	**101.3**
	17.5	911.92	0.61	277	53	85	83	1.6	3.5		16.36	**100.7**
5	20	913.67	0.64	278	53	85	83	1.6	3.5		16.76	**100.4**
	22.5	915.42	0.61	278	53	85	83	1.6	3.5		16.37	**98.1**
6	25	917.16	0.59	278	53	85	84	1.6	3.5		16.10	**99.9**
	27.5	918.90	0.6	278	53	85	83	1.6	3.5		16.23	**101.5**
7	30	920.65	0.61	278	54	85	84	1.6	3.5		16.37	**101.3**
	32.5	922.39	0.61	277	54	85	83	1.6	3.5		16.36	**99.8**
8	35	924.10	0.63	277	54	85	83	1.7	4.0		16.62	**98.1**
	37.5	925.91	0.65	278	55	85	83	1.7	4.0		16.89	**102.2**
9	40	927.69	0.66	278	53	85	84	1.8	4.0		17.02	**99.1**
	42.5	929.50	0.64	278	52	85	83	1.7	4.0		16.76	**99.9**
10	45	931.31	0.71	278	52	85	83	1.8	4.0		17.66	**101.5**
	47.5	933.18	0.72	278	52	85	83	1.9	4.0		17.78	**99.6**
11	50	935.06	0.78	278	51	85	83	2	4.0		18.51	**99.5**
	52.5	936.99	0.76	277	51	85	83	2.1	4.0		18.26	**98.1**
12	55	938.96	0.78	277	51	85	83	2.1	4.0		18.49	**101.4**
	57.5	940.96	0.78	277	51	85	83	2.1	4.0		18.49	**101.6**
	60	942.94										**100.6**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 2 BH Outlet
Test No.:	2 - Metals
Date:	September 29, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.847
DGM CORRECTION FACTOR	0.985
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	2.406 m^3
AVGERGE ISOKINETICITY	99.7 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	135.6 °C
AVERAGE GAS MOISTURE BY VOLUME	15.7 %
AVERAGE GAS VELOCITY	17.22 m/s
BAROMETRIC PRESSURE (Station)	100.339 Kpa
STATIC PRESSURE	-2.614 Kpa
ABSOLUTE GAS PRESSURE	97.724 Kpa
OXYGEN CONCENTRATION	8.25 %
CARBON DIOXIDE CONCENTRATION	10.81 %
CARBON MONOXIDE CONCENTRATION	22.2 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.44 m^3/s
DRY REF GAS FLOWRATE	15.09 Rm^3/s
DRY ADJ GAS FLOWRATE	19.28 Rm^3/s
WET REF GAS FLOWRATE	17.90 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1.4 mg
	-FILTER	1.4 mg
	-TOTAL	2.8 mg
DRY REF GAS VOLUME SAMPLED		2.406 m^3
PARTICULATE CONC. - ACTUAL		0.690 mg/m^3
PARTICULATE CONC. - DRY REF		1.164 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.911 mg/m^4
PARTICULATE CONC. - WET REF		0.981 mg/m^3
PARTICULATE EMISSION RATE		0.01756 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Metals	**Test Location:**	Boiler No. 2 BH Outlet
Date:	September 29, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	0.985	**Probe (mg)**	2.1
Barometric Pressure	29.65 "Hg	**CWTR (g)**	326.4
Static Pressure	-10.500 "H_2O	**WCBDA (g)**	12.5
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.54 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.41
CO2%	10.78
COppm	18.9

Measured H2O
15.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	943.34	0.66	275	68	80	80	1.7	3.0		16.99	
	2.5	945.19	0.67	278	69	81	80	1.8	3.0		17.15	**103.0**
2	5	947.02	0.68	278	68	81	81	1.8	3.0		17.28	**101.3**
	7.5	948.85	0.67	279	64	80	80	1.8	3.0		17.17	**100.4**
3	10	950.69	0.66	278	60	80	80	1.7	3.0		17.03	**102.0**
	12.5	952.48	0.68	277	58	80	80	1.8	3.0		17.27	**99.9**
4	15	954.30	0.67	278	56	81	80	1.8	3.0		17.15	**100.0**
	17.5	956.13	0.67	278	55	80	80	1.8	3.0		17.15	**101.3**
5	20	957.96	0.64	278	54	81	80	1.7	3.0		16.77	**101.3**
	22.5	959.76	0.6	277	53	81	80	1.6	3.0		16.22	**101.9**
6	25	961.51	0.62	277	53	81	80	1.6	3.0		16.49	**102.2**
	27.5	963.22	0.6	277	53	81	80	1.6	3.0		16.22	**98.2**
7	30	964.96	0.6	277	53	81	80	1.6	3.0		16.22	**101.6**
	32.5	966.72	0.59	278	53	81	80	1.6	3.0		16.10	**102.8**
8	35	968.44	0.61	278	53	81	80	1.6	3.0		16.37	**101.4**
	37.5	970.16	0.63	278	54	81	80	1.6	3.0		16.63	**99.7**
9	40	971.88	0.62	278	54	81	80	1.7	3.0		16.50	**98.1**
	42.5	973.65	0.67	278	54	81	80	1.7	3.0		17.15	**101.8**
10	45	975.50	0.66	277	55	81	80	1.7	3.0		17.01	**102.3**
	47.5	977.19	0.68	278	55	82	80	1.8	3.0		17.28	**94.1**
11	50	979.02	0.75	278	55	82	80	2	3.0		18.15	**100.4**
	52.5	980.92	0.75	278	52	82	80	2	3.0		18.15	**99.3**
12	55	982.83	0.79	278	52	82	80	2.1	3.0		18.63	**99.8**
	57.5	984.80	0.84	278	51	82	80	2.2	3.0		19.21	**100.4**
	60	986.83								0.54		**100.3**
1	0	987.37	0.72	267	61	80	79	1.9	3.0		17.65	
	2.5	989.10	0.73	278	53	80	79	2.1	3.0		17.91	**91.8**
2	5	991.02	0.72	278	51	81	80	2.2	3.0		17.78	**102.0**
	7.5	993.03	0.73	278	52	80	79	1.9	3.0		17.91	**107.4**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Metals	**Test Location:**	Boiler No. 2 BH Outlet
Date:	September 29, 2015	**Operator:**	AM

Pitot Factor	0.847	**Filter (mg)**	0
DGMCF	0.985	**Probe (mg)**	2.1
Barometric Pressure	29.65 "Hg	**CWTR (g)**	326.4
Static Pressure	-10.500 "H_2O	**WCBDA (g)**	12.5
Nozzle	0.2545 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.54 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.41
CO2%	10.78
COppm	18.9

Measured H2O
15.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
3	10	994.92	0.76	278	51	80	80	2	3.0		18.27	**100.4**
	12.5	996.82	0.75	278	52	80	80	2	3.0		18.15	**98.8**
4	15	998.72	0.72	278	52	80	80	2	3.0		17.78	**99.5**
	17.5	1000.63	0.71	279	52	80	79	1.9	3.0		17.67	**102.1**
5	20	1002.60	0.69	278	51	81	79	1.8	3.0		17.41	**106.2**
	22.5	1004.34	0.68	279	51	81	79	1.9	3.0		17.29	**95.0**
6	25	1006.21	0.66	278	52	81	79	1.7	3.0		17.03	**102.9**
	27.5	1007.99	0.65	279	52	81	79	1.7	3.0		16.91	**99.3**
7	30	1009.76	0.65	278	52	81	79	1.7	3.0		16.90	**99.6**
	32.5	1011.56	0.65	278	52	81	79	1.7	3.0		16.90	**101.2**
8	35	1013.28	0.71	277	52	81	79	1.9	3.0		17.65	**96.7**
	37.5	1015.11	0.7	278	52	81	79	1.9	3.0		17.53	**98.4**
9	40	1016.97	0.75	278	52	81	79	2	3.0		18.15	**100.8**
	42.5	1018.90	0.71	278	52	81	79	1.9	3.0		17.66	**101.1**
10	45	1020.77	0.71	277	52	81	79	1.9	3.0		17.65	**100.6**
	47.5	1022.64	0.72	277	52	81	79	1.9	3.0		17.77	**100.6**
11	50	1024.52	0.74	277	52	81	79	2	3.0		18.02	**100.4**
	52.5	1026.42	0.73	277	52	81	79	1.9	3.0		17.89	**100.1**
12	55	1028.29	0.72	277	53	81	79	1.9	3.0		17.77	**99.2**
	57.5	1030.16	0.71	268	53	81	79	1.9	3.0		17.54	**99.9**
	60	1032.03										**99.9**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 2 BH Outlet
Test No.:	3 - Metals
Date:	September 29, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.847
DGM CORRECTION FACTOR	0.985
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	2.435 m^3
AVGERGE ISOKINETICITY	100.4 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	136.3 °C
AVERAGE GAS MOISTURE BY VOLUME	15.9 %
AVERAGE GAS VELOCITY	17.36 m/s
BAROMETRIC PRESSURE (Station)	100.406 Kpa
STATIC PRESSURE	-2.614 Kpa
ABSOLUTE GAS PRESSURE	97.792 Kpa
OXYGEN CONCENTRATION	8.41 %
CARBON DIOXIDE CONCENTRATION	10.78 %
CARBON MONOXIDE CONCENTRATION	18.9 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.66 m^3/s
DRY REF GAS FLOWRATE	15.16 Rm^3/s
DRY ADJ GAS FLOWRATE	19.13 Rm^3/s
WET REF GAS FLOWRATE	18.04 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	2.1 mg
	-FILTER	0 mg
	-TOTAL	2.1 mg
DRY REF GAS VOLUME SAMPLED		2.435 m^3
PARTICULATE CONC. - ACTUAL		0.510 mg/m^3
PARTICULATE CONC. - DRY REF		0.863 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.684 mg/m^4
PARTICULATE CONC. - WET REF		0.725 mg/m^3
PARTICULATE EMISSION RATE		0.01308 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)
Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

APPENDIX 40

Hexavalent Chromium Test Emission Calculations
at the Boiler No. 2 BH Outlet
(9 pages)

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Hexavalent Chromium	**Test Location:**	Boiler No. 2 BH Outlet
Date:	September 29, 2015	**Operator:**	MT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	1.004	**Probe (mg)**	0
Barometric Pressure	29.65 "Hg	**CWTR (g)**	222.5
Static Pressure	-10.500 "H_2O	**WCBDA (g)**	46.5
Nozzle	0.256 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.71 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.18
CO2%	10.99
COppm	21.0

Measured H2O
16.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	196.00	0.84	280	70	80	81	2.2	10.0		19.23	
	2.5	198.00	0.84	276	69	81	81	2.2	11.0		19.18	**100.6**
2	5	199.97	0.82	275	70	81	81	2.1	11.0		18.94	**98.7**
	7.5	201.93	0.79	275	71	81	83	2.1	11.0		18.59	**99.3**
3	10	203.82	0.76	275	65	81	84	2.2	11.0		18.23	**97.4**
	12.5	205.91	0.73	275	69	81	85	2.1	12.0		17.87	**109.8**
4	15	207.85	0.69	274	69	81	86	2	12.0		17.36	**103.8**
	17.5	209.80	0.62	274	69	81	87	1.9	12.0		16.46	**107.1**
5	20	211.70	0.62	274	69	81	87	1.7	12.0		16.46	110.0
	22.5	213.43	0.62	274	70	81	88	1.6	12.0		16.46	**100.1**
6	25	215.30	0.63	274	70	81	89	1.4	9.0		16.59	**108.1**
	27.5	216.96	0.6	273	69	81	90	1.4	9.0		16.18	**95.1**
7	30	218.61	0.61	273	69	82	91	1.5	9.0		16.31	**96.7**
	32.5	220.30	0.63	273	70	82	91	1.6	10.0		16.58	**98.0**
8	35	222.02	0.645	273	69	82	92	1.7	10.0		16.77	**98.2**
	37.5	223.78	0.65	273	69	82	92	1.7	10.0		16.84	**99.2**
9	40	225.55	0.66	274	69	82	93	1.8	10.0		16.98	**99.4**
	42.5	227.37	0.695	273	69	82	93	1.9	11.0		17.41	**101.5**
10	45	229.25	0.69	271	68	83	93	1.8	10.0		17.33	**102.1**
	47.5	231.10	0.69	271	67	83	93	1.8	10.0		17.33	**100.6**
11	50	232.97	0.66	271	67	83	93	1.7	10.0		16.94	**101.7**
	52.5	234.80	0.68	266	67	83	93	1.8	10.0		17.14	**101.7**
12	55	236.63	0.63	252	67	83	93	1.7	10.0		16.34	**99.9**
	57.5	238.48	0.63	252	66	83	93	1.7	10.0		16.34	**103.8**
	60	240.29								0.71		**101.6**
1	0	241.00	0.63	271	63	83	84	1.7	10.0		16.55	
	2.5	242.74	0.645	268	61	83	85	1.8	10.0		16.72	**99.8**
2	5	244.52	0.65	268	53	83	86	1.8	10.0		16.78	**100.6**
	7.5	246.34	0.625	268	52	83	87	1.7	10.0		16.45	**102.4**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Hexavalent Chromium	**Test Location:**	Boiler No. 2 BH Outlet
Date:	September 29, 2015	**Operator:**	MT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	1.004	**Probe (mg)**	0
Barometric Pressure	29.65 "Hg	**CWTR (g)**	222.5
Static Pressure	-10.500 "H_2O	**WCBDA (g)**	46.5
Nozzle	0.256 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.71 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.18
CO2%	10.99
COppm	21.0

Measured H2O
16.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
3	10	248.11	0.64	267	53	83	88	1.7	10.0		16.64	**101.4**
	12.5	249.90	0.64	271	53	82	88	1.7	10.0		16.69	**101.2**
4	15	251.68	0.66	273	54	83	89	1.7	10.0		16.97	**101.0**
	17.5	253.47	0.65	273	54	83	89	1.7	10.0		16.84	**100.0**
5	20	255.26	0.59	265	55	83	90	1.6	10.0		15.95	**100.7**
	22.5	257.00	0.6	275	55	83	90	1.55	10.0		16.20	**102.1**
6	25	258.73	0.56	276	55	83	91	1.5	10.0		15.66	**101.3**
	27.5	260.40	0.58	276	55	83	91	1.5	10.0		15.94	**101.2**
7	30	262.09	0.625	276	55	83	92	1.7	10.0		16.55	**100.7**
	32.5	263.86	0.63	276	55	83	92	1.7	10.0		16.61	**101.5**
8	35	265.65	0.66	276	56	83	92	1.7	10.0		17.00	**102.2**
	37.5	267.46	0.66	276	56	83	92	1.7	10.0		17.00	**101.0**
9	40	269.28	0.67	276	57	83	92	1.7	10.0		17.13	**101.6**
	42.5	271.15	0.67	276	66	83	82	1.7	10.0		17.13	**103.6**
10	45	273.00	0.82	279	56	82	82	2.1	10.0		18.99	**103.4**
	47.5	274.80	0.82	279	53	82	83	2.4	12.0		18.99	**91.3**
11	50	276.95	0.8	279	53	82	83	2.1	11.0		18.76	**109.0**
	52.5	278.97	0.78	279	54	82	84	2	11.0		18.52	**103.6**
12	55	280.93	0.82	278	56	82	85	2.1	12.0		18.98	**101.7**
	57.5	282.91	0.82	278	56	82	86	2.1	12.0		18.98	**100.1**
	60	284.89										**100.0**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 2 BH Outlet
Test No.:	1 - Hexavalent Chromium
Date:	September 29, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.50 mm
DRY REF GAS VOLUME SAMPLED	2.459 m^3
AVGERGE ISOKINETICITY	101.4 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	133.8 °C
AVERAGE GAS MOISTURE BY VOLUME	16.6 %
AVERAGE GAS VELOCITY	17.21 m/s
BAROMETRIC PRESSURE (Station)	100.406 Kpa
STATIC PRESSURE	-2.614 Kpa
ABSOLUTE GAS PRESSURE	97.792 Kpa
OXYGEN CONCENTRATION	8.18 %
CARBON DIOXIDE CONCENTRATION	10.99 %
CARBON MONOXIDE CONCENTRATION	21.0 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.42 m^3/s
DRY REF GAS FLOWRATE	14.99 Rm^3/s
DRY ADJ GAS FLOWRATE	19.26 Rm^3/s
WET REF GAS FLOWRATE	17.98 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		2.459 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)
Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Hexavalent Chromium	**Test Location:**	Boiler No. 2 BH Outlet
Date:	September 29, 2015	**Operator:**	MT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	1.004	**Probe (mg)**	0
Barometric Pressure	29.63 "Hg	**CWTR (g)**	156.1
Static Pressure	-10.500 "H_2O	**WCBDA (g)**	40.2
Nozzle	0.256 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.43 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.25
CO2%	10.81
COppm	22.2

Measured H2O
15.7 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	289.70	0.79	272	70	82	84	1.8	9.0		18.53	
	2.5	291.53	0.8	279	69	82	84	2.1	10.0		18.73	**93.0**
2	5	293.42	0.79	276	65	82	86	2.1	10.0		18.58	**96.0**
	7.5	295.39	0.76	276	66	82	87	2	10.0		18.22	**100.3**
3	10	297.34	0.76	276	65	82	88	2	10.0		18.22	**101.1**
	12.5	299.25	0.72	276	65	82	89	1.9	10.0		17.74	**98.9**
4	15	301.15	0.66	275	65	83	90	1.7	9.0		16.97	**101.0**
	17.5	302.98	0.68	275	63	83	91	1.8	9.0		17.23	**101.3**
5	20	304.80	0.64	276	60	83	91	1.7	9.0		16.72	**99.2**
	22.5	306.61	0.64	277	59	83	92	1.7	9.0		16.73	**101.7**
6	25	308.40	0.59	276	60	83	93	1.6	9.0		16.06	**100.6**
	27.5	310.09	0.59	275	58	83	93	1.6	9.0		16.04	**98.7**
7	30	311.90	0.6	275	58	83	93	1.5	9.0		16.18	**105.6**
	32.5	313.60	0.6	275	58	83	94	1.5	9.0		16.18	**98.4**
8	35	315.33	0.57	275	58	83	94	1.5	9.0		15.77	**100.0**
	37.5	317.01	0.6	275	57	84	95	1.7	9.0		16.18	**99.6**
9	40	318.80	0.61	275	57	84	95	1.6	9.0		16.31	**103.3**
	42.5	320.53	0.61	275	57	84	95	1.6	9.0		16.31	**99.0**
10	45	322.26	0.62	275	56	84	95	1.6	9.0		16.45	**99.0**
	47.5	324.00	0.62	275	56	84	95	1.6	9.0		16.45	**98.8**
11	50	325.72	0.62	273	56	84	96	1.6	9.0		16.43	**97.7**
	52.5	327.47	0.63	272	55	84	96	1.6	9.0		16.55	**99.1**
12	55	329.23	0.65	273	55	84	96	1.8	9.0		16.82	**98.8**
	57.5	331.07	0.59	271	55	84	96	1.6	9.0		16.00	**101.8**
	60	332.82								0.43		**101.5**
1	0	333.25	0.82	276	53	84	87	2.2	10.0		18.93	
	2.5	335.27	0.85	278	52	86	88	2.2	10.0		19.30	**100.7**
2	5	337.28	0.83	278	50	84	89	2.3	10.0		19.07	**98.3**
	7.5	339.20	0.84	279	50	84	90	2.4	10.0		19.20	**95.1**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Hexavalent Chromium	**Test Location:**	Boiler No. 2 BH Outlet
Date:	September 29, 2015	**Operator:**	MT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	1.004	**Probe (mg)**	0
Barometric Pressure	29.63 "Hg	**CWTR (g)**	156.1
Static Pressure	-10.500 "H_2O	**WCBDA (g)**	40.2
Nozzle	0.256 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.43 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.25
CO2%	10.81
COppm	22.2

Measured H2O
15.7 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
3	10	341.29	0.77	279	51	84	90	2.4	11.0		18.38	**102.9**
	12.5	343.31	0.77	278	53	84	90	2.1	11.0		18.37	**103.9**
4	15	345.32	0.73	278	54	84	91	2	10.0		17.88	**103.2**
	17.5	347.23	0.74	278	54	84	92	2	10.0		18.01	**100.6**
5	20	349.15	0.72	278	55	78	92	2	10.0		17.76	**100.4**
	22.5	351.05	0.7	278	56	84	90	1.9	10.0		17.51	**101.2**
6	25	352.93	0.65	278	57	84	93	1.8	10.0		16.88	**101.2**
	27.5	354.71	0.64	278	57	85	94	1.8	10.0		16.74	**99.1**
7	30	356.66	0.69	278	58	85	94	1.8	10.0		17.39	**109.2**
	32.5	358.50	0.69	278	59	81	94	1.8	10.0		17.39	**99.3**
8	35	360.28	0.7	278	60	82	85	1.9	10.0		17.51	**96.4**
	37.5	362.12	0.72	278	60	82	85	1.9	10.0		17.76	**99.7**
9	40	364.00	0.73	278	60	94	94	1.9	10.0		17.88	**100.4**
	42.5	366.00	0.72	279	60	85	94	2	10.0		17.77	**104.1**
10	45	367.94	0.74	279	61	85	94	2	10.0		18.02	**102.6**
	47.5	369.86	0.745	277	60	85	94	2	10.0		18.05	**100.1**
11	50	371.78	0.74	277	57	85	94	2	10.0		17.99	**99.7**
	52.5	373.70	0.7	273	57	85	94	2	10.0		17.45	**100.0**
12	55	375.63	0.68	273	56	85	94	1.9	10.0		17.20	**103.1**
	57.5	377.51	0.66	272	56	85	94	1.9	10.0		16.94	**101.9**
	60	379.41										**104.4**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 2 BH Outlet
Test No.:	2 - Hexavalent Chromium
Date:	September 29, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.50 mm
DRY REF GAS VOLUME SAMPLED	2.477 m^3
AVGERGE ISOKINETICITY	100.5 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	135.6 °C
AVERAGE GAS MOISTURE BY VOLUME	15.7 %
AVERAGE GAS VELOCITY	17.39 m/s
BAROMETRIC PRESSURE (Station)	100.339 Kpa
STATIC PRESSURE	-2.614 Kpa
ABSOLUTE GAS PRESSURE	97.724 Kpa
OXYGEN CONCENTRATION	8.25 %
CARBON DIOXIDE CONCENTRATION	10.81 %
CARBON MONOXIDE CONCENTRATION	22.2 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.70 m^3/s
DRY REF GAS FLOWRATE	15.24 Rm^3/s
DRY ADJ GAS FLOWRATE	19.47 Rm^3/s
WET REF GAS FLOWRATE	18.08 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		2.477 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Hexavalent Chromium	**Test Location:**	Boiler No. 2 BH Outlet
Date:	September 29, 2015	**Operator:**	MT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	1.004	**Probe (mg)**	0
Barometric Pressure	29.65 "Hg	**CWTR (g)**	297.8
Static Pressure	-10.500 "H_2O	**WCBDA (g)**	57.2
Nozzle	0.256 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.77 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.41
CO2%	10.78
COppm	18.9

Measured H2O
15.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	381.20	0.85	277	65	80	80	2.2	11.0		19.29	
	2.5	383.20	0.825	279	69	80	80	2.2	11.0		19.03	**99.2**
2	5	385.20	0.83	279	70	80	80	2.15	11.0		19.08	**100.8**
	7.5	387.21	0.84	279	66	80	80	2.15	11.0		19.20	**101.0**
3	10	389.32	0.82	279	65	80	80	2.1	11.0		18.97	**105.4**
	12.5	391.31	0.82	279	64	80	80	2.1	11.0		18.97	**100.6**
4	15	393.32	0.78	278	65	81	80	2	11.0		18.49	**101.6**
	17.5	395.27	0.78	278	66	81	80	2	11.0		18.49	**100.9**
5	20	397.20	0.78	278	66	80	80	2	11.0		18.49	**99.8**
	22.5	399.12	0.77	278	59	82	84	2	11.0		18.37	**99.4**
6	25	401.06	0.71	278	58	80	82	1.9	11.0		17.64	**100.6**
	27.5	402.95	0.69	278	58	79	82	1.8	10.0		17.39	**102.4**
7	30	404.77	0.71	278	58	79	83	1.85	10.0		17.64	**100.1**
	32.5	406.65	0.71	274	58	79	84	1.85	10.0		17.59	**101.8**
8	35	408.53	0.7	278	58	80	84	1.8	10.0		17.51	**101.4**
	37.5	410.38	0.7	278	58	80	85	1.8	10.0		17.51	**100.7**
9	40	412.17	0.71	278	58	80	85	1.9	10.0		17.64	**97.3**
	42.5	414.07	0.7	278	58	80	85	1.8	10.0		17.51	**102.6**
10	45	415.92	0.74	278	58	80	85	1.95	11.0		18.01	**100.6**
	47.5	417.86	0.735	277	59	80	85	1.9	11.0		17.93	**102.7**
11	50	419.74	0.75	276	59	80	85	1.95	11.0		18.10	**99.7**
	52.5	421.65	0.73	276	60	80	85	2	11.0		17.86	**100.3**
12	55	423.55	0.75	277	60	80	85	2	11.0		18.12	**101.1**
	57.5	425.50	0.7	273	61	80	85	2	11.0		17.45	**102.4**
	60	427.33								0.77		**99.2**
1	0	428.10	0.68	273	61	78	81	1.8	10.0		17.20	
	2.5	429.89	0.675	273	58	79	81	1.9	10.0		17.14	**99.0**
2	5	431.70	0.71	273	54	79	83	2	10.0		17.58	**100.4**
	7.5	433.60	0.675	273	53	79	84	1.8	10.0		17.14	**102.6**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Hexavalent Chromium	**Test Location:**	Boiler No. 2 BH Outlet
Date:	September 29, 2015	**Operator:**	MT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	1.004	**Probe (mg)**	0
Barometric Pressure	29.65 "Hg	**CWTR (g)**	297.8
Static Pressure	-10.500 "H_2O	**WCBDA (g)**	57.2
Nozzle	0.256 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.77 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.41
CO2%	10.78
COppm	18.9

Measured H2O
15.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
3	10	435.42	0.69	278	53	79	86	1.8	10.0		17.39	**100.6**
	12.5	437.29	0.695	278	53	79	86	1.8	10.0		17.45	**102.4**
4	15	439.09	0.69	279	53	79	87	1.8	10.0		17.40	**98.2**
	17.5	440.91	0.68	279	53	79	87	1.8	10.0		17.27	**99.7**
5	20	442.73	0.69	279	54	79	88	1.8	10.0		17.40	**100.4**
	22.5	444.53	0.65	279	54	79	88	1.8	10.0		16.89	**98.5**
6	25	446.34	0.65	279	54	79	88	1.8	10.0		16.89	**102.0**
	27.5	448.15	0.65	279	55	80	89	1.7	10.0		16.89	**102.0**
7	30	449.95	0.66	278	55	80	89	1.7	10.0		17.01	**101.3**
	32.5	451.75	0.67	278	55	80	89	1.7	10.0		17.13	**100.4**
8	35	453.54	0.72	278	55	80	89	1.7	10.0		17.76	**99.1**
	37.5	455.40	0.74	278	56	80	89	1.8	11.0		18.01	**99.3**
9	40	457.22	0.75	279	56	80	89	1.9	11.0		18.14	**95.9**
	42.5	459.08	0.775	278	56	80	89	2	11.0		18.43	**97.5**
10	45	461.02	0.77	278	57	80	89	2	11.0		18.37	**99.9**
	47.5	462.96	0.8	278	57	80	88	2.1	12.0		18.72	**100.3**
11	50	464.95	0.85	278	57	80	88	2.2	13.0		19.30	**101.0**
	52.5	466.99	0.815	278	57	80	87	2.1	14.0		18.90	**100.5**
12	55	469.00	0.85	278	58	80	87	2.2	15.0		19.30	**101.2**
	57.5	471.11	0.86	278	59	80	86	2.2	15.0		19.41	**104.0**
	60	473.19										**102.1**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 2 BH Outlet
Test No.:	3 - Hexavalent Chromium
Date:	September 29, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.50 mm
DRY REF GAS VOLUME SAMPLED	2.559 m^3
AVGERGE ISOKINETICITY	100.6 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	136.4 ^oC
AVERAGE GAS MOISTURE BY VOLUME	15.9 %
AVERAGE GAS VELOCITY	17.99 m/s
BAROMETRIC PRESSURE (Station)	100.406 Kpa
STATIC PRESSURE	-2.614 Kpa
ABSOLUTE GAS PRESSURE	97.792 Kpa
OXYGEN CONCENTRATION	8.41 %
CARBON DIOXIDE CONCENTRATION	10.78 %
CARBON MONOXIDE CONCENTRATION	18.9 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.58 m^3/s
DRY REF GAS FLOWRATE	15.70 Rm^3/s
DRY ADJ GAS FLOWRATE	19.81 Rm^3/s
WET REF GAS FLOWRATE	18.68 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		2.559 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

APPENDIX 41

SVOC Test Emission Calculations
at the Boiler No. 2 BH Outlet
(36 pages)

Plant: Covanta - DYEC
Test No.: 1 - SVOC
Date: October 1, 2015

Plant Location: Courtice, ON
Test Location: Boiler No. 2 BH Outlet
Operator: KS

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	1.004	**Probe (mg)**	0
Barometric Pressure	30.04 "Hg	**CWTR (g)**	667.8
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	34.9
Nozzle	0.25575 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.35 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.16
CO2%	12.43
COppm	29.1

Measured H2O
17.0 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	91.11	0.58	249	66	69	69	1.5	8.0		15.50	
	2.5	92.70	0.7	275	50	69	69	1.8	9.0		17.34	**97.8**
	5	94.44	0.68	275	48	69	70	1.8	10.0		17.09	**99.2**
	7.5	96.24	0.66	274	47	69	71	1.8	10.0		16.83	**104.1**
2	10	98.03	0.73	274	46	69	72	1.8	10.0		17.70	**104.9**
	12.5	99.81	0.78	274	45	69	73	2	10.0		18.29	**99.1**
	15	101.67	0.79	275	45	69	74	2.1	11.0		18.42	**100.1**
	17.5	103.60	0.71	275	45	70	75	1.8	10.5		17.47	**103.2**
3	20	105.44	0.68	276	45	70	76	1.8	10.5		17.11	**103.5**
	22.5	107.30	0.64	275	44	70	77	1.6	10.0		16.58	**106.9**
	25	109.02	0.61	274	44	70	77	1.6	9.5		16.18	**101.7**
	27.5	110.74	0.66	273	44	71	78	1.6	9.5		16.82	**104.1**
4	30	112.45	0.64	272	44	71	79	1.6	9.5		16.55	**99.2**
	32.5	114.16	0.65	272	44	71	80	1.7	10.0		16.68	**100.6**
	35	115.91	0.65	272	44	71	80	1.7	10.0		16.68	**102.1**
	37.5	117.66	0.66	273	44	72	81	1.7	10.0		16.82	**102.1**
5	40	119.41	0.66	274	44	72	81	1.7	10.0		16.83	**101.2**
	42.5	121.15	0.63	275	44	72	81	1.6	10.0		16.45	**100.7**
	45	122.88	0.61	275	44	72	82	1.7	10.0		16.19	**102.5**
	47.5	124.65	0.61	275	44	72	82	1.6	10.0		16.19	**106.5**
6	50	126.37	0.56	275	44	72	82	1.4	9.5		15.51	**103.5**
	52.5	128.03	0.57	275	44	73	83	1.4	9.5		15.65	**104.2**
	55	129.65	0.57	276	45	73	83	1.5	9.5		15.66	**100.6**
	57.5	131.29	0.58	276	44	73	83	1.5	9.5		15.80	**101.9**
7	60	132.93	0.55	276	44	73	83	1.5	9.5		15.38	**101.0**
	62.5	134.56	0.54	276	44	73	84	1.5	10.0		15.24	**103.1**
	65	136.20	0.55	277	44	73	84	1.4	10.0		15.39	**104.6**
	67.5	137.83	0.56	277	44	74	84	1.4	9.5		15.53	**103.1**
8	70	139.46	0.59	277	44	74	84	1.5	9.5		15.94	**102.0**
	72.5	141.11	0.62	276	44	74	84	1.6	10.0		16.33	**100.7**
	75	142.80	0.61	277	44	74	84	1.7	10.0		16.21	**100.5**
	77.5	144.52	0.6	277	44	74	84	1.6	10.5		16.08	**103.2**
9	80	146.26	0.63	277	44	74	84	1.6	10.5		16.48	**105.3**
	82.5	147.98	0.63	273	44	74	84	1.6	10.0		16.43	**101.6**
	85	149.59	0.62	273	44	75	84	1.7	10.0		16.30	**94.8**
	87.5	151.45	0.61	272	44	75	84	1.6	10.0		16.16	**110.3**
10	90	153.18	0.6	272	44	75	84	1.6	10.0		16.02	**103.4**
	92.5	154.89	0.6	253	45	75	84	1.6	10.0		15.81	**103.0**
	95	156.60	0.6	252	45	75	84	1.6	10.0		15.80	**101.7**

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 1, 2015	**Operator:**	KS

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	1.004	**Probe (mg)**	0
Barometric Pressure	30.04 "Hg	**CWTR (g)**	667.8
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	34.9
Nozzle	0.25575 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.35 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.16
CO2%	12.43
COppm	29.1

Measured H2O
17.0 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	97.5	158.30	0.6	252	45	76	85	1.6	10.0		15.80	101.0
11	100	160.01	0.53	252	45	75	85	1.4	10.0		14.85	101.4
	102.5	161.64	0.53	252	45	75	85	1.4	10.0		14.85	102.9
	105	163.25	0.53	252	46	75	85	1.4	10.0		14.85	101.6
	107.5	164.87	0.53	252	45	75	85	1.4	10.0		14.85	102.3
12	110	166.49	0.42	252	45	76	85	1.1	9.0		13.22	102.3
	112.5	167.99	0.4	252	45	76	86	1	8.5		12.90	106.2
	115	169.43	0.43	252	46	76	86	1	8.5		13.38	104.4
	117.5	170.84	0.41	252	46	76	86	1.1	8.5		13.06	98.5
	120	172.32								0.35		106.0
1	0	172.67	0.6	256	65	76	76	1.5	9.0		15.85	
	2.5	174.28	0.6	273	49	76	78	1.6	9.5		16.03	96.5
	5	175.97	0.6	273	46	76	80	1.6	10.0		16.03	102.4
	7.5	177.65	0.64	274	46	76	81	1.6	10.0		16.57	101.6
2	10	179.39	0.65	274	45	76	82	1.6	10.0		16.70	101.8
	12.5	181.12	0.65	273	44	76	82	1.7	10.0		16.69	100.4
	15	182.88	0.65	274	44	76	83	1.7	11.0		16.70	102.1
	17.5	184.65	0.66	274	44	76	84	1.7	11.0		16.83	102.6
3	20	186.42	0.65	274	45	76	84	1.7	11.0		16.70	101.7
	22.5	188.19	0.62	274	45	76	84	1.6	11.0		16.31	102.5
	25	189.92	0.64	273	45	76	85	1.6	11.0		16.56	102.6
	27.5	191.67	0.63	273	45	77	85	1.6	11.0		16.43	102.0
4	30	193.39	0.61	273	45	76	85	1.6	11.0		16.17	100.9
	32.5	195.13	0.59	272	45	77	85	1.6	11.0		15.89	103.8
	35	196.86	0.59	272	46	77	86	1.5	11.0		15.89	104.8
	37.5	198.42	0.6	271	46	77	86	1.6	11.0		16.01	94.4
5	40	200.27	0.57	272	46	77	86	1.5	11.0		15.62	111.0
	42.5	201.99	0.57	271	46	77	86	1.5	10.0		15.61	105.9
	45	203.66	0.54	271	46	77	87	1.4	10.0		15.19	102.8
	47.5	205.32	0.56	271	48	78	87	1.4	10.0		15.47	104.8
6	50	206.95	0.56	271	47	78	87	1.4	10.0		15.47	101.0
	52.5	208.60	0.5	271	47	78	88	1.3	10.0		14.62	102.2
	55	210.20	0.51	271	47	78	88	1.3	10.0		14.76	104.8
	57.5	211.79	0.52	271	47	79	89	1.3	10.0		14.91	103.1
7	60	213.37	0.51	272	47	78	89	1.3	10.0		14.77	101.3
	62.5	214.95	0.51	271	47	79	89	1.3	10.0		14.76	102.4
	65	216.51	0.56	271	47	78	89	1.4	10.0		15.47	101.0
	67.5	218.11	0.58	272	47	79	89	1.5	10.0		15.75	98.9
8	70	219.75	0.59	273	47	79	89	1.6	11.0		15.90	99.6

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 1, 2015	**Operator:**	KS

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	1.004	**Probe (mg)**	0
Barometric Pressure	30.04 "Hg	**CWTR (g)**	667.8
Static Pressure	-11.200 "H_2O	**WCBDA (g)**	34.9
Nozzle	0.25575 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.35 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.16
CO2%	12.43
COppm	29.1

Measured H2O
17.0 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	72.5	221.46	0.6	272	47	79	89	1.6	11.0		16.02	**103.1**
	75	223.17	0.6	272	47	79	89	1.6	11.0		16.02	**102.2**
	77.5	224.88	0.6	272	47	79	89	1.6	11.0		16.02	**102.2**
9	80	226.58	0.63	273	48	79	89	1.7	11.0		16.43	**101.6**
	82.5	228.32	0.63	271	46	80	89	1.7	11.5		16.41	**101.6**
	85	230.08	0.61	271	45	79	89	1.7	11.5		16.15	**102.5**
	87.5	231.84	0.65	271	44	80	89	1.7	12.0		16.67	**104.3**
10	90	233.62	0.63	271	44	80	89	1.7	12.0		16.41	**102.0**
	92.5	235.40	0.64	271	44	80	89	1.7	12.0		16.54	**103.7**
	95	237.18	0.62	271	44	80	89	1.7	12.0		16.28	**102.8**
	97.5	238.95	0.62	247	44	80	89	1.7	12.0		16.01	**103.9**
11	100	240.73	0.64	247	44	80	89	1.7	12.0		16.26	**102.8**
	102.5	242.50	0.64	248	44	80	89	1.8	12.0		16.28	**100.6**
	105	244.31	0.63	247	45	80	89	1.7	12.0		16.14	**102.9**
	107.5	246.11	0.65	247	44	80	89	1.7	12.0		16.39	**103.1**
12	110	247.90	0.65	248	44	80	89	1.8	12.0		16.40	**100.9**
	112.5	249.72	0.6	248	44	80	89	1.6	12.0		15.76	**102.7**
	115	251.57	0.6	248	45	80	88	1.5	12.0		15.76	**108.6**
	117.5	253.13	0.6	248	44	80	88	1.6	12.0		15.76	**91.6**
	120	254.81										**98.7**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 2 BH Outlet
Test No.:	1 - SVOC
Date:	October 1, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.845
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.50 mm
DRY REF GAS VOLUME SAMPLED	4.661 m^3
AVGERGE ISOKINETICITY	102.2 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	131.2 °C
AVERAGE GAS MOISTURE BY VOLUME	17.0 %
AVERAGE GAS VELOCITY	15.99 m/s
BAROMETRIC PRESSURE (Station)	101.727 Kpa
STATIC PRESSURE	-2.789 Kpa
ABSOLUTE GAS PRESSURE	98.938 Kpa
OXYGEN CONCENTRATION	7.16 %
CARBON DIOXIDE CONCENTRATION	12.43 %
CARBON MONOXIDE CONCENTRATION	29.1 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	23.62 m^3/s
DRY REF GAS FLOWRATE	14.11 Rm^3/s
DRY ADJ GAS FLOWRATE	19.59 Rm^3/s
WET REF GAS FLOWRATE	17.01 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.661 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 2, 2015	**Operator:**	KS

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	1.004	**Probe (mg)**	0
Barometric Pressure	30.16 "Hg	**CWTR (g)**	674.9
Static Pressure	-10.000 "H_2O	**WCBDA (g)**	13.3
Nozzle	0.2543 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.36 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.36
CO2%	12.03
COppm	14.0

Measured H2O
16.7 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	57.73	0.68	252	66	66	66	1.8	6.5		16.76	
	2.5	59.53	0.7	272	56	66	66	1.8	7.0		17.25	**103.9**
	5	61.27	0.71	272	53	66	66	1.7	7.0		17.37	**100.3**
	7.5	63.02	0.77	272	51	66	67	1.9	7.5		18.09	**100.2**
2	10	64.86	0.71	272	49	66	68	1.8	7.5		17.37	**101.1**
	12.5	66.66	0.71	272	48	66	70	1.7	7.5		17.37	**102.9**
	15	68.42	0.73	272	47	66	71	1.8	7.5		17.61	**100.4**
	17.5	70.22	0.71	272	47	66	72	1.8	7.5		17.37	**101.2**
3	20	71.99	0.71	272	46	66	73	1.8	7.5		17.37	**100.8**
	22.5	73.78	0.7	271	46	67	74	1.8	7.5		17.23	**101.8**
	25	75.50	0.7	272	46	67	95	1.8	8.0		17.25	**98.3**
	27.5	77.30	0.71	272	45	67	76	1.8	8.0		17.37	**100.9**
4	30	79.10	0.69	272	45	67	76	1.8	8.0		17.12	**102.0**
	32.5	80.90	0.68	271	45	67	76	1.7	8.0		16.99	**103.5**
	35	82.67	0.68	272	45	67	77	1.7	8.0		17.00	**102.4**
	37.5	84.44	0.69	271	45	67	77	1.7	8.0		17.11	**102.4**
5	40	86.22	0.67	271	45	68	77	1.7	8.0		16.86	**102.1**
	42.5	87.96	0.69	272	45	68	78	1.7	8.0		17.12	**101.2**
	45	89.70	0.69	272	45	68	78	1.7	8.0		17.12	**99.7**
	47.5	91.46	0.69	272	45	68	78	1.8	8.0		17.12	**100.9**
6	50	93.24	0.62	272	45	68	78	1.6	8.0		16.23	**102.0**
	52.5	95.02	0.63	272	45	68	79	1.6	8.0		16.36	**107.6**
	55	96.72	0.62	272	45	68	79	1.6	8.0		16.23	**101.8**
	57.5	98.40	0.62	272	45	68	79	1.6	8.0		16.23	**101.4**
7	60	100.11	0.67	272	46	69	79	1.7	8.5		16.87	**103.3**
	62.5	101.83	0.66	272	47	69	79	1.7	8.5		16.75	**99.8**
	65	103.62	0.66	272	47	69	79	1.7	8.5		16.75	**104.7**
	67.5	105.38	0.67	272	47	69	79	1.7	8.5		16.87	**102.9**
8	70	107.16	0.64	272	47	69	79	1.6	8.5		16.49	**103.3**
	72.5	108.90	0.63	270	48	69	79	1.6	8.5		16.34	**103.3**
	75	110.62	0.6	269	47	69	79	1.5	8.5		15.93	**102.8**
	77.5	112.31	0.6	269	46	69	79	1.5	8.5		15.93	**103.4**
9	80	114.00	0.6	268	45	69	80	1.5	8.5		15.92	**103.4**
	82.5	115.68	0.6	268	45	69	80	1.5	8.5		15.92	**102.6**
	85	117.38	0.58	267	46	69	80	1.4	8.0		15.65	**103.8**
	87.5	119.04	0.58	266	44	69	80	1.4	8.0		15.63	**103.0**
10	90	120.68	0.58	266	44	69	80	1.4	8.0		15.63	**101.7**
	92.5	122.34	0.58	263	44	69	80	1.4	8.0		15.60	**103.0**
	95	124.00	0.58	262	44	69	80	1.4	8.0		15.59	**102.8**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 2, 2015	**Operator:**	KS

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	1.004	**Probe (mg)**	0
Barometric Pressure	30.16 "Hg	**CWTR (g)**	674.9
Static Pressure	-10.000 "H_2O	**WCBDA (g)**	13.3
Nozzle	0.2543 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.36 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.36
CO2%	12.03
COppm	14.0

Measured H2O
16.7 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	97.5	125.67	0.58	262	44	69	80	1.4	8.0		15.59	103.3
11	100	127.34	0.56	262	44	69	80	1.4	8.0		15.32	103.3
	102.5	128.98	0.56	263	45	70	80	1.4	8.0		15.33	103.2
	105	130.63	0.55	263	45	70	80	1.4	7.5		15.19	103.8
	107.5	132.31	0.55	264	45	70	80	1.4	7.5		15.20	106.7
12	110	133.90	0.55	264	45	70	80	1.4	7.5		15.20	101.0
	112.5	135.52	0.55	264	45	70	81	1.4	7.5		15.20	102.9
	115	137.32	0.55	264	46	70	81	1.4	7.5		15.20	114.3
	117.5	138.95	0.55	264	46	70	81	1.4	7.5		15.20	103.5
	120	140.46								0.36		95.9
1	0	140.82	0.66	264	61	69	70	1.6	8.5		16.65	
	2.5	142.53	0.67	264	61	69	70	1.6	8.5		16.78	100.3
	5	144.33	0.67	266	62	69	73	1.6	8.5		16.80	104.8
	7.5	146.00	0.68	266	60	69	75	1.6	8.5		16.93	97.1
2	10	147.67	0.67	266	60	69	75	1.6	8.5		16.80	96.2
	12.5	149.40	0.66	266	59	69	77	1.6	8.5		16.68	100.4
	15	151.00	0.67	266	59	69	77	1.6	8.5		16.80	93.3
	17.5	152.68	0.67	266	61	69	78	1.6	8.5		16.80	97.3
3	20	154.42	0.66	267	62	69	78	1.6	8.5		16.69	100.7
	22.5	156.11	0.65	267	62	69	79	1.6	8.5		16.56	98.6
	25	157.82	0.65	267	62	69	79	1.6	8.5		16.56	100.4
	27.5	159.55	0.65	267	62	70	79	1.6	8.5		16.56	101.6
4	30	161.22	0.62	267	62	70	79	1.6	8.5		16.18	98.0
	32.5	162.92	0.62	267	45	70	79	1.6	9.0		16.18	102.1
	35	164.61	0.6	267	45	70	80	1.6	9.0		15.91	101.5
	37.5	166.26	0.6	267	45	70	80	1.6	9.0		15.91	100.6
5	40	168.01	0.58	267	45	70	80	1.6	9.0		15.65	106.7
	42.5	169.66	0.54	266	46	70	80	1.4	8.5		15.09	102.4
	45	171.32	0.52	266	46	70	80	1.4	8.5		14.80	106.6
	47.5	172.94	0.52	266	46	70	80	1.4	8.5		14.80	106.0
6	50	174.56	0.5	266	46	70	80	1.4	8.5		14.52	106.0
	52.5	176.30	0.5	267	46	70	80	1.4	8.5		14.53	116.1
	55	177.87	0.5	267	46	70	80	1.4	8.5		14.53	104.9
	57.5	179.48	0.5	268	47	70	81	1.4	8.5		14.54	107.5
7	60	181.04	0.51	268	46	70	81	1.4	8.5		14.68	104.2
	62.5	182.58	0.52	268	46	70	81	1.4	8.5		14.82	101.8
	65	184.13	0.52	269	46	71	81	1.4	8.5		14.83	101.5
	67.5	185.67	0.51	269	46	71	81	1.4	8.5		14.69	100.8
8	70	187.20	0.52	269	46	71	81	1.4	8.5		14.83	101.1

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 2, 2015	**Operator:**	KS

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	1.004	**Probe (mg)**	0
Barometric Pressure	30.16 "Hg	**CWTR (g)**	674.9
Static Pressure	-10.000 "H_2O	**WCBDA (g)**	13.3
Nozzle	0.2543 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.36 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.36
CO2%	12.03
COppm	14.0

Measured H2O
16.7 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	72.5	188.74	0.58	268	47	71	81	1.5	9.0		15.66	100.8
	75	190.36	0.6	268	47	71	81	1.5	9.0		15.92	100.4
	77.5	192.21	0.6	268	46	71	81	1.5	9.0		15.92	112.7
9	80	193.88	0.58	268	46	71	81	1.5	9.0		15.66	101.7
	82.5	195.55	0.58	267	47	71	81	1.5	9.0		15.65	103.5
	85	197.23	0.58	266	47	71	81	1.5	9.0		15.63	104.0
	87.5	198.90	0.57	266	47	71	82	1.5	9.0		15.50	103.3
10	90	200.56	0.56	266	47	71	82	1.5	9.0		15.36	103.5
	92.5	202.24	0.56	265	47	71	82	1.5	9.0		15.35	105.7
	95	203.90	0.57	265	47	72	81	1.5	9.0		15.49	104.3
	97.5	205.56	0.56	265	48	72	82	1.5	9.0		15.35	103.4
11	100	207.22	0.56	265	48	72	82	1.5	9.0		15.35	104.3
	102.5	208.90	0.5	266	48	72	82	1.4	9.0		14.52	105.5
	105	210.53	0.48	266	48	72	82	1.3	8.8		14.22	108.4
	107.5	212.13	0.48	266	48	72	82	1.3	8.5		14.22	108.6
12	110	213.72	0.48	266	48	72	82	1.3	8.5		14.22	107.9
	112.5	215.26	0.47	266	48	72	82	1.3	8.5		14.07	104.5
	115	216.82	0.48	267	48	72	83	1.3	8.5		14.23	107.0
	117.5	218.37	0.48	266	48	72	83	1.3	8.5		14.22	105.1
	120	219.91										104.4

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 2 BH Outlet
Test No.:	2 - SVOC
Date:	October 2, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.845
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	4.685 m^3
AVGERGE ISOKINETICITY	102.9 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	130.9 °C
AVERAGE GAS MOISTURE BY VOLUME	16.7 %
AVERAGE GAS VELOCITY	15.97 m/s
BAROMETRIC PRESSURE (Station)	102.133 Kpa
STATIC PRESSURE	-2.490 Kpa
ABSOLUTE GAS PRESSURE	99.643 Kpa
OXYGEN CONCENTRATION	7.36 %
CARBON DIOXIDE CONCENTRATION	12.03 %
CARBON MONOXIDE CONCENTRATION	14.0 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	23.59 m^3/s
DRY REF GAS FLOWRATE	14.27 Rm^3/s
DRY ADJ GAS FLOWRATE	19.51 Rm^3/s
WET REF GAS FLOWRATE	17.12 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.685 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 2, 2015	**Operator:**	DU

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	1.004	**Probe (mg)**	0
Barometric Pressure	30.14 "Hg	**CWTR (g)**	653.2
Static Pressure	-10.100 "H_2O	**WCBDA (g)**	19.7
Nozzle	0.2543 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.3 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.28
CO2%	12.04
COppm	11.8

Measured H2O
16.8 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	20.20	0.7	273	60	71	71	1.8	9.0		17.27	
	2.5	21.90	0.72	273	57	73	71	1.8	9.0		17.52	97.3
	5	23.69	0.7	275	55	75	71	1.8	9.0		17.30	100.8
	7.5	25.45	0.7	275	55	71	76	1.8	9.0		17.30	100.5
2	10	26.99	0.71	275	54	72	77	1.8	9.0		17.42	87.8
	12.5	28.62	0.7	275	53	72	78	1.8	9.0		17.30	92.1
	15	30.43	0.72	275	53	72	78	1.8	9.0		17.54	102.9
	17.5	32.23	0.71	276	53	72	78	1.8	9.0		17.43	100.9
3	20	34.03	0.69	276	52	73	80	1.8	9.0		17.18	101.7
	22.5	35.95	0.67	275	52	73	80	1.7	9.0		16.92	109.8
	25	37.69	0.68	275	52	73	81	1.7	9.0		17.05	100.8
	27.5	39.37	0.67	275	52	73	81	1.8	9.0		16.92	96.6
4	30	41.16	0.67	275	52	74	81	1.8	9.0		16.92	103.7
	32.5	42.95	0.61	275	51	73	81	1.6	9.0		16.15	103.6
	35	44.69	0.63	275	51	73	82	1.6	9.0		16.41	105.6
	37.5	46.30	0.63	275	51	74	83	1.6	9.0		16.41	96.0
5	40	47.89	0.59	275	51	74	83	1.6	9.0		15.88	94.7
	42.5	49.73	0.58	275	51	74	83	1.5	9.0		15.74	113.2
	45	51.40	0.57	275	51	74	83	1.5	9.0		15.61	103.6
	47.5	53.04	0.57	275	51	74	83	1.5	9.0		15.61	102.6
6	50	54.65	0.53	274	51	74	84	1.5	9.0		15.04	100.7
	52.5	56.35	0.51	274	51	74	84	1.3	10.0		14.75	110.1
	55	57.93	0.51	274	51	75	84	1.3	10.0		14.75	104.3
	57.5	59.51	0.51	273	51	75	84	1.3	10.0		14.74	104.2
7	60	61.06	0.52	273	52	75	84	1.3	10.0		14.89	102.2
	62.5	62.63	0.52	273	53	75	85	1.3	10.0		14.89	102.5
	65	64.17	0.52	273	53	75	85	1.3	10.0		14.89	100.4
	67.5	65.76	0.52	273	53	75	85	1.3	10.0		14.89	103.7
8	70	67.32	0.54	271	49	75	85	1.3	10.0		15.15	101.7
	72.5	68.89	0.54	271	48	75	85	1.3	10.0		15.15	100.3
	75	70.44	0.53	271	48	75	85	1.3	10.0		15.01	99.0
	77.5	72.00	0.53	270	49	75	85	1.3	10.0		15.00	100.6
9	80	73.56	0.56	267	49	76	86	1.5	11.0		15.38	100.6
	82.5	75.19	0.57	266	48	76	86	1.6	11.0		15.51	101.9
	85	76.87	0.56	265	48	76	86	1.6	11.0		15.36	104.0
	87.5	78.55	0.55	265	48	76	86	1.5	11.0		15.23	104.9
10	90	80.15	0.58	262	48	76	86	1.6	11.0		15.60	100.8
	92.5	81.88	0.57	261	48	76	86	1.6	11.0		15.46	105.9
	95	83.56	0.56	261	48	76	86	1.6	11.0		15.32	103.7

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 2, 2015	**Operator:**	DU

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	1.004	**Probe (mg)**	0
Barometric Pressure	30.14 "Hg	**CWTR (g)**	653.2
Static Pressure	-10.100 "H_2O	**WCBDA (g)**	19.7
Nozzle	0.2543 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.3 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.28
CO2%	12.04
COppm	11.8

Measured H2O
16.8 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	97.5	85.24	0.56	260	49	76	85	1.6	11.0		15.31	**104.6**
11	100	86.91	0.57	259	49	76	85	1.6	11.0		15.44	**104.0**
	102.5	88.58	0.56	262	49	76	85	1.6	11.0		15.33	**103.0**
	105	90.24	0.57	263	49	77	86	1.6	11.0		15.48	**103.5**
	107.5	91.91	0.58	263	49	77	86	1.6	11.0		15.61	**103.1**
12	110	93.57	0.57	264	49	77	86	1.6	11.0		15.49	**101.6**
	112.5	95.23	0.59	264	49	76	85	1.6	11.0		15.76	**102.5**
	115	96.90	0.59	264	49	76	85	1.6	11.0		15.76	**101.6**
	117.5	98.53	0.6	264	49	77	86	1.6	11.0		15.89	**99.1**
	120	100.20								0.3		**100.5**
1	0	100.50	0.69	274	50	77	76	1.9	13.0		17.16	
	2.5	102.26	0.69	275	46	76	79	1.9	13.0		17.17	**100.5**
	5	104.13	0.69	275	46	76	79	1.9	13.0		17.17	**106.6**
	7.5	106.01	0.68	276	45	76	80	1.9	13.0		17.06	**107.2**
2	10	107.83	0.68	276	46	76	81	1.9	13.0		17.06	**104.5**
	12.5	109.65	0.69	276	46	76	82	1.9	13.0		17.18	**104.4**
	15	111.42	0.68	276	47	76	82	1.9	13.0		17.06	**100.7**
	17.5	113.30	0.68	276	47	76	82	1.9	13.0		17.06	**107.8**
3	20	115.11	0.68	275	48	76	82	1.8	13.0		17.05	**103.8**
	22.5	116.92	0.67	275	48	76	82	1.8	13.0		16.92	**103.7**
	25	118.72	0.67	275	48	76	83	1.7	12.5		16.92	**103.9**
	27.5	120.50	0.67	275	48	76	83	1.7	12.5		16.92	**102.6**
4	30	122.30	0.6	275	49	77	84	1.5	12.0		16.01	**103.7**
	32.5	124.00	0.6	275	49	76	84	1.6	12.0		16.01	**103.3**
	35	125.73	0.6	276	49	76	84	1.6	12.0		16.02	**105.2**
	37.5	127.41	0.6	275	49	77	85	1.6	12.0		16.01	**102.3**
5	40	129.12	0.58	275	49	77	85	1.6	12.0		15.74	**103.8**
	42.5	130.80	0.56	275	49	77	85	1.4	11.0		15.47	**103.8**
	45	132.45	0.54	274	50	77	85	1.4	11.0		15.18	**103.7**
	47.5	134.09	0.55	274	49	77	85	1.4	11.0		15.32	**104.8**
6	50	135.62	0.46	274	49	77	86	1.4	11.0		14.01	**96.9**
	52.5	137.17	0.46	274	49	77	86	1.2	10.0		14.01	**107.3**
	55	138.70	0.46	273	49	77	86	1.2	10.0		14.00	**105.8**
	57.5	140.24	0.46	273	50	77	86	1.2	10.0		14.00	**106.4**
7	60	141.74	0.46	273	49	77	86	1.2	10.0		14.00	**103.7**
	62.5	143.27	0.46	273	49	77	86	1.2	10.0		14.00	**105.8**
	65	144.77	0.46	273	49	77	86	1.2	10.0		14.00	**103.7**
	67.5	146.30	0.46	273	49	77	86	1.2	10.0		14.00	**105.8**
8	70	147.82	0.45	273	49	77	86	1.2	10.0		13.85	**105.1**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 2, 2015	**Operator:**	DU

Pitot Factor	0.845	**Filter (mg)**	0
DGMCF	1.004	**Probe (mg)**	0
Barometric Pressure	30.14 "Hg	**CWTR (g)**	653.2
Static Pressure	-10.100 "H_2O	**WCBDA (g)**	19.7
Nozzle	0.2543 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.3 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.28
CO2%	12.04
COppm	11.8

Measured H2O
16.8 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	72.5	149.34	0.45	273	49	77	86	1.2	10.0		13.85	**106.2**
	75	150.84	0.45	273	49	77	86	1.2	10.0		13.85	**104.8**
	77.5	152.38	0.5	273	49	77	86	1.2	10.0		14.60	**107.6**
9	80	153.92	0.5	273	49	77	86	1.2	10.0		14.60	**102.1**
	82.5	155.46	0.5	273	50	77	86	1.2	10.0		14.60	**102.1**
	85	157.01	0.5	274	50	77	86	1.2	11.0		14.61	**102.8**
	87.5	158.53	0.5	274	50	77	86	1.2	11.0		14.61	**100.8**
10	90	160.07	0.55	274	50	77	86	1.2	11.0		15.32	**102.2**
	92.5	161.63	0.55	273	48	77	86	1.3	11.5		15.31	**98.7**
	95	163.22	0.54	274	48	77	86	1.3	11.5		15.18	**100.5**
	97.5	164.81	0.56	274	48	77	86	1.3	11.5		15.46	**101.5**
11	100	166.40	0.56	274	48	77	86	1.3	11.5		15.46	**99.7**
	102.5	167.92	0.55	274	47	77	86	1.4	11.5		15.32	**95.3**
	105	169.50	0.55	274	47	77	86	1.4	11.5		15.32	**100.0**
	107.5	171.20	0.54	273	47	78	86	1.4	11.5		15.17	**107.6**
12	110	172.87	0.5	270	47	77	86	1.2	11.0		14.57	**106.5**
	112.5	174.44	0.49	270	47	77	86	1.2	11.0		14.42	**103.9**
	115	175.96	0.48	270	47	77	86	1.2	11.0		14.27	**101.6**
	117.5	177.48	0.48	270	47	77	86	1.2	11.0		14.27	**102.6**
	120	179.02										**104.0**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 2 BH Outlet
Test No.:	3 - SVOC
Date:	October 2, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.845
DGM CORRECTION FACTOR	1.004
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	4.538 m^3
AVGERGE ISOKINETICITY	102.7 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	133.4 °C
AVERAGE GAS MOISTURE BY VOLUME	16.8 %
AVERAGE GAS VELOCITY	15.63 m/s
BAROMETRIC PRESSURE (Station)	102.066 Kpa
STATIC PRESSURE	-2.515 Kpa
ABSOLUTE GAS PRESSURE	99.551 Kpa
OXYGEN CONCENTRATION	7.28 %
CARBON DIOXIDE CONCENTRATION	12.04 %
CARBON MONOXIDE CONCENTRATION	11.8 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	23.09 m^3/s
DRY REF GAS FLOWRATE	13.84 Rm^3/s
DRY ADJ GAS FLOWRATE	19.04 Rm^3/s
WET REF GAS FLOWRATE	16.64 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.538 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)
Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 21, 2015	**Operator:**	MT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.89 "Hg	**CWTR (g)**	697.1
Static Pressure	-10.300 "H_2O	**WCBDA (g)**	48.4
Nozzle	0.2563 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.42 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7
CO2%	12.24
COppm	11.7

Measured H2O
17.6 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	551.15	0.65	275	68	96	96	1.9	8.0		16.79	
	2.5	553.09	0.66	277	67	95	95	1.8	8.0		16.94	**107.2**
	5	554.94	0.65	277	65	95	95	1.8	8.0		16.81	**101.8**
	7.5	556.80	0.67	277	65	95	96	1.9	8.0		17.07	**103.1**
2	10	558.67	0.67	278	64	95	96	1.9	8.0		17.08	**102.0**
	12.5	560.58	0.71	278	64	96	96	1.9	8.0		17.58	**104.3**
	15	562.48	0.71	278	64	96	96	2	9.0		17.58	**100.7**
	17.5	564.51	0.715	277	63	95	96	1.95	9.0		17.63	**107.6**
3	20	566.42	0.72	279	63	96	97	2	9.0		17.72	**100.9**
	22.5	568.35	0.7	279	63	96	97	2	9.0		17.47	**101.6**
	25	570.31	0.69	279	63	95	98	1.9	9.0		17.34	**104.6**
	27.5	572.24	0.695	279	63	95	98	1.9	9.0		17.40	**103.7**
4	30	574.18	0.66	280	63	96	99	1.8	9.0		16.97	**103.9**
	32.5	576.10	0.65	280	63	96	99	1.75	8.5		16.84	**105.4**
	35	577.91	0.65	280	63	96	101	1.85	9.0		16.84	**100.1**
	37.5	579.80	0.66	280	63	96	101	1.85	9.0		16.97	**104.3**
5	40	581.70	0.65	280	63	96	102	1.8	9.0		16.84	**104.1**
	42.5	583.57	0.62	280	63	96	102	1.7	9.0		16.45	**103.1**
	45	585.39	0.61	289	61	96	102	1.7	9.0		16.42	**102.7**
	47.5	587.30	0.61	289	61	96	102	1.6	8.5		16.42	**109.4**
6	50	589.04	0.63	281	61	96	103	1.8	8.5		16.59	**99.6**
	52.5	590.85	0.6	281	61	96	103	1.8	9.0		16.19	**101.4**
	55	592.70	0.6	281	61	96	103	1.7	9.0		16.19	**106.2**
	57.5	594.53	0.57	281	61	96	103	1.6	8.0		15.78	**105.0**
7	60	596.30	0.59	281	61	96	103	1.6	8.0		16.06	**104.2**
	62.5	598.05	0.58	281	61	97	104	1.6	8.0		15.92	**101.2**
	65	599.85	0.59	281	61	97	104	1.6	8.0		16.06	**104.8**
	67.5	601.61	0.595	280	61	97	104	1.6	8.0		16.11	**101.6**
8	70	603.37	0.59	281	61	97	104	1.6	8.0		16.06	**101.1**
	72.5	605.14	0.6	279	61	97	104	1.7	8.0		16.17	**102.2**
	75	606.91	0.6	279	62	97	105	1.7	8.0		16.17	**101.2**
	77.5	608.73	0.59	279	62	97	105	1.6	8.0		16.04	**104.0**
9	80	610.51	0.615	277	62	97	105	1.75	9.0		16.35	**102.6**
	82.5	612.31	0.615	277	62	97	105	1.8	9.0		16.35	**101.5**
	85	614.20	0.61	276	61	97	104	1.7	9.0		16.27	**106.6**
	87.5	616.04	0.62	276	61	97	104	1.7	9.0		16.41	**104.2**
10	90	617.91	0.54	275	61	97	104	1.5	8.0		15.30	**105.0**
	92.5	619.60	0.54	270	61	97	104	1.5	8.0		15.25	**101.6**
	95	621.34	0.61	261	62	97	104	1.7	9.0		16.11	**104.2**

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 21, 2015	**Operator:**	MT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.89 "Hg	**CWTR (g)**	697.1
Static Pressure	-10.300 "H_2O	**WCBDA (g)**	48.4
Nozzle	0.2563 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.42 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7
CO2%	12.24
COppm	11.7

Measured H2O
17.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	97.5	623.19	0.59	261	62	97	104	1.7	9.0		15.84	**103.7**
11	100	624.94	0.58	261	62	97	104	1.7	9.0		15.70	**99.7**
	102.5	626.75	0.59	265	62	97	104	1.7	9.0		15.88	**104.0**
	105	628.58	0.6	260	61	97	104	1.7	9.0		15.96	**104.5**
	107.5	630.38	0.62	260	61	97	104	1.75	9.0		16.23	**101.6**
12	110	632.35	0.62	262	60	97	104	1.7	9.0		16.25	**109.4**
	112.5	634.19	0.61	262	60	97	104	1.7	9.0		16.12	**102.3**
	115	635.85	0.62	262	60	98	104	1.8	9.0		16.25	**93.1**
	117.5	637.72	0.625	263	60	98	104	1.8	9.0		16.33	**103.9**
	120	639.58								0.42		**103.0**
1	0	640.00	0.62	280	66	96	96	1.8	9.0		16.45	
	2.5	641.72	0.68	281	70	96	96	2	9.5		17.24	**97.7**
	5	643.70	0.68	281	63	96	96	1.9	9.5		17.24	**107.5**
	7.5	645.61	0.675	281	59	96	96	1.9	9.5		17.18	**103.6**
2	10	647.55	0.69	281	51	96	97	1.9	9.5		17.37	**105.7**
	12.5	649.47	0.76	281	56	96	97	2	10.0		18.23	**103.3**
	15	651.43	0.76	281	56	96	97	2	10.0		18.23	**100.5**
	17.5	653.48	0.73	281	56	96	97	2	10.0		17.86	**105.1**
3	20	655.48	0.735	280	55	96	97	2	10.0		17.91	**104.7**
	22.5	657.48	0.7	280	55	96	97	1.9	10.0		17.48	**104.2**
	25	659.44	0.7	280	55	96	98	1.9	10.0		17.48	**104.7**
	27.5	661.38	0.69	280	55	96	98	1.9	10.0		17.35	**103.5**
4	30	663.31	0.67	280	55	96	98	1.85	10.0		17.10	**103.7**
	32.5	665.23	0.64	280	55	96	98	1.8	10.0		16.71	**104.7**
	35	667.13	0.63	281	56	96	98	1.8	10.0		16.59	**106.0**
	37.5	669.04	0.64	281	56	96	99	1.7	9.0		16.72	**107.5**
5	40	670.90	0.66	275	56	96	99	1.6	9.0		16.91	**103.7**
	42.5	672.70	0.6	277	56	96	99	1.6	9.0		16.15	**98.4**
	45	674.43	0.59	275	56	96	100	1.7	9.0		15.99	**99.3**
	47.5	676.24	0.58	275	56	96	101	1.7	9.0		15.86	**104.6**
6	50	678.03	0.58	275	56	96	101	1.7	9.0		15.86	**104.2**
	52.5	679.82	0.57	275	56	96	101	1.6	9.0		15.72	**104.2**
	55	681.63	0.585	274	56	96	102	1.6	9.0		15.91	**106.3**
	57.5	683.40	0.59	275	56	96	102	1.6	9.0		15.99	**102.4**
7	60	685.30	0.59	275	56	96	102	1.5	9.0		15.99	**109.6**
	62.5	687.05	0.58	276	57	96	102	1.5	9.0		15.87	**100.9**
	65	688.72	0.52	276	57	96	102	1.55	9.0		15.02	**97.2**
	67.5	690.38	0.53	276	57	96	103	1.6	9.0		15.17	**102.0**
8	70	692.09	0.53	276	57	96	103	1.6	9.0		15.17	**104.0**

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 21, 2015	**Operator:**	MT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.89 "Hg	**CWTR (g)**	697.1
Static Pressure	-10.300 "H_2O	**WCBDA (g)**	48.4
Nozzle	0.2563 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.42 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7
CO2%	12.24
COppm	11.7

Measured H2O
17.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	72.5	693.90	0.535	277	57	96	103	1.6	9.0		15.25	110.1
	75	695.62	0.545	278	57	96	103	1.6	9.0		15.40	104.2
	77.5	697.39	0.52	278	57	96	103	1.5	9.0		15.04	106.3
9	80	699.13	0.57	276	57	96	103	1.55	9.0		15.73	107.0
	82.5	701.00	0.57	276	57	96	103	1.5	9.0		15.73	109.7
	85	702.60	0.57	276	57	96	103	1.6	9.0		15.73	93.8
	87.5	704.36	0.58	277	57	96	103	1.6	9.0		15.88	103.2
10	90	706.11	0.61	277	57	96	103	1.6	9.0		16.28	101.8
	92.5	707.95	0.54	266	57	96	103	1.55	9.0		15.21	104.4
	95	709.63	0.56	266	57	96	103	1.6	9.0		15.49	100.5
	97.5	711.43	0.55	267	57	96	103	1.6	9.0		15.36	105.8
11	100	713.22	0.55	265	57	96	103	1.55	9.0		15.34	106.2
	102.5	714.96	0.54	265	57	96	102	1.55	9.0		15.20	103.1
	105	716.70	0.55	265	57	96	103	1.55	9.0		15.34	104.1
	107.5	718.49	0.56	265	57	96	103	1.5	9.0		15.47	106.1
12	110	720.15	0.575	265	57	96	102	1.6	9.0		15.68	97.5
	112.5	721.90	0.56	260	57	96	102	1.6	9.0		15.42	101.5
	115	723.63	0.575	260	57	96	102	1.6	9.0		15.63	101.3
	117.5	725.40	0.58	263	57	96	102	1.6	9.0		15.73	102.3
	120	727.21										104.4

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 2 BH Outlet
Test No.:	1 - SVOC
Date:	October 21, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846
DGM CORRECTION FACTOR	0.989
NOZZLE DIAMETER	6.51 mm
DRY REF GAS VOLUME SAMPLED	4.747 m^3
AVGERGE ISOKINETICITY	103.4 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	135.1 °C
AVERAGE GAS MOISTURE BY VOLUME	17.6 %
AVERAGE GAS VELOCITY	16.34 m/s
BAROMETRIC PRESSURE (Station)	101.219 Kpa
STATIC PRESSURE	-2.565 Kpa
ABSOLUTE GAS PRESSURE	98.654 Kpa
OXYGEN CONCENTRATION	7 %
CARBON DIOXIDE CONCENTRATION	12.24 %
CARBON MONOXIDE CONCENTRATION	11.7 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	24.14 m^3/s
DRY REF GAS FLOWRATE	14.15 Rm^3/s
DRY ADJ GAS FLOWRATE	19.86 Rm^3/s
WET REF GAS FLOWRATE	17.17 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.747 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

Plant: Covanta - DYEC
Test No.: 2 - SVOC
Date: October 22, 2015

Plant Location: Courtice, ON
Test Location: Boiler No. 2 BH Outlet
Operator: MT

Pitot Factor	0.846	
DGMCF	0.989	
Barometric Pressure	29.8	"Hg
Static Pressure	-10.300	"H_2O
Nozzle	0.2563	inches
Stack Diameter	4.500	ft
Length	0.000	ft
Width	0.000	ft

Filter (mg)	0
Probe (mg)	0
CWTR (g)	749.6
WCBDA (g)	19.8

Leak Check Volume	0.44	ft^3
Reading Interval	2.5	minutes
Number of Ports	2	
Number of points / Port	12	

Combustion Gases	
O2%	6.91
CO2%	12.10
COppm	10.6

Measured H2O
18.4 %

				Temperatures								
Point	**Time**	**DGM Reading**	**ΔP "H2O**	**Stack °F**	**Imp. Out °F**	**DGM Out °F**	**DGM In °F**	**ΔH "H2O**	**Vacuum "Hg**	**Leak Check Volume**	**Velocity m/s**	**Isokinetic %**
1	0	29.42	0.65	283	70	84	84	1.65	6.0		16.94	
	2.5	31.20	0.65	283	67	84	84	1.65	6.0		16.94	**101.7**
	5	32.95	0.72	280	65	84	84	1.8	9.0		17.79	**99.9**
	7.5	34.79	0.715	280	63	84	84	1.8	9.0		17.73	**99.7**
2	10	36.64	0.71	280	61	84	84	1.8	9.0		17.67	**100.6**
	12.5	38.49	0.72	280	61	84	84	1.8	9.0		17.79	**100.9**
	15	40.39	0.69	279	59	84	86	1.8	9.0		17.41	**102.9**
	17.5	42.19	0.69	279	59	84	86	1.8	9.0		17.41	**99.4**
3	20	44.02	0.71	279	59	84	86	1.8	9.0		17.66	**101.0**
	22.5	45.85	0.67	280	59	84	86	1.7	9.0		17.16	**99.6**
	25	47.66	0.675	278	56	84	88	1.7	9.0		17.20	**101.4**
	27.5	49.47	0.7	278	56	84	89	1.8	9.0		17.52	**100.7**
4	30	51.30	0.7	278	56	84	89	1.8	9.0		17.52	**99.9**
	32.5	53.12	0.685	278	55	84	90	1.8	9.0		17.33	**99.4**
	35	55.00	0.7	278	55	84	90	1.8	9.0		17.52	**103.7**
	37.5	56.82	0.69	278	54	84	91	1.8	9.0		17.39	**99.3**
5	40	58.68	0.62	278	54	84	91	1.65	9.0		16.49	**102.1**
	42.5	60.49	0.61	278	55	85	91	1.6	9.0		16.35	**104.8**
	45	62.24	0.595	278	55	85	91	1.6	9.0		16.15	**102.1**
	47.5	63.98	0.64	278	55	85	91	1.8	9.0		16.75	**102.7**
6	50	65.80	0.635	278	55	85	91	1.8	9.0		16.69	**103.7**
	52.5	67.60	0.61	279	56	85	92	1.6	9.0		16.37	**102.9**
	55	69.39	0.61	280	56	85	92	1.55	9.0		16.38	**104.4**
	57.5	71.15	0.59	280	56	85	92	1.5	9.0		16.11	**102.7**
7	60	72.85	0.56	278	56	86	93	1.5	9.0		15.67	**100.8**
	62.5	74.60	0.575	278	56	86	93	1.45	9.0		15.88	**106.2**
	65	76.25	0.585	278	56	86	93	1.5	9.0		16.02	**98.8**
	67.5	77.95	0.57	278	57	86	93	1.5	9.0		15.81	**100.9**
8	70	79.64	0.56	278	57	86	93	1.5	9.0		15.67	**101.7**
	72.5	81.33	0.565	277	58	86	94	1.5	9.0		15.73	**102.6**
	75	83.03	0.55	277	58	86	94	1.5	9.0		15.52	**102.5**
	77.5	84.72	0.575	277	58	86	94	1.5	9.0		15.87	**103.3**
9	80	86.38	0.57	277	58	86	94	1.5	9.0		15.80	**99.3**
	82.5	88.07	0.575	277	58	86	94	1.5	9.0		15.87	**101.5**
	85	89.80	0.585	277	58	86	94	1.5	9.0		16.00	**103.4**
	87.5	91.45	0.59	277	58	86	94	1.5	9.0		16.07	**97.8**
10	90	93.15	0.595	277	56	86	94	1.5	9.0		16.14	**100.3**
	92.5	94.88	0.62	276	55	86	94	1.5	9.0		16.47	**101.7**
	95	96.59	0.605	274	54	86	94	1.55	9.0		16.24	**98.4**

Plant: Covanta - DYEC
Test No.: 2 - SVOC
Date: October 22, 2015

Plant Location: Courtice, ON
Test Location: Boiler No. 2 BH Outlet
Operator: MT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.8 "Hg	**CWTR (g)**	749.6
Static Pressure	-10.300 "H_2O	**WCBDA (g)**	19.8
Nozzle	0.2563 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.44 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	6.91
CO2%	12.10
COppm	10.6

Measured H2O
18.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	97.5	98.30	0.59	274	54	86	94	1.55	9.0		16.04	**99.5**
11	100	100.06	0.58	274	54	86	93	1.5	9.0		15.90	**103.7**
	102.5	101.74	0.6	275	54	86	93	1.55	9.0		16.19	**99.9**
	105	103.47	0.58	275	54	86	92	1.5	9.0		15.91	**101.2**
	107.5	105.18	0.56	275	54	86	92	1.5	9.0		15.64	**101.9**
12	110	106.90	0.575	275	54	85	92	1.45	9.0		15.85	**104.3**
	112.5	108.58	0.58	275	54	85	92	1.45	9.0		15.91	**100.6**
	115	110.25	0.59	275	55	85	92	1.5	9.0		16.05	**99.5**
	117.5	111.98	0.595	275	55	85	92	1.5	9.0		16.12	**102.3**
	120	113.62								0.44		**96.5**
1	0	114.06	0.77	281	68	84	84	2	11.0		18.41	
	2.5	115.85	0.77	280	56	84	84	2.1	11.0		18.40	**93.9**
	5	117.78	0.84	280	54	84	84	2.25	12.0		19.22	**101.2**
	7.5	119.83	0.79	282	52	84	86	2.1	12.0		18.66	**102.9**
2	10	121.85	0.82	282	52	84	86	2.1	12.0		19.01	**104.5**
	12.5	123.90	0.79	282	52	83	87	2	12.0		18.66	**104.1**
	15	125.85	0.8	282	52	83	88	2	12.0		18.78	**100.9**
	17.5	127.79	0.8	282	52	83	88	2	12.0		18.78	**99.6**
3	20	129.73	0.77	282	52	83	88	2	12.0		18.42	**99.6**
	22.5	131.67	0.77	283	51	83	90	2	12.0		18.44	**101.5**
	25	133.61	0.77	283	51	83	90	2	12.0		18.44	**101.4**
	27.5	135.56	0.72	283	51	83	90	1.9	11.0		17.83	**101.9**
4	30	137.41	0.72	283	51	83	90	1.9	11.0		17.83	**100.0**
	32.5	139.26	0.71	283	51	83	90	1.9	11.0		17.70	**100.0**
	35	141.20	0.69	281	53	84	90	1.8	11.0		17.43	**105.6**
	37.5	143.16	0.68	281	53	85	92	1.7	11.0		17.30	**107.9**
5	40	145.02	0.6	281	53	85	92	1.5	10.0		16.25	**102.9**
	42.5	146.79	0.6	281	53	85	92	1.5	10.0		16.25	**104.2**
	45	148.47	0.6	282	53	85	93	1.5	10.0		16.26	**98.9**
	47.5	150.15	0.61	282	54	85	94	1.5	10.0		16.40	**98.9**
6	50	151.85	0.55	279	54	85	94	1.45	10.0		15.54	**99.1**
	52.5	153.50	0.57	279	53	85	95	1.45	10.0		15.82	**101.1**
	55	155.17	0.58	279	53	85	95	1.5	10.0		15.96	**100.4**
	57.5	156.87	0.56	279	53	85	95	1.5	10.0		15.68	**101.3**
7	60	158.55	0.5	279	53	85	95	1.4	10.0		14.82	**101.9**
	62.5	160.22	0.51	279	54	85	95	1.3	10.0		14.96	**107.2**
	65	161.84	0.525	280	54	86	95	1.3	10.0		15.19	**102.9**
	67.5	163.47	0.51	279	54	86	95	1.3	10.0		14.96	**102.1**
8	70	165.10	0.54	279	54	86	95	1.5	10.0		15.40	**103.5**

ORTECH Environmental

Plant: Covanta - DYEC
Test No.: 2 - SVOC
Date: October 22, 2015

Plant Location: Courtice, ON
Test Location: Boiler No. 2 BH Outlet
Operator: MT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.8 "Hg	**CWTR (g)**	749.6
Static Pressure	-10.300 "H_2O	**WCBDA (g)**	19.8
Nozzle	0.2563 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.44 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	6.91
CO2%	12.10
COppm	10.6

Measured H2O
18.4 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	72.5	166.73	0.535	279	54	86	95	1.5	10.0		15.33	**100.6**
	75	168.41	0.545	279	54	86	95	1.5	10.0		15.47	**104.2**
	77.5	170.12	0.54	280	54	86	95	1.4	10.0		15.41	**105.1**
9	80	171.74	0.55	279	54	86	95	1.4	10.0		15.54	**100.0**
	82.5	173.40	0.54	279	54	86	95	1.4	10.0		15.40	**101.5**
	85	175.08	0.59	279	55	86	95	1.5	10.0		16.09	**103.7**
	87.5	176.80	0.6	280	55	86	95	1.5	10.0		16.24	**101.6**
10	90	178.40	0.59	260	55	86	95	1.55	10.0		15.89	**93.8**
	92.5	180.11	0.575	259	55	86	95	1.55	10.0		15.67	**99.7**
	95	181.82	0.585	258	55	86	95	1.55	10.0		15.80	**100.9**
	97.5	183.58	0.585	260	55	86	95	1.55	10.0		15.82	**102.9**
11	100	185.28	0.59	265	55	86	95	1.55	10.0		15.94	**99.5**
	102.5	187.00	0.59	265	55	86	95	1.55	10.0		15.94	**100.6**
	105	188.70	0.58	267	55	86	95	1.55	10.0		15.83	**99.4**
	107.5	190.41	0.57	267	56	86	95	1.5	10.0		15.69	**101.0**
12	110	192.20	0.57	268	55	86	95	1.5	10.0		15.70	**106.7**
	112.5	193.84	0.59	270	56	86	95	1.5	10.0		16.00	**97.8**
	115	195.55	0.6	271	56	86	95	1.5	10.0		16.14	**100.4**
	117.5	197.30	0.6	272	56	86	95	1.5	10.0		16.15	**101.9**
	120	199.05										**102.0**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 2 BH Outlet
Test No.:	2 - SVOC
Date:	October 22, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846
DGM CORRECTION FACTOR	0.989
NOZZLE DIAMETER	6.51 mm
DRY REF GAS VOLUME SAMPLED	4.644 m^3
AVGERGE ISOKINETICITY	101.4 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	136.2 °C
AVERAGE GAS MOISTURE BY VOLUME	18.4 %
AVERAGE GAS VELOCITY	16.56 m/s
BAROMETRIC PRESSURE (Station)	100.914 Kpa
STATIC PRESSURE	-2.565 Kpa
ABSOLUTE GAS PRESSURE	98.350 Kpa
OXYGEN CONCENTRATION	6.91 %
CARBON DIOXIDE CONCENTRATION	12.10 %
CARBON MONOXIDE CONCENTRATION	10.6 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	24.46 m^3/s
DRY REF GAS FLOWRATE	14.11 Rm^3/s
DRY ADJ GAS FLOWRATE	19.94 Rm^3/s
WET REF GAS FLOWRATE	17.30 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.644 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)
Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3- SVOC	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 22, 2015	**Operator:**	MT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.86 "Hg	**CWTR (g)**	671.5
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	24.7
Nozzle	0.2563 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.47 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.03
CO2%	12.07
COppm	11.6

Measured H2O
17.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	0.09	0.65	280	68	85	85	1.7	7.0		16.86	
	2.5	1.38	0.73	280	49	85	85	1.9	7.0		17.86	72.7
	5	3.24	0.74	280	49	85	85	1.9	7.5		17.98	**98.9**
	7.5	5.17	0.75	279	49	85	86	1.9	7.5		18.09	**102.0**
2	10	7.05	0.765	279	48	85	88	1.9	7.5		18.27	**98.5**
	12.5	9.07	0.745	280	48	85	90	1.9	7.5		18.05	**104.6**
	15	10.96	0.73	279	48	85	91	1.9	7.5		17.85	**99.0**
	17.5	12.80	0.77	279	48	85	92	2	8.0		18.33	**97.3**
3	20	14.73	0.72	279	48	85	92	1.9	8.0		17.73	**99.3**
	22.5	16.66	0.675	279	48	85	93	1.8	8.0		17.17	**102.6**
	25	18.55	0.66	278	48	86	94	1.7	7.5		16.96	**103.7**
	27.5	20.41	0.66	278	49	86	95	1.7	7.5		16.96	**102.9**
4	30	22.21	0.59	278	49	86	95	1.6	7.0		16.04	**99.5**
	32.5	23.99	0.59	278	49	86	96	1.5	7.0		16.04	**104.0**
	35	25.72	0.59	277	49	86	96	1.5	7.0		16.03	**101.0**
	37.5	27.46	0.595	276	49	86	96	1.5	7.0		16.08	**101.5**
5	40	29.20	0.56	275	49	87	97	1.45	7.0		15.59	**101.0**
	42.5	30.90	0.53	275	49	87	97	1.45	7.0		15.17	**101.5**
	45	32.58	0.54	275	49	87	97	1.4	7.0		15.31	**103.1**
	47.5	34.25	0.535	275	50	87	98	1.4	7.0		15.24	**101.5**
6	50	35.92	0.515	274	50	87	98	1.35	7.0		14.94	**101.9**
	52.5	37.55	0.51	274	47	88	98	1.3	6.5		14.87	**101.3**
	55	39.18	0.51	273	46	88	98	1.3	6.5		14.86	**101.7**
	57.5	40.80	0.52	273	46	88	98	1.3	6.0		15.00	**101.0**
7	60	42.42	0.53	273	46	88	98	1.3	6.0		15.15	**100.0**
	62.5	44.03	0.54	273	45	88	99	1.4	6.5		15.29	**98.4**
	65	45.66	0.53	273	45	88	99	1.45	7.0		15.15	**98.7**
	67.5	47.33	0.535	274	45	88	99	1.4	7.0		15.23	**102.0**
8	70	49.00	0.54	274	45	88	99	1.4	7.0		15.30	**101.6**
	72.5	50.64	0.535	274	46	88	99	1.4	7.0		15.23	**99.3**
	75	52.30	0.55	273	46	89	99	1.4	7.0		15.43	**101.0**
	77.5	54.00	0.56	274	46	89	99	1.4	7.0		15.58	**101.9**
9	80	55.60	0.57	275	46	89	99	1.5	7.0		15.73	**95.1**
	82.5	57.27	0.565	275	46	89	99	1.55	7.0		15.66	**98.5**
	85	58.98	0.57	275	46	89	99	1.5	7.0		15.73	**101.3**
	87.5	60.70	0.565	275	46	89	99	1.5	7.0		15.66	**101.4**
10	90	62.40	0.565	275	47	89	99	1.5	7.0		15.66	**100.7**
	92.5	64.10	0.61	277	47	89	99	1.6	7.0		16.30	**100.7**
	95	65.90	0.61	279	47	89	99	1.55	7.0		16.32	**102.7**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	3- SVOC	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 22, 2015	**Operator:**	MT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.86 "Hg	**CWTR (g)**	671.5
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	24.7
Nozzle	0.2563 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.47 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.03
CO2%	12.07
COppm	11.6

Measured H2O
17.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	97.5	67.62	0.58	279	47	89	100	1.55	7.0		15.91	**98.3**
11	100	69.35	0.62	279	47	89	100	1.6	7.0		16.45	**101.3**
	102.5	71.12	0.62	279	47	90	100	1.6	7.0		16.45	**100.3**
	105	72.90	0.62	279	47	90	100	1.6	7.0		16.45	**100.7**
	107.5	74.65	0.61	279	47	90	100	1.6	7.0		16.32	**99.0**
12	110	76.46	0.62	275	48	90	100	1.6	7.0		16.41	**103.3**
	112.5	78.23	0.63	275	48	90	100	1.6	7.0		16.54	**99.9**
	115	80.01	0.635	275	48	90	100	1.6	7.0		16.60	**99.7**
	117.5	81.76	0.635	275	48	90	100	1.6	7.0		16.60	**97.6**
	120	83.54								0.47		**99.3**
1	0	84.01	0.77	275	80	88	88	2.2	9.0		18.28	
	2.5	85.42	0.77	281	56	88	88	2.2	9.0		18.36	72.4
	5	87.34	0.73	281	52	89	88	2	9.0		17.87	**99.0**
	7.5	89.39	0.73	280	50	88	90	1.95	9.0		17.86	**108.4**
2	10	91.30	0.71	280	49	88	92	1.9	9.0		17.62	**100.9**
	12.5	93.22	0.71	280	49	88	93	1.8	9.0		17.62	**102.6**
	15	95.10	0.715	280	49	88	93	1.8	9.0		17.68	**100.3**
	17.5	97.00	0.74	281	49	88	95	1.8	9.0		18.00	**101.1**
3	20	98.87	0.76	280	49	88	96	1.9	9.0		18.23	**97.7**
	22.5	100.73	0.725	280	49	88	97	1.9	9.0		17.80	**95.7**
	25	102.65	0.725	281	49	88	97	1.9	9.0		17.81	**101.1**
	27.5	104.60	0.74	281	48	88	97	1.9	9.0		18.00	**102.7**
4	30	106.52	0.715	280	48	88	97	1.9	9.0		17.68	**100.1**
	32.5	108.47	0.65	280	48	88	98	1.7	9.0		16.86	**103.4**
	35	110.30	0.66	280	48	88	98	1.7	9.0		16.98	**101.6**
	37.5	112.17	0.65	280	48	88	98	1.7	9.0		16.86	**103.0**
5	40	113.94	0.64	280	48	88	98	1.75	9.0		16.73	**98.3**
	42.5	115.75	0.64	280	48	88	98	1.75	9.0		16.73	**101.3**
	45	117.57	0.57	279	49	89	98	1.55	9.0		15.77	**101.8**
	47.5	119.32	0.57	279	49	89	98	1.5	8.0		15.77	**103.6**
6	50	121.01	0.56	279	49	89	98	1.5	8.0		15.63	**100.0**
	52.5	122.67	0.57	279	49	89	98	1.5	8.0		15.77	**99.1**
	55	124.40	0.55	280	49	89	99	1.4	8.0		15.50	**102.4**
	57.5	126.09	0.56	280	49	89	99	1.4	8.0		15.65	**101.7**
7	60	127.74	0.49	278	50	89	99	1.25	8.0		14.61	**98.4**
	62.5	129.30	0.495	278	50	89	99	1.3	8.0		14.69	**99.3**
	65	130.85	0.48	278	50	89	99	1.3	8.0		14.47	**98.2**
	67.5	132.41	0.495	279	51	89	99	1.35	8.0		14.70	**100.4**
8	70	134.00	0.47	279	50	89	99	1.35	8.0		14.32	**100.8**

ORTECH Environmental

Plant: Covanta - DYEC
Test No.: 3- SVOC
Date: October 22, 2015

Plant Location: Courtice, ON
Test Location: Boiler No. 2 BH Outlet
Operator: MT

Pitot Factor	0.846	**Filter (mg)**	0		
DGMCF	0.989	**Probe (mg)**	0		
Barometric Pressure	29.86 "Hg	**CWTR (g)**	671.5		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	24.7		
Nozzle	0.2563 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.47	ft^3
Length	0.000 ft	**Reading Interval**		2.5	minutes
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	7.03
CO2%	12.07
COppm	11.6

Measured H2O
17.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	72.5	135.60	0.49	278	50	89	99	1.3	8.0		14.61	**104.1**
	75	137.18	0.495	277	48	89	99	1.3	8.0		14.68	**100.6**
	77.5	138.75	0.49	277	48	89	99	1.3	8.0		14.61	**99.4**
9	80	140.35	0.485	277	47	89	99	1.3	8.0		14.53	**101.8**
	82.5	141.95	0.49	277	47	89	99	1.3	8.0		14.61	**102.3**
	85	143.51	0.56	277	47	89	99	1.45	8.0		15.61	**99.3**
	87.5	145.18	0.57	274	47	88	98	1.5	8.0		15.72	**99.4**
10	90	146.87	0.565	274	47	88	98	1.5	8.0		15.65	**99.7**
	92.5	148.54	0.57	275	47	88	98	1.5	8.0		15.73	**99.0**
	95	150.22	0.565	275	47	88	98	1.5	8.0		15.66	**99.2**
	97.5	151.92	0.57	275	47	88	98	1.5	8.0		15.73	**100.8**
11	100	153.60	0.565	275	47	88	98	1.5	8.0		15.66	**99.2**
	102.5	155.30	0.53	274	47	88	98	1.45	8.0		15.16	**100.8**
	105	156.96	0.54	274	47	88	98	1.45	8.0		15.30	**101.6**
	107.5	158.62	0.57	274	47	88	98	1.6	8.0		15.72	**100.6**
12	110	160.40	0.54	275	47	88	98	1.5	8.0		15.31	**105.1**
	112.5	162.06	0.56	275	47	88	98	1.5	8.0		15.59	**100.7**
	115	163.75	0.545	275	47	88	98	1.5	8.0		15.38	**100.7**
	117.5	165.36	0.55	275	47	88	98	1.5	8.0		15.45	**97.2**
	120	167.12										**105.8**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 2 BH Outlet
Test No.:	3- SVOC
Date:	October 22, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846
DGM CORRECTION FACTOR	0.989
NOZZLE DIAMETER	6.51 mm
DRY REF GAS VOLUME SAMPLED	4.547 m^3
AVGERGE ISOKINETICITY	100.2 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	136.2 °C
AVERAGE GAS MOISTURE BY VOLUME	17.2 %
AVERAGE GAS VELOCITY	16.18 m/s
BAROMETRIC PRESSURE (Station)	101.118 Kpa
STATIC PRESSURE	-2.689 Kpa
ABSOLUTE GAS PRESSURE	98.428 Kpa
OXYGEN CONCENTRATION	7.03 %
CARBON DIOXIDE CONCENTRATION	12.07 %
CARBON MONOXIDE CONCENTRATION	11.6 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	23.90 m^3/s
DRY REF GAS FLOWRATE	14.00 Rm^3/s
DRY ADJ GAS FLOWRATE	19.61 Rm^3/s
WET REF GAS FLOWRATE	16.92 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.547 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)
Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	4- SVOC	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 28, 2015	**Operator:**	AN

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.25 "Hg	**CWTR (g)**	676.7
Static Pressure	-10.300 "H_2O	**WCBDA (g)**	19.1
Nozzle	0.2563 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.53 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	6.89
CO2%	11.70
COppm	9.4

Measured H2O
16.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	68.05	2.2	275	75	81	81	5	8.5		31.22	
	2.5	70.43	0.72	278	46	81	81	1.9	7.5		17.90	72.7
	5	72.60	0.72	278	46	81	81	1.9	7.5		17.90	115.1
	7.5	74.22	0.72	278	46	81	81	2.1	9.0		17.90	86.0
2	10	76.15	0.75	278	45	81	82	2.1	9.0		18.26	102.5
	12.5	78.17	0.75	278	45	81	82	2	9.0		18.26	105.0
	15	80.16	0.75	278	45	81	82	1.9	9.0		18.26	103.4
	17.5	82.12	0.73	278	45	81	83	1.8	9.0		18.02	101.8
3	20	84.03	0.75	278	45	81	83	1.9	9.0		18.26	100.4
	22.5	85.95	0.74	278	44	81	84	1.9	9.0		18.14	99.6
	25	87.85	0.74	278	44	82	85	1.8	9.0		18.14	99.2
	27.5	89.75	0.71	277	45	82	85	1.7	9.0		17.76	99.0
4	30	91.61	0.71	277	45	82	86	1.7	9.0		17.76	98.8
	32.5	93.44	0.69	277	45	82	86	1.7	9.0		17.51	97.1
	35	95.28	0.69	277	45	82	87	1.7	9.0		17.51	99.1
	37.5	97.11	0.68	277	45	82	87	1.7	9.0		17.38	98.4
5	40	98.92	0.68	277	45	82	88	1.7	9.0		17.38	98.1
	42.5	100.75	0.64	277	45	82	88	1.6	8.5		16.86	99.1
	45	102.54	0.62	277	45	82	88	1.5	8.0		16.59	99.9
	47.5	104.30	0.64	276	45	82	89	1.5	8.0		16.85	99.7
6	50	106.01	0.62	277	45	83	89	1.5	8.0		16.59	95.2
	52.5	107.74	0.61	277	46	83	90	1.5	8.5		16.46	97.8
	55	109.49	0.6	277	46	83	90	1.5	8.5		16.33	99.7
	57.5	111.23	0.59	277	46	83	90	1.5	8.5		16.19	99.9
7	60	112.94	0.56	276	46	83	90	1.3	8.0		15.76	99.1
	62.5	114.59	0.57	276	46	83	91	1.3	8.0		15.90	98.0
	65	116.22	0.57	277	46	83	91	1.4	8.0		15.91	95.9
	67.5	117.88	0.57	277	46	83	91	1.4	8.0		15.91	97.7
8	70	119.54	0.63	276	47	83	91	1.6	9.0		16.72	97.7
	72.5	121.30	0.61	275	46	83	91	1.6	9.0		16.44	98.5
	75	123.06	0.64	276	46	84	91	1.6	9.0		16.85	100.1
	77.5	124.83	0.65	276	47	84	91	1.7	9.0		16.98	98.2
9	80	126.64	0.62	264	46	84	91	1.6	9.0		16.45	99.7
	82.5	128.43	0.6	262	47	84	91	1.5	9.0		16.16	100.1
	85	130.19	0.6	260	47	84	91	1.5	9.0		16.14	99.9
	87.5	131.92	0.63	261	47	84	91	1.6	9.0		16.55	98.0
10	90	133.68	0.52	261	47	84	91	1.3	8.5		15.03	97.4
	92.5	135.37	0.52	259	47	84	91	1.3	8.0		15.01	102.9
	95	136.98	0.55	258	48	84	91	1.4	8.5		15.43	97.9

Plant: Covanta - DYEC
Test No.: 4- SVOC
Date: October 28, 2015

Plant Location: Courtice, ON
Test Location: Boiler No. 2 BH Outlet
Operator: AN

Pitot Factor	0.846	
DGMCF	0.989	
Barometric Pressure	29.25	"Hg
Static Pressure	-10.300	"H_2O
Nozzle	0.2563	inches
Stack Diameter	4.500	ft
Length	0.000	ft
Width	0.000	ft

Filter (mg)	0	
Probe (mg)	0	
CWTR (g)	676.7	
WCBDA (g)	19.1	
Leak Check Volume	0.53	ft^3
Reading Interval	2.5	minutes
Number of Ports	2	
Number of points / Port	12	

Combustion Gases	
O2%	6.89
CO2%	11.70
COppm	9.4

Measured H2O
16.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	97.5	138.64	0.53	258	48	84	91	1.4	8.5		15.14	**98.1**
11	100	140.33	0.63	259	48	84	92	1.6	9.0		16.52	**101.7**
	102.5	142.06	0.63	259	48	84	92	1.7	9.0		16.52	**95.5**
	105	143.91	0.62	260	47	84	91	1.6	9.0		16.40	**102.2**
	107.5	145.73	0.61	262	47	84	91	1.5	9.0		16.29	**101.5**
12	110	147.49	0.62	262	48	84	91	1.6	9.0		16.43	**99.1**
	112.5	149.28	0.6	262	48	84	91	1.5	9.0		16.16	**100.0**
	115	151.01	0.62	262	48	84	91	1.6	9.0		16.43	**98.2**
	117.5	152.80	0.6	262	48	84	91	1.5	9.0		16.16	**100.0**
	120	154.53								0.53		**98.2**
1	0	155.06	0.69	262	67	84	85	1.9	10.0		17.33	
	2.5	156.98	0.71	277	48	84	85	2	10.0		17.76	**102.3**
	5	158.97	0.69	278	45	84	86	1.8	10.0		17.52	**105.6**
	7.5	160.89	0.69	278	44	84	86	1.7	9.5		17.52	**103.3**
2	10	162.73	0.7	278	44	84	87	1.7	9.5		17.64	**98.9**
	12.5	164.57	0.7	277	44	84	88	1.7	9.5		17.63	**98.1**
	15	166.42	0.7	277	44	84	88	1.7	9.5		17.63	**98.5**
	17.5	168.26	0.72	278	44	84	89	1.8	9.5		17.90	**98.0**
3	20	170.12	0.77	278	44	84	89	2	10.0		18.51	**97.7**
	22.5	172.08	0.78	278	44	84	90	2	10.0		18.63	**99.6**
	25	174.07	0.78	278	44	84	90	1.9	10.0		18.63	**100.4**
	27.5	176.04	0.78	278	45	84	90	1.9	10.0		18.63	**99.3**
4	30	178.01	0.75	278	45	84	90	1.8	10.0		18.26	**99.3**
	32.5	179.93	0.75	278	45	84	90	1.8	10.0		18.26	**98.7**
	35	181.84	0.74	278	45	84	90	1.8	10.0		18.14	**98.2**
	37.5	183.74	0.74	278	45	84	90	1.8	10.0		18.14	**98.3**
5	40	185.66	0.69	278	45	84	90	1.7	10.0		17.52	**99.4**
	42.5	187.50	0.67	278	46	84	90	1.7	10.0		17.26	**98.6**
	45	189.33	0.67	278	46	84	90	1.7	10.0		17.26	**99.5**
	47.5	191.17	0.67	278	46	84	91	1.6	9.5		17.26	**100.0**
6	50	192.97	0.67	278	47	84	91	1.6	9.5		17.26	**97.8**
	52.5	194.77	0.61	278	47	85	91	1.4	9.0		16.47	**97.8**
	55	196.49	0.62	278	47	85	92	1.4	9.0		16.61	**97.8**
	57.5	198.18	0.62	278	47	84	92	1.5	9.0		16.61	**95.2**
7	60	199.93	0.61	278	47	85	92	1.5	9.0		16.47	**98.7**
	62.5	201.67	0.61	275	47	85	92	1.5	9.0		16.44	**98.8**
	65	203.40	0.6	277	47	85	93	1.5	9.0		16.33	**98.1**
	67.5	205.15	0.61	277	47	85	93	1.5	9.5		16.46	**100.1**
8	70	206.91	0.61	276	47	85	93	1.5	9.5		16.45	**99.8**

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	4- SVOC	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 28, 2015	**Operator:**	AN

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.25 "Hg	**CWTR (g)**	676.7
Static Pressure	-10.300 "H_2O	**WCBDA (g)**	19.1
Nozzle	0.2563 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.53 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	6.89
CO2%	11.70
COppm	9.4

Measured H2O
16.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	72.5	208.62	0.59	276	48	85	93	1.5	9.5		16.18	**96.9**
	75	210.34	0.58	276	48	85	93	1.4	9.0		16.04	**99.1**
	77.5	212.03	0.63	276	48	85	93	1.6	9.5		16.72	**98.2**
9	80	213.78	0.62	276	48	85	93	1.6	9.5		16.58	**97.6**
	82.5	215.58	0.63	275	47	85	93	1.5	9.5		16.71	**101.2**
	85	217.36	0.63	275	47	85	93	1.6	9.5		16.71	**99.2**
	87.5	219.16	0.64	275	48	85	93	1.6	10.0		16.84	**100.3**
10	90	220.93	0.63	275	47	85	93	1.6	10.0		16.71	**97.9**
	92.5	222.70	0.63	276	47	86	93	1.6	10.0		16.72	**98.7**
	95	224.48	0.65	276	46	85	93	1.7	10.0		16.98	**99.2**
	97.5	226.29	0.64	276	46	86	93	1.6	10.0		16.85	**99.4**
11	100	228.10	0.55	276	46	86	93	1.4	9.0		15.62	**100.1**
	102.5	229.80	0.55	276	47	86	93	1.3	9.0		15.62	**101.3**
	105	231.44	0.55	276	47	86	93	1.3	9.0		15.62	**97.7**
	107.5	233.06	0.54	276	46	86	93	1.3	9.0		15.48	**96.5**
12	110	234.69	0.55	274	47	86	94	1.4	9.0		15.60	**98.0**
	112.5	236.35	0.57	274	47	86	94	1.4	9.0		15.88	**98.7**
	115	238.04	0.54	274	46	86	94	1.3	9.0		15.46	**98.7**
	117.5	239.70	0.55	275	47	86	94	1.4	9.0		15.61	**99.6**
	120	241.35										**98.2**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 2 BH Outlet
Test No.:	4- SVOC
Date:	October 28, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846
DGM CORRECTION FACTOR	0.989
NOZZLE DIAMETER	6.51 mm
DRY REF GAS VOLUME SAMPLED	4.669 m^3
AVGERGE ISOKINETICITY	98.9 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	134.4 °C
AVERAGE GAS MOISTURE BY VOLUME	16.9 %
AVERAGE GAS VELOCITY	17.03 m/s
BAROMETRIC PRESSURE (Station)	99.052 Kpa
STATIC PRESSURE	-2.565 Kpa
ABSOLUTE GAS PRESSURE	96.487 Kpa
OXYGEN CONCENTRATION	6.89 %
CARBON DIOXIDE CONCENTRATION	11.70 %
CARBON MONOXIDE CONCENTRATION	9.4 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.17 m^3/s
DRY REF GAS FLOWRATE	14.57 Rm^3/s
DRY ADJ GAS FLOWRATE	20.62 Rm^3/s
WET REF GAS FLOWRATE	17.53 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.669 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)
Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	5- SVOC	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 29, 2015	**Operator:**	AN

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.2 "Hg	**CWTR (g)**	657.1
Static Pressure	-10.300 "H_2O	**WCBDA (g)**	125.2
Nozzle	0.2563 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.65 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	6.95
CO2%	11.53
COppm	12.1

Measured H2O
17.8 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	42.31	0.76	269	64	80	81	2	8.5		18.33	
	2.5	44.18	0.77	278	53	79	78	2.2	9.5		18.57	**96.9**
	5	46.29	0.77	278	52	79	78	2.1	9.0		18.57	**109.7**
	7.5	48.34	0.8	278	51	79	78	2.1	9.0		18.93	**106.6**
2	10	50.36	0.81	279	51	78	78	2.1	9.0		19.06	**103.0**
	12.5	52.39	0.79	279	49	78	78	2	9.0		18.82	**103.1**
	15	54.40	0.79	279	47	78	79	2	9.0		18.82	**103.3**
	17.5	56.37	0.77	278	47	78	80	1.9	9.0		18.57	**101.2**
3	20	58.31	0.78	278	47	78	80	1.9	9.0		18.69	**100.7**
	22.5	60.27	0.77	278	47	77	81	1.8	9.0		18.57	**101.1**
	25	62.17	0.76	278	47	77	81	1.9	9.0		18.45	**98.6**
	27.5	64.10	0.78	278	46	77	82	1.9	9.0		18.69	**100.9**
4	30	66.04	0.73	278	46	77	82	1.7	8.5		18.08	**100.0**
	32.5	67.92	0.75	279	46	77	82	1.8	8.5		18.34	**100.1**
	35	69.81	0.77	279	46	76	82	1.9	9.0		18.58	**99.4**
	37.5	71.72	0.81	280	46	76	82	1.9	9.0		19.07	**99.2**
5	40	73.65	0.76	281	46	76	82	1.9	9.0		18.48	**97.8**
	42.5	75.60	0.71	281	46	76	82	1.7	9.0		17.87	**102.1**
	45	77.47	0.68	281	46	76	82	1.6	8.5		17.48	**101.3**
	47.5	79.27	0.69	281	46	75	82	1.6	8.5		17.61	**99.6**
6	50	81.07	0.66	281	46	75	82	1.7	8.5		17.22	**98.9**
	52.5	82.88	0.65	281	46	75	82	1.6	8.5		17.09	**101.7**
	55	84.66	0.65	281	46	75	82	1.6	8.5		17.09	**100.8**
	57.5	86.43	0.65	281	46	75	82	1.6	8.5		17.09	**100.2**
7	60	88.19	0.64	280	46	75	82	1.6	8.5		16.95	**99.7**
	62.5	89.97	0.64	281	46	75	82	1.6	8.5		16.96	**101.5**
	65	91.73	0.64	281	46	74	82	1.6	8.5		16.96	**100.4**
	67.5	93.48	0.66	281	46	74	82	1.6	8.5		17.22	**100.0**
8	70	95.24	0.67	281	45	74	82	1.7	9.0		17.35	**99.0**
	72.5	97.05	0.68	281	45	74	82	1.7	9.0		17.48	**101.1**
	75	98.89	0.7	281	44	74	82	1.7	9.0		17.74	**102.0**
	77.5	100.70	0.66	281	44	74	82	1.6	9.0		17.22	**98.9**
9	80	102.53	0.68	280	44	74	81	1.7	9.0		17.47	**102.9**
	82.5	104.34	0.7	279	44	74	81	1.7	9.0		17.71	**100.4**
	85	106.17	0.7	279	44	73	81	1.7	9.0		17.71	**99.9**
	87.5	107.99	0.71	279	44	73	81	1.7	9.0		17.84	**99.5**
10	90	109.85	0.66	271	44	73	81	1.6	9.0		17.11	**101.0**
	92.5	111.67	0.68	271	44	73	81	1.7	9.0		17.37	**101.9**
	95	113.47	0.67	270	44	73	81	1.7	9.0		17.23	**99.3**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	5- SVOC	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 29, 2015	**Operator:**	AN

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.2 "Hg	**CWTR (g)**	657.1
Static Pressure	-10.300 "H_2O	**WCBDA (g)**	125.2
Nozzle	0.2563 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.65 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	6.95
CO2%	11.53
COppm	12.1

Measured H2O
17.8 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	97.5	115.28	0.67	269	44	73	81	1.7	9.0		17.21	**100.5**
11	100	117.08	0.6	271	44	73	81	1.4	8.5		16.31	**99.9**
	102.5	118.79	0.6	272	45	73	81	1.4	8.5		16.32	**100.3**
	105	120.47	0.6	273	45	72	81	1.5	8.5		16.33	**98.6**
	107.5	122.19	0.59	273	45	72	81	1.5	8.5		16.20	**101.2**
12	110	123.94	0.59	273	50	68	68	1.4	8.5		16.20	**103.8**
	112.5	125.55	0.58	273	46	68	68	1.4	8.5		16.06	**97.0**
	115	127.22	0.58	273	44	68	68	1.4	8.5		16.06	**101.5**
	117.5	128.85	0.6	273	44	68	69	1.4	8.5		16.33	**99.1**
	120	130.51								0.65		**99.1**
1	0	131.16	0.79	263	50	68	69	2.2	11.0		18.61	
	2.5	133.09	0.81	275	45	68	70	2.1	11.0		19.00	**99.9**
	5	135.14	0.78	275	44	68	70	1.9	10.0		18.65	**105.6**
	7.5	137.07	0.81	276	45	68	71	1.9	10.0		19.02	**101.2**
2	10	138.99	0.81	277	45	68	71	2	10.0		19.03	**98.8**
	12.5	140.94	0.86	278	45	68	72	2.1	10.5		19.62	**100.4**
	15	142.93	0.86	279	45	68	73	2.1	10.5		19.64	**99.5**
	17.5	144.94	0.86	279	45	68	73	2.1	10.5		19.64	**100.4**
3	20	146.94	0.85	280	45	68	73	2.1	10.5		19.53	**99.9**
	22.5	148.94	0.85	280	46	68	74	2.1	10.5		19.53	**100.6**
	25	150.93	0.85	281	46	68	74	2.1	10.5		19.55	**100.0**
	27.5	152.94	0.84	282	46	68	74	2	10.5		19.44	**101.1**
4	30	154.90	0.81	282	46	68	74	1.9	10.5		19.09	**99.2**
	32.5	156.82	0.83	282	46	69	75	2	10.5		19.33	**98.9**
	35	158.80	0.83	283	46	69	75	2	10.5		19.34	**100.6**
	37.5	160.76	0.83	284	46	69	75	2	10.5		19.35	**99.7**
5	40	162.63	0.75	284	46	69	76	2	10.5		18.40	**95.1**
	42.5	164.54	0.77	285	46	69	76	1.9	10.5		18.65	**102.1**
	45	166.47	0.79	285	46	69	76	1.9	10.5		18.90	**101.9**
	47.5	168.38	0.79	286	46	69	76	1.9	10.5		18.91	**99.6**
6	50	170.30	0.77	286	46	69	76	1.8	10.5		18.67	**100.1**
	52.5	172.20	0.74	286	45	69	77	1.7	10.0		18.30	**100.4**
	55	174.05	0.74	287	43	70	77	1.7	10.0		18.31	**99.6**
	57.5	175.89	0.73	287	43	70	77	1.7	10.0		18.19	**99.0**
7	60	177.74	0.71	286	43	70	77	1.6	10.0		17.93	**100.2**
	62.5	179.54	0.72	286	43	70	78	1.7	10.0		18.05	**98.8**
	65	181.37	0.72	285	43	70	78	1.7	10.0		18.04	**99.7**
	67.5	183.21	0.71	285	43	70	78	1.6	10.0		17.91	**100.1**
8	70	185.00	0.73	284	43	70	78	1.8	10.0		18.15	**98.1**

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	5- SVOC	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 29, 2015	**Operator:**	AN

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.2 "Hg	**CWTR (g)**	657.1
Static Pressure	-10.300 "H_2O	**WCBDA (g)**	125.2
Nozzle	0.2563 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.65 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	6.95
CO2%	11.53
COppm	12.1

Measured H2O
17.8 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	72.5	186.86	0.74	284	43	70	78	1.9	10.5		18.28	**100.5**
	75	188.76	0.72	284	43	70	78	1.8	10.5		18.03	**102.0**
	77.5	190.66	0.72	284	43	70	78	1.7	10.0		18.03	**103.4**
9	80	192.51	0.74	281	43	70	78	1.8	10.5		18.24	**100.6**
	82.5	194.39	0.74	280	43	70	78	1.8	10.5		18.23	**100.7**
	85	196.28	0.75	280	44	70	78	1.8	10.5		18.35	**101.1**
	87.5	198.15	0.72	280	44	71	78	1.6	11.0		17.98	**99.4**
10	90	199.92	0.73	281	44	71	78	1.7	12.0		18.11	**95.9**
	92.5	201.71	0.73	281	44	71	78	1.8	12.0		18.11	**96.4**
	95	203.57	0.75	281	44	71	77	1.9	13.0		18.36	**100.2**
	97.5	205.48	0.73	280	44	71	77	1.9	13.0		18.10	**101.6**
11	100	207.40	0.7	280	44	71	77	1.7	13.0		17.73	**103.5**
	102.5	209.30	0.69	281	45	71	76	1.6	12.0		17.61	**104.5**
	105	211.11	0.69	281	48	71	76	1.6	12.0		17.61	**100.4**
	107.5	212.88	0.69	281	49	71	76	1.6	12.0		17.61	**98.2**
12	110	214.69	0.58	281	49	71	76	1.3	10.0		16.15	**100.4**
	112.5	216.33	0.58	280	50	71	76	1.3	10.0		16.14	**99.2**
	115	217.92	0.58	280	52	71	77	1.4	10.5		16.14	**96.1**
	117.5	219.49	0.58	280	52	71	77	1.5	11.0		16.14	**94.8**
	120	221.30										**109.3**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 2 BH Outlet
Test No.:	5- SVOC
Date:	October 29, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846
DGM CORRECTION FACTOR	0.989
NOZZLE DIAMETER	6.51 mm
DRY REF GAS VOLUME SAMPLED	4.918 m^3
AVGERGE ISOKINETICITY	100.5 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	137.5 °C
AVERAGE GAS MOISTURE BY VOLUME	17.8 %
AVERAGE GAS VELOCITY	17.99 m/s
BAROMETRIC PRESSURE (Station)	98.883 Kpa
STATIC PRESSURE	-2.565 Kpa
ABSOLUTE GAS PRESSURE	96.318 Kpa
OXYGEN CONCENTRATION	6.95 %
CARBON DIOXIDE CONCENTRATION	11.53 %
CARBON MONOXIDE CONCENTRATION	12.1 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.58 m^3/s
DRY REF GAS FLOWRATE	15.08 Rm^3/s
DRY ADJ GAS FLOWRATE	21.25 Rm^3/s
WET REF GAS FLOWRATE	18.35 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.918 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	6- SVOC	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 29, 2015	**Operator:**	AN

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.29 "Hg	**CWTR (g)**	755
Static Pressure	-10.300 "H_2O	**WCBDA (g)**	17.6
Nozzle	0.2563 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.41 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.05
CO2%	11.55
COppm	12.6

Measured H2O
17.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	25.20	0.69	266	61	69	69	1.7	6.0		17.41	
	2.5	27.07	0.71	274	48	69	69	1.7	6.0		17.75	**103.8**
	5	28.96	0.74	276	47	69	69	1.7	6.0		18.15	**104.0**
	7.5	30.61	0.72	276	47	69	70	1.7	6.0		17.90	**89.1**
2	10	32.40	0.79	277	46	69	72	1.8	6.5		18.77	**97.9**
	12.5	34.27	0.78	277	46	69	73	1.8	7.0		18.65	**97.5**
	15	36.16	0.79	277	46	69	75	1.9	7.0		18.77	**99.1**
	17.5	38.09	0.78	278	45	69	76	1.9	7.0		18.66	**100.4**
3	20	39.99	0.77	278	45	69	76	1.8	7.0		18.54	**99.4**
	22.5	41.87	0.77	278	45	70	77	1.9	7.0		18.54	**99.0**
	25	43.77	0.79	278	45	70	78	2	7.0		18.78	**99.9**
	27.5	45.73	0.77	278	45	70	78	1.9	7.0		18.54	**101.7**
4	30	47.67	0.7	278	44	70	79	1.6	6.5		17.68	**101.9**
	32.5	49.44	0.7	278	44	70	79	1.7	6.5		17.68	**97.3**
	35	51.25	0.71	278	44	70	79	1.8	6.5		17.80	**99.6**
	37.5	53.11	0.72	278	43	70	80	1.8	7.0		17.93	**101.6**
5	40	54.98	0.65	278	43	71	81	1.5	6.5		17.03	**101.4**
	42.5	56.74	0.67	279	43	71	80	1.6	6.5		17.30	**100.1**
	45	58.54	0.67	279	43	71	80	1.6	6.5		17.30	**101.1**
	47.5	60.34	0.66	279	43	71	81	1.6	6.5		17.18	**101.1**
6	50	62.11	0.64	279	43	71	81	1.5	6.5		16.91	**100.0**
	52.5	63.85	0.64	279	43	71	81	1.6	6.5		16.91	**99.8**
	55	65.59	0.65	279	43	71	81	1.7	7.0		17.04	**99.9**
	57.5	67.38	0.66	280	43	71	81	1.7	7.0		17.19	**102.0**
7	60	69.19	0.62	280	43	71	81	1.5	7.0		16.66	**102.4**
	62.5	70.94	0.61	280	43	71	81	1.5	7.0		16.52	**102.1**
	65	72.67	0.61	280	43	71	81	1.5	6.5		16.52	**101.8**
	67.5	74.36	0.62	280	43	71	81	1.5	6.5		16.66	**99.4**
8	70	76.08	0.66	280	43	71	81	1.6	7.0		17.19	**100.3**
	72.5	77.86	0.66	280	43	71	81	1.6	7.0		17.19	**100.7**
	75	79.64	0.66	280	43	71	81	1.6	7.0		17.19	**100.7**
	77.5	81.43	0.66	280	43	71	81	1.6	7.0		17.19	**101.2**
9	80	83.21	0.66	278	42	70	80	1.6	7.0		17.16	**100.7**
	82.5	84.98	0.66	278	42	70	80	1.6	7.0		17.16	**100.2**
	85	86.76	0.67	278	41	70	80	1.7	7.0		17.29	**100.7**
	87.5	88.58	0.66	277	41	70	80	1.6	7.0		17.15	**102.2**
10	90	90.36	0.67	277	41	70	80	1.6	7.0		17.28	**100.7**
	92.5	92.16	0.68	277	41	70	80	1.6	7.0		17.41	**101.0**
	95	93.96	0.65	278	41	70	80	1.6	7.0		17.03	**100.3**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	6- SVOC	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 29, 2015	**Operator:**	AN

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.29 "Hg	**CWTR (g)**	755
Static Pressure	-10.300 "H_2O	**WCBDA (g)**	17.6
Nozzle	0.2563 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.41 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.05
CO2%	11.55
COppm	12.6

Measured H2O
17.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	97.5	95.74	0.65	277	41	70	80	1.6	7.0		17.02	**101.5**
11	100	97.51	0.6	277	41	70	80	1.5	7.0		16.35	**100.9**
	102.5	99.24	0.61	277	41	70	80	1.5	7.0		16.49	**102.6**
	105	100.97	0.61	277	41	70	80	1.5	7.0		16.49	**101.7**
	107.5	102.68	0.61	277	41	70	80	1.5	7.0		16.49	**100.6**
12	110	104.38	0.49	275	42	70	80	1.1	6.0		14.76	**100.0**
	112.5	105.94	0.49	275	41	70	80	1.1	6.0		14.76	**102.1**
	115	107.44	0.49	275	41	70	81	1.1	6.0		14.76	**98.2**
	117.5	108.97	0.48	275	41	70	80	1.1	6.0		14.61	**100.1**
	120	110.46								0.41		**98.5**
1	0	110.87	0.77	271	51	69	74	1.9	7.5		18.45	
	2.5	112.74	0.72	277	44	70	76	1.8	7.5		17.91	**98.2**
	5	114.64	0.73	278	43	70	76	1.8	7.5		18.05	**103.3**
	7.5	116.52	0.71	278	44	70	77	1.8	7.5		17.80	**101.6**
2	10	118.37	0.81	279	44	70	77	2	8.0		19.03	**101.3**
	12.5	120.31	0.83	280	43	70	77	2	8.0		19.27	**99.5**
	15	122.28	0.81	280	44	70	78	2	8.0		19.04	**99.9**
	17.5	124.24	0.83	280	44	70	78	2	8.0		19.27	**100.5**
3	20	126.18	0.83	280	44	70	78	2	8.0		19.27	**98.3**
	22.5	128.18	0.83	280	44	70	78	2	8.0		19.27	**101.3**
	25	130.17	0.82	280	44	69	78	2	8.0		19.16	**100.8**
	27.5	132.11	0.83	280	45	70	79	2	8.0		19.27	**99.0**
4	30	134.10	0.76	280	45	70	78	1.8	8.0		18.44	**100.7**
	32.5	136.01	0.77	280	45	70	78	1.8	8.0		18.56	**101.1**
	35	137.91	0.78	280	45	70	78	1.9	8.0		18.68	**99.9**
	37.5	139.83	0.78	280	45	69	79	1.9	8.0		18.68	**100.3**
5	40	141.74	0.78	281	45	70	78	1.9	8.0		18.70	**99.8**
	42.5	143.65	0.81	281	44	69	78	2	8.5		19.05	**99.9**
	45	145.62	0.8	281	43	69	78	2	8.5		18.93	**101.2**
	47.5	147.59	0.8	281	43	70	78	1.9	8.5		18.93	**101.8**
6	50	149.52	0.71	281	43	69	78	1.7	8.0		17.84	**99.7**
	52.5	151.37	0.72	282	43	69	78	1.7	8.0		17.98	**101.4**
	55	153.18	0.72	281	43	69	78	1.7	8.0		17.96	**98.6**
	57.5	155.03	0.72	281	43	69	78	1.7	8.0		17.96	**100.7**
7	60	156.88	0.65	281	43	69	78	1.7	8.0		17.07	**100.7**
	62.5	158.68	0.67	281	43	69	78	1.6	7.5		17.33	**103.2**
	65	160.47	0.65	282	43	69	78	1.5	7.5		17.08	**101.0**
	67.5	162.22	0.66	281	43	69	79	1.6	7.5		17.20	**100.3**
8	70	163.98	0.68	281	43	69	79	1.7	8.0		17.46	**100.0**

ORTECH Environmental

Plant:	Covanta - DYEC	**Plant Location:**	Courtice, ON
Test No.:	6- SVOC	**Test Location:**	Boiler No. 2 BH Outlet
Date:	October 29, 2015	**Operator:**	AN

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.29 "Hg	**CWTR (g)**	755
Static Pressure	-10.300 "H_2O	**WCBDA (g)**	17.6
Nozzle	0.2563 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.41 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	7.05
CO2%	11.55
COppm	12.6

Measured H2O
17.9 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	72.5	165.80	0.68	280	43	69	79	1.7	8.0		17.45	**101.9**
	75	167.61	0.67	281	43	69	79	1.6	8.0		17.33	**101.3**
	77.5	169.40	0.68	281	43	69	78	1.7	8.0		17.46	**100.9**
9	80	171.20	0.68	280	43	69	79	1.7	8.0		17.45	**100.9**
	82.5	173.02	0.69	280	43	69	79	1.7	8.0		17.57	**101.8**
	85	174.85	0.71	280	43	69	79	1.9	8.0		17.83	**101.6**
	87.5	176.76	0.71	280	43	69	78	1.9	8.0		17.83	**104.6**
10	90	178.68	0.71	280	43	69	78	1.8	8.0		17.83	**105.3**
	92.5	180.53	0.71	280	43	69	78	1.7	8.0		17.83	**101.4**
	95	182.33	0.71	277	43	69	79	1.7	8.0		17.79	**98.6**
	97.5	184.16	0.7	276	44	69	78	1.7	8.0		17.65	**100.0**
11	100	185.98	0.7	276	44	69	78	1.7	8.0		17.65	**100.2**
	102.5	187.79	0.7	276	44	69	78	1.7	8.0		17.65	**99.6**
	105	189.62	0.69	277	44	69	78	1.6	8.0		17.54	**100.7**
	107.5	191.43	0.7	276	44	69	78	1.7	8.0		17.65	**100.4**
12	110	193.23	0.55	276	44	69	78	1.3	7.5		15.65	**99.1**
	112.5	194.90	0.56	274	45	69	78	1.3	7.5		15.77	**103.6**
	115	196.51	0.58	275	45	69	78	1.4	7.5		16.06	**98.8**
	117.5	198.17	0.58	275	45	69	79	1.4	7.5		16.06	**100.2**
	120	199.97										**108.6**

ORTECH Environmental

Plant:	Covanta - DYEC
Plant Location:	Courtice, ON
Test Location:	Boiler No. 2 BH Outlet
Test No.:	6- SVOC
Date:	October 29, 2015

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846
DGM CORRECTION FACTOR	0.989
NOZZLE DIAMETER	6.51 mm
DRY REF GAS VOLUME SAMPLED	4.830 m^3
AVGERGE ISOKINETICITY	100.6 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	136.9 °C
AVERAGE GAS MOISTURE BY VOLUME	17.9 %
AVERAGE GAS VELOCITY	17.58 m/s
BAROMETRIC PRESSURE (Station)	99.187 Kpa
STATIC PRESSURE	-2.565 Kpa
ABSOLUTE GAS PRESSURE	96.623 Kpa
OXYGEN CONCENTRATION	7.05 %
CARBON DIOXIDE CONCENTRATION	11.55 %
CARBON MONOXIDE CONCENTRATION	12.6 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.97 m^3/s
DRY REF GAS FLOWRATE	14.79 Rm^3/s
DRY ADJ GAS FLOWRATE	20.69 Rm^3/s
WET REF GAS FLOWRATE	18.01 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.830 m^3
PARTICULATE CONC. - ACTUAL		0.000 mg/m^3
PARTICULATE CONC. - DRY REF		0.000 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.000 mg/m^4
PARTICULATE CONC. - WET REF		0.000 mg/m^3
PARTICULATE EMISSION RATE		0.00000 g/s

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F)and 1 atmosphere, adjusted to 11% oxygen by volume

APPENDIX 42

CALPUFF Zip Files
(CD)

APPENDIX 43

Zorix Environmental Odour Report
(107 pages)

Specialists in Odour
and VOC Issues

Source Test Report
Odour Test at
Durham York Energy Centre

Prepared for: **Durham York Renewable Energy LP**
1835 Energy Drive
Courtice, Ontario L7E 2R2

Prepared by: Michael R. E. Rix, B.Sc., QEP
Specialist in Odour Impact Assessments
and
Tom Vallarino, A.Sc.T., EPt
Project Technologist

Report No.: **14-290-R1.1**

Date: November 23, 2015

REPORT

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1 INTRODUCTION

The Durham York Energy Centre (DYEC) is an energy-from-waste (EFW) facility located in Clarington, Ontario, in Durham Region. The facility accepts municipal solid waste (MSW) from the Regional Municipalities of Durham and York, and uses the MSW as fuel to generate electricity. One of many tests required by the Environmental Compliance Approval (ECA) at the DYEC is a test for potential odour emissions. This requirement was included as an element of the Odour Management and Mitigation Plan, which was required to meet conditions in the ECA and in the Environmental Assessment (EA) Approval for the project. A copy of the ECA is included in Appendix A.

The odour testing requirement is described in Section 6.2 of the Odour Management and Mitigation Plan. This states that triplicate samples will be collected from the charging floor during normal operation. A Test Plan was submitted to the MOECC based on this requirement, and this plan further stated that two tests will be conducted on consecutive days, the first day being at the beginning of a delivery period (i.e. after a weekend). Triplicate samples will be collected on each day. Tests will be conducted as per Method ON-6; collection in gas sample bags followed by analysis by an 8-member odour panel.

The sampling location was chosen to represent the only significant odour source at the facility - odours from the tipping area and storage pit. However, the building is designed so that these odours should not be released directly to the outside environment. Air from this area is exclusively used as combustion air for the furnaces, and by design the air flow to the furnaces is sufficient to contain odours and dust by induced air flow. The design ensures that any odours in the tipping building cannot escape, but are drawn through the combustion process, which then will completely destroy the odours due to the high temperatures and residence time of the combustion system. The untreated odour emissions from the building were used to calculate a hypothetical worst-case odour emission which could occur if both combustion trains at the facility are not in operation, but the fans remain on to ventilate the boiler for outage work. Under this scenario, the untreated odour emissions would be dispersed from the stack.

Testing was conducted following methodologies outlined in the Ontario Source Testing Code (OSTC) dated 2010, PIBs#1310e03 where applicable.

A Pre-Test Plan was submitted to the Source Assessment group, Technology Standards Section, Standards Development Branch on September 17, 2014, and test methods were accepted by the MOE in a letter (TSS File No.: CR:SA:109194:14) dated September 19, 2014. A copy of the Pre-Test Plan review is in Appendix B. Odour Source Testing was conducted on October 8 and 9, 2015 and was witnessed by Guillermo Azocar of the MOECC Standards Development Branch. Although sampling was conducted later in the week of waste receipts this was deemed an acceptable deviation from the pre-test plan.

Triplicate samples for odour were collected from the indoor ambient air in the charging area of the tipping building. The maximum air flow rate for the system during outages was used to calculate an odour emission rate for the facility for the hypothetical worst-case emission scenario.

2 Key Personnel

The following identifies key personnel who will be involved with the odour source testing program:

Organization	Contact	Contact Details
Durham York Renewable Energy, L.P.	Matt Neild, Facility Manager	Tel: (905) 404-4030 Fax (905) 404-6745 Email: htitus@covanta.com
	Amanda Huxter, Environmental Specialist	Tel: (905) 404-4041 Fax: (905) 404-6745 Email: ahuxter@covanta.com
Durham York Energy Centre	Leon Brasowski, Project Coordinator	Tel: (862) 345-5306 Fax: (862) 345-5210 Email: lbrasowski@covanta.com
ZORIX Environmental	Michael Rix, Odour Assessment Specialist	Tel: (905) 829-3939 Fax: (905) 829-3935 Email: mrix@zorix.ca
	Tom Vallarino, Senior Technologist	Email: tvallarino@zorix.ca

3 Facility Description

The Facility is operated by Covanta Durham York Renewable Energy Limited Partnership (DYRE) under contract from the Regions of Durham and York. The Facility accepts waste from the Regions of Durham and York. The sources of waste are post-diversion residual waste collected by the Regions' municipal curbside collection programs, municipal public drop-off centers and transfer stations or from Regional operations where the Regions' have waste management procedures in place.

The maximum waste processing rate for the facility established by the ECA is 140,000 tonnes/year of waste. The Facility is permitted to operate on a continuous basis; 24 hours/day, seven (7) days/week, 365 days/year. Waste may be delivered six (6) days per week between 7:00 am to 7:00 pm. The proposed receiving schedule may vary within these limits, depending on demand and Facility needs.

Waste will only be accepted from approved haulers that have a valid waste licence as per Section 16(2)(a) of O.Reg. 347. All incoming waste vehicles must proceed to a weigh scale to allow the vehicle weight, waste type and source to be determined and recorded by the scale operator. A maximum of 7,350 cubic metres of waste storage will be provided in the storage pit with waste stored above and below the tipping floor level.

The Facility Tipping Building is designed to draw all combustion air from above the storage pit. Induced air flow through the building helps to prevent the escape of dust and odour from the Facility. Combustion air is admitted to the tipping area from outside the building either through the entrance/exit doors when opened, or manually operable louvers in the tipping building walls.

The Facility consists of two (2) thermal treatment trains, each equipped with independently operated boilers/furnaces and air pollution control equipment. Table 1 presents general information about the Facility relevant to this Plan.

Table 1 - Facility Description

Facility:	Durham-York Energy Centre
Location:	**1835 Energy Drive, Courtice, Ontario, L1E 2R2** **Clarington Energy Business Park** **Clarington, Ontario**
Main activities / equipment used:	**Thermal Treatment of Solid Waste**
Production:	**140,000 tonnes/year (MCR) 218 tonnes/day per unit @ 13 MJ/kg.**
Predominant wind direction:	**Northwest**

4 Odour Source Test Program

Samples were collected from one location in the facility, the charging floor in the tipping building, on two consecutive days, October 8 and 9, 2015.

Table 2 below provides a test matrix for Odour Source Testing of the facility.

Table 2 - Test Matrix

Plant Operation	Sample Location	Parameter	No. of Samples	Sample Method	Analytical Method
1st day	Charging Floor	Odour	3	OSTC Method ON-6	EN-13725
2nd day	Charging Floor	Odour	3	OSTC Method ON-6	EN-13725

5 METHODOLOGY

Sampling was conducted in accordance with the methodologies outlined in the Ontario Source Testing Code (OSTC) dated June 2010, PIBs#1310e03 and described in the Pre-Test Plan as well as communications with the Ontario Ministry of Environment. These methodologies are described in more detail in the following sections.

5.1 Odour Sampling

The odour sampling procedure is designed to provide a representative sample of the air at the odour source, without loss of the chemical constituents of that may contribute to the odour. The time required to collect samples needs to be brief (approximately 10 minutes per sample) and results therefore provide a "snap-shot" of emissions at a given time.

5.1.1 Sample Collection Methodology

OSTC Method ON-6 requires selection of sampling methods based on the moisture content and temperature of the source, and the ambient temperatures that the sample will experience before it is analysed. A dilution sampling methodology is required if moisture content of the air stream is high. This approach is used to prevent the possibility of condensation of water vapour in the gas sample bag. Condensed water in the sample bag can absorb odorant compounds and negatively bias results.

Since the sampling location was at ambient temperature and humidity, a dilution sampling methodology was not required for the sampling at the charging floor. Samples were therefore collected using an evacuated lung sampling procedure as described in Section 6.0 of Method ON-6. The apparatus, shown in Figure 1, consisted of a length of Teflon tubing, connected to a sample bag within a rigid, air-tight case. A pump is used to evacuate the case, which then causes the sample bag to be filled through the Teflon tubing.

Tedlar gas sample bags (40 litre capacity) were used as sample containers. All bags were baked out before use and checked to ensure there was no background odour.

Each sample bag was purged once with sample and then evacuated in order to precondition the bag with the sample gas. The sample was then collected over a period of approximately 10 minutes.

Three samples were collected at each sampling location on each test day. One field blank was collected on the second day. The field blank was a sample collected at the same location using the same apparatus as described above, but with an activated carbon filter on the end of the Teflon sampling tube.

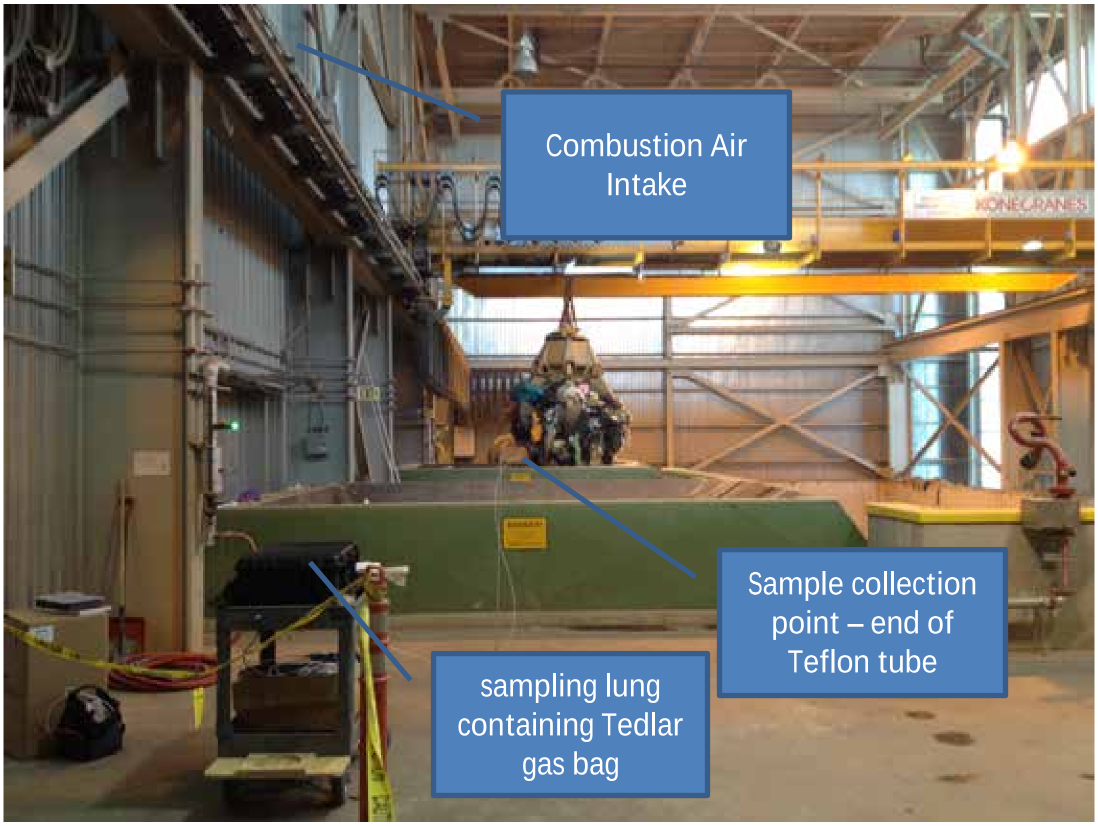

Figure 1 - Sampling Equipment and Location on Charging Deck

Sampling conditions were recorded on a field data sheet. Sample bags were identified by a numeric code. Samples were stored in opaque containers, and were transported the same day to the olfactometry laboratory.

5.1.2 Odour Evaluation (Olfactometry) Methodology

The primary purpose of the odour measurement process is to determine the odour detection threshold for each sample, expressed in odour units (OU) or odour units per cubic metre (OU/m³). Odour units may be considered a measure of the "concentration" of the odour in a sample. In general the olfactometry methodology followed the European Standard EN 13725:2003 – *Air Quality – Determination of Odour Concentration by Dynamic Olfactometry*.

The emission samples were evaluated by an eight person panel within 24 hours of sampling, on October 9, 2015. The odour evaluation process involved obtaining responses from eight pre-screened, qualified and independent panelists to the sample presented to them at various dilutions. The apparatus used to dilute the samples and present them to the panelists is referred to as a dynamic dilution olfactometer. The evaluations all took place in ZORIX's odour evaluation laboratory, which is enclosed in a specialized room, designed to provide odour-free environment for accurate and reliable evaluation. Details of the system are as follows:

Olfactometry Lab – ZORIX's odour laboratory consists of a specially constructed evaluation room with stations for eight panelists. The operator's console and other related equipment are located in a separate area adjacent to the evaluation room. Fittings, furnishings, and materials of construction used in the odour laboratory were chosen to minimize the potential for odour emission (off-gassing) and adsorption.

Ventilation System – The ventilation air supplied to the evaluation room is air conditioned and filtered through a series of activated carbon filters as well as a fine particulate filter to maintain an odourless background environment in the odour laboratory. The room is kept under a positive pressure so that any odours from the surrounding environment cannot enter the room. The supply air to the odour laboratory provides about 50 air changes per hour. The air flow pattern in the room is designed to provide an even air flow from ceiling to floor, to ensure that any odours released into the room during an evaluation session are quickly removed from the breathing zone.

Olfactometer – An olfactometer is a device or system for presenting accurate dilutions of a sample to a panel of people, incorporating a means to record the responses of these "assessors" or "panelists". ZORIX's olfactometer was designed to present odour samples to eight panelists simultaneously. Each panelist is thus responding to the identical sample under the same conditions. The olfactometer flow system is constructed of Teflon® tubing with Teflon® fittings, and glass "sniff ports". The olfactometer/nose interface or "sniff ports" have been custom designed and manufactured to provide a uniform face velocity. The flow rate for each "sniff port" is 20 litres per minute, and the ports have been sized to allow the panelist to easily sniff from the ports without the sample being diluted by ambient air.

Each of the eight evaluation booths has two ports. One of these ports is always a reference port (odourless air only) available for comparison to the odorous sample. The sample port and reference port are randomly switched, and the panelists are required to identify the port bearing the odorous sample.

A custom software program controls most aspects of the operation of the olfactometer. The olfactometer operator monitors the responses of the panelists, and controls the pace of the evaluation session, to ensure the panelists remain focused and do not become de-sensitized, and to monitor potential problems such as contamination of the olfactometer by high strength odour samples.

The olfactometer supply air is filtered through a series of high capacity activated carbon filtrations. At the beginning of the day the panel operator checks the odour from the system to ensure that it is odourless.

Panelists (Odour Assessors) – Panelists are the “sensors” in an olfactometry system. The maintenance of the pool of screened, trained, and motivated panelists is essential to obtaining reliable odour threshold data. The panelists employed by ZORIX Consultants have been drawn from the community, and have been selected based on a demonstration of a “normal” sense of smell, as shown by their response to test odorants, primarily n-butanol, and a comparison of their responses to the established acceptable range of detection as specified in EN13725.

Olfactometry Protocol - ZORIX’s olfactometer was operated in a “non-forced choice” mode, with an ascending presentation sequence (low concentration to high concentration). “Non-forced choice” means that the panelists are not required to identify which port contains the odour if they are unsure, i.e. if they think there is “no difference” between the two ports. An ascending presentation sequence, i.e. from most dilute (weakest) presentation to progressively stronger presentations, minimizes the possibility for “adaptation” or “olfactometry fatigue”, by which exposure to odour causes a reduction in sensitivity. Occasionally during the evaluation of a new sample, the initial dilution chosen as the starting point for a presentation sequence may be too low (concentration too high). In that case, the presentation sequence will be restarted at a higher dilution level, after a sufficient period of time to allow recovery from any possible temporary desensitization.

At each presentation the panelists were given about 20 seconds to evaluate the air from the two ports and make responses. The presentation protocol ensures that there is a rest period between presentations of at least 1 minute. The odorant concentration was increased by a factor of 2 or less at each presentation step.

Olfactometry Data Recording and Processing – The responses of the odour panelists to each odour presentation were logged by a data acquisition system with other olfactometer data such as dilution factors and flow rates. The responses were subsequently processed to obtain an odour detection threshold based on the geometric mean of the individual detection thresholds.

Odour calculations were based on determination of individual odour detection thresholds for each panelist as described in EN 13725:2003. A sample of n-butanol in nitrogen was also evaluated by the odour panelists on October 9 to determine if the response of the panel is consistent with the n-butanol detection criterion in EN 13725:2003.

5.2 Volumetric Flow Rate Determination

As already discussed, the odour emission rate being determined by this program is not an actual odour emission rate but is a theoretical emission rate assuming a worst-case scenario in which the furnaces are not operating to perform system maintenance. Under normal operating conditions, odours in the tipping building would be destroyed by as the air from the area is drawn into the furnaces and treated at high temperatures. Under the theoretical worst-case scenario, the furnaces would be off, but fans would continue to run and untreated emissions would be conveyed to the stack for dispersion.

The DYEC has developed and successfully implemented a Fugitive Dust and Odour Control Standard Operating Procedure (SOP) to minimize the potential of the DYEC to generate offsite odours. Included in this SOP is a procedure to mist the MSW storage area with a micro-nutrient product during periods of boiler outage. During the outage, combustion fan load is reduced to approximately 15-30% of design load, dependent on the type of maintenance work being conducted in the boiler. A variable frequency drive allows these fans to operate at a wide range of set points.

The micronutrients significantly reduce odors by biologically promoting the consumption of odour generating organics. Implementation of the Odour SOP in combination with the reduction of air flow to the stack significantly reduces actual untreated odours emissions released from the stack. To conservatively estimate the rate of untreated odour emission release from the stack a maximum outage air flow of 11 cubic meters per second (approximately 30% of the design flow of 38.7 cubic meters per second) was utilized.

6 RESULTS

Emissions from the DYEC tipping building were sampled on October 8 and October 9, 2015. All samples were evaluated in odour panel sessions on the morning of October 9.

Odour concentrations as determined by the odour panel for all samples are shown in Table 3. The "blank" or "zero" sample collected on October 9 had no measureable odour (< 11 OU/m^3). The certified standard n-butanol standard (49.9 ppm in nitrogen), was determined to have an odour concentration of 939 OU/m^3, corresponding to a detection threshold for n-butanol of 0.053 ppm, which is in the acceptable range of 0.020 to 0.080 ppm.

The total odour emission rate from the stack was calculated using the formula shown below.

$$Geom. Mean\ Odour\ Conc. \left({}^{OU}/_{m^3}\right) x\ Max. Outage\ Flow\ Rate\ (wet, ref. basis) \left({}^{m^3}/_{s}\right)$$
$$= Odour\ Emission\ Rate\ \left({}^{OU}/_{s}\right)$$

Table 4 summarizes the odour emission rates calculated on this basis for each of the two test days. Based on these results the worst-case result was 10,000 OU/s, based on the results on the first day. This odour emission rate may be used to calculate off-property odour concentrations at nearby sensitive receptors as described in Schedule "B" of the ECA for the facility. It should be emphasized again that the modelling results would show the predicted impacts for a hypothetical worst-case scenario of untreated emissions being released when furnaces are not in operation, and would not represent the impact of the facility under normal operating conditions.

Table 3 - Odour Concentration Results

Date	Test ID	Test Location	Test Condition	Sample Time	Bag No.	Sample ID	Pre-Dilution	raw OTV (odour units)	net OTV (odour units)	Geometric Mean (odour units)
8-Oct-15	1	Mezzanine of Charging Floor	Maximum Capacity on Charging Floor (1st Day)	10:38 AM	261A	3418	1	861	861	912
	2			10:48 AM	255A	3419	1	939	939	
	3			10:58 AM	260A	3420	1	939	939	
9-Oct-15	4	Mezzanine of Charging Floor	Maximum Capacity on Charging Floor (2nd Day)	8:19 AM	268	3425	1	664	664	861
	5			8:28 AM	262A	3426	1	1117	1,117	
	6			8:37 AM	276	2727	1	861	861	
	7		A/C Filtered Air (field blank)	8:52 AM	266A	3428	1	<11	<11	<11
9-Oct-15	8	Laboratory	n-butanol (49.9ppm)	11:08 AM	143A	3429	1	939	939	939

Table 4 - Odour Emission Rate

Date	Operating Condition	Odour Concentration (OU/m³)	Geometric Mean (OU/m³)	Maximum Outage Flow Rate (30% of Design)* (m³/s)	Total Odour Emission Rate (OU/s)
8-Oct-15	Maximum Capacity on Charging Floor (1st Day)	861	912	11	10,000
		939			
		939			
9-Oct-15	Maximum Capacity on Charging Floor (2nd Day)	664	861	11	9,500
		1,117			
		861			
Highest odour emission rate of the two days/conditions:					10,000

** based on design flow of 38.7m³/s from Golder Report No. 10-1151-0343 EMRP (DYEC Air Emission Monitoring Plan),*

7 CLOSURE

Should there be any questions regarding the contents of this report, please contact the undersigned.

Michael R. E. Rix, B.Sc., QEP
Project Manager
Specialist – Odour Assessments

Appendix A

Environmental Compliance Approval (ECA) No. 7306-8FDKNX

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 2
Issue Date: October 24, 2014

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and
The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership
445 South St
Morristown, New Jersey
USA 07960

Site Location: Durham York Energy Centre
1835 Energy Drive
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, as follows:

1. The address of the Site has been changed to read as follows:

   Durham York Energy Centre
   1835 Energy Drive
   Clarington Municipality, Regional Municipality of Durham
   L1E 2R2

2. The following definitions have been added:

"**Operator**" means any person other than the Regions' employees, authorized by the Regions as having the charge, management or control of any aspect of the Site and includes TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership, the partnership under the laws of Nova Scotia more particularly described in the October 6, 2014 letter from Joanna Rosengarten to the Ministry of Environment and Climate Change, and includes its successors and assignees, their successors and assignees;

"**Regions**" means any person that is responsible for the establishment or operation of the Site being approved by this Approval, and it includes The Regional Municipality of Durham and The Regional Municipality of York, their successors and assignees;

2. The following definition has been amended to read as follows:

"**Site**" means the property referred to as Durham York Energy Centre where the Owner has located and operates the Facility and the Works and located at 1835 Energy Drive in the Municipality of Clarington, Regional Municipality of Durham;

"**Owner**" within the context of this Approval, means the Regions and the Operator;

3. The following Conditions have been amended to read as follows:

"General: Change of Ownership" Conditions 1.(14) and 1.(15):

(14) The Regions shall notify the Director in writing, and forward a copy of the notification to the District Manager, within thirty (30) days of the occurrence of any changes:

(a) the ownership of the Site;
(b) the operator of the Site;
(c) the address of the Regions;
(d) the partners, where the Regions are or at any time become a partnership and a copy of the most recent declaration filed under the *Business Names Act*, R.S.O. 1990, c. B.17, as amended, shall be included in the notification;
(e) the name of the corporation where the Regions are or at any time become a corporation, other than a municipal corporation, and a copy of the most current information filed under the *Corporations Information Act*, R.S.O. 1990, c. C.39, as amended, shall be included in the notification.

(15) No portion of this Site shall be transferred or encumbered prior to or after closing of the Site unless the Director is notified in advance. In the event of any change in ownership of the Site, other than change to a successor municipality, the Regions shall notify the successor of and provide the successor with a copy of this Approval, and the Regions shall provide a copy of the notification to the District Manager and the Director.

"Service Area, Approved Waste Types, Rates And Storage: Storage Restrictions" Condition 2.(5)(e):

2.(5)(e) (i) A maximum of 630 tonnes of the Residual Waste, limited to the bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation.

(ii) The storage duration of bottom ash in the bunkers is limited to a maximum of seven (7) days.

(iii) Should additional storage location(s) and a longer storage duration be required during testing, a minimum of forty eight (48) hours before the storage parameters are changed from those approved in Condition 2.(5)(e)(i) and (ii), the Owner shall notify the District Manager, in writing, of the proposed changes and provide the reasons for the changes.

"Site Operations: Residual Waste Handling and Disposal" Condition 4.(5)(b)(iii):

4.(5)(b)(iii) The Owner may use the equipment that comes in contact with the hazardous wastes to handle other wastes provided that prior to such use, the equipment has been cleaned, as confirmed by visual inspections, to ensure the removal of any hazardous waste residues and to prevent cross contamination.

"Closure of the Site" Conditions 18.(1) and 18.(2):

(1) A minimum of nine (9) months prior to closure of the Site, the Regions shall submit, for approval by the Director, a written Closure Plan for the Site. This Plan shall include, as a minimum, a description of the work that will be done to facilitate closure of the Site and a schedule for completion of that work.

(2) Within ten (10) days after closure of the Site, the Regions shall notify the Director and the District Manager, in writing, that the Site is closed and that the approved Closure Plan has been implemented.

4. "Covanta Durham York Renewable Energy Limited Partnership" is replaced with "TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership, the partnership under the laws of Nova Scotia more particularly described in the October 6, 2014 letter from Joanna Rosengarten to the Ministry of Environment and Climate Change and includes its successors and assignees", in the Environmental Compliance Approval dated June 28, 2011 and in the Notice of Amendment dated August 12, 2014.

5. The following documents are added to Schedule "A":

   8. Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Matthew R. Mulcahy, Covanta Durham York Renewable Energy Limited Partnership, Application for Environmental Compliance Approval Application dated May

23, 2014, signed by Cliff Curtis, The Regional Municipality of Durham and Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Laura McDowell, The Regional Municipality of York, including the following attached supporting documentation:

(a) revised Section 8.0 "Ash Handling and Associated System" and revised Section 10.0 "Potable Process and Wastewater" dated May 2014, of the document entitled "Design and Operations Report", dated March 2011, prepared by Golder Associates Ltd.

(b) Drawing No. M-2530, entitled "Piping & Instrumentation Diagram Bottom Ash Lime Slurry System"

(c) Drawing No. 70258-1-ME-GA-SK-001, entitled "Covanta Durham York Hydrated Lime System for Boiler Bottom Ash"

9. E-mail dated September 10, 2014 (2:26 p.m.) from Leon Brasowski, Covanta Durham York Renewable Energy Limited Partnership, to Margaret Wojcik, Ontario Ministry of the Environment and Climate Change, providing additional supporting documentation on the proposal, including an attachment entitled "M-1500^0360 Highlighted for MOE.pdf".

10. E-mail dated October 13, 2014 (3:23 p.m.) from Leon Brasowski, Covanta Durham York Renewable Energy Limited Partnership, to Ricki Allum, Ontario Ministry of the Environment and Climate Change, providing additional supporting documentation on the legal name of the applicant, including an attachment entitled "Partnership Legal Clarification.pdf".

The reasons for this amendment to the Approval are as follows:

to approve the proposed Bottom Ash Lime Conditioning System, to correct the typographical errors in the Notice of Amendment dated August 12, 2014, to clarify the intent of the Residual Waste equipment cleaning condition and to allow different bottom ash storage conditions during testing.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and *conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.*

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*****
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of
Part II.1 of the Environmental Protection Act
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 24th day of October, 2014

Tesfaye Gebrezghi, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental*

MW/
c: District Manager, MOE York-Durham
Leon Brasowski, Covanta Energy Corporation

CONTENT COPY OF ORIGINAL

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 1
Issue Date: August 12, 2014

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and

The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
72 Osbourne Rd Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 forWaste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment,, as follows:

1. The following definition has been added:

"Contingency and Emergency Response Plan" also means the document entitled "Spill Contingency and Emergency Response Plan";

2. The following Conditions are amended to read as follows:

2.(5)(b)(iii) The Owner may use equipment used to handle the hazardous wastes to handle other wastes provided that prior to such use the equipment has been thoroughly cleaned first.

4.(5)(e) A maximum of 630 tonnes of the Residual Waste, limited to the bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is as follows:

(i) The storage duration is limited to a maximum of seven (7) days.

(ii) Should longer storage duration be required to accommodate the duration of the required compliance testing, a minimum of forty eight (48) hours before the storage extension is commenced, the Owner shall notify the District Manager of the required extension. The

notification shall include the duration of the extension and the reasons.

3. The following Conditions are added:

7.(7) (e) The Owner shall carry out the required bottom and fly ash compliance testing in accordance with the document entitled "Ash Sampling and Testing Protocol", listed in the attached Schedule.

11.8 Containment evaluations performed under the Spill Contingency and Emergency Response Plan shall be conducted by the Owner in accordance to procedures agreed by the District Manager pursuant to Conditions 8.(7)(i),(ii) and (iii).

4. The following documents have been added to Schedule "A":

4. October 31, 2013 letter from Mirka Januszkiewicz, the Regional Municipality of Durham to Ian Parrott, Ministry of the Environment and Climate Change, requesting approval of the Ash Sampling and Testing Protocol and the document entitled "Durham York Energy Centre, Ash Sampling and Testing Protocol", prepared by by Golder Associates and dated June 2014.

5. Document entitled "Durham York Energy Centre, Spill Contingency & Emergency Response Plan" prepared by Covanta Durham York Renewable Energy Limited Partnership and dated January 13, 2014, excluding section entitled "Containment Evaluation".

6. Document entitled "Durham York Energy Centre, Protocol for the Measurement of Combustion Temperature and the Development of Time and Temperature Correlations", prepared by Covanta Durham York Renewable Energy Limited Partnership and dated June 2014.

7. Document entitled "Durham York Energy Centre, Noise Monitoring and Reporting Plan", prepared by Golder Associates and dated September 2011.

The reasons for this amendment to the Approval are as follows:

to approve the "Ash Sampling and Testing Protocol" as required Condition 7.(7)(a), the "Durham York Energy Centre, Spill Contingency & Emergency Response Plan", as required Condition 11.(3), "Durham York Energy Centre, Noise Monitoring and Reporting Plan" as required Condition 7.(5)(a) and "Durham York Energy Centre, Protocol for the Measurement of Combustion Temperature and the Development of Time and Temperature Correlations" as proposed by the applicant.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;

8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary* Environmental Review Tribunal 655 Bay Street, Suite 1500 Toronto, Ontario M5G 1E5	AND	The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment 2 St. Clair Avenue West, Floor 12A Toronto, Ontario M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 12th day of August, 2014

Ian Parrott, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

MW/
c: District Manager, MOE York-Durham
n/a, The Regional Municipality of Durham

Ontario

Ministry of the Environment
Ministère de l'Environnement

CERTIFICATE OF APPROVAL
MULTI-MEDIA
Number 7306-8FDKNX
Issue Date: June 28, 2011

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and

The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
72 Osbourne Road
Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham

You have applied in accordance with Sections 9 and 27 of the Environmental Protection Act and Section 53 of the Ontario Water Resources Act for approval of:

A thermal treatment facility to be used for the receipt and manual and/or mechanical sorting of solid non-hazardous post-diversion municipal waste (Waste), temporary storage and thermal treatment of the Waste, abatement of the emissions from the processes and activities undertaken at the Site, handling, screening, sorting and/or conditioning of the residual wastes and management of the wastewater and the non-contact stormwater generated at the Site. The Facility's maximum Waste thermal treatment rate is 140,000 tonnes per year of Waste, the nominal electricity generation rate is 20 Megawatts and the nominal steam generation rate 72,000 kilograms per hour of steam.

The facility consists of the following major processes and support units:

(1) two (2) identical combustion trains, each having a nominal capacity of 218 tonnes of Waste per day venting into the atmosphere via a common exhaust stack, having an exit diameter of 1.71 metres, extending 87.6 metres above grade.

Each combustion train is an independent process train and it consists of the following main components:

(a) a stoker grate steam Boiler, having a design heat input of 118 Gigajoules per hour, equipped with a natural gas fired auxiliary Low NOx burner, having a nominal heat input of 59.5 Gigajoules per hour; and

(b) the following air pollution control equipment:

(i) a Selective Non Catalytic Reduction System (SNCR System) with ammonia injection for NOx control;
(ii) an activated carbon injection system, to reduce mercury and dioxins in flue gas;
(iii) a dry recirculation lime injection scrubber to control acid gases;
(iv) a pulse jet type baghouse to control particulate emissions;

(2) one (1) steam turbine generator set having a rated capacity of 20 Megawatts;

(3) waste and reagent storage as described in Condition 2.:

(4) fly ash conditioning system including two (2) surge bins, two (2) pugmills and seven (7) curing/storage bunkers;

(5) bottom ash sorting system including conveyors, screens, a rotary drum magnet and an eddy separator;

(6) one (1) emergency diesel generator, rated at 250 Kilowatts;

(7) natural gas-fired combustion equipment for comfort heating;

(8) a wastewater management system for collection, recirculation and reuse of the process water; and

(9) a stormwater management facility for collection, transmission and discharge of non-contact runoff at the Site, as described in the attached Schedule "G",

Note: Use of the site for any other type of waste is not approved under this Certificate, and requires obtaining a separate approval amending this Certificate.

For the purpose of this Provisional Certificate of Approval and the terms and conditions specified below, the following definitions apply:

"***Acoustic Assessment Report***" means the report, prepared in accordance with *Publication NPC-233* by Paul Niejadlik / Golder Associates Ltd. and dated March 2011 submitted in support of the application, that documents all sources of noise emissions and Noise Control Measures present at the Facility;

"**Acoustic Assessment Summary Table**" means a table summarizing the results of the Acoustic Assessment Report;

"**Acoustic Audit**" means an investigative procedure consisting of measurements of all noise emissions due to the operation of the Facility, assessed in comparison to the Performance Limits for the Facility regarding noise emissions, completed in accordance with the procedures set in the Ministry's *Publication NPC-103* and reported in accordance with the Ministry's *Publication NPC-233;*

"**Acoustic Audit Report**" means a report presenting the results of an Acoustic Audit, prepared in accordance with the Ministry's *Publication NPC-233;*

"**Acoustical Consultant**" means a person currently active in the field of environmental acoustics and noise/vibration control, who is familiar with Ministry noise guidelines and procedures and has a combination of formal university education, training and experience necessary to assess noise emissions from a Facility;

"**Air Standards Manager**" means the Manager, Human Toxicology and Air Standards Section, Standards Development Branch, or any other person who represents and carries out the duties of the Manager, Human Toxicology and Air Standards Section, Standards Development Branch, as those duties relate to the conditions of this Certificate;

"**APC Building**" means the building at the Site where the APC Equipment and the reagent indoor storage tanks are located;

"**APC Equipment**" means all the air pollution control equipment at the Facility, including the SNCR System, the activated carbon injection system, the dry recirculation lime injection scrubber and the pulse jet type baghouse to control emissions from the combustion chamber of the Boilers, the dust collectors to control emissions from the Residue Building and the dust collectors to control emissions from the reagent storage silos;

"**Boiler Building**" means the building at the Site where the Boilers, turbine generator and the air cooled condenser(s) are located;

"**Boilers**" means the two (2) steam boilers firing the approved Waste described in this Certificate;

"**Bulky Unprocessable Items**" means the incoming Waste received at the Site that cannot be processed in the Equipment;

"**CEM Systems**" means the continuous monitoring and recording systems used to measure and record the temperature and the emissions from the Boilers as specified in the attached Schedule "F";

"**Certificate**" means this entire provisional Certificate of Approval, issued in accordance with Sections 39 and 9 of the *EPA* and Section 53 of the *OWRA,* and includes any schedules attached to it, the application and the supporting documentation listed in the attached Schedule "A;

"***40 CFR 60***" means title 40, part 60 under the Code of Federal Regulations (Air Programs, U.S. Environmental Protection Agency), revised as of July 1, 1990, published by the Office of the Federal Register, National Archives and Records, Administration in the United States of America;

"**Complaint**" means a complaint received either by the Owner or the District Manager that has been confirmed by staff of the Ministry and the cause of which is attributed to the Owner's activities at the Facility;

"**Commencement Date of Operation**" means the date when the approved Waste is first received at the Site;

"**Compound of Concern**" means a contaminant that, based on generally available information, may be emitted to the atmosphere in a quantity from any source at the Facility that is significant either in comparison to the relevant Ministry Point of Impingement Limit or if a Ministry Point of Impingement Limit is not available for the compound then, based on generally available toxicological information, the compound has the potential to cause an adverse effect as defined by the *EPA* at a Point of Impingement;

"**Controlled Shutdown**" means an immediate cut-off of all waste into the Boilers, while maintaining the operation of the combustion chamber and the APC Equipment within the Performance Requirements;

"**Description Section**" means the section on page one of the Certificate describing the Owner's operations and the Equipment located at the Facility and specifying the Facility Production Limit for the Facility;

"**Dioxins and Furans**" means polychlorinated dibenzo-dioxins and polychlorinated dibenzofurans;

"**Director**" means any person appointed in writing by the Minister of the Environment pursuant to section 5 of the *EPA* and pursuant to section 5 of the *OWRA* as a Director for the purposes of Part V of the *EPA,* section 9 of the *EPA* and section 53 of the *OWRA;*

"**District Manager**" means the District Manager of the York Durham District Office of the Ministry;

"**Emergency Shutdown**" means an immediate cut-off of all waste feed into the Boilers, followed by an accelerated extinction of all combustion in the Boilers, while maintaining the combustion temperature within the Performance Requirements, except when unreasonable;

"**Emission Summary Table**" means the table prepared in accordance with *O. Reg. 419/05* and the Procedure Document listing the appropriate Point of Impingement concentrations of each Compound of Concern from the Facility and providing comparison to the corresponding Ministry Point of Impingement Limit;

"***EAA***" means the Environmental Assessment Act, R.S.O. 1990, c. E.18, as amended;

"**EA Approval**" means the Notice of Approval to Proceed with the Undertaking signed by the Minister of the Environment on November 3, 2010, EA File No. 04-EA-02-08;

"***EPA***" means the Environmental Protection Act, R.S.O. 1990, c. E.19, as amended;

"**Equipment**" means equipment or processes associated with the thermal treatment of the approved Waste described in this Certificate and in the Supporting Documentation referred to herein and any other equipment or processes handling wastes and reagents;

"**ESDM Report**" means the Emission Summary and Dispersion Modelling Report prepared in accordance with the Procedure Document by Golder Associates and dated March 2011 submitted in support of the application, and includes any amendments to the ESDM Report listed in the attached Schedule "A" and all subsequent up-dated ESDM Reports as applicable;

"**Facility**" means the entire operation associated with thermal treatment of Waste located on the property where the Equipment is located;

"**Facility Production Limit**" means the production limit placed on the main product(s) or raw materials used by the Facility that represents the design capacity of the Facility and assists in the definition of the operations approved by the Director;

"**Grizzly Building**" means the building at the Site where the bottom ash is screened and where the oversized constituents of the bottom ash (grizzly overs) are temporarily stored prior to transport for subsequent storage in the Residue Building;

"**Independent Acoustical Consultant**" means an Acoustical Consultant who is not representing the Owner and was not involved in preparing the Acoustic Assessment Report or the design/implementation of Noise Control Measures for the Facility and/or Equipment. The Independent Acoustical Consultant shall not be retained by the Acoustical Consultant involved in the noise impact assessment or the design/implementation of Noise Control Measures for the Facility and/or Equipment;

"**I-TEF**" means International Toxic Equivalency Factor derived for each dioxin and furan congener by comparing its toxicity to the toxicity of 2,3,7,8 tetrachloro dibenzo-p-dioxin, as recommended by the North Atlantic Treaty Organization Committee on Challenges to Modern Society (NATO CCMS) in 1989 and adopted by Canada in 1990;

"**I-TEQ**" means International Toxic Equivalent of dioxins and furans calculated using the I-TEFs, as recommended by the NATO CCMS in 1989 and adopted by Canada in 1990;

"**Manager**" means the Manager, Technology Standards Section, Standards Development Branch, who has been appointed under Section 5 of the *EPA* for the purposes of Section 11(1)2 of the *O. Reg. 419/05,* or any other person who represents and carries out the duties of the Manager,

Technology Standards Section, Standards Development Branch, as those duties relate to the conditions of this Certificate;

"**Ministry**" means the ministry of the government of Ontario responsible for the *EPA* and the *OWRA* and includes all officials, employees or other persons acting on its behalf or the Ontario Ministry of the Environment;

"**Municipality**" means the Municipality of Clarington;

"***NMA***" means the *Nutrient Management Act*, 2002, S.O. 2002, c. 4, as amended;

"**Noise Control Measures**" means measures to reduce the noise emission from the Facility and/or Equipment including, but not limited to silencers, acoustic louvers, enclosures, absorptive treatment, plenums and barriers;

"**LDR**" means the Lands Disposal Restrictions referred to in sections 74 through 85 of the *O. Reg. 347,* which prohibit the disposal of hazardous wastes on land until they have been treated to meet the treatment standards under the *O. Reg. 347;*

"**Leachate Toxicity Criteria**" means the concentrations of any of the contaminants listed in Schedule 4 at a concentration equal to or in excess of the concentration specified for that contaminant in Schedule 4 using the Toxicity Characteristic Leaching Procedure, defined in the *O. Reg. 347*;

"***O. Reg. 419/05***" means the *Ontario Regulation 419/05,* Air Pollution – Local Air Quality enacted under the *EPA,* as amended;

*"**O. Reg. 347**"* means the *Ontario Regulation 347,* R.R.O 1990 (General –Waste Management) enacted under the *EPA,* as amended;

"***OWRA***" means the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40, as amended;

"**Owner**" means any person that is responsible for the establishment and operation of the Site being approved by this Certificate, and it includes The Regional Municipality of Durham, The Regional Municipality of York, and Covanta Durham York Renewable Energy Limited Partnership (operator), their successors and assignees;

"***PA***" means the *Pesticides Act*, R.S.O. 1990, c.P. 11, as amended;

"**Performance Requirements**" means the performance requirements and emission limits specified in the section of this Certificate entitled "Performance Requirements";

"**Point of Impingement**" means any point outside the Facility in the natural environment and as defined by s.2 of the *O. Reg. 419/05;*

"**Point of Reception**" means the Point of Reception as defined by *Publication NPC-205* and/or *Publication NPC-232*, as applicable;

"**Pre-test Information**" means the information outlined in Section 1.1 of the Source Testing Code;

"**Procedure Document**" means the Ministry's document entitled "Procedure for Preparing an Emission Summary and Dispersion Modelling Report" dated July 2005, as amended;

"**Professional Engineer**" means a Professional Engineer as defined within the *Professional Engineers Act*, R.S.O. 1990, c. P.28, as amended;

"**Provincial Officer**" means any person designated in writing by the Minister as a provincial officer pursuant to Section 5 of the *OWRA* or Section 5 of the *EPA* or Section 17 of the *PA* or Section 4 of the *NMA* or Section 8 of the *SDWA;*

"***Publication NPC-103***" means the Ministry's Publication NPC-103 of the Model Municipal Noise Control By-Law, Final Report, dated August 1978, published by the Ministry, as amended;

"***Publication NPC-205***" means the Ministry's Publication NPC-205, entitled "Sound Level Limits for Stationary Sources in Class 1 & 2 Areas (Urban)", dated October, 1995, as amended;

"***Publication NPC-207***" means the Ministry's draft technical publication entitled "Impulse Vibration in Residential Buildings", dated November 1983, supplementing the Model Municipal Noise Control By-Law, Final Report, dated August 1978, published by the Ministry, as amended;

"***Publication NPC-232***" means the Ministry's Publication NPC-232, entitled "Sound Level Limits for Stationary Sources in Class 3 Areas (Rural)", dated October, 1995, as amended;

"***Publication NPC-233***" means the Ministry's Publication NPC-233, entitled "Information to be Submitted for Approval of Stationary Sources of Sound", dated October, 1995, as amended;

"**Rejected Waste**" means either municipal waste which cannot be processed at the Facility or waste which the Site is not approved to accept. Rejected Waste includes but is not limited to the Bulky Unprocessable Items and the Unacceptable Waste;

"**Regional Director**" means the Regional Director of the Central Region of the Ministry;

"**Regions**" means The Regional Municipality of Durham and The Regional Municipality of York;

"Report EPS 1/PG/7" means the Environment Canada Report EPS 1/PG/7, entitled "Protocols and Performance Specifications for Continuous Monitoring of Gaseous Emissions from Thermal Generation", dated September, 1993, as amended;

"**Residual Waste**" means waste resulting from the Waste processing activities at the Site. Residual Waste is limited to the recovered ferrous metals, the recovered non-ferrous metals, the bottom ash (consisting of the ash fines and the grizzly overs) and the fly ash (untreated and following conditioning);

"**Residue Building**" means the building at the Site where the bottom ash and the fly ash are processed, temporarily stored and loaded in transport vehicles for off-site disposal;

"**Schedules**" means the following schedules "A", "B", "C", "D", "F" and "G", attached to the Certificate and forming part of the Certificate;

"***SDWA***" means the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, as amended;

"**Sensitive Receptor**" means any location where routine or normal activities occurring at reasonably expected times would experience adverse effect(s) from odour discharges from the Facility, including one or a combination of:

(a) private residences or public facilities where people sleep (e.g.: single and multi-unit dwellings, nursing homes, hospitals, trailer parks, camping grounds, etc.);

(b) institutional facilities (e.g.: schools, churches, community centres, day care centres, recreational centres, etc.);

(c) outdoor public recreational areas (e.g.: trailer parks, play grounds, picnic areas, etc.); and

(d) other outdoor public areas where there are continuous human activities (e.g.: commercial plazas and office buildings);

"**Site**" means the property where the Owner has located and operates the Facility and the Works and located at 72 Osbourne Road, 27, Concession Broken Front, Part 1 in the Municipality of Clarington, Regional Municipality of Durham;

"**Source Testing**" means monitoring, sampling and testing to measure emissions resulting from operating the Facility under conditions which yield the worst case emissions within the approved operating range of the Facility;

"***Source Testing Code***" means the Ministry's document entitled "Source Testing Code, Version 2, Report No. ARB-66-80", dated November 1980, as amended;

"**Stack**" means the stack that discharges emissions from the Boilers after those emissions have been controlled by the associated APC Equipment;

"**Substantial Completion**" has the same meaning as "substantial performance" in the *Construction Lien Act* R.S.O. 1990, c.C-30, as amended;

"**Supporting Documentation**" means the documents listed in the attached Schedule "A" of this Certificate which forms part of this Certificate;

"**Test Contaminants**" means the contaminants set out in the attached Schedule "D";

"**Tipping Building**" means the building at the Site where the incoming Waste is received, sorted and temporarily stored;

"**Total Power Failure**" means the loss of the external power supply and concurrent loss of all in-plant power generation;

"**Trained Personnel**" means one or more Site personnel trained in accordance with the requirements of Condition 9.;

"**Waste**" means municipal solid waste as defined in the *O. Reg. 347* and limited to the approved waste set out in Condition No. 2.(2);

"**Waste Processing Rate** means the mass of Waste fed into one of the Boilers;

"**Works**" means the sewage works described in the Owner's application, this Certificate and in the Supporting Documentation referred to herein, to the extent approved by this Certificate;

"**Unacceptable Waste**" means the incoming Waste received at the Site that does not meet the incoming Waste quality criteria set out in this Certificate, is of hazardous nature and requires caution when handling; and

"**Undiluted Gases**" means the flue gas stream which contains oxygen, carbon monoxide, total hydrocarbons and all contaminants in the same concentrations as they exist in the flue gas stream emerging from an individual piece of equipment, such as the combustion chamber of one Boiler or one baghouse, and into which gas stream no ambient air and/or no other gas stream originating from another piece of equipment, except for dilution air introduced within the CEM Systems, has been introduced.

You are hereby notified that this approval is issued to you subject to the terms and conditions outlined below:

GENERAL PROVISIONS

1. GENERAL

Compliance

(1) The Owner shall ensure compliance with all the conditions of this Certificate and shall ensure that any person authorized to carry out work on or operate any aspect of the Site, including the Works, is notified of this Certificate and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

(2) Any person authorized to carry out work on or operate any aspect of the Site shall comply with the conditions of this Certificate.

Build in Accordance

(3) (a) Except as otherwise provided by this Certificate, the Site shall be designed, developed, built, operated, monitored, inspected and maintained in accordance with the following applications:

(i) Applications for a Certificate of Approval (Air) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of

Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the Supporting Documentation listed in the attached Schedule "A".

(ii) Applications for a Provisional Certificate of Approval (Waste Disposal Site) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the Supporting Documentation listed in the attached Schedule "A".

(iii) Applications for a Certificate of Approval of Municipal and Private Sewage Works dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the Supporting Documentation listed in the attached Schedule "A".

(b) (i) Any design optimization or modification that is inconsistent with the conceptual design set out in the Supporting Documentation in Schedule "A" shall be clearly identified, along with an explanation of the reasons for the change and submitted to the Director for approval.

(ii) If a change to the conceptual design is submitted to the Director for approval, no construction of the Site shall commence prior to the Director approving, in writing, the final conceptual design of the Site.

As-built Drawings

(4) (a) Within ninety (90) days of the completion of the initial successful Source Testing program, a set of as-built drawings showing the Facility and the Works and bearing the stamp of a Professional Engineer, shall be prepared and retained at the Site.

(b) These drawings shall be kept up-to-date through revisions undertaken from time to time and a copy shall be retained at the location of the Site or at the operational office of the Owner for the operational life of the Site.

(c) Notwithstanding provisions of Condition 1.(4)(b), an amendment to this Certificate shall be sought for changes to the as-built drawings, requiring approval.

(d) The as-built drawings shall be made available to Ministry staff upon request.

Interpretation

(5) Where there is a conflict between a provision of any document, including the application referred to in this Certificate and the conditions of this Certificate, the conditions in this Certificate shall take precedence.

(6) Where there is a conflict between the applications and a provision in any documents listed in Schedule "A", the applications shall take precedence, unless it is clear that the purpose of the document was to amend the applications and that the Ministry approved the amendment.

(7) Where there is a conflict between any two documents listed in Schedule "A", other than the applications, the document bearing the most recent date shall take precedence.

(8) The requirements of this Certificate are severable. If any requirement of this Certificate, or the application of any requirement of this Certificate to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this Certificate shall not be affected thereby.

Other Legal Obligations

(9) The issuance of, and compliance with the conditions of this Certificate does not:

(a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement; or

(b) limit in any way the authority of the Ministry to require certain steps be taken or to require the Owner to furnish any further information related to compliance with this Certificate.

Adverse Effects

(10) The Site shall be constructed, operated and maintained in a manner which ensures the health and safety of all persons and prevents adverse effects on the natural environment or on any persons.

(11) The Owner shall take steps to minimize and ameliorate any adverse effect on the natural environment or impairment of water quality resulting from the approved operations at the Site, including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.

(12) Despite the Owner or any other person fulfilling any obligations imposed by this Certificate, the person remains responsible for any contravention of any other condition of this Certificate or any applicable statute, regulation, or other legal requirement resulting from any act or emission that caused the adverse effect to the natural environment or impairment of water quality.

(13) If at any time odours, pests, litter, dust, noise or other such negative effects are generated at this Site and cause an adverse effect, the Owner shall take immediate appropriate remedial action that may be necessary to alleviate the adverse effect, including suspension of all waste management activities if necessary.

Change of Ownership

(14) The Owner shall notify the Director in writing, and forward a copy of the notification to the District Manager, within thirty (30) days of the occurrence of any changes:

(a) the ownership of the Site;
(b) the operator of the Site;
(c) the address of the Owner;
(d) the partners, where the Owner is or at any time becomes a partnership and a copy of the most recent declaration filed under the *Business Names Act,* R.S.O. 1990, c. B.17, as amended, shall be included in the notification;
(e) the name of the corporation where the Owner is or at any time becomes a corporation, other than a municipal corporation, and a copy of the most current information filed under the *Corporations Information Act*, R.S.O. 1990, c. C.39, as amended, shall be included in the notification.

(15) No portion of this Site shall be transferred or encumbered prior to or after closing of the Site unless the Director is notified in advance. In the event of any change in ownership of the Site, other than change to a successor municipality, the Owner shall notify the successor of and provide the successor with a copy of this Certificate, and the Owner shall provide a copy of the notification to the District Manager and the Director.

Inspections by the Ministry

(16) No person shall hinder or obstruct a Provincial Officer from carrying out any and all inspections authorized by the *OWRA,* the *EPA,* the *PA,* the *SDWA* or the *NMA* of any place to which this Certificate relates, and without limiting the foregoing:

(a) to enter upon the premises where the approved processing is undertaken, or the location where the records required by the conditions of this Certificate are kept;
(b) to have access to, inspect, and copy any records required to be kept by the conditions of this Certificate;
(c) to inspect the Site, related equipment and appurtenances;
(d) to inspect the practices, procedures, or operations required by the conditions of this Certificate;
(e) to conduct interviews with staff, contractors, agents and assignees of the Owner; and
(f) to sample and monitor for the purposes of assessing compliance with the terms and conditions of this Certificate or the *EPA,* the *OWRA,* the *PA,* the *SDWA* or the *NMA.*

Information

(17) Any information requested by the Ministry, concerning the operation of the Site and its operation under this Certificate, including but not limited to any records required to be kept by this Certificate, manuals, plans, records, data, procedures and supporting documentation shall be provided to the Ministry, in a timely manner, upon request.

(18) The receipt of any information by the Ministry or the failure of the Ministry to prosecute any person or to require any person to take any action, under this Certificate or under any statute, regulation or other legal requirement, in relation to the information, shall not be construed as:

(a) an approval, waiver, or justification by the Ministry of any act or omission of any person that contravenes any term or condition of this Certificate or any statute, regulation or other legal requirement; or

(b) acceptance by the Ministry of the information's completeness or accuracy.

(19) The Owner shall ensure that a copy of this Certificate, in its entirety and including all its Notices of Amendment and the Supporting Documentation listed in Schedule "A" are retained at the Site at all times.

2. **SERVICE AREA, APPROVED WASTE TYPES, RATES and STORAGE**

(1) The service area for the Site is the area within the jurisdictional boundaries of The Regional Municipality of Durham and The Regional Municipality of York.

(2) The operation of this Site is limited to:

(a) receipt, temporary storage, transfer and processing, including thermal treatment, of solid non-hazardous waste remaining after Waste Diversion required by the EA Approval, limited to Waste from the following sources:

(i) domestic waste and Industrial Commercial and Institutional waste from the Regions' curbside collection and/or from the Regions' waste management facilities; and

(ii) waste generated on-Site through activities not relating to the handling and processing of Waste (ie. office, lunch room, etc.);

(b) collection and management of the stormwater run-off generated at the Site.

(3) The following Unacceptable Waste is prohibited from being accepted at the Site:

(a) hazardous waste, as defined in the *O. Reg. 347;*
(b) wastes which have been source-separated for the purposes of diversion;

(c) international waste generated outside of Canada, but collected within the jurisdictional boundaries of The Regional Municipality of Durham and The Regional Municipality of York.

(4) Waste Receipt Rate:

(a) The maximum daily amount of Waste that is approved to be accepted at the Site shall not exceed 1,520 tonnes per day.

(5) Storage Restrictions:

Solids:

(a) A maximum of 7,350 cubic metres shall be stored inside the Waste pit within the Tipping Building as shown in the Supporting Documentation.

(b) Rejected Waste, limited to the Bulky Unprocessable Items removed from the incoming Waste in the Tipping Building shall be stored:

(i) in two (2) roll-off bins having a maximum total storage capacity of 30 cubic metres, located within the confines of the Tipping Building; and/or

(ii) in the appropriate dedicated bunkers, located within the confines of the Residue Building and described in Conditions 2.(5)(c), 2.(5)(d) and 2.(5)(d), below.

(c) A maximum of approximately 77 tonnes or 106 cubic metres of the Residual Waste, limited to the recovered ferrous metals, shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of seven (7) days.

(d) A maximum of approximately 120 tonnes or 100 cubic metres of the Residual Waste, limited to the recovered non-ferrous metals, shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of seven (7) days.

(e) A maximum of 630 tonnes of the Residual Waste, limited to bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of seven (7) days.

(f) A maximum of 700 tonnes of the Residual Waste, limited to the fly ash shall be stored in seven (7) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of thirty six (36) days.

(g) A maximum of 85 cubic metres of activated carbon for the carbon injection system shall be stored in one (1) outdoor tank, located adjacent to the APC Building.

(h) A maximum of 150 cubic metres of lime for the dry scrubber shall be stored in one (1) or more indoor tank(s), located within the confines of the APC Building.

(i) If required, recirculated residue shall be stored in one (1) or more indoor tank(s), located within the confines of the APC Building.

(j) A maximum of 35 tonnes or 25 cubic metres of cement for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.

(k) A maximum of 25 tonnes or 45 cubic metres of pozzolan for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.

Liquids:

(l) (i) A maximum of 36 cubic metres or 40 tonnes of aqueous ammonia for the SNCR System shall be stored in one (1) outdoor tank, located adjacent to the APC Building.

(ii) The Owner shall ensure that the aqueous ammonia storage tank is equipped with a liquid level monitoring device designed to provide a visual and an auditory alarm when the high level setpoint is reached.

(iii) The aqueous ammonia storage tank spill containment area and the loading area shall be designed in accordance with the requirements in the Ministry's document entitled *"Guidelines for Environmental Protection Measures at Chemical and Waste Storage Facilities"* dated May 2007, as amended.

(6) No outdoor storage of waste, including storage in vehicles, is approved under this Certificate.

(7) The Owner shall ensure that storage of all wastes is undertaken in a manner that does not cause an adverse effect or a hazard to the environment or any person.

(8) (a) Waste received at the Site shall be processed within four (4) days from its receipt at the Site.

(b) Emergency Waste storage duration extension:

(i) The Owner may store the incoming Waste inside the tipping pit within the confines of the Tipping Building for up-to seven (7) days from its receipt at the Site, on an emergency basis only.

(ii) Within twenty four (24) hours from the start of the emergency storage of the incoming Waste, the Owner shall notify, in writing, the District Manager that the incoming Waste is being stored longer then four (4) days.

(iii) Should there be public complaints about the extended incoming Waste storage, the Owner, in consultation with the District Manager, shall determine the cause of the complaints, propose appropriate abatement measures, including but not be limited to the removal and off-site disposal of the Waste contained in the tipping pit, and implement the said measures upon receiving written concurrence from the District Manager within the time frame acceptable to the District Manager.

(9) In the event that Waste cannot be processed at the Site and the Site is at its approved storage capacity, the Owner shall cease accepting additional Waste. Receipt of additional Waste may be resumed once such receipt complies with the waste storage limitations approved in this Certificate.

3. **SIGNS and SITE SECURITY**

(1) Prior to receipt of Waste at the Site, the Owner shall ensure that a sign is posted at the entrance to the Site. The sign shall be visible from the main road leading to the Site. The following information shall be included on the sign:

(a) name of the Owner;
(b) this Certificate number;
(c) hours during which the Site is open;
(d) waste types that are approved to be accepted at the Site;
(e) Owner's telephone number to which complaints may be directed;
(f) Owner's twenty-four hour emergency telephone number (if different from above);
(g) a warning against unauthorized access; and
(h) a warning against dumping at the Site.

(2) The Owner shall ensure that appropriate and visible signs are posted at the Site clearly identifying the wastes and the process reagents and stating warnings about the nature and any possible hazards of the wastes and the reagents.

(3) The Owner shall ensure that appropriate and visible signs are posted at the Site to prohibit smoking, open flames or sources of ignition from being allowed near any flammable materials storage areas.

(4) The Owner shall install and maintain appropriate and visible signs at the Site to direct vehicles to the Waste receiving and Residual Waste removal areas and to the reagent unloading areas.

(5) The Owner shall post appropriate and visible signs along the traffic route providing clear directions to the Site.

(6) The Owner shall ensure that the Site is fenced in and that all entrances are secured by lockable gates to restrict access only to authorized personnel when the Site is not open.

(7) The Owner shall ensure that access to the Site, with the exception of the area designated as a Public Information Centre, is regulated and that no unauthorized persons are permitted at the Site without the Trained Personnel escort.

(8) The Owner shall ensure that the Site is operated in a safe and secure manner, and that Waste, the Residual Waste and the Unacceptable Waste are properly handled, packaged or contained and stored so as not to pose any threat to the general public and the Site personnel.

4. **SITE OPERATIONS**

(1) **Operating hours:**

(a) The Site is approved to operate twenty-four (24) hours per day three hundred and sixty-five (365) days per year.

(b) Notwithstanding Condition 4.(1)(a), Waste shall only be received at the Site and the Residual Waste shall only be transferred from the Site between 7:00 a.m. and 7:00 p.m. Monday to Saturday. No receipt of the Waste or transfer of the Residual Waste shall be undertaken on statutory holidays.

(c) Emergency Receipt of Waste:

(i) The Owner may receive Waste at the Site outside of the operating hours specified in Condition 4.(1)(b), above, on an emergency basis only.

(ii) Within twenty four (24) hours from the receipt of Waste outside of the approved receiving hours, the Owner shall notify, in writing, the District Manager that Waste was received outside of the approved receiving hours.

(iii) Should there be complaints about Waste shipments outside of the approved hours, the Owner, in consultation with the District Manager, shall determine the cause of the complaint, propose appropriate abatement measures and implement the said measures upon receiving written concurrence from the District Manager within the time frame acceptable to the District Manager.

(2) **Incoming Waste receipt:**

(a) At the weigh scale, the Trained Personnel shall:

(i) inspect the required documentation prior to acceptance of the incoming Waste at the Site; and

(ii) inspect the incoming Waste with radiation detection equipment.

(b) In the Tipping Building, the Trained Personnel shall:

(i) visually inspect all incoming Waste being unloaded into the Waste pit; and

(ii) once per hour, or as accepted by the District Manager, unload the incoming Waste on the tipping floor for a manual visual inspection and sorting of the incoming Waste.

(c) The Owner shall only accept the incoming Waste that is delivered in vehicles that have been approved by the Ministry.

(d) The Owner shall ensure that all unloading of incoming Waste at the Site takes place entirely within the confines of the Tipping Building.

(3) **Unacceptable Waste handling:**

(a) In the event that waste that is not approved under this Certificate is inadvertently accepted at the Site, the Owner shall ensure that the Unacceptable Waste:

(i) is stored in a way that ensures that no adverse effects result from its storage;
(ii) is segregated from all other waste;
(iii) is handled and removed from the Site in accordance with the *O. Reg. 347* and the *EPA*; and
(iv) is removed from the Site within (4) days of its receipt or as acceptable to the District Manager.

(b) The Owner shall ensure that all loading of the Unacceptable Waste into transport vehicles is carried out entirely within the confines of the Tipping Building.

(4) **Waste Sorting:**

(a) The Trained Personnel shall remove the Bulky Unprocessable Items and Unacceptable Waste from the incoming Waste prior to charging of the Waste to the Boilers.

(b) All sorting of the incoming Waste at the Site shall be undertaken indoors, within the confines of the Tipping Building and/or the Refuse Building.

(5) **Residual Waste Handling and Disposal:**

(a) (i) Except for transportation of the Residual Waste between the Grizzly Building and the Residue Building, the Owner shall ensure that all

handling of the bottom ash and its segregated constituents, and of the fly ash, is undertaken within the confines of enclosed conveyors and enclosed buildings.

(ii) The Owner shall ensure that all loading of the Residual Waste into vehicles for its transport from the Site is carried out entirely within the confines of the Residue Building.

(b) (i) Different constituents of the Residual Waste shall not be comingled prior to the required compliance testing, unless all Residual Waste is to be disposed of at a Waste Disposal Site that is approved to accept hazardous waste.

(ii) The Owner shall ensure that the equipment used in handling of the hazardous wastes or that came in direct contact with the hazardous wastes is not used to handle other wastes.

(iii) On an emergency basis, the Owner may use equipment used to handle the hazardous wastes to handle other wastes provided that prior to such use the equipment has been thoroughly cleaned first.

(c) (i) Only haulers approved by the Ministry shall be used to transport the Residual Waste from the Site.

(ii) The Residual Waste shall be transported from the Site in appropriately covered vehicles that will not allow fugitive dust emissions to be emitted into the natural environment during the said transport.

d) Residual Waste generated at the Site shall be disposed of shall only be disposed of at an approved waste disposal site in accordance with the requirements in the *EPA* and the *O. Reg. 347* or at a location with the appropriate jurisdictional approval or a license, if required.

(e) Should the Residual Waste limited to the conditioned fly ash and/or the bottom ash be deemed a hazardous waste, the ash shall be disposed of at an approved waste disposal site in accordance with the Land Disposal Restrictions requirements in the *EPA* and the *O. Reg.* 347 or at a location with the appropriate jurisdictional approval or a license, if required.

(6) **Wastewater Management**

(a) The Owner shall ensure that all wastewater generated at the Site is contained within enclosed buildings, tanks, pipes and conveyors at the Site and the approved outdoor Wastewater Settling Basin.

(b) The Owner shall ensure that all wastewater generated at the Site is collected in leak-proof and sufficiently designed wastewater storage facilities:

(i) Wastewater Holding Tank, to collect the continuous reject water flow from the Boiler make-up water treatment system and the Boiler blowdown, having an approximate holding capacity of 100 cubic metres, located within the confines of the Boiler Building and venting to the atmosphere; and

(ii) Wastewater Settling Basin, to collect the wastewater from the floor drains in the buildings at the Site, except for the Tipping Building and the Residue Building, the ash discharger overflow and drain water, the Boiler and turbine-generator washdown water and the APC Equipment area washdown water, having an approximate holding capacity of 38 cubic metres, located outdoors, open to the atmosphere and equipped with a filter basket and an oil skimmer board.

(c) The wastewater pumps shall be located in the area designed in accordance with the Supporting Documentation to ensure that any potential leaks or drips are contained and directed to the Wastewater Settling Basin.

(d) (i) The wastewater level in the Wastewater Holding Tank shall be monitored and controlled to ensure that the wastewater inflow to the Tank does not cause the Tank overflow.

(ii) The wastewater level in the Wastewater Settling Basin shall be monitored and controlled to ensure that the atmospheric precipitation does not cause an overflow from the Basin.

(e) The Owner shall regularly empty, and clean as necessary, all sumps, wastewater storage/holding areas and equipment that are used to contain, collect and handling the wastewater generated at the Site.

(f) Should the Owner find it necessary to remove the wastewater from the Site, the wastewater shall only be disposed of at a Ministry-approved site in accordance with the site's certificate of approval or be discharged to the sanitary sewer in accordance with the agreement with the municipality accepting the discharge.

(g) The floors of the Tipping Building and the Residue Building shall be sufficiently sloped to facilitate the flow of the wastewater generated from the floor cleaning activities and from the truck washdown towards the designated wastewater collection area.

(h) The Owner shall ensure that the Wastewater Settling Basin is regularly cleaned out and that it does not become a source of odour emissions.

(7) All activities approved under this Certificate shall only be carried out by appropriately Trained Personnel.

5. EQUIPMENT and SITE INSPECTIONS and MAINTENANCE

Operation and Maintenance

(1) Prior to the receipt of the Waste at the Site, the Owner shall prepare and update as necessary, an Operation and Maintenance Manual for all the Equipment, the APC Equipment, the CEM Systems, the Works and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility. The Manual shall be prepared in accordance with the written manufacturer's and/or supplier's specifications and good engineering practice.

As a minimum, the Operation and Maintenance Manual shall specify:

(a) operation procedures of the Equipment, the APC Equipment, the CEM Systems, the Works, and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility, in accordance with manufacturers' recommendations and good engineering practices to achieve compliance with this Certificate, the *EPA,* the *OWRA* and their Regulations;
(b) calibration procedures for the CEM Systems as required by this Certificate;
(c) procedures for start-up and shutdown, including Controlled Shutdown and Emergency Shutdown;
(d) quality assurance procedures for the operation and calibration of the CEM Systems in accordance with *40 CFR 60*, Appendix F or *Report EPS 1/PG/7,* as appropriate;
(e) Waste receiving and screening procedures;
(f) Waste, Rejected Waste and Residual Waste handling procedures;
(g) testing and monitoring procedures as required by this Certificate;
(h) maintenance and preventative maintenance procedures as required by this Certificate;
(i) Facility inspection, including frequency of inspections, procedures;
(j) procedure for handling complaints as required by this Certificate.
(k) contingency measures to resolve upset conditions and/or minimize the environmental impacts from the Facility;
(l) emergency response procedures, including procedures for dealing with power failure, fire, explosion, spills and any other potential emergencies;
(m) procedures for record keeping activities as required by this Certificate;
(n) description of the responsibilities of the Site personnel and the personnel training protocols; and
(o) a list of personnel positions responsible for operation and maintenance, including supervisory personnel and personnel responsible for handling of the emergency situations, recording and reporting pursuant to the requirements of this Certificate, along with the training and experience required for the positions and a description of the responsibilities.

(2) A copy of this Operations and Maintenance Manual shall be kept at the Site, be accessible to the Site personnel at all times and be updated, as required. The Operations and Maintenance Manual shall be available for inspection by a Provincial Officer upon request.

(3) The Owner shall implement the operation, maintenance, preventative maintenance and calibration procedures set out in the Operations and Maintenance Manual required by this Certificate.

Critical Spare Parts

(4) (a) The Owner shall prepare a list of critical spare parts, update this list annually or more frequently, if necessary, to ensure that this list is maintained up-to-date and shall be available for inspection by a Provincial Officer upon request.

(b) The Owner shall ensure that the critical spare parts are available at the Site at all times or are immediately available from an off-Site supplier.

Inspections

(5) Prior to receipt of the Waste at the Site, the Owner shall prepare a comprehensive written inspection program which includes inspections of all aspects of the Site's operations including, but not limited to the following:

(a) buildings and the indoor waste storage facilities and presence of dust and odour and leaks in or near any openings, such as doorways, window, vent, louver or any other opening;
(b) outdoor Residual Waste transport equipment, and the presence of dust and leaks at or near transfer points or the equipment seams;
(c) the Equipment, the APC Equipment, the CEM Systems, the Works and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility;
(d) spill containment areas, loading areas and the conditions around the Wastewater Settling Basin;
(e) security fencing, gates, barriers and signs;
(f) off-site nuisance impacts such as odour, dust, litter, etc.
(g) presence of stormwater pooling at the Site; and
(h) condition of the on-Site roads for presence of leaks and drips from the waste delivery trucks or excessive dust emissions.

(6) The inspections, except for the inspection of the Works, are to be undertaken daily by the Trained Personnel in accordance with the inspection program to ensure that the Facility is maintained in good working order at all times and that no off-Site impacts are occurring. Any deficiencies detected during these regular inspections must be promptly corrected.

Inspections and Maintenance of the Works

(7) The Owner shall inspect the Works at least once a year and, if necessary, clean and maintain the Works to prevent the excessive build-up of sediments and/or vegetation.

6. PERFORMANCE REQUIREMENTS

(1) The Owner shall, ensure that the Facility/Equipment is designed and operated in such a manner as to ensure that the following Performance Requirements are met:

(a) the maximum 10-minute average concentration of odour at the most impacted Sensitive Receptor, resulting from the operation of the Facility/Equipment, calculated in accordance with the procedures outlined in the attached Schedule "B", shall not exceed 1 odour unit;

(b) the noise emissions from the Facility shall comply with the limits set out in Ministry *Publication NPC-205;*

(c) the vibration emissions from the Facility shall comply with the limits set out in Ministry *Publication NPC-207.*

(2) The Owner shall ensure that the Boilers and the associated APC Equipment and the CEM Systems are designed and operated in such a manner as to ensure that the following Performance Requirements are met:

(a) (i) The temperature in the combustion zone of each Boiler shall reach a minimum of 1000 degrees Celsius (^{o}C) for one second, prior to introduction of the Waste into the combustion chamber of the Boiler during the start-up, and thereafter maintained during the entire thermal treatment cycle and subsequent shutdown until all Waste combustion is completed.

(ii) Compliance with the minimum temperature requirement shall be demonstrated by direct measurement at the location where the combustion gases have achieved the residence time of one second at a minimum temperature of 1000^{o}C (the Target Location) or by correlation of the required temperature of 1000^{o}C for one second to the temperature measured downstream of the Target Location as proven by a method acceptable to the Director.

(b) The concentration of residual oxygen in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, as measured and recorded by the CEM System, shall not be less than 6 percent by volume on a dry basis.

(c) (i) The operational target for the concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler is 40 milligrams per dry cubic metre, as a 4-hour rolling average, normalized to 11 percent oxygen at a reference temperature of 25^{o}C and a reference pressure of 101.3 kilopascals, as measured and recorded by the CEM System, for the period from and including initial commissioning of the facility to twelve months following the completion of the first Source Testing program.

(ii) The 4-hour average concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, as measured and recorded by the CEM System, shall not be more than 40 milligrams per dry cubic metre, normalized to 11 percent oxygen at a reference temperature of 25^{o}C and a reference pressure of 101.3 kilopascals, after the first twelve months following the completion of the first Source Testing program.

(d) The emissions from the Boilers after those emissions have been controlled by the associated APC Equipment for discharge into the atmosphere via the Stack shall comply with the emission concentration limits listed in the attached Schedule "C", as measured by a CEM System or by Source Testing as applicable.

(e) The Boilers shall include combustion air control systems, which are capable of automatically adjusting the distribution and the quantity of combustion air, in such a manner that changes in the Waste Processing Rate and/or Waste composition or irregularities in the loading and/or combustion shall not adversely affect the performance of the Boilers.

(f) The Boilers shall provide and maintain a high degree of gas turbulence and mixing in the combustion chamber.

(g) The Boilers shall achieve the temperature, oxygen availability and turbulence requirements over the complete range of operating parameters, including feed rate, feed characteristics, combustion air, flue gas flow rate and heat losses.

(h) The inlet temperature into each baghouse of the APC Equipment of the Boilers shall not be less than 120^{o}C and not more than 185^{o}C.

(3) The Owner shall install and maintain visual and audible alarm systems to alert the Facility/Equipment operators of any potential deviation from the above Performance Requirements for parameters that are continuously monitored by applicable CEM Systems and shall forthwith take all reasonable actions to bring the Equipment/Facility into compliance with all Performance Conditions.

(4) In the event that the CEM Systems indicate that emissions from the Boilers and the Stack exceed any Performance Requirements in the attached Schedule "C" for a continuous three (3) hour period, the Owner shall forthwith cut-off all Waste feed into the affected Boiler and initiate an Emergency Shutdown, while maintaining a temperature of 1000^{o}C, as practicable, in the combustion zone of the Boiler.

Residual Waste Compliance Criteria

(5) (a) The Residual Waste generated at the Site and destined for a non-hazardous waste disposal site in Ontario shall not meet any of the criteria from the definition of "hazardous waste" set out in the *O. Reg. 347.*

(b) The Residual Waste that meets any of the criteria from the definition of "hazardous waste" set out in the *O. Reg.* 347 shall be handled and disposed of in accordance with the LDR requirements set out in the *EPA* and the *O. Reg. 347.*

(6) The Residual Waste, limited to the bottom ash, destined for a non-hazardous waste disposal site shall meet the definition of "incinerator ash" set out in the *O. Reg. 347.*

7. TESTING, MONITORING and AUDITING

Source Testing

(1) The Owner shall perform annual Source Testing in accordance with the procedures and schedule outlined in the attached Schedule "E", to determine the rate of emission of the Test Contaminants from the Stack. The first Source Testing program shall be conducted not later than six (6) months after the Commencement Date of Operation of the Facility/Equipment and subsequent Source Testing program shall be conducted once (1) every calendar year thereafter.

Continuous Monitoring

(2) The Owner shall select, test and install appropriate CEM Systems and continuous recording devices in accordance with the requirements outlined in the attached Schedule "F" to conduct and maintain a program to continuously monitor, as a minimum, the following parameters prior to commencement of operation of the Boilers:

(a) the temperature at one (1) second downstream of the combustion zone of each Boiler where most of the combustion has been completed and the combustion temperature is fully developed;

(b) the inlet temperature of the gases into each baghouse of the APC Equipment of each Boiler;

(c) the concentration of carbon monoxide, oxygen and organic matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler;

(d) the opacity and moisture content of the flue gas and the concentration of oxygen, nitrogen oxides, sulphur dioxide, hydrogen chloride, hydrogen fluoride and ammonia in the Undiluted Gases leaving the baghouse of the APC Equipment of each Boiler.

Long-Term Sampling for Dioxins and Furans

(3) (a) The Owner shall develop, install, maintain and update as necessary a long-term sampling system, with a minimum monthly sampling frequency, to measure the concentration of Dioxins and Furans in the Undiluted Gases leaving the APC Equipment associated with each Boiler. The performance of

this sampling system will be evaluated during the annual Source Testing programs in accordance with the principles outlined by 40 CFR 60, Appendix B, Specification 4.

(b) The Owner shall evaluate the performance of the long-term sampling system in determining Dioxins and Furans emission trends and/or fluctuations as well as demonstrating the ongoing performance of the APC Equipment associated with the Boilers.

Ambient Air Monitoring

(4) (a) The Regions shall develop and implement the Ambient Air Monitoring and Reporting Plan, in accordance with the requirements set out in the EA Approval and as determined to be acceptable by the Regional Director.

(b) The Regions shall report the results of the Ambient Air Monitoring program to the Regional Director in accordance with the Ambient Air Monitoring and Reporting Plan and in accordance with the requirements of Condition 14.

(c) The Regions shall post the Ambient Air Monitoring and Reporting Plan and the results of the Ambient Air Monitoring program on the Owner's web site for the Facility in accordance with the requirements of the EA Approval and Condition 15.

Noise Monitoring - Acoustic Audit

(5) The Owner:

(a) shall carry out Acoustic Audit measurements on the actual noise emissions due to the operation of the Facility. The Acoustic Audit measurements shall be carried out in accordance with the procedures in *Publication NPC-103* and in accordance to the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director;

(b) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of *Publication NPC-233* and the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director, to the District Manager and the Director, not later than three (3) months after the commencement of operation of the Facility.

(6) The Director:

(a) may not accept the results of the Acoustic Audit if the requirements of *Publication NPC-233* or the approved Noise Monitoring and Reporting Plan were not followed;

(b) may require the Owner to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

Residual Waste Testing

(7) (a) A minimum of six (6) months prior to the Commencement Date of Operation, the Owner shall submit to the Director for approval, a Testing Protocol for testing of the bottom ash for compliance with the criteria set out in the "incinerator ash" definition from the *O. Reg.* 347 and for testing of the Residual Waste for compliance with the criteria set out in this Certificate.

(b) As a minimum, the Testing Protocol shall comply with the Ministry's regulatory requirements for sampling and testing of waste, including the requirements set out in the Ministry's document entitled "Principles of Sampling and Analysis of Waste for TCLP under Ontario Regulation 347", dated February 2002, as amended.

(c) The Testing Protocol shall include the rationale for the proposed methods and the following:

(i) a sampling protocol, including the proposed number of samples to be taken and their locations, to ensure that representative sample(s) are being tested for compliance with this Certificate;

(ii) sample(s) handling and preserving procedures;

(iii) analytical protocol for the applicable contaminants to ensure that appropriate analytical method(s) are being used for compliance testing required by this Certificate; and

(iv) a testing protocol for the bottom ash during the Site commissioning period.

(d) The Owner shall implement the Testing Protocol on the Commencement Date of Operation.

(8) For handling of the bottom ash as a solid non-hazardous waste, the Owner shall follow the following schedule for compliance testing:

(a) for the Site commissioning period, the bottom ash shall be tested in accordance with the Testing Protocol approved by the Director;

(b) for the period following the Site commissioning period, the bottom ash shall be tested for the content of the combustible materials on an annual basis, until the compliance testing results indicate that the bottom ash meets the “incinerator ash” definition from the *O. Reg. 347* for three (3) consecutive years, following which a triennial compliance testing event may be carried out;

(c) should any annual or triennial compliance testing event indicate that the bottom ash does not meet the “incinerator ash” definition, prior to each of the next three (3) shipments from the Site, compliance testing of each of the three (3) shipments shall be carried out. Once three (3) consecutive tests re – establish compliance with the “incinerator ash” definition from the *O. Reg. 347* and that the bottom ash does not exceed the Leachate Toxicity Criteria, the compliance testing schedule set out in Condition 7.(8)(b) may be resumed; and

(d) should the results of any compliance testing of the bottom ash indicate that the concentrations of the leachate toxic contaminants in the bottom ash equal to or exceed the Leachate Toxicity Criteria, the bottom ash shall be handled as a hazardous waste. Once three (3) consecutive tests re – establish that the bottom ash does not exceed the Leachate Toxicity Criteria, the bottom ash compliance testing schedule set out in Condition 7.(8)(b) may be resumed.

(9) (a) For handling of the bottom ash as a hazardous waste and for handling of the fly ash, prior to final disposal at a hazardous waste landfill site in Ontario, the Owner shall undertake any sampling and testing that would be required to comply with the LDR requirements set out in the *EPA* and the *O. Reg. 347.*

(b) The Owner shall follow the following schedule for compliance testing:

(i) prior to each of the first three (3) shipments of the ash from the Site, the ash shall be tested so that for the compliance with the LDR requirements can be demonstrated;

(ii) following the three (3) initial compliance testing events, the ash shall be tested on an annual basis, until the compliance testing results indicate that the ash meets the LDR requirements during the three (3) consecutive years, following which a triennial compliance testing may be carried out; and

(iii) should any annual or triennial compliance testing event indicate that the ash does not meet the LDR requirements, prior to next three (3) shipments from the Site, compliance testing of each of the three (3) shipments shall be carried out. Once three (3) consecutive tests re – establish compliance with the LDR requirements, the compliance testing schedule set out in Condition 7.(9)(b)(ii) may be resumed.

Soil Testing:

(10) (a) Within one hundred and twenty (120) days from the date of this Certificate, the Regions shall undertake the soil testing in accordance with the Soil Testing Plan required by this Certificate.

(b) The soil testing shall be repeated every three (3) years or as agreed upon in writing by the Regional Director.

Disposal of Residual Waste

(11) The Owners shall ensure that no portion of the Residual Waste undergoing compliance testing is transferred from the Site until the results of the compliance testing required by this Certificate demonstrate compliance with the relevant Ministry's requirements.

(12) Bottom ash that is not a hazardous waste, as defined in the *O. Reg. 347,* may be disposed of at an approved non-hazardous waste landfill site or at a site approved to accept such waste by an appropriate government agency of equivalent jurisdiction.

(13) Residual Waste shall be treated to comply with the LDR requirements set out in the *EPA* and the *O. Reg. 347* prior to disposal of at an approved hazardous waste landfill site or at a site approved to accept such waste by an appropriate government agency of equivalent jurisdiction.

Groundwater and Surface Water Monitoring

(14) (a) The Regions shall develop and implement the Groundwater and Surface Water Monitoring Plan, in accordance with the requirements set out in the EA Approval and as determined to be acceptable to the Regional Director.

(b) The Regions shall report the results of the Groundwater and Surface Water Monitoring program to the Regional Director and to the Director in accordance with the schedule set out in the EA Approval and in accordance with the requirements of Condition 14.

(c) The Regions shall post the Groundwater and Surface Water Monitoring Plan and the results of the Groundwater and Surface Water Monitoring program on the Owner's web site for the Facility in accordance with the requirements of the EA Approval and Condition 15.

8. **NUISANCE IMPACT CONTROL and HOUSEKEEPING**

Odour Management

(1) (a) The Owner shall maintain a negative air pressure atmosphere in the Tipping Building at all times to contain any potential odours within the confines of the Tipping Building.

(b) (i) Once per year, or as required by the District Manager, the Owner shall undertake a test to measure the worse case scenario negative air pressure atmosphere throughout the Tipping Building, while the activities approved in this Certificate are carried out in the Tipping Building.

(ii) Notwithstanding the requirements set out in Condition 8.(1)(b)(i), the Owner shall install sufficient instrumentation to measure the air flow into the Boilers and demonstrate that adequate air flow is maintained

to maintain a negative air pressure atmosphere throughout the Tipping Building.

(c) In the event that adequate negative air pressure cannot be maintained, the Owner shall implement any necessary additional odour containment and control measures, including, but not necessarily limited to, those in the required Contingency and Emergency Response Plan.

(2) The Owner shall ensure that the entrance and exit doors into the Tipping Building, the Residue Building and the Grizzly Building are kept closed at all times except to permit the entry or exit of the respective waste transport vehicles and waste handling equipment into and out of these Buildings.

(3) The Owner shall ensure that, at all times, the air from the Tipping Building, the Residue Building, the Grizzly Building and from the Equipment is exhausted through an appropriate and fully functional APC Equipment approved by this Certificate.

(4) The Owner shall undertake appropriate housekeeping activities, including regular cleaning of the tipping floor to control potential sources of fugitive odour emissions.

(5) The Owner shall ensure that no Waste handling equipment or empty storage containers are stored outside, unless they have been washed to prevent fugitive odour emissions.

(6) The Owner shall regularly clean all equipment and storage areas that are used to handle, process and store waste at the Site, including the surfaces of the outdoor spill containment areas, as required.

(7) (i) Prior to the receipt of Waste at the Site, the Owner shall provide documentation which outlines the testing carried out by a licensed structural engineer to confirm the effectiveness of the containment in the buildings, conveyors and tanks and silos at the Site.

(ii) The testing shall be carried out and repeated as directed by the District Manager in accordance with the test protocol prepared in consultation with and approved by the District Manager.

(iii) These tests shall be repeated as directed or agreed by the District Manager.

(8) The Owner shall prepare and implement an Odour Management and Mitigation Plan in accordance with the requirements set out in the EA Approval and as determined to be acceptable to the Regional Director.

(9) (a) In addition to the requirements set out in the EA Approval, the Odour Management and Mitigation Plan shall include the following:

(i) identification of all potential sources of odourous emissions;

(ii) description of the preventative and control measures to minimize odourous emissions from the identified sources;
(iii) procedures for the implementation of the Odour Management and Mitigation Plan;
(iv) inspection and maintenance procedures to ensure effective implementation of the Odour Management and Mitigation Plan; and
(v) procedures for verification and recording the progress of the implementation of the Odour Management and Mitigation Plan.

(b) The Owner shall continue to submit an updated Odour Management and Mitigation Plan until such time as the Regional Director notifies the Owner in writing that further submissions are no longer required.

Vehicles and Traffic

(10) (a) The Owner shall ensure that all vehicles transporting waste to and from the Site are not leaking or dripping waste when arriving at or leaving the Site.

(b) Should the Owner become aware that the truck(s) delivering waste to the Site have leaked wastewater on the municipal roadways, the Owner shall immediately report the violation to the owner of the vehicle(s) and to the District Manager.

(c) The Owner shall ensure that the exterior of all vehicles delivering Waste to the Site or hauling waste from the Site is washed prior to the trucks' departure from the Site, if necessary.

(d) Any necessary truck washing shall occur only in the designated wash down area of the Tipping Building or the Residue Building.

(11) The Owner shall ensure that there is no queuing or parking of vehicles that are waiting to enter the Site on any roadway that is not a distinct part of the Site.

Litter

(12) The Owner shall:

(a) take all practical steps to prevent the escape of litter from the Site;
(b) pick up litter around the Site on a daily basis, or more frequently if necessary; and
(c) if necessary, erect litter fences around the areas causing a litter problem.

Dust

(13) The Owner shall ensure that all on-site roads and operations/yard areas are regularly swept/washed to prevent dust impacts off-Site.

Vermin and Vectors

(14) The Owner shall:

(a) implement necessary housekeeping procedures to eliminate sources and potential sources of attraction for vermin and vectors; and

(b) hire a qualified, licensed pest control professional to design and implement a pest control plan for the Site. The pest control plan shall remain in place, and be updated from time to time as necessary, until the Site has been closed and this Certificate has been revoked.

Visual Screening

(15) The Owner shall provide visual screening for the Site in accordance with the documentation included in the attached Schedule "A".

9. STAFF TRAINING

(1) (a) The Owner shall ensure that all operators of the Site are trained with respect to the following, as per the specific job requirements of each individual operator:

(i) terms and conditions of this Certificate and the requirements of the EA Approval;
(ii) operation and management of the Site, or area(s) within the Site, as per the specific job requirements of each individual operator, and which may include procedures for receiving, screening and identifying Waste, refusal, handling, processing and temporarily storing wastes, operation of the Equipment, the APC Equipment, the CEM System and the Works;
(iii) testing, monitoring and operating requirements;
(iv) maintenance and inspection procedures;
(v) recording procedures;
(vi) nuisance impact control and housekeeping procedures;
(vii) procedures for recording and responding to public complaints;
(viii) an outline of the responsibilities of Site personnel including roles and responsibilities during emergency situations;
(ix) the Contingency and Emergency Response Plan including exit locations and evacuation routing, and location of relevant equipment available for emergency situations;
(x) environmental, and occupational health and safety concerns pertaining to the wastes to be handled;
(xi) emergency first-aid information; and
(xii) relevant waste management legislation and regulations, including the *EPA,* the *OWRA,* the *O. Reg. 347,* the *O. Reg. 419/05* and the Ministry guidelines affecting thermal treatment facilities.

(2) The Owner shall ensure that all personnel are trained in the requirements of this Certificate relevant to the employee's position:

(a) upon commencing employment at the Site in a particular position;
(b) whenever items listed in Condition 9.(1) are changed or updated; and
(c) during the planned refresher training.

10. **COMPLAINTS / ODOUR-CONTAMINANT EMISSIONS RESPONSE PROCEDURE**

(1) The Owner or a designated representative of the Owner shall be available to receive public complaints caused by the operations at the Site twenty-four (24) hours per day, seven (7) days per week.

(2) If at any time, the Owner or the Ministry receives a complaint or the Owner or the Provincial Officer detects an emission of odour or any contaminant, (Emission Event), from the Site, in addition to the requirements set out in the EA approval, the Owner shall record all relevant information in the computerized tracking system and shall respond to the complaint/Emission Event according to the following procedure:

Step 1: Record of Complaint/Emission Event

(a) (i) The Owner shall record each complaint/Emission Event and each record shall include the following:

(A) name, address and the telephone number of the complainant, if known;
(B) time and date of the complaint/Emission Event;
(C) details of the complaint; and

(ii) After the complaint/Emission Event has been recorded in the tracking system, the Owner shall immediately report to the District Manager by phone or e-mail during office hours and to the Ministry's Spills Actions Centre at 1-800-268-6060 after office hours on the receipt of the complaint or occurrence of the Emission Event.

Step 2: Investigation and Handling of Complaint/Emission Event

(b) The Owner shall immediately initiate investigation of the complaint/Emission Event. As a minimum, the investigation shall include the following:

(i) determination of the activities being undertaken at the Site at the time of the complaint/Emission Event;
(ii) meteorological conditions including, but not limited to the ambient temperature, approximate wind speed and its direction.
(iii) determination if the complaint is attributed to activities being undertaken at the Site and if so, the possible cause(s) of the complaint/Emission Event; and

(iv) determination of the remedial action(s) to address the cause(s) of the Complaint/Emission Event, and the schedule for the implementation of the necessary remedial action(s).

(c) The Owner shall respond to the complainant, if known, and the response shall include the results of the investigation of the Complaint, the action(s) taken or planned to be taken to address the cause(s) of the Complaint, and if any follow-up response(s) will be provided.

(d) Upon completed investigation of the Complaint/Emission event, the Owner shall, within three (3) business days, submit a report to the District Manager on the Complaint, on the action(s) taken or planned to be taken to address the cause(s) of the Complaint and on all proposed action(s) to prevent recurrence of the Complaint/Emission Event in the future.

(3) If, in the opinion of the District Manager, failure of the APC Equipment and/or any other process or equipment upset or malfunction results in off-site Complaint/Emission Event, confirmed by the Owner or a Provincial Officer of the Ministry, the Owner shall, immediately upon notification from the District Manager, implement any necessary additional control measures, including, but not necessarily limited to, those in the Contingency and Emergency Response Plan required by this Certificate.

(4) If the District Manager deems the additional control measures taken as per condition 10.(3) to be unsuitable, insufficient or ineffective, the District Manager may direct the Owner, in writing, to take further measures to address the noted failure, upset or malfunction including pursuant to section 39 of the *EPA* requiring a reduction in the receipt of Waste, cessation of the receipt of Waste, removal and off-site disposal of Waste from the Tipping Building as well as making repairs or modifications to equipment or processes.

11. CONTINGENCY and EMERGENCY RESPONSE PLAN

(1) (a) The Owner shall develop and implement a Contingency and Emergency Response Plan in accordance with the requirements set out in the EA Approval.

(b) Notwithstanding the requirements set out in the EA Approval, the Contingency and Emergency Response Plan shall be prepared in consultation with the District Manager or designate, the local Municipality and the Fire Department.

(2) In addition to the requirements set out in the EA Approval, the Contingency and Emergency Response Plan, as a minimum, shall include the following:

(a) the Site plan clearly showing the equipment layout and all storage areas for wastes and reagents;

(b) a list of Site personnel responsible for the implementation of the contingency measures and various emergency response tasks and their training requirements;

(c) a list of equipment and materials required for the implementation of the contingency measures and the emergency situation response;

(d) maintenance and testing program for equipment required for the implementation of the contingency measures and the emergency situation response;

(e) procedures to be undertaken as part of the implementation of the contingency measures and the emergency situation response;

(f) names and telephone numbers of waste management companies available for emergency response;

(g) notification protocol, with names and telephone numbers of persons to be contacted, including the Owner, the Site personnel, the Ministry of the Environment Spills Action Centre and the York Durham District, the local Fire and Police Departments, the local Municipality, the local Medical Officer of Health, and the Ministry of Labour;

(h) procedures and actions to be taken should the incoming Waste not meet the applicable quality criteria specified in this Certificate;

(i) procedures and actions to be taken should the outgoing Residual Waste fail to meet the criteria specified in this Certificate;

(j) procedures and actions to be taken should the current disposal options for the outgoing Residual Waste become unavailable;

(k) design of the contingency measure, procedures and actions should the emissions from the Site, including the fugitive odour/dust emissions, cause occurrences of public Complaints;

(l) procedures and actions to be taken should the Owner be unable to maintain the negative pressure in the Tipping Building;

(m) procedures and actions to be taken should the occurrence of Complaints require the Owner to suspend the waste processing activities at the Site; and

(n) identification and risk assessment of all reasonably foreseeable incidents that may result in a discharge into the natural environment of any contaminant in an amount, concentration or level in excess of that prescribed by the Regulations and/or imposed by this Certificate, including but not limited to:

    (i) a breakdown of the Facility/Equipment or part of the Facility/Equipment, including the APC Equipment and the CEM Systems associated with the Boilers;

    (ii) CEM Systems indicate that the Boilers and associated APC Equipment have been out of compliance with the Performance Requirements;

    (iii) any change in process parameters which may result in non compliance with the Performance Requirements;

    (iv) power failure resulting in the use of the Emergency Diesel Generator or Total Power Failure; and

    (v) description of the preventative and control measures to minimize the occurrence or impacts of the above incidents; and

    (vi) procedures for corrective measures and timelines to take to address the above incidents in a timely manner to effectively prevent or minimize the discharge of any contaminant into the natural environment and continue to maintain compliance with the *EPA* , the Regulations and

this Certificate, including procedures for Waste Processing Rate reduction, waste feed cut-off, Controlled Shutdown or Emergency Shutdown of the Boilers as applicable.

(3) The Owner shall submit the finalized Contingency and Emergency Response Plan to the Director a minimum of one hundred and twenty (120) days prior to the Commencement Date of Operation, for approval.

(4) An up-to-date version of the Contingency and Emergency Response Plan shall be kept at the Site at all times, in a central location available to all staff, and it shall be available for inspection by a Provincial Officer upon request.

(5) The Owner shall ensure that the names and telephone numbers of the persons to be contacted in the event of an emergency situation are kept up-to-date, and that these numbers are prominently displayed at the Site and at all times available to all staff and emergency response personnel.

(6) The Contingency and Emergency Response Plan shall be reviewed on a regular basis and updated, as necessary. The revised version of the Contingency and Emergency Response Plan shall be submitted to the local Municipality and the Fire Department for comments and to the District Manager for comments and concurrence.

(7) The Owner shall implement the recommendations of the updated Contingency and Emergency Response Plan, immediately upon receipt of the written concurrence from the District Manager.

12. **EMERGENCY SITUATION RESPONSE and REPORTING**

(1) The Owner shall immediately take all measures necessary to contain and clean up any spill or leak which may result from the operation at this Site and manage any emergency situation in accordance with the Contingency and Emergency Response Plan.

(2) The Owner shall ensure that the equipment and materials listed in the Contingency and Emergency Response Plan are immediately available at the Site, are in a good state of repair, and fully operational at all times.

(3) The Owner shall ensure that all Site personnel responsible for the emergency situation response are fully trained in the use of the equipment and related materials, and in the procedures to be employed in the event of an emergency.

(4) All Spills as defined in the *EPA* shall be immediately reported to the **Ministry's Spills Action Centre at 1-800-268-6060** and shall be recorded in the log book as to the nature of the emergency situation, and the action taken for clean-up, correction and prevention of future occurrences.

13. **SUBMISSIONS to the REGIONAL DIRECTOR or DISTRICT MANAGER**

(1) The Owner shall notify the District Manager in writing, at least six (60) days prior to the scheduled date for the first receipt of Waste at the Site, as to whether or not the construction of the Facility has been carried out in accordance with this Certificate to a point of Substantial Completion.

(2) (a) The Owner shall forthwith notify the District Manager and the Spills Action Centre by telephone, when any of the following incidents occur that may result in a discharge into the natural environment of any contaminant in an amount, concentration or level in excess of that prescribed by the Regulations and/or imposed by this Certificate:

(i) CEM Systems indicate that the Boilers and associated APC Equipment have been out of compliance with the Performance Requirements triggering a Waste Processing Rate Reduction, Waste Feed cut-off, Controlled Shutdown or Emergency Shutdown as specified in the Emergency Response and Contingency Plan;
(ii) failure of the APC Equipment associated with the Boilers; and
(iii) power failure resulting in the use of the emergency diesel generator or Total Power Failure;

(b) In addition to fulfilling the notification requirements from the *EPA,* the Owner shall prepare and submit a written report to the District Manager with respect to any of the above said occurrences, within five (5) calendar days of the occurrence, in the following format:

(i) date of the occurrence;
(ii) general description of the occurrence;
(iii) duration of the occurrence;
(iv) effect of the occurrence on the emissions from the Facility;
(v) measures taken to alleviate the effect of the occurrence on the emissions from the Facility; and
(vi) measures taken to prevent the occurrence of the same or similar occurrence in the future.

(3) Should a Spill, as defined in the *EPA*, occur at the Site, in addition to fulfilling the requirements from the *EPA* and applicable regulations, the Owner shall submit to the District Manager a written report within three (3) calendar days outlining the nature of the Spill, remedial measure taken and the measures taken to prevent future occurrences at the Site.

(4) (a) Within ninety (90) days from the date of this Certificate, the Regions shall prepare and submit to the District Manager for concurrence, a Soil Testing Plan to monitor the impact of the Site operations at the locations where the ambient air monitoring is proposed by the Owner in accordance with the requirements set out in the EA Approval.

(b) (i) This Plan shall ensure that representative samples of the soil to be tested are collected in sufficient numbers and that the samples are properly preserved and tested so that reliable data on the soil characteristics is collected.

(ii) As a minimum, the Plan shall include testing for cadmium, lead, chromium, nickel, cobalt, copper, molybdenum, selenium, zinc and mercury, Dioxins and Furans.

(iii) This Plan shall comply with the Ministry's regulatory requirements for sampling and testing of soil and it shall include the rationale for the proposed methods.

(iv) This Plan be kept at the Site at all times and be available for inspection by a Provincial Officer upon request.

14. **RECORDS KEEPING**

(1) Any information requested by the Ministry concerning the Facility and its operation under this Certificate, including, but not limited to, any records required to be kept by this Certificate, shall be provided to the Ministry, upon request**,** in a timely manner.

(2) The Owner shall retain, for a minimum of seven (7) years from the date of their creation, except as noted below, all reports, records and information described in this Certificate.

Daily Activities

(3) The Owner shall maintain an on-Site written or digital record of activities undertaken at the Site. All measurements shall be recorded in consistent metric units of measurement. As a minimum, the record shall include the following:

(a) date of record and the name and signature of the person completing the report;
(b) quantity and source of the incoming Waste received at the Site;
(c) records of the estimated quantity of Waste thermally treated in the Boilers;
(d) quantity of the Unacceptable Waste received at the Site by the end of the approved Waste receipt period and the type(s) of the Unacceptable Waste received;
(e) quantity and type of the Residual Waste shipped from the Site, including any required outgoing Residual Waste characterization results;
(f) destination and/or receiving site(s) for the Residual Waste shipped from the Site;
(g) quantity and type of any Rejected Waste accepted at the Site;
(h) destination and/or receiving site(s) for the Rejected Waste shipped from the Site;
(i) housekeeping activities, including litter collection and washing/cleaning activities, etc.
(j) amount of electricity produced;

(k) amount of excess electricity exported to the electrical grid.

Monitoring and Testing Records

(4) The Owner shall maintain an on-Site written or digital record of activities undertaken at the Site. All measurements shall be recorded in consistent metric units of measurement. As a minimum, the record shall include the following:

(a) day and time of the activity;
(b) all original records produced by the recording devices associated with the CEM Systems;
(c) a summary of daily records of readings of the CEM Systems, including:
  (i) the daily minimum and maximum 4-hour average readings for carbon monoxide;
  (ii) the daily minimum and maximum one hour average readings for oxygen;
  (iii) the daily minimum and maximum 10-minute average readings for organic matter;
  (iv) the daily minimum and maximum 24-hour average readings for sulphur dioxide;
  (v) the daily minimum and maximum 24-hour average readings for nitrogen oxides;
  (vi) the daily minimum and maximum 24-hour average readings for hydrogen chloride;
  (vii) the daily minimum and maximum 6-minute average and 2-hour average opacity readings; and
  (viii) the daily minimum and maximum one-hour average readings for temperature measurements.
(d) records of all excursions from the applicable Performance Requirements as measured by the CEM Systems, duration of the excursions, reasons for the excursions and corrective measures taken to eliminate the excursions;
(e) all records produced during any Acoustic Audit;
(f) all records produced during any Source Testing;
(g) all records produced by the long term sampling program for Dioxins and Furans required by this Certificate;
(h) all records produced during the Residual Waste compliance testing;
(i) all records produced during the Soil Testing;
(j) all records produced during the Groundwater and Surface Water Monitoring required by this Certificate;
(k) all records produced during the Ambient Air Monitoring required by this Certificate;
(l) all records associated with radiation monitoring of the incoming Waste, including but not limited to:
  (i) transaction number;
  (ii) hauler;
  (iii) vehicle ID;
  (iv) alarm level;
  (v) maximum CPS;
  (vi) uSv/hr;

(vii) comment;
(viii) background CPS;
(ix) driver time in and out; and
(x) name of the Trainer Personnel that carried out the monitoring.

(m) results of the containment testing carried out in the buildings, conveyors, tanks and silos, as required;
(n) results the negative pressure in the Tipping Building carried out, as required.

Inspections/Maintenance/Repairs

(5) The Owner shall maintain an on-Site written or digital record of inspections and maintenance as required by this Certificate. As a minimum, the record shall include the following:

(a) the name and signature of the Trained Personnel that conducted the inspection;
(b) the date and time of the inspection;
(c) the list of any deficiencies discovered, including the need for a maintenance or repair activity;
(d) the recommendations for remedial action;
(e) the date, time and description of actions (repair or maintenance) undertaken;
(f) the name and signature of the Trained Personnel who undertook the remedial action; and
(g) an estimate of the quantity of any materials removed during cleaning of the Works.

Emergency Situations

(6) The Owner shall maintain an on-Site written or digital record of the emergency situations. As a minimum, the record shall include the following:

(a) the type of an emergency situation;
(b) description of how the emergency situation was handled;
(c) the type and amount of material spilled, if applicable;
(d) a description of how the material was cleaned up and stored, if generated; and
(e) the location and time of final disposal, if applicable; and
(f) description of the preventative and control measures undertaken to minimize the potential for re-occurrence of the emergency situation in the future.

Complaints Response Records

(7) The Owner shall establish and maintain a written or digital record of complaints received and the responses made as required by this Certificate.

Training

(8) The Owner shall maintain an on-Site written or digital record of training as required by this Certificate. As a minimum, the record shall include the following:

(a) date of training;
(b) name and signature of person who has been trained; and
(c) description of the training provided.

Reports

(9) The Owner shall keep at the Site the following reports required by this Certificate:

(a) the ESDM Report
(b) the Acoustic Assessment Report;
(c) the Annual Report; and
(d) the Third Party Audit.

15. REPORTING

Annual Report

(1) By March 31st following the end of each operating year, the Owner shall prepare and submit to the District Manager and to the Advisory Committee, an Annual Report summarizing the operation of the Site covering the previous calendar year. This Annual Report shall include, as a minimum, the following information:

(a) a summary of the quality and the quantity of the Wastes accepted at the Site, including the maximum amount of the Waste received annually and daily and the sources of the Waste;

(b) a summary of the quality and the quantity of the Residual Waste shipped from the Site, including the analytical data required to characterize the Residual Waste, the off-Site destinations for the Residual Waste and its subsequent use, if known;

(c) estimated material balance for each month documenting the maximum amount of wastes stored at the Site;

(d) annual water usage;

(e) annual amount of the electricity produced and the annual amount of the electricity exported to the electrical grid;

(f) summaries and conclusions from the records required by Conditions 14.(3) through 14.(8) of this Certificate;

(g) the Emission Summary Table and the Acoustic Assessment Summary Table for the Facility as of December 31 from the previous calendar year;

(h) a summary of dates, duration and reasons for any environmental and operational problems, Boilers downtime, APC Equipment and CEM System malfunctions that may have negatively impacted the quality of the environment or any incidents triggered by the Emergency Response and

Contingency Plan and corrective measures taken to eliminate the environmental impacts of the incidents;

(i) a summary of the dates, duration and reasons for all excursions from the applicable Performance Requirements as measured by the CEM Systems or as reported by the annual Source Testing, reasons for the excursions and corrective measures taken to eliminate the excursions;

(j) results of the evaluation of the performance of the long-term sampling system in determining the Dioxins and Furans emission trends and/or fluctuations for the year reported on as well as demonstrating the ongoing performance of the APC Equipment associated with the Boilers;

(k) dates of all environmental complaints relating to the Site together with cause of the Complaints and actions taken to prevent future Complaints and/or events that could lead to future Complaints;

(l) any environmental and operational problems that could have negatively impacted the environment, discovered as a result of daily inspections or otherwise and any mitigative actions taken;

(m) a summary of any emergency situations that have occurred at the Site and how they were handled;

(n) the results and an interpretive analysis of the results of the groundwater and surface water, including an assessment of the need to amend the monitoring programs;

(o) summaries of the Advisory Committee meetings, including the issues raised by the public and their current status;

(p) any recommendations to improve the environmental and process performance of the Site in the future;

(q) statement of compliance with this Certificate, including compliance with the *O. Reg. 419/05* and all air emission limits based on the results of source testing, continuous monitoring and engineering calculations, as may be appropriate; and

(r) interpretation of the results and comparison to the results from previous Annual Reports to demonstrate the Facility's impact on the environment.

Third Party Audit

(2) (a) The Regions shall ensure that an independent technical review of the operations at the Site is undertaken in accordance with the requirements of the EA Approval.

(b) In addition to the Third Party Audit requirements set out in the EA approval, the Third Party Audit shall include the following:

(i) a review of the data from the monitoring and testing required by this Certificate;
(ii) a review of all complaints received about the operation of the Facility;
(iii) any recommendations for improving the operation of the Facility received from the Advisory Committee; and
(iv) a recommendation of any improvements that could be made to ensure that the operation of the Facility is optimized and is protective of the health and safety of people and the environment.

(3) The Regions shall submit a Written Audit Report on the results of the independent technical review to the Regional Director in accordance with the Audit Plan and retain a copy at the Site.

Soil Testing Report

(4) Within one (1) month of completion of each Soil Testing event, the Regions shall submit to the District Manager a Soil Testing Report, which includes the details on the sampling/testing procedures, the results of the testing and a comparison with the results obtained during the previous Soil Testing.

16. PUBLIC ACCESS TO DOCUMENTATION

(1) The Owner shall, at all times, maintain documentation that describes the current operations of the Facility. The Owner shall post the documentation at the website for the undertaking and during regular business hours, the Owner shall make the following documents available for inspection at the Site by any interested member of the public, upon submission to the Ministry for review:

(a) a current ESDM Report that demonstrates compliance with the Performance Limits for the Facility regarding all Compounds of Concern;

(b) a current Acoustic Assessment Report that demonstrates compliance with the Performance Limits for the Facility regarding noise emissions;

(c) the most recent Annual Report;

(d) the most current Third Party Audit Report;

(e) Odour Management and Mitigation Plan, prepared in accordance with the requirements of the EA Approval;

(f) Noise Monitoring and Reporting Plan, prepared in accordance with the requirements of the EA Approval; and

(g) Groundwater and Surface Water Monitoring and Reporting Plan, prepared in accordance with the requirements of the EA Approval.

(2) The Owner shall ensure that necessary hardware and software are provided at a location available to the public, to provide on-line real-time reporting of the operating parameter data for the Facility, including acceptable operating limits, stack emissions, and all other parameters for which continuous monitoring is required and that continuous records of the same be kept and made available to the public.

17. **ADVISORY COMMITTEE**

(1) The Regions shall establish an Advisory Committee in accordance with the requirements set out in the EA Approval.

18. **CLOSURE of the SITE**

(1) A minimum of nine (9) months prior to closure of the Site, the Owner shall submit, for approval by the Director, a written Closure Plan for the Site. This Plan shall include, as a minimum, a description of the work that will be done to facilitate closure of the Site and a schedule for completion of that work.

(2) Within ten (10) days after closure of the Site, the Owner shall notify the Director and the District Manager, in writing, that the Site is closed and that the approved Closure Plan has been implemented.

<u>**SCHEDULE**</u> <u>"A"</u>

Supporting Documentation

(1) Applications for a Certificate of Approval (Air) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

   (a) Emission Summary and Dispersion Modelling Report, dated March 2011, prepared by Golder Associates;

   (b) Acoustic Assessment Report prepared by Golder Associates Ltd., dated March 2011 and signed by Paul Niejadlik.

(2) Applications for a Provisional Certificate of Approval (Waste Disposal Site) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

   (a) Attachment #1 containing the "Design and Operations Report", dated March 2011, prepared by Golder Associates Ltd.;

   (b) Attachment #3 containing the "Public Consultation Report", dated March 2011, prepared by Golder Associates Ltd.;

   (c) Attachment #4 containing the Host Community Agreement

   (d) Attachment #5 containing the proof of legal name for Covanta Durham York Renewable Energy Limited Partnership; and

   (e) A letter May 24, 2011 from Anthony Ciccone, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, providing additional technical information on the proposal and attaching a report entitled "Amendment #1 Durham York Energy Centre Design and Operations Report", dated May 2011;

(3) Applications for a Certificate of Approval of Municipal and Private Sewage Works dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of Durham and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

(a) "Surface Water and Groundwater Technical Study Report" dated July 2009, prepared by Jacques Whitford, Markham, Ontario (CD Report).

(b) "Stormwater Design Model Output" prepared by Sigma Energy, dated March 2001 (CD Report).

(c) Clearance letter from Central Lake Ontario Conservation date February 22, 2011.

(d) A letter dated March 23, 2011, from Brian Bahor, Covanta Energy Corporation, to Stefanos Habtom, Ontario Ministry of the Environment, providing additional technical design information on the proposed stormwater management ponds.

SCHEDULE "B"

Procedure to calculate and record the 10-minute average concentration of odour at the Point of Impingement and at the most impacted Sensitive Receptor

(a) Calculate and record one-hour average concentration of odour at the Point of Impingement and at the most impacted Sensitive Receptor, employing CALPUFF atmospheric dispersion model or the dispersion model acceptable to the Director that employs at least five (5) years of hourly local meteorological data and that can provide results reported as individual one-hour average odour concentrations.

(b) Convert and record each of the one-hour average concentrations predicted over the five (5) years of hourly local meteorological data at the Point of Impingement and at the most impacted Sensitive Receptor to 10-minute average concentrations using the One-hour Average to 10-Minute Average Conversion described below; and

(c) Record and present the 10-Minute Average concentrations predicted to occur over a five (5) year period at the Point of Impingement and at the most impacted Sensitive Receptor in a histogram. The histogram shall identify all predicted 10-minute average odour concentration occurrences in terms of frequency, identifying the number of occurrences over the entire range of predicted odour concentration in increments of not more than 1/10 of one odour unit. The maximum 10-minute average concentration of odour at the Sensitive Receptor will be considered to be the maximum odour concentration at the most impacted Sensitive Receptor that occurs and is represented in the histogram, disregarding outlying data points on the histogram as agreed to by the Director.

One-hour Average To 10-minute Average Conversion

1. Use the following formula to convert and record one-hour average concentrations predicted by the CALPUFF atmospheric dispersion model or by the dispersion model acceptable to the Director to 10-minute average concentrations:

X10min = X60min*1.65

where X10min = 10-minute average concentration
X60min = one-hour average concentration

SCHEDULE "C"

PERFORMANCE REQUIREMENTS

In-Stack Emission Limits

Parameter	In-Stack Emission Limit	Verification of Compliance
Total Suspended Particulate Matter (filterable particulate measured in accordance with the Ontario Source Testing Code)	9 mg/Rm3	Results from compliance Source Testing
cadmium	7 µg/Rm3	Results from compliance Source Testing
lead	50 µg/Rm3	Results from compliance Source Testing
mercury	15 µg/Rm3	Results from compliance Source Testing
dioxins and furans	60 pg/Rm3	Results from compliance Source Testing; results expressed as I-TEQ
hydrochloric acid (HCl)	9 mg/Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes
sulphur dioxide (SO2)	35 mg/Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes
nitrogen oxides (NOx)	121 mg/ Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes
organic matter (undiluted, expressed as equivalent methane)	50 ppmdv (33 mg/ Rm3)	Results from compliance source testing
carbon monoxide	35 ppmdv (40 mg/Rm3)	Calculated as the rolling arithmetic average of four (4) hours of data measured by a CEM System that provides data at least once every fifteen minutes, in accordance with condition 6 (2) (c)
opacity	10 percent	Calculated as the rolling arithmetic average of six (6) minutes of data measured by a CEM System that provides data at least once every minute
	5 percent	Calculated as the rolling arithmetic average of two (2) hours of data measured by a CEM System that provides data at least once every

		fifteen minutes

mg/Rm3- milligrams per reference cubic metre;

pg/Rm3 - picograms per reference cubic metre

ppmdv parts per million by dry volume,

µg/Rm3 - micrograms per reference cubic metre

R- reference conditions - 25 degrees Celsius, 101.3 kilopascals, dry basis, 11% oxygen

SCHEDULE "D"

TEST CONTAMINANTS

Hydrogen Chloride
Hydrogen Fluoride
Oxides of Nitrogen expressed as Nitrogen Dioxide
Sulphur Dioxide
Total Hydrocarbons, expressed as methane on wet basis
Carbon Dioxide
Total Suspended Particulate Matter (< 44 microns)
Total PM-10 including condensables
Total PM-2.5 including condensables

Metals

Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Copper
Lead
Mercury
Molybdenum
Nickel
Selenium
Silver
Thallium
Vanadium
Zinc

Schedule "D" - Cont'd

Chlorobenzenes	Chlorophenols
Monochlorobenzene (MCB) 1,2-Dichlorobenzene (1,2-DCB) 1,3-Dichlorobenzene (1,3-DCB) 1,4-Dichlorobenzene (1,4-DCB) 1,2,3-Trichlorobenzene (1,2,3-TCB) 1,2,4-Trichlorobenzene (1,2,4-TCB) 1,3,5-Trichlorobenzene (1,3,5-TCB) 1,2,3,4-Tetrachlorobenzene (1,2,3,4-TeCB) 1,2,3,5-Tetrachlorobenzene (1,2,3,5-TeCB) 1,2,4,5-Tetrachlorobenzene (1,2,4,5-TeCB) Pentachlorobenzene (PeCB) Hexachlorobenzene (HxCB)	2-monochlorophenol (2-MCP) 3-monochlorophenol (3-MCP) 4-monochlorophenol (4-MCP) 2,3-dichlorophenol (2,3-DCP) 2,4-dichlorophenol (2,4-DCP) 2,5-dichlorophenol (2,5-DCP) 2,6-dichlorophenol (2,6-DCP) 3,4-dichlorophenol (3,4-DCP) 3,5-dichlorophenol (3,5-DCP) 2,3,4-trichlorophenol (2,3,4-T3CP) 2,3,5-trichlorophenol (2,3,5-T3CP) 2,3,6-trichlorophenol (2,3,6-T3CP) 2,4,5-trichlorophenol (2,4,5-T3CP) 2,4,6-trichlorophenol (2,4,6-T3CP) 3,4,5-trichlorophenol (3,4,5-T3CP) 2,3,4,5-tetrachlorophenol (2,3,4,5-T4CP) 2,3,4,6-tetrachlorophenol (2,3,4,6-T4CP) 2,3,5,6-tetrachlorophenol (2,3,5,6-T4CP) Pentachlorophenol (PeCP)

Schedule "D" - Cont'd

Co-Planar PCBs (Dioxin-like PCBs)	Volatile Organic Matter
PCB-077 (3,3',4,4'-TCB)	Acetaldehyde
PCB-081 (3,4,4',5-TCB)	Acetone
PCB-105 (2,3,3',4,4'-PeCB)	Acrolein
PCB-114 (2,3,4,4',5-PeCB)	Benzene
PCB-118 (2,3',4,4',5-PeCB)	Bromodichloromethane
PCB-123 (2',3,4,4',5-PeCB)	Bromoform
PCB-126 (3,3',4,4',5-PeCB)	Bromomethane
PCB-156 (2,3,3',4,4',5-HxCB)	Butadiene, 1,3 -
PCB-157 (2,3,3',4,4',5'-HxCB)	Butanone, 2 -
PCB-167 (2,3',4,4',5,5'-HxCB)	Carbon Tetrachloride
PCB-169 (3,3',4,4',5,5'-HxCB)	Chloroform
PCB-189 (2,3,3',4,4',5,5'-HpCB)	Cumene
	Dibromochloromethane
	Dichlorodifluoromethane
	Dichloroethane, 1,2 -
	Dichloroethene, Trans - 1,2
	Dichloroethene, 1,1 -
	Dichloropropane, 1,2 -
	Ethylbenzene
	Ethylene Dibromide
	Formaldehyde
	Mesitylene
	Methylene Chloride
	Styrene
	Tetrachloroethene
	Toluene
	Trichloroethane, 1,1,1 -
	Trichloroethene
	Trichloroethylene, 1,1,2 -
	Trichlorotrifluoroethane
	Trichlorofluoromethane
	Xylenes, M-, P- and O-
	Vinyl Chloride

Schedule "D" - Cont'd

Polycyclic Organic Matter	Dioxin/Furan Isomers
Acenaphthylene Acenaphthene Anthracene Benzo(a)anthracene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)fluorene Benzo(b)fluorene Benzo(ghi)perylene Benzo(a)pyrene Benzo(e)pyrene Biphenyl 2-Chloronaphthalene Chrysene Coronene Dibenzo(a,c)anthracene Dibenzo(a,h)anthracene Dibenzo(a,e)pyrene 9,10-Dimethylanthracene 7,12-Dimethylbenzo(a)anthracene Fluoranthene Fluorene Indeno(1,2,3-cd)pyrene 2-Methylanthracene 3-Methylcholanthrene 1-Methylnaphthalene 2-Methylnaphthalene 1-Methylphenanthrene 9-Methylphenanthrene Naphthalene Perylene Phenanthrene Picene Pyrene Tetralin M-terphenyl O-terphenyl P-terphenyl Triphenylene	2,3,7,8-Tetrachlorodibenzo-p-dioxin 1,2,3,7,8-Pentachlorodibenzo-p-dioxin 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin 2,3,7,8-Tetrachlorodibenzofuran 2,3,4,7,8-Pentachlorodibenzofuran 1,2,3,7,8-Pentachlorodibenzofuran 1,2,3,4,7,8-Hexachlorodibenzofuran 1,2,3,6,7,8-Hexachlorodibenzofuran 1,2,3,7,8,9-Hexachlorodibenzofuran 2,3,4,6,7,8-Hexachlorodibenzofuran 1,2,3,4,6,7,8-Heptachlorodibenzofuran 1,2,3,4,7,8,9-Heptachlorodibenzofuran 1,2,3,4,6,7,8,9-Octachlorodibenzofuran

SCHEDULE "E"

SOURCE TESTING PROCEDURES

1. The Owner shall submit, to the Manager a test protocol including the Pre-Test Information required by the Source Testing Code, at least two (2) months prior to the scheduled Source Testing date.

2. (1) For the purpose of the Source Testing program, the Owner is temporarily permitted to operate the Boilers at a residual oxygen concentration below the performance limit outlined in Condition 6.(2)(b) during the period of the Source Testing. The Owner shall ensure that the concentration of residual oxygen in the Undiluted Gases leaving the combustion zone of the Boilers, as measured and recorded by the CEM System, shall not be less than 5 percent by volume on a dry basis, during this Source Testing program.

   (2) If the Source Testing results demonstrate that compliance with the Performance Requirements can be maintained at a residual oxygen concentration below the performance limit outlined in Condition 6.(2)(b), the Owner may apply to the Director for approval to alter the required residual oxygen concentration.

3. The Owner shall finalize the test protocol in consultation with the Manager.

4. The Owner shall not commence the Source Testing until the Manager has accepted the test protocol.

5. The Owner shall complete the first Source Testing not later than six (6) months after Commencement of Operation of the Facility/Equipment.

6. The Owner shall conduct subsequent Source Testing at least once (1) every calendar year thereafter.

7. The Owner shall notify the District Manager and the Manager in writing of the location, date and time of any impending Source Testing required by this Certificate, at least fifteen (15) days prior to the Source Testing.

8. The Owner shall submit a report on the Source Testing programs to the District Manager and the Manager not later than three (3) months after completing each Source Testing program. The report shall be in the format described in the Source Testing Code, and shall also include, but not be limited to:

   (1) an executive summary;
   (2) records of operating conditions; including process description, records of waste composition and feed rate during the Source Testing;
   (3) all records produced by the CEM Equipment;
   (4) procedures followed during the Source Testing and any deviation from the proposed test protocol and the reasons therefore;
   (5) the results of the analyses of the stack emissions;

(6) a summary table that compares the Source Testing results, the monitoring data and the records of operating conditions during the Source Testing to the requirements imposed by the *EPA*, the Regulation and/or the Performance Requirements;

(7) the results of dispersion calculations in accordance with the *O. Reg. 419/05*, indicating the maximum concentration of the Test Contaminants, at the Point of Impingement.

(8) an updated site wide emission source inventory to assess the aggregate point of impingement concentrations of the Test Contaminants.

9. The Owner shall ensure that the Source Testing Report is made available and easily accessible for review by the public at the Facility, immediately after the document is submitted to the Ministry.

10. The Director may not accept the results of the Source Testing if:

(1) the Source Testing Code or the requirements of the Manager were not followed; or

(2) the Owner did not notify the District Manager and the Manager of the Source Testing; or

(3) the Owner failed to provide a complete report on the Source Testing.

11. If the Director does not accept the results of the Source Testing, the Director may require re-testing.

SCHEDULE "F"

PARAMETER:
Temperature

LOCATION:
The sample point for the Continuous Temperature Monitor shall be located at a point where the temperature in the combustion zone of the Boilers has reached at least 1000^{o}C for a period of not less than one second. Compliance shall be proven by direct measurement or/and a correlation between the measured temperature and the intended target proven by a method acceptable to the Director.

PERFORMANCE:
The Continuous Temperature Monitor shall meet the following minimum performance specifications for the following parameters.

	PARAMETERS	SPECIFICATION
1)	Type:	"K", "J" or other type or alternative measurement device with equivalent measurement accuracy and suitable to the temperature range being measured
2)	Accuracy:	± 1.5 percent of the minimum gas temperature

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor without a significant loss of accuracy and with a time resolution of 1 minutes or better. Temperature readings for record keeping and reporting purposes shall be kept as one-hour average values.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 95 percent of the time for each calendar quarter.

PARAMETER:
Carbon Monoxide

INSTALLATION:
The Continuous Carbon Monoxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (parts per million, ppm):	0 to ≥100 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Carbon Monoxide Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤10 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3) Calibration Error:	≤ 2.5 percent of actual concentration
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 5 percent of span value
7) Span Calibration Drift (24-hour):	≤5 percent of span value
8) Response Time (90 percent response to a step change):	≤180 seconds
9) Operational Test Period:	≥168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:
Oxygen

INSTALLATION:
The Continuous Oxygen Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of oxygen in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler and in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (percentage):	0 - 20 or 0 - 25
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Oxygen Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (percentage):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤10 percent of the mean value of the reference method test data
3) Calibration Error:	0.25 percent O_2
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 0.5 percent O_2
7) Span Calibration Drift (24-hour):	≤ 0.5 percent O_2
8) Response Time (90 percent response to a step change):	≤ 90 seconds
9) Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better. Oxygen concentration readings for record keeping and reporting purposes shall be kept as one-hour average values.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:
Hydrogen Chloride

INSTALLATION:
The Continuous Hydrogen Chloride Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of hydrogen chloride in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (parts per million, ppm):	0 to ≥100 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Hydrogen Chloride Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤ 20 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3) Calibration Error:	≤ 2 percent of actual concentration
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 5 percent of span value
7) Span Calibration Drift (24-hour):	≤ 5 percent of span value
8) Response Time (90 percent response to a step change):	≤ 240 seconds
9) Operational Test Period:	≥168 hours without corrective maintenance

CALIBRATION:
The monitor shall be calibrated daily at the sample point, to ensure that it meets the drift limits specified above, during the periods of the operation of the . The results of all calibrations shall be recorded at the time of calibration.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 5 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:
Nitrogen Oxides

INSTALLATION:
The Continuous Nitrogen Oxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of nitrogen oxides in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Analyzer Operating Range (parts per million, ppm):	0 to ≥200 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Nitrogen Oxides Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data
3) Calibration Error:	≤ 2 percent of actual concentration
4) System Bias:	≤4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 2.5 percent of span value
7) Span Calibration Drift (24-hour):	≤ 2.5 percent of span value
8) Response Time (90 percent response to a step change):	≤ 240 seconds
9) Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:
Sulphur Dioxide

INSTALLATION:
The Continuous Sulphur Dioxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of sulphur dioxide in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1. Range (parts per million, ppm):	0 to ≥100 ppm
2. Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Sulphur Dioxide Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1. Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2. Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data
3. Calibration Error:	≤ 2 percent of actual concentration
4. System Bias:	≤ 4 percent of the mean value of the reference method test data
5. Procedure for Zero and Span Calibration Check:	all system components checked
6. Zero Calibration Drift (24-hour):	≤ 2.5 percent of span value
7. Span Calibration Drift (24-hour):	≤ 2.5 percent of span value
8. Response Time (90 percent response to a step change):	≤ 200 seconds
9. Operational Test Period:	≥168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:
Total Hydrocarbons

INSTALLATION:
The Total Hydrocarbons Monitor shall be installed at an accessible location where the measurements are representative of the concentrations of Organic Matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler and shall meet the following installation specifications.

PARAMETERS		SPECIFICATION
1.	Detector Type:	Flame Ionization
2.	Oven Temperature:	160^{o}C minimum
3.	Flame Temperature:	1800 ^{o}C minimum at the corona of the hydrogen flame
4.	Range (parts per million, ppm):	0 to ≥200 ppm
5.	Calibration Gas:	propane in air or nitrogen
6.	Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Total Hydrocarbons Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS		SPECIFICATION
1.	Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2.	Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3.	System Bias:	≤ 4 percent of the mean value of the reference method test data
4.	Noise:	≤ 1 percent of span value on most sensitive range
5.	Repeatability:	≤ 1 percent of span value
6.	Linearity (response with propane in air):	≤ 3 percent of span value over all ranges
7.	Calibration Error:	≤ 2 percent of actual concentration
8.	Procedure for Zero and Span Calibration Check:	all system components checked on all ranges
9.	Zero Calibration Drift (24-hours):	≤ 2.5 percent of span value on all ranges
10.	Span Calibration Drift (24-hours):	≤ 2.5 percent of span value
11.	Response Time (90 percent response to a step change):	≤ 60 seconds
12.	Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better. Measurements of concentrations of organic matter (as methane) shall be kept as 10 minute average values for record keeping and reporting purposes.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER: Opacity

INSTALLATION: The Continuous Opacity Monitor shall be installed at an accessible location where the measurements are representative of the actual opacity of the Undiluted Gases leaving the APC Equipment associated with each Boiler and shall meet the following design and installation specifications.

PARAMETERS		SPECIFICATION
1)	Wavelength at Peak Spectral Response (nanometres, nm):	500 - 600
2)	Wavelength at Mean Spectral Response (nm):	500 - 600
3)	Detector Angle of View:	≤ 5 degrees
4)	Angle of Projection:	≤ 5 degrees
5)	Range (percent of opacity):	0 -100

PERFORMANCE:
The Continuous Opacity Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS		SPECIFICATION
1)	Span Value (percent opacity):	2 times the average normal opacity of the source
2)	Calibration Error:	≤3 percent opacity
3)	Attenuator Calibration:	≤2 percent opacity
4)	Response Time (95 percent response to a step change):	≤ 10 seconds
5)	Schedule for Zero and Calibration Checks:	daily minimum
6)	Procedure for Zero and Calibration Checks:	all system components checked
7)	Zero Calibration Drift (24-hours):	≤ 2 percent opacity
8)	Span Calibration Drift (24-hours):	≤ 2 percent opacity
9)	Conditioning Test Period:	≥ 168 hours without corrective maintenance
10)	Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
The monitor shall be calibrated, to ensure that it meets the drift limits specified above, during the periods of the operation of the Equipment. The results of all calibrations shall be recorded at the time of calibration.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 30 seconds or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:
Moisture, Hydrogen Fluoride and Ammonia

<u>Selection and Installation</u>

The Owner shall select and install a CEM System, to measure moisture content of the stack gases, the concentration of hydrogen fluoride and ammonia in the Undiluted Gases leaving the APC Equipment associated with each Boiler, as follows:

a) Design and Performance Specifications shall be in accordance with 40 CFR 60, Appendix B, Specification 4.

b) The Owner shall select the probe locations in compliance with 40 CFR 60, Appendix B, Specification 2.

<u>Test Procedures</u>

The Owner shall verify compliance with the Design and Performance Specifications in accordance with 40 CFR 60, Appendix B, Specification 4, with the reference method for the relative accuracy test being Method 4. of the Source Testing Code.

In furtherance of, but without limiting the generality of the foregoing, the mean difference between the calibration gas value and the analyzer response value at each of the four test concentrations shall be less than 5 percent of the measurement range.

SCHEDULE "G"

A stormwater management facility to service a 10.0 ha drainage area of the Durham York Energy Centre located on the west side of Osbourne Road and north of the CN Rail, Lot 27, Concession Broken Front, Part, Municipality of Clarington, Regional Municipality of Durham, designed to provide quality and quantity control of stormwater run-off by attenuating runoff from storm events up to 1:100 years return frequency to or below the pre-development levels, consisting of:

East Stormwater Management Pond (East SWM Pond)

A stormwater management facility to service a 5.7 ha drainage area comprising of the eastern part of the Durham York Energy Centre consisting of the following:

- one (1) approximately 128 m long drainage ditch collecting stormwater runoff from the north eastern part of the site, having an average horizontal slope of 1.56%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- one (1) approximately 199 m long drainage ditch collecting stormwater runoff from the eastern part of the site, having an average horizontal slope of 2.77%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- approximately fourteen (14) catch basins/maintenance holes and a total of 466.8 m long 450 mm diameter and 34.6 m of 600 mm diameter corrugated PE stormwater sewers conveying stormwater runoff collected from the north and north eastern part of the site, discharging to a forebay of a wet extended detention stormwater management pond described below;

- one (1) forebay with approximate bottom dimensions of 11.0 m wide and 34.8 m long and depth of 1.0 m, equipped with 600 mm diameter corrugated HDPE inlet pipe, a rip-rap covered inlet structure, and a forebay berm with top elevation of 95.0 m masl, discharging to a wet extended detention pond described below;

- one (1) wet extended detention stormwater management pond located at the south east part of the site, with approximate bottom dimensions of 21.0 m wide and 71.4 m long and a maximum depth of 2.7 m at 96.70 m masl elevation, having side slopes of 3H:1V and 5H:1V near the outlet structure, providing a permanent pool storage capacity of 1,008 m^3 at elevation 95.0 m masl, an active storage capacity of 3,099 m^3 at 96.70 m masl elevation, and total storage capacity of 4,107 m^3, equipped with an outlet structure consisting of a 150 mm diameter reverse slope inlet pipe with a gate valve and a 450 mm diameter perforated pipe riser fitted with 75 mm diameter orifice plate, a 75 mm diameter maintenance discharge pipe with a gate valve, and an emergency overflow structure at elevation 97.0 m masl, discharging through a 450 mm diameter outlet pipe to existing swale along the northern side of the CN Rail line to Tooley Creek and eventually to Lake Ontario;

West Stormwater Management Pond (West SWM Pond)

A stormwater management facility to service a 4.3 ha drainage area comprising of the western part of the Durham York Energy Centre consisting of the following:

- one (1) approximately 296 m long drainage ditch collecting stormwater runoff from the north western part of the site, having an average horizontal slope of 1.0%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- approximately five (5) catch basins/maintenance holes and a total of 272.2 m long 450 mm diameter corrugated PE stormwater sewers conveying stormwater runoff collected from the western part of the site, discharging to a forebay of a wet extended detention stormwater management pond described below;

- one (1) forebay with approximate bottom dimensions of 13.0 m wide and 26.0 m long and depth of 1.0 m, equipped with 450 mm diameter corrugated HDPE inlet pipe, a rip-rap covered inlet structure, and a forebay berm with top elevation of 95.0 m masl, discharging to a wet extended detention pond described below;

- one (1) wet extended detention stormwater management pond located at the south western part of the site, with approximate bottom dimensions of 13.0 m wide and 58.0 m long and a maximum depth of 2.5 m at 96.5 m masl elevation, having side slopes of 3H:1V and 5H:1V near the outlet structure, providing a permanent storage capacity of 623 m^3 at elevation 95.0 m masl, an active storage capacity of 2,054 m^3 at 96.50 m masl elevation, and total storage capacity of 2,677 m^3, equipped with an outlet structure consisting of a 150 mm diameter reverse slope inlet pipe with a gate valve and a 450 mm diameter perforated pipe riser fitted with 75 mm diameter orifice plate, a 75 mm diameter maintenance discharge pipe with a gate valve, and an emergency overflow structure at elevation 96.80 m masl, discharging through a 450 mm diameter outlet pipe to existing swale along the northern side of the CN Rail line to Tooley Creek and eventually to Lake Ontario;

including all associated controls and appurtenances.

The reasons for the imposition of these terms and conditions are as follows:

GENERAL

Conditions 1.(1), (2), (5), (6), (7), (8), (9), (10), (11), (12), (13), (17), (18) and (19) are included to clarify the legal rights and responsibilities of the Owner.

Conditions Nos.1.(3) and (4) are included to ensure that the Site is operated in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.

Condition No. 1.(14) is included to ensure that the Site is operated under the corporate name which appears on the application form submitted for this approval and to ensure that the Director is informed of any changes.

Condition No.1.(15) is included to restrict potential transfer or encumbrance of the Site without the notification to the Director and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this Certificate.

Condition No. 1.(16) is included to ensure that the appropriate Ministry staff has ready access to the operations of the Site which are approved under this Certificate. The Condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the *EPA*, the *OWRA*, the *PA*, the *NMA* and the *SDWA*.

SERVICE AREA, APPROVED WASTE TYPES, RATES and STORAGE

Condition No. 2. is included to specify the approved waste receipt rates, the approved waste types and the service area from which waste may be accepted at the Site based on the Owner's application and supporting documentation. Condition No. 2. is also included to specify the maximum amount of waste that is approved to be stored at the Site.

SIGNS and SITE SECURITY

Condition No. 3. is included to ensure that the Site's users, operators and the public are fully aware of important information and restrictions related to the operation of the Site. Condition No. 3. is also included to ensure that the Site is sufficiently secured, supervised and operated by properly trained personnel and to ensure controlled access and integrity of the Site by preventing unauthorized access when the Site is closed and no site personnel is on duty.

SITE OPERATIONS

Condition No. 4. is included to outline the operational requirements for the Facility to ensure that the said operation does not result in an adverse effect or a hazard to the natural environment or any person.

EQUIPMENT and SITE INSPECTIONS and MAINTENANCE

Condition No. 5. is included to require the Site to be maintained and inspected thoroughly on a regular basis to ensure that the operations at the Site are undertaken in a manner which does not result in an adverse effect or a hazard to the health and safety of the environment or any person.

PERFORMANCE REQUIREMENTS

Condition No. 6 is included to set out the minimum performance requirements considered necessary to prevent an adverse effect resulting from the operation of the Facility.

TESTING, **MONITORING** and **AUDITING**

Condition No. 7. is to require the Owner to gather accurate information on the operation of the Facility so that the environmental impact and subsequent compliance with the *EPA*, the *OWRA*, their Regulations and this Certificate can be verified.

NUISANCE IMPACT CONTROL and HOUSEKEEPING

Condition No. 8. is included to ensure that the Site is operated and maintained in an environmentally acceptable manner which does not result in a negative impact on the natural environment or any person. Condition No. 8 is also included to specify odour control measures to minimize a potential for odour emissions from the Site.

STAFF TRAINING

Condition No. 9. is included to ensure that staff are properly trained in the operation of the equipment and instrumentation used at the Site, in the emergency response procedures and on the requirements and restrictions related to the Site operations under this Certificate.

COMPLAINTS RECORDING PROCEDURE

Condition No.10. is included to require the Owner to respond to any environmental complaints resulting from the Facility appropriately and in a timely manner and that appropriate actions are taken to prevent any further incidents that may cause complaints in the future.

CONTINGENCY and EMERGENCY RESPONSE PLAN and EMERGENCY SITUATIONS RESPONSE AND REPORTING

Conditions Nos.11. and 12. are included to ensure that the Owner is prepared and properly equipped to take immediate action in the event of an emergency situation.

<u>SUBMISSIONS to the REGIONAL DIRECTOR or DISTRICT MANAGER</u>

Condition No. 13. is included to set out the requirements for the submissions to the District Manager and the Regional Director regarding the operation of the Facility and the activities required by this Certificate.

<u>RECORDS KEEPING</u>

Condition No.14. is included to ensure that detailed records of Site activities, inspections, monitoring and upsets are recorded and maintained for inspection and information purposes.

<u>REPORTING</u>

Condition No.15. is to ensure that regular review of site, operations and monitoring is carried out and findings documented by a third party for determining whether or not the Site is being operated in compliance with this Certificate of Approval, the EPA and its regulations and whether or not any changes should be considered.

<u>PUBLIC ACCESS to DOCUMENTATION</u>

Condition No.16. is included to ensure that the public has access to information on the operation of the Site in order to participate in the activities of the Advisory Committee in a meaningful and effective way.

<u>ADVISORY COMMITTEE</u>

Condition No.17. is included to require the Owner to establish a forum for the exchange of information and public dialogue on activities carried out at the Site and to ensure that the local residents are properly informed of the activities at the Site and that their concerns can be heard and acted upon , as necessary. Open communication with the public and local authorities is important in helping to maintain high standards for the operation of the Site and protection of the natural environment. Condition 16. is also included to ensure that the requirements of the EA Approval are fulfilled.

<u>CLOSURE of the SITE</u>

Condition No.18. is included to ensure that the final closure of the Site is completed in accordance with Ministry's standards.

In accordance with Section 139 of the <u>Environmental Protection Act</u>, R.S.O. 1990, Chapter E-19, as amended, and in accordance with Section 100 of the <u>Ontario Water Resources Act</u>, R.S.O. 1990, Chapter 0.40, as amended, you may by written Notice served upon me, the Environmental Review Tribunal, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 142 of the <u>Environmental Protection Act and</u> Section 101 of the

Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto, Ontario
M5G 1E5

AND

The Director
Section 9 and 39, *Environmental Protection Act*
Section 53, *Ontario Water Resources Act*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted site is approved under Section 9 and Section 27 of the Environmental Protection Act and Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 28th day of June, 2011

Signature
Ian Parrott, P .Eng.
Director
Section 9, *EPA*
Section 39, *EPA*
Section 53, *OWRA*

MW,QN,SH/

c: District Manager, MOE York-Durham
Regional Director, MOE Central Region

Appendix B

Response to Test Plan from Guillermo Azocar, Technology Standards Section, Standards Development Branch, MOECC, September 19, 2014, File No.: CR:SA:109194:14

Ministry of the Environment
& Climate Change
Standards Development Branch

40 St. Clair Avenue West
Toronto ON M4V 1M2
www.ene.gov.on.ca

Ministère de l'Environnement
et de l'Action en matière de
changement climatique
Direction de l'élaboration des normes
40, avenue St. Clair ouest
Toronto, ON M4V 1M2
www.ene.gov.on.ca

Ontario

Via email: lbrasowski@covanta.com
TSS File No.: CR:SA:109194:14

2014/09/19

Mr. Leon Brasowski, Director Environmental Engineering
Covanta
445 South St.
Morristown, New Jersey
07960

Dear Mr. Brasowski:

Subject: Pre-test plan for re-testing to be conducted at Durham-York Energy Centre (Courtice facility). Odour Management Mitigation Plan (April 2012).

We reviewed your pre-test plan (Covanta Project 11-1151-3943), dated 2014/09/17, prepared on behalf of Durham-York Energy Centre (DYEC), and referring to source testing to be conducted at DYEC's Energy-From-Waste facility. The pre-test plan was submitted to fulfill requirement for odour measurements as outlined in the Odour Management and Mitigation Plan (OMMP), dated April 2012.

The OMMP was prepared in support of the EAA Notice to proceed with undertaking EA File No. 04-EA-02-08 (Section 18); as well as, for the Environmental Compliance Approval (ECA) No. 7306-8FDKNX, issued on 2011/06/28; and subsequent ECA Notice (No.1) dated 2014/08/12.

***Target Source*:**

- Solid waste charging floor – Tipping Building (2 locations).

Notes: *The two sampling locations are not identified in the pre-test plan. The sampling locations need to be set (when possible) within the emissions envelope of the activity, equipment or process with the potential of generating the odorous emissions. A plant drawing showing the process, areas of activity and equipment (considered to be potential sources of odour) and the sampling locations shall be provided to this office to determine the suitability of such locations to represent worst case emissions scenario within the charging floor.*

Two primary potential odour emissions were identified; but only testing at the charging floor has been stated. Based on the pre-test plan, there is the expectation that there may be a queue of waste delivery trucks waiting to enter the plant. As truck transportation of waste onto the site has been identified as a primary potential *odour emission source, Covanta shall provide to the MOECC York-Durham District Office with the rationale for not undertaking odour measurements to address this primary potential source of odour.*

Target Contaminants:

- Odour

***Reference methodologies*:**

- Odour: ***OSTC – Method ON-6 for Odour.*** *The odour samples will be collected undiluted in Tedlar bags using a vacuum lung, samples will be collected in triplicate for each of the sources, evaluated within 24 hours by a panel of 8 members using a dynamic dilution olfactometer, with the sample presentation to the panel on an ascending concentration. In very general terms, it is stated that the strategy to be used for the determination of the exhaust gas flow characteristics will follow the requirements of the Ontario Source Testing Code.*

Notes: *As the sampling strategies to be used are similar to ambient sampling, the strategy to be used for the determination of the exhaust gas flow characteristics needs to be submitted by the selected source testing consultant to this office, for consensus.*

***Brief Process Description*:**

The DYEC is an energy-from-waste facility was built with the aim at processing solid waste from the Regions of Durham and York. The maximum thermal processing rate stated in the ECA is 140,000 tonnes of waste per year. The facility is expected to operate on a continuous basis, 24 hours/day, 7 days/week, 365 days/year, with the waste delivered initially set at 6 days per week between 07:00 and 19:00 hours.

The facility consists of two thermal treatment lines, each equipped with independent operated boilers/furnaces and air pollution control equipment. The treated exhaust gases from both lines are vented to a common stack and released to the atmosphere.

The source of waste are post-diversion residual waste collected at curbside; as well as, any residual waste material collected at public drop-off centers and transfer stations. The only industrial, commercial and industrial waste to be managed by this facility will be non-hazardous residual waste.

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Target Process Condition during the Source Testing Program:

Not indicated in the pre-test plan, but it is expected that source testing will be conducted when the charging area is operating at its maximum capacity.

Process Data Monitoring:

It is assumed (not stated in the pre-test plan) that DYEC (or Covanta) personnel will be responsible for the monitoring, collection, compilation and reporting of relevant process parameters pertaining to the facility's operations, in order to establish production/processing levels.

The following process information will be recorded during the source testing program

- Power output (megawatts)
- Daily waste combusted
- Auxiliary fuel combusted
- Steam generated
- Details of any upset conditions during the source testing program
- Real time meteorological data

Notes: *As the sampling of odours is of short duration (10-minute), Covanta should make an effort at providing hourly rate of the process parameters of interest.*

Air flow, direction and temperature need to be monitored close to the odour sampling station during each of the test-runs.

Our review indicates that the proposed reference methodologies, sampling strategies, and process data monitoring/collection are acceptable; conditional on Covanta addressing our observations outlined in notes made throughout this letter, and the undertaking of actions stated in those notes, where actions are required to be undertaken.

We noted that the source testing is tentatively scheduled for not earlier than 2014/11/22. Please provide the schedule at least 15 days prior to conducting the source testing. The testing notification (with the scheduled sampling dates) needs to be sent (via email) to the MOECC's Standards Development Branch (Guillermo Azocar) and to the MOECC's York-Durham District Office (Sandra Thomas).

Just a reminder that the source testing report is required to be submitted only in electronic format to the Technology Standards Section; and in electronic and hardcopy formats to the MOECC's York-Durham District Office.

If you have any question with regards to this assessment, I can be reached by phone at 416-327-6403, or by email at guillermo.azocar@ontario.ca.

Sincerely yours,

Guillermo Azocar

(Doc.Mgmt # 5X090098)

cc: H. Titus – Covanta (via email: htitus@covanta.com)
D. Fumerton – York-Durham District Office (via email: dave.fumerton@ontario.ca)
S. Thomas – York-Durham District Office (via email: Sandra.thomas@ontario.ca)
M. Wojcik – EAB (via email: margaret.wojcik@ontario.ca)
L. Hussain/C. Ruddy – SDB (via email)
File AQ-02 (Durham-York Energy Centre)

Appendix C

Sampling Datasheets

ZORIX Consultants Inc.
Odour Sampling Data Sheet/Chain of Custody Form

ZORIX

Client: Covanta
Project: Source Test 2015
Sampling Location: Tipping floor
Date: Oct 8/15
Sampling Crew: MR / TV

Note: Protect samples from light and excessive heat.

Scheduled Evaluation Date: Oct 9/15

Check all fittings? ☑ Leak Check? ☑ Pa Correct calibration table? ☑ N/A Manometer zeroed? ☑ N/A

Date: Oct 9/15

Test ID No.	Start Time	End Time	Tedlar Bag No.	Sampler Parameters: Control Box No.	Sampler Number	Umbilical ID	Nitrogen *psig*	Delta p *Pa*	Temp. *°C*	Dilution	Probe *°C*	Test Condition	Laboratory: Sample ID. (assigned by lab)	Time	Bag H_2S Conc. (ppm)	
1	10:38	10:47	261A	–	lung #	1	—	—		1x	–	normal Production	3418		N/A	
2	10:48	10:58	255 A	~	lung #	1	—	—		1x	–	normal Production	3419		N/A	
3	10:58	11:11	260A	~	lung #	1	—	—		1x	–	normal Production	3420		N/A	

Pre-Dilution Determinations

Anticipated Ambient Conditions	Source Conditions	
Bar. Pressure (Kpa)	Barometric Pressure (Kpa)	
Temp. (°C)	Temperature (°C)	
Sat. Vapour Conc. (g/m3)	Saturated Vapour Conc. (g/m3)	
	Relative Humidity (%)	
	Calculated Pre-Dilution Ratio:	

Field Notes

Using Teflon tubing ~ 5' above grade with a stand to sample behind the hoppers

10:46, crane dumped into hopper behind sample point
10:51, crane dumped into hopper behind sample point
10:54, crane dumped into hopper behind sample point
10:59, crane dumped into hopper behind sample point

Chain of Custody for All Samples Above

Delivered By: Date and Time: Received By:

Delivered By: Date and Time: Received By:

~2m behind hopper is sample point.

ZORIX Consultants Inc.
Odour Sampling Data Sheet/Chain of Custody Form

ZORIX

Client: Covanta
Project: Odour Test
Sampling Location: Charging Deck
Date: Oct. 9, 2015
Sampling Crew: MM

Note: Protect samples from light and excessive heat.

Scheduled Evaluation Date: Oct-9, 2015

Check all fittings? ☑ Leak Check? ☐ N/A Pa Correct calibration table? ☐ N/A Manometer zeroed? ☐ N/A

Test ID No.	Start Time	End Time	Tedlar Bag No.	Sampler Parameters: Control Box No.	Sampler Number	Umbilical ID	Nitrogen *psig*	Delta p *Pa*	Temp. *°C*	Dilution	Probe *°C*	Source H_2S Conc. (ppm)	Bag H_2S Conc. (ppm)	Laboratory (Date: Oct 9, 2015): Sample ID. (assigned by lab)	Time	Bag H_2S Conc. (ppm)
1	08:19	08:29	268	lung		—	—	—	—	—	—			3425		N/A
2	08:28	08:37	262A	lung										3426		N/A
3	08:37	08:46	276	lung										3427		N/A
4	08:52	09:02	266A	lung		+	AC filter					blank		3428		N/A

Pre-Dilution Determinations

Anticipated Ambient Conditions	Source Conditions	
Bar. Pressure (Kpa)	Barometric Pressure (Kpa)	
Temp. (°C)	Temperature (°C)	
Sat. Vapour Conc. (g/m3)	Saturated Vapour Conc. (g/m3)	
	Relative Humidity (%)	
	Calculated Pre-Dilution Ratio:	

Field Notes blank - with carbon filter at end of tubing

8:31 - load dropped into hopper (photos)
- only 1 load dropped during collection of samples
- one load during blank collection

Chain of Custody for All Samples Above

Delivered By: Date and Time: Received By:
Delivered By: Date and Time: Received By:

Appendix D

Odour Panel Responses

Session No: 697 **Date:** 09-Oct-15 **Session Start Time:** 9:01

Sample No: 3418 **Bag No:** 261a **Date** 08-Oct-15 **Time** 10:38 **Predilution:** 1 **Location:** tipping floor

TestCondition: normal production

		Panelists									
Challenge No	**Dilution**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**No. of Panelists**	**Correct Resp.**
1	11585	1	1	1	1	1	1	1	1	8	0
2	5793	1	1	1	1	1	1	1	1	8	0
3	2896	1	4	1	1	1	1	1	1	8	0
4	1448	4	1	1	1	1	1	1	6	8	1
5	724	6	6	6	4	4	4	6	6	8	5
6	362	6	6	6	6	6	6	6	6	8	8

Sample No: 3419 **Bag No:** 255a **Date** 08-Oct-15 **Time** 10:48 **Predilution:** 1 **Location:** tipping floor

TestCondition: normal production

		Panelists									
Challenge No	**Dilution**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**No. of Panelists**	**Correct Resp.**
1	5793	1	1	1	1	1	1	1	1	8	0
2	2896	1	1	1	1	1	1	1	1	8	0
3	1448	1	4	1	1	1	1	6	1	8	1
4	724	6	6	6	4	6	4	6	6	8	6
5	362	6	6	1	6	6	4	6	6	8	6
6	362	6	6	6	6	6	6	6	6	8	8

Sample No: 3420 **Bag No:** 260a **Date** 08-Oct-15 **Time** 10:58 **Predilution:** 1 **Location:** tipping floor

TestCondition: normal production

		Panelists									
Challenge No	**Dilution**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**No. of Panelists**	**Correct Resp.**
1	5793	1	1	1	1	1	1	1	1	8	0
2	2896	1		1	1	1	1	1	1	7	0
3	2896	1	1	1	1	1	1	1	6	8	1
4	1448	1	1	1	1	4	1	6	6	8	2
5	724	1	6	1	4	6	4	6	6	8	4
6	362	6	6	6	6	6	6	6	6	8	8

Panelist responses:
1="no detection" 3="uncertain, wrong port" 4="uncertain, correct port", 5="certain, wrong port", 6="certain, correct port"

Sample No: 3425 **Bag No:** 268 **Date** 09-Oct-15 **Time** 8:19 **Predilution:** 1 **Location:** tipping floor

TestCondition: normal production, 2nd day

Challenge No	Dilution	Panelists 1	2	3	4	5	6	7	8	No. of Panelists	Correct Resp.
1	2896	1	1	1	1	1	1	1	1	8	0
2	1448	1	1	1	1	1	1	1	1	8	0
3	724	4	6	6	1	6	4	6	6	8	5
4	362	6	6	6	1	6	6	6	6	8	7
5	181	6	6	6	1	6	6	6	6	8	7
6	91	6	6	6	6	6	6	6	6	8	8

Sample No: 3426 **Bag No:** 268 **Date** 09-Oct-15 **Time** 8:28 **Predilution:** 1 **Location:** tipping floor

TestCondition: normal production, 2nd day

Challenge No	Dilution	Panelists 1	2	3	4	5	6	7	8	No. of Panelists	Correct Resp.
1	2896	1	1	1	1	1	1	1	1	8	0
2	1448	1	1	1		4	1	4	5	7	0
3	1448	1	1	1	4	6	1	6	6	8	3
4	724	4	6	6	6	6	1	6	6	8	6
5	362	6	6	6	6	6	6	6	6	8	8

Sample No: 3427 **Bag No:** 276 **Date** 09-Oct-15 **Time** 8:37 **Predilution:** 1 **Location:** tipping floor

TestCondition: normal production, 2nd day

Challenge No	Dilution	Panelists 1	2	3	4	5	6	7	8	No. of Panelists	Correct Resp.
1	5793	1	1	1	1	1	1	1	1	8	0
2	2896	1	1	1	1	1	1	1	1	8	0
3	1448	1	1	1	1	4	4	6	1	8	1
4	724	1	1	6	4	6	6	6	6	8	5
5	362	6	6	6	6	6	6	6	6	8	8

Sample No: 3428 **Bag No:** 266a **Date** 09-Oct-15 **Time** 8:52 **Predilution:** 1 **Location:** tipping floor

TestCondition: ambient + a/c filter

Challenge No	Dilution	Panelists 1	2	3	4	5	6	7	8	No. of Panelists	Correct Resp.
1	91	1	1	1	1	1	1	1	1	8	0
2	45	1	1	1	1	1	1	1	1	8	0
3	23	1	1	6	1	1	1	1	1	8	1
4	11	1	1	6	4	4	1	1	1	8	1

Panelist responses:
1="no detection" 3="uncertain, wrong port" 4="uncertain, correct port", 5="certain, wrong port", 6="certain, correct port"

Sample No: 3429 **Bag No:** 143a **Date** 09-Oct-15 **Time** 11:08 **Predilution:** 1 **Location:** lab

TestCondition: qc n-butanol (49.9ppm)

		Panelists									
Challenge No	**Dilution**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**No. of Panelists**	**Correct Resp.**
1	5793	1	1	1	1	1	1	1	1	8	0
2	2896	1	1	1	1	1	1	1	1	8	0
3	1448	1	1	6	1	4	1	6	1	8	2
4	724	6	1	6	1	6	4	6	6	8	5
5	362	6	6	6	6	6	6	6	6	8	8
6	181	6	6	6	6	6	6	6	6	8	8
7	91	6	6	6	6	6	6	6	6	8	8

Panelist responses:
1="no detection" 3="uncertain, wrong port" 4="uncertain, correct port", 5="certain, wrong port", 6="certain, correct port"

ORTECH

APPENDIX 44

DYEC CEMS 1-Hour Average Data
and ORTECH THC Data
(6 pages)

Covanta - Durham York Energy Centre
Boiler No. 1 CEMS

						BH Outlet						Scrubber Inlet	
		O_2	CO_2	CO		SO_2		NOx		HCl		O_2	THC
		%	kg/m^3	mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		%	mg/m^3 @ 11% O_2
Date	Time	1-hr	1-hr	1-hr	Rolling 4-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	1-hr
29-Sep-15	0:00	7.74	0.20	14.3		0.0		114.3		1.8		7.96	1.9
29-Sep-15	1:00	7.72	0.20	12.8		0.0		105.0		1.6		7.97	2.0
29-Sep-15	2:00	7.87	0.20	15.4		0.0		116.7		1.6		8.11	2.1
29-Sep-15	3:00	7.70	0.20	8.8	12.8	0.8		109.1		1.6		7.91	1.9
29-Sep-15	4:00	7.47	0.21	11.3	12.1	0.0		113.7		1.5		7.65	2.0
29-Sep-15	5:00	7.55	0.20	14.6	12.5	0.0		106.6		1.7		7.94	2.0
29-Sep-15	6:00	7.81	0.20	13.0	11.9	0.0		113.0		1.7		8.01	2.0
29-Sep-15	7:00	7.62	0.20	9.4	12.1	0.8		141.3		1.0		7.63	1.9
29-Sep-15	8:00	7.83	0.20	13.2	12.6	1.7		99.1		1.6		8.01	1.9
29-Sep-15	9:00	7.49	0.21	10.7	11.6	0.3		111.6		1.4		7.94	
29-Sep-15	10:00	7.62	0.20	11.4	11.2	0.2		106.4		1.4		7.85	2.2
29-Sep-15	11:00	7.87	0.20	15.3	12.6	3.3		115.4		2.3		8.11	2.3
29-Sep-15	12:00	7.63	0.21	16.5	13.5	0.5		107.2		2.3		10.41	2.0
29-Sep-15	13:00	7.85	0.20	17.3	15.1	30.0		112.2		3.5		8.15	2.2
29-Sep-15	14:00	7.72	0.20	26.2	18.8	4.1		103.1		1.6		8.02	2.4
29-Sep-15	15:00	7.51	0.21	23.3	20.8	4.4		120.8		1.5		7.61	2.0
29-Sep-15	16:00	7.44	0.21	13.8	20.2	3.4		112.0		1.4		7.70	1.4
29-Sep-15	17:00	8.24	0.20	15.8	19.8	1.2		109.8		1.6		8.36	2.4
29-Sep-15	18:00	8.01	0.20	21.8	18.7	1.3		103.0		1.7		8.39	2.1
29-Sep-15	19:00	7.43	0.21	18.2	17.4	1.5		120.5		1.4		7.67	2.1
29-Sep-15	20:00	7.46	0.21	24.2	20.0	2.7		107.8		1.6		7.71	2.3
29-Sep-15	21:00	7.81	0.20	20.2	21.1	1.9		109.0		1.6		8.21	2.1
29-Sep-15	22:00	7.44	0.21	13.7	19.1	3.7		118.0		1.6		7.76	2.0
29-Sep-15	23:00	7.60	0.21	12.7	17.7	5.9	2.8	99.6	111.5	1.9	1.7	8.00	2.1
30-Sep-15	0:00	7.15	0.21	20.3	16.7	1.0	2.9	125.5	111.9	1.7	1.7	7.44	1.9
30-Sep-15	1:00	7.78	0.20	14.7	15.3	10.0	3.3	103.7	111.9	1.9	1.7	8.11	2.0
30-Sep-15	2:00	7.62	0.20	11.8	14.8	10.1	3.7	108.8	111.5	1.7	1.7	7.99	1.9
30-Sep-15	3:00	7.37	0.21	17.6	16.1	9.9	4.1	110.7	111.6	1.5	1.7	7.82	1.7
30-Sep-15	4:00	7.45	0.21	15.7	15.0	12.2	4.6	114.7	111.7	1.5	1.7	7.80	1.8
30-Sep-15	5:00	7.67	0.21	15.5	15.2	11.3	5.1	104.3	111.6	1.7	1.7	7.97	1.8
30-Sep-15	6:00	7.55	0.21	9.7	14.6	0.9	5.1	125.4	112.1	1.5	1.7	7.54	1.6
30-Sep-15	7:00	7.45	0.21	18.0	14.7	9.7	5.5	149.6	112.4	0.9	1.7	7.91	1.6
30-Sep-15	8:00	8.16	0.20	13.1	14.1	15.7	6.0	148.5	114.5	1.4	1.7	8.41	1.7
30-Sep-15	9:00	7.75	0.20	10.9	12.9	1.5	6.1	117.0	114.7	1.1	1.7	7.96	1.7
30-Sep-15	10:00	7.84	0.20	9.7	12.9	4.6	6.3	112.9	115.0	1.3	1.7	8.14	1.8
30-Sep-15	11:00	7.82	0.20	11.5	11.3	4.1	6.3	112.1	114.8	1.8	1.7	8.19	1.8
30-Sep-15	12:00	8.37	0.19	22.2	13.6	1.8	6.4	91.2	114.2	1.7	1.6	8.64	1.8
30-Sep-15	13:00	7.49	0.21	14.3	14.4	0.5	5.1	103.4	113.8	1.6	1.6	7.86	1.7
30-Sep-15	14:00	7.77	0.20	16.9	16.2	4.7	5.2	118.5	114.4	1.7	1.6	8.03	1.8
30-Sep-15	15:00	7.91	0.20	20.8	18.5	34.2	6.4	102.3	113.7	6.5	1.8	8.21	1.9
30-Sep-15	16:00	7.93	0.20	17.6	17.4	9.2	6.7	91.6	112.8	3.0	1.8	8.20	1.9
30-Sep-15	17:00	8.12	0.20	18.1	18.3	3.0	6.7	106.1	112.7	2.5	1.9	8.50	2.0
30-Sep-15	18:00	7.30	0.21	11.0	16.9	0.0	6.7	92.1	112.2	2.2	1.9	7.56	1.7
30-Sep-15	19:00	7.23	0.21	10.9	14.4	0.0	6.6	95.8	111.2	2.3	1.9	7.55	1.8
30-Sep-15	20:00	7.51	0.21	10.5	12.6	2.1	6.6	107.9	111.2	4.9	2.1	7.87	1.8
30-Sep-15	21:00	7.18	0.21	11.8	11.1	0.6	6.5	107.3	111.1	3.4	2.1	7.41	1.6
30-Sep-15	22:00	7.65	0.21	14.4	11.9	0.0	6.4	102.4	110.5	3.6	2.2	7.98	1.7
30-Sep-15	23:00	7.70	0.21	11.9	12.2	3.7	6.3	112.0	111.0	6.6	2.4	8.10	1.9
1-Oct-15	0:00	7.83	0.21	13.0	12.8	6.7	6.5	104.4	110.1	6.8	2.6	8.18	1.8
1-Oct-15	1:00	7.81	0.20	13.7	13.3	5.1	6.3	113.5	110.5	5.0	2.8	8.04	1.8
1-Oct-15	2:00	7.59	0.21	14.2	13.2	1.7	6.0	101.0	110.2	2.7	2.8	7.83	1.7
1-Oct-15	3:00	8.13	0.20	14.0	13.7	5.9	5.8	101.6	109.8	3.0	2.9	8.37	1.6
1-Oct-15	4:00	7.72	0.21	10.4	13.1	1.4	5.4	110.0	109.6	1.8	2.9	8.07	1.6
1-Oct-15	5:00	7.93	0.20	11.8	12.6	1.2	4.9	99.0	109.4	1.8	2.9	8.35	1.6
1-Oct-15	6:00	7.70	0.21	9.1	11.3	0.0	4.9	116.4	109.0	1.6	2.9	8.01	1.5
1-Oct-15	7:00	7.70	0.21	12.7	11.0	5.5	4.7	127.0	108.1	1.3	2.9	8.32	1.5
1-Oct-15	8:00	7.72	0.21	17.1	12.7	9.7	4.5	115.0	106.7	2.9	3.0	7.98	1.4
1-Oct-15	9:00	7.43	0.21	14.8	13.4	2.8	4.5	104.3	106.2	2.0	3.0	7.75	1.5
1-Oct-15	10:00	7.60	0.21	17.8	15.6	2.8	4.5	110.2	106.0	1.9	3.0	7.91	1.6
1-Oct-15	11:00	7.84	0.20	19.1	17.2	2.9	4.4	94.5	105.3	2.4	3.0	8.22	1.7
1-Oct-15	12:00	7.37	0.21	16.9	17.2	6.9	4.6	111.0	106.1	3.0	3.1	7.71	1.7
1-Oct-15	13:00	7.72	0.21	12.7	16.6	1.3	4.7	106.2	106.3	2.4	3.1	8.00	1.8
1-Oct-15	14:00	7.47	0.21	9.1	14.5	1.2	4.5	102.7	105.6	2.2	3.1	7.79	1.8
1-Oct-15	15:00	7.43	0.21	11.1	12.5	2.3	3.2	111.1	106.0	3.4	3.0	7.75	1.8
1-Oct-15	16:00	7.59	0.21	10.7	10.9	1.8	2.9	97.3	106.2	4.6	3.1	7.83	1.9
1-Oct-15	17:00	7.69	0.20	16.6	11.9	5.0	2.9	107.1	106.2	7.2	3.3	7.92	2.0
1-Oct-15	18:00	7.11	0.22	9.9	12.1	0.0	2.9	100.8	106.6	3.8	3.3	7.39	1.8
1-Oct-15	19:00	7.86	0.21	16.5	13.4	0.0	2.9	100.4	106.8	2.5	3.4	8.13	2.1
1-Oct-15	20:00	7.37	0.21	14.2	14.3	0.0	2.9	109.4	106.9	1.8	3.2	7.74	1.9
1-Oct-15	21:00	7.51	0.21	16.4	14.2	0.0	2.8	106.9	106.8	1.7	3.2	7.91	1.6
1-Oct-15	22:00	7.57	0.21	28.9	19.0	0.0	2.8	105.8	107.0	1.8	3.1	7.93	1.8
1-Oct-15	23:00	7.50	0.21	24.7	21.0	0.0	2.7	106.9	106.8	2.1	2.9	7.93	1.7

Covanta - Durham York Energy Centre
Boiler No. 1 CEMS

						BH Outlet						Scrubber Inlet	
		O_2	CO_2	CO		SO_2		NOx		HCl		O_2	THC
		%	kg/m^3	mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		%	mg/m^3 @ 11% O_2
	Time	1-hr	1-hr	1-hr	Rolling 4-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	1-hr
2-Oct-15	0:00	7.30	0.21	21.8	22.9	0.0	2.4	101.9	106.7	2.7	2.7	7.81	1.6
2-Oct-15	1:00	7.26	0.21	22.3	24.4	0.2	2.2	109.0	106.5	3.4	2.7	7.63	1.6
2-Oct-15	2:00	7.25	0.21	17.6	21.6	1.3	2.2	102.4	106.5	5.0	2.8	7.69	1.6
2-Oct-15	3:00	7.24	0.21	14.6	19.1	1.2	2.0	109.1	106.9	4.1	2.8	7.55	1.5
2-Oct-15	4:00	7.28	0.21	13.6	17.0	3.5	2.1	98.7	106.4	6.0	3.0	7.73	1.6
2-Oct-15	5:00	7.38	0.21	15.4	15.3	5.5	2.2	111.5	106.9	7.1	3.2	7.67	1.5
2-Oct-15	6:00	7.77	0.21	9.3	13.2	0.0	2.2	89.0	105.8	6.9	3.4	7.70	1.5
2-Oct-15	7:00	7.94	0.20	10.9	12.3	0.9	2.0	127.5	105.8	4.8	3.6	7.96	1.4
2-Oct-15	8:00	7.68	0.21	26.0	15.4	0.6	1.7	107.3	105.5	3.4	3.6	8.01	1.4
2-Oct-15	9:00	7.46	0.21	15.8	15.5	3.3	1.7	105.6	105.5	5.2	3.7	7.70	1.4
2-Oct-15	10:00	7.55	0.21	15.3	17.0	0.0	1.6	110.8	105.5	2.0	3.7	7.80	1.5
2-Oct-15	11:00	7.60	0.21	10.7	17.0	0.0	1.5	111.2	106.2	1.8	3.7	7.96	1.5
2-Oct-15	12:00	7.39	0.21	11.7	13.4	0.0	1.2	110.2	106.2	1.9	3.7	7.63	1.5
2-Oct-15	13:00	7.47	0.21	13.2	12.7	0.0	1.1	114.9	106.6	1.3	3.6	7.75	1.5
2-Oct-15	14:00	7.30	0.21	15.1	12.7	0.0	1.1	105.0	106.7	1.0	3.6	7.65	1.6
2-Oct-15	15:00	8.05	0.20	24.1	16.0	0.0	1.0	112.6	106.7	1.6	3.5	8.26	1.7
2-Oct-15	16:00	7.41	0.21	24.2	19.2	0.0	0.9	113.6	107.4	1.6	3.4	7.75	1.8
2-Oct-15	17:00	7.34	0.21	20.4	21.0	0.0	0.7	112.0	107.6	1.7	3.1	7.67	1.8
2-Oct-15	18:00	7.17	0.22	15.1	21.0	0.0	0.7	116.1	108.2	1.8	3.0	7.45	1.6
2-Oct-15	19:00	7.41	0.21	12.7	18.1	0.0	0.7	102.0	108.3	1.7	3.0	7.82	1.7
2-Oct-15	20:00	7.43	0.21	17.4	16.4	0.4	0.7	111.9	108.4	1.5	3.0	7.84	1.8
2-Oct-15	21:00	7.50	0.21	23.4	17.2	0.2	0.7	111.0	108.6	1.4	3.0	7.88	1.8
2-Oct-15	22:00	7.42	0.21	12.5	16.5	0.3	0.7	107.7	108.7	1.2	3.0	7.77	1.8
2-Oct-15	23:00	7.30	0.21	10.8	16.1	1.3	0.8	111.8	108.9	1.6	2.9	7.94	1.7
	Min	7.11	0.19	8.8	10.9	0.0	0.68	89.0	105.3	0.9	1.6	7.39	1.4
	Max	8.37	0.22	28.9	24.4	34.2	6.73	149.6	115.0	7.2	3.7	10.41	2.4
	Avg	7.61	0.21	15.3	15.4	3.1	3.75	109.5	109.0	2.5	2.7	7.94	1.8
	Std Dev	0.25	0.00	4.5	3.1	5.4	2.01	10.0	2.9	1.5	0.7	0.35	0.2

Covanta - Durham York Energy Centre
Boiler No. 2 CEMS

						BH Outlet						Scrubber Inlet	
		O_2	CO_2	CO		SO_2		NOx		HCl		O_2	THC
		%	kg/m^3	mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		%	mg/m^3 @ 11% O_2
Date	Time	1-hr	1-hr	1-hr	Rolling 4-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	1-hr
29-Sep-15	0:00	8.02	0.20	13.6		0.0		111.2		2.7		7.09	0.0
29-Sep-15	1:00	8.17	0.20	16.9		0.0		110.9		3.0		7.34	0.0
29-Sep-15	2:00	8.21	0.20	16.1		0.0		108.6		2.3		7.38	0.0
29-Sep-15	3:00	7.87	0.20	15.4	15.5	0.0		110.7		2.7		7.00	0.0
29-Sep-15	4:00	7.90	0.20	14.3	15.7	0.0		114.4		2.9		7.06	0.0
29-Sep-15	5:00	8.16	0.20	15.3	15.3	0.0		102.7		2.9		7.30	0.0
29-Sep-15	6:00	8.47	0.19	17.1	15.5	0.0		119.0		3.4		7.54	0.0
29-Sep-15	7:00	7.88	0.20	24.2	17.7	0.0		135.8		2.4		7.04	0.0
29-Sep-15	8:00	8.32	0.19	20.8	19.3	0.0		112.9		1.9		6.72	
29-Sep-15	9:00	8.35	0.20	19.2	20.3	0.5		109.6		3.7		7.45	0.1
29-Sep-15	10:00	8.10	0.20	18.2	20.6	0.2		115.4		4.1		8.85	
29-Sep-15	11:00	8.24	0.20	24.4	20.6	9.3		108.4		7.2		7.18	0.0
29-Sep-15	12:00	8.29	0.20	19.4	20.3	7.5		106.4		3.9		7.48	0.0
29-Sep-15	13:00	8.27	0.19	18.6	20.1	14.1		106.7		3.4		7.28	0.0
29-Sep-15	14:00	8.29	0.19	18.5	20.2	0.1		117.8		1.4		7.35	0.0
29-Sep-15	15:00	8.13	0.20	21.4	19.5	0.1		109.4		1.7		7.14	0.0
29-Sep-15	16:00	8.24	0.20	16.7	18.8	0.0		111.5		1.8		7.33	0.0
29-Sep-15	17:00	8.45	0.19	12.6	17.3	0.0		118.1		1.7		7.46	0.0
29-Sep-15	18:00	8.34	0.19	21.6	18.1	0.0		111.5		2.0		7.62	0.0
29-Sep-15	19:00	8.04	0.20	15.7	16.7	0.0		107.7		2.2		7.14	0.0
29-Sep-15	20:00	8.20	0.20	18.6	17.1	0.0		115.1		3.0		7.29	0.0
29-Sep-15	21:00	8.29	0.20	20.5	19.1	0.0		105.3		3.3		7.38	0.0
29-Sep-15	22:00	8.07	0.20	18.5	18.3	0.3		106.1		3.4		7.05	0.0
29-Sep-15	23:00	8.25	0.20	20.4	19.5	0.3	1.3	116.3	112.1	3.5	2.9	7.37	0.0
30-Sep-15	0:00	8.09	0.20	17.5	19.2	0.4	1.4	108.7	112.0	3.1	2.9	7.14	0.0
30-Sep-15	1:00	8.06	0.20	11.7	17.0	0.4	1.4	111.8	112.1	2.8	2.9	7.13	0.0
30-Sep-15	2:00	8.21	0.20	12.7	15.6	1.4	1.4	114.3	112.3	2.9	3.0	7.30	0.0
30-Sep-15	3:00	8.27	0.20	12.9	13.7	4.7	1.6	110.3	112.3	4.4	3.0	7.28	0.0
30-Sep-15	4:00	8.24	0.20	13.8	12.8	2.1	1.7	112.0	112.2	3.6	3.1	7.29	0.0
30-Sep-15	5:00	8.06	0.20	12.9	13.1	0.8	1.8	112.8	112.6	2.8	3.1	7.20	0.0
30-Sep-15	6:00	8.21	0.20	11.8	12.9	0.5	1.8	105.5	112.1	10.2	3.3	7.26	0.0
30-Sep-15	7:00	8.61	0.19	11.8	12.6	0.0	1.8	144.1	112.4	2.0	3.3	7.31	0.0
30-Sep-15	8:00	8.47	0.20	10.2	11.7	0.6	1.8	153.4	114.1	1.5	3.3	7.50	0.0
30-Sep-15	9:00	8.13	0.20	10.5	11.1	0.0	1.8	113.5	114.3	1.5	3.2	7.24	0.0
30-Sep-15	10:00	8.36	0.20	9.9	10.6	0.0	1.8	127.0	114.7	1.7	3.1	7.37	0.0
30-Sep-15	11:00	8.38	0.19	16.1	11.7	0.0	1.4	122.1	115.3	2.1	2.9	7.45	0.0
30-Sep-15	12:00	8.43	0.20	14.4	12.7	1.1	1.1	98.6	115.0	2.1	2.8	7.44	0.0
30-Sep-15	13:00	8.33	0.20	11.7	13.0	0.0	0.5	99.0	114.7	1.4	2.7	7.33	0.0
30-Sep-15	14:00	8.60	0.19	14.5	14.2	0.0	0.5	103.5	114.1	1.8	2.8	7.53	0.0
30-Sep-15	15:00	8.56	0.19	16.5	14.3	1.3	0.6	107.8	114.0	2.7	2.8	7.52	0.0
30-Sep-15	16:00	8.30	0.20	11.2	13.5	0.8	0.6	102.2	113.6	1.0	2.8	7.21	0.0
30-Sep-15	17:00	8.52	0.19	16.2	14.6	0.0	0.6	88.6	112.4	1.8	2.8	7.50	0.0
30-Sep-15	18:00	8.11	0.20	11.8	13.9	0.0	0.6	94.5	111.7	3.2	2.8	7.01	0.0
30-Sep-15	19:00	8.20	0.20	11.2	12.6	0.0	0.6	104.1	111.5	4.1	2.9	7.12	0.0
30-Sep-15	20:00	8.25	0.20	13.3	13.1	0.0	0.6	96.9	110.8	3.2	2.9	7.20	0.0
30-Sep-15	21:00	8.20	0.20	13.7	12.5	0.0	0.6	104.0	110.7	17.1	3.5	7.24	0.0
30-Sep-15	22:00	8.35	0.20	11.8	12.5	0.0	0.6	107.3	110.8	4.7	3.5	7.29	0.0
30-Sep-15	23:00	8.22	0.20	13.9	13.2	0.0	0.6	109.1	110.5	5.7	3.6	7.15	0.0
1-Oct-15	0:00	8.43	0.20	18.5	14.5	0.1	0.6	100.1	110.1	2.6	3.6	7.29	0.0
1-Oct-15	1:00	8.42	0.20	15.3	14.9	0.0	0.6	107.6	109.9	0.9	3.5	7.43	0.0
1-Oct-15	2:00	8.48	0.20	13.3	15.2	0.0	0.5	107.5	109.6	0.8	3.4	7.44	0.0
1-Oct-15	3:00	8.48	0.20	15.5	15.6	0.0	0.3	102.1	109.3	1.0	3.3	7.42	0.0
1-Oct-15	4:00	8.33	0.20	16.1	15.0	0.0	0.2	103.3	108.9	0.9	3.2	7.30	0.0
1-Oct-15	5:00	8.42	0.20	15.5	15.1	0.0	0.2	106.1	108.7	10.6	3.5	7.34	0.0
1-Oct-15	6:00	8.47	0.20	11.8	14.7	0.0	0.2	105.1	108.6	11.9	3.6	7.51	0.0
1-Oct-15	7:00	8.53	0.20	14.5	14.5	0.0	0.2	153.6	109.0	0.5	3.5	7.95	0.0
1-Oct-15	8:00	8.65	0.20	12.4	13.5	0.0	0.1	104.0	107.0	0.2	3.5	8.25	0.0
1-Oct-15	9:00	7.23	0.22	17.7	14.1	9.8	0.5	83.7	105.7	2.5	3.5		
1-Oct-15	10:00	6.74	0.23	12.6	14.3	5.1	0.8	103.7	104.8	5.5	3.7		
1-Oct-15	11:00	7.29	0.22	17.0	14.9	4.9	1.0	104.3	104.0	7.6	3.9		
1-Oct-15	12:00	7.27	0.22	11.1	14.6	0.0	0.9	96.6	103.9	2.2	3.9		
1-Oct-15	13:00	7.07	0.22	15.5	14.1	0.6	0.9	103.3	104.1	0.0	3.8	19.74	0.0
1-Oct-15	14:00	7.52	0.22	64.3	27.0	0.0	0.9	104.2	104.2	0.9	3.8	7.04	0.0
1-Oct-15	15:00	6.77	0.24	11.1	25.5	0.0	0.9	102.3	103.9	4.4	3.9	6.60	
1-Oct-15	16:00	7.50	0.22	12.8	25.9	0.0	0.8	101.5	103.9	5.3	4.1	7.29	
1-Oct-15	17:00	6.58	0.23	14.0	25.6	0.0	0.8	87.5	103.9	3.1	4.1	6.34	
1-Oct-15	18:00	6.99	0.22	10.3	12.1	0.0	0.8	118.5	104.9	0.4	4.0	8.80	23.6
1-Oct-15	19:00	6.98	0.22	11.9	12.2	0.0	0.8	94.4	104.5	0.2	3.8	7.01	22.7
1-Oct-15	20:00	7.06	0.22	9.7	11.5	0.0	0.8	105.0	104.8	0.3	3.7	6.95	10.5
1-Oct-15	21:00	7.49	0.22	15.3	11.8	0.0	0.8	99.7	104.6	0.6	3.0	7.28	5.2
1-Oct-15	22:00	7.36	0.22	10.6	11.9	0.0	0.8	95.9	104.1	0.9	2.9	7.23	5.0
1-Oct-15	23:00	7.19	0.22	14.1	12.4	0.0	0.8	101.0	103.8	0.9	2.7	7.10	6.2

Covanta - Durham York Energy Centre
Boiler No. 2 CEMS

						BH Outlet						Scrubber Inlet	
		O_2	CO_2	CO		SO_2		NOx		HCl		O_2	THC
		%	kg/m^3	mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		mg/m^3 @ 11% O_2		%	mg/m^3 @ 11% O_2
	Time	1-hr	1-hr	1-hr	Rolling 4-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	1-hr
2-Oct-15	0:00	6.94	0.22	12.7	13.1	0.0	0.8	97.3	103.7	1.3	2.6	6.80	4.9
2-Oct-15	1:00	7.30	0.22	17.0	13.6	0.0	0.8	101.0	103.4	1.9	2.7	7.18	3.0
2-Oct-15	2:00	7.10	0.22	12.6	14.1	0.0	0.8	98.4	103.0	2.0	2.7	6.94	4.2
2-Oct-15	3:00	6.98	0.22	8.9	12.8	0.0	0.8	103.2	103.1	2.5	2.8	6.93	2.9
2-Oct-15	4:00	7.14	0.22	12.5	12.8	0.1	0.9	94.2	102.7	2.7	2.8	7.01	2.9
2-Oct-15	5:00	7.31	0.22	16.3	12.6	0.0	0.9	102.4	102.5	3.1	2.5	7.22	0.7
2-Oct-15	6:00	6.63	0.23	7.4	11.3	1.2	0.9	116.0	103.0	3.1	2.2	6.74	2.8
2-Oct-15	7:00	7.33	0.22	8.0	11.0	0.3	0.9	129.7	102.0	3.6	2.3	6.88	2.6
2-Oct-15	8:00	8.17	0.20	12.9	11.1	1.0	1.0	108.5	102.2	5.1	2.5	7.82	2.4
2-Oct-15	9:00	7.25	0.22	14.1	10.6	0.0	0.5	101.8	102.9	3.2	2.5	7.09	3.0
2-Oct-15	10:00	7.02	0.22	9.2	11.0	0.0	0.3	111.6	103.3	3.0	2.4	6.93	3.2
2-Oct-15	11:00	6.86	0.23	11.8	12.0	0.0	0.1	109.5	103.5	2.6	2.2	6.92	3.8
2-Oct-15	12:00	7.25	0.22	12.5	11.9	0.0	0.1	113.5	104.2	2.4	2.2	7.29	7.0
2-Oct-15	13:00	7.41	0.22	9.1	10.7	0.0	0.1	106.4	104.3	1.9	2.3	7.37	6.2
2-Oct-15	14:00	6.90	0.22	8.9	10.6	0.0	0.1	113.9	104.7	1.8	2.3	6.85	12.6
2-Oct-15	15:00	7.60	0.21	10.0	10.1	0.0	0.1	105.1	104.8	1.7	2.2	7.49	4.8
2-Oct-15	16:00	7.15	0.22	11.7	9.9	0.0	0.1	112.1	105.3	1.8	2.1	7.10	5.0
2-Oct-15	17:00	6.75	0.23	9.3	10.0	0.2	0.1	119.7	106.6	1.6	2.0	6.73	7.1
2-Oct-15	18:00	7.06	0.22	7.8	9.7	0.0	0.1	115.3	106.5	1.6	2.1	6.99	9.3
2-Oct-15	19:00	6.82	0.23	10.5	9.8	0.0	0.1	105.5	106.9	2.5	2.2	6.79	8.0
2-Oct-15	20:00	7.20	0.22	12.6	10.1	0.0	0.1	111.8	107.2	2.5	2.3	7.18	4.2
2-Oct-15	21:00	7.36	0.22	13.2	11.0	0.0	0.1	109.8	107.6	2.3	2.3	7.34	9.6
2-Oct-15	22:00	7.12	0.22	10.3	11.7	0.1	0.1	110.1	108.2	2.0	2.4	7.12	10.1
2-Oct-15	23:00	7.05	0.22	11.3	11.9	0.0	0.1	107.9	108.5	2.2	2.4	7.02	8.2
	Min	6.58	0.19	7.4	9.7	0.0	0.11	83.7	102.0	0.0	2.0	6.34	0.0
	Max	8.65	0.24	64.3	27.0	14.1	1.80	153.6	115.3	17.1	4.1	19.74	23.6
	Avg	7.82	0.21	14.6	14.6	0.7	0.74	108.7	107.9	2.9	3.0	7.39	2.3
	Std Dev	0.60	0.01	6.2	3.8	2.2	0.50	11.1	4.1	2.5	0.6	1.34	4.4

Covanta - Durham York Energy Centre
Total Hydrocarbon Sampling at the Boiler No. 2 Scrubber Inlet
September 23, 2015

Test No. 1		Test No. 2		Test No. 3		Test No. 4		Test No. 5		Test No. 6	
	THC		THC		THC		THC		THC		THC
Time	ppm, dry	Time	ppm, dry	Time	ppm, dry	Time	ppm, dry	Time	ppm, dry	Time	ppm, dry
10:31	4.4	11:10	3.4	13:22	4.3	14:01	3.1	15:04	2.8	15:45	5.4
10:32	4.6	11:11	3.6	13:23	3.4	14:02	3.0	15:05	3.5	15:46	4.5
10:33	5.7	11:12	3.3	13:24	4.5	14:03	2.2	15:06	4.6	15:47	4.8
10:34	5.7	11:13	3.4	13:25	3.8	14:04	1.9	15:07	5.5	15:48	4.3
10:35	4.7	11:14	3.0	13:26	3.4	14:05	1.7	15:08	5.1	15:49	4.1
10:36	4.6	11:15	3.2	13:27	3.4	14:06	2.3	15:09	5.2	15:50	4.5
10:37	6.0	11:16	2.8	13:28	3.1	14:07	1.9	15:10	6.1	15:51	4.2
10:38	4.7	11:17	3.9	13:29	3.4	14:08	2.2	15:11	5.8	15:52	3.7
10:39	5.3	11:18	3.0	13:30	2.9	14:09	2.4	15:12	20.8	15:53	3.9
10:40	5.1	11:19	3.3	13:31	3.1	14:10	1.1	15:13	13.8	15:54	3.9
10:41	5.4	11:20	4.2	13:32	2.3	14:11	2.8	15:14	10.8	15:55	5.0
10:42	4.3	11:21	3.8	13:33	2.6	14:12	2.2	15:15	9.3	15:56	5.3
10:43	4.5	11:22	4.3	13:34	3.7	14:13	2.1	15:16	9.1	15:57	5.5
10:44	5.3	11:23	5.8	13:35	2.4	14:14	2.6	15:17	9.3	15:58	5.0
10:45	5.1	11:24	5.5	13:36	2.1	14:15	2.6	15:18	17.2	15:59	5.4
10:46	4.2	11:25	5.4	13:37	3.3	14:16	2.1	15:19	27.7	16:00	5.5
10:47	3.9	11:26	4.5	13:38	2.8	14:17	2.2	15:20	19.4	16:01	5.3
10:48	3.9	11:27	4.9	13:39	2.3	14:18	1.7	15:21	16.4	16:02	5.2
10:49	3.9	11:28	5.1	13:40	2.8	14:19	2.1	15:22	13.0	16:03	5.0
10:50	4.9	11:29	5.7	13:41	3.3	14:20	2.5	15:23	11.7	16:04	5.4
10:51	4.2	11:30	5.7	13:42	2.3	14:21	2.1	15:24	9.7	16:05	5.3
10:52	4.7	11:31	5.4	13:43	2.7	14:22	2.2	15:25	8.9	16:06	6.1
10:53	5.2	11:32	5.7	13:44	2.5	14:23	2.4	15:26	8.5	16:07	5.8
10:54	3.9	11:33	5.8	13:45	3.3	14:24	2.0	15:27	9.0	16:08	6.0
10:55	4.0	11:34	5.5	13:46	1.9	14:25	1.4	15:28	8.8	16:09	5.7
10:56	3.6	11:35	4.9	13:47	2.1	14:26	2.7	15:29	8.1	16:10	5.6
10:57	4.2	11:36	5.1	13:48	2.8	14:27	2.1	15:30	8.3	16:11	5.8
10:58	3.9	11:37	5.5	13:49	2.7	14:28	2.0	15:31	7.8	16:12	5.5
10:59	3.3	11:38	5.9	13:50	2.7	14:29	2.2	15:32	7.3	16:13	5.9
11:00	4.1	11:39	5.5	13:51	2.4	14:30	2.0	15:33	6.7	16:14	5.4
11:01	4.0	11:40	5.5	13:52	2.1	14:31	2.1	15:34	7.3	16:15	5.6
Min	3.3	Min	2.8	Min	1.9	Min	1.1	Min	2.8	Min	3.7
Max	6.0	Max	5.9	Max	4.5	Max	3.1	Max	27.7	Max	6.1
Avg	4.6	Avg	4.6	Avg	2.9	Avg	2.2	Avg	9.9	Avg	5.1

Covanta - Durham York Energy Centre

Total Hydrocarbon Sampling at the Boiler No. 1 Scrubber Inlet

September 27, 2015

Test No. 1		Test No. 2		Test No. 3		Test No. 4		Test No. 5		Test No. 6	
	THC		THC		THC		THC		THC		THC
Time	ppm, dry	Time	ppm, dry	Time	ppm, dry	Time	ppm, dry	Time	ppm, dry	Time	ppm, dry
07:57	0.0	08:28	0.0	08:59	0.0	09:30	0.0	10:10	0.0	10:41	0.0
07:58	0.0	08:29	0.0	09:00	0.0	09:31	0.0	10:11	0.0	10:42	0.0
07:59	0.0	08:30	0.0	09:01	0.0	09:32	0.0	10:12	0.0	10:43	0.0
08:00	0.0	08:31	0.0	09:02	0.0	09:33	0.0	10:13	0.0	10:44	0.0
08:01	0.0	08:32	0.0	09:03	0.0	09:34	0.0	10:14	0.0	10:45	0.0
08:02	0.0	08:33	0.0	09:04	0.0	09:35	0.0	10:15	0.0	10:46	0.0
08:03	0.0	08:34	0.0	09:05	0.0	09:36	0.0	10:16	0.0	10:47	0.0
08:04	0.0	08:35	0.0	09:06	0.0	09:37	0.0	10:17	0.8	10:48	0.0
08:05	0.0	08:36	0.0	09:07	0.0	09:38	0.0	10:18	0.0	10:49	0.0
08:06	0.1	08:37	0.0	09:08	0.0	09:39	0.0	10:19	0.3	10:50	0.0
08:07	0.0	08:38	0.0	09:09	0.0	09:40	0.0	10:20	0.0	10:51	0.0
08:08	0.0	08:39	0.0	09:10	0.0	09:41	0.0	10:21	0.0	10:52	0.0
08:09	0.0	08:40	0.4	09:11	0.0	09:42	0.0	10:22	0.0	10:53	0.0
08:10	0.0	08:41	0.2	09:12	0.0	09:43	0.0	10:23	0.0	10:54	0.0
08:11	0.0	08:42	0.0	09:13	0.0	09:44	0.0	10:24	0.0	10:55	0.0
08:12	0.0	08:43	0.0	09:14	0.0	09:45	0.0	10:25	0.0	10:56	0.0
08:13	0.0	08:44	0.0	09:15	0.0	09:46	0.0	10:26	0.0	10:57	0.1
08:14	0.3	08:45	0.0	09:16	0.0	09:47	0.0	10:27	0.0	10:58	0.0
08:15	0.2	08:46	0.0	09:17	0.4	09:48	0.0	10:28	0.0	10:59	0.0
08:16	0.0	08:47	0.0	09:18	0.0	09:49	0.0	10:29	0.0	11:00	0.0
08:17	0.0	08:48	0.0	09:19	0.0	09:50	0.0	10:30	0.0	11:01	0.0
08:18	0.0	08:49	0.0	09:20	0.0	09:51	0.0	10:31	0.0	11:02	0.0
08:19	0.0	08:50	0.0	09:21	0.0	09:52	0.1	10:32	0.0	11:03	0.0
08:20	0.0	08:51	0.0	09:22	0.0	09:53	0.0	10:33	0.0	11:04	0.0
08:21	0.0	08:52	0.0	09:23	0.0	09:54	0.0	10:34	0.0	11:05	0.0
08:22	0.0	08:53	0.0	09:24	0.0	09:55	0.0	10:35	0.0	11:06	0.0
08:23	0.0	08:54	0.0	09:25	0.0	09:56	0.0	10:36	0.0	11:07	0.0
08:24	0.0	08:55	0.0	09:26	0.0	09:57	0.0	10:37	0.0	11:08	0.0
08:25	0.0	08:56	0.0	09:27	0.0	09:58	0.0	10:38	0.0	11:09	0.0
08:26	0.0	08:57	0.0	09:28	0.0	09:59	0.0	10:39	0.0	11:10	0.0
08:27	0.0	08:58	0.0	09:29	0.0	10:00	0.0	10:40	0.0	11:11	0.0
Min	0.0	Min	0.0	Min	0.0	Min	0.0	Min	0.0	Min	0.0
Max	0.3	Max	0.4	Max	0.4	Max	0.1	Max	0.8	Max	0.1
Avg	0.0	Avg	0.0	Avg	0.0	Avg	0.0	Avg	0.0	Avg	0.0

APPENDIX 45

DYEC AMESA Dioxin and Furan
Analytical Report and Results
October 1 to October 2, 2015
(72 pages)

TABLE 1
Covanta - Durham York Energy Centre
AMESA Monitor
Dioxin and Furan Test Schedule

Boiler No. 1 BH Outlet

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	October 1, 2015	10:47	15:08	258
2	October 2, 2015	7:41	12:00	256
3	October 2, 2015	12:35	16:44	245

Boiler No. 2 BH Outlet

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	October 1, 2015	12:14	16:35	257
2	October 2, 2015	7:42	12:01	256
3	October 2, 2015	12:36	16:43	243

TABLE 2
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Data
Test No. 1

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	1230	0.26	0.43	0.32	0.36	6.39
Pentachlorodibenzo-p-dioxins	8260	1.72	2.86	2.12	2.40	42.9
Hexachlorodibenzo-p-dioxins	27500	5.71	9.52	7.07	7.98	143
Heptachlorodibenzo-p-dioxins	19200	3.99	6.65	4.94	5.57	99.7
Octachlorodibenzo-p-dioxin	5350	1.11	1.85	1.38	1.55	27.8
Total	61540	12.8	21.3	15.8	17.9	320

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	1500	0.31	0.52	0.39	0.44	7.79
Pentachlorodibenzofurans	5120	1.06	1.77	1.32	1.49	26.6
Hexachlorodibenzofurans	9270	1.93	3.21	2.38	2.69	48.1
Heptachlorodibenzofurans	5030	1.04	1.74	1.29	1.46	26.1
Octachlorodibenzofuran	1170	0.24	0.40	0.30	0.34	6.07
Total	22090	4.59	7.65	5.68	6.41	115

Dry Gas Volume Sampled (Rm^3*) :	2.889
Actual Flowrate (m^3/s) :	25.0
Dry Reference Flowrate (Rm^3/s*) :	15.0
Dry Adjusted Flowrate (Rm^3/s**) :	20.2
Wet Reference Flowrate (Rm^3/s*) :	17.9

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 3
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Data
Test No. 2

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	1130	0.25	0.42	0.31	0.35	5.91
Pentachlorodibenzo-p-dioxins	6890	1.51	2.54	1.89	2.12	36.0
Hexachlorodibenzo-p-dioxins	29800	6.54	11.0	8.15	9.16	156
Heptachlorodibenzo-p-dioxins	24100	5.29	8.87	6.59	7.41	126
Octachlorodibenzo-p-dioxin	7110	1.56	2.62	1.95	2.19	37.2
Total	69030	15.2	25.4	18.9	21.2	361

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	1420	0.31	0.52	0.39	0.44	7.42
Pentachlorodibenzofurans	4320	0.95	1.59	1.18	1.33	22.6
Hexachlorodibenzofurans	9630	2.11	3.54	2.64	2.96	50.3
Heptachlorodibenzofurans	6260	1.37	2.30	1.71	1.92	32.7
Octachlorodibenzofuran	1650	0.36	0.61	0.45	0.51	8.62
Total	23280	5.11	8.57	6.37	7.16	122

Dry Gas Volume Sampled (Rm³*) :	2.717
Actual Flowrate (m³/s) :	23.8
Dry Reference Flowrate (Rm³/s*) :	14.2
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	17.0

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 4
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Data
Test No. 3

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	1130	0.26	0.43	0.32	0.36	6.25
Pentachlorodibenzo-p-dioxins	7760	1.77	2.98	2.20	2.50	42.9
Hexachlorodibenzo-p-dioxins	29700	6.79	11.4	8.43	9.55	164
Heptachlorodibenzo-p-dioxins	21800	4.98	8.37	6.18	7.01	121
Octachlorodibenzo-p-dioxin	6700	1.53	2.57	1.90	2.15	37.1
Total	67090	15.3	25.8	19.0	21.6	371

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	1290	0.29	0.50	0.37	0.41	7.14
Pentachlorodibenzofurans	4980	1.14	1.91	1.41	1.60	27.5
Hexachlorodibenzofurans	9330	2.13	3.58	2.65	3.00	51.6
Heptachlorodibenzofurans	5730	1.31	2.20	1.63	1.84	31.7
Octachlorodibenzofuran	1480	0.34	0.57	0.42	0.48	8.19
Total	22810	5.21	8.76	6.47	7.34	126

Dry Gas Volume Sampled (Rm³*) :	2.603
Actual Flowrate (m³/s) :	24.2
Dry Reference Flowrate (Rm³/s*) :	14.4
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	17.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 5
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Actual Concentrations

Dioxins

Congener Group	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzo-p-dioxins	0.26	0.25	0.26	0.25	2.1
Pentachlorodibenzo-p-dioxins	1.72	1.51	1.77	1.67	8.2
Hexachlorodibenzo-p-dioxins	5.71	6.54	6.79	6.35	8.9
Heptachlorodibenzo-p-dioxins	3.99	5.29	4.98	4.75	14.3
Octachlorodibenzo-p-dioxin	1.11	1.56	1.53	1.40	18.0
Total	12.8	15.2	15.3	14.4	9.9

Furans

Congener Group	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzofurans	0.31	0.31	0.29	0.31	3.2
Pentachlorodibenzofurans	1.06	0.95	1.14	1.05	9.1
Hexachlorodibenzofurans	1.93	2.11	2.13	2.06	5.6
Heptachlorodibenzofurans	1.04	1.37	1.31	1.24	14.1
Octachlorodibenzofuran	0.24	0.36	0.34	0.31	20.1
Total	4.59	5.11	5.21	4.97	6.8

TABLE 6
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Dry Reference Concentrations

Dioxins

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.43	0.42	0.43	0.43	2.1
Pentachlorodibenzo-p-dioxins	2.86	2.54	2.98	2.79	8.2
Hexachlorodibenzo-p-dioxins	9.52	11.0	11.4	10.6	9.3
Heptachlorodibenzo-p-dioxins	6.65	8.87	8.37	7.96	14.7
Octachlorodibenzo-p-dioxin	1.85	2.62	2.57	2.35	18.3
Total	21.3	25.4	25.8	24.2	10.3

Furans

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.52	0.52	0.50	0.51	2.9
Pentachlorodibenzofurans	1.77	1.59	1.91	1.76	9.2
Hexachlorodibenzofurans	3.21	3.54	3.58	3.45	6.0
Heptachlorodibenzofurans	1.74	2.30	2.20	2.08	14.4
Octachlorodibenzofuran	0.40	0.61	0.57	0.53	20.4
Total	7.65	8.57	8.76	8.33	7.2

* At 25°C and 1 atmosphere

TABLE 7
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Dry Adjusted Concentrations

Dioxins

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.32	0.31	0.32	0.32	1.8
Pentachlorodibenzo-p-dioxins	2.12	1.89	2.20	2.07	8.0
Hexachlorodibenzo-p-dioxins	7.07	8.15	8.43	7.88	9.1
Heptachlorodibenzo-p-dioxins	4.94	6.59	6.18	5.90	14.6
Octachlorodibenzo-p-dioxin	1.38	1.95	1.90	1.74	18.2
Total	15.8	18.9	19.0	17.9	10.1

Furans

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.39	0.39	0.37	0.38	3.2
Pentachlorodibenzofurans	1.32	1.18	1.41	1.30	8.9
Hexachlorodibenzofurans	2.38	2.64	2.65	2.55	5.8
Heptachlorodibenzofurans	1.29	1.71	1.63	1.54	14.4
Octachlorodibenzofuran	0.30	0.45	0.42	0.39	20.3
Total	5.68	6.37	6.47	6.17	7.0

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 8
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Wet Reference Concentrations

Dioxins

Congener Group	Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	Wet Reference Concentration				
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.36	0.35	0.36	0.36	2.3
Pentachlorodibenzo-p-dioxins	2.40	2.12	2.50	2.34	8.4
Hexachlorodibenzo-p-dioxins	7.98	9.16	9.55	8.90	9.2
Heptachlorodibenzo-p-dioxins	5.57	7.41	7.01	6.66	14.5
Octachlorodibenzo-p-dioxin	1.55	2.19	2.15	1.96	18.2
Total	17.9	21.2	21.6	20.2	10.2

Furans

Congener Group	Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	Wet reference Concentration				
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.44	0.44	0.41	0.43	2.8
Pentachlorodibenzofurans	1.49	1.33	1.60	1.47	9.3
Hexachlorodibenzofurans	2.69	2.96	3.00	2.88	5.9
Heptachlorodibenzofurans	1.46	1.92	1.84	1.74	14.3
Octachlorodibenzofuran	0.34	0.51	0.48	0.44	20.3
Total	6.41	7.16	7.34	6.97	7.1

* At 25°C and 1 atmosphere

TABLE 9
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Rates

Dioxins

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	6.39	5.91	6.25	6.18	4.0
Pentachlorodibenzo-p-dioxins	42.9	36.0	42.9	40.6	9.8
Hexachlorodibenzo-p-dioxins	143	156	164	154	7.0
Heptachlorodibenzo-p-dioxins	99.7	126	121	115	12.0
Octachlorodibenzo-p-dioxin	27.8	37.2	37.1	34.0	15.9
Total	320	361	371	350	7.8

Furans

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzofurans	7.79	7.42	7.14	7.45	4.4
Pentachlorodibenzofurans	26.6	22.6	27.5	25.6	10.3
Hexachlorodibenzofurans	48.1	50.3	51.6	50.0	3.5
Heptachlorodibenzofurans	26.1	32.7	31.7	30.2	11.8
Octachlorodibenzofuran	6.07	8.62	8.19	7.63	17.9
Total	115	122	126	121	4.8

TABLE 10
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Summary of Dioxin and Furan Congener Group Emission Data

Dioxins

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.25	0.43	0.32	0.36	6.18
Pentachlorodibenzo-p-dioxins	1.67	2.79	2.07	2.34	40.6
Hexachlorodibenzo-p-dioxins	6.35	10.6	7.88	8.90	154
Heptachlorodibenzo-p-dioxins	4.75	7.96	5.90	6.66	115
Octachlorodibenzo-p-dioxin	1.40	2.35	1.74	1.96	34.0
Total	14.4	24.2	17.9	20.2	350

Furans

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	0.31	0.51	0.38	0.43	7.45
Pentachlorodibenzofurans	1.05	1.76	1.30	1.47	25.6
Hexachlorodibenzofurans	2.06	3.45	2.55	2.88	50.0
Heptachlorodibenzofurans	1.24	2.08	1.54	1.74	30.2
Octachlorodibenzofuran	0.31	0.53	0.39	0.44	7.63
Total	4.97	8.33	6.17	6.97	121

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 11
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Data
Test No. 1

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	1420	0.31	0.52	0.38	0.43	7.38
Pentachlorodibenzo-p-dioxins	6730	1.48	2.48	1.79	2.06	35.0
Hexachlorodibenzo-p-dioxins	13100	2.89	4.83	3.47	4.01	68.1
Heptachlorodibenzo-p-dioxins	7660	1.69	2.82	2.03	2.34	39.8
Octachlorodibenzo-p-dioxin	2260	0.50	0.83	0.60	0.69	11.8
Total	31170	6.87	11.5	8.27	9.53	162

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	1880	0.41	0.69	0.50	0.57	9.77
Pentachlorodibenzofurans	4280	0.94	1.58	1.14	1.31	22.3
Hexachlorodibenzofurans	4330	0.95	1.60	1.15	1.32	22.5
Heptachlorodibenzofurans	1950	0.43	0.72	0.52	0.60	10.1
Octachlorodibenzofuran	518	0.11	0.19	0.14	0.16	2.69
Total	12958	2.85	4.78	3.44	3.96	67.4

Dry Gas Volume Sampled (Rm³*) :	2.712
Actual Flowrate (m³/s) :	23.6
Dry Reference Flowrate (Rm³/s*) :	14.1
Dry Adjusted Flowrate (Rm³/s**) :	19.6
Wet Reference Flowrate (Rm³/s*) :	17.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 12
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Data
Test No. 2

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	3700	0.84	1.38	1.01	1.15	19.7
Pentachlorodibenzo-p-dioxins	4970	1.12	1.85	1.36	1.55	26.5
Hexachlorodibenzo-p-dioxins	10000	2.26	3.73	2.73	3.12	53.3
Heptachlorodibenzo-p-dioxins	6240	1.41	2.33	1.71	1.94	33.3
Octachlorodibenzo-p-dioxin	1990	0.45	0.74	0.54	0.62	10.6
Total	26900	6.08	10.0	7.35	8.38	143

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	1480	0.33	0.55	0.40	0.46	7.89
Pentachlorodibenzofurans	3370	0.76	1.26	0.92	1.05	18.0
Hexachlorodibenzofurans	3370	0.76	1.26	0.92	1.05	18.0
Heptachlorodibenzofurans	1600	0.36	0.60	0.44	0.50	8.53
Octachlorodibenzofuran	430	0.097	0.16	0.12	0.13	2.29
Total	10250	2.31	3.82	2.80	3.19	54.6

Dry Gas Volume Sampled (Rm³*) :	2.683
Actual Flowrate (m³/s) :	23.6
Dry Reference Flowrate (Rm³/s*) :	14.3
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	17.1

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 13
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Data
Test No. 3

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	1090	0.26	0.43	0.31	0.36	5.94
Pentachlorodibenzo-p-dioxins	5110	1.21	2.02	1.47	1.68	27.9
Hexachlorodibenzo-p-dioxins	9480	2.24	3.75	2.72	3.11	51.7
Heptachlorodibenzo-p-dioxins	5360	1.27	2.12	1.54	1.76	29.2
Octachlorodibenzo-p-dioxin	1580	0.37	0.62	0.45	0.52	8.61
Total	22620	5.34	8.94	6.49	7.43	123

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	1370	0.32	0.54	0.39	0.45	7.47
Pentachlorodibenzofurans	3380	0.80	1.34	0.97	1.11	18.4
Hexachlorodibenzofurans	3270	0.77	1.29	0.94	1.07	17.8
Heptachlorodibenzofurans	1420	0.34	0.56	0.41	0.47	7.74
Octachlorodibenzofuran	359	0.085	0.14	0.10	0.12	1.96
Total	9799	2.31	3.87	2.81	3.22	53.4

Dry Gas Volume Sampled (Rm^3*) :	2.531
Actual Flowrate (m^3/s) :	23.1
Dry Reference Flowrate (Rm^3/s*) :	13.8
Dry Adjusted Flowrate (Rm^3/s**) :	19.0
Wet Reference Flowrate (Rm^3/s*) :	16.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 14
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Actual Concentrations

Dioxins

Congener Group	Actual Concentration Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.31	0.84	0.26	0.47	68.1
Pentachlorodibenzo-p-dioxins	1.48	1.12	1.21	1.27	14.8
Hexachlorodibenzo-p-dioxins	2.89	2.26	2.24	2.46	15.0
Heptachlorodibenzo-p-dioxins	1.69	1.41	1.27	1.45	14.8
Octachlorodibenzo-p-dioxin	0.50	0.45	0.37	0.44	14.3
Total	6.87	6.08	5.34	6.09	12.5

Furans

Congener Group	Actual Concentration Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
Tetrachlorodibenzofurans	0.41	0.33	0.32	0.36	13.9
Pentachlorodibenzofurans	0.94	0.76	0.80	0.83	11.5
Hexachlorodibenzofurans	0.95	0.76	0.77	0.83	13.1
Heptachlorodibenzofurans	0.43	0.36	0.34	0.38	13.0
Octachlorodibenzofuran	0.11	0.097	0.085	0.099	15.0
Total	2.85	2.31	2.31	2.49	12.5

TABLE 15
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Dry Reference Concentrations

Dioxins

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.52	1.38	0.43	0.78	67.2
Pentachlorodibenzo-p-dioxins	2.48	1.85	2.02	2.12	15.4
Hexachlorodibenzo-p-dioxins	4.83	3.73	3.75	4.10	15.4
Heptachlorodibenzo-p-dioxins	2.82	2.33	2.12	2.42	15.0
Octachlorodibenzo-p-dioxin	0.83	0.74	0.62	0.73	14.3
Total	11.5	10.0	8.94	10.2	12.6

Furans

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.69	0.55	0.54	0.60	14.3
Pentachlorodibenzofurans	1.58	1.26	1.34	1.39	12.1
Hexachlorodibenzofurans	1.60	1.26	1.29	1.38	13.5
Heptachlorodibenzofurans	0.72	0.60	0.56	0.63	13.3
Octachlorodibenzofuran	0.19	0.16	0.14	0.16	15.1
Total	4.78	3.82	3.87	4.16	13.0

* At 25°C and 1 atmosphere

TABLE 16
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Dry Adjusted Concentrations

Dioxins

Congener Group	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
	Dry Adjusted Concentration				
Tetrachlorodibenzo-p-dioxins	0.38	1.01	0.31	0.57	68.1
Pentachlorodibenzo-p-dioxins	1.79	1.36	1.47	1.54	14.4
Hexachlorodibenzo-p-dioxins	3.47	2.73	2.72	2.98	14.5
Heptachlorodibenzo-p-dioxins	2.03	1.71	1.54	1.76	14.3
Octachlorodibenzo-p-dioxin	0.60	0.54	0.45	0.53	13.9
Total	8.27	7.35	6.49	7.37	12.1

Furans

Congener Group	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
	Dry Adjusted Concentration				
Tetrachlorodibenzofurans	0.50	0.40	0.39	0.43	13.4
Pentachlorodibenzofurans	1.14	0.92	0.97	1.01	11.1
Hexachlorodibenzofurans	1.15	0.92	0.94	1.00	12.6
Heptachlorodibenzofurans	0.52	0.44	0.41	0.45	12.5
Octachlorodibenzofuran	0.14	0.12	0.10	0.12	14.5
Total	3.44	2.80	2.81	3.02	12.1

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 17
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Wet Reference Concentrations

Dioxins

Congener Group	Wet Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.43	1.15	0.36	0.65	67.7
Pentachlorodibenzo-p-dioxins	2.06	1.55	1.68	1.76	15.0
Hexachlorodibenzo-p-dioxins	4.01	3.12	3.11	3.41	15.1
Heptachlorodibenzo-p-dioxins	2.34	1.94	1.76	2.02	14.8
Octachlorodibenzo-p-dioxin	0.69	0.62	0.52	0.61	14.2
Total	9.53	8.38	7.43	8.45	12.5

Furans

Congener Group	Wet reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.57	0.46	0.45	0.50	14.0
Pentachlorodibenzofurans	1.31	1.05	1.11	1.16	11.7
Hexachlorodibenzofurans	1.32	1.05	1.07	1.15	13.2
Heptachlorodibenzofurans	0.60	0.50	0.47	0.52	13.0
Octachlorodibenzofuran	0.16	0.13	0.12	0.14	14.9
Total	3.96	3.19	3.22	3.46	12.6

* At 25°C and 1 atmosphere

TABLE 18
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Rates

Dioxins

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	7.38	19.7	5.94	11.0	68.7
Pentachlorodibenzo-p-dioxins	35.0	26.5	27.9	29.8	15.3
Hexachlorodibenzo-p-dioxins	68.1	53.3	51.7	57.7	15.7
Heptachlorodibenzo-p-dioxins	39.8	33.3	29.2	34.1	15.7
Octachlorodibenzo-p-dioxin	11.8	10.6	8.61	10.3	15.4
Total	162	143	123	143	13.5

Furans

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzofurans	9.77	7.89	7.47	8.38	14.7
Pentachlorodibenzofurans	22.3	18.0	18.4	19.5	12.0
Hexachlorodibenzofurans	22.5	18.0	17.8	19.4	13.7
Heptachlorodibenzofurans	10.1	8.53	7.74	8.80	13.9
Octachlorodibenzofuran	2.69	2.29	1.96	2.31	15.9
Total	67.4	54.6	53.4	58.5	13.2

TABLE 19
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Summary of Dioxin and Furan Congener Group Emission Data

Dioxins

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.47	0.78	0.57	0.65	11.0
Pentachlorodibenzo-p-dioxins	1.27	2.12	1.54	1.76	29.8
Hexachlorodibenzo-p-dioxins	2.46	4.10	2.98	3.41	57.7
Heptachlorodibenzo-p-dioxins	1.45	2.42	1.76	2.02	34.1
Octachlorodibenzo-p-dioxin	0.44	0.73	0.53	0.61	10.3
Total	6.09	10.2	7.37	8.45	143

Furans

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	0.36	0.60	0.43	0.50	8.38
Pentachlorodibenzofurans	0.83	1.39	1.01	1.16	19.5
Hexachlorodibenzofurans	0.83	1.38	1.00	1.15	19.4
Heptachlorodibenzofurans	0.38	0.63	0.45	0.52	8.80
Octachlorodibenzofuran	0.099	0.16	0.12	0.14	2.31
Total	2.49	4.16	3.02	3.46	58.5

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 20
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 1

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<3.0	<0.62	<1.04	<0.77	<0.87	<0.016
12378-pentachlorodibenzo-p-dioxin	150	31.2	51.9	38.6	43.5	0.78
123478-hexachlorodibenzo-p-dioxin	585	121	202	150	170	3.04
123678-hexachlorodibenzo-p-dioxin	1850	384	640	476	537	9.61
123789-hexachlorodibenzo-p-dioxin	1090	226	377	280	316	5.66
1234678-heptachlorodibenzo-p-dioxin	9190	1909	3181	2362	2666	47.7
Octachlorodibenzo-p-dioxin	5350	1111	1852	1375	1552	27.8
2378-tetrachlorodibenzofuran	38.1	7.91	13.2	9.79	11.1	0.20
12378-pentachlorodibenzofuran	119	24.7	41.2	30.6	34.5	0.62
23478-pentachlorodibenzofuran	617	128	214	159	179	3.20
123478-hexachlorodibenzofuran	885	184	306	227	257	4.60
123678-hexachlorodibenzofuran	881	183	305	226	256	4.57
234678-hexachlorodibenzofuran	1740	361	602	447	505	9.03
123789-hexachlorodibenzofuran	545	113	189	140	158	2.83
1234678-heptachlorodibenzofuran	2670	555	924	686	774	13.9
1234789-heptachlorodibenzofuran	517	107	179	133	150	2.68
Octachlorodibenzofuran	1170	243	405	301	339	6.07
Total Dioxins & Furans Only	<27400	<5691	<9484	<7043	<7948	<142

Dry Gas Volume Sampled (Rm³*) :	2.889
Actual Flowrate (m³/s) :	25.0
Dry Reference Flowrate (Rm³/s*) :	15.0
Dry Adjusted Flowrate (Rm³/s**) :	20.2
Wet Reference Flowrate (Rm³/s*) :	17.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 21
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 2

Specific Isomer	Total Collected pg	Actual Concentration pg/m^3	Dry Reference Concentration pg/Rm^3*	Dry Adjusted Concentration pg/Rm^3**	Wet Reference Concentration pg/Rm^3*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<3.3	<0.72	<1.21	<0.90	<1.01	<0.017
12378-pentachlorodibenzo-p-dioxin	140	30.7	51.5	38.3	43.0	0.73
123478-hexachlorodibenzo-p-dioxin	571	125	210	156	176	2.98
123678-hexachlorodibenzo-p-dioxin	1910	419	703	523	587	9.98
123789-hexachlorodibenzo-p-dioxin	1110	244	409	304	341	5.80
1234678-heptachlorodibenzo-p-dioxin	11600	2547	4269	3174	3566	60.6
Octachlorodibenzo-p-dioxin	7110	1561	2617	1946	2186	37.2
2378-tetrachlorodibenzofuran	28.2	6.19	10.4	7.72	8.67	0.15
12378-pentachlorodibenzofuran	109	23.9	40.1	29.8	33.5	0.57
23478-pentachlorodibenzofuran	556	122	205	152	171	2.91
123478-hexachlorodibenzofuran	908	199	334	248	279	4.75
123678-hexachlorodibenzofuran	817	179	301	224	251	4.27
234678-hexachlorodibenzofuran	2000	439	736	547	615	10.5
123789-hexachlorodibenzofuran	608	134	224	166	187	3.18
1234678-heptachlorodibenzofuran	3260	716	1200	892	1002	17.0
1234789-heptachlorodibenzofuran	687	151	253	188	211	3.59
Octachlorodibenzofuran	1650	362	607	451	507	8.62
Total Dioxins & Furans Only	<33068	<7261	<12171	<9048	<10166	<173

Dry Gas Volume Sampled (Rm^3*) :	2.717
Actual Flowrate (m^3/s) :	23.8
Dry Reference Flowrate (Rm^3/s*) :	14.2
Dry Adjusted Flowrate (Rm^3/s**) :	19.1
Wet Reference Flowrate (Rm^3/s*) :	17.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 22
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 3

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<2.9	<0.66	<1.11	<0.82	<0.93	<0.016
12378-pentachlorodibenzo-p-dioxin	156	35.7	59.9	44.3	50.2	0.86
123478-hexachlorodibenzo-p-dioxin	676	155	260	192	217	3.74
123678-hexachlorodibenzo-p-dioxin	1860	425	715	528	598	10.3
123789-hexachlorodibenzo-p-dioxin	1120	256	430	318	360	6.20
1234678-heptachlorodibenzo-p-dioxin	10300	2355	3957	2922	3313	57.0
Octachlorodibenzo-p-dioxin	6700	1532	2574	1901	2155	37.1
2378-tetrachlorodibenzofuran	40.2	9.19	15.4	11.4	12.9	0.22
12378-pentachlorodibenzofuran	115	26.3	44.2	32.6	37.0	0.64
23478-pentachlorodibenzofuran	553	126	212	157	178	3.06
123478-hexachlorodibenzofuran	901	206	346	256	290	4.98
123678-hexachlorodibenzofuran	847	194	325	240	272	4.69
234678-hexachlorodibenzofuran	1740	398	668	494	560	9.63
123789-hexachlorodibenzofuran	561	128	216	159	180	3.10
1234678-heptachlorodibenzofuran	3080	704	1183	874	991	17.0
1234789-heptachlorodibenzofuran	564	129	217	160	181	3.12
Octachlorodibenzofuran	1480	338	569	420	476	8.19
Total Dioxins & Furans Only	<30696	<7017	<11793	<8708	<9873	<170

Dry Gas Volume Sampled (Rm^3*) :	2.603
Actual Flowrate (m^3/s) :	24.2
Dry Reference Flowrate (Rm^3/s*) :	14.4
Dry Adjusted Flowrate (Rm^3/s**) :	19.5
Wet Reference Flowrate (Rm^3/s*) :	17.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 23
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	pg/m^3	pg/m^3	pg/m^3	pg/m^3	%
2378-tetrachlorodibenzo-p-dioxin	<0.62	<0.72	<0.66	<0.67	7.6
12378-pentachlorodibenzo-p-dioxin	31.2	30.7	35.7	32.5	8.4
123478-hexachlorodibenzo-p-dioxin	121	125	155	134	13.5
123678-hexachlorodibenzo-p-dioxin	384	419	425	410	5.4
123789-hexachlorodibenzo-p-dioxin	226	244	256	242	6.2
1234678-heptachlorodibenzo-p-dioxin	1909	2547	2355	2270	14.4
Octachlorodibenzo-p-dioxin	1111	1561	1532	1401	18.0
2378-tetrachlorodibenzofuran	7.91	6.19	9.19	7.76	19.4
12378-pentachlorodibenzofuran	24.7	23.9	26.3	25.0	4.8
23478-pentachlorodibenzofuran	128	122	126	126	2.5
123478-hexachlorodibenzofuran	184	199	206	196	5.8
123678-hexachlorodibenzofuran	183	179	194	185	4.0
234678-hexachlorodibenzofuran	361	439	398	399	9.7
123789-hexachlorodibenzofuran	113	134	128	125	8.4
1234678-heptachlorodibenzofuran	555	716	704	658	13.7
1234789-heptachlorodibenzofuran	107	151	129	129	16.8
Octachlorodibenzofuran	243	362	338	315	20.1
Total Dioxins & Furans Only	<5691	<7261	<7017	<6656	12.7

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 24
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<1.04	<1.21	<1.11	<1.12	7.9
12378-pentachlorodibenzo-p-dioxin	51.9	51.5	59.9	54.5	8.7
123478-hexachlorodibenzo-p-dioxin	202	210	260	224	13.9
123678-hexachlorodibenzo-p-dioxin	640	703	715	686	5.8
123789-hexachlorodibenzo-p-dioxin	377	409	430	405	6.6
1234678-heptachlorodibenzo-p-dioxin	3181	4269	3957	3802	14.7
Octachlorodibenzo-p-dioxin	1852	2617	2574	2348	18.3
2378-tetrachlorodibenzofuran	13.2	10.4	15.4	13.0	19.5
12378-pentachlorodibenzofuran	41.2	40.1	44.2	41.8	5.0
23478-pentachlorodibenzofuran	214	205	212	210	2.3
123478-hexachlorodibenzofuran	306	334	346	329	6.2
123678-hexachlorodibenzofuran	305	301	325	310	4.3
234678-hexachlorodibenzofuran	602	736	668	669	10.0
123789-hexachlorodibenzofuran	189	224	216	209	8.8
1234678-heptachlorodibenzofuran	924	1200	1183	1102	14.0
1234789-heptachlorodibenzofuran	179	253	217	216	17.1
Octachlorodibenzofuran	405	607	569	527	20.4
Total Dioxins & Furans Only	<9484	<12171	<11793	<11149	13.0

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 25
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<0.77	<0.90	<0.82	<0.83	8.0
12378-pentachlorodibenzo-p-dioxin	38.6	38.3	44.3	40.4	8.3
123478-hexachlorodibenzo-p-dioxin	150	156	192	166	13.5
123678-hexachlorodibenzo-p-dioxin	476	523	528	509	5.7
123789-hexachlorodibenzo-p-dioxin	280	304	318	301	6.3
1234678-heptachlorodibenzo-p-dioxin	2362	3174	2922	2819	14.7
Octachlorodibenzo-p-dioxin	1375	1946	1901	1740	18.2
2378-tetrachlorodibenzofuran	9.79	7.72	11.4	9.64	19.2
12378-pentachlorodibenzofuran	30.6	29.8	32.6	31.0	4.7
23478-pentachlorodibenzofuran	159	152	157	156	2.1
123478-hexachlorodibenzofuran	227	248	256	244	6.0
123678-hexachlorodibenzofuran	226	224	240	230	3.9
234678-hexachlorodibenzofuran	447	547	494	496	10.1
123789-hexachlorodibenzofuran	140	166	159	155	8.7
1234678-heptachlorodibenzofuran	686	892	874	817	13.9
1234789-heptachlorodibenzofuran	133	188	160	160	17.2
Octachlorodibenzofuran	301	451	420	391	20.3
Total Dioxins & Furans Only	<7043	<9048	<8708	<8266	13.0

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 26
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.87	<1.01	<0.93	<0.94	7.7
12378-pentachlorodibenzo-p-dioxin	43.5	43.0	50.2	45.6	8.8
123478-hexachlorodibenzo-p-dioxin	170	176	217	188	13.9
123678-hexachlorodibenzo-p-dioxin	537	587	598	574	5.7
123789-hexachlorodibenzo-p-dioxin	316	341	360	339	6.5
1234678-heptachlorodibenzo-p-dioxin	2666	3566	3313	3182	14.6
Octachlorodibenzo-p-dioxin	1552	2186	2155	1964	18.2
2378-tetrachlorodibenzofuran	11.1	8.67	12.9	10.9	19.6
12378-pentachlorodibenzofuran	34.5	33.5	37.0	35.0	5.1
23478-pentachlorodibenzofuran	179	171	178	176	2.5
123478-hexachlorodibenzofuran	257	279	290	275	6.1
123678-hexachlorodibenzofuran	256	251	272	260	4.3
234678-hexachlorodibenzofuran	505	615	560	560	9.8
123789-hexachlorodibenzofuran	158	187	180	175	8.6
1234678-heptachlorodibenzofuran	774	1002	991	922	13.9
1234789-heptachlorodibenzofuran	150	211	181	181	16.9
Octachlorodibenzofuran	339	507	476	441	20.3
Total Dioxins & Furans Only	<7948	<10166	<9873	<9329	12.9

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 27
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Rates

Specific Isomer	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.016	<0.017	<0.016	<0.016	5.3
12378-pentachlorodibenzo-p-dioxin	0.78	0.73	0.86	0.79	8.4
123478-hexachlorodibenzo-p-dioxin	3.04	2.98	3.74	3.25	13.0
123678-hexachlorodibenzo-p-dioxin	9.61	9.98	10.3	9.96	3.4
123789-hexachlorodibenzo-p-dioxin	5.66	5.80	6.20	5.89	4.7
1234678-heptachlorodibenzo-p-dioxin	47.7	60.6	57.0	55.1	12.1
Octachlorodibenzo-p-dioxin	27.8	37.2	37.1	34.0	15.9
2378-tetrachlorodibenzofuran	0.20	0.15	0.22	0.19	20.2
12378-pentachlorodibenzofuran	0.62	0.57	0.64	0.61	5.7
23478-pentachlorodibenzofuran	3.20	2.91	3.06	3.06	4.9
123478-hexachlorodibenzofuran	4.60	4.75	4.98	4.77	4.1
123678-hexachlorodibenzofuran	4.57	4.27	4.69	4.51	4.8
234678-hexachlorodibenzofuran	9.03	10.5	9.63	9.70	7.3
123789-hexachlorodibenzofuran	2.83	3.18	3.10	3.04	6.0
1234678-heptachlorodibenzofuran	13.9	17.0	17.0	16.0	11.5
1234789-heptachlorodibenzofuran	2.68	3.59	3.12	3.13	14.5
Octachlorodibenzofuran	6.07	8.62	8.19	7.63	17.9
Total Dioxins & Furans Only	<142	<173	<170	<162	10.4

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 28
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Summary of Dioxin and Furan Specific Isomer Emission Data

Specific Isomer	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.67	<1.12	<0.83	<0.94	<0.016
12378-pentachlorodibenzo-p-dioxin	32.5	54.5	40.4	45.6	0.79
123478-hexachlorodibenzo-p-dioxin	134	224	166	188	3.25
123678-hexachlorodibenzo-p-dioxin	410	686	509	574	9.96
123789-hexachlorodibenzo-p-dioxin	242	405	301	339	5.89
1234678-heptachlorodibenzo-p-dioxin	2270	3802	2819	3182	55.1
Octachlorodibenzo-p-dioxin	1401	2348	1740	1964	34.0
2378-tetrachlorodibenzofuran	7.76	13.0	9.64	10.9	0.19
12378-pentachlorodibenzofuran	25.0	41.8	31	35.0	0.61
23478-pentachlorodibenzofuran	126	210	156	176	3.06
123478-hexachlorodibenzofuran	196	329	244	275	4.77
123678-hexachlorodibenzofuran	185	310	230	260	4.51
234678-hexachlorodibenzofuran	399	669	496	560	9.70
123789-hexachlorodibenzofuran	125	209	155	175	3.04
1234678-heptachlorodibenzofuran	658	1102	817	922	16.0
1234789-heptachlorodibenzofuran	129	216	160	181	3.13
Octachlorodibenzofuran	315	527	391	441	7.63
Total Dioxins & Furans Only	<6656	<11149	<8266	<9329	<162

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 29
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Actual Concentrations

Specific Isomer	Toxicity Equivalency Factor	Actual Concentration Test No. 1 pg TEQ/m³	Test No. 2 pg TEQ/m³	Test No. 3 pg TEQ/m³	Average pg TEQ/m³
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.62	<0.72	<0.66	<0.67
12378-pentachlorodibenzo-p-dioxin	1.000	31.2	30.7	35.7	32.5
123478-hexachlorodibenzo-p-dioxin	0.100	12.1	12.5	15.5	13.4
123678-hexachlorodibenzo-p-dioxin	0.100	38.4	41.9	42.5	41.0
123789-hexachlorodibenzo-p-dioxin	0.100	22.6	24.4	25.6	24.2
1234678-heptachlorodibenzo-p-dioxin	0.010	19.1	25.5	23.5	22.7
Octachlorodibenzo-p-dioxin	0.0003	0.33	0.47	0.46	0.42
2378-tetrachlorodibenzofuran	0.100	0.79	0.62	0.92	0.78
12378-pentachlorodibenzofuran	0.030	0.74	0.72	0.79	0.75
23478-pentachlorodibenzofuran	0.300	38.4	36.6	37.9	37.7
123478-hexachlorodibenzofuran	0.100	18.4	19.9	20.6	19.6
123678-hexachlorodibenzofuran	0.100	18.3	17.9	19.4	18.5
234678-hexachlorodibenzofuran	0.100	36.1	43.9	39.8	39.9
123789-hexachlorodibenzofuran	0.100	11.3	13.4	12.8	12.5
1234678-heptachlorodibenzofuran	0.010	5.55	7.16	7.04	6.58
1234789-heptachlorodibenzofuran	0.010	1.07	1.51	1.29	1.29
Octachlorodibenzofuran	0.0003	0.073	0.11	0.10	0.094
Total Dioxins & Furans Only		<255	<278	<285	<273

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 30
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Dry Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Dry Reference Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.04	<1.21	<1.11	<1.12
12378-pentachlorodibenzo-p-dioxin	1.000	51.9	51.5	59.9	54.5
123478-hexachlorodibenzo-p-dioxin	0.100	20.2	21.0	26.0	22.4
123678-hexachlorodibenzo-p-dioxin	0.100	64.0	70.3	71.5	68.6
123789-hexachlorodibenzo-p-dioxin	0.100	37.7	40.9	43.0	40.5
1234678-heptachlorodibenzo-p-dioxin	0.010	31.8	42.7	39.6	38.0
Octachlorodibenzo-p-dioxin	0.0003	0.56	0.79	0.77	0.70
2378-tetrachlorodibenzofuran	0.100	1.32	1.04	1.54	1.30
12378-pentachlorodibenzofuran	0.030	1.24	1.20	1.33	1.25
23478-pentachlorodibenzofuran	0.300	64.1	61.4	63.7	63.1
123478-hexachlorodibenzofuran	0.100	30.6	33.4	34.6	32.9
123678-hexachlorodibenzofuran	0.100	30.5	30.1	32.5	31.0
234678-hexachlorodibenzofuran	0.100	60.2	73.6	66.8	66.9
123789-hexachlorodibenzofuran	0.100	18.9	22.4	21.6	20.9
1234678-heptachlorodibenzofuran	0.010	9.24	12.0	11.8	11.0
1234789-heptachlorodibenzofuran	0.010	1.79	2.53	2.17	2.16
Octachlorodibenzofuran	0.0003	0.12	0.18	0.17	0.16
Total Dioxins & Furans Only		<425	<466	<478	<457

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 31
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.77	<0.90	<0.82	<0.83
12378-pentachlorodibenzo-p-dioxin	1.000	38.6	38.3	44.3	40.4
123478-hexachlorodibenzo-p-dioxin	0.100	15.0	15.6	19.2	16.6
123678-hexachlorodibenzo-p-dioxin	0.100	47.6	52.3	52.8	50.9
123789-hexachlorodibenzo-p-dioxin	0.100	28.0	30.4	31.8	30.1
1234678-heptachlorodibenzo-p-dioxin	0.010	23.6	31.7	29.2	28.2
Octachlorodibenzo-p-dioxin	0.0003	0.41	0.58	0.57	0.52
2378-tetrachlorodibenzofuran	0.100	0.98	0.77	1.14	0.96
12378-pentachlorodibenzofuran	0.030	0.92	0.89	0.98	0.93
23478-pentachlorodibenzofuran	0.300	47.6	45.6	47.1	46.8
123478-hexachlorodibenzofuran	0.100	22.7	24.8	25.6	24.4
123678-hexachlorodibenzofuran	0.100	22.6	22.4	24.0	23.0
234678-hexachlorodibenzofuran	0.100	44.7	54.7	49.4	49.6
123789-hexachlorodibenzofuran	0.100	14.0	16.6	15.9	15.5
1234678-heptachlorodibenzofuran	0.010	6.86	8.92	8.74	8.17
1234789-heptachlorodibenzofuran	0.010	1.33	1.88	1.60	1.60
Octachlorodibenzofuran	0.0003	0.090	0.14	0.13	0.12
Total Dioxins & Furans Only		<316	<347	<353	<339

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 31A
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using Half the Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	0.39	0.45	0.41	0.42
12378-pentachlorodibenzo-p-dioxin	1.000	38.6	38.3	44.3	40.4
123478-hexachlorodibenzo-p-dioxin	0.100	15.0	15.6	19.2	16.6
123678-hexachlorodibenzo-p-dioxin	0.100	47.6	52.3	52.8	50.9
123789-hexachlorodibenzo-p-dioxin	0.100	28.0	30.4	31.8	30.1
1234678-heptachlorodibenzo-p-dioxin	0.010	23.6	31.7	29.2	28.2
Octachlorodibenzo-p-dioxin	0.0003	0.41	0.58	0.57	0.52
2378-tetrachlorodibenzofuran	0.100	0.98	0.77	1.14	0.96
12378-pentachlorodibenzofuran	0.030	0.92	0.89	0.98	0.93
23478-pentachlorodibenzofuran	0.300	47.6	45.6	47.1	46.8
123478-hexachlorodibenzofuran	0.100	22.7	24.8	25.6	24.4
123678-hexachlorodibenzofuran	0.100	22.6	22.4	24.0	23.0
234678-hexachlorodibenzofuran	0.100	44.7	54.7	49.4	49.6
123789-hexachlorodibenzofuran	0.100	14.0	16.6	15.9	15.5
1234678-heptachlorodibenzofuran	0.010	6.86	8.92	8.74	8.17
1234789-heptachlorodibenzofuran	0.010	1.33	1.88	1.60	1.60
Octachlorodibenzofuran	0.0003	0.09	0.14	0.13	0.12
Total Dioxins & Furans Only		315	346	353	338

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 31B
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.77	<0.90	<0.82	<0.83
12378-pentachlorodibenzo-p-dioxin	0.500	19.3	19.2	22.1	20.2
123478-hexachlorodibenzo-p-dioxin	0.100	15.0	15.6	19.2	16.6
123678-hexachlorodibenzo-p-dioxin	0.100	47.6	52.3	52.8	50.9
123789-hexachlorodibenzo-p-dioxin	0.100	28.0	30.4	31.8	30.1
1234678-heptachlorodibenzo-p-dioxin	0.010	23.6	31.7	29.2	28.2
Octachlorodibenzo-p-dioxin	0.001	1.38	1.95	1.90	1.74
2378-tetrachlorodibenzofuran	0.100	0.98	0.77	1.14	0.96
12378-pentachlorodibenzofuran	0.050	1.53	1.49	1.63	1.55
23478-pentachlorodibenzofuran	0.500	79.3	76.1	78.4	77.9
123478-hexachlorodibenzofuran	0.100	22.7	24.8	25.6	24.4
123678-hexachlorodibenzofuran	0.100	22.6	22.4	24.0	23.0
234678-hexachlorodibenzofuran	0.100	44.7	54.7	49.4	49.6
123789-hexachlorodibenzofuran	0.100	14.0	16.6	15.9	15.5
1234678-heptachlorodibenzofuran	0.010	6.86	8.92	8.74	8.17
1234789-heptachlorodibenzofuran	0.010	1.33	1.88	1.60	1.60
Octachlorodibenzofuran	0.001	0.30	0.45	0.42	0.39
Total Dioxins & Furans		<330	<360	<365	<352
In-Stack Emission Limit					60

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

NATO/CCMS (1989) Toxicity Equivalency Factors

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 32
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Wet Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Wet Reference Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.87	<1.01	<0.93	<0.94
12378-pentachlorodibenzo-p-dioxin	1.000	43.5	43.0	50.2	45.6
123478-hexachlorodibenzo-p-dioxin	0.100	17.0	17.6	21.7	18.8
123678-hexachlorodibenzo-p-dioxin	0.100	53.7	58.7	59.8	57.4
123789-hexachlorodibenzo-p-dioxin	0.100	31.6	34.1	36.0	33.9
1234678-heptachlorodibenzo-p-dioxin	0.010	26.7	35.7	33.1	31.8
Octachlorodibenzo-p-dioxin	0.0003	0.47	0.66	0.65	0.59
2378-tetrachlorodibenzofuran	0.100	1.11	0.87	1.29	1.09
12378-pentachlorodibenzofuran	0.030	1.04	1.01	1.11	1.05
23478-pentachlorodibenzofuran	0.300	53.7	51.3	53.4	52.8
123478-hexachlorodibenzofuran	0.100	25.7	27.9	29.0	27.5
123678-hexachlorodibenzofuran	0.100	25.6	25.1	27.2	26.0
234678-hexachlorodibenzofuran	0.100	50.5	61.5	56.0	56.0
123789-hexachlorodibenzofuran	0.100	15.8	18.7	18.0	17.5
1234678-heptachlorodibenzofuran	0.010	7.74	10.0	9.91	9.22
1234789-heptachlorodibenzofuran	0.010	1.50	2.11	1.81	1.81
Octachlorodibenzofuran	0.0003	0.10	0.15	0.14	0.13
Total Dioxins & Furans Only		<356	<389	<400	<382

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 33
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Emission Rates

Specific Isomer	Toxicity Equivalency Factor	Emission Rate Test No. 1 ng TEQ/s	Test No. 2 ng TEQ/s	Test No. 3 ng TEQ/s	Average ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.016	<0.017	<0.016	<0.016
12378-pentachlorodibenzo-p-dioxin	1.000	0.78	0.73	0.86	0.79
123478-hexachlorodibenzo-p-dioxin	0.100	0.30	0.30	0.37	0.33
123678-hexachlorodibenzo-p-dioxin	0.100	0.96	1.00	1.03	1.00
123789-hexachlorodibenzo-p-dioxin	0.100	0.57	0.58	0.62	0.59
1234678-heptachlorodibenzo-p-dioxin	0.010	0.48	0.61	0.57	0.55
Octachlorodibenzo-p-dioxin	0.0003	0.0083	0.011	0.011	0.010
2378-tetrachlorodibenzofuran	0.100	0.020	0.015	0.022	0.019
12378-pentachlorodibenzofuran	0.030	0.019	0.017	0.019	0.018
23478-pentachlorodibenzofuran	0.300	0.96	0.87	0.92	0.92
123478-hexachlorodibenzofuran	0.100	0.46	0.47	0.50	0.48
123678-hexachlorodibenzofuran	0.100	0.46	0.43	0.47	0.45
234678-hexachlorodibenzofuran	0.100	0.90	1.05	0.96	0.97
123789-hexachlorodibenzofuran	0.100	0.28	0.32	0.31	0.30
1234678-heptachlorodibenzofuran	0.010	0.14	0.17	0.17	0.16
1234789-heptachlorodibenzofuran	0.010	0.027	0.036	0.031	0.031
Octachlorodibenzofuran	0.0003	0.0018	0.0026	0.0025	0.0023
Total Dioxins & Furans Only		<6.38	<6.62	<6.89	<6.63

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 34
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using the Full Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	<0.67	<1.12	<0.83	<0.94	<0.016
12378-pentachlorodibenzo-p-dioxin	32.5	54.5	40.4	45.6	0.79
123478-hexachlorodibenzo-p-dioxin	13.4	22.4	16.6	18.8	0.33
123678-hexachlorodibenzo-p-dioxin	41.0	68.6	50.9	57.4	1.00
123789-hexachlorodibenzo-p-dioxin	24.2	40.5	30.1	33.9	0.59
1234678-heptachlorodibenzo-p-dioxin	22.7	38.0	28.2	31.8	0.55
Octachlorodibenzo-p-dioxin	0.42	0.70	0.52	0.59	0.010
2378-tetrachlorodibenzofuran	0.78	1.30	0.96	1.09	0.019
12378-pentachlorodibenzofuran	0.75	1.25	0.93	1.05	0.018
23478-pentachlorodibenzofuran	37.7	63.1	46.8	52.8	0.92
123478-hexachlorodibenzofuran	19.6	32.9	24.4	27.5	0.48
123678-hexachlorodibenzofuran	18.5	31.0	23.0	26.0	0.45
234678-hexachlorodibenzofuran	39.9	66.9	49.6	56.0	0.97
123789-hexachlorodibenzofuran	12.5	20.9	15.5	17.5	0.30
1234678-heptachlorodibenzofuran	6.58	11.0	8.17	9.22	0.16
1234789-heptachlorodibenzofuran	1.29	2.16	1.60	1.81	0.031
Octachlorodibenzofuran	0.094	0.16	0.12	0.13	0.0023
Total Dioxins & Furans Only	<273	<457	<339	<382	<6.63

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 35

Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using Half the Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	0.34	0.56	0.42	0.47	0.0081
12378-pentachlorodibenzo-p-dioxin	32.5	54.5	40.4	45.6	0.79
123478-hexachlorodibenzo-p-dioxin	13.4	22.4	16.6	18.8	0.33
123678-hexachlorodibenzo-p-dioxin	41.0	68.6	50.9	57.4	1.00
123789-hexachlorodibenzo-p-dioxin	24.2	40.5	30.1	33.9	0.59
1234678-heptachlorodibenzo-p-dioxin	22.7	38.0	28.2	31.8	0.55
Octachlorodibenzo-p-dioxin	0.42	0.70	0.52	0.59	0.010
2378-tetrachlorodibenzofuran	0.78	1.30	0.96	1.09	0.019
12378-pentachlorodibenzofuran	0.75	1.25	0.93	1.05	0.018
23478-pentachlorodibenzofuran	37.7	63.1	46.8	52.8	0.92
123478-hexachlorodibenzofuran	19.6	32.9	24.4	27.5	0.48
123678-hexachlorodibenzofuran	18.5	31.0	23.0	26.0	0.45
234678-hexachlorodibenzofuran	39.9	66.9	49.6	56.0	0.97
123789-hexachlorodibenzofuran	12.5	20.9	15.5	17.5	0.30
1234678-heptachlorodibenzofuran	6.58	11.0	8.17	9.22	0.16
1234789-heptachlorodibenzofuran	1.29	2.16	1.60	1.81	0.031
Octachlorodibenzofuran	0.094	0.16	0.12	0.13	0.0023
Total Dioxins & Furans Only	272	456	338	382	6.62

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 36
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 1

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<4.7	<1.04	<1.73	<1.25	<1.44	<0.024
12378-pentachlorodibenzo-p-dioxin	132	29.1	48.7	35.0	40.4	0.69
123478-hexachlorodibenzo-p-dioxin	266	58.6	98.1	70.6	81.4	1.38
123678-hexachlorodibenzo-p-dioxin	858	189	316	228	262	4.46
123789-hexachlorodibenzo-p-dioxin	503	111	185	133	154	2.62
1234678-heptachlorodibenzo-p-dioxin	3810	839	1405	1011	1165	19.8
Octachlorodibenzo-p-dioxin	2260	498	833	599	691	11.8
2378-tetrachlorodibenzofuran	58.7	12.9	21.6	15.6	18.0	0.31
12378-pentachlorodibenzofuran	133	29.3	49.0	35.3	40.7	0.69
23478-pentachlorodibenzofuran	471	104	174	125	144	2.45
123478-hexachlorodibenzofuran	402	88.6	148	107	123	2.09
123678-hexachlorodibenzofuran	434	95.6	160	115	133	2.26
234678-hexachlorodibenzofuran	761	168	281	202	233	3.96
123789-hexachlorodibenzofuran	253	55.7	93.3	67.1	77.4	1.32
1234678-heptachlorodibenzofuran	963	212	355	255	295	5.01
1234789-heptachlorodibenzofuran	238	52.4	87.8	63.1	72.8	1.24
Octachlorodibenzofuran	518	114	191	137	158	2.69
Total Dioxins & Furans Only	<12065	<2658	<4449	<3200	<3690	<62.7

Dry Gas Volume Sampled (Rm³*) :	2.712
Actual Flowrate (m³/s) :	23.6
Dry Reference Flowrate (Rm³/s*) :	14.1
Dry Adjusted Flowrate (Rm³/s**) :	19.6
Wet Reference Flowrate (Rm³/s*) :	17.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 37
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 2

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<12.0	<2.71	<4.47	<3.28	<3.74	<0.064
12378-pentachlorodibenzo-p-dioxin	106	23.9	39.5	29.0	33.0	0.56
123478-hexachlorodibenzo-p-dioxin	207	46.7	77.2	56.6	64.5	1.10
123678-hexachlorodibenzo-p-dioxin	658	149	245	180	205	3.51
123789-hexachlorodibenzo-p-dioxin	396	89.4	148	108	123	2.11
1234678-heptachlorodibenzo-p-dioxin	3090	698	1152	845	963	16.5
Octachlorodibenzo-p-dioxin	1990	449	742	544	620	10.6
2378-tetrachlorodibenzofuran	29.2	6.59	10.9	7.98	9.10	0.16
12378-pentachlorodibenzofuran	106	23.9	39.5	29.0	33.0	0.56
23478-pentachlorodibenzofuran	366	82.7	136	100	114	1.95
123478-hexachlorodibenzofuran	299	67.5	111	81.7	93.2	1.59
123678-hexachlorodibenzofuran	338	76.3	126	92.4	105	1.80
234678-hexachlorodibenzofuran	603	136	225	165	188	3.21
123789-hexachlorodibenzofuran	203	45.8	75.7	55.5	63.3	1.08
1234678-heptachlorodibenzofuran	817	185	305	223	255	4.35
1234789-heptachlorodibenzofuran	190	42.9	70.8	51.9	59.2	1.01
Octachlorodibenzofuran	430	97.1	160	118	134	2.29
Total Dioxins & Furans Only	<9840	<2222	<3668	<2690	<3067	<52.4

Dry Gas Volume Sampled (Rm³*) :	2.683
Actual Flowrate (m³/s) :	23.6
Dry Reference Flowrate (Rm³/s*) :	14.3
Dry Adjusted Flowrate (Rm³/s**) :	19.5
Wet Reference Flowrate (Rm³/s*) :	17.1

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 38
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 3

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<2.6	<0.61	<1.03	<0.75	<0.85	<0.014
12378-pentachlorodibenzo-p-dioxin	<93	<22.0	<36.7	<26.7	<30.5	<0.51
123478-hexachlorodibenzo-p-dioxin	170	40.1	67.2	48.8	55.8	0.93
123678-hexachlorodibenzo-p-dioxin	634	150	250	182	208	3.46
123789-hexachlorodibenzo-p-dioxin	379	89.5	150	109	124	2.07
1234678-heptachlorodibenzo-p-dioxin	2620	618	1035	752	861	14.3
Octachlorodibenzo-p-dioxin	1580	373	624	453	519	8.61
2378-tetrachlorodibenzofuran	44.2	10.4	17.5	12.7	14.5	0.24
12378-pentachlorodibenzofuran	104	24.5	41.1	29.8	34.2	0.57
23478-pentachlorodibenzofuran	371	87.6	147	106	122	2.02
123478-hexachlorodibenzofuran	308	72.7	122	88.4	101	1.68
123678-hexachlorodibenzofuran	362	85.4	143	104	119	1.97
234678-hexachlorodibenzofuran	599	141	237	172	197	3.27
123789-hexachlorodibenzofuran	196	46.3	77.4	56.2	64.4	1.07
1234678-heptachlorodibenzofuran	721	170	285	207	237	3.93
1234789-heptachlorodibenzofuran	164	38.7	64.8	47.1	53.9	0.89
Octachlorodibenzofuran	359	84.7	142	103	118	1.96
Total Dioxins & Furans Only	<8707	<2055	<3440	<2499	<2860	<47.5

Dry Gas Volume Sampled (Rm³*) :	2.531
Actual Flowrate (m³/s) :	23.1
Dry Reference Flowrate (Rm³/s*) :	13.8
Dry Adjusted Flowrate (Rm³/s**) :	19.0
Wet Reference Flowrate (Rm³/s*) :	16.6

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 39
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration Test No. 1 pg/m³	Test No. 2 pg/m³	Test No. 3 pg/m³	Average pg/m³	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<1.04	<2.71	<0.61	<1.45	76.3
12378-pentachlorodibenzo-p-dioxin	29.1	23.9	<22.0	<25.0	14.7
123478-hexachlorodibenzo-p-dioxin	58.6	46.7	40.1	48.5	19.3
123678-hexachlorodibenzo-p-dioxin	189	149	150	162	14.2
123789-hexachlorodibenzo-p-dioxin	111	89.4	89.5	96.6	12.8
1234678-heptachlorodibenzo-p-dioxin	839	698	618	719	15.6
Octachlorodibenzo-p-dioxin	498	449	373	440	14.3
2378-tetrachlorodibenzofuran	12.9	6.59	10.4	9.99	32.0
12378-pentachlorodibenzofuran	29.3	23.9	24.5	25.9	11.3
23478-pentachlorodibenzofuran	104	82.7	87.6	91.3	12.1
123478-hexachlorodibenzofuran	88.6	67.5	72.7	76.3	14.4
123678-hexachlorodibenzofuran	95.6	76.3	85.4	85.8	11.2
234678-hexachlorodibenzofuran	168	136	141	148	11.4
123789-hexachlorodibenzofuran	55.7	45.8	46.3	49.3	11.4
1234678-heptachlorodibenzofuran	212	185	170	189	11.3
1234789-heptachlorodibenzofuran	52.4	42.9	38.7	44.7	15.7
Octachlorodibenzofuran	114	97.1	84.7	98.7	15.0
Total Dioxins & Furans Only	<2658	<2222	<2055	<2312	13.5

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 40
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<1.73	<4.47	<1.03	<2.41	75.5
12378-pentachlorodibenzo-p-dioxin	48.7	39.5	<36.7	<41.6	15.0
123478-hexachlorodibenzo-p-dioxin	98.1	77.2	67.2	80.8	19.5
123678-hexachlorodibenzo-p-dioxin	316	245	250	271	14.6
123789-hexachlorodibenzo-p-dioxin	185	148	150	161	13.2
1234678-heptachlorodibenzo-p-dioxin	1405	1152	1035	1197	15.8
Octachlorodibenzo-p-dioxin	833	742	624	733	14.3
2378-tetrachlorodibenzofuran	21.6	10.9	17.5	16.7	32.6
12378-pentachlorodibenzofuran	49.0	39.5	41.1	43.2	11.8
23478-pentachlorodibenzofuran	174	136	147	152	12.7
123478-hexachlorodibenzofuran	148	111	122	127	14.9
123678-hexachlorodibenzofuran	160	126	143	143	11.9
234678-hexachlorodibenzofuran	281	225	237	247	11.9
123789-hexachlorodibenzofuran	93.3	75.7	77.4	82.1	11.8
1234678-heptachlorodibenzofuran	355	305	285	315	11.5
1234789-heptachlorodibenzofuran	87.8	70.8	64.8	74.5	16.0
Octachlorodibenzofuran	191	160	142	164	15.1
Total Dioxins & Furans Only	<4449	<3668	<3440	<3852	13.7

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 41

Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<1.25	<3.28	<0.75	<1.76	76.4
12378-pentachlorodibenzo-p-dioxin	35.0	29.0	<26.7	<30.2	14.2
123478-hexachlorodibenzo-p-dioxin	70.6	56.6	48.8	58.6	18.8
123678-hexachlorodibenzo-p-dioxin	228	180	182	196	13.7
123789-hexachlorodibenzo-p-dioxin	133	108	109	117	12.3
1234678-heptachlorodibenzo-p-dioxin	1011	845	752	869	15.1
Octachlorodibenzo-p-dioxin	599	544	453	532	13.9
2378-tetrachlorodibenzofuran	15.6	7.98	12.7	12.1	31.7
12378-pentachlorodibenzofuran	35.3	29.0	29.8	31.4	10.9
23478-pentachlorodibenzofuran	125	100	106	110	11.7
123478-hexachlorodibenzofuran	107	81.7	88.4	92.2	14.0
123678-hexachlorodibenzofuran	115	92.4	104	104	11.0
234678-hexachlorodibenzofuran	202	165	172	180	11.0
123789-hexachlorodibenzofuran	67.1	55.5	56.2	59.6	10.9
1234678-heptachlorodibenzofuran	255	223	207	229	10.8
1234789-heptachlorodibenzofuran	63.1	51.9	47.1	54.0	15.2
Octachlorodibenzofuran	137	118	103	119	14.5
Total Dioxins & Furans Only	<3200	<2690	<2499	<2796	13.0

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 42
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration				Coefficient of Variation
	Test No. 1	Test No. 2	Test No. 3	Average	
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	<1.44	<3.74	<0.85	<2.01	75.9
12378-pentachlorodibenzo-p-dioxin	40.4	33.0	<30.5	<34.7	14.7
123478-hexachlorodibenzo-p-dioxin	81.4	64.5	55.8	67.2	19.3
123678-hexachlorodibenzo-p-dioxin	262	205	208	225	14.3
123789-hexachlorodibenzo-p-dioxin	154	123	124	134	12.9
1234678-heptachlorodibenzo-p-dioxin	1165	963	861	996	15.6
Octachlorodibenzo-p-dioxin	691	620	519	610	14.2
2378-tetrachlorodibenzofuran	18.0	9.10	14.5	13.9	32.2
12378-pentachlorodibenzofuran	40.7	33.0	34.2	36.0	11.5
23478-pentachlorodibenzofuran	144	114	122	127	12.3
123478-hexachlorodibenzofuran	123	93.2	101	106	14.6
123678-hexachlorodibenzofuran	133	105	119	119	11.5
234678-hexachlorodibenzofuran	233	188	197	206	11.5
123789-hexachlorodibenzofuran	77.4	63.3	64.4	68.3	11.5
1234678-heptachlorodibenzofuran	295	255	237	262	11.3
1234789-heptachlorodibenzofuran	72.8	59.2	53.9	62.0	15.7
Octachlorodibenzofuran	158	134	118	137	14.9
Total Dioxins & Furans Only	<3690	<3067	<2860	<3206	13.5

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 43
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Rates

Specific Isomer	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.024	<0.064	<0.014	<0.034	76.9
12378-pentachlorodibenzo-p-dioxin	0.69	0.56	<0.51	<0.59	15.6
123478-hexachlorodibenzo-p-dioxin	1.38	1.10	0.93	1.14	20.2
123678-hexachlorodibenzo-p-dioxin	4.46	3.51	3.46	3.81	14.9
123789-hexachlorodibenzo-p-dioxin	2.62	2.11	2.07	2.26	13.5
1234678-heptachlorodibenzo-p-dioxin	19.8	16.5	14.3	16.9	16.5
Octachlorodibenzo-p-dioxin	11.8	10.6	8.61	10.3	15.4
2378-tetrachlorodibenzofuran	0.31	0.16	0.24	0.23	32.1
12378-pentachlorodibenzofuran	0.69	0.56	0.57	0.61	11.9
23478-pentachlorodibenzofuran	2.45	1.95	2.02	2.14	12.6
123478-hexachlorodibenzofuran	2.09	1.59	1.68	1.79	14.8
123678-hexachlorodibenzofuran	2.26	1.80	1.97	2.01	11.4
234678-hexachlorodibenzofuran	3.96	3.21	3.27	3.48	11.9
123789-hexachlorodibenzofuran	1.32	1.08	1.07	1.16	12.0
1234678-heptachlorodibenzofuran	5.01	4.35	3.93	4.43	12.2
1234789-heptachlorodibenzofuran	1.24	1.01	0.89	1.05	16.6
Octachlorodibenzofuran	2.69	2.29	1.96	2.31	15.9
Total Dioxins & Furans Only	<62.7	<52.4	<47.5	<54.2	14.4

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 44
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Summary of Dioxin and Furan Specific Isomer Emission Data

Specific Isomer	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<1.45	<2.41	<1.76	<2.01	<0.034
12378-pentachlorodibenzo-p-dioxin	<25.0	<41.6	<30.2	<34.7	<0.59
123478-hexachlorodibenzo-p-dioxin	48.5	80.8	58.6	67.2	1.14
123678-hexachlorodibenzo-p-dioxin	162	271	196	225	3.81
123789-hexachlorodibenzo-p-dioxin	96.6	161	117	134	2.26
1234678-heptachlorodibenzo-p-dioxin	719	1197	869	996	16.9
Octachlorodibenzo-p-dioxin	440	733	532	610	10.3
2378-tetrachlorodibenzofuran	9.99	16.7	12.1	13.9	0.23
12378-pentachlorodibenzofuran	25.9	43.2	31.4	36.0	0.61
23478-pentachlorodibenzofuran	91.3	152	110	127	2.14
123478-hexachlorodibenzofuran	76.3	127	92.2	106	1.79
123678-hexachlorodibenzofuran	85.8	143	104	119	2.01
234678-hexachlorodibenzofuran	148	247	180	206	3.48
123789-hexachlorodibenzofuran	49.3	82.1	59.6	68.3	1.16
1234678-heptachlorodibenzofuran	189	315	229	262	4.43
1234789-heptachlorodibenzofuran	44.7	74.5	54.0	62.0	1.05
Octachlorodibenzofuran	98.7	164	119	137	2.31
Total Dioxins & Furans Only	<2312	<3852	<2796	<3206	<54.2

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 45
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Actual Concentrations

Specific Isomer	Toxicity Equivalency Factor	Actual Concentration Test No. 1 pg TEQ/m³	Test No. 2 pg TEQ/m³	Test No. 3 pg TEQ/m³	Average pg TEQ/m³
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.04	<2.71	<0.61	<1.45
12378-pentachlorodibenzo-p-dioxin	1.000	29.1	23.9	<22.0	<25.0
123478-hexachlorodibenzo-p-dioxin	0.100	5.86	4.67	4.01	4.85
123678-hexachlorodibenzo-p-dioxin	0.100	18.9	14.9	15.0	16.2
123789-hexachlorodibenzo-p-dioxin	0.100	11.1	8.94	8.95	9.66
1234678-heptachlorodibenzo-p-dioxin	0.010	8.39	6.98	6.18	7.19
Octachlorodibenzo-p-dioxin	0.0003	0.15	0.13	0.11	0.13
2378-tetrachlorodibenzofuran	0.100	1.29	0.66	1.04	1.00
12378-pentachlorodibenzofuran	0.030	0.88	0.72	0.74	0.78
23478-pentachlorodibenzofuran	0.300	31.1	24.8	26.3	27.4
123478-hexachlorodibenzofuran	0.100	8.86	6.75	7.27	7.63
123678-hexachlorodibenzofuran	0.100	9.56	7.63	8.54	8.58
234678-hexachlorodibenzofuran	0.100	16.8	13.6	14.1	14.8
123789-hexachlorodibenzofuran	0.100	5.57	4.58	4.63	4.93
1234678-heptachlorodibenzofuran	0.010	2.12	1.85	1.70	1.89
1234789-heptachlorodibenzofuran	0.010	0.52	0.43	0.39	0.45
Octachlorodibenzofuran	0.0003	0.034	0.029	0.025	0.030
Total Dioxins & Furans Only		<151	<123	<122	<132

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 46
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Dry Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Dry Reference Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.73	<4.47	<1.03	<2.41
12378-pentachlorodibenzo-p-dioxin	1.000	48.7	39.5	<36.7	<41.6
123478-hexachlorodibenzo-p-dioxin	0.100	9.81	7.72	6.72	8.08
123678-hexachlorodibenzo-p-dioxin	0.100	31.6	24.5	25.0	27.1
123789-hexachlorodibenzo-p-dioxin	0.100	18.5	14.8	15.0	16.1
1234678-heptachlorodibenzo-p-dioxin	0.010	14.0	11.5	10.4	12.0
Octachlorodibenzo-p-dioxin	0.0003	0.25	0.22	0.19	0.22
2378-tetrachlorodibenzofuran	0.100	2.16	1.09	1.75	1.67
12378-pentachlorodibenzofuran	0.030	1.47	1.19	1.23	1.30
23478-pentachlorodibenzofuran	0.300	52.1	40.9	44.0	45.7
123478-hexachlorodibenzofuran	0.100	14.8	11.1	12.2	12.7
123678-hexachlorodibenzofuran	0.100	16.0	12.6	14.3	14.3
234678-hexachlorodibenzofuran	0.100	28.1	22.5	23.7	24.7
123789-hexachlorodibenzofuran	0.100	9.33	7.57	7.74	8.21
1234678-heptachlorodibenzofuran	0.010	3.55	3.05	2.85	3.15
1234789-heptachlorodibenzofuran	0.010	0.88	0.71	0.65	0.74
Octachlorodibenzofuran	0.0003	0.057	0.048	0.043	0.049
Total Dioxins & Furans Only		<253	<204	<203	<220

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 47

Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.25	<3.28	<0.75	<1.76
12378-pentachlorodibenzo-p-dioxin	1.000	35.0	29.0	<26.7	<30.2
123478-hexachlorodibenzo-p-dioxin	0.100	7.06	5.66	4.88	5.86
123678-hexachlorodibenzo-p-dioxin	0.100	22.8	18.0	18.2	19.6
123789-hexachlorodibenzo-p-dioxin	0.100	13.3	10.8	10.9	11.7
1234678-heptachlorodibenzo-p-dioxin	0.010	10.1	8.45	7.52	8.69
Octachlorodibenzo-p-dioxin	0.0003	0.18	0.16	0.14	0.16
2378-tetrachlorodibenzofuran	0.100	1.56	0.80	1.27	1.21
12378-pentachlorodibenzofuran	0.030	1.06	0.87	0.90	0.94
23478-pentachlorodibenzofuran	0.300	37.5	30.0	31.9	33.1
123478-hexachlorodibenzofuran	0.100	10.7	8.17	8.84	9.22
123678-hexachlorodibenzofuran	0.100	11.5	9.24	10.4	10.4
234678-hexachlorodibenzofuran	0.100	20.2	16.5	17.2	18.0
123789-hexachlorodibenzofuran	0.100	6.71	5.55	5.62	5.96
1234678-heptachlorodibenzofuran	0.010	2.55	2.23	2.07	2.29
1234789-heptachlorodibenzofuran	0.010	0.63	0.52	0.47	0.54
Octachlorodibenzofuran	0.0003	0.041	0.035	0.031	0.036
Total Dioxins & Furans Only		<182	<149	<148	<160

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 47A

Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using Half the Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	0.62	1.64	0.37	0.88
12378-pentachlorodibenzo-p-dioxin	1.000	35.0	29.0	13.3	25.8
123478-hexachlorodibenzo-p-dioxin	0.100	7.06	5.66	4.88	5.86
123678-hexachlorodibenzo-p-dioxin	0.100	22.8	18.0	18.2	19.6
123789-hexachlorodibenzo-p-dioxin	0.100	13.3	10.8	10.9	11.7
1234678-heptachlorodibenzo-p-dioxin	0.010	10.1	8.45	7.52	8.69
Octachlorodibenzo-p-dioxin	0.0003	0.18	0.16	0.14	0.16
2378-tetrachlorodibenzofuran	0.100	1.56	0.80	1.27	1.21
12378-pentachlorodibenzofuran	0.030	1.06	0.87	0.90	0.94
23478-pentachlorodibenzofuran	0.300	37.5	30.0	31.9	33.1
123478-hexachlorodibenzofuran	0.100	10.7	8.17	8.84	9.22
123678-hexachlorodibenzofuran	0.100	11.5	9.24	10.4	10.4
234678-hexachlorodibenzofuran	0.100	20.2	16.5	17.2	18.0
123789-hexachlorodibenzofuran	0.100	6.71	5.55	5.62	5.96
1234678-heptachlorodibenzofuran	0.010	2.55	2.23	2.07	2.29
1234789-heptachlorodibenzofuran	0.010	0.63	0.52	0.47	0.54
Octachlorodibenzofuran	0.0003	0.04	0.035	0.031	0.036
Total Dioxins & Furans Only		181	148	134	154

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 47B
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.25	<3.28	<0.75	<1.76
12378-pentachlorodibenzo-p-dioxin	0.500	17.5	14.5	<13.3	<15.1
123478-hexachlorodibenzo-p-dioxin	0.100	7.06	5.66	4.88	5.86
123678-hexachlorodibenzo-p-dioxin	0.100	22.8	18.0	18.2	19.6
123789-hexachlorodibenzo-p-dioxin	0.100	13.3	10.8	10.9	11.7
1234678-heptachlorodibenzo-p-dioxin	0.010	10.1	8.45	7.52	8.69
Octachlorodibenzo-p-dioxin	0.001	0.60	0.54	0.45	0.53
2378-tetrachlorodibenzofuran	0.100	1.56	0.80	1.27	1.21
12378-pentachlorodibenzofuran	0.050	1.76	1.45	1.49	1.57
23478-pentachlorodibenzofuran	0.500	62.5	50.0	53.2	55.2
123478-hexachlorodibenzofuran	0.100	10.7	8.17	8.84	9.22
123678-hexachlorodibenzofuran	0.100	11.5	9.24	10.4	10.4
234678-hexachlorodibenzofuran	0.100	20.2	16.5	17.2	18.0
123789-hexachlorodibenzofuran	0.100	6.71	5.55	5.62	5.96
1234678-heptachlorodibenzofuran	0.010	2.55	2.23	2.07	2.29
1234789-heptachlorodibenzofuran	0.010	0.63	0.52	0.47	0.54
Octachlorodibenzofuran	0.001	0.14	0.12	0.10	0.12
Total Dioxins & Furans		<191	<156	<157	<168
In-Stack Emission Limit					60

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

NATO/CCMS (1989) Toxicity Equivalency Factors

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 48
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Wet Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Wet Reference Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.44	<3.74	<0.85	<2.01
12378-pentachlorodibenzo-p-dioxin	1.000	40.4	33.0	<30.5	<34.7
123478-hexachlorodibenzo-p-dioxin	0.100	8.14	6.45	5.58	6.72
123678-hexachlorodibenzo-p-dioxin	0.100	26.2	20.5	20.8	22.5
123789-hexachlorodibenzo-p-dioxin	0.100	15.4	12.3	12.4	13.4
1234678-heptachlorodibenzo-p-dioxin	0.010	11.7	9.63	8.61	9.96
Octachlorodibenzo-p-dioxin	0.0003	0.21	0.19	0.16	0.18
2378-tetrachlorodibenzofuran	0.100	1.80	0.91	1.45	1.39
12378-pentachlorodibenzofuran	0.030	1.22	0.99	1.02	1.08
23478-pentachlorodibenzofuran	0.300	43.2	34.2	36.6	38.0
123478-hexachlorodibenzofuran	0.100	12.3	9.32	10.1	10.6
123678-hexachlorodibenzofuran	0.100	13.3	10.5	11.9	11.9
234678-hexachlorodibenzofuran	0.100	23.3	18.8	19.7	20.6
123789-hexachlorodibenzofuran	0.100	7.74	6.33	6.44	6.83
1234678-heptachlorodibenzofuran	0.010	2.95	2.55	2.37	2.62
1234789-heptachlorodibenzofuran	0.010	0.73	0.59	0.54	0.62
Octachlorodibenzofuran	0.0003	0.048	0.040	0.035	0.041
Total Dioxins & Furans Only		<210	<170	<169	<183

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 49
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Emission Rates

Specific Isomer	Toxicity Equivalency Factor	Emission Rate Test No. 1 ng TEQ/s	Test No. 2 ng TEQ/s	Test No. 3 ng TEQ/s	Average ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.024	<0.064	<0.014	<0.034
12378-pentachlorodibenzo-p-dioxin	1.000	0.69	0.56	<0.51	<0.59
123478-hexachlorodibenzo-p-dioxin	0.100	0.14	0.11	0.093	0.11
123678-hexachlorodibenzo-p-dioxin	0.100	0.45	0.35	0.35	0.38
123789-hexachlorodibenzo-p-dioxin	0.100	0.26	0.21	0.21	0.23
1234678-heptachlorodibenzo-p-dioxin	0.010	0.20	0.16	0.14	0.17
Octachlorodibenzo-p-dioxin	0.0003	0.0035	0.0032	0.0026	0.0031
2378-tetrachlorodibenzofuran	0.100	0.031	0.016	0.024	0.023
12378-pentachlorodibenzofuran	0.030	0.021	0.017	0.017	0.018
23478-pentachlorodibenzofuran	0.300	0.73	0.59	0.61	0.64
123478-hexachlorodibenzofuran	0.100	0.21	0.16	0.17	0.18
123678-hexachlorodibenzofuran	0.100	0.23	0.18	0.20	0.20
234678-hexachlorodibenzofuran	0.100	0.40	0.32	0.33	0.35
123789-hexachlorodibenzofuran	0.100	0.13	0.11	0.11	0.12
1234678-heptachlorodibenzofuran	0.010	0.050	0.044	0.039	0.044
1234789-heptachlorodibenzofuran	0.010	0.012	0.010	0.0089	0.010
Octachlorodibenzofuran	0.0003	0.00081	0.00069	0.00059	0.00069
Total Dioxins & Furans Only		<3.57	<2.91	<2.81	<3.10

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 50
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using the Full Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	<1.45	<2.41	<1.76	<2.01	<0.034
12378-pentachlorodibenzo-p-dioxin	<25.0	<41.6	<30.2	<34.7	<0.59
123478-hexachlorodibenzo-p-dioxin	4.85	8.08	5.86	6.72	0.11
123678-hexachlorodibenzo-p-dioxin	16.2	27.1	19.6	22.5	0.38
123789-hexachlorodibenzo-p-dioxin	9.66	16.1	11.7	13.4	0.23
1234678-heptachlorodibenzo-p-dioxin	7.19	12.0	8.69	9.96	0.17
Octachlorodibenzo-p-dioxin	0.13	0.22	0.16	0.18	0.0031
2378-tetrachlorodibenzofuran	1.00	1.67	1.21	1.39	0.023
12378-pentachlorodibenzofuran	0.78	1.30	0.94	1.08	0.018
23478-pentachlorodibenzofuran	27.4	45.7	33.1	38.0	0.64
123478-hexachlorodibenzofuran	7.63	12.7	9.22	10.6	0.18
123678-hexachlorodibenzofuran	8.58	14.3	10.4	11.9	0.20
234678-hexachlorodibenzofuran	14.8	24.7	18.0	20.6	0.35
123789-hexachlorodibenzofuran	4.93	8.21	5.96	6.83	0.12
1234678-heptachlorodibenzofuran	1.89	3.15	2.29	2.62	0.044
1234789-heptachlorodibenzofuran	0.45	0.74	0.54	0.62	0.010
Octachlorodibenzofuran	0.030	0.049	0.036	0.041	0.00069
Total Dioxins & Furans Only	<132	<220	<160	<183	<3.10

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 51

Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using Half the Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	0.73	1.21	0.88	1.01	0.017
12378-pentachlorodibenzo-p-dioxin	21.3	35.5	25.8	29.6	0.50
123478-hexachlorodibenzo-p-dioxin	4.85	8.08	5.86	6.72	0.11
123678-hexachlorodibenzo-p-dioxin	16.2	27.1	19.6	22.5	0.38
123789-hexachlorodibenzo-p-dioxin	9.66	16.1	11.7	13.4	0.23
1234678-heptachlorodibenzo-p-dioxin	7.19	12.0	8.69	9.96	0.17
Octachlorodibenzo-p-dioxin	0.13	0.22	0.16	0.18	0.0031
2378-tetrachlorodibenzofuran	1.00	1.67	1.21	1.39	0.023
12378-pentachlorodibenzofuran	0.78	1.30	0.94	1.08	0.018
23478-pentachlorodibenzofuran	27.4	45.7	33.1	38.0	0.64
123478-hexachlorodibenzofuran	7.63	12.7	9.22	10.6	0.18
123678-hexachlorodibenzofuran	8.58	14.3	10.4	11.9	0.20
234678-hexachlorodibenzofuran	14.8	24.7	18.0	20.6	0.35
123789-hexachlorodibenzofuran	4.93	8.21	5.96	6.83	0.12
1234678-heptachlorodibenzofuran	1.89	3.15	2.29	2.62	0.044
1234789-heptachlorodibenzofuran	0.45	0.74	0.54	0.62	0.010
Octachlorodibenzofuran	0.030	0.049	0.036	0.041	0.00069
Total Dioxins & Furans Only	128	213	154	177	2.99

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	Covanta - Durham York Renewable Energy LP
ALS Project ID:	24244	**Client Address:**	1835 Energy Drive
ALS WO#:	WG2187113		Courtice, ON L1E 2R2
Date of Report	15-Oct-15		Canada
Date of Sample Receipt	3-Oct-15	**Client Contact:**	Amanda Huxter
		Client Project ID:	AMESA Sampling

COMMENTS: **PCDD/F by EPA M23A**

There are peak masses at the diphenylether monitoring mass indicating the possibility that the results for 1,2,3,4,7,8-HxCDF and 1,2,3,6,7,8-HxCDF may be elevated. The concentrations of these two targets contribute approximately 15% of the TEQ

LCS recoveries for 1,2,3,7,8,9-HxCDD/F are slightly above normal control limits indicating a potential for high bias to the reported results of these targets.

R. Stolys

Rachael Stolys
Account Manager

ALS Life sciences

Sample Analysis summary Report

Sample Name	UNIT 1, 151001-3	UNIT 1, 151002-4	UNIT 1, 151002-5	UNIT 2, 151001-3	UNIT 2, 151002-4	UNIT 2, 151002-5
ALS Sample ID	L1682781-1	L1682783-1	L1682785-1	L1682781-2	L1682783-2	L1682785-2
Sample Size	1	1	1	1	1	1
Sample size units	Trap	Trap	Trap	Trap	Trap	Trap
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	XAD Trap	XAD Trap	XAD Trap	XAD Trap	XAD Trap	XAD Trap
Sampling Date	1-Oct-15	2-Oct-15	2-Oct-15	1-Oct-15	2-Oct-15	2-Oct-15
Extraction Date	7-Oct-15	7-Oct-15	7-Oct-15	7-Oct-15	7-Oct-15	7-Oct-15
Target Analytes	pg	pg	pg	pg	pg	pg
2,3,7,8-TCDD	<3.0	<3.3	<2.9	<4.7	<12	<2.6
1,2,3,7,8-PeCDD	150	140	156	132	106	<93
1,2,3,4,7,8-HxCDD	585	571	676	266	207	170
1,2,3,6,7,8-HxCDD	1850	1910	1860	858	658	634
1,2,3,7,8,9-HxCDD	1090	1110	1120	503	396	379
1,2,3,4,6,7,8-HpCDD	9190	11600	10300	3810	3090	2620
OCDD	5350	7110	6700	2260	1990	1580
2,3,7,8-TCDF	38.1	28.2	40.2	58.7	29.2	44.2
1,2,3,7,8-PeCDF	119	109	115	133	106	104
2,3,4,7,8-PeCDF	617	556	553	471	366	371
1,2,3,4,7,8-HxCDF	885	908	901	402	299	308
1,2,3,6,7,8-HxCDF	881	817	847	434	338	362
2,3,4,6,7,8-HxCDF	1740	2000	1740	761	603	599
1,2,3,7,8,9-HxCDF	545	608	561	253	203	196
1,2,3,4,6,7,8-HpCDF	2670	3260	3080	963	817	721
1,2,3,4,7,8,9-HpCDF	517	687	564	238	190	164
OCDF	1170	1650	1480	518	430	359
Field Spike Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
37Cl4-2,3,7,8-TCDD	93	90	93	89	92	97
13C12-1,2,3,4,7,8-HxCDD	92	84	106	101	102	93
13C12-2,3,4,7,8-PeCDF	101	100	102	96	97	104
13C12-1,2,3,4,7,8-HxCDF	96	108	108	97	98	101
13C12-1,2,3,4,7,8,9-HpCDF	97	99	103	100	98	109
Extraction Standards						
13C12-2,3,7,8-TCDD	84	93	91	85	24	90
13C12-1,2,3,7,8-PeCDD	85	115	93	88	95	97
13C12-1,2,3,6,7,8-HxCDD	95	108	100	94	99	105
13C12-1,2,3,4,6,7,8-HpCDD	93	108	106	95	99	101
13C12-OCDD	80	100	92	86	92	93
13C12-2,3,7,8-TCDF	83	93	89	85	92	93
13C12-1,2,3,7,8-PeCDF	83	109	90	87	94	93
13C12-1,2,3,6,7,8-HxCDF	97	103	103	100	104	107
13C12-1,2,3,4,6,7,8-HpCDF	90	105	104	92	97	102
Cleanup Standard						
13C12-1,2,3,7,8,9-HxCDF	91	93	100	98	108	107
Homologue Group Totals	pg	pg	pg	pg	pg	pg
Total-TCDD	1230	1130	1130	1420	3700	1090
Total-PeCDD	8260	6890	7760	6730	4970	5110
Total-HxCDD	27500	29800	29700	13100	10000	9480
Total-HpCDD	19200	24100	21800	7660	6240	5360
Total-TCDF	1500	1420	1290	1880	1480	1370
Total-PeCDF	5120	4320	4980	4280	3370	3380
Total-HxCDF	9270	9630	9330	4330	3370	3270
Total-HpCDF	5030	6260	5730	1950	1600	1420
Toxic Equivalency - (WHO 2005)						
Lower Bound PCDD/F TEQ (WHO 2005)	1230	1260	1240	682	534	419
Mid Point PCDD/F TEQ (WHO 2005)	1230	1270	1240	684	540	514
Upper Bound PCDD/F TEQ (WHO 2005)	1230	1270	1240	687	546	515

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Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG2187113-1	WG2187113-2
Sample Size	1.00	1.00
Sample size units	Trap	n/a
Percent Moisture	n/a	n/a
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	7-Oct-15	7-Oct-15
Target Analytes	**pg**	**% Rec**
2,3,7,8-TCDD	<1.6	103
1,2,3,7,8-PeCDD	<1.1	105
1,2,3,4,7,8-HxCDD	<1.7	110
1,2,3,6,7,8-HxCDD	<1.3	124
1,2,3,7,8,9-HxCDD	<1.3	134
1,2,3,4,6,7,8-HpCDD	<1.2	107
OCDD	<1.6	98
2,3,7,8-TCDF	<1.3	90
1,2,3,7,8-PeCDF	<0.83	107
2,3,4,7,8-PeCDF	<0.81	93
1,2,3,4,7,8-HxCDF	<0.92	115
1,2,3,6,7,8-HxCDF	<0.68	130
2,3,4,6,7,8-HxCDF	<0.78	120
1,2,3,7,8,9-HxCDF	<0.94	133
1,2,3,4,6,7,8-HpCDF	<0.77	101
1,2,3,4,7,8,9-HpCDF	<0.95	98
OCDF	<1.2	97
Field Spike Standards	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	NS	NS
13C12-1,2,3,4,7,8-HxCDD	NS	NS
13C12-2,3,4,7,8-PeCDF	NS	NS
13C12-1,2,3,4,7,8-HxCDF	NS	NS
13C12-1,2,3,4,7,8,9-HpCDF	NS	NS
Extraction Standards		
13C12-2,3,7,8-TCDD	90	72
13C12-1,2,3,7,8-PeCDD	88	79
13C12-1,2,3,6,7,8-HxCDD	81	67
13C12-1,2,3,4,6,7,8-HpCDD	101	82
13C12-OCDD	91	75
13C12-2,3,7,8-TCDF	92	74
13C12-1,2,3,7,8-PeCDF	88	73
13C12-1,2,3,6,7,8-HxCDF	83	64
13C12-1,2,3,4,6,7,8-HpCDF	97	79
Cleanup Standard		
13C12-1,2,3,7,8,9-HxCDF	99	100
Homologue Group Totals	**pg**	
Total-TCDD	<1.6	
Total-PeCDD	<1.1	
Total-HxCDD	<1.7	
Total-HpCDD	<1.2	
Total-TCDF	<1.3	
Total-PeCDF	<0.83	
Total-HxCDF	<0.94	
Total-HpCDF	<0.95	
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	0.00	
Mid Point PCDD/F TEQ (WHO 2005)	1.95	
Upper Bound PCDD/F TEQ (WHO 2005)	3.89	

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Sample Analysis Report

Sample Name	**UNIT 1, 151001-3**	Sampling Date	1-Oct-15	
ALS Sample ID	L1682781-1	Extraction Date	7-Oct-15	Approved:
Analysis Method	EPA M23A	Sample Size	1 Trap	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	XAD Trap	Split Ratio	2	15-Oct-2015

Run Information	**Run 1**
Filename	7-151010A22
Run Date	10-Oct-15 17:07
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<3.0	3.0	U		20
1,2,3,7,8-PeCDD	1	31.88	150	2.7			100
1,2,3,4,7,8-HxCDD	0.1	33.95	585	9.4			100
1,2,3,6,7,8-HxCDD	0.1	34.00	1850	7.1			100
1,2,3,7,8,9-HxCDD	0.1	34.12	1090	7.3			100
1,2,3,4,6,7,8-HpCDD	0.01	35.59	9190	8.8			100
OCDD	0.0003	37.06	5350	6.0			200
2,3,7,8-TCDF	0.1	26.64	38.1	2.4	M		20
1,2,3,7,8-PeCDF	0.03	30.91	119	3.7			100
2,3,4,7,8-PeCDF	0.3	31.66	617	3.6			100
1,2,3,4,7,8-HxCDF	0.1	33.45	885	8.2			100
1,2,3,6,7,8-HxCDF	0.1	33.52	881	6.1			100
2,3,4,6,7,8-HxCDF	0.1	33.85	1740	6.9			100
1,2,3,7,8,9-HxCDF	0.1	34.29	545	8.4			100
1,2,3,4,6,7,8-HpCDF	0.01	35.04	2670	5.2			100
1,2,3,4,7,8,9-HpCDF	0.01	35.83	517	6.4			100
OCDF	0.0003	37.15	1170	4.3			200

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	400	27.57	93	70-130
13C12-1,2,3,4,7,8-HxCDD	4000	33.94	92	70-130
13C12-2,3,4,7,8-PeCDF	4000	31.65	101	70-130
13C12-1,2,3,4,7,8-HxCDF	4000	33.44	96	70-130
13C12-1,2,3,4,7,8,9-HpCDF	4000	35.83	97	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	4000	27.55	84	40-130
13C12-1,2,3,7,8-PeCDD	4000	31.87	85	40-130
13C12-1,2,3,6,7,8-HxCDD	4000	33.99	95	40-130
13C12-1,2,3,4,6,7,8-HpCDD	4000	35.58	93	25-130
13C12-OCDD	8000	37.05	80	25-130
13C12-2,3,7,8-TCDF	4000	26.62	83	40-130
13C12-1,2,3,7,8-PeCDF	4000	30.90	83	40-130
13C12-1,2,3,6,7,8-HxCDF	4000	33.51	97	40-130
13C12-1,2,3,4,6,7,8-HpCDF	4000	35.03	90	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	4000	34.27	91	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	13	1230	3.0	20
Total-PeCDD	9	8260	2.7	100
Total-HxCDD	7	27500	9.4	100
Total-HpCDD	2	19200	8.8	100
Total-TCDF	15	1500	2.4	20
Total-PeCDF	13	5120	3.7	100
Total-HxCDF	13	9270	8.4	100
Total-HpCDF	4	5030	6.4	100

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	1230
Mid Point PCDD/F TEQ (WHO 2005)	1230
Upper Bound PCDD/F TEQ (WHO 2005)	1230

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

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Sample Analysis Report

Sample Name	**UNIT 1, 151002-4**	Sampling Date	2-Oct-15		
ALS Sample ID	L1682783-1	Extraction Date	7-Oct-15		Approved:
Analysis Method	EPA M23A	Sample Size	1	Trap	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	XAD Trap	Split Ratio	2		15-Oct-2015

Run Information	**Run 1**
Filename	7-151010A24
Run Date	10-Oct-15 18:31
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<3.3	3.3	U		20
1,2,3,7,8-PeCDD	1	31.89	140	2.8			100
1,2,3,4,7,8-HxCDD	0.1	33.96	571	7.2			100
1,2,3,6,7,8-HxCDD	0.1	34.01	1910	5.5			100
1,2,3,7,8,9-HxCDD	0.1	34.13	1110	5.7			100
1,2,3,4,6,7,8-HpCDD	0.01	35.59	11600	13			100
OCDD	0.0003	37.07	7110	10			200
2,3,7,8-TCDF	0.1	26.65	28.2	5.0	M		20
1,2,3,7,8-PeCDF	0.03	30.92	109	2.9			100
2,3,4,7,8-PeCDF	0.3	31.67	556	2.9			100
1,2,3,4,7,8-HxCDF	0.1	33.48	908	6.7			100
1,2,3,6,7,8-HxCDF	0.1	33.55	817	5.0			100
2,3,4,6,7,8-HxCDF	0.1	33.86	2000	5.6			100
1,2,3,7,8,9-HxCDF	0.1	34.30	608	6.9			100
1,2,3,4,6,7,8-HpCDF	0.01	35.04	3260	5.9			100
1,2,3,4,7,8,9-HpCDF	0.01	35.83	687	7.3			100
OCDF	0.0003	37.15	1650	4.3			200

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	400	27.58	90	70-130
13C12-1,2,3,4,7,8-HxCDD	4000	33.95	84	70-130
13C12-2,3,4,7,8-PeCDF	4000	31.66	100	70-130
13C12-1,2,3,4,7,8-HxCDF	4000	33.47	108	70-130
13C12-1,2,3,4,7,8,9-HpCDF	4000	35.83	99	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	4000	27.57	93	40-130
13C12-1,2,3,7,8-PeCDD	4000	31.88	115	40-130
13C12-1,2,3,6,7,8-HxCDD	4000	34.00	108	40-130
13C12-1,2,3,4,6,7,8-HpCDD	4000	35.58	108	25-130
13C12-OCDD	8000	37.05	100	25-130
13C12-2,3,7,8-TCDF	4000	26.65	93	40-130
13C12-1,2,3,7,8-PeCDF	4000	30.91	109	40-130
13C12-1,2,3,6,7,8-HxCDF	4000	33.53	103	40-130
13C12-1,2,3,4,6,7,8-HpCDF	4000	35.04	105	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	4000	34.27	93	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	9	1130	3.3	20
Total-PeCDD	9	6890	2.8	100
Total-HxCDD	7	29800	7.2	100
Total-HpCDD	2	24100	13	100
Total-TCDF	15	1420	5.0	20
Total-PeCDF	14	4320	2.9	100
Total-HxCDF	13	9630	6.9	100
Total-HpCDF	4	6260	7.3	100

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	1260
Mid Point PCDD/F TEQ (WHO 2005)	1270
Upper Bound PCDD/F TEQ (WHO 2005)	1270

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.

ALS Life sciences

Sample Analysis Report

Sample Name	**UNIT 1, 151002-5**	Sampling Date	2-Oct-15	
ALS Sample ID	L1682785-1	Extraction Date	7-Oct-15	Approved:
Analysis Method	EPA M23A	Sample Size	1 Trap	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	XAD Trap	Split Ratio	2	15-Oct-2015

Run Information	**Run 1**
Filename	7-151010A26
Run Date	10-Oct-15 19:55
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<2.9	2.9	U		20
1,2,3,7,8-PeCDD	1	31.89	156	3.6			100
1,2,3,4,7,8-HxCDD	0.1	33.96	676	8.5			100
1,2,3,6,7,8-HxCDD	0.1	34.00	1860	6.5			100
1,2,3,7,8,9-HxCDD	0.1	34.13	1120	6.7			100
1,2,3,4,6,7,8-HpCDD	0.01	35.59	10300	8.3			100
OCDD	0.0003	37.06	6700	6.1			200
2,3,7,8-TCDF	0.1	26.62	40.2	2.3	M		20
1,2,3,7,8-PeCDF	0.03	30.92	115	4.5			100
2,3,4,7,8-PeCDF	0.3	31.66	553	4.4			100
1,2,3,4,7,8-HxCDF	0.1	33.46	901	9.7			100
1,2,3,6,7,8-HxCDF	0.1	33.52	847	7.2			100
2,3,4,6,7,8-HxCDF	0.1	33.85	1740	8.1			100
1,2,3,7,8,9-HxCDF	0.1	34.30	561	9.9			100
1,2,3,4,6,7,8-HpCDF	0.01	35.05	3080	4.5			100
1,2,3,4,7,8,9-HpCDF	0.01	35.85	564	5.5			100
OCDF	0.0003	37.16	1480	3.1			200

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	400	27.58	93	70-130
13C12-1,2,3,4,7,8-HxCDD	4000	33.95	106	70-130
13C12-2,3,4,7,8-PeCDF	4000	31.65	102	70-130
13C12-1,2,3,4,7,8-HxCDF	4000	33.45	108	70-130
13C12-1,2,3,4,7,8,9-HpCDF	4000	35.83	103	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	4000	27.55	91	40-130
13C12-1,2,3,7,8-PeCDD	4000	31.87	93	40-130
13C12-1,2,3,6,7,8-HxCDD	4000	33.99	100	40-130
13C12-1,2,3,4,6,7,8-HpCDD	4000	35.59	106	25-130
13C12-OCDD	8000	37.06	92	25-130
13C12-2,3,7,8-TCDF	4000	26.64	89	40-130
13C12-1,2,3,7,8-PeCDF	4000	30.91	90	40-130
13C12-1,2,3,6,7,8-HxCDF	4000	33.51	103	40-130
13C12-1,2,3,4,6,7,8-HpCDF	4000	35.04	104	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	4000	34.27	100	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	11	1130	2.9	20
Total-PeCDD	9	7760	3.6	100
Total-HxCDD	7	29700	8.5	100
Total-HpCDD	2	21800	8.3	100
Total-TCDF	16	1290	2.3	20
Total-PeCDF	14	4980	4.5	100
Total-HxCDF	16	9330	9.9	100
Total-HpCDF	4	5730	5.5	100

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	1240
Mid Point PCDD/F TEQ (WHO 2005)	1240
Upper Bound PCDD/F TEQ (WHO 2005)	1240

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Life sciences

Sample Analysis Report

Sample Name	**UNIT 2, 151001-3**	Sampling Date	1-Oct-15
ALS Sample ID	L1682781-2	Extraction Date	7-Oct-15
Analysis Method	EPA M23A	Sample Size	1 Trap
Analysis Type	Sample	Percent Moisture	n/a
Sample Matrix	XAD Trap	Split Ratio	2

Approved:
T.Patterson
--e-signature--
15-Oct-2015

Run Information	**Run 1**
Filename	7-151010A23
Run Date	10-Oct-15 17:49
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<4.7	4.7	U		20
1,2,3,7,8-PeCDD	1	31.89	132	3.9			100
1,2,3,4,7,8-HxCDD	0.1	33.96	266	8.1			100
1,2,3,6,7,8-HxCDD	0.1	34.00	858	6.1			100
1,2,3,7,8,9-HxCDD	0.1	34.13	503	6.3			100
1,2,3,4,6,7,8-HpCDD	0.01	35.59	3810	6.2			100
OCDD	0.0003	37.06	2260	6.0			200
2,3,7,8-TCDF	0.1	26.61	58.7	3.2	M		20
1,2,3,7,8-PeCDF	0.03	30.92	133	2.7			100
2,3,4,7,8-PeCDF	0.3	31.66	471	2.6			100
1,2,3,4,7,8-HxCDF	0.1	33.46	402	6.3			100
1,2,3,6,7,8-HxCDF	0.1	33.52	434	4.7			100
2,3,4,6,7,8-HxCDF	0.1	33.85	761	5.3			100
1,2,3,7,8,9-HxCDF	0.1	34.30	253	6.4			100
1,2,3,4,6,7,8-HpCDF	0.01	35.05	963	3.4			100
1,2,3,4,7,8,9-HpCDF	0.01	35.85	238	4.1			100
OCDF	0.0003	37.16	518	2.6			200

Field Spike Standards	**pg**	**Ret. Time**	**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	400	27.57	89	70-130
13C12-1,2,3,4,7,8-HxCDD	4000	33.95	101	70-130
13C12-2,3,4,7,8-PeCDF	4000	31.65	96	70-130
13C12-1,2,3,4,7,8-HxCDF	4000	33.45	97	70-130
13C12-1,2,3,4,7,8,9-HpCDF	4000	35.83	100	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	4000	27.54	85	40-130
13C12-1,2,3,7,8-PeCDD	4000	31.87	88	40-130
13C12-1,2,3,6,7,8-HxCDD	4000	34.00	94	40-130
13C12-1,2,3,4,6,7,8-HpCDD	4000	35.59	95	25-130
13C12-OCDD	8000	37.06	86	25-130
13C12-2,3,7,8-TCDF	4000	26.64	85	40-130
13C12-1,2,3,7,8-PeCDF	4000	30.90	87	40-130
13C12-1,2,3,6,7,8-HxCDF	4000	33.51	100	40-130
13C12-1,2,3,4,6,7,8-HpCDF	4000	35.04	92	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	4000	34.27	98	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	**LQL**
Total-TCDD	11	1420	4.7	20
Total-PeCDD	9	6730	3.9	100
Total-HxCDD	7	13100	8.1	100
Total-HpCDD	2	7660	6.2	100
Total-TCDF	19	1880	3.2	20
Total-PeCDF	14	4280	2.7	100
Total-HxCDF	13	4330	6.4	100
Total-HpCDF	4	1950	4.1	100

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	682
Mid Point PCDD/F TEQ (WHO 2005)	684
Upper Bound PCDD/F TEQ (WHO 2005)	687

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Life sciences

Sample Analysis Report

Sample Name	**UNIT 2, 151002-4**	Sampling Date	2-Oct-15	
ALS Sample ID	L1682783-2	Extraction Date	7-Oct-15	
Analysis Method	EPA M23A	Sample Size	1	Trap
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	XAD Trap	Split Ratio	2	

Approved:
T.Patterson
--e-signature--
15-Oct-2015

Run Information	**Run 1**
Filename	7-151010A25
Run Date	10-Oct-15 19:13
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<12	12	U		20
1,2,3,7,8-PeCDD	1	31.87	106	1.9			100
1,2,3,4,7,8-HxCDD	0.1	33.94	207	5.7	M		100
1,2,3,6,7,8-HxCDD	0.1	33.99	658	4.4	M		100
1,2,3,7,8,9-HxCDD	0.1	34.12	396	4.5			100
1,2,3,4,6,7,8-HpCDD	0.01	35.58	3090	6.1			100
OCDD	0.0003	37.05	1990	5.6			200
2,3,7,8-TCDF	0.1	26.62	29.2	1.8	M		20
1,2,3,7,8-PeCDF	0.03	30.90	106	2.4			100
2,3,4,7,8-PeCDF	0.3	31.65	366	2.4			100
1,2,3,4,7,8-HxCDF	0.1	33.45	299	8.8			100
1,2,3,6,7,8-HxCDF	0.1	33.51	338	6.5			100
2,3,4,6,7,8-HxCDF	0.1	33.84	603	7.4			100
1,2,3,7,8,9-HxCDF	0.1	34.29	203	9.0			100
1,2,3,4,6,7,8-HpCDF	0.01	35.04	817	2.8			100
1,2,3,4,7,8,9-HpCDF	0.01	35.83	190	3.4			100
OCDF	0.0003	37.14	430	2.7			200

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	400	27.57	92	70-130
13C12-1,2,3,4,7,8-HxCDD	4000	33.94	102	70-130
13C12-2,3,4,7,8-PeCDF	4000	31.64	97	70-130
13C12-1,2,3,4,7,8-HxCDF	4000	33.44	98	70-130
13C12-1,2,3,4,7,8,9-HpCDF	4000	35.82	98	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	4000	27.54	24	40-130
13C12-1,2,3,7,8-PeCDD	4000	31.85	95	40-130
13C12-1,2,3,6,7,8-HxCDD	4000	33.98	99	40-130
13C12-1,2,3,4,6,7,8-HpCDD	4000	35.58	99	25-130
13C12-OCDD	8000	37.05	92	25-130
13C12-2,3,7,8-TCDF	4000	26.62	92	40-130
13C12-1,2,3,7,8-PeCDF	4000	30.89	94	40-130
13C12-1,2,3,6,7,8-HxCDF	4000	33.50	104	40-130
13C12-1,2,3,4,6,7,8-HpCDF	4000	35.03	97	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	4000	34.26	108	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	9	3700	12	20
Total-PeCDD	8	4970	1.9	100
Total-HxCDD	7	10000	5.7	100
Total-HpCDD	2	6240	6.1	100
Total-TCDF	17	1480	1.8	20
Total-PeCDF	15	3370	2.4	100
Total-HxCDF	14	3370	9.0	100
Total-HpCDF	4	1600	3.4	100

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	534
Mid Point PCDD/F TEQ (WHO 2005)	540
Upper Bound PCDD/F TEQ (WHO 2005)	546

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Life sciences

Sample Analysis Report

Sample Name	**UNIT 2, 151002-5**	Sampling Date	2-Oct-15	
ALS Sample ID	L1682785-2	Extraction Date	7-Oct-15	Approved:
Analysis Method	EPA M23A	Sample Size	1 Trap	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	XAD Trap	Split Ratio	2	15-Oct-2015

Run Information	**Run 1**
Filename	7-151010A27
Run Date	10-Oct-15 20:36
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<2.6	2.6	U		20
1,2,3,7,8-PeCDD	1	31.88	<93	2.8	J,R	93	100
1,2,3,4,7,8-HxCDD	0.1	33.95	170	4.3			100
1,2,3,6,7,8-HxCDD	0.1	34.00	634	3.3			100
1,2,3,7,8,9-HxCDD	0.1	34.12	379	3.4			100
1,2,3,4,6,7,8-HpCDD	0.01	35.59	2620	4.0			100
OCDD	0.0003	37.06	1580	3.2			200
2,3,7,8-TCDF	0.1	26.59	44.2	2.2	M		20
1,2,3,7,8-PeCDF	0.03	30.91	104	3.4			100
2,3,4,7,8-PeCDF	0.3	31.65	371	3.3			100
1,2,3,4,7,8-HxCDF	0.1	33.45	308	3.1			100
1,2,3,6,7,8-HxCDF	0.1	33.52	362	2.3			100
2,3,4,6,7,8-HxCDF	0.1	33.85	599	2.6			100
1,2,3,7,8,9-HxCDF	0.1	34.29	196	3.2			100
1,2,3,4,6,7,8-HpCDF	0.01	35.04	721	3.3			100
1,2,3,4,7,8,9-HpCDF	0.01	35.83	164	4.1			100
OCDF	0.0003	37.15	359	2.0			200

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	400	27.55	97	70-130
13C12-1,2,3,4,7,8-HxCDD	4000	33.94	93	70-130
13C12-2,3,4,7,8-PeCDF	4000	31.64	104	70-130
13C12-1,2,3,4,7,8-HxCDF	4000	33.44	101	70-130
13C12-1,2,3,4,7,8,9-HpCDF	4000	35.83	109	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	4000	27.54	90	40-130
13C12-1,2,3,7,8-PeCDD	4000	31.87	97	40-130
13C12-1,2,3,6,7,8-HxCDD	4000	33.99	105	40-130
13C12-1,2,3,4,6,7,8-HpCDD	4000	35.58	101	25-130
13C12-OCDD	8000	37.05	93	25-130
13C12-2,3,7,8-TCDF	4000	26.62	93	40-130
13C12-1,2,3,7,8-PeCDF	4000	30.90	93	40-130
13C12-1,2,3,6,7,8-HxCDF	4000	33.51	107	40-130
13C12-1,2,3,4,6,7,8-HpCDF	4000	35.04	102	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	4000	34.27	107	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	10	1090	2.6	20
Total-PeCDD	8	5110	2.8	100
Total-HxCDD	7	9480	4.3	100
Total-HpCDD	2	5360	4.0	100
Total-TCDF	17	1370	2.2	20
Total-PeCDF	13	3380	3.4	100
Total-HxCDF	12	3270	3.2	100
Total-HpCDF	4	1420	4.1	100

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	419
Mid Point PCDD/F TEQ (WHO 2005)	514
Upper Bound PCDD/F TEQ (WHO 2005)	515

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

J Indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG2187113-1	Extraction Date	7-Oct-15
Analysis Method	EPA M23A	Sample Size	1 Trap
Analysis Type	Blank	Percent Moisture	n/a
Sample Matrix	QC	Split Ratio	2

Approved:
T.Patterson
--e-signature--
15-Oct-2015

Run Information	**Run 1**
Filename	7-151010A20
Run Date	10-Oct-15 15:43
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<1.6	1.6	U		20
1,2,3,7,8-PeCDD	1	NotFnd	<1.1	1.1	U		100
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<1.7	1.7	U		100
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<1.3	1.3	U		100
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<1.3	1.3	U		100
1,2,3,4,6,7,8-HpCDD	0.01	NotFnd	<1.2	1.2	U		100
OCDD	0.0003	37.05	<1.6	1.3	M,J,R	1.6	200
2,3,7,8-TCDF	0.1	NotFnd	<1.3	1.3	U		20
1,2,3,7,8-PeCDF	0.03	NotFnd	<0.83	0.83	U		100
2,3,4,7,8-PeCDF	0.3	NotFnd	<0.81	0.81	U		100
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<0.92	0.92	U		100
1,2,3,6,7,8-HxCDF	0.1	33.52	<0.68	0.68	M,U	0.24	100
2,3,4,6,7,8-HxCDF	0.1	33.85	<0.78	0.78	M,U	0.72	100
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<0.94	0.94	U		100
1,2,3,4,6,7,8-HpCDF	0.01	NotFnd	<0.77	0.77	U		100
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<0.95	0.95	U		100
OCDF	0.0003	NotFnd	<1.2	1.2	U		200

Field Spike Standards	pg	% Rec	Limits
37Cl4-2,3,7,8-TCDD	400	NS	
13C12-1,2,3,4,7,8-HxCDD	4000	NS	
13C12-2,3,4,7,8-PeCDF	4000	NS	
13C12-1,2,3,4,7,8-HxCDF	4000	NS	
13C12-1,2,3,4,7,8,9-HpCDF	4000	NS	

Extraction Standards	pg	Ret. Time	% Rec	Limits
13C12-2,3,7,8-TCDD	4000	27.54	90	40-130
13C12-1,2,3,7,8-PeCDD	4000	31.85	88	40-130
13C12-1,2,3,6,7,8-HxCDD	4000	33.99	81	40-130
13C12-1,2,3,4,6,7,8-HpCDD	4000	35.58	101	25-130
13C12-OCDD	8000	37.04	91	25-130
13C12-2,3,7,8-TCDF	4000	26.62	92	40-130
13C12-1,2,3,7,8-PeCDF	4000	30.89	88	40-130
13C12-1,2,3,6,7,8-HxCDF	4000	33.50	83	40-130
13C12-1,2,3,4,6,7,8-HpCDF	4000	35.03	97	25-130

Cleanup Standard	pg	Ret. Time	% Rec	Limits
13C12-1,2,3,7,8,9-HxCDF	4000	34.26	99	40-130

Homologue Group Totals	# peaks	Conc. pg	EDL pg	Flags	LQL
Total-TCDD	0	<1.6	1.6	U	20
Total-PeCDD	0	<1.1	1.1	U	100
Total-HxCDD	0	<1.7	1.7	U	100
Total-HpCDD	0	<1.2	1.2	U	100
Total-TCDF	0	<1.3	1.3	U	20
Total-PeCDF	0	<0.83	0.83	U	100
Total-HxCDF	0	<0.94	0.94	U	100
Total-HpCDF	0	<0.95	0.95	U	100

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCDD/F TEQ (WHO 2005)	0.00
Mid Point PCDD/F TEQ (WHO 2005)	1.95
Upper Bound PCDD/F TEQ (WHO 2005)	3.89

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
TEQ	Indicates the Toxic Equivalency.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG2187113-2	Extraction Date	7-Oct-15
Analysis Method	EPA M23A	Sample Size	1 n/a
Analysis Type	LCS	Percent Moisture	n/a
Sample Matrix	QC	Split Ratio	1

Approved:
T.Patterson
--e-signature--
15-Oct-2015

Run Information	**Run 1**
Filename	7-151010A16
Run Date	10-Oct-15 12:57
Final Volume	20 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-7 DB5MSUSE700122H

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,3,7,8-TCDD	400	27.58	103	70-130	
1,2,3,7,8-PeCDD	2000	31.89	105	70-130	
1,2,3,4,7,8-HxCDD	2000	33.96	110	70-130	
1,2,3,6,7,8-HxCDD	2000	34.00	124	70-130	
1,2,3,7,8,9-HxCDD	2000	34.13	134	70-130	
1,2,3,4,6,7,8-HpCDD	2000	35.61	107	70-130	
OCDD	4000	37.07	98	70-130	
2,3,7,8-TCDF	400	26.67	90	70-130	
1,2,3,7,8-PeCDF	2000	30.92	107	70-130	
2,3,4,7,8-PeCDF	2000	31.67	93	70-130	
1,2,3,4,7,8-HxCDF	2000	33.46	115	70-130	
1,2,3,6,7,8-HxCDF	2000	33.53	130	70-130	
2,3,4,6,7,8-HxCDF	2000	33.86	120	70-130	
1,2,3,7,8,9-HxCDF	2000	34.28	133	70-130	
1,2,3,4,6,7,8-HpCDF	2000	35.05	101	70-130	
1,2,3,4,7,8,9-HpCDF	2000	35.85	98	70-130	
OCDF	4000	37.16	97	70-130	
Field Spike Standards	**pg**		**% Rec**	**Limits**	
37Cl4-2,3,7,8-TCDD	400		NS		
13C12-1,2,3,4,7,8-HxCDD	4000		NS		
13C12-2,3,4,7,8-PeCDF	4000		NS		
13C12-1,2,3,4,7,8-HxCDF	4000		NS		
13C12-1,2,3,4,7,8,9-HpCDF	4000		NS		
Extraction Standards					
13C12-2,3,7,8-TCDD	4000	27.55	72	40-130	
13C12-1,2,3,7,8-PeCDD	4000	31.88	79	40-130	
13C12-1,2,3,6,7,8-HxCDD	4000	34.00	67	40-130	
13C12-1,2,3,4,6,7,8-HpCDD	4000	35.59	82	25-130	
13C12-OCDD	8000	37.06	75	25-130	
13C12-2,3,7,8-TCDF	4000	26.64	74	40-130	
13C12-1,2,3,7,8-PeCDF	4000	30.91	73	40-130	
13C12-1,2,3,6,7,8-HxCDF	4000	33.52	64	40-130	
13C12-1,2,3,4,6,7,8-HpCDF	4000	35.04	79	25-130	
Cleanup Standard	**pg**				
13C12-1,2,3,7,8,9-HxCDF	4000	34.27	100	40-130	

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

COVANTA CANADA - STACK UNIT 1
Amesa_860142-P86.020.1-08.10.2015-15:56

Cartridge box no..: 1
Cartridge box name: COVANTA - STACK 1

Measurement no. 3

Startrecord	S	[.HUMID]	[CO2MAX]	[TRGUGR]	[.O2OGR]	[.O2UGR]	[.VHUGR]	[Start]	[..End]	[.......Substi	[...AW]
	S	[..g/m3]	[.....%]	[.Grd.C]	[.....%]	[.....%]	[...m/s]				
01-10-15/1	S	119	5	10	25	0	1	manual	manual	....	_

Endrecord:	E	[MDurat]	[TGVNMD]	[TGVNGU]	[CONVOL]	[BDFAKT]	[MH2ORG]	[..MO2]	[.MCO2]	[Paramacct	[.End.]	[NEV]	[.......Substi	[...AW]		
	E	[.hh:mm]	[....m3]	[....m3]	[.....l]	[......]	[..g/m3]	[....%]	[....%]	....	....	.....	....	....	....	[.ngup]
01-10-15/1	E	4:18	2.889	2.924	0.31	0.784	111.95	6.7	11.2	01-10-15/1	manual	1	....	_	372	

Runtimerec	L	[...VHM]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]
	L	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]
01-10-15/1	L	16.4	0.327	0.332	6.2	11.6	0.0363	116	0.791	894.9	35	138	139	23.1	24	1600	1600
01-10-15/1	L	16.5	0.674	0.68	11	8	0.0627	80.1	0.784	913.4	35	137	138	23.7	25	1600	1600
01-10-15/1	L	16.2	0.999	1.01	6.1	11.8	0.0995	117.5	0.784	896.4	35	136	137	24.5	25	1600	1600
01-10-15/1	L	17.7	1.353	1.369	5.5	12.1	0.14	120.3	0.782	886.9	35	137	139	24.4	26	1600	1600
01-10-15/1	L	17.8	1.71	1.732	6.5	11.3	0.1785	112.5	0.78	900.2	34	137	139	24.6	26	1600	1600
01-10-15/1	L	16.2	2.036	2.061	6.3	11.5	0.2142	114.7	0.782	909	34	137	138	25.6	27	1600	1600
01-10-15/1	L	15.7	2.352	2.381	6	11.7	0.2494	116.3	0.784	914	34	136	137	26.2	27	1600	1600
01-10-15/1	L	16.8	2.688	2.721	6	11.5	0.2861	114.5	0.784	902.1	34	137	139	26.2	28	1600	1600

Eventrecor	X	[....VH]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]
	X	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]
01-10-15/1	X	16.4	2.889	2.924	5.9	11.8	0.3082	118	0.784	904.1	34	138	138	26.2	28	1600	1600

COVANTA CANADA - STACK UNIT 1
Amesa_860142-P86.020.1-08.10.2015-15:56

Cartridge box no..: 1
Cartridge box name: COVANTA - STACK 1

Measurement no. 4

Startrecord	S	[.HUMID]	[CO2MAX]	[TRGUGR]	[.O2OGR]	[.O2UGR]	[.VHUGR]	[Start]	[..End]	[.......Substi	[...AW]						
	S	[..g/m3]	[.....%]	[.Grd.C]	[.....%]	[.....%]	[...m/s]										
02-10-15/0	S	115	5	10	25	0	1	manual	manual	....	_						
Endrecord:	E	[MDurat]	[TGVNMD]	[TGVNGU]	[CONVOL]	[BDFAKT]	[MH2ORG]	[..MO2]	[.MCO2]	[Paramacct	[.End.]	[NEV]	[.......Substi	[...AW]			
	E	[.hh:mm]	[....m3]	[....m3]	[.....l]	[......]	[..g/m3]	[....%]	[....%]	....	....	.....	....	....	....	[.ngup]	
02-10-15/1	E	4:16	2.717	2.754	0.29	0.803	112.133	6.6	11.3	02-10-15/0	manual	1	....	_	342		
Runtimere	L	[...VHM]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]
	L	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]
02-10-15/0	L	15.6	0.315	0.319	6.2	11.6	0.0346	115.1	0.808	918.5	35	135	136	23.6	24	1600	1600
02-10-15/0	L	16	0.638	0.646	6.2	11.5	0.07	114.8	0.804	921.9	35	136	138	23.9	25	1600	1600
02-10-15/0	L	15.4	0.951	0.965	6.4	11.3	0.1039	112.6	0.804	927.1	35	135	137	24.5	25	1600	1600
02-10-15/0	L	15.5	1.264	1.282	5.9	11.9	0.1393	118.5	0.804	926.8	35	135	136	24.8	25	1600	1600
02-10-15/1	L	15.7	1.58	1.604	5.9	11.8	0.1749	117.2	0.803	925.1	35	136	137	24.8	25	1600	1600
02-10-15/1	L	15.9	1.901	1.929	6	11.6	0.2104	115.9	0.803	925	35	137	138	24.8	26	1600	1600
02-10-15/1	L	15.9	2.222	2.255	5.9	11.6	0.2458	115.4	0.803	924.1	35	137	138	24.9	26	1600	1600
02-10-15/1	L	15.6	2.55	2.584	10.8	8.3	0.2712	83.1	0.803	925.5	35	137	140	25.2	26	1600	1600
Eventrecor	X	[....VH]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]
	X	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]
02-10-15/1	X	15	2.717	2.754	5.9	12.1	0.2903	120	0.803	933.1	35	138	140	25.6	26	1600	1600

COVANTA CANADA - STACK UNIT 1
Amesa_860142-P86.020.1-08.10.2015-15:56

Cartridge box no..: 1
Cartridge box name: COVANTA - STACK 1

Measurement no. 5

Startrecord	S	[.HUMID]	[CO2MAX]	[TRGUGR]	[.O2OGR]	[.O2UGR]	[.VHUGR]	[Start]	[..End]	[.......Substi	[...AW]
	S	[..g/m3]	[.....%]	[.Grd.C]	[.....%]	[.....%]	[...m/s]				
02-10-15/1	S	123	5	10	25	0	1	manual	manual	....	_

Endrecord:	E	[MDurat]	[TGVNMD]	[TGVNGU]	[CONVOL]	[BDFAKT]	[MH2ORG]	[..MO2]	[.MCO2]	[Paramacct	[.End.]	[NEV]	[.......Substi	[...AW]		
	E	[.hh:mm]	[....m3]	[....m3]	[.....l]	[......]	[..g/m3]	[....%]	[....%]	....	....	.....	....	....	....	[.ngup]
02-10-15/1	E	4:05	2.603	2.645	0.29	0.794	115.58	6.5	11.6	02-10-15/1	manual	1	....	_	332	

Runtimerec	L	[...VHM]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]
	L	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]
02-10-15/1	L	15.7	0.316	0.321	6.1	11.6	0.0349	115.5	0.8	916.3	35	137	138	25.9	27	1600	1600
02-10-15/1	L	15.8	0.633	0.644	5.9	11.7	0.0703	116.3	0.797	916.5	35	137	141	26.4	28	1600	1600
02-10-15/1	L	15.7	0.946	0.962	5.9	11.8	0.1058	118	0.797	917.2	36	141	141	26.9	28	1600	1600
02-10-15/1	L	16.1	1.267	1.288	5.7	12	0.1425	119.3	0.795	907	35	141	143	27	29	1600	1600
02-10-15/1	L	16.6	1.597	1.623	5.9	11.8	0.1795	117.3	0.793	910	35	143	143	27	29	1600	1600
02-10-15/1	L	15.8	1.915	1.946	10.5	10.7	0.2114	106	0.793	921.3	35	139	143	27.4	29	1600	1600
02-10-15/1	L	15.3	2.225	2.261	6.3	11.5	0.2452	114.1	0.794	920.3	35	137	139	27.6	29	1600	1600
02-10-15/1	L	15.8	2.541	2.582	5.8	11.9	0.2813	118.6	0.794	912.9	35	139	141	27.6	29	1600	1600

Eventrecor	X	[....VH]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]
	X	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]
02-10-15/1	X	15.8	2.603	2.645	5.6	11.6	0.2881	117	0.794	918.8	35	140	140	27.6	29	1600	1600

COVANTA CANADA - STACK UNIT 2
Amesa_860154-P86.020.1-08.10.2015-15:57

Cartridge box no..: 1
Cartridge box name: COVANTA - STACK 2

Measurement no. 3

Startrecord	S	[.HUMID]	[CO2MAX]	[TRGUGR]	[.O2OGR]	[.O2UGR]	[.VHUGR]	[Start]	[..End]	[.......Substi	[...AW]
	S	[..g/m3]	[.....%]	[.Grd.C]	[.....%]	[.....%]	[...m/s]				
01-10-15/1	S	134	5	10	25	0	1	manual	manual	....	_

Endrecord:	E	[MDurat]	[TGVNMD]	[TGVNGU]	[CONVOL]	[BDFAKT]	[MH2ORG]	[..MO2]	[.MCO2]	[Paramacct	[.End.]	[NEV]	[.......Substi	[...AW]		
	E	[.hh:mm]	[....m3]	[....m3]	[.....l]	[......]	[..g/m3]	[....%]	[....%]	....	....	.....	....	....	....	[.ngup]
01-10-15/1	E	4:17	2.712	2.671	0.31	0.781	122.907	5.6	12.3	01-10-15/1	manual	1	....	_	341	

Runtimerec	L	[...VHM]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]
	L	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]
01-10-15/1	L	15.6	0.313	0.31	5.4	12.3	0.0359	122.8	0.784	898.8	33	133	135	25.3	27	1600	1600
01-10-15/1	L	15.6	0.629	0.62	5.9	12	0.071	119.1	0.783	892.4	33	133	136	25.7	28	1600	1600
01-10-15/1	L	16.3	0.955	0.941	5.1	12.4	0.1085	123.6	0.781	892.6	33	136	137	25.9	29	1600	1600
01-10-15/1	L	15.8	1.276	1.257	6.1	11.4	0.1419	114.1	0.781	900.4	33	134	136	26.3	29	1600	1600
01-10-15/1	L	15.4	1.589	1.565	6	11.8	0.1762	117.2	0.781	899.2	34	134	135	27	30	1600	1600
01-10-15/1	L	15.2	1.895	1.866	5.6	12.7	0.2126	127.1	0.782	899.5	33	132	134	27.6	30	1600	1600
01-10-15/1	L	15.4	2.204	2.171	5.3	13.2	0.2508	132.1	0.782	893.5	33	132	133	27.8	31	1600	1600
01-10-15/1	L	16	2.526	2.488	5.7	12.6	0.2887	125.9	0.781	890.9	33	133	134	27.9	31	1600	1600

Eventrecor	X	[....VH]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]
	X	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]
01-10-15/1	X	15.8	2.712	2.671	5.1	13.1	0.311	131	0.781	895.3	33	133	134	28	31	1600	1600

COVANTA CANADA - STACK UNIT 2
Amesa_860154-P86.020.1-08.10.2015-15:57

Cartridge box no..: 1
Cartridge box name: COVANTA - STACK 2

Measurement no. 4

Startrecord	S	[.HUMID]	[CO2MAX]	[TRGUGR]	[.O2OGR]	[.O2UGR]	[.VHUGR]	[Start]	[..End]	[.......Substi	[...AW]
	S	[..g/m3]	[.....%]	[.Grd.C]	[.....%]	[.....%]	[...m/s]				
02-10-15/0	S	116	5	10	25	0	1	manual	manual	....	_

Endrecord:	E	[MDurat]	[TGVNMD]	[TGVNGU]	[CONVOL]	[BDFAKT]	[MH2ORG]	[..MO2]	[.MCO2]	[Paramacct	[.End.]	[NEV]	[.......Substi	[...AW]		
	E	[.hh:mm]	[....m3]	[....m3]	[.....l]	[......]	[..g/m3]	[....%]	[....%]	....	....	.....	....	....	....	[.ngup]
02-10-15/1	E	4:16	2.683	2.642	0.3	0.789	118.906	5.8	11.9	02-10-15/0	manual	1	....	_	334	

Runtimerec	L	[...VHM]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]
	L	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]
02-10-15/0	L	16	0.323	0.319	5.6	12	0.0359	119.2	0.794	893.8	33	133	134	24.2	26	1600	1600
02-10-15/0	L	16.8	0.666	0.656	6.4	11.3	0.0719	113	0.785	882.8	33	133	134	24.2	26	1600	1600
02-10-15/0	L	15.6	0.986	0.973	6.6	11.1	0.1047	110.7	0.785	903.4	34	131	133	24.6	26	1600	1600
02-10-15/0	L	14.8	1.29	1.271	5.7	12.2	0.1393	121.9	0.787	904.8	33	129	131	25	27	1600	1600
02-10-15/1	L	14.9	1.595	1.572	5.4	12.3	0.1744	122.9	0.788	905.4	33	129	130	25.2	27	1600	1600
02-10-15/1	L	14.8	1.899	1.871	5.5	12.2	0.2086	121.2	0.789	909.2	33	130	131	25.4	27	1600	1600
02-10-15/1	L	15.1	2.207	2.172	5.3	12.3	0.2436	122.2	0.789	901.5	33	130	132	25.4	27	1600	1600
02-10-15/1	L	15.2	2.519	2.48	6.1	11.5	0.277	114.5	0.789	904.1	33	132	132	25.6	27	1600	1600

Eventrecor	X	[....VH]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]
	X	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]
02-10-15/1	X	15.8	2.683	2.642	5.2	14.1	0.2968	129	0.789	902.9	33	132	135	25.8	28	1600	1600

COVANTA CANADA - STACK UNIT 2
Amesa_860154-P86.020.1-08.10.2015-15:57

Cartridge box no..: 1
Cartridge box name: COVANTA - STACK 2

Measurement no. 5

Startrecord	S	[.HUMID]	[CO2MAX]	[TRGUGR]	[.O2OGR]	[.O2UGR]	[.VHUGR]	[Start]	[..End]	[.......Substi	[...AW]
	S	[..g/m3]	[.....%]	[.Grd.C]	[.....%]	[.....%]	[...m/s]				
02-10-15/1	S	116	5	10	25	0	1	manual	manual	....	_

Endrecord:	E	[MDurat]	[TGVNMD]	[TGVNGU]	[CONVOL]	[BDFAKT]	[MH2ORG]	[..MO2]	[.MCO2]	[Paramacct	[.End.]	[NEV]	[.......Substi	[...AW]		
	E	[.hh:mm]	[....m3]	[....m3]	[.....l]	[......]	[..g/m3]	[....%]	[....%]	....	....	.....	....	....	....	[.ngup]
02-10-15/1	E	4:03	2.531	2.492	0.28	0.781	119.737	5.7	12	02-10-15/1	manual	1	....	_	318	

Runtimere(	L	[...VHM]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]
	L	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]
02-10-15/1	L	15.9	0.321	0.317	5.9	11.8	0.0353	117.9	0.783	891	33	135	135	26.3	29	1600	1600
02-10-15/1	L	15.3	0.633	0.625	5.9	11.7	0.0691	116.9	0.781	895.8	33	134	135	27	29	1600	1600
02-10-15/1	L	15.2	0.94	0.926	5.3	12.3	0.1042	122.7	0.781	898.2	33	134	134	27.4	30	1600	1600
02-10-15/1	L	15.5	1.254	1.235	5.3	12.3	0.1401	122.6	0.781	884.2	33	134	136	27.6	30	1600	1600
02-10-15/1	L	15.9	1.574	1.551	5.4	12.3	0.1767	122.5	0.78	889.5	33	135	136	27.6	30	1600	1600
02-10-15/1	L	15.3	1.886	1.858	6.4	11.5	0.2097	114.1	0.78	900.1	33	134	135	27.9	31	1600	1600
02-10-15/1	L	14.8	2.187	2.154	5.6	12	0.2432	120	0.781	897.9	33	133	135	28.1	31	1600	1600
02-10-15/1	L	15.2	2.494	2.455	5.5	12.3	0.2783	122.7	0.781	900.6	34	135	136	28.2	31	1600	1600

Eventrecor	X	[....VH]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]
	X	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]
02-10-15/1	X	14.9	2.531	2.492	7.3	12.3	0.2822	123	0.781	903.7	33	135	135	28	31	1600	1600

APPENDIX 46

DYEC AMESA Dioxin and Furan Analytical Report and Results October 28 to October 29, 2015 (83 pages)

TABLE 1
Covanta - Durham York Energy Centre
AMESA Monitor
Dioxin and Furan Test Schedule

Boiler No. 1 BH Outlet

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
4	October 28, 2015	13:12	17:32	260
5	October 29, 2015	8:39	13:53	314
6	October 29, 2015	15:27	19:48	261

Boiler No. 2 BH Outlet

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
4	October 28, 2015	12:20	16:47	267
5	October 29, 2015	9:04	13:34	270
6	October 29, 2015	15:26	19:47	261

TABLE 2
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Data
Test No. 4

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	958	0.21	0.37	0.27	0.31	5.08
Pentachlorodibenzo-p-dioxins	8650	1.92	3.37	2.40	2.82	45.9
Hexachlorodibenzo-p-dioxins	60700	13.5	23.7	16.9	19.8	322
Heptachlorodibenzo-p-dioxins	93000	20.6	36.3	25.8	30.3	493
Octachlorodibenzo-p-dioxin	39800	8.84	15.5	11.1	13.0	211
Total	203108	45.1	79.2	56.4	66.1	1078

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	1760	0.39	0.69	0.49	0.57	9.34
Pentachlorodibenzofurans	5720	1.27	2.23	1.59	1.86	30.4
Hexachlorodibenzofurans	17100	3.80	6.67	4.75	5.57	90.7
Heptachlorodibenzofurans	21900	4.86	8.54	6.08	7.13	116
Octachlorodibenzofuran	8350	1.85	3.26	2.32	2.72	44.3
Total	54830	12.2	21.4	15.2	17.8	291

Dry Gas Volume Sampled (Rm^3*) :	2.563
Actual Flowrate (m^3/s) :	23.9
Dry Reference Flowrate (Rm^3/s*) :	13.6
Dry Adjusted Flowrate (Rm^3/s**) :	19.1
Wet Reference Flowrate (Rm^3/s*) :	16.3

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 3
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Data
Test No. 5

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	882	0.15	0.27	0.19	0.22	3.72
Pentachlorodibenzo-p-dioxins	4360	0.74	1.32	0.96	1.08	18.4
Hexachlorodibenzo-p-dioxins	24100	4.08	7.31	5.32	5.98	102
Heptachlorodibenzo-p-dioxins	31400	5.32	9.53	6.93	7.79	132
Octachlorodibenzo-p-dioxin	10500	1.78	3.19	2.32	2.60	44.3
Total	71242	12.1	21.6	15.7	17.7	300

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	1800	0.30	0.55	0.40	0.45	7.59
Pentachlorodibenzofurans	2980	0.50	0.90	0.66	0.74	12.6
Hexachlorodibenzofurans	8450	1.43	2.56	1.87	2.10	35.6
Heptachlorodibenzofurans	7590	1.29	2.30	1.68	1.88	32.0
Octachlorodibenzofuran	2460	0.42	0.75	0.54	0.61	10.4
Total	23280	3.94	7.06	5.14	5.78	98.2

Dry Gas Volume Sampled (Rm^3*) :	3.296
Actual Flowrate (m^3/s) :	24.9
Dry Reference Flowrate (Rm^3/s*) :	13.9
Dry Adjusted Flowrate (Rm^3/s**) :	19.1
Wet Reference Flowrate (Rm^3/s*) :	17.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 4
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Data
Test No. 6

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	538	0.11	0.20	0.15	0.16	2.76
Pentachlorodibenzo-p-dioxins	1720	0.36	0.64	0.49	0.52	8.84
Hexachlorodibenzo-p-dioxins	8720	1.81	3.22	2.48	2.65	44.8
Heptachlorodibenzo-p-dioxins	8910	1.85	3.29	2.53	2.71	45.8
Octachlorodibenzo-p-dioxin	2930	0.61	1.08	0.83	0.89	15.1
Total	22818	4.75	8.44	6.48	6.94	117

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	1220	0.25	0.45	0.35	0.37	6.27
Pentachlorodibenzofurans	1040	0.22	0.38	0.30	0.32	5.34
Hexachlorodibenzofurans	2780	0.58	1.03	0.79	0.85	14.3
Heptachlorodibenzofurans	2210	0.46	0.82	0.63	0.67	11.4
Octachlorodibenzofuran	644	0.13	0.24	0.18	0.20	3.31
Total	7894	1.64	2.92	2.24	2.40	40.6

Dry Gas Volume Sampled (Rm^3*) :	2.705
Actual Flowrate (m^3/s) :	24.7
Dry Reference Flowrate (Rm^3/s*) :	13.9
Dry Adjusted Flowrate (Rm^3/s**) :	18.1
Wet Reference Flowrate (Rm^3/s*) :	16.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 5
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Actual Concentrations

Dioxins

Congener Group	Actual Concentration Test No. 4	Test No. 5	Test No. 6	Average	Coefficient of Variation
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
Tetrachlorodibenzo-p-dioxins	0.21	0.15	0.11	0.16	32.2
Pentachlorodibenzo-p-dioxins	1.92	0.74	0.36	1.01	81.0
Hexachlorodibenzo-p-dioxins	13.5	4.08	1.81	6.46	95.8
Heptachlorodibenzo-p-dioxins	20.6	5.32	1.85	9.27	108
Octachlorodibenzo-p-dioxin	8.84	1.78	0.61	3.74	119
Total	45.1	12.1	4.75	20.6	104

Furans

Congener Group	Actual Concentration Test No. 4	Test No. 5	Test No. 6	Average	Coefficient of Variation
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
Tetrachlorodibenzofurans	0.39	0.30	0.25	0.32	21.9
Pentachlorodibenzofurans	1.27	0.50	0.22	0.66	82.0
Hexachlorodibenzofurans	3.80	1.43	0.58	1.94	86.1
Heptachlorodibenzofurans	4.86	1.29	0.46	2.20	106
Octachlorodibenzofuran	1.85	0.42	0.13	0.80	115
Total	12.2	3.94	1.64	5.92	93.5

TABLE 6
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Dry Reference Concentrations

Dioxins

Congener Group	Dry Reference Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.37	0.27	0.20	0.28	31.5
Pentachlorodibenzo-p-dioxins	3.37	1.32	0.64	1.78	80.2
Hexachlorodibenzo-p-dioxins	23.7	7.31	3.22	11.4	94.9
Heptachlorodibenzo-p-dioxins	36.3	9.53	3.29	16.4	107
Octachlorodibenzo-p-dioxin	15.5	3.19	1.08	6.60	118
Total	79.2	21.6	8.44	36.4	103

Furans

Congener Group	Dry Reference Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.69	0.55	0.45	0.56	21.1
Pentachlorodibenzofurans	2.23	0.90	0.38	1.17	81.2
Hexachlorodibenzofurans	6.67	2.56	1.03	3.42	85.3
Heptachlorodibenzofurans	8.54	2.30	0.82	3.89	105
Octachlorodibenzofuran	3.26	0.75	0.24	1.41	114
Total	21.4	7.06	2.92	10.5	92.7

* At 25°C and 1 atmosphere

TABLE 7
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Dry Adjusted Concentrations

Dioxins

Congener Group	Dry Adjusted Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.27	0.19	0.15	0.20	28.0
Pentachlorodibenzo-p-dioxins	2.40	0.96	0.49	1.28	77.6
Hexachlorodibenzo-p-dioxins	16.9	5.32	2.48	8.22	92.7
Heptachlorodibenzo-p-dioxins	25.8	6.93	2.53	11.8	105
Octachlorodibenzo-p-dioxin	11.1	2.32	0.83	4.74	117
Total	56.4	15.7	6.48	26.2	101

Furans

Congener Group	Dry Adjusted Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.49	0.40	0.35	0.41	17.6
Pentachlorodibenzofurans	1.59	0.66	0.30	0.85	78.8
Hexachlorodibenzofurans	4.75	1.87	0.79	2.47	83.0
Heptachlorodibenzofurans	6.08	1.68	0.63	2.80	104
Octachlorodibenzofuran	2.32	0.54	0.18	1.02	113
Total	15.2	5.14	2.24	7.54	90.5

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 8
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Wet Reference Concentrations

Dioxins

Congener Group	Wet Reference Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.31	0.22	0.16	0.23	32.4
Pentachlorodibenzo-p-dioxins	2.82	1.08	0.52	1.47	81.1
Hexachlorodibenzo-p-dioxins	19.8	5.98	2.65	9.46	95.9
Heptachlorodibenzo-p-dioxins	30.3	7.79	2.71	13.6	108
Octachlorodibenzo-p-dioxin	13.0	2.60	0.89	5.48	119
Total	66.1	17.7	6.94	30.2	104

Furans

Congener Group	Wet Reference Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.57	0.45	0.37	0.46	22.0
Pentachlorodibenzofurans	1.86	0.74	0.32	0.97	82.1
Hexachlorodibenzofurans	5.57	2.10	0.85	2.84	86.3
Heptachlorodibenzofurans	7.13	1.88	0.67	3.23	106
Octachlorodibenzofuran	2.72	0.61	0.20	1.17	115
Total	17.8	5.78	2.40	8.67	93.6

* At 25°C and 1 atmosphere

TABLE 9
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Rates

Dioxins

Congener Group	Emission Rate Test No. 4 ng/s	Test No. 5 ng/s	Test No. 6 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	5.08	3.72	2.76	3.86	30.2
Pentachlorodibenzo-p-dioxins	45.9	18.4	8.84	24.4	78.9
Hexachlorodibenzo-p-dioxins	322	102	44.8	156	93.8
Heptachlorodibenzo-p-dioxins	493	132	45.8	224	106
Octachlorodibenzo-p-dioxin	211	44.3	15.1	90.2	117
Total	1078	300	117	498	102

Furans

Congener Group	Emission Rate Test No. 4 ng/s	Test No. 5 ng/s	Test No. 6 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzofurans	9.34	7.59	6.27	7.73	19.9
Pentachlorodibenzofurans	30.4	12.6	5.34	16.1	80.0
Hexachlorodibenzofurans	90.7	35.6	14.3	46.9	84.1
Heptachlorodibenzofurans	116	32.0	11.4	53.2	104
Octachlorodibenzofuran	44.3	10.4	3.31	19.3	113
Total	291	98.2	40.6	143	91.6

TABLE 10
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Summary of Dioxin and Furan Congener Group Emission Data

Dioxins

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.16	0.28	0.20	0.23	3.86
Pentachlorodibenzo-p-dioxins	1.01	1.78	1.28	1.47	24.4
Hexachlorodibenzo-p-dioxins	6.46	11.4	8.22	9.46	156
Heptachlorodibenzo-p-dioxins	9.27	16.4	11.8	13.6	224
Octachlorodibenzo-p-dioxin	3.74	6.60	4.74	5.48	90.2
Total	20.6	36.4	26.2	30.2	498

Furans

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	0.32	0.56	0.41	0.46	7.73
Pentachlorodibenzofurans	0.66	1.17	0.85	0.97	16.1
Hexachlorodibenzofurans	1.94	3.42	2.47	2.84	46.9
Heptachlorodibenzofurans	2.20	3.89	2.80	3.23	53.2
Octachlorodibenzofuran	0.80	1.41	1.02	1.17	19.3
Total	5.92	10.5	7.54	8.67	143

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 11
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Data
Test No. 4

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	4780	0.99	1.71	1.21	1.43	25.0
Pentachlorodibenzo-p-dioxins	14800	3.07	5.31	3.76	4.43	77.5
Hexachlorodibenzo-p-dioxins	40200	8.35	14.4	10.2	12.0	210
Heptachlorodibenzo-p-dioxins	41300	8.58	14.8	10.5	12.4	216
Octachlorodibenzo-p-dioxin	10700	2.22	3.84	2.72	3.20	56.0
Total	111780	23.2	40.1	28.4	33.4	585

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	6080	1.26	2.18	1.55	1.82	31.8
Pentachlorodibenzofurans	9760	2.03	3.50	2.48	2.92	51.1
Hexachlorodibenzofurans	14700	3.05	5.27	3.74	4.40	77.0
Heptachlorodibenzofurans	11500	2.39	4.12	2.92	3.44	60.2
Octachlorodibenzofuran	2560	0.53	0.92	0.65	0.77	13.4
Total	44600	9.26	16.0	11.3	13.3	233

Dry Gas Volume Sampled (Rm³*) :	2.789
Actual Flowrate (m³/s) :	25.2
Dry Reference Flowrate (Rm³/s*) :	14.6
Dry Adjusted Flowrate (Rm³/s**) :	20.6
Wet Reference Flowrate (Rm³/s*) :	17.5

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 12
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Data
Test No. 5

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	3310	0.63	1.12	0.79	0.92	16.9
Pentachlorodibenzo-p-dioxins	9340	1.79	3.15	2.23	2.59	47.6
Hexachlorodibenzo-p-dioxins	16900	3.24	5.70	4.04	4.68	86.1
Heptachlorodibenzo-p-dioxins	16900	3.24	5.70	4.04	4.68	86.1
Octachlorodibenzo-p-dioxin	5230	1.00	1.77	1.25	1.45	26.7
Total	51680	9.90	17.4	12.4	14.3	263

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	4470	0.86	1.51	1.07	1.24	22.8
Pentachlorodibenzofurans	6720	1.29	2.27	1.61	1.86	34.2
Hexachlorodibenzofurans	6350	1.22	2.14	1.52	1.76	32.4
Heptachlorodibenzofurans	4450	0.85	1.50	1.06	1.23	22.7
Octachlorodibenzofuran	1330	0.25	0.45	0.32	0.37	6.78
Total	23320	4.47	7.87	5.58	6.46	119

Dry Gas Volume Sampled (Rm³*) :	2.963
Actual Flowrate (m³/s) :	26.6
Dry Reference Flowrate (Rm³/s*) :	15.1
Dry Adjusted Flowrate (Rm³/s**) :	21.3
Wet Reference Flowrate (Rm³/s*) :	18.4

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 13
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Data
Test No. 6

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	2260	0.45	0.79	0.56	0.65	11.7
Pentachlorodibenzo-p-dioxins	7260	1.44	2.53	1.81	2.08	37.5
Hexachlorodibenzo-p-dioxins	10400	2.06	3.63	2.59	2.98	53.7
Heptachlorodibenzo-p-dioxins	9720	1.93	3.39	2.42	2.79	50.2
Octachlorodibenzo-p-dioxin	2680	0.53	0.93	0.67	0.77	13.8
Total	32320	6.42	11.3	8.06	9.27	167

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	2870	0.57	1.00	0.72	0.82	14.8
Pentachlorodibenzofurans	4770	0.95	1.66	1.19	1.37	24.6
Hexachlorodibenzofurans	4380	0.87	1.53	1.09	1.26	22.6
Heptachlorodibenzofurans	2660	0.53	0.93	0.66	0.76	13.7
Octachlorodibenzofuran	699	0.14	0.24	0.17	0.20	3.61
Total	15379	3.05	5.36	3.84	4.41	79.4

Dry Gas Volume Sampled (Rm³*) :	2.867
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**) :	20.7
Wet Reference Flowrate (Rm³/s*) :	18.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 14
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Actual Concentrations

Dioxins

Congener Group	Actual Concentration Test No. 4 ng/m³	Test No. 5 ng/m³	Test No. 6 ng/m³	Average ng/m³	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.99	0.63	0.45	0.69	40.0
Pentachlorodibenzo-p-dioxins	3.07	1.79	1.44	2.10	40.9
Hexachlorodibenzo-p-dioxins	8.35	3.24	2.06	4.55	73.4
Heptachlorodibenzo-p-dioxins	8.58	3.24	1.93	4.58	76.9
Octachlorodibenzo-p-dioxin	2.22	1.00	0.53	1.25	69.7
Total	23.2	9.90	6.42	13.2	67.3

Furans

Congener Group	Actual Concentration Test No. 4 ng/m³	Test No. 5 ng/m³	Test No. 6 ng/m³	Average ng/m³	Coefficient of Variation %
Tetrachlorodibenzofurans	1.26	0.86	0.57	0.90	38.9
Pentachlorodibenzofurans	2.03	1.29	0.95	1.42	38.9
Hexachlorodibenzofurans	3.05	1.22	0.87	1.71	68.5
Heptachlorodibenzofurans	2.39	0.85	0.53	1.26	79.1
Octachlorodibenzofuran	0.53	0.25	0.14	0.31	65.5
Total	9.26	4.47	3.05	5.60	58.2

TABLE 15
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Dry Reference Concentrations

Dioxins

Congener Group	Dry Reference Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	1.71	1.12	0.79	1.21	38.9
Pentachlorodibenzo-p-dioxins	5.31	3.15	2.53	3.66	39.7
Hexachlorodibenzo-p-dioxins	14.4	5.70	3.63	7.91	72.3
Heptachlorodibenzo-p-dioxins	14.8	5.70	3.39	7.97	75.8
Octachlorodibenzo-p-dioxin	3.84	1.77	0.93	2.18	68.6
Total	40.1	17.4	11.3	22.9	66.1

Furans

Congener Group	Dry Reference Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	2.18	1.51	1.00	1.56	37.8
Pentachlorodibenzofurans	3.50	2.27	1.66	2.48	37.8
Hexachlorodibenzofurans	5.27	2.14	1.53	2.98	67.3
Heptachlorodibenzofurans	4.12	1.50	0.93	2.18	78.0
Octachlorodibenzofuran	0.92	0.45	0.24	0.54	64.4
Total	16.0	7.87	5.36	9.74	57.0

* At 25°C and 1 atmosphere

TABLE 16
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Dry Adjusted Concentrations

Dioxins

Congener Group	Test No. 4 ng/Rm³*	Dry Adjusted Concentration Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	1.21	0.79	0.56	0.86	38.6
Pentachlorodibenzo-p-dioxins	3.76	2.23	1.81	2.60	39.4
Hexachlorodibenzo-p-dioxins	10.2	4.04	2.59	5.62	72.1
Heptachlorodibenzo-p-dioxins	10.5	4.04	2.42	5.65	75.5
Octachlorodibenzo-p-dioxin	2.72	1.25	0.67	1.55	68.3
Total	28.4	12.4	8.06	16.3	65.9

Furans

Congener Group	Test No. 4 ng/Rm³*	Dry Adjusted Concentration Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	1.55	1.07	0.72	1.11	37.5
Pentachlorodibenzofurans	2.48	1.61	1.19	1.76	37.4
Hexachlorodibenzofurans	3.74	1.52	1.09	2.12	67.1
Heptachlorodibenzofurans	2.92	1.06	0.66	1.55	77.7
Octachlorodibenzofuran	0.65	0.32	0.17	0.38	64.1
Total	11.3	5.58	3.84	6.92	56.7

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 17
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Wet Reference Concentrations

Dioxins

Congener Group	Wet Reference Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	1.43	0.92	0.65	1.00	39.8
Pentachlorodibenzo-p-dioxins	4.43	2.59	2.08	3.03	40.7
Hexachlorodibenzo-p-dioxins	12.0	4.68	2.98	6.56	73.2
Heptachlorodibenzo-p-dioxins	12.4	4.68	2.79	6.61	76.7
Octachlorodibenzo-p-dioxin	3.20	1.45	0.77	1.81	69.5
Total	33.4	14.3	9.27	19.0	67.1

Furans

Congener Group	Wet Reference Concentration Test No. 4 ng/Rm³*	Test No. 5 ng/Rm³*	Test No. 6 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	1.82	1.24	0.82	1.29	38.7
Pentachlorodibenzofurans	2.92	1.86	1.37	2.05	38.7
Hexachlorodibenzofurans	4.40	1.76	1.26	2.47	68.3
Heptachlorodibenzofurans	3.44	1.23	0.76	1.81	78.9
Octachlorodibenzofuran	0.77	0.37	0.20	0.44	65.3
Total	13.3	6.46	4.41	8.07	58.0

* At 25°C and 1 atmosphere

TABLE 18
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Rates

Dioxins

Congener Group	Emission Rate Test No. 4 ng/s	Test No. 5 ng/s	Test No. 6 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	25.0	16.9	11.7	17.9	37.7
Pentachlorodibenzo-p-dioxins	77.5	47.6	37.5	54.2	38.4
Hexachlorodibenzo-p-dioxins	210	86.1	53.7	117	70.9
Heptachlorodibenzo-p-dioxins	216	86.1	50.2	118	74.3
Octachlorodibenzo-p-dioxin	56.0	26.7	13.8	32.2	67.2
Total	585	263	167	338	64.7

Furans

Congener Group	Emission Rate Test No. 4 ng/s	Test No. 5 ng/s	Test No. 6 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzofurans	31.8	22.8	14.8	23.1	36.8
Pentachlorodibenzofurans	51.1	34.2	24.6	36.7	36.6
Hexachlorodibenzofurans	77.0	32.4	22.6	44.0	65.9
Heptachlorodibenzofurans	60.2	22.7	13.7	32.2	76.6
Octachlorodibenzofuran	13.4	6.78	3.61	7.93	63.0
Total	233	119	79.4	144	55.6

TABLE 19

Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Summary of Dioxin and Furan Congener Group Emission Data

Dioxins

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.69	1.21	0.86	1.00	17.9
Pentachlorodibenzo-p-dioxins	2.10	3.66	2.60	3.03	54.2
Hexachlorodibenzo-p-dioxins	4.55	7.91	5.62	6.56	117
Heptachlorodibenzo-p-dioxins	4.58	7.97	5.65	6.61	118
Octachlorodibenzo-p-dioxin	1.25	2.18	1.55	1.81	32.2
Total	13.2	22.9	16.3	19.0	338

Furans

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	0.90	1.56	1.11	1.29	23.1
Pentachlorodibenzofurans	1.42	2.48	1.76	2.05	36.7
Hexachlorodibenzofurans	1.71	2.98	2.12	2.47	44.0
Heptachlorodibenzofurans	1.26	2.18	1.55	1.81	32.2
Octachlorodibenzofuran	0.31	0.54	0.38	0.44	7.93
Total	5.60	9.74	6.92	8.07	144

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

TABLE 20
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 4

Specific Isomer	Total Collected	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg	pg/m³	pg/Rm³*	pg/Rm³**	pg/Rm³*	ng/s
2378-tetrachlorodibenzo-p-dioxin	<6.3	<1.40	<2.46	<1.75	<2.05	<0.033
12378-pentachlorodibenzo-p-dioxin	214	47.5	83.5	59.5	69.7	1.14
123478-hexachlorodibenzo-p-dioxin	1810	402	706	503	589	9.60
123678-hexachlorodibenzo-p-dioxin	4110	913	1604	1142	1338	21.8
123789-hexachlorodibenzo-p-dioxin	3100	688	1210	861	1009	16.4
1234678-heptachlorodibenzo-p-dioxin	45300	10058	17675	12585	14747	240
Octachlorodibenzo-p-dioxin	39800	8836	15529	11057	12956	211
2378-tetrachlorodibenzofuran	<47	<10.4	<18.3	<13.1	<15.3	<0.25
12378-pentachlorodibenzofuran	165	36.6	64.4	45.8	53.7	0.88
23478-pentachlorodibenzofuran	859	191	335	239	280	4.56
123478-hexachlorodibenzofuran	1530	340	597	425	498	8.12
123678-hexachlorodibenzofuran	1530	340	597	425	498	8.12
234678-hexachlorodibenzofuran	4910	1090	1916	1364	1598	26.1
123789-hexachlorodibenzofuran	1420	315	554	394	462	7.53
1234678-heptachlorodibenzofuran	11100	2464	4331	3084	3613	58.9
1234789-heptachlorodibenzofuran	2450	544	956	681	798	13.0
Octachlorodibenzofuran	8350	1854	3258	2320	2718	44.3
PCB 81	<37	<8.21	<14.4	<10.3	<12.0	<0.20
PCB 77	120	26.6	46.8	33.3	39.1	0.64
PCB 123	38.9	8.64	15.2	10.8	12.7	0.21
PCB 118	44.3	9.84	17.3	12.3	14.4	0.24
PCB 114	46.2	10.3	18.0	12.8	15.0	0.25
PCB 105	<43	<9.55	<16.8	<11.9	<14.0	<0.23
PCB 126	<120	<26.6	<46.8	<33.3	<39.1	<0.64
PCB 167	<32	<7.10	<12.5	<8.89	<10.4	<0.17
PCB 156	<78	<17.3	<30.4	<21.7	<25.4	<0.41
PCB 157	<87	<19.3	<33.9	<24.2	<28.3	<0.46
PCB 169	209	46.4	81.5	58.1	68.0	1.11
PCB 189	314	69.7	123	87.2	102	1.67
Total Dioxins & Furans Only	<126701	<28130	<49435	<35200	<41246	<672
Total PCBs Only	<1169	<260	<456	<325	<381	<6.21
Total Dioxins & Furans and PCBs	<127871	<28390	<49891	<35525	<41627	<679

Dry Gas Volume Sampled (Rm³*) :	2.563
Actual Flowrate (m³/s) :	23.9
Dry Reference Flowrate (Rm³/s*) :	13.6
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	16.3

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 21
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 5

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	8.16	1.38	2.48	1.80	2.02	0.034
12378-pentachlorodibenzo-p-dioxin	104	17.6	31.6	23.0	25.8	0.44
123478-hexachlorodibenzo-p-dioxin	612	104	186	135	152	2.58
123678-hexachlorodibenzo-p-dioxin	1640	278	498	362	407	6.92
123789-hexachlorodibenzo-p-dioxin	1240	210	376	274	308	5.23
1234678-heptachlorodibenzo-p-dioxin	14900	2524	4521	3290	3696	62.8
Octachlorodibenzo-p-dioxin	10500	1778	3186	2318	2605	44.3
2378-tetrachlorodibenzofuran	37.6	6.37	11.4	8.30	9.33	0.16
12378-pentachlorodibenzofuran	94.4	16.0	28.6	20.8	23.4	0.40
23478-pentachlorodibenzofuran	397	67.2	120	87.7	98.5	1.67
123478-hexachlorodibenzofuran	660	112	200	146	164	2.78
123678-hexachlorodibenzofuran	681	115	207	150	169	2.87
234678-hexachlorodibenzofuran	2140	362	649	473	531	9.02
123789-hexachlorodibenzofuran	628	106	191	139	156	2.65
1234678-heptachlorodibenzofuran	3950	669	1198	872	980	16.7
1234789-heptachlorodibenzofuran	802	136	243	177	199	3.38
Octachlorodibenzofuran	2460	417	746	543	610	10.4
PCB 81	41.2	6.98	12.5	9.10	10.2	0.17
PCB 77	133	22.5	40.4	29.4	33.0	0.56
PCB 123	<39	<6.61	<11.8	<8.61	<9.67	<0.16
PCB 118	45.9	7.77	13.9	10.1	11.4	0.19
PCB 114	44.2	7.49	13.4	9.76	11.0	0.19
PCB 105	42.0	7.11	12.7	9.27	10.4	0.18
PCB 126	<84	<14.2	<25.5	<18.5	<20.8	<0.35
PCB 167	<20	<3.39	<6.07	<4.42	<4.96	<0.084
PCB 156	<42	<7.11	<12.7	<9.27	<10.4	<0.18
PCB 157	<44	<7.45	<13.3	<9.72	<10.9	<0.19
PCB 169	101	17.1	30.6	22.3	25.1	0.43
PCB 189	127	21.5	38.5	28.0	31.5	0.54
Total Dioxins & Furans Only	40854	6919	12395	9020	10135	172
Total PCBs Only	<763	<129	<232	<169	<189	<3.22
Total Dioxins & Furans and PCBs	<41617	<7049	<12627	<9189	<10324	<176

Dry Gas Volume Sampled (Rm³*) :	3.296
Actual Flowrate (m³/s) :	24.9
Dry Reference Flowrate (Rm³/s*) :	13.9
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	17.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 22
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 6

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<3.0	<0.62	<1.11	<0.85	<0.91	<0.015
12378-pentachlorodibenzo-p-dioxin	44.2	9.20	16.3	12.5	13.4	0.23
123478-hexachlorodibenzo-p-dioxin	239	49.7	88.4	67.9	72.7	1.23
123678-hexachlorodibenzo-p-dioxin	571	119	211	162	174	2.93
123789-hexachlorodibenzo-p-dioxin	414	86.1	153	118	126	2.13
1234678-heptachlorodibenzo-p-dioxin	4160	865	1538	1181	1265	21.4
Octachlorodibenzo-p-dioxin	2930	610	1083	832	891	15.1
2378-tetrachlorodibenzofuran	<20	<4.16	<7.39	<5.68	<6.08	<0.10
12378-pentachlorodibenzofuran	48.0	9.99	17.7	13.6	14.6	0.25
23478-pentachlorodibenzofuran	154	32.0	56.9	43.7	46.8	0.79
123478-hexachlorodibenzofuran	222	46.2	82.1	63.0	67.5	1.14
123678-hexachlorodibenzofuran	236	49.1	87.2	67.0	71.8	1.21
234678-hexachlorodibenzofuran	713	148	264	202	217	3.66
123789-hexachlorodibenzofuran	208	43.3	76.9	59.1	63.2	1.07
1234678-heptachlorodibenzofuran	1180	245	436	335	359	6.06
1234789-heptachlorodibenzofuran	221	46.0	81.7	62.7	67.2	1.14
Octachlorodibenzofuran	644	134	238	183	196	3.31
PCB 81	34.1	7.09	12.6	9.68	10.4	0.18
PCB 77	97.7	20.3	36.1	27.7	29.7	0.50
PCB 123	32.1	6.68	11.9	9.11	9.76	0.16
PCB 118	36.2	7.53	13.4	10.3	11.0	0.19
PCB 114	<32	<6.66	<11.8	<9.08	<9.73	<0.16
PCB 105	28.4	5.91	10.5	8.06	8.64	0.15
PCB 126	<58	<12.1	<21.4	<16.5	<17.6	<0.30
PCB 167	18.6	3.87	6.88	5.28	5.66	0.096
PCB 156	<24	<4.99	<8.87	<6.81	<7.30	<0.12
PCB 157	<22	<4.58	<8.13	<6.25	<6.69	<0.11
PCB 169	<24	<4.99	<8.87	<6.81	<7.30	<0.12
PCB 189	42.5	8.84	15.7	12.1	12.9	0.22
Total Dioxins & Furans Only	<12007	<2498	<4439	<3409	<3651	<61.7
Total PCBs Only	<450	<93.5	<166	<128	<137	<2.31
Total Dioxins & Furans and PCBs	<12457	<2592	<4605	<3537	<3788	<64.0

Dry Gas Volume Sampled (Rm^3*) :	2.705
Actual Flowrate (m^3/s) :	24.7
Dry Reference Flowrate (Rm^3/s*) :	13.9
Dry Adjusted Flowrate (Rm^3/s**) :	18.1
Wet Reference Flowrate (Rm^3/s*) :	16.9

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 23
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration Test No. 4 pg/m³	Test No. 5 pg/m³	Test No. 6 pg/m³	Average pg/m³	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<1.40	1.38	<0.62	<1.13	39.0
12378-pentachlorodibenzo-p-dioxin	47.5	17.6	9.20	24.8	81.3
123478-hexachlorodibenzo-p-dioxin	402	104	49.7	185	102
123678-hexachlorodibenzo-p-dioxin	913	278	119	436	96.2
123789-hexachlorodibenzo-p-dioxin	688	210	86.1	328	96.9
1234678-heptachlorodibenzo-p-dioxin	10058	2524	865	4482	109
Octachlorodibenzo-p-dioxin	8836	1778	610	3741	119
2378-tetrachlorodibenzofuran	<10.4	6.37	<4.16	<6.99	45.5
12378-pentachlorodibenzofuran	36.6	16.0	9.99	20.9	67.0
23478-pentachlorodibenzofuran	191	67.2	32.0	96.7	86.2
123478-hexachlorodibenzofuran	340	112	46.2	166	92.9
123678-hexachlorodibenzofuran	340	115	49.1	168	90.6
234678-hexachlorodibenzofuran	1090	362	148	534	92.5
123789-hexachlorodibenzofuran	315	106	43.3	155	91.9
1234678-heptachlorodibenzofuran	2464	669	245	1126	105
1234789-heptachlorodibenzofuran	544	136	46.0	242	110
Octachlorodibenzofuran	1854	417	134	801	115
PCB 81	<8.21	6.98	7.09	<7.43	9.2
PCB 77	26.6	22.5	20.3	23.2	13.8
PCB 123	8.64	<6.61	6.68	<7.31	15.8
PCB 118	9.84	7.77	7.53	8.38	15.1
PCB 114	10.3	7.49	<6.66	<8.13	23.2
PCB 105	<9.55	7.11	5.91	<7.52	24.6
PCB 126	<26.6	<14.2	<12.1	<17.6	44.6
PCB 167	<7.10	<3.39	3.87	<4.79	42.2
PCB 156	<17.3	<7.11	<4.99	<9.81	67.2
PCB 157	<19.3	<7.45	<4.58	<10.4	74.8
PCB 169	46.4	17.1	<4.99	<22.8	93.2
PCB 189	69.7	21.5	8.84	33.4	96.3
Total Dioxins & Furans Only	<28130	6919	<2498	<12516	109
Total PCBs Only	<260	<129	<93.5	<161	54.4
Total Dioxins & Furans and PCBs	<28390	<7049	<2592	<12677	109

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 24
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration Test No. 4 pg/Rm³*	Test No. 5 pg/Rm³*	Test No. 6 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<2.46	2.48	<1.11	<2.01	38.9
12378-pentachlorodibenzo-p-dioxin	83.5	31.6	16.3	43.8	80.4
123478-hexachlorodibenzo-p-dioxin	706	186	88.4	327	102
123678-hexachlorodibenzo-p-dioxin	1604	498	211	771	95.4
123789-hexachlorodibenzo-p-dioxin	1210	376	153	580	96.1
1234678-heptachlorodibenzo-p-dioxin	17675	4521	1538	7911	109
Octachlorodibenzo-p-dioxin	15529	3186	1083	6599	118
2378-tetrachlorodibenzofuran	<18.3	11.4	<7.39	<12.4	44.7
12378-pentachlorodibenzofuran	64.4	28.6	17.7	36.9	66.1
23478-pentachlorodibenzofuran	335	120	56.9	171	85.3
123478-hexachlorodibenzofuran	597	200	82.1	293	92.0
123678-hexachlorodibenzofuran	597	207	87.2	297	89.8
234678-hexachlorodibenzofuran	1916	649	264	943	91.7
123789-hexachlorodibenzofuran	554	191	76.9	274	91.0
1234678-heptachlorodibenzofuran	4331	1198	436	1989	104
1234789-heptachlorodibenzofuran	956	243	81.7	427	109
Octachlorodibenzofuran	3258	746	238	1414	114
PCB 81	<14.4	12.5	12.6	<13.2	8.3
PCB 77	46.8	40.4	36.1	41.1	13.1
PCB 123	15.2	<11.8	11.9	<13.0	14.8
PCB 118	17.3	13.9	13.4	14.9	14.2
PCB 114	18.0	13.4	<11.8	<14.4	22.3
PCB 105	<16.8	12.7	10.5	<13.3	23.8
PCB 126	<46.8	<25.5	<21.4	<31.2	43.6
PCB 167	<12.5	<6.07	6.88	<8.48	41.2
PCB 156	<30.4	<12.7	<8.87	<17.3	66.3
PCB 157	<33.9	<13.3	<8.13	<18.5	73.9
PCB 169	81.5	30.6	<8.87	<40.4	92.4
PCB 189	123	38.5	15.7	58.9	95.5
Total Dioxins & Furans Only	<49435	12395	<4439	<22090	109
Total PCBs Only	<456	<232	<166	<285	53.4
Total Dioxins & Furans and PCBs	<49891	<12627	<4605	<22374	108

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 25
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration Test No. 4 pg/Rm³*	Test No. 5 pg/Rm³*	Test No. 6 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<1.75	1.80	<0.85	<1.47	36.4
12378-pentachlorodibenzo-p-dioxin	59.5	23.0	12.5	31.7	77.8
123478-hexachlorodibenzo-p-dioxin	503	135	67.9	235	100
123678-hexachlorodibenzo-p-dioxin	1142	362	162	555	93.2
123789-hexachlorodibenzo-p-dioxin	861	274	118	418	93.9
1234678-heptachlorodibenzo-p-dioxin	12585	3290	1181	5685	107
Octachlorodibenzo-p-dioxin	11057	2318	832	4736	117
2378-tetrachlorodibenzofuran	<13.1	8.30	<5.68	<9.01	41.5
12378-pentachlorodibenzofuran	45.8	20.8	13.6	26.8	63.1
23478-pentachlorodibenzofuran	239	87.7	43.7	123	82.9
123478-hexachlorodibenzofuran	425	146	63.0	211	89.8
123678-hexachlorodibenzofuran	425	150	67.0	214	87.5
234678-hexachlorodibenzofuran	1364	473	202	680	89.4
123789-hexachlorodibenzofuran	394	139	59.1	197	88.8
1234678-heptachlorodibenzofuran	3084	872	335	1430	102
1234789-heptachlorodibenzofuran	681	177	62.7	307	107
Octachlorodibenzofuran	2320	543	183	1015	113
PCB 81	<10.3	9.10	9.68	<9.69	6.1
PCB 77	33.3	29.4	27.7	30.1	9.6
PCB 123	10.8	<8.61	9.11	<9.51	12.1
PCB 118	12.3	10.1	10.3	10.9	11.1
PCB 114	12.8	9.76	<9.08	<10.6	18.9
PCB 105	<11.9	9.27	8.06	<9.76	20.4
PCB 126	<33.3	<18.5	<16.5	<22.8	40.4
PCB 167	<8.89	<4.42	5.28	<6.20	38.3
PCB 156	<21.7	<9.27	<6.81	<12.6	63.3
PCB 157	<24.2	<9.72	<6.25	<13.4	71.1
PCB 169	58.1	22.3	<6.81	<29.1	90.5
PCB 189	87.2	28.0	12.1	42.4	93.3
Total Dioxins & Furans Only	<35200	9020	<3409	<15876	107
Total PCBs Only	<325	<169	<128	<207	50.3
Total Dioxins & Furans and PCBs	<35525	<9189	<3537	<16083	106

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 26
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration Test No. 4 pg/Rm³*	Test No. 5 pg/Rm³*	Test No. 6 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<2.05	2.02	<0.91	<1.66	39.1
12378-pentachlorodibenzo-p-dioxin	69.7	25.8	13.4	36.3	81.4
123478-hexachlorodibenzo-p-dioxin	589	152	72.7	271	103
123678-hexachlorodibenzo-p-dioxin	1338	407	174	639	96.3
123789-hexachlorodibenzo-p-dioxin	1009	308	126	481	97.0
1234678-heptachlorodibenzo-p-dioxin	14747	3696	1265	6569	109
Octachlorodibenzo-p-dioxin	12956	2605	891	5484	119
2378-tetrachlorodibenzofuran	<15.3	9.33	<6.08	<10.2	45.7
12378-pentachlorodibenzofuran	53.7	23.4	14.6	30.6	67.1
23478-pentachlorodibenzofuran	280	98.5	46.8	142	86.3
123478-hexachlorodibenzofuran	498	164	67.5	243	93.0
123678-hexachlorodibenzofuran	498	169	71.8	246	90.7
234678-hexachlorodibenzofuran	1598	531	217	782	92.6
123789-hexachlorodibenzofuran	462	156	63.2	227	92.0
1234678-heptachlorodibenzofuran	3613	980	359	1651	105
1234789-heptachlorodibenzofuran	798	199	67.2	355	110
Octachlorodibenzofuran	2718	610	196	1175	115
PCB 81	<12.0	10.2	10.4	<10.9	9.3
PCB 77	39.1	33.0	29.7	33.9	14.0
PCB 123	12.7	<9.67	9.76	<10.7	15.9
PCB 118	14.4	11.4	11.0	12.3	15.2
PCB 114	15.0	11.0	<9.73	<11.9	23.3
PCB 105	<14.0	10.4	8.64	<11.0	24.8
PCB 126	<39.1	<20.8	<17.6	<25.8	44.7
PCB 167	<10.4	<4.96	5.66	<7.01	42.4
PCB 156	<25.4	<10.4	<7.30	<14.4	67.3
PCB 157	<28.3	<10.9	<6.69	<15.3	74.9
PCB 169	68.0	25.1	<7.30	<33.5	93.3
PCB 189	102	31.5	12.9	48.9	96.4
Total Dioxins & Furans Only	<41246	10135	<3651	<18344	110
Total PCBs Only	<381	<189	<137	<236	54.5
Total Dioxins & Furans and PCBs	<41627	<10324	<3788	<18580	109

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 27
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Rates

Specific Isomer	Emission Rate Test No. 4	Test No. 5	Test No. 6	Average	Coefficient of Variation
	ng/s	ng/s	ng/s	ng/s	%
2378-tetrachlorodibenzo-p-dioxin	<0.033	0.034	<0.015	<0.028	38.5
12378-pentachlorodibenzo-p-dioxin	1.14	0.44	0.23	0.60	79.2
123478-hexachlorodibenzo-p-dioxin	9.60	2.58	1.23	4.47	101
123678-hexachlorodibenzo-p-dioxin	21.8	6.92	2.93	10.6	94.3
123789-hexachlorodibenzo-p-dioxin	16.4	5.23	2.13	7.94	95.0
1234678-heptachlorodibenzo-p-dioxin	240	62.8	21.4	108	108
Octachlorodibenzo-p-dioxin	211	44.3	15.1	90.2	117
2378-tetrachlorodibenzofuran	<0.25	0.16	<0.10	<0.17	43.5
12378-pentachlorodibenzofuran	0.88	0.40	0.25	0.51	64.8
23478-pentachlorodibenzofuran	4.56	1.67	0.79	2.34	84.1
123478-hexachlorodibenzofuran	8.12	2.78	1.14	4.01	90.9
123678-hexachlorodibenzofuran	8.12	2.87	1.21	4.07	88.6
234678-hexachlorodibenzofuran	26.1	9.02	3.66	12.9	90.5
123789-hexachlorodibenzofuran	7.53	2.65	1.07	3.75	89.9
1234678-heptachlorodibenzofuran	58.9	16.7	6.06	27.2	103
1234789-heptachlorodibenzofuran	13.0	3.38	1.14	5.84	108
Octachlorodibenzofuran	44.3	10.4	3.31	19.3	113
PCB 81	<0.20	0.17	0.18	<0.18	7.0
PCB 77	0.64	0.56	0.50	0.57	11.9
PCB 123	0.21	<0.16	0.16	<0.18	13.5
PCB 118	0.24	0.19	0.19	0.20	12.9
PCB 114	0.25	0.19	<0.16	<0.20	21.0
PCB 105	<0.23	0.18	0.15	<0.18	22.6
PCB 126	<0.64	<0.35	<0.30	<0.43	42.2
PCB 167	<0.17	<0.084	0.096	<0.12	39.8
PCB 156	<0.41	<0.18	<0.12	<0.24	64.9
PCB 157	<0.46	<0.19	<0.11	<0.25	72.6
PCB 169	1.11	0.43	<0.12	<0.55	91.3
PCB 189	1.67	0.54	0.22	0.81	94.3
Total Dioxins & Furans Only	<672	172	<61.7	<302	108
Total PCBs Only	<6.21	<3.22	<2.31	<3.91	52.1
Total Dioxins & Furans and PCBs	<679	<176	<64.0	<306	107

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 28
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Summary of Dioxin and Furan Specific Isomer Emission Data

Specific Isomer	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<1.13	<2.01	<1.47	<1.66	<0.028
12378-pentachlorodibenzo-p-dioxin	24.8	43.8	31.7	36.3	0.60
123478-hexachlorodibenzo-p-dioxin	185	327	235	271	4.47
123678-hexachlorodibenzo-p-dioxin	436	771	555	639	10.6
123789-hexachlorodibenzo-p-dioxin	328	580	418	481	7.94
1234678-heptachlorodibenzo-p-dioxin	4482	7911	5685	6569	108
Octachlorodibenzo-p-dioxin	3741	6599	4736	5484	90.2
2378-tetrachlorodibenzofuran	<6.99	<12.4	<9.01	<10.2	<0.17
12378-pentachlorodibenzofuran	20.9	36.9	26.8	30.6	0.51
23478-pentachlorodibenzofuran	96.7	171	123	142	2.34
123478-hexachlorodibenzofuran	166	293	211	243	4.01
123678-hexachlorodibenzofuran	168	297	214	246	4.07
234678-hexachlorodibenzofuran	534	943	680	782	12.9
123789-hexachlorodibenzofuran	155	274	197	227	3.75
1234678-heptachlorodibenzofuran	1126	1989	1430	1651	27.2
1234789-heptachlorodibenzofuran	242	427	307	355	5.84
Octachlorodibenzofuran	801	1414	1015	1175	19.3
PCB 81	<7.43	<13.2	<9.69	<10.9	<0.18
PCB 77	23.2	41.1	30.1	33.9	0.57
PCB 123	<7.31	<13.0	<9.51	<10.7	<0.18
PCB 118	8.38	14.9	10.9	12.3	0.20
PCB 114	<8.13	<14.4	<10.6	<11.9	<0.20
PCB 105	<7.52	<13.3	<9.76	<11.0	<0.18
PCB 126	<17.6	<31.2	<22.8	<25.8	<0.43
PCB 167	<4.79	<8.48	<6.20	<7.01	<0.12
PCB 156	<9.81	<17.3	<12.6	<14.4	<0.24
PCB 157	<10.4	<18.5	<13.4	<15.3	<0.25
PCB 169	<22.8	<40.4	<29.1	<33.5	<0.55
PCB 189	33.4	58.9	42.4	48.9	0.81
Total Dioxins & Furans Only	<12516	<22090	<15876	<18344	<302
Total PCBs Only	<161	<285	<207	<236	<3.91
Total Dioxins & Furans and PCBs	<12677	<22374	<16083	<18580	<306

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 29
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Actual Concentrations

Specific Isomer	Toxicity Equivalency Factor	Actual Concentration Test No. 4 pg TEQ/m³	Test No. 5 pg TEQ/m³	Test No. 6 pg TEQ/m³	Average pg TEQ/m³
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.40	1.38	<0.62	<1.13
12378-pentachlorodibenzo-p-dioxin	1.000	47.5	17.6	9.20	24.8
123478-hexachlorodibenzo-p-dioxin	0.100	40.2	10.4	4.97	18.5
123678-hexachlorodibenzo-p-dioxin	0.100	91.3	27.8	11.9	43.6
123789-hexachlorodibenzo-p-dioxin	0.100	68.8	21.0	8.61	32.8
1234678-heptachlorodibenzo-p-dioxin	0.010	101	25.2	8.65	44.8
Octachlorodibenzo-p-dioxin	0.0003	2.65	0.53	0.18	1.12
2378-tetrachlorodibenzofuran	0.100	<1.04	0.64	<0.42	<0.70
12378-pentachlorodibenzofuran	0.030	1.10	0.48	0.30	0.63
23478-pentachlorodibenzofuran	0.300	57.2	20.2	9.61	29.0
123478-hexachlorodibenzofuran	0.100	34.0	11.2	4.62	16.6
123678-hexachlorodibenzofuran	0.100	34.0	11.5	4.91	16.8
234678-hexachlorodibenzofuran	0.100	109	36.2	14.8	53.4
123789-hexachlorodibenzofuran	0.100	31.5	10.6	4.33	15.5
1234678-heptachlorodibenzofuran	0.010	24.6	6.69	2.5	11.3
1234789-heptachlorodibenzofuran	0.010	5.44	1.36	0.46	2.42
Octachlorodibenzofuran	0.0003	0.56	0.12	0.040	0.24
PCB 81	0.0003	<0.0025	0.0021	0.0021	<0.0022
PCB 77	0.0001	0.0027	0.0023	0.0020	0.0023
PCB 123	0.00003	0.00026	<0.00020	0.00020	<0.00022
PCB 118	0.00003	0.00030	0.00023	0.00023	0.00025
PCB 114	0.00003	0.00031	0.00022	<0.00020	<0.00024
PCB 105	0.00003	<0.00029	0.00021	0.00018	<0.00023
PCB 126	0.100	<2.66	<1.42	<1.21	<1.76
PCB 167	0.00003	<0.00021	<0.00010	0.00012	<0.00014
PCB 156	0.00003	<0.00052	<0.00021	<0.00015	<0.00029
PCB 157	0.00003	<0.00058	<0.00022	<0.00014	<0.00031
PCB 169	0.030	1.39	0.51	<0.15	<0.69
PCB 189	0.00003	0.0021	0.00065	0.00027	0.0010
Total Dioxins & Furans Only		<651	203	<86.1	<313
Total PCBs Only		<4.07	<1.94	<1.36	<2.46
Total Dioxins & Furans and PCBs		<655	<205	<87.5	<316

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 30
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Dry Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Dry Reference Concentration Test No. 4 pg TEQ/Rm³*	Test No. 5 pg TEQ/Rm³*	Test No. 6 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<2.46	2.48	<1.11	<2.01
12378-pentachlorodibenzo-p-dioxin	1.000	83.5	31.6	16.3	43.8
123478-hexachlorodibenzo-p-dioxin	0.100	70.6	18.6	8.84	32.7
123678-hexachlorodibenzo-p-dioxin	0.100	160	49.8	21.1	77.1
123789-hexachlorodibenzo-p-dioxin	0.100	121	37.6	15.3	58.0
1234678-heptachlorodibenzo-p-dioxin	0.010	177	45.2	15.4	79.1
Octachlorodibenzo-p-dioxin	0.0003	4.66	0.96	0.32	1.98
2378-tetrachlorodibenzofuran	0.100	<1.83	1.14	<0.74	<1.24
12378-pentachlorodibenzofuran	0.030	1.93	0.86	0.53	1.11
23478-pentachlorodibenzofuran	0.300	101	36.1	17.1	51.3
123478-hexachlorodibenzofuran	0.100	59.7	20.0	8.21	29.3
123678-hexachlorodibenzofuran	0.100	59.7	20.7	8.72	29.7
234678-hexachlorodibenzofuran	0.100	192	64.9	26.4	94.3
123789-hexachlorodibenzofuran	0.100	55.4	19.1	7.69	27.4
1234678-heptachlorodibenzofuran	0.010	43.3	12.0	4.36	19.9
1234789-heptachlorodibenzofuran	0.010	9.56	2.43	0.82	4.27
Octachlorodibenzofuran	0.0003	0.98	0.22	0.071	0.42
PCB 81	0.0003	<0.0043	0.0038	0.0038	<0.0040
PCB 77	0.0001	0.0047	0.0040	0.0036	0.0041
PCB 123	0.00003	0.00046	<0.00035	0.00036	<0.00039
PCB 118	0.00003	0.00052	0.00042	0.00040	0.00045
PCB 114	0.00003	0.00054	0.00040	<0.00035	<0.00043
PCB 105	0.00003	<0.00050	0.00038	0.00031	<0.00040
PCB 126	0.100	<4.68	<2.55	<2.14	<3.12
PCB 167	0.00003	<0.00037	<0.00018	0.00021	<0.00025
PCB 156	0.00003	<0.00091	<0.00038	<0.00027	<0.00052
PCB 157	0.00003	<0.0010	<0.00040	<0.00024	<0.00055
PCB 169	0.030	2.45	0.92	<0.27	<1.21
PCB 189	0.00003	0.0037	0.0012	0.00047	0.0018
Total Dioxins & Furans Only		<1144	364	<153	<553
Total PCBs Only		<7.15	<3.48	<2.42	<4.35
Total Dioxins & Furans and PCBs		<1151	<367	<155	<558

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 31
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 4 pg TEQ/Rm³*	Test No. 5 pg TEQ/Rm³*	Test No. 6 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.75	1.80	<0.85	<1.47
12378-pentachlorodibenzo-p-dioxin	1.000	59.5	23.0	12.5	31.7
123478-hexachlorodibenzo-p-dioxin	0.100	50.3	13.5	6.79	23.5
123678-hexachlorodibenzo-p-dioxin	0.100	114	36.2	16.2	55.5
123789-hexachlorodibenzo-p-dioxin	0.100	86.1	27.4	11.8	41.8
1234678-heptachlorodibenzo-p-dioxin	0.010	126	32.9	11.8	56.9
Octachlorodibenzo-p-dioxin	0.0003	3.32	0.70	0.25	1.42
2378-tetrachlorodibenzofuran	0.100	<1.31	0.83	<0.57	<0.90
12378-pentachlorodibenzofuran	0.030	1.38	0.63	0.41	0.80
23478-pentachlorodibenzofuran	0.300	71.6	26.3	13.1	37.0
123478-hexachlorodibenzofuran	0.100	42.5	14.6	6.30	21.1
123678-hexachlorodibenzofuran	0.100	42.5	15.0	6.70	21.4
234678-hexachlorodibenzofuran	0.100	136	47.3	20.2	68.0
123789-hexachlorodibenzofuran	0.100	39.4	13.9	5.91	19.7
1234678-heptachlorodibenzofuran	0.010	30.8	8.72	3.35	14.3
1234789-heptachlorodibenzofuran	0.010	6.81	1.77	0.63	3.07
Octachlorodibenzofuran	0.0003	0.70	0.16	0.055	0.30
PCB 81	0.0003	<0.0031	0.0027	0.0029	<0.0029
PCB 77	0.0001	0.0033	0.0029	0.0028	0.0030
PCB 123	0.00003	0.00032	<0.00026	0.00027	<0.00029
PCB 118	0.00003	0.00037	0.00030	0.00031	0.00033
PCB 114	0.00003	0.00039	0.00029	<0.00027	<0.00032
PCB 105	0.00003	<0.00036	0.00028	0.00024	<0.00029
PCB 126	0.100	<3.33	<1.85	<1.65	<2.28
PCB 167	0.00003	<0.00027	<0.00013	0.00016	<0.00019
PCB 156	0.00003	<0.00065	<0.00028	<0.00020	<0.00038
PCB 157	0.00003	<0.00073	<0.00029	<0.00019	<0.00040
PCB 169	0.030	1.74	0.67	<0.20	<0.87
PCB 189	0.00003	0.0026	0.00084	0.00036	0.0013
Total Dioxins & Furans Only		<814	265	<117	<399
Total PCBs Only		<5.09	<2.53	<1.86	<3.16
Total Dioxins & Furans and PCBs		<820	<267	<119	<402

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 31A
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using Half the Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Test No. 4 pg TEQ/Rm³*	Dry Adjusted Concentration Test No. 5 pg TEQ/Rm³*	Test No. 6 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	0.88	1.80	0.43	1.03
12378-pentachlorodibenzo-p-dioxin	1.000	59.5	23.0	12.5	31.7
123478-hexachlorodibenzo-p-dioxin	0.100	50.3	13.5	6.79	23.5
123678-hexachlorodibenzo-p-dioxin	0.100	114	36.2	16.2	55.5
123789-hexachlorodibenzo-p-dioxin	0.100	86.1	27.4	11.8	41.8
1234678-heptachlorodibenzo-p-dioxin	0.010	126	32.9	11.8	56.9
Octachlorodibenzo-p-dioxin	0.0003	3.32	0.70	0.25	1.42
2378-tetrachlorodibenzofuran	0.100	0.65	0.83	0.28	0.59
12378-pentachlorodibenzofuran	0.030	1.38	0.63	0.41	0.80
23478-pentachlorodibenzofuran	0.300	71.6	26.3	13.1	37.0
123478-hexachlorodibenzofuran	0.100	42.5	14.6	6.30	21.1
123678-hexachlorodibenzofuran	0.100	42.5	15.0	6.70	21.4
234678-hexachlorodibenzofuran	0.100	136	47.3	20.2	68.0
123789-hexachlorodibenzofuran	0.100	39.4	13.9	5.91	19.7
1234678-heptachlorodibenzofuran	0.010	30.8	8.72	3.35	14.3
1234789-heptachlorodibenzofuran	0.010	6.81	1.77	0.63	3.07
Octachlorodibenzofuran	0.0003	0.70	0.16	0.055	0.30
PCB 81	0.0003	0.0015	0.0027	0.0029	0.0024
PCB 77	0.0001	0.0033	0.0029	0.0028	0.0030
PCB 123	0.00003	0.00032	0.00013	0.00027	0.00024
PCB 118	0.00003	0.00037	0.00030	0.00031	0.00033
PCB 114	0.00003	0.00039	0.00029	0.00014	0.00027
PCB 105	0.00003	0.00018	0.00028	0.00024	0.00023
PCB 126	0.100	1.67	0.93	0.82	1.14
PCB 167	0.00003	0.00013	0.000066	0.00016	0.00012
PCB 156	0.00003	0.00033	0.00014	0.00010	0.00019
PCB 157	0.00003	0.00036	0.00015	0.000094	0.00020
PCB 169	0.030	1.74	0.67	0.10	0.84
PCB 189	0.00003	0.0026	0.00084	0.00036	0.0013
Total Dioxins & Furans Only		813	265	117	398
Total PCBs Only		3.42	1.60	0.93	1.99
Total Dioxins & Furans and PCBs		816	266	118	400

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 31B

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet - AMESA Monitor

Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations

Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 4 pg TEQ/Rm³*	Test No. 5 pg TEQ/Rm³*	Test No. 6 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<1.75	1.80	<0.85	<1.47
12378-pentachlorodibenzo-p-dioxin	0.500	29.7	11.5	6.3	15.8
123478-hexachlorodibenzo-p-dioxin	0.100	50.3	13.5	6.79	23.5
123678-hexachlorodibenzo-p-dioxin	0.100	114	36.2	16.2	55.5
123789-hexachlorodibenzo-p-dioxin	0.100	86.1	27.4	11.8	41.8
1234678-heptachlorodibenzo-p-dioxin	0.010	126	32.9	11.8	56.9
Octachlorodibenzo-p-dioxin	0.001	11.1	2.32	0.83	4.74
2378-tetrachlorodibenzofuran	0.100	<1.31	0.83	<0.57	<0.90
12378-pentachlorodibenzofuran	0.050	2.29	1.04	0.68	1.34
23478-pentachlorodibenzofuran	0.500	119	43.8	21.9	61.7
123478-hexachlorodibenzofuran	0.100	42.5	14.6	6.30	21.1
123678-hexachlorodibenzofuran	0.100	42.5	15.0	6.70	21.4
234678-hexachlorodibenzofuran	0.100	136	47.3	20.2	68.0
123789-hexachlorodibenzofuran	0.100	39.4	13.9	5.91	19.7
1234678-heptachlorodibenzofuran	0.010	30.8	8.72	3.35	14.3
1234789-heptachlorodibenzofuran	0.010	6.81	1.77	0.63	3.07
Octachlorodibenzofuran	0.001	2.32	0.54	0.18	1.02
Total Dioxins & Furans		<843	<273	<121	<412
In-Stack Emission Limit					60

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

NATO/CCMS (1989) Toxicity Equivalency Factors

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 32
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Wet Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Wet Reference Concentration Test No. 4 pg TEQ/Rm³*	Test No. 5 pg TEQ/Rm³*	Test No. 6 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	<2.05	2.02	<0.91	<1.66
12378-pentachlorodibenzo-p-dioxin	1.000	69.7	25.8	13.4	36.3
123478-hexachlorodibenzo-p-dioxin	0.100	58.9	15.2	7.27	27.1
123678-hexachlorodibenzo-p-dioxin	0.100	134	40.7	17.4	63.9
123789-hexachlorodibenzo-p-dioxin	0.100	101	30.8	12.6	48.1
1234678-heptachlorodibenzo-p-dioxin	0.010	147	37.0	12.6	65.7
Octachlorodibenzo-p-dioxin	0.0003	3.89	0.78	0.27	1.65
2378-tetrachlorodibenzofuran	0.100	<1.53	0.93	<0.61	<1.02
12378-pentachlorodibenzofuran	0.030	1.61	0.70	0.44	0.92
23478-pentachlorodibenzofuran	0.300	83.9	29.5	14.0	42.5
123478-hexachlorodibenzofuran	0.100	49.8	16.4	6.75	24.3
123678-hexachlorodibenzofuran	0.100	49.8	16.9	7.18	24.6
234678-hexachlorodibenzofuran	0.100	160	53.1	21.7	78.2
123789-hexachlorodibenzofuran	0.100	46.2	15.6	6.32	22.7
1234678-heptachlorodibenzofuran	0.010	36.1	9.80	3.59	16.5
1234789-heptachlorodibenzofuran	0.010	7.98	1.99	0.67	3.55
Octachlorodibenzofuran	0.0003	0.82	0.18	0.059	0.35
PCB 81	0.0003	<0.0036	0.0031	0.0031	<0.0033
PCB 77	0.0001	0.0039	0.0033	0.0030	0.0034
PCB 123	0.00003	0.00038	<0.00029	0.00029	<0.00032
PCB 118	0.00003	0.00043	0.00034	0.00033	0.00037
PCB 114	0.00003	0.00045	0.00033	<0.00029	<0.00036
PCB 105	0.00003	<0.00042	0.00031	0.00026	<0.00033
PCB 126	0.100	<3.91	<2.08	<1.76	<2.58
PCB 167	0.00003	<0.00031	<0.00015	0.00017	<0.00021
PCB 156	0.00003	<0.00076	<0.00031	<0.00022	<0.00043
PCB 157	0.00003	<0.00085	<0.00033	<0.00020	<0.00046
PCB 169	0.030	2.04	0.75	<0.22	<1.00
PCB 189	0.00003	0.0031	0.00095	0.00039	0.0015
Total Dioxins & Furans Only		<954	297	<126	<459
Total PCBs Only		<5.96	<2.84	<1.99	<3.60
Total Dioxins & Furans and PCBs		<960	<300	<128	<463

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 33
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Emission Rates

Specific Isomer	Toxicity Equivalency Factor	Emission Rate Test No. 4 ng TEQ/s	Test No. 5 ng TEQ/s	Test No. 6 ng TEQ/s	Average ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	1.000	<0.033	0.034	<0.015	<0.028
12378-pentachlorodibenzo-p-dioxin	1.000	1.14	0.44	0.23	0.60
123478-hexachlorodibenzo-p-dioxin	0.100	0.96	0.26	0.12	0.45
123678-hexachlorodibenzo-p-dioxin	0.100	2.18	0.69	0.29	1.06
123789-hexachlorodibenzo-p-dioxin	0.100	1.64	0.52	0.21	0.79
1234678-heptachlorodibenzo-p-dioxin	0.010	2.40	0.63	0.21	1.08
Octachlorodibenzo-p-dioxin	0.0003	0.063	0.013	0.0045	0.027
2378-tetrachlorodibenzofuran	0.100	<0.025	0.016	<0.010	<0.017
12378-pentachlorodibenzofuran	0.030	0.026	0.012	0.0074	0.015
23478-pentachlorodibenzofuran	0.300	1.37	0.50	0.24	0.70
123478-hexachlorodibenzofuran	0.100	0.81	0.28	0.11	0.40
123678-hexachlorodibenzofuran	0.100	0.81	0.29	0.12	0.41
234678-hexachlorodibenzofuran	0.100	2.61	0.90	0.37	1.29
123789-hexachlorodibenzofuran	0.100	0.75	0.26	0.11	0.38
1234678-heptachlorodibenzofuran	0.010	0.59	0.17	0.061	0.27
1234789-heptachlorodibenzofuran	0.010	0.13	0.034	0.011	0.058
Octachlorodibenzofuran	0.0003	0.013	0.0031	0.00099	0.0058
PCB 81	0.0003	<0.000059	0.000052	0.000053	<0.000055
PCB 77	0.0001	0.000064	0.000056	0.000050	0.000057
PCB 123	0.00003	0.0000062	<0.0000049	0.0000049	<0.0000054
PCB 118	0.00003	0.0000071	0.0000058	0.0000056	0.0000061
PCB 114	0.00003	0.0000074	0.0000056	<0.0000049	<0.0000060
PCB 105	0.00003	<0.0000068	0.0000053	0.0000044	<0.0000055
PCB 126	0.100	<0.064	<0.035	<0.030	<0.043
PCB 167	0.00003	<0.0000051	<0.0000025	0.0000029	<0.0000035
PCB 156	0.00003	<0.000012	<0.0000053	<0.0000037	<0.0000071
PCB 157	0.00003	<0.000014	<0.0000056	<0.0000034	<0.0000076
PCB 169	0.030	0.033	0.013	<0.0037	<0.017
PCB 189	0.00003	0.000050	0.000016	0.0000066	0.000024
Total Dioxins & Furans Only		<15.6	5.05	<2.13	<7.58
Total PCBs Only		<0.097	<0.048	<0.034	<0.060
Total Dioxins & Furans and PCBs		<15.7	<5.10	<2.16	<7.64

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 34
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using the Full Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	<1.13	<2.01	<1.47	<1.66	<0.028
12378-pentachlorodibenzo-p-dioxin	24.8	43.8	31.7	36.3	0.60
123478-hexachlorodibenzo-p-dioxin	18.5	32.7	23.5	27.1	0.45
123678-hexachlorodibenzo-p-dioxin	43.6	77.1	55.5	63.9	1.06
123789-hexachlorodibenzo-p-dioxin	32.8	58.0	41.8	48.1	0.79
1234678-heptachlorodibenzo-p-dioxin	44.8	79.1	56.9	65.7	1.08
Octachlorodibenzo-p-dioxin	1.12	1.98	1.42	1.65	0.027
2378-tetrachlorodibenzofuran	<0.70	<1.24	<0.90	<1.02	<0.017
12378-pentachlorodibenzofuran	0.63	1.11	0.80	0.92	0.015
23478-pentachlorodibenzofuran	29.0	51.3	37.0	42.5	0.70
123478-hexachlorodibenzofuran	16.6	29.3	21.1	24.3	0.40
123678-hexachlorodibenzofuran	16.8	29.7	21.4	24.6	0.41
234678-hexachlorodibenzofuran	53.4	94.3	68.0	78.2	1.29
123789-hexachlorodibenzofuran	15.5	27.4	19.7	22.7	0.38
1234678-heptachlorodibenzofuran	11.3	19.9	14.3	16.5	0.27
1234789-heptachlorodibenzofuran	2.42	4.27	3.07	3.55	0.058
Octachlorodibenzofuran	0.24	0.42	0.30	0.35	0.0058
PCB 81	<0.0022	<0.0040	<0.0029	<0.0033	<0.000055
PCB 77	0.0023	0.0041	0.0030	0.0034	0.000057
PCB 123	<0.00022	<0.00039	<0.00029	<0.00032	<0.0000054
PCB 118	0.00025	0.00045	0.00033	0.00037	0.0000061
PCB 114	<0.00024	<0.00043	<0.00032	<0.00036	<0.0000060
PCB 105	<0.00023	<0.00040	<0.00029	<0.00033	<0.0000055
PCB 126	<1.76	<3.12	<2.28	<2.58	<0.043
PCB 167	<0.00014	<0.00025	<0.00019	<0.00021	<0.0000035
PCB 156	<0.00029	<0.00052	<0.00038	<0.00043	<0.0000071
PCB 157	<0.00031	<0.00055	<0.00040	<0.00046	<0.0000076
PCB 169	<0.69	<1.21	<0.87	<1.00	<0.017
PCB 189	0.0010	0.0018	0.0013	0.0015	0.000024
Total Dioxins & Furans Only	<313	<553	<399	<459	<7.58
Total PCBs Only	<2.46	<4.35	<3.16	<3.60	<0.060
Total Dioxins & Furans and PCBs	<316	<558	<402	<463	<7.64

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 35
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using Half the Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	0.80	1.42	1.03	1.17	0.020
12378-pentachlorodibenzo-p-dioxin	24.8	43.8	31.7	36.3	0.60
123478-hexachlorodibenzo-p-dioxin	18.5	32.7	23.5	27.1	0.45
123678-hexachlorodibenzo-p-dioxin	43.6	77.1	55.5	63.9	1.06
123789-hexachlorodibenzo-p-dioxin	32.8	58.0	41.8	48.1	0.79
1234678-heptachlorodibenzo-p-dioxin	44.8	79.1	56.9	65.7	1.08
Octachlorodibenzo-p-dioxin	1.12	1.98	1.42	1.65	0.027
2378-tetrachlorodibenzofuran	0.46	0.81	0.59	0.67	0.011
12378-pentachlorodibenzofuran	0.63	1.11	0.80	0.92	0.015
23478-pentachlorodibenzofuran	29.0	51.3	37.0	42.5	0.70
123478-hexachlorodibenzofuran	16.6	29.3	21.1	24.3	0.40
123678-hexachlorodibenzofuran	16.8	29.7	21.4	24.6	0.41
234678-hexachlorodibenzofuran	53.4	94.3	68.0	78.2	1.29
123789-hexachlorodibenzofuran	15.5	27.4	19.7	22.7	0.38
1234678-heptachlorodibenzofuran	11.3	19.9	14.3	16.5	0.27
1234789-heptachlorodibenzofuran	2.42	4.27	3.07	3.55	0.058
Octachlorodibenzofuran	0.24	0.42	0.30	0.35	0.0058
PCB 81	0.0018	0.0032	0.0024	0.0027	0.000045
PCB 77	0.0023	0.0041	0.0030	0.0034	0.000057
PCB 123	0.00019	0.00033	0.00024	0.00027	0.0000045
PCB 118	0.00025	0.00045	0.00033	0.00037	0.0000061
PCB 114	0.00021	0.00037	0.00027	0.00031	0.0000051
PCB 105	0.00018	0.00032	0.00023	0.00026	0.0000044
PCB 126	0.88	1.56	1.14	1.29	0.021
PCB 167	0.000091	0.00016	0.00012	0.00013	0.0000022
PCB 156	0.00015	0.00026	0.00019	0.00022	0.0000036
PCB 157	0.00016	0.00028	0.00020	0.00023	0.0000038
PCB 169	0.66	1.17	0.84	0.97	0.016
PCB 189	0.0010	0.0018	0.0013	0.0015	0.000024
Total Dioxins & Furans Only	313	552	398	458	7.56
Total PCBs Only	1.55	2.74	1.99	2.27	0.038
Total Dioxins & Furans and PCBs	314	555	400	461	7.60

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 36
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 4

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	30.4	6.32	10.9	7.73	9.09	0.16
12378-pentachlorodibenzo-p-dioxin	<220	<45.7	<78.9	<55.9	<65.8	<1.15
123478-hexachlorodibenzo-p-dioxin	953	198	342	242	285	4.99
123678-hexachlorodibenzo-p-dioxin	2550	530	914	648	763	13.3
123789-hexachlorodibenzo-p-dioxin	1870	388	670	475	559	9.79
1234678-heptachlorodibenzo-p-dioxin	19500	4051	6992	4955	5833	102
Octachlorodibenzo-p-dioxin	10700	2223	3837	2719	3201	56.0
2378-tetrachlorodibenzofuran	150	31.2	53.8	38.1	44.9	0.79
12378-pentachlorodibenzofuran	347	72.1	124	88.2	104	1.82
23478-pentachlorodibenzofuran	1110	231	398	282	332	5.81
123478-hexachlorodibenzofuran	1170	243	420	297	350	6.12
123678-hexachlorodibenzofuran	1360	283	488	346	407	7.12
234678-hexachlorodibenzofuran	3140	652	1126	798	939	16.4
123789-hexachlorodibenzofuran	895	186	321	227	268	4.69
1234678-heptachlorodibenzofuran	5820	1209	2087	1479	1741	30.5
1234789-heptachlorodibenzofuran	1350	280	484	343	404	7.07
Octachlorodibenzofuran	2560	532	918	651	766	13.4
PCB 81	108	22.4	38.7	27.4	32.3	0.57
PCB 77	255	53.0	91.4	64.8	76.3	1.33
PCB 123	107	22.2	38.4	27.2	32.0	0.56
PCB 118	108	22.4	38.7	27.4	32.3	0.57
PCB 114	<120	<24.9	<43.0	<30.5	<35.9	<0.63
PCB 105	<150	<31.2	<53.8	<38.1	<44.9	<0.79
PCB 126	509	106	183	129	152	2.66
PCB 167	<98	<20.4	<35.1	<24.9	<29.3	<0.51
PCB 156	<200	<41.5	<71.7	<50.8	<59.8	<1.05
PCB 157	247	51.3	88.6	62.8	73.9	1.29
PCB 169	371	77.1	133	94.3	111	1.94
PCB 189	329	68.3	118	83.6	98.4	1.72
Total Dioxins & Furans Only	<53725	<11160	<19263	<13653	<16071	<281
Total PCBs Only	<2602	<541	<933	<661	<778	<13.6
Total Dioxins & Furans and PCBs	<56327	<11701	<20196	<14314	<16849	<295

Dry Gas Volume Sampled (Rm^3*) :	2.789
Actual Flowrate (m^3/s) :	25.2
Dry Reference Flowrate (Rm^3/s*) :	14.6
Dry Adjusted Flowrate (Rm^3/s**) :	20.6
Wet Reference Flowrate (Rm^3/s*) :	17.5

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 37
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 5

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<13	<2.49	<4.39	<3.11	<3.60	<0.066
12378-pentachlorodibenzo-p-dioxin	166	31.8	56.0	39.7	46.0	0.85
123478-hexachlorodibenzo-p-dioxin	415	79.5	140	99.3	115	2.11
123678-hexachlorodibenzo-p-dioxin	1050	201	354	251	291	5.35
123789-hexachlorodibenzo-p-dioxin	690	132	233	165	191	3.52
1234678-heptachlorodibenzo-p-dioxin	8140	1560	2747	1948	2255	41.5
Octachlorodibenzo-p-dioxin	5230	1002	1765	1251	1449	26.7
2378-tetrachlorodibenzofuran	98.7	18.9	33.3	23.6	27.3	0.50
12378-pentachlorodibenzofuran	253	48.5	85.4	60.5	70.1	1.29
23478-pentachlorodibenzofuran	701	134	237	168	194	3.57
123478-hexachlorodibenzofuran	535	102	181	128	148	2.73
123678-hexachlorodibenzofuran	604	116	204	145	167	3.08
234678-hexachlorodibenzofuran	1270	243	429	304	352	6.47
123789-hexachlorodibenzofuran	359	68.8	121	85.9	99.4	1.83
1234678-heptachlorodibenzofuran	2260	433	763	541	626	11.5
1234789-heptachlorodibenzofuran	535	102	181	128	148	2.73
Octachlorodibenzofuran	1330	255	449	318	368	6.78
PCB 81	69.8	13.4	23.6	16.7	19.3	0.36
PCB 77	186	35.6	62.8	44.5	51.5	0.95
PCB 123	56.7	10.9	19.1	13.6	15.7	0.29
PCB 118	65.4	12.5	22.1	15.6	18.1	0.33
PCB 114	<65	<12.5	<21.9	<15.6	<18.0	<0.33
PCB 105	88.1	16.9	29.7	21.1	24.4	0.45
PCB 126	383	73.4	129	91.6	106	1.95
PCB 167	60.4	11.6	20.4	14.5	16.7	0.31
PCB 156	<110	<21.1	<37.1	<26.3	<30.5	<0.56
PCB 157	<130	<24.9	<43.9	<31.1	<36.0	<0.66
PCB 169	214	41.0	72.2	51.2	59.3	1.09
PCB 189	181	34.7	61.1	43.3	50.1	0.92
Total Dioxins & Furans Only	<23650	<4531	<7982	<5658	<6550	<121
Total PCBs Only	<1609	<308	<543	<385	<446	<8.20
Total Dioxins & Furans and PCBs	<25259	<4839	<8525	<6043	<6996	<129

Dry Gas Volume Sampled (Rm³*) :	2.963
Actual Flowrate (m³/s) :	26.6
Dry Reference Flowrate (Rm³/s*) :	15.1
Dry Adjusted Flowrate (Rm³/s**) :	21.3
Wet Reference Flowrate (Rm³/s*) :	18.4

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 38
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 6

Specific Isomer	Total Collected pg	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	14.3	2.84	4.99	3.57	4.10	0.074
12378-pentachlorodibenzo-p-dioxin	133	26.4	46.4	33.2	38.1	0.69
123478-hexachlorodibenzo-p-dioxin	200	39.7	69.8	49.9	57.4	1.03
123678-hexachlorodibenzo-p-dioxin	644	128	225	161	185	3.32
123789-hexachlorodibenzo-p-dioxin	380	75.4	133	94.8	109	1.96
1234678-heptachlorodibenzo-p-dioxin	4630	919	1615	1155	1328	23.9
Octachlorodibenzo-p-dioxin	2680	532	935	668	769	13.8
2378-tetrachlorodibenzofuran	80.3	15.9	28.0	20.0	23.0	0.41
12378-pentachlorodibenzofuran	186	36.9	64.9	46.4	53.3	0.96
23478-pentachlorodibenzofuran	514	102	179	128	147	2.65
123478-hexachlorodibenzofuran	372	73.9	130	92.8	107	1.92
123678-hexachlorodibenzofuran	419	83.2	146	104	120	2.16
234678-hexachlorodibenzofuran	841	167	293	210	241	4.34
123789-hexachlorodibenzofuran	246	48.8	85.8	61.3	70.5	1.27
1234678-heptachlorodibenzofuran	1370	272	478	342	393	7.07
1234789-heptachlorodibenzofuran	308	61.2	107	76.8	88.3	1.59
Octachlorodibenzofuran	699	139	244	174	200	3.61
PCB 81	48.7	9.67	17.0	12.1	14.0	0.25
PCB 77	121	24.0	42.2	30.2	34.7	0.62
PCB 123	<35	<6.95	<12.2	<8.73	<10.0	<0.18
PCB 118	<34	<6.75	<11.9	<8.48	<9.75	<0.18
PCB 114	<46	<9.13	<16.0	<11.5	<13.2	<0.24
PCB 105	63.7	12.6	22.2	15.9	18.3	0.33
PCB 126	254	50.4	88.6	63.3	72.8	1.31
PCB 167	<45	<8.93	<15.7	<11.2	<12.9	<0.23
PCB 156	<66	<13.1	<23.0	<16.5	<18.9	<0.34
PCB 157	113	22.4	39.4	28.2	32.4	0.58
PCB 169	<100	<19.9	<34.9	<24.9	<28.7	<0.52
PCB 189	145	28.8	50.6	36.2	41.6	0.75
Total Dioxins & Furans Only	13717	2723	4784	3421	3934	70.8
Total PCBs Only	<1071	<213	<374	<267	<307	<5.53
Total Dioxins & Furans and PCBs	<14788	<2936	<5158	<3688	<4241	<76.3

Dry Gas Volume Sampled (Rm³*) :	2.867
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**) :	20.7
Wet Reference Flowrate (Rm³/s*) :	18.0

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected (was less than the analytical detection limit), and the value of the detection limit was used to calculate the emission data.

TABLE 39
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration Test No. 4	Test No. 5	Test No. 6	Average	Coefficient of Variation
	pg/m³	pg/m³	pg/m³	pg/m³	%
2378-tetrachlorodibenzo-p-dioxin	6.32	<2.49	2.84	<3.88	54.5
12378-pentachlorodibenzo-p-dioxin	<45.7	31.8	26.4	<34.6	28.7
123478-hexachlorodibenzo-p-dioxin	198	79.5	39.7	106	77.9
123678-hexachlorodibenzo-p-dioxin	530	201	128	286	74.8
123789-hexachlorodibenzo-p-dioxin	388	132	75.4	199	83.9
1234678-heptachlorodibenzo-p-dioxin	4051	1560	919	2177	76.0
Octachlorodibenzo-p-dioxin	2223	1002	532	1252	69.7
2378-tetrachlorodibenzofuran	31.2	18.9	15.9	22.0	36.7
12378-pentachlorodibenzofuran	72.1	48.5	36.9	52.5	34.1
23478-pentachlorodibenzofuran	231	134	102	156	43.0
123478-hexachlorodibenzofuran	243	102	73.9	140	64.8
123678-hexachlorodibenzofuran	283	116	83.2	160	66.6
234678-hexachlorodibenzofuran	652	243	167	354	73.7
123789-hexachlorodibenzofuran	186	68.8	48.8	101	73.2
1234678-heptachlorodibenzofuran	1209	433	272	638	78.5
1234789-heptachlorodibenzofuran	280	102	61.2	148	78.7
Octachlorodibenzofuran	532	255	139	308	65.5
PCB 81	22.4	13.4	9.67	15.2	43.3
PCB 77	53.0	35.6	24.0	37.5	38.8
PCB 123	22.2	10.9	<6.95	<13.3	59.5
PCB 118	22.4	12.5	<6.75	<13.9	57.0
PCB 114	<24.9	<12.5	<9.13	<15.5	53.7
PCB 105	<31.2	16.9	12.6	<20.2	48.0
PCB 126	106	73.4	50.4	76.5	36.3
PCB 167	<20.4	11.6	<8.93	<13.6	43.9
PCB 156	<41.5	<21.1	<13.1	<25.2	58.1
PCB 157	51.3	<24.9	22.4	<32.9	48.7
PCB 169	77.1	41.0	<19.9	<46.0	62.9
PCB 189	68.3	34.7	28.8	43.9	48.6
Total Dioxins & Furans Only	<11160	<4531	2723	<6138	72.4
Total PCBs Only	<541	<308	<213	<354	47.6
Total Dioxins & Furans and PCBs	<11701	<4839	<2936	<6492	71.0

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 40
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration Test No. 4 pg/Rm³*	Test No. 5 pg/Rm³*	Test No. 6 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	10.9	<4.39	4.99	<6.76	53.3
12378-pentachlorodibenzo-p-dioxin	<78.9	56.0	46.4	<60.4	27.6
123478-hexachlorodibenzo-p-dioxin	342	140	69.8	184	76.8
123678-hexachlorodibenzo-p-dioxin	914	354	225	498	73.6
123789-hexachlorodibenzo-p-dioxin	670	233	133	345	82.8
1234678-heptachlorodibenzo-p-dioxin	6992	2747	1615	3785	74.9
Octachlorodibenzo-p-dioxin	3837	1765	935	2179	68.6
2378-tetrachlorodibenzofuran	53.8	33.3	28.0	38.4	35.5
12378-pentachlorodibenzofuran	124	85.4	64.9	91.6	33.0
23478-pentachlorodibenzofuran	398	237	179	271	41.8
123478-hexachlorodibenzofuran	420	181	130	243	63.6
123678-hexachlorodibenzofuran	488	204	146	279	65.5
234678-hexachlorodibenzofuran	1126	429	293	616	72.5
123789-hexachlorodibenzofuran	321	121	85.8	176	72.0
1234678-heptachlorodibenzofuran	2087	763	478	1109	77.4
1234789-heptachlorodibenzofuran	484	181	107	257	77.6
Octachlorodibenzofuran	918	449	244	537	64.4
PCB 81	38.7	23.6	17.0	26.4	42.2
PCB 77	91.4	62.8	42.2	65.5	37.8
PCB 123	38.4	19.1	<12.2	<23.2	58.3
PCB 118	38.7	22.1	<11.9	<24.2	56.0
PCB 114	<43.0	<21.9	<16.0	<27.0	52.5
PCB 105	<53.8	29.7	22.2	<35.2	46.8
PCB 126	183	129	88.6	133	35.3
PCB 167	<35.1	20.4	<15.7	<23.7	42.7
PCB 156	<71.7	<37.1	<23.0	<44.0	57.0
PCB 157	88.6	<43.9	39.4	<57.3	47.4
PCB 169	133	72.2	<34.9	<80.0	61.9
PCB 189	118	61.1	50.6	76.5	47.4
Total Dioxins & Furans Only	<19263	<7982	4784	<10676	71.2
Total PCBs Only	<933	<543	<374	<617	46.5
Total Dioxins & Furans and PCBs	<20196	<8525	<5158	<11293	69.9

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 41
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration Test No. 4	Test No. 5	Test No. 6	Average	Coefficient of Variation
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	7.73	<3.11	3.57	<4.80	53.0
12378-pentachlorodibenzo-p-dioxin	<55.9	39.7	33.2	<42.9	27.3
123478-hexachlorodibenzo-p-dioxin	242	99.3	49.9	130	76.6
123678-hexachlorodibenzo-p-dioxin	648	251	161	353	73.4
123789-hexachlorodibenzo-p-dioxin	475	165	94.8	245	82.6
1234678-heptachlorodibenzo-p-dioxin	4955	1948	1155	2686	74.7
Octachlorodibenzo-p-dioxin	2719	1251	668	1546	68.3
2378-tetrachlorodibenzofuran	38.1	23.6	20.0	27.3	35.1
12378-pentachlorodibenzofuran	88.2	60.5	46.4	65.0	32.7
23478-pentachlorodibenzofuran	282	168	128	193	41.5
123478-hexachlorodibenzofuran	297	128	92.8	173	63.3
123678-hexachlorodibenzofuran	346	145	104	198	65.2
234678-hexachlorodibenzofuran	798	304	210	437	72.3
123789-hexachlorodibenzofuran	227	85.9	61.3	125	71.8
1234678-heptachlorodibenzofuran	1479	541	342	787	77.2
1234789-heptachlorodibenzofuran	343	128	76.8	183	77.4
Octachlorodibenzofuran	651	318	174	381	64.1
PCB 81	27.4	16.7	12.1	18.8	41.9
PCB 77	64.8	44.5	30.2	46.5	37.4
PCB 123	27.2	13.6	<8.73	<16.5	58.0
PCB 118	27.4	15.6	<8.48	<17.2	55.7
PCB 114	<30.5	<15.6	<11.5	<19.2	52.2
PCB 105	<38.1	21.1	15.9	<25.0	46.5
PCB 126	129	91.6	63.3	94.8	34.9
PCB 167	<24.9	14.5	<11.2	<16.9	42.4
PCB 156	<50.8	<26.3	<16.5	<31.2	56.7
PCB 157	62.8	<31.1	28.2	<40.7	47.1
PCB 169	94.3	51.2	<24.9	<56.8	61.6
PCB 189	83.6	43.3	36.2	54.4	47.1
Total Dioxins & Furans Only	<13653	<5658	3421	<7577	71.0
Total PCBs Only	<661	<385	<267	<438	46.2
Total Dioxins & Furans and PCBs	<14314	<6043	<3688	<8015	69.6

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 42
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration Test No. 4 pg/Rm³*	Test No. 5 pg/Rm³*	Test No. 6 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	9.09	<3.60	4.10	<5.60	54.3
12378-pentachlorodibenzo-p-dioxin	<65.8	46.0	38.1	<50.0	28.5
123478-hexachlorodibenzo-p-dioxin	285	115	57.4	152	77.7
123678-hexachlorodibenzo-p-dioxin	763	291	185	413	74.6
123789-hexachlorodibenzo-p-dioxin	559	191	109	286	83.7
1234678-heptachlorodibenzo-p-dioxin	5833	2255	1328	3138	75.8
Octachlorodibenzo-p-dioxin	3201	1449	769	1806	69.5
2378-tetrachlorodibenzofuran	44.9	27.3	23.0	31.7	36.4
12378-pentachlorodibenzofuran	104	70.1	53.3	75.7	33.9
23478-pentachlorodibenzofuran	332	194	147	225	42.8
123478-hexachlorodibenzofuran	350	148	107	202	64.6
123678-hexachlorodibenzofuran	407	167	120	231	66.4
234678-hexachlorodibenzofuran	939	352	241	511	73.5
123789-hexachlorodibenzofuran	268	99.4	70.5	146	73.0
1234678-heptachlorodibenzofuran	1741	626	393	920	78.3
1234789-heptachlorodibenzofuran	404	148	88.3	213	78.5
Octachlorodibenzofuran	766	368	200	445	65.3
PCB 81	32.3	19.3	14.0	21.9	43.1
PCB 77	76.3	51.5	34.7	54.2	38.6
PCB 123	32.0	15.7	<10.0	<19.2	59.3
PCB 118	32.3	18.1	<9.75	<20.1	56.9
PCB 114	<35.9	<18.0	<13.2	<22.4	53.5
PCB 105	<44.9	24.4	18.3	<29.2	47.7
PCB 126	152	106	72.8	110	36.1
PCB 167	<29.3	16.7	<12.9	<19.6	43.7
PCB 156	<59.8	<30.5	<18.9	<36.4	57.9
PCB 157	73.9	<36.0	32.4	<47.4	48.4
PCB 169	111	59.3	<28.7	<66.3	62.7
PCB 189	98.4	50.1	41.6	63.4	48.4
Total Dioxins & Furans Only	<16071	<6550	3934	<8852	72.2
Total PCBs Only	<778	<446	<307	<510	47.4
Total Dioxins & Furans and PCBs	<16849	<6996	<4241	<9362	70.8

* At 25°C and 1 atmosphere

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 43
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Rates

Specific Isomer	Emission Rate Test No. 4 ng/s	Test No. 5 ng/s	Test No. 6 ng/s	Average ng/s	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	0.16	<0.066	0.074	<0.10	51.7
12378-pentachlorodibenzo-p-dioxin	<1.15	0.85	0.69	<0.89	26.4
123478-hexachlorodibenzo-p-dioxin	4.99	2.11	1.03	2.71	75.4
123678-hexachlorodibenzo-p-dioxin	13.3	5.35	3.32	7.34	72.2
123789-hexachlorodibenzo-p-dioxin	9.79	3.52	1.96	5.09	81.4
1234678-heptachlorodibenzo-p-dioxin	102	41.5	23.9	55.8	73.5
Octachlorodibenzo-p-dioxin	56.0	26.7	13.8	32.2	67.2
2378-tetrachlorodibenzofuran	0.79	0.50	0.41	0.57	34.1
12378-pentachlorodibenzofuran	1.82	1.29	0.96	1.36	31.9
23478-pentachlorodibenzofuran	5.81	3.57	2.65	4.01	40.5
123478-hexachlorodibenzofuran	6.12	2.73	1.92	3.59	62.1
123678-hexachlorodibenzofuran	7.12	3.08	2.16	4.12	64.0
234678-hexachlorodibenzofuran	16.4	6.47	4.34	9.08	71.1
123789-hexachlorodibenzofuran	4.69	1.83	1.27	2.59	70.6
1234678-heptachlorodibenzofuran	30.5	11.5	7.07	16.4	76.0
1234789-heptachlorodibenzofuran	7.07	2.73	1.59	3.79	76.2
Octachlorodibenzofuran	13.4	6.78	3.61	7.93	63.0
PCB 81	0.57	0.36	0.25	0.39	40.9
PCB 77	1.33	0.95	0.62	0.97	36.7
PCB 123	0.56	0.29	<0.18	<0.34	56.9
PCB 118	0.57	0.33	<0.18	<0.36	54.8
PCB 114	<0.63	<0.33	<0.24	<0.40	51.1
PCB 105	<0.79	0.45	0.33	<0.52	45.4
PCB 126	2.66	1.95	1.31	1.98	34.3
PCB 167	<0.51	0.31	<0.23	<0.35	41.4
PCB 156	<1.05	<0.56	<0.34	<0.65	55.7
PCB 157	1.29	<0.66	0.58	<0.85	46.0
PCB 169	1.94	1.09	<0.52	<1.18	60.6
PCB 189	1.72	0.92	0.75	1.13	45.9
Total Dioxins & Furans Only	<281	<121	70.8	<158	69.8
Total PCBs Only	<13.6	<8.20	<5.53	<9.12	45.2
Total Dioxins & Furans and PCBs	<295	<129	<76.3	<167	68.5

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 44
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Summary of Dioxin and Furan Specific Isomer Emission Data

Specific Isomer	Actual Concentration pg/m^3	Dry Reference Concentration pg/Rm^3*	Dry Adjusted Concentration pg/Rm^3**	Wet Reference Concentration pg/Rm^3*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<3.88	<6.76	<4.80	<5.60	<0.10
12378-pentachlorodibenzo-p-dioxin	<34.6	<60.4	<42.9	<50.0	<0.89
123478-hexachlorodibenzo-p-dioxin	106	184	130	152	2.71
123678-hexachlorodibenzo-p-dioxin	286	498	353	413	7.34
123789-hexachlorodibenzo-p-dioxin	199	345	245	286	5.09
1234678-heptachlorodibenzo-p-dioxin	2177	3785	2686	3138	55.8
Octachlorodibenzo-p-dioxin	1252	2179	1546	1806	32.2
2378-tetrachlorodibenzofuran	22.0	38.4	27.3	31.7	0.57
12378-pentachlorodibenzofuran	52.5	91.6	65.0	75.7	1.36
23478-pentachlorodibenzofuran	156	271	193	225	4.01
123478-hexachlorodibenzofuran	140	243	173	202	3.59
123678-hexachlorodibenzofuran	160	279	198	231	4.12
234678-hexachlorodibenzofuran	354	616	437	511	9.08
123789-hexachlorodibenzofuran	101	176	125	146	2.59
1234678-heptachlorodibenzofuran	638	1109	787	920	16.4
1234789-heptachlorodibenzofuran	148	257	183	213	3.79
Octachlorodibenzofuran	308	537	381	445	7.93
PCB 81	15.2	26.4	18.8	21.9	0.39
PCB 77	37.5	65.5	46.5	54.2	0.97
PCB 123	<13.3	<23.2	<16.5	<19.2	<0.34
PCB 118	<13.9	<24.2	<17.2	<20.1	<0.36
PCB 114	<15.5	<27.0	<19.2	<22.4	<0.40
PCB 105	<20.2	<35.2	<25.0	<29.2	<0.52
PCB 126	76.5	133	94.8	110	1.98
PCB 167	<13.6	<23.7	<16.9	<19.6	<0.35
PCB 156	<25.2	<44.0	<31.2	<36.4	<0.65
PCB 157	<32.9	<57.3	<40.7	<47.4	<0.85
PCB 169	<46.0	<80.0	<56.8	<66.3	<1.18
PCB 189	43.9	76.5	54.4	63.4	1.13
Total Dioxins & Furans Only	<6138	<10676	<7577	<8852	<158
Total PCBs Only	<354	<617	<438	<510	<9.12
Total Dioxins & Furans and PCBs	<6492	<11293	<8015	<9362	<167

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 45
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Actual Concentrations

Specific Isomer	Toxicity Equivalency Factor	Actual Concentration Test No. 4 pg TEQ/m³	Test No. 5 pg TEQ/m³	Test No. 6 pg TEQ/m³	Average pg TEQ/m³
2378-tetrachlorodibenzo-p-dioxin	1.000	6.32	<2.49	2.84	<3.88
12378-pentachlorodibenzo-p-dioxin	1.000	<45.7	31.8	26.4	<34.6
123478-hexachlorodibenzo-p-dioxin	0.100	19.8	7.95	3.97	10.6
123678-hexachlorodibenzo-p-dioxin	0.100	53.0	20.1	12.8	28.6
123789-hexachlorodibenzo-p-dioxin	0.100	38.8	13.2	7.54	19.9
1234678-heptachlorodibenzo-p-dioxin	0.010	40.5	15.6	9.19	21.8
Octachlorodibenzo-p-dioxin	0.0003	0.67	0.30	0.16	0.38
2378-tetrachlorodibenzofuran	0.100	3.12	1.89	1.59	2.20
12378-pentachlorodibenzofuran	0.030	2.16	1.45	1.11	1.57
23478-pentachlorodibenzofuran	0.300	69.2	40.3	30.6	46.7
123478-hexachlorodibenzofuran	0.100	24.3	10.2	7.39	14.0
123678-hexachlorodibenzofuran	0.100	28.3	11.6	8.32	16.0
234678-hexachlorodibenzofuran	0.100	65.2	24.3	16.7	35.4
123789-hexachlorodibenzofuran	0.100	18.6	6.88	4.88	10.1
1234678-heptachlorodibenzofuran	0.010	12.1	4.33	2.72	6.38
1234789-heptachlorodibenzofuran	0.010	2.80	1.02	0.61	1.48
Octachlorodibenzofuran	0.0003	0.16	0.076	0.042	0.093
PCB 81	0.0003	0.0067	0.0040	0.0029	0.0045
PCB 77	0.0001	0.0053	0.0036	0.0024	0.0038
PCB 123	0.00003	0.00067	0.00033	<0.00021	<0.00040
PCB 118	0.00003	0.00067	0.00038	<0.00020	<0.00042
PCB 114	0.00003	<0.00075	<0.00037	<0.00027	<0.00047
PCB 105	0.00003	<0.00093	0.00051	0.00038	<0.00061
PCB 126	0.100	10.6	7.34	5.04	7.65
PCB 167	0.00003	<0.00061	0.00035	<0.00027	<0.00041
PCB 156	0.00003	<0.0012	<0.00063	<0.00039	<0.00076
PCB 157	0.00003	0.0015	<0.00075	0.00067	<0.00099
PCB 169	0.030	2.31	1.23	<0.60	<1.38
PCB 189	0.00003	0.0021	0.0010	0.00086	0.0013
Total Dioxins & Furans Only		<431	<194	137	<254
Total PCBs Only		<12.9	<8.58	<5.65	<9.04
Total Dioxins & Furans and PCBs		<444	<202	<143	<263

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 46
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Dry Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Dry Reference Concentration Test No. 4 pg TEQ/Rm³*	Test No. 5 pg TEQ/Rm³*	Test No. 6 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	10.9	<4.39	4.99	<6.76
12378-pentachlorodibenzo-p-dioxin	1.000	<78.9	56.0	46.4	<60.4
123478-hexachlorodibenzo-p-dioxin	0.100	34.2	14.0	6.98	18.4
123678-hexachlorodibenzo-p-dioxin	0.100	91.4	35.4	22.5	49.8
123789-hexachlorodibenzo-p-dioxin	0.100	67.0	23.3	13.3	34.5
1234678-heptachlorodibenzo-p-dioxin	0.010	69.9	27.5	16.1	37.8
Octachlorodibenzo-p-dioxin	0.0003	1.15	0.53	0.28	0.65
2378-tetrachlorodibenzofuran	0.100	5.38	3.33	2.80	3.84
12378-pentachlorodibenzofuran	0.030	3.73	2.56	1.95	2.75
23478-pentachlorodibenzofuran	0.300	119	71.0	53.8	81.4
123478-hexachlorodibenzofuran	0.100	42.0	18.1	13.0	24.3
123678-hexachlorodibenzofuran	0.100	48.8	20.4	14.6	27.9
234678-hexachlorodibenzofuran	0.100	113	42.9	29.3	61.6
123789-hexachlorodibenzofuran	0.100	32.1	12.1	8.58	17.6
1234678-heptachlorodibenzofuran	0.010	20.9	7.63	4.78	11.1
1234789-heptachlorodibenzofuran	0.010	4.84	1.81	1.07	2.57
Octachlorodibenzofuran	0.0003	0.28	0.13	0.073	0.16
PCB 81	0.0003	0.012	0.0071	0.0051	0.0079
PCB 77	0.0001	0.0091	0.0063	0.0042	0.0065
PCB 123	0.00003	0.0012	0.00057	<0.00037	<0.00070
PCB 118	0.00003	0.0012	0.00066	<0.00036	<0.00073
PCB 114	0.00003	<0.0013	<0.00066	<0.00048	<0.00081
PCB 105	0.00003	<0.0016	0.00089	0.00067	<0.0011
PCB 126	0.100	18.3	12.9	8.86	13.3
PCB 167	0.00003	<0.0011	0.00061	<0.00047	<0.00071
PCB 156	0.00003	<0.0022	<0.0011	<0.00069	<0.0013
PCB 157	0.00003	0.0027	<0.0013	0.0012	<0.0017
PCB 169	0.030	3.99	2.17	<1.05	<2.40
PCB 189	0.00003	0.0035	0.0018	0.0015	0.0023
Total Dioxins & Furans Only		<743	<341	240	<442
Total PCBs Only		<22.3	<15.1	<9.92	<15.8
Total Dioxins & Furans and PCBs		<766	<356	<250	<457

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 47
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 4 pg TEQ/Rm³*	Test No. 5 pg TEQ/Rm³*	Test No. 6 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	7.73	<3.11	3.57	<4.80
12378-pentachlorodibenzo-p-dioxin	1.000	<55.9	39.7	33.2	<42.9
123478-hexachlorodibenzo-p-dioxin	0.100	24.2	9.93	4.99	13.0
123678-hexachlorodibenzo-p-dioxin	0.100	64.8	25.1	16.1	35.3
123789-hexachlorodibenzo-p-dioxin	0.100	47.5	16.5	9.48	24.5
1234678-heptachlorodibenzo-p-dioxin	0.010	49.6	19.5	11.5	26.9
Octachlorodibenzo-p-dioxin	0.0003	0.82	0.38	0.20	0.46
2378-tetrachlorodibenzofuran	0.100	3.81	2.36	2.00	2.73
12378-pentachlorodibenzofuran	0.030	2.65	1.82	1.39	1.95
23478-pentachlorodibenzofuran	0.300	84.6	50.3	38.5	57.8
123478-hexachlorodibenzofuran	0.100	29.7	12.8	9.28	17.3
123678-hexachlorodibenzofuran	0.100	34.6	14.5	10.4	19.8
234678-hexachlorodibenzofuran	0.100	79.8	30.4	21.0	43.7
123789-hexachlorodibenzofuran	0.100	22.7	8.59	6.13	12.5
1234678-heptachlorodibenzofuran	0.010	14.8	5.41	3.42	7.87
1234789-heptachlorodibenzofuran	0.010	3.43	1.28	0.77	1.83
Octachlorodibenzofuran	0.0003	0.20	0.095	0.052	0.11
PCB 81	0.0003	0.0082	0.0050	0.0036	0.0056
PCB 77	0.0001	0.0065	0.0045	0.0030	0.0046
PCB 123	0.00003	0.00082	0.00041	<0.00026	<0.00049
PCB 118	0.00003	0.00082	0.00047	<0.00025	<0.00052
PCB 114	0.00003	<0.00091	<0.00047	<0.00034	<0.00058
PCB 105	0.00003	<0.0011	0.00063	0.00048	<0.00075
PCB 126	0.100	12.9	9.16	6.33	9.48
PCB 167	0.00003	<0.00075	0.00043	<0.00034	<0.00051
PCB 156	0.00003	<0.0015	<0.00079	<0.00049	<0.00094
PCB 157	0.00003	0.0019	<0.00093	0.00085	<0.0012
PCB 169	0.030	2.83	1.54	<0.75	<1.70
PCB 189	0.00003	0.0025	0.0013	0.0011	0.0016
Total Dioxins & Furans Only		<527	<242	172	<314
Total PCBs Only		<15.8	<10.7	<7.09	<11.2
Total Dioxins & Furans and PCBs		<543	<252	<179	<325

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 47A
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using Half the Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 4 pg TEQ/Rm³*	Test No. 5 pg TEQ/Rm³*	Test No. 6 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	7.73	1.56	3.57	4.28
12378-pentachlorodibenzo-p-dioxin	1.000	28.0	39.7	33.2	33.6
123478-hexachlorodibenzo-p-dioxin	0.100	24.2	9.93	4.99	13.0
123678-hexachlorodibenzo-p-dioxin	0.100	64.8	25.1	16.1	35.3
123789-hexachlorodibenzo-p-dioxin	0.100	47.5	16.5	9.48	24.5
1234678-heptachlorodibenzo-p-dioxin	0.010	49.6	19.5	11.5	26.9
Octachlorodibenzo-p-dioxin	0.0003	0.82	0.38	0.20	0.46
2378-tetrachlorodibenzofuran	0.100	3.81	2.36	2.00	2.73
12378-pentachlorodibenzofuran	0.030	2.65	1.82	1.39	1.95
23478-pentachlorodibenzofuran	0.300	84.6	50.3	38.5	57.8
123478-hexachlorodibenzofuran	0.100	29.7	12.8	9.28	17.3
123678-hexachlorodibenzofuran	0.100	34.6	14.5	10.4	19.8
234678-hexachlorodibenzofuran	0.100	79.8	30.4	21.0	43.7
123789-hexachlorodibenzofuran	0.100	22.7	8.59	6.13	12.5
1234678-heptachlorodibenzofuran	0.010	14.8	5.41	3.42	7.87
1234789-heptachlorodibenzofuran	0.010	3.43	1.28	0.77	1.83
Octachlorodibenzofuran	0.0003	0.20	0.095	0.052	0.11
PCB 81	0.0003	0.0082	0.0050	0.0036	0.0056
PCB 77	0.0001	0.0065	0.0045	0.0030	0.0046
PCB 123	0.00003	0.00082	0.00041	0.00013	0.00045
PCB 118	0.00003	0.00082	0.00047	0.00013	0.00047
PCB 114	0.00003	0.00046	0.00023	0.00017	0.00029
PCB 105	0.00003	0.00057	0.00063	0.00048	0.00056
PCB 126	0.100	12.9	9.16	6.33	9.48
PCB 167	0.00003	0.00037	0.00043	0.00017	0.00033
PCB 156	0.00003	0.00076	0.00039	0.00025	0.00047
PCB 157	0.00003	0.0019	0.00047	0.00085	0.0011
PCB 169	0.030	2.83	1.54	0.37	1.58
PCB 189	0.00003	0.0025	0.0013	0.0011	0.0016
Total Dioxins & Furans Only		499	240	172	304
Total PCBs Only		15.8	10.7	6.72	11.1
Total Dioxins & Furans and PCBs		515	251	179	315

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

TABLE 47B
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations
Calculated Using the Full Detection Limit

Specific Isomer	Toxicity Equivalency Factor	Dry Adjusted Concentration Test No. 1 pg TEQ/Rm³*	Test No. 2 pg TEQ/Rm³*	Test No. 3 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	7.73	<3.11	3.57	<4.80
12378-pentachlorodibenzo-p-dioxin	0.500	<28.0	19.9	16.6	<21.5
123478-hexachlorodibenzo-p-dioxin	0.100	24.2	9.93	4.99	13.0
123678-hexachlorodibenzo-p-dioxin	0.100	64.8	25.1	16.1	35.3
123789-hexachlorodibenzo-p-dioxin	0.100	47.5	16.5	9.48	24.5
1234678-heptachlorodibenzo-p-dioxin	0.010	49.6	19.5	11.5	26.9
Octachlorodibenzo-p-dioxin	0.001	2.72	1.25	0.67	1.55
2378-tetrachlorodibenzofuran	0.100	3.81	2.36	2.00	2.73
12378-pentachlorodibenzofuran	0.050	4.41	3.03	2.32	3.25
23478-pentachlorodibenzofuran	0.500	141	83.9	64.1	96.3
123478-hexachlorodibenzofuran	0.100	29.7	12.8	9.28	17.3
123678-hexachlorodibenzofuran	0.100	34.6	14.5	10.4	19.8
234678-hexachlorodibenzofuran	0.100	79.8	30.4	21.0	43.7
123789-hexachlorodibenzofuran	0.100	22.7	8.59	6.13	12.5
1234678-heptachlorodibenzofuran	0.010	14.8	5.41	3.42	7.87
1234789-heptachlorodibenzofuran	0.010	3.43	1.28	0.77	1.83
Octachlorodibenzofuran	0.001	0.65	0.32	0.17	0.38
Total Dioxins & Furans		<559	<258	<182	<333
In-Stack Emission Limit					60

* At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

NATO/CCMS (1989) Toxicity Equivalency Factors

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 48
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Wet Reference Concentrations

Specific Isomer	Toxicity Equivalency Factor	Wet Reference Concentration Test No. 4 pg TEQ/Rm³*	Test No. 5 pg TEQ/Rm³*	Test No. 6 pg TEQ/Rm³*	Average pg TEQ/Rm³*
2378-tetrachlorodibenzo-p-dioxin	1.000	9.09	<3.60	4.10	<5.60
12378-pentachlorodibenzo-p-dioxin	1.000	<65.8	46.0	38.1	<50.0
123478-hexachlorodibenzo-p-dioxin	0.100	28.5	11.5	5.74	15.2
123678-hexachlorodibenzo-p-dioxin	0.100	76.3	29.1	18.5	41.3
123789-hexachlorodibenzo-p-dioxin	0.100	55.9	19.1	10.9	28.6
1234678-heptachlorodibenzo-p-dioxin	0.010	58.3	22.5	13.3	31.4
Octachlorodibenzo-p-dioxin	0.0003	0.96	0.43	0.23	0.54
2378-tetrachlorodibenzofuran	0.100	4.49	2.73	2.30	3.17
12378-pentachlorodibenzofuran	0.030	3.11	2.10	1.60	2.27
23478-pentachlorodibenzofuran	0.300	99.6	58.2	44.2	67.4
123478-hexachlorodibenzofuran	0.100	35.0	14.8	10.7	20.2
123678-hexachlorodibenzofuran	0.100	40.7	16.7	12.0	23.1
234678-hexachlorodibenzofuran	0.100	93.9	35.2	24.1	51.1
123789-hexachlorodibenzofuran	0.100	26.8	9.94	7.05	14.6
1234678-heptachlorodibenzofuran	0.010	17.4	6.26	3.93	9.20
1234789-heptachlorodibenzofuran	0.010	4.04	1.48	0.88	2.13
Octachlorodibenzofuran	0.0003	0.23	0.11	0.060	0.13
PCB 81	0.0003	0.0097	0.0058	0.0042	0.0066
PCB 77	0.0001	0.0076	0.0052	0.0035	0.0054
PCB 123	0.00003	0.00096	0.00047	<0.00030	<0.00058
PCB 118	0.00003	0.00097	0.00054	<0.00029	<0.00060
PCB 114	0.00003	<0.0011	<0.00054	<0.00040	<0.00067
PCB 105	0.00003	<0.0013	0.00073	0.00055	<0.00088
PCB 126	0.100	15.2	10.6	7.28	11.0
PCB 167	0.00003	<0.00088	0.00050	<0.00039	<0.00059
PCB 156	0.00003	<0.0018	<0.00091	<0.00057	<0.0011
PCB 157	0.00003	0.0022	<0.0011	0.00097	<0.0014
PCB 169	0.030	3.33	1.78	<0.86	<1.99
PCB 189	0.00003	0.0030	0.0015	0.0012	0.0019
Total Dioxins & Furans Only		<620	<280	198	<366
Total PCBs Only		<18.6	<12.4	<8.16	<13.0
Total Dioxins & Furans and PCBs		<639	<292	<206	<379

* At 25°C and 1 atmosphere

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 49
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Emission Rates

Specific Isomer	Toxicity Equivalency Factor	Emission Rate Test No. 4 ng TEQ/s	Test No. 5 ng TEQ/s	Test No. 6 ng TEQ/s	Average ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	1.000	0.16	<0.066	0.074	<0.10
12378-pentachlorodibenzo-p-dioxin	1.000	<1.15	0.85	0.69	<0.89
123478-hexachlorodibenzo-p-dioxin	0.100	0.50	0.21	0.10	0.27
123678-hexachlorodibenzo-p-dioxin	0.100	1.33	0.54	0.33	0.73
123789-hexachlorodibenzo-p-dioxin	0.100	0.98	0.35	0.20	0.51
1234678-heptachlorodibenzo-p-dioxin	0.010	1.02	0.41	0.24	0.56
Octachlorodibenzo-p-dioxin	0.0003	0.017	0.0080	0.0042	0.0097
2378-tetrachlorodibenzofuran	0.100	0.079	0.050	0.041	0.057
12378-pentachlorodibenzofuran	0.030	0.054	0.039	0.029	0.041
23478-pentachlorodibenzofuran	0.300	1.74	1.07	0.80	1.20
123478-hexachlorodibenzofuran	0.100	0.61	0.27	0.19	0.36
123678-hexachlorodibenzofuran	0.100	0.71	0.31	0.22	0.41
234678-hexachlorodibenzofuran	0.100	1.64	0.65	0.43	0.91
123789-hexachlorodibenzofuran	0.100	0.47	0.18	0.13	0.26
1234678-heptachlorodibenzofuran	0.010	0.30	0.12	0.071	0.16
1234789-heptachlorodibenzofuran	0.010	0.071	0.027	0.016	0.038
Octachlorodibenzofuran	0.0003	0.0040	0.0020	0.0011	0.0024
PCB 81	0.0003	0.00017	0.00011	0.000075	0.00012
PCB 77	0.0001	0.00013	0.000095	0.000062	0.000097
PCB 123	0.00003	0.000017	0.0000087	<0.0000054	<0.000010
PCB 118	0.00003	0.000017	0.000010	<0.0000053	<0.000011
PCB 114	0.00003	<0.000019	<0.0000099	<0.0000071	<0.000012
PCB 105	0.00003	<0.000024	0.000013	0.0000099	<0.000016
PCB 126	0.100	0.27	0.20	0.13	0.20
PCB 167	0.00003	<0.000015	0.0000092	<0.0000070	<0.000011
PCB 156	0.00003	<0.000031	<0.000017	<0.000010	<0.000019
PCB 157	0.00003	0.000039	<0.000020	0.000017	<0.000025
PCB 169	0.030	0.058	0.033	<0.015	<0.035
PCB 189	0.00003	0.000052	0.000028	0.000022	0.000034
Total Dioxins & Furans Only		<10.9	<5.15	3.56	<6.52
Total PCBs Only		<0.33	<0.23	<0.15	<0.23
Total Dioxins & Furans and PCBs		<11.2	<5.38	<3.71	<6.75

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 50
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using the Full Detection Limit

Specific Isomer	Actual Concentration	Dry Reference Concentration	Dry Adjusted Concentration	Wet Reference Concentration	Emission Rate
	pg TEQ/m³	pg TEQ/Rm³*	pg TEQ/Rm³**	pg TEQ/Rm³*	ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	<3.88	<6.76	<4.80	<5.60	<0.10
12378-pentachlorodibenzo-p-dioxin	<34.6	<60.4	<42.9	<50.0	<0.89
123478-hexachlorodibenzo-p-dioxin	10.6	18.4	13.0	15.2	0.27
123678-hexachlorodibenzo-p-dioxin	28.6	49.8	35.3	41.3	0.73
123789-hexachlorodibenzo-p-dioxin	19.9	34.5	24.5	28.6	0.51
1234678-heptachlorodibenzo-p-dioxin	21.8	37.8	26.9	31.4	0.56
Octachlorodibenzo-p-dioxin	0.38	0.65	0.46	0.54	0.0097
2378-tetrachlorodibenzofuran	2.20	3.84	2.73	3.17	0.057
12378-pentachlorodibenzofuran	1.57	2.75	1.95	2.27	0.041
23478-pentachlorodibenzofuran	46.7	81.4	57.8	67.4	1.20
123478-hexachlorodibenzofuran	14.0	24.3	17.3	20.2	0.36
123678-hexachlorodibenzofuran	16.0	27.9	19.8	23.1	0.41
234678-hexachlorodibenzofuran	35.4	61.6	43.7	51.1	0.91
123789-hexachlorodibenzofuran	10.1	17.6	12.5	14.6	0.26
1234678-heptachlorodibenzofuran	6.38	11.1	7.87	9.20	0.16
1234789-heptachlorodibenzofuran	1.48	2.57	1.83	2.13	0.038
Octachlorodibenzofuran	0.093	0.16	0.11	0.13	0.0024
PCB 81	0.0045	0.0079	0.0056	0.0066	0.00012
PCB 77	0.0038	0.0065	0.0046	0.0054	0.000097
PCB 123	<0.00040	<0.00070	<0.00049	<0.00058	<0.000010
PCB 118	<0.00042	<0.00073	<0.00052	<0.00060	<0.000011
PCB 114	<0.00047	<0.00081	<0.00058	<0.00067	<0.000012
PCB 105	<0.00061	<0.0011	<0.00075	<0.00088	<0.000016
PCB 126	7.65	13.3	9.48	11.0	0.20
PCB 167	<0.00041	<0.00071	<0.00051	<0.00059	<0.000011
PCB 156	<0.00076	<0.0013	<0.00094	<0.0011	<0.000019
PCB 157	<0.00099	<0.0017	<0.0012	<0.0014	<0.000025
PCB 169	<1.38	<2.40	<1.70	<1.99	<0.035
PCB 189	0.0013	0.0023	0.0016	0.0019	0.000034
Total Dioxins & Furans Only	<254	<442	<314	<366	<6.52
Total PCBs Only	<9.04	<15.8	<11.2	<13.0	<0.23
Total Dioxins & Furans and PCBs	<263	<457	<325	<379	<6.75

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 51
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Summary of Dioxin and Furan Toxicity Equivalent Emission Data
Calculated Using Half the Detection Limit

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	3.47	6.03	4.28	5.00	0.089
12378-pentachlorodibenzo-p-dioxin	27.0	47.3	33.6	39.0	0.70
123478-hexachlorodibenzo-p-dioxin	10.6	18.4	13.0	15.2	0.27
123678-hexachlorodibenzo-p-dioxin	28.6	49.8	35.3	41.3	0.73
123789-hexachlorodibenzo-p-dioxin	19.9	34.5	24.5	28.6	0.51
1234678-heptachlorodibenzo-p-dioxin	21.8	37.8	26.9	31.4	0.56
Octachlorodibenzo-p-dioxin	0.38	0.65	0.46	0.54	0.0097
2378-tetrachlorodibenzofuran	2.20	3.84	2.73	3.17	0.057
12378-pentachlorodibenzofuran	1.57	2.75	1.95	2.27	0.041
23478-pentachlorodibenzofuran	46.7	81.4	57.8	67.4	1.20
123478-hexachlorodibenzofuran	14.0	24.3	17.3	20.2	0.36
123678-hexachlorodibenzofuran	16.0	27.9	19.8	23.1	0.41
234678-hexachlorodibenzofuran	35.4	61.6	43.7	51.1	0.91
123789-hexachlorodibenzofuran	10.1	17.6	12.5	14.6	0.26
1234678-heptachlorodibenzofuran	6.38	11.1	7.87	9.20	0.16
1234789-heptachlorodibenzofuran	1.48	2.57	1.83	2.13	0.038
Octachlorodibenzofuran	0.093	0.16	0.11	0.13	0.0024
PCB 81	0.0045	0.0079	0.0056	0.0066	0.00012
PCB 77	0.0038	0.0065	0.0046	0.0054	0.000097
PCB 123	0.00037	0.00064	0.00045	0.00053	0.0000094
PCB 118	0.00038	0.00067	0.00047	0.00055	0.0000099
PCB 114	0.00023	0.00041	0.00029	0.00034	0.0000060
PCB 105	0.00045	0.00079	0.00056	0.00065	0.000012
PCB 126	7.65	13.3	9.48	11.0	0.20
PCB 167	0.00026	0.00046	0.00033	0.00038	0.0000068
PCB 156	0.00038	0.00066	0.00047	0.00055	0.0000097
PCB 157	0.00086	0.0015	0.0011	0.0012	0.000022
PCB 169	1.28	2.23	1.58	1.85	0.033
PCB 189	0.0013	0.0023	0.0016	0.0019	0.000034
Total Dioxins & Furans Only	246	428	304	354	6.32
Total PCBs Only	8.94	15.6	11.1	12.9	0.23
Total Dioxins & Furans and PCBs	255	443	315	367	6.55

* At 25°C and 1 atmosphere

** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume

World Health Organization Toxicity Equivalency Factors as detailed in O. Reg. 419/05.

Note: The value of half the detection limit was used to calculate emission data for those analytes not detected.

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
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Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	COVANTA
ALS Project ID:	24244	**Client Address:**	1835 Energy Drive
ALS WO#:	L1695812		Courtice, ON L1E 2R2
Date of Report	6-Nov-15		Canada
Date of Sample Receipt	30-Oct-15	**Client Contact:**	Amanda Huxter
		Client Project ID:	DYEC - AMESA Dioxin Traps

COMMENTS: **PCDD/F by EPA M23A**

Samples L1695812-1,2,3,4,5,6 all show low level responses in the chlorinated diphenyl ether channel that elute at similar retention times to 1,2,3,4,7,8-HxCDF and 1,2,3,6,7,8-HxCDF. These responses are not judged to be from chlorinated diphenyl ethers since (a) they are not removed by florisil nor carbon column clean-ups and (b) do not elute at the common retention times for known chlorinated diphenyl ether peaks. In the analyst's judgment these responses are not from chlorinated diphenyl ethers and therefore there is no negative impact to the reported PCDD/F values from these co-eluting compounds.

R. Stolys

Rachael Stolys
Account Manager

ALS Life sciences

Sample Analysis summary Report

Sample Name	DYEC/UNIT 1/SAMPLE 6 (RUN 1)	DYEC/UNIT 1/SAMPLE 7 (RUN 2)	DYEC/UNIT 1/SAMPLE 8 (RUN 3)	DYEC/UNIT 2/SAMPLE 6 (RUN 1)	DYEC/UNIT 2/SAMPLE 7 (RUN 2)	DYEC/UNIT 2/SAMPLE 8 (RUN 3)
ALS Sample ID	L1695812-1	L1695812-2	L1695812-3	L1695812-4	L1695812-5	L1695812-6
Sample Size	1	1	1	1	1	1
Sample size units	Train	Train	Train	Train	Train	Train
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	AMESA Trap	AMESA Trap	AMESA Trap	AMESA Trap	AMESA Trap	AMESA Trap
Sampling Date	28-Oct-15	29-Oct-15	29-Oct-15	28-Oct-15	29-Oct-15	29-Oct-15
Extraction Date	3-Nov-15	3-Nov-15	3-Nov-15	3-Nov-15	3-Nov-15	3-Nov-15
Target Analytes	pg	pg	pg	pg	pg	pg
2,3,7,8-TCDD	<6.3	8.16	<3.0	30.4	<13	14.3
1,2,3,7,8-PeCDD	214	104	44.2	<220	166	133
1,2,3,4,7,8-HxCDD	1810	612	239	953	415	200
1,2,3,6,7,8-HxCDD	4110	1640	571	2550	1050	644
1,2,3,7,8,9-HxCDD	3100	1240	414	1870	690	380
1,2,3,4,6,7,8-HpCDD	45300	14900	4160	19500	8140	4630
OCDD	39800	10500	2930	10700	5230	2680
2,3,7,8-TCDF	<47	37.6	<20	150	98.7	80.3
1,2,3,7,8-PeCDF	165	94.4	48.0	347	253	186
2,3,4,7,8-PeCDF	859	397	154	1110	701	514
1,2,3,4,7,8-HxCDF	1530	660	222	1170	535	372
1,2,3,6,7,8-HxCDF	1530	681	236	1360	604	419
2,3,4,6,7,8-HxCDF	4910	2140	713	3140	1270	841
1,2,3,7,8,9-HxCDF	1420	628	208	895	359	246
1,2,3,4,6,7,8-HpCDF	11100	3950	1180	5820	2260	1370
1,2,3,4,7,8,9-HpCDF	2450	802	221	1350	535	308
OCDF	8350	2460	644	2560	1330	699
Field Spike Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
37Cl4-2,3,7,8-TCDD	90	90	92	89	77	90
13C12-1,2,3,4,7,8-HxCDD	96	89	92	100	106	90
13C12-2,3,4,7,8-PeCDF	100	98	101	100	91	101
13C12-1,2,3,4,7,8-HxCDF	90	103	97	92	92	105
13C12-1,2,3,4,7,8,9-HpCDF	91	96	95	94	93	98
Extraction Standards						
13C12-2,3,7,8-TCDD	69	85	77	69	80	87
13C12-1,2,3,7,8-PeCDD	75	92	83	76	87	92
13C12-1,2,3,6,7,8-HxCDD	82	102	91	77	87	111
13C12-1,2,3,4,6,7,8-HpCDD	92	103	92	84	93	107
13C12-OCDD	95	101	86	85	90	109
13C12-2,3,7,8-TCDF	71	88	79	70	83	90
13C12-1,2,3,7,8-PeCDF	71	89	79	72	82	90
13C12-1,2,3,6,7,8-HxCDF	86	97	90	80	90	102
13C12-1,2,3,4,6,7,8-HpCDF	89	99	90	79	91	105
Cleanup Standard						
13C12-1,2,3,7,8,9-HxCDF	76	97	82	73	83	93
Homologue Group Totals	pg	pg	pg	pg	pg	pg
Total-TCDD	958	882	538	4780	3310	2260
Total-PeCDD	8650	4360	1720	14800	9340	7260
Total-HxCDD	60700	24100	8720	40200	16900	10400
Total-HpCDD	93000	31400	8910	41300	16900	9720
Total-TCDF	1760	1800	1220	6080	4470	2870
Total-PeCDF	5720	2980	1040	9760	6720	4770
Total-HxCDF	17100	8450	2780	14700	6350	4380
Total-HpCDF	21900	7590	2210	11500	4450	2660
Toxic Equivalency - (WHO 2005)						
Lower Bound PCDD/F TEQ (WHO 2005)	2920	1200	409	1850	997	689
Mid Point PCDD/F TEQ (WHO 2005)	2930	1200	412	2070	1010	689
Upper Bound PCDD/F TEQ (WHO 2005)	2930	1200	414	2070	1010	689

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Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG2204673-1	WG2204673-2
Sample Size	1.00	1.00
Sample size units	Train	n/a
Percent Moisture	n/a	n/a
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	3-Nov-15	3-Nov-15
Target Analytes	**pg**	**% Rec**
2,3,7,8-TCDD	<2.8	99
1,2,3,7,8-PeCDD	<1.3	106
1,2,3,4,7,8-HxCDD	<1.1	99
1,2,3,6,7,8-HxCDD	<0.77	119
1,2,3,7,8,9-HxCDD	<0.78	123
1,2,3,4,6,7,8-HpCDD	<1.6	104
OCDD	<1.2	94
2,3,7,8-TCDF	<1.5	84
1,2,3,7,8-PeCDF	<0.97	101
2,3,4,7,8-PeCDF	<0.97	94
1,2,3,4,7,8-HxCDF	<1.1	99
1,2,3,6,7,8-HxCDF	<0.86	125
2,3,4,6,7,8-HxCDF	<0.97	118
1,2,3,7,8,9-HxCDF	<1.1	114
1,2,3,4,6,7,8-HpCDF	<0.97	92
1,2,3,4,7,8,9-HpCDF	<1.2	89
OCDF	<1.6	95
Field Spike Standards	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	NS	NS
13C12-1,2,3,4,7,8-HxCDD	NS	NS
13C12-2,3,4,7,8-PeCDF	NS	NS
13C12-1,2,3,4,7,8-HxCDF	NS	NS
13C12-1,2,3,4,7,8,9-HpCDF	NS	NS
Extraction Standards		
13C12-2,3,7,8-TCDD	85	92
13C12-1,2,3,7,8-PeCDD	107	99
13C12-1,2,3,6,7,8-HxCDD	96	96
13C12-1,2,3,4,6,7,8-HpCDD	120	113
13C12-OCDD	117	114
13C12-2,3,7,8-TCDF	107	97
13C12-1,2,3,7,8-PeCDF	106	96
13C12-1,2,3,6,7,8-HxCDF	100	97
13C12-1,2,3,4,6,7,8-HpCDF	125	115
Cleanup Standard		
13C12-1,2,3,7,8,9-HxCDF	108	94
Homologue Group Totals	**pg**	
Total-TCDD	<2.8	
Total-PeCDD	<1.3	
Total-HxCDD	<1.1	
Total-HpCDD	<1.6	
Total-TCDF	<1.5	
Total-PeCDF	<0.97	
Total-HxCDF	<1.1	
Total-HpCDF	<1.2	
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	0.00	
Mid Point PCDD/F TEQ (WHO 2005)	2.64	
Upper Bound PCDD/F TEQ (WHO 2005)	5.28	

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Sample Analysis Report

Sample Name	**DYEC/UNIT 1/SAMPLE 6 (RUN 1)**	Sampling Date	28-Oct-15	
ALS Sample ID	L1695812-1	Extraction Date	3-Nov-15	Approved:
Analysis Method	EPA M23A	Sample Size	1 Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	AMESA Trap	Split Ratio	2	06-Nov-2015

Run Information	**Run 1**
Filename	7-151105A09
Run Date	05-Nov-15 22:19
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700124H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<6.3	6.3	U		25
1,2,3,7,8-PeCDD	1	31.99	214	6.1			130
1,2,3,4,7,8-HxCDD	0.1	34.03	1810	10			130
1,2,3,6,7,8-HxCDD	0.1	34.08	4110	7.3			130
1,2,3,7,8,9-HxCDD	0.1	34.20	3100	7.4			130
1,2,3,4,6,7,8-HpCDD	0.01	35.66	45300	27			130
OCDD	0.0003	37.14	39800	16			250
2,3,7,8-TCDF	0.1	26.91	<47	4.9	R	47	25
1,2,3,7,8-PeCDF	0.03	31.06	165	4.6			130
2,3,4,7,8-PeCDF	0.3	31.78	859	4.6			130
1,2,3,4,7,8-HxCDF	0.1	33.54	1530	0.0029			130
1,2,3,6,7,8-HxCDF	0.1	33.61	1530	0.0022			130
2,3,4,6,7,8-HxCDF	0.1	33.93	4910	0.0025			130
1,2,3,7,8,9-HxCDF	0.1	34.37	1420	0.0029			130
1,2,3,4,6,7,8-HpCDF	0.01	35.12	11100	13			130
1,2,3,4,7,8,9-HpCDF	0.01	35.92	2450	17			130
OCDF	0.0003	37.23	8350	7.3			250
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	400	27.84	90	70-130			
13C12-1,2,3,4,7,8-HxCDD	4000	34.02	96	70-130	M		
13C12-2,3,4,7,8-PeCDF	4000	31.77	100	70-130			
13C12-1,2,3,4,7,8-HxCDF	4000	33.53	90	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	4000	35.91	91	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	4000	27.82	69	40-130			
13C12-1,2,3,7,8-PeCDD	4000	31.98	75	40-130			
13C12-1,2,3,6,7,8-HxCDD	4000	34.07	82	40-130	M		
13C12-1,2,3,4,6,7,8-HpCDD	4000	35.66	92	25-130			
13C12-OCDD	8000	37.14	95	25-130			
13C12-2,3,7,8-TCDF	4000	26.91	71	40-130			
13C12-1,2,3,7,8-PeCDF	4000	31.05	71	40-130			
13C12-1,2,3,6,7,8-HxCDF	4000	33.60	86	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	4000	35.11	89	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	4000	34.35	76	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	8	958	6.3	25
Total-PeCDD	9	8650	6.1	130
Total-HxCDD	7	60700	10	130
Total-HpCDD	2	93000	27	130
Total-TCDF	18	1760	4.9	25
Total-PeCDF	16	5720	4.6	130
Total-HxCDF	10	17100	0.0029	130
Total-HpCDF	4	21900	17	130

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	2920
Mid Point PCDD/F TEQ (WHO 2005)	2930
Upper Bound PCDD/F TEQ (WHO 2005)	2930

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	**DYEC/UNIT 1/SAMPLE 7 (RUN 2)**	Sampling Date	29-Oct-15	
ALS Sample ID	L1695812-2	Extraction Date	3-Nov-15	Approved:
Analysis Method	EPA M23A	Sample Size	1 Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	AMESA Trap	Split Ratio	2	06-Nov-2015

Run Information	**Run 1**
Filename	7-151105A10
Run Date	05-Nov-15 23:01
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700124H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	27.83	8.16	4.0	M,J		25
1,2,3,7,8-PeCDD	1	31.99	104	3.6	J		130
1,2,3,4,7,8-HxCDD	0.1	34.03	612	7.1			130
1,2,3,6,7,8-HxCDD	0.1	34.07	1640	5.1			130
1,2,3,7,8,9-HxCDD	0.1	34.20	1240	5.2			130
1,2,3,4,6,7,8-HpCDD	0.01	35.66	14900	13			130
OCDD	0.0003	37.14	10500	9.3			250
2,3,7,8-TCDF	0.1	26.90	37.6	3.6			25
1,2,3,7,8-PeCDF	0.03	31.05	94.4	4.6	J		130
2,3,4,7,8-PeCDF	0.3	31.77	397	4.5			130
1,2,3,4,7,8-HxCDF	0.1	33.54	660	20			130
1,2,3,6,7,8-HxCDF	0.1	33.60	681	15			130
2,3,4,6,7,8-HxCDF	0.1	33.93	2140	17			130
1,2,3,7,8,9-HxCDF	0.1	34.37	628	20			130
1,2,3,4,6,7,8-HpCDF	0.01	35.11	3950	8.2			130
1,2,3,4,7,8,9-HpCDF	0.01	35.92	802	10			130
OCDF	0.0003	37.23	2460	5.6			250

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	400	27.83	90	70-130
13C12-1,2,3,4,7,8-HxCDD	4000	34.02	89	70-130
13C12-2,3,4,7,8-PeCDF	4000	31.76	98	70-130
13C12-1,2,3,4,7,8-HxCDF	4000	33.53	103	70-130
13C12-1,2,3,4,7,8,9-HpCDF	4000	35.91	96	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	4000	27.82	85	40-130
13C12-1,2,3,7,8-PeCDD	4000	31.98	92	40-130
13C12-1,2,3,6,7,8-HxCDD	4000	34.07	102	40-130
13C12-1,2,3,4,6,7,8-HpCDD	4000	35.65	103	25-130
13C12-OCDD	8000	37.14	101	25-130
13C12-2,3,7,8-TCDF	4000	26.90	88	40-130
13C12-1,2,3,7,8-PeCDF	4000	31.03	89	40-130
13C12-1,2,3,6,7,8-HxCDF	4000	33.59	97	40-130
13C12-1,2,3,4,6,7,8-HpCDF	4000	35.11	99	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	4000	34.34	97	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	10	882	4.0	25
Total-PeCDD	8	4360	3.6	130
Total-HxCDD	8	24100	7.1	130
Total-HpCDD	2	31400	13	130
Total-TCDF	19	1800	3.6	25
Total-PeCDF	14	2980	4.6	130
Total-HxCDF	14	8450	20	130
Total-HpCDF	4	7590	10	130

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	1200
Mid Point PCDD/F TEQ (WHO 2005)	1200
Upper Bound PCDD/F TEQ (WHO 2005)	1200

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.

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Sample Analysis Report

Sample Name	**DYEC/UNIT 1/SAMPLE 8 (RUN 3)**	Sampling Date	29-Oct-15	
ALS Sample ID	L1695812-3	Extraction Date	3-Nov-15	Approved:
Analysis Method	EPA M23A	Sample Size	1 Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	AMESA Trap	Split Ratio	2	06-Nov-2015

Run Information	**Run 1**
Filename	7-151105A11
Run Date	05-Nov-15 23:43
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700124H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<3.0	3.0	U		25
1,2,3,7,8-PeCDD	1	31.99	44.2	3.7	J		130
1,2,3,4,7,8-HxCDD	0.1	34.02	239	6.4			130
1,2,3,6,7,8-HxCDD	0.1	34.07	571	4.6			130
1,2,3,7,8,9-HxCDD	0.1	34.19	414	4.6			130
1,2,3,4,6,7,8-HpCDD	0.01	35.66	4160	7.8			130
OCDD	0.0003	37.14	2930	7.1			250
2,3,7,8-TCDF	0.1	26.93	<20	3.6	J,R	20	25
1,2,3,7,8-PeCDF	0.03	31.05	48.0	5.0	J		130
2,3,4,7,8-PeCDF	0.3	31.77	154	4.9			130
1,2,3,4,7,8-HxCDF	0.1	33.53	222	7.2			130
1,2,3,6,7,8-HxCDF	0.1	33.60	236	5.5			130
2,3,4,6,7,8-HxCDF	0.1	33.93	713	6.2			130
1,2,3,7,8,9-HxCDF	0.1	34.37	208	7.4			130
1,2,3,4,6,7,8-HpCDF	0.01	35.11	1180	5.4			130
1,2,3,4,7,8,9-HpCDF	0.01	35.91	221	6.9			130
OCDF	0.0003	37.22	644	3.4			250

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	400	27.83	92	70-130
13C12-1,2,3,4,7,8-HxCDD	4000	34.02	92	70-130
13C12-2,3,4,7,8-PeCDF	4000	31.76	101	70-130
13C12-1,2,3,4,7,8-HxCDF	4000	33.52	97	70-130
13C12-1,2,3,4,7,8,9-HpCDF	4000	35.91	95	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	4000	27.82	77	40-130
13C12-1,2,3,7,8-PeCDD	4000	31.98	83	40-130
13C12-1,2,3,6,7,8-HxCDD	4000	34.06	91	40-130
13C12-1,2,3,4,6,7,8-HpCDD	4000	35.65	92	25-130
13C12-OCDD	8000	37.14	86	25-130
13C12-2,3,7,8-TCDF	4000	26.90	79	40-130
13C12-1,2,3,7,8-PeCDF	4000	31.03	79	40-130
13C12-1,2,3,6,7,8-HxCDF	4000	33.59	90	40-130
13C12-1,2,3,4,6,7,8-HpCDF	4000	35.10	90	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	4000	34.34	82	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	9	538	3.0	25
Total-PeCDD	9	1720	3.7	130
Total-HxCDD	7	8720	6.4	130
Total-HpCDD	2	8910	7.8	130
Total-TCDF	21	1220	3.6	25
Total-PeCDF	10	1040	5.0	130
Total-HxCDF	12	2780	7.4	130
Total-HpCDF	4	2210	6.9	130

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	409
Mid Point PCDD/F TEQ (WHO 2005)	412
Upper Bound PCDD/F TEQ (WHO 2005)	414

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency

U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	**DYEC/UNIT 2/SAMPLE 6 (RUN 1)**	Sampling Date	28-Oct-15		
ALS Sample ID	L1695812-4	Extraction Date	3-Nov-15		Approved:
Analysis Method	EPA M23A	Sample Size	1	Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	AMESA Trap	Split Ratio	2		06-Nov-2015

Run Information	**Run 1**
Filename	7-151105A12
Run Date	06-Nov-15 00:25
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700124H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	27.83	30.4	5.0			25
1,2,3,7,8-PeCDD	1	31.99	<220	5.5	R	220	130
1,2,3,4,7,8-HxCDD	0.1	34.02	953	13	M		130
1,2,3,6,7,8-HxCDD	0.1	34.07	2550	9.2	M		130
1,2,3,7,8,9-HxCDD	0.1	34.19	1870	9.3			130
1,2,3,4,6,7,8-HpCDD	0.01	35.65	19500	22			130
OCDD	0.0003	37.14	10700	13			250
2,3,7,8-TCDF	0.1	26.88	150	5.5	M		25
1,2,3,7,8-PeCDF	0.03	31.05	347	6.4			130
2,3,4,7,8-PeCDF	0.3	31.77	1110	6.4			130
1,2,3,4,7,8-HxCDF	0.1	33.53	1170	13			130
1,2,3,6,7,8-HxCDF	0.1	33.60	1360	10			130
2,3,4,6,7,8-HxCDF	0.1	33.92	3140	11			130
1,2,3,7,8,9-HxCDF	0.1	34.36	895	13			130
1,2,3,4,6,7,8-HpCDF	0.01	35.10	5820	9.3			130
1,2,3,4,7,8,9-HpCDF	0.01	35.91	1350	12			130
OCDF	0.0003	37.22	2560	9.6			250

Field Spike Standards	**pg**		**% Rec**	**Limits**	
37Cl4-2,3,7,8-TCDD	400	27.83	89	70-130	
13C12-1,2,3,4,7,8-HxCDD	4000	34.01	100	70-130	M
13C12-2,3,4,7,8-PeCDF	4000	31.76	100	70-130	
13C12-1,2,3,4,7,8-HxCDF	4000	33.52	92	70-130	
13C12-1,2,3,4,7,8,9-HpCDF	4000	35.89	94	70-130	
Extraction Standards					
13C12-2,3,7,8-TCDD	4000	27.82	69	40-130	
13C12-1,2,3,7,8-PeCDD	4000	31.96	76	40-130	
13C12-1,2,3,6,7,8-HxCDD	4000	34.06	77	40-130	M
13C12-1,2,3,4,6,7,8-HpCDD	4000	35.65	84	25-130	
13C12-OCDD	8000	37.13	85	25-130	
13C12-2,3,7,8-TCDF	4000	26.90	70	40-130	
13C12-1,2,3,7,8-PeCDF	4000	31.03	72	40-130	
13C12-1,2,3,6,7,8-HxCDF	4000	33.59	80	40-130	
13C12-1,2,3,4,6,7,8-HpCDF	4000	35.10	79	25-130	
Cleanup Standard	**pg**				
13C12-1,2,3,7,8,9-HxCDF	4000	34.34	73	40-130	

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	15	4780	5.0	25
Total-PeCDD	8	14800	5.5	130
Total-HxCDD	7	40200	13	130
Total-HpCDD	2	41300	22	130
Total-TCDF	20	6080	5.5	25
Total-PeCDF	14	9760	6.4	130
Total-HxCDF	13	14700	13	130
Total-HpCDF	4	11500	12	130

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	1850
Mid Point PCDD/F TEQ (WHO 2005)	2070
Upper Bound PCDD/F TEQ (WHO 2005)	2070

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
M Indicates that a peak has been manually integrated.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life sciences

Sample Analysis Report

Sample Name	**DYEC/UNIT 2/SAMPLE 7 (RUN 2)**	Sampling Date	29-Oct-15	
ALS Sample ID	L1695812-5	Extraction Date	3-Nov-15	Approved:
Analysis Method	EPA M23A	Sample Size	1 Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	AMESA Trap	Split Ratio	2	06-Nov-2015

Run Information	**Run 1**
Filename	7-151105A13
Run Date	06-Nov-15 01:07
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700124H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	27.84	<13	3.5	M,J,R	13	25
1,2,3,7,8-PeCDD	1	31.99	166	4.5			130
1,2,3,4,7,8-HxCDD	0.1	34.03	415	7.6	M		130
1,2,3,6,7,8-HxCDD	0.1	34.08	1050	5.5	M		130
1,2,3,7,8,9-HxCDD	0.1	34.20	690	5.6			130
1,2,3,4,6,7,8-HpCDD	0.01	35.66	8140	7.6			130
OCDD	0.0003	37.14	5230	8.0			250
2,3,7,8-TCDF	0.1	26.90	98.7	4.4	M		25
1,2,3,7,8-PeCDF	0.03	31.06	253	3.5			130
2,3,4,7,8-PeCDF	0.3	31.78	701	3.5			130
1,2,3,4,7,8-HxCDF	0.1	33.54	535	7.7			130
1,2,3,6,7,8-HxCDF	0.1	33.60	604	5.9			130
2,3,4,6,7,8-HxCDF	0.1	33.93	1270	6.7			130
1,2,3,7,8,9-HxCDF	0.1	34.37	359	7.9			130
1,2,3,4,6,7,8-HpCDF	0.01	35.11	2260	6.5			130
1,2,3,4,7,8,9-HpCDF	0.01	35.92	535	8.4			130
OCDF	0.0003	37.23	1330	7.2			250

Field Spike Standards	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
37Cl4-2,3,7,8-TCDD	400	27.84	77	70-130	
13C12-1,2,3,4,7,8-HxCDD	4000	34.02	106	70-130	M
13C12-2,3,4,7,8-PeCDF	4000	31.77	91	70-130	
13C12-1,2,3,4,7,8-HxCDF	4000	33.53	92	70-130	
13C12-1,2,3,4,7,8,9-HpCDF	4000	35.91	93	70-130	
Extraction Standards					
13C12-2,3,7,8-TCDD	4000	27.82	80	40-130	
13C12-1,2,3,7,8-PeCDD	4000	31.98	87	40-130	
13C12-1,2,3,6,7,8-HxCDD	4000	34.07	87	40-130	M
13C12-1,2,3,4,6,7,8-HpCDD	4000	35.66	93	25-130	
13C12-OCDD	8000	37.14	90	25-130	
13C12-2,3,7,8-TCDF	4000	26.90	83	40-130	
13C12-1,2,3,7,8-PeCDF	4000	31.05	82	40-130	
13C12-1,2,3,6,7,8-HxCDF	4000	33.59	90	40-130	
13C12-1,2,3,4,6,7,8-HpCDF	4000	35.11	91	25-130	
Cleanup Standard	**pg**				
13C12-1,2,3,7,8,9-HxCDF	4000	34.34	83	40-130	

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	**LQL**
Total-TCDD	11	3310	3.5	25
Total-PeCDD	8	9340	4.5	130
Total-HxCDD	7	16900	7.6	130
Total-HpCDD	2	16900	7.6	130
Total-TCDF	20	4470	4.4	25
Total-PeCDF	15	6720	3.5	130
Total-HxCDF	12	6350	7.9	130
Total-HpCDF	4	4450	8.4	130

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	997
Mid Point PCDD/F TEQ (WHO 2005)	1010
Upper Bound PCDD/F TEQ (WHO 2005)	1010

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency
M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life sciences

Sample Analysis Report

Sample Name	**DYEC/UNIT 2/SAMPLE 8 (RUN 3)**	Sampling Date	29-Oct-15		Approved:
ALS Sample ID	L1695812-6	Extraction Date	3-Nov-15		*T.Patterson*
Analysis Method	EPA M23A	Sample Size	1	Train	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		
Sample Matrix	AMESA Trap	Split Ratio	2		06-Nov-2015

Run Information	**Run 1**
Filename	7-151105A14
Run Date	06-Nov-15 01:49
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700124H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	27.83	14.3	2.4	J		25
1,2,3,7,8-PeCDD	1	31.99	133	2.5			130
1,2,3,4,7,8-HxCDD	0.1	34.03	200	6.5			130
1,2,3,6,7,8-HxCDD	0.1	34.07	644	4.7			130
1,2,3,7,8,9-HxCDD	0.1	34.20	380	4.8			130
1,2,3,4,6,7,8-HpCDD	0.01	35.66	4630	7.5			130
OCDD	0.0003	37.14	2680	5.4			250
2,3,7,8-TCDF	0.1	26.93	80.3	2.1			25
1,2,3,7,8-PeCDF	0.03	31.06	186	16			130
2,3,4,7,8-PeCDF	0.3	31.78	514	16			130
1,2,3,4,7,8-HxCDF	0.1	33.54	372	4.5			130
1,2,3,6,7,8-HxCDF	0.1	33.60	419	3.4			130
2,3,4,6,7,8-HxCDF	0.1	33.93	841	3.9			130
1,2,3,7,8,9-HxCDF	0.1	34.37	246	4.6			130
1,2,3,4,6,7,8-HpCDF	0.01	35.11	1370	3.7			130
1,2,3,4,7,8,9-HpCDF	0.01	35.92	308	4.8			130
OCDF	0.0003	37.23	699	4.3			250

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	400	27.84	90	70-130
13C12-1,2,3,4,7,8-HxCDD	4000	34.02	90	70-130
13C12-2,3,4,7,8-PeCDF	4000	31.77	101	70-130
13C12-1,2,3,4,7,8-HxCDF	4000	33.53	105	70-130
13C12-1,2,3,4,7,8,9-HpCDF	4000	35.91	98	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	4000	27.82	87	40-130
13C12-1,2,3,7,8-PeCDD	4000	31.98	92	40-130
13C12-1,2,3,6,7,8-HxCDD	4000	34.07	111	40-130
13C12-1,2,3,4,6,7,8-HpCDD	4000	35.65	107	25-130
13C12-OCDD	8000	37.14	109	25-130
13C12-2,3,7,8-TCDF	4000	26.91	90	40-130
13C12-1,2,3,7,8-PeCDF	4000	31.03	90	40-130
13C12-1,2,3,6,7,8-HxCDF	4000	33.59	102	40-130
13C12-1,2,3,4,6,7,8-HpCDF	4000	35.11	105	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	4000	34.34	93	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	13	2260	2.4	25
Total-PeCDD	9	7260	2.5	130
Total-HxCDD	7	10400	6.5	130
Total-HpCDD	2	9720	7.5	130
Total-TCDF	17	2870	2.1	25
Total-PeCDF	16	4770	16	130
Total-HxCDF	11	4380	4.6	130
Total-HpCDF	4	2660	4.8	130

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	689
Mid Point PCDD/F TEQ (WHO 2005)	689
Upper Bound PCDD/F TEQ (WHO 2005)	689

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency

J Indicates that a target analyte was detected below the calibrated range.

ALS Life sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG2204673-1	Extraction Date	3-Nov-15
Analysis Method	EPA M23A	Sample Size	1 Train
Analysis Type	Blank	Percent Moisture	n/a
Sample Matrix	QC	Split Ratio	2

Approved:
T.Patterson
--e-signature--
06-Nov-2015

Run Information	**Run 1**
Filename	7-151105A08
Run Date	05-Nov-15 21:38
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSE700124H

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
2,3,7,8-TCDD	1	NotFnd	<2.8	2.8	U		25
1,2,3,7,8-PeCDD	1	NotFnd	<1.3	1.3	U		130
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<1.1	1.1	U		130
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<0.77	0.77	U		130
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<0.78	0.78	U		130
1,2,3,4,6,7,8-HpCDD	0.01	NotFnd	<1.6	1.6	U		130
OCDD	0.0003	NotFnd	<1.2	1.2	U		250
2,3,7,8-TCDF	0.1	NotFnd	<1.5	1.5	U		25
1,2,3,7,8-PeCDF	0.03	NotFnd	<0.97	0.97	U		130
2,3,4,7,8-PeCDF	0.3	NotFnd	<0.97	0.97	U		130
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<1.1	1.1	U		130
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<0.86	0.86	U		130
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<0.97	0.97	U		130
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<1.1	1.1	U		130
1,2,3,4,6,7,8-HpCDF	0.01	NotFnd	<0.97	0.97	U		130
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<1.2	1.2	U		130
OCDF	0.0003	NotFnd	<1.6	1.6	U		250

Field Spike Standards	pg	% Rec
37Cl4-2,3,7,8-TCDD	400	NS
13C12-1,2,3,4,7,8-HxCDD	4000	NS
13C12-2,3,4,7,8-PeCDF	4000	NS
13C12-1,2,3,4,7,8-HxCDF	4000	NS
13C12-1,2,3,4,7,8,9-HpCDF	4000	NS

Extraction Standards	pg	Ret. Time	% Rec	Limits
13C12-2,3,7,8-TCDD	4000	27.80	85	40-130
13C12-1,2,3,7,8-PeCDD	4000	31.98	107	40-130
13C12-1,2,3,6,7,8-HxCDD	4000	34.07	96	40-130
13C12-1,2,3,4,6,7,8-HpCDD	4000	35.65	120	25-130
13C12-OCDD	8000	37.14	117	25-130
13C12-2,3,7,8-TCDF	4000	26.88	107	40-130
13C12-1,2,3,7,8-PeCDF	4000	31.03	106	40-130
13C12-1,2,3,6,7,8-HxCDF	4000	33.59	100	40-130
13C12-1,2,3,4,6,7,8-HpCDF	4000	35.11	125	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	4000	34.34	108	40-130

Homologue Group Totals	# peaks	Conc. pg	EDL pg	Flags	LQL
Total-TCDD	0	<2.8	2.8	U	25
Total-PeCDD	0	<1.3	1.3	U	130
Total-HxCDD	0	<1.1	1.1	U	130
Total-HpCDD	0	<1.6	1.6	U	130
Total-TCDF	0	<1.5	1.5	U	25
Total-PeCDF	0	<0.97	0.97	U	130
Total-HxCDF	0	<1.1	1.1	U	130
Total-HpCDF	0	<1.2	1.2	U	130

Toxic Equivalency - (WHO 2005)	pg
Lower Bound PCDD/F TEQ (WHO 2005)	0.00
Mid Point PCDD/F TEQ (WHO 2005)	2.64
Upper Bound PCDD/F TEQ (WHO 2005)	5.28

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency

U Indicates that this compound was not detected above the MDL.

ALS Life sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a	
ALS Sample ID	WG2204673-2	Extraction Date	3-Nov-15	
Analysis Method	EPA M23A	Sample Size	1	n/a
Analysis Type	LCS	Percent Moisture	n/a	
Sample Matrix	QC	Split Ratio	2	

Approved:
T.Patterson
--e-signature--
06-Nov-2015

Run Information	**Run 1**
Filename	7-151105A04
Run Date	05-Nov-15 18:50
Final Volume	25 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-7 DB5MSUSE700124H

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,3,7,8-TCDD	400	27.83	99	70-130	
1,2,3,7,8-PeCDD	2000	31.99	106	70-130	
1,2,3,4,7,8-HxCDD	2000	34.03	99	70-130	
1,2,3,6,7,8-HxCDD	2000	34.08	119	70-130	
1,2,3,7,8,9-HxCDD	2000	34.21	123	70-130	
1,2,3,4,6,7,8-HpCDD	2000	35.66	104	70-130	
OCDD	4000	37.14	94	70-130	
2,3,7,8-TCDF	400	26.91	84	70-130	
1,2,3,7,8-PeCDF	2000	31.06	101	70-130	
2,3,4,7,8-PeCDF	2000	31.78	94	70-130	
1,2,3,4,7,8-HxCDF	2000	33.54	99	70-130	
1,2,3,6,7,8-HxCDF	2000	33.61	125	70-130	
2,3,4,6,7,8-HxCDF	2000	33.93	118	70-130	
1,2,3,7,8,9-HxCDF	2000	34.36	114	70-130	
1,2,3,4,6,7,8-HpCDF	2000	35.12	92	70-130	
1,2,3,4,7,8,9-HpCDF	2000	35.92	89	70-130	
OCDF	4000	37.23	95	70-130	
Field Spike Standards	**pg**		**% Rec**		
37Cl4-2,3,7,8-TCDD	400		NS		
13C12-1,2,3,4,7,8-HxCDD	4000		NS		
13C12-2,3,4,7,8-PeCDF	4000		NS		
13C12-1,2,3,4,7,8-HxCDF	4000		NS		
13C12-1,2,3,4,7,8,9-HpCDF	4000		NS		
Extraction Standards					
13C12-2,3,7,8-TCDD	4000	27.82	92	40-130	
13C12-1,2,3,7,8-PeCDD	4000	31.98	99	40-130	
13C12-1,2,3,6,7,8-HxCDD	4000	34.07	96	40-130	
13C12-1,2,3,4,6,7,8-HpCDD	4000	35.66	113	25-130	
13C12-OCDD	8000	37.14	114	25-130	
13C12-2,3,7,8-TCDF	4000	26.90	97	40-130	
13C12-1,2,3,7,8-PeCDF	4000	31.03	96	40-130	
13C12-1,2,3,6,7,8-HxCDF	4000	33.60	97	40-130	
13C12-1,2,3,4,6,7,8-HpCDF	4000	35.11	115	25-130	
Cleanup Standard	**pg**				
13C12-1,2,3,7,8,9-HxCDF	4000	34.35	94	40-130	

ALS Life Sciences
1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Steve Kennedy	**Client Name:**	COVANTA
ALS Project ID:	24244	**Client Address:**	1835 Energy Drive
ALS WO#:	L1695812		Courtice, ON L1E 2R2
Date of Report	6-Nov-15		CANADA
Date of Sample Receipt	30-Oct-15	**Client Contact:**	Amanda Huxter
		Client Project ID:	DYEC - AMESA Dioxin Traps

COMMENTS: **WHO Toxic PCB Congeners by EPA Method 1668A**

The WHO toxic PCB patterns in Unit #2 are unusually high in non-ortho-substituted PCBs relative to the other observed PCB congeners. The high level of PCB-126 in the Unit 2 samples was confirmed by analysis for this target in sample L1695812-4 on a secondary GC column.

Co-elutions may cause a high bias to selected PCB analytical results. Secondary column confirmations to uniquely define the toxic congeners for PCB targets is recommended where it is of value to resolve such sources of potential high bias.

R. Stolys

Certified by: Rachael Stolys
Account Manager

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	Method Blank	DYEC/UNIT 1/SAMPLE 6 (RUN 1)	DYEC/UNIT 1/SAMPLE 7 (RUN 2)	DYEC/UNIT 1/SAMPLE 8 (RUN 3)	DYEC/UNIT 2/SAMPLE 6 (RUN 1)	DYEC/UNIT 2/SAMPLE 7 (RUN 2)
ALS Sample ID	WG2204673-1	L1695812-1	L1695812-2	L1695812-3	L1695812-4	L1695812-5
Sample Size	1	1	1	1	1	1
Sample units	n/a	stack	stack	stack	stack	stack
Lipid Content	n/a	n/a	n/a	n/a	n/a	n/a
Matrix	QC	AMESA Trap	AMESA Trap	AMESA Trap	AMESA Trap	AMESA Trap
Sampling Date	n/a	28-Oct-15	29-Oct-15	29-Oct-15	28-Oct-15	29-Oct-15
Extraction Date	3-Nov-15	3-Nov-15	3-Nov-15	3-Nov-15	3-Nov-15	3-Nov-15
Target Analytes	**pg**	**pg**	**pg**	**pg**	**pg**	**pg**
PCB 81	<0.99	<37	41.2	34.1	108	69.8
PCB 77	<1.0	120	133	97.7	255	186
PCB 123	<0.72	38.9	<39	32.1	107	56.7
PCB 118	<1.0	44.3	45.9	36.2	108	65.4
PCB 114	<0.61	46.2	44.2	<32	<120	<65
PCB 105	<0.61	<43	42.0	28.4	<150	88.1
PCB 126	<0.60	<120	<84	<58	509	383
PCB 167	<0.57	<32	<20	18.6	<98	60.4
PCB 156	<0.52	<78	<42	<24	<200	<110
PCB 157	<0.54	<87	<44	<22	247	<130
PCB 169	<0.63	209	101	<24	371	214
PCB 189	<0.23	314	127	42.5	329	181
Extraction Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
13C12 PCB 81	95	68	82	84	52	75
13C12 PCB 77	107	78	89	89	57	80
13C12 PCB 123	107	85	106	104	66	90
13C12 PCB 118	136	98	111	108	70	106
13C12 PCB 114	127	95	111	108	70	100
13C12 PCB 105	128	94	111	112	69	104
13C12 PCB 126	146	98	111	112	72	103
13C12 PCB 167	133	92	106	110	68	105
13C12 PCB 156	139	99	124	120	71	104
13C12 PCB 157	146	96	115	111	74	104
13C12 PCB 169	133	96	111	108	69	100
13C12 PCB 189	124	93	106	101	69	93
Cleanup Standards						
13C12 PCB 28	95	85	97	84	67	79
13C12 PCB 111	78	60	73	65	43	60
Toxic Equivalency WHO 2005						
Lower Bound PCB TEQ	0.00	6.30	3.06	0.0247	62.1	44.8
Upper Bound PCB TEQ	0.0794	18.3	11.5	6.55	62.1	44.8

ALS Life Sciences

Sample Analysis Summary Report

Sample Name	DYEC/UNIT 2/SAMPLE 8 (RUN 3)	Laboratory Control Sample
ALS Sample ID	L1695812-6	WG2204673-2
Sample Size	1	1
Sample units	stack	n/a
Lipid Content	n/a	n/a
Matrix	AMESA Trap	QC
Sampling Date	29-Oct-15	n/a
Extraction Date	3-Nov-15	3-Nov-15
Target Analytes	**pg**	**% Rec**
PCB 81	48.7	123
PCB 77	121	125
PCB 123	<35	141
PCB 118	<34	105
PCB 114	<46	116
PCB 105	63.7	115
PCB 126	254	117
PCB 167	<45	116
PCB 156	<66	111
PCB 157	113	118
PCB 169	<100	115
PCB 189	145	115
Extraction Standards	**% Rec**	**% Rec**
13C12 PCB 81	102	82
13C12 PCB 77	109	86
13C12 PCB 123	129	109
13C12 PCB 118	131	118
13C12 PCB 114	134	117
13C12 PCB 105	133	118
13C12 PCB 126	134	122
13C12 PCB 167	131	116
13C12 PCB 156	141	133
13C12 PCB 157	127	124
13C12 PCB 169	127	118
13C12 PCB 189	120	116
Cleanup Standards		
13C12 PCB 28	79	94
13C12 PCB 111	76	72
Toxic Equivalency WHO 2005		
Lower Bound PCB TEQ	25.4	
Upper Bound PCB TEQ	28.4	

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date		Approved:
ALS Sample ID	WG2204673-1	Extraction Date	3-Nov-15	*A.Ali*
Analysis Method	EPA 1668A	Sample Size	1 n/a	--e-signature--
Analysis Type	Blank	Lipid Content	n/a	05-Nov-2015
Sample Matrix	QC	Split Ratio	2	

Run Information	**Run 1**
Filename	1-151105A S:4
Run Date	5-NOV-15 11:55:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**TEF WHO 2005**
PCB 81	NotFnd	<0.99	0.99	U	0.0003
PCB 77	NotFnd	<1.0	1.0	U	0.0001
PCB 123	NotFnd	<0.72	0.72	U	0.00003
PCB 118	7:24	<1.0	0.56	M J R	0.00003
PCB 114	NotFnd	<0.61	0.61	U	0.00003
PCB 105	NotFnd	<0.61	0.61	U	0.00003
PCB 126	NotFnd	<0.60	0.60	U	0.1
PCB 167	NotFnd	<0.57	0.57	U	0.00003
PCB 156	NotFnd	<0.52	0.52	U	0.00003
PCB 157	NotFnd	<0.54	0.54	U	0.00003
PCB 169	NotFnd	<0.63	0.63	U	0.03
PCB 189	10:10	<0.23	0.21	M J R	0.00003

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:54	95	25-150
13C12 PCB 77	7:02	107	25-150
13C12 PCB 123	7:20	107	25-150
13C12 PCB 118	7:24	136	25-150
13C12 PCB 114	7:33	127	25-150
13C12 PCB 105	7:46	128	25-150
13C12 PCB 126	8:19	146	25-150
13C12 PCB 167	8:35	133	25-150
13C12 PCB 156	8:57	139	25-150
13C12 PCB 157	9:01	146	25-150
13C12 PCB 169	9:35	133	25-150
13C12 PCB 189	10:09	124	25-150
Cleanup Standard		**% Rec**	
13C12 PCB 28	5:00	95	30-135
13C12 PCB 111	6:50	78	30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	0.00
Upper Bound PCB TEQ (WHO 2005)	0.0794

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor
TEQ Indicates the Toxic Equivalency.
U Indicates that this compound was not detected above the MDL.

J indicates that a target analyte was detected below the LQL.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**DYEC/UNIT 1/SAMPLE 6 (RUN 1)**	Sampling Date	28-Oct-15	Approved:
ALS Sample ID	L1695812-1	Extraction Date	3-Nov-15	*A.Ali*
Analysis Method	EPA 1668A	Sample Size	1 stack	--e-signature--
Analysis Type	Sample	Lipid Content	n/a	05-Nov-2015
Sample Matrix	AMESA Trap	Split Ratio	2	

Run Information	**Run 1**
Filename	1-151105A S:5
Run Date	5-NOV-15 12:14:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**		**TEF WHO 2005**
PCB 81	6:53	<37	26	M	R	0.0003
PCB 77	7:02	120	24	M		0.0001
PCB 123	7:18	38.9	11	M		0.00003
PCB 118	7:23	44.3	9.1			0.00003
PCB 114	7:33	46.2	9.8	M		0.00003
PCB 105	7:46	<43	10	M	R	0.00003
PCB 126	8:18	<120	11		R	0.1
PCB 167	8:35	<32	29	M	R	0.00003
PCB 156	8:56	<78	27	M	R	0.00003
PCB 157	9:00	<87	29	M	R	0.00003
PCB 169	9:34	209	31	M		0.03
PCB 189	10:08	314	16			0.00003

Extraction Standards		**% Rec**		**Limits**
13C12 PCB 81	6:52	68		25-150
13C12 PCB 77	7:01	78		25-150
13C12 PCB 123	7:19	85		25-150
13C12 PCB 118	7:23	98		25-150
13C12 PCB 114	7:32	95		25-150
13C12 PCB 105	7:45	94		25-150
13C12 PCB 126	8:18	98		25-150
13C12 PCB 167	8:35	92	M	25-150
13C12 PCB 156	8:56	99		25-150
13C12 PCB 157	9:00	96		25-150
13C12 PCB 169	9:34	96		25-150
13C12 PCB 189	10:08	93		25-150
Cleanup Standard		**% Rec**		
13C12 PCB 28	4:59	85		30-135
13C12 PCB 111	6:49	60		30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	6.30
Upper Bound PCB TEQ (WHO 2005)	18.3

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**DYEC/UNIT 1/SAMPLE 7 (RUN 2)**	Sampling Date	29-Oct-15	
ALS Sample ID	L1695812-2	Extraction Date	3-Nov-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	AMESA Trap	Split Ratio	2	05-Nov-2015

Run Information	**Run 1**
Filename	1-151105A S:6
Run Date	5-NOV-15 12:32:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**		**TEF WHO 2005**
PCB 81	6:54	41.2	22	M		0.0003
PCB 77	7:03	133	23	M		0.0001
PCB 123	7:19	<39	7.1	M	R	0.00003
PCB 118	7:24	45.9	5.8			0.00003
PCB 114	7:34	44.2	6.6	M		0.00003
PCB 105	7:46	42.0	6.3	M		0.00003
PCB 126	8:19	<84	7.0		R	0.1
PCB 167	8:35	<20	13	M	R	0.00003
PCB 156	9:01	<42	12	M	R	0.00003
PCB 157	9:01	<44	13	M	R	0.00003
PCB 169	9:35	101	15	M		0.03
PCB 189	10:09	127	13			0.00003

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:53	82	25-150
13C12 PCB 77	7:02	89	25-150
13C12 PCB 123	7:20	106	25-150
13C12 PCB 118	7:23	111	25-150
13C12 PCB 114	7:33	111	25-150
13C12 PCB 105	7:46	111	25-150
13C12 PCB 126	8:18	111	25-150
13C12 PCB 167	8:35	106	25-150
13C12 PCB 156	9:00	124	25-150
13C12 PCB 157	9:00	115	25-150
13C12 PCB 169	9:34	111	25-150
13C12 PCB 189	10:08	106	25-150
Cleanup Standard		**% Rec**	
13C12 PCB 28	4:59	97	30-135
13C12 PCB 111	6:50	73	30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	3.06
Upper Bound PCB TEQ (WHO 2005)	11.5

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	**DYEC/UNIT 1/SAMPLE 8 (RUN 3)**	Sampling Date	29-Oct-15	
ALS Sample ID	L1695812-3	Extraction Date	3-Nov-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	AMESA Trap	Split Ratio	2	05-Nov-2015

Run Information	**Run 1**
Filename	1-151105A S:7
Run Date	5-NOV-15 12:50:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**		**TEF WHO 2005**
PCB 81	6:54	34.1	16	M		0.0003
PCB 77	7:02	97.7	17	M		0.0001
PCB 123	7:19	32.1	4.3	M		0.00003
PCB 118	7:23	36.2	3.3	M		0.00003
PCB 114	7:34	<32	3.8	M	R	0.00003
PCB 105	7:47	28.4	3.6	M		0.00003
PCB 126	8:19	<58	4.0	M	R	0.1
PCB 167	8:36	18.6	7.6	M		0.00003
PCB 156	8:56	<24	7.3	M	R	0.00003
PCB 157	9:00	<22	7.7	M	R	0.00003
PCB 169	9:35	<24	8.9	M	R	0.03
PCB 189	10:09	42.5	5.1			0.00003

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:53	84	25-150
13C12 PCB 77	7:02	89	25-150
13C12 PCB 123	7:20	104	25-150
13C12 PCB 118	7:23	108	25-150
13C12 PCB 114	7:32	108	25-150
13C12 PCB 105	7:46	112	25-150
13C12 PCB 126	8:19	112	25-150
13C12 PCB 167	8:36	110	25-150
13C12 PCB 156	8:56	120	25-150
13C12 PCB 157	9:00	111	25-150
13C12 PCB 169	9:34	108	25-150
13C12 PCB 189	10:08	101	25-150
Cleanup Standard		**% Rec**	
13C12 PCB 28	4:60	84	30-135
13C12 PCB 111	6:50	65	30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	0.0247
Upper Bound PCB TEQ (WHO 2005)	6.55

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

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Sample Analysis Report

Sample Name	**DYEC/UNIT 2/SAMPLE 6 (RUN 1)**	Sampling Date	28-Oct-15	
ALS Sample ID	L1695812-4	Extraction Date	3-Nov-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	AMESA Trap	Split Ratio	2	05-Nov-2015

Run Information	**Run 1**
Filename	1-151105A S:8
Run Date	5-NOV-15 13:08:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**		**TEF WHO 2005**
PCB 81	6:54	108	25			0.0003
PCB 77	7:02	255	25	M		0.0001
PCB 123	7:19	107	27	M		0.00003
PCB 118	7:23	108	21	M		0.00003
PCB 114	7:33	<120	23	M	R	0.00003
PCB 105	7:46	<150	24		R	0.00003
PCB 126	8:19	509	26	M		0.1
PCB 167	8:36	<98	33		R	0.00003
PCB 156	8:56	<200	31		R	0.00003
PCB 157	9:00	247	33	M		0.00003
PCB 169	9:34	371	37	M		0.03
PCB 189	10:08	329	24			0.00003

Extraction Standards		**% Rec**		**Limits**
13C12 PCB 81	6:53	52		25-150
13C12 PCB 77	7:02	57		25-150
13C12 PCB 123	7:19	66	M	25-150
13C12 PCB 118	7:23	70	M	25-150
13C12 PCB 114	7:32	70		25-150
13C12 PCB 105	7:46	69		25-150
13C12 PCB 126	8:19	72		25-150
13C12 PCB 167	8:35	68		25-150
13C12 PCB 156	8:56	71		25-150
13C12 PCB 157	9:00	74		25-150
13C12 PCB 169	9:34	69		25-150
13C12 PCB 189	10:08	69		25-150
Cleanup Standard		**% Rec**		
13C12 PCB 28	4:60	67		30-135
13C12 PCB 111	6:50	43		30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	62.1
Upper Bound PCB TEQ (WHO 2005)	62.1

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**DYEC/UNIT 2/SAMPLE 7 (RUN 2)**	Sampling Date	29-Oct-15	
ALS Sample ID	L1695812-5	Extraction Date	3-Nov-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	AMESA Trap	Split Ratio	2	05-Nov-2015

Run Information	**Run 1**
Filename	1-151105A S:9
Run Date	5-NOV-15 13:26:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**		**TEF WHO 2005**
PCB 81	6:53	69.8	13			0.0003
PCB 77	7:02	186	13	M		0.0001
PCB 123	7:19	56.7	18	M		0.00003
PCB 118	7:23	65.4	14			0.00003
PCB 114	7:33	<65	16	M	R	0.00003
PCB 105	7:46	88.1	16	M		0.00003
PCB 126	8:19	383	17			0.1
PCB 167	8:36	60.4	19	M		0.00003
PCB 156	8:56	<110	20	M	R	0.00003
PCB 157	9:00	<130	21	M	R	0.00003
PCB 169	9:34	214	23	M		0.03
PCB 189	10:08	181	11			0.00003

Extraction Standards		**% Rec**	**Flags**	**Limits**
13C12 PCB 81	6:53	75		25-150
13C12 PCB 77	7:02	80		25-150
13C12 PCB 123	7:19	90		25-150
13C12 PCB 118	7:23	106		25-150
13C12 PCB 114	7:32	100		25-150
13C12 PCB 105	7:45	104		25-150
13C12 PCB 126	8:18	103		25-150
13C12 PCB 167	8:35	105	M	25-150
13C12 PCB 156	8:56	104		25-150
13C12 PCB 157	9:00	104		25-150
13C12 PCB 169	9:34	100		25-150
13C12 PCB 189	10:08	93		25-150
Cleanup Standard		**% Rec**		
13C12 PCB 28	4:60	79		30-135
13C12 PCB 111	6:49	60		30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	44.8
Upper Bound PCB TEQ (WHO 2005)	44.8

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Sample Analysis Report

Sample Name	**DYEC/UNIT 2/SAMPLE 8 (RUN 3)**	Sampling Date	29-Oct-15	
ALS Sample ID	L1695812-6	Extraction Date	3-Nov-15	Approved:
Analysis Method	EPA 1668A	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Lipid Content	n/a	--e-signature--
Sample Matrix	AMESA Trap	Split Ratio	2	05-Nov-2015

Run Information	**Run 1**
Filename	1-151105A S:10
Run Date	5-NOV-15 13:44:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**		**TEF WHO 2005**
PCB 81	6:53	48.7	9.7			0.0003
PCB 77	7:02	121	11	M		0.0001
PCB 123	7:19	<35	7.3	M	R	0.00003
PCB 118	7:23	<34	5.6		R	0.00003
PCB 114	7:33	<46	6.3	M	R	0.00003
PCB 105	7:46	63.7	6.3			0.00003
PCB 126	8:18	254	6.9			0.1
PCB 167	8:35	<45	23	M	R	0.00003
PCB 156	8:55	<66	22	M	R	0.00003
PCB 157	9:00	113	24			0.00003
PCB 169	9:34	<100	27	M	R	0.03
PCB 189	10:08	145	9.8			0.00003

Extraction Standards		**% Rec**		**Limits**
13C12 PCB 81	6:53	102		25-150
13C12 PCB 77	7:02	109		25-150
13C12 PCB 123	7:19	129		25-150
13C12 PCB 118	7:22	131		25-150
13C12 PCB 114	7:31	134		25-150
13C12 PCB 105	7:45	133		25-150
13C12 PCB 126	8:18	134		25-150
13C12 PCB 167	8:35	131	M	25-150
13C12 PCB 156	8:55	141		25-150
13C12 PCB 157	8:59	127		25-150
13C12 PCB 169	9:34	127		25-150
13C12 PCB 189	10:08	120		25-150
Cleanup Standard		**% Rec**		
13C12 PCB 28	4:60	79		30-135
13C12 PCB 111	6:49	76		30-135

Toxic Equivalency	**pg**
Lower Bound PCB TEQ (WHO 2005)	25.4
Upper Bound PCB TEQ (WHO 2005)	28.4

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.

R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date		Approved:
ALS Sample ID	WG2204673-2	Extraction Date	3-Nov-15	*A.Ali*
Analysis Method	EPA 1668A	Sample Size	1 n/a	--e-signature--
Analysis Type	LCS	Lipid Content	n/a	05-Nov-2015
Sample Matrix	QC	Split Ratio	2	

Run Information	**Run 1**
Filename	1-151105A S:2
Run Date	5-NOV-15 11:19:
Final Volume	25 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-1 DB5MSUSE159367H

Target Analytes	**Ret. Time**	**% Rec**	**Limits**
PCB 81	6:54	123	50-150
PCB 77	7:02	125	50-150
PCB 123	7:20	141	50-150
PCB 118	7:24	105	50-150
PCB 114	7:33	116	50-150
PCB 105	7:47	115	50-150
PCB 126	8:19	117	50-150
PCB 167	8:36	116	50-150
PCB 156	9:01	111	50-150
PCB 157	9:01	118	50-150
PCB 169	9:35	115	50-150
PCB 189	10:09	115	50-150

Extraction Standards		**% Rec**	**Limits**
13C12 PCB 81	6:53	82	30-140
13C12 PCB 77	7:02	86	30-140
13C12 PCB 123	7:20	109	30-140
13C12 PCB 118	7:23	118	30-140
13C12 PCB 114	7:33	117	30-140
13C12 PCB 105	7:46	118	30-140
13C12 PCB 126	8:18	122	30-140
13C12 PCB 167	8:36	116	30-140
13C12 PCB 156	9:00	133	30-140
13C12 PCB 157	9:00	124	30-140
13C12 PCB 169	9:35	118	30-140
13C12 PCB 189	10:08	116	30-140
Cleanup Standard		**% Rec**	
13C12 PCB 28	4:60	94	40-125
13C12 PCB 111	6:50	72	40-125

Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency.

COVANTA CANADA - STACK UNIT 1
Amesa_860142-P86.020.1-05.11.2015-19:52

Cartridge box no..: 1
Cartridge box name: COVANTA - STACK 1

Measurement no. 6

Startrecord:	S	[.HUMID]	[CO2MAX]	[TRGUGR]	[.O2OGR]	[.O2UGR]	[.VHUGR]	[Start]	[..End]	[.......Substi	[...AW]
	S	[..g/m3]	[.....%]	[.Grd.C]	[.....%]	[.....%]	[...m/s]				
28-10-15/13:12	S	116	5	10	25	0	1	manual	manual	....	_

Endrecord:	E	[MDurat]	[TGVNMD]	[TGVNGU]	[CONVOL]	[BDFAKT]	[MH2ORG]	[..MO2]	[.MCO2]	[Paramacct	[.End.]	[NEV]	[.......Substi	[...AW]		
	E	[.hh:mm]	[....m3]	[....m3]	[.....l]	[......]	[..g/m3]	[....%]	[....%]	....	....	.....	....	....	....	[.ngup]
28-10-15/17:32	E	4:17	2.563	2.613	0.3	0.783	121.28	5.3	12.2	28-10-15/1	manual	1	....	_	333	

Runtimerecord:	L	[...VHM]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]	[.......Substi	[...AW]	[.....FA]
	L	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]			
28-10-15/13:42	L	16	0.309	0.314	5.5	12	0.0353	119.1	0.79	908.2	35	140	142	29.2	31	1600	1600	....	_	_
28-10-15/14:12	L	15.4	0.607	0.617	5.1	12.4	0.0709	123.6	0.788	905.5	35	142	142	30	32	1600	1600	....	_	_
28-10-15/14:42	L	15.8	0.91	0.926	4.8	12.6	0.1078	125.9	0.786	899.5	35	142	143	30.2	32	1600	1600	....	_	_
28-10-15/15:12	L	15.5	1.212	1.234	5.8	11.7	0.1416	116.1	0.785	906.7	35	139	142	30.2	32	1600	1600	....	_	_
28-10-15/15:42	L	15.2	1.506	1.535	5.3	12.2	0.1761	120.9	0.785	902.2	35	139	141	30.3	32	1600	1600	....	_	_
28-10-15/16:12	L	15.5	1.805	1.839	5.1	12.4	0.2116	123.4	0.784	899.3	35	141	142	30.4	32	1600	1600	....	_	_
28-10-15/16:42	L	15.3	2.1	2.139	5.5	11.9	0.2454	119.1	0.784	903.9	36	141	142	30.6	33	1600	1600	....	_	_
28-10-15/17:12	L	15.2	2.395	2.441	5.4	12	0.2796	119.6	0.783	900.9	35	141	142	30.8	33	1600	1600	....	_	_

Eventrecord:	X	[....VH]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]	[.......Substi	[...AW]	[.....FA]	[....Reason]
	X	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]				
28-10-15/17:29	X	15.9	2.563	2.613	4.4	12.9	0.2998	128	0.783	894.4	35	142	143	31	33	1600	1600	....	_	_	Manual command

COVANTA CANADA - STACK UNIT 1
Amesa_860142-P86.020.1-05.11.2015-19:52

Cartridge box no..: 1
Cartridge box name: COVANTA - STACK 1

Measurement no. 7

Startrecord:	S	[.HUMID]	[CO2MAX]	[TRGUGR]	[.O2OGR]	[.O2UGR]	[.VHUGR]	[Start]	[..End]	[.......Substi	[...AW]
	S	[..g/m3]	[.....%]	[.Grd.C]	[.....%]	[.....%]	[...m/s]				
29-10-15/08:39	S	108	5	10	25	0	1	manual	manual	....	_

Endrecord:	E	[MDurat]	[TGVNMD]	[TGVNGU]	[CONVOL]	[BDFAKT]	[MH2ORG]	[..MO2]	[.MCO2]	[Paramacc	[.End.]	[NEV]	[.......Substi	[...AW]		
	E	[.hh:mm]	[....m3]	[....m3]	[.....l]	[......]	[..g/m3]	[....%]	[....%]	....	....	.....	....	....	....	[.ngup]
29-10-15/13:53	E	5:11	3.296	3.353	0.37	0.76	115.373	5.8	11.7	29-10-15/0	manual	1	....	_		441

Runtimerecord:	L	[...VHM]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]	[.......Substi	[...AW]	[.....FA]
	L	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]			
29-10-15/09:09	L	15.4	0.298	0.303	6	11.5	0.0315	112.7	0.777	874.1	35	139	142	30.1	32	1600	1600	....	_	_
29-10-15/09:39	L	16.4	0.61	0.621	5.2	12.2	0.068	121.4	0.769	876	35	142	145	29.5	31	1600	1600	....	_	_
29-10-15/10:09	L	16.5	0.924	0.941	5.1	12.2	0.1049	121.7	0.766	880.6	35	144	145	28.7	29	1600	1600	....	_	_
29-10-15/10:39	L	16.2	1.234	1.257	5.1	12.2	0.14	119.9	0.765	868.8	35	141	144	28.2	29	1600	1600	....	_	_
29-10-15/11:09	L	16.7	1.555	1.584	5.2	12.2	0.1776	121.2	0.764	878.6	36	139	143	27.1	28	1600	1600	....	_	_
29-10-15/11:39	L	17	1.896	1.928	9.7	8.7	0.2055	86.5	0.761	864	36	138	142	26.6	27	1600	1600	....	_	_
29-10-15/12:09	L	17.1	2.223	2.261	5.7	12	0.2432	118.2	0.761	873.2	36	142	145	26	26	1600	1600	....	_	_
29-10-15/12:39	L	16.7	2.543	2.587	5.4	11.8	0.2794	118	0.76	877	36	142	144	26	26	1600	1600	....	_	_
29-10-15/13:09	L	16.7	2.862	2.911	5.2	12.1	0.3164	120.4	0.76	880.4	36	141	143	26.3	26	1600	1600	....	_	_
29-10-15/13:39	L	16.1	3.175	3.23	5.7	11.6	0.3514	116	0.76	878.5	36	139	141	26.4	27	1600	1600	....	_	_

Eventrecord:	X	[....VH]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]	[.......Substi	[...AW]	[.....FA]	[....Reason]
	X	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]				
29-10-15/13:50	X	16.1	3.296	3.353	5.4	12	0.3656	119	0.76	881.7	36	140	141	26.3	27	1600	1600	....	_	_	Manual command

COVANTA CANADA - STACK UNIT 1
Amesa_860142-P86.020.1-05.11.2015-19:52

Cartridge box no..: 1
Cartridge box name: COVANTA - STACK 1

Measurement no. 8

Startrecord:	S	[.HUMID]	[CO2MAX]	[TRGUGR]	[.O2OGR]	[.O2UGR]	[.VHUGR]	[Start]	[..End]	[.......Substi	[...AW]
	S	[..g/m3]	[.....%]	[.Grd.C]	[.....%]	[.....%]	[...m/s]				
29-10-15/15:27	S	124	5	10	25	0	1	manual	manual	....	_

Endrecord:	E	[MDurat]	[TGVNMD]	[TGVNGU]	[CONVOL]	[BDFAKT]	[MH2ORG]	[..MO2]	[.MCO2]	[Paramacc	[.End.]	[NEV]	[.......Substi	[...AW]		
	E	[.hh:mm]	[....m3]	[....m3]	[.....l]	[......]	[..g/m3]	[....%]	[....%]	....	....	.....	....	....	....	[.ngup]
29-10-15/19:48	E	4:17	2.705	2.747	0.3	0.769	115.704	6	11.6	29-10-15/1	manual	1	....	_		357

Runtimerecord:	L	[...VHM]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]	[.......Substi	[...AW]	[.....FA]
	L	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]			
29-10-15/15:57	L	16	0.306	0.311	5.2	12.3	0.0361	122.2	0.779	896.7	35	140	143	25.8	26	1600	1600	....	_	_
29-10-15/16:27	L	15.8	0.611	0.622	5.2	12.4	0.0723	123.1	0.775	887.1	35	140	142	26	26	1600	1600	....	_	_
29-10-15/16:57	L	16	0.92	0.935	5.6	11.9	0.1074	118.7	0.774	887.1	35	140	141	25.8	26	1600	1600	....	_	_
29-10-15/17:27	L	16	1.228	1.249	5.4	12	0.1431	120	0.773	889.1	36	140	142	25.8	25	1600	1600	....	_	_
29-10-15/17:57	L	16.1	1.551	1.574	10.2	8.6	0.1689	85.8	0.772	890	36	141	142	25.8	25	1600	1600	....	_	_
29-10-15/18:27	L	16.3	1.863	1.891	5.2	12.3	0.2059	123	0.771	884.6	36	141	143	25.3	25	1600	1600	....	_	_
29-10-15/18:57	L	17	2.187	2.221	5.1	12.4	0.2442	123.2	0.77	878.3	36	141	143	24.4	25	1600	1600	....	_	_
29-10-15/19:27	L	17	2.515	2.554	5.8	11.7	0.2806	116.3	0.769	881.3	36	140	142	23.1	25	1600	1600	....	_	_

Eventrecord:	X	[....VH]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]	[.......Substi	[...AW]	[.....FA]	[....Reason]
	X	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]				
29-10-15/19:44	X	16.4	2.705	2.747	5.7	11.7	0.3002	117	0.769	884	36	139	140	23.1	24	1600	1600	....	_	_	Manual command

COVANTA CANADA - STACK UNIT 2
Amesa_860154-P86.020.1-05.11.2015-19:54

Cartridge box no..: 1
Cartridge box name: COVANTA - STACK 2

Measurement no. 6

Startrecord:	S	[.HUMID]	[CO2MAX]	[TRGUGR]	[.O2OGR]	[.O2UGR]	[.VHUGR]	[Start]	[..End]	[.......Substi	[...AW]
	S	[..g/m3]	[.....%]	[.Grd.C]	[.....%]	[.....%]	[...m/s]				
28-10-15/12:20	S	120	5	10	25	0	1	manual	manual	....	_

Endrecord:	E	[MDurat]	[TGVNMD]	[TGVNGU]	[CONVOL]	[BDFAKT]	[MH2ORG]	[..MO2]	[.MCO2]	[Paramacc	[.End.]	[NEV]	[.......Substi	[...AW]		
	E	[.hh:mm]	[....m3]	[....m3]	[.....l]	[......]	[..g/m3]	[....%]	[....%]	....	....	.....	....	......	....	[.ngup]
28-10-15/16:47	E	4:23	2.789	2.756	0.3	0.746	116.646	5.6	11.7	28-10-15/1	manual	1	....	_	368	

Runtimerecord:	L	[...VHM]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]	[.......Substi	[...AW]	[.....FA]
	L	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]			
28-10-15/12:50	L	16	0.314	0.311	5.7	11.6	0.0341	116.1	0.766	870.4	33	136	137	43.3	33	1600	1600	....	_	_
28-10-15/13:20	L	15.8	0.627	0.62	5.5	11.7	0.0681	116.3	0.761	862	34	135	136	44.7	34	1600	1600	....	_	_
28-10-15/13:50	L	16.3	0.947	0.936	5.3	12	0.104	119.4	0.756	860.6	34	135	137	46	35	1600	1600	....	_	_
28-10-15/14:20	L	16.5	1.27	1.255	5.4	11.9	0.1399	118.6	0.752	852.1	34	137	137	46.5	36	1600	1600	....	_	_
28-10-15/14:50	L	16.2	1.588	1.57	5.5	11.8	0.1748	117.2	0.75	854.4	34	136	137	46.6	36	1600	1600	....	_	_
28-10-15/15:20	L	16.3	1.91	1.888	5.6	11.6	0.2096	115.5	0.748	846.6	34	136	136	46.2	36	1600	1600	....	_	_
28-10-15/15:50	L	16.1	2.226	2.2	5.6	11.7	0.2442	116.9	0.747	848	34	135	136	45.9	36	1600	1600	....	_	_
28-10-15/16:20	L	16.1	2.543	2.513	5.8	11.5	0.2782	114.4	0.746	852.4	34	135	135	45.2	36	1600	1600	....	_	_

Eventrecord:	X	[....VH]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]	[.......Substi	[...AW]	[.....FA]	[....Reason]
	X	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]				
28-10-15/16:43	X	16.2	2.789	2.756	5.7	11.5	0.3044	115	0.746	849	34	135	135	45.5	37	1600	1600	....	_	_	Manual command

COVANTA CANADA - STACK UNIT 2
Amesa_860154-P86.020.1-05.11.2015-19:55

Cartridge box no..: 1
Cartridge box name: COVANTA - STACK 2

Measurement no. 7

Startrecord:	S	[.HUMID]	[CO2MAX]	[TRGUGR]	[.O2OGR]	[.O2UGR]	[.VHUGR]	[Start]	[..End]	[.......Substi	[...AW]
	S	[..g/m3]	[....:%]	[.Grd.C]	[.....%]	[.....%]	[...m/s]				
29-10-15/09:04	S	109	5	10	25	0	1	manual	manual	....	_

Endrecord:	E	[MDurat]	[TGVNMD]	[TGVNGU]	[CONVOL]	[BDFAKT]	[MH2ORG]	[..MO2]	[.MCO2]	[Paramacc	[.End.]	[NEV]	[.......Substi	[...AW]		
	E	[.hh:mm]	[....m3]	[....m3]	[.....l]	[......]	[..g/m3]	[....%]	[....%]	....	....	.....	....	....	....	[.ngup]
29-10-15/13:34	E	4:26	2.963	2.925	0.32	0.728	114.312	5.7	11.5	29-10-15/0	manual	1	....	_	400	

Runtimerecord:	L	[...VHM]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]	[.......Substi	[...AW]	[.....FA]	
	L	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]				
29-10-15/09:34	L	16.7	0.322	0.318	5.4	11.9	0.0357	118.2	0.743	841.7	33	137	138	42.3	30	1600	1600	....	_	_	
29-10-15/10:04	L	17	0.651	0.644	5.4	11.8	0.072	117.8	0.737	839.8	34	138	139	43.8	29	1600	1600	....	_	_	
29-10-15/10:34	L	16.9	0.979	0.968	5.6	11.7	0.1077	116.3	0.735	839.2	34	137	138	42.6	29	1600	1600	....	_	_	
29-10-15/11:04	L	17	1.311	1.295	5.5	11.7	0.1437	116.3	0.734	829.7	34	134	137	43.3	29	1600	1600	....	_	_	
29-10-15/11:34	L	17.1	1.649	1.628	6.1	11.2	0.1787	110.8	0.732	830.5	34	133	135	43.3	29	1600	1600	....	_	_	
29-10-15/12:04	L	17.3	1.986	1.96	5.7	11.3	0.2143	113	0.731	823.8	34	135	139	42.9	29	1600	1600	....	_	_	
29-10-15/12:34	L	17.7	2.328	2.298	5.5	11.6	0.2513	115.3	0.729	828.6	34	139	141	43.8	29	1600	1600	....	_	_	
29-10-15/13:04	L	17.4	2.666	2.632	6	11.1	0.286	110.2	0.728	833.2	34	138	141	43.2	29	1600	1600	....	_	_	
Eventrecord:	X	[...VH]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]	[.......Substi	[...AW]	[.....FA]	[....Reason]
	X	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]				
29-10-15/13:30	X	16.3	2.963	2.925	6	11	0.3167	109	0.728	840.9	34	136	138	42.4	29	1600	1600	....	_	_	Manual command

COVANTA CANADA - STACK UNIT 2
Amesa_860154-P86.020.1-05.11.2015-19:55

Cartridge box no..: 1
Cartridge box name: COVANTA - STACK 2

Measurement no. 8

Startrecord:	S	[.HUMID]	[CO2MAX]	[TRGUGR]	[.O2OGR]	[.O2UGR]	[.VHUGR]	[Start]	[..End]	[.......Substi	[...AW]
	S	[..g/m3]	[.....%]	[.Grd.C]	[.....%]	[.....%]	[...m/s]				
29-10-15/15:26	S	116	5	10	25	0	1	manual	manual	....	_

Endrecord:	E	[MDurat]	[TGVNMD]	[TGVNGU]	[CONVOL]	[BDFAKT]	[MH2ORG]	[..MO2]	[.MCO2]	[Paramacc|	[.End.]	[NEV]	[.......Substi	[...AW]		
	E	[.hh:mm]	[....m3]	[....m3]	[.....l]	[......]	[..g/m3]	[....%]	[....%]	....	....	.....	....	....	....	[.ngup]
29-10-15/19:47	E	4:18	2.867	2.829	0.31	0.731	113.984	5.8	11.4	29-10-15/1	manual	1	....	_	386	

Runtimerecord:	L	[...VHM]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]	[.......Substi	[...AW]	[.....FA]
	L	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]			
29-10-15/15:56	L	16.6	0.324	0.32	5.4	11.8	0.0358	117.7	0.738	839.5	33	135	137	41.4	28	1600	1600	....	_	_
29-10-15/16:26	L	16.9	0.653	0.645	5.6	11.6	0.0715	115.7	0.736	838.3	34	136	137	42.9	29	1600	1600	....	_	_
29-10-15/16:56	L	17.3	0.989	0.977	5.6	11.6	0.108	116.1	0.734	839.9	34	137	138	43.1	29	1600	1600	....	_	_
29-10-15/17:26	L	16.9	1.322	1.304	6.1	11.2	0.1424	111.3	0.734	842.9	34	137	138	42	29	1600	1600	....	_	_
29-10-15/17:56	L	17.1	1.66	1.638	6.6	10.6	0.1749	104.1	0.733	834.8	34	136	138	43.3	29	1600	1600	....	_	_
29-10-15/18:26	L	17.3	1.996	1.97	5.6	11.6	0.2114	116.1	0.732	838.5	34	138	138	43.6	29	1600	1600	....	_	_
29-10-15/18:56	L	17.2	2.331	2.3	5.7	11.6	0.2475	115.4	0.732	841.1	34	138	139	43.2	29	1600	1600	....	_	_
29-10-15/19:26	L	17.1	2.666	2.63	5.8	11.5	0.2833	114.6	0.732	838.2	34	138	139	42.7	28	1600	1600	....	_	_

Eventrecord:	X	[....VH]	[TGVNMD]	[TGVNGU]	[...O2M]	[..CO2M]	[CONVOL]	[....FM]	[BDFAKT]	[...PGU]	[...TGU]	[TRGMIN]	[TRGMAX]	[TKTMAX]	[...TC1]	[...TCS]	[...TCF]	[.......Substi	[...AW]	[.....FA]	[....Reason]
	X	[...m/s]	[....m3]	[....m3]	[.....%]	[.....%]	[.....l]	[..g/m3]	[......]	[...hPa]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]	[.Grd.C]				
29-10-15/19:44	X	17.5	2.867	2.829	5.4	12	0.3053	120	0.731	835.5	34	138	139	43.2	28	1600	1600	....	_	_	Manual command

APPENDIX 47

ORTECH Report No. 21546-2
Relative Accuracy and System Bias Testing
(628 pages)

Report No. 21546-2

ORTECH

Report:

Covanta Durham York Renewable Energy Limited Partnership Compliance Relative Accuracy and System Bias Performance Evaluation of the Continuous Emission Monitoring Systems (CEMS)

Date: October 19, 2015



Report:

Covanta Durham York Renewable Energy Limited Partnership Compliance Relative Accuracy and System Bias Performance Evaluation of the Continuous Emission Monitoring Systems (CEMS)

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Report No.: 21546-2
21 pages, 20 Appendices

Revision History

Version	Date	Summary Changes/Purpose of Revision
1	October 19, 2015	None

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SUMMARY

ORTECH Consulting Inc. (ORTECH) was requested by Covanta Durham York Renewable Energy Limited Partnership to complete a relative accuracy and system bias performance evaluation of the Continuous Emission Monitoring Systems (CEMS) installed at the Durham York Energy Centre (DYEC) located in Clarington, Ontario.

Ministry of Environment and Climate Change (MOECC) Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX requires the facility to “select, test and install appropriate CEM systems and continuous recording devices in accordance with the requirements outlined in the attached Schedule F”. DYEC continuously monitors the concentrations of carbon monoxide, oxygen and organic matter in the undiluted gases leaving the combustion zone via the economizer outlet of each Boiler (location referred to as the Scrubber Inlet). DYEC also continuously monitors the concentrations of oxygen, nitrogen oxides, sulphur dioxide and hydrogen chloride in the undiluted gases leaving the baghouse of the air pollution control equipment of each Boiler (location referred to as the BH Outlet).

DYEC verified the CEMS met the Installation Parameters and Performance Parameters listed in Schedule F prior to commencing the relative accuracy and system bias performance evaluation.

This report outlines the test procedures and test results of the relative accuracy and system bias testing completed according to the procedures described in “Protocols and Performance Specifications for Continuous Monitoring of Gaseous Emissions from Thermal Power Generation”, Environment Canada Report EPS 1/PG/7, December, 2005 and the QA/QC manual developed for the CEM system.

The relative accuracy and system bias performance evaluation for the CEMS installed at Boiler No. 2 was conducted on September 23, 2015. The relative accuracy and system bias performance evaluation for the CEMS installed at Boiler No. 1 was conducted on September 24, 2015.

The bias calculated for total hydrocarbons at the Boiler No. 1 Scrubber Inlet was outside of the limit stated in the ECA primarily due to the very low concentrations (<10 ppm) and the lack of low level relief in the bias criteria stated in Schedule F of the ECA. The relative accuracy and bias testing was repeated for total hydrocarbons at the Boiler No. 1 Scrubber Inlet on September 27, 2015. The analyzer met both the relative accuracy and bias criteria stated in the ECA during the repeat testing.

The bias calculated for hydrogen chloride at the Boiler No. 1 BH Outlet was equal to the limit stated in the ECA (4% of FS) primarily due to the very low concentrations (<10 ppm) and the lack of low level relief in the bias criteria stated in Schedule F of the ECA. The relative accuracy and bias testing was repeated for hydrogen chloride at the Boiler No. 1 BH Outlet on October 5, 2015. The analyzer met both the relative accuracy and bias criteria stated in the ECA during the repeat testing.

Twelve half-hour tests were completed for carbon monoxide, oxygen and organic matter (total hydrocarbons expressed as equivalent methane) using reference method continuous emission monitors at the Scrubber Inlet located on each Boiler.

Twelve half-hour tests were completed for carbon monoxide, oxygen, nitrogen oxides and sulphur dioxide using reference method continuous emission monitors at the BH Outlet located on each Boiler. Twelve half-hour tests were also conducted for hydrogen chloride using the sampling procedures detailed in US EPA Method 26. The hydrogen chloride sampling methodology was modified to use large (Greenburg Smith) impingers; the sampling rate was also increased to ensure an adequate volume of exhaust gas was drawn through the sampling train resulting in concentrations sufficiently above the analytical detection limit.

The relative accuracy and system bias calculations for each parameter are shown in Appendix 1.

The results for the relative accuracy tests completed at the Scrubber Inlet and BH Outlet for each Boiler were as follows:

Parameter	Performance Specification	Relative Accuracy (%)	Average Absolute Difference	Criteria Met
Boiler 1 Scrubber Inlet:				
CO Concentration (ppm)	≤10% of the mean value of RM or ±5ppm	0.7	1.0 ppm	Pass
O_2 Concentration (%, dry)	≤10% of the mean value of RM	4.1	0.1 %	Pass
THC Concentration (ppm)	≤10% of the mean value of RM or ±5ppm	4.4	4.1 ppm	Pass
Boiler 1 BH Outlet:				
CO Concentration (ppm)	≤10% of the mean value of RM or ±5ppm	0.6	1.8 ppm	Pass
HCl Concentration (ppm)	≤20% of the mean value of RM or ±5ppm	2.4	2.2 ppm	Pass
NO_X Concentration (ppm)	≤10% of the mean value of RM	1.6	7.1 ppm	Pass
O_2 Concentration (%, dry)	≤10% of the mean value of RM	2.8	0.0 %	Pass
SO_2 Concentration (ppm)	≤10% of the mean value of RM	0.8	1.3 ppm	Pass
Boiler 2 Scrubber Inlet:				
CO Concentration (ppm)	≤10% of the mean value of RM or ±5ppm	0.5	2.1 ppm	Pass
O_2 Concentration (%, dry)	≤10% of the mean value of RM	6.0	0.4 %	Pass
THC Concentration (ppm)	≤10% of the mean value of RM or ±5ppm	2.9	1.7 ppm	Pass
Boiler 2 BH Outlet:				
CO Concentration (ppm)	≤10% of the mean value of RM or ±5ppm	0.3	0.2 ppm	Pass
HCl Concentration (ppm)	≤20% of the mean value of RM or ±5ppm	3.6	3.0 ppm	Pass
NO_X Concentration (ppm)	≤10% of the mean value of RM	0.7	2.7 ppm	Pass
O_2 Concentration (%, dry)	≤10% of the mean value of RM	2.6	0.2 %	Pass
SO_2 Concentration (ppm)	≤10% of the mean value of RM	0.6	0.7 ppm	Pass

The analyzer full sale setting for each component was provided by Covanta and was used to calculate the system bias as a percentage of full scale. The results for the system bias tests completed at the Scrubber Inlet and BH Outlet for each Boiler were as follows:

Parameter	Performance Specification	System Bias (%)	Bias Adjustment Factor	Criteria Met
Boiler 1 Scrubber Inlet:				
CO Concentration (ppm)	≤4% of FS	-0.3	0.950	Pass
O_2 Concentration (%, dry)	≤4% of FS	-0.2	0.983	Pass
THC Concentration (ppm)	≤4% of FS	3.8	*	Pass
Boiler 1 BH Outlet:				
CO Concentration(ppm)	≤4% of FS	0.1	1.092	Pass
HCl Concentration(ppm)	≤4% of FS	2.0	2.955	Pass
NO_X Concentration (ppm)	≤4% of FS	1.3	1.099	Pass
O_2 Concentration (%, dry)	≤4% of FS	-0.9	1.001	Pass
SO_2 Concentration (ppm)	≤4% of FS	0.5	*	Pass
Boiler 2 Scrubber Inlet:				
CO Concentration (ppm)	≤4% of FS	0.4	0.896	Pass
O_2 Concentration (%, dry)	≤4% of FS	1.4	1.053	Pass
THC Concentration (ppm)	≤4% of FS	0.6	0.674	Pass
Boiler 2 BH Outlet:				
CO Concentration(ppm)	≤4% of FS	-0.2	1.013	Pass
HCl Concentration(ppm)	≤4% of FS	2.5	1.926	Pass
NO_X Concentration (ppm)	≤4% of FS	0.4	0.962	Pass
O_2 Concentration (%, dry)	≤4% of FS	0.8	1.024	Pass
SO_2 Concentration (ppm)	≤4% of FS	0.2	*	Pass

* Concentrations measured either by the plant CEMS or the reference method CEMS were at or near zero (<1 ppm), therefore bias adjustment factors are not provided as they may not be representative at higher concentrations.

During the time of testing, DYEC was operating at a municipal solid waste production rate of greater than 50% of capacity (maximum continuous rating for each boiler is 218 tonnes/day) as required by Environment Canada Report EPS 1/PG/7. The relative accuracy and system bias for all of the parameters met the criteria specified in Schedule F of the ECA.

1. INTRODUCTION

ORTECH Consulting Inc. (ORTECH) was requested by Covanta Durham York Renewable Energy Limited Partnership to complete a relative accuracy and system bias performance evaluation of the Continuous Emission Monitoring Systems (CEMS) installed at the Durham York Energy Centre (DYEC) located in Clarington, Ontario.

Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX requires the facility to "select, test and install appropriate CEM systems and continuous recording devices in accordance with the requirements outlined in the attached Schedule F". A copy of ECA No. 7306-8FDKNX, and amendments, is provided in Appendix 2.

DYEC verified the CEMS met the Installation Parameters and Performance Parameters listed in Schedule F prior to commencing the relative accuracy and system bias performance evaluation.

This report outlines the test procedures and test results of the relative accuracy and system bias testing completed according to the procedures described in "Protocols and Performance Specifications for Continuous Monitoring of Gaseous Emissions from Thermal Power Generation", Environment Canada Report EPS 1/PG/7, December, 2005 and the QA/QC manual developed for the CEM system.

The relative accuracy and system bias performance evaluation for the CEMS installed at Boiler No. 2 was conducted on September 23, 2015. The relative accuracy and system bias performance evaluation for the CEMS installed at Boiler No. 1 was conducted on September 24, 2015.

The bias calculated for total hydrocarbons at the Boiler No. 1 Scrubber Inlet was outside of the limit stated in the ECA primarily due to the very low concentrations (<10 ppm) and the lack of low level relief in bias criteria stated in Schedule F of the ECA. The relative accuracy and bias testing was repeated for total hydrocarbons at the Boiler No. 1 Scrubber Inlet on September 27, 2015. The analyzer met both the relative accuracy and bias criteria stated in the ECA during the repeat testing.

The bias calculated for hydrogen chloride at the Boiler No. 1 BH Outlet was equal to the limit stated in the ECA (4% of FS) primarily due to the very low concentrations (<10 ppm) and the lack of low level relief in the bias criteria stated in Schedule F of the ECA. The relative accuracy and bias testing was repeated for hydrogen chloride at the Boiler No. 1 BH Outlet on October 5, 2015. The analyzer met both the relative accuracy and bias criteria stated in the ECA during the repeat testing.

2. PROCESS DESCRIPTION

DYEC is a thermal treatment facility with a maximum thermal treatment rate of 140,000 tonnes/year of municipal solid waste (MSW), as established by the Amended ECA. The maximum continuous rating (MCR) for the facility is defined as 218 tonnes per day, per unit, of MSW with a heat content of 13 MJ/kg per train.

The facility was built to operate on a continuous basis; 24 hours/day, seven days/weeks, 365 days/year. Waste may be delivered six days per week between 7:00 am to 7:00 pm. The proposed operating schedule may be adjusted depending on demand and facility needs within the established setup indicated in the ECA (i.e., waste can only be received from Monday to Saturday – excluding statutory holidays, and between 7:00 am and 7:00 pm – ECA's Condition 4(1)(b)).

MSW arrives at the facility via covered refuse trucks and deposited in a storage pit within the receiving building. Facility operators manage MSW by moving and mixing MSW within the storage pit with the overhead grapple cranes. The MSW is lifted from the pit by crane and fed into the fuel hopper for each thermal treatment train.

The facility consists of two thermal treatment trains, each equipped with independently operated boilers/furnaces and air pollution control equipment. The treated exhaust gases are vented to a common 87.6 m stack and released to atmosphere.

2.1 Control Equipment

Flue gasses pass through a dry recirculating type scrubber for acid control and a fabric filter for particulate control. A Selective Non-Catalytic Reduction System (SNCR) with ammonia injection is used for NO_X control. Powdered carbon is injected for additional mercury control between the dry recirculating type scrubber and the fabric filter.

2.2 Continuous Emission Monitoring Systems

Continuous Emissions Monitors are installed in the vertical ductwork between the economizer and dry recirculating type scrubber (location referred to as the Scrubber Inlet), and in the vertical ductwork between the fabric filter and the ID fan (location referred to as the BH Outlet).

Covanta has confirmed that the plant CEMS data provided for the relative accuracy test periods is reported on a dry volume basis with the exception of total hydrocarbons which are reported on a wet volume basis as equivalent methane. Also, nitrogen oxides (NO_X) is total nitric oxide (NO) and nitrogen dioxide (NO_2) reported as NO_2 equivalent. These are the same conditions which the ORTECH data are reported.

3. SAMPLING LOCATIONS

The Scrubber Inlet sampling ports are located on the circular ductwork between the Boiler Outlet and the Recirculating Type Dry Scrubber Inlet. There are two 6-inch ports, located 90 degrees apart, at the same height. The Scrubber Inlet duct has a diameter of 1.37 meters (54 inches) at the sampling ports. The ports are located approximately 3.8 duct diameters (5.2 meters) downstream and 4.7 duct diameters (6.4 meters) upstream from the nearest flow disturbances.

The BH Outlet sampling ports are located on the circular ductwork between the baghouse outlet and the ID Fan inlet. There are two 6-inch ports, located 90 degrees apart, at the same height. A third port is located approximately 0.6 meters above the two sampling ports and 45 degrees apart. The BH Outlet duct has an inside diameter of 1.37 meters (54 inches) at the sampling ports. The two six inch ports are approximately 4.4 duct diameters (6.1 meters) downstream and 0.7 duct diameters (0.94 meters) upstream from the nearest flow disturbances.

The sampling ports are located at a "non-ideal" location as defined by the Ontario Source Testing Code. An "ideal" location is defined as being at least eight stack diameters downstream and at least two stack diameters upstream of flow disturbances.

4. OPERATIONAL TEST PROGRAM

Prior to commencing the relative accuracy and bias testing, Covanta personnel conducted the Operational Test Period (OTP) and the system response time test. Covanta notified ORTECH that the OTP and the system response time tests were completed and that ORTECH could proceed with the relative accuracy and system bias testing. The OTP and system response time results provided by Covanta are presented in Appendix 3.

5. CYCLONIC FLOW AND STRATIFICATION TESTING

Cyclonic flow checks were performed by ORTECH at the BH Outlet and Scrubber Inlet sampling locations on each Boiler on September 22, 2015. The cyclonic flow checks were performed using a S-type pitot tube and manometer following the procedures detailed in Ontario Source Testing Code Method 1. Briefly, the pitot tube was positioned at each sampling point so that the planes of the face openings were parallel to the cross-sectional axis of the duct. The pitot tube was then rotated about its longitudinal axis until the manometer reading was zero. The absolute value of the rotational angle was recorded to the nearest degree at each point. The average of the recorded angles was calculated at each location. If the average angle is less than 15^{o}, cyclonic flow is considered not present and sampling may proceed as normal.

The results for the cyclonic flow checks are provided in Appendix 4 and are summarized below:

Sampling Location	Performance Specification	Average Angle (^{o})	Cyclonic Flow Present
Boiler No. 1 Scrubber Inlet	Average <15^o	6.6	No
Boiler No. 2 Scrubber Inlet	Average <15^o	8.4	No
Boiler No. 1 BH Outlet	Average <15^o	8.8	No
Boiler No. 2 BH Outlet	Average <15^o	8.1	No

In addition, reverse flow was not observed at any point at any of the four sample locations during the cyclonic flow checks or during any test.

A stratification test was conducted at the BH Outlet of each Boiler on September 22, 2015. Stratification testing was conducted following the procedures detailed in Section 4.2.1 of Environment Canada Report EPS 1/PG/7.

Two continuous emission monitoring systems (CEMS) were used during the stratification testing; one system was traversing and one system was at a fixed location. Each system measured carbon monoxide, nitrogen oxides, oxygen and sulphur dioxide.

During the stratification testing the concentrations of sulphur dioxide and carbon monoxide were less than 20 ppm and fell within the lower range of the analyzers scale. The low concentrations for sulphur dioxide and carbon monoxide can be affected by the analyzer noise, which make them unreliable as an indicator of exhaust gas stratification. Therefore, with MOECC approval, stratification testing was performed for oxygen and nitrogen oxides only at each BH Outlet.

Environment Canada Report EPS 1/PG/7 states that “the installed analyzer system, which withdraws a sample from a fixed point, may be used as the stability reference measurement for the stratification test”. Therefore, the DYEC CEMS was used as the fixed location monitoring system. The fixed location monitoring system is used as an indicator of the stability of the gas flow and operation of the unit. If this concentration, measured at the fixed location, varies by more than 10% of the average concentration during the stratification test for longer than one minute the test is considered invalid.

The ORTECH CEMS were used as the traversing monitoring system. Combustion gases were measured at six points across two traverses of the duct (12 points total) at each of the BH Outlet sampling locations. The ORTECH CEMS was allowed to stabilize at the first point of each traverse for 4 minutes, approximately 2.5 times the response time for nitrogen oxides (88 seconds), before the concentrations were recorded, the concentrations at each subsequent point were recorded after being allowed to stabilize for 2 minutes. At the conclusion of both traverses the concentration at the initial measurement point was recorded again. The results for the stratification testing are provided in Appendix 5.

During the stratification testing at the Boiler No. 1 BH Outlet, the process was not stable (i.e. the concentrations measured by the fixed location monitor varied by greater than 10% of the average). Since more stable operating conditions could not be achieved during the stratification testing, the sampling location was considered to be stratified for the purpose of subsequent testing. Relative accuracy and bias testing was conducted at three points across a single traverse of the duct. A single point sampling probe was used to measure combustion gases at three sampling points located at 16.7% (0.23 m), 50% (0.69 m) and 83.3% (1.14 m) of the duct diameter (1.37 m) on a single traverse of the duct. The single point sampling probe was moved at ten minute intervals during each thirty minute relative accuracy and bias test run.

The stratification results showed that the Boiler No. 2 BH Outlet was not stratified. Thus, relative accuracy and bias testing was conducted at a single point located near (within 0.1 m) the DYEC CEM sampling probe.

As discussed and agreed with the MOECC, relative accuracy and bias testing at the Scrubber Inlet location on each Boiler was conducted at a single point located approximately in the center of the duct.

6. RELATIVE ACCURACY AND BIAS TESTING

6.1 Combustion Gases

The tests at the Scrubber Inlet and BH Outlet on each Boiler were conducted under relatively stable process operating conditions in accordance with Environment Canada Report EPS 1/PG/7 to evaluate the relative accuracy and system bias of the DYEC continuous emission monitors. Facility process data recorded during the relative accuracy and bias testing is discussed in Section 9. The reference method (ORTECH) one-minute average combustion gas results for the Boiler No. 1 Scrubber Inlet, Boiler No. 1 BH Outlet, Boiler No. 2 Scrubber Inlet and Boiler No. 2 BH Outlet tests are shown in Appendix 6, Appendix 7, Appendix 8 and Appendix 9, respectively.

Combustion gas sampling involved the insertion of a 9 millimeter inside diameter stainless steel heated probe into each duct. The gases were drawn through the probe and heated line to a portable Peltier type refrigeration unit and then transferred to the analyzers by way of a Teflon sampling line. The gas was then split into several portions that were metered with rotameters and delivered to the individual reference method analyzers. A portion of the hot, wet gas stream was delivered directly to the total hydrocarbon analyzers for the Scrubber Inlet locations.

During the initial set-up, the ORTECH analyzers were given time to warm up. On the test day zero gas was introduced to the back of each analyzer and the analyzer was calibrated for zero. The high concentration gas was then introduced to the rear of each analyzer and the analyzer was calibrated for span. Then, zero gas was delivered to each analyzer and the value was recorded on a calibration sheet noting the date and time. A mid-range gas was then introduced to each analyzer and the value recorded. Finally, the high concentration gas was introduced to each analyzer and the value was recorded. If the analyzer initial calibration did not exceed the allowable limit, the zero gas was then sent to the probe via a Teflon calibration line controlled by a solenoid. The value was recorded and then the upscale gas was introduced to the probe and the result recorded.

If the calibration values were acceptable, the system was put online. At the conclusion of a sampling period, a zero gas was introduced to the probe and the value was recorded. The mid-range or high range concentration, which ever best represented the stack gas concentration, was introduced to the probe and the value was recorded. If these calibration values were acceptable the analyzer was put back online and the test was considered valid.

A Sick/Maihak 710S analyzer was used to measure oxygen and carbon monoxide concentrations at the Scrubber Inlet locations. A Ratfisch Model RS55 flame ionization analyzer was used to measure total hydrocarbons concentrations.

A Horiba Model VA 3000 analyzer was used to measure oxygen and carbon monoxide concentrations at the BH Outlet locations. A Teledyne Model T100 analyzer was used to measure sulphur dioxide concentrations and a Teledyne API Model 200EH analyzer was used to measure nitrogen oxides concentrations at the BH Outlet locations.

The following data acquisition devices were used in conjunction with the continuous analyzers:

Data Logger:	Modicon TSX Momentum Model 14000, 16 channels
Data Processing:	Dell Latitude Lap Top Computer
Software:	CEMView

These data acquisition devices were used to transfer the electrical signals from each analyzer into a data file for later processing in a spreadsheet format. Prior to testing, the clock for the ORTECH data acquisition system was synchronized with the DYEC CEM system.

The reference methods used during the relative accuracy and system bias testing are summarized below:

Test Component	Reference Method
Oxygen	US EPA Method 3A
Carbon Monoxide	US EPA Method 10
Nitrogen Oxides	US EPA Method 7E
Sulphur Dioxide	US EPA Method 6C
Total Hydrocarbons	US EPA Method 25A

6.2 Hydrogen Chloride

Relative accuracy and system bias tests were conducted for hydrogen chloride at the Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet following the procedures detailed in US EPA Method 26. The hydrogen chloride sampling methodology was modified to use large (Greenburg-Smith type) impingers; the sampling rate was also increased to ensure an adequate volume of exhaust gas was drawn through the sampling train such that the concentrations were sufficiently above the analytical detection limit.

Major components of the test train were as follows:

- A one-piece glass nozzle and probe liner assembly
- The first and second impingers each contained 100 ml of 0.1N H_2SO_4
- The third impinger was initially empty
- The fourth impinger contained silica gel

Each hydrogen chloride test involved the collection of exhaust gas sampled at a single point in the BH Outlet duct, as close as possible to the DYEC CEMS probe, at a sampling flowrate of approximately 0.02 m^3/minute (0.7 cfm) for thirty minutes. At five minute time increments throughout each test the following information was measured and recorded for the train:

- Elapsed sampling time
- Dry gas meter volume
- Gas temperature
- Probe, oven and impinger outlet temperatures
- Dry gas meter temperatures
- Control module orifice pressure
- Sampling pump vacuum

The US EPA Method 26 field data sheets for Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet are provided in Appendix 10 and Appendix 11, respectively.

Leak checks of the sample system were performed before and after each test and only those tests whose leak checks met or exceeded the requirements of the method were accepted.

The test train samples were recovered in the on-site ORTECH laboratory. Briefly, the test train was disassembled and the volumes of the first three impingers were measured based on mass to the nearest 0.1 g. The impingers with connecting glassware back to the probe connection were rinsed in triplicate with distilled, deionized water and made up to a known volume which was recorded on the sample recovery sheet. One sample was collected for each test performed.

Chloride analysis of the collected samples was performed by ALS Environmental by ion chromatography and the results converted to the equivalent amounts of hydrogen chloride. One blank sample was submitted to the analytical laboratory and analyzed with the test samples.

The hydrogen chloride analytical results (total for each test) were divided by the volume sampled for each test to calculate the concentration in milligrams per cubic meter. The concentration was converted to ppm using the molecular weight of hydrogen chloride (36.45).

The recovery field data sheet for the tests performed at Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet are provided in Appendix 12 and Appendix 13, respectively. The hydrogen chloride analytical reports are given in Appendix 14.

7. QUALITY ASSURANCE/QUALITY CONTROL

A stratification test was performed at the BH Outlet sampling locations prior to commencing relative accuracy and system bias testing to determine the number of sampling points required for the relative accuracy testing. It could not be demonstrated that the Unit No. 1 BH Outlet sampling location was non-stratified due to process instability, therefore relative accuracy and bias testing was conducted at three points across a single traverse of the duct. A single point sampling probe was used to measure combustion gases at three sampling points located at 16.7% (0.23 m), 50% (0.69 m) and 83.3% (1.14 m) of the duct diameter (1.37 m) on a single traverse of the duct. The single point sampling probe was moved at ten minute intervals during each thirty minute relative accuracy and bias test run. The stratification results showed that the Boiler No. 2 BH Outlet was not stratified therefore relative accuracy and bias testing was conducted at a single point located near the DYEC CEM sampling probe. The stratification testing at each location is discussed in more detail in Section 5.

A cyclonic flow check was performed at each of the four sample locations prior to commencing relative accuracy and system bias testing to determine the presence or absence of cyclonic and reverse flow in each duct. No cyclonic flow or reverse flow was observed at any of the sampling locations.

System bias checks were conducted by ORTECH prior to the reference method tests. This involved a calibration of the ORTECH instruments through the entire sampling system by directing calibration gas directly to a point of entry immediately after the sampling probe and to the analyzers directly. System bias values were evaluated in accordance with the values indicated in the reference methods. Also, pre and post-test zero and span drift checks were performed on each of ORTECH's CEMs periodically during the test program. The ORTECH CEM calibration data is provided in Appendix 15.

Instrument linearity checks were completed prior to commencing the test program. Calibrations were performed at two concentration levels plus a zero. Response and reproducibility checks of the reference method analyzers were also conducted prior to the test program. A NO_2 to NO conversion efficiency check was conducted on the ORTECH nitrogen oxides analyzer following the procedure detailed in US EPA Method 7E. The ORTECH CEM analyzer linearity determination calculations, response and reproducibility and converter efficiency are located in Appendix 16. All ORTECH CEM calibrations met the performance requirements defined in Report EPS 1/PG/7 and the reference methods.

The calibration certificates for the US EPA Protocol calibration gases used by ORTECH to calibrate the reference method analyzers during the test program are shown in Appendix 17 and are detailed below. These calibration gases meet the accuracy requirements as detailed in Environment Canada Report EPS 1/PG/7.

Supplier	Lot No.	Quality	Expiry Date	Parameter	Concentration
Praxair	301732326303	EPA Protocol	11/29/2021	O_2	23.67%
				CO_2	19.36%
Praxair	0219UD15	EPA Protocol	02/25/2023	O_2	23.3%
				CO_2	19.9%
Praxair	1224UB14	EPA Protocol	01/07/2023	O_2	12.4%
				CO_2	12.7%
Praxair	1224UB14	EPA Protocol	01/07/2023	O_2	12.3%
				CO_2	12.7%
Praxair	304613365301	EPA Protocol	01/06/2022	CO	455 ppm
Air Liquide	PLUO295140	EPA Protocol	08/13/2022	CO	225.4 ppm
Praxair	1230TA14	EPA Protocol	01/09/2023	CO	91.0 ppm
Linde Group	1268504	EPA Protocol	09/08/2021	CO	52.86 ppm
Linde Group	1268518	EPA Protocol	09/04/2021	SO_2	225.16 ppm
Linde Group	1268511	EPA Protocol	09/04/2021	SO_2	90.99 ppm
Linde Group	1256215	EPA Protocol	05/14/2021	SO_2	89.97 ppm
Praxair	1223UD13	EPA Protocol	01/08/2018	SO_2	20.3 ppm
Praxair	0524HD14	EPA Protocol	06/04/2022	NO	252 ppm
Linde Group	1266609	EPA Protocol	08/14/2021	NO	90.49 ppm
Praxair	Y787512507	Primary Standard	-	Propane (THC)	30.0 ppm
Linde Group	1268516	Primary Standard	08/19/2016	Propane (THC)	30.0 ppm
Linde Group	1266955	Certified	08/12/2016	Propane (THC)	10.2 ppm
Linde Group	1268515	Certified	08/21/2016	Propane (THC)	9.7 ppm

All equipment used was calibrated and checked prior to the field testing program. Pertinent equipment calibration data for the hydrogen chloride sampling equipment is supplied in Appendix 18.

Analyses of the hydrogen chloride samples from the Method 26 sampling train involved suppressed ion chromatography-conductivity detection. The analytical QA/QC included the following:

- A 6 point calibration bracketing the expected range.
- An instrument check calibration standard was analyzed immediately after the calibration and must be within 90%-110% of the actual concentration.
- A complete set of calibration standards were analyzed at the end of the analysis and must be within 10% of the true value.
- One mid-range calibration standard was analyzed after 10 samples and at the end of the run and must be within 90%-110% of the actual concentration.
- Instrument calibration blank check samples were analyzed with every 10 samples and must be within three times the minimum detection limit for each ion.
- All samples were analyzed in duplicate for hydrogen chloride. The relative percent difference was less than 10% well within the acceptable limit of less than ±20%, for compounds that are greater than 5 times the minimum detection limit.
- Blank spike samples were analyzed with the test samples. The recovery results of the blank spike samples were between 94%-96%, within the acceptable range of 90-110%.
- Matrix spike (spike confirmation) samples were analyzed with every 20 samples to confirm the identity of each peak. The recovery results of the matrix spike samples were between 99%-101% for hydrogen chloride, within the acceptable range of 90-110%.

8. RESULTS AND DISCUSSION

The relative accuracy and system bias testing program conducted by ORTECH was based on the procedures described in "Protocols and Performance Specifications for Continuous Monitoring of Gaseous Emissions from Thermal Power Generation", Environment Canada Report EPS 1/PG/7, December, 2005.

These procedures require that a minimum of nine separate tests are completed, with thirty minutes duration per test, in which the average concentration of each test component determined by the reference CEM (the ORTECH CEM) for each test are compared with the plant CEM (DYEC's CEM). The differences are expressed as the relative accuracy which is defined as:

$RA = [(|d| + |cc|)/RM] \times 100$

where:

- RA = relative accuracy (%)
- |d| = average absolute difference between the plant CEM and reference CEM for the nine tests
- |cc| = confidence coefficient
- RM = average reference CEM result for the nine tests

The confidence coefficient is defined as:

$$|cc| = t_{.025} \frac{Sd}{\sqrt{n}}$$

where:

- $t_{.025}$ = one tailed t-statistic at a 95% confidence level
- Sd = standard deviation of the absolute difference between the plant CEM and reference CEM test average readings for the nine tests
- n = number of tests (nine)

Environment Canada Report EPS 1/PG/7 states "when the pollutant gas concentrations are less than 250 ppm, the full scale setting of the plant CEM analyzer must be substituted for the value of the average reference CEM result (RM) when calculating the relative accuracy". Therefore, in instances where the average concentration was less than 250 ppm, the full scale setting of the plant CEM analyzer was substituted for the value of the average of the reference CEM results (RM) when calculating the relative accuracy. The value of the average of the reference CEM results (RM) were used when calculating the relative accuracy for all of the other relative accuracy tests. The relative accuracy calculations for each pollutant gas are shown in Appendix 1.

Twelve half-hour tests were completed for carbon monoxide, oxygen and organic matter (total hydrocarbons expressed as equivalent methane) using reference method continuous emission monitors at the Scrubber Inlet located on each Boiler.

Twelve half-hour tests were completed for carbon monoxide, oxygen, nitrogen oxides and sulphur dioxide using reference method continuous emission monitors at the BH Outlet located on each Boiler. Twelve half-hour hydrogen chloride tests were also conducted using the sampling procedures detailed in US EPA Method 26. The hydrogen chloride sampling methodology was modified to use the larger Greenburg-Smith type impingers; the sampling rate was also increased to ensure an adequate volume of exhaust gas was drawn through the sampling train resulting in concentrations sufficiently above the analytical detection limit.

All twelve tests were accepted and used to calculate relative accuracy, bias and the bias adjustment factor for each component except for total hydrocarbons at the Boiler No. 1 Scrubber Inlet. Total hydrocarbons Test No. 3 and Test No. 12 at the Boiler No. 1 Scrubber Inlet were reported but rejected from subsequent calculations as the DYEC CEMS went into blowback during the test run.

The results for the relative accuracy tests completed at the Scrubber Inlet and BH Outlet for each Boiler were as follows:

RATA Parameter	Performance Specification	Relative Accuracy (%)	Average Absolute Difference	Criteria Met
Boiler 1 Scrubber Inlet:				
CO Concentration (ppm)	≤10% of the mean value of RM or ±5ppm	0.7	1.0 ppm	Pass
O_2 Concentration (%, dry)	≤10% of the mean value of RM	4.1	0.1 %	Pass
THC Concentration (ppm)	≤10% of the mean value of RM or ±5ppm	4.4	4.1 ppm	Pass
Boiler 1 BH Outlet:				
CO Concentration (ppm)	≤10% of the mean value of RM or ±5ppm	0.6	1.8 ppm	Pass
HCl Concentration (ppm)	≤20% of the mean value of RM or ±5ppm	2.4	2.2 ppm	Pass
NO_X Concentration (ppm)	≤10% of the mean value of RM	1.6	7.1 ppm	Pass
O_2 Concentration (%, dry)	≤10% of the mean value of RM	2.8	0.0 %	Pass
SO_2 Concentration (ppm)	≤10% of the mean value of RM	0.8	1.3 ppm	Pass
Boiler 2 Scrubber Inlet:				
CO Concentration (ppm)	≤10% of the mean value of RM or ±5ppm	0.5	2.1 ppm	Pass
O_2 Concentration (%, dry)	≤10% of the mean value of RM	6.0	0.4 %	Pass
THC Concentration (ppm)	≤10% of the mean value of RM or ±5ppm	2.9	1.7 ppm	Pass
Boiler 2 BH Outlet:				
CO Concentration (ppm)	≤10% of the mean value of RM or ±5ppm	0.3	0.2 ppm	Pass
HCl Concentration (ppm)	≤20% of the mean value of RM or ±5ppm	3.6	3.0 ppm	Pass
NO_X Concentration (ppm)	≤10% of the mean value of RM	0.7	2.7 ppm	Pass
O_2 Concentration (%, dry)	≤10% of the mean value of RM	2.6	0.2 %	Pass
SO_2 Concentration (ppm)	≤10% of the mean value of RM	0.6	0.7 ppm	Pass

Bias or systematic error is considered to be present in the measurements of a pollutant gas or stack gas flow, if the mean difference between the plant CEM and the reference method results is greater than or equal to the confidence coefficient. The bias is defined as:

$$\text{Bias} = \frac{|d| - |cc|}{FS} \times 100$$

where:

- $|d|$ = average absolute difference between the plant CEM and reference CEM for the nine tests
- $|cc|$ = confidence coefficient
- FS = full scale setting of the plant CEM

If bias is present then the subsequent measurement of the plant CEM system must be corrected by a bias adjustment factor. The bias adjustment factor is defined as:

$$BAF = \frac{RM}{CEM_{Avg}}$$

where:

- BAF = bias adjustment factor
- RM = average of the reference method results for the nine tests
- CEM_{Avg} = average plant CEM results for the nine tests

Bias is present in the measurements of the pollutant gas analyzers installed at each location. However, the bias for each analyzer is within the acceptance limit. Since bias was present and within acceptable levels, subsequent measurements of the plant CEM system should be corrected using the bias adjustment factors calculated during the relative accuracy and system bias testing.

The results for the system bias tests completed at the Scrubber Inlet and BH Outlet for each Boiler were as follows:

Parameter	Performance Specification	System Bias (%)	Bias Adjustment Factor	Criteria Met
Boiler 1 Scrubber Inlet:				
CO Concentration (ppm)	≤4% of FS	-0.3	0.950	Pass
O_2 Concentration (%, dry)	≤4% of FS	-0.2	0.983	Pass
THC Concentration (ppm)	≤4% of FS	3.8	*	Pass
Boiler 1 BH Outlet:				
CO Concentration (ppm)	≤4% of FS	0.1	1.092	Pass
HCl Concentration (ppm)	≤4% of FS	2.0	2.955	Pass
NO_X Concentration (ppm)	≤4% of FS	1.3	1.099	Pass
O_2 Concentration (%, dry)	≤4% of FS	-0.9	1.001	Pass
SO_2 Concentration (ppm)	≤4% of FS	0.5	*	Pass
Boiler 2 Scrubber Inlet:				
CO Concentration (ppm)	≤4% of FS	0.4	0.896	Pass
O_2 Concentration (%, dry)	≤4% of FS	1.4	1.053	Pass
THC Concentration (ppm)	≤4% of FS	0.6	0.674	Pass
Boiler 2 BH Outlet:				
CO Concentration (ppm)	≤4% of FS	-0.2	1.013	Pass
HCl Concentration (ppm)	≤4% of FS	2.5	1.926	Pass
NO_X Concentration (ppm)	≤4% of FS	0.4	0.962	Pass
O_2 Concentration (%, dry)	≤4% of FS	0.8	1.024	Pass
SO_2 Concentration (ppm)	≤4% of FS	0.2	*	Pass

* Concentrations measured either by the facility CEMS or the reference method CEMS were at or near zero (<1 ppm), therefore bias adjustment factors are not provided as they may not be representative at higher concentrations.

9. FACILITY PROCESS DATA

CEM analyzer data was supplied by DYEC personnel for the relative accuracy and system bias test periods. The CEM data for Boiler No. 1 and Boiler No. 2 is provided in Appendix 19 and Appendix 20, respectively.

A summary of the process operating conditions during the stratification testing, and the relative accuracy and system bias testing is provided below:

Scope of Testing	Test Date	Power Output (MWh)	Aux. Fuel Combusted (m^3)		Steam (tonnes)	NOx Reagent Inj. Rate (lph)		MSW Combusted (tonnes)		Percent of MCR	
			Boiler 1	Boiler 2		Boiler 1	Boiler 2	Boiler 1	Boiler 2	Boiler 1	Boiler 2
1	22 Sep 2015	388	0	0	1579	55.3	44.4	218	219	100.0	100.5
2	23 Sep 2015	377	0	179	1575	42.4	32.8	218	218	-	100.0
3	24 Sep 2015	227	257	332	1135	50.6	25.4	194	120	89.0	-
4	27 Sep 2015	411	0	156	1676	54.5	44.7	225	223	103.2	-
5	5 Oct 2015	403	4222	0	1513	48.3	49.0	187	217	85.8	-

Scope of testing:

1. Boiler No. 1 and Boiler No. 2 Scrubber Inlet cyclonic and reverse flow testing. Boiler No. 1 and Boiler No. 2 BH Outlet stratification, cyclonic and reverse flow testing.
2. Boiler No. 2 Scrubber Inlet and BH Outlet relative accuracy and system bias testing.
3. Boiler No. 1 Scrubber Inlet and BH Outlet relative accuracy and system bias testing.
4. Boiler No. 1 Scrubber Inlet relative accuracy and system bias testing (repeat testing for total hydrocarbons only).
5. Boiler No. 1 BH Outlet relative accuracy and system bias testing (repeat testing for hydrogen chloride only).

During the time of testing, DYEC was operating at a municipal solid waste production rate of greater than 50% of capacity (maximum continuous rating for each boiler is 218 tonnes/day) as required by Environment Canada Report EPS 1/PG/7.

APPENDIX 1

Relative Accuracy and System Bias
Calculation Data Sheets
(16 page)

Relative Accuracy Test Audit

LOCATION:	Durham York Energy Centre
UNIT:	Boiler No. 1 Scrubber Inlet
PARAMETER:	Carbon Monoxide
CEM ANALYZER:	Environmental SA MIR 9000
UNITS:	ppm
CEM ANALYZER FULL SCALE (FS):	500
RM OPERATOR:	TT

Test Data

RUN #	Accepted Test? (Yes/No)	RM ppm	CEMS ppm	Di ppm	$(Di)^2$	ABS. DIFF (%)	TEST PERIOD (PLANT DAS)		TEST DATE
1	YES	9.3	11.0	1.7	3.0	18.5%	10:31	11:01	September 24, 2015
2	YES	23.1	25.1	1.9	3.7	8.3%	12:08	12:38	September 24, 2015
3	YES	14.6	15.9	1.4	1.8	9.3%	12:44	13:14	September 24, 2015
4	YES	18.5	20.3	1.8	3.2	9.7%	13:45	14:15	September 24, 2015
5	YES	13.7	16.6	2.9	8.2	20.9%	14:30	15:00	September 24, 2015
6	YES	13.6	15.4	1.8	3.1	12.9%	15:06	15:36	September 24, 2015
7	YES	42.5	31.9	-10.6	112.1	24.9%	16:07	16:37	September 24, 2015
8	YES	19.2	23.6	4.4	19.4	22.9%	16:43	17:13	September 24, 2015
9	YES	42.7	43.6	0.9	0.7	2.0%	17:20	17:50	September 24, 2015
10	YES	11.1	13.2	2.2	4.6	19.5%	17:58	18:28	September 24, 2015
11	YES	15.7	18.7	3.0	8.8	18.9%	18:35	19:05	September 24, 2015
12	YES	12.7	14.1	1.4	1.8	10.7%	19:11	19:41	September 24, 2015
SUM		**236.8**	**249.3**	**12.6**	**170.6**	**178.6%**			
AVG.		19.7	**20.8**	**1.0**	**14.2**	**14.9%**			

Average Reference Method value (RM):	500.0*
Absolute Mean Difference (|d|):	1.0
Number of Accepted Tests (n):	12
Standard Deviation:	3.78
t - Value:	2.201
Absolute 2.5 % Confidence Coefficient (cc):	2.4
Difference (|d|) + Confidence Coefficient (cc):	3.5

*When the pollutant gas concentrations (Avg. RM) are less than 250 ppm, the FS setting of the CEM analyzer must be substituted for the RM value for RA calculations.

Relative Accuracy (RA)

Assessment Parameter	Result %	Acceptance Criteria	STATUS
Relative Accuracy	**0.7**	**≤ 10% of RM**	**PASSED**

Bias

Assessment Parameter	Result %	Acceptance Criteria	STATUS
Bias	-0.3	≤ 4% of FS	PASSED

Bias Adjustment Factor (BAF) **0.950**

Relative Accuracy Test Audit

LOCATION:	Durham York Energy Centre
UNIT:	Boiler No. 1 Scrubber Inlet
PARAMETER:	Oxygen (dry basis)
CEM ANALYZER:	Environmental SA MIR 9000
UNITS:	%
CEM ANALYZER FULL SCALE (FS):	25
RM OPERATOR:	TT

Test Data

RUN #	Accepted Test? (Yes/No)	RM %	CEMS %	Di %	$(Di)^2$	ABS. DIFF (%)	TEST PERIOD (PLANT DAS)		TEST DATE
1	YES	7.51	8.06	0.6	0.3	7.3%	10:31	11:01	September 24, 2015
2	YES	8.26	8.71	0.5	0.2	5.4%	12:08	12:38	September 24, 2015
3	YES	7.66	8.14	0.5	0.2	6.3%	12:44	13:14	September 24, 2015
4	YES	7.44	7.54	0.1	0.0	1.3%	13:45	14:15	September 24, 2015
5	YES	8.63	8.68	0.0	0.0	0.6%	14:30	15:00	September 24, 2015
6	YES	8.35	8.47	0.1	0.0	1.4%	15:06	15:36	September 24, 2015
7	YES	7.67	7.87	0.2	0.0	2.6%	16:07	16:37	September 24, 2015
8	YES	7.95	8.09	0.1	0.0	1.8%	16:43	17:13	September 24, 2015
9	YES	8.22	8.31	0.1	0.0	1.1%	17:20	17:50	September 24, 2015
10	YES	7.75	7.77	0.0	0.0	0.3%	17:58	18:28	September 24, 2015
11	YES	8.36	7.79	-0.6	0.3	6.8%	18:35	19:05	September 24, 2015
12	YES	7.98	8.05	0.1	0.0	0.9%	19:11	19:41	September 24, 2015
SUM		**95.8**	**97.5**	**1.7**	**1.2**	**35.8%**			
AVG.		**8.0**	**8.1**	**0.1**	**0.1**	**3.0%**			

Average Reference Method value (RM):	8.0
Absolute Mean Difference (|d|):	0.1
Number of Accepted Tests (n):	12
Standard Deviation:	0.29
t - Value:	2.201
Absolute 2.5 % Confidence Coefficient (cc):	0.2
Difference (|d|) + Confidence Coefficient (cc):	0.3

Relative Accuracy (RA)	Assessment Parameter	Result %	Acceptance Criteria	STATUS
	Relative Accuracy	4.1	≤ 10% of RM	PASSED

Bias	Assessment Parameter	Result %	Acceptance Criteria	STATUS
	Bias	-0.2	≤ 4% of FS	PASSED

Bias Adjustment Factor (BAF) 0.983

Relative Accuracy Test Audit

LOCATION:	Durham York Energy Centre
UNIT:	Boiler No. 1 Scrubber Inlet
PARAMETER:	Total Hydrocarbons
CEM ANALYZER:	Environmental SA Graphite 52M
UNITS:	ppm (wet basis as methane)
CEM ANALYZER FULL SCALE (FS):	100
RM OPERATOR:	TT

Test Data

RUN #	Accepted Test? (Yes/No)	RM ppm	CEMS ppm	Di ppm	$(Di)^2$	ABS. DIFF (%)	TEST PERIOD (PLANT DAS)		TEST DATE
1	**YES**	0.0	3.4	3.4	11.6		7:57	8:27	September 27, 2015
2	**YES**	0.0	3.7	3.7	13.7		8:28	8:29	September 27, 2015
3	**NO**	0.0	3.3	3.3	10.9		8:59	9:29	September 27, 2015
4	**YES**	0.0	3.7	3.7	13.7		9:30	10:00	September 27, 2015
5	**YES**	0.0	4.0	4.0	16.0		10:10	10:40	September 27, 2015
6	**YES**	0.0	4.2	4.2	17.6		10:41	11:11	September 27, 2015
7	**YES**	0.0	4.0	4.0	16.0		12:22	12:52	September 27, 2015
8	**YES**	0.0	4.2	4.2	17.6		12:53	13:23	September 27, 2015
9	**YES**	0.2	4.9	4.7	22.1	2350.0%	13:24	13:54	September 27, 2015
10	**YES**	0.9	5.2	4.3	18.5	477.8%	13:55	14:25	September 27, 2015
11	**YES**	0.1	4.8	4.7	22.1	4700.0%	14:26	14:56	September 27, 2015
12	**NO**	0.3	4.6	4.3	18.5	1433.3%	14:57	15:27	September 27, 2015
SUM		**1.2**	**42.1**	**40.9**	**168.9**	**7527.8%**			
AVG.		0.1	**4.2**	**4.1**	**16.9**	**752.8%**			

Average Reference Method value (RM):	100.0*
Absolute Mean Difference (|d|):	4.1
Number of Accepted Tests (n):	10
Standard Deviation:	0.42
t - Value:	2.262
Absolute 2.5 % Confidence Coefficient (cc):	0.3
Difference (|d|) + Confidence Coefficient (cc):	4.4

*When the pollutant gas concentrations (Avg. RM) are less than 250 ppm, the FS setting of the CEM analyzer must be substituted for the RM value for RA calculations.

Relative Accuracy (RA)

Assessment Parameter	Result %	Acceptance Criteria	STATUS
Relative Accuracy	**4.4**	**≤ 10% of RM**	**PASSED**

Bias

Assessment Parameter	Result %	Acceptance Criteria	STATUS
Bias	**3.8**	**≤4% of FS**	**PASSED**

Bias Adjustment Factor (BAF) -

Note: Test No. 3 and Test No. 12 were rejected as the DYEC analyzer went into blow back during the test.

Relative Accuracy Test Audit

LOCATION:	Durham York Energy Centre
UNIT:	Boiler No. 1 BH Outlet
PARAMETER:	Carbon Monoxide
CEM ANALYZER:	Environmental SA MIR 9000
UNITS:	ppm
CEM ANALYZER FULL SCALE (FS):	500
RM OPERATOR:	JG

Test Data

RUN #	Accepted Test? (Yes/No)	RM ppm	CEMS ppm	Di ppm	$(Di)^2$	ABS. DIFF (%)	TEST PERIOD (PLANT DAS)		TEST DATE
1	YES	9.7	9.0	-0.7	0.5	7.5%	10:31	11:01	September 24, 2015
2	YES	24.3	23.3	-1.0	1.1	4.2%	12:08	12:38	September 24, 2015
3	YES	15.4	13.9	-1.5	2.3	9.9%	12:44	13:14	September 24, 2015
4	YES	18.5	17.5	-1.0	1.0	5.4%	13:45	14:15	September 24, 2015
5	YES	14.6	13.8	-0.8	0.6	5.4%	14:30	15:00	September 24, 2015
6	YES	14.3	13.2	-1.1	1.2	7.6%	15:06	15:36	September 24, 2015
7	YES	41.9	42.5	0.6	0.4	1.6%	16:07	16:37	September 24, 2015
8	YES	22.6	19.3	-3.3	10.9	14.6%	16:43	17:13	September 24, 2015
9	YES	45.7	39.5	-6.2	38.3	13.5%	17:20	17:50	September 24, 2015
10	YES	14.0	11.3	-2.7	7.5	19.5%	17:58	18:28	September 24, 2015
11	YES	20.5	18.5	-2.0	4.0	9.8%	18:35	19:05	September 24, 2015
12	YES	15.5	13.5	-2.0	4.0	13.0%	19:11	19:41	September 24, 2015
SUM		**257.0**	**235.3**	**-21.7**	**71.9**	**111.9%**			
AVG.		21.4	**19.6**	**1.8**	**6.0**	**9.3%**			

Average Reference Method value (RM):	500.0*
Absolute Mean Difference (|d|):	1.8
Number of Accepted Tests (n):	12
Standard Deviation:	1.72
t - Value:	2.201
Absolute 2.5 % Confidence Coefficient (cc):	1.09
Difference (|d|) + Confidence Coefficient (cc):	2.9

*When the pollutant gas concentrations (Avg. RM) are less than 250 ppm, the FS setting of the CEM analyzer must be substituted for the RM value for RA calculations.

Relative Accuracy (RA)	Assessment Parameter	Result %	Acceptance Criteria	STATUS
	Relative Accuracy	0.6	≤ 10% of RM	PASSED

Bias	Assessment Parameter	Result %	Acceptance Criteria	STATUS
	Bias	0.1	≤ 4% of FS	PASSED

Bias Adjustment Factor (BAF) 1.092

Relative Accuracy Test Audit

LOCATION:	Durham York Energy Centre
UNIT:	Boiler No. 1 BH Outlet
PARAMETER:	Hydrogen Chloride
CEM ANALYZER:	Environmental SA MIR 9000
UNITS:	ppm
CEM ANALYZER FULL SCALE (FS):	100
RM OPERATOR:	DU

Test Data

RUN #	Accepted Test? (Yes/No)	RM ppm	CEMS ppm	Di ppm	$(Di)^2$	ABS. DIFF (%)	TEST PERIOD (PLANT DAS)		TEST DATE
1	YES	4.2	1.3	-2.9	8.7	69.4%	9:56	10:26	October 5, 2015
2	YES	3.5	1.1	-2.4	5.6	68.2%	10:28	10:58	October 5, 2015
3	YES	3.4	1.1	-2.3	5.4	67.9%	11:00	11:30	October 5, 2015
4	YES	3.3	1.4	-1.9	3.5	57.0%	13:19	13:49	October 5, 2015
5	YES	3.1	1.2	-1.9	3.7	61.6%	13:51	14:21	October 5, 2015
6	YES	3.5	1.2	-2.3	5.2	65.6%	14:23	14:53	October 5, 2015
7	YES	3.3	1.1	-2.2	4.7	66.3%	14:55	15:25	October 5, 2015
8	YES	3.3	1.1	-2.2	4.9	66.8%	15:26	15:56	October 5, 2015
9	YES	3.1	1.0	-2.1	4.4	67.7%	15:57	16:27	October 5, 2015
10	YES	3.1	1.0	-2.1	4.5	67.9%	16:28	16:58	October 5, 2015
11	YES	2.9	0.9	-2.0	3.8	68.5%	16:59	17:29	October 5, 2015
12	NO	2.2		-2.2	4.8		17:30	18:00	October 5, 2015
SUM		**36.6**	**12.4**	**-24.2**	**54.3**	**726.9%**			
AVG.		3.3	**1.1**	**2.2**	**4.9**	**66.1%**			

Average Reference Method value (RM):	100.0*
Absolute Mean Difference (|d|):	2.2
Number of Accepted Tests (n):	11
Standard Deviation:	0.30
t - Value:	2.228
Absolute 2.5 % Confidence Coefficient (cc):	0.20
Difference (|d|) + Confidence Coefficient (cc):	2.4

*When the pollutant gas concentrations (Avg. RM) are less than 250 ppm, the FS setting of the CEM analyzer must be substituted for the RM value for RA calculations.

Relative Accuracy (RA)	**Assessment Parameter**	**Result %**	**Acceptance Criteria**	**STATUS**
	Relative Accuracy	**2.4**	**≤20% of RM**	**PASSED**

Bias	**Assessment Parameter**	**Result %**	**Acceptance Criteria**	**STATUS**
	Bias	**2.0**	**≤ 4% of FS**	**PASSED**

Bias Adjustment Factor (BAF) **2.955**

Note: Test No. 12 was rejected as the DYEC analyzer went into blow back during the test.

Relative Accuracy Test Audit

LOCATION:	Durham York Energy Centre
UNIT:	Boiler No. 1 BH Outlet
PARAMETER:	Nitrogen Oxides
CEM ANALYZER:	Environmental SA MIR 9000
UNITS:	ppm
CEM ANALYZER FULL SCALE (FS):	500
RM OPERATOR:	JG

Test Data

RUN #	Accepted Test? (Yes/No)	RM ppm	CEMS ppm	Di ppm	$(Di)^2$	ABS. DIFF (%)	TEST PERIOD (PLANT DAS)		TEST DATE
1	YES	69.4	62.7	-6.7	45.0	9.7%	10:31	11:01	September 24, 2015
2	YES	74.4	67.5	-6.9	47.6	9.3%	12:08	12:38	September 24, 2015
3	YES	84.4	75.9	-8.5	71.6	10.0%	12:44	13:14	September 24, 2015
4	YES	73.9	67.6	-6.3	39.8	8.5%	13:45	14:15	September 24, 2015
5	YES	71.3	65.1	-6.2	38.1	8.7%	14:30	15:00	September 24, 2015
6	YES	74.9	68.8	-6.1	37.5	8.2%	15:06	15:36	September 24, 2015
7	YES	87.0	78.2	-8.8	77.3	10.1%	16:07	16:37	September 24, 2015
8	YES	94.7	85.6	-9.1	82.8	9.6%	16:43	17:13	September 24, 2015
9	YES	66.6	61.7	-4.9	24.3	7.4%	17:20	17:50	September 24, 2015
10	YES	80.4	73.8	-6.6	43.7	8.2%	17:58	18:28	September 24, 2015
11	YES	77.2	69.9	-7.3	52.9	9.4%	18:35	19:05	September 24, 2015
12	YES	81.9	74.6	-7.3	53.3	8.9%	19:11	19:41	September 24, 2015
SUM		**936.1**	**851.4**	**-84.7**	**613.8**	**108.0%**			
AVG.		78.0	**71.0**	**7.1**	**51.1**	**9.0%**			

Average Reference Method value (RM):	500.0*
Absolute Mean Difference (|d|):	7.1
Number of Accepted Tests (n):	12
Standard Deviation:	1.22
t - Value:	2.201
Absolute 2.5 % Confidence Coefficient (cc):	0.77
Difference (|d|) + Confidence Coefficient (cc):	7.8

*When the pollutant gas concentrations (Avg. RM) are less than 250 ppm, the FS setting of the CEM analyzer must be substituted for the RM value for RA calculations.

Relative Accuracy (RA)

Assessment Parameter	Result %	Acceptance Criteria	STATUS
Relative Accuracy	1.6	≤ 10% of RM	PASSED

Bias

Assessment Parameter	Result %	Acceptance Criteria	STATUS
Bias	1.3	≤4% of FS	PASSED

Bias Adjustment Factor (BAF) 1.099

Relative Accuracy Test Audit

LOCATION:	Durham York Energy Centre
UNIT:	Boiler No. 1 BH Outlet
PARAMETER:	Oxygen (dry basis)
CEM ANALYZER:	Environmental SA MIR 9000
UNITS:	%
CEM ANALYZER FULL SCALE (FS):	25
RM OPERATOR:	JG

Test Data

RUN #	Accepted Test? (Yes/No)	RM %	CEMS %	Di %	$(Di)^2$	ABS. DIFF (%)	TEST PERIOD (PLANT DAS)		TEST DATE
1	YES	8.44	7.92	-0.5	0.3	6.2%	10:31	11:01	September 24, 2015
2	YES	9.07	8.42	-0.7	0.4	7.2%	12:08	12:38	September 24, 2015
3	YES	8.38	7.85	-0.5	0.3	6.3%	12:44	13:14	September 24, 2015
4	YES	7.28	7.33	0.0	0.0	0.7%	13:45	14:15	September 24, 2015
5	YES	8.24	8.41	0.2	0.0	2.1%	14:30	15:00	September 24, 2015
6	YES	8.12	8.25	0.1	0.0	1.6%	15:06	15:36	September 24, 2015
7	YES	7.38	7.60	0.2	0.0	3.0%	16:07	16:37	September 24, 2015
8	YES	7.65	7.89	0.2	0.1	3.1%	16:43	17:13	September 24, 2015
9	YES	7.86	8.07	0.2	0.0	2.7%	17:20	17:50	September 24, 2015
10	YES	7.29	7.48	0.2	0.0	2.6%	17:58	18:28	September 24, 2015
11	YES	7.30	7.52	0.2	0.0	3.0%	18:35	19:05	September 24, 2015
12	YES	7.50	7.72	0.2	0.0	2.9%	19:11	19:41	September 24, 2015
SUM		**94.5**	**94.5**	**-0.1**	**1.3**	**41.3%**			
AVG.		**7.9**	**7.9**	**0.0**	**0.1**	**3.4%**			

Average Reference Method value (RM):	7.9
Absolute Mean Difference (|d|):	0.0
Number of Accepted Tests (n):	12
Standard Deviation:	0.34
t - Value:	2.201
Absolute 2.5 % Confidence Coefficient (cc):	0.22
Difference (|d|) + Confidence Coefficient (cc):	0.2

Relative Accuracy (RA)	Assessment Parameter	Result %	Acceptance Criteria	STATUS
	Relative Accuracy	**2.8**	**≤ 10% of RM**	**PASSED**

Bias	Assessment Parameter	Result %	Acceptance Criteria	STATUS
	Bias	**-0.9**	**≤ 4% of FS**	**PASSED**

Bias Adjustment Factor (BAF) **1.001**

Relative Accuracy Test Audit

LOCATION:	Durham York Energy Centre
UNIT:	Boiler No. 1 BH Outlet
PARAMETER:	Sulphur Dioxide
CEM ANALYZER:	Environmental SA MIR 9000
UNITS:	ppm
CEM ANALYZER FULL SCALE (FS):	200
RM OPERATOR:	JG

Test Data

RUN #	Accepted Test? (Yes/No)	RM ppm	CEMS ppm	Di ppm	$(Di)^2$	ABS. DIFF (%)	TEST PERIOD (PLANT DAS)		TEST DATE
1	YES	2.1	0.0	-2.1	4.3		10:31	11:01	September 24, 2015
2	YES	0.5	0.0	-0.5	0.3		12:08	12:38	September 24, 2015
3	YES	1.5	0.0	-1.5	2.3		12:44	13:14	September 24, 2015
4	YES	0.6	0.0	-0.6	0.4		13:45	14:15	September 24, 2015
5	YES	2.4	0.3	-2.1	4.3	87.3%	14:30	15:00	September 24, 2015
6	YES	2.1	0.1	-2.0	4.0	95.2%	15:06	15:36	September 24, 2015
7	YES	0.8	0.0	-0.8	0.7		16:07	16:37	September 24, 2015
8	YES	1.2	0.0	-1.2	1.4		16:43	17:13	September 24, 2015
9	YES	1.0	0.0	-1.0	1.0		17:20	17:50	September 24, 2015
10	YES	1.0	0.0	-1.0	1.0		17:58	18:28	September 24, 2015
11	YES	1.4	0.0	-1.4	2.0		18:35	19:05	September 24, 2015
12	YES	1.2	0.0	-1.2	1.5		19:11	19:41	September 24, 2015
SUM		**15.8**	**0.4**	**-15.4**	**23.1**	**182.6%**			
AVG.		**1.3**	**0.0**	**1.3**	**1.9**	**15.2%**			

Average Reference Method value (RM):	200.0*
Absolute Mean Difference (|d|):	1.3
Number of Accepted Tests (n):	12
Standard Deviation:	0.54
t - Value:	2.201
Absolute 2.5 % Confidence Coefficient (cc):	0.34
Difference (|d|) + Confidence Coefficient (cc):	1.6

*When the pollutant gas concentrations (Avg. RM) are less than 250 ppm, the FS setting of the CEM analyzer must be substituted for the RM value for RA calculations.

Relative Accuracy (RA)	Assessment Parameter	Result %	Acceptance Criteria	STATUS
	Relative Accuracy	**0.8**	**≤ 10% of RM**	**PASSED**

Bias	Assessment Parameter	Result %	Acceptance Criteria	STATUS
	Bias	**0.5**	**≤ 4% of FS**	**PASSED**

Bias Adjustment Factor (BAF) -

Relative Accuracy Test Audit

LOCATION:	Durham York Energy Centre
UNIT:	Boiler No. 2 Scrubber Inlet
PARAMETER:	Carbon Monoxide
CEM ANALYZER:	Environmental SA MIR 9000
UNITS:	ppm
CEM ANALYZER FULL SCALE (FS):	500
RM OPERATOR:	TT

Test Data

RUN #	Accepted Test? (Yes/No)	RM ppm	CEMS ppm	Di ppm	$(Di)^2$	ABS. DIFF (%)	TEST PERIOD (PLANT DAS)		TEST DATE
1	YES	21.1	23.3	2.2	5.0	10.6%	10:31	11:01	September 23, 2015
2	YES	17.8	19.8	2.0	3.9	11.0%	11:10	11:40	September 23, 2015
3	YES	14.4	16.6	2.2	5.0	15.5%	13:22	13:52	September 23.2015
4	YES	14.9	16.9	2.0	4.0	13.4%	14:01	14:31	September 23, 2015
5	YES	25.2	27.2	2.0	4.1	8.1%	15:04	15:34	September 23, 2015
6	YES	17.8	19.2	1.4	1.9	7.8%	15:45	16:15	September 23, 2015
7	YES	15.5	17.3	1.8	3.2	11.6%	16:30	17:00	September 23, 2015
8	YES	29.6	31.3	1.7	2.8	5.7%	17:19	17:49	September 23, 2015
9	YES	14.6	16.9	2.3	5.5	16.0%	18:50	19:20	September 23, 2015
10	YES	15.4	17.9	2.5	6.0	15.9%	19:27	19:57	September 23, 2015
11	YES	17.6	20.5	2.9	8.2	16.3%	20:06	20:36	September 23, 2015
12	YES	13.4	15.8	2.4	5.6	17.6%	20:42	21:12	September 23, 2015
SUM		**217.4**	**242.7**	**25.4**	**55.3**	**149.5%**			
AVG.		18.1	**20.2**	**2.1**	**4.6**	**12.5%**			

Average Reference Method value (RM):	500.0
Absolute Mean Difference (|d|):	2.1
Number of Accepted Tests (n):	12
Standard Deviation:	0.4
t - Value:	2.201
Absolute 2.5 % Confidence Coefficient (cc):	0.2
Difference (|d|) + Confidence Coefficient (cc):	2.4

*When the pollutant gas concentrations (Avg. RM) are less than 250 ppm, the FS setting of the CEM analyzer must be substituted for the RM value for RA calculations.

Relative Accuracy (RA)

Assessment Parameter	Result %	Acceptance Criteria	STATUS
Relative Accuracy	**0.5**	**≤ 10% of RM**	**PASSED**

Bias

Assessment Parameter	Result %	Acceptance Criteria	STATUS
Bias	**0.4**	**≤ 4% of FS**	**PASSED**

Bias Adjustment Factor (BAF) **0.896**

Relative Accuracy Test Audit

LOCATION:	Durham York Energy Centre
UNIT:	Boiler No. 2 Scrubber Inlet
PARAMETER:	Oxygen (dry basis)
CEM ANALYZER:	Environmental SA MIR 9000
UNITS:	%
CEM ANALYZER FULL SCALE (FS):	25
RM OPERATOR:	TT

Test Data

RUN #	Accepted Test? (Yes/No)	RM %	CEMS %	Di %	$(Di)^2$	ABS. DIFF (%)	TEST PERIOD (PLANT DAS)		TEST DATE
1	YES	8.56	8.34	-0.2	0.0	2.6%	10:31	11:01	September 23, 2015
2	YES	8.60	8.37	-0.2	0.1	2.7%	11:10	11:40	September 23, 2015
3	YES	8.41	8.03	-0.4	0.1	4.5%	13:22	13:52	September 23.2015
4	YES	7.88	7.47	-0.4	0.2	5.2%	14:01	14:31	September 23, 2015
5	YES	8.65	8.31	-0.3	0.1	3.9%	15:04	15:34	September 23, 2015
6	YES	8.20	7.81	-0.4	0.2	4.8%	15:45	16:15	September 23, 2015
7	YES	8.25	7.85	-0.4	0.2	4.8%	16:30	17:00	September 23, 2015
8	YES	8.75	8.36	-0.4	0.2	4.5%	17:19	17:49	September 23, 2015
9	YES	8.17	7.57	-0.6	0.4	7.3%	18:50	19:20	September 23, 2015
10	YES	8.40	7.82	-0.6	0.3	6.9%	19:27	19:57	September 23, 2015
11	YES	8.56	7.97	-0.6	0.3	6.9%	20:06	20:36	September 23, 2015
12	YES	8.54	8.00	-0.5	0.3	6.3%	20:42	21:12	September 23, 2015
SUM		**101.0**	**95.9**	**-5.1**	**2.3**	**60.4%**			
AVG.		**8.4**	**8.0**	**0.4**	**0.2**	**5.0%**			

Average Reference Method value (RM):	8.4
Absolute Mean Difference (|d|):	0.4
Number of Accepted Tests (n):	12
Standard Deviation:	0.1
t - Value:	2.201
Absolute 2.5 % Confidence Coefficient (cc):	0.1
Difference (|d|) + Confidence Coefficient (cc):	0.5

Relative Accuracy (RA)	Assessment Parameter	Result %	Acceptance Criteria	STATUS
	Relative Accuracy	6.0	≤ 10% of RM	PASSED

Bias	Assessment Parameter	Result %	Acceptance Criteria	STATUS
	Bias	1.4	≤ 4% of FS	PASSED

Bias Adjustment Factor (BAF)	1.053

Relative Accuracy Test Audit

LOCATION:	Durham York Energy Centre
UNIT:	Boiler No. 2 Scrubber Inlet
PARAMETER:	Total Hydrocarbons
CEM ANALYZER:	Environmental SA Graphite 52M
UNITS:	ppm (wet basis as methane)
CEM ANALYZER FULL SCALE (FS):	100
RM OPERATOR:	TT

Test Data

RUN #	Accepted Test? (Yes/No)	RM ppm	CEMS ppm	Di ppm	$(Di)^2$	ABS. DIFF (%)	TEST PERIOD (PLANT DAS)		TEST DATE
1	YES	3.8	5.0	1.2	1.5	31.9%	10:31	11:01	September 23, 2015
2	YES	3.9	5.1	1.2	1.5	31.1%	11:10	11:40	September 23, 2015
3	YES	2.5	5.1	2.7	7.2	109.4%	13:22	13:52	September 23.2015
4	YES	1.8	5.4	3.6	13.0	198.9%	14:01	14:31	September 23, 2015
5	YES	8.4	5.0	-3.4	11.6	40.5%	15:04	15:34	September 23, 2015
6	YES	4.2	5.3	1.0	1.1	24.2%	15:45	16:15	September 23, 2015
7	YES	2.8	5.3	2.5	6.2	88.9%	16:30	17:00	September 23, 2015
8	YES	3.7	5.3	1.6	2.6	43.8%	17:19	17:49	September 23, 2015
9	YES	3.4	5.5	2.1	4.6	62.9%	18:50	19:20	September 23, 2015
10	YES	2.9	5.5	2.6	6.9	92.0%	19:27	19:57	September 23, 2015
11	YES	2.7	5.4	2.7	7.3	100.0%	20:06	20:36	September 23, 2015
12	YES	2.7	5.4	2.7	7.4	101.5%	20:42	21:12	September 23, 2015
SUM		**42.7**	**63.4**	**20.6**	**70.7**	**925.1%**			
AVG.		3.6	**5.3**	**1.7**	**5.9**	**77.1%**			

Average Reference Method value (RM):	100.0
Absolute Mean Difference (|d|):	1.7
Number of Accepted Tests (n):	12
Standard Deviation:	1.8
t - Value:	2.201
Absolute 2.5 % Confidence Coefficient (cc):	1.1
Difference (|d|) + Confidence Coefficient (cc):	2.9

*When the pollutant gas concentrations (Avg. RM) are less than 250 ppm, the FS setting of the CEM analyzer must be substituted for the RM value for RA calculations.

Relative Accuracy (RA)

Assessment Parameter	Result %	Acceptance Criteria	STATUS
Relative Accuracy	**2.9**	**≤ 10% of RM**	**PASSED**

Bias

Assessment Parameter	Result %	Acceptance Criteria	STATUS
Bias	**0.6**	**≤4% of FS**	**PASSED**

Bias Adjustment Factor (BAF) **0.674**

Relative Accuracy Test Audit

LOCATION:	Durham York Energy Centre
UNIT:	Boiler No. 2 BH Outlet
PARAMETER:	Carbon Monoxide
CEM ANALYZER:	Environmental SA MIR 9000
UNITS:	ppm
CEM ANALYZER FULL SCALE (FS):	500
RM OPERATOR:	JG

Test Data

RUN #	Accepted Test? (Yes/No)	RM ppm	CEMS ppm	Di ppm	$(Di)^2$	ABS. DIFF (%)	TEST PERIOD (PLANT DAS)		TEST DATE
1	YES	23.9	21.2	-2.7	7.2	11.2%	10:31	11:01	September 23, 2015
2	YES	20.7	18.0	-2.7	7.5	13.2%	11:10	11:40	September 23, 2015
3	YES	17.7	14.3	-3.5	12.0	19.6%	13:22	13:52	September 23, 2015
4	YES	18.3	14.7	-3.6	12.9	19.6%	14:01	14:31	September 23, 2015
5	YES	25.4	25.7	0.3	0.1	1.0%	15:04	15:34	September 23, 2015
6	YES	17.5	17.7	0.2	0.1	1.3%	15:45	16:15	September 23, 2015
7	YES	15.4	15.7	0.3	0.1	2.0%	16:30	17:00	September 23, 2015
8	YES	29.7	30.6	0.9	0.9	3.2%	17:19	17:49	September 23, 2015
9	YES	13.0	14.8	1.8	3.3	13.9%	18:50	19:20	September 23, 2015
10	YES	14.0	16.1	2.1	4.5	15.1%	19:27	19:57	September 23, 2015
11	YES	16.3	18.5	2.2	4.6	13.2%	20:06	20:36	September 23, 2015
12	YES	12.2	13.9	1.7	2.9	13.9%	20:42	21:12	September 23, 2015
SUM		**224.1**	**221.2**	**-3.0**	**55.9**	**127.2%**			
AVG.		**18.7**	**18.4**	**0.2**	**4.7**	**10.6%**			

Average Reference Method value (RM):	500.0
Absolute Mean Difference (|d|):	0.2
Number of Accepted Tests (n):	12
Standard Deviation:	2.24
t - Value:	2.201
Absolute 2.5 % Confidence Coefficient (cc):	1.4
Difference (|d|) + Confidence Coefficient (cc):	1.7

*When the pollutant gas concentrations (Avg. RM) are less than 250 ppm, the FS setting of the CEM analyzer must be substituted for the RM value for RA calculations.

Relative Accuracy (RA)

Assessment Parameter	Result %	Acceptance Criteria	STATUS
Relative Accuracy	0.3	≤ 10% of RM	PASSED

Bias

Assessment Parameter	Result %	Acceptance Criteria	STATUS
Bias	-0.2	≤ 4% of FS	PASSED

Bias Adjustment Factor (BAF) 1.013

Relative Accuracy Test Audit

LOCATION:	Durham York Energy Centre
UNIT:	Boiler No. 2 BH Outlet
PARAMETER:	Hydrogen Chloride
CEM ANALYZER:	Environmental SA MIR 9000
UNITS:	ppm
CEM ANALYZER FULL SCALE (FS):	100
RM OPERATOR:	DU

Test Data

RUN #	Accepted Test? (Yes/No)	RM ppm	CEMS ppm	Di ppm	$(Di)^2$	ABS. DIFF (%)	TEST PERIOD (PLANT DAS)		TEST DATE
1	YES	7.3	6.1	-1.2	1.5	16.6%	10:32	11:02	September 23, 2015
2	YES	8.0	5.6	-2.4	5.9	30.2%	11:10	11:40	September 23, 2015
3	YES	5.2	2.7	-2.5	6.1	47.8%	13:22	13:52	September 23, 2015
4	YES	4.8	2.1	-2.7	7.1	55.5%	14:01	14:31	September 23, 2015
5	YES	5.1	2.0	-3.2	10.1	61.8%	15:04	15:34	September 23, 2015
6	YES	7.6	3.0	-4.6	21.0	60.1%	15:45	16:15	September 23, 2015
7	YES	7.2	3.4	-3.8	14.5	52.8%	16:30	17:00	September 23, 2015
8	YES	6.3	2.7	-3.6	13.0	57.2%	17:19	17:49	September 23, 2015
9	YES	6.0	3.4	-2.6	6.5	42.8%	18:50	19:20	September 23, 2015
10	YES	6.3	2.8	-3.5	12.3	55.7%	19:27	19:57	September 23, 2015
11	YES	5.7	2.7	-3.0	9.0	52.6%	20:06	20:36	September 23, 2015
12	YES	5.6	2.5	-3.2	10.0	56.1%	20:42	21:12	September 23, 2015
SUM		**75.2**	**39.1**	**-36.2**	**117.0**	**589.1%**			
AVG.		6.3	**3.3**	**3.0**	**9.7**	**49.1%**			

Average Reference Method value (RM):	100.0
Absolute Mean Difference (|d|):	3.0
Number of Accepted Tests (n):	12
Standard Deviation:	0.85
t - Value:	2.201
Absolute 2.5 % Confidence Coefficient (cc):	0.5
Difference (|d|) + Confidence Coefficient (cc):	3.6

*When the pollutant gas concentrations (Avg. RM) are less than 250 ppm, the FS setting of the CEM analyzer must be substituted for the RM value for RA calculations.

Relative Accuracy (RA)

Assessment Parameter	Result %	Acceptance Criteria	STATUS
Relative Accuracy	3.6	≤20% of RM	PASSED

Bias

Assessment Parameter	Result %	Acceptance Criteria	STATUS
Bias	2.5	≤ 4% of FS	PASSED

Bias Adjustment Factor (BAF) **1.926**

Relative Accuracy Test Audit

LOCATION:	Durham York Energy Centre
UNIT:	Boiler No. 2 BH Outlet
PARAMETER:	Nitrogen Oxides
CEM ANALYZER:	Environmental SA MIR 9000
UNITS:	ppm
CEM ANALYZER FULL SCALE (FS):	500
RM OPERATOR:	JG

Test Data

RUN #	Accepted Test? (Yes/No)	RM ppm	CEMS ppm	Di ppm	$(Di)^2$	ABS. DIFF (%)	TEST PERIOD (PLANT DAS)		TEST DATE
1	YES	66.4	70.5	4.2	17.2	6.3%	10:31	11:01	September 23, 2015
2	YES	67.8	72.2	4.4	19.4	6.5%	11:10	11:40	September 23, 2015
3	YES	69.3	71.6	2.3	5.2	3.3%	13:22	13:52	September 23, 2015
4	YES	71.8	74.4	2.6	6.7	3.6%	14:01	14:31	September 23, 2015
5	YES	64.5	66.8	2.3	5.4	3.6%	15:04	15:34	September 23, 2015
6	YES	73.1	76.3	3.2	10.5	4.4%	15:45	16:15	September 23, 2015
7	YES	68.6	71.2	2.6	6.8	3.8%	16:30	17:00	September 23, 2015
8	YES	67.6	69.8	2.2	4.9	3.3%	17:19	17:49	September 23, 2015
9	YES	69.0	71.7	2.6	6.9	3.8%	18:50	19:20	September 23, 2015
10	YES	77.3	79.0	1.7	2.8	2.2%	19:27	19:57	September 23, 2015
11	YES	65.5	67.4	1.9	3.6	2.9%	20:06	20:36	September 23, 2015
12	YES	74.8	77.5	2.7	7.4	3.6%	20:42	21:12	September 23, 2015
SUM		**835.7**	**868.5**	**32.7**	**96.8**	**47.3%**			
AVG.		69.6	**72.4**	**2.7**	**8.1**	**3.9%**			

Average Reference Method value (RM):	500.0
Absolute Mean Difference (|d|):	2.7
Number of Accepted Tests (n):	12
Standard Deviation:	0.83
t - Value:	2.201
Absolute 2.5 % Confidence Coefficient (cc):	0.5
Difference (|d|) + Confidence Coefficient (cc):	3.3

*When the pollutant gas concentrations (Avg. RM) are less than 250 ppm, the FS setting of the CEM analyzer must be substituted for the RM value for RA calculations.

Relative Accuracy (RA)

Assessment Parameter	Result %	Acceptance Criteria	STATUS
Relative Accuracy	**0.7**	**≤ 10% of RM**	**PASSED**

Bias

Assessment Parameter	Result %	Acceptance Criteria	STATUS
Bias	**0.4**	**≤4% of FS**	**PASSED**

Bias Adjustment Factor (BAF) **0.962**

Relative Accuracy Test Audit

LOCATION:	Durham York Energy Centre
UNIT:	Boiler No. 2 BH Outlet
PARAMETER:	Oxygen (dry basis)
CEM ANALYZER:	Environmental SA MIR 9000
UNITS:	%
CEM ANALYZER FULL SCALE (FS):	25
RM OPERATOR:	JG

Test Data

RUN #	Accepted Test? (Yes/No)	RM %	CEMS %	Di %	$(Di)^2$	ABS. DIFF (%)	TEST PERIOD (PLANT DAS)		TEST DATE
1	YES	9.28	9.03	-0.3	0.1	2.7%	10:31	11:01	September 23, 2015
2	YES	9.33	9.07	-0.3	0.1	2.8%	11:10	11:40	September 23, 2015
3	YES	9.05	8.81	-0.2	0.1	2.7%	13:22	13:52	September 23, 2015
4	YES	8.54	8.37	-0.2	0.0	2.0%	14:01	14:31	September 23, 2015
5	YES	9.31	9.07	-0.2	0.1	2.6%	15:04	15:34	September 23, 2015
6	YES	8.85	8.66	-0.2	0.0	2.1%	15:45	16:15	September 23, 2015
7	YES	8.90	8.69	-0.2	0.0	2.4%	16:30	17:00	September 23, 2015
8	YES	9.39	9.17	-0.2	0.0	2.3%	17:19	17:49	September 23, 2015
9	YES	8.67	8.49	-0.2	0.0	2.1%	18:50	19:20	September 23, 2015
10	YES	8.89	8.68	-0.2	0.0	2.4%	19:27	19:57	September 23, 2015
11	YES	9.02	8.85	-0.2	0.0	1.9%	20:06	20:36	September 23, 2015
12	YES	8.98	8.77	-0.2	0.0	2.3%	20:42	21:12	September 23, 2015
SUM		**108.2**	**105.7**	**-2.6**	**0.6**	**28.2%**			
AVG.		**9.0**	**8.8**	**0.2**	**0.0**	**2.4%**			

Average Reference Method value (RM):	9.0
Absolute Mean Difference (|d|):	0.2
Number of Accepted Tests (n):	12
Standard Deviation:	0.03
t - Value:	2.201
Absolute 2.5 % Confidence Coefficient (cc):	0.0
Difference (|d|) + Confidence Coefficient (cc):	0.2

Relative Accuracy (RA)

Assessment Parameter	Result %	Acceptance Criteria	STATUS
Relative Accuracy	**2.6**	**≤ 10% of RM**	**PASSED**

Bias

Assessment Parameter	Result %	Acceptance Criteria	STATUS
Bias	**0.8**	**≤ 4% of FS**	**PASSED**

Bias Adjustment Factor (BAF) **1.024**

Relative Accuracy Test Audit

LOCATION:	Durham York Energy Centre
UNIT:	Boiler No. 2 BH Outlet
PARAMETER:	Sulphur Dioxide
CEM ANALYZER:	Environmental SA MIR 9000
UNITS:	ppm
CEM ANALYZER FULL SCALE (FS):	200
RM OPERATOR:	JG

Test Data

RUN #	Accepted Test? (Yes/No)	RM ppm	CEMS ppm	Di ppm	$(Di)^2$	ABS. DIFF (%)	TEST PERIOD (PLANT DAS)		TEST DATE
1	YES	1.0	0.0	-1.0	1.0		10:31	11:01	September 23, 2015
2	YES	2.6	0.3	-2.3	5.3	88.5%	11:10	11:40	September 23, 2015
3	YES	0.2	0.0	-0.2	0.0		13:22	13:52	September 23, 2015
4	YES	0.1	0.0	-0.1	0.0		14:01	14:31	September 23, 2015
5	YES	0.4	0.0	-0.4	0.2		15:04	15:34	September 23, 2015
6	YES	1.8	0.5	-1.3	1.7	72.5%	15:45	16:15	September 23, 2015
7	YES	0.7	0.0	-0.7	0.5		16:30	17:00	September 23, 2015
8	YES	0.8	0.1	-0.7	0.5	91.4%	17:19	17:49	September 23, 2015
9	YES	0.7	0.0	-0.7	0.5	98.6%	18:50	19:20	September 23, 2015
10	YES	0.6	0.0	-0.5	0.3	92.9%	19:27	19:57	September 23, 2015
11	YES	0.4	0.0	-0.4	0.1		20:06	20:36	September 23, 2015
12	YES	0.3	0.0	-0.3	0.1		20:42	21:12	September 23, 2015
SUM		**9.6**	**0.9**	**-8.7**	**10.3**	**443.8%**			
AVG.		0.8	**0.1**	**0.7**	**0.9**	**37.0%**			

Average Reference Method value (RM):	200.0
Absolute Mean Difference (|d|):	0.7
Number of Accepted Tests (n):	12
Standard Deviation:	0.60
t - Value:	2.201
Absolute 2.5 % Confidence Coefficient (cc):	0.4
Difference (|d|) + Confidence Coefficient (cc):	1.1

*When the pollutant gas concentrations (Avg. RM) are less than 250 ppm, the FS setting of the CEM analyzer must be substituted for the RM value for RA calculations.

Relative Accuracy (RA)

Assessment Parameter	Result %	Acceptance Criteria	STATUS
Relative Accuracy	**0.6**	**≤ 10% of RM**	**PASSED**

Bias

Assessment Parameter	Result %	Acceptance Criteria	STATUS
Bias	**0.2**	**≤ 4% of FS**	**PASSED**

Bias Adjustment Factor (BAF) -

APPENDIX 2

Amended Environmental Compliance Approval
No. 7306-8FDKNX
(78 pages)

CONTENT COPY OF ORIGINAL

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 1
Issue Date: August 12, 2014

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and

The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
72 Osbourne Rd Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 forWaste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment,, as follows:

1. The following definition has been added:

"Contingency and Emergency Response Plan" also means the document entitled "Spill Contingency and Emergency Response Plan";

2. The following Conditions are amended to read as follows:

2.(5)(b)(iii) The Owner may use equipment used to handle the hazardous wastes to handle other wastes provided that prior to such use the equipment has been thoroughly cleaned first.

4.(5)(e) A maximum of 630 tonnes of the Residual Waste, limited to the bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is as follows:

(i) The storage duration is limited to a maximum of seven (7) days.

(ii) Should longer storage duration be required to accommodate the duration of the required compliance testing, a minimum of forty eight (48) hours before the storage extension is commenced, the Owner shall notify the District Manager of the required extension. The

notification shall include the duration of the extension and the reasons.

3. The following Conditions are added:

7.(7) (e) The Owner shall carry out the required bottom and fly ash compliance testing in accordance with the document entitled "Ash Sampling and Testing Protocol", listed in the attached Schedule.

11.8 Containment evaluations performed under the Spill Contingency and Emergency Response Plan shall be conducted by the Owner in accordance to procedures agreed by the District Manager pursuant to Conditions 8.(7)(i),(ii) and (iii).

4. The following documents have been added to Schedule "A":

4. October 31, 2013 letter from Mirka Januszkiewicz, the Regional Municipality of Durham to Ian Parrott, Ministry of the Environment and Climate Change, requesting approval of the Ash Sampling and Testing Protocol and the document entitled "Durham York Energy Centre, Ash Sampling and Testing Protocol", prepared by by Golder Associates and dated June 2014.

5. Document entitled "Durham York Energy Centre, Spill Contingency & Emergency Response Plan" prepared by Covanta Durham York Renewable Energy Limited Partnership and dated January 13, 2014, excluding section entitled "Containment Evaluation".

6. Document entitled "Durham York Energy Centre, Protocol for the Measurement of Combustion Temperature and the Development of Time and Temperature Correlations", prepared by Covanta Durham York Renewable Energy Limited Partnership and dated June 2014.

7. Document entitled "Durham York Energy Centre, Noise Monitoring and Reporting Plan", prepared by Golder Associates and dated September 2011.

The reasons for this amendment to the Approval are as follows:

to approve the "Ash Sampling and Testing Protocol" as required Condition 7.(7)(a), the "Durham York Energy Centre, Spill Contingency & Emergency Response Plan", as required Condition 11.(3), "Durham York Energy Centre, Noise Monitoring and Reporting Plan" as required Condition 7.(5)(a) and "Durham York Energy Centre, Protocol for the Measurement of Combustion Temperature and the Development of Time and Temperature Correlations" as proposed by the applicant.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;

8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary* Environmental Review Tribunal 655 Bay Street, Suite 1500 Toronto, Ontario M5G 1E5	AND	The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment 2 St. Clair Avenue West, Floor 12A Toronto, Ontario M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 12th day of August, 2014

Ian Parrott, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

MW/
c: District Manager, MOE York-Durham
n/a, The Regional Municipality of Durham

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 7306-8FDKNX
Notice No. 2
Issue Date: October 24, 2014

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and
The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership
445 South St
Morristown, New Jersey
USA 07960

Site Location: Durham York Energy Centre
1835 Energy Drive
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment, as follows:

1. The address of the Site has been changed to read as follows:

Durham York Energy Centre
1835 Energy Drive
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

2. The following definitions have been added:

"Operator" means any person other than the Regions' employees, authorized by the Regions as having the charge, management or control of any aspect of the Site and includes TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership, the partnership under the laws of Nova Scotia more particularly described in the October 6, 2014 letter from Joanna Rosengarten to the Ministry of Environment and Climate Change, and includes its successors and assignees, their successors and assignees;

"Regions" means any person that is responsible for the establishment or operation of the Site being approved by this Approval, and it includes The Regional Municipality of Durham and The Regional Municipality of York, their successors and assignees;

2. The following definition has been amended to read as follows:

"**Site**" means the property referred to as Durham York Energy Centre where the Owner has located and operates the Facility and the Works and located at 1835 Energy Drive in the Municipality of Clarington, Regional Municipality of Durham;

"**Owner**" within the context of this Approval, means the Regions and the Operator;

3. The following Conditions have been amended to read as follows:

"General: Change of Ownership" Conditions 1.(14) and 1.(15):

(14) The Regions shall notify the Director in writing, and forward a copy of the notification to the District Manager, within thirty (30) days of the occurrence of any changes:

(a) the ownership of the Site;
(b) the operator of the Site;
(c) the address of the Regions;
(d) the partners, where the Regions are or at any time become a partnership and a copy of the most recent declaration filed under the *Business Names Act*, R.S.O. 1990, c. B.17, as amended, shall be included in the notification;
(e) the name of the corporation where the Regions are or at any time become a corporation, other than a municipal corporation, and a copy of the most current information filed under the *Corporations Information Act*, R.S.O. 1990, c. C.39, as amended, shall be included in the notification.

(15) No portion of this Site shall be transferred or encumbered prior to or after closing of the Site unless the Director is notified in advance. In the event of any change in ownership of the Site, other than change to a successor municipality, the Regions shall notify the successor of and provide the successor with a copy of this Approval, and the Regions shall provide a copy of the notification to the District Manager and the Director.

"Service Area, Approved Waste Types, Rates And Storage: Storage Restrictions" Condition 2.(5)(e):

2.(5)(e) (i) A maximum of 630 tonnes of the Residual Waste, limited to the bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation.

(ii) The storage duration of bottom ash in the bunkers is limited to a maximum of seven (7) days.

(iii) Should additional storage location(s) and a longer storage duration be required during testing, a minimum of forty eight (48) hours before the storage parameters are changed from those approved in Condition 2.(5)(e)(i) and (ii), the Owner shall notify the District Manager, in writing, of the proposed changes and provide the reasons for the changes.

"Site Operations: Residual Waste Handling and Disposal" Condition 4.(5)(b)(iii):

4.(5)(b)(iii) The Owner may use the equipment that comes in contact with the hazardous wastes to handle other wastes provided that prior to such use, the equipment has been cleaned, as confirmed by visual inspections, to ensure the removal of any hazardous waste residues and to prevent cross contamination.

"Closure of the Site" Conditions 18.(1) and 18.(2):

(1) A minimum of nine (9) months prior to closure of the Site, the Regions shall submit, for approval by the Director, a written Closure Plan for the Site. This Plan shall include, as a minimum, a description of the work that will be done to facilitate closure of the Site and a schedule for completion of that work.

(2) Within ten (10) days after closure of the Site, the Regions shall notify the Director and the District Manager, in writing, that the Site is closed and that the approved Closure Plan has been implemented.

4. "Covanta Durham York Renewable Energy Limited Partnership" is replaced with "TransRiver Canada Incorporated, as general partner for and on behalf of Covanta Durham York Renewable Energy Limited Partnership, the partnership under

the laws of Nova Scotia more particularly described in the October 6, 2014 letter from Joanna Rosengarten to the Ministry of Environment and Climate Change and includes its successors and assignees", in the Environmental Compliance Approval dated June 28, 2011 and in the Notice of Amendment dated August 12, 2014.

5. The following documents are added to Schedule "A":

8. Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Matthew R. Mulcahy, Covanta Durham York Renewable Energy Limited Partnership, Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Cliff Curtis, The Regional Municipality of Durham and Application for Environmental Compliance Approval Application dated May 23, 2014, signed by Laura McDowell, The Regional Municipality of York, including the following attached supporting documentation:

(a) revised Section 8.0 "Ash Handling and Associated System" and revised Section 10.0 "Potable Process and Wastewater" dated May 2014, of the document entitled "Design and Operations Report", dated March 2011, prepared by Golder Associates Ltd.

(b) Drawing No. M-2530, entitled "Piping & Instrumentation Diagram Bottom Ash Lime Slurry System"

(c) Drawing No. 70258-1-ME-GA-SK-001, entitled "Covanta Durham York Hydrated Lime System for Boiler Bottom Ash"

9. E-mail dated September 10, 2014 (2:26 p.m.) from Leon Brasowski, Covanta Durham York Renewable Energy Limited Partnership, to Margaret Wojcik, Ontario Ministry of the Environment and Climate Change, providing additional supporting documentation on the proposal, including an attachment entitled "M-1500^0360 Highlighted for MOE.pdf".

10. E-mail dated October 13, 2014 (3:23 p.m.) from Leon Brasowski, Covanta Durham York Renewable Energy Limited Partnership, to Ricki Allum, Ontario Ministry of the Environment and Climate Change, providing additional supporting documentation on the legal name of the applicant, including an attachment entitled "Partnership Legal Clarification.pdf".

The reasons for this amendment to the Approval are as follows:

to approve the proposed Bottom Ash Lime Conditioning System, to correct the typographical errors in the Notice of Amendment dated August 12, 2014, to clarify the intent of the Residual Waste equipment cleaning condition and to allow different bottom ash storage conditions during testing.

This Notice shall constitute part of the approval issued under Approval No. 7306-8FDKNX dated June 28, 2011, as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;

7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary* Environmental Review Tribunal 655 Bay Street, Suite 1500 Toronto, Ontario M5G 1E5	AND	The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment 2 St. Clair Avenue West, Floor 12A Toronto, Ontario M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 24th day of October, 2014

Tesfaye Gebrezghi, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

MW/
c: District Manager, MOE York-Durham
Leon Brasowski, Covanta Energy Corporation

Ministry of the Environment
Ministère de l'Environnement

CERTIFICATE OF APPROVAL
MULTI-MEDIA
Number 7306-8FDKNX
Issue Date: June 28, 2011

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and

The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
72 Osbourne Road
Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham

You have applied in accordance with Sections 9 and 27 of the Environmental Protection Act and Section 53 of the Ontario Water Resources Act for approval of:

A thermal treatment facility to be used for the receipt and manual and/or mechanical sorting of solid non-hazardous post-diversion municipal waste (Waste), temporary storage and thermal treatment of the Waste, abatement of the emissions from the processes and activities undertaken at the Site, handling, screening, sorting and/or conditioning of the residual wastes and management of the wastewater and the non-contact stormwater generated at the Site. The Facility's maximum Waste thermal treatment rate is 140,000 tonnes per year of Waste, the nominal electricity generation rate is 20 Megawatts and the nominal steam generation rate 72,000 kilograms per hour of steam.

The facility consists of the following major processes and support units:

(1) two (2) identical combustion trains, each having a nominal capacity of 218 tonnes of Waste per day venting into the atmosphere via a common exhaust stack, having an exit diameter of 1.71 metres, extending 87.6 metres above grade.

Each combustion train is an independent process train and it consists of the following main components:

(a) a stoker grate steam Boiler, having a design heat input of 118 Gigajoules per hour, equipped with a natural gas fired auxiliary Low NOx burner, having a nominal heat input of 59.5 Gigajoules per hour; and

(b) the following air pollution control equipment:

(i) a Selective Non Catalytic Reduction System (SNCR System) with ammonia injection for NOx control;
(ii) an activated carbon injection system, to reduce mercury and dioxins in flue gas;
(iii) a dry recirculation lime injection scrubber to control acid gases;
(iv) a pulse jet type baghouse to control particulate emissions;

(2) one (1) steam turbine generator set having a rated capacity of 20 Megawatts;

(3) waste and reagent storage as described in Condition 2.:

(4) fly ash conditioning system including two (2) surge bins, two (2) pugmills and seven (7) curing/storage bunkers;

(5) bottom ash sorting system including conveyors, screens, a rotary drum magnet and an eddy separator;

(6) one (1) emergency diesel generator, rated at 250 Kilowatts;

(7) natural gas-fired combustion equipment for comfort heating;

(8) a wastewater management system for collection, recirculation and reuse of the process water; and

(9) a stormwater management facility for collection, transmission and discharge of non-contact runoff at the Site, as described in the attached Schedule "G",

Note: Use of the site for any other type of waste is not approved under this Certificate, and requires obtaining a separate approval amending this Certificate.

For the purpose of this Provisional Certificate of Approval and the terms and conditions specified below, the following definitions apply:

"***Acoustic Assessment Report***" means the report, prepared in accordance with *Publication NPC-233* by Paul Niejadlik / Golder Associates Ltd. and dated March 2011 submitted in support of the application, that documents all sources of noise emissions and Noise Control Measures present at the Facility;

"**Acoustic Assessment Summary Table**" means a table summarizing the results of the Acoustic Assessment Report;

"**Acoustic Audit**" means an investigative procedure consisting of measurements of all noise emissions due to the operation of the Facility, assessed in comparison to the Performance Limits for the Facility regarding noise emissions, completed in accordance with the procedures set in the Ministry's *Publication NPC-103* and reported in accordance with the Ministry's *Publication NPC-233;*

"**Acoustic Audit Report**" means a report presenting the results of an Acoustic Audit, prepared in accordance with the Ministry's *Publication NPC-233;*

"**Acoustical Consultant**" means a person currently active in the field of environmental acoustics and noise/vibration control, who is familiar with Ministry noise guidelines and procedures and has a combination of formal university education, training and experience necessary to assess noise emissions from a Facility;

"**Air Standards Manager**" means the Manager, Human Toxicology and Air Standards Section, Standards Development Branch, or any other person who represents and carries out the duties of the Manager, Human Toxicology and Air Standards Section, Standards Development Branch, as those duties relate to the conditions of this Certificate;

"**APC Building**" means the building at the Site where the APC Equipment and the reagent indoor storage tanks are located;

"**APC Equipment**" means all the air pollution control equipment at the Facility, including the SNCR System, the activated carbon injection system, the dry recirculation lime injection scrubber and the pulse jet type baghouse to control emissions from the combustion chamber of the Boilers, the dust collectors to control emissions from the Residue Building and the dust collectors to control emissions from the reagent storage silos;

"**Boiler Building**" means the building at the Site where the Boilers, turbine generator and the air cooled condenser(s) are located;

"**Boilers**" means the two (2) steam boilers firing the approved Waste described in this Certificate;

"**Bulky Unprocessable Items**" means the incoming Waste received at the Site that cannot be processed in the Equipment;

"**CEM Systems**" means the continuous monitoring and recording systems used to measure and record the temperature and the emissions from the Boilers as specified in the attached Schedule "F";

"**Certificate**" means this entire provisional Certificate of Approval, issued in accordance with Sections 39 and 9 of the *EPA* and Section 53 of the *OWRA,* and includes any schedules attached to it, the application and the supporting documentation listed in the attached Schedule "A;

"***40 CFR 60***" means title 40, part 60 under the Code of Federal Regulations (Air Programs, U.S. Environmental Protection Agency), revised as of July 1, 1990, published by the Office of the Federal Register, National Archives and Records, Administration in the United States of America;

"**Complaint**" means a complaint received either by the Owner or the District Manager that has been confirmed by staff of the Ministry and the cause of which is attributed to the Owner's activities at the Facility;

"**Commencement Date of Operation**" means the date when the approved Waste is first received at the Site;

"**Compound of Concern**" means a contaminant that, based on generally available information, may be emitted to the atmosphere in a quantity from any source at the Facility that is significant either in comparison to the relevant Ministry Point of Impingement Limit or if a Ministry Point of Impingement Limit is not available for the compound then, based on generally available toxicological information, the compound has the potential to cause an adverse effect as defined by the *EPA* at a Point of Impingement;

"**Controlled Shutdown**" means an immediate cut-off of all waste into the Boilers, while maintaining the operation of the combustion chamber and the APC Equipment within the Performance Requirements;

"**Description Section**" means the section on page one of the Certificate describing the Owner's operations and the Equipment located at the Facility and specifying the Facility Production Limit for the Facility;

"**Dioxins and Furans**" means polychlorinated dibenzo-dioxins and polychlorinated dibenzofurans;

"**Director**" means any person appointed in writing by the Minister of the Environment pursuant to section 5 of the *EPA* and pursuant to section 5 of the *OWRA* as a Director for the purposes of Part V of the *EPA,* section 9 of the *EPA* and section 53 of the *OWRA;*

"**District Manager**" means the District Manager of the York Durham District Office of the Ministry;

"**Emergency Shutdown**" means an immediate cut-off of all waste feed into the Boilers, followed by an accelerated extinction of all combustion in the Boilers, while maintaining the combustion temperature within the Performance Requirements, except when unreasonable;

"**Emission Summary Table**" means the table prepared in accordance with *O. Reg. 419/05* and the Procedure Document listing the appropriate Point of Impingement concentrations of each Compound of Concern from the Facility and providing comparison to the corresponding Ministry Point of Impingement Limit;

"***EAA***" means the Environmental Assessment Act, R.S.O. 1990, c. E.18, as amended;

"**EA Approval**" means the Notice of Approval to Proceed with the Undertaking signed by the Minister of the Environment on November 3, 2010, EA File No. 04-EA-02-08;

"***EPA***" means the Environmental Protection Act, R.S.O. 1990, c. E.19, as amended;

"**Equipment**" means equipment or processes associated with the thermal treatment of the approved Waste described in this Certificate and in the Supporting Documentation referred to herein and any other equipment or processes handling wastes and reagents;

"**ESDM Report**" means the Emission Summary and Dispersion Modelling Report prepared in accordance with the Procedure Document by Golder Associates and dated March 2011 submitted in support of the application, and includes any amendments to the ESDM Report listed in the attached Schedule "A" and all subsequent up-dated ESDM Reports as applicable;

"**Facility**" means the entire operation associated with thermal treatment of Waste located on the property where the Equipment is located;

"**Facility Production Limit**" means the production limit placed on the main product(s) or raw materials used by the Facility that represents the design capacity of the Facility and assists in the definition of the operations approved by the Director;

"**Grizzly Building**" means the building at the Site where the bottom ash is screened and where the oversized constituents of the bottom ash (grizzly overs) are temporarily stored prior to transport for subsequent storage in the Residue Building;

"**Independent Acoustical Consultant**" means an Acoustical Consultant who is not representing the Owner and was not involved in preparing the Acoustic Assessment Report or the design/implementation of Noise Control Measures for the Facility and/or Equipment. The Independent Acoustical Consultant shall not be retained by the Acoustical Consultant involved in the noise impact assessment or the design/implementation of Noise Control Measures for the Facility and/or Equipment;

"**I-TEF**" means International Toxic Equivalency Factor derived for each dioxin and furan congener by comparing its toxicity to the toxicity of 2,3,7,8 tetrachloro dibenzo-p-dioxin, as recommended by the North Atlantic Treaty Organization Committee on Challenges to Modern Society (NATO CCMS) in 1989 and adopted by Canada in 1990;

"**I-TEQ**" means International Toxic Equivalent of dioxins and furans calculated using the I-TEFs, as recommended by the NATO CCMS in 1989 and adopted by Canada in 1990;

"**Manager**" means the Manager, Technology Standards Section, Standards Development Branch, who has been appointed under Section 5 of the *EPA* for the purposes of Section 11(1)2 of the *O. Reg. 419/05,* or any other person who represents and carries out the duties of the Manager,

Technology Standards Section, Standards Development Branch, as those duties relate to the conditions of this Certificate;

"**Ministry**" means the ministry of the government of Ontario responsible for the *EPA* and the *OWRA* and includes all officials, employees or other persons acting on its behalf or the Ontario Ministry of the Environment;

"**Municipality**" means the Municipality of Clarington;

"***NMA***" means the *Nutrient Management Act*, 2002, S.O. 2002, c. 4, as amended;

"**Noise Control Measures**" means measures to reduce the noise emission from the Facility and/or Equipment including, but not limited to silencers, acoustic louvers, enclosures, absorptive treatment, plenums and barriers;

"**LDR**" means the Lands Disposal Restrictions referred to in sections 74 through 85 of the *O. Reg. 347,* which prohibit the disposal of hazardous wastes on land until they have been treated to meet the treatment standards under the *O. Reg. 347;*

"**Leachate Toxicity Criteria**" means the concentrations of any of the contaminants listed in Schedule 4 at a concentration equal to or in excess of the concentration specified for that contaminant in Schedule 4 using the Toxicity Characteristic Leaching Procedure, defined in the *O. Reg. 347*;

"***O. Reg. 419/05***" means the *Ontario Regulation 419/05,* Air Pollution – Local Air Quality enacted under the *EPA,* as amended;

*"**O. Reg. 347**"* means the *Ontario Regulation 347,* R.R.O 1990 (General –Waste Management) enacted under the *EPA,* as amended;

"***OWRA***" means the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40, as amended;

"**Owner**" means any person that is responsible for the establishment and operation of the Site being approved by this Certificate, and it includes The Regional Municipality of Durham, The Regional Municipality of York, and Covanta Durham York Renewable Energy Limited Partnership (operator), their successors and assignees;

"***PA***" means the *Pesticides Act*, R.S.O. 1990, c.P. 11, as amended;

"**Performance Requirements**" means the performance requirements and emission limits specified in the section of this Certificate entitled "Performance Requirements";

"**Point of Impingement**" means any point outside the Facility in the natural environment and as defined by s.2 of the *O. Reg. 419/05;*

"**Point of Reception**" means the Point of Reception as defined by *Publication NPC-205* and/or *Publication NPC-232*, as applicable;

"**Pre-test Information**" means the information outlined in Section 1.1 of the Source Testing Code;

"**Procedure Document**" means the Ministry's document entitled "Procedure for Preparing an Emission Summary and Dispersion Modelling Report" dated July 2005, as amended;

"**Professional Engineer**" means a Professional Engineer as defined within the *Professional Engineers Act*, R.S.O. 1990, c. P.28, as amended;

"**Provincial Officer**" means any person designated in writing by the Minister as a provincial officer pursuant to Section 5 of the *OWRA* or Section 5 of the *EPA* or Section 17 of the *PA* or Section 4 of the *NMA* or Section 8 of the *SDWA;*

"***Publication NPC-103***" means the Ministry's Publication NPC-103 of the Model Municipal Noise Control By-Law, Final Report, dated August 1978, published by the Ministry, as amended;

"***Publication NPC-205***" means the Ministry's Publication NPC-205, entitled "Sound Level Limits for Stationary Sources in Class 1 & 2 Areas (Urban)", dated October, 1995, as amended;

"***Publication NPC-207***" means the Ministry's draft technical publication entitled "Impulse Vibration in Residential Buildings", dated November 1983, supplementing the Model Municipal Noise Control By-Law, Final Report, dated August 1978, published by the Ministry, as amended;

"***Publication NPC-232***" means the Ministry's Publication NPC-232, entitled "Sound Level Limits for Stationary Sources in Class 3 Areas (Rural)", dated October, 1995, as amended;

"***Publication NPC-233***" means the Ministry's Publication NPC-233, entitled "Information to be Submitted for Approval of Stationary Sources of Sound", dated October, 1995, as amended;

"**Rejected Waste**" means either municipal waste which cannot be processed at the Facility or waste which the Site is not approved to accept. Rejected Waste includes but is not limited to the Bulky Unprocessable Items and the Unacceptable Waste;

"**Regional Director**" means the Regional Director of the Central Region of the Ministry;

"**Regions**" means The Regional Municipality of Durham and The Regional Municipality of York;

"Report EPS 1/PG/7" means the Environment Canada Report EPS 1/PG/7, entitled "Protocols and Performance Specifications for Continuous Monitoring of Gaseous Emissions from Thermal Generation", dated September, 1993, as amended;

"**Residual Waste**" means waste resulting from the Waste processing activities at the Site. Residual Waste is limited to the recovered ferrous metals, the recovered non-ferrous metals, the bottom ash (consisting of the ash fines and the grizzly overs) and the fly ash (untreated and following conditioning);

"**Residue Building**" means the building at the Site where the bottom ash and the fly ash are processed, temporarily stored and loaded in transport vehicles for off-site disposal;

"**Schedules**" means the following schedules "A", "B", "C", "D", "F" and "G", attached to the Certificate and forming part of the Certificate;

"***SDWA***" means the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, as amended;

"**Sensitive Receptor**" means any location where routine or normal activities occurring at reasonably expected times would experience adverse effect(s) from odour discharges from the Facility, including one or a combination of:

(a) private residences or public facilities where people sleep (e.g.: single and multi-unit dwellings, nursing homes, hospitals, trailer parks, camping grounds, etc.);

(b) institutional facilities (e.g.: schools, churches, community centres, day care centres, recreational centres, etc.);

(c) outdoor public recreational areas (e.g.: trailer parks, play grounds, picnic areas, etc.); and

(d) other outdoor public areas where there are continuous human activities (e.g.: commercial plazas and office buildings);

"**Site**" means the property where the Owner has located and operates the Facility and the Works and located at 72 Osbourne Road, 27, Concession Broken Front, Part 1 in the Municipality of Clarington, Regional Municipality of Durham;

"**Source Testing**" means monitoring, sampling and testing to measure emissions resulting from operating the Facility under conditions which yield the worst case emissions within the approved operating range of the Facility;

"***Source Testing Code***" means the Ministry's document entitled "Source Testing Code, Version 2, Report No. ARB-66-80", dated November 1980, as amended;

"**Stack**" means the stack that discharges emissions from the Boilers after those emissions have been controlled by the associated APC Equipment;

"**Substantial Completion**" has the same meaning as "substantial performance" in the *Construction Lien Act* R.S.O. 1990, c.C-30, as amended;

"**Supporting Documentation**" means the documents listed in the attached Schedule "A" of this Certificate which forms part of this Certificate;

"**Test Contaminants**" means the contaminants set out in the attached Schedule "D";

"**Tipping Building**" means the building at the Site where the incoming Waste is received, sorted and temporarily stored;

"**Total Power Failure**" means the loss of the external power supply and concurrent loss of all in-plant power generation;

"**Trained Personnel**" means one or more Site personnel trained in accordance with the requirements of Condition 9.;

"**Waste**" means municipal solid waste as defined in the *O. Reg. 347* and limited to the approved waste set out in Condition No. 2.(2);

"**Waste Processing Rate** means the mass of Waste fed into one of the Boilers;

"**Works**" means the sewage works described in the Owner's application, this Certificate and in the Supporting Documentation referred to herein, to the extent approved by this Certificate;

"**Unacceptable Waste**" means the incoming Waste received at the Site that does not meet the incoming Waste quality criteria set out in this Certificate, is of hazardous nature and requires caution when handling; and

"**Undiluted Gases**" means the flue gas stream which contains oxygen, carbon monoxide, total hydrocarbons and all contaminants in the same concentrations as they exist in the flue gas stream emerging from an individual piece of equipment, such as the combustion chamber of one Boiler or one baghouse, and into which gas stream no ambient air and/or no other gas stream originating from another piece of equipment, except for dilution air introduced within the CEM Systems, has been introduced.

You are hereby notified that this approval is issued to you subject to the terms and conditions outlined below:

GENERAL PROVISIONS

1. GENERAL

Compliance

(1) The Owner shall ensure compliance with all the conditions of this Certificate and shall ensure that any person authorized to carry out work on or operate any aspect of the Site, including the Works, is notified of this Certificate and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

(2) Any person authorized to carry out work on or operate any aspect of the Site shall comply with the conditions of this Certificate.

Build in Accordance

(3) (a) Except as otherwise provided by this Certificate, the Site shall be designed, developed, built, operated, monitored, inspected and maintained in accordance with the following applications:

(i) Applications for a Certificate of Approval (Air) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of

Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the Supporting Documentation listed in the attached Schedule "A".

(ii) Applications for a Provisional Certificate of Approval (Waste Disposal Site) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the Supporting Documentation listed in the attached Schedule "A".

(iii) Applications for a Certificate of Approval of Municipal and Private Sewage Works dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the Supporting Documentation listed in the attached Schedule "A".

(b) (i) Any design optimization or modification that is inconsistent with the conceptual design set out in the Supporting Documentation in Schedule "A" shall be clearly identified, along with an explanation of the reasons for the change and submitted to the Director for approval.

(ii) If a change to the conceptual design is submitted to the Director for approval, no construction of the Site shall commence prior to the Director approving, in writing, the final conceptual design of the Site.

As-built Drawings

(4) (a) Within ninety (90) days of the completion of the initial successful Source Testing program, a set of as-built drawings showing the Facility and the Works and bearing the stamp of a Professional Engineer, shall be prepared and retained at the Site.

(b) These drawings shall be kept up-to-date through revisions undertaken from time to time and a copy shall be retained at the location of the Site or at the operational office of the Owner for the operational life of the Site.

(c) Notwithstanding provisions of Condition 1.(4)(b), an amendment to this Certificate shall be sought for changes to the as-built drawings, requiring approval.

(d) The as-built drawings shall be made available to Ministry staff upon request.

Interpretation

(5) Where there is a conflict between a provision of any document, including the application referred to in this Certificate and the conditions of this Certificate, the conditions in this Certificate shall take precedence.

(6) Where there is a conflict between the applications and a provision in any documents listed in Schedule "A", the applications shall take precedence, unless it is clear that the purpose of the document was to amend the applications and that the Ministry approved the amendment.

(7) Where there is a conflict between any two documents listed in Schedule "A", other than the applications, the document bearing the most recent date shall take precedence.

(8) The requirements of this Certificate are severable. If any requirement of this Certificate, or the application of any requirement of this Certificate to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this Certificate shall not be affected thereby.

Other Legal Obligations

(9) The issuance of, and compliance with the conditions of this Certificate does not:

(a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement; or

(b) limit in any way the authority of the Ministry to require certain steps be taken or to require the Owner to furnish any further information related to compliance with this Certificate.

Adverse Effects

(10) The Site shall be constructed, operated and maintained in a manner which ensures the health and safety of all persons and prevents adverse effects on the natural environment or on any persons.

(11) The Owner shall take steps to minimize and ameliorate any adverse effect on the natural environment or impairment of water quality resulting from the approved operations at the Site, including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.

(12) Despite the Owner or any other person fulfilling any obligations imposed by this Certificate, the person remains responsible for any contravention of any other condition of this Certificate or any applicable statute, regulation, or other legal requirement resulting from any act or emission that caused the adverse effect to the natural environment or impairment of water quality.

(13) If at any time odours, pests, litter, dust, noise or other such negative effects are generated at this Site and cause an adverse effect, the Owner shall take immediate appropriate remedial action that may be necessary to alleviate the adverse effect, including suspension of all waste management activities if necessary.

Change of Ownership

(14) The Owner shall notify the Director in writing, and forward a copy of the notification to the District Manager, within thirty (30) days of the occurrence of any changes:

(a) the ownership of the Site;
(b) the operator of the Site;
(c) the address of the Owner;
(d) the partners, where the Owner is or at any time becomes a partnership and a copy of the most recent declaration filed under the *Business Names Act,* R.S.O. 1990, c. B.17, as amended, shall be included in the notification;
(e) the name of the corporation where the Owner is or at any time becomes a corporation, other than a municipal corporation, and a copy of the most current information filed under the *Corporations Information Act*, R.S.O. 1990, c. C.39, as amended, shall be included in the notification.

(15) No portion of this Site shall be transferred or encumbered prior to or after closing of the Site unless the Director is notified in advance. In the event of any change in ownership of the Site, other than change to a successor municipality, the Owner shall notify the successor of and provide the successor with a copy of this Certificate, and the Owner shall provide a copy of the notification to the District Manager and the Director.

Inspections by the Ministry

(16) No person shall hinder or obstruct a Provincial Officer from carrying out any and all inspections authorized by the *OWRA,* the *EPA,* the *PA,* the *SDWA* or the *NMA* of any place to which this Certificate relates, and without limiting the foregoing:

(a) to enter upon the premises where the approved processing is undertaken, or the location where the records required by the conditions of this Certificate are kept;
(b) to have access to, inspect, and copy any records required to be kept by the conditions of this Certificate;
(c) to inspect the Site, related equipment and appurtenances;
(d) to inspect the practices, procedures, or operations required by the conditions of this Certificate;
(e) to conduct interviews with staff, contractors, agents and assignees of the Owner; and
(f) to sample and monitor for the purposes of assessing compliance with the terms and conditions of this Certificate or the *EPA,* the *OWRA,* the *PA,* the *SDWA* or the *NMA.*

Information

(17) Any information requested by the Ministry, concerning the operation of the Site and its operation under this Certificate, including but not limited to any records required to be kept by this Certificate, manuals, plans, records, data, procedures and supporting documentation shall be provided to the Ministry, in a timely manner, upon request**.**

(18) The receipt of any information by the Ministry or the failure of the Ministry to prosecute any person or to require any person to take any action, under this Certificate or under any statute, regulation or other legal requirement, in relation to the information, shall not be construed as:

(a) an approval, waiver, or justification by the Ministry of any act or omission of any person that contravenes any term or condition of this Certificate or any statute, regulation or other legal requirement; or

(b) acceptance by the Ministry of the information's completeness or accuracy.

(19) The Owner shall ensure that a copy of this Certificate, in its entirety and including all its Notices of Amendment and the Supporting Documentation listed in Schedule "A" are retained at the Site at all times.

2. **<u>SERVICE AREA, APPROVED WASTE TYPES, RATES and STORAGE</u>**

(1) The service area for the Site is the area within the jurisdictional boundaries of The Regional Municipality of Durham and The Regional Municipality of York.

(2) The operation of this Site is limited to:

(a) receipt, temporary storage, transfer and processing, including thermal treatment, of solid non-hazardous waste remaining after Waste Diversion required by the EA Approval, limited to Waste from the following sources:

(i) domestic waste and Industrial Commercial and Institutional waste from the Regions' curbside collection and/or from the Regions' waste management facilities; and

(ii) waste generated on-Site through activities not relating to the handling and processing of Waste (ie. office, lunch room, etc.);

(b) collection and management of the stormwater run-off generated at the Site.

(3) The following Unacceptable Waste is prohibited from being accepted at the Site:

(a) hazardous waste, as defined in the *O. Reg. 347;*
(b) wastes which have been source-separated for the purposes of diversion;

(c) international waste generated outside of Canada, but collected within the jurisdictional boundaries of The Regional Municipality of Durham and The Regional Municipality of York.

(4) Waste Receipt Rate:

(a) The maximum daily amount of Waste that is approved to be accepted at the Site shall not exceed 1,520 tonnes per day.

(5) Storage Restrictions:

Solids:

(a) A maximum of 7,350 cubic metres shall be stored inside the Waste pit within the Tipping Building as shown in the Supporting Documentation.

(b) Rejected Waste, limited to the Bulky Unprocessable Items removed from the incoming Waste in the Tipping Building shall be stored:

(i) in two (2) roll-off bins having a maximum total storage capacity of 30 cubic metres, located within the confines of the Tipping Building; and/or

(ii) in the appropriate dedicated bunkers, located within the confines of the Residue Building and described in Conditions 2.(5)(c), 2.(5)(d) and 2.(5)(d), below.

(c) A maximum of approximately 77 tonnes or 106 cubic metres of the Residual Waste, limited to the recovered ferrous metals, shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of seven (7) days.

(d) A maximum of approximately 120 tonnes or 100 cubic metres of the Residual Waste, limited to the recovered non-ferrous metals, shall be stored in one (1) dedicated bunker, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of seven (7) days.

(e) A maximum of 630 tonnes of the Residual Waste, limited to bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of seven (7) days.

(f) A maximum of 700 tonnes of the Residual Waste, limited to the fly ash shall be stored in seven (7) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is limited to a maximum of thirty six (36) days.

(g) A maximum of 85 cubic metres of activated carbon for the carbon injection system shall be stored in one (1) outdoor tank, located adjacent to the APC Building.

(h) A maximum of 150 cubic metres of lime for the dry scrubber shall be stored in one (1) or more indoor tank(s), located within the confines of the APC Building.

(i) If required, recirculated residue shall be stored in one (1) or more indoor tank(s), located within the confines of the APC Building.

(j) A maximum of 35 tonnes or 25 cubic metres of cement for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.

(k) A maximum of 25 tonnes or 45 cubic metres of pozzolan for fly ash conditioning shall be stored in one (1) outdoor silo, located adjacent to the Residue Building.

Liquids:

(l) (i) A maximum of 36 cubic metres or 40 tonnes of aqueous ammonia for the SNCR System shall be stored in one (1) outdoor tank, located adjacent to the APC Building.

(ii) The Owner shall ensure that the aqueous ammonia storage tank is equipped with a liquid level monitoring device designed to provide a visual and an auditory alarm when the high level setpoint is reached.

(iii) The aqueous ammonia storage tank spill containment area and the loading area shall be designed in accordance with the requirements in the Ministry's document entitled *"Guidelines for Environmental Protection Measures at Chemical and Waste Storage Facilities"* dated May 2007, as amended.

(6) No outdoor storage of waste, including storage in vehicles, is approved under this Certificate.

(7) The Owner shall ensure that storage of all wastes is undertaken in a manner that does not cause an adverse effect or a hazard to the environment or any person.

(8) (a) Waste received at the Site shall be processed within four (4) days from its receipt at the Site.

(b) Emergency Waste storage duration extension:

(i) The Owner may store the incoming Waste inside the tipping pit within the confines of the Tipping Building for up-to seven (7) days from its receipt at the Site, on an emergency basis only.

(ii) Within twenty four (24) hours from the start of the emergency storage of the incoming Waste, the Owner shall notify, in writing, the District Manager that the incoming Waste is being stored longer then four (4) days.

(iii) Should there be public complaints about the extended incoming Waste storage, the Owner, in consultation with the District Manager, shall determine the cause of the complaints, propose appropriate abatement measures, including but not be limited to the removal and off-site disposal of the Waste contained in the tipping pit, and implement the said measures upon receiving written concurrence from the District Manager within the time frame acceptable to the District Manager.

(9) In the event that Waste cannot be processed at the Site and the Site is at its approved storage capacity, the Owner shall cease accepting additional Waste. Receipt of additional Waste may be resumed once such receipt complies with the waste storage limitations approved in this Certificate.

3. **SIGNS and SITE SECURITY**

(1) Prior to receipt of Waste at the Site, the Owner shall ensure that a sign is posted at the entrance to the Site. The sign shall be visible from the main road leading to the Site. The following information shall be included on the sign:

(a) name of the Owner;
(b) this Certificate number;
(c) hours during which the Site is open;
(d) waste types that are approved to be accepted at the Site;
(e) Owner's telephone number to which complaints may be directed;
(f) Owner's twenty-four hour emergency telephone number (if different from above);
(g) a warning against unauthorized access; and
(h) a warning against dumping at the Site.

(2) The Owner shall ensure that appropriate and visible signs are posted at the Site clearly identifying the wastes and the process reagents and stating warnings about the nature and any possible hazards of the wastes and the reagents.

(3) The Owner shall ensure that appropriate and visible signs are posted at the Site to prohibit smoking, open flames or sources of ignition from being allowed near any flammable materials storage areas.

(4) The Owner shall install and maintain appropriate and visible signs at the Site to direct vehicles to the Waste receiving and Residual Waste removal areas and to the reagent unloading areas.

(5) The Owner shall post appropriate and visible signs along the traffic route providing clear directions to the Site.

(6) The Owner shall ensure that the Site is fenced in and that all entrances are secured by lockable gates to restrict access only to authorized personnel when the Site is not open.

(7) The Owner shall ensure that access to the Site, with the exception of the area designated as a Public Information Centre, is regulated and that no unauthorized persons are permitted at the Site without the Trained Personnel escort.

(8) The Owner shall ensure that the Site is operated in a safe and secure manner, and that Waste, the Residual Waste and the Unacceptable Waste are properly handled, packaged or contained and stored so as not to pose any threat to the general public and the Site personnel.

4. **SITE OPERATIONS**

(1) **Operating hours:**

(a) The Site is approved to operate twenty-four (24) hours per day three hundred and sixty-five (365) days per year.

(b) Notwithstanding Condition 4.(1)(a), Waste shall only be received at the Site and the Residual Waste shall only be transferred from the Site between 7:00 a.m. and 7:00 p.m. Monday to Saturday. No receipt of the Waste or transfer of the Residual Waste shall be undertaken on statutory holidays.

(c) Emergency Receipt of Waste:

(i) The Owner may receive Waste at the Site outside of the operating hours specified in Condition 4.(1)(b), above, on an emergency basis only.

(ii) Within twenty four (24) hours from the receipt of Waste outside of the approved receiving hours, the Owner shall notify, in writing, the District Manager that Waste was received outside of the approved receiving hours.

(iii) Should there be complaints about Waste shipments outside of the approved hours, the Owner, in consultation with the District Manager, shall determine the cause of the complaint, propose appropriate abatement measures and implement the said measures upon receiving written concurrence from the District Manager within the time frame acceptable to the District Manager.

(2) **Incoming Waste receipt:**

(a) At the weigh scale, the Trained Personnel shall:

(i) inspect the required documentation prior to acceptance of the incoming Waste at the Site; and

(ii) inspect the incoming Waste with radiation detection equipment.

(b) In the Tipping Building, the Trained Personnel shall:

(i) visually inspect all incoming Waste being unloaded into the Waste pit; and

(ii) once per hour, or as accepted by the District Manager, unload the incoming Waste on the tipping floor for a manual visual inspection and sorting of the incoming Waste.

(c) The Owner shall only accept the incoming Waste that is delivered in vehicles that have been approved by the Ministry.

(d) The Owner shall ensure that all unloading of incoming Waste at the Site takes place entirely within the confines of the Tipping Building.

(3) **Unacceptable Waste handling:**

(a) In the event that waste that is not approved under this Certificate is inadvertently accepted at the Site, the Owner shall ensure that the Unacceptable Waste:

(i) is stored in a way that ensures that no adverse effects result from its storage;
(ii) is segregated from all other waste;
(iii) is handled and removed from the Site in accordance with the *O. Reg. 347* and the *EPA*; and
(iv) is removed from the Site within (4) days of its receipt or as acceptable to the District Manager.

(b) The Owner shall ensure that all loading of the Unacceptable Waste into transport vehicles is carried out entirely within the confines of the Tipping Building.

(4) **Waste Sorting:**

(a) The Trained Personnel shall remove the Bulky Unprocessable Items and Unacceptable Waste from the incoming Waste prior to charging of the Waste to the Boilers.

(b) All sorting of the incoming Waste at the Site shall be undertaken indoors, within the confines of the Tipping Building and/or the Refuse Building.

(5) **Residual Waste Handling and Disposal:**

(a) (i) Except for transportation of the Residual Waste between the Grizzly Building and the Residue Building, the Owner shall ensure that all

handling of the bottom ash and its segregated constituents, and of the fly ash, is undertaken within the confines of enclosed conveyors and enclosed buildings.

(ii) The Owner shall ensure that all loading of the Residual Waste into vehicles for its transport from the Site is carried out entirely within the confines of the Residue Building.

(b) (i) Different constituents of the Residual Waste shall not be comingled prior to the required compliance testing, unless all Residual Waste is to be disposed of at a Waste Disposal Site that is approved to accept hazardous waste.

(ii) The Owner shall ensure that the equipment used in handling of the hazardous wastes or that came in direct contact with the hazardous wastes is not used to handle other wastes.

(iii) On an emergency basis, the Owner may use equipment used to handle the hazardous wastes to handle other wastes provided that prior to such use the equipment has been thoroughly cleaned first.

(c) (i) Only haulers approved by the Ministry shall be used to transport the Residual Waste from the Site.

(ii) The Residual Waste shall be transported from the Site in appropriately covered vehicles that will not allow fugitive dust emissions to be emitted into the natural environment during the said transport.

d) Residual Waste generated at the Site shall be disposed of shall only be disposed of at an approved waste disposal site in accordance with the requirements in the *EPA* and the *O. Reg. 347* or at a location with the appropriate jurisdictional approval or a license, if required.

(e) Should the Residual Waste limited to the conditioned fly ash and/or the bottom ash be deemed a hazardous waste, the ash shall be disposed of at an approved waste disposal site in accordance with the Land Disposal Restrictions requirements in the *EPA* and the *O. Reg.* 347 or at a location with the appropriate jurisdictional approval or a license, if required.

(6) **Wastewater Management**

(a) The Owner shall ensure that all wastewater generated at the Site is contained within enclosed buildings, tanks, pipes and conveyors at the Site and the approved outdoor Wastewater Settling Basin.

(b) The Owner shall ensure that all wastewater generated at the Site is collected in leak-proof and sufficiently designed wastewater storage facilities:

(i) Wastewater Holding Tank, to collect the continuous reject water flow from the Boiler make-up water treatment system and the Boiler blowdown, having an approximate holding capacity of 100 cubic metres, located within the confines of the Boiler Building and venting to the atmosphere; and

(ii) Wastewater Settling Basin, to collect the wastewater from the floor drains in the buildings at the Site, except for the Tipping Building and the Residue Building, the ash discharger overflow and drain water, the Boiler and turbine-generator washdown water and the APC Equipment area washdown water, having an approximate holding capacity of 38 cubic metres, located outdoors, open to the atmosphere and equipped with a filter basket and an oil skimmer board.

(c) The wastewater pumps shall be located in the area designed in accordance with the Supporting Documentation to ensure that any potential leaks or drips are contained and directed to the Wastewater Settling Basin.

(d) (i) The wastewater level in the Wastewater Holding Tank shall be monitored and controlled to ensure that the wastewater inflow to the Tank does not cause the Tank overflow.

(ii) The wastewater level in the Wastewater Settling Basin shall be monitored and controlled to ensure that the atmospheric precipitation does not cause an overflow from the Basin.

(e) The Owner shall regularly empty, and clean as necessary, all sumps, wastewater storage/holding areas and equipment that are used to contain, collect and handling the wastewater generated at the Site.

(f) Should the Owner find it necessary to remove the wastewater from the Site, the wastewater shall only be disposed of at a Ministry-approved site in accordance with the site's certificate of approval or be discharged to the sanitary sewer in accordance with the agreement with the municipality accepting the discharge.

(g) The floors of the Tipping Building and the Residue Building shall be sufficiently sloped to facilitate the flow of the wastewater generated from the floor cleaning activities and from the truck washdown towards the designated wastewater collection area.

(h) The Owner shall ensure that the Wastewater Settling Basin is regularly cleaned out and that it does not become a source of odour emissions.

(7) All activities approved under this Certificate shall only be carried out by appropriately Trained Personnel.

5. EQUIPMENT and SITE INSPECTIONS and MAINTENANCE

Operation and Maintenance

(1) Prior to the receipt of the Waste at the Site, the Owner shall prepare and update as necessary, an Operation and Maintenance Manual for all the Equipment, the APC Equipment, the CEM Systems, the Works and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility. The Manual shall be prepared in accordance with the written manufacturer's and/or supplier's specifications and good engineering practice.

As a minimum, the Operation and Maintenance Manual shall specify:

(a) operation procedures of the Equipment, the APC Equipment, the CEM Systems, the Works, and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility, in accordance with manufacturers' recommendations and good engineering practices to achieve compliance with this Certificate, the *EPA,* the *OWRA* and their Regulations;
(b) calibration procedures for the CEM Systems as required by this Certificate;
(c) procedures for start-up and shutdown, including Controlled Shutdown and Emergency Shutdown;
(d) quality assurance procedures for the operation and calibration of the CEM Systems in accordance with *40 CFR 60*, Appendix F or *Report EPS 1/PG/7,* as appropriate;
(e) Waste receiving and screening procedures;
(f) Waste, Rejected Waste and Residual Waste handling procedures;
(g) testing and monitoring procedures as required by this Certificate;
(h) maintenance and preventative maintenance procedures as required by this Certificate;
(i) Facility inspection, including frequency of inspections, procedures;
(j) procedure for handling complaints as required by this Certificate.
(k) contingency measures to resolve upset conditions and/or minimize the environmental impacts from the Facility;
(l) emergency response procedures, including procedures for dealing with power failure, fire, explosion, spills and any other potential emergencies;
(m) procedures for record keeping activities as required by this Certificate;
(n) description of the responsibilities of the Site personnel and the personnel training protocols; and
(o) a list of personnel positions responsible for operation and maintenance, including supervisory personnel and personnel responsible for handling of the emergency situations, recording and reporting pursuant to the requirements of this Certificate, along with the training and experience required for the positions and a description of the responsibilities.

(2) A copy of this Operations and Maintenance Manual shall be kept at the Site, be accessible to the Site personnel at all times and be updated, as required. The Operations and Maintenance Manual shall be available for inspection by a Provincial Officer upon request.

(3) The Owner shall implement the operation, maintenance, preventative maintenance and calibration procedures set out in the Operations and Maintenance Manual required by this Certificate.

Critical Spare Parts

(4) (a) The Owner shall prepare a list of critical spare parts, update this list annually or more frequently, if necessary, to ensure that this list is maintained up-to-date and shall be available for inspection by a Provincial Officer upon request.

(b) The Owner shall ensure that the critical spare parts are available at the Site at all times or are immediately available from an off-Site supplier.

Inspections

(5) Prior to receipt of the Waste at the Site, the Owner shall prepare a comprehensive written inspection program which includes inspections of all aspects of the Site's operations including, but not limited to the following:

(a) buildings and the indoor waste storage facilities and presence of dust and odour and leaks in or near any openings, such as doorways, window, vent, louver or any other opening;
(b) outdoor Residual Waste transport equipment, and the presence of dust and leaks at or near transfer points or the equipment seams;
(c) the Equipment, the APC Equipment, the CEM Systems, the Works and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility;
(d) spill containment areas, loading areas and the conditions around the Wastewater Settling Basin;
(e) security fencing, gates, barriers and signs;
(f) off-site nuisance impacts such as odour, dust, litter, etc.
(g) presence of stormwater pooling at the Site; and
(h) condition of the on-Site roads for presence of leaks and drips from the waste delivery trucks or excessive dust emissions.

(6) The inspections, except for the inspection of the Works, are to be undertaken daily by the Trained Personnel in accordance with the inspection program to ensure that the Facility is maintained in good working order at all times and that no off-Site impacts are occurring. Any deficiencies detected during these regular inspections must be promptly corrected.

Inspections and Maintenance of the Works

(7) The Owner shall inspect the Works at least once a year and, if necessary, clean and maintain the Works to prevent the excessive build-up of sediments and/or vegetation.

6. PERFORMANCE REQUIREMENTS

(1) The Owner shall, ensure that the Facility/Equipment is designed and operated in such a manner as to ensure that the following Performance Requirements are met:

(a) the maximum 10-minute average concentration of odour at the most impacted Sensitive Receptor, resulting from the operation of the Facility/Equipment, calculated in accordance with the procedures outlined in the attached Schedule "B", shall not exceed 1 odour unit;

(b) the noise emissions from the Facility shall comply with the limits set out in Ministry *Publication NPC-205;*

(c) the vibration emissions from the Facility shall comply with the limits set out in Ministry *Publication NPC-207.*

(2) The Owner shall ensure that the Boilers and the associated APC Equipment and the CEM Systems are designed and operated in such a manner as to ensure that the following Performance Requirements are met:

(a) (i) The temperature in the combustion zone of each Boiler shall reach a minimum of 1000 degrees Celsius (^oC) for one second, prior to introduction of the Waste into the combustion chamber of the Boiler during the start-up, and thereafter maintained during the entire thermal treatment cycle and subsequent shutdown until all Waste combustion is completed.

(ii) Compliance with the minimum temperature requirement shall be demonstrated by direct measurement at the location where the combustion gases have achieved the residence time of one second at a minimum temperature of 1000^oC (the Target Location) or by correlation of the required temperature of 1000^oC for one second to the temperature measured downstream of the Target Location as proven by a method acceptable to the Director.

(b) The concentration of residual oxygen in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, as measured and recorded by the CEM System, shall not be less than 6 percent by volume on a dry basis.

(c) (i) The operational target for the concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler is 40 milligrams per dry cubic metre, as a 4-hour rolling average, normalized to 11 percent oxygen at a reference temperature of 25^oC and a reference pressure of 101.3 kilopascals, as measured and recorded by the CEM System, for the period from and including initial commissioning of the facility to twelve months following the completion of the first Source Testing program.

(ii) The 4-hour average concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, as measured and recorded by the CEM System, shall not be more than 40 milligrams per dry cubic metre, normalized to 11 percent oxygen at a reference temperature of 25°C and a reference pressure of 101.3 kilopascals, after the first twelve months following the completion of the first Source Testing program.

(d) The emissions from the Boilers after those emissions have been controlled by the associated APC Equipment for discharge into the atmosphere via the Stack shall comply with the emission concentration limits listed in the attached Schedule "C", as measured by a CEM System or by Source Testing as applicable.

(e) The Boilers shall include combustion air control systems, which are capable of automatically adjusting the distribution and the quantity of combustion air, in such a manner that changes in the Waste Processing Rate and/or Waste composition or irregularities in the loading and/or combustion shall not adversely affect the performance of the Boilers.

(f) The Boilers shall provide and maintain a high degree of gas turbulence and mixing in the combustion chamber.

(g) The Boilers shall achieve the temperature, oxygen availability and turbulence requirements over the complete range of operating parameters, including feed rate, feed characteristics, combustion air, flue gas flow rate and heat losses.

(h) The inlet temperature into each baghouse of the APC Equipment of the Boilers shall not be less than 120°C and not more than 185°C.

(3) The Owner shall install and maintain visual and audible alarm systems to alert the Facility/Equipment operators of any potential deviation from the above Performance Requirements for parameters that are continuously monitored by applicable CEM Systems and shall forthwith take all reasonable actions to bring the Equipment/Facility into compliance with all Performance Conditions.

(4) In the event that the CEM Systems indicate that emissions from the Boilers and the Stack exceed any Performance Requirements in the attached Schedule "C" for a continuous three (3) hour period, the Owner shall forthwith cut-off all Waste feed into the affected Boiler and initiate an Emergency Shutdown, while maintaining a temperature of 1000°C, as practicable, in the combustion zone of the Boiler.

Residual Waste Compliance Criteria

(5) (a) The Residual Waste generated at the Site and destined for a non-hazardous waste disposal site in Ontario shall not meet any of the criteria from the definition of "hazardous waste" set out in the *O. Reg. 347.*

(b) The Residual Waste that meets any of the criteria from the definition of "hazardous waste" set out in the *O. Reg.* 347 shall be handled and disposed of in accordance with the LDR requirements set out in the *EPA* and the *O. Reg. 347.*

(6) The Residual Waste, limited to the bottom ash, destined for a non-hazardous waste disposal site shall meet the definition of "incinerator ash" set out in the *O. Reg. 347.*

7. **TESTING, MONITORING** and **AUDITING**

Source Testing

(1) The Owner shall perform annual Source Testing in accordance with the procedures and schedule outlined in the attached Schedule "E", to determine the rate of emission of the Test Contaminants from the Stack. The first Source Testing program shall be conducted not later than six (6) months after the Commencement Date of Operation of the Facility/Equipment and subsequent Source Testing program shall be conducted once (1) every calendar year thereafter.

Continuous Monitoring

(2) The Owner shall select, test and install appropriate CEM Systems and continuous recording devices in accordance with the requirements outlined in the attached Schedule "F" to conduct and maintain a program to continuously monitor, as a minimum, the following parameters prior to commencement of operation of the Boilers:

(a) the temperature at one (1) second downstream of the combustion zone of each Boiler where most of the combustion has been completed and the combustion temperature is fully developed;

(b) the inlet temperature of the gases into each baghouse of the APC Equipment of each Boiler;

(c) the concentration of carbon monoxide, oxygen and organic matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler;

(d) the opacity and moisture content of the flue gas and the concentration of oxygen, nitrogen oxides, sulphur dioxide, hydrogen chloride, hydrogen fluoride and ammonia in the Undiluted Gases leaving the baghouse of the APC Equipment of each Boiler.

Long-Term Sampling for Dioxins and Furans

(3) (a) The Owner shall develop, install, maintain and update as necessary a long-term sampling system, with a minimum monthly sampling frequency, to measure the concentration of Dioxins and Furans in the Undiluted Gases leaving the APC Equipment associated with each Boiler. The performance of

this sampling system will be evaluated during the annual Source Testing programs in accordance with the principles outlined by 40 CFR 60, Appendix B, Specification 4.

(b) The Owner shall evaluate the performance of the long-term sampling system in determining Dioxins and Furans emission trends and/or fluctuations as well as demonstrating the ongoing performance of the APC Equipment associated with the Boilers.

Ambient Air Monitoring

(4) (a) The Regions shall develop and implement the Ambient Air Monitoring and Reporting Plan, in accordance with the requirements set out in the EA Approval and as determined to be acceptable by the Regional Director.

(b) The Regions shall report the results of the Ambient Air Monitoring program to the Regional Director in accordance with the Ambient Air Monitoring and Reporting Plan and in accordance with the requirements of Condition 14.

(c) The Regions shall post the Ambient Air Monitoring and Reporting Plan and the results of the Ambient Air Monitoring program on the Owner's web site for the Facility in accordance with the requirements of the EA Approval and Condition 15.

Noise Monitoring - Acoustic Audit

(5) The Owner:

(a) shall carry out Acoustic Audit measurements on the actual noise emissions due to the operation of the Facility. The Acoustic Audit measurements shall be carried out in accordance with the procedures in *Publication NPC-103* and in accordance to the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director;

(b) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of *Publication NPC-233* and the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director, to the District Manager and the Director, not later than three (3) months after the commencement of operation of the Facility.

(6) The Director:

(a) may not accept the results of the Acoustic Audit if the requirements of *Publication NPC-233* or the approved Noise Monitoring and Reporting Plan were not followed;

(b) may require the Owner to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

Residual Waste Testing

(7) (a) A minimum of six (6) months prior to the Commencement Date of Operation, the Owner shall submit to the Director for approval, a Testing Protocol for testing of the bottom ash for compliance with the criteria set out in the "incinerator ash" definition from the *O. Reg.* 347 and for testing of the Residual Waste for compliance with the criteria set out in this Certificate.

(b) As a minimum, the Testing Protocol shall comply with the Ministry's regulatory requirements for sampling and testing of waste, including the requirements set out in the Ministry's document entitled "Principles of Sampling and Analysis of Waste for TCLP under Ontario Regulation 347", dated February 2002, as amended.

(c) The Testing Protocol shall include the rationale for the proposed methods and the following:

(i) a sampling protocol, including the proposed number of samples to be taken and their locations, to ensure that representative sample(s) are being tested for compliance with this Certificate;

(ii) sample(s) handling and preserving procedures;

(iii) analytical protocol for the applicable contaminants to ensure that appropriate analytical method(s) are being used for compliance testing required by this Certificate; and

(iv) a testing protocol for the bottom ash during the Site commissioning period.

(d) The Owner shall implement the Testing Protocol on the Commencement Date of Operation.

(8) For handling of the bottom ash as a solid non-hazardous waste, the Owner shall follow the following schedule for compliance testing:

(a) for the Site commissioning period, the bottom ash shall be tested in accordance with the Testing Protocol approved by the Director;

(b) for the period following the Site commissioning period, the bottom ash shall be tested for the content of the combustible materials on an annual basis, until the compliance testing results indicate that the bottom ash meets the "incinerator ash" definition from the *O. Reg. 347* for three (3) consecutive years, following which a triennial compliance testing event may be carried out;

(c) should any annual or triennial compliance testing event indicate that the bottom ash does not meet the "incinerator ash" definition, prior to each of the next three (3) shipments from the Site, compliance testing of each of the three (3) shipments shall be carried out. Once three (3) consecutive tests re – establish compliance with the "incinerator ash" definition from the *O. Reg. 347* and that the bottom ash does not exceed the Leachate Toxicity Criteria, the compliance testing schedule set out in Condition 7.(8)(b) may be resumed; and

(d) should the results of any compliance testing of the bottom ash indicate that the concentrations of the leachate toxic contaminants in the bottom ash equal to or exceed the Leachate Toxicity Criteria, the bottom ash shall be handled as a hazardous waste. Once three (3) consecutive tests re – establish that the bottom ash does not exceed the Leachate Toxicity Criteria, the bottom ash compliance testing schedule set out in Condition 7.(8)(b) may be resumed.

(9) (a) For handling of the bottom ash as a hazardous waste and for handling of the fly ash, prior to final disposal at a hazardous waste landfill site in Ontario, the Owner shall undertake any sampling and testing that would be required to comply with the LDR requirements set out in the *EPA* and the *O. Reg. 347.*

(b) The Owner shall follow the following schedule for compliance testing:

(i) prior to each of the first three (3) shipments of the ash from the Site, the ash shall be tested so that for the compliance with the LDR requirements can be demonstrated;

(ii) following the three (3) initial compliance testing events, the ash shall be tested on an annual basis, until the compliance testing results indicate that the ash meets the LDR requirements during the three (3) consecutive years, following which a triennial compliance testing may be carried out; and

(iii) should any annual or triennial compliance testing event indicate that the ash does not meet the LDR requirements, prior to next three (3) shipments from the Site, compliance testing of each of the three (3) shipments shall be carried out. Once three (3) consecutive tests re – establish compliance with the LDR requirements, the compliance testing schedule set out in Condition 7.(9)(b)(ii) may be resumed.

Soil Testing:

(10) (a) Within one hundred and twenty (120) days from the date of this Certificate, the Regions shall undertake the soil testing in accordance with the Soil Testing Plan required by this Certificate.

(b) The soil testing shall be repeated every three (3) years or as agreed upon in writing by the Regional Director.

Disposal of Residual Waste

(11) The Owners shall ensure that no portion of the Residual Waste undergoing compliance testing is transferred from the Site until the results of the compliance testing required by this Certificate demonstrate compliance with the relevant Ministry's requirements.

(12) Bottom ash that is not a hazardous waste, as defined in the *O. Reg. 347,* may be disposed of at an approved non-hazardous waste landfill site or at a site approved to accept such waste by an appropriate government agency of equivalent jurisdiction.

(13) Residual Waste shall be treated to comply with the LDR requirements set out in the *EPA* and the *O. Reg. 347* prior to disposal of at an approved hazardous waste landfill site or at a site approved to accept such waste by an appropriate government agency of equivalent jurisdiction.

Groundwater and Surface Water Monitoring

(14) (a) The Regions shall develop and implement the Groundwater and Surface Water Monitoring Plan, in accordance with the requirements set out in the EA Approval and as determined to be acceptable to the Regional Director.

(b) The Regions shall report the results of the Groundwater and Surface Water Monitoring program to the Regional Director and to the Director in accordance with the schedule set out in the EA Approval and in accordance with the requirements of Condition 14.

(c) The Regions shall post the Groundwater and Surface Water Monitoring Plan and the results of the Groundwater and Surface Water Monitoring program on the Owner's web site for the Facility in accordance with the requirements of the EA Approval and Condition 15.

8. **<u>NUISANCE IMPACT CONTROL and HOUSEKEEPING</u>**

Odour Management

(1) (a) The Owner shall maintain a negative air pressure atmosphere in the Tipping Building at all times to contain any potential odours within the confines of the Tipping Building.

(b) (i) Once per year, or as required by the District Manager, the Owner shall undertake a test to measure the worse case scenario negative air pressure atmosphere throughout the Tipping Building, while the activities approved in this Certificate are carried out in the Tipping Building.

(ii) Notwithstanding the requirements set out in Condition 8.(1)(b)(i), the Owner shall install sufficient instrumentation to measure the air flow into the Boilers and demonstrate that adequate air flow is maintained

to maintain a negative air pressure atmosphere throughout the Tipping Building.

(c) In the event that adequate negative air pressure cannot be maintained, the Owner shall implement any necessary additional odour containment and control measures, including, but not necessarily limited to, those in the required Contingency and Emergency Response Plan.

(2) The Owner shall ensure that the entrance and exit doors into the Tipping Building, the Residue Building and the Grizzly Building are kept closed at all times except to permit the entry or exit of the respective waste transport vehicles and waste handling equipment into and out of these Buildings.

(3) The Owner shall ensure that, at all times, the air from the Tipping Building, the Residue Building, the Grizzly Building and from the Equipment is exhausted through an appropriate and fully functional APC Equipment approved by this Certificate.

(4) The Owner shall undertake appropriate housekeeping activities, including regular cleaning of the tipping floor to control potential sources of fugitive odour emissions.

(5) The Owner shall ensure that no Waste handling equipment or empty storage containers are stored outside, unless they have been washed to prevent fugitive odour emissions.

(6) The Owner shall regularly clean all equipment and storage areas that are used to handle, process and store waste at the Site, including the surfaces of the outdoor spill containment areas, as required.

(7) (i) Prior to the receipt of Waste at the Site, the Owner shall provide documentation which outlines the testing carried out by a licensed structural engineer to confirm the effectiveness of the containment in the buildings, conveyors and tanks and silos at the Site.

(ii) The testing shall be carried out and repeated as directed by the District Manager in accordance with the test protocol prepared in consultation with and approved by the District Manager.

(iii) These tests shall be repeated as directed or agreed by the District Manager.

(8) The Owner shall prepare and implement an Odour Management and Mitigation Plan in accordance with the requirements set out in the EA Approval and as determined to be acceptable to the Regional Director.

(9) (a) In addition to the requirements set out in the EA Approval, the Odour Management and Mitigation Plan shall include the following:

(i) identification of all potential sources of odourous emissions;

(ii) description of the preventative and control measures to minimize odourous emissions from the identified sources;
(iii) procedures for the implementation of the Odour Management and Mitigation Plan;
(iv) inspection and maintenance procedures to ensure effective implementation of the Odour Management and Mitigation Plan; and
(v) procedures for verification and recording the progress of the implementation of the Odour Management and Mitigation Plan.

(b) The Owner shall continue to submit an updated Odour Management and Mitigation Plan until such time as the Regional Director notifies the Owner in writing that further submissions are no longer required.

Vehicles and Traffic

(10) (a) The Owner shall ensure that all vehicles transporting waste to and from the Site are not leaking or dripping waste when arriving at or leaving the Site.

(b) Should the Owner become aware that the truck(s) delivering waste to the Site have leaked wastewater on the municipal roadways, the Owner shall immediately report the violation to the owner of the vehicle(s) and to the District Manager.

(c) The Owner shall ensure that the exterior of all vehicles delivering Waste to the Site or hauling waste from the Site is washed prior to the trucks' departure from the Site, if necessary.

(d) Any necessary truck washing shall occur only in the designated wash down area of the Tipping Building or the Residue Building.

(11) The Owner shall ensure that there is no queuing or parking of vehicles that are waiting to enter the Site on any roadway that is not a distinct part of the Site.

Litter

(12) The Owner shall:

(a) take all practical steps to prevent the escape of litter from the Site;
(b) pick up litter around the Site on a daily basis, or more frequently if necessary; and
(c) if necessary, erect litter fences around the areas causing a litter problem.

Dust

(13) The Owner shall ensure that all on-site roads and operations/yard areas are regularly swept/washed to prevent dust impacts off-Site.

Vermin and Vectors

(14) The Owner shall:

(a) implement necessary housekeeping procedures to eliminate sources and potential sources of attraction for vermin and vectors; and

(b) hire a qualified, licensed pest control professional to design and implement a pest control plan for the Site. The pest control plan shall remain in place, and be updated from time to time as necessary, until the Site has been closed and this Certificate has been revoked.

Visual Screening

(15) The Owner shall provide visual screening for the Site in accordance with the documentation included in the attached Schedule "A".

9. **STAFF TRAINING**

(1) (a) The Owner shall ensure that all operators of the Site are trained with respect to the following, as per the specific job requirements of each individual operator:

(i) terms and conditions of this Certificate and the requirements of the EA Approval;
(ii) operation and management of the Site, or area(s) within the Site, as per the specific job requirements of each individual operator, and which may include procedures for receiving, screening and identifying Waste, refusal, handling, processing and temporarily storing wastes, operation of the Equipment, the APC Equipment, the CEM System and the Works;
(iii) testing, monitoring and operating requirements;
(iv) maintenance and inspection procedures;
(v) recording procedures;
(vi) nuisance impact control and housekeeping procedures;
(vii) procedures for recording and responding to public complaints;
(viii) an outline of the responsibilities of Site personnel including roles and responsibilities during emergency situations;
(ix) the Contingency and Emergency Response Plan including exit locations and evacuation routing, and location of relevant equipment available for emergency situations;
(x) environmental, and occupational health and safety concerns pertaining to the wastes to be handled;
(xi) emergency first-aid information; and
(xii) relevant waste management legislation and regulations, including the *EPA,* the *OWRA,* the *O. Reg. 347,* the *O. Reg. 419/05* and the Ministry guidelines affecting thermal treatment facilities.

(2) The Owner shall ensure that all personnel are trained in the requirements of this Certificate relevant to the employee's position:

(a) upon commencing employment at the Site in a particular position;
(b) whenever items listed in Condition 9.(1) are changed or updated; and
(c) during the planned refresher training.

10. COMPLAINTS / ODOUR-CONTAMINANT EMISSIONS RESPONSE PROCEDURE

(1) The Owner or a designated representative of the Owner shall be available to receive public complaints caused by the operations at the Site twenty-four (24) hours per day, seven (7) days per week.

(2) If at any time, the Owner or the Ministry receives a complaint or the Owner or the Provincial Officer detects an emission of odour or any contaminant, (Emission Event), from the Site, in addition to the requirements set out in the EA approval, the Owner shall record all relevant information in the computerized tracking system and shall respond to the complaint/Emission Event according to the following procedure:

Step 1: Record of Complaint/Emission Event

(a) (i) The Owner shall record each complaint/Emission Event and each record shall include the following:

(A) name, address and the telephone number of the complainant, if known;
(B) time and date of the complaint/Emission Event;
(C) details of the complaint; and

(ii) After the complaint/Emission Event has been recorded in the tracking system, the Owner shall immediately report to the District Manager by phone or e-mail during office hours and to the Ministry's Spills Actions Centre at 1-800-268-6060 after office hours on the receipt of the complaint or occurrence of the Emission Event.

Step 2: Investigation and Handling of Complaint/Emission Event

(b) The Owner shall immediately initiate investigation of the complaint/Emission Event. As a minimum, the investigation shall include the following:

(i) determination of the activities being undertaken at the Site at the time of the complaint/Emission Event;
(ii) meteorological conditions including, but not limited to the ambient temperature, approximate wind speed and its direction.
(iii) determination if the complaint is attributed to activities being undertaken at the Site and if so, the possible cause(s) of the complaint/Emission Event; and

(iv) determination of the remedial action(s) to address the cause(s) of the Complaint/Emission Event, and the schedule for the implementation of the necessary remedial action(s).

(c) The Owner shall respond to the complainant, if known, and the response shall include the results of the investigation of the Complaint, the action(s) taken or planned to be taken to address the cause(s) of the Complaint, and if any follow-up response(s) will be provided.

(d) Upon completed investigation of the Complaint/Emission event, the Owner shall, within three (3) business days, submit a report to the District Manager on the Complaint, on the action(s) taken or planned to be taken to address the cause(s) of the Complaint and on all proposed action(s) to prevent recurrence of the Complaint/Emission Event in the future.

(3) If, in the opinion of the District Manager, failure of the APC Equipment and/or any other process or equipment upset or malfunction results in off-site Complaint/Emission Event, confirmed by the Owner or a Provincial Officer of the Ministry, the Owner shall, immediately upon notification from the District Manager, implement any necessary additional control measures, including, but not necessarily limited to, those in the Contingency and Emergency Response Plan required by this Certificate.

(4) If the District Manager deems the additional control measures taken as per condition 10.(3) to be unsuitable, insufficient or ineffective, the District Manager may direct the Owner, in writing, to take further measures to address the noted failure, upset or malfunction including pursuant to section 39 of the *EPA* requiring a reduction in the receipt of Waste, cessation of the receipt of Waste, removal and off-site disposal of Waste from the Tipping Building as well as making repairs or modifications to equipment or processes.

11. **<u>CONTINGENCY and EMERGENCY RESPONSE PLAN</u>**

(1) (a) The Owner shall develop and implement a Contingency and Emergency Response Plan in accordance with the requirements set out in the EA Approval.

(b) Notwithstanding the requirements set out in the EA Approval, the Contingency and Emergency Response Plan shall be prepared in consultation with the District Manager or designate, the local Municipality and the Fire Department.

(2) In addition to the requirements set out in the EA Approval, the Contingency and Emergency Response Plan, as a minimum, shall include the following:

(a) the Site plan clearly showing the equipment layout and all storage areas for wastes and reagents;

(b) a list of Site personnel responsible for the implementation of the contingency measures and various emergency response tasks and their training requirements;
(c) a list of equipment and materials required for the implementation of the contingency measures and the emergency situation response;
(d) maintenance and testing program for equipment required for the implementation of the contingency measures and the emergency situation response;
(e) procedures to be undertaken as part of the implementation of the contingency measures and the emergency situation response;
(f) names and telephone numbers of waste management companies available for emergency response;
(g) notification protocol, with names and telephone numbers of persons to be contacted, including the Owner, the Site personnel, the Ministry of the Environment Spills Action Centre and the York Durham District, the local Fire and Police Departments, the local Municipality, the local Medical Officer of Health, and the Ministry of Labour;
(h) procedures and actions to be taken should the incoming Waste not meet the applicable quality criteria specified in this Certificate;
(i) procedures and actions to be taken should the outgoing Residual Waste fail to meet the criteria specified in this Certificate;
(j) procedures and actions to be taken should the current disposal options for the outgoing Residual Waste become unavailable;
(k) design of the contingency measure, procedures and actions should the emissions from the Site, including the fugitive odour/dust emissions, cause occurrences of public Complaints;
(l) procedures and actions to be taken should the Owner be unable to maintain the negative pressure in the Tipping Building;
(m) procedures and actions to be taken should the occurrence of Complaints require the Owner to suspend the waste processing activities at the Site; and
(n) identification and risk assessment of all reasonably foreseeable incidents that may result in a discharge into the natural environment of any contaminant in an amount, concentration or level in excess of that prescribed by the Regulations and/or imposed by this Certificate, including but not limited to:
    (i) a breakdown of the Facility/Equipment or part of the Facility/Equipment, including the APC Equipment and the CEM Systems associated with the Boilers;
    (ii) CEM Systems indicate that the Boilers and associated APC Equipment have been out of compliance with the Performance Requirements;
    (iii) any change in process parameters which may result in non compliance with the Performance Requirements;
    (iv) power failure resulting in the use of the Emergency Diesel Generator or Total Power Failure; and
    (v) description of the preventative and control measures to minimize the occurrence or impacts of the above incidents; and
    (vi) procedures for corrective measures and timelines to take to address the above incidents in a timely manner to effectively prevent or minimize the discharge of any contaminant into the natural environment and continue to maintain compliance with the *EPA* , the Regulations and

this Certificate, including procedures for Waste Processing Rate reduction, waste feed cut-off, Controlled Shutdown or Emergency Shutdown of the Boilers as applicable.

(3) The Owner shall submit the finalized Contingency and Emergency Response Plan to the Director a minimum of one hundred and twenty (120) days prior to the Commencement Date of Operation, for approval.

(4) An up-to-date version of the Contingency and Emergency Response Plan shall be kept at the Site at all times, in a central location available to all staff, and it shall be available for inspection by a Provincial Officer upon request.

(5) The Owner shall ensure that the names and telephone numbers of the persons to be contacted in the event of an emergency situation are kept up-to-date, and that these numbers are prominently displayed at the Site and at all times available to all staff and emergency response personnel.

(6) The Contingency and Emergency Response Plan shall be reviewed on a regular basis and updated, as necessary. The revised version of the Contingency and Emergency Response Plan shall be submitted to the local Municipality and the Fire Department for comments and to the District Manager for comments and concurrence.

(7) The Owner shall implement the recommendations of the updated Contingency and Emergency Response Plan, immediately upon receipt of the written concurrence from the District Manager.

12. **EMERGENCY SITUATION RESPONSE and REPORTING**

(1) The Owner shall immediately take all measures necessary to contain and clean up any spill or leak which may result from the operation at this Site and manage any emergency situation in accordance with the Contingency and Emergency Response Plan.

(2) The Owner shall ensure that the equipment and materials listed in the Contingency and Emergency Response Plan are immediately available at the Site, are in a good state of repair, and fully operational at all times.

(3) The Owner shall ensure that all Site personnel responsible for the emergency situation response are fully trained in the use of the equipment and related materials, and in the procedures to be employed in the event of an emergency.

(4) All Spills as defined in the *EPA* shall be immediately reported to the **Ministry's Spills Action Centre at 1-800-268-6060** and shall be recorded in the log book as to the nature of the emergency situation, and the action taken for clean-up, correction and prevention of future occurrences.

13. **SUBMISSIONS to the REGIONAL DIRECTOR or DISTRICT MANAGER**

(1) The Owner shall notify the District Manager in writing, at least six (60) days prior to the scheduled date for the first receipt of Waste at the Site, as to whether or not the construction of the Facility has been carried out in accordance with this Certificate to a point of Substantial Completion.

(2) (a) The Owner shall forthwith notify the District Manager and the Spills Action Centre by telephone, when any of the following incidents occur that may result in a discharge into the natural environment of any contaminant in an amount, concentration or level in excess of that prescribed by the Regulations and/or imposed by this Certificate:

(i) CEM Systems indicate that the Boilers and associated APC Equipment have been out of compliance with the Performance Requirements triggering a Waste Processing Rate Reduction, Waste Feed cut-off, Controlled Shutdown or Emergency Shutdown as specified in the Emergency Response and Contingency Plan;
(ii) failure of the APC Equipment associated with the Boilers; and
(iii) power failure resulting in the use of the emergency diesel generator or Total Power Failure;

(b) In addition to fulfilling the notification requirements from the *EPA,* the Owner shall prepare and submit a written report to the District Manager with respect to any of the above said occurrences, within five (5) calendar days of the occurrence, in the following format:

(i) date of the occurrence;
(ii) general description of the occurrence;
(iii) duration of the occurrence;
(iv) effect of the occurrence on the emissions from the Facility;
(v) measures taken to alleviate the effect of the occurrence on the emissions from the Facility; and
(vi) measures taken to prevent the occurrence of the same or similar occurrence in the future.

(3) Should a Spill, as defined in the *EPA*, occur at the Site, in addition to fulfilling the requirements from the *EPA* and applicable regulations, the Owner shall submit to the District Manager a written report within three (3) calendar days outlining the nature of the Spill, remedial measure taken and the measures taken to prevent future occurrences at the Site.

(4) (a) Within ninety (90) days from the date of this Certificate, the Regions shall prepare and submit to the District Manager for concurrence, a Soil Testing Plan to monitor the impact of the Site operations at the locations where the ambient air monitoring is proposed by the Owner in accordance with the requirements set out in the EA Approval.

(b) (i) This Plan shall ensure that representative samples of the soil to be tested are collected in sufficient numbers and that the samples are properly preserved and tested so that reliable data on the soil characteristics is collected.

(ii) As a minimum, the Plan shall include testing for cadmium, lead, chromium, nickel, cobalt, copper, molybdenum, selenium, zinc and mercury, Dioxins and Furans.

(iii) This Plan shall comply with the Ministry's regulatory requirements for sampling and testing of soil and it shall include the rationale for the proposed methods.

(iv) This Plan be kept at the Site at all times and be available for inspection by a Provincial Officer upon request.

14. **RECORDS KEEPING**

(1) Any information requested by the Ministry concerning the Facility and its operation under this Certificate, including, but not limited to, any records required to be kept by this Certificate, shall be provided to the Ministry, upon request**,** in a timely manner.

(2) The Owner shall retain, for a minimum of seven (7) years from the date of their creation, except as noted below, all reports, records and information described in this Certificate.

Daily Activities

(3) The Owner shall maintain an on-Site written or digital record of activities undertaken at the Site. All measurements shall be recorded in consistent metric units of measurement. As a minimum, the record shall include the following:

(a) date of record and the name and signature of the person completing the report;
(b) quantity and source of the incoming Waste received at the Site;
(c) records of the estimated quantity of Waste thermally treated in the Boilers;
(d) quantity of the Unacceptable Waste received at the Site by the end of the approved Waste receipt period and the type(s) of the Unacceptable Waste received;
(e) quantity and type of the Residual Waste shipped from the Site, including any required outgoing Residual Waste characterization results;
(f) destination and/or receiving site(s) for the Residual Waste shipped from the Site;
(g) quantity and type of any Rejected Waste accepted at the Site;
(h) destination and/or receiving site(s) for the Rejected Waste shipped from the Site;
(i) housekeeping activities, including litter collection and washing/cleaning activities, etc.
(j) amount of electricity produced;

(k) amount of excess electricity exported to the electrical grid.

Monitoring and Testing Records

(4) The Owner shall maintain an on-Site written or digital record of activities undertaken at the Site. All measurements shall be recorded in consistent metric units of measurement. As a minimum, the record shall include the following:

(a) day and time of the activity;
(b) all original records produced by the recording devices associated with the CEM Systems;
(c) a summary of daily records of readings of the CEM Systems, including:
   (i) the daily minimum and maximum 4-hour average readings for carbon monoxide;
   (ii) the daily minimum and maximum one hour average readings for oxygen;
   (iii) the daily minimum and maximum 10-minute average readings for organic matter;
   (iv) the daily minimum and maximum 24-hour average readings for sulphur dioxide;
   (v) the daily minimum and maximum 24-hour average readings for nitrogen oxides;
   (vi) the daily minimum and maximum 24-hour average readings for hydrogen chloride;
   (vii) the daily minimum and maximum 6-minute average and 2-hour average opacity readings; and
   (viii) the daily minimum and maximum one-hour average readings for temperature measurements.
(d) records of all excursions from the applicable Performance Requirements as measured by the CEM Systems, duration of the excursions, reasons for the excursions and corrective measures taken to eliminate the excursions;
(e) all records produced during any Acoustic Audit;
(f) all records produced during any Source Testing;
(g) all records produced by the long term sampling program for Dioxins and Furans required by this Certificate;
(h) all records produced during the Residual Waste compliance testing;
(i) all records produced during the Soil Testing;
(j) all records produced during the Groundwater and Surface Water Monitoring required by this Certificate;
(k) all records produced during the Ambient Air Monitoring required by this Certificate;
(l) all records associated with radiation monitoring of the incoming Waste, including but not limited to:
   (i) transaction number;
   (ii) hauler;
   (iii) vehicle ID;
   (iv) alarm level;
   (v) maximum CPS;
   (vi) uSv/hr;

(vii) comment;
(viii) background CPS;
(ix) driver time in and out; and
(x) name of the Trainer Personnel that carried out the monitoring.

(m) results of the containment testing carried out in the buildings, conveyors, tanks and silos, as required;
(n) results the negative pressure in the Tipping Building carried out, as required.

Inspections/Maintenance/Repairs

(5) The Owner shall maintain an on-Site written or digital record of inspections and maintenance as required by this Certificate. As a minimum, the record shall include the following:

(a) the name and signature of the Trained Personnel that conducted the inspection;
(b) the date and time of the inspection;
(c) the list of any deficiencies discovered, including the need for a maintenance or repair activity;
(d) the recommendations for remedial action;
(e) the date, time and description of actions (repair or maintenance) undertaken;
(f) the name and signature of the Trained Personnel who undertook the remedial action; and
(g) an estimate of the quantity of any materials removed during cleaning of the Works.

Emergency Situations

(6) The Owner shall maintain an on-Site written or digital record of the emergency situations. As a minimum, the record shall include the following:

(a) the type of an emergency situation;
(b) description of how the emergency situation was handled;
(c) the type and amount of material spilled, if applicable;
(d) a description of how the material was cleaned up and stored, if generated; and
(e) the location and time of final disposal, if applicable; and
(f) description of the preventative and control measures undertaken to minimize the potential for re-occurrence of the emergency situation in the future.

Complaints Response Records

(7) The Owner shall establish and maintain a written or digital record of complaints received and the responses made as required by this Certificate.

Training

(8) The Owner shall maintain an on-Site written or digital record of training as required by this Certificate. As a minimum, the record shall include the following:

(a) date of training;
(b) name and signature of person who has been trained; and
(c) description of the training provided.

Reports

(9) The Owner shall keep at the Site the following reports required by this Certificate:

(a) the ESDM Report
(b) the Acoustic Assessment Report;
(c) the Annual Report; and
(d) the Third Party Audit.

15. **REPORTING**

Annual Report

(1) By March 31st following the end of each operating year, the Owner shall prepare and submit to the District Manager and to the Advisory Committee, an Annual Report summarizing the operation of the Site covering the previous calendar year. This Annual Report shall include, as a minimum, the following information:

(a) a summary of the quality and the quantity of the Wastes accepted at the Site, including the maximum amount of the Waste received annually and daily and the sources of the Waste;

(b) a summary of the quality and the quantity of the Residual Waste shipped from the Site, including the analytical data required to characterize the Residual Waste, the off-Site destinations for the Residual Waste and its subsequent use, if known;

(c) estimated material balance for each month documenting the maximum amount of wastes stored at the Site;

(d) annual water usage;

(e) annual amount of the electricity produced and the annual amount of the electricity exported to the electrical grid;

(f) summaries and conclusions from the records required by Conditions 14.(3) through 14.(8) of this Certificate;

(g) the Emission Summary Table and the Acoustic Assessment Summary Table for the Facility as of December 31 from the previous calendar year;

(h) a summary of dates, duration and reasons for any environmental and operational problems, Boilers downtime, APC Equipment and CEM System malfunctions that may have negatively impacted the quality of the environment or any incidents triggered by the Emergency Response and

Contingency Plan and corrective measures taken to eliminate the environmental impacts of the incidents;

(i) a summary of the dates, duration and reasons for all excursions from the applicable Performance Requirements as measured by the CEM Systems or as reported by the annual Source Testing, reasons for the excursions and corrective measures taken to eliminate the excursions;

(j) results of the evaluation of the performance of the long-term sampling system in determining the Dioxins and Furans emission trends and/or fluctuations for the year reported on as well as demonstrating the ongoing performance of the APC Equipment associated with the Boilers;

(k) dates of all environmental complaints relating to the Site together with cause of the Complaints and actions taken to prevent future Complaints and/or events that could lead to future Complaints;

(l) any environmental and operational problems that could have negatively impacted the environment, discovered as a result of daily inspections or otherwise and any mitigative actions taken;

(m) a summary of any emergency situations that have occurred at the Site and how they were handled;

(n) the results and an interpretive analysis of the results of the groundwater and surface water, including an assessment of the need to amend the monitoring programs;

(o) summaries of the Advisory Committee meetings, including the issues raised by the public and their current status;

(p) any recommendations to improve the environmental and process performance of the Site in the future;

(q) statement of compliance with this Certificate, including compliance with the *O. Reg. 419/05* and all air emission limits based on the results of source testing, continuous monitoring and engineering calculations, as may be appropriate; and

(r) interpretation of the results and comparison to the results from previous Annual Reports to demonstrate the Facility's impact on the environment.

Third Party Audit

(2) (a) The Regions shall ensure that an independent technical review of the operations at the Site is undertaken in accordance with the requirements of the EA Approval.

(b) In addition to the Third Party Audit requirements set out in the EA approval, the Third Party Audit shall include the following:

(i) a review of the data from the monitoring and testing required by this Certificate;
(ii) a review of all complaints received about the operation of the Facility;
(iii) any recommendations for improving the operation of the Facility received from the Advisory Committee; and
(iv) a recommendation of any improvements that could be made to ensure that the operation of the Facility is optimized and is protective of the health and safety of people and the environment.

(3) The Regions shall submit a Written Audit Report on the results of the independent technical review to the Regional Director in accordance with the Audit Plan and retain a copy at the Site.

Soil Testing Report

(4) Within one (1) month of completion of each Soil Testing event, the Regions shall submit to the District Manager a Soil Testing Report, which includes the details on the sampling/testing procedures, the results of the testing and a comparison with the results obtained during the previous Soil Testing.

16. **PUBLIC ACCESS TO DOCUMENTATION**

(1) The Owner shall, at all times, maintain documentation that describes the current operations of the Facility. The Owner shall post the documentation at the website for the undertaking and during regular business hours, the Owner shall make the following documents available for inspection at the Site by any interested member of the public, upon submission to the Ministry for review:

(a) a current ESDM Report that demonstrates compliance with the Performance Limits for the Facility regarding all Compounds of Concern;

(b) a current Acoustic Assessment Report that demonstrates compliance with the Performance Limits for the Facility regarding noise emissions;

(c) the most recent Annual Report;

(d) the most current Third Party Audit Report;

(e) Odour Management and Mitigation Plan, prepared in accordance with the requirements of the EA Approval;

(f) Noise Monitoring and Reporting Plan, prepared in accordance with the requirements of the EA Approval; and

(g) Groundwater and Surface Water Monitoring and Reporting Plan, prepared in accordance with the requirements of the EA Approval.

(2) The Owner shall ensure that necessary hardware and software are provided at a location available to the public, to provide on-line real-time reporting of the operating parameter data for the Facility, including acceptable operating limits, stack emissions, and all other parameters for which continuous monitoring is required and that continuous records of the same be kept and made available to the public.

17. **ADVISORY COMMITTEE**

(1) The Regions shall establish an Advisory Committee in accordance with the requirements set out in the EA Approval.

18. **CLOSURE of the SITE**

(1) A minimum of nine (9) months prior to closure of the Site, the Owner shall submit, for approval by the Director, a written Closure Plan for the Site. This Plan shall include, as a minimum, a description of the work that will be done to facilitate closure of the Site and a schedule for completion of that work.

(2) Within ten (10) days after closure of the Site, the Owner shall notify the Director and the District Manager, in writing, that the Site is closed and that the approved Closure Plan has been implemented.

SCHEDULE "A"

Supporting Documentation

(1) Applications for a Certificate of Approval (Air) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

(a) Emission Summary and Dispersion Modelling Report, dated March 2011, prepared by Golder Associates;

(b) Acoustic Assessment Report prepared by Golder Associates Ltd., dated March 2011 and signed by Paul Niejadlik.

(2) Applications for a Provisional Certificate of Approval (Waste Disposal Site) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

(a) Attachment #1 containing the "Design and Operations Report", dated March 2011, prepared by Golder Associates Ltd.;

(b) Attachment #3 containing the "Public Consultation Report", dated March 2011, prepared by Golder Associates Ltd.;

(c) Attachment #4 containing the Host Community Agreement

(d) Attachment #5 containing the proof of legal name for Covanta Durham York Renewable Energy Limited Partnership; and

(e) A letter May 24, 2011 from Anthony Ciccone, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, providing additional technical information on the proposal and attaching a report entitled "Amendment #1 Durham York Energy Centre Design and Operations Report", dated May 2011;

(3) Applications for a Certificate of Approval of Municipal and Private Sewage Works dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of Durham and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

(a) "Surface Water and Groundwater Technical Study Report" dated July 2009, prepared by Jacques Whitford, Markham, Ontario (CD Report).

(b) "Stormwater Design Model Output" prepared by Sigma Energy, dated March 2001 (CD Report).

(c) Clearance letter from Central Lake Ontario Conservation date February 22, 2011.

(d) A letter dated March 23, 2011, from Brian Bahor, Covanta Energy Corporation, to Stefanos Habtom, Ontario Ministry of the Environment, providing additional technical design information on the proposed stormwater management ponds.

<u>**SCHEDULE "B"**</u>

Procedure to calculate and record the 10-minute average concentration of odour at the Point of Impingement and at the most impacted Sensitive Receptor

(a) Calculate and record one-hour average concentration of odour at the Point of Impingement and at the most impacted Sensitive Receptor, employing CALPUFF atmospheric dispersion model or the dispersion model acceptable to the Director that employs at least five (5) years of hourly local meteorological data and that can provide results reported as individual one-hour average odour concentrations.

(b) Convert and record each of the one-hour average concentrations predicted over the five (5) years of hourly local meteorological data at the Point of Impingement and at the most impacted Sensitive Receptor to 10-minute average concentrations using the One-hour Average to 10-Minute Average Conversion described below; and

(c) Record and present the 10-Minute Average concentrations predicted to occur over a five (5) year period at the Point of Impingement and at the most impacted Sensitive Receptor in a histogram. The histogram shall identify all predicted 10-minute average odour concentration occurrences in terms of frequency, identifying the number of occurrences over the entire range of predicted odour concentration in increments of not more than 1/10 of one odour unit. The maximum 10-minute average concentration of odour at the Sensitive Receptor will be considered to be the maximum odour concentration at the most impacted Sensitive Receptor that occurs and is represented in the histogram, disregarding outlying data points on the histogram as agreed to by the Director.

One-hour Average To 10-minute Average Conversion

1. Use the following formula to convert and record one-hour average concentrations predicted by the CALPUFF atmospheric dispersion model or by the dispersion model acceptable to the Director to 10-minute average concentrations:

X10min = X60min*1.65

where X10min = 10-minute average concentration
X60min = one-hour average concentration

SCHEDULE "C"

PERFORMANCE REQUIREMENTS

In-Stack Emission Limits

Parameter	In-Stack Emission Limit	Verification of Compliance
Total Suspended Particulate Matter (filterable particulate measured in accordance with the Ontario Source Testing Code)	9 mg/Rm3	Results from compliance Source Testing
cadmium	7 µg/Rm3	Results from compliance Source Testing
lead	50 µg/Rm3	Results from compliance Source Testing
mercury	15 µg/Rm3	Results from compliance Source Testing
dioxins and furans	60 pg/Rm3	Results from compliance Source Testing; results expressed as I-TEQ
hydrochloric acid (HCl)	9 mg/Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes
sulphur dioxide (SO2)	35 mg/Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes
nitrogen oxides (NOx)	121 mg/ Rm3	Calculated as the rolling arithmetic average of 24 hours of data measured by a CEM System that provides data at least once every 15 minutes
organic matter (undiluted, expressed as equivalent methane)	50 ppmdv (33 mg/ Rm3)	Results from compliance source testing
carbon monoxide	35 ppmdv (40 mg/Rm3)	Calculated as the rolling arithmetic average of four (4) hours of data measured by a CEM System that provides data at least once every fifteen minutes, in accordance with condition 6 (2) (c)
opacity	10 percent	Calculated as the rolling arithmetic average of six (6) minutes of data measured by a CEM System that provides data at least once every minute
	5 percent	Calculated as the rolling arithmetic average of two (2) hours of data measured by a CEM System that provides data at least once every

		fifteen minutes

mg/Rm3- milligrams per reference cubic metre;

pg/Rm3 - picograms per reference cubic metre

ppmdv parts per million by dry volume,

µg/Rm3 - micrograms per reference cubic metre

R- reference conditions - 25 degrees Celsius, 101.3 kilopascals, dry basis, 11% oxygen

SCHEDULE "D"

TEST CONTAMINANTS

Hydrogen Chloride
Hydrogen Fluoride
Oxides of Nitrogen expressed as Nitrogen Dioxide
Sulphur Dioxide
Total Hydrocarbons, expressed as methane on wet basis
Carbon Dioxide
Total Suspended Particulate Matter (< 44 microns)
Total PM-10 including condensables
Total PM-2.5 including condensables

Metals

Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Copper
Lead
Mercury
Molybdenum
Nickel
Selenium
Silver
Thallium
Vanadium
Zinc

Schedule "D" - Cont'd

Chlorobenzenes	Chlorophenols
	2-monochlorophenol (2-MCP)
Monochlorobenzene (MCB)	3-monochlorophenol (3-MCP)
1,2-Dichlorobenzene (1,2-DCB)	4-monochlorophenol (4-MCP)
1,3-Dichlorobenzene (1,3-DCB)	2,3-dichlorophenol (2,3-DCP)
1,4-Dichlorobenzene (1,4-DCB)	2,4-dichlorophenol (2,4-DCP)
1,2,3-Trichlorobenzene (1,2,3-TCB)	2,5-dichlorophenol (2,5-DCP)
1,2,4-Trichlorobenzene (1,2,4-TCB)	2,6-dichlorophenol (2,6-DCP)
1,3,5-Trichlorobenzene (1,3,5-TCB)	3,4-dichlorophenol (3,4-DCP)
1,2,3,4-Tetrachlorobenzene (1,2,3,4-TeCB)	3,5-dichlorophenol (3,5-DCP)
1,2,3,5-Tetrachlorobenzene (1,2,3,5-TeCB)	2,3,4-trichlorophenol (2,3,4-T3CP)
1,2,4,5-Tetrachlorobenzene (1,2,4,5-TeCB)	2,3,5-trichlorophenol (2,3,5-T3CP)
Pentachlorobenzene (PeCB)	2,3,6-trichlorophenol (2,3,6-T3CP)
Hexachlorobenzene (HxCB)	2,4,5-trichlorophenol (2,4,5-T3CP)
	2,4,6-trichlorophenol (2,4,6-T3CP)
	3,4,5-trichlorophenol (3,4,5-T3CP)
	2,3,4,5-tetrachlorophenol (2,3,4,5-T4CP)
	2,3,4,6-tetrachlorophenol (2,3,4,6-T4CP)
	2,3,5,6-tetrachlorophenol (2,3,5,6-T4CP)
	Pentachlorophenol (PeCP)

Schedule "D" - Cont'd

Co-Planar PCBs (Dioxin-like PCBs)	Volatile Organic Matter
PCB-077 (3,3',4,4'-TCB)	Acetaldehyde
PCB-081 (3,4,4',5-TCB)	Acetone
PCB-105 (2,3,3',4,4'-PeCB)	Acrolein
PCB-114 (2,3,4,4',5-PeCB)	Benzene
PCB-118 (2,3',4,4',5-PeCB)	Bromodichloromethane
PCB-123 (2',3,4,4',5-PeCB)	Bromoform
PCB-126 (3,3',4,4',5-PeCB)	Bromomethane
PCB-156 (2,3,3',4,4',5-HxCB)	Butadiene, 1,3 -
PCB-157 (2,3,3',4,4',5'-HxCB)	Butanone, 2 -
PCB-167 (2,3',4,4',5,5'-HxCB)	Carbon Tetrachloride
PCB-169 (3,3',4,4',5,5'-HxCB)	Chloroform
PCB-189 (2,3,3',4,4',5,5'-HpCB)	Cumene
	Dibromochloromethane
	Dichlorodifluoromethane
	Dichloroethane, 1,2 -
	Dichloroethene, Trans - 1,2
	Dichloroethene, 1,1 -
	Dichloropropane, 1,2 -
	Ethylbenzene
	Ethylene Dibromide
	Formaldehyde
	Mesitylene
	Methylene Chloride
	Styrene
	Tetrachloroethene
	Toluene
	Trichloroethane, 1,1,1 -
	Trichloroethene
	Trichloroethylene, 1,1,2 -
	Trichlorotrifluoroethane
	Trichlorofluoromethane
	Xylenes, M-, P- and O-
	Vinyl Chloride

Schedule "D" - Cont'd

Polycyclic Organic Matter	Dioxin/Furan Isomers
Acenaphthylene Acenaphthene Anthracene Benzo(a)anthracene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)fluorene Benzo(b)fluorene Benzo(ghi)perylene Benzo(a)pyrene Benzo(e)pyrene Biphenyl 2-Chloronaphthalene Chrysene Coronene Dibenzo(a,c)anthracene Dibenzo(a,h)anthracene Dibenzo(a,e)pyrene 9,10-Dimethylanthracene 7,12-Dimethylbenzo(a)anthracene Fluoranthene Fluorene Indeno(1,2,3-cd)pyrene 2-Methylanthracene 3-Methylcholanthrene 1-Methylnaphthalene 2-Methylnaphthalene 1-Methylphenanthrene 9-Methylphenanthrene Naphthalene Perylene Phenanthrene Picene Pyrene Tetralin M-terphenyl O-terphenyl P-terphenyl Triphenylene	2,3,7,8-Tetrachlorodibenzo-p-dioxin 1,2,3,7,8-Pentachlorodibenzo-p-dioxin 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin 2,3,7,8-Tetrachlorodibenzofuran 2,3,4,7,8-Pentachlorodibenzofuran 1,2,3,7,8-Pentachlorodibenzofuran 1,2,3,4,7,8-Hexachlorodibenzofuran 1,2,3,6,7,8-Hexachlorodibenzofuran 1,2,3,7,8,9-Hexachlorodibenzofuran 2,3,4,6,7,8-Hexachlorodibenzofuran 1,2,3,4,6,7,8-Heptachlorodibenzofuran 1,2,3,4,7,8,9-Heptachlorodibenzofuran 1,2,3,4,6,7,8,9-Octachlorodibenzofuran

SCHEDULE "E"

SOURCE TESTING PROCEDURES

1. The Owner shall submit, to the Manager a test protocol including the Pre-Test Information required by the Source Testing Code, at least two (2) months prior to the scheduled Source Testing date.

2. (1) For the purpose of the Source Testing program, the Owner is temporarily permitted to operate the Boilers at a residual oxygen concentration below the performance limit outlined in Condition 6.(2)(b) during the period of the Source Testing. The Owner shall ensure that the concentration of residual oxygen in the Undiluted Gases leaving the combustion zone of the Boilers, as measured and recorded by the CEM System, shall not be less than 5 percent by volume on a dry basis, during this Source Testing program.

   (2) If the Source Testing results demonstrate that compliance with the Performance Requirements can be maintained at a residual oxygen concentration below the performance limit outlined in Condition 6.(2)(b), the Owner may apply to the Director for approval to alter the required residual oxygen concentration.

3. The Owner shall finalize the test protocol in consultation with the Manager.

4. The Owner shall not commence the Source Testing until the Manager has accepted the test protocol.

5. The Owner shall complete the first Source Testing not later than six (6) months after Commencement of Operation of the Facility/Equipment.

6. The Owner shall conduct subsequent Source Testing at least once (1) every calendar year thereafter.

7. The Owner shall notify the District Manager and the Manager in writing of the location, date and time of any impending Source Testing required by this Certificate, at least fifteen (15) days prior to the Source Testing.

8. The Owner shall submit a report on the Source Testing programs to the District Manager and the Manager not later than three (3) months after completing each Source Testing program. The report shall be in the format described in the Source Testing Code, and shall also include, but not be limited to:

   (1) an executive summary;
   (2) records of operating conditions; including process description, records of waste composition and feed rate during the Source Testing;
   (3) all records produced by the CEM Equipment;
   (4) procedures followed during the Source Testing and any deviation from the proposed test protocol and the reasons therefore;
   (5) the results of the analyses of the stack emissions;

(6) a summary table that compares the Source Testing results, the monitoring data and the records of operating conditions during the Source Testing to the requirements imposed by the *EPA*, the Regulation and/or the Performance Requirements;

(7) the results of dispersion calculations in accordance with the *O. Reg. 419/05*, indicating the maximum concentration of the Test Contaminants, at the Point of Impingement.

(8) an updated site wide emission source inventory to assess the aggregate point of impingement concentrations of the Test Contaminants.

9. The Owner shall ensure that the Source Testing Report is made available and easily accessible for review by the public at the Facility, immediately after the document is submitted to the Ministry.

10. The Director may not accept the results of the Source Testing if:

(1) the Source Testing Code or the requirements of the Manager were not followed; or

(2) the Owner did not notify the District Manager and the Manager of the Source Testing; or

(3) the Owner failed to provide a complete report on the Source Testing.

11. If the Director does not accept the results of the Source Testing, the Director may require re-testing.

SCHEDULE "F"

PARAMETER:
Temperature

LOCATION:
The sample point for the Continuous Temperature Monitor shall be located at a point where the temperature in the combustion zone of the Boilers has reached at least 1000^{o}C for a period of not less than one second. Compliance shall be proven by direct measurement or/and a correlation between the measured temperature and the intended target proven by a method acceptable to the Director.

PERFORMANCE:
The Continuous Temperature Monitor shall meet the following minimum performance specifications for the following parameters.

	PARAMETERS	SPECIFICATION
1)	Type:	"K", "J" or other type or alternative measurement device with equivalent measurement accuracy and suitable to the temperature range being measured
2)	Accuracy:	± 1.5 percent of the minimum gas temperature

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor without a significant loss of accuracy and with a time resolution of 1 minutes or better. Temperature readings for record keeping and reporting purposes shall be kept as one-hour average values.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 95 percent of the time for each calendar quarter.

PARAMETER:
Carbon Monoxide

INSTALLATION:
The Continuous Carbon Monoxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (parts per million, ppm):	0 to ≥100 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Carbon Monoxide Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤10 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3) Calibration Error:	≤ 2.5 percent of actual concentration
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 5 percent of span value
7) Span Calibration Drift (24-hour):	≤5 percent of span value
8) Response Time (90 percent response to a step change):	≤180 seconds
9) Operational Test Period:	≥168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:
Oxygen

INSTALLATION:
The Continuous Oxygen Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of oxygen in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler and in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Range (percentage):	0 - 20 or 0 - 25
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Oxygen Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (percentage):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤10 percent of the mean value of the reference method test data
3) Calibration Error:	0.25 percent O_2
4) System Bias:	≤ 4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 0.5 percent O_2
7) Span Calibration Drift (24-hour):	≤ 0.5 percent O_2
8) Response Time (90 percent response to a step change):	≤ 90 seconds
9) Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better. Oxygen concentration readings for record keeping and reporting purposes shall be kept as one-hour average values.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:
Hydrogen Chloride

INSTALLATION:
The Continuous Hydrogen Chloride Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of hydrogen chloride in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

	PARAMETERS	SPECIFICATION
1)	Range (parts per million, ppm):	0 to ≥100 ppm
2)	Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Hydrogen Chloride Monitor shall meet the following minimum performance specifications for the following parameters.

	PARAMETERS	SPECIFICATION
1)	Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2)	Relative Accuracy:	≤ 20 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3)	Calibration Error:	≤ 2 percent of actual concentration
4)	System Bias:	≤ 4 percent of the mean value of the reference method test data
5)	Procedure for Zero and Span Calibration Check:	all system components checked
6)	Zero Calibration Drift (24-hour):	≤ 5 percent of span value
7)	Span Calibration Drift (24-hour):	≤ 5 percent of span value
8)	Response Time (90 percent response to a step change):	≤ 240 seconds
9)	Operational Test Period:	≥168 hours without corrective maintenance

CALIBRATION:
The monitor shall be calibrated daily at the sample point, to ensure that it meets the drift limits specified above, during the periods of the operation of the . The results of all calibrations shall be recorded at the time of calibration.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 5 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:
Nitrogen Oxides

INSTALLATION:
The Continuous Nitrogen Oxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of nitrogen oxides in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1) Analyzer Operating Range (parts per million, ppm):	0 to ≥200 ppm
2) Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Nitrogen Oxides Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1) Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2) Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data
3) Calibration Error:	≤ 2 percent of actual concentration
4) System Bias:	≤4 percent of the mean value of the reference method test data
5) Procedure for Zero and Span Calibration Check:	all system components checked
6) Zero Calibration Drift (24-hour):	≤ 2.5 percent of span value
7) Span Calibration Drift (24-hour):	≤ 2.5 percent of span value
8) Response Time (90 percent response to a step change):	≤ 240 seconds
9) Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER:
Sulphur Dioxide

INSTALLATION:
The Continuous Sulphur Dioxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of sulphur dioxide in the Undiluted Gases leaving the APC Equipment associated with each Boiler, and shall meet the following installation specifications.

PARAMETERS	SPECIFICATION
1. Range (parts per million, ppm):	0 to ≥100 ppm
2. Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Sulphur Dioxide Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
1. Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2. Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data
3. Calibration Error:	≤ 2 percent of actual concentration
4. System Bias:	≤ 4 percent of the mean value of the reference method test data
5. Procedure for Zero and Span Calibration Check:	all system components checked
6. Zero Calibration Drift (24-hour):	≤ 2.5 percent of span value
7. Span Calibration Drift (24-hour):	≤ 2.5 percent of span value
8. Response Time (90 percent response to a step change):	≤ 200 seconds
9. Operational Test Period:	≥168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:
Total Hydrocarbons

INSTALLATION:
The Total Hydrocarbons Monitor shall be installed at an accessible location where the measurements are representative of the concentrations of Organic Matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler and shall meet the following installation specifications.

	PARAMETERS	**SPECIFICATION**
1.	Detector Type:	Flame Ionization
2.	Oven Temperature:	$160^{o}C$ minimum
3.	Flame Temperature:	$1800\,^{o}C$ minimum at the corona of the hydrogen flame
4.	Range (parts per million, ppm):	0 to ≥200 ppm
5.	Calibration Gas:	propane in air or nitrogen
6.	Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Total Hydrocarbons Monitor shall meet the following minimum performance specifications for the following parameters.

	PARAMETERS	**SPECIFICATION**
1.	Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
2.	Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3.	System Bias:	≤ 4 percent of the mean value of the reference method test data
4.	Noise:	≤ 1 percent of span value on most sensitive range
5.	Repeatability:	≤ 1 percent of span value
6.	Linearity (response with propane in air):	≤ 3 percent of span value over all ranges
7.	Calibration Error:	≤ 2 percent of actual concentration
8.	Procedure for Zero and Span Calibration Check:	all system components checked on all ranges
9.	Zero Calibration Drift (24-hours):	≤ 2.5 percent of span value on all ranges
10.	Span Calibration Drift (24-hours):	≤ 2.5 percent of span value
11.	Response Time (90 percent response to a step change):	≤ 60 seconds
12.	Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better. Measurements of concentrations of organic matter (as methane) shall be kept as 10 minute average values for record keeping and reporting purposes.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent thereafter.

PARAMETER: Opacity

INSTALLATION: The Continuous Opacity Monitor shall be installed at an accessible location where the measurements are representative of the actual opacity of the Undiluted Gases leaving the APC Equipment associated with each Boiler and shall meet the following design and installation specifications.

PARAMETERS		SPECIFICATION
1)	Wavelength at Peak Spectral Response (nanometres, nm):	500 - 600
2)	Wavelength at Mean Spectral Response (nm):	500 - 600
3)	Detector Angle of View:	≤ 5 degrees
4)	Angle of Projection:	≤ 5 degrees
5)	Range (percent of opacity):	0 -100

PERFORMANCE:
The Continuous Opacity Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS		SPECIFICATION
1)	Span Value (percent opacity):	2 times the average normal opacity of the source
2)	Calibration Error:	≤3 percent opacity
3)	Attenuator Calibration:	≤2 percent opacity
4)	Response Time (95 percent response to a step change):	≤ 10 seconds
5)	Schedule for Zero and Calibration Checks:	daily minimum
6)	Procedure for Zero and Calibration Checks:	all system components checked
7)	Zero Calibration Drift (24-hours):	≤ 2 percent opacity
8)	Span Calibration Drift (24-hours):	≤ 2 percent opacity
9)	Conditioning Test Period:	≥ 168 hours without corrective maintenance
10)	Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:
The monitor shall be calibrated, to ensure that it meets the drift limits specified above, during the periods of the operation of the Equipment. The results of all calibrations shall be recorded at the time of calibration.

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 30 seconds or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER:
Moisture, Hydrogen Fluoride and Ammonia

Selection and Installation

The Owner shall select and install a CEM System, to measure moisture content of the stack gases, the concentration of hydrogen fluoride and ammonia in the Undiluted Gases leaving the APC Equipment associated with each Boiler, as follows:

a) Design and Performance Specifications shall be in accordance with 40 CFR 60, Appendix B, Specification 4.

b) The Owner shall select the probe locations in compliance with 40 CFR 60, Appendix B, Specification 2.

Test Procedures

The Owner shall verify compliance with the Design and Performance Specifications in accordance with 40 CFR 60, Appendix B, Specification 4, with the reference method for the relative accuracy test being Method 4. of the Source Testing Code.

In furtherance of, but without limiting the generality of the foregoing, the mean difference between the calibration gas value and the analyzer response value at each of the four test concentrations shall be less than 5 percent of the measurement range.

SCHEDULE "G"

A stormwater management facility to service a 10.0 ha drainage area of the Durham York Energy Centre located on the west side of Osbourne Road and north of the CN Rail, Lot 27, Concession Broken Front, Part, Municipality of Clarington, Regional Municipality of Durham, designed to provide quality and quantity control of stormwater run-off by attenuating runoff from storm events up to 1:100 years return frequency to or below the pre-development levels, consisting of:

East Stormwater Management Pond (East SWM Pond)

A stormwater management facility to service a 5.7 ha drainage area comprising of the eastern part of the Durham York Energy Centre consisting of the following:

- one (1) approximately 128 m long drainage ditch collecting stormwater runoff from the north eastern part of the site, having an average horizontal slope of 1.56%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- one (1) approximately 199 m long drainage ditch collecting stormwater runoff from the eastern part of the site, having an average horizontal slope of 2.77%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- approximately fourteen (14) catch basins/maintenance holes and a total of 466.8 m long 450 mm diameter and 34.6 m of 600 mm diameter corrugated PE stormwater sewers conveying stormwater runoff collected from the north and north eastern part of the site, discharging to a forebay of a wet extended detention stormwater management pond described below;

- one (1) forebay with approximate bottom dimensions of 11.0 m wide and 34.8 m long and depth of 1.0 m, equipped with 600 mm diameter corrugated HDPE inlet pipe, a rip-rap covered inlet structure, and a forebay berm with top elevation of 95.0 m masl, discharging to a wet extended detention pond described below;

- one (1) wet extended detention stormwater management pond located at the south east part of the site, with approximate bottom dimensions of 21.0 m wide and 71.4 m long and a maximum depth of 2.7 m at 96.70 m masl elevation, having side slopes of 3H:1V and 5H:1V near the outlet structure, providing a permanent pool storage capacity of 1,008 m^3 at elevation 95.0 m masl, an active storage capacity of 3,099 m^3 at 96.70 m masl elevation, and total storage capacity of 4,107 m^3, equipped with an outlet structure consisting of a 150 mm diameter reverse slope inlet pipe with a gate valve and a 450 mm diameter perforated pipe riser fitted with 75 mm diameter orifice plate, a 75 mm diameter maintenance discharge pipe with a gate valve, and an emergency overflow structure at elevation 97.0 m masl, discharging through a 450 mm diameter outlet pipe to existing swale along the northern side of the CN Rail line to Tooley Creek and eventually to Lake Ontario;

West Stormwater Management Pond (West SWM Pond)

A stormwater management facility to service a 4.3 ha drainage area comprising of the western part of the Durham York Energy Centre consisting of the following:

- one (1) approximately 296 m long drainage ditch collecting stormwater runoff from the north western part of the site, having an average horizontal slope of 1.0%, depth of 0.5 m, bottom width of 1.0 m, and side slopes of 2.5H:1V, discharging to storm sewers described below;

- approximately five (5) catch basins/maintenance holes and a total of 272.2 m long 450 mm diameter corrugated PE stormwater sewers conveying stormwater runoff collected from the western part of the site, discharging to a forebay of a wet extended detention stormwater management pond described below;

- one (1) forebay with approximate bottom dimensions of 13.0 m wide and 26.0 m long and depth of 1.0 m, equipped with 450 mm diameter corrugated HDPE inlet pipe, a rip-rap covered inlet structure, and a forebay berm with top elevation of 95.0 m masl, discharging to a wet extended detention pond described below;

- one (1) wet extended detention stormwater management pond located at the south western part of the site, with approximate bottom dimensions of 13.0 m wide and 58.0 m long and a maximum depth of 2.5 m at 96.5 m masl elevation, having side slopes of 3H:1V and 5H:1V near the outlet structure, providing a permanent storage capacity of 623 m^3 at elevation 95.0 m masl, an active storage capacity of 2,054 m^3 at 96.50 m masl elevation, and total storage capacity of 2,677 m^3, equipped with an outlet structure consisting of a 150 mm diameter reverse slope inlet pipe with a gate valve and a 450 mm diameter perforated pipe riser fitted with 75 mm diameter orifice plate, a 75 mm diameter maintenance discharge pipe with a gate valve, and an emergency overflow structure at elevation 96.80 m masl, discharging through a 450 mm diameter outlet pipe to existing swale along the northern side of the CN Rail line to Tooley Creek and eventually to Lake Ontario;

including all associated controls and appurtenances.

The reasons for the imposition of these terms and conditions are as follows:

GENERAL

Conditions 1.(1), (2), (5), (6), (7), (8), (9), (10), (11), (12), (13), (17), (18) and (19) are included to clarify the legal rights and responsibilities of the Owner.

Conditions Nos.1.(3) and (4) are included to ensure that the Site is operated in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.

Condition No. 1.(14) is included to ensure that the Site is operated under the corporate name which appears on the application form submitted for this approval and to ensure that the Director is informed of any changes.

Condition No.1.(15) is included to restrict potential transfer or encumbrance of the Site without the notification to the Director and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this Certificate.

Condition No. 1.(16) is included to ensure that the appropriate Ministry staff has ready access to the operations of the Site which are approved under this Certificate. The Condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the *EPA*, the *OWRA*, the *PA*, the *NMA* and the *SDWA*.

SERVICE AREA, APPROVED WASTE TYPES, RATES and STORAGE

Condition No. 2. is included to specify the approved waste receipt rates, the approved waste types and the service area from which waste may be accepted at the Site based on the Owner's application and supporting documentation. Condition No. 2. is also included to specify the maximum amount of waste that is approved to be stored at the Site.

SIGNS and SITE SECURITY

Condition No. 3. is included to ensure that the Site's users, operators and the public are fully aware of important information and restrictions related to the operation of the Site. Condition No. 3. is also included to ensure that the Site is sufficiently secured, supervised and operated by properly trained personnel and to ensure controlled access and integrity of the Site by preventing unauthorized access when the Site is closed and no site personnel is on duty.

SITE OPERATIONS

Condition No. 4. is included to outline the operational requirements for the Facility to ensure that the said operation does not result in an adverse effect or a hazard to the natural environment or any person.

EQUIPMENT and SITE INSPECTIONS and MAINTENANCE

Condition No. 5. is included to require the Site to be maintained and inspected thoroughly on a regular basis to ensure that the operations at the Site are undertaken in a manner which does not result in an adverse effect or a hazard to the health and safety of the environment or any person.

PERFORMANCE REQUIREMENTS

Condition No. 6 is included to set out the minimum performance requirements considered necessary to prevent an adverse effect resulting from the operation of the Facility.

TESTING, **MONITORING** and **AUDITING**

Condition No. 7. is to require the Owner to gather accurate information on the operation of the Facility so that the environmental impact and subsequent compliance with the *EPA*, the *OWRA*, their Regulations and this Certificate can be verified.

NUISANCE IMPACT CONTROL and HOUSEKEEPING

Condition No. 8. is included to ensure that the Site is operated and maintained in an environmentally acceptable manner which does not result in a negative impact on the natural environment or any person. Condition No. 8 is also included to specify odour control measures to minimize a potential for odour emissions from the Site.

STAFF TRAINING

Condition No. 9. is included to ensure that staff are properly trained in the operation of the equipment and instrumentation used at the Site, in the emergency response procedures and on the requirements and restrictions related to the Site operations under this Certificate.

COMPLAINTS RECORDING PROCEDURE

Condition No.10. is included to require the Owner to respond to any environmental complaints resulting from the Facility appropriately and in a timely manner and that appropriate actions are taken to prevent any further incidents that may cause complaints in the future.

CONTINGENCY and EMERGENCY RESPONSE PLAN and EMERGENCY SITUATIONS RESPONSE AND REPORTING

Conditions Nos.11. and 12. are included to ensure that the Owner is prepared and properly equipped to take immediate action in the event of an emergency situation.

SUBMISSIONS to the REGIONAL DIRECTOR or DISTRICT MANAGER

Condition No. 13. is included to set out the requirements for the submissions to the District Manager and the Regional Director regarding the operation of the Facility and the activities required by this Certificate.

RECORDS KEEPING

Condition No.14. is included to ensure that detailed records of Site activities, inspections, monitoring and upsets are recorded and maintained for inspection and information purposes.

REPORTING

Condition No.15. is to ensure that regular review of site, operations and monitoring is carried out and findings documented by a third party for determining whether or not the Site is being operated in compliance with this Certificate of Approval, the EPA and its regulations and whether or not any changes should be considered.

PUBLIC ACCESS to DOCUMENTATION

Condition No.16. is included to ensure that the public has access to information on the operation of the Site in order to participate in the activities of the Advisory Committee in a meaningful and effective way.

ADVISORY COMMITTEE

Condition No.17. is included to require the Owner to establish a forum for the exchange of information and public dialogue on activities carried out at the Site and to ensure that the local residents are properly informed of the activities at the Site and that their concerns can be heard and acted upon , as necessary. Open communication with the public and local authorities is important in helping to maintain high standards for the operation of the Site and protection of the natural environment. Condition 16. is also included to ensure that the requirements of the EA Approval are fulfilled.

CLOSURE of the SITE

Condition No.18. is included to ensure that the final closure of the Site is completed in accordance with Ministry's standards.

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, and in accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, you may by written Notice served upon me, the Environmental Review Tribunal, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 142 of the Environmental Protection Act and Section 101 of the

Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto, Ontario
M5G 1E5

AND

The Director
Section 9 and 39, *Environmental Protection Act*
Section 53, *Ontario Water Resources Act*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted site is approved under Section 9 and Section 27 of the Environmental Protection Act and Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 28th day of June, 2011

Signature
Ian Parrott, P .Eng.
Director
Section 9, *EPA*
Section 39, *EPA*
Section 53, *OWRA*

MW,QN,SH/

c: District Manager, MOE York-Durham
Regional Director, MOE Central Region

APPENDIX 3

Covanta Operational Test Period and System Response Data (245 pages)

Unit #1 CEMS

Commissioning Testing
Durham-York Energy Centre

Prepared By: Chuck Davis
Regional CEMS Coordinator
Covanta

Section 1

OTP 7 Day and Response Time Test

Data Flags

TRACE SYSTEM STATUS VALUES	DEFINITION OF STATUS VALUES	STATUS VALUES IN CEMS .CSV FILES
< :	Not all samples were available for the reported averaging period. Missing one or two readings; full data not available. Data is valid.	OK<
B :	Bad data, insufficient samples available to calculate an average or other system error.	Bad
C :	Analyzer is in calibration mode	CAL
X :	Out of control, analyzer failed calibration operation.	OOC
d :	Source down, CEMS is operational, source is not combusting waste.	SrcD
M:	Missing data (not Polled)	Miss
u:	Unverified data - This code will be used during the time between first fire and first RATA test to mark data as test.	SUD
	There is no associated value for this status; not marked. Data is valid	OK

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 15, 2015
Start Time:	13:40
Stop Time:	15:56

Unit #1 Inlet **Year - 2015** **Day1**

Analyzer or Channel	O2			COLo			COHi		
Analyzer Full Range	25			500			2000		
Analyzer Make	Environment SA			Environment SA			Environment SA		
Analyzer Serial Number	2684			2684			2684		
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High
Ca = Cal Gas Value	2.00	9.99	18.00	0.00	281.00	422.00	0.00	1075.00	1699.00
Cylinder ID#	CC332354	CC275798	CC239156	CC332354	EB0047021	CC10010	CC332354	CC275798	CC239156
Expiration Date	09/23/22	11/17/22	05/19/20	09/23/22	12/10/22	04/27/20	09/23/22	11/17/22	05/19/20
Run #1	**1.69**	**9.79**	**17.89**	**0.40**	**278.10**	**421.60**	**0.00**	**1046.00**	**1699.00**
Run #2	**1.69**	**9.89**	**17.99**	**1.30**	**275.10**	**427.60**	**1.00**	**1035.00**	**1699.00**
Run #3	**1.69**	**9.79**	**17.89**	**1.20**	**277.10**	**425.90**	**1.00**	**1037.00**	**1699.00**
SUM (1+2+3)	5.07	29.47	53.77	2.90	830.30	1275.10	2.00	3118.00	5097.00
Cm = SUM/3	1.69	9.82	17.92	0.97	276.77	425.03	0.67	1039.33	1699.00
Abs. Diff	0.31	0.1666667	0.0766667	0.9666667	4.2333333	3.0333333	0.6666667	35.666667	0
%F.S.				0.19	0.85	-0.61	0.03	1.78	0.00
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**

Comments:

Technician :	Jake Kiser	Title:	Altech Rep.	Date:
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:

Date/Time	U1 1-min Inlet Data - O2e-dry	Data Status	U1 1-min Inlet Data - COe-l	Data Status	U1 1-min Inlet Data - COe-h	Data Status	Run #
9/15/2015 13:34	0	B	423.2	B	373	B	
9/15/2015 13:35	0	B	419.6	B	380	B	
9/15/2015 13:36	0	B	426.8	B	380	B	
9/15/2015 13:37	0	B	422.4	B	379	B	
9/15/2015 13:38	0	B	422.9	B	381	B	
9/15/2015 13:39	0	B	422.1	B	379	B	
9/15/2015 13:40	0	B	421.6	B	375	B	1
9/15/2015 13:41	0	B	423.5	B	376	B	
9/15/2015 13:42	4.19	B	313.7	B	335	B	
9/15/2015 13:43	8.69	B	30.5	B	60	B	
9/15/2015 13:44	7.29	B	27	B	36	B	
9/15/2015 13:45	1.69	B	48.3	B	47	B	
9/15/2015 13:46	1.79	B	1.2	B	1	B	
9/15/2015 13:47	1.79	B	0.8	B	1	B	
9/15/2015 13:48	1.69	B	0.7	B	0	B	
9/15/2015 13:49	1.69	B	0.6	B	0	B	
9/15/2015 13:50	1.69	B	0.6	B	0	B	
9/15/2015 13:51	1.69	B	0.5	B	0	B	
9/15/2015 13:52	1.79	B	0.7	B	0	B	
9/15/2015 13:53	1.79	B	0.3	B	0	B	
9/15/2015 13:54	1.69	B	0.4	B	0	B	1
9/15/2015 13:55	1.79	B	0.4	B	0	B	
9/15/2015 13:56	3.19	B	16	B	17	B	
9/15/2015 13:57	0	B	270.3	B	252	B	
9/15/2015 13:58	0	B	272.1	B	255	B	
9/15/2015 13:59	0	B	270.6	B	253	B	
9/15/2015 14:00	0	B	272.5	B	255	B	1
9/15/2015 14:01	0	B	270.6	B	254	B	
9/15/2015 14:02	0	B	271.5	B	255	B	
9/15/2015 14:03	0	B	272	B	255	B	
9/15/2015 14:04	14.79	B	500	B	869	B	
9/15/2015 14:05	17.89	B	500	B	1699	B	
9/15/2015 14:06	17.89	B	500	B	1699	B	
9/15/2015 14:07	17.89	B	500	B	1699	B	1
9/15/2015 14:08	9.19	B	500	B	848	B	
9/15/2015 14:09	0	B	426	B	388	B	
9/15/2015 14:10	0	B	422.7	B	383	B	
9/15/2015 14:11	0	B	427.6	B	382	B	
9/15/2015 14:12	0.29	B	342.6	B	321	B	
9/15/2015 14:13	0	B	277.8	B	258	B	
9/15/2015 14:14	0	B	276.2	B	258	B	
9/15/2015 14:15	6.29	B	144.1	B	156	B	
9/15/2015 14:16	0	B	427.1	B	386	B	
9/15/2015 14:17	0	B	423.7	B	380	B	
9/15/2015 14:18	0	B	424.9	B	381	B	
9/15/2015 14:19	0	B	426.1	B	380	B	
9/15/2015 14:20	0	B	424.3	B	381	B	
9/15/2015 14:21	3.69	B	353.9	B	352	B	
9/15/2015 14:22	1.69	B	3.5	B	2	B	

9/15/2015 14:23	1.69	B	1.1	B	1	B	
9/15/2015 14:24	1.69	B	1.2	B	1	B	
9/15/2015 14:25	1.69	B	0.9	B	1	B	
9/15/2015 14:26	1.69	B	0.6	B	0	B	
9/15/2015 14:27	1.69	B	54.3	B	53	B	
9/15/2015 14:28	0	B	273.2	B	256	B	
9/15/2015 14:29	0	B	270.8	B	249	B	
9/15/2015 14:30	0	B	278.1	B	259	B	
9/15/2015 14:31	16.19	B	500	B	1058	B	
9/15/2015 14:32	17.89	B	500	B	1699	B	
9/15/2015 14:33	17.89	B	500	B	1699	B	
9/15/2015 14:34	17.99	B	500	B	1699	B	
9/15/2015 14:35	17.99	B	500	B	1699	B	
9/15/2015 14:36	17.99	B	500	B	1699	B	
9/15/2015 14:37	9.99	B	500	B	1160	B	
9/15/2015 14:38	9.89	B	500	B	1033	B	
9/15/2015 14:39	9.79	B	500	B	1038	B	
9/15/2015 14:40	9.79	B	500	B	1027	B	
9/15/2015 14:41	9.79	B	500	B	1046	B	1
9/15/2015 14:42	9.79	B	500	B	1031	B	
9/15/2015 14:43	9.79	B	500	B	939	B	
9/15/2015 14:44	1.79	B	12.8	B	12	B	
9/15/2015 14:45	1.69	B	3.4	B	3	B	
9/15/2015 14:46	7.39	B	19.3	B	33	B	
9/15/2015 14:47	9.69	B	500	B	1016	B	
9/15/2015 14:48	9.79	B	500	B	1021	B	
9/15/2015 14:49	9.79	B	500	B	1032	B	
9/15/2015 14:50	9.79	B	500	B	1032	B	
9/15/2015 14:51	9.79	B	500	B	1041	B	
9/15/2015 14:52	9.79	B	500	B	1039	B	
9/15/2015 14:53	9.79	B	500	B	1040	B	
9/15/2015 14:54	1.79	B	28.2	B	27	B	
9/15/2015 14:55	1.69	B	3.5	B	3	B	
9/15/2015 14:56	1.69	B	2.3	B	2	B	
9/15/2015 14:57	1.79	B	1.6	B	1	B	
9/15/2015 14:58	1.69	B	1.3	B	1	B	2
9/15/2015 14:59	1.69	B	1.2	B	1	B	
9/15/2015 15:00	1.69	B	1.1	B	1	B	
9/15/2015 15:01	0.19	B	134.4	B	138	B	
9/15/2015 15:02	0	B	272.7	B	254	B	
9/15/2015 15:03	0	B	274	B	254	B	
9/15/2015 15:04	0	B	275.3	B	254	B	
9/15/2015 15:05	0	B	275.1	B	255	B	2
9/15/2015 15:06	0	B	275.1	B	255	B	
9/15/2015 15:07	1.59	B	268.4	B	259	B	
9/15/2015 15:08	17.79	B	500	B	1699	B	
9/15/2015 15:09	17.89	B	500	B	1699	B	
9/15/2015 15:10	17.89	B	500	B	1699	B	
9/15/2015 15:11	17.99	B	500	B	1699	B	
9/15/2015 15:12	17.99	B	500	B	1699	B	2
9/15/2015 15:13	17.99	B	500	B	1699	B	
9/15/2015 15:14	10.19	B	500	B	1122	B	

9/15/2015 15:15	9.89	B	500	B	1041	B		
9/15/2015 15:16	9.89	B	500	B	1037	B		
9/15/2015 15:17	9.89	B	500	B	1030	B		
9/15/2015 15:18	9.89	B	500	B	1035	B		
9/15/2015 15:19	9.89	B	500	B	1039	B		
9/15/2015 15:20	9.89	B	500	B	1035	B		2
9/15/2015 15:21	9.79	B	500	B	1029	B		
9/15/2015 15:22	0	B	484.6	B	430	B		
9/15/2015 15:23	0	B	426.3	B	384	B		
9/15/2015 15:24	0	B	426.6	B	385	B		
9/15/2015 15:25	0	B	427.6	B	382	B		2
9/15/2015 15:26	0	B	425.3	B	382	B		
9/15/2015 15:27	17.69	B	500	B	1525	B		
9/15/2015 15:28	17.89	B	500	B	1699	B		
9/15/2015 15:29	17.89	B	500	B	1699	B		
9/15/2015 15:30	17.99	B	500	B	1699	B		
9/15/2015 15:31	17.99	B	500	B	1699	B		
9/15/2015 15:32	17.89	B	500	B	1699	B		3
9/15/2015 15:33	15.69	B	500	B	1699	B		
9/15/2015 15:34	0	B	300.9	B	284	B		
9/15/2015 15:35	0	B	281.5	B	262	B		
9/15/2015 15:36	0	B	277.1	B	258	B		3
9/15/2015 15:37	0	B	276.6	B	259	B		
9/15/2015 15:38	1.69	B	86.7	B	52	B		
9/15/2015 15:39	1.69	B	2.2	B	2	B		
9/15/2015 15:40	1.69	B	1.6	B	1	B		
9/15/2015 15:41	1.69	B	1.2	B	1	B		3
9/15/2015 15:42	1.69	B	0.9	B	1	B		
9/15/2015 15:43	2.49	B	32.7	B	32	B		
9/15/2015 15:44	0	B	422.9	B	379	B		
9/15/2015 15:45	0	B	424.6	B	379	B		
9/15/2015 15:46	0	B	425.9	B	382	B		3
9/15/2015 15:47	0	B	423.9	B	382	B		
9/15/2015 15:48	9.59	B	500	B	919	B		
9/15/2015 15:49	9.79	B	500	B	1015	B		
9/15/2015 15:50	9.79	B	500	B	1026	B		
9/15/2015 15:51	9.79	B	500	B	1040	B		
9/15/2015 15:52	9.79	B	500	B	1033	B		
9/15/2015 15:53	9.79	B	500	B	1031	B		
9/15/2015 15:54	9.79	B	500	B	1032	B		
9/15/2015 15:55	9.79	B	500	B	1031	B		
9/15/2015 15:56	9.79	B	500	B	1037	B		3
9/15/2015 15:57	9.89	B	500	B	1031	B		
9/15/2015 15:58	9.79	B	500	B	1033	B		
9/15/2015 15:59	9.79	B	500	B	1038	B		
9/15/2015 16:00	7.59	B	408.7	B	422	B		
9/15/2015 16:01	7.29	B	39	B	41	B		
9/15/2015 16:02	6.89	B	29.7	B	33	B		

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 15, 2015
Start Time:	11:05
Stop Time:	12:33

Unit #1 Outlet **Year - 2015** **Day 1**

Analyzer or Channel	O2			SO2			NOX			COLo			COHi				
Analyzer Full Range	25			200			500			500			2000				
Analyzer Make	Environment SA			Environment SA			Environment SA			Environment SA			Environment SA				
Analyzer Serial Number	2687			2687			2687			2687			2687				
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High		
Ca = Cal Gas Value	2.00	9.94	18.00	0.00	107.00	167.00	0.00	280.00	434.00	0.00	282.00	424.00	0.00	1073.00	1679.00		
Cylinder ID#	EB0019268	CC164055	EB0002281	EB0019268	EB0016778	CC248887	EB0019268	EB0016778	CC248887	EB0019268	EB0016778	CC248887	EB0019268	CC164055	EB0002281		
Expiration Date	09/23/22	09/23/22	12/19/20	09/23/22	10/08/22	06/26/18	09/23/22	10/08/22	06/26/18	09/23/22	10/08/22	06/26/18	09/23/22	09/23/22	12/19/20		
Run #1	**2.01**	**9.99**	**18.07**	**0.00**	**106.80**	**167.00**	**0.90**	**275.30**	**438.50**	**0.50**	**275.30**	**422.50**	**3.00**	**1030.00**	**1666.00**		
Run #2	**2.12**	**9.99**	**18.07**	**0.00**	**106.90**	**166.80**	**1.20**	**282.20**	**435.40**	**0.70**	**275.50**	**423.00**	**3.00**	**1047.00**	**1668.00**		
Run #3	**1.91**	**10.09**	**18.17**	**0.00**	**106.90**	**167.00**	**0.90**	**280.40**	**429.60**	**0.50**	**276.50**	**422.30**	**3.00**	**1046.00**	**1687.00**		
SUM (1+2+3)	6.04	30.07	54.31	0.00	320.60	500.80	3.00	837.90	1303.50	1.70	827.30	1267.80	9.00	3123.00	5021.00		
Cm = SUM/3	2.01	10.02	18.10	0.00	106.87	166.93	1.00	279.30	434.50	0.57	275.77	422.60	3.00	1041.00	1673.67		
Abs. Diff	0.0133333	0.0833333	0.1033333	0	0.1333333	0.0666667	1	0.7	0.5	0.5666667	6.2333333	1.4	3	32	5.3333333		
%F.S.				0.00	0.07	0.03	0.20	0.14	-0.10	0.11	1.25	0.28	0.15	1.60	0.27		
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**		

Comments:

Technician :	Jake Kiser	Title:	Altech Rep.	Date:	
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:	

Date/Time	U1 1-min Outlet Data - O2s-dry	Data Status	U1 1-min Outlet Data - SO2s	Data Status	U1 1-min Outlet Data - NOxs	Data Status	U1 1-min Outlet Data - COs-l	Data Status	U1 1-min Outlet Data - COs-h	Data Status	Run #
9/15/2015 11:05	0	B	107.5	B	287.1	B	275.9	B	268	B	
9/15/2015 11:06	0.6	B	81.5	B	271.1	B	247.8	B	241	B	
9/15/2015 11:07	0	B	163.4	B	435.7	B	416.2	B	402	B	
9/15/2015 11:08	0	B	167	B	443	B	422.7	B	408	B	
9/15/2015 11:09	0.1	B	166.8	B	437.7	B	422.4	B	408	B	
9/15/2015 11:10	0.1	B	167	B	438.5	B	422.5	B	408	B	1
9/15/2015 11:11	0.1	B	146.9	B	421.3	B	401.4	B	388	B	
9/15/2015 11:12	2.12	B	3.6	B	7.4	B	6	B	5	B	
9/15/2015 11:13	1.91	B	0	B	1.5	B	0.6	B	3	B	
9/15/2015 11:14	1.91	B	0	B	1.4	B	0.5	B	3	B	
9/15/2015 11:15	2.01	B	0	B	0.9	B	0.5	B	3	B	1
9/15/2015 11:16	0	B	104.6	B	265.9	B	258.3	B	251	B	
9/15/2015 11:17	0	B	107.3	B	285.3	B	275.6	B	268	B	
9/15/2015 11:18	0	B	106.6	B	280.7	B	273.9	B	266	B	
9/15/2015 11:19	0.1	B	106.8	B	284.6	B	275.3	B	268	B	1
9/15/2015 11:20	0	B	106.9	B	285.5	B	275.4	B	268	B	
9/15/2015 11:21	16.96	B	41.4	B	118.9	B	500	B	911	B	
9/15/2015 11:22	18.17	B	0	B	2.2	B	500	B	1652	B	
9/15/2015 11:23	18.17	B	0	B	0.8	B	500	B	1670	B	
9/15/2015 11:24	18.07	B	0	B	0.6	B	500	B	1666	B	
9/15/2015 11:25	17.97	B	0	B	0.5	B	500	B	1664	B	
9/15/2015 11:26	18.07	B	0	B	0.5	B	500	B	1665	B	1
9/15/2015 11:27	18.17	B	0	B	0.5	B	500	B	1666	B	
9/15/2015 11:28	13.43	B	1.1	B	10.4	B	500	B	1341	B	
9/15/2015 11:29		M		M		M		M		M	
9/15/2015 11:30	10.09	B	0	B	0.7	B	500	B	1036	B	
9/15/2015 11:31	9.99	B	0	B	0.6	B	500	B	1029	B	
9/15/2015 11:32	9.99	B	0	B	0.6	B	500	B	1030	B	1
9/15/2015 11:33	9.89	B	0	B	0.6	B	500	B	1031	B	
9/15/2015 11:34	2.12	B	0	B	2.2	B	37.7	B	35	B	
9/15/2015 11:35	2.01	B	0	B	0.9	B	1	B	3	B	
9/15/2015 11:36	1.91	B	0	B	1.2	B	0.8	B	3	B	
9/15/2015 11:37	2.12	B	0	B	1.2	B	0.7	B	3	B	2
9/15/2015 11:38	1.11	B	31.5	B	88.3	B	82.6	B	83	B	
9/15/2015 11:39	0.1	B	106.5	B	283.2	B	275.5	B	268	B	
9/15/2015 11:40	0.1	B	107.2	B	282.1	B	275.1	B	268	B	
9/15/2015 11:41	0	B	106.9	B	282.2	B	275.5	B	268	B	2
9/15/2015 11:42	14.13	B	57	B	160.8	B	500	B	717	B	
9/15/2015 11:43	18.17	B	0	B	1	B	500	B	1649	B	
9/15/2015 11:44	18.07	B	0	B	0.6	B	500	B	1668	B	
9/15/2015 11:45	18.28	B	0	B	0.6	B	500	B	1669	B	
9/15/2015 11:46	18.07	B	0	B	0.6	B	500	B	1668	B	2
9/15/2015 11:47	15.55	B	0	B	7.4	B	500	B	1526	B	
9/15/2015 11:48	10.09	B	0	B	0.8	B	500	B	1037	B	
9/15/2015 11:49	9.99	B	0	B	0.6	B	500	B	1032	B	
9/15/2015 11:50	9.99	B	0	B	0.4	B	500	B	1034	B	
9/15/2015 11:51	9.99	B	0	B	0.4	B	500	B	1047	B	2
9/15/2015 11:52	9.99	B	0	B	0.4	B	500	B	1047	B	
9/15/2015 11:53	0	B	108.2	B	308.9	B	500	B	557	B	
9/15/2015 11:54	0	B	166.5	B	434.7	B	424.2	B	415	B	
9/15/2015 11:55	0	B	167.2	B	435.7	B	425.2	B	416	B	
9/15/2015 11:56	0	B	166.1	B	430.2	B	421.8	B	413	B	
9/15/2015 11:57	0.1	B	166.7	B	434.4	B	422.8	B	414	B	
9/15/2015 11:58	0	B	166.8	B	435.4	B	423	B	414	B	2
9/15/2015 11:59	0.1	B	147.5	B	419	B	407	B	398	B	
9/15/2015 12:00	8.68	B	3.6	B	97.7	B	19.4	B	9	B	
9/15/2015 12:01	17.87	B	13.4	B	64.1	B	500	B	1096	B	
9/15/2015 12:02	18.17	B	0	B	0.5	B	500	B	1677	B	
9/15/2015 12:03	18.07	B	0	B	0.6	B	500	B	1689	B	
9/15/2015 12:04	18.07	B	0	B	0.6	B	500	B	1691	B	
9/15/2015 12:05	18.17	B	0	B	0.5	B	500	B	1687	B	3
9/15/2015 12:06	18.17	B	0	B	0.5	B	500	B	1685	B	
9/15/2015 12:07	0	B	104.5	B	258.6	B	357.5	B	351	B	

9/15/2015 12:08	0.1	B	106.8	B	277.9	B	276.1	B	272	B		
9/15/2015 12:09	0.1	B	106.3	B	277.9	B	276.2	B	272	B		
9/15/2015 12:10	0	B	106.7	B	279.9	B	276.4	B	272	B		
9/15/2015 12:11	0.1	B	106.9	B	280.4	B	276.5	B	272	B		3
9/15/2015 12:12	1.61	B	75.6	B	174.6	B	180.5	B	177	B		
9/15/2015 12:13	2.12	B	0	B	2.6	B	2	B	3	B		
9/15/2015 12:14	2.12	B	0	B	1.3	B	0.6	B	3	B		
9/15/2015 12:15	2.12	B	0	B	0.8	B	0.5	B	3	B		
9/15/2015 12:16	2.01	B	0	B	0.9	B	0.5	B	3	B		
9/15/2015 12:17	1.91	B	0	B	0.9	B	0.5	B	3	B		3
9/15/2015 12:18	2.01	B	0	B	5.5	B	0.5	B	3	B		
9/15/2015 12:19	0	B	164.9	B	429.6	B	420.2	B	411	B		
9/15/2015 12:20	0	B	166.6	B	431.6	B	422.4	B	413	B		
9/15/2015 12:21	0	B	167	B	432.2	B	423	B	414	B		
9/15/2015 12:22	0	B	166.9	B	429.6	B	422.3	B	413	B		3
9/15/2015 12:23	0.1	B	166.8	B	430	B	422.3	B	413	B		
9/15/2015 12:24	9.99	B	37.7	B	83.2	B	500	B	862	B		
9/15/2015 12:25	9.99	B	0	B	0.7	B	500	B	1040	B		
9/15/2015 12:26	9.99	B	0	B	0.9	B	500	B	1047	B		
9/15/2015 12:27	9.99	B	0	B	0.9	B	500	B	1048	B		
9/15/2015 12:28	9.99	B	0	B	0.8	B	500	B	1047	B		
9/15/2015 12:29	10.09	B	0	B	0.7	B	500	B	1046	B		3
9/15/2015 12:30	10.09	B	0	B	0.7	B	500	B	1046	B		
9/15/2015 12:31	10.2	B	0	B	0.6	B	500	B	1045	B		
9/15/2015 12:32	8.88	B	0	B	83.3	B	28	B	25	B		
9/15/2015 12:33	9.39	B	0	B	72.2	B	14.8	B	12	B		

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 16, 2015
Start Time:	10:44
Stop Time:	12:32

Unit #1 Inlet **Year - 2015** **Day2**

Analyzer or Channel	O2			COLo			COHi		
Analyzer Full Range	25			500			2000		
Analyzer Make	Environment SA			Environment SA			Environment SA		
Analyzer Serial Number	2684			2684			2684		
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High
Ca = Cal Gas Value	2.00	9.99	18.00	0.00	281.00	422.00	0.00	1075.00	1699.00
Cylinder ID#	CC332354	CC275798	CC97046	CC332354	EB0047021	DT0006731	CC332354	CC275798	CC97046
Expiration Date	09/23/22	11/17/22	10/14/17	09/23/22	12/10/22	01/02/17	09/23/22	11/17/22	10/14/17
Run #1	**1.99**	**10.09**	**18.19**	**0.40**	**275.20**	**422.30**	**0.00**	**1031.00**	**1704.00**
Run #2	**1.99**	**10.09**	**18.19**	**1.30**	**274.50**	**424.50**	**1.00**	**1042.00**	**1704.00**
Run #3	**1.89**	**10.09**	**18.19**	**0.70**	**276.70**	**426.20**	**0.00**	**1054.00**	**1704.00**
SUM (1+2+3)	5.87	30.27	54.57	2.40	826.40	1273.00	1.00	3127.00	5112.00
Cm = SUM/3	1.96	10.09	18.19	0.80	275.47	424.33	0.33	1042.33	1704.00
Abs. Diff	0.0433333	0.1	0.19	0.8	5.5333333	2.3333333	0.3333333	32.666667	5
%F.S.				0.16	1.11	-0.47	0.02	1.63	-0.25
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**

Comments:

Technician :	Jake Kiser	Title:	Altech Rep.	Date:
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:

Date/Time	U1 1-min Inlet Data - O2e-dry	Data Status	U1 1-min Inlet Data - COe-l	Data Status	U1 1-min Inlet Data - COe-h	Data Status	
9/16/2015 10:44	0	B	425.1	B	378	B	
9/16/2015 10:45	0	B	422.3	B	376	B	1
9/16/2015 10:46	0	B	422.5	B	376	B	
9/16/2015 10:47	1.99	B	3.2	B	2	B	
9/16/2015 10:48	1.89	B	1.1	B	1	B	
9/16/2015 10:49	1.99	B	1	B	0	B	
9/16/2015 10:50	1.99	B	0.9	B	0	B	
9/16/2015 10:51	1.99	B	0.4	B	0	B	1
9/16/2015 10:52	1.99	B	0.5	B	0	B	
9/16/2015 10:53	0	B	271.6	B	251	B	
9/16/2015 10:54	0	B	271.7	B	253	B	
9/16/2015 10:55	0	B	275	B	255	B	
9/16/2015 10:56	0	B	275.2	B	255	B	1
9/16/2015 10:57	0	B	273.5	B	254	B	
9/16/2015 10:58	17.99	B	500	B	1634	B	
9/16/2015 10:59	18.19	B	500	B	1704	B	
9/16/2015 11:00	18.19	B	500	B	1704	B	
9/16/2015 11:01	18.19	B	500	B	1704	B	
9/16/2015 11:02	18.19	B	500	B	1704	B	1
9/16/2015 11:03	18.19	B	500	B	1696	B	
9/16/2015 11:04	15.39	B	500	B	1488	B	
9/16/2015 11:05	10.19	B	500	B	1009	B	
9/16/2015 11:06	10.09	B	500	B	1008	B	
9/16/2015 11:07	10.09	B	500	B	998	B	
9/16/2015 11:08	10.09	B	500	B	1003	B	
9/16/2015 11:09	10.09	B	500	B	1011	B	
9/16/2015 11:10	10.09	B	500	B	1011	B	
9/16/2015 11:11	10.09	B	500	B	1015	B	
9/16/2015 11:12	10.09	B	500	B	1023	B	
9/16/2015 11:13	10.09	B	500	B	1019	B	
9/16/2015 11:14	10.09	B	500	B	1026	B	
9/16/2015 11:15	10.09	B	500	B	1031	B	
9/16/2015 11:16	10.09	B	500	B	1031	B	1
9/16/2015 11:17	10.09	B	500	B	1031	B	
9/16/2015 11:18	10.19	B	500	B	1033	B	
9/16/2015 11:19	2.09	B	30.4	B	28	B	
9/16/2015 11:20	1.99	B	3.6	B	3	B	
9/16/2015 11:21	1.99	B	2.2	B	2	B	
9/16/2015 11:22	1.99	B	1.8	B	1	B	
9/16/2015 11:23	1.99	B	1.3	B	1	B	2
9/16/2015 11:24	1.99	B	1	B	0	B	
9/16/2015 11:25	1.99	B	1.1	B	1	B	
9/16/2015 11:26	0	B	271.4	B	253	B	
9/16/2015 11:27	0	B	273.3	B	258	B	
9/16/2015 11:28	0	B	275.5	B	259	B	
9/16/2015 11:29	0	B	275.6	B	259	B	
9/16/2015 11:30	0	B	274.5	B	258	B	2
9/16/2015 11:31	0	B	274.6	B	256	B	
9/16/2015 11:32	17.99	B	500	B	1724	B	

9/16/2015 11:33	18.19	B	500	B	1714	B	
9/16/2015 11:34	18.19	B	500	B	1704	B	
9/16/2015 11:35	18.19	B	500	B	1704	B	
9/16/2015 11:36	18.19	B	500	B	1704	B	
9/16/2015 11:37	18.19	B	500	B	1704	B	
9/16/2015 11:38	18.19	B	500	B	1704	B	2
9/16/2015 11:39	18.19	B	500	B	1704	B	
9/16/2015 11:40	10.99	B	500	B	1351	B	
9/16/2015 11:41	10.09	B	500	B	1070	B	
9/16/2015 11:42	10.09	B	500	B	1058	B	
9/16/2015 11:43	10.09	B	500	B	1052	B	
9/16/2015 11:44	10.09	B	500	B	1042	B	
9/16/2015 11:45	10.09	B	500	B	1062	B	2
9/16/2015 11:46	0.09	B	437.4	B	404	B	
9/16/2015 11:47	0	B	427.1	B	386	B	
9/16/2015 11:48	0	B	430.6	B	382	B	
9/16/2015 11:49	0	B	426.5	B	384	B	
9/16/2015 11:50	0	B	426.8	B	385	B	
9/16/2015 11:51	0	B	428.1	B	386	B	
9/16/2015 11:52	0	B	423.6	B	382	B	
9/16/2015 11:53	0	B	424.5	B	383	B	2
9/16/2015 11:54	0	B	426.2	B	384	B	
9/16/2015 11:55	18.09	B	500	B	1704	B	
9/16/2015 11:56	18.19	B	500	B	1704	B	
9/16/2015 11:57	18.19	B	500	B	1704	B	
9/16/2015 11:58	18.19	B	500	B	1704	B	3
9/16/2015 11:59	0.09	B	306.6	B	285	B	
9/16/2015 12:00	0	B	280.5	B	261	B	
9/16/2015 12:01	0	B	279.3	B	259	B	
9/16/2015 12:02	0	B	274.9	B	259	B	
9/16/2015 12:03	0	B	276.6	B	259	B	3
9/16/2015 12:04	0	B	277.7	B	259	B	
9/16/2015 12:05	1.89	B	17.3	B	16	B	
9/16/2015 12:06	1.89	B	1.6	B	1	B	
9/16/2015 12:07	1.99	B	1.3	B	1	B	
9/16/2015 12:08	1.89	B	1	B	0	B	
9/16/2015 12:09	1.89	B	1	B	0	B	
9/16/2015 12:10	1.89	B	0.8	B	0	B	
9/16/2015 12:11	1.89	B	0.7	B	0	B	
9/16/2015 12:12	1.89	B	0.7	B	0	B	3
9/16/2015 12:13	1.99	B	0.6	B	0	B	
9/16/2015 12:14	5.99	B	3	B	5	B	
9/16/2015 12:15	7.69	B	16.2	B	21	B	
9/16/2015 12:16	6.39	B	20.8	B	27	B	
9/16/2015 12:17	6.19	B	14.5	B	17	B	
9/16/2015 12:18	0.69	B	182.1	B	171	B	
9/16/2015 12:19	0	B	426.1	B	377	B	
9/16/2015 12:20	0	B	423.6	B	379	B	
9/16/2015 12:21	0	B	427.6	B	382	B	
9/16/2015 12:22	0	B	427	B	381	B	
9/16/2015 12:23	0	B	426	B	382	B	
9/16/2015 12:24	0	B	426.2	B	381	B	3

9/16/2015 12:25	0 B	426.4 B	388 B	
9/16/2015 12:26	9.99 B	500 B	1022 B	
9/16/2015 12:27	10.09 B	500 B	1046 B	
9/16/2015 12:28	9.99 B	500 B	1047 B	
9/16/2015 12:29	9.99 B	500 B	1055 B	
9/16/2015 12:30	10.09 B	500 B	1058 B	
9/16/2015 12:31	10.09 B	500 B	1055 B	
9/16/2015 12:32	10.09 B	500 B	1054 B	3
9/16/2015 12:33	10.09 B	500 B	1051 B	
9/16/2015 12:34	8.69 B	500 B	706 B	
9/16/2015 12:35	7.59 B	44.5 B	57 B	
9/16/2015 12:36	8.19 B	29.5 B	38 B	
9/16/2015 12:37	8.29 B	20 B	30 B	
9/16/2015 12:38	7.79 B	17.1 B	23 B	
9/16/2015 12:39	7.69 B	19.5 B	30 B	
9/16/2015 12:40	7.89 B	21.4 B	31 B	
9/16/2015 12:41	8.09 B	16.7 B	22 B	
9/16/2015 12:42	7.89 B	15 B	22 B	

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 16, 2015
Start Time:	8:06
Stop Time:	9:27

Unit #1 Outlet **Year - 2015** **Day 2**

Analyzer or Channel	O2			SO2			NOX			COLo			COHi				
Analyzer Full Range	25			200			500			500			2000				
Analyzer Make	Environment SA			Environment SA			Environment SA			Environment SA			Environment SA				
Analyzer Serial Number	2687			2687			2687			2687			2687				
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High		
Ca = Cal Gas Value	2.00	9.94	18.00	0.00	107.00	167.00	0.00	280.00	434.00	0.00	282.00	424.00	0.00	1073.00	1679.00		
Cylinder ID#	EB0019268	CC164055	EB0002281	EB0019268	EB0016778	CC248887	EB0019268	EB0016778	CC248887	EB0019268	EB0016778	CC248887	EB0019268	CC164055	EB0002281		
Expiration Date	09/23/22	09/23/22	12/19/20	09/23/22	10/08/22	06/26/18	09/23/22	10/08/22	06/26/18	09/23/22	10/08/22	06/26/18	09/23/22	09/23/22	12/19/20		
Run #1	**2.01**	**10.09**	**18.17**	**0.00**	**108.40**	**167.30**	**1.50**	**283.20**	**431.20**	**0.60**	**278.20**	**424.70**	**3.00**	**1049.00**	**1701.00**		
Run #2	**2.01**	**9.99**	**18.07**	**0.00**	**108.00**	**168.20**	**1.10**	**279.10**	**430.20**	**1.00**	**276.60**	**427.40**	**3.00**	**1051.00**	**1698.00**		
Run #3	**1.91**	**10.09**	**18.17**	**0.00**	**108.30**	**168.00**	**1.20**	**273.50**	**421.00**	**0.60**	**277.30**	**425.70**	**3.00**	**1053.00**	**1704.00**		
SUM (1+2+3)	5.93	30.17	54.41	0.00	324.70	503.50	3.80	835.80	1282.40	2.20	832.10	1277.80	9.00	3153.00	5103.00		
Cm = SUM/3	1.98	10.06	18.14	0.00	108.23	167.83	1.27	278.60	427.47	0.73	277.37	425.93	3.00	1051.00	1701.00		
Abs. Diff	0.0233333	0.1166667	0.1366667	0	1.2333333	0.8333333	1.2666667	1.4	6.5333333	0.7333333	4.6333333	1.9333333	3	22	22		
%F.S.				0.00	-0.62	-0.42	0.25	0.28	1.31	0.15	0.93	-0.39	0.15	1.10	-1.10		
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**		

Comments:

Technician :	Jake Kiser	Title:	Altech Rep.	Date:	
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:	

Date/Time	U1 1-min Outlet Data - O2s-dry	Data Status	U1 1-min Outlet Data - SO2s	Data Status	U1 1-min Outlet Data - NOxs	Data Status	U1 1-min Outlet Data - COs-l	Data Status	U1 1-min Outlet Data - COs-h	Data Status	
9/16/2015 8:06	8.18	B	0	B	125.2	B	12	B	9	B	
9/16/2015 8:07	2.72	B	13.5	B	144	B	58.4	B	59	B	
9/16/2015 8:08	0.2	B	165.1	B	442.3	B	423.7	B	415	B	
9/16/2015 8:09	0	B	167.8	B	441.4	B	426.3	B	417	B	
9/16/2015 8:10	0.1	B	168.1	B	435.9	B	426.2	B	417	B	
9/16/2015 8:11	0.1	B	167.3	B	431.2	B	424.7	B	416	B	1
9/16/2015 8:12	1.81	B	116.8	B	314.1	B	288.2	B	284	B	
9/16/2015 8:13	1.91	B	0.6	B	1.7	B	0.9	B	3	B	
9/16/2015 8:14	2.01	B	0	B	1.1	B	0.7	B	3	B	
9/16/2015 8:15	2.01	B	0	B	1.4	B	0.6	B	3	B	
9/16/2015 8:16	2.01	B	0	B	1.5	B	0.6	B	3	B	1
9/16/2015 8:17	1.31	B	21.5	B	64.2	B	69.5	B	71	B	
9/16/2015 8:18	0.1	B	107.1	B	280.7	B	277.2	B	273	B	
9/16/2015 8:19	0	B	108.3	B	282.9	B	278	B	274	B	
9/16/2015 8:20	0	B	108.4	B	283.2	B	278.2	B	274	B	1
9/16/2015 8:21	0	B	108.1	B	278.1	B	277.5	B	274	B	
9/16/2015 8:22	7.77	B	67.1	B	214.2	B	500	B	525	B	
9/16/2015 8:23	18.07	B	0	B	1.9	B	500	B	1694	B	
9/16/2015 8:24	18.07	B	0	B	0.7	B	500	B	1684	B	
9/16/2015 8:25	18.17	B	0	B	0.9	B	500	B	1698	B	
9/16/2015 8:26	18.17	B	0	B	0.9	B	500	B	1701	B	1
9/16/2015 8:27	18.07	B	0	B	2.1	B	500	B	1687	B	
9/16/2015 8:28	9.99	B	0	B	0.9	B	500	B	1056	B	
9/16/2015 8:29	9.99	B	0	B	1	B	500	B	1055	B	
9/16/2015 8:30	10.09	B	0	B	0.8	B	500	B	1049	B	1
9/16/2015 8:31	10.2	B	0	B	0.7	B	500	B	1049	B	
9/16/2015 8:32	2.42	B	0	B	9.4	B	492.4	B	477	B	
9/16/2015 8:33	2.01	B	0	B	1.3	B	7	B	6	B	
9/16/2015 8:34	2.01	B	0	B	1.1	B	1	B	3	B	2
9/16/2015 8:35	1.91	B	0	B	1.3	B	0.8	B	3	B	
9/16/2015 8:36	2.01	B	0	B	1.2	B	0.8	B	3	B	
9/16/2015 8:37	0	B	85.3	B	210.4	B	210.5	B	207	B	
9/16/2015 8:38	0.1	B	107.6	B	280.4	B	277.7	B	274	B	
9/16/2015 8:39	0.1	B	108.3	B	281.3	B	278.1	B	274	B	
9/16/2015 8:40	0	B	108.1	B	276.6	B	276.4	B	272	B	
9/16/2015 8:41	0	B	108	B	279.1	B	276.6	B	273	B	2
9/16/2015 8:42	0	B	108	B	280.2	B	276.8	B	273	B	
9/16/2015 8:43	0	B	108.1	B	280	B	277	B	273	B	
9/16/2015 8:44	0	B	107.8	B	277.2	B	276.8	B	273	B	
9/16/2015 8:45	0	B	107.9	B	279.5	B	277	B	273	B	
9/16/2015 8:46	18.07	B	0.8	B	10.2	B	500	B	1621	B	
9/16/2015 8:47	18.17	B	0	B	1	B	500	B	1696	B	
9/16/2015 8:48	18.07	B	0	B	1	B	500	B	1698	B	2
9/16/2015 8:49	18.28	B	0	B	1	B	500	B	1700	B	
9/16/2015 8:50	18.07	B	0	B	0.9	B	500	B	1693	B	
9/16/2015 8:51	10.2	B	0	B	1.4	B	500	B	1147	B	
9/16/2015 8:52	10.2	B	0	B	1	B	500	B	1056	B	
9/16/2015 8:53	10.09	B	0	B	0.6	B	500	B	1047	B	
9/16/2015 8:54	9.99	B	0	B	0.6	B	500	B	1050	B	
9/16/2015 8:55	9.99	B	0	B	0.7	B	500	B	1051	B	2
9/16/2015 8:56	10.09	B	0	B	0.6	B	500	B	1050	B	
9/16/2015 8:57	10.2	B	0	B	0.6	B	500	B	1051	B	
9/16/2015 8:58	0.5	B	88.6	B	232.8	B	500	B	622	B	
9/16/2015 8:59	0	B	166.6	B	421.7	B	423.7	B	415	B	
9/16/2015 9:00	0	B	167.6	B	427.4	B	426.4	B	417	B	
9/16/2015 9:01	0	B	168.2	B	430.2	B	427.4	B	418	B	2
9/16/2015 9:02	0	B	168.2	B	430	B	427.3	B	418	B	
9/16/2015 9:03	18.17	B	0	B	1.7	B	500	B	1684	B	
9/16/2015 9:04	18.07	B	0	B	0.9	B	500	B	1697	B	
9/16/2015 9:05	18.17	B	0	B	0.9	B	500	B	1704	B	3
9/16/2015 9:06	18.17	B	0	B	0.7	B	500	B	1693	B	
9/16/2015 9:07	4.44	B	42.4	B	84.7	B	500	B	1099	B	

9/16/2015 9:08	0 B	108.4 B	276.9 B	279.8 B	276 B	
9/16/2015 9:09	0 B	108.5 B	276.6 B	279 B	275 B	
9/16/2015 9:10	0 B	108.3 B	273.5 B	277.3 B	273 B	3
9/16/2015 9:11	0 B	108.3 B	275.8 B	277.7 B	274 B	
9/16/2015 9:12	1.91 B	6.2 B	14.8 B	14.6 B	12 B	
9/16/2015 9:13	1.91 B	0 B	0.9 B	0.7 B	3 B	
9/16/2015 9:14	1.91 B	0 B	1.2 B	0.6 B	3 B	3
9/16/2015 9:15	2.01 B	0 B	1.2 B	0.6 B	3 B	
9/16/2015 9:16	0 B	161 B	405.9 B	412.2 B	403 B	
9/16/2015 9:17	0.2 B	167.7 B	424.1 B	425.1 B	416 B	
9/16/2015 9:18	0 B	168.2 B	426.5 B	426.3 B	417 B	
9/16/2015 9:19	0 B	168 B	421 B	425.7 B	416 B	3
9/16/2015 9:20	0.7 B	168 B	422.4 B	425.6 B	399 B	
9/16/2015 9:21	10.09 B	41.7 B	88.3 B	500 B	877 B	
9/16/2015 9:22	9.99 B	0 B	0.9 B	500 B	1047 B	
9/16/2015 9:23	10.2 B	0 B	0.9 B	500 B	1052 B	
9/16/2015 9:24	9.99 B	0 B	0.9 B	500 B	1053 B	
9/16/2015 9:25	10.09 B	0 B	0.8 B	500 B	1053 B	3
9/16/2015 9:26	9.99 B	0 B	0.7 B	500 B	1051 B	
9/16/2015 9:27	8.18 B	0 B	90.2 B	24.3 B	21 B	

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 17, 2015
Start Time:	10:35
Stop Time:	12:07

Unit #1 Inlet **Year - 2015** **Day3**

Analyzer or Channel	O2			COLo			COHi		
Analyzer Full Range	25			500			2000		
Analyzer Make	Environment SA			Environment SA			Environment SA		
Analyzer Serial Number	2684			2684			2684		
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High
Ca = Cal Gas Value	2.00	9.99	18.00	0.00	281.00	422.00	0.00	1075.00	1699.00
Cylinder ID#	CC332354	CC275798	CC239156	CC332354	EB0047021	CC10010	CC332354	CC275798	CC239156
Expiration Date	09/23/22	11/17/22	05/19/20	09/23/22	12/10/22	04/27/20	09/23/22	11/17/22	05/19/20
Run #1	**2.09**	**10.09**	**18.09**	**0.00**	**271.80**	**421.50**	**0.00**	**1041.00**	**1710.00**
Run #2	**1.99**	**10.09**	**18.09**	**1.20**	**273.30**	**420.80**	**1.00**	**1040.00**	**1710.00**
Run #3	**1.99**	**9.99**	**18.09**	**0.70**	**275.10**	**420.80**	**0.00**	**1042.00**	**1710.00**
SUM (1+2+3)	6.07	30.17	54.27	1.90	820.20	1263.10	1.00	3123.00	5130.00
Cm = SUM/3	2.02	10.06	18.09	0.63	273.40	421.03	0.33	1041.00	1710.00
Abs. Diff	0.0233333	0.0666667	0.09	0.6333333	7.6	0.9666667	0.3333333	34	11
%F.S.				0.13	1.52	0.19	0.02	1.70	-0.55
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass

Comments:

Technician :	Jake Kiser	Title:	Altech Rep.	Date:	
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:	

Date/Time	U1 1-min Inlet Data - O2e-dry	Data Status	U1 1-min Inlet Data - COe-l	Data Status	U1 1-min Inlet Data - COe-h	Data Status	
9/17/2015 10:31	0	B	417.7	B	374	B	
9/17/2015 10:32	0	B	421.6	B	377	B	
9/17/2015 10:33	0	B	423.2	B	377	B	
9/17/2015 10:34	0	B	421.3	B	375	B	
9/17/2015 10:35	0	B	421.5	B	375	B	1
9/17/2015 10:36	0.09	B	424	B	377	B	
9/17/2015 10:37	0	B	422.7	B	376	B	
9/17/2015 10:38	1.99	B	5.8	B	5	B	
9/17/2015 10:39	1.99	B	1.4	B	1	B	
9/17/2015 10:40	1.99	B	1	B	1	B	
9/17/2015 10:41	1.99	B	0.9	B	0	B	
9/17/2015 10:42	2.09	B	0.6	B	0	B	1
9/17/2015 10:43	1.99	B	0.6	B	0	B	
9/17/2015 10:44	0	B	270.6	B	250	B	
9/17/2015 10:45	0.09	B	269.2	B	250	B	
9/17/2015 10:46	0.09	B	270.5	B	252	B	
9/17/2015 10:47	0	B	271.7	B	252	B	
9/17/2015 10:48	0	B	271.7	B	252	B	
9/17/2015 10:49	0	B	271.7	B	252	B	
9/17/2015 10:50	0	B	271.8	B	252	B	1
9/17/2015 10:51	0	B	271.7	B	252	B	
9/17/2015 10:52	17.89	B	500	B	1524	B	
9/17/2015 10:53	17.99	B	500	B	1710	B	
9/17/2015 10:54	18.09	B	500	B	1710	B	
9/17/2015 10:55	18.09	B	500	B	1710	B	
9/17/2015 10:56	18.09	B	500	B	1710	B	
9/17/2015 10:57	18.09	B	500	B	1710	B	1
9/17/2015 10:58	18.09	B	500	B	1710	B	
9/17/2015 10:59	10.09	B	500	B	1015	B	
9/17/2015 11:00	10.09	B	500	B	1035	B	
9/17/2015 11:01	10.09	B	500	B	1039	B	
9/17/2015 11:02	10.09	B	500	B	1041	B	
9/17/2015 11:03	10.09	B	500	B	1042	B	
9/17/2015 11:04	10.09	B	500	B	1042	B	
9/17/2015 11:05	10.09	B	500	B	1041	B	1
9/17/2015 11:06	9.99	B	500	B	1016	B	
9/17/2015 11:07	2.09	B	12.7	B	12	B	
9/17/2015 11:08	1.99	B	3.8	B	3	B	
9/17/2015 11:09	1.99	B	1.9	B	1	B	
9/17/2015 11:10	1.99	B	1.7	B	1	B	
9/17/2015 11:11	1.99	B	1.2	B	1	B	2
9/17/2015 11:12	1.99	B	1.1	B	1	B	
9/17/2015 11:13	0	B	271.2	B	249	B	
9/17/2015 11:14	0	B	269.6	B	251	B	
9/17/2015 11:15	0	B	272	B	253	B	
9/17/2015 11:16	0	B	273.5	B	253	B	
9/17/2015 11:17	0	B	272.3	B	252	B	2
9/17/2015 11:18	0	B	272.6	B	252	B	
9/17/2015 11:19	17.49	B	500	B	1286	B	

9/17/2015 11:20	18.09	B	500	B	1710	B	
9/17/2015 11:21	18.09	B	500	B	1710	B	
9/17/2015 11:22	18.09	B	500	B	1710	B	
9/17/2015 11:23	18.09	B	500	B	1710	B	2
9/17/2015 11:24	18.19	B	500	B	1710	B	
9/17/2015 11:25	10.09	B	500	B	1047	B	
9/17/2015 11:26	10.09	B	500	B	1041	B	
9/17/2015 11:27	9.99	B	500	B	1038	B	
9/17/2015 11:28	10.09	B	500	B	1038	B	
9/17/2015 11:29	9.99	B	500	B	1045	B	
9/17/2015 11:30	10.09	B	500	B	1040	B	2
9/17/2015 11:31	10.09	B	500	B	1016	B	
9/17/2015 11:32	0	B	431.1	B	385	B	
9/17/2015 11:33	0	B	419.2	B	378	B	
9/17/2015 11:34	0	B	421.6	B	381	B	
9/17/2015 11:35	0	B	422.1	B	379	B	
9/17/2015 11:36	0	B	420.8	B	380	B	2
9/17/2015 11:37	0	B	421.4	B	379	B	
9/17/2015 11:38	17.99	B	500	B	1695	B	
9/17/2015 11:39	17.99	B	500	B	1710	B	
9/17/2015 11:40	18.09	B	500	B	1710	B	
9/17/2015 11:41	18.09	B	500	B	1710	B	
9/17/2015 11:42	18.09	B	500	B	1710	B	3
9/17/2015 11:43	18.19	B	500	B	1710	B	
9/17/2015 11:44	0.29	B	364.7	B	336	B	
9/17/2015 11:45	0	B	280.6	B	258	B	
9/17/2015 11:46	0	B	274.1	B	254	B	
9/17/2015 11:47	0	B	275.1	B	255	B	3
9/17/2015 11:48	0	B	275.3	B	255	B	
9/17/2015 11:49	1.39	B	207.6	B	198	B	
9/17/2015 11:50	1.99	B	2.3	B	2	B	
9/17/2015 11:51	1.99	B	1.3	B	1	B	
9/17/2015 11:52	1.99	B	0.9	B	0	B	
9/17/2015 11:53	1.89	B	0.8	B	0	B	
9/17/2015 11:54	1.99	B	0.7	B	0	B	3
9/17/2015 11:55	1.89	B	0.6	B	0	B	
9/17/2015 11:56	1.99	B	0.6	B	0	B	
9/17/2015 11:57	0	B	417.4	B	373	B	
9/17/2015 11:58	0	B	418.5	B	385	B	
9/17/2015 11:59	0	B	421.2	B	386	B	
9/17/2015 12:00	0	B	420.8	B	386	B	
9/17/2015 12:01	0	B	420.8	B	386	B	
9/17/2015 12:02	0	B	420.8	B	386	B	3
9/17/2015 12:03	0	B	420.6	B	386	B	
9/17/2015 12:04	9.89	B	500	B	1030	B	
9/17/2015 12:05	9.99	B	500	B	1036	B	
9/17/2015 12:06	9.99	B	500	B	1038	B	
9/17/2015 12:07	9.99	B	500	B	1042	B	3
9/17/2015 12:08	9.89	B	500	B	1041	B	
9/17/2015 12:09	9.59	B	500	B	935	B	

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 17, 2015
Start Time:	8:46
Stop Time:	10:03

Unit #1 Outlet **Year - 2015** **Day 3**

Analyzer or Channel	O2			SO2			NOX			COLo			COHi				
Analyzer Full Range	25			200			500			500			2000				
Analyzer Make	Environment SA			Environment SA			Environment SA			Environment SA			Environment SA				
Analyzer Serial Number	2687			2687			2687			2687			2687				
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High		
Ca = Cal Gas Value	2.00	9.94	18.00	0.00	107.00	167.00	0.00	280.00	434.00	0.00	282.00	424.00	0.00	1073.00	1679.00		
Cylinder ID#	EB0019268	CC164055	EB0002281	EB0019268	EB0016778	CC248887	EB0019268	EB0016778	CC248887	EB0019268	EB0016778	CC248887	EB0019268	CC164055	EB0002281		
Expiration Date	09/23/22	09/23/22	12/19/20	09/23/22	10/08/22	06/26/18	09/23/22	10/08/22	06/26/18	09/23/22	10/08/22	06/26/18	09/23/22	09/23/22	12/19/20		
Run #1	**1.91**	**9.89**	**17.89**	**0.00**	**107.80**	**167.40**	**0.90**	**277.80**	**425.00**	**0.60**	**276.60**	**420.70**	**3.00**	**1043.00**	**1685.00**		
Run #2	**2.01**	**9.99**	**18.07**	**0.00**	**107.00**	**168.10**	**0.70**	**274.10**	**426.60**	**0.70**	**275.40**	**426.60**	**3.00**	**1048.00**	**1683.00**		
Run #3	**2.01**	**9.89**	**18.07**	**0.00**	**107.70**	**167.70**	**0.60**	**273.30**	**420.60**	**0.40**	**275.80**	**422.40**	**3.00**	**1048.00**	**1685.00**		
SUM (1+2+3)	5.93	29.77	54.03	0.00	322.50	503.20	2.20	825.20	1272.20	1.70	827.80	1269.70	9.00	3139.00	5053.00		
Cm = SUM/3	1.98	9.92	18.01	0.00	107.50	167.73	0.73	275.07	424.07	0.57	275.93	423.23	3.00	1046.33	1684.33		
Abs. Diff	0.0233333	0.0166667	0.01	0	0.5	0.7333333	0.7333333	4.9333333	9.9333333	0.5666667	6.0666667	0.7666667	3	26.666667	5.3333333		
%F.S.				0.00	-0.25	-0.37	0.15	0.99	1.99	0.11	1.21	0.15	0.15	1.33	-0.27		
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**		

Comments:

Technician : Jake Kiser		Title: Altech Rep.	Date:
Reviewed By : Chuck Davis		Title: REGIONAL CEMS COORD.	Date:

Date/Time	U1 1-min Outlet Data - O2s-dry	Data Status	U1 1-min Outlet Data - SO2s	Data Status	U1 1-min Outlet Data - NOxs	Data Status	U1 1-min Outlet Data - COs-l	Data Status	U1 1-min Outlet Data - COs-h	Data Status	
9/17/2015 8:41	8.18	B	0	B	63.5	B	11.1	B	9	B	
9/17/2015 8:42	7.97	B	0	B	72.1	B	10.5	B	8	B	
9/17/2015 8:43	0.2	B	99.6	B	281	B	256.7	B	253	B	
9/17/2015 8:44	0	B	166.9	B	431.2	B	423.5	B	414	B	
9/17/2015 8:45	0	B	168	B	432.4	B	423.9	B	415	B	
9/17/2015 8:46	0	B	167.4	B	425	B	420.7	B	412	B	1
9/17/2015 8:47	0.1	B	167.4	B	431	B	422.4	B	413	B	
9/17/2015 8:48	2.01	B	2.7	B	6.1	B	5.4	B	5	B	
9/17/2015 8:49	2.01	B	0	B	0.6	B	0.7	B	3	B	
9/17/2015 8:50	1.91	B	0	B	0.8	B	0.6	B	3	B	
9/17/2015 8:51	1.91	B	0	B	0.9	B	0.6	B	3	B	1
9/17/2015 8:52	2.01	B	0	B	0.9	B	0.6	B	3	B	
9/17/2015 8:53	0	B	106.8	B	277	B	275.9	B	272	B	
9/17/2015 8:54	0.1	B	107.7	B	278.9	B	276.7	B	273	B	
9/17/2015 8:55	0	B	107.8	B	277.8	B	276.6	B	273	B	1
9/17/2015 8:56	0	B	107.6	B	276	B	276.2	B	272	B	
9/17/2015 8:57	15.95	B	48.9	B	129.7	B	500	B	831	B	
9/17/2015 8:58	18.07	B	0	B	0.4	B	500	B	1673	B	
9/17/2015 8:59	18.07	B	0	B	0.2	B	500	B	1676	B	
9/17/2015 9:00	17.97	B	0	B	0.3	B	500	B	1685	B	1
9/17/2015 9:01	18.07	B	0	B	0.3	B	500	B	1685	B	
9/17/2015 9:02	9.89	B	0.8	B	3.7	B	500	B	1105	B	
9/17/2015 9:03	9.99	B	0	B	0.4	B	500	B	1048	B	
9/17/2015 9:04	9.99	B	0	B	0.5	B	500	B	1050	B	
9/17/2015 9:05	9.89	B	0	B	0.3	B	500	B	1043	B	1
9/17/2015 9:06	10.09	B	0	B	0.2	B	500	B	1043	B	
9/17/2015 9:07	8.38	B	0	B	13	B	500	B	781	B	
9/17/2015 9:08	2.01	B	0	B	0.2	B	1.6	B	3	B	
9/17/2015 9:09	2.12	B	0	B	0.6	B	1	B	3	B	
9/17/2015 9:10	2.12	B	0	B	0.7	B	0.8	B	3	B	
9/17/2015 9:11	2.01	B	0	B	0.7	B	0.7	B	3	B	2
9/17/2015 9:12	0.1	B	89.4	B	215.4	B	220	B	216	B	
9/17/2015 9:13	0	B	107.7	B	278	B	277	B	273	B	
9/17/2015 9:14	0	B	107.6	B	276.1	B	275.6	B	272	B	
9/17/2015 9:15	0	B	107	B	274.1	B	275.4	B	271	B	2
9/17/2015 9:16	0	B	107.2	B	277.1	B	276.5	B	272	B	
9/17/2015 9:17	17.57	B	40.7	B	100.6	B	500	B	1048	B	
9/17/2015 9:18	17.87	B	0	B	2.3	B	500	B	1653	B	
9/17/2015 9:19	18.07	B	0	B	0.3	B	500	B	1686	B	
9/17/2015 9:20	17.97	B	0	B	0.3	B	500	B	1690	B	
9/17/2015 9:21	18.07	B	0	B	0.1	B	500	B	1683	B	2
9/17/2015 9:22	17.87	B	0	B	0.1	B	500	B	1682	B	
9/17/2015 9:23	9.89	B	0	B	0.4	B	500	B	1051	B	
9/17/2015 9:24	9.89	B	0	B	0	B	500	B	1039	B	
9/17/2015 9:25	9.99	B	0	B	0.1	B	500	B	1045	B	
9/17/2015 9:26	9.99	B	0	B	0.1	B	500	B	1048	B	2
9/17/2015 9:27	8.28	B	15.9	B	50.7	B	500	B	808	B	
9/17/2015 9:28	0	B	164.2	B	415.8	B	429.5	B	421	B	
9/17/2015 9:29	0.1	B	168	B	426.1	B	425.1	B	416	B	
9/17/2015 9:30	0	B	168.1	B	426.6	B	425.2	B	416	B	2
9/17/2015 9:31	0	B	167.1	B	419.4	B	421.7	B	413	B	
9/17/2015 9:32	17.87	B	22	B	40.8	B	500	B	1519	B	
9/17/2015 9:33	18.17	B	0	B	0.9	B	500	B	1691	B	
9/17/2015 9:34	18.07	B	0	B	0	B	500	B	1675	B	
9/17/2015 9:35	18.07	B	0	B	0.1	B	500	B	1685	B	3
9/17/2015 9:36	17.97	B	0	B	0.1	B	500	B	1690	B	
9/17/2015 9:37	1.21	B	52.3	B	125.3	B	500	B	866	B	
9/17/2015 9:38	0	B	107.8	B	272.9	B	280	B	276	B	
9/17/2015 9:39	0.1	B	108.1	B	274	B	277.9	B	274	B	
9/17/2015 9:40	0.1	B	107.8	B	269.2	B	275.2	B	271	B	
9/17/2015 9:41	0.1	B	107.6	B	272.3	B	275.7	B	272	B	
9/17/2015 9:42	0	B	107.7	B	273.3	B	275.8	B	272	B	3
9/17/2015 9:43	0	B	107.8	B	273.7	B	276	B	272	B	
9/17/2015 9:44	1.91	B	1.4	B	3.8	B	3.4	B	4	B	

9/17/2015 9:45	1.81	B	0	B	0.8	B	0.8	B	3	B	
9/17/2015 9:46	2.01	B	0	B	0.9	B	0.6	B	3	B	
9/17/2015 9:47	2.12	B	0	B	0.4	B	0.6	B	3	B	
9/17/2015 9:48	2.01	B	0	B	0.6	B	0.4	B	3	B	3
9/17/2015 9:49	1.91	B	0	B	0.7	B	0.4	B	3	B	
9/17/2015 9:50	0	B	166	B	416.5	B	419.4	B	411	B	
9/17/2015 9:51	0	B	167.2	B	420.6	B	422.4	B	414	B	
9/17/2015 9:52	0	B	168	B	422.7	B	423.6	B	415	B	
9/17/2015 9:53	0	B	167.6	B	414.8	B	422.5	B	414	B	
9/17/2015 9:54	0	B	167.4	B	417.6	B	422.2	B	414	B	
9/17/2015 9:55	0	B	167.5	B	419.7	B	422.2	B	414	B	
9/17/2015 9:56	0.1	B	167.7	B	420.6	B	422.4	B	414	B	3
9/17/2015 9:57	0	B	167.5	B	413.4	B	421.6	B	413	B	
9/17/2015 9:58	0	B	167.5	B	417.8	B	421.7	B	413	B	
9/17/2015 9:59	5.35	B	112.8	B	307.9	B	500	B	521	B	
9/17/2015 10:00	9.89	B	0	B	0.2	B	500	B	1037	B	
9/17/2015 10:01	9.99	B	0	B	0.3	B	500	B	1043	B	
9/17/2015 10:02	9.99	B	0	B	0.4	B	500	B	1048	B	
9/17/2015 10:03	9.89	B	0	B	0.3	B	500	B	1048	B	3
9/17/2015 10:04	7.87	B	1.6	B	88.3	B	26.3	B	23	B	
9/17/2015 10:05	8.58	B	2	B	81.5	B	9.5	B	7	B	
9/17/2015 10:06	8.28	B	0.3	B	79.2	B	24.2	B	21	B	
9/17/2015 10:07	7.77	B	0	B	75.5	B	25.1	B	22	B	

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 18, 2015
Start Time:	11:24
Stop Time:	12:52

Unit #1 Inlet **Year - 2015** **Day 4**

Analyzer or Channel	O2			COLo			COHi		
Analyzer Full Range	25			500			2000		
Analyzer Make	Environment SA			Environment SA			Environment SA		
Analyzer Serial Number	2684			2684			2684		
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High
Ca = Cal Gas Value	2.00	9.99	18.00	0.00	281.00	433.00	0.00	1075.00	1699.00
Cylinder ID#	CC332354	CC275798	CC239156	CC332354	EB0047021	EB0047069	CC332354	CC275798	CC239156
Expiration Date	09/23/22	11/17/22	05/19/20	09/23/22	12/10/22	04/27/20	09/23/22	11/17/22	05/19/20
Run #1	**1.99**	**9.99**	**17.99**	**0.90**	**275.80**	**433.70**	**1.00**	**1052.00**	**1723.00**
Run #2	**1.99**	**9.99**	**17.99**	**1.50**	**276.10**	**434.00**	**1.00**	**1055.00**	**1726.00**
Run #3	**1.99**	**9.99**	**17.99**	**1.10**	**274.00**	**432.90**	**1.00**	**1046.00**	**1726.00**
SUM (1+2+3)	5.97	29.97	53.97	3.50	825.90	1300.60	3.00	3153.00	5175.00
Cm = SUM/3	1.99	9.99	17.99	1.17	275.30	433.53	1.00	1051.00	1725.00
Abs. Diff	0.01	0	0.01	1.1666667	5.7	0.5333333	1	24	26
%F.S.				0.23	1.14	-0.11	0.05	1.20	-1.30
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass

Comments:

Technician :	Jake Kiser	Title:	Altech Rep.	Date:
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:

Date/Time	U1 1-min Inlet Data - O2e-dry	Data Status	U1 1-min Inlet Data - COe-l	Data Status	U1 1-min Inlet Data - COe-h	Data Status	
9/18/2015 11:17	10.29	B	500	B	1051	B	
9/18/2015 11:18	10.29	B	500	B	1049	B	
9/18/2015 11:19	9.89	B	500	B	1048	B	
9/18/2015 11:20	0.29	B	392.2	B	358	B	
9/18/2015 11:21	0.09	B	434.1	B	387	B	
9/18/2015 11:22	0	B	429.9	B	384	B	
9/18/2015 11:23	0.19	B	432	B	384	B	
9/18/2015 11:24	0.09	B	433.7	B	385	B	1
9/18/2015 11:25	0	B	431	B	385	B	
9/18/2015 11:26	0	B	431.5	B	384	B	
9/18/2015 11:27	1.89	B	125.1	B	115	B	
9/18/2015 11:28	1.99	B	2.1	B	1	B	
9/18/2015 11:29	1.99	B	1.8	B	1	B	
9/18/2015 11:30	1.99	B	1	B	1	B	
9/18/2015 11:31	1.99	B	0.9	B	1	B	1
9/18/2015 11:32	1.99	B	0.5	B	0	B	
9/18/2015 11:33	1.99	B	0.8	B	0	B	
9/18/2015 11:34	0	B	269.7	B	248	B	
9/18/2015 11:35	0	B	271.6	B	253	B	
9/18/2015 11:36	0	B	272.7	B	251	B	
9/18/2015 11:37	0	B	275.8	B	253	B	1
9/18/2015 11:38	0	B	274.5	B	253	B	
9/18/2015 11:39	0	B	274	B	252	B	
9/18/2015 11:40	17.89	B	500	B	1676	B	
9/18/2015 11:41	17.99	B	500	B	1623	B	
9/18/2015 11:42	17.89	B	500	B	1717	B	
9/18/2015 11:43	17.99	B	500	B	1739	B	
9/18/2015 11:44	17.99	B	500	B	1723	B	1
9/18/2015 11:45	17.99	B	500	B	1697	B	
9/18/2015 11:46	17.59	B	500	B	1633	B	
9/18/2015 11:47	10.09	B	500	B	1042	B	
9/18/2015 11:48	10.09	B	500	B	1058	B	
9/18/2015 11:49	9.99	B	500	B	1055	B	
9/18/2015 11:50	9.99	B	500	B	1052	B	1
9/18/2015 11:51	10.09	B	500	B	1050	B	
9/18/2015 11:52	5.29	B	500	B	728	B	
9/18/2015 11:53	2.09	B	7.4	B	7	B	
9/18/2015 11:54	2.09	B	3.8	B	3	B	
9/18/2015 11:55	2.09	B	2	B	1	B	
9/18/2015 11:56	1.99	B	1.5	B	1	B	
9/18/2015 11:57	1.99	B	1.5	B	1	B	2
9/18/2015 11:58	1.99	B	1.1	B	1	B	
9/18/2015 11:59	1.59	B	57.2	B	54	B	
9/18/2015 12:00	0	B	274	B	251	B	
9/18/2015 12:01	0	B	273.2	B	253	B	
9/18/2015 12:02	0	B	273.9	B	254	B	
9/18/2015 12:03	0	B	276	B	254	B	
9/18/2015 12:04	0	B	276.1	B	254	B	2
9/18/2015 12:05	0	B	274.7	B	255	B	

9/18/2015 12:06	17.89	B	500	B	1646	B	
9/18/2015 12:07	17.99	B	500	B	1665	B	
9/18/2015 12:08	17.99	B	500	B	1716	B	
9/18/2015 12:09	18.09	B	500	B	1727	B	
9/18/2015 12:10	17.99	B	500	B	1672	B	2
9/18/2015 12:11	17.99	B	500	B	1644	B	
9/18/2015 12:12	10.09	B	500	B	1035	B	
9/18/2015 12:13	9.99	B	500	B	1048	B	
9/18/2015 12:14	9.99	B	500	B	1048	B	
9/18/2015 12:15	9.99	B	500	B	1055	B	2
9/18/2015 12:16	9.99	B	500	B	1048	B	
9/18/2015 12:17	9.79	B	500	B	1002	B	
9/18/2015 12:18	0.09	B	441.8	B	396	B	
9/18/2015 12:19	0	B	431.9	B	390	B	
9/18/2015 12:20	0	B	434	B	392	B	2
9/18/2015 12:21	0	B	435.3	B	392	B	
9/18/2015 12:22	0.59	B	500	B	498	B	
9/18/2015 12:23	17.89	B	500	B	1688	B	
9/18/2015 12:24	17.99	B	500	B	1720	B	
9/18/2015 12:25	17.99	B	500	B	1644	B	
9/18/2015 12:26	18.09	B	500	B	1744	B	
9/18/2015 12:27	17.99	B	500	B	1744	B	
9/18/2015 12:28	17.99	B	500	B	1726	B	3
9/18/2015 12:29	17.99	B	500	B	1694	B	
9/18/2015 12:30	17.99	B	500	B	1729	B	
9/18/2015 12:31	0.09	B	284.8	B	265	B	
9/18/2015 12:32	0	B	279.4	B	259	B	
9/18/2015 12:33	0	B	274.7	B	257	B	
9/18/2015 12:34	0	B	274.9	B	257	B	3
9/18/2015 12:35	0	B	275	B	257	B	
9/18/2015 12:36	0	B	274.5	B	257	B	
9/18/2015 12:37	1.99	B	3.5	B	3	B	
9/18/2015 12:38	1.99	B	1.6	B	1	B	
9/18/2015 12:39	1.99	B	1.3	B	1	B	
9/18/2015 12:40	1.99	B	1.1	B	1	B	3
9/18/2015 12:41	1.99	B	0.9	B	0	B	
9/18/2015 12:42	1.99	B	0.9	B	0	B	
9/18/2015 12:43	0	B	427.1	B	383	B	
9/18/2015 12:44	0	B	428.7	B	388	B	
9/18/2015 12:45	0	B	431.8	B	389	B	
9/18/2015 12:46	0	B	432.9	B	390	B	3
9/18/2015 12:47	0	B	430.4	B	389	B	
9/18/2015 12:48	2.39	B	500	B	510	B	
9/18/2015 12:49	9.89	B	500	B	1037	B	
9/18/2015 12:50	9.99	B	500	B	1032	B	
9/18/2015 12:51	9.99	B	500	B	1044	B	
9/18/2015 12:52	9.99	B	500	B	1046	B	3
9/18/2015 12:53	9.99	B	500	B	1048	B	
9/18/2015 12:54	9.69	B	500	B	1039	B	
9/18/2015 12:55	8.49	B	92.2	B	133	B	
9/18/2015 12:56	8.09	B	34.1	B	53	B	

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	**September 18, 2015**
Start Time:	**9:04**
Stop Time:	**10:42**

Unit #1 Outlet **Year - 2015** **Day 4**

Analyzer or Channel	O2			SO2			NOX			COLo			COHi				
Analyzer Full Range	25			200			500			500			2000				
Analyzer Make	Environment SA			Environment SA			Environment SA			Environment SA			Environment SA				
Analyzer Serial Number	2687			2687			2687			2687			2687				
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High		
Ca = Cal Gas Value	2.00	9.94	18.00	0.00	107.00	165.00	0.00	280.00	437.00	0.00	282.00	425.00	0.00	1073.00	1679.00		
Cylinder ID#	EB0019268	CC164055	EB0002281	EB0019268	EB0016778	EB0047080	EB0019268	EB0016778	EB0047080	EB0019268	EB0016778	EB0047080	EB0019268	CC164055	EB0002281		
Expiration Date	09/23/22	09/23/22	12/19/20	09/23/22	10/08/22	07/08/18	09/23/22	10/08/22	07/08/18	09/23/22	10/08/22	07/08/18	09/23/22	09/23/22	12/19/20		
Run #1	**2.01**	**9.99**	**17.87**	**0.00**	**107.40**	**165.50**	**0.70**	**285.00**	**439.50**	**0.50**	**274.60**	**423.70**	**3.00**	**1044.00**	**1674.00**		
Run #2	**2.01**	**9.79**	**17.97**	**0.00**	**107.80**	**165.50**	**0.30**	**278.90**	**433.10**	**0.60**	**278.90**	**424.50**	**3.00**	**1045.00**	**1677.00**		
Run #3	**1.91**	**9.79**	**17.87**	**0.00**	**107.90**	**166.00**	**0.20**	**279.40**	**433.20**	**0.50**	**275.20**	**423.50**	**3.00**	**1041.00**	**1686.00**		
SUM (1+2+3)	5.93	29.57	53.71	0.00	323.10	497.00	1.20	843.30	1305.80	1.60	828.70	1271.70	9.00	3130.00	5037.00		
Cm = SUM/3	1.98	9.86	17.90	0.00	107.70	165.67	0.40	281.10	435.27	0.53	276.23	423.90	3.00	1043.33	1679.00		
Abs. Diff	0.0233333	0.0833333	0.0966667	0	0.7	0.6666667	0.4	1.1	1.7333333	0.5333333	5.7666667	1.1	3	29.666667	0		
%F.S.				0.00	-0.35	-0.33	0.08	-0.22	0.35	0.11	1.15	0.22	0.15	1.48	0.00		
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**		

Comments:

Technician :	Jake Kiser	Title:	Altech Rep.	Date:	
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:	

Date/Time	U1 1-min Outlet Data - O2s-dry	Data Status	U1 1-min Outlet Data - SO2s	Data Status	U1 1-min Outlet Data - NOxs	Data Status	U1 1-min Outlet Data - COs-l	Data Status	U1 1-min Outlet Data - COs-h	Data Status	
9/18/2015 8:57	0.1	B	165.2	B	443.9	B	423.4	B	415	B	
9/18/2015 8:58	0	B	165.3	B	445.3	B	423.6	B	415	B	
9/18/2015 8:59	0	B	165.3	B	438.8	B	423.5	B	415	B	
9/18/2015 9:00	0	B	165.3	B	439	B	423.5	B	415	B	
9/18/2015 9:01	0	B	165.5	B	439.4	B	423.7	B	415	B	
9/18/2015 9:02	0	B	165.3	B	437.3	B	423.5	B	415	B	
9/18/2015 9:03	0.1	B	165.3	B	438	B	423.5	B	415	B	
9/18/2015 9:04	0	B	165.5	B	439.5	B	423.7	B	415	B	1
9/18/2015 9:05	0	B	165.3	B	436.3	B	423.4	B	415	B	
9/18/2015 9:06	2.01	B	15.2	B	29	B	26.5	B	23	B	
9/18/2015 9:07	2.01	B	0	B	1.1	B	0.7	B	3	B	
9/18/2015 9:08	1.91	B	0	B	0.4	B	0.6	B	3	B	
9/18/2015 9:09	2.01	B	0	B	0.6	B	0.5	B	3	B	
9/18/2015 9:10	2.01	B	0	B	0.7	B	0.5	B	3	B	1
9/18/2015 9:11	2.01	B	0	B	0.7	B	0.5	B	3	B	
9/18/2015 9:12	1	B	31.7	B	94.7	B	90.7	B	93	B	
9/18/2015 9:13	0.2	B	107.4	B	284.9	B	275.1	B	271	B	
9/18/2015 9:14	0	B	107.6	B	282.6	B	274.9	B	271	B	
9/18/2015 9:15	0	B	107	B	282.2	B	273.9	B	270	B	
9/18/2015 9:16	0	B	107.2	B	284.5	B	274.4	B	271	B	
9/18/2015 9:17	0.1	B	107.4	B	285	B	274.6	B	271	B	1
9/18/2015 9:18	0	B	107.3	B	280.3	B	274.3	B	270	B	
9/18/2015 9:19	17.47	B	32.9	B	83.5	B	500	B	1116	B	
9/18/2015 9:20	17.97	B	0	B	0.5	B	500	B	1678	B	
9/18/2015 9:21	17.87	B	0	B	0	B	500	B	1663	B	
9/18/2015 9:22	18.07	B	0	B	0	B	500	B	1667	B	
9/18/2015 9:23	17.87	B	0	B	0.1	B	500	B	1674	B	
9/18/2015 9:24	17.87	B	0	B	0.1	B	500	B	1674	B	1
9/18/2015 9:25	16.76	B	0	B	0	B	500	B	1673	B	
9/18/2015 9:26	9.89	B	0	B	0.3	B	500	B	1046	B	
9/18/2015 9:27	9.89	B	0	B	0.3	B	500	B	1043	B	
9/18/2015 9:28	9.89	B	0	B	0	B	500	B	1036	B	
9/18/2015 9:29	9.99	B	0	B	0	B	500	B	1040	B	
9/18/2015 9:30	9.99	B	0	B	0	B	500	B	1044	B	1
9/18/2015 9:31	9.99	B	0	B	0	B	500	B	1043	B	
9/18/2015 9:32	2.01	B	0.3	B	4.1	B	97	B	99	B	
9/18/2015 9:33	1.91	B	0	B	0.7	B	1.4	B	3	B	
9/18/2015 9:34	1.91	B	0	B	0	B	0.9	B	3	B	
9/18/2015 9:35	2.12	B	0	B	0.5	B	0.6	B	3	B	
9/18/2015 9:36	2.01	B	0	B	0.8	B	0.6	B	3	B	
9/18/2015 9:37	1.91	B	0	B	0.7	B	0.6	B	3	B	
9/18/2015 9:38	2.01	B	0	B	0.3	B	0.6	B	3	B	2
9/18/2015 9:39	1.91	B	0	B	0.3	B	0.6	B	3	B	
9/18/2015 9:40	2.01	B	0	B	0.4	B	0.6	B	3	B	
9/18/2015 9:41	0	B	106	B	262.3	B	259.3	B	256	B	
9/18/2015 9:42	0	B	107.3	B	280.2	B	274.7	B	272	B	
9/18/2015 9:43	0	B	108.2	B	281.8	B	275.4	B	272	B	
9/18/2015 9:44	0.1	B	108.1	B	277.4	B	274.9	B	272	B	
9/18/2015 9:45	0.1	B	107.8	B	278.9	B	274.4	B	271	B	2
9/18/2015 9:46	0	B	107.9	B	280.9	B	274.6	B	272	B	
9/18/2015 9:47	17.77	B	21.4	B	55.6	B	500	B	1552	B	
9/18/2015 9:48	17.97	B	0	B	0.2	B	500	B	1675	B	
9/18/2015 9:49	17.87	B	0	B	0.2	B	500	B	1683	B	
9/18/2015 9:50	17.77	B	0	B	0.2	B	500	B	1684	B	
9/18/2015 9:51	17.77	B	0	B	0	B	500	B	1678	B	
9/18/2015 9:52	17.87	B	0	B	0	B	500	B	1678	B	
9/18/2015 9:53	17.97	B	0	B	0	B	500	B	1678	B	
9/18/2015 9:54	17.97	B	0	B	0	B	500	B	1677	B	2
9/18/2015 9:55	17.87	B	0	B	0	B	500	B	1676	B	
9/18/2015 9:56	9.99	B	0.1	B	2.7	B	500	B	1126	B	
9/18/2015 9:57	9.89	B	0	B	0	B	500	B	1044	B	
9/18/2015 9:58	9.99	B	0	B	0	B	500	B	1041	B	

9/18/2015 9:59	9.79 B	0 B	0 B	500 B	1045 B	
9/18/2015 10:00	9.79 B	0 B	0 B	500 B	1045 B	2
9/18/2015 10:01	9.89 B	0 B	0 B	500 B	1042 B	
9/18/2015 10:02	0.7 B	2.4 B	17.2 B	500 B	675 B	
9/18/2015 10:03	0 B	165.1 B	427.1 B	427 B	420 B	
9/18/2015 10:04	0 B	165.3 B	425.1 B	424.7 B	417 B	
9/18/2015 10:05	0.1 B	165.3 B	423.2 B	423.8 B	416 B	
9/18/2015 10:06	0 B	165.5 B	430.3 B	424.3 B	417 B	
9/18/2015 10:07	0 B	165.5 B	433.1 B	424.5 B	417 B	2
9/18/2015 10:08	0.1 B	165.5 B	431.4 B	424.3 B	417 B	
9/18/2015 10:09	8.48 B	108.3 B	326.2 B	500 B	635 B	
9/18/2015 10:10	17.87 B	0 B	1.3 B	500 B	1673 B	
9/18/2015 10:11	17.97 B	0 B	0 B	500 B	1674 B	
9/18/2015 10:12	17.87 B	0 B	0 B	500 B	1683 B	
9/18/2015 10:13	17.87 B	0 B	0.1 B	500 B	1686 B	3
9/18/2015 10:14	17.87 B	0 B	0 B	500 B	1676 B	
9/18/2015 10:15	0.6 B	60.3 B	145.7 B	500 B	832 B	
9/18/2015 10:16	0 B	108.4 B	281.7 B	278.5 B	276 B	
9/18/2015 10:17	0 B	107.2 B	277 B	273.8 B	271 B	
9/18/2015 10:18	0 B	107.4 B	279.6 B	274.9 B	272 B	
9/18/2015 10:19	0 B	107.8 B	281.8 B	275.5 B	273 B	
9/18/2015 10:20	0.1 B	107.9 B	279.4 B	275.2 B	272 B	3
9/18/2015 10:21	0 B	146.3 B	377.5 B	380.3 B	375 B	
9/18/2015 10:22	0 B	166.2 B	432.3 B	425.3 B	418 B	
9/18/2015 10:23	0 B	166.4 B	432.5 B	425.3 B	417 B	
9/18/2015 10:24	0 B	164.9 B	424.9 B	422.1 B	415 B	
9/18/2015 10:25	0 B	165.4 B	433.4 B	422.4 B	415 B	
9/18/2015 10:26	0 B	165.7 B	434.9 B	422.8 B	415 B	
9/18/2015 10:27	0 B	165.8 B	435.1 B	423 B	416 B	
9/18/2015 10:28	1.91 B	42.9 B	94.1 B	95 B	97 B	
9/18/2015 10:29	1.91 B	0 B	0.9 B	0.8 B	3 B	
9/18/2015 10:30	1.91 B	0 B	0 B	0.5 B	3 B	
9/18/2015 10:31	1.91 B	0 B	0.2 B	0.5 B	3 B	3
9/18/2015 10:32	3.63 B	0 B	13.1 B	3.1 B	4 B	
9/18/2015 10:33	0 B	165.6 B	431.8 B	423 B	416 B	
9/18/2015 10:34	0 B	165.5 B	431.1 B	422.9 B	416 B	
9/18/2015 10:35	0 B	166 B	433.2 B	423.5 B	416 B	3
9/18/2015 10:36	0 B	166.1 B	433.7 B	424.3 B	417 B	
9/18/2015 10:37	3.02 B	125.3 B	367.7 B	384.5 B	379 B	
9/18/2015 10:38	9.79 B	0 B	0.9 B	500 B	1045 B	
9/18/2015 10:39	9.89 B	0 B	0.4 B	500 B	1045 B	
9/18/2015 10:40	9.89 B	0 B	0 B	500 B	1039 B	
9/18/2015 10:41	9.99 B	0 B	0 B	500 B	1040 B	
9/18/2015 10:42	9.79 B	0 B	0 B	500 B	1041 B	3
9/18/2015 10:43	9.89 B	0 B	0 B	500 B	1041 B	
9/18/2015 10:44	8.58 B	0 B	27.4 B	500 B	797 B	
9/18/2015 10:45	8.18 B	0 B	120.1 B	14.5 B	12 B	
9/18/2015 10:46	8.88 B	0.2 B	108.4 B	8.5 B	7 B	
9/18/2015 10:47	7.57 B	0 B	124.3 B	9.1 B	7 B	
9/18/2015 10:48	7.97 B	0 B	124.6 B	9.3 B	7 B	
9/18/2015 10:49	8.48 B	0 B	122.7 B	6.8 B	6 B	
9/18/2015 10:50	8.18 B	0 B	122.3 B	11.3 B	9 B	
9/18/2015 10:51	8.07 B	0 B	128.2 B	14.8 B	12 B	
9/18/2015 10:52	8.58 B	0 B	143.5 B	11.3 B	9 B	
9/18/2015 10:53	6.66 B	0 B	143.3 B	12.3 B	10 B	

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 19, 2015
Start Time:	10:47
Stop Time:	12:17

Unit #1 Inlet **Year - 2015** **Day 5**

Analyzer or Channel	O2			COLo			COHi		
Analyzer Full Range	25			500			2000		
Analyzer Make	Environment SA			Environment SA			Environment SA		
Analyzer Serial Number	2684			2684			2684		
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High
Ca = Cal Gas Value	0.00	9.99	17.90	0.00	281.00	433.00	0.00	1075.00	1708.00
Cylinder ID#	CC31829	CC275798	CC97046	CC31829	EB0047021	EB0047069	CC31829	CC275798	CC97046
Expiration Date	01/14/16	11/17/22	10/14/17	01/14/16	12/10/22	04/07/20	01/14/16	11/17/22	10/14/17
Run #1	**0.00**	**9.89**	**17.89**	**1.60**	**275.80**	**432.20**	**1.00**	**1105.00**	**1707.00**
Run #2	**0.00**	**9.89**	**17.79**	**1.70**	**277.40**	**430.50**	**1.00**	**1096.00**	**1718.00**
Run #3	**0.00**	**9.98**	**17.79**	**0.50**	**278.70**	**428.90**	**0.00**	**1094.00**	**1709.00**
SUM (1+2+3)	0.00	29.76	53.47	3.80	831.90	1291.60	2.00	3295.00	5134.00
Cm = SUM/3	0.00	9.92	17.82	1.27	277.30	430.53	0.67	1098.33	1711.33
Abs. Diff	0	0.07	0.0766667	1.2666667	3.7	2.4666667	0.6666667	23.333333	3.3333333
%F.S.				0.25	0.74	0.49	0.03	-1.17	-0.17
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**

Comments: Changed to Using a N2 Bottle for zero. High Span 2 bottle changed, New values 17.90% , 1708ppm CO.

Technician :	Jake Kiser	Title:	Altech Rep.	Date:	
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:	

Date/Time	U1 1-min Inlet Data - O2e-dry	Data Status	U1 1-min Inlet Data - COe-l	Data Status	U1 1-min Inlet Data - COe-h	Data Status	
9/19/2015 10:37	8.09	B	27.2	B	32	B	
9/19/2015 10:38	4.19	B	38.1	B	41	B	
9/19/2015 10:39	0.09	B	426.2	B	384	B	
9/19/2015 10:40	0	B	426.8	B	382	B	
9/19/2015 10:41	0	B	425.7	B	380	B	
9/19/2015 10:42	0	B	428.4	B	383	B	
9/19/2015 10:43	0	B	431.6	B	383	B	
9/19/2015 10:44	0	B	427.8	B	382	B	
9/19/2015 10:45	0	B	427.9	B	385	B	
9/19/2015 10:46	0	B	433.8	B	386	B	
9/19/2015 10:47	0	B	432.2	B	385	B	1
9/19/2015 10:48	0	B	428.7	B	385	B	
9/19/2015 10:49	0	B	416.7	B	373	B	
9/19/2015 10:50	0	B	3.9	B	3	B	
9/19/2015 10:51	0	B	1.8	B	1	B	
9/19/2015 10:52	0	B	1.6	B	1	B	1
9/19/2015 10:53	0	B	1.2	B	1	B	
9/19/2015 10:54	0.09	B	31.5	B	29	B	
9/19/2015 10:55	0	B	272	B	254	B	
9/19/2015 10:56	0	B	268.7	B	252	B	
9/19/2015 10:57	0	B	273.8	B	250	B	
9/19/2015 10:58	0	B	275.8	B	253	B	
9/19/2015 10:59	0	B	275.8	B	253	B	1
9/19/2015 11:00	0	B	276.5	B	253	B	
9/19/2015 11:01	0	B	271.8	B	253	B	
9/19/2015 11:02	17.59	B	500	B	1502	B	
9/19/2015 11:03	17.79	B	500	B	1566	B	
9/19/2015 11:04	17.79	B	500	B	1685	B	
9/19/2015 11:05	17.79	B	500	B	1709	B	
9/19/2015 11:06	17.89	B	500	B	1707	B	1
9/19/2015 11:07	17.79	B	500	B	1721	B	
9/19/2015 11:08	9.99	B	500	B	1158	B	
9/19/2015 11:09	9.89	B	500	B	1164	B	
9/19/2015 11:10	9.89	B	500	B	1124	B	
9/19/2015 11:11	9.89	B	500	B	1104	B	
9/19/2015 11:12	9.89	B	500	B	1105	B	1
9/19/2015 11:13	9.89	B	500	B	1153	B	
9/19/2015 11:14	0.09	B	14.6	B	15	B	
9/19/2015 11:15	0	B	4.1	B	4	B	
9/19/2015 11:16	0	B	2.9	B	3	B	
9/19/2015 11:17	0	B	2.1	B	2	B	
9/19/2015 11:18	0	B	1.7	B	1	B	2
9/19/2015 11:19	0	B	1.7	B	1	B	
9/19/2015 11:20	0	B	273	B	277	B	
9/19/2015 11:21	0	B	275	B	282	B	
9/19/2015 11:22	0	B	277.6	B	282	B	
9/19/2015 11:23	0	B	275.4	B	283	B	
9/19/2015 11:24	0	B	277.4	B	285	B	2
9/19/2015 11:25	0	B	272.3	B	286	B	

9/19/2015 11:26	17.69	B	500	B	1702	B	
9/19/2015 11:27	17.79	B	500	B	1713	B	
9/19/2015 11:28	17.79	B	500	B	1694	B	
9/19/2015 11:29	17.79	B	500	B	1707	B	
9/19/2015 11:30	17.79	B	500	B	1718	B	2
9/19/2015 11:31	17.79	B	500	B	1622	B	
9/19/2015 11:32	9.99	B	500	B	1119	B	
9/19/2015 11:33	9.89	B	500	B	1094	B	
9/19/2015 11:34	9.89	B	500	B	1093	B	
9/19/2015 11:35	9.89	B	500	B	1096	B	2
9/19/2015 11:36	9.89	B	500	B	1094	B	
9/19/2015 11:37	0.19	B	476.7	B	479	B	
9/19/2015 11:38	0	B	433.9	B	439	B	
9/19/2015 11:39	0	B	432.1	B	435	B	
9/19/2015 11:40	0	B	430.9	B	435	B	
9/19/2015 11:41	0	B	430.5	B	434	B	2
9/19/2015 11:42	0	B	427.8	B	432	B	
9/19/2015 11:43	16.59	B	500	B	1333	B	
9/19/2015 11:44	17.69	B	500	B	1705	B	
9/19/2015 11:45	17.79	B	500	B	1715	B	
9/19/2015 11:46	17.79	B	500	B	1716	B	
9/19/2015 11:47	17.89	B	500	B	1717	B	
9/19/2015 11:48	17.79	B	500	B	1709	B	3
9/19/2015 11:49	17.79	B	500	B	1711	B	
9/19/2015 11:50	0.19	B	302.6	B	294	B	
9/19/2015 11:51	0.09	B	280.9	B	274	B	
9/19/2015 11:52	0	B	281.3	B	272	B	
9/19/2015 11:53	0	B	278.8	B	270	B	
9/19/2015 11:54	0	B	278.7	B	270	B	3
9/19/2015 11:55	0	B	273.4	B	270	B	
9/19/2015 11:56	1.89	B	5	B	5	B	
9/19/2015 11:57	1.99	B	1.8	B	1	B	
9/19/2015 11:58	1.99	B	1.1	B	1	B	
9/19/2015 11:59	1.89	B	1	B	1	B	
9/19/2015 12:00	1.99	B	1.1	B	1	B	
9/19/2015 12:01	0	B	0.5	B	0	B	
9/19/2015 12:02	0	B	0.8	B	0	B	
9/19/2015 12:03	0	B	0.5	B	0	B	3
9/19/2015 12:04	0	B	18.6	B	18	B	
9/19/2015 12:05	0	B	429.8	B	410	B	
9/19/2015 12:06	0	B	423.9	B	408	B	
9/19/2015 12:07	0	B	428.9	B	407	B	3
9/19/2015 12:08	0	B	431.5	B	410	B	
9/19/2015 12:09	0	B	428.3	B	409	B	
9/19/2015 12:10	9.79	B	500	B	1084	B	
9/19/2015 12:11	9.89	B	500	B	1099	B	
9/19/2015 12:12	9.89	B	500	B	1086	B	
9/19/2015 12:13	9.89	B	500	B	1087	B	
9/19/2015 12:14	9.89	B	500	B	1093	B	
9/19/2015 12:15	9.89	B	500	B	1104	B	
9/19/2015 12:16	9.89	B	500	B	1094	B	
9/19/2015 12:17	9.89	B	500	B	1094	B	3

9/19/2015 12:18	9.89	B	500	B	1092	B
9/19/2015 12:19	8.59	B	120.6	B	158	B
9/19/2015 12:20	7.79	B	50.6	B	72	B
9/19/2015 12:21	8.99	B	27.4	B	42	B
9/19/2015 12:22	8.69	B	21.5	B	32	B
9/19/2015 12:23	7.19	B	24.1	B	35	B
9/19/2015 12:24	8.09	B	17	B	26	B
9/19/2015 12:25	7.89	B	23.9	B	37	B
9/19/2015 12:26	7.29	B	28.3	B	46	B
9/19/2015 12:27	7.19	B	29.7	B	44	B
9/19/2015 12:28	7.79	B	32.2	B	48	B
9/19/2015 12:29	7.39	B	32.4	B	51	B

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 19, 2015
Start Time:	8:34
Stop Time:	10:01

Unit #1 Outlet **Year - 2015** **Day 5**

Analyzer or Channel	O2			SO2			NOX			COLo			COHi				
Analyzer Full Range	25			200			500			500			2000				
Analyzer Make	Environment SA			Environment SA			Environment SA			Environment SA			Environment SA				
Analyzer Serial Number	2687			2687			2687			2687			2687				
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High		
Ca = Cal Gas Value	0.00	9.94	18.00	0.00	107.00	165.00	0.00	280.00	437.00	0.00	282.00	425.00	0.00	1073.00	1679.00		
Cylinder ID#	SA21825	CC164055	EB0002281	SA21825	EB0016778	EB0047080	SA21825	EB0016778	EB0047080	SA21825	EB0016778	EB0047080	SA21825	CC164055	EB0002281		
Expiration Date	08/07/16	09/23/22	12/19/20	08/07/16	10/08/22	07/08/18	08/07/16	10/08/22	07/08/18	08/07/16	10/08/22	07/08/18	08/07/16	09/23/22	12/19/20		
Run #1	**0.00**	**9.89**	**17.77**	**1.60**	**107.70**	**165.00**	**0.90**	**281.60**	**441.00**	**0.70**	**275.70**	**422.80**	**3.00**	**1051.00**	**1685.00**		
Run #2	**0.00**	**9.89**	**17.97**	**0.10**	**108.50**	**165.30**	**0.90**	**280.80**	**430.40**	**1.00**	**277.80**	**424.50**	**3.00**	**1056.00**	**1685.00**		
Run #3	**0.00**	**9.79**	**17.97**	**0.70**	**108.40**	**165.50**	**0.60**	**279.90**	**433.30**	**0.80**	**277.90**	**426.80**	**3.00**	**1058.00**	**1683.00**		
SUM (1+2+3)	0.00	29.57	53.71	2.40	324.60	495.80	2.40	842.30	1304.70	2.50	831.40	1274.10	9.00	3165.00	5053.00		
Cm = SUM/3	0.00	9.86	17.90	0.80	108.20	165.27	0.80	280.77	434.90	0.83	277.13	424.70	3.00	1055.00	1684.33		
Abs. Diff	0	0.0833333	0.0966667	0.8	1.2	0.2666667	0.8	0.7666667	2.1	0.8333333	4.8666667	0.3	3	18	5.3333333		
%F.S.				0.40	-0.60	-0.13	0.16	-0.15	0.42	0.17	0.97	0.06	0.15	0.90	-0.27		
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**		

Comments:

Technician :	Jake Kiser	Title:	Altech Rep.	Date:
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:

Date/Time	U1 1-min Outlet Data - O2s-dry	Data Status	U1 1-min Outlet Data - SO2s	Data Status	U1 1-min Outlet Data - NOxs	Data Status	U1 1-min Outlet Data - COs-l	Data Status	U1 1-min Outlet Data - COs-h	Data Status	
9/19/2015 8:23	7.27	B	0	B	80.7	B	9.6	B	8	B	
9/19/2015 8:24	7.67	B	0	B	75.9	B	11.1	B	9	B	
9/19/2015 8:25	8.07	B	0	B	68.5	B	14.9	B	12	B	
9/19/2015 8:26	17.87	B	0	B	1.9	B	500	B	1616	B	
9/19/2015 8:27	17.77	B	0	B	0.7	B	500	B	1679	B	
9/19/2015 8:28	2.12	B	0	B	1.5	B	371.4	B	366	B	
9/19/2015 8:29	7.57	B	0	B	34	B	10.2	B	8	B	
9/19/2015 8:30	0	B	155.3	B	432.5	B	406.1	B	399	B	
9/19/2015 8:31	0	B	163.3	B	447.2	B	419.8	B	413	B	
9/19/2015 8:32	0	B	164.4	B	450.6	B	421.3	B	414	B	
9/19/2015 8:33	0	B	165.6	B	451	B	422.7	B	415	B	
9/19/2015 8:34	0	B	165.7	B	441	B	422.8	B	416	B	1
9/19/2015 8:35	0	B	165.4	B	436.4	B	422.1	B	415	B	
9/19/2015 8:36	0.1	B	165.6	B	439.8	B	422.2	B	415	B	
9/19/2015 8:37	6.05	B	125.9	B	352.4	B	320.6	B	317	B	
9/19/2015 8:38	0	B	6.1	B	10	B	9.3	B	7	B	
9/19/2015 8:39	0	B	2.2	B	1.7	B	1.1	B	3	B	
9/19/2015 8:40	0	B	2.1	B	1.5	B	0.7	B	3	B	
9/19/2015 8:41	0	B	1.6	B	0.9	B	0.7	B	3	B	1
9/19/2015 8:42	0.1	B	1.2	B	0.9	B	0.8	B	3	B	
9/19/2015 8:43	0.5	B	48.5	B	153.1	B	137	B	138	B	
9/19/2015 8:44	0.1	B	106.8	B	282.1	B	272.7	B	270	B	
9/19/2015 8:45	0	B	107.6	B	284.5	B	274.2	B	271	B	
9/19/2015 8:46	0	B	107.8	B	285.4	B	275.9	B	271	B	
9/19/2015 8:47	0.1	B	107.7	B	281.6	B	275.7	B	271	B	1
9/19/2015 8:48	0	B	107.2	B	281.6	B	275.6	B	271	B	
9/19/2015 8:49	17.67	B	1.1	B	4.8	B	500	B	1651	B	
9/19/2015 8:50	17.77	B	0	B	2.4	B	500	B	1667	B	
9/19/2015 8:51	17.87	B	0	B	0.5	B	500	B	1669	B	
9/19/2015 8:52	17.77	B	0	B	0.6	B	500	B	1675	B	
9/19/2015 8:53	17.77	B	0	B	0.5	B	500	B	1672	B	1
9/19/2015 8:54	17.77	B	0	B	0.5	B	500	B	1662	B	
9/19/2015 8:55	11	B	0	B	2	B	500	B	1374	B	
9/19/2015 8:56	9.89	B	0	B	0.4	B	500	B	1031	B	
9/19/2015 8:57	9.79	B	0	B	0.6	B	500	B	1045	B	
9/19/2015 8:58	9.69	B	0	B	0.7	B	500	B	1051	B	
9/19/2015 8:59	9.89	B	0	B	0.6	B	500	B	1051	B	1
9/19/2015 9:00	9.89	B	0	B	0.5	B	500	B	1048	B	
9/19/2015 9:01	0.1	B	1.6	B	1.8	B	142.3	B	72	B	
9/19/2015 9:02	0	B	0.9	B	1	B	1.4	B	3	B	
9/19/2015 9:03	0	B	0	B	0.5	B	1.2	B	3	B	
9/19/2015 9:04	0	B	0.1	B	0.9	B	1	B	3	B	2
9/19/2015 9:05	0	B	0.3	B	1	B	1	B	3	B	
9/19/2015 9:06	0	B	96.5	B	236.4	B	239.4	B	236	B	
9/19/2015 9:07	0	B	107.5	B	279.9	B	277.3	B	274	B	
9/19/2015 9:08	0	B	108.7	B	281.9	B	277.9	B	275	B	
9/19/2015 9:09	0.1	B	108.5	B	280.8	B	277.8	B	275	B	2
9/19/2015 9:10	0	B	108.2	B	278.5	B	277.1	B	274	B	
9/19/2015 9:11	15.45	B	53	B	143.6	B	500	B	838	B	
9/19/2015 9:12	17.87	B	0	B	0.6	B	500	B	1686	B	
9/19/2015 9:13	17.77	B	0	B	0.4	B	500	B	1682	B	
9/19/2015 9:14	17.77	B	0	B	0.5	B	500	B	1693	B	
9/19/2015 9:15	17.77	B	0	B	0.5	B	500	B	1685	B	2
9/19/2015 9:16	17.77	B	0	B	0.4	B	500	B	1685	B	
9/19/2015 9:17	9.89	B	0.7	B	3.5	B	500	B	1098	B	
9/19/2015 9:18	9.89	B	0	B	0.6	B	500	B	1059	B	
9/19/2015 9:19	9.79	B	0	B	0.3	B	500	B	1053	B	
9/19/2015 9:20	9.89	B	0	B	0.4	B	500	B	1056	B	2
9/19/2015 9:21	9.99	B	0	B	0.4	B	500	B	1056	B	
9/19/2015 9:22	0.1	B	116.3	B	327.9	B	500	B	527	B	
9/19/2015 9:23	0	B	165.4	B	429	B	429	B	424	B	
9/19/2015 9:24	0	B	165.9	B	429.8	B	426.9	B	424	B	
9/19/2015 9:25	0.1	B	165.4	B	423.6	B	424.6	B	422	B	
9/19/2015 9:26	0.1	B	165.3	B	430.4	B	424.5	B	421	B	2

9/19/2015 9:27	0	B	165.6	B	438.9	B	424.8	B	422	B	
9/19/2015 9:28	15.85	B	77	B	205.3	B	500	B	911	B	
9/19/2015 9:29	17.77	B	0	B	3.2	B	500	B	1683	B	
9/19/2015 9:30	17.77	B	0	B	0.8	B	500	B	1702	B	
9/19/2015 9:31	17.87	B	0	B	0.7	B	500	B	1702	B	
9/19/2015 9:32	17.87	B	0	B	0.5	B	500	B	1683	B	
9/19/2015 9:33	17.97	B	0	B	0.5	B	500	B	1683	B	3
9/19/2015 9:34	17.97	B	0	B	0.4	B	500	B	1683	B	
9/19/2015 9:35	0.1	B	70	B	181.6	B	500	B	655	B	
9/19/2015 9:36	0.1	B	107.9	B	283	B	279	B	274	B	
9/19/2015 9:37	0	B	108.3	B	282.8	B	278.4	B	274	B	
9/19/2015 9:38	0.1	B	108.3	B	279.1	B	277.9	B	273	B	
9/19/2015 9:39	0.1	B	108.3	B	279.9	B	277.9	B	273	B	
9/19/2015 9:40	0.1	B	108.4	B	279.9	B	277.9	B	273	B	3
9/19/2015 9:41	0	B	4.9	B	7.2	B	7.2	B	6	B	
9/19/2015 9:42	0	B	1.4	B	1	B	0.9	B	3	B	
9/19/2015 9:43	0.1	B	0.7	B	0.7	B	0.8	B	3	B	
9/19/2015 9:44	0.1	B	0.6	B	0.6	B	0.8	B	3	B	
9/19/2015 9:45	0	B	0.7	B	0.6	B	0.8	B	3	B	3
9/19/2015 9:46	0.1	B	0.7	B	0.6	B	0.7	B	3	B	
9/19/2015 9:47	8.18	B	0	B	76.2	B	38	B	35	B	
9/19/2015 9:48	8.48	B	0	B	73	B	32.3	B	29	B	
9/19/2015 9:49	8.07	B	0	B	88.4	B	19.7	B	15	B	
9/19/2015 9:50	8.07	B	0	B	91.7	B	11.7	B	9	B	
9/19/2015 9:51	3.33	B	1.4	B	47.5	B	11.9	B	9	B	
9/19/2015 9:52	0.1	B	164.7	B	425.4	B	425.2	B	416	B	
9/19/2015 9:53	0	B	164.3	B	424.1	B	426.2	B	417	B	
9/19/2015 9:54	0	B	165.5	B	430.4	B	427.6	B	418	B	
9/19/2015 9:55	0.1	B	165.8	B	434.3	B	427.6	B	418	B	
9/19/2015 9:56	0.1	B	165.6	B	427.4	B	426.9	B	417	B	
9/19/2015 9:57	0.2	B	165.5	B	433.3	B	426.8	B	417	B	3
9/19/2015 9:58	0	B	165.7	B	436.8	B	427.1	B	418	B	
9/19/2015 9:59	9.79	B	21	B	45.3	B	500	B	950	B	
9/19/2015 10:00	9.99	B	0	B	1.1	B	500	B	1053	B	
9/19/2015 10:01	9.79	B	0	B	0.9	B	500	B	1058	B	3
9/19/2015 10:02	9.89	B	0	B	0.9	B	500	B	1058	B	

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 20, 2015
Start Time:	11:33
Stop Time:	13:08

Unit #1 Inlet **Year - 2015** **Day 6**

Analyzer or Channel	O2			COLo			COHi		
Analyzer Full Range	25			500			2000		
Analyzer Make	Environment SA			Environment SA			Environment SA		
Analyzer Serial Number	2684			2684			2684		
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High
Ca = Cal Gas Value	0.00	9.62	17.90	0.00	281.00	433.00	0.00	1118.00	1708.00
Cylinder ID#	CC31829	CC316057	CC86026	CC31829	EB0047021	EB0047069	CC31829	CC316057	CC86026
Expiration Date	01/14/16	09/23/22	04/24/20	01/14/16	12/10/22	04/07/20	01/14/16	09/23/22	04/24/20
Run #1	**0.00**	**9.69**	**18.09**	**1.20**	**276.40**	**439.20**	**1.00**	**1141.00**	**1707.00**
Run #2	**0.00**	**9.69**	**18.09**	**2.20**	**274.80**	**438.00**	**2.00**	**1143.00**	**1714.00**
Run #3	**0.00**	**9.69**	**18.19**	**1.50**	**276.10**	**433.70**	**1.00**	**1126.00**	**1719.00**
SUM (1+2+3)	0.00	29.07	54.37	4.90	827.30	1310.90	4.00	3410.00	5140.00
Cm = SUM/3	0.00	9.69	18.12	1.63	275.77	436.97	1.33	1136.67	1713.33
Abs. Diff	0	0.07	0.2233333	1.6333333	5.2333333	3.9666667	1.3333333	18.666667	5.3333333
%F.S.				0.33	1.05	-0.79	0.07	-0.93	-0.27
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**

Comments: Mid bottle Span 2 changed, New Values 9.62 %O2, 1118ppmCO Changed to N2 Bottle for Zero.

Technician :	Jake Kiser	Title:	Altech Rep.	Date:
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:

Date/Time	U1 1-min Inlet Data - O2e-dry	Data Status	U1 1-min Inlet Data - COe-l	Data Status	U1 1-min Inlet Data - COe-h	Data Status	
9/20/2015 11:24	7.29		15.7		20		
9/20/2015 11:25	5.89		40		47		
9/20/2015 11:26	7.89		13.1		16		
9/20/2015 11:27	8.69	B	11.3	B	16	B	
9/20/2015 11:28	0.19	B	290.4	B	291	B	
9/20/2015 11:29	0	B	438.1	B	417	B	
9/20/2015 11:30	0	B	440.6	B	418	B	
9/20/2015 11:31	0	B	442.5	B	418	B	
9/20/2015 11:32	0	B	433.8	B	417	B	
9/20/2015 11:33	0	B	439.2	B	418	B	1
9/20/2015 11:34	0	B	440.2	B	418	B	
9/20/2015 11:35	0	B	420.6	B	405	B	
9/20/2015 11:36	7.89	B	30.5	B	38	B	
9/20/2015 11:37	8.09	B	22.9	B	31	B	
9/20/2015 11:38	0	B	1.4	B	1	B	
9/20/2015 11:39	0	B	1.2	B	1	B	1
9/20/2015 11:40	0	B	1.1	B	0	B	
9/20/2015 11:41	1.49	B	1.7	B	2	B	
9/20/2015 11:42	0	B	275.9	B	273	B	
9/20/2015 11:43	0	B	273.8	B	271	B	
9/20/2015 11:44	0	B	276	B	274	B	
9/20/2015 11:45	0	B	277	B	275	B	
9/20/2015 11:46	0	B	276.4	B	274	B	1
9/20/2015 11:47	0	B	276.2	B	274	B	
9/20/2015 11:48	17.89	B	500	B	1627	B	
9/20/2015 11:49	17.99	B	500	B	1677	B	
9/20/2015 11:50	18.09	B	500	B	1700	B	
9/20/2015 11:51	18.09	B	500	B	1675	B	
9/20/2015 11:52	18.09	B	500	B	1707	B	1
9/20/2015 11:53	18.09	B	500	B	1718	B	
9/20/2015 11:54	17.69	B	500	B	1637	B	
9/20/2015 11:55	9.69	B	500	B	1198	B	
9/20/2015 11:56	9.69	B	500	B	1146	B	
9/20/2015 11:57	9.69	B	500	B	1137	B	
9/20/2015 11:58	9.69	B	500	B	1145	B	
9/20/2015 11:59	9.69	B	500	B	1141	B	1
9/20/2015 12:00	9.69	B	500	B	1128	B	
9/20/2015 12:01	9.79	B	500	B	1136	B	
9/20/2015 12:02	0	B	12.6	B	12	B	
9/20/2015 12:03	0	B	4.4	B	4	B	
9/20/2015 12:04	0	B	2.8	B	2	B	
9/20/2015 12:05	0	B	2.2	B	2	B	2
9/20/2015 12:06	0	B	2.2	B	2	B	
9/20/2015 12:07	0	B	274.4	B	278	B	
9/20/2015 12:08	0	B	271.3	B	278	B	
9/20/2015 12:09	0	B	273.9	B	281	B	
9/20/2015 12:10	0	B	275.8	B	283	B	
9/20/2015 12:11	0	B	276.3	B	282	B	
9/20/2015 12:12	0	B	274.8	B	280	B	2

9/20/2015 12:13	0	B	276.6	B	282	B		
9/20/2015 12:14	17.59	B	500	B	1436	B		
9/20/2015 12:15	17.99	B	500	B	1703	B		
9/20/2015 12:16	18.09	B	500	B	1732	B		
9/20/2015 12:17	18.09	B	500	B	1705	B		
9/20/2015 12:18	18.09	B	500	B	1715	B		
9/20/2015 12:19	18.09	B	500	B	1744	B		
9/20/2015 12:20	18.09	B	500	B	1706	B		
9/20/2015 12:21	18.09	B	500	B	1714	B		2
9/20/2015 12:22	18.09	B	500	B	1693	B		
9/20/2015 12:23	9.89	B	500	B	1164	B		
9/20/2015 12:24	9.79	B	500	B	1169	B		
9/20/2015 12:25	9.69	B	500	B	1156	B		
9/20/2015 12:26	9.69	B	500	B	1124	B		
9/20/2015 12:27	9.69	B	500	B	1136	B		
9/20/2015 12:28	9.69	B	500	B	1143	B		2
9/20/2015 12:29	9.69	B	500	B	1125	B		
9/20/2015 12:30	8.09	B	500	B	1054	B		
9/20/2015 12:31	0	B	437.6	B	409	B		
9/20/2015 12:32	0	B	432.7	B	410	B		
9/20/2015 12:33	0	B	438.9	B	411	B		
9/20/2015 12:34	0	B	439.9	B	411	B		
9/20/2015 12:35	0	B	434.7	B	408	B		
9/20/2015 12:36	0	B	438	B	410	B		2
9/20/2015 12:37	0	B	479.1	B	465	B		
9/20/2015 12:38	17.99	B	500	B	1691	B		
9/20/2015 12:39	18.09	B	500	B	1733	B		
9/20/2015 12:40	18.09	B	500	B	1717	B		
9/20/2015 12:41	18.09	B	500	B	1707	B		
9/20/2015 12:42	18.09	B	500	B	1722	B		
9/20/2015 12:43	18.19	B	500	B	1719	B		3
9/20/2015 12:44	18.19	B	500	B	1714	B		
9/20/2015 12:45	18.19	B	500	B	1679	B		
9/20/2015 12:46	0.09	B	282.1	B	289	B		
9/20/2015 12:47	0.09	B	281.1	B	286	B		
9/20/2015 12:48	0	B	281	B	285	B		
9/20/2015 12:49	0	B	276.1	B	281	B		3
9/20/2015 12:50	0	B	81.6	B	83	B		
9/20/2015 12:51	0	B	2.7	B	2	B		
9/20/2015 12:52	0	B	1.8	B	1	B		
9/20/2015 12:53	0	B	1.5	B	1	B		
9/20/2015 12:54	0	B	1.5	B	1	B		3
9/20/2015 12:55	0	B	1.3	B	1	B		
9/20/2015 12:56	0	B	432.3	B	422	B		
9/20/2015 12:57	0	B	436.1	B	425	B		
9/20/2015 12:58	0	B	433.5	B	406	B		
9/20/2015 12:59	0	B	437.7	B	410	B		
9/20/2015 13:00	0	B	437.9	B	410	B		
9/20/2015 13:01	0	B	433.7	B	406	B		3
9/20/2015 13:02	0	B	435.6	B	407	B		
9/20/2015 13:03	9.59	B	500	B	1090	B		
9/20/2015 13:04	9.59	B	500	B	1124	B		

9/20/2015 13:05	9.69	B	500	B	1135	B	
9/20/2015 13:06	9.59	B	500	B	1117	B	
9/20/2015 13:07	9.69	B	500	B	1119	B	
9/20/2015 13:08	9.69	B	500	B	1126	B	3
9/20/2015 13:09	9.69	B	500	B	1171	B	
9/20/2015 13:10	10.69	B	113.7	B	217	B	
9/20/2015 13:11	10.69	B	78.3	B	162	B	
9/20/2015 13:12	11.09	B	97.5	B	203	B	
9/20/2015 13:13	10.69	B	56.8	B	147	B	
9/20/2015 13:14	10.99	B	33.2	B	75	B	
9/20/2015 13:15	11.39	B	41.1	B	85	B	
9/20/2015 13:16	10.59	B	15.5	B	29	B	
9/20/2015 13:17	9.39	B	13.1	B	29	B	
9/20/2015 13:18	9.89	B	17.1	B	40	B	
9/20/2015 13:19	10.59	B	29.8	B	66	B	
9/20/2015 13:20	10.59	B	39.4	B	90	B	
9/20/2015 13:21	10.69	B	24.2	B	53	B	
9/20/2015 13:22	10.89	B	28.3	B	72	B	
9/20/2015 13:23	10.89	B	20	B	42	B	
9/20/2015 13:24	10.39	B	19.3	B	38	B	
9/20/2015 13:25	10.39	B	17.9	B	38	B	

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 20, 2015
Start Time:	9:30
Stop Time:	10:56

Unit #1 Outlet **Year - 2015** **Day 6**

Analyzer or Channel	O2			SO2			NOX			COLo			COHi				
Analyzer Full Range	25			200			500			500			2000				
Analyzer Make	Environment SA			Environment SA			Environment SA			Environment SA			Environment SA				
Analyzer Serial Number	2687			2687			2687			2687			2687				
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High		
Ca = Cal Gas Value	0.00	9.94	18.00	0.00	104.00	165.00	0.00	283.00	437.00	0.00	276.00	425.00	0.00	1073.00	1679.00		
Cylinder ID#	SA21825	CC164055	EB0002281	SA21825	EB0022279	EB0047080	SA21825	EB0022279	EB0047080	SA21825	EB0022279	EB0047080	SA21825	CC164055	EB0002281		
Expiration Date	08/07/16	09/23/22	12/19/20	08/07/16	10/29/22	07/08/18	08/07/16	10/29/22	07/08/18	08/07/16	10/29/22	07/08/18	08/07/16	09/23/22	12/19/20		
Run #1	**0.10**	**9.99**	**18.17**	**1.20**	**105.70**	**166.00**	**1.10**	**282.30**	**434.60**	**0.70**	**271.70**	**426.80**	**3.00**	**1060.00**	**1685.00**		
Run #2	**0.00**	**9.99**	**18.07**	**0.60**	**105.30**	**166.70**	**0.70**	**283.20**	**434.90**	**0.90**	**271.60**	**428.90**	**3.00**	**1063.00**	**1681.00**		
Run #3	**0.00**	**10.20**	**18.07**	**1.10**	**105.80**	**166.10**	**0.60**	**275.80**	**432.10**	**0.70**	**271.40**	**426.90**	**3.00**	**1056.00**	**1681.00**		
SUM (1+2+3)	0.10	30.18	54.31	2.90	316.80	498.80	2.40	841.30	1301.60	2.30	814.70	1282.60	9.00	3179.00	5047.00		
Cm = SUM/3	0.03	10.06	18.10	0.97	105.60	166.27	0.80	280.43	433.87	0.77	271.57	427.53	3.00	1059.67	1682.33		
Abs. Diff	0.0333333	0.12	0.1033333	0.9666667	1.6	1.2666667	0.8	2.5666667	3.1333333	0.7666667	4.4333333	2.5333333	3	13.333333	3.3333333		
%F.S.				0.48	-0.80	-0.63	0.16	0.51	0.63	0.15	0.89	-0.51	0.15	0.67	-0.17		
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass		

Comments: Mid Span 1 Bottle changed New values 104ppm SO2, 283ppmNOX, 276 ppm CO.

Technician :	Jake Kiser	Title:	Altech Rep.	Date:	
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:	

Date/Time	U1 1-min Outlet Data - O2s-dry	Data Status	U1 1-min Outlet Data - SO2s	Data Status	U1 1-min Outlet Data - NOxs	Data Status	U1 1-min Outlet Data - COs-l	Data Status	U1 1-min Outlet Data - COs-h	Data Status	result6
9/20/2015 9:21	8.28	B	0	B	53.4	B	13.1	B	10	B	
9/20/2015 9:22	0.1	B	103.7	B	320.1	B	300.8	B	299	B	
9/20/2015 9:23	0.1	B	164.7	B	452.6	B	431.8	B	426	B	
9/20/2015 9:24	0	B	164.6	B	442.2	B	431.8	B	426	B	
9/20/2015 9:25	0	B	166	B	441.5	B	431.3	B	428	B	
9/20/2015 9:26	0	B	166.1	B	439	B	429.1	B	428	B	
9/20/2015 9:27	0	B	165.8	B	436.2	B	427.3	B	428	B	
9/20/2015 9:28	0	B	165.9	B	441.6	B	427.2	B	428	B	
9/20/2015 9:29	0.1	B	166.1	B	442.2	B	427.3	B	428	B	
9/20/2015 9:30	0.1	B	166	B	434.6	B	426.8	B	427	B	1
9/20/2015 9:31	0.1	B	165.9	B	440.5	B	426.7	B	427	B	
9/20/2015 9:32	0	B	70.4	B	152.2	B	152.7	B	155	B	
9/20/2015 9:33	0	B	2.1	B	1.4	B	1	B	3	B	
9/20/2015 9:34	0	B	0.8	B	1	B	0.8	B	3	B	
9/20/2015 9:35	0.1	B	1.2	B	1.1	B	0.7	B	3	B	1
9/20/2015 9:36	0.1	B	1.3	B	1.2	B	0.7	B	3	B	
9/20/2015 9:37	0	B	103.7	B	261.9	B	258.8	B	261	B	
9/20/2015 9:38	0.1	B	105.6	B	283.9	B	272.1	B	274	B	
9/20/2015 9:39	0	B	106.1	B	284.3	B	272.4	B	275	B	
9/20/2015 9:40	0.1	B	105.8	B	279.7	B	271.9	B	274	B	
9/20/2015 9:41	0	B	105.7	B	282.3	B	271.7	B	274	B	1
9/20/2015 9:42	0.1	B	105.8	B	284.1	B	271.8	B	274	B	
9/20/2015 9:43	17.37	B	29.7	B	94.1	B	500	B	1010	B	
9/20/2015 9:44	18.07	B	0	B	0.7	B	500	B	1721	B	
9/20/2015 9:45	18.07	B	0	B	0.6	B	500	B	1708	B	
9/20/2015 9:46	18.07	B	0	B	0.5	B	500	B	1696	B	
9/20/2015 9:47	18.17	B	0	B	0.4	B	500	B	1685	B	1
9/20/2015 9:48	18.07	B	0	B	0.4	B	500	B	1686	B	
9/20/2015 9:49	10.09	B	0	B	0.6	B	500	B	1055	B	
9/20/2015 9:50	10.09	B	0	B	0.5	B	500	B	1051	B	
9/20/2015 9:51	9.99	B	0	B	0.5	B	500	B	1060	B	
9/20/2015 9:52	9.99	B	0	B	0.5	B	500	B	1060	B	1
9/20/2015 9:53	9.99	B	0	B	0.5	B	500	B	1060	B	
9/20/2015 9:54	0.2	B	0	B	5.7	B	138.2	B	140	B	
9/20/2015 9:55	0	B	1	B	1.1	B	1.6	B	3	B	
9/20/2015 9:56	0.1	B	0.5	B	0.7	B	1.1	B	3	B	
9/20/2015 9:57	0.1	B	0.6	B	0.8	B	0.9	B	3	B	
9/20/2015 9:58	0	B	0.6	B	0.7	B	0.9	B	3	B	2
9/20/2015 9:59	0.1	B	0.5	B	0.7	B	0.9	B	3	B	
9/20/2015 10:00	0.1	B	86.4	B	215.4	B	214.3	B	213	B	
9/20/2015 10:01	0	B	105.8	B	280.4	B	272.1	B	271	B	
9/20/2015 10:02	0.1	B	105.6	B	278.6	B	271.7	B	271	B	
9/20/2015 10:03	0	B	104.7	B	279.6	B	271	B	270	B	
9/20/2015 10:04	0.1	B	105.3	B	283.2	B	271.6	B	271	B	2
9/20/2015 10:05	0	B	105.7	B	282	B	271.8	B	271	B	
9/20/2015 10:06	17.97	B	15.8	B	43.7	B	500	B	1364	B	
9/20/2015 10:07	18.17	B	0	B	0.8	B	500	B	1690	B	
9/20/2015 10:08	18.17	B	0	B	0.5	B	500	B	1695	B	
9/20/2015 10:09	18.07	B	0	B	0.1	B	500	B	1679	B	
9/20/2015 10:10	18.07	B	0	B	0.1	B	500	B	1686	B	2
9/20/2015 10:11	18.28	B	0	B	0.1	B	500	B	1691	B	
9/20/2015 10:12	10.3	B	1.6	B	4.6	B	500	B	1261	B	
9/20/2015 10:13	9.99	B	0	B	0.3	B	500	B	1061	B	
9/20/2015 10:14	9.99	B	0	B	0.5	B	500	B	1063	B	2
9/20/2015 10:15	9.99	B	0	B	0.4	B	500	B	1063	B	
9/20/2015 10:16	9.99	B	0	B	0.3	B	500	B	1062	B	
9/20/2015 10:17	8.88	B	15.4	B	65	B	500	B	734	B	
9/20/2015 10:18	0.1	B	166	B	430.9	B	429.1	B	421	B	
9/20/2015 10:19	0.1	B	165.3	B	428.2	B	426.9	B	418	B	
9/20/2015 10:20	0.1	B	166.4	B	433.2	B	427.8	B	420	B	
9/20/2015 10:21	0.2	B	166.7	B	434.9	B	428.9	B	420	B	2
9/20/2015 10:22	0	B	166.5	B	426.4	B	428.1	B	420	B	
9/20/2015 10:23	12.01	B	84.8	B	259.9	B	500	B	683	B	
9/20/2015 10:24	18.07	B	0	B	1.4	B	500	B	1693	B	

9/20/2015 10:25	18.07 B	0 B	0.3 B	500 B	1687 B	
9/20/2015 10:26	18.07 B	0 B	0.1 B	500 B	1681 B	3
9/20/2015 10:27	18.07 B	0 B	0.2 B	500 B	1692 B	
9/20/2015 10:28	0.1 B	87 B	227.1 B	500 B	486 B	
9/20/2015 10:29	0.2 B	104.1 B	273.8 B	272.8 B	269 B	
9/20/2015 10:30	0 B	105.7 B	277.2 B	272.7 B	269 B	
9/20/2015 10:31	0.1 B	106 B	278.6 B	273.3 B	270 B	
9/20/2015 10:32	0 B	106 B	274.9 B	272.5 B	269 B	
9/20/2015 10:33	0.1 B	105.8 B	275.8 B	271.4 B	268 B	3
9/20/2015 10:34	0 B	105.8 B	276 B	271.4 B	268 B	
9/20/2015 10:35	0 B	4 B	4.3 B	4.1 B	4 B	
9/20/2015 10:36	0 B	0.3 B	0.6 B	0.8 B	3 B	
9/20/2015 10:37	0 B	1 B	0.7 B	0.7 B	3 B	
9/20/2015 10:38	0 B	1.2 B	0.7 B	0.7 B	3 B	
9/20/2015 10:39	0 B	1.1 B	0.6 B	0.7 B	3 B	3
9/20/2015 10:40	0 B	0.9 B	0.4 B	0.7 B	3 B	
9/20/2015 10:41	0.6 B	31.7 B	77.7 B	75.2 B	77 B	
9/20/2015 10:42	0.1 B	164.2 B	420.4 B	423.3 B	415 B	
9/20/2015 10:43	0 B	165.5 B	426.4 B	425.7 B	417 B	
9/20/2015 10:44	0 B	166.3 B	429.7 B	426.8 B	418 B	
9/20/2015 10:45	0 B	166.5 B	429.8 B	427 B	419 B	
9/20/2015 10:46	0 B	166.1 B	425 B	426.5 B	418 B	
9/20/2015 10:47	0 B	166.1 B	432.1 B	426.5 B	418 B	3
9/20/2015 10:48	0 B	166.3 B	434 B	426.7 B	418 B	
9/20/2015 10:49	18.07 B	23.2 B	49.8 B	500 B	1479 B	
9/20/2015 10:50	17.97 B	0 B	0.9 B	500 B	1684 B	
9/20/2015 10:51	18.17 B	0 B	0.6 B	500 B	1695 B	
9/20/2015 10:52	10.9 B	2.1 B	6 B	500 B	1361 B	
9/20/2015 10:53	10.2 B	0 B	0.3 B	500 B	1062 B	
9/20/2015 10:54	9.99 B	0 B	0.5 B	500 B	1059 B	
9/20/2015 10:55	10.09 B	0 B	0.5 B	500 B	1063 B	
9/20/2015 10:56	10.2 B	0 B	0.1 B	500 B	1056 B	3
9/20/2015 10:57	9.99 B	0 B	0.1 B	500 B	1056 B	
9/20/2015 10:58	7.77 B	0 B	69.5 B	407.2 B	404 B	
9/20/2015 10:59	7.57 B	0.2 B	115.3 B	18.1 B	15 B	
9/20/2015 11:00	8.18 B	0.7 B	119.4 B	16.1 B	13 B	
9/20/2015 11:01	7.47 B	0 B	128.6 B	11.9 B	9 B	
9/20/2015 11:02	7.77 B	0.4 B	118.9 B	9 B	7 B	
9/20/2015 11:03	8.78 B	1.1 B	108.9 B	10.9 B	9 B	
9/20/2015 11:04	8.28 B	0 B	115.8 B	14.6 B	12 B	
9/20/2015 11:05	8.88 B	1 B	107.2 B	10.3 B	8 B	
9/20/2015 11:06	7.77 B	0 B	113 B	11.7 B	9 B	
9/20/2015 11:07	8.58 B	0.5 B	114.6 B	13.8 B	11 B	
9/20/2015 11:08	8.28 B	0.3 B	111.7 B	15.4 B	12 B	
9/20/2015 11:09	8.28 B	0.3 B	117.4 B	13.2 B	10 B	
9/20/2015 11:10	8.88	0.1	124.1	10.9	9	
9/20/2015 11:11	7.87	0	121.7	9.8	8	

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	**September 21, 2015**
Start Time:	**11:04**
Stop Time:	**12:40**

Unit #1 Inlet **Year - 2015** **Day 7**

Analyzer or Channel	O2			COLo			COHi		
Analyzer Full Range	25			500			2000		
Analyzer Make	Environment SA			Environment SA			Environment SA		
Analyzer Serial Number	2684			2684			2684		
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High
Ca = Cal Gas Value	0.00	9.62	17.90	0.00	281.00	433.00	0.00	1118.00	1708.00
Cylinder ID#	CC31829	CC316057	CC86026	CC31829	EB0047035	EB0047069	CC31829	CC316057	CC86026
Expiration Date	01/14/16	09/23/22	04/24/20	01/14/16	10/10/22	04/07/20	01/14/16	09/23/22	04/24/20
Run #1	**0.00**	**9.69**	**18.09**	**0.70**	**276.00**	**438.30**	**0.00**	**1143.00**	**1700.00**
Run #2	**0.00**	**9.69**	**18.19**	**1.50**	**275.20**	**432.90**	**1.00**	**1141.00**	**1708.00**
Run #3	**0.00**	**9.69**	**18.19**	**0.90**	**277.80**	**435.20**	**0.00**	**1133.00**	**1701.00**
SUM (1+2+3)	0.00	29.07	54.47	3.10	829.00	1306.40	1.00	3417.00	5109.00
Cm = SUM/3	0.00	9.69	18.16	1.03	276.33	435.47	0.33	1139.00	1703.00
Abs. Diff	0	0.07	0.2566667	1.0333333	4.6666667	2.4666667	0.3333333	21	5
%F.S.				0.21	0.93	-0.49	0.02	-1.05	0.25
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**

Comments: Mid bottle Span 1 changed, New Values are the same as the old. CO 281PPM.

Technician :	Jake Kiser	Title:	Altech Rep.	Date:	
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:	

Date/Time	U1 1-min Inlet Data - O2e-dry	Data Status	U1 1-min Inlet Data - COe-l	Data Status	U1 1-min Inlet Data - COe-h	Data Status	
9/21/2015 10:59	7.79	B	21.3	B	27	B	
9/21/2015 11:00	6.79	B	33	B	41	B	
9/21/2015 11:01	0.19	B	422	B	408	B	
9/21/2015 11:02	0.19	B	432.7	B	419	B	
9/21/2015 11:03	0.19	B	436.8	B	423	B	
9/21/2015 11:04	0.09	B	438.6	B	423	B	1
9/21/2015 11:05	0.09	B	434.4	B	421	B	
9/21/2015 11:06	0	B	436.4	B	424	B	
9/21/2015 11:07	0	B	4.2	B	3	B	
9/21/2015 11:08	0	B	1.3	B	1	B	
9/21/2015 11:09	0	B	1.1	B	1	B	
9/21/2015 11:10	0	B	0.7	B	0	B	1
9/21/2015 11:11	0	B	0.6	B	0	B	
9/21/2015 11:12	0	B	0.6	B	0	B	
9/21/2015 11:13	0.09	B	181.2	B	184	B	
9/21/2015 11:14	0	B	274.8	B	278	B	
9/21/2015 11:15	0	B	275.3	B	278	B	
9/21/2015 11:16	0	B	272	B	276	B	
9/21/2015 11:17	0	B	274	B	278	B	
9/21/2015 11:18	0	B	276	B	279	B	1
9/21/2015 11:19	0	B	274.3	B	279	B	
9/21/2015 11:20	15.39	B	500	B	947	B	
9/21/2015 11:21	18.09	B	500	B	1678	B	
9/21/2015 11:22	18.19	B	500	B	1698	B	
9/21/2015 11:23	18.09	B	500	B	1715	B	
9/21/2015 11:24	18.09	B	500	B	1683	B	
9/21/2015 11:25	18.09	B	500	B	1700	B	1
9/21/2015 11:26	18.19	B	500	B	1722	B	
9/21/2015 11:27	16.09	B	500	B	1591	B	
9/21/2015 11:28	9.79	B	500	B	1198	B	
9/21/2015 11:29	9.79	B	500	B	1178	B	
9/21/2015 11:30	9.79	B	500	B	1165	B	
9/21/2015 11:31	9.69	B	500	B	1163	B	
9/21/2015 11:32	9.79	B	500	B	1143	B	
9/21/2015 11:33	9.69	B	500	B	1143	B	1
9/21/2015 11:34	9.79	B	500	B	1189	B	
9/21/2015 11:35	0.09	B	11.1	B	11	B	
9/21/2015 11:36	0	B	3.9	B	4	B	
9/21/2015 11:37	0	B	2.8	B	2	B	
9/21/2015 11:38	0	B	1.7	B	1	B	
9/21/2015 11:39	0	B	1.5	B	1	B	2
9/21/2015 11:40	0	B	1.2	B	1	B	
9/21/2015 11:41	0	B	77.8	B	81	B	
9/21/2015 11:42	0	B	275.3	B	279	B	
9/21/2015 11:43	0	B	272.2	B	276	B	
9/21/2015 11:44	0	B	274.7	B	278	B	
9/21/2015 11:45	0	B	277.1	B	280	B	
9/21/2015 11:46	0	B	275.2	B	278	B	2
9/21/2015 11:47	0	B	275.1	B	278	B	

9/21/2015 11:48	17.99	B	500	B	1680	B		
9/21/2015 11:49	18.09	B	500	B	1693	B		
9/21/2015 11:50	18.09	B	500	B	1690	B		
9/21/2015 11:51	18.09	B	500	B	1708	B		
9/21/2015 11:52	18.09	B	500	B	1708	B		2
9/21/2015 11:53	18.09	B	500	B	1710	B		
9/21/2015 11:54	14.79	B	500	B	1524	B		
9/21/2015 11:55	9.79	B	500	B	1151	B		
9/21/2015 11:56	9.69	B	500	B	1149	B		
9/21/2015 11:57	9.79	B	500	B	1135	B		
9/21/2015 11:58	9.69	B	500	B	1150	B		
9/21/2015 11:59	9.69	B	500	B	1145	B		
9/21/2015 12:00	9.69	B	500	B	1141	B		2
9/21/2015 12:01	9.69	B	500	B	1150	B		
9/21/2015 12:02	0.29	B	439.9	B	421	B		
9/21/2015 12:03	0.19	B	437.2	B	430	B		
9/21/2015 12:04	0.19	B	439.2	B	430	B		
9/21/2015 12:05	0.19	B	432.9	B	425	B		2
9/21/2015 12:06	0.19	B	434	B	427	B		
9/21/2015 12:07	0	B	437.7	B	430	B		
9/21/2015 12:08	14.99	B	500	B	1004	B		
9/21/2015 12:09	17.99	B	500	B	1702	B		
9/21/2015 12:10	18.09	B	500	B	1713	B		
9/21/2015 12:11	18.19	B	500	B	1683	B		
9/21/2015 12:12	18.19	B	500	B	1706	B		
9/21/2015 12:13	18.19	B	500	B	1726	B		
9/21/2015 12:14	18.19	B	500	B	1701	B		3
9/21/2015 12:15	18.19	B	500	B	1710	B		
9/21/2015 12:16	0.19	B	342.2	B	344	B		
9/21/2015 12:17	0	B	280.2	B	285	B		
9/21/2015 12:18	0	B	279.6	B	285	B		
9/21/2015 12:19	0	B	277.8	B	283	B		3
9/21/2015 12:20	0	B	275.2	B	281	B		
9/21/2015 12:21	0	B	4.2	B	4	B		
9/21/2015 12:22	0	B	1.7	B	1	B		
9/21/2015 12:23	0	B	1.3	B	1	B		
9/21/2015 12:24	0	B	1.2	B	1	B		
9/21/2015 12:25	0	B	0.9	B	0	B		3
9/21/2015 12:26	0	B	0.7	B	0	B		
9/21/2015 12:27	0	B	0.9	B	0	B		
9/21/2015 12:28	0	B	418.1	B	412	B		
9/21/2015 12:29	0	B	435.3	B	425	B		
9/21/2015 12:30	0	B	435.9	B	425	B		
9/21/2015 12:31	0	B	432	B	422	B		
9/21/2015 12:32	0	B	435.2	B	425	B		3
9/21/2015 12:33	0	B	435.5	B	425	B		
9/21/2015 12:34	7.49	B	500	B	725	B		
9/21/2015 12:35	9.69	B	500	B	1139	B		
9/21/2015 12:36	9.69	B	500	B	1134	B		
9/21/2015 12:37	9.69	B	500	B	1142	B		
9/21/2015 12:38	9.69	B	500	B	1140	B		
9/21/2015 12:39	9.69	B	500	B	1129	B		

9/21/2015 12:40	9.69	B	500	B	1133	B	3
9/21/2015 12:41	9.79	B	500	B	1179	B	
9/21/2015 12:42	9.39	B	234.3	B	336	B	
9/21/2015 12:43	10.19	B	56.7	B	100	B	

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 21, 2015
Start Time:	8:36
Stop Time:	10:00

Unit #1 Outlet **Year - 2015** **Day 7**

Analyzer or Channel	O2			SO2			NOX			COLo			COHi				
Analyzer Full Range	25			200			500			500			2000				
Analyzer Make	Environment SA			Environment SA			Environment SA			Environment SA			Environment SA				
Analyzer Serial Number	2687			2687			2687			2687			2687				
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High		
Ca = Cal Gas Value	0.00	9.94	18.00	0.00	104.00	165.00	0.00	283.00	437.00	0.00	276.00	425.00	0.00	1073.00	1679.00		
Cylinder ID#	SA21825	CC164055	EB0002281	SA21825	EB0022279	EB0047080	SA21825	EB0022279	EB0047080	SA21825	EB0022279	EB0047080	SA21825	CC164055	EB0002281		
Expiration Date	08/07/16	09/23/22	12/19/20	08/07/16	10/29/22	07/08/18	08/07/16	10/29/22	07/08/18	08/07/16	10/29/22	07/08/18	08/07/16	09/23/22	12/19/20		
Run #1	**0.00**	**9.79**	**18.17**	**0.00**	**105.00**	**165.70**	**1.50**	**287.50**	**445.90**	**0.60**	**273.90**	**426.70**	**3.00**	**1062.00**	**1677.00**		
Run #2	**0.00**	**9.99**	**18.17**	**0.00**	**105.50**	**166.10**	**1.00**	**274.60**	**427.10**	**0.90**	**274.60**	**427.10**	**3.00**	**1062.00**	**1690.00**		
Run #3	**0.00**	**9.99**	**17.97**	**0.00**	**105.70**	**165.40**	**0.70**	**279.50**	**427.20**	**0.70**	**274.70**	**427.10**	**3.00**	**1059.00**	**1689.00**		
SUM (1+2+3)	0.00	29.77	54.31	0.00	316.20	497.20	3.20	841.60	1300.20	2.20	823.20	1280.90	9.00	3183.00	5056.00		
Cm = SUM/3	0.00	9.92	18.10	0.00	105.40	165.73	1.07	280.53	433.40	0.73	274.40	426.97	3.00	1061.00	1685.33		
Abs. Diff	0	0.0166667	0.1033333	0	1.4	0.7333333	1.0666667	2.4666667	3.6	0.7333333	1.6	1.9666667	3	12	6.3333333		
%F.S.				0.00	-0.70	-0.37	0.21	0.49	0.72	0.15	0.32	-0.39	0.15	0.60	-0.32		
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**		

Comments: Mid Span 1 Bottle changed New values 104ppm SO2, 283ppmNOX, 276 ppm CO.

Technician :	Jake Kiser	Title:	Altech Rep.	Date:	
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:	

Date/Time	U1 1-min Outlet Data - O2s-dry	Data Status	U1 1-min Outlet Data - SO2s	Data Status	U1 1-min Outlet Data - NOxs	Data Status	U1 1-min Outlet Data - COs-l	Data Status	U1 1-min Outlet Data - COs-h	Data Status	
9/21/2015 8:29	7.97	B	0	B	83.5	B	6.7	B	6	B	
9/21/2015 8:30	7.87	B	0	B	84.5	B	6.7	B	6	B	
9/21/2015 8:31	8.68	B	0	B	96.4	B	4.8	B	4	B	
9/21/2015 8:32	8.18	B	0	B	85.3	B	8	B	6	B	
9/21/2015 8:33	0.2	B	95.1	B	292.9	B	255.1	B	254	B	
9/21/2015 8:34	0.1	B	163.5	B	448.5	B	424.6	B	421	B	
9/21/2015 8:35	0	B	165.6	B	451.2	B	426.6	B	423	B	
9/21/2015 8:36	0.1	B	165.7	B	445.9	B	426.7	B	423	B	1
9/21/2015 8:37	0.1	B	165.6	B	440.8	B	426.3	B	422	B	
9/21/2015 8:38	0	B	25.3	B	52.3	B	52.1	B	53	B	
9/21/2015 8:39	0	B	0	B	1.6	B	0.9	B	3	B	
9/21/2015 8:40	0	B	0	B	1.5	B	0.7	B	3	B	
9/21/2015 8:41	0	B	0	B	1.5	B	0.6	B	3	B	1
9/21/2015 8:42	0	B	0	B	1.4	B	0.6	B	3	B	
9/21/2015 8:43	0	B	103.7	B	267.6	B	258	B	257	B	
9/21/2015 8:44	0.1	B	105.6	B	286.6	B	271.3	B	271	B	
9/21/2015 8:45	0	B	104.8	B	281.8	B	269.6	B	269	B	
9/21/2015 8:46	0	B	104.8	B	285.1	B	271	B	269	B	
9/21/2015 8:47	0.1	B	105	B	287.5	B	273.9	B	270	B	1
9/21/2015 8:48	0.1	B	105.2	B	288.1	B	271.3	B	271	B	
9/21/2015 8:49	18.28	B	3.7	B	13.6	B	500	B	1606	B	
9/21/2015 8:50	18.17	B	0	B	1.2	B	500	B	1705	B	
9/21/2015 8:51	18.07	B	0	B	1.1	B	500	B	1698	B	
9/21/2015 8:52	18.07	B	0	B	0.8	B	500	B	1677	B	1
9/21/2015 8:53	18.07	B	0	B	0.8	B	500	B	1682	B	
9/21/2015 8:54	10.09	B	0	B	2.6	B	500	B	1258	B	
9/21/2015 8:55	9.99	B	0	B	0.5	B	500	B	1048	B	
9/21/2015 8:56	9.99	B	0	B	0.9	B	500	B	1059	B	
9/21/2015 8:57	9.79	B	0	B	0.9	B	500	B	1062	B	1
9/21/2015 8:58	9.89	B	0	B	0.9	B	500	B	1063	B	
9/21/2015 8:59	1.11	B	0	B	9.7	B	500	B	490	B	
9/21/2015 9:00	0	B	0	B	1.3	B	2.5	B	3	B	
9/21/2015 9:01	0	B	0	B	1.3	B	1.1	B	3	B	
9/21/2015 9:02	0.1	B	0	B	0.9	B	1	B	3	B	
9/21/2015 9:03	0.1	B	0	B	1	B	0.9	B	3	B	2
9/21/2015 9:04	0	B	0	B	1.1	B	0.9	B	3	B	
9/21/2015 9:05	0.1	B	102.7	B	276.2	B	270.4	B	265	B	
9/21/2015 9:06	0	B	105.1	B	283.1	B	274.4	B	269	B	
9/21/2015 9:07	0	B	105.4	B	284.7	B	274.7	B	269	B	
9/21/2015 9:08	0	B	105.5	B	283.2	B	274.6	B	269	B	2
9/21/2015 9:09	0	B	105.3	B	282.2	B	273.9	B	269	B	
9/21/2015 9:10	6.76	B	105.4	B	283.9	B	500	B	523	B	
9/21/2015 9:11	18.07	B	0	B	3.1	B	500	B	1662	B	
9/21/2015 9:12	18.17	B	0	B	1	B	500	B	1687	B	
9/21/2015 9:13	18.17	B	0	B	0.9	B	500	B	1696	B	
9/21/2015 9:14	18.17	B	0	B	0.8	B	500	B	1695	B	
9/21/2015 9:15	18.17	B	0	B	0.7	B	500	B	1690	B	2
9/21/2015 9:16	18.07	B	0	B	0.7	B	500	B	1690	B	
9/21/2015 9:17	9.99	B	0.1	B	1.3	B	500	B	1132	B	
9/21/2015 9:18	9.99	B	0	B	0.3	B	500	B	1055	B	
9/21/2015 9:19	10.09	B	0	B	0.7	B	500	B	1062	B	
9/21/2015 9:20	9.99	B	0	B	0.8	B	500	B	1065	B	
9/21/2015 9:21	9.99	B	0	B	0.7	B	500	B	1062	B	2
9/21/2015 9:22	9.99	B	0	B	0.7	B	500	B	1060	B	
9/21/2015 9:23	0.3	B	110	B	312.8	B	500	B	575	B	
9/21/2015 9:24	0	B	165.1	B	429.4	B	425.7	B	419	B	
9/21/2015 9:25	0.1	B	165.5	B	432.8	B	426.6	B	420	B	
9/21/2015 9:26	0.1	B	166	B	436.4	B	427	B	420	B	
9/21/2015 9:27	0	B	166.1	B	435.6	B	427.1	B	420	B	2
9/21/2015 9:28	0.1	B	165.8	B	427.5	B	426.3	B	420	B	
9/21/2015 9:29	17.77	B	49	B	113	B	500	B	1237	B	
9/21/2015 9:30	18.07	B	0	B	1.3	B	500	B	1700	B	

9/21/2015 9:31	18.07 B	0 B	0.7 B	500 B	1683 B	
9/21/2015 9:32	17.97 B	0 B	0.8 B	500 B	1685 B	
9/21/2015 9:33	17.97 B	0 B	0.8 B	500 B	1689 B	3
9/21/2015 9:34	17.97 B	0 B	0.8 B	500 B	1689 B	
9/21/2015 9:35	0 B	103.7 B	274.4 B	295.1 B	290 B	
9/21/2015 9:36	0.1 B	105.8 B	280.5 B	276.3 B	271 B	
9/21/2015 9:37	0 B	105.6 B	277.6 B	274.3 B	269 B	
9/21/2015 9:38	0 B	105.5 B	278 B	274.4 B	269 B	
9/21/2015 9:39	0.1 B	105.6 B	279.2 B	274.6 B	269 B	
9/21/2015 9:40	0 B	105.7 B	279.5 B	274.7 B	269 B	3
9/21/2015 9:41	0.1 B	105.6 B	277.6 B	274.5 B	269 B	
9/21/2015 9:42	0.1 B	79.5 B	222.5 B	207.4 B	203 B	
9/21/2015 9:43	0 B	33.1 B	75.1 B	74.4 B	76 B	
9/21/2015 9:44	0 B	0 B	1.1 B	0.8 B	3 B	
9/21/2015 9:45	0 B	0 B	1.1 B	0.7 B	3 B	
9/21/2015 9:46	0 B	0 B	1.2 B	0.7 B	3 B	
9/21/2015 9:47	0 B	0 B	0.9 B	0.7 B	3 B	
9/21/2015 9:48	0 B	0 B	0.7 B	0.7 B	3 B	3
9/21/2015 9:49	0.1 B	0 B	4.4 B	0.7 B	3 B	
9/21/2015 9:50	0 B	157.1 B	407.7 B	410.7 B	405 B	
9/21/2015 9:51	0 B	164.4 B	425.4 B	429.4 B	423 B	
9/21/2015 9:52	0.1 B	165.8 B	429.4 B	430.6 B	424 B	
9/21/2015 9:53	0 B	165.9 B	428.9 B	428.9 B	424 B	
9/21/2015 9:54	0 B	165.3 B	424 B	428 B	424 B	
9/21/2015 9:55	0 B	165.4 B	427.2 B	428 B	424 B	3
9/21/2015 9:56	0.1 B	165.7 B	432.5 B	428.4 B	424 B	
9/21/2015 9:57	9.79 B	21.6 B	48.5 B	500 B	952 B	
9/21/2015 9:58	10.09 B	0 B	1.4 B	500 B	1063 B	
9/21/2015 9:59	10.2 B	0 B	1.2 B	500 B	1064 B	
9/21/2015 10:00	10.09 B	0 B	0.6 B	500 B	1059 B	3
9/21/2015 10:01	9.89 B	0 B	0.7 B	500 B	1058 B	
9/21/2015 10:02	8.28 B	0.6 B	80.8 B	47 B	47 B	
9/21/2015 10:03	8.18 B	0.7 B	92.4 B	13 B	10 B	
9/21/2015 10:04	7.87 B	0.4 B	90.9 B	28.3 B	25 B	
9/21/2015 10:05	8.58 B	0.2 B	93.6 B	16.9 B	14 B	
9/21/2015 10:06	8.98 B	0 B	88.5 B	8.8 B	7 B	
9/21/2015 10:07	8.98 B	0 B	88.5 B	8.8 B	7 B	
9/21/2015 10:08	7.97 B	0 B	94.3 B	58.1 B	33 B	
9/21/2015 10:09	8.18 B	0 B	92.5 B	17.9 B	15 B	
9/21/2015 10:10	7.97 B	0 B	87.3 B	103.8 B	107 B	
9/21/2015 10:11	8.38 B	0 B	85.5 B	46.5 B	46 B	
9/21/2015 10:12	8.38 B	0 B	89.5 B	36.8 B	35 B	
9/21/2015 10:13	7.87 B	0 B	113 B	14.4 B	12 B	

Operational Test Period

System Response Time Test Field Data Sheet

Location:	Durham - York - Courtice Ontario
Source:	Incenerator - Unit 1 Outlet
Operator:	David with Altech
Test Date:	April 29 2015 @ 19:40
OTP System Response Criteria:	

Parameter	CEM Analyzer Model	Scale Reponse Time (seconds)					
		Test 1		Test 2		Test 3	
		Upscale	Downscale	Upscale	Downscale	Upscale	Downscale
Stack System							
Hcl 0-100	Mir 9000	153	127	126	133	123	142
SO2 0-200	Mir 9000	92	105	89	82	95	90
NO 0-500	Mir 9000	92	85	84	82	95	85
CO low 0-500	Mir 9000	92	85	84	82	95	85
Co High 0-2000	Mir 9000	91	98	111	111	105	100
CO2 0-25	Mir 9000	98	98	111	111	107	102
O2 Outlet Dry 0-25	Mir 9000	52	63	66	61	60	60
O2 Outlet Wet 0-25	AmeteK	13	13	13	13	12	13
Inlet System							
CO low 0-500	Mir 9000	112	112	112	112	112	112
Co High 0-2000	Mir 9000	111	111	111	111	111	111
THC 0-100	FTIR	50	47	50	47	50	50
O2 Inlet Dry 0-25	Mir 9000	57	57	57	57	55	55

Section 2

OTP 1Hr CEMS, Maintenance Log, and Calibration Data

Date/Time	U1 1-hr Data - O2s-dry	Data Status	U1 1-hr Data - COs	Data Status	U1 1-hr Data - SO2s	Data Status	U1 1-hr Data - NOxs	Data Status	U1 1-hr Data - HCLs	Data Status	U1 1-hr Data - O2e-dry	Data Status	U1 1-hr Data - COe	Data Status	U1 1-hr Data - Steam	Data Status
9/15/2015 13:00	8.88		31.3		0.3		73.2		2.3		9.04	<	52.5	<	32.8	
9/15/2015 14:00	9.19		27.3		0		76.9		2.8		3.69	B	353.9	B	33.63	
9/15/2015 15:00	8.66		44.1		0		80.9		2.8		7.36	B	390.5	B	32.51	
9/15/2015 16:00	7.71		27.3		0		77.5		3		7.55	<	34.2	<	34.46	
9/15/2015 17:00	8.05	<	7.7	<	0	<	79.2	<	3.2	<	8.08		13		33.16	
9/15/2015 18:00	7.45		13.7		0		81.6		3.4		7.26	<	18.7	<	33.43	
9/15/2015 19:00	7.91		15.3		0		83.7		5.5		7.76		20.5		33.18	
9/15/2015 20:00	8.15		17.7		0		74.9		7.4		8.01		21.6		33.75	
9/15/2015 21:00	8.25		38.8		0		78.2		5		8.21	<	46.2	<	33.87	
9/15/2015 22:00	8.21		22		0		83.4		4.8		8.11		27		33.49	
9/15/2015 23:00	7.93	<	26.5	<	0	<	73.8	<	6.1	<	7.93		26.9		33.57	
9/16/2015 0:00	8.01		11.8		0		81.9		7.4		7.86	<	15	<	33.43	
9/16/2015 1:00	8.06		13.1		0		77.3		6.9		7.96		16.6		33.42	
9/16/2015 2:00	8.1		21.8		0		79.1		7.7		8.07		25		33.41	
9/16/2015 3:00	7.98		22.1		0.1		84.9		7.8		7.94	<	24	<	33.18	
9/16/2015 4:00	8.27		17.3		0.2		75		7.6		8.2		20.3		33.42	
9/16/2015 5:00	7.69	<	11.4	<	0	<	81.8	<	4.9	<	7.95		14.4		33.44	
9/16/2015 6:00	8.14	<	24.4	<	0	<	70.6	<	4.6	<	8.23	<	29.5	<	33.44	
9/16/2015 7:00	7.62	<	13	<	0	<	73.7	<	5.7	<	8.11	B	16.7	B	33.28	
9/16/2015 8:00	6.33	B	302.6	B	42.1	B	127.1	B	0.5	B	7.83		15.8		33.83	
9/16/2015 9:00	8.53	B	22.7	B	0	B	67.7	B	3	B	7.97	<	16.8	<	33.17	
9/16/2015 10:00	8.07		18.6		0		83.1		3.2		7.99	B	16.7	B	33.26	
9/16/2015 11:00	8.18	<	19.1	<	0	<	78.3	<	3.3	<	8.72	B	405.7	B	32.06	
9/16/2015 12:00	8.02		21.3		0		82.1		3.8		8.01	B	32.3	B	34.14	
9/16/2015 13:00	8		64.1		0		84.3		3.3		8.11		70.1		33.77	
9/16/2015 14:00	7.55		30.6		0		65.3		3.1		7.69		35.1		33.34	
9/16/2015 15:00	7.56		17.9		0		73.8		3.2		7.73	<	25.2	<	33.77	
9/16/2015 16:00	7.59		17.6		0.3		87.8		3.7		7.68		21.6		33.29	
9/16/2015 17:00	7.1	<	30.7	<	0	<	76.7	<	3.1	<	7.21		60.1		33.4	
9/16/2015 18:00	7.07		12.9		0		91.7		3.1		7.26	<	17.4	<	33.76	
9/16/2015 19:00	6.83		17.4		0		76		3.9		6.94		21.5		32.79	
9/16/2015 20:00	7.37		21.8		0		72.2		4.2		7.41		26.5		33.09	
9/16/2015 21:00	7.17		19.8		0		78.1		5.6		7.41	<	24.8	<	33.14	
9/16/2015 22:00	7.75		23.2		0.1		76.2		6.6		7.88		26.3		33.36	
9/16/2015 23:00	8.03	<	14.4	<	0	<	68.1	<	7.3	<	8.21		19.6		33.82	
9/17/2015 0:00	8.56		31.9		0.4		61.2		4.8		8.84	<	37.9	<	33.59	
9/17/2015 1:00	8.22		23.7		0.1		68.6		3.8		8.44		26.1		32.78	
9/17/2015 2:00	8		26.3		0.1		71.9		4.6		8.14		30.8		33.16	
9/17/2015 3:00	7.76		15.2		0		73.1		5.6		7.92	<	18.5	<	33.15	
9/17/2015 4:00	8.14		21		0		66.2		5.1		8.29		23.3		32.99	
9/17/2015 5:00	7.99	<	13.6	<	0	<	70.4	<	4.9	<	8.23		17.4		33.21	
9/17/2015 6:00	7.8	<	14.5	<	0	<	74.1	<	4.4	<	8.13	<	13.7	<	33.41	
9/17/2015 7:00	8.3	<	16	<	0	<	84.2	<	3.2	<	8.3	B	21.2	B	32.65	
9/17/2015 8:00	8.12	<	13.7	<	0	<	76.4	<	2.9	<	8.17	<	14.3	<	32.52	
9/17/2015 9:00	6.12	B	358.2	B	59.8	B	151.1	B	0	B	7.78	<	15	<	32.84	
9/17/2015 10:00	8.23	<	26.1	<	0	<	89.7	<	2.9	<	8.47	B	39.9	B	33.37	
9/17/2015 11:00	7.91	<	9.1	<	0	<	74.7	<	3.1	<	6.41	B	335.5	B	33.3	
9/17/2015 12:00	7.2		23.4		0.4		79.3		3.9		6.97	B	99.3	B	33.65	
9/17/2015 13:00	7.28		13.7		0.6		67.1		5.8		7.42	B	18.7	B	33.18	
9/17/2015 14:00	7.52	<	10.2	<	0	<	75.3	<	4.4	<	7.67	B	13.9	B	33.46	
9/17/2015 15:00	7.69	B	15.7	B	0	B	90.7	B	3.3	B	7.96	<	18.8	<	33.5	
9/17/2015 16:00	7.66		17.8		0.2		83.9		6.9		7.81		20.9		33.39	
9/17/2015 17:00	7.72	<	16.6	<	0	<	72.9	<	5.3	<	7.96		19.6		33.49	
9/17/2015 18:00	7.2		21.6		0		73.7		6.6		7.19	<	23.9	<	35.46	
9/17/2015 19:00	7.55		14.5		0		70.6		7.4		7.8		17.9		33.27	
9/17/2015 20:00	7.4		14		0		75.7		8.9		7.58		18.4		33.51	
9/17/2015 21:00	7.96		17.8		0		63.2		7.4		8.22	<	22	<	33.58	
9/17/2015 22:00	7.47		27.6		1.1		81.2		7		7.67		32.3		33.08	
9/17/2015 23:00	7.86	<	16.8	<	1.7	<	66.9	<	8.6	<	7.94		20.6		33.58	
9/18/2015 0:00	7.61		11		1.1		78.1		8.4		7.72	<	14.2	<	33.16	
9/18/2015 1:00	7.72		14.1		0.7		68.3		8.8		7.94		17		33.64	
9/18/2015 2:00	8.19		15		0		62.7		7.4		8.41		17.4		33.64	
9/18/2015 3:00	7.66		14		1.2		75.8		8.7		7.83	<	16.4	<	33	
9/18/2015 4:00	7.77		15.5		1.2		72.5		9		7.98		18.4		33.28	
9/18/2015 5:00	7.78	<	13.2	<	0	<	65.4	<	5.6	<	8		16.8		33.58	
9/18/2015 6:00	8	<	15.2	<	0	<	70.9	<	3.9	<	7.93	<	24.3	<	33.43	
9/18/2015 7:00	7.8	<	12.6	<	0	<	87.9	<	4.5	<	7.67	B	20.4	B	33.36	
9/18/2015 8:00	7.9	<	11.5	<	0	<	68	<	3.2	<	8.15		14.8		33.12	
9/18/2015 9:00	6.92	B	317.4	B	39.7	B	104.5	B	0.1	B	7.91	<	15.5	<	32.55	
9/18/2015 10:00	7.94	B	9	B	0	B	121.6	B	3.2	B	7.63	<	16.1	<	33.74	
9/18/2015 11:00	7.95	<	10.5	<	0	<	86.7	<	3.6	<	7.08	B	334.1	B	32.16	
9/18/2015 12:00	8.52		36.2		0		61.4		3		7.13	B	357.1	B	33.38	
9/18/2015 13:00	8.23		14.3		0		71.5		2.7		8.42	<	20.2	<	31.86	
9/18/2015 14:00	7.74		14.4		0		76.8		2.5		7.91		20.2		32.99	
9/18/2015 15:00	7.64	<	14.5	<	0	<	70.1	<	2.7	<	7.99	<	22.6	<	34.68	
9/18/2015 16:00	0.11	B	0	B	0.1	B	0.8	B	0.3	B	8.63		26.5		33.6	
9/18/2015 17:00	0.48	B	0.2	B	0.1	B	2.3	B	0	B	8.18		28.7		32.73	
9/18/2015 18:00	7.82	<	11.5	<	0	<	96.3	<	2.8	<	7.88	<	17.6	<	33.91	
9/18/2015 19:00	7.98		22.1		0		75.5		2.9		8.14		26.8		33.04	
9/18/2015 20:00	8		21.4		0		74.8		3.1		8.19		26.2		33.58	
9/18/2015 21:00	8.17		34.5		0		75.7		3.2		8.4	<	41.4	<	33.49	
9/18/2015 22:00	7.96		37.3		0		75.2		3.2		8.28		41.8		33.36	
9/18/2015 23:00	7.73	<	23.3	<	0	<	80.9	<	5.4	<	8.05		26.7		33.15	
9/19/2015 0:00	8.07		20.3		0		75.4		7.4		8.25	<	23.4	<	33.5	
9/19/2015 1:00	7.84		20.7		0		78.6		6.7		8.1		24.8		33.37	
9/19/2015 2:00	7.82		18.2		0		76.7		7.3		8.1		21.9		33.58	
9/19/2015 3:00	7.96		21.1		0		78.2		7.2		8.31	<	25.3	<	33.54	
9/19/2015 4:00	7.95		24.3		0		76.1		7.1		8.14		27.1		33.57	
9/19/2015 5:00	7.79	<	21.1	<	0	<	70.9	<	7.2	<	8.15		26.1		33.35	
9/19/2015 6:00	7.87	<	21.1	<	0	<	85	<	7.5	<	8.01	<	19.8	<	33.38	

9/19/2015 7:00	7.59 <	14.6 <	0 <	88.1 <	7.3 <	7.82 B	15.8 B	33.68
9/19/2015 8:00	7.71 B	16.8 B	0 B	82.4 B	4.7 B	8.12	18.6	33.43
9/19/2015 9:00	5.58 B	318.8 B	56.8 B	153.9 B	17 B	8.3 <	34 <	33.53
9/19/2015 10:00	7.69 <	15.5 <	0 <	98 <	3.8 <	7.87 <	26.5 <	33.39
9/19/2015 11:00	7.59 <	26.6 <	0 <	71.3 <	3.3 <	7.57 B	359.4 B	33.64
9/19/2015 12:00	7.65	17.9	0	78.3	3.2	7.63 <	22.1 <	33.44
9/19/2015 13:00	7.87	22.3	0	77.5	5.8	8.06	28	33.8
9/19/2015 14:00	8.13 B	34.1 B	0 B	76.6 B	3.3 B	7.9	34	33.32
9/19/2015 15:00	1.75 B	5.4 B	0 B	22.5 B	0.6 B	7.78 <	27.3 <	33.74
9/19/2015 16:00	8.07 <	16.8 <	0 <	91.9 <	3.3 <	8.25	20.7	33.7
9/19/2015 17:00	7.86 <	22.6 <	0 <	70.5 <	3.7 <	8.29	26.6	34.17
9/19/2015 18:00	8.29	23.6	0	77.5	4	8.55 <	25.4 <	33.16
9/19/2015 19:00	8.29	34.8	0	77.1	4	8.55	44.4	33.29
9/19/2015 20:00	8.4	21.9	0	70.1	3.9	8.75	25.2	33.18
9/19/2015 21:00	8.27	26.5	0	80.1	4.4	8.5 <	31.1 <	32.91
9/19/2015 22:00	8.27	18.7	0	74.4	4.6	8.53	22.1	33.86
9/19/2015 23:00	8.33 <	17.5 <	0 <	77.1 <	4.9 <	8.77	20.2	33.19
9/20/2015 0:00	8.58	20.8	0	65.7	3.8	9 <	23.2 <	33.56
9/20/2015 1:00	8.25	17	0	79.8	4.8	8.52	19.8	32.26
9/20/2015 2:00	8.16	17.7	0	71.1	4.2	8.43	21	33.22
9/20/2015 3:00	8.32	15.7	0	68	3.6	8.69 <	17.5 <	33.41
9/20/2015 4:00	8	23.9	0	73.1	3.2	8.31	26	33.19
9/20/2015 5:00	7.94 <	14.5 <	0 <	71 <	3 <	8.44	17.8	33.41
9/20/2015 6:00	8.13 <	12.1 <	0 <	70.7 <	3 <	7.92 <	16 <	34.53
9/20/2015 7:00	8.11 <	25.3 <	0 <	90 <	2.8 <	8.63 B	17.7 B	32.48
9/20/2015 8:00	7.89	16.4	0	74.3	2.5	8.16	18.3	33.69
9/20/2015 9:00	8.27 B	14 B	0 B	55.9 B	2.3 B	8.31 <	14.8 <	33.02
9/20/2015 10:00	6.42 B	372.3 B	58.5 B	156 B	11.3 B	8.16	15.6	33.14
9/20/2015 11:00	7.91 <	10.1 <	0 <	93.1 <	3 <	8.29 B	15 B	33.62
9/20/2015 12:00	8.97	17.7	0	60.7	2.5	6.72 B	358.3 B	31.81
9/20/2015 13:00	10.02	19.6	0	62.4	2	10.1 <	17.9 <	27.04
9/20/2015 14:00	8.93	7.7	0	64.2	1.9	9.15	12.8	26.53
9/20/2015 15:00	8.44	5.9	0	72.3	1.9	8.72 <	10.1 <	26.51
9/20/2015 16:00	8.12	9	0	69.7	2.1	8.26	14.3	27.08
9/20/2015 17:00	8.36 <	6.4 <	0 <	71 <	2.3 <	8.67	11.7	26.46
9/20/2015 18:00	7.79	10.4	0	79.3	3	8.07 <	14 <	28.82
9/20/2015 19:00	8.25	12.8	0	69.4	3.1	8.42	16	29.05
9/20/2015 20:00	8.17	10.4	0	72.3	3.1	8.42	13.4	28.87
9/20/2015 21:00	8.28	11.8	0	69.7	2.9	8.46 <	14.1 <	28.41
9/20/2015 22:00	7.76	28.3	0	77.1	3.3	7.91	24.8 <	28.64
9/20/2015 23:00	7.92 <	28.7 <	0 <	69.8 <	5.2 <	8.08	27.8	28.66
9/21/2015 0:00	7.68	19.5	0.1	74.8	6.4	8.03 <	23.5 <	28.99
9/21/2015 1:00	7.2	19.5	0.4	83.7	8	7.41	22.8	31.89
9/21/2015 2:00	7.43	12.5	0.4	72.4	7.8	7.7	15	33.82
9/21/2015 3:00	7.06	8.9	0.1	87.4	4	7.18 <	11.6 <	33.36
9/21/2015 4:00	7.86	16.6	0.1	67.1	4.4	8.07	19.1	34.17
9/21/2015 5:00	7.74 <	17 <	0 <	75.5 <	4.5 <	8.11	20.8	33.17
9/21/2015 6:00	7.85 <	18.5 <	0 <	82.2 <	4.6 <	8.07 <	14.8 <	33.22
9/21/2015 7:00	7.87 <	15 <	0.3 <	88.3 <	4.8 <	8.05 B	12.8 B	33.32
9/21/2015 8:00	7.95 B	18.6 B	0.7 B	86.6 B	4.5 B	8.08	17.5	33.34
9/21/2015 9:00	5.25 B	337 B	60.6 B	159.7 B	0.1 B	8.13 <	24.9 <	34.06
9/21/2015 10:00	7.91 <	14.1 <	3.1 <	104 <	6.4 <	8.2 <	21.3 <	32.3
9/21/2015 11:00	8.58 <	21.4 <	0.7 <	61.7 <	5.4 <	6.47 B	328.7 B	32.67
9/21/2015 12:00	9.75	21.9	0.7	57.1	2.9	6.97 B	276.8 B	30.38
9/21/2015 13:00	8.88	24.1	2.8	72.2	2.7	8.99 <	31.2 <	28.94
9/21/2015 14:00	8.07	26.9	0	76.3	2.4	8.23	32.8	28.88
9/21/2015 15:00	8.34	9.3	0.8	84.7	3.8	8.4 <	14.3 <	30.42
9/21/2015 16:00	9.06	14.2	3.9	55.5	5.1	9.18	19.6	32.88
9/21/2015 17:00	9.03 <	16.6 <	0.3 <	63.2 <	2.3 <	9.4	21.8	31.63
9/21/2015 18:00	8.65	10.3	0.9	73	2.4	8.86 <	14.2 <	32.8
9/21/2015 19:00	8.37	11.2	1.7	74.2	2.6	8.6	15	33.2
9/21/2015 20:00	7.75	20.8	1.3	76.4	2.4	7.97	26.9	33.98
9/21/2015 21:00	8.39	15.8	0	67.8	2	8.67 <	19.7 <	33.19
9/21/2015 22:00	7.91	13.3	0.3	71.6	1.8	8.23	16	33.58
9/21/2015 23:00	7.61 <	9.5 <	0.3 <	69.4 <	1.9 <	8.05	12.5	33.28
9/22/2015 0:00	7.78	11	1.6	80.7	2.1	8.1 <	14.3 <	33.6
9/22/2015 1:00	7.47	15	0.5	77.3	1.7	7.76	18.1	33.39
9/22/2015 2:00	7.68	19.3	0.8	74.6	1.8	7.96	21.1	33.66
9/22/2015 3:00	8	11.4	0	70.8	1.6	8.39 <	13.7 <	32.9
9/22/2015 4:00	7.67	9.4	0.4	73.7	1.7	7.96	11.9	33.2
9/22/2015 5:00	7.7 <	15.8 <	0.6 <	69.3 <	2 <	8.1	18.3	32.72
9/22/2015 6:00	8.31 <	25.7 <	0.2 <	76.4 <	2.4 <	8.47 <	27.9 <	32.73
9/22/2015 7:00	8.15 <	21.9 <	1.7 <	88.8 <	1.9 <	8.34 B	32.7 B	33.58
9/22/2015 8:00	7.98	22.1	1.1	73.8	1.7	8.24	26.3	33.58
9/22/2015 9:00	7.51	13.5	1.4	72.3	1.6	7.82 <	16.7 <	33.77
9/22/2015 10:00	7.54	11.5	1	86	1.6	7.73	13.8	33.02
9/22/2015 11:00	8.09 <	15.1 <	2.9 <	66.2 <	1.9 <	8.48	18.2	33.54
9/22/2015 12:00	7.46	10.2	0.4	81.7	2.2	7.64 <	12.5 <	33.25
9/22/2015 13:00	8.02	15.6	0.5	68.9	2.4	8.23	17.7	33.67

Calibration Summary

Company: Covanta - Durham York Energy
1835 Energy Drive

Clarington Municipality, ON

Stack ID #: Boiler #1

Start of Report: 09/15/15 00:00
End of Report: 09/22/15 23:59

TYPE	PARAMETER	START	STOP	EXPECT.	ACTUAL	ERROR	% FS	STATUS
Zero	CO-HI-IN	09/15/15 07:10	09/15/15 07:16	0.0	0.00	0.00	0.0	OK
Span		09/15/15 07:22	09/15/15 07:28	1699.0	1699.00	0.00	0.0	
Zero	CO-HI-OUT	09/15/15 06:30	09/15/15 06:34	0.0	3.00	3.00	0.2	OK
Span		09/15/15 06:38	09/15/15 06:42	1675.0	1669.00	-6.00	-0.3	
Zero	CO-LOW-IN	09/15/15 07:10	09/15/15 07:16	0.0	0.50	0.50	0.1	OK
Span		09/15/15 07:16	09/15/15 07:22	422.0	420.20	-1.80	-0.4	
Zero	CO-LOW-OUT	09/15/15 06:30	09/15/15 06:34	0.0	0.40	0.40	0.1	OK
Span		09/15/15 06:34	09/15/15 06:38	424.0	424.20	0.20	0.0	
Zero	CO2-OUT	09/15/15 06:30	09/15/15 06:34	0.0	0.02	0.02	0.1	OK
Span		09/15/15 06:38	09/15/15 06:42	19.0	18.84	-0.16	-0.6	
Zero	FLOW-OUT	09/15/15 06:15	09/15/15 06:16	4.0	4.01	0.01	0.0	OK
Span		09/15/15 06:16	09/15/15 06:17	24.0	24.00	0.00	0.0	
Zero	HCL-OUT	09/15/15 06:38	09/15/15 06:42	0.0	0.00	0.00	0.0	>1 x
Span		09/15/15 06:42	09/15/15 06:52	88.8	96.50	7.70	7.7	
Zero	NH3-OUT	09/15/15 06:42	09/15/15 06:52	0.0	2.46	2.46	4.9	>1 x
Span		09/15/15 06:52	09/15/15 07:02	42.4	39.52	-2.88	-5.8	
Zero	NOX-OUT	09/15/15 06:30	09/15/15 06:34	0.0	1.30	1.30	0.3	>1 x
Span		09/15/15 06:34	09/15/15 06:38	434.0	451.70	17.70	3.5	
Zero	O2DRY-IN	09/15/15 07:10	09/15/15 07:16	2.0	1.79	-0.29	-1.2	OK
Span		09/15/15 07:22	09/15/15 07:28	18.0	17.99	-0.01	0.0	
Span	O2DRY-OUT	09/15/15 06:30	09/15/15 06:34	2.0	2.12	0.12	0.5	OK
		09/15/15 06:38	09/15/15 06:42	17.8	18.07	0.27	1.1	
Zero	O2WET-OUT	09/15/15 06:30	09/15/15 06:34	2.0	1.87	-0.13	-0.5	OK
Span		09/15/15 06:38	09/15/15 06:42	17.8	17.62	-0.18	-0.7	
Zero	OPACITY	09/15/15 07:00	09/15/15 07:02	0.0	0.01	0.01	0.0	OK
Span		09/15/15 07:02	09/15/15 07:04	26.0	25.77	-0.23	-0.2	
Zero	SO2-IN	09/15/15 07:10	09/15/15 07:16	0.0	2.50	2.50	0.5	OK
Span		09/15/15 07:16	09/15/15 07:22	425.0	425.30	0.30	0.1	
Zero	SO2-OUT	09/15/15 06:30	09/15/15 06:34	0.0	0.00	0.00	0.0	OK
Span		09/15/15 06:34	09/15/15 06:38	167.0	170.80	3.80	1.9	
Zero	THC-IN	09/15/15 07:10	09/15/15 07:16	0.0	0.20	0.20	0.2	OK
Span		09/15/15 07:38	09/15/15 07:44	84.6	85.20	0.60	0.6	
Zero	CO-HI-IN	09/16/15 07:10	09/16/15 07:16	0.0	0.00	0.00	0.0	OK
Span		09/16/15 07:22	09/16/15 07:28	1699.0	1704.00	5.00	0.2	
Zero	CO-HI-OUT	09/16/15 06:30	09/16/15 06:34	0.0	3.00	3.00	0.2	OK
Span		09/16/15 06:38	09/16/15 06:42	1679.0	1698.00	19.00	0.9	

Zero	CO-LOW-IN	09/16/15 07:10	09/16/15 07:16	0.0	0.60	0.60	0.1	OK
Span		09/16/15 07:16	09/16/15 07:22	422.0	423.90	1.90	0.4	
Zero	CO-LOW-OUT	09/16/15 06:30	09/16/15 06:34	0.0	0.50	0.50	0.1	OK
Span		09/16/15 06:34	09/16/15 06:38	424.0	424.60	0.60	0.1	
Zero	CO2-OUT	09/16/15 06:30	09/16/15 06:34	0.0	0.02	0.02	0.1	OK
Span		09/16/15 06:38	09/16/15 06:42	19.1	19.09	-0.01	0.0	
Zero	FLOW-OUT	09/16/15 06:15	09/16/15 06:16	4.0	4.02	0.02	0.0	OK
Span		09/16/15 06:16	09/16/15 06:17	24.0	24.00	0.00	0.0	
Zero	HCL-OUT	09/16/15 06:38	09/16/15 06:42	0.0	0.00	0.00	0.0	>1 x
Span		09/16/15 06:42	09/16/15 06:52	88.8	97.10	8.30	8.3	
Zero	NH3-OUT	09/16/15 07:45	09/16/15 07:46	0.0	2.15	2.15	4.3	OK
Span		09/16/15 07:46	09/16/15 07:56	41.6	41.73	0.13	0.3	
Zero	NOX-OUT	09/16/15 06:30	09/16/15 06:34	0.0	0.80	0.80	0.2	OK
Span		09/16/15 06:34	09/16/15 06:38	434.0	444.00	10.00	2.0	
Zero	O2DRY-IN	09/16/15 07:10	09/16/15 07:16	2.0	1.69	-0.31	-1.2	OK
Span		09/16/15 07:22	09/16/15 07:28	18.0	17.99	-0.01	0.0	
Zero	O2DRY-OUT	09/16/15 06:30	09/16/15 06:34	2.0	1.91	-0.09	-0.4	OK
Span		09/16/15 06:38	09/16/15 06:42	18.0	18.07	0.07	0.3	
Zero	O2WET-OUT	09/16/15 06:30	09/16/15 06:34	2.0	1.82	-0.18	-0.7	>1 x
Span		09/16/15 06:38	09/16/15 06:42	18.0	17.46	-0.54	-2.2	
Zero	OPACITY	09/16/15 07:00	09/16/15 07:02	0.0	0.08	0.08	0.1	OK
Span		09/16/15 07:02	09/16/15 07:04	26.0	25.75	-0.25	-0.2	
Zero	SO2-IN	09/16/15 07:10	09/16/15 07:16	0.0	2.60	2.60	0.5	OK
Span		09/16/15 07:16	09/16/15 07:22	425.0	426.40	1.40	0.3	
Zero	SO2-OUT	09/16/15 06:30	09/16/15 06:34	0.0	0.00	0.00	0.0	OK
Span		09/16/15 06:34	09/16/15 06:38	167.0	167.20	0.20	0.1	
Zero	THC-IN	09/16/15 07:10	09/16/15 07:16	0.0	0.00	0.00	0.0	OK
Span		09/16/15 07:38	09/16/15 07:44	84.6	85.60	1.00	1.0	
Zero	CO-HI-IN	09/17/15 07:10	09/17/15 07:16	0.0	0.00	0.00	0.0	OK
Span		09/17/15 07:22	09/17/15 07:28	1699.0	1704.00	5.00	0.2	
Zero	CO-HI-OUT	09/17/15 06:30	09/17/15 06:34	0.0	3.00	3.00	0.2	OK
Span		09/17/15 06:38	09/17/15 06:42	1679.0	1690.00	11.00	0.5	
Zero	CO-LOW-IN	09/17/15 07:10	09/17/15 07:16	0.0	0.50	0.50	0.1	OK
Span		09/17/15 07:16	09/17/15 07:22	422.0	419.30	-2.70	-0.5	
Zero	CO-LOW-OUT	09/17/15 06:30	09/17/15 06:34	0.0	0.40	0.40	0.1	OK
Span		09/17/15 06:34	09/17/15 06:38	424.0	423.10	-0.90	-0.2	
Zero	CO2-OUT	09/17/15 06:30	09/17/15 06:34	0.0	0.02	0.02	0.1	OK
Span		09/17/15 06:38	09/17/15 06:42	19.1	19.04	-0.06	-0.2	
Zero	FLOW-OUT	09/17/15 06:15	09/17/15 06:16	4.0	4.02	0.02	0.0	OK
Span		09/17/15 06:16	09/17/15 06:17	24.0	24.00	0.00	0.0	
Zero	HCL-OUT	09/17/15 06:38	09/17/15 06:42	0.0	0.00	0.00	0.0	>1 x
Span		09/17/15 06:42	09/17/15 06:52	88.8	96.70	7.90	7.9	
Zero	NH3-OUT	09/17/15 06:42	09/17/15 06:52	0.0	2.31	2.31	4.6	OK
Span		09/17/15 06:52	09/17/15 07:02	41.6	39.52	-2.08	-4.2	
Span	NOX-OUT	09/17/15 06:30	09/17/15 06:34	0.0	0.40	0.40	0.1	OK
		09/17/15 06:34	09/17/15 06:38	434.0	429.30	-4.70	-0.9	
Zero	O2DRY-IN	09/17/15 07:10	09/17/15 07:16	2.0	1.99	-0.01	0.0	OK

Span		09/17/15 07:22	09/17/15 07:28	18.0	18.09	0.09	0.4	
Zero	O2DRY-OUT	09/17/15 06:30	09/17/15 06:34	2.0	1.91	-0.09	-0.4	OK
Span		09/17/15 06:38	09/17/15 06:42	18.0	18.07	0.07	0.3	
Zero	O2WET-OUT	09/17/15 06:30	09/17/15 06:34	2.0	1.96	-0.04	-0.2	OK
Span		09/17/15 06:38	09/17/15 06:42	18.0	18.50	0.50	2.0	
Zero	OPACITY	09/17/15 07:00	09/17/15 07:02	0.0	0.08	0.08	0.1	OK
Span		09/17/15 07:02	09/17/15 07:04	26.0	25.72	-0.28	-0.3	
Zero	SO2-IN	09/17/15 07:10	09/17/15 07:16	0.0	1.10	1.10	0.2	OK
Span		09/17/15 07:16	09/17/15 07:22	425.0	422.80	-2.20	-0.4	
Zero	SO2-OUT	09/17/15 06:30	09/17/15 06:34	0.0	0.00	0.00	0.0	OK
Span		09/17/15 06:34	09/17/15 06:38	167.0	167.80	0.80	0.4	
Zero	THC-IN	09/17/15 08:16	09/17/15 08:21	0.0	0.20	0.20	0.2	OK
Span		09/17/15 08:21	09/17/15 08:26	84.6	84.40	-0.20	-0.2	
Zero	CO-HI-IN	09/18/15 07:10	09/18/15 07:16	0.0	0.00	0.00	0.0	OK
Span		09/18/15 07:22	09/18/15 07:28	1699.0	1725.00	26.00	1.3	
Zero	CO-HI-OUT	09/18/15 06:30	09/18/15 06:34	0.0	3.00	3.00	0.2	OK
Span		09/18/15 06:38	09/18/15 06:42	1679.0	1677.00	-2.00	-0.1	
Zero	CO-LOW-IN	09/18/15 07:10	09/18/15 07:16	0.0	0.60	0.60	0.1	OK
Span		09/18/15 07:16	09/18/15 07:22	422.0	419.20	-2.80	-0.6	
Zero	CO-LOW-OUT	09/18/15 06:30	09/18/15 06:34	0.0	0.40	0.40	0.1	OK
Span		09/18/15 06:34	09/18/15 06:38	424.0	419.70	-4.30	-0.9	
Zero	CO2-OUT	09/18/15 06:30	09/18/15 06:34	0.0	0.02	0.02	0.1	OK
Span		09/18/15 06:38	09/18/15 06:42	19.1	18.99	-0.11	-0.4	
Zero	FLOW-OUT	09/18/15 06:15	09/18/15 06:16	4.0	4.02	0.02	0.0	OK
Span		09/18/15 06:16	09/18/15 06:17	24.0	24.00	0.00	0.0	
Zero	HCL-OUT	09/18/15 06:38	09/18/15 06:42	0.0	0.00	0.00	0.0	OK
Span		09/18/15 06:42	09/18/15 06:52	88.8	91.60	2.80	2.8	
Zero	NH3-OUT	09/18/15 06:42	09/18/15 06:52	0.0	2.47	2.47	4.9	OK
Span		09/18/15 06:52	09/18/15 07:02	41.6	39.30	-2.30	-4.6	
Zero	NOX-OUT	09/18/15 06:30	09/18/15 06:34	0.0	0.30	0.30	0.1	OK
Span		09/18/15 06:34	09/18/15 06:38	434.0	426.50	-7.50	-1.5	
Span	O2DRY-IN	09/18/15 07:10	09/18/15 07:16	2.0	1.89	-0.11	-0.4	OK
		09/18/15 07:22	09/18/15 07:28	18.0	17.99	-0.01	0.0	
Zero	O2DRY-OUT	09/18/15 06:30	09/18/15 06:34	2.0	2.01	0.01	0.0	OK
Span		09/18/15 06:38	09/18/15 06:42	18.0	17.97	-0.03	-0.1	
Zero	O2WET-OUT	09/18/15 06:30	09/18/15 06:34	2.0	1.94	-0.06	-0.2	OK
Span		09/18/15 06:38	09/18/15 06:42	18.0	17.78	-0.22	-0.9	
Zero	OPACITY	09/18/15 08:12	09/18/15 08:14	0.0	0.00	0.00	0.0	OK
Span		09/18/15 08:14	09/18/15 08:16	26.0	25.70	-0.30	-0.3	
Zero	SO2-IN	09/18/15 07:10	09/18/15 07:16	0.0	3.30	3.30	0.7	OK
Span		09/18/15 07:16	09/18/15 07:22	425.0	424.10	-0.90	-0.2	
Zero	SO2-OUT	09/18/15 06:30	09/18/15 06:34	0.0	0.00	0.00	0.0	OK
Span		09/18/15 06:34	09/18/15 06:38	167.0	167.00	0.00	0.0	
Zero	THC-IN	09/18/15 07:10	09/18/15 07:16	0.0	0.10	0.10	0.1	OK
Span		09/18/15 07:38	09/18/15 07:44	84.6	85.40	0.80	0.8	
Zero	CO-HI-OUT	09/19/15 06:30	09/19/15 06:34	0.0	3.00	3.00	0.2	OK
Span		09/19/15 06:38	09/19/15 06:42	1679.0	1665.00	-14.00	-0.7	

Zero	CO-LOW-IN	09/19/15 07:10	09/19/15 07:16	0.0	0.70	0.70	0.1	OK
Span		09/19/15 07:16	09/19/15 07:22	433.0	424.90	-8.10	-1.6	
Zero	CO-LOW-OUT	09/19/15 06:30	09/19/15 06:34	0.0	0.50	0.50	0.1	OK
Span		09/19/15 06:34	09/19/15 06:38	425.0	421.40	-3.60	-0.7	
Zero	CO2-OUT	09/19/15 06:30	09/19/15 06:34	0.0	0.01	0.01	0.0	OK
Span		09/19/15 06:38	09/19/15 06:42	19.1	18.93	-0.17	-0.7	
Zero	FLOW-OUT	09/19/15 06:15	09/19/15 06:16	4.0	4.02	0.02	0.0	OK
Span		09/19/15 06:16	09/19/15 06:17	24.0	24.00	0.00	0.0	
Zero	HCL-OUT	09/19/15 06:38	09/19/15 06:42	0.0	0.00	0.00	0.0	OK
Span		09/19/15 06:42	09/19/15 06:52	88.8	91.10	2.30	2.3	
Zero	NH3-OUT	09/19/15 06:42	09/19/15 06:52	0.0	2.71	2.71	5.4	>1 x
Span		09/19/15 06:52	09/19/15 07:02	41.6	40.42	-1.18	-2.4	
Zero	NOX-OUT	09/19/15 06:30	09/19/15 06:34	0.0	1.20	1.20	0.2	OK
Span		09/19/15 06:34	09/19/15 06:38	437.0	447.80	10.80	2.2	
Zero	O2DRY-IN	09/19/15 07:10	09/19/15 07:16	2.0	1.99	-0.01	0.0	OK
Span		09/19/15 07:22	09/19/15 07:28	17.9	17.79	-0.11	-0.4	
Zero	O2DRY-OUT	09/19/15 06:30	09/19/15 06:34	2.0	2.01	0.01	0.0	OK
Span		09/19/15 06:38	09/19/15 06:42	18.0	17.67	-0.33	-1.3	
Zero	O2WET-OUT	09/19/15 06:30	09/19/15 06:34	2.0	1.94	-0.06	-0.2	>1 x
Span		09/19/15 06:38	09/19/15 06:42	18.0	17.45	-0.55	-2.2	
Span	OPACITY	09/19/15 07:00	09/19/15 07:02	0.0	0.00	0.00	0.0	OK
		09/19/15 07:02	09/19/15 07:04	26.0	25.74	-0.26	-0.3	
Zero	SO2-IN	09/19/15 07:10	09/19/15 07:16	0.0	2.00	2.00	0.4	OK
Span		09/19/15 07:16	09/19/15 07:22	432.0	428.30	-3.70	-0.7	
Zero	SO2-OUT	09/19/15 06:30	09/19/15 06:34	0.0	0.00	0.00	0.0	OK
Span		09/19/15 06:34	09/19/15 06:38	165.0	165.10	0.10	0.1	
Zero	THC-IN	09/19/15 07:10	09/19/15 07:16	0.0	0.20	0.20	0.2	OK
Span		09/19/15 07:38	09/19/15 07:44	84.6	85.10	0.50	0.5	
Zero	CO-HI-IN	09/20/15 07:10	09/20/15 07:16	0.0	0.00	0.00	0.0	OK
Span		09/20/15 07:22	09/20/15 07:28	1708.0	1679.00	-29.00	-1.4	
Zero	CO-HI-OUT	09/20/15 06:30	09/20/15 06:34	0.0	3.00	3.00	0.2	OK
Span		09/20/15 06:38	09/20/15 06:42	1679.0	1720.00	41.00	2.1	
Zero	CO-LOW-IN	09/20/15 07:10	09/20/15 07:16	0.0	0.60	0.60	0.1	OK
Span		09/20/15 07:16	09/20/15 07:22	433.0	441.50	8.50	1.7	
Zero	CO-LOW-OUT	09/20/15 06:30	09/20/15 06:34	0.0	0.50	0.50	0.1	OK
Span		09/20/15 06:34	09/20/15 06:38	425.0	431.70	6.70	1.3	
Zero	CO2-OUT	09/20/15 06:30	09/20/15 06:34	0.0	0.02	0.02	0.1	OK
Span		09/20/15 06:38	09/20/15 06:42	19.1	19.08	-0.02	-0.1	
Zero	FLOW-OUT	09/20/15 06:15	09/20/15 06:16	4.0	4.02	0.02	0.0	OK
Span		09/20/15 06:16	09/20/15 06:17	24.0	24.00	0.00	0.0	
Zero	HCL-OUT	09/20/15 06:38	09/20/15 06:42	0.0	0.00	0.00	0.0	OK
Span		09/20/15 06:42	09/20/15 06:52	88.8	91.60	2.80	2.8	
Zero	NH3-OUT	09/20/15 06:42	09/20/15 06:52	0.0	2.88	2.88	5.8	>1 x
Span		09/20/15 06:52	09/20/15 07:02	41.6	40.64	-0.96	-1.9	
Zero	NOX-OUT	09/20/15 06:30	09/20/15 06:34	0.0	0.40	0.40	0.1	>1 x
Span		09/20/15 06:34	09/20/15 06:38	437.0	450.90	13.90	2.8	

Zero	O2DRY-IN	09/20/15 07:10	09/20/15 07:16	2.0	1.99	-0.01	0.0	OK
Span		09/20/15 07:22	09/20/15 07:28	17.9	18.09	0.19	0.8	
Zero	O2DRY-OUT	09/20/15 06:30	09/20/15 06:34	2.0	2.12	0.12	0.5	OK
Span		09/20/15 06:38	09/20/15 06:42	18.0	18.07	0.07	0.3	
Zero	O2WET-OUT	09/20/15 06:30	09/20/15 06:34	2.0	2.06	0.06	0.2	>1 x
Span		09/20/15 06:38	09/20/15 06:42	18.0	18.53	0.53	2.1	
Zero	OPACITY	09/20/15 07:00	09/20/15 07:02	0.0	0.17	0.17	0.2	OK
Span		09/20/15 07:02	09/20/15 07:04	26.0	25.68	-0.32	-0.3	
Zero	SO2-IN	09/20/15 07:10	09/20/15 07:16	0.0	3.40	3.40	0.7	OK
Span		09/20/15 07:16	09/20/15 07:22	432.0	439.20	7.20	1.4	
Span	SO2-OUT	09/20/15 06:30	09/20/15 06:34	0.0	0.00	0.00	0.0	OK
		09/20/15 06:34	09/20/15 06:38	165.0	166.00	1.00	0.5	
Zero	THC-IN	09/20/15 07:10	09/20/15 07:16	0.0	0.20	0.20	0.2	OK
Span		09/20/15 07:38	09/20/15 07:44	84.6	85.10	0.50	0.5	
Zero	CO-HI-IN	09/21/15 07:10	09/21/15 07:16	0.0	0.00	0.00	0.0	OK
Span		09/21/15 07:22	09/21/15 07:28	1708.0	1728.00	20.00	1.0	
Zero	CO-HI-OUT	09/21/15 06:30	09/21/15 06:34	0.0	3.00	3.00	0.2	OK
Span		09/21/15 06:38	09/21/15 06:42	1679.0	1708.00	29.00	1.4	
Zero	CO-LOW-IN	09/21/15 07:10	09/21/15 07:16	0.0	0.60	0.60	0.1	OK
Span		09/21/15 07:16	09/21/15 07:22	433.0	435.10	2.10	0.4	
Zero	CO-LOW-OUT	09/21/15 06:30	09/21/15 06:34	0.0	0.40	0.40	0.1	OK
Span		09/21/15 06:34	09/21/15 06:38	425.0	426.10	1.10	0.2	
Zero	CO2-OUT	09/21/15 06:30	09/21/15 06:34	0.0	0.02	0.02	0.1	OK
Span		09/21/15 06:38	09/21/15 06:42	19.1	19.09	-0.01	0.0	
Zero	FLOW-OUT	09/21/15 06:15	09/21/15 06:16	4.0	4.01	0.01	0.0	OK
Span		09/21/15 06:16	09/21/15 06:17	24.0	24.00	0.00	0.0	
Zero	HCL-OUT	09/21/15 06:38	09/21/15 06:42	0.0	0.00	0.00	0.0	OK
Span		09/21/15 06:42	09/21/15 06:52	88.4	92.40	4.00	4.0	
Zero	NH3-OUT	09/21/15 06:42	09/21/15 06:52	0.0	2.78	2.78	5.6	>1 x
Span		09/21/15 06:52	09/21/15 07:02	41.6	40.89	-0.71	-1.4	
Zero	NOX-OUT	09/21/15 06:30	09/21/15 06:34	0.0	1.20	1.20	0.2	>1 x
Span		09/21/15 06:34	09/21/15 06:38	437.0	453.00	16.00	3.2	
Zero	O2DRY-IN	09/21/15 07:10	09/21/15 07:16	2.0	2.09	0.09	0.4	OK
Span		09/21/15 07:22	09/21/15 07:28	17.9	18.09	0.19	0.8	
Zero	O2DRY-OUT	09/21/15 06:30	09/21/15 06:34	2.0	2.01	0.01	0.0	OK
Span		09/21/15 06:38	09/21/15 06:42	18.0	18.17	0.17	0.7	
Zero	O2WET-OUT	09/21/15 06:30	09/21/15 06:34	2.0	2.03	0.03	0.1	>1 x
Span		09/21/15 06:38	09/21/15 06:42	18.0	18.65	0.65	2.6	
Zero	OPACITY	09/21/15 07:00	09/21/15 07:02	0.0	0.00	0.00	0.0	OK
Span		09/21/15 07:02	09/21/15 07:04	26.0	25.74	-0.26	-0.3	
Zero	SO2-IN	09/21/15 07:10	09/21/15 07:16	0.0	3.00	3.00	0.6	OK
Span		09/21/15 07:16	09/21/15 07:22	432.0	437.60	5.60	1.1	
Zero	SO2-OUT	09/21/15 06:30	09/21/15 06:34	0.0	0.00	0.00	0.0	OK
Span		09/21/15 06:34	09/21/15 06:38	165.0	165.40	0.40	0.2	
Zero	THC-IN	09/21/15 07:10	09/21/15 07:16	0.0	0.00	0.00	0.0	OK
Span		09/21/15 07:38	09/21/15 07:44	84.6	83.30	-1.30	-1.3	
Span	CO-HI-IN	09/22/15 07:10	09/22/15 07:16	0.0	0.00	0.00	0.0	OK

		09/22/15 07:22	09/22/15 07:28	1708.0	1730.00	22.00	1.1	
Zero	CO-HI-OUT	09/22/15 06:30	09/22/15 06:34	0.0	3.00	3.00	0.2	OK
Span		09/22/15 06:38	09/22/15 06:42	1679.0	1704.00	25.00	1.3	
Zero	CO-LOW-IN	09/22/15 07:10	09/22/15 07:16	0.0	0.70	0.70	0.1	OK
Span		09/22/15 07:16	09/22/15 07:22	433.0	435.50	2.50	0.5	
Zero	CO-LOW-OUT	09/22/15 06:30	09/22/15 06:34	0.0	0.50	0.50	0.1	OK
Span		09/22/15 06:34	09/22/15 06:38	425.0	428.10	3.10	0.6	
Zero	CO2-OUT	09/22/15 06:30	09/22/15 06:34	0.0	0.02	0.02	0.1	OK
Span		09/22/15 06:38	09/22/15 06:42	19.1	19.04	-0.06	-0.2	
Zero	FLOW-OUT	09/22/15 06:15	09/22/15 06:16	4.0	4.01	0.01	0.0	OK
Span		09/22/15 06:16	09/22/15 06:17	24.0	24.00	0.00	0.0	
Zero	HCL-OUT	09/22/15 06:38	09/22/15 06:42	0.0	0.00	0.00	0.0	OK
Span		09/22/15 06:42	09/22/15 06:52	88.4	92.30	3.90	3.9	
Zero	NH3-OUT	09/22/15 06:42	09/22/15 06:52	0.0	2.51	2.51	5.0	OK
Span		09/22/15 06:52	09/22/15 07:02	41.6	41.28	-0.32	-0.6	
Zero	NOX-OUT	09/22/15 06:30	09/22/15 06:34	0.0	1.00	1.00	0.2	OK
Span		09/22/15 06:34	09/22/15 06:38	437.0	439.60	2.60	0.5	
Zero	O2DRY-IN	09/22/15 07:10	09/22/15 07:16	2.0	1.99	-0.01	0.0	OK
Span		09/22/15 07:22	09/22/15 07:28	17.9	18.09	0.19	0.8	
Zero	O2DRY-OUT	09/22/15 06:30	09/22/15 06:34	2.0	2.01	0.01	0.0	OK
Span		09/22/15 06:38	09/22/15 06:42	18.0	18.17	0.17	0.7	
Zero	O2WET-OUT	09/22/15 06:30	09/22/15 06:34	2.0	2.07	0.07	0.3	>1 x
Span		09/22/15 06:38	09/22/15 06:42	18.0	18.59	0.59	2.4	
Zero	OPACITY	09/22/15 07:00	09/22/15 07:02	0.0	0.04	0.04	0.0	OK
Span		09/22/15 07:02	09/22/15 07:04	26.0	25.73	-0.27	-0.3	
Zero	SO2-IN	09/22/15 07:10	09/22/15 07:16	0.0	2.90	2.90	0.6	OK
Span		09/22/15 07:16	09/22/15 07:22	432.0	436.20	4.20	0.8	
Zero	SO2-OUT	09/22/15 06:30	09/22/15 06:34	0.0	0.00	0.00	0.0	OK
Span		09/22/15 06:34	09/22/15 06:38	165.0	165.10	0.10	0.1	
Zero	THC-IN	09/22/15 07:10	09/22/15 07:16	0.0	0.00	0.00	0.0	OK
Span		09/22/15 07:38	09/22/15 07:44	84.6	83.30	-1.30	-1.3	

Sep. 18, 2015

08:00am Unit #1 outlet opacity monitor didn't pass daily Cal. Daily Cal re-run again from cpp4794 and passed.

08:30am Inlet Daily zero, Outlet Daily span1 & Inlet Daily Span1 gas bottles pressure was found below 200psi. bottles replaced with new ones.

08:50 am 168 hr. acceptance test Continued.

02:30 pm Inlet Daily span2 & Inlet CGA low span1 gas bottles pressure was found around 200psi. Bottles replaced by new one.

03:00pm HF linearity test performed by Jake, Altech. on Unit #1 & Unit #2

Sep 19, 2015.

08:00am Unit #2 Inlet THC analyzer failed daily cal. THC daily Cal re-run again from cpp4794 module and passed.

08:30am 168 hr acceptance test Continued.

03:00pm HF linearity test performed again by Jake Kaizer, Altech representative.

04:00pm Outlet Daily zero gas bottle replaced.

Sep 20, 2015:

- Unit #2 Inlet THC Analyzer failed daily Cal, Jake from Altech to have a look at it.

- 168 hr acceptance test continued.

- The following gas bottles replaced:
  - Outlet mid span 1
  - Inlet mid span 2
  - Inlet Daily span 3
  - Outlet Daily span 3

Sep 21, 2015

- 168 hr acceptance test performed & finalized.

- Inlet CGA MID-SPAN 1 gas bottle replaced

- Corrective maintenance continued on Unit #2 Inlet THC analyzer by Jake K., Altech representative.

Sep 22, 2015

- Outlet CGA mid span4 regulator ruptured teflon Seal replaced by new one. (JK & AB)

- Corrective maintenance on Unit #2 Inlet THC analyzer finalized by Jake, Altech.

Sep 23, 2015

- RATA (Relative Accuracy Test Audit) performed by ORETECH Environmental.

Sep 13, 2015 AB.

07:30am: Daily cal. bottle pressure checked and found to be within acceptable range.

- Both Boiler #1 & #2 daily Cal passed except:

Unit #1 NOx-out, HCL-out, NH_3-out, CO-hi-in, THC-in] >1 x Cal. Spec (In Control)

Unit #2

THC-in, O_2 wet-out] >4 x Cal spec (out of Control)

HCL-out — >1 x Cal spec (In-control)

- Unit #2 Graphite 52M sample Inlet pressure was found 999 mb the expected pressure is 200mb, needs further investigation.

Sep 14, 2015 AB.

07:30am Unit #2 outlet HCL didn't pass daily Cal, k-factor adjusted and run Cems cal again; passed the daily Calibration.

- outlet Daily zero gas bottle replaced.
- 168 hr. Test started by Jake, Altech.

Sep 15, 2015. AB

- 168 hr. Test Continued.
- Daily Inlet Zero gas bottle replaced.
- outlet span 2 & outlet span 4 gas bottles replaced.

Sep 16, 2015

- 168 hr test continued. (JK & AB)
- Unit #2 Inlet Graphite 52M sample pressure pump replaced with new one. The old one was causing bad pressure reading. Done by Jake, Altech.
- Unit #1 outlet wet O_2 (RM CEM O_2/IQ Analyzer Calibrated by Jake, Altech.
- Unit #2 Inlet THC Analyzer couldn't pass Cal. after sample pressure pump was replaced. C1 sample capilary was found cloged and replaced with a new one. Calibration passed. (done by Jake, Altech)
- Sample press. Sensor for Unit#2 Inlet replaced by new one.

Sep 17, 2015. (JK, Altech)

08:00am - Unit #1 & Unit #2 THC failed daily Cal; Inlet Daily span 4 regulator was found ~~closed~~ wide open which causes the calibration to failed. Regulator opened (adjusted) and re-run cal. passed daily Calibration.

08:30am Continued 168 hr test for acceptance. (JK & AB)

12:15pm Unit #2 outlet wet O_2 Analyzer Calibrated by Jake, Altech

02:30pm (AB & RM) Inlet daily span 4 regulator replaced with a new one, as it was unable to control the gas pressure.

02:30pm - Unit #1 & #2 outlet CO_2 and wet O_2 4 point test performed as part of the 168 hr acceptance test by Jake, Altech.

Section 3

4 Point / 7 Day Drift tests

Durham York
Unit#1 APC Outlet

LINEARITY TEST - CO2

MANUFACTURER	Ametek	
MODEL NUMBER	CEM/O2-IQ	
SERIAL NUMBER	10217710-1-O2w	
ANALYZER SPAN RANGE	0-25	%
DATE	16-Sep-15	

	GAS VALUE PPM		
Zero	2.00		
LOW	4.94	CC40355	9/6/2021
MID	9.94	CC164055	9/23/2022
HIGH	18.00	DT0006151	12/29/2016

				DIFFERENCES (R-A)			
Run Number	**Run Level**	**Calibration Gas Value (R)**	**Monitor Response**	**ZERO**	**LOW**	**MID**	**HIGH**
1	ZERO	2.00	1.96	0.04			
1	LOW	4.94	4.98		-0.04		
1	MID	9.94	9.94			0.00	
1	HIGH	18.00	17.83				0.17
2	ZERO	2.00	1.96	0.04			
2	LOW	4.94	4.98		-0.04		
2	MID	9.94	9.70			0.24	
2	HIGH	18.00	17.83				0.17
3	ZERO	2.00	1.96	0.04			
3	LOW	4.94	4.89		0.05		
3	MID	9.94	9.70			0.24	
3	HIGH	18.00	17.83				0.17
			AVERAGE RESPONSE	1.96	4.95	9.78	17.83
			ABS DIFF of AVERAGE	0.04	0.01	0.16	0.17
			LINEARITY ERROR, %	1.96	0.20	1.61	0.94

Durham York
Unit#1 APC Outlet

LINEARITY TEST - CO2

MANUFACTURER	SA Envionmental	
MODEL NUMBER	Mir 9000	
SERIAL NUMBER		
ANALYZER SPAN RANGE	0-25	%
DATE	16-Sep-15	

	GAS VALUE PPM		
LOW	5.98	CC40355	9/6/2021
MID	12.10	CC164055	9/23/2022
HIGH	19.10	DT0006151	12/29/2016

				DIFFERENCES (R-A)			
Run Number	**Run Level**	**Calibration Gas Value (R)**	**Monitor Response**	**ZERO**	**LOW**	**MID**	**HIGH**
1	ZERO	0.00	0.00	0.00			
1	LOW	5.98	5.98		0.00		
1	MID	12.10	11.99			0.11	
1	HIGH	19.10	19.07				0.03
2	ZERO	0.00	0.00	0.00			
2	LOW	5.98	5.98		0.00		
2	MID	12.10	11.99			0.11	
2	HIGH	19.10	19.07				0.03
3	ZERO	0.00	0.00	0.00			
3	LOW	5.98	5.98		0.00		
3	MID	12.10	11.99			0.11	
3	HIGH	19.10	19.07				0.03
			AVERAGE RESPONSE	0.00	5.98	11.99	19.07
			ABS DIFF of AVERAGE	0.00	0.00	0.11	0.03

Durham York
Unit#1 APC Outlet

LINEARITY TEST - NH3

MANUFACTURER	SA Environment	
MODEL NUMBER	FTUV/EXM-400	
SERIAL NUMBER	F130304	
ANALYZER SPAN RANGE	0-50	ppm
DATE	26-Jun-15	

	GAS VALUE PPM		
LOW	12.70	DT0004689	14-May-16
MID	27.10	DT0004591	14-Jun-16
HIGH	43.40	DT0007561	5-Mar-16

				DIFFERENCES (R-A)			
Run Number	**Run Level**	**Calibration Gas Value (R)**	**Monitor Response**	**ZERO**	**LOW**	**MID**	**HIGH**
1	ZERO	0.00	2.43	-2.43			
1	LOW	12.70	12.82		-0.12		
1	MID	27.10	27.01			0.09	
1	HIGH	43.40	43.75				-0.35
2	ZERO	0.00	1.60	-1.60			
2	LOW	12.70	12.78		-0.08		
2	MID	27.10	27.21			-0.11	
2	HIGH	43.40	43.47				-0.07
3	ZERO	0.00	2.43	-2.43			
3	LOW	12.70	12.68		0.02		
3	MID	27.10	27.56			-0.46	
3	HIGH	43.40	43.64				-0.24
			AVERAGE RESPONSE	2.15	12.76	27.26	43.62
			ABS DIFF of AVERAGE	2.15	0.06	0.16	0.22
			LINEARITY ERROR, %	2.15	0.47	0.59	0.51

LE= (|R-A|)/R x 100%
Where:
LE = Percent Linearity Error
R = Refrence Value
A = Average of monitoring system response.

Durham York
Unit#1 APC Outlet

LINEARITY TEST - THC

MANUFACTURER	SA Environment	
MODEL NUMBER	GR52M-S	
SERIAL NUMBER	647	
ANALYZER SPAN RANGE	0-100	ppm
DATE	24-Jun-15	

	GAS VALUE PPM			
LOW	25.32	EB0002929	12-Nov-22	8.44
MID	54.90	CC15333	12-Nov-22	18.3
HIGH	85.80	EB0005278	3-Feb-18	28.6

				DIFFERENCES (R-A)			
Run Number	**Run Level**	**Calibration Gas Value (R)**	**Monitor Response**	**ZERO**	**LOW**	**MID**	**HIGH**
1	ZERO	0.00	0.00	0.00			
1	LOW	25.32	24.50		0.82		
1	MID	54.90	54.60			0.30	
1	HIGH	85.80	85.10				0.70
2	ZERO	0.00	0.00	0.00			
2	LOW	25.32	24.90		0.42		
2	MID	54.90	55.40			-0.50	
2	HIGH	85.80	85.70				0.10
3	ZERO	0.00	0.00	0.00			
3	LOW	25.32	25.00		0.32		
3	MID	54.90	54.60			0.30	
3	HIGH	85.80	84.90				0.90
			AVERAGE RESPONSE	0.00	24.80	54.87	85.23
			ABS DIFF of AVERAGE	0.00	0.52	0.03	0.57
			LINEARITY ERROR, %	0.00	2.05	0.06	0.66

LE= (|R-A|)/R x 100%
Where:
LE = Percent Linearity Error
R = Refrence Value
A = Average of monitoring system response.

Durham York
Unit#1 APC Outlet

LINEARITY TEST - HCL

MANUFACTURER	SA Environment	
MODEL NUMBER	Mir 9000	
SERIAL NUMBER	2686	
ANALYZER SPAN RANGE	0-100	ppm
DATE	22-Jun-15	

	GAS VALUE PPM		
LOW	26.90	CC93565	27-Jun-15
MID	59.50	CC99745	30-Jun-15
HIGH	87.20	CC188770	5-May-16

				DIFFERENCES (R-A)			
Run Number	**Run Level**	**Calibration Gas Value (R)**	**Monitor Response**	**ZERO**	**LOW**	**MID**	**HIGH**
1	ZERO	0.00	1.20	-1.20			
1	LOW	26.90	25.00		1.90		
1	MID	59.50	58.00			1.50	
1	HIGH	87.20	87.20				0.00
2	ZERO	0.00	1.00	-1.00			
2	LOW	26.90	27.90		-1.00		
2	MID	59.50	60.50			-1.00	
2	HIGH	87.20	87.60				-0.40
3	ZERO	0.00	1.80	-1.80			
3	LOW	26.90	28.40		-1.50		
3	MID	59.50	59.50			0.00	
3	HIGH	87.20	87.20				0.00
			AVERAGE RESPONSE	1.33	27.10	59.33	87.33
			ABS DIFF of AVERAGE	1.33	0.20	0.17	0.13
			LINEARITY ERROR, %	1.33	0.74	0.28	0.15

Durham York
Unit#1 APC Outlet

LINEARITY TEST - HF

MANUFACTURER	SA Environment	
MODEL NUMBER	Mir 9000	
SERIAL NUMBER	2686	
ANALYZER SPAN RANGE	0-100	ppm
DATE	19-Sep-15	

	GAS VALUE PPM
LOW	25.10
MID	53.80
HIGH	89.50

				DIFFERENCES (R-A)			
Run Number	**Run Level**	**Calibration Gas Value (R)**	**Monitor Response**	**ZERO**	**LOW**	**MID**	**HIGH**
1	ZERO	0.00	0.00	0.10			
1	LOW	25.10	25.50		-0.40		
1	MID	53.80	53.90			-0.10	
1	HIGH	89.50	89.90				-0.40
			AVERAGE RESPONSE	0.00	25.50	53.90	89.90
			ABS DIFF of AVERAGE	0.00	0.40	0.10	0.40
			LINEARITY ERROR, %	0.00	1.59	0.19	0.45

LE= (|R-A|)/R x 100%
Where:
LE = Percent Linearity Error
R = Refrence Value
A = Average of monitoring system response.

Calibration Report

Company: Covanta - Durham York Energy
1835 Energy Drive
Lot 27, concessions Broken Front,
Clarington Municipality, ON
Stack Designation: Boiler #1
Parameter: CO2-Out
Units: %
Serial #: 2686-CO2
Start of Report: 09/12/15 00:00
End of Report: 09/18/15 11:20

ZERO READINGS						SPAN READINGS						
START	**STOP**	**EXPECT.**	**ACTUAL**	**ERROR**	**%**	**START**	**STOP**	**EXPECT.**	**ACTUAL**	**ERROR**	**%**	**STATUS**
09/12/15 06:30	09/12/15 06:34	0.00	0.01	0.01	0.0	09/12/15 06:38	09/12/15 06:42	19.00	19.12	0.12	0.5	OK
09/13/15 06:30	09/13/15 06:34	0.00	0.01	0.01	0.0	09/13/15 06:38	09/13/15 06:42	19.00	19.06	0.06	0.2	OK
09/14/15 06:30	09/14/15 06:34	0.00	0.02	0.02	0.1	09/14/15 06:38	09/14/15 06:42	19.00	19.15	0.15	0.6	OK
09/15/15 06:30	09/15/15 06:34	0.00	0.02	0.02	0.1	09/15/15 06:38	09/15/15 06:42	19.00	18.84	-0.16	-0.6	OK
09/16/15 06:30	09/16/15 06:34	0.00	0.02	0.02	0.1	09/16/15 06:38	09/16/15 06:42	19.10	19.09	-0.01	0.0	OK
09/17/15 06:30	09/17/15 06:34	0.00	0.02	0.02	0.1	09/17/15 06:38	09/17/15 06:42	19.10	19.04	-0.06	-0.2	OK
09/18/15 06:30	09/18/15 06:34	0.00	0.02	0.02	0.1	09/18/15 06:38	09/18/15 06:42	19.10	18.99	-0.11	-0.4	OK

Date/Time Printed: 09/22/15 11:23

Calibration Report

Company: Covanta - Durham York Energy
1835 Energy Drive
Lot 27, concessions Broken Front,
Clarington Municipality, ON
Stack Designation: Boiler #1
Parameter: HCL-Out
Units: ppm
Serial #: 2686-HCL
Start of Report: 05/19/15 00:00
End of Report: 05/25/15 11:20

ZERO READINGS						SPAN READINGS						
START	STOP	EXPECT.	ACTUAL	ERROR	%	START	STOP	EXPECT.	ACTUAL	ERROR	%	STATUS
05/19/15 06:38	05/19/15 06:42	0.00	0.90	0.90	0.9	05/19/15 06:42	05/19/15 06:52	91.30	91.90	0.60	0.6	OK
05/20/15 06:38	05/20/15 06:42	0.00	0.50	0.50	0.5	05/20/15 06:42	05/20/15 06:52	91.30	92.00	0.70	0.7	OK
05/21/15 06:38	05/21/15 06:42	0.00	1.10	1.10	1.1	05/21/15 06:42	05/21/15 06:52	91.30	92.70	1.40	1.4	OK
05/22/15 06:38	05/22/15 06:42	0.00	3.10	3.10	3.1	05/22/15 06:42	05/22/15 06:52	91.30	91.90	0.60	0.6	OK
05/23/15 06:38	05/23/15 06:42	0.00	2.10	2.10	2.1	05/23/15 06:42	05/23/15 06:52	91.30	89.40	-1.90	-1.9	OK
05/24/15 06:38	05/24/15 06:42	0.00	1.30	1.30	1.3	05/24/15 06:42	05/24/15 06:52	91.30	88.70	-2.60	-2.6	OK
05/25/15 06:38	05/25/15 06:42	0.00	2.10	2.10	2.1	05/25/15 06:42	05/25/15 06:52	91.30	91.30	0.00	0.0	OK

Calibration Report

Company: Covanta - Durham York Energy
1835 Energy Drive
Lot 27, concessions Broken Front,
Clarington Municipality, ON
Stack Designation: Boiler #1
Parameter: THC-In
Units: ppm
Serial #: 648-THC
Start of Report: 08/22/15 00:00
End of Report: 08/28/15 11:20

ZERO READINGS						SPAN READINGS						
START	**STOP**	**EXPECT.**	**ACTUAL**	**ERROR**	**%**	**START**	**STOP**	**EXPECT.**	**ACTUAL**	**ERROR**	**%**	**STATUS**
08/22/15 07:10	08/22/15 07:16	0.00	0.20	0.20	0.2	08/22/15 07:38	08/22/15 07:44	84.60	84.80	0.20	0.2	OK
08/23/15 07:10	08/23/15 07:16	0.00	0.10	0.10	0.1	08/23/15 07:38	08/23/15 07:44	84.60	83.70	-0.90	-0.9	OK
08/24/15 07:10	08/24/15 07:16	0.00	0.40	0.40	0.4	08/24/15 07:38	08/24/15 07:44	84.60	84.40	-0.20	-0.2	OK
08/25/15 07:10	08/25/15 07:16	0.00	0.10	0.10	0.1	08/25/15 07:38	08/25/15 07:44	84.60	83.60	-1.00	-1.0	OK
08/26/15 07:10	08/26/15 07:16	0.00	0.00	0.00	0.0	08/26/15 07:38	08/26/15 07:44	84.60	84.30	-0.30	-0.3	OK
08/27/15 07:10	08/27/15 07:16	0.00	0.00	0.00	0.0	08/27/15 07:38	08/27/15 07:44	84.60	84.10	-0.50	-0.5	OK
08/28/15 07:10	08/28/15 07:16	0.00	0.00	0.00	0.0	08/28/15 07:38	08/28/15 07:44	84.60	84.10	-0.50	-0.5	OK

Calibration Report

Company: Covanta - Durham York Energy
1835 Energy Drive
Lot 27, concessions Broken Front,
Clarington Municipality, ON
Stack Designation: Boiler #1
Parameter: O2wet-Out
Units: %
Serial #: 10217710-1-O2w
Start of Report: 07/01/15 00:00
End of Report: 07/06/15 11:20

ZERO READINGS						SPAN READINGS						
START	STOP	EXPECT.	ACTUAL	ERROR	%	START	STOP	EXPECT.	ACTUAL	ERROR	%	STATUS
07/01/15 06:30	07/01/15 06:34	2.00	1.99	-0.01	0.0	07/01/15 06:38	07/01/15 06:42	18.00	17.83	-0.17	-0.7	OK
07/02/15 06:30	07/02/15 06:34	2.00	1.94	-0.06	-0.2	07/02/15 06:38	07/02/15 06:42	18.00	17.91	-0.09	-0.4	OK
07/03/15 06:30	07/03/15 06:34	2.00	1.97	-0.03	-0.1	07/03/15 06:38	07/03/15 06:42	18.00	17.53	-0.47	-1.9	OK
07/04/15 06:30	07/04/15 06:34	2.00	1.96	-0.04	-0.2	07/04/15 06:38	07/04/15 06:42	18.00	17.80	-0.20	-0.8	OK
07/05/15 06:30	07/05/15 06:34	2.00	1.99	-0.01	0.0	07/05/15 06:38	07/05/15 06:42	18.00	18.22	0.22	0.9	OK
07/06/15 06:30	07/06/15 06:34	2.00	1.95	-0.05	-0.2	07/06/15 06:38	07/06/15 06:42	18.00	18.05	0.05	0.2	OK
07/06/15 10:17	07/06/15 10:21	2.00	1.98	-0.02	-0.1	07/06/15 10:25	07/06/15 10:29	18.00	17.88	-0.12	-0.5	OK

Date/Time Printed: 09/22/15 11:59

Section 4

Opacity Certification Tests

QUARTERLY OPACITY AUDIT REPORT

Page 1

IDENTIFICATION (MODEL/SERIAL #):	411388	MANUFACTURER:	Teledyne
PROCESS UNIT/STACK IDENTIFICATION:	Unit #1	FACILITY NAME:	Covanta Durham York Renewable Energy L.P.
AUDITOR:	Chuck Davis	REPRESENTING:	Covanta Energy
TECHNICIAN	McComb, Randy	REPRESENTING:	Covanta Energy
TECHNICIAN		REPRESENTING:	

DATE:	09/01/15	START TIME:	15:06
		END TIME:	15:55

PRELIMINARY DATA

1	Stack exit inside diameter (FT) = Lx	4.5
2	Stack (or duct) inside diameter (or width) at the transmissometer location (FT) = Lt	4.427
3	Calculated OPLR (Optical Path Length Ratio) = Lx / (Lt * 2)	0.508
4	Source-cited OPLR value	1.016
5	Source-cited Zero automatic calibration value (% opacity)	0.00
6	Source-cited Span automatic calibration value (% opacity)	26.00

FAULT LAMP INSPECTION

		ON	OFF
7	Alarm Indication		X
8	Power Light	X	
9	Fault Indication		X

10	Dust Compensation Value	0.50

ZERO CHECK

11	ERP Opacity ZERO calibration value (% opacity)	0.60
12	CEMS Cal Report ZERO calibration value (% opacity)	0.60

SPAN CHECK

13	ERP Opacity SPAN calibration value (% opacity)	26.20
14	CEMS Cal Report Opacity SPAN calibration value (% opacity)	26.20

QUARTERLY OPACITY AUDIT REPORT

RETROREFLECTOR DUST ACCUMULATION CHECK

15	Pre-cleaning effluent Opacity (% opacity)	1.00
16	Post-cleaning effluent Opacity (% opacity)	0.50

TRANSCEIVER DUST ACCUMULATION CHECK

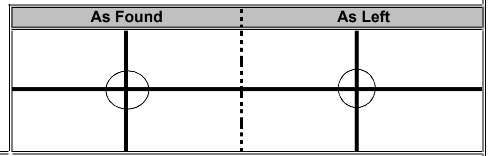
17	Pre cleaning effluent Opacity (% opacity)	0.50
18	Post-cleaning effluent Opacity (% opacity)	0.30

OPTICAL ALIGNMENT CHECK

		YES	NO
20	Is image centered?	Yes	

[DRAW LOCATION OF BEAM IMAGE.]

As Found | As Left



CALIBRATION FILTER DATA CHECK

21a	Zero	0.60
21b	Span	26.20

CALIBRATION ERROR CHECK

[RECORD AUDIT FILTER DATA.]

	FILTER	SERIAL NUMBER	% OPACITY	Expiration Date
22	LOW	S10089	8.40	07/27/16
23	MID	S10098	17.10	07/27/16
24	HIGH	S10082	27.50	07/27/16

QUARTERLY OPACITY AUDIT REPORT

[CALIBRATION FILTER AUDIT DATA.]

LOW		MID		HIGH	
26	8.9	**27**	17.2	**28**	27.4
30	8.9	**31**	17.1	**32**	27.4
34	9.0	**35**	17.2	**36**	27.4
38	9.0	**39**	17.3	**40**	27.5
42	8.9	**43**	17.2	**44**	27.4

QUARTERLY OPACITY AUDIT REPORT

CALCULATION OF AUDIT RESULTS

STACK EXIT CORRELATION ERROR (%)

51		$\frac{1.016\ (\text{BLANK 4}) - 0.508\ (\text{BLANK 3})}{0.508\ (\text{BLANK 3})}$			X 100	=	99.9

ZERO ERROR (% OPACITY)

52	Control Unit	0.6 *(BLANK 13)*	-	0.0 *(BLANK 5)*	=	0.6
53	Opacity Rec. (CEMS)	0.6 *(BLANK 14)*	-	0.0 *(BLANK 5)*	=	0.6

SPAN ERROR (% OPACITY)

54	Control Unit	26.2 *(BLANK 15)*	-	26.0 *(BLANK 6)*	=	0.2
55	Opacity Recorder (CEMS)	26.2 *(BLANK 16)*	-	26.0 *(BLANK 6)*	=	0.2

OPTICAL SURFACE DUST ACCUMULATION (% OPACITY)

56	Retroreflector	1.0 *(BLANK 17)*	-	0.5 *(BLANK 18)*	=	0.5
57	Transceiver	0.5 *(BLANK 19)*	-	0.3 *(BLANK 20)*	=	0.2
58	Total	0.5 *(BLANK 56)*	+	0.2 *(BLANK 57)*	=	0.7

OPTICAL PATHLENGTH CORRECTION FACTOR AND ZERO OFFSET CORRECTION OF AUDIT FILTERS

59 Low: $\left(1 - \left(\left(1 - \frac{8.40\ (\text{BLANK 22})}{100}\right)^{2.032\ (\text{BLANK 4 x 2})} \times \left(1 - \frac{0.1\ (\text{BLANK 45})}{100}\right)\right)\right) \times 100 =$ 16.4

60 Mid: $\left(1 - \left(\left(1 - \frac{17.10\ (\text{BLANK 23})}{100}\right)^{2.032\ (\text{BLANK 4 x 2})} \times \left(1 - \frac{0.1\ (\text{BLANK 45})}{100}\right)\right)\right) \times 100 =$ 31.8

61 High: $\left(1 - \left(\left(1 - \frac{27.50\ (\text{BLANK 24})}{100}\right)^{2.032\ (\text{BLANK 4 x 2})} \times \left(1 - \frac{0.1\ (\text{BLANK 45})}{100}\right)\right)\right) \times 100 =$ 48.0

QUARTERLY OPACITY AUDIT REPORT

SOURCE ID.	Unit #1	DATE: 09/01/15 QTR/YR: 3/2015 Time: 15:06-15:55	
MONITOR MANUFACTURER :	Teledyne	PERSON CONDUCTING AUDIT :	Chuck Davis
MODEL / SERIAL NUMBER :	560	AFFILIATION :	Covanta Energy
MONITOR PATHLENGTH (Lt) :	4.427 FT.	EMISSION OUTLET PATHLENGTH (Lx) :	4.5 FT.
MONITOR OUTPUT PATHLENGTH CORRECTED ?	YES	OPTICAL PATHLENGTH RATIO USED:	1.02 ((Lx / (Lt x 2)) x 2)

FILTER OPTICAL DENSITY CALCULATION

	SERIAL #	EXP. DATE	VALUE	PATHLENGTH OPTICAL DENSITY	ZERO COMPENSATED VALUES
LOW RANGE	S10089	7/27/16	8.40	8.5	8.5
MID RANGE	S10098	7/27/16	17.10	17.4	17.4
HIGH RANGE	S10082	7/27/16	27.50	27.9	27.9

LOW FILTER AUDIT CALCULATIONS

RUN No.	FILTER DATA	OPAC DATA	Di	Di2	t 0.975	N	SUM Di/N	SUM Di2	Result
1	8.5	8.9	0.4	0.14	0.2776	5	0.41	4.15	PASS
2	8.5	8.9	0.4	0.14					
3	8.5	9.0	0.5	0.22					
4	8.5	9.0	0.5	0.22					
5	8.5	8.9	0.4	0.14					
	8.53 AVG	8.94 AVG	2.0 SUM	0.84 SUM					

ME	+	CI	=	%Error
0.408		0.068		0.48
(BLANK 62)		(BLANK 65)		(BLANK 68)

MID FILTER AUDIT CALCULATIONS

RUN No.	FILTER DATA	OPAC DATA	Di	Di2	t 0.975	N	SUM Di/N	SUM Di2	Result
1	17.4	17.2	-0.2	0.02	0.2776	5	0.16	0.61	PASS
2	17.4	17.1	-0.3	0.07					
3	17.4	17.2	-0.2	0.02					
4	17.4	17.3	-0.1	0.00					
5	17.4	17.2	-0.2	0.02					
	17.36 AVG	17.20 AVG	-0.8 SUM	0.14 SUM					

ME	+	CI	=	%Error
0.156		0.088		0.24
(BLANK 63)		(BLANK 66)		(BLANK 69)

HIGH FILTER AUDIT CALCULATIONS

RUN No.	FILTER DATA	OPAC DATA	Di	Di2	t 0.975	N	SUM Di/N	SUM Di2	Result
1	27.9	27.4	-0.5	0.23	0.2776	5	0.46	5.37	PASS
2	27.9	27.4	-0.5	0.23					
3	27.9	27.4	-0.5	0.23					
4	27.9	27.5	-0.4	0.15					
5	27.9	27.4	-0.5	0.23					
	27.88 AVG	27.42 AVG	-2.3 SUM	1.08 SUM					

ME	+	CI	=	%Error
0.463		0.056		0.52
(BLANK 64)		(BLANK 67)		(BLANK 70)

QUARTERLY OPACITY AUDIT REPORT

Page 6

AUDITOR:	**Chuck Davis**	DATE	**9/1/2015**
SOURCE:	**Covanta Durham York Renewable Energy L.P.**	UNIT #	**Unit #1**
QUARTER/YEAR:	**Qtr - 3 2015**	S/N	**411388**

PARAMETER		BLANK NO.	AUDIT RESULT	SPECIFICATION
Fault Lamps				
Alarm Indication		**7**	**Off**	**OFF**
Power Light		**8**	**On**	**ON**
Fault Indication		**9**	**Off**	**OFF**
Dust compensation at Start of Audit		**10**	**0.50**	**+/- 2 % Opacity**
MONITOR ALIGNMENT ANALYSIS		**21**	**Yes**	**CENTERED**
STACK EXIT CORRELATION ERROR		**51**	**99.90**	**+/- 2 % Opacity**
INTERNAL ZERO ERROR	CONTROL UNIT	**52**	**0.60**	**+/- 2 % Opacity**
	DATA RECORDER (CEMS)	**53**	**0.60**	**+/- 2 % Opacity**
INTERNAL SPAN ERROR	CONTROL UNIT	**54**	**0.20**	**+/- 2 % Opacity**
	DATA RECORDER (CEMS)	**55**	**0.20**	**+/- 2 % Opacity**
OPTICAL SURFACE DUST ACCUMULATION				
RETROREFLECTOR		**56**	**0.50**	**+/- 2 % Opacity**
TRANSCEIVER		**57**	**0.20**	**+/- 2 % Opacity**
TOTAL		**58**	**0.70**	**+/- 2% Opacity**
CALIBRATION ERROR ANALYSIS				
MEAN ERROR				
LOW		**62**	0.41	
		71	N/A	
MID		**63**	0.16	
		72	9.1	
HIGH		**64**	0.46	
		73	N/A	
CONFIDENCE INTERVAL				
LOW		**65**	0.07	
MID		**66**	0.09	
HIGH		**67**	0.06	
CALIBRATION ERROR / Response time				
LOW		**68**	**0.48**	**< 2% Opacity**
MID		**69**	**0.24**	**< 2% Opacity**
HIGH		**70**	**0.52**	**< 2% Opacity**
Upscale Response time average		6		**10 Seconds**
Downscale Response time average		6		**10 Seconds**

OPACITY AUDIT DATA ENTRY SCREEN

Preliminary Information

Enter Required Information

		Unit #1	Unit #2
	Audit Date	9/1/15	5/16/13
	Audit Performed by	McComb, Randy	Chuck Davis
3	Automatically calculated OPLR	*0.508*	*0.508*
4	Source-cited OPLR value	1.016	1.016
5	Source-cited Zero automatic expected calibration value (% opacity)	0	0
6	Source-cited Span automatic expected calibration value (% opacity)	26	26

Pre-Clean Cal Check

		Unit #1	Unit #2
	Select "Force Cal cycle" from Output & Cal tests menu. (4.4.10) and execute cal. After cal is complete, read and record Dust compensation value from ERP		
10	**Dust Compensation Value**	0.5	-0.28
	Read and Record Dust Compensation value from ERP.		
11	**Zero Cal Response Value**	0.6	0
	Read and Record cal zero value from ERP.		
12	**Zero Cal Response Value (from Cal Report)**	0.6	0
	Read and Record most recently obtained zero value from Trace Cal Report		
13	**Upscale Cal Response Value**	26.2	26.2
	Read and Record cal upscale value from ERP.		
14	**Span Cal Response Value (from Cal Report)**	26.2	25.7
	Read and Record most recently obtained span value from Trace Cal Report		

OPACITY AUDIT DATA ENTRY SCREEN

Cleaning

		Unit #1	Unit #2
19	**Pre-cleaning effluent Opacity (% opacity)** *Record 1-min Opacity (Optical Head display at location U1) just prior to opening Reflector for cleaning. Clean the Reflector.*	1	-0.8
20	**Post-cleaning effluent Opacity (% opacity)** *Close Reflector, wait 3 minutes, then read and record effluent opacity from display location U1.*	0.5	-0.8
21	**Pre cleaning effluent Opacity (% opacity)** *Record Opacity from display location U1 just prior to opening Transmissometer for cleaning. Clean Optics on Transmissometer side.*	0.5	-0.8
22	**Post-cleaning effluent Opacity (% opacity)** *Close Transmissometer, wait 3 minutes, then read and record effluent opacity from display location U1.*	0.3	-0.8

Filter Information

Form'

		Serial #	Opacity	Exp.Date
29	**Low Filter Data**	S10089	8.4	7/27/16
30	**Mid Filter Data**	S10098	17.1	7/27/16
31	**High Filter Data**	S10082	27.5	7/27/16

Perform Test Audit

Leave the test audit jig in place. Allow three (3) full minutes to record the zero value (display location U1) then insert each filter in turn for three (3) minutes followed by a three (3) minute zero period. Repeat this procedure for 4 additional runs. For the final test, insert the mid-filter and allow thirteen (13) full minutes and record the 6-min value (display location U2). Note that if the zero obtained has drifted by more than 1% opacity over any one run, that run must be eliminated and repeated after the jig is rezeroed.

		Unit #1 DAS Time	Unit #1 1m Average	Unit #2 DAS Time	Unit #2 1m Average
33	**Enter Run 1 Low Filter Response**	15:06	8.9	11:47	8.3
34	**Enter Run 1 Mid Filter Response**		17.2		16.6
35	**Enter Run 1 High Filter Response**		27.4		27.0
37	**Enter Run 2 Low Filter Response**		8.9		8.3
38	**Enter Run 2 Mid Filter Response**		17.1		16.5
39	**Enter Run 2 High Filter Response**		27.4		26.9
41	**Enter Run 3 Low Filter Response**		9.0		8.3
42	**Enter Run 3 Mid Filter Response**		17.2		16.6
43	**Enter Run 3 High Filter Response**		27.4		27.0
45	**Enter Run 4 Low Filter Response**		9.0		8.7
46	**Enter Run 4 Mid Filter Response**		17.3		16.5
47	**Enter Run 4 High Filter Response**		27.5		27.0

49	Enter Run 5 Low Filter Response		8.9		8.5
50	Enter Run 5 Mid Filter Response		17.2		16.5
51	Enter Run 5 High Filter Response	15:55	27.4	12:19	27.0

Response Times (seconds)	Up	Down	UP	Down
Enter Run 1 Response	6	6	6	6
Enter Run 2 Response	6	6	6	6
Enter Run 3 Response	6	6	6	6
Enter Run 4 Response	6	6	6	6
Enter Run 5 Response	6	6	6	6
Average:	6	6	6	6

Date/Time	U1 1-min C	Data Status
9/1/2015 15:00	0.5	D
9/1/2015 15:01	0.5	D
9/1/2015 15:02	0.4	D
9/1/2015 15:03	0.6	D
9/1/2015 15:04	0.5	D
9/1/2015 15:05	8.9	D
9/1/2015 15:06	8.9	D
9/1/2015 15:07	8.9	D
9/1/2015 15:08	8.9	D
9/1/2015 15:09	17.2	D
9/1/2015 15:10	17.2	D
9/1/2015 15:11	17.2	D
9/1/2015 15:12	9.7	D
9/1/2015 15:13	27.5	D
9/1/2015 15:14	27.4	D
9/1/2015 15:15	27.5	D
9/1/2015 15:16	8.9	D
9/1/2015 15:17	8.9	D
9/1/2015 15:18	8.9	D
9/1/2015 15:19	2.4	D
9/1/2015 15:20	17.1	D
9/1/2015 15:21	17.1	D
9/1/2015 15:22	17.1	D
9/1/2015 15:23	27.4	D
9/1/2015 15:24	27.4	D
9/1/2015 15:25	27.4	D
9/1/2015 15:26	9	D
9/1/2015 15:27	9	D
9/1/2015 15:28	9	D
9/1/2015 15:29	3.7	D
9/1/2015 15:30	0	D
9/1/2015 15:31	17.2	D
9/1/2015 15:32	17.2	D
9/1/2015 15:33	27.5	D
9/1/2015 15:34	27.4	D
9/1/2015 15:35	27.4	D
9/1/2015 15:36	8.6	D
9/1/2015 15:37	9	D
9/1/2015 15:38	9	D
9/1/2015 15:39	9	D
9/1/2015 15:40	17.3	D
9/1/2015 15:41	17.3	D
9/1/2015 15:42	17.2	D
9/1/2015 15:43	27.4	D
9/1/2015 15:44	27.5	D
9/1/2015 15:45	27.4	D
9/1/2015 15:46	0.5	D
9/1/2015 15:47	8.9	D
9/1/2015 15:48	8.9	D
9/1/2015 15:49	8.9	D
9/1/2015 15:50	13.5	D

9/1/2015 15:51	17.2	D
9/1/2015 15:52	17.2	D
9/1/2015 15:53	17.2	D
9/1/2015 15:54	27.5	D
9/1/2015 15:55	27.5	D
9/1/2015 15:56	27.4	D
9/1/2015 15:57	17.1	D
9/1/2015 15:58	17.2	D
9/1/2015 15:59	17.2	D
9/1/2015 16:00	17.2	D
9/1/2015 16:01	17.1	D

Calibration Report

Company: Covanta - Durham York Energy
1835 Energy Drive
Lot 27, concessions Broken Front,
Clarington Municipality, ON
Stack Designation: Boiler #1
Parameter: Opacity
Units: %
Serial #: 5602492-Opacity
Start of Report: 09/04/15 00:00
End of Report: 09/10/15 14:04

ZERO READINGS / SPAN READINGS

START	STOP	EXPECT.	ACTUAL	ERROR	%	START	STOP	EXPECT.	ACTUAL	ERROR	%	STATUS
09/04/15 07:00	09/04/15 07:02	0.00	0.00	0.00	0.0	09/04/15 07:02	09/04/15 07:04	26.00	25.75	-0.25	-0.2	OK
09/05/15 07:00	09/05/15 07:02	0.00	0.00	0.00	0.0	09/05/15 07:02	09/05/15 07:04	26.00	25.76	-0.24	-0.2	OK
09/06/15 07:00	09/06/15 07:02	0.00	0.00	0.00	0.0	09/06/15 07:02	09/06/15 07:04	26.00	25.71	-0.29	-0.3	OK
09/07/15 07:00	09/07/15 07:02	0.00	0.40	0.40	0.4	09/07/15 07:02	09/07/15 07:04	26.00	25.72	-0.28	-0.3	OK
09/08/15 07:00	09/08/15 07:02	0.00	0.00	0.00	0.0	09/08/15 07:02	09/08/15 07:04	26.00	25.74	-0.26	-0.3	OK
09/09/15 07:00	09/09/15 07:02	0.00	0.16	0.16	0.2	09/09/15 07:02	09/09/15 07:04	26.00	25.65	-0.35	-0.4	OK
09/10/15 07:00	09/10/15 07:02	0.00	0.11	0.11	0.1	09/10/15 07:02	09/10/15 07:04	26.00	25.72	-0.28	-0.3	OK

Section 5

Bottle and Opacity Filter Certifications

PRAXAIR.

Daily Inlet Zero
9/15/2015
05:00 pm

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

08/31/2015

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA, ON L1J 1R1

Work Order No. **24296096**
Customer Reference No.

Product Lot/Batch No. **0820WD15**
Product Part No. **NI OX2M-AS**

CERTIFICATE OF ANALYSIS

Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Oxygen	**2.00%**	**2.00%**	**O**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Servomex~575~~**
Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **580**
Cylinder No(s). **CC332354**

Filling Method: **Gravimetric**
Date of Fill: **08/20/2015**
Expiration Date: **08/25/2020**

Comments: **Values not valid below 150 psig. [O2] is N.I.S.T traceable to SRM # 2657a respectively.**

Approved Signer: **Rolonda Kaywood**

QA Reviewer: **Joshua Jones**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:
- A Flame Ionization with Methanizer
- B Gas Chromatography with Discharge Ionization Detector
- C Gas Chromatography with Electrolytic Conductivity Detector
- D Gas Chromatography with Flame Ionization Detector
- E Gas Chromatography with Flame Photometric Detector
- F Gas Chromatography with Helium Ionization Detector
- G Gas Chromatography with Methanizer Carbonizer
- H Gas Chromatography with Photoionization Detector
- I Gas Chromatography with Reduction Gas Analyzer
- J Gas Chromatography with Thermal Conductivity Detector
- K Binary Gas Analyzer with Thermal Conductivity Detector
- L Infrared - FTIR or NDIR
- M Mass Spectrometry - MS or GC/MS
- N By Difference of Typical Impurities
- O Paramagnetic
- P Specific Water Analyzer
- Q Total Hydrocarbon Analyzer
- R Wet Chemical
- S Detector Tube
- T Odor
- U Chemiluminescence
- V Gravimetric
- W Electrolytic Cell/Electrochemical
- X UV Spectrometry
- Y Vendor Analysis

PRAXAIR.

Inlet Daily Span 2
9/18/2015
02:25 pm

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

04/27/2015

PRAXAIR PKG PARIS P/H 80271
41 CONSOLIDATED DR
PARIS, ON N3L 3G2

Work Order No. **30967063**
Customer Reference No.

Product Lot/Batch No. **0422UA15**
Product Part No. **NI CO1700O5M-AS**

CERTIFICATE OF ANALYSIS

Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Carbon monoxide	**1700 ppm**	**1708 ppm**	**V**	**± 2%**
Oxygen	**18.0%**	**17.9 %**	**V**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **N/A**
Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **590**
Cylinder No(s). **CC86026**
Comments: **Values not valid below 150 psig. [CO] and [O2] are N.I.S.T traceable to SRM #2637a and 2659a respectively.**

Filling Method: **Gravimetric**
Date of Fill: **04/22/2015**
Expiration Date: **04/24/2020**

QA Reviewer: **Joshua Jones**

Approved Signer: **Rolonda Kaywood**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

INLET DAILY S1
18-SEPT-15
0840

PRAXAIR

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

04/08/2015

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA, ON L1J 1R1

Work Order No. **23167226**
Customer Reference No.

Product Lot/Batch No. **0406WA15**
Product Part No. **NI CO425S1M-AS**

CERTIFICATE OF ANALYSIS

Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Sulfur dioxide	**425 ppm**	**432 ppm**	**X**	**± 2%**
Carbon monoxide	**425 ppm**	**433 ppm**	**L**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **AMETEK~921CE SO2~~ Horiba~VA 3000 CO~~**

Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **660**

Filling Method: **Gravimetric**
Date of Fill: **04/06/2015**
Expiration Date: **04/07/2020**

Cylinder No(s). **EB0047069**
Comments: **Values not valid below 150 psig. [SO2] and [CO] are N.I.S.T traceable to SRM # 1661a and 1681b respectively.**

QA Reviewer: **Joshua Jones**

Approved Signer: **Rolonda Kaywood**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A Flame Ionization with Methanizer	B Gas Chromatography with Discharge Ionization Detector	C Gas Chromatography with Electrolytic Conductivity Detector	D Gas Chromatography with Flame Ionization Detector
E Gas Chromatography with Flame Photometric Detector	F Gas Chromatography with Helium Ionization Detector	G Gas Chromatography with Methanizer Carbonizer	H Gas Chromatography with Photoionization Detector
I Gas Chromatography with Reduction Gas Analyzer	J Gas Chromatography with Thermal Conductivity Detector	K Binary Gas Analyzer with Thermal Conductivity Detector	L Infrared - FTIR or NDIR
M Mass Spectrometry - MS or GC/MS	N By Difference of Typical Impurities	O Paramagnetic	P Specific Water Analyzer
Q Total Hydrocarbon Analyzer	R Wet Chemical	S Detector Tube	T Odor
U Chemiluminescence	V Gravimetric	W Electrolytic Cell/Electrochemical	X UV Spectrometry
Y Vendor Analysis			

~~SH~~ OUTLET SPAN 1
~~[illegible]~~
18-SEP-15
0830

PRAXAIR.

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

07/08/2015

PRAXAIR PKG PARIS P/H 80271
41 CONSOLIDATED DR
PARIS, ON N3L 3G2

Work Order No. **31751843**
Customer Reference No.

Product Lot/Batch No. **0706WF15**
Product Part No. **NI CO425NS4M-AS**

CERTIFICATE OF ANALYSIS
Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Nitric oxide	**425 ppm**	**437 ppm**	**U**	**± 2%**
Sulfur dioxide	**170 ppm**	**165 ppm**	**X**	**± 2%**
Carbon monoxide	**425 ppm**	**425 ppm**	**L**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Rosemount Analytical~951A~~**
AMETEK~921CE SO2~~
Horiba~VA 3000 CO~~

Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **660**
Cylinder No(s). **EB0047080**

Filling Method: **Gravimetric**
Date of Fill: **07/06/2015**
Expiration Date: **07/08/2018**

Comments: **Values not valid below 150 psig. [NOx] = 437 ppm. [NO], [SO2], and [CO] are N.I.S.T traceable to SRM # 1686b, 1661a and 1681b respectively.**

QA Reviewer: **Kyle Osborne**

Approved Signer: **Rolonda Kaywood**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A Flame Ionization with Methanizer	B Gas Chromatography with Discharge Ionization Detector	C Gas Chromatography with Electrolytic Conductivity Detector	D Gas Chromatography with Flame Ionization Detector
E Gas Chromatography with Flame Photometric Detector	F Gas Chromatography with Helium Ionization Detector	G Gas Chromatography with Methanizer Carbonizer	H Gas Chromatography with Photoionization Detector
I Gas Chromatography with Reduction Gas Analyzer	J Gas Chromatography with Thermal Conductivity Detector	K Binary Gas Analyzer with Thermal Conductivity Detector	L Infrared - FTIR or NDIR
M Mass Spectrometry - MS or GC/MS	N By Difference of Typical Impurities	O Paramagnetic	P Specific Water Analyzer
Q Total Hydrocarbon Analyzer	R Wet Chemical	S Detector Tube	T Odor
U Chemiluminescence	V Gravimetric	W Electrolytic Cell/Electrochemical	X UV Spectrometry
Y Vendor Analysis			

Inlet Daily Zero
9/18/2015
08:15 am

PRAXAIR.

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

08/31/2015

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA, ON L1J 1R1

Work Order No. **24296096**
Customer Reference No.

Product Lot/Batch No. **0820WD15**
Product Part No. **NI OX2M-AS**

CERTIFICATE OF ANALYSIS

Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Oxygen	**2.00%**	**2.00%**	**O**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Servomex~575~~**
Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **580**
Cylinder No(s). **CC320410**

Filling Method: **Gravimetric**
Date of Fill: **08/20/2015**
Expiration Date: **08/25/2020**

Comments: **Values not valid below 150 psig. [O2] is N.I.S.T traceable to SRM # 2657a respectively.**

Approved Signer: **Rolonda Kaywood**

QA Reviewer: **Joshua Jones**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

PRAXAIR

Inlet CGA
Mid Span #1

DocNumber: 000007089

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12014

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

<ENTER COUNTRY & PDI LOC # B
ENTER STREET ADDRESS
ANKENY IA 500210

Praxair Order Number: 29355252
Customer P. O. Number:
Customer Reference Number:

Fill Date: 11/18/2014
Part Number: NI CO275S2E-AS
Lot Number: 1118HA14
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:		12/10/2022	NIST Traceable
Cylinder Number:		EB0047021	Analytical Uncertainty:
278	ppm	SULFUR DIOXIDE	± 0.8 %
281	ppm	CARBON MONOXIDE	± 0.3 %
	Balance	NITROGEN	

Changed 06/18/15

Certifcation Information: Certification Date: 12/10/2014 Term: 96 Months Expiration Date: 12/10/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
Do Not Use this Standard if Pressure is less than 100 PSIG.

Not on Gas List

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: SULFUR DIOXIDE

Requested Concentration: 275 ppm
Certified Concentration: 278 ppm
Instrument Used: AMETEK 921
Analytical Method: NDUV
Last Multipoint Calibration: 12/2/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: EB0024313
Ref. Std. Conc: 502.6 ppm
Ref. Std. Traceable to SRM #: 1661a
SRM Sample #: 94-H-17
SRM Cylinder #: FF28055

First Analysis Data: Date: 12/3/2014

Z:	0	R:	502	C:	278	Conc:	278.33		
R:	502	Z:	0	C:	277	Conc:	277.33		
Z:	0	C:	277	R:	502	Conc:	277.33		

UOM: PPM Mean Test Assay: 277.67 PPM

Second Analysis Data: Date: 12/10/2014

Z:	0	R:	502	C:	277	Conc:	277.15
R:	502	Z:	0	C:	277	Conc:	277.15
Z:	0	C:	278	R:	503	Conc:	278.15

UOM: PPM Mean Test Assay: 277.48 PPM

2. Component: CARBON MONOXIDE

Requested Concentration: 275 ppm
Certified Concentration: 281 ppm
Instrument Used: Horiba VIA 510
Analytical Method: NDIR
Last Multipoint Calibration: 11/21/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC19107
Ref. Std. Conc: 255 ppm
Ref. Std. Traceable to SRM #: 2636a
SRM Sample #: 57-F-15
SRM Cylinder #: FF30792

First Analysis Data: Date: 12/3/2014

Z:	0	R:	255	C:	281	Conc:	281
R:	255	Z:	0	C:	281	Conc:	281
Z:	0	C:	281	R:	255	Conc:	281

UOM: PPM Mean Test Assay: 281 PPM

Second Analysis Data: Date:

Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0

UOM: PPM Mean Test Assay: 0 PPM

Analyzed by: Kyle Osborne

Certified by: Josh Jones

PRAXAIR

INLET GGA MID-SPAN 1
21-SEPT-2015
0815

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12014

DocNumber: 000006151

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA ON L1J 1R

Praxair Order Number: 21760536
Customer P. O. Number: 02930636
Customer Reference Number:

Fill Date: 9/26/2014
Part Number: NI CO275S2E-AS
Lot Number: 0926HC14
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:		10/10/2022	NIST Traceable
Cylinder Number:		EB0047035	Analytical Uncertainty:
280	ppm	SULFUR DIOXIDE	± 0.8 %
281	ppm	CARBON MONOXIDE	± 0.3 %
	Balance	NITROGEN	

Certifcation Information: *Certification Date:* 10/10/2014 *Term:* 96 Months *Expiration Date:* 10/10/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: SULFUR DIOXIDE

Requested Concentration: 275 ppm
Certified Concentration: 280 ppm
Instrument Used: MKS 2031
Analytical Method: FOURIER-TRANSFORM INFRAR
Last Multipoint Calibration: 9/2/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC198966
Ref. Std. Conc: 500.4 ppm
Ref. Std. Traceable to SRM #: 1661a
SRM Sample #: 94-H-17
SRM Cylinder #: FF28055

First Analysis Data: **Date:** 10/3/2014

Z: 0	**R:** 500	**C:** 281	**Conc:** 281.23
R: 500	**Z:** 0	**C:** 281	**Conc:** 281.23
Z: 0	**C:** 281	**R:** 500	**Conc:** 281.23

UOM: PPM **Mean Test Assay:** 281.23 PPM

Second Analysis Data: **Date:** 0/10/2014

Z: 0	**R:** 500	**C:** 279	**Conc:** 279.22
R: 500	**Z:** 0	**C:** 279	**Conc:** 279.22
Z: 0	**C:** 279	**R:** 500	**Conc:** 279.22

UOM: PPM **Mean Test Assay:** 279.22 PPM

2. Component: CARBON MONOXIDE

Requested Concentration: 275 ppm
Certified Concentration: 281 ppm
Instrument Used: Horiba VA-3000
Analytical Method: NDIR
Last Multipoint Calibration: 9/28/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC19107
Ref. Std. Conc: 255 ppm
Ref. Std. Traceable to SRM #: 2636a
SRM Sample #: 57-F-15
SRM Cylinder #: FF30792

First Analysis Data: **Date:** 10/3/2014

Z: 0	**R:** 255	**C:** 281	**Conc:** 281
R: 255	**Z:** 0	**C:** 281	**Conc:** 281
Z: 0	**C:** 281	**R:** 255	**Conc:** 281

UOM: PPM **Mean Test Assay:** 281 PPM

Second Analysis Data: **Date:**

Z: 0	**R:** 0	**C:** 0	**Conc:** 0
R: 0	**Z:** 0	**C:** 0	**Conc:** 0
Z: 0	**C:** 0	**R:** 0	**Conc:** 0

UOM: PPM **Mean Test Assay:** 0 PPM

Analyzed by: Kyle Osborne

Certified by: Josh Jones

PRAXAIR

Inlet CGA mid span 2

Praxair Distribution, Inc,
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12014

DocNumber: 000006895

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

<ENTER COUNTRY & PDI LOC # B
ENTER STREET ADDRESS
ANKENY IA 500210

Praxair Order Number: 29285491
Customer P. O. Number:
Customer Reference Number:

Fill Date: 11/10/2014
Part Number: NI CO1100O2E-AS
Lot Number: 1110UE14
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Changed 06/18/15

Expiration Date:		11/17/2022	NIST Traceable
Cylinder Number:		CC275798	Analytical Uncertainty:
1075	ppm	CARBON MONOXIDE	± 0.4 %
9.99	%	OXYGEN	± 0.7 %
	Balance	NITROGEN	

Certifcation Information: *Certification Date:* 11/17/2014 *Term:* 96 Months *Expiration Date:* 11/17/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
Do Not Use this Standard if Pressure is less than 100 PSIG.

NOT ON GAS LIST

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: CARBON MONOXIDE

Requested Concentration: 1100 ppm
Certified Concentration: 1075 ppm
Instrument Used: Horiba VA-3000
Analytical Method: NDIR
Last Multipoint Calibration: 10/25/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: EB0005133
Ref. Std. Conc: 2427 ppm
Ref. Std. Traceable to SRM #: 2637a
SRM Sample #: 56-F-36
SRM Cylinder #: CAL017141

First Analysis Data:						Date:	11/17/2014
Z:	0	R:	2427	C:	1075	Conc:	1075
R:	2427	Z:	0	C:	1075	Conc:	1075
Z:	0	C:	1075	R:	2427	Conc:	1075
UOM:	PPM			Mean Test Assay:			1075 PPM

Second Analysis Data:						Date:	
Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	PPM			Mean Test Assay:			0 PPM

2. Component: OXYGEN

Requested Concentration: 10.0 %
Certified Concentration: 9.99 %
Instrument Used: Servomex 575
Analytical Method: Paramagnetic
Last Multipoint Calibration: 10/25/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: EB0015425
Ref. Std. Conc: 22.37%
Ref. Std. Traceable to SRM #: 2659a
SRM Sample #: 71-D-04
SRM Cylinder #: CAL015785

First Analysis Data:						Date:	11/17/2014
Z:	0	R:	22.37	C:	9.99	Conc:	9.99
R:	22.37	Z:	0	C:	9.99	Conc:	9.99
Z:	0	C:	9.99	R:	22.37	Conc:	9.99
UOM:	%			Mean Test Assay:			9.99 %

Second Analysis Data:						Date:	
Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	%			Mean Test Assay:			0 %

Analyzed by: Mike Monnette

Certified by: Josh Jones

PRAXAIR.

INLET 1

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

01/03/2015

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA, ON L1J 1R1

Work Order No. **22453143**
Customer Reference No.

Product Lot/Batch No. **1230SE14**
Product Part No. **NI CO425S1M-AS**

CERTIFICATE OF ANALYSIS

Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Sulfur dioxide	**425 ppm**	**435 ppm**	**L**	**± 2%**
Carbon monoxide	**425 ppm**	**431 ppm**	**L**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **MKS~2031 FTIR~~**
Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **145 ft3**
Valve Outlet Connection: **660**
Cylinder No(s). **DT0006731**

Filling Method: **Gravimetric**
Date of Fill: **12/30/2014**
Expiration Date: **01/02/2017**

Analyst: **Joshua Jones**

QA Reviewer: **Ed Zucal**

0800 Changed 06/17/15

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
	Vendor Analysis						

PRAXAIR.

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

10/15/2014

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA, ON L1J 1R1

Work Order No. **21957055**
Customer Reference No.

Product Lot/Batch No. **1013UA14**
Product Part No. **NI CO1700O5M-AS**

CERTIFICATE OF ANALYSIS

Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Oxygen	**18.0%**	**18.0 %**	**O**	**± 2%**
Carbon monoxide	**1700 ppm**	**1662 ppm**	**L**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Servomex~575~~**
Horiba~VA 3000 CO~~

Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **590**
Cylinder No(s). **CC97046**

Filling Method: **Gravimetric**
Date of Fill: **10/13/2014**
Expiration Date: **10/14/2017**

Analyst: **Mike Monnette**

QA Reviewer: **Kyle Osborne**

Changed June 19/2015
@ 8:00am

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
*	Vendor Analysis						

IPORTANT

Inlet Daily Zero
9/18/2015
08:15 am.

PRAXAIR.

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

08/31/2015

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA, ON L1J 1R1

Work Order No. **24296096**
Customer Reference No.

Product Lot/Batch No. **0820WD15**
Product Part No. **NI OX2M-AS**

CERTIFICATE OF ANALYSIS
Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Oxygen	**2.00%**	**2.00%**	**O**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Servomex~575~~**
Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **580**
Cylinder No(s). **CC320410**

Filling Method: **Gravimetric**
Date of Fill: **08/20/2015**
Expiration Date: **08/25/2020**

Comments: **Values not valid below 150 psig. [O2] is N.I.S.T traceable to SRM # 2657a respectively.**

Approved Signer: **Rolonda Kaywood**

QA Reviewer: **Joshua Jones**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

PRAXAIR

Inlet mid span2
03/20/2015
08:00 am.

Praxair Distribution, Inc,
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12014

DocNumber: 000005795

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA ON L1J 1R

Praxair Order Number: 21760580
Customer P. O. Number: 02930641
Customer Reference Number:

Fill Date: 9/19/2014
Part Number: NI CO1100O2E-AS
Lot Number: 0919WC14
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:		9/23/2022	NIST Traceable
Cylinder Number:		CC316057	Analytical Uncertainty:
1118	ppm	CARBON MONOXIDE	± 0.9 %
9.62	%	OXYGEN	± 0.2 %
	Balance	NITROGEN	

Certifcation Information: Certification Date: 9/23/2014 Term: 96 Months Expiration Date: 9/23/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: CARBON MONOXIDE

Requested Concentration:	1100 ppm
Certified Concentration:	1118 ppm
Instrument Used:	Horiba VA-3000
Analytical Method:	NDIR
Last Multipoint Calibration:	8/28/2014

Reference Standard Type:	GMIS
Ref. Std. Cylinder #:	EB0005133
Ref. Std. Conc:	2427 ppm
Ref. Std. Traceable to SRM #:	2637a
SRM Sample #:	56-F-36
SRM Cylinder #:	CAL017141

First Analysis Data:						Date:	9/23/2014
Z: 0		R: 2427		C: 1118		Conc:	1118
R: 2427		Z: 0		C: 1118		Conc:	1118
Z: 0		C: 1118		R: 2427		Conc:	1118
UOM: PPM				Mean Test Assay:			1118 PPM

Second Analysis Data:						Date:	
Z: 0		R: 0		C: 0		Conc:	0
R: 0		Z: 0		C: 0		Conc:	0
Z: 0		C: 0		R: 0		Conc:	0
UOM: PPM				Mean Test Assay:			0 PPM

2. Component: OXYGEN

Requested Concentration:	10 %
Certified Concentration:	9.62 %
Instrument Used:	Servomex 575
Analytical Method:	Paramagnetic
Last Multipoint Calibration:	8/27/2014

Reference Standard Type:	GMIS
Ref. Std. Cylinder #:	CC200088
Ref. Std. Conc:	22.62%
Ref. Std. Traceable to SRM #:	2659a
SRM Sample #:	71-D-04
SRM Cylinder #:	CAL015785

First Analysis Data:						Date:	9/23/2014
Z: 0		R: 22.62		C: 9.63		Conc:	9.63
R: 22.62		Z: 0		C: 9.62		Conc:	9.62
Z: 0		C: 9.62		R: 22.62		Conc:	9.62
UOM: %				Mean Test Assay:			9.623 %

Second Analysis Data:						Date:	
Z: 0		R: 0		C: 0		Conc:	0
R: 0		Z: 0		C: 0		Conc:	0
Z: 0		C: 0		R: 0		Conc:	0
UOM: %				Mean Test Assay:			0 %

Analyzed by:
Mike Monnette

Certified by:
Josh Jones

PRAXAIR Inlet Spa #3

Praxair Distribution Inc.
One Steel Road East
Morrisville, PA 19067
Tel: 1-800-638-6360
Fax: 1-215-736-5237

01/24/2015

PDI WHSE PARIS ONTARIO
41 CONSOLIDATED DR
PARIS, ON N1S 3Z4
Attention: FRANK JONES

Work Order No. **05335525**
Customer Reference No.

Product Lot/Batch No. **300024021504**
Product Part No. **NI HC1275C-AS**

CERTIFICATE OF ANALYSIS
Certified Standard

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Hydrogen chloride	**1275 ppm**	**1273 ppm**	**X**	**±2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Vendor Guaranteed Specification~~~**
Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **141.7 ft3**
Valve Outlet Connection: **CGA-330**
Cylinder No(s). **CC31829**

Filling Method: **Gravimetric**
Date of Fill: **01/14/2015**
Expiration Date: **01/14/2016**

Analyst: **Todd Bennett**

The gas calibration cylinder standard prepared by Praxair Distribution Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

- A Flame Ionization with Methanizer
- B Gas Chromatography with Discharge Ionization Detector
- C Gas Chromatography with Electrolytic Conductivity Detector
- D Gas Chromatography with Flame Ionization Detector
- E Gas Chromatography with Flame Photometric Detector
- F Gas Chromatography with Helium Ionization Detector
- G Gas Chromatography with Methanizer Carbonizer
- H Gas Chromatography with Photoionization Detector
- I Gas Chromatography with Reduction Gas Analyzer
- J Gas Chromatography with Thermal Conductivity Detector
- K Binary Gas Analyzer with Thermal Conductivity Detector
- L Infrared - FTIR or NDIR
- M Mass Spectrometry - MS or GC/MS
- N By Difference of Typical Impurities
- O Paramagnetic
- P Specific Water Analyzer
- Q Total Hydrocarbon Analyzer
- R Wet Chemical
- S Detector Tube
- T Odor
- U Gravimetrical Methods
- V Electrochemical
- W Chemiluminescent
- X Vendor Analysis

PRAXAIR

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12014

DocNumber: 000005776

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA ON L1J 1R

Praxair Order Number: 21760701
Customer P. O. Number: 02930660
Customer Reference Number:

Fill Date: 9/16/2014
Part Number: NI CD12CO11E-AS
Lot Number: 0916UC14
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:		9/23/2022	NIST Traceable
Cylinder Number:		CC164055	Analytical Uncertainty:
1073	ppm	**CARBON MONOXIDE**	± 0.5 %
12.1	%	**CARBON DIOXIDE**	± 0.4 %
9.94	%	**OXYGEN**	± 0.2 %
	Balance	**NITROGEN**	

Certifcation Information: Certification Date: 9/23/2014 Term: 96 Months Expiration Date: 9/23/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
Do Not Use this Standard if Pressure is less than 100 PSIG.

Not on Gas hiss

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: CARBON MONOXIDE

Requested Concentration: 1100 ppm
Certified Concentration: 1073 ppm
Instrument Used: MKS 2031
Analytical Method: FOURIER-TRANSFORM INFRAR
Last Multipoint Calibration: 9/2/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: EB0005133
Ref. Std. Conc: 2427 ppm
Ref. Std. Traceable to SRM #: 2637a
SRM Sample #: 56-F-36
SRM Cylinder #: CAL017141

First Analysis Data:						Date:	9/23/2014
Z:	0	R:	2427	C:	1073	Conc:	1073
R:	2427	Z:	0	C:	1073	Conc:	1073
Z:	0	C:	1073	R:	2427	Conc:	1073
UOM:	PPM			Mean Test Assay:			1073 PPM

Second Analysis Data:						Date:	
Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	PPM			Mean Test Assay:			0 PPM

2. Component: CARBON DIOXIDE

Requested Concentration: 12 %
Certified Concentration: 12.1 %
Instrument Used: MKS 2031
Analytical Method: FOURIER-TRANSFORM INFRAR
Last Multipoint Calibration: 9/8/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: EB0023062
Ref. Std. Conc: 19.87
Ref. Std. Traceable to SRM #: 2745
SRM Sample #: 9-C-03
SRM Cylinder #: CAL016000

First Analysis Data:						Date:	9/23/2014
Z:	0	R:	19.87	C:	12.1	Conc:	12.1
R:	19.87	Z:	0	C:	12.1	Conc:	12.1
Z:	0	C:	12.1	R:	19.87	Conc:	12.1
UOM:	%			Mean Test Assay:			12.1 %

Second Analysis Data:						Date:	
Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	%			Mean Test Assay:			0 %

PRAXAIR

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

12/29/2014

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA, ON L1J 1R1

Work Order No. **22445449**
Customer Reference No.

Product Lot/Batch No. **1216SH14**
Product Part No. **NI CO425NS4M-AS**

CERTIFICATE OF ANALYSIS
Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Nitric oxide	**425 ppm**	**424 ppm**	**U**	**± 2%**
Sulfur dioxide	**170 ppm**	**165 ppm**	**X**	**± 2%**
Carbon monoxide	**425 ppm**	**420 ppm**	**L**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Rosemount Analytical~951A~~**
AMETEK~921CE SO2~~
Horiba~VA 3000 CO~~

Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **143 ft3**
Valve Outlet Connection: **660**
Cylinder No(s). **DT0006151**

Filling Method: **Gravimetric**
Date of Fill: **12/16/2014**
Expiration Date: **12/29/2016**

Analyst: **Kyle Osborne**

QA Reviewer: **Ed Zucal**

CANSCAS June 15/15
@ 2:30pm

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

PRAXAIR.

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

08/31/2015

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA, ON L1J 1R1

Work Order No. **24296096**
Customer Reference No.

Product Lot/Batch No. **0820WD15**
Product Part No. **NI OX2M-AS**

Outlet Daily Zero
9/14/2015
04.30 pm.

CERTIFICATE OF ANALYSIS
Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Oxygen	**2.00%**	**2.00%**	**O**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Servomex~575~~**
Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **580**
Cylinder No(s). **EB0019268**

Filling Method: **Gravimetric**
Date of Fill: **08/20/2015**
Expiration Date: **08/25/2020**

Comments: **Values not valid below 150 psig. [O2] is N.I.S.T traceable to SRM # 2657a respectively.**

Approved Signer: **Rolonda Kaywood**

QA Reviewer: **Joshua Jones**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a c... standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which a... prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g. ppmv) unless otherwise noted.

Key to Analytical Techniques:

A Flame Ionization with Methanizer	B Gas Chromatography with Discharge Ionization Detector	C Gas Chromatography with Electrolytic Conductivity Detector	D Gas Chromatography with Flame Ionization Detector
E Gas Chromatography with Flame Photometric Detector	F Gas Chromatography with Helium Ionization Detector	G Gas Chromatography with Methanizer Carbonizer	H Gas Chromatography with Photoionization Detector
I Gas Chromatography with Reduction Gas Analyzer	J Gas Chromatography with Thermal Conductivity Detector	K Binary Gas Analyzer with Thermal Conductivity Detector	L Infrared - FTIR or NDIR
M Mass Spectrometry - MS or GC/MS	N By Difference of Typical Impurities	O Paramagnetic	P Specific Water Analyzer
Q Total Hydrocarbon Analyzer	R Wet Chemical	S Detector Tub...	T Odor
U Chemiluminescence	V Gravimetric	W Electrolytic Cell/Electrochemical	X UV Spectrometry
Y Vendor Analysis			

IMPORTANT
The information contained herein has been prepared at your request by personnel within Praxair Distribution, Inc. While we believe the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any particular purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall liability of Praxair Distribution, Inc. arising out of the use of the information contained herein exceed the fee established for providing such information.

PRAXAIR

Outlet mid span
09 | 20 | 2015
09:00 am

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12014

DocNumber: 000006542

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

<ENTER COUNTRY & PDI LOC # B
ENTER STREET ADDRESS
ANKENY IA 500210

Praxair Order Number: 28930166
Customer P. O. Number:
Customer Reference Number:

Fill Date:	10/17/2014
Part Number:	NI CO275NS9E-AS
Lot Number:	1017HB14
Cylinder Style & Outlet:	AS CGA 660
Cylinder Pressure & Volume:	2000 psig 140 cu. ft

Certified Concentration:

Expiration Date:		**10/29/2022**	NIST Traceable
Cylinder Number:		**EB0022279**	Analytical Uncertainty:
283	**ppm**	**NITRIC OXIDE**	± 0.5 %
104	**ppm**	**SULFUR DIOXIDE**	± 1.1 %
276	**ppm**	**CARBON MONOXIDE**	± 0.7 %
	Balance	**NITROGEN**	

NOx = 283 ppm **NOx for Reference Only**

Certifcation Information: *Certification Date:* 10/29/2014 *Term:* 96 Months *Expiration Date:* 10/29/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: NITRIC OXIDE

Requested Concentration:	275 ppm
Certified Concentration:	283 ppm
Instrument Used:	Rosemount 951A
Analytical Method:	Chemiluminescent
Last Multipoint Calibration:	9/29/2014

Reference Standard Type:	SRM
Ref. Std. Cylinder #:	CAL017948
Ref. Std. Conc:	500 ppm
Ref. Std. Traceable to SRM #:	1686b
SRM Sample #:	42-M-44
SRM Cylinder #:	CAL017948

First Analysis Data: **Date:** 0/21/2014

Z:	0	**R:**	500	**C:**	282	**Conc:**	281.63
R:	501	**Z:**	0	**C:**	283	**Conc:**	282.62
Z:	0	**C:**	283	**R:**	501	**Conc:**	282.62

UOM: PPM **Mean Test Assay:** 282.29 PPM

Second Analysis Data: **Date:** 0/29/2014

Z:	0	**R:**	501	**C:**	283	**Conc:**	282.25
R:	502	**Z:**	0	**C:**	284	**Conc:**	283.25
Z:	0	**C:**	284	**R:**	501	**Conc:**	283.25

UOM: PPM **Mean Test Assay:** 282.91 PPM

2. Component: SULFUR DIOXIDE

Requested Concentration:	275 ppm
Certified Concentration:	104 ppm
Instrument Used:	AMETEK 921
Analytical Method:	NDUV
Last Multipoint Calibration:	9/29/2014

Reference Standard Type:	GMIS
Ref. Std. Cylinder #:	CC198966
Ref. Std. Conc:	500.4 ppm
Ref. Std. Traceable to SRM #:	1661a
SRM Sample #:	94-H-17
SRM Cylinder #:	FF28055

First Analysis Data: **Date:** 0/21/2014

Z:	0	**R:**	500	**C:**	104	**Conc:**	103.95
R:	501	**Z:**	0	**C:**	105	**Conc:**	104.94
Z:	0	**C:**	104	**R:**	501	**Conc:**	103.95

UOM: PPM **Mean Test Assay:** 104.28 PPM

Second Analysis Data: **Date:** 0/29/2014

Z:	0	**R:**	501	**C:**	104	**Conc:**	103.95
R:	501	**Z:**	0	**C:**	104	**Conc:**	103.95
Z:	0	**C:**	104	**R:**	500	**Conc:**	103.95

UOM: PPM **Mean Test Assay:** 103.95 PPM

OUTLET SPAN 2

15 SEPT 2015 0750

2000 PSI

PRAXAIR

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

01/21/2015

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA, ON L1J 1R1

Work Order No. **22621641**
Customer Reference No.

Product Lot/Batch No. **0120UC15**
Product Part No. **NI CD10CO48M-AS**

CERTIFICATE OF ANALYSIS

Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Carbon monoxide	**1700 ppm**	**1679 ppm**	**L**	**± 2%**
Carbon dioxide	**19.0%**	**19.1 %**	**L**	**± 2%**
Oxygen	**18.0%**	**18.0 %**	**O**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **MKS~2031 FTIR~~**
Servomex~575~~

Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **153 ft3**
Valve Outlet Connection: **590**
Cylinder No(s). **EB0002281**

Filling Method: **Gravimetric**
Date of Fill: **01/20/2015**
Expiration Date: **01/21/2018**

Analyst: **Joshua Jones**

QA Reviewer: **Kyle Osborne**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

- A Flame Ionization with Methanizer
- B Gas Chromatography with Discharge Ionization Detector
- C Gas Chromatography with Electrolytic Conductivity Detector
- D Gas Chromatography with Flame Ionization Detector
- E Gas Chromatography with Flame Photometric Detector
- F Gas Chromatography with Helium Ionization Detector
- G Gas Chromatography with Methanizer Carbonizer
- H Gas Chromatography with Photoionization Detector
- I Gas Chromatography with Reduction Gas Analyzer
- J Gas Chromatography with Thermal Conductivity Detector
- K Binary Gas Analyzer with Thermal Conductivity Detector
- L Infrared - FTIR or NDIR
- M Mass Spectrometry - MS or GC/MS
- N By Difference of Typical Impurities
- O Paramagnetic
- P Specific Water Analyzer
- Q Total Hydrocarbon Analyzer
- R Wet Chemical
- S Detector Tube
- T Odor
- U Chemiluminescence
- V Gravimetric
- W Electrolytic Cell/Electrochemical
- X UV Spectrometry
- Y Vendor Analysis

PRAXAIR

outlet SPM 3
9/8/15

Praxair Distribution Inc.
One Steel Road East
Morrisville, PA 19067
Tel: 1-800-638-6360
Fax: 1-215-736-5237

08/12/2015

PDI WHSE PARIS ONTARIO
41 CONSOLIDATED DR
PO BOX 283
PARIS, ON N1S 3Z4
Attention: PDI WHSE PARIS ONTARIO

Work Order No. **72553222**
Customer Reference No.

Product Lot/Batch No. **300024222502**
Product Part No. **NI HC85MC-AS**

CERTIFICATE OF ANALYSIS
Certified Standard

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Hydrogen chloride	**85 ppm**	**88.8 ppm**	**X**	**±5%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Vendor Guaranteed Specification~~~**
Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **141.6 ft3**
Valve Outlet Connection: **CGA-330**
Cylinder No(s). **LCCO-SA21825**

Filling Method: **Gravimetric**
Date of Fill: **08/07/2016**
Expiration Date: **08/07/2016**

Analyst: **Todd Bennett**

The gas calibration cylinder standard prepared by Praxair Distribution Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g. ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Gravimetrical Methods	V	Electrochemical	W	Chemiluminescent	X	Vendor Analysis

IMPORTANT
The information contained herein has been prepared at your request by personnel within Praxair Distribution Inc. While we believe the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any particular purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall liability of Praxair Distribution Inc. arising out of the use of the information contained herein exceed the fee established for providing such information.

PRAXAIR

Praxair Distribution, Inc,
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12014

DocNumber: 000006803

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

<ENTER COUNTRY & PDI LOC # B
ENTER STREET ADDRESS
ANKENY IA 500210

Praxair Order Number: 29200666
Customer P. O. Number:
Customer Reference Number:

Fill Date: 10/31/2014
Part Number: NI PR8.3ME-AS
Lot Number: 1031UI14
Cylinder Style & Outlet: AS CGA 350
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:		11/12/2022	NIST Traceable
Cylinder Number:		EB0002929	Analytical Uncertainty:
8.44	ppm	PROPANE	± 0.9 %
	Balance	NITROGEN	

Certification Information: Certification Date: 11/12/2014 Term: 96 Months Expiration Date: 11/12/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: PROPANE

Requested Concentration: 8.30 ppm
Certified Concentration: 8.44 ppm
Instrument Used: MKS 2031
Analytical Method: FOURIER TRANSFORM INFRAR
Last Multipoint Calibration: 10/17/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: EB0001221
Ref. Std. Conc: 51.05 ppm
Ref. Std. Traceable to SRM #: 2644a
SRM Sample #: 101-C-40
SRM Cylinder #: XF003903B

First Analysis Data: Date: 11/12/2014

Z:	0	R:	51.1	C:	8.45	Conc:	8.436
R:	51.2	Z:	0	C:	8.45	Conc:	8.436
Z:	0	C:	8.45	R:	51.1	Conc:	8.436

UOM: PPM Mean Test Assay: 8.436 PPM

Second Analysis Data: Date:

Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0

UOM: PPM Mean Test Assay: 0 PPM

Analyzed by: Josh Jones

Certified by: Edward E Zucal

PRAXAIR

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12014

DocNumber: 000006807

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

<ENTER COUNTRY & PDI LOC # B
ENTER STREET ADDRESS
ANKENY IA 500210

Praxair Order Number: 29200574
Customer P. O. Number:
Customer Reference Number:

Fill Date: 10/31/2014
Part Number: NI PR18ME-AS
Lot Number: 1031UH14
Cylinder Style & Outlet: AS CGA 350
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:		11/12/2022	NIST Traceable
Cylinder Number:		CC15333	Analytical Uncertainty:
18.3	ppm	PROPANE	± 0.6 %
	Balance	NITROGEN	

Certifcation Information: Certification Date: 11/12/2014 Term: 96 Months Expiration Date: 11/12/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: PROPANE

Requested Concentration: 18.0 ppm
Certified Concentration: 18.3 ppm
Instrument Used: MKS 2031
Analytical Method: FOURIER-TRANSFORM INFRAR
Last Multipoint Calibration: 10/17/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: EB0001221
Ref. Std. Conc: 51.05 ppm
Ref. Std. Traceable to SRM #: 2644a
SRM Sample #: 101-C-40
SRM Cylinder #: XF003903B

First Analysis Data: Date: 11/12/2014

Z: 0	R: 51.1	C: 18.3	Conc:	18.27
R: 51.2	Z: 0	C: 18.3	Conc:	18.27
Z: 0	C: 18.3	R: 51.1	Conc:	18.27
UOM: PPM		Mean Test Assay:		18.27 PPM

Second Analysis Data: Date:

Z: 0	R: 0	C: 0	Conc:	0
R: 0	Z: 0	C: 0	Conc:	0
Z: 0	C: 0	R: 0	Conc:	0
UOM: PPM		Mean Test Assay:		0 PPM

Analyzed by: Josh Jones

Certified by: Kyle Osborne

PRAXAIR.

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

02/04/2015

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA, ON L1J 1R1

Work Order No. **22712467**
Customer Reference No.

Product Lot/Batch No. **0123GD15**
Product Part No. **NI PR28MM-AS**

CERTIFICATE OF ANALYSIS

Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Propane	**28.0 ppm**	**28.6 ppm**	**L**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **MKS~2031 FTIR~~**
Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **350**
Cylinder No(s). **EB0005278**

Filling Method: **Gravimetric**
Date of Fill: **01/23/2015**
Expiration Date: **02/03/2018**

Analyst: **Kyle Osborne**

QA Reviewer: **Joshua Jones**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g. % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

IMPORTANT
The information contained herein has been prepared at your request by personnel within Praxair Distribution, Inc. While we believe the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any particular purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall liability of Praxair Distribution, Inc. arising out of the use of the information contained herein exceed the fee established for providing such information.

PRAXAIR

Praxair Distribution, Inc,
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12014

DocNumber: 000005932

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

<ENTER COUNTRY & PDI LOC # B
ENTER STREET ADDRESS
ANKENY IA 500210

Praxair Order Number: 28656961
Customer P. O. Number:
Customer Reference Number:

Fill Date: 9/26/2014
Part Number: NI CO275NS9E-AS
Lot Number: 0926HD14
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:		10/8/2022	NIST Traceable
Cylinder Number:		EB0016778	Analytical Uncertainty:
280	ppm	NITRIC OXIDE	± 0.6 %
107	ppm	SULFUR DIOXIDE	± 1.1 %
282	ppm	CARBON MONOXIDE	± 0.3 %
	Balance	NITROGEN	

NOx = 280 ppm **NOx for Reference Only**

Certifcation Information: *Certification Date:* 10/8/2014 *Term:* 96 Months *Expiration Date:* 10/8/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1
Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: NITRIC OXIDE

Requested Concentration: 275 ppm
Certified Concentration: 280 ppm
Instrument Used: MKS 2031
Analytical Method: FOURIER-TRANSFORM INFRAR
Last Multipoint Calibration: 9/15/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: EB0015083
Ref. Std. Conc: 508.1 ppm
Ref. Std. Traceable to SRM #: 1686b
SRM Sample #: 42-M-44
SRM Cylinder #: CAL017948

First Analysis Data:						**Date:**	10/1/2014
Z:	0	R:	508.1	C:	279	Conc:	279
R:	508.1	Z:	0	C:	279	Conc:	279
Z:	0	C:	279	R:	508.1	Conc:	279
UOM:	PPM			**Mean Test Assay:**			279 PPM

Second Analysis Data:						**Date:**	10/8/2014
Z:	0	R:	508	C:	280	Conc:	280.06
R:	508	Z:	0	C:	280	Conc:	280.06
Z:	0	C:	280	R:	508	Conc:	280.06
UOM:	PPM			**Mean Test Assay:**			280.06 PPM

2. Component: SULFUR DIOXIDE

Requested Concentration: 110 ppm
Certified Concentration: 107 ppm
Instrument Used: MKS 2031
Analytical Method: FOURIER-TRANSFORM INFRAR
Last Multipoint Calibration: 9/2/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: EB0023798
Ref. Std. Conc: 97.57 ppm
Ref. Std. Traceable to SRM #: 1694a
SRM Sample #: 95-J-88
SRM Cylinder #: CAL016706

First Analysis Data:						**Date:**	10/1/2014
Z:	0	R:	97.57	C:	106.8	Conc:	106.8
R:	97.57	Z:	0	C:	106.8	Conc:	106.8
Z:	0	C:	106.8	R:	97.57	Conc:	106.8
UOM:	PPM			**Mean Test Assay:**			106.8 PPM

Second Analysis Data:						**Date:**	10/8/2014
Z:	0	R:	97.6	C:	107	Conc:	106.97
R:	97.6	Z:	0	C:	107	Conc:	106.97
Z:	0	C:	107	R:	97.6	Conc:	106.97
UOM:	PPM			**Mean Test Assay:**			106.97 PPM

Changed out June 18/15
@ 8:00am Ronald

PRAXAIR

DocNumber: 000005932

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12014

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

3. Component: CARBON MONOXIDE

Requested Concentration: 275 ppm
Certified Concentration: 282 ppm
Instrument Used: MKS 2031
Analytical Method: FOURIER-TRANSFORM INFRAR
Last Mult point Calibration: 9/29/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC19107
Ref. Std. Conc: 255 ppm
Ref. Std. Traceable to SRM #: 2636a
SRM Sample #: 57-F-15
SRM Cylinder #: FF30792

First Analysis Data:						Date:	10/1/2014
Z:	0	R:	255	C:	281.6	Conc:	281.6
R:	255	Z:	0	C:	281.6	Conc:	281.6
Z:	0	C:	281.6	R:	255	Conc:	281.6
UOM:	PPM			Mean Test Assay:			281.6 PPM

Second Analysis Data:						Date:	
Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	PPM			Mean Test Assay:			0 PPM

Analyzed by: Mike Monnette FOR

Certified by: Josh Jones

PRAXAIR

One Steel Road East • Morrisville, PA 19067 • Phone: 800-638-6360 • Fax: 215-736-5240

Issue Date: January 5, 2015

To: PRAXAIR PARIS

Attn: PARIS ONTARIO

Praxair OrderNumber: 05255801
Customer Order Number: NA
Customer Reference Number: LD578

Product Lot Number: 300024005505
ProductPartNumber: NI HC25MZC-AS

CERTIFICATE OF ANALYSIS

CERTIFIED STANDARD

(PADER Gas Mixture)

Cylinder SerialNumber	Analytes	Specification		Analytical Results		Analytical Principle	Analytical Uncertainty
LCCO-SA11804	Hydrogen Chloride	25.0	ppm	26.9	ppm	Vendor Analysis	±2 %
	Nitrogen	balance		Balance			

Date:	12/13/14		1ST TRIAD ANALYSIS								Avg. Concentration	
ZERO:	0.00	ppm	REFERENCE	25.2	ppm	TEST CYL	26.9	ppm			26.8	ppm
REFERENCE	25.2	ppm	ZERO	0.00	ppm	TEST CYL	26.8	ppm				
ZERO	0.00	ppm	TEST	26.8	ppm	REFERENCE	25.2	ppm				
Date:	12/20/14		2ND TRIAD ANALYSIS								Avg. Concentration	
ZERO:	0.00	ppm	REFERENCE	25.2	ppm	TEST CYL	27.0	ppm			27.0	ppm
REFERENCE	25.2	ppm	ZERO	0.00	ppm	TEST CYL	27.1	ppm				
ZERO	0.00	ppm	TEST	26.9	ppm	REFERENCE	25.2	ppm				
Date:	12/27/14		3RD TRIAD ANALYSIS								Avg. Concentration	
ZERO:	0.00	ppm	REFERENCE	25.2	ppm	TEST CYL	27.1	ppm			26.9	ppm
REFERENCE	25.2	ppm	ZERO	0.00	Ppm	TEST CYL	26.7	ppm				
ZERO	0.00	ppm	TEST	27.0	ppm	REFERENCE	25.2	ppm				

Reference Standard	Type/Std No.	Cyl #	Concentration	Exp Date
	CGMIS	CC93565	25.2 ppm HCL/N2	01/21/2015

Pressure: 1800 PSIA@20°C/70°F
Valve: CGA-330
Analysis Date: 12/27/2014
Expiration Date: 06/27/2015

Approved Signer: M Ten
(Mohamad Bentaher)

This analysis of the product described herein was prepared by Praxair Distribution using instruments whose calibration is certified using Praxair Reference Materials. Praxair Reference Materials are prepared either by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada or by using NIST Standard Reference Materials where available.

Note. All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted

Analytical Principle:

VENDOR GUARANTEED SPECIFICATIONS

COAP1 - REV 05/2006

PRAXAIR

One Steel Road East • Morrisville, PA 19067 • Phone: 800-638-6360 • Fax: 215-736-5240

Issue Date: January 5, 2015

To: PRAXAIR PARIS

Attn: PARIS ONTARIO

Praxair OrderNumber: 05255811
Customer Order Number: NA
Customer Reference Number: LD578

Product Lot Number: 300024005504
ProductPartNumber: NI HC55MZC-AS

CERTIFICATE OF ANALYSIS

CERTIFIED STANDARD

(PADER Gas Mixture)

Cylinder SerialNumber	Analytes	Specification		Analytical Results		Analytical Principle	Analytical Uncertainty
CC99745	Hydrogen Chloride	55.0	ppm	59.5	ppm	Vendor Analysis	±2 %
	Nitrogen	balance		Balance			

Date:	12/16/14		1ST TRIAD ANALYSIS						Avg. Concentration	
ZERO:	0.00	ppm	REFERENCE	50.8	ppm	TEST CYL	59.7	ppm	59.8	ppm
REFERENCE	50.8	ppm	ZERO	0.00	ppm	TEST CYL	59.6	ppm		
ZERO	0.00	ppm	TEST	60.0	ppm	REFERENCE	50.8	ppm		
Date:	12/23/14		2ND TRIAD ANALYSIS						Avg. Concentration	
ZERO:	0.00	ppm	REFERENCE	50.8	ppm	TEST CYL	59.3	ppm	59.4	ppm
REFERENCE	50.8	ppm	ZERO	0.00	ppm	TEST CYL	59.4	ppm		
ZERO	0.00	ppm	TEST	59.6	ppm	REFERENCE	50.8	ppm		
Date:	12/30/14		3RD TRIAD ANALYSIS						Avg. Concentration	
ZERO:	0.00	ppm	REFERENCE	50.8	ppm	TEST CYL	59.1	ppm	59.3	ppm
REFERENCE	50.8	ppm	ZERO	0.00	Ppm	TEST CYL	59.3	ppm		
ZERO	0.00	ppm	TEST	59.4	ppm	REFERENCE	50.8	ppm		

Reference Standard	Type/Std No.	Cyl #	Concentration	Exp Date
	CGMIS	SG9809750	50.8ppm HCL/N2	01/21/2015

Pressure: 1800 PSIA@20°C/70°F
Valve: CGA-330
Analysis Date: 12/30/2014
Expiration Date: 06/30/2015

Approved Signer: M Ten
(Mohamad Bentaher)

This analysis of the product described herein was prepared by Praxair Distribution using instruments whose calibration is certified using Praxair Reference Materials. Praxair Reference Materials are prepared either by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted

Analytical Principle:

VENDOR GUARANTEED SPECIFICATIONS

COAP1 – REV 05/2005

PRAXAIR.

Praxair Distribution, Inc.
One Steel Rd East
Morrisville, PA 19067
Tel: 1-800-638-6360
Fax: 1-215-736-5237

05/11/2015

PDI WHSE PARIS ONTARIO
41 CONSOLIDATED DR
PARIS, ON N1S 3Z4
Attention: FRANK JONES

6/22/15
Outlet Dual 3
RB

Work Order No.	**05508135**	Product Lot/Batch No.	**300024131501**
Customer Reference No.		Product Part No.	**NI HC85MC-AS**

CERTIFICATE OF ANALYSIS
Certified Standard

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Hydrogen chloride	**85 ppm**	**87.2 ppm**	**X**	**±5%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Vendor Guaranteed Specification~~~**

Cylinder Style:	**AS**	Filling Method:	**Gravimetric**
Cylinder Pressure @70F:	**2000 psig**	Date of Fill:	**05/05/2015**
Cylinder Volume:	**141.6 ft3**	Expiration Date:	**05/05/2016**
Valve Outlet Connection:	**CGA-330**		
Cylinder No(s):	**CC188770**		

Analyst: **Todd Bennett**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Gravimetrical Methods	V	Electrochemical	W	Chemiluminescent	X	Vendor Analysis

INLET DAILY SPAN 2
SEPT 11/2015
2:15pm

PRAXAIR.

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

05/20/2015

PRAXAIR PKG PARIS P/H 80271
41 CONSOLIDATED DR
PARIS, ON N3L 3G2

Work Order No. **31233283**
Customer Reference No.

Product Lot/Batch No. **0513GJ15**
Product Part No. **NI CO1700O5M-AS**

CERTIFICATE OF ANALYSIS

Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Carbon monoxide	**1700 ppm**	**1699 ppm**	**L**	**± 2%**
Oxygen	**18.0 %**	**18.0 %**	**O**	**± 2$**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Horiba~VA 3000 CO~~**
Servomex~575~~

Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **590**
Cylinder No(s). **CC239156**
Comments: **Values not valid below 1510 psig. [CO] and [O2] are N.I.S.T traceable to SRM #2637a and 2659a respectively**

Filling Method: **Gravimetric**
Date of Fill: **05/13/2015**
Expiration Date: **05/19/2020**

Approved Signer: **Rolonda Kaywood**

QA Reviewer: **Joshua Jones**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

IMPORTANT

PRAXAIR

Outlet span)

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

06/29/2015

PRAXAIR PKG PARIS P/H 80271
41 CONSOLIDATED DR
PARIS, ON N3L 3G2

Work Order No. **31702311**
Customer Reference No.

Product Lot/Batch No. **0625WA15**
Product Part No. **NI CO425NS4M-AS**

CERTIFICATE OF ANALYSIS

Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Nitric oxide	**425 ppm**	**434 ppm**	**U**	**± 2%**
Sulfur dioxide	**170 ppm**	**167 ppm**	**X**	**± 2%**
Carbon monoxide	**425 ppm**	**424 ppm**	**L**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Rosemount Analytical~951A~~**
AMETEK~921CE SO2~~
Horiba~VA 3000 CO~~

Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **660**

Filling Method: **Gravimetric**
Date of Fill: **06/25/2015**
Expiration Date: **06/26/2018**

Cylinder No(s). **CC248887**
Comments: **Values not valid below 150 psig. [NOx] = 438 ppm. [NO], [SO2], and [CO] are N.I.S.T traceable to SRM # 1686b, 1661a and 1681b respectively.**

QA Reviewer: **Kyle Osborne**

Approved Signer: **Rolonda Kaywood**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A Flame Ionization with Methanizer	B Gas Chromatography with Discharge Ionization Detector	C Gas Chromatography with Electrolytic Conductivity Detector	D Gas Chromatography with Flame Ionization Detector
E Gas Chromatography with Flame Photometric Detector	F Gas Chromatography with Helium Ionization Detector	G Gas Chromatography with Methanizer Carbonizer	H Gas Chromatography with Photoionization Detector
I Gas Chromatography with Reduction Gas Analyzer	J Gas Chromatography with Thermal Conductivity Detector	K Binary Gas Analyzer with Thermal Conductivity Detector	L Infrared - FTIR or NDIR
M Mass Spectrometry - MS or GC/MS	N By Difference of Typical Impurities	O Paramagnetic	P Specific Water Analyzer
Q Total Hydrocarbon Analyzer	R Wet Chemical	S Detector Tube	T Odor
U Chemiluminescence	V Gravimetric	W Electrolytic Cell/Electrochemical	X UV Spectrometry
Y Vendor Analysis			

PRAXAIR

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

9/8/15

Inlet Dr.G. Spa #1

04/27/2015

PRAXAIR PKG PARIS P/H 80271
41 CONSOLIDATED DR
PARIS, ON N3L 3G2

Work Order No. **30984385**
Customer Reference No.

Product Lot/Batch No. **0423WC15**
Product Part No. **NI CO425S1M-AS**

CERTIFICATE OF ANALYSIS

Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Sulfur dioxide	**425 ppm**	**433 ppm**	**X**	**± 2%**
Carbon monoxide	**425 ppm**	**422 ppm**	**L**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **AMETEK~921CE SO2~~**
Horiba~VA 3000 CO~~

Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **660**
Cylinder No(s). **CC10010**

Filling Method: **Gravimetric**
Date of Fill: **04/23/2015**
Expiration Date: **04/27/2020**

Comments: **Values not valid below 150 psig. [SO2] and [CO] are N.I.S.T traceable to SRM #1661a and 1681b respectively.**

QA Reviewer: **Joshua Jones**

Approved Signer: **Rolonda Kaywood**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

INLET DAILY SPAN 2
SEPT 11/2015
2:15pm

PRAXAIR.

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

05/20/2015

PRAXAIR PKG PARIS P/H 80271
41 CONSOLIDATED DR
PARIS, ON N3L 3G2

Work Order No.	**31233283**	Product Lot/Batch No.	**0513GJ15**
Customer Reference No.		Product Part No.	**NI CO1700O5M-AS**

CERTIFICATE OF ANALYSIS
Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Carbon monoxide	**1700 ppm**	**1699 ppm**	**L**	**± 2%**
Oxygen	**18.0 %**	**18.0 %**	**O**	**± 2$**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Horiba~VA 3000 CO~~**
Servomex~575~~

Cylinder Style:	**AS**	Filling Method:	**Gravimetric**
Cylinder Pressure @70F:	**2000 psig**	Date of Fill:	**05/13/2015**
Cylinder Volume:	**144 ft3**	Expiration Date:	**05/19/2020**
Valve Outlet Connection:	**590**		
Cylinder No(s).	**CC239156**		

Comments: **Values not valid below 1510 psig. [CO] and [O2] are N.I.S.T traceable to SRM #2637a and 2659a respectively**

Approved Signer: **Rolonda Kaywood**

QA Reviewer: **Joshua Jones**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

IMPORTANT
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PRAXAIR

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

9/8/15

Inlet Dil. Span #1

04/27/2015

PRAXAIR PKG PARIS P/H 80271
41 CONSOLIDATED DR
PARIS, ON N3L 3G2

Work Order No.	**30984385**	Product Lot/Batch No.	**0423WC15**
Customer Reference No.		Product Part No.	**NI CO425S1M-AS**

CERTIFICATE OF ANALYSIS
Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Sulfur dioxide	**425 ppm**	**433 ppm**	**X**	**± 2%**
Carbon monoxide	**425 ppm**	**422 ppm**	**L**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **AMETEK~921CE SO2~~**
Horiba~VA 3000 CO~~

Cylinder Style:	**AS**	Filling Method:	**Gravimetric**
Cylinder Pressure @70F:	**2000 psig**	Date of Fill:	**04/23/2015**
Cylinder Volume:	**144 ft3**	Expiration Date:	**04/27/2020**
Valve Outlet Connection:	**660**		
Cylinder No(s).	**CC10010**		

Comments: **Values not valid below 150 psig. [SO2] and [CO] are N.I.S.T traceable to SRM #1661a and 1681b respectively.**

QA Reviewer: **Joshua Jones**

Approved Signer: **Rolonda Kaywood**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

PRAXAIR.

Outlet span)

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

06/29/2015

PRAXAIR PKG PARIS P/H 80271
41 CONSOLIDATED DR
PARIS, ON N3L 3G2

Work Order No. **31702311**
Customer Reference No.

Product Lot/Batch No. **0625WA15**
Product Part No. **NI CO425NS4M-AS**

CERTIFICATE OF ANALYSIS

Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Nitric oxide	**425 ppm**	**434 ppm**	**U**	**± 2%**
Sulfur dioxide	**170 ppm**	**167 ppm**	**X**	**± 2%**
Carbon monoxide	**425 ppm**	**424 ppm**	**L**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Rosemount Analytical~951A~~**
AMETEK~921CE SO2~~
Horiba~VA 3000 CO~~

Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **660**

Filling Method: **Gravimetric**
Date of Fill: **06/25/2015**
Expiration Date: **06/26/2018**

Cylinder No(s). **CC248887**
Comments: **Values not valid below 150 psig. [NOx] = 438 ppm. [NO], [SO2], and [CO] are N.I.S.T traceable to SRM # 1686b, 1661a and 1681b respectively.**

QA Reviewer: **Kyle Osborne**

Approved Signer: **Rolonda Kaywood**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

CAL CHECK

11600 Black Horse Run, Raleigh, North Carolina 27613 Phone (919) 847-1898 FAX (919) 847-8005

REPORT OF CERTIFICATION OF NEUTRAL DENSITY AUDIT FILTERS

Report prepared for: **Covanta York, LLC**

Date of Filter Certification: **July 27, 2015**
Date of Filter Expiration: July 26, 2016

Monitor Make/Model: **Teledyne-Monitor Labs 560**

Audit Device/Filter Slot Angle of Incidence: **10** Degrees
Path-Length Correction: **1.000** (Straight Stack)

Table 1-1: Individual Filter Certification Data

Serial Number	Opacity Value (%)	Transmittance (%)	Optical Density	Accuracy (%)
S10089	8.4	91.6	0.0379	± 0.5
S10098	17.1	82.9	0.0813	± 0.5
S10082	27.5	72.5	0.1395	± 0.5

Table 1-2: Individual Filter Certification Data @ 567 nM

Serial Number	Opacity Value (%)	Transmittance (%)	Optical Density
S10089	8.4	91.6	0.0381
S10098	17.6	82.4	0.0841
S10082	27.2	72.8	0.1379

Eileen Rosenquest

Eileen Rosenquest
Instrument Operator

****See second page for Instrument Information and Details of Certification****

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Unit #2 CEMS

Commissioning Testing
Durham-York Energy Centre

Prepared By: Chuck Davis
Regional CEMS Coordinator
Covanta

Section 1

OTP 7 Day and Response Time Test

Data Flags

TRACE SYSTEM STATUS VALUES	DEFINITION OF STATUS VALUES	STATUS VALUES IN CEMS .CSV FILES
< :	Not all samples were available for the reported averaging period. Missing one or two readings; full data not available. Data is valid.	OK<
B :	Bad data, insufficient samples available to calculate an average or other system error.	Bad
C :	Analyzer is in calibration mode	CAL
X :	Out of control, analyzer failed calibration operation.	OOC
d :	Source down, CEMS is operational, source is not combusting waste.	SrcD
M:	Missing data (not Polled)	Miss
u:	Unverified data - This code will be used during the time between first fire and first RATA test to mark data as test.	SUD
	There is no associated value for this status; not marked. Data is valid	OK

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	**September 15, 2015**
Start Time:	**18:23**
Stop Time:	**20:13**

Unit #2 Inlet **Year - 2015** **Day1**

Analyzer or Channel	O2			COLo			COHi		
Analyzer Full Range	25			500			2000		
Analyzer Make	Environment SA			Environment SA			Environment SA		
Analyzer Serial Number	2685			2685			2685		
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High
Ca = Cal Gas Value	2.00	9.99	18.00	0.00	281.00	422.00	0.00	1075.00	1699.00
Cylinder ID#	CC332354	CC275798	CC239156	CC332354	EB0047021	CC10010	CC332354	CC275798	CC239156
Expiration Date	09/23/22	11/17/22	05/19/20	09/23/22	12/10/22	04/27/20	09/23/22	11/17/22	05/19/20
Run #1	**1.89**	**10.09**	**17.99**	**2.60**	**275.00**	**422.00**	**5.00**	**1064.00**	**1675.00**
Run #2	**2.09**	**10.09**	**17.99**	**6.50**	**279.00**	**430.80**	**6.00**	**1064.00**	**1678.00**
Run #3	**1.89**	**9.89**	**17.99**	**6.60**	**286.40**	**422.30**	**6.00**	**1057.00**	**1681.00**
SUM (1+2+3)	5.87	30.07	53.97	15.70	840.40	1275.10	17.00	3185.00	5034.00
Cm = SUM/3	1.96	10.02	17.99	5.23	280.13	425.03	5.67	1061.67	1678.00
Abs. Diff	0.0433333	0.0333333	0.01	5.2333333	0.8666667	3.0333333	5.6666667	13.333333	21
%F.S.				1.05	0.17	-0.61	0.28	0.67	1.05
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass

Comments:

Technician :	Jake Kieser	Title:	Altech Rep.	Date:
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:

Date/Time	U2 1-min Inlet Data - O2e-dry	Data Status	U2 1-min Inlet Data - COe-l	Data Status	U2 1-min Inlet Data - COe-h	Data Status	Run #
9/15/2015 18:20	0	B	424.7	B	490	B	
9/15/2015 18:21	0	B	422.2	B	490	B	
9/15/2015 18:22	0	B	422.2	B	490	B	
9/15/2015 18:23	0	B	422.2	B	490	B	1
9/15/2015 18:24	0	B	422.2	B	490	B	
9/15/2015 18:25	0	B	426	B	494	B	
9/15/2015 18:26	0	B	422.2	B	490	B	
9/15/2015 18:27	1.79	B	134.3	B	156	B	
9/15/2015 18:28	1.89	B	11.6	B	9	B	
9/15/2015 18:29	1.89	B	8.6	B	7	B	
9/15/2015 18:30	1.89	B	7.3	B	7	B	
9/15/2015 18:31	1.89	B	6.5	B	6	B	
9/15/2015 18:32	1.89	B	5.8	B	6	B	
9/15/2015 18:33	1.89	B	5.3	B	5	B	
9/15/2015 18:34	1.89	B	4.8	B	5	B	
9/15/2015 18:35	1.89	B	4.5	B	5	B	
9/15/2015 18:36	1.89	B	3.3	B	5	B	
9/15/2015 18:37	1.89	B	2.7	B	5	B	
9/15/2015 18:38	1.89	B	2.6	B	5	B	1
9/15/2015 18:39	1.89	B	3.2	B	5	B	
9/15/2015 18:40	1.59	B	38.7	B	37	B	
9/15/2015 18:41	0.09	B	269.9	B	316	B	
9/15/2015 18:42	0	B	272.3	B	319	B	
9/15/2015 18:43	0	B	275.5	B	320	B	
9/15/2015 18:44	0	B	275.6	B	320	B	
9/15/2015 18:45	0	B	275.8	B	320	B	1
9/15/2015 18:46	0	B	275.9	B	320	B	
9/15/2015 18:47	17.49	B	500	B	1637	B	
9/15/2015 18:48	17.69	B	500	B	1669	B	
9/15/2015 18:49	17.89	B	500	B	1673	B	
9/15/2015 18:50	17.89	B	500	B	1674	B	
9/15/2015 18:51	17.89	B	500	B	1675	B	
9/15/2015 18:52	17.99	B	500	B	1675	B	1
9/15/2015 18:53	17.99	B	500	B	1676	B	
9/15/2015 18:54	13.29	B	500	B	1520	B	
9/15/2015 18:55	10.29	B	500	B	1068	B	
9/15/2015 18:56	10.19	B	500	B	1065	B	
9/15/2015 18:57	10.19	B	500	B	1064	B	
9/15/2015 18:58	10.19	B	500	B	1064	B	
9/15/2015 18:59	10.09	B	500	B	1064	B	1
9/15/2015 19:00	10.09	B	500	B	1063	B	
9/15/2015 19:01	2.29	B	53.9	B	55	B	
9/15/2015 19:02	2.19	B	18	B	15	B	
9/15/2015 19:03	2.19	B	14.5	B	12	B	
9/15/2015 19:04	2.19	B	12	B	10	B	
9/15/2015 19:05	2.09	B	8.2	B	8	B	
9/15/2015 19:06	2.09	B	7.1	B	8	B	
9/15/2015 19:07	2.09	B	6.6	B	7	B	
9/15/2015 19:08	2.09	B	9.5	B	8	B	

9/15/2015 19:09	2.09	B	6.5	B	6	B	2
9/15/2015 19:10	0.09	B	275.4	B	319	B	
9/15/2015 19:11	0.09	B	278	B	322	B	
9/15/2015 19:12	0.09	B	278.2	B	322	B	
9/15/2015 19:13	0	B	279.2	B	323	B	2
9/15/2015 19:14	0	B	279.1	B	323	B	
9/15/2015 19:15	17.49	B	500	B	1637	B	
9/15/2015 19:16	17.79	B	500	B	1668	B	
9/15/2015 19:17	17.89	B	500	B	1674	B	
9/15/2015 19:18	17.89	B	500	B	1677	B	
9/15/2015 19:19	17.89	B	500	B	1677	B	
9/15/2015 19:20	17.99	B	500	B	1678	B	2
9/15/2015 19:21	17.89	B	500	B	1676	B	
9/15/2015 19:22	10.39	B	500	B	1100	B	
9/15/2015 19:23	10.19	B	500	B	1065	B	
9/15/2015 19:24	10.19	B	500	B	1064	B	
9/15/2015 19:25	10.09	B	500	B	1064	B	
9/15/2015 19:26	10.09	B	500	B	1064	B	
9/15/2015 19:27	10.09	B	500	B	1064	B	2
9/15/2015 19:28	10.09	B	500	B	1064	B	
9/15/2015 19:29	0.89	B	500	B	674	B	
9/15/2015 19:30	0.29	B	436.4	B	500	B	
9/15/2015 19:31	0.19	B	433.3	B	497	B	
9/15/2015 19:32	0.19	B	431.8	B	495	B	
9/15/2015 19:33	0.09	B	431.1	B	495	B	
9/15/2015 19:34	0	B	430.8	B	494	B	2
9/15/2015 19:35	0	B	430.5	B	494	B	
9/15/2015 19:36	13.89	B	500	B	990	B	
9/15/2015 19:37	17.69	B	500	B	1674	B	
9/15/2015 19:38	17.79	B	500	B	1679	B	
9/15/2015 19:39	17.89	B	500	B	1680	B	
9/15/2015 19:40	17.99	B	500	B	1681	B	
9/15/2015 19:41	17.99	B	500	B	1681	B	3
9/15/2015 19:42	17.99	B	500	B	1681	B	
9/15/2015 19:43	0.69	B	362.3	B	417	B	
9/15/2015 19:44	0.29	B	300.7	B	347	B	
9/15/2015 19:45	0.19	B	294.9	B	341	B	
9/15/2015 19:46	0.19	B	291.2	B	336	B	
9/15/2015 19:47	0.19	B	289.5	B	335	B	
9/15/2015 19:48	0.09	B	288.4	B	333	B	
9/15/2015 19:49	0.09	B	287.5	B	332	B	
9/15/2015 19:50	0	B	287	B	332	B	
9/15/2015 19:51	0	B	286.4	B	331	B	3
9/15/2015 19:52	0	B	285.6	B	330	B	
9/15/2015 19:53	1.89	B	13.1	B	10	B	
9/15/2015 19:54	1.89	B	9.6	B	8	B	
9/15/2015 19:55	1.89	B	8.3	B	7	B	
9/15/2015 19:56	1.89	B	7.2	B	6	B	
9/15/2015 19:57	1.89	B	6.6	B	6	B	3
9/15/2015 19:58	1.89	B	5.7	B	6	B	
9/15/2015 19:59	1.29	B	8.2	B	7	B	
9/15/2015 20:00	0.09	B	416.2	B	478	B	

9/15/2015 20:01	0.09	B	420.1	B	482	B	
9/15/2015 20:02	0.09	B	421.7	B	484	B	
9/15/2015 20:03	0.09	B	422	B	484	B	
9/15/2015 20:04	0	B	422.2	B	484	B	
9/15/2015 20:05	0	B	422.3	B	484	B	3
9/15/2015 20:06	0	B	419.9	B	482	B	
9/15/2015 20:07	9.69	B	500	B	1048	B	
9/15/2015 20:08	9.79	B	500	B	1054	B	
9/15/2015 20:09	9.79	B	500	B	1056	B	
9/15/2015 20:10	9.89	B	500	B	1057	B	
9/15/2015 20:11	9.89	B	500	B	1057	B	
9/15/2015 20:12	9.89	B	500	B	1057	B	
9/15/2015 20:13	9.89	B	500	B	1057	B	3
9/15/2015 20:14	9.89	B	500	B	1057	B	

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 15, 2015
Start Time:	11:05
Stop Time:	12:33

Unit #1 Outlet **Year - 2015** **Day 1**

Analyzer or Channel	O2			SO2			NOX			COLo			COHi				
Analyzer Full Range	25			200			500			500			2000				
Analyzer Make	Environment SA			Environment SA			Environment SA			Environment SA			Environment SA				
Analyzer Serial Number	2686			2686			2686			2686			2686				
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High		
Ca = Cal Gas Value	2.00	9.94	18.00	0.00	107.00	167.00	0.00	280.00	434.00	0.00	282.00	424.00	0.00	1073.00	1679.00		
Cylinder ID#	EB0019268	CC164055	EB0002281	EB0019268	EB0016778	CC248887	EB0019268	EB0016778	CC248887	EB0019268	EB0016778	CC248887	EB0019268	CC164055	EB0002281		
Expiration Date	09/23/22	09/23/22	12/19/20	09/23/22	10/08/22	06/26/18	09/23/22	10/08/22	06/26/18	09/23/22	10/08/22	06/26/18	09/23/22	09/23/22	12/19/20		
Run #1	**2.01**	**10.20**	**18.38**	**3.40**	**109.10**	**168.10**	**2.10**	**274.10**	**439.80**	**1.60**	**281.00**	**428.10**	**2.00**	**1061.00**	**1685.00**		
Run #2	**2.12**	**10.20**	**18.28**	**3.00**	**109.10**	**169.80**	**1.90**	**273.70**	**440.50**	**1.80**	**281.50**	**428.90**	**2.00**	**1064.00**	**1696.00**		
Run #3	**2.01**	**10.09**	**18.28**	**2.60**	**111.50**	**170.30**	**2.60**	**275.20**	**437.90**	**1.60**	**282.20**	**428.90**	**2.00**	**1061.00**	**1687.00**		
SUM (1+2+3)	6.14	30.49	54.94	9.00	329.70	508.20	6.60	823.00	1318.20	5.00	844.70	1285.90	6.00	3186.00	5068.00		
Cm = SUM/3	2.05	10.16	18.31	3.00	109.90	169.40	2.20	274.33	439.40	1.67	281.57	428.63	2.00	1062.00	1689.33		
Abs. Diff	0.0466667	0.2233333	0.3133333	3	2.9	2.4	2.2	5.6666667	5.4	1.6666667	0.4333333	4.6333333	2	11	10.333333		
%F.S.				1.50	-1.45	-1.20	0.44	1.13	-1.08	0.33	0.09	-0.93	0.10	0.55	-0.52		
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**		

Comments:

Technician : Jake Kiser		Title: Altech Rep.	Date:
Reviewed By : Chuck Davis		Title: REGIONAL CEMS COORD.	Date:

Date/Time	U2 1-min Outlet Data - O2s-dry	Data Status	U2 1-min Outlet Data - SO2s	Data Status	U2 1-min Outlet Data - NOxs	Data Status	U2 1-min Outlet Data - COs-l	Data Status	U2 1-min Outlet Data - COs-h	Data Status	Run #
9/15/2015 13:43	0	B	167.8	B	439.6	B	428	B	429	B	
9/15/2015 13:44	0	B	168	B	438.6	B	428.2	B	429	B	
9/15/2015 13:45	0	B	168.1	B	439.8	B	428.1	B	429	B	1
9/15/2015 13:46	0	B	168.2	B	434.1	B	427.9	B	429	B	
9/15/2015 13:47	2.01	B	16.1	B	23.6	B	21.8	B	23	B	
9/15/2015 13:48	2.01	B	4.8	B	2.5	B	1.9	B	2	B	
9/15/2015 13:49	2.01	B	3.9	B	2.3	B	1.8	B	2	B	
9/15/2015 13:50	2.01	B	3.8	B	2.2	B	1.7	B	2	B	
9/15/2015 13:51	2.01	B	3.6	B	2	B	1.7	B	2	B	
9/15/2015 13:52	2.01	B	3.5	B	2	B	1.7	B	2	B	
9/15/2015 13:53	2.01	B	3.4	B	2.1	B	1.6	B	2	B	1
9/15/2015 13:54	1.91	B	29.9	B	80	B	80.3	B	84	B	
9/15/2015 13:55	0.1	B	106.4	B	272.3	B	278.5	B	284	B	
9/15/2015 13:56	0	B	108.8	B	275	B	279.9	B	286	B	
9/15/2015 13:57	0	B	109	B	275.2	B	281.1	B	287	B	
9/15/2015 13:58	0	B	109	B	274.9	B	281	B	287	B	
9/15/2015 13:59	0	B	109.1	B	274.1	B	281	B	287	B	1
9/15/2015 14:00	18.17	B	20.7	B	40.4	B	500	B	1400	B	
9/15/2015 14:01	18.28	B	2.1	B	2.9	B	500	B	1686	B	
9/15/2015 14:02	18.38	B	1.5	B	2.4	B	500	B	1685	B	
9/15/2015 14:03	18.38	B	1.5	B	2.1	B	500	B	1685	B	1
9/15/2015 14:04	18.38	B	1.4	B	2.2	B	500	B	1684	B	
9/15/2015 14:05	10.3	B	1.8	B	5.3	B	500	B	1149	B	
9/15/2015 14:06	10.2	B	1.3	B	2	B	500	B	1062	B	
9/15/2015 14:07	10.2	B	1.3	B	2.2	B	500	B	1062	B	
9/15/2015 14:08	10.2	B	1.2	B	1.8	B	500	B	1062	B	
9/15/2015 14:09	10.2	B	1.2	B	2.1	B	500	B	1061	B	
9/15/2015 14:10	10.2	B	1.2	B	2.1	B	500	B	1061	B	
9/15/2015 14:11	10.2	B	1.2	B	2.1	B	500	B	1061	B	1
9/15/2015 14:12	10.2	B	1.2	B	2.1	B	500	B	1060	B	
9/15/2015 14:13	8.18	B	3.6	B	8	B	500	B	775	B	
9/15/2015 14:14	2.12	B	3.5	B	2.3	B	42.3	B	45	B	
9/15/2015 14:15	2.12	B	3.2	B	1.1	B	2.5	B	3	B	
9/15/2015 14:16	2.12	B	3	B	1.8	B	2	B	2	B	
9/15/2015 14:17	2.12	B	3	B	1.5	B	1.9	B	2	B	
9/15/2015 14:18	2.12	B	3	B	1.9	B	1.8	B	2	B	2
9/15/2015 14:19	2.01	B	3	B	1.8	B	1.8	B	2	B	
9/15/2015 14:20	0.1	B	99.9	B	257	B	263.2	B	269	B	
9/15/2015 14:21	0	B	108.3	B	272.5	B	282	B	288	B	
9/15/2015 14:22	0	B	109	B	273.9	B	281.2	B	287	B	
9/15/2015 14:23	0	B	109.1	B	274.4	B	281.4	B	287	B	
9/15/2015 14:24	0	B	109.1	B	273.7	B	281.5	B	287	B	2
9/15/2015 14:25	0	B	109.2	B	274	B	281.7	B	287	B	
9/15/2015 14:26	18.07	B	43.8	B	97.2	B	500	B	1166	B	
9/15/2015 14:27	18.28	B	2.3	B	2.9	B	500	B	1693	B	
9/15/2015 14:28	18.38	B	1.6	B	2	B	500	B	1688	B	
9/15/2015 14:29	18.17	B	1.6	B	2.6	B	500	B	1695	B	
9/15/2015 14:30	18.28	B	1.8	B	2.7	B	500	B	1696	B	2
9/15/2015 14:31	15.45	B	3.3	B	9.2	B	500	B	1449	B	
9/15/2015 14:32	10.2	B	2.8	B	2.6	B	500	B	1062	B	
9/15/2015 14:33	10.2	B	2.4	B	2.3	B	500	B	1061	B	
9/15/2015 14:34	10.2	B	2.4	B	2.5	B	500	B	1063	B	
9/15/2015 14:35	10.2	B	2.4	B	2.8	B	500	B	1064	B	2
9/15/2015 14:36	10.2	B	2.4	B	2.4	B	500	B	1064	B	
9/15/2015 14:37	0.5	B	84.4	B	231.9	B	500	B	646	B	
9/15/2015 14:38	0	B	167.6	B	437.5	B	429.1	B	430	B	
9/15/2015 14:39	0.1	B	169.1	B	440.6	B	428.8	B	430	B	
9/15/2015 14:40	0.1	B	169.6	B	441.5	B	429.4	B	431	B	
9/15/2015 14:41	0.1	B	169.7	B	440.1	B	429	B	430	B	
9/15/2015 14:42	0.1	B	169.8	B	440.5	B	428.9	B	430	B	2
9/15/2015 14:43	0.1	B	169.9	B	440.4	B	428.7	B	430	B	
9/15/2015 14:44	18.07	B	49.9	B	97.6	B	500	B	1354	B	
9/15/2015 14:45	18.17	B	6.4	B	7	B	500	B	1686	B	
9/15/2015 14:46	18.17	B	3.6	B	3.2	B	500	B	1688	B	

9/15/2015 14:47	18.28	B	3.4	B	2.9	B	500	B	1688	B		
9/15/2015 14:48	18.28	B	3.4	B	3	B	500	B	1688	B		
9/15/2015 14:49	18.28	B	3.3	B	3	B	500	B	1689	B		
9/15/2015 14:50	18.28	B	3.2	B	3	B	500	B	1689	B		
9/15/2015 14:51	18.28	B	3.1	B	2.9	B	500	B	1688	B		
9/15/2015 14:52	18.28	B	3	B	2.8	B	500	B	1687	B		3
9/15/2015 14:53	18.28	B	2.9	B	2.8	B	500	B	1687	B		
9/15/2015 14:54	0.2	B	84.3	B	222.1	B	500	B	505	B		
9/15/2015 14:55	0.1	B	110.6	B	274.3	B	283.5	B	289	B		
9/15/2015 14:56	0.1	B	111.3	B	274.8	B	282.1	B	288	B		
9/15/2015 14:57	0.1	B	111.4	B	274.9	B	282.2	B	288	B		
9/15/2015 14:58	0	B	111.5	B	275.2	B	282.2	B	288	B		3
9/15/2015 14:59	0	B	111.6	B	275.3	B	282.3	B	288	B		
9/15/2015 15:00	1.21	B	99.5	B	253	B	241.3	B	247	B		
9/15/2015 15:01	2.01	B	6.2	B	3.3	B	2.1	B	2	B		
9/15/2015 15:02	2.01	B	5.6	B	2.8	B	1.8	B	2	B		
9/15/2015 15:03	2.01	B	5.6	B	2.8	B	1.8	B	2	B		
9/15/2015 15:04	2.01	B	5.5	B	2.7	B	1.8	B	2	B		
9/15/2015 15:05	2.01	B	5.4	B	2.7	B	1.8	B	2	B		
9/15/2015 15:06	2.01	B	5.3	B	2.7	B	1.8	B	2	B		
9/15/2015 15:07	2.01	B	5.2	B	2.7	B	1.7	B	2	B		
9/15/2015 15:08	2.01	B	5.2	B	2.7	B	1.7	B	2	B		
9/15/2015 15:09	2.01	B	5.1	B	2.7	B	1.7	B	2	B		
9/15/2015 15:10	2.01	B	0.1	B	2.6	B	1.6	B	2	B		3
9/15/2015 15:11	2.01	B	2.6	B	2.6	B	1.6	B	2	B		
9/15/2015 15:12	2.01	B	2.5	B	2.6	B	1.6	B	2	B		
9/15/2015 15:13	2.01	B	2.5	B	2.6	B	1.6	B	2	B		
9/15/2015 15:14	0.5	B	38.9	B	202	B	192.5	B	195	B		
9/15/2015 15:15	0.1	B	87.2	B	437.3	B	427.7	B	429	B		
9/15/2015 15:16	0.1	B	87.9	B	438.5	B	426.4	B	428	B		
9/15/2015 15:17	0.1	B	88.1	B	438.9	B	428.7	B	430	B		
9/15/2015 15:18	0.1	B	88.1	B	438.7	B	428.6	B	430	B		
9/15/2015 15:19	0	B	169.7	B	438.3	B	428.7	B	430	B		
9/15/2015 15:20	0	B	169.8	B	438.1	B	428.6	B	430	B		
9/15/2015 15:21	0	B	169.9	B	437.8	B	428.6	B	430	B		
9/15/2015 15:22	0	B	170	B	437.9	B	429.4	B	431	B		
9/15/2015 15:23	0	B	170.1	B	437.8	B	429.2	B	430	B		
9/15/2015 15:24	0	B	170.2	B	437.9	B	428.8	B	430	B		
9/15/2015 15:25	0	B	170.3	B	437.9	B	428.9	B	430	B		3
9/15/2015 15:26	0	B	170.4	B	437.7	B	428.9	B	430	B		
9/15/2015 15:27	8.68	B	100.7	B	238.5	B	500	B	715	B		
9/15/2015 15:28	10.09	B	6.7	B	5.8	B	500	B	1064	B		
9/15/2015 15:29	10.09	B	4.4	B	3.1	B	500	B	1059	B		
9/15/2015 15:30	10.09	B	4.4	B	3.1	B	500	B	1061	B		
9/15/2015 15:31	10.09	B	4.3	B	2.8	B	500	B	1061	B		3
9/15/2015 15:32	7.17	B	4.7	B	101.7	B	265.1	B	269	B		
9/15/2015 15:33	6.86	B	3.5	B	120.5	B	24.2	B	24	B		
9/15/2015 15:34	7.17	B	3.1	B	118.6	B	15.9	B	16	B		

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 16, 2015
Start Time:	8:07
Stop Time:	9:57

Unit #2 Inlet **Year - 2015** **Day2**

Analyzer or Channel	O2			COLo			COHi		
Analyzer Full Range	25			500			2000		
Analyzer Make	Environment SA			Environment SA			Environment SA		
Analyzer Serial Number	2685			2685			2685		
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High
Ca = Cal Gas Value	2.00	9.99	18.00	0.00	281.00	422.00	0.00	1075.00	1699.00
Cylinder ID#	CC332354	CC275798	CC239156	CC332354	EB0047021	CC10010	CC332354	CC275798	CC239156
Expiration Date	09/23/22	11/17/22	05/19/20	09/23/22	12/10/22	04/27/20	09/23/22	11/17/22	05/19/20
Run #1	**1.89**	**10.09**	**17.99**	**2.30**	**273.80**	**417.50**	**3.00**	**1061.00**	**1657.00**
Run #2	**1.99**	**10.09**	**17.99**	**8.90**	**276.00**	**427.90**	**8.00**	**1060.00**	**1671.00**
Run #3	**1.89**	**9.89**	**17.89**	**5.30**	**286.30**	**419.00**	**6.00**	**1051.00**	**1674.00**
SUM (1+2+3)	5.77	30.07	53.87	16.50	836.10	1264.40	17.00	3172.00	5002.00
Cm = SUM/3	1.92	10.02	17.96	5.50	278.70	421.47	5.67	1057.33	1667.33
Abs. Diff	0.0766667	0.0333333	0.0433333	5.5	2.3	0.5333333	5.6666667	17.666667	31.666667
%F.S.				1.10	0.46	0.11	0.28	0.88	1.58
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**

Comments:

Technician :	Jake Kieser	Title:	Altech Rep.	Date:	
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:	

Date/Time	U2 1-min Inlet Data - O2e-dry	Data Status	U2 1-min Inlet Data - COe-l	Data Status	U2 1-min Inlet Data - COe-h	Data Status	
9/16/2015 8:07	7.79	B	22.1	B	17	B	
9/16/2015 8:08	7.59	B	24	B	19	B	
9/16/2015 8:09	7.99	B	30	B	25	B	
9/16/2015 8:10	6.39	B	21.2	B	17	B	
9/16/2015 8:11	6.49	B	18.6	B	14	B	
9/16/2015 8:12	2.29	B	74.5	B	79	B	
9/16/2015 8:13	0.09	B	410	B	472	B	
9/16/2015 8:14	0.09	B	411.6	B	474	B	
9/16/2015 8:15	0.09	B	417.4	B	476	B	
9/16/2015 8:16	0.09	B	417.4	B	476	B	
9/16/2015 8:17	0	B	417.5	B	476	B	1
9/16/2015 8:18	0	B	417.6	B	477	B	
9/16/2015 8:19	0.19	B	379.4	B	434	B	
9/16/2015 8:20	1.79	B	11.3	B	9	B	
9/16/2015 8:21	1.89	B	6.2	B	6	B	
9/16/2015 8:22	1.89	B	4.4	B	5	B	
9/16/2015 8:23	1.89	B	3.5	B	5	B	
9/16/2015 8:24	1.89	B	3	B	5	B	
9/16/2015 8:25	1.89	B	2.6	B	4	B	
9/16/2015 8:26	1.89	B	2.3	B	4	B	1
9/16/2015 8:27	1.89	B	2.9	B	5	B	
9/16/2015 8:28	1.89	B	1.9	B	4	B	
9/16/2015 8:29	0.19	B	180.3	B	207	B	
9/16/2015 8:30	0.09	B	270.3	B	312	B	
9/16/2015 8:31	0	B	273.3	B	315	B	
9/16/2015 8:32	0	B	273.8	B	316	B	
9/16/2015 8:33	0	B	273.8	B	316	B	1
9/16/2015 8:34	0	B	273.9	B	316	B	
9/16/2015 8:35	0	B	274.1	B	316	B	
9/16/2015 8:36	17.29	B	500	B	1522	B	
9/16/2015 8:37	17.69	B	500	B	1646	B	
9/16/2015 8:38	17.79	B	500	B	1653	B	
9/16/2015 8:39	17.89	B	500	B	1656	B	
9/16/2015 8:40	17.89	B	500	B	1656	B	
9/16/2015 8:41	17.89	B	500	B	1657	B	
9/16/2015 8:42	17.99	B	500	B	1657	B	1
9/16/2015 8:43	17.99	B	500	B	1658	B	
9/16/2015 8:44	10.29	B	500	B	1061	B	
9/16/2015 8:45	10.19	B	500	B	1063	B	
9/16/2015 8:46	10.19	B	500	B	1064	B	
9/16/2015 8:47	10.09	B	500	B	1062	B	
9/16/2015 8:48	10.09	B	500	B	1062	B	
9/16/2015 8:49	10.09	B	500	B	1061	B	1
9/16/2015 8:50	10.09	B	500	B	1061	B	
9/16/2015 8:51	2.29	B	30.5	B	27	B	
9/16/2015 8:52	2.19	B	18.8	B	16	B	
9/16/2015 8:53	2.09	B	14	B	11	B	
9/16/2015 8:54	2.09	B	11.6	B	10	B	
9/16/2015 8:55	2.09	B	10	B	8	B	

9/16/2015 8:56	2.09	B	8.7	B	7	B	
9/16/2015 8:57	2.09	B	7.7	B	7	B	
9/16/2015 8:58	2.09	B	6.6	B	6	B	
9/16/2015 8:59	1.99	B	8.9	B	8	B	2
9/16/2015 9:00	1.99	B	5.2	B	6	B	
9/16/2015 9:01	0.19	B	208	B	240	B	
9/16/2015 9:02	0.09	B	275.1	B	320	B	
9/16/2015 9:03	0.09	B	275.9	B	321	B	
9/16/2015 9:04	0	B	276.6	B	321	B	2
9/16/2015 9:05	0	B	276.6	B	321	B	
9/16/2015 9:06	17.39	B	500	B	1623	B	
9/16/2015 9:07	17.79	B	500	B	1665	B	
9/16/2015 9:08	17.89	B	500	B	1669	B	
9/16/2015 9:09	17.89	B	500	B	1671	B	
9/16/2015 9:10	17.99	B	500	B	1671	B	2
9/16/2015 9:11	17.99	B	500	B	1671	B	
9/16/2015 9:12	10.29	B	500	B	1078	B	
9/16/2015 9:13	10.19	B	500	B	1062	B	
9/16/2015 9:14	10.19	B	500	B	1061	B	
9/16/2015 9:15	10.09	B	500	B	1060	B	2
9/16/2015 9:16	10.09	B	500	B	1060	B	
9/16/2015 9:17	1.89	B	500	B	798	B	
9/16/2015 9:18	0.29	B	434.7	B	500	B	
9/16/2015 9:19	0.19	B	430.7	B	495	B	
9/16/2015 9:20	0.19	B	428.5	B	493	B	
9/16/2015 9:21	0.09	B	427.9	B	492	B	2
9/16/2015 9:22	0	B	427.8	B	492	B	
9/16/2015 9:23	0	B	427.6	B	492	B	
9/16/2015 9:24	17.49	B	500	B	1628	B	
9/16/2015 9:25	17.79	B	500	B	1669	B	
9/16/2015 9:26	17.89	B	500	B	1673	B	
9/16/2015 9:27	17.89	B	500	B	1674	B	3
9/16/2015 9:28	17.99	B	500	B	1675	B	
9/16/2015 9:29	0.89	B	482.6	B	553	B	
9/16/2015 9:30	0.39	B	298.6	B	345	B	
9/16/2015 9:31	0.19	B	293.1	B	339	B	
9/16/2015 9:32	0.09	B	287.6	B	333	B	
9/16/2015 9:33	0.09	B	286.3	B	332	B	
9/16/2015 9:34	0.09	B	286.3	B	332	B	3
9/16/2015 9:35	0.09	B	284.1	B	330	B	
9/16/2015 9:36	1.79	B	48.8	B	49	B	
9/16/2015 9:37	1.89	B	10.8	B	9	B	
9/16/2015 9:38	1.89	B	8.8	B	8	B	
9/16/2015 9:39	1.89	B	8.1	B	7	B	
9/16/2015 9:40	1.89	B	6.7	B	6	B	
9/16/2015 9:41	1.89	B	6	B	6	B	
9/16/2015 9:42	1.89	B	5.3	B	6	B	3
9/16/2015 9:43	1.89	B	4.9	B	5	B	
9/16/2015 9:44	0.09	B	410	B	475	B	
9/16/2015 9:45	0	B	417	B	480	B	
9/16/2015 9:46	0	B	418.7	B	481	B	
9/16/2015 9:47	0	B	419.1	B	482	B	

9/16/2015 9:48	0	B	419.2	B	482	B		
9/16/2015 9:49	0	B	419.3	B	482	B		
9/16/2015 9:50	0	B	419.5	B	482	B		3
9/16/2015 9:51	0	B	419.8	B	483	B		
9/16/2015 9:52	9.59	B	500	B	1039	B		
9/16/2015 9:53	9.79	B	500	B	1050	B		
9/16/2015 9:54	9.79	B	500	B	1049	B		
9/16/2015 9:55	9.89	B	500	B	1050	B		
9/16/2015 9:56	9.89	B	500	B	1050	B		
9/16/2015 9:57	9.89	B	500	B	1051	B		3
9/16/2015 9:58	9.89	B	500	B	1051	B		
9/16/2015 9:59	6.69	B	165.9	B	185	B		
9/16/2015 10:00	6.79	B	41.5	B	37	B		
9/16/2015 10:01	6.49	B	34.9	B	30	B		
9/16/2015 10:02	7.09	B	30.3	B	24	B		

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 16, 2015
Start Time:	10:40
Stop Time:	12:39

Unit #2 Outlet **Year - 2015** **Day 2**

Analyzer or Channel	O2			SO2			NOX			COLo			COHi		
Analyzer Full Range	25			200			500			500			2000		
Analyzer Make	Environment SA			Environment SA			Environment SA			Environment SA			Environment SA		
Analyzer Serial Number	2686			2686			2686			2686			2686		
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High
Ca = Cal Gas Value	2.00	9.94	18.00	0.00	107.00	167.00	0.00	280.00	434.00	0.00	282.00	424.00	0.00	1073.00	1679.00
Cylinder ID#	EB0019268	CC164055	EB0002281	EB0019268	EB0016778	CC248887	EB0019268	EB0016778	CC248887	EB0019268	EB0016778	CC248887	EB0019268	CC164055	EB0002281
Expiration Date	09/23/22	09/23/22	12/19/20	09/23/22	10/08/22	06/26/18	09/23/22	10/08/22	06/26/18	09/23/22	10/08/22	06/26/18	09/23/22	09/23/22	12/19/20
Run #1	**2.01**	**10.09**	**18.28**	**1.30**	**106.70**	**165.00**	**1.50**	**274.90**	**437.80**	**1.70**	**283.00**	**426.20**	**2.00**	**1059.00**	**1648.00**
Run #2	**2.01**	**10.09**	**18.28**	**0.30**	**106.80**	**165.90**	**0.90**	**273.10**	**431.20**	**1.80**	**281.40**	**429.00**	**2.00**	**1055.00**	**1655.00**
Run #3	**2.01**	**10.09**	**18.28**	**0.70**	**107.00**	**165.00**	**1.00**	**270.90**	**430.00**	**1.70**	**282.00**	**427.70**	**2.00**	**1061.00**	**1639.00**
SUM (1+2+3)	6.03	30.27	54.84	2.30	320.50	495.90	3.40	818.90	1299.00	5.20	846.40	1282.90	6.00	3175.00	4942.00
Cm = SUM/3	2.01	10.09	18.28	0.77	106.83	165.30	1.13	272.97	433.00	1.73	282.13	427.63	2.00	1058.33	1647.33
Abs. Diff	0.01	0.15	0.28	0.7666667	0.1666667	1.7	1.1333333	7.0333333	1	1.7333333	0.1333333	3.6333333	2	14.666667	31.666667
%F.S.				0.38	0.08	0.85	0.23	1.41	0.20	0.35	-0.03	-0.73	0.10	0.73	1.58
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass

Comments:

Technician : Jake Kiser		Title: Altech Rep.	Date:
Reviewed By : Chuck Davis		Title: REGIONAL CEMS COORD.	Date:

Date/Time	U2 1-min Outlet Data - O2s-dry	Data Status	U2 1-min Outlet Data - SO2s	Data Status	U2 1-min Outlet Data - NOxs	Data Status	U2 1-min Outlet Data - COs-l	Data Status	U2 1-min Outlet Data - COs-h	Data Status	
9/16/2015 10:40	7.77	B	0	B	106.3	B	13.5	B	13	B	
9/16/2015 10:41	0	B	126.6	B	373	B	347.5	B	350	B	
9/16/2015 10:42	0	B	163.3	B	439.6	B	424.3	B	425	B	
9/16/2015 10:43	0	B	164.8	B	438.1	B	426.1	B	427	B	
9/16/2015 10:44	0.1	B	165.1	B	439.4	B	425.8	B	427	B	
9/16/2015 10:45	0	B	165.3	B	437.8	B	426.2	B	427	B	1
9/16/2015 10:46	0.1	B	165.3	B	440	B	426.4	B	427	B	
9/16/2015 10:47	0.7	B	157.4	B	403.2	B	387.4	B	387	B	
9/16/2015 10:48	2.01	B	6.2	B	7.3	B	6.5	B	7	B	
9/16/2015 10:49	2.01	B	2.4	B	2.1	B	1.9	B	2	B	
9/16/2015 10:50	2.01	B	1.4	B	1.3	B	1.7	B	2	B	
9/16/2015 10:51	2.01	B	1.3	B	1.5	B	1.7	B	2	B	1
9/16/2015 10:52	2.01	B	1.2	B	1.4	B	1.6	B	2	B	
9/16/2015 10:53	0.1	B	86.1	B	227.2	B	233.2	B	239	B	
9/16/2015 10:54	0.1	B	105.8	B	272	B	279.8	B	286	B	
9/16/2015 10:55	0	B	106.6	B	271.5	B	280.2	B	286	B	
9/16/2015 10:56	0.1	B	106.6	B	274.5	B	280.8	B	287	B	
9/16/2015 10:57	0	B	106.7	B	274.9	B	283	B	289	B	1
9/16/2015 10:58	0	B	106.7	B	274	B	280.3	B	286	B	
9/16/2015 10:59	17.87	B	39	B	96.5	B	500	B	1100	B	
9/16/2015 11:00	18.28	B	1.9	B	4.7	B	500	B	1632	B	
9/16/2015 11:01	18.17	B	0	B	1.4	B	500	B	1637	B	
9/16/2015 11:02	18.28	B	0	B	1	B	500	B	1634	B	
9/16/2015 11:03	18.28	B	0	B	1.3	B	500	B	1638	B	
9/16/2015 11:04	18.28	B	0	B	0.9	B	500	B	1633	B	
9/16/2015 11:05	18.28	B	0	B	1	B	500	B	1644	B	
9/16/2015 11:06	18.28	B	0	B	1	B	500	B	1660	B	
9/16/2015 11:07	18.28	B	0	B	1	B	500	B	1648	B	
9/16/2015 11:08	18.28	B	0	B	1	B	500	B	1644	B	
9/16/2015 11:09	18.28	B	0	B	1	B	500	B	1648	B	1
9/16/2015 11:10	18.28	B	0	B	3.5	B	500	B	1648	B	
9/16/2015 11:11	10.09	B	0	B	1.9	B	500	B	1069	B	
9/16/2015 11:12	10.2	B	0	B	1	B	500	B	1058	B	
9/16/2015 11:13	10.2	B	0	B	1.1	B	500	B	1061	B	
9/16/2015 11:14	10.2	B	0	B	1.2	B	500	B	1066	B	
9/16/2015 11:15	10.09	B	0	B	1.2	B	500	B	1063	B	
9/16/2015 11:16	10.09	B	0	B	1.2	B	500	B	1059	B	1
9/16/2015 11:17	10.09	B	0	B	1.2	B	500	B	1060	B	
9/16/2015 11:18	6.76	B	0.5	B	18.3	B	500	B	639	B	
9/16/2015 11:19	2.12	B	0.8	B	2.2	B	35.5	B	38	B	
9/16/2015 11:20	2.01	B	0.4	B	1	B	2.5	B	3	B	
9/16/2015 11:21	1.91	B	0.4	B	0.9	B	2.2	B	2	B	
9/16/2015 11:22	2.01	B	0.4	B	0.9	B	1.8	B	2	B	
9/16/2015 11:23	2.01	B	0.4	B	0.9	B	1.8	B	2	B	
9/16/2015 11:24	2.01	B	0.3	B	0.9	B	1.8	B	2	B	2
9/16/2015 11:25	0.4	B	53.6	B	162.4	B	149.6	B	154	B	
9/16/2015 11:26	0.1	B	105.4	B	270.7	B	278.7	B	286	B	
9/16/2015 11:27	0	B	106.4	B	272.7	B	283.2	B	290	B	
9/16/2015 11:28	0	B	106.8	B	273.1	B	281.4	B	288	B	2
9/16/2015 11:29	0	B	106.9	B	271.7	B	280.4	B	287	B	
9/16/2015 11:30	17.87	B	44	B	94.4	B	500	B	1136	B	
9/16/2015 11:31	18.17	B	0.4	B	2.9	B	500	B	1644	B	
9/16/2015 11:32	18.28	B	0	B	1.4	B	500	B	1641	B	
9/16/2015 11:33	18.17	B	0	B	1	B	500	B	1641	B	
9/16/2015 11:34	18.17	B	0	B	1	B	500	B	1672	B	
9/16/2015 11:35	18.17	B	0	B	1	B	500	B	1638	B	
9/16/2015 11:36	18.28	B	0	B	1	B	500	B	1641	B	
9/16/2015 11:37	18.28	B	0	B	0.9	B	500	B	1655	B	2
9/16/2015 11:38	18.28	B	0	B	1	B	500	B	1659	B	
9/16/2015 11:39	15.85	B	0.2	B	9	B	500	B	1468	B	
9/16/2015 11:40	9.99	B	0	B	1.4	B	500	B	1059	B	
9/16/2015 11:41	10.09	B	0	B	0.9	B	500	B	1062	B	
9/16/2015 11:42	10.09	B	0	B	1.2	B	500	B	1069	B	

9/16/2015 11:43	10.09 B	0 B	1.1 B	500 B	1055 B	2
9/16/2015 11:44	10.09 B	0 B	1.1 B	500 B	1053 B	
9/16/2015 11:45	10.09 B	0 B	1.1 B	500 B	1059 B	
9/16/2015 11:46	0.2 B	103.2 B	292.1 B	500 B	529 B	
9/16/2015 11:47	0 B	163.5 B	428 B	430 B	433 B	
9/16/2015 11:48	0 B	165.7 B	430.7 B	428 B	431 B	
9/16/2015 11:49	0 B	165.9 B	430.8 B	427.5 B	430 B	
9/16/2015 11:50	0 B	165.9 B	430.4 B	427.6 B	430 B	
9/16/2015 11:51	0 B	165.9 B	431.2 B	429 B	432 B	2
9/16/2015 11:52	0 B	166 B	431.1 B	428.7 B	431 B	
9/16/2015 11:53	17.97 B	60.5 B	141.4 B	500 B	1175 B	
9/16/2015 11:54	18.17 B	1.4 B	3 B	500 B	1646 B	
9/16/2015 11:55	18.28 B	0 B	1.3 B	500 B	1646 B	
9/16/2015 11:56	18.28 B	0 B	1 B	500 B	1651 B	
9/16/2015 11:57	18.28 B	0 B	1 B	500 B	1639 B	3
9/16/2015 11:58	18.28 B	0 B	1 B	500 B	1657 B	
9/16/2015 11:59	0.1 B	82.3 B	223.6 B	444.9 B	447 B	
9/16/2015 12:00	0 B	106 B	266.2 B	286.8 B	293 B	
9/16/2015 12:01	0 B	107.1 B	268.6 B	283.2 B	290 B	
9/16/2015 12:02	0 B	107.1 B	269.4 B	283.2 B	290 B	
9/16/2015 12:03	0 B	107.2 B	268.7 B	283 B	290 B	
9/16/2015 12:04	0 B	107.3 B	268.9 B	282.8 B	289 B	
9/16/2015 12:05	0 B	107.3 B	268.9 B	282.7 B	289 B	
9/16/2015 12:06	0 B	107.4 B	270 B	282.7 B	289 B	
9/16/2015 12:07	0 B	107.4 B	269.7 B	282.1 B	289 B	
9/16/2015 12:08	0 B	107.5 B	270.9 B	282 B	289 B	3
9/16/2015 12:09	0 B	107.5 B	270.9 B	282.1 B	289 B	
9/16/2015 12:10	0 B	102.2 B	269.6 B	267.7 B	274 B	
9/16/2015 12:11	2.01 B	4.9 B	6.1 B	5.7 B	6 B	
9/16/2015 12:12	1.91 B	1 B	1.6 B	2.2 B	2 B	
9/16/2015 12:13	2.01 B	0.8 B	1.2 B	1.8 B	2 B	
9/16/2015 12:14	2.01 B	0.8 B	1 B	1.6 B	2 B	
9/16/2015 12:15	2.01 B	0.7 B	1 B	1.7 B	2 B	3
9/16/2015 12:16	2.01 B	0.7 B	1 B	1.7 B	2 B	
9/16/2015 12:17	0.2 B	86.8 B	234.9 B	233.6 B	239 B	
9/16/2015 12:18	0 B	162.9 B	430.8 B	427.1 B	430 B	
9/16/2015 12:19	0 B	164.7 B	426.6 B	427.9 B	430 B	
9/16/2015 12:20	0 B	165.1 B	431.3 B	427.7 B	430 B	
9/16/2015 12:21	0 B	165.2 B	430.4 B	427.7 B	430 B	3
9/16/2015 12:22	4.34 B	133.7 B	354.2 B	403.3 B	405 B	
9/16/2015 12:23	10.09 B	7.4 B	13.2 B	500 B	1029 B	
9/16/2015 12:24	9.99 B	0.3 B	1.5 B	500 B	1060 B	
9/16/2015 12:25	10.09 B	0 B	1.4 B	500 B	1059 B	
9/16/2015 12:26	10.09 B	0 B	1.2 B	500 B	1060 B	
9/16/2015 12:27	10.09 B	0 B	1.2 B	500 B	1061 B	3
9/16/2015 12:28	10.09 B	0 B	1.2 B	500 B	1060 B	
9/16/2015 12:29	8.98 B	0 B	71.6 B	214.1 B	217 B	
9/16/2015 12:30	9.29 B	0 B	94.6 B	24 B	24 B	
9/16/2015 12:31	8.68 B	0 B	102.5 B	18.5 B	19 B	
9/16/2015 12:32	8.88 B	0 B	104.1 B	24 B	24 B	
9/16/2015 12:33	8.58 B	0 B	107.6 B	16.1 B	16 B	
9/16/2015 12:34	8.28 B	0 B	106.6 B	13 B	13 B	
9/16/2015 12:35	8.58 B	0 B	115.1 B	10.9 B	11 B	
9/16/2015 12:36	7.06 B	0 B	111.8 B	12.1 B	12 B	
9/16/2015 12:37	7.06 B	0 B	112.8 B	15.6 B	15 B	
9/16/2015 12:38	8.18 B	0 B	100.8 B	12.7 B	12 B	
9/16/2015 12:39	8.78 B	0 B	74.9 B	28 B	29 B	

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 17, 2015
Start Time:	8:45
Stop Time:	10:32

Unit #2 Inlet **Year - 2015** **Day3**

Analyzer or Channel	O2			COLo			COHi		
Analyzer Full Range	25			500			2000		
Analyzer Make	Environment SA			Environment SA			Environment SA		
Analyzer Serial Number	2685			2685			2685		
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High
Ca = Cal Gas Value	2.00	9.99	18.00	0.00	281.00	422.00	0.00	1075.00	1699.00
Cylinder ID#	CC332354	CC275798	CC239156	CC332354	EB0047021	CC10010	CC332354	CC275798	CC239156
Expiration Date	09/23/22	11/17/22	05/19/20	09/23/22	12/10/22	04/27/20	09/23/22	11/17/22	05/19/20
Run #1	**1.97**	**10.09**	**18.09**	**0.80**	**275.00**	**416.00**	**4.00**	**1060.00**	**1675.00**
Run #2	**1.89**	**10.09**	**18.09**	**1.70**	**275.50**	**421.80**	**4.00**	**1058.00**	**1674.00**
Run #3	**1.79**	**9.89**	**18.09**	**0.90**	**279.40**	**418.40**	**4.00**	**1053.00**	**1674.00**
SUM (1+2+3)	5.65	30.07	54.27	3.40	829.90	1256.20	12.00	3171.00	5023.00
Cm = SUM/3	1.88	10.02	18.09	1.13	276.63	418.73	4.00	1057.00	1674.33
Abs. Diff	0.1166667	0.0333333	0.09	1.1333333	4.3666667	3.2666667	4	18	24.666667
%F.S.				0.23	0.87	0.65	0.20	0.90	1.23
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass

Comments:

Technician :	Jake Kieser	Title:	Altech Rep.	Date:	
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:	

Date/Time	U2 1-min Inlet Data - O2e-dry	Data Status	U2 1-min Inlet Data - COe-l	Data Status	U2 1-min Inlet Data - COe-h	Data Status	
9/17/2015 8:39	8.89	B	11.4	B	8	B	
9/17/2015 8:40	8.79	B	12.1	B	9	B	
9/17/2015 8:41	0.19	B	100.3	B	116	B	
9/17/2015 8:42	0	B	415.7	B	479	B	
9/17/2015 8:43	0	B	416.7	B	480	B	
9/17/2015 8:44	0	B	416.6	B	480	B	
9/17/2015 8:45	0	B	416.8	B	480	B	1
9/17/2015 8:46	0	B	416.9	B	480	B	
9/17/2015 8:47	0	B	417	B	480	B	
9/17/2015 8:48	0	B	417.3	B	481	B	
9/17/2015 8:49	0	B	417.3	B	481	B	
9/17/2015 8:50	1.69	B	16.5	B	13	B	
9/17/2015 8:51	1.79	B	2.9	B	5	B	
9/17/2015 8:52	1.79	B	1.9	B	4	B	
9/17/2015 8:53	1.79	B	1.6	B	4	B	
9/17/2015 8:54	1.79	B	1.1	B	4	B	
9/17/2015 8:55	1.79	B	0.9	B	4	B	
9/17/2015 8:56	1.79	B	0.8	B	4	B	1
9/17/2015 8:57	1.79	B	1.9	B	4	B	
9/17/2015 8:58	0	B	273.3	B	318	B	
9/17/2015 8:59	0	B	274.7	B	320	B	
9/17/2015 9:00	0	B	275	B	320	B	
9/17/2015 9:01	0	B	275	B	320	B	
9/17/2015 9:02	0	B	275.1	B	320	B	
9/17/2015 9:03	0	B	275.2	B	320	B	1
9/17/2015 9:04	0	B	275.2	B	320	B	
9/17/2015 9:05	4.99	B	275.3	B	320	B	
9/17/2015 9:06	17.79	B	500	B	1668	B	
9/17/2015 9:07	17.89	B	500	B	1671	B	
9/17/2015 9:08	17.99	B	500	B	1675	B	
9/17/2015 9:09	18.09	B	500	B	1675	B	
9/17/2015 9:10	18.09	B	500	B	1675	B	1
9/17/2015 9:11	18.09	B	500	B	1676	B	
9/17/2015 9:12	10.19	B	500	B	1061	B	
9/17/2015 9:13	10.09	B	500	B	1061	B	
9/17/2015 9:14	10.09	B	500	B	1060	B	
9/17/2015 9:15	10.09	B	500	B	1060	B	1
9/17/2015 9:16	9.99	B	500	B	1059	B	
9/17/2015 9:17	9.99	B	500	B	1059	B	
9/17/2015 9:18	2.19	B	27.7	B	24	B	
9/17/2015 9:19	2.09	B	7.3	B	7	B	
9/17/2015 9:20	1.99	B	4.8	B	5	B	
9/17/2015 9:21	1.89	B	3.1	B	5	B	
9/17/2015 9:22	1.89	B	2.4	B	4	B	
9/17/2015 9:23	1.89	B	1.7	B	4	B	2
9/17/2015 9:24	1.89	B	1.9	B	4	B	
9/17/2015 9:25	0.49	B	97.3	B	114	B	
9/17/2015 9:26	0	B	274.3	B	319	B	
9/17/2015 9:27	0	B	275.4	B	320	B	

9/17/2015 9:28	0	B	275.3	B	320	B	
9/17/2015 9:29	0	B	275.4	B	320	B	
9/17/2015 9:30	0	B	275.4	B	320	B	
9/17/2015 9:31	0	B	275.5	B	320	B	2
9/17/2015 9:32	0	B	275.5	B	320	B	
9/17/2015 9:33	17.89	B	500	B	1667	B	
9/17/2015 9:34	17.99	B	500	B	1673	B	
9/17/2015 9:35	18.09	B	500	B	1673	B	
9/17/2015 9:36	18.09	B	500	B	1673	B	
9/17/2015 9:37	18.09	B	500	B	1674	B	
9/17/2015 9:38	18.09	B	500	B	1674	B	2
9/17/2015 9:39	18.09	B	500	B	1674	B	
9/17/2015 9:40	16.09	B	500	B	1593	B	
9/17/2015 9:41	10.19	B	500	B	1062	B	
9/17/2015 9:42	10.19	B	500	B	1061	B	
9/17/2015 9:43	10.09	B	500	B	1058	B	
9/17/2015 9:44	10.09	B	500	B	1058	B	
9/17/2015 9:45	10.09	B	500	B	1058	B	
9/17/2015 9:46	10.09	B	500	B	1058	B	2
9/17/2015 9:47	10.09	B	500	B	1058	B	
9/17/2015 9:48	9.99	B	500	B	1058	B	
9/17/2015 9:49	0.79	B	500	B	731	B	
9/17/2015 9:50	0.09	B	425	B	489	B	
9/17/2015 9:51	0	B	422.7	B	486	B	
9/17/2015 9:52	0	B	422	B	486	B	
9/17/2015 9:53	0	B	421.8	B	485	B	2
9/17/2015 9:54	0	B	421.7	B	485	B	
9/17/2015 9:55	4.99	B	500	B	699	B	
9/17/2015 9:56	17.89	B	500	B	1671	B	
9/17/2015 9:57	17.99	B	500	B	1673	B	
9/17/2015 9:58	17.99	B	500	B	1674	B	
9/17/2015 9:59	18.09	B	500	B	1674	B	
9/17/2015 10:00	18.09	B	500	B	1674	B	
9/17/2015 10:01	18.09	B	500	B	1674	B	
9/17/2015 10:02	18.09	B	500	B	1674	B	3
9/17/2015 10:03	18.09	B	500	B	1674	B	
9/17/2015 10:04	8.49	B	500	B	1333	B	
9/17/2015 10:05	0.09	B	287.5	B	333	B	
9/17/2015 10:06	0	B	281.7	B	327	B	
9/17/2015 10:07	0	B	280.5	B	326	B	
9/17/2015 10:08	0	B	279.8	B	325	B	
9/17/2015 10:09	0	B	279.4	B	324	B	3
9/17/2015 10:10	0	B	279.3	B	324	B	
9/17/2015 10:11	1.79	B	6	B	6	B	
9/17/2015 10:12	1.79	B	2.8	B	4	B	
9/17/2015 10:13	1.79	B	1.9	B	4	B	
9/17/2015 10:14	1.79	B	1.5	B	4	B	
9/17/2015 10:15	1.79	B	1.2	B	4	B	
9/17/2015 10:16	1.79	B	1	B	4	B	
9/17/2015 10:17	1.79	B	0.9	B	4	B	3
9/17/2015 10:18	1.79	B	0.8	B	4	B	
9/17/2015 10:19	1.79	B	0.8	B	4	B	

9/17/2015 10:20	0	B	409.5	B	471	B		
9/17/2015 10:21	0	B	416.6	B	479	B		
9/17/2015 10:22	0	B	418.3	B	481	B		
9/17/2015 10:23	0	B	418.4	B	481	B		
9/17/2015 10:24	0	B	418.4	B	481	B		3
9/17/2015 10:25	0	B	418.6	B	481	B		
9/17/2015 10:26	9.69	B	500	B	1030	B		
9/17/2015 10:27	9.79	B	500	B	1051	B		
9/17/2015 10:28	9.79	B	500	B	1052	B		
9/17/2015 10:29	9.89	B	500	B	1053	B		
9/17/2015 10:30	9.89	B	500	B	1053	B		
9/17/2015 10:31	9.89	B	500	B	1053	B		
9/17/2015 10:32	9.89	B	500	B	1053	B		3
9/17/2015 10:33	9.89	B	500	B	1053	B		
9/17/2015 10:34	8.99	B	100.7	B	114	B		
9/17/2015 10:35	8.19	B	27.2	B	22	B		
9/17/2015 10:36	8.29	B	26.4	B	21	B		
9/17/2015 10:37	8.59	B	28.1	B	23	B		
9/17/2015 10:38	8.49	B	26.1	B	21	B		
9/17/2015 10:39	8.59	B	32.2	B	27	B		

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 17, 2015
Start Time:	10:49
Stop Time:	12:27

Unit #2 Outlet **Year - 2015** **Day 3**

Analyzer or Channel	O2			SO2			NOX			COLo			COHi				
Analyzer Full Range	25			200			500			500			2000				
Analyzer Make	Environment SA			Environment SA			Environment SA			Environment SA			Environment SA				
Analyzer Serial Number	2686			2686			2686			2686			2686				
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High		
Ca = Cal Gas Value	2.00	9.94	18.00	0.00	107.00	167.00	0.00	280.00	434.00	0.00	282.00	424.00	0.00	1073.00	1679.00		
Cylinder ID#	EB0019268	CC164055	EB0002281	EB0019268	EB0016778	CC248887	EB0019268	EB0016778	CC248887	EB0019268	EB0016778	CC248887	EB0019268	CC164055	EB0002281		
Expiration Date	09/23/22	09/23/22	12/19/20	09/23/22	10/08/22	06/26/18	09/23/22	10/08/22	06/26/18	09/23/22	10/08/22	06/26/18	09/23/22	09/23/22	12/19/20		
Run #1	**1.91**	**9.89**	**18.07**	**1.30**	**106.50**	**165.30**	**1.90**	**275.50**	**442.50**	**1.30**	**276.20**	**418.80**	**2.00**	**1045.00**	**1668.00**		
Run #2	**1.91**	**9.99**	**18.07**	**1.10**	**106.60**	**165.20**	**1.70**	**273.90**	**435.20**	**1.50**	**277.10**	**420.90**	**2.00**	**1051.00**	**1682.00**		
Run #3	**1.91**	**9.99**	**18.07**	**1.20**	**107.30**	**164.80**	**1.80**	**273.70**	**437.20**	**1.30**	**276.80**	**419.80**	**2.00**	**1050.00**	**1676.00**		
SUM (1+2+3)	5.73	29.87	54.21	3.60	320.40	495.30	5.40	823.10	1314.90	4.10	830.10	1259.50	6.00	3146.00	5026.00		
Cm = SUM/3	1.91	9.96	18.07	1.20	106.80	165.10	1.80	274.37	438.30	1.37	276.70	419.83	2.00	1048.67	1675.33		
Abs. Diff	0.09	0.0166667	0.07	1.2	0.2	1.9	1.8	5.6333333	4.3	1.3666667	5.3	4.1666667	2	24.333333	3.6666667		
%F.S.				0.60	0.10	0.95	0.36	1.13	-0.86	0.27	1.06	0.83	0.10	1.22	0.18		
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**		

Comments:

Technician :	Jake Kiser	Title:	Altech Rep.	Date:	
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:	

Date/Time	U2 1-min Outlet Data - O2s-dry	Data Status	U2 1-min Outlet Data - SO2s	Data Status	U2 1-min Outlet Data - NOxs	Data Status	U2 1-min Outlet Data - COs-l	Data Status	U2 1-min Outlet Data - COs-h	Data Status	
9/17/2015 10:40	0	B	117.4	B	355.7	B	376.9	B	379	B	
9/17/2015 10:41	0	B	163.2	B	447.3	B	420	B	424	B	
9/17/2015 10:42	0	B	164.5	B	446.6	B	417.6	B	421	B	
9/17/2015 10:43	0	B	164.6	B	447.5	B	419.9	B	424	B	
9/17/2015 10:44	0	B	164.7	B	447.7	B	419.7	B	423	B	
9/17/2015 10:45	0	B	164.8	B	447.4	B	418.5	B	422	B	
9/17/2015 10:46	0	B	165	B	447.4	B	418.7	B	422	B	
9/17/2015 10:47	0	B	165.1	B	442.3	B	418.5	B	422	B	
9/17/2015 10:48	0	B	165.2	B	442.5	B	418.7	B	422	B	
9/17/2015 10:49	0	B	165.3	B	442.5	B	418.8	B	423	B	1
9/17/2015 10:50	0	B	165.4	B	440.9	B	418.6	B	422	B	
9/17/2015 10:51	1.91	B	27.4	B	56.9	B	52.9	B	57	B	
9/17/2015 10:52	1.91	B	2.9	B	2.2	B	1.6	B	2	B	
9/17/2015 10:53	1.91	B	1.6	B	2.3	B	1.7	B	2	B	
9/17/2015 10:54	1.91	B	1.4	B	2.1	B	1.4	B	2	B	
9/17/2015 10:55	1.91	B	1.4	B	1.9	B	1.3	B	2	B	
9/17/2015 10:56	1.91	B	1.3	B	1.9	B	1.3	B	2	B	1
9/17/2015 10:57	1.91	B	1.2	B	1.9	B	1.3	B	2	B	
9/17/2015 10:58	0	B	97	B	254.5	B	255.8	B	263	B	
9/17/2015 10:59	0	B	106	B	275.8	B	275.5	B	283	B	
9/17/2015 11:00	0	B	106.4	B	275.4	B	274.8	B	282	B	
9/17/2015 11:01	0	B	106.4	B	275.3	B	274.9	B	283	B	
9/17/2015 11:02	0	B	106.5	B	275.5	B	276.2	B	284	B	1
9/17/2015 11:03	0	B	106.6	B	275.4	B	275.8	B	283	B	
9/17/2015 11:04	17.97	B	28.3	B	64.1	B	500	B	1281	B	
9/17/2015 11:05	18.07	B	1.5	B	3.7	B	500	B	1660	B	
9/17/2015 11:06	18.07	B	0.4	B	2.3	B	500	B	1652	B	
9/17/2015 11:07	18.07	B	0.4	B	2.2	B	500	B	1671	B	
9/17/2015 11:08	18.07	B	0.3	B	2.2	B	500	B	1668	B	1
9/17/2015 11:09	18.07	B	0.2	B	2.1	B	500	B	1649	B	
9/17/2015 11:10	11.31	B	0	B	14	B	500	B	1231	B	
9/17/2015 11:11	9.99	B	0	B	1.9	B	500	B	1037	B	
9/17/2015 11:12	9.99	B	0	B	2.1	B	500	B	1050	B	
9/17/2015 11:13	9.99	B	0	B	2.1	B	500	B	1036	B	
9/17/2015 11:14	9.99	B	0	B	2	B	500	B	1038	B	
9/17/2015 11:15	9.99	B	0	B	2	B	500	B	1044	B	
9/17/2015 11:16	9.89	B	0	B	2	B	500	B	1045	B	1
9/17/2015 11:17	9.99	B	0	B	2	B	500	B	1055	B	
9/17/2015 11:18	9.99	B	0	B	2	B	500	B	1057	B	
9/17/2015 11:19	8.68	B	0	B	12.3	B	500	B	641	B	
9/17/2015 11:20	2.12	B	0	B	10.3	B	105.4	B	111	B	
9/17/2015 11:21	2.01	B	1.8	B	2.8	B	15.1	B	16	B	
9/17/2015 11:22	1.91	B	1.2	B	1.6	B	1.7	B	2	B	
9/17/2015 11:23	1.91	B	1.1	B	1.7	B	1.9	B	2	B	
9/17/2015 11:24	1.91	B	1.1	B	1.7	B	1.5	B	2	B	2
9/17/2015 11:25	1.91	B	1	B	1.7	B	1.5	B	2	B	
9/17/2015 11:26	0.1	B	59.3	B	164.1	B	160.9	B	167	B	
9/17/2015 11:27	0	B	105.5	B	273.4	B	276.6	B	287	B	
9/17/2015 11:28	0	B	106.3	B	273.1	B	274.1	B	284	B	
9/17/2015 11:29	0	B	106.5	B	273.7	B	274.6	B	285	B	
9/17/2015 11:30	0	B	106.6	B	273.9	B	277.1	B	287	B	2
9/17/2015 11:31	0	B	106.7	B	273.7	B	276.1	B	286	B	
9/17/2015 11:32	17.47	B	44.6	B	111.4	B	500	B	1042	B	
9/17/2015 11:33	18.07	B	2	B	4.2	B	500	B	1679	B	
9/17/2015 11:34	18.07	B	0.3	B	2.1	B	500	B	1675	B	
9/17/2015 11:35	18.07	B	0.2	B	2	B	500	B	1672	B	
9/17/2015 11:36	18.07	B	0.1	B	2	B	500	B	1682	B	
9/17/2015 11:37	18.07	B	0	B	2	B	500	B	1682	B	2
9/17/2015 11:38	17.97	B	0	B	1.9	B	500	B	1673	B	
9/17/2015 11:39	10.2	B	0	B	18.1	B	500	B	1052	B	
9/17/2015 11:40	9.89	B	0	B	1.7	B	500	B	1047	B	
9/17/2015 11:41	9.99	B	0	B	1.9	B	500	B	1055	B	
9/17/2015 11:42	9.99	B	0	B	1.9	B	500	B	1054	B	

9/17/2015 11:43	9.99 B	0 B	1.7 B	500 B	1052 B	
9/17/2015 11:44	9.99 B	0 B	1.8 B	500 B	1054 B	
9/17/2015 11:45	9.99 B	0 B	1.7 B	500 B	1051 B	2
9/17/2015 11:46	9.89 B	0 B	1.8 B	500 B	1048 B	
9/17/2015 11:47	0 B	139.8 B	386.2 B	422.6 B	431 B	
9/17/2015 11:48	0 B	164.5 B	434.2 B	418 B	425 B	
9/17/2015 11:49	0 B	165.1 B	437.1 B	421.1 B	428 B	
9/17/2015 11:50	0 B	165.2 B	435.2 B	420.9 B	428 B	2
9/17/2015 11:51	0 B	165.3 B	434 B	420.6 B	428 B	
9/17/2015 11:52	0 B	165.4 B	434.1 B	420.3 B	428 B	
9/17/2015 11:53	17.47 B	67.9 B	163.8 B	500 B	1099 B	
9/17/2015 11:54	18.07 B	1.9 B	2.5 B	500 B	1670 B	
9/17/2015 11:55	18.07 B	0.6 B	2.4 B	500 B	1683 B	
9/17/2015 11:56	18.07 B	0.4 B	1.8 B	500 B	1671 B	
9/17/2015 11:57	18.07 B	0.4 B	2.1 B	500 B	1678 B	
9/17/2015 11:58	18.07 B	0.3 B	2 B	500 B	1676 B	3
9/17/2015 11:59	18.07 B	0.2 B	2.5 B	500 B	1676 B	
9/17/2015 12:00	0.1 B	75.3 B	216.1 B	434.1 B	441 B	
9/17/2015 12:01	0 B	106.2 B	270.6 B	280.6 B	291 B	
9/17/2015 12:02	0 B	107 B	271.9 B	275.8 B	286 B	
9/17/2015 12:03	0 B	107.2 B	269.8 B	274.4 B	284 B	
9/17/2015 12:04	0 B	107.2 B	274.3 B	276.1 B	286 B	
9/17/2015 12:05	0 B	107.3 B	275.3 B	276.7 B	287 B	
9/17/2015 12:06	0 B	107.3 B	273.7 B	276.8 B	287 B	3
9/17/2015 12:07	0 B	107.4 B	273.7 B	276.8 B	287 B	
9/17/2015 12:08	1.91 B	30.5 B	71.5 B	40.3 B	44 B	
9/17/2015 12:09	1.91 B	1.9 B	2.3 B	1.9 B	2 B	
9/17/2015 12:10	1.91 B	1.6 B	2 B	1.5 B	2 B	
9/17/2015 12:11	1.91 B	1.5 B	2 B	1.4 B	2 B	
9/17/2015 12:12	1.91 B	1.4 B	1.8 B	1.6 B	2 B	
9/17/2015 12:13	1.91 B	1.3 B	1.8 B	1.4 B	2 B	
9/17/2015 12:14	1.91 B	1.2 B	1.8 B	1.3 B	2 B	3
9/17/2015 12:15	1.91 B	1.1 B	1.9 B	1.4 B	2 B	
9/17/2015 12:16	0 B	161 B	437 B	413.4 B	420 B	
9/17/2015 12:17	0 B	164.4 B	431.5 B	419.6 B	427 B	
9/17/2015 12:18	0 B	164.7 B	433.5 B	418.8 B	426 B	
9/17/2015 12:19	0 B	164.8 B	437.2 B	419.8 B	427 B	3
9/17/2015 12:20	0 B	164.9 B	438.7 B	419.9 B	427 B	
9/17/2015 12:21	0 B	165 B	438.6 B	420 B	427 B	
9/17/2015 12:22	4.34 B	119 B	317.6 B	500 B	506 B	
9/17/2015 12:23	9.89 B	8.9 B	15.1 B	500 B	1030 B	
9/17/2015 12:24	9.99 B	1 B	2.2 B	500 B	1044 B	
9/17/2015 12:25	9.89 B	0.7 B	2.2 B	500 B	1059 B	
9/17/2015 12:26	9.89 B	0.6 B	2.1 B	500 B	1049 B	
9/17/2015 12:27	9.99 B	0.5 B	1.9 B	500 B	1050 B	3
9/17/2015 12:28	9.99 B	0.4 B	1.9 B	500 B	1051 B	

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 18, 2015
Start Time:	9:16
Stop Time:	11:06

Unit #2 Inlet **Year - 2015** **Day 4**

Analyzer or Channel	O2			COLo			COHi											
Analyzer Full Range	25			500			2000											
Analyzer Make	Environment SA			Environment SA			Environment SA											
Analyzer Serial Number	2685			2685			2685											
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High									
Ca = Cal Gas Value	2.00	9.99	18.00	0.00	281.00	433.00	0.00	1075.00	1699.00									
Cylinder ID#	CC320410	CC275798	CC239156	CC320410	EB0047021	EB0047069	CC320410	CC275798	CC239156									
Expiration Date	08/25/20	11/17/22	05/19/20	08/25/20	12/10/22	04/07/20	08/25/20	11/17/22	05/19/20									
Run #1	**1.79**	**9.99**	**17.99**	**1.00**	**278.00**	**433.50**	**4.00**	**1057.00**	**1674.00**									
Run #2	**1.89**	**9.99**	**17.99**	**1.80**	**278.40**	**435.90**	**4.00**	**1057.00**	**1672.00**									
Run #3	**1.79**	**9.98**	**17.99**	**1.10**	**282.50**	**433.00**	**4.00**	**1053.00**	**1672.00**									
SUM (1+2+3)	5.47	29.96	53.97	3.90	838.90	1302.40	12.00	3167.00	5018.00									
Cm = SUM/3	1.82	9.99	17.99	1.30	279.63	434.13	4.00	1055.67	1672.67									
Abs. Diff	0.1766667	0.0033333	0.01	1.3	1.3666667	1.1333333	4	19.333333	26.333333									
%F.S.				0.26	0.27	-0.23	0.20	0.97	1.32									
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass									

Comments:

Technician :	Jake Kieser	Title:	Altech Rep.	Date:	
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:	

Date/Time	U2 1-min Inlet Data - O2e-dry	Data Status	U2 1-min Inlet Data - COe-l	Data Status	U2 1-min Inlet Data - COe-h	Data Status	
9/18/2015 9:08	0	B	427.3	B	490	B	
9/18/2015 9:09	0	B	431.5	B	490	B	
9/18/2015 9:10	0	B	432.9	B	490	B	
9/18/2015 9:11	0	B	433	B	490	B	
9/18/2015 9:12	0	B	433.1	B	490	B	
9/18/2015 9:13	0	B	433.2	B	491	B	
9/18/2015 9:14	0	B	433.3	B	491	B	
9/18/2015 9:15	0	B	433.4	B	491	B	
9/18/2015 9:16	0	B	433.5	B	491	B	1
9/18/2015 9:17	0	B	433.6	B	491	B	
9/18/2015 9:18	0	B	433.5	B	491	B	
9/18/2015 9:19	1.59	B	141.8	B	161	B	
9/18/2015 9:20	1.79	B	4.3	B	5	B	
9/18/2015 9:21	1.79	B	2.4	B	4	B	
9/18/2015 9:22	1.79	B	1.7	B	4	B	
9/18/2015 9:23	1.79	B	1.3	B	4	B	
9/18/2015 9:24	1.79	B	1.1	B	4	B	
9/18/2015 9:25	1.79	B	1	B	4	B	1
9/18/2015 9:26	1.79	B	10	B	8	B	
9/18/2015 9:27	0	B	276.1	B	316	B	
9/18/2015 9:28	0	B	277.2	B	317	B	
9/18/2015 9:29	0	B	277.7	B	318	B	
9/18/2015 9:30	0	B	277.8	B	318	B	
9/18/2015 9:31	0	B	277.9	B	318	B	
9/18/2015 9:32	0	B	278	B	318	B	1
9/18/2015 9:33	0	B	278.1	B	318	B	
9/18/2015 9:34	17.29	B	500	B	1481	B	
9/18/2015 9:35	17.79	B	500	B	1659	B	
9/18/2015 9:36	17.89	B	500	B	1663	B	
9/18/2015 9:37	17.89	B	500	B	1663	B	
9/18/2015 9:38	17.89	B	500	B	1668	B	
9/18/2015 9:39	17.99	B	500	B	1672	B	
9/18/2015 9:40	17.99	B	500	B	1673	B	
9/18/2015 9:41	17.99	B	500	B	1674	B	1
9/18/2015 9:42	17.99	B	500	B	1674	B	
9/18/2015 9:43	10.29	B	500	B	1120	B	
9/18/2015 9:44	10.09	B	500	B	1060	B	
9/18/2015 9:45	10.09	B	500	B	1058	B	
9/18/2015 9:46	9.99	B	500	B	1057	B	
9/18/2015 9:47	9.99	B	500	B	1058	B	
9/18/2015 9:48	9.99	B	500	B	1058	B	
9/18/2015 9:49	9.99	B	500	B	1057	B	
9/18/2015 9:50	9.99	B	500	B	1057	B	1
9/18/2015 9:51	9.99	B	500	B	1057	B	
9/18/2015 9:52	2.09	B	16	B	13	B	
9/18/2015 9:53	1.99	B	7	B	6	B	
9/18/2015 9:54	1.99	B	4.7	B	5	B	
9/18/2015 9:55	1.99	B	3	B	5	B	
9/18/2015 9:56	1.89	B	2.2	B	4	B	

9/18/2015 9:57	1.89	B	1.8	B	4	B		2
9/18/2015 9:58	1.89	B	1.4	B	4	B		
9/18/2015 9:59	1.89	B	1.2	B	4	B		
9/18/2015 10:00	0	B	236.8	B	302	B		
9/18/2015 10:01	0	B	277.2	B	319	B		
9/18/2015 10:02	0	B	277.9	B	319	B		
9/18/2015 10:03	0	B	278.2	B	320	B		
9/18/2015 10:04	0	B	278.3	B	320	B		
9/18/2015 10:05	0	B	278.4	B	320	B		2
9/18/2015 10:06	0	B	278.5	B	320	B		
9/18/2015 10:07	0	B	278.5	B	320	B		
9/18/2015 10:08	17.49	B	500	B	1507	B		
9/18/2015 10:09	17.79	B	500	B	1668	B		
9/18/2015 10:10	17.89	B	500	B	1669	B		
9/18/2015 10:11	17.89	B	500	B	1671	B		
9/18/2015 10:12	17.99	B	500	B	1672	B		
9/18/2015 10:13	17.99	B	500	B	1672	B		2
9/18/2015 10:14	17.99	B	500	B	1672	B		
9/18/2015 10:15	10.49	B	500	B	1291	B		
9/18/2015 10:16	10.09	B	500	B	1059	B		
9/18/2015 10:17	10.09	B	500	B	1057	B		2
9/18/2015 10:18	10.09	B	500	B	1057	B		
9/18/2015 10:19	9.99	B	500	B	1057	B		
9/18/2015 10:20	9.99	B	500	B	1057	B		
9/18/2015 10:21	9.99	B	500	B	1056	B		
9/18/2015 10:22	9.99	B	500	B	1056	B		2
9/18/2015 10:23	0.19	B	453.5	B	515	B		
9/18/2015 10:24	0	B	438.1	B	498	B		
9/18/2015 10:25	0	B	436.7	B	496	B		
9/18/2015 10:26	0	B	436	B	495	B		
9/18/2015 10:27	0	B	436	B	495	B		
9/18/2015 10:28	0	B	435.9	B	495	B		2
9/18/2015 10:29	0	B	435.8	B	495	B		
9/18/2015 10:30	17.49	B	500	B	1568	B		
9/18/2015 10:31	17.79	B	500	B	1667	B		
9/18/2015 10:32	17.79	B	500	B	1671	B		
9/18/2015 10:33	17.89	B	500	B	1671	B		
9/18/2015 10:34	17.99	B	500	B	1671	B		
9/18/2015 10:35	17.99	B	500	B	1672	B		
9/18/2015 10:36	17.99	B	500	B	1672	B		3
9/18/2015 10:37	14.79	B	500	B	1513	B		
9/18/2015 10:38	0.09	B	293.9	B	337	B		
9/18/2015 10:39	0.09	B	286.6	B	329	B		
9/18/2015 10:40	0	B	285.1	B	327	B		
9/18/2015 10:41	0	B	282.8	B	324	B		
9/18/2015 10:42	0	B	282.5	B	324	B		3
9/18/2015 10:43	0	B	282.4	B	324	B		
9/18/2015 10:44	1.59	B	125	B	143	B		
9/18/2015 10:45	1.79	B	2.9	B	5	B		
9/18/2015 10:46	1.79	B	2.1	B	4	B		
9/18/2015 10:47	1.79	B	1.6	B	4	B		
9/18/2015 10:48	1.79	B	1.2	B	4	B		

9/18/2015 10:49	1.79	B	1.1	B	4	B	3
9/18/2015 10:50	1.79	B	1	B	4	B	
9/18/2015 10:51	1.09	B	86.1	B	102	B	
9/18/2015 10:52	0	B	426.4	B	484	B	
9/18/2015 10:53	0	B	431.1	B	489	B	
9/18/2015 10:54	0	B	432.3	B	491	B	
9/18/2015 10:55	0	B	432.8	B	491	B	
9/18/2015 10:56	0	B	432.9	B	491	B	
9/18/2015 10:57	0	B	433	B	492	B	3
9/18/2015 10:58	0	B	433.2	B	492	B	
9/18/2015 10:59	9.59	B	500	B	1046	B	
9/18/2015 11:00	9.79	B	500	B	1050	B	
9/18/2015 11:01	9.79	B	500	B	1053	B	
9/18/2015 11:02	9.89	B	500	B	1053	B	
9/18/2015 11:03	9.89	B	500	B	1053	B	
9/18/2015 11:04	9.89	B	500	B	1053	B	
9/18/2015 11:05	9.89	B	500	B	1053	B	
9/18/2015 11:06	9.89	B	500	B	1053	B	3
9/18/2015 11:07	9.89	B	500	B	1053	B	
9/18/2015 11:08	8.99	B	500	B	734	B	
9/18/2015 11:09	8.99	B	51	B	48	B	
9/18/2015 11:10	7.99	B	40.6	B	36	B	
9/18/2015 11:11	7.99	B	35.9	B	30	B	
9/18/2015 11:12	8.39	B	39.8	B	35	B	

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 18, 2015
Start Time:	11:28
Stop Time:	13:11

Unit #2 Outlet **Year - 2015** **Day 4**

Analyzer or Channel	O2			SO2			NOX		
Analyzer Full Range	25			200			500		
Analyzer Make	Environment SA			Environment SA			Environment SA		
Analyzer Serial Number	2686			2686			2686		
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High
Ca = Cal Gas Value	2.00	9.94	18.00	0.00	107.00	165.00	0.00	280.00	437.00
Cylinder ID#	EB0019268	CC164055	EB0002281	EB0019268	EB0016778	EB0047080	EB0019268	EB0016778	EB0047080
Expiration Date	09/23/22	09/23/22	12/19/20	09/23/22	10/08/22	07/08/18	09/23/22	10/08/22	07/08/18
Run #1	**2.01**	**9.89**	**17.97**	**1.40**	**106.10**	**161.70**	**1.90**	**276.20**	**442.20**
Run #2	**1.91**	**9.89**	**17.97**	**0.60**	**106.40**	**162.60**	**1.80**	**281.00**	**448.00**
Run #3	**1.91**	**9.89**	**17.97**	**1.50**	**106.90**	**162.30**	**1.70**	**279.20**	**440.40**
SUM (1+2+3)	5.83	29.67	53.91	3.50	319.40	486.60	5.40	836.40	1330.60
Cm = SUM/3	1.94	9.89	17.97	1.17	106.47	162.20	1.80	278.80	443.53
Abs. Diff	0.0566667	0.05	0.03	1.1666667	0.5333333	2.8	1.8	1.2	6.5333333
%F.S.				0.58	0.27	1.40	0.36	0.24	-1.31
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**

Analyzer or Channel	COLo			COHi				
Analyzer Full Range	500			2000				
Analyzer Make	Environment SA			Environment SA				
Analyzer Serial Number	2686			2686				
Cal Gas Range	Low	Mid	High	Low	Mid	High		
Ca = Cal Gas Value	0.00	282.00	425.00	0.00	1073.00	1679.00		
Cylinder ID#	EB0019268	EB0016778	EB0047080	EB0019268	CC164055	EB0002281		
Expiration Date	09/23/22	10/08/22	07/08/18	09/23/22	09/23/22	12/19/20		
Run #1	**1.40**	**277.10**	**417.80**	**2.00**	**1054.00**	**1672.00**		
Run #2	**1.70**	**276.90**	**425.40**	**2.00**	**1053.00**	**1673.00**		
Run #3	**1.60**	**277.40**	**424.30**	**2.00**	**1051.00**	**1673.00**		
SUM (1+2+3)	4.70	831.40	1267.50	6.00	3158.00	5018.00		
Cm = SUM/3	1.57	277.13	422.50	2.00	1052.67	1672.67		
Abs. Diff	1.5666667	4.8666667	2.5	2	20.333333	6.3333333		
%F.S.	0.31	0.97	0.50	0.10	1.02	0.32		
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**		

Comments:

Technician : Jake Kiser		Title: Altech Rep.	Date:
Reviewed By : Chuck Davis		Title: REGIONAL CEMS COORD.	Date:

Date/Time	U2 1-min Outlet Data - O2s-dry	Data Status	U2 1-min Outlet Data - SO2s	Data Status	U2 1-min Outlet Data - NOxs	Data Status	U2 1-min Outlet Data - COs-l	Data Status	U2 1-min Outlet Data - COs-h	Data Status	
9/18/2015 11:21	9.59	B	0	B	61.5	B	17.7	B	18	B	
9/18/2015 11:22	0.5	B	69.6	B	242.8	B	217.8	B	225	B	
9/18/2015 11:23	0	B	159.5	B	438.7	B	417	B	425	B	
9/18/2015 11:24	0	B	160.9	B	441	B	416.5	B	425	B	
9/18/2015 11:25	0	B	161.3	B	443.3	B	417.3	B	425	B	
9/18/2015 11:26	0	B	161.4	B	443	B	418.6	B	427	B	
9/18/2015 11:27	0	B	161.6	B	442.4	B	418.4	B	426	B	
9/18/2015 11:28	0	B	161.7	B	442.2	B	417.8	B	426	B	1
9/18/2015 11:29	0	B	161.8	B	443.2	B	418	B	426	B	
9/18/2015 11:30	2.01	B	52.4	B	130.2	B	117.8	B	124	B	
9/18/2015 11:31	1.91	B	3	B	3.1	B	2	B	2	B	
9/18/2015 11:32	1.91	B	2	B	1.8	B	1.6	B	2	B	
9/18/2015 11:33	1.91	B	1.7	B	2.3	B	1.5	B	2	B	
9/18/2015 11:34	1.91	B	1.6	B	1.7	B	1.4	B	2	B	
9/18/2015 11:35	2.01	B	1.4	B	1.9	B	1.4	B	2	B	1
9/18/2015 11:36	1.91	B	1.3	B	1.9	B	1.3	B	2	B	
9/18/2015 11:37	0	B	100.9	B	267.1	B	265.9	B	274	B	
9/18/2015 11:38	0	B	105.2	B	276.3	B	275.2	B	283	B	
9/18/2015 11:39	0	B	106	B	274.5	B	274.3	B	282	B	
9/18/2015 11:40	0	B	106.1	B	273.5	B	274.2	B	282	B	
9/18/2015 11:41	0	B	106.1	B	276.2	B	277.1	B	285	B	1
9/18/2015 11:42	0	B	106.1	B	279.1	B	276.3	B	284	B	
9/18/2015 11:43	3.02	B	78	B	228.8	B	409.5	B	411	B	
9/18/2015 11:44	17.87	B	3	B	5.2	B	500	B	1659	B	
9/18/2015 11:45	17.97	B	0.2	B	2.4	B	500	B	1653	B	
9/18/2015 11:46	17.97	B	0	B	2.5	B	500	B	1672	B	1
9/18/2015 11:47	17.97	B	0	B	2.7	B	500	B	1655	B	
9/18/2015 11:48	12.82	B	1.9	B	20.4	B	500	B	1329	B	
9/18/2015 11:49	9.99	B	0.3	B	3.4	B	500	B	1038	B	
9/18/2015 11:50	9.89	B	0	B	1.7	B	500	B	1035	B	
9/18/2015 11:51	9.89	B	0	B	2.2	B	500	B	1051	B	
9/18/2015 11:52	9.99	B	0	B	1.6	B	500	B	1049	B	
9/18/2015 11:53	9.89	B	0	B	1.6	B	500	B	1034	B	
9/18/2015 11:54	9.89	B	0	B	2.3	B	500	B	1049	B	
9/18/2015 11:55	9.89	B	0	B	1.7	B	500	B	1041	B	
9/18/2015 11:56	9.89	B	0	B	2.1	B	500	B	1037	B	
9/18/2015 11:57	9.89	B	0	B	1.9	B	500	B	1054	B	1
9/18/2015 11:58	9.89	B	0	B	1.4	B	500	B	1050	B	
9/18/2015 11:59	4.54	B	0	B	24	B	493	B	499	B	
9/18/2015 12:00	2.01	B	1.3	B	2.5	B	18.5	B	20	B	
9/18/2015 12:01	1.91	B	1	B	1.5	B	2.2	B	3	B	
9/18/2015 12:02	1.91	B	0.7	B	1.5	B	1.8	B	2	B	
9/18/2015 12:03	1.91	B	0.7	B	1.5	B	1.8	B	2	B	
9/18/2015 12:04	1.91	B	0.7	B	1.5	B	1.7	B	2	B	
9/18/2015 12:05	1.91	B	0.6	B	1.8	B	1.7	B	2	B	2
9/18/2015 12:06	1.91	B	0.6	B	1.8	B	1.5	B	2	B	
9/18/2015 12:07	0	B	90.2	B	237.6	B	242.5	B	252	B	
9/18/2015 12:08	0	B	105.4	B	274.4	B	275.9	B	286	B	
9/18/2015 12:09	0	B	106	B	274.3	B	276.8	B	287	B	
9/18/2015 12:10	0	B	106.1	B	271.8	B	277.4	B	288	B	
9/18/2015 12:11	0	B	106.2	B	281.2	B	275.6	B	286	B	
9/18/2015 12:12	0	B	106.3	B	284	B	277	B	287	B	
9/18/2015 12:13	0	B	106.4	B	281	B	276.9	B	287	B	2
9/18/2015 12:14	0	B	106.4	B	282.9	B	276.7	B	287	B	
9/18/2015 12:15	14.34	B	88.3	B	257.4	B	332.2	B	341	B	
9/18/2015 12:16	17.97	B	5.8	B	11.2	B	500	B	1621	B	
9/18/2015 12:17	17.87	B	0	B	2.1	B	500	B	1685	B	
9/18/2015 12:18	17.97	B	0	B	2.3	B	500	B	1679	B	
9/18/2015 12:19	17.87	B	0	B	1.8	B	500	B	1673	B	
9/18/2015 12:20	17.97	B	0	B	2.3	B	500	B	1692	B	
9/18/2015 12:21	17.97	B	0	B	1.8	B	500	B	1675	B	
9/18/2015 12:22	17.87	B	0	B	1.9	B	500	B	1676	B	2
9/18/2015 12:23	17.97	B	0	B	4.8	B	500	B	1667	B	

9/18/2015 12:24	9.89	B	0.4	B	2.1	B	500	B	1047	B	
9/18/2015 12:25	9.89	B	0	B	2	B	500	B	1057	B	
9/18/2015 12:26	9.99	B	0	B	1.6	B	500	B	1049	B	
9/18/2015 12:27	9.89	B	0	B	1.6	B	500	B	1044	B	
9/18/2015 12:28	9.89	B	0	B	1.6	B	500	B	1053	B	2
9/18/2015 12:29	9.89	B	0	B	1.8	B	500	B	1053	B	
9/18/2015 12:30	6.05	B	25.2	B	115	B	500	B	528	B	
9/18/2015 12:31	0	B	150.1	B	426.6	B	420.9	B	428	B	
9/18/2015 12:32	0	B	161.7	B	442.6	B	426.4	B	434	B	
9/18/2015 12:33	0	B	162.2	B	443.2	B	424.3	B	431	B	
9/18/2015 12:34	0	B	162.2	B	446	B	423.6	B	431	B	
9/18/2015 12:35	0	B	162.3	B	447.6	B	425	B	432	B	
9/18/2015 12:36	0	B	162.4	B	444.4	B	423.8	B	431	B	
9/18/2015 12:37	0	B	162.5	B	443.2	B	423.8	B	431	B	
9/18/2015 12:38	0	B	162.6	B	448	B	425.4	B	433	B	2
9/18/2015 12:39	0	B	162.7	B	439	B	424	B	431	B	
9/18/2015 12:40	0	B	162.8	B	444.4	B	423.9	B	431	B	
9/18/2015 12:41	9.79	B	94.8	B	274.1	B	500	B	709	B	
9/18/2015 12:42	17.87	B	20.9	B	40.2	B	500	B	1494	B	
9/18/2015 12:43	17.97	B	0.8	B	2.9	B	500	B	1679	B	
9/18/2015 12:44	17.97	B	0.6	B	2	B	500	B	1678	B	
9/18/2015 12:45	17.97	B	0.5	B	2.2	B	500	B	1676	B	
9/18/2015 12:46	17.97	B	0.4	B	2	B	500	B	1690	B	
9/18/2015 12:47	17.97	B	0.3	B	1.9	B	500	B	1673	B	3
9/18/2015 12:48	17.97	B	0.2	B	1.9	B	500	B	1681	B	
9/18/2015 12:49	0.9	B	44.3	B	146	B	500	B	774	B	
9/18/2015 12:50	0	B	103.2	B	269.8	B	292.6	B	302	B	
9/18/2015 12:51	0	B	106.6	B	274.8	B	278.7	B	289	B	
9/18/2015 12:52	0	B	106.9	B	277.4	B	277.1	B	287	B	
9/18/2015 12:53	0	B	106.9	B	279.2	B	277.4	B	287	B	3
9/18/2015 12:54	0	B	106.9	B	278.9	B	277.5	B	287	B	
9/18/2015 12:55	6.05	B	65.3	B	195.8	B	162.4	B	168	B	
9/18/2015 12:56	2.01	B	4	B	4.9	B	3.7	B	4	B	
9/18/2015 12:57	1.91	B	1.7	B	1.7	B	1.7	B	2	B	
9/18/2015 12:58	1.91	B	1.6	B	1.6	B	1.4	B	2	B	
9/18/2015 12:59	1.91	B	1.5	B	1.7	B	1.6	B	2	B	3
9/18/2015 13:00	2.01	B	1.4	B	1.7	B	1.6	B	2	B	
9/18/2015 13:01	0	B	156	B	429	B	411.5	B	418	B	
9/18/2015 13:02	0	B	161.5	B	440.2	B	424.9	B	432	B	
9/18/2015 13:03	0	B	162.1	B	439.8	B	423	B	430	B	
9/18/2015 13:04	0	B	162.2	B	440.2	B	426.7	B	434	B	
9/18/2015 13:05	0	B	162.3	B	440.4	B	424.3	B	431	B	3
9/18/2015 13:06	0	B	162.4	B	439.9	B	422	B	429	B	
9/18/2015 13:07	9.79	B	55.9	B	132.8	B	500	B	803	B	
9/18/2015 13:08	9.89	B	2.9	B	4.1	B	500	B	1046	B	
9/18/2015 13:09	9.89	B	1.1	B	2.4	B	500	B	1051	B	
9/18/2015 13:10	9.89	B	0.7	B	2.1	B	500	B	1055	B	
9/18/2015 13:11	9.89	B	0.6	B	2	B	500	B	1051	B	3
9/18/2015 13:12	9.89	B	0.5	B	2	B	500	B	1059	B	
9/18/2015 13:13	8.28	B	0	B	84.6	B	59.6	B	63	B	

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 19, 2015
Start Time:	8:39
Stop Time:	10:19

Unit #2 Inlet **Year - 2015** **Day 5**

Analyzer or Channel	O2			COLo			COHi		
Analyzer Full Range	25			500			2000		
Analyzer Make	Environment SA			Environment SA			Environment SA		
Analyzer Serial Number	2685			2685			2685		
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High
Ca = Cal Gas Value	2.00	9.99	17.90	0.00	281.00	433.00	0.00	1075.00	1708.00
Cylinder ID#	CC320410	CC275798	CC97046	CC320410	EB0047021	EB0047069	CC320410	CC275798	CC97046
Expiration Date	08/25/20	09/23/22	10/14/17	08/25/20	12/10/22	04/07/20	08/25/20	09/23/22	10/14/17
Run #1	**1.79**	**9.89**	**17.79**	**1.20**	**277.10**	**430.50**	**4.00**	**1048.00**	**1730.00**
Run #2	**1.89**	**9.98**	**17.79**	**2.20**	**277.90**	**434.40**	**2.00**	**1045.00**	**1736.00**
Run #3	**1.79**	**9.79**	**17.79**	**1.60**	**281.60**	**430.70**	**4.00**	**1044.00**	**1736.00**
SUM (1+2+3)	5.47	29.66	53.37	5.00	836.60	1295.60	10.00	3137.00	5202.00
Cm = SUM/3	1.82	9.89	17.79	1.67	278.87	431.87	3.33	1045.67	1734.00
Abs. Diff	0.1766667	0.1033333	0.11	1.6666667	2.1333333	1.1333333	3.3333333	29.333333	26
%F.S.				0.33	0.43	0.23	0.17	1.47	-1.30
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass

Comments: High Span 2 bottle changed, New values 17.90% , 1708ppm CO.

Technician :	Jake Kieser	Title:	Altech Rep.	Date:	
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:	

Date/Time	U2 1-min Inlet Data - O2e-dry	Data Status	U2 1-min Inlet Data - COe-l	Data Status	U2 1-min Inlet Data - COe-h	Data Status	
9/19/2015 8:31	7.39		13		9		
9/19/2015 8:32	6.09	B	10.8	B	8	B	
9/19/2015 8:33	6.79	B	8.5	B	6	B	
9/19/2015 8:34	0.09	B	405.7	B	479	B	
9/19/2015 8:35	0	B	429.2	B	488	B	
9/19/2015 8:36	0	B	430.2	B	489	B	
9/19/2015 8:37	0	B	430.5	B	490	B	
9/19/2015 8:38	0	B	430.5	B	490	B	
9/19/2015 8:39	0	B	430.5	B	490	B	1
9/19/2015 8:40	0	B	430.6	B	490	B	
9/19/2015 8:41	1.79	B	119	B	136	B	
9/19/2015 8:42	1.79	B	3.9	B	5	B	
9/19/2015 8:43	1.79	B	2.3	B	4	B	
9/19/2015 8:44	1.79	B	1.6	B	4	B	
9/19/2015 8:45	1.79	B	1.3	B	4	B	
9/19/2015 8:46	1.79	B	1.2	B	4	B	1
9/19/2015 8:47	1.79	B	1	B	4	B	
9/19/2015 8:48	0	B	274.4	B	315	B	
9/19/2015 8:49	0	B	276.6	B	318	B	
9/19/2015 8:50	0	B	277.1	B	319	B	
9/19/2015 8:51	0	B	277.1	B	319	B	1
9/19/2015 8:52	0	B	277.2	B	319	B	
9/19/2015 8:53	17.09	B	500	B	1475	B	
9/19/2015 8:54	17.69	B	500	B	1746	B	
9/19/2015 8:55	17.69	B	500	B	1749	B	
9/19/2015 8:56	17.79	B	500	B	1750	B	
9/19/2015 8:57	17.79	B	500	B	1740	B	
9/19/2015 8:58	17.79	B	500	B	1736	B	
9/19/2015 8:59	17.79	B	500	B	1736	B	
9/19/2015 9:00	17.79	B	500	B	1730	B	
9/19/2015 9:01	17.79	B	500	B	1730	B	1
9/19/2015 9:02	17.79	B	500	B	1730	B	
9/19/2015 9:03	11.19	B	500	B	1409	B	
9/19/2015 9:04	9.99	B	500	B	1042	B	
9/19/2015 9:05	9.99	B	500	B	1040	B	
9/19/2015 9:06	9.99	B	500	B	1043	B	
9/19/2015 9:07	9.89	B	500	B	1048	B	
9/19/2015 9:08	9.89	B	500	B	1048	B	1
9/19/2015 9:09	9.89	B	500	B	1047	B	
9/19/2015 9:10	4.59	B	500	B	751	B	
9/19/2015 9:11	2.09	B	12.4	B	10	B	
9/19/2015 9:12	1.99	B	7.2	B	7	B	
9/19/2015 9:13	1.99	B	4.5	B	5	B	
9/19/2015 9:14	1.89	B	3.1	B	5	B	
9/19/2015 9:15	1.89	B	2.2	B	4	B	2
9/19/2015 9:16	1.89	B	1.8	B	4	B	
9/19/2015 9:17	0	B	231.4	B	264	B	
9/19/2015 9:18	0	B	276.1	B	316	B	
9/19/2015 9:19	0	B	278.1	B	318	B	

9/19/2015 9:20	0	B	278	B	318	B	
9/19/2015 9:21	0	B	277.9	B	318	B	
9/19/2015 9:22	0	B	277.9	B	318	B	
9/19/2015 9:23	0	B	277.9	B	318	B	2
9/19/2015 9:24	0	B	277.9	B	318	B	
9/19/2015 9:25	17.59	B	500	B	1735	B	
9/19/2015 9:26	17.69	B	500	B	1739	B	
9/19/2015 9:27	17.69	B	500	B	1741	B	
9/19/2015 9:28	17.79	B	500	B	1736	B	
9/19/2015 9:29	17.79	B	500	B	1737	B	
9/19/2015 9:30	17.79	B	500	B	1737	B	2
9/19/2015 9:31	17.79	B	500	B	1737	B	
9/19/2015 9:32	10.09	B	500	B	1049	B	
9/19/2015 9:33	9.99	B	500	B	1044	B	
9/19/2015 9:34	9.89	B	500	B	1044	B	
9/19/2015 9:35	9.89	B	500	B	1045	B	
9/19/2015 9:36	9.89	B	500	B	1045	B	2
9/19/2015 9:37	9.89	B	500	B	1044	B	
9/19/2015 9:38	0.39	B	500	B	623	B	
9/19/2015 9:39	0	B	438	B	494	B	
9/19/2015 9:40	0	B	436.5	B	492	B	
9/19/2015 9:41	0	B	435	B	490	B	
9/19/2015 9:42	0	B	434.6	B	490	B	
9/19/2015 9:43	0	B	434.4	B	490	B	2
9/19/2015 9:44	0	B	434.4	B	490	B	
9/19/2015 9:45	15.59	B	500	B	1133	B	
9/19/2015 9:46	17.49	B	500	B	1725	B	
9/19/2015 9:47	17.69	B	500	B	1735	B	
9/19/2015 9:48	17.69	B	500	B	1735	B	
9/19/2015 9:49	17.79	B	500	B	1735	B	
9/19/2015 9:50	17.79	B	500	B	1736	B	
9/19/2015 9:51	17.79	B	500	B	1736	B	3
9/19/2015 9:52	14.69	B	500	B	1569	B	
9/19/2015 9:53	0.09	B	289.4	B	329	B	
9/19/2015 9:54	0	B	286.3	B	326	B	
9/19/2015 9:55	0	B	283.1	B	322	B	
9/19/2015 9:56	0	B	282	B	321	B	
9/19/2015 9:57	0	B	281.7	B	320	B	
9/19/2015 9:58	0	B	281.6	B	320	B	3
9/19/2015 9:59	0	B	281.5	B	320	B	
9/19/2015 10:00	1.69	B	31.6	B	28	B	
9/19/2015 10:01	1.79	B	3.4	B	5	B	
9/19/2015 10:02	1.79	B	2	B	4	B	
9/19/2015 10:03	1.79	B	1.6	B	4	B	3
9/19/2015 10:04	1.79	B	1.3	B	4	B	
9/19/2015 10:05	0	B	328.1	B	370	B	
9/19/2015 10:06	0	B	428.8	B	483	B	
9/19/2015 10:07	0	B	430.6	B	485	B	
9/19/2015 10:08	0	B	430.6	B	485	B	
9/19/2015 10:09	0	B	430.7	B	485	B	3
9/19/2015 10:10	0	B	430.8	B	485	B	
9/19/2015 10:11	9.29	B	500	B	906	B	

9/19/2015 10:12	9.69	B	500	B	1037	B		
9/19/2015 10:13	9.69	B	500	B	1038	B		
9/19/2015 10:14	9.69	B	500	B	1039	B		
9/19/2015 10:15	9.69	B	500	B	1043	B		
9/19/2015 10:16	9.69	B	500	B	1043	B		
9/19/2015 10:17	9.79	B	500	B	1043	B		
9/19/2015 10:18	9.79	B	500	B	1044	B		
9/19/2015 10:19	9.79	B	500	B	1044	B		3
9/19/2015 10:20	9.79	B	500	B	1044	B		
9/19/2015 10:21	8.09	B	176.9	B	195	B		
9/19/2015 10:22	7.89	B	31.5	B	26	B		
9/19/2015 10:23	8.39	B	25.5	B	20	B		
9/19/2015 10:24	8.09	B	21.4	B	16	B		
9/19/2015 10:25	6.99	B	15.6	B	11	B		
9/19/2015 10:26	7.19	B	14.3	B	10	B		
9/19/2015 10:27	7.79	B	18.6	B	14	B		
9/19/2015 10:28	8.19	B	29.8	B	24	B		
9/19/2015 10:29	7.69	B	23.8	B	18	B		

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 19, 2015
Start Time:	10:59
Stop Time:	12:32

Unit #2 Outlet **Year - 2015** **Day 5**

Analyzer or Channel	O2			SO2			NOX			COLo			COHi				
Analyzer Full Range	25			200			500			500			2000				
Analyzer Make	Environment SA			Environment SA			Environment SA			Environment SA			Environment SA				
Analyzer Serial Number	2686			2686			2686			2686			2686				
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High		
Ca = Cal Gas Value	0.00	9.94	18.00	0.00	107.00	165.00	0.00	280.00	437.00	0.00	282.00	425.00	0.00	1073.00	1679.00		
Cylinder ID#	SA21825	CC164055	EB0002281	SA21825	EB0016778	EB0047080	SA21825	EB0016778	EB0047080	SA21825	EB0016778	EB0047080	SA21825	CC164055	EB0002281		
Expiration Date	08/07/16	09/23/22	12/19/20	08/07/16	10/08/22	07/08/18	08/07/16	10/08/22	07/08/18	08/07/16	10/08/22	07/08/18	08/07/16	09/23/22	12/19/20		
Run #1	**0.00**	**9.89**	**17.77**	**0.70**	**106.30**	**162.40**	**2.00**	**279.10**	**443.60**	**1.50**	**275.70**	**418.50**	**2.00**	**1046.00**	**1678.00**		
Run #2	**0.00**	**9.89**	**17.77**	**0.10**	**106.50**	**162.40**	**1.60**	**276.90**	**438.00**	**1.80**	**276.80**	**426.80**	**2.00**	**1056.00**	**1675.00**		
Run #3	**0.00**	**9.79**	**17.78**	**0.30**	**106.80**	**162.40**	**1.70**	**274.60**	**435.70**	**1.60**	**277.40**	**435.70**	**2.00**	**1055.00**	**1685.00**		
SUM (1+2+3)	0.00	29.57	53.32	1.10	319.60	487.20	5.30	830.60	1317.30	4.90	829.90	1281.00	6.00	3157.00	5038.00		
Cm = SUM/3	0.00	9.86	17.77	0.37	106.53	162.40	1.77	276.87	439.10	1.63	276.63	427.00	2.00	1052.33	1679.33		
Abs. Diff	0	0.0833333	0.2266667	0.3666667	0.4666667	2.6	1.7666667	3.1333333	2.1	1.6333333	5.3666667	2	2	20.666667	0.3333333		
%F.S.				0.18	0.23	1.30	0.35	0.63	-0.42	0.33	1.07	-0.40	0.10	1.03	-0.02		
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass		

Comments: Used N2 Bottle for Zero.

Technician :	Jake Kiser	Title:	Altech Rep.	Date:	
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:	

Date/Time	U2 1-min Outlet Data - O2s-dry	Data Status	U2 1-min Outlet Data - SO2s	Data Status	U2 1-min Outlet Data - NOxs	Data Status	U2 1-min Outlet Data - COs-l	Data Status	U2 1-min Outlet Data - COs-h	Data Status	
9/19/2015 10:55	0	B	161.9	B	446.8	B	422.9	B	431	B	
9/19/2015 10:56	0	B	162	B	446.7	B	418.5	B	426	B	
9/19/2015 10:57	0	B	162.1	B	444.4	B	417.5	B	425	B	
9/19/2015 10:58	0	B	162.2	B	444.4	B	422.9	B	431	B	
9/19/2015 10:59	0	B	162.4	B	443.8	B	418.5	B	426	B	1
9/19/2015 11:00	0	B	162.4	B	443.8	B	419.4	B	427	B	
9/19/2015 11:01	0	B	6.3	B	8.2	B	6.4	B	7	B	
9/19/2015 11:02	0	B	1.5	B	2.1	B	1.7	B	2	B	
9/19/2015 11:03	0	B	0.9	B	2.1	B	1.6	B	2	B	
9/19/2015 11:04	0	B	0.8	B	2	B	1.5	B	2	B	
9/19/2015 11:05	0	B	0.7	B	2	B	1.5	B	2	B	1
9/19/2015 11:06	0	B	0.6	B	2	B	1.5	B	2	B	
9/19/2015 11:07	0	B	100.7	B	267.7	B	265	B	275	B	
9/19/2015 11:08	0	B	106	B	278.7	B	274.3	B	285	B	
9/19/2015 11:09	0	B	106.3	B	277.9	B	274.2	B	285	B	
9/19/2015 11:10	0	B	106.3	B	279	B	274.9	B	285	B	
9/19/2015 11:11	0	B	106.3	B	279.1	B	275.7	B	286	B	1
9/19/2015 11:12	0	B	106.3	B	278.7	B	271	B	281	B	
9/19/2015 11:13	17.57	B	33.1	B	85.6	B	500	B	1131	B	
9/19/2015 11:14	17.77	B	1	B	2.8	B	500	B	1667	B	
9/19/2015 11:15	17.77	B	0.4	B	2.2	B	500	B	1680	B	
9/19/2015 11:16	17.87	B	0.4	B	2.2	B	500	B	1678	B	
9/19/2015 11:17	17.77	B	0.3	B	2.1	B	500	B	1678	B	1
9/19/2015 11:18	17.77	B	0.2	B	2.1	B	500	B	1678	B	
9/19/2015 11:19	9.89	B	0.2	B	4	B	500	B	1070	B	
9/19/2015 11:20	9.79	B	0	B	2	B	500	B	1050	B	
9/19/2015 11:21	9.89	B	0	B	1.8	B	500	B	1043	B	
9/19/2015 11:22	9.89	B	0	B	1.9	B	500	B	1049	B	
9/19/2015 11:23	9.79	B	0	B	1.8	B	500	B	1048	B	
9/19/2015 11:24	9.89	B	0	B	1.8	B	500	B	1046	B	1
9/19/2015 11:25	9.89	B	0	B	1.8	B	500	B	1047	B	
9/19/2015 11:26	0	B	0	B	8.1	B	162.2	B	168	B	
9/19/2015 11:27	0	B	0.7	B	1.8	B	3.7	B	4	B	
9/19/2015 11:28	0	B	0.2	B	1.5	B	2.3	B	3	B	
9/19/2015 11:29	0	B	0.2	B	1.6	B	2	B	2	B	
9/19/2015 11:30	0	B	0.2	B	1.6	B	1.8	B	2	B	
9/19/2015 11:31	0	B	0.1	B	1.6	B	1.8	B	2	B	2
9/19/2015 11:32	0	B	0.1	B	1.6	B	1.7	B	2	B	
9/19/2015 11:33	0	B	65.3	B	176.2	B	175.5	B	181	B	
9/19/2015 11:34	0	B	105.7	B	276.9	B	274.8	B	285	B	
9/19/2015 11:35	0	B	106.1	B	277.3	B	275.5	B	286	B	
9/19/2015 11:36	0	B	106.3	B	277.2	B	273.7	B	284	B	
9/19/2015 11:37	0	B	106.4	B	277.1	B	275.7	B	285	B	
9/19/2015 11:38	0	B	106.4	B	277.1	B	277.6	B	286	B	
9/19/2015 11:39	0	B	106.5	B	276.9	B	276.2	B	285	B	2
9/19/2015 11:40	0	B	105.4	B	273.7	B	265.5	B	274	B	
9/19/2015 11:41	17.77	B	3.9	B	99.7	B	500	B	1134	B	
9/19/2015 11:42	17.87	B	0.3	B	2.3	B	500	B	1684	B	
9/19/2015 11:43	17.77	B	0.3	B	2.1	B	500	B	1677	B	
9/19/2015 11:44	17.77	B	0.2	B	1.9	B	500	B	1675	B	2
9/19/2015 11:45	17.87	B	0.1	B	1.8	B	500	B	1676	B	
9/19/2015 11:46	9.89	B	0	B	5.5	B	500	B	1144	B	
9/19/2015 11:47	9.79	B	0	B	1.9	B	500	B	1047	B	
9/19/2015 11:48	9.89	B	0	B	1.9	B	500	B	1044	B	
9/19/2015 11:49	9.79	B	0	B	1.9	B	500	B	1046	B	
9/19/2015 11:50	9.89	B	0	B	1.9	B	500	B	1046	B	
9/19/2015 11:51	9.79	B	0	B	1.8	B	500	B	1047	B	
9/19/2015 11:52	9.79	B	0	B	1.7	B	500	B	1046	B	
9/19/2015 11:53	9.79	B	0	B	1.7	B	500	B	1053	B	
9/19/2015 11:54	9.89	B	0	B	1.7	B	500	B	1056	B	2
9/19/2015 11:55	9.89	B	0	B	1.7	B	500	B	1053	B	
9/19/2015 11:56	0	B	121.7	B	349.4	B	489.5	B	496	B	
9/19/2015 11:57	0	B	161.5	B	436.6	B	424.1	B	431	B	
9/19/2015 11:58	0	B	162.2	B	436.5	B	426.3	B	433	B	

9/19/2015 11:59	0	B	162.4	B	438	B	426.8	B	434	B		2
9/19/2015 12:00	0	B	149.7	B	415.5	B	392.4	B	397	B		
9/19/2015 12:01	17.77	B	12.5	B	23.4	B	500	B	1591	B		
9/19/2015 12:02	17.87	B	0.9	B	2.5	B	500	B	1685	B		
9/19/2015 12:03	17.77	B	0.4	B	2	B	500	B	1676	B		
9/19/2015 12:04	17.87	B	0.3	B	1.9	B	500	B	1697	B		
9/19/2015 12:05	17.87	B	0.2	B	1.9	B	500	B	1685	B		3
9/19/2015 12:06	17.87	B	0.1	B	1.9	B	500	B	1688	B		
9/19/2015 12:07	4.03	B	26.2	B	99.1	B	500	B	1028	B		
9/19/2015 12:08	0	B	91.8	B	246.4	B	379.4	B	386	B		
9/19/2015 12:09	0	B	106.4	B	274.3	B	280.9	B	291	B		
9/19/2015 12:10	0	B	106.6	B	273.7	B	277.6	B	288	B		
9/19/2015 12:11	0	B	106.7	B	274.6	B	277.8	B	288	B		
9/19/2015 12:12	0	B	106.8	B	274.6	B	277.4	B	287	B		3
9/19/2015 12:13	0	B	106.8	B	274.6	B	278.2	B	288	B		
9/19/2015 12:14	0.1	B	32.5	B	80	B	76.2	B	82	B		
9/19/2015 12:15	0	B	1.2	B	2.3	B	2.2	B	3	B		
9/19/2015 12:16	0	B	0.4	B	1.9	B	1.9	B	2	B		
9/19/2015 12:17	0	B	0.3	B	1.7	B	1.6	B	2	B		3
9/19/2015 12:18	0	B	0.3	B	1.7	B	1.7	B	2	B		
9/19/2015 12:19	1.31	B	26.5	B	79.1	B	73.3	B	79	B		
9/19/2015 12:20	0	B	160.1	B	433.4	B	420.7	B	427	B		
9/19/2015 12:21	0	B	161.6	B	435.4	B	425.8	B	433	B		
9/19/2015 12:22	0	B	162.2	B	435.6	B	423.1	B	430	B		
9/19/2015 12:23	0	B	162.2	B	435.6	B	425	B	432	B		
9/19/2015 12:24	0	B	162.3	B	435.8	B	426.3	B	433	B		
9/19/2015 12:25	0	B	162.4	B	435.7	B	424.3	B	431	B		3
9/19/2015 12:26	0	B	162.5	B	435.9	B	424.8	B	431	B		
9/19/2015 12:27	9.69	B	64.3	B	157.8	B	500	B	773	B		
9/19/2015 12:28	9.79	B	1.9	B	2.9	B	500	B	1052	B		
9/19/2015 12:29	9.79	B	0.6	B	2.3	B	500	B	1056	B		
9/19/2015 12:30	9.79	B	0.5	B	1.9	B	500	B	1051	B		
9/19/2015 12:31	9.79	B	0.4	B	2.1	B	500	B	1055	B		
9/19/2015 12:32	9.79	B	0.4	B	2	B	500	B	1055	B		3
9/19/2015 12:33	9.79	B	0.3	B	2	B	500	B	1055	B		
9/19/2015 12:34	8.28	B	1.6	B	82.9	B	160.9	B	165	B		
9/19/2015 12:35	8.38	B	1.4	B	97.6	B	42.8	B	45	B		
9/19/2015 12:36	8.28	B	0.1	B	105.9	B	22.4	B	23	B		
9/19/2015 12:37	7.97	B	0	B	124.2	B	15	B	15	B		
9/19/2015 12:38	8.07	B	0	B	129.2	B	8.7	B	8	B		
9/19/2015 12:39	7.87	B	0	B	117.6	B	9.5	B	9	B		
9/19/2015 12:40	7.87	B	0	B	111.7	B	12.4	B	12	B		
9/19/2015 12:41	7.97	B	0	B	103.6	B	10.3	B	10	B		
9/19/2015 12:42	7.77	B	0	B	110.5	B	10.1	B	10	B		
9/19/2015 12:43	8.38	B	0	B	101.6	B	8.7	B	8	B		
9/19/2015 12:44	8.28	B	0	B	93.2	B	11	B	11	B		
9/19/2015 12:45	8.68	B	0	B	86.2	B	11.2	B	11	B		

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 20, 2015
Start Time:	9:32
Stop Time:	11:00

Unit #2 Inlet **Year - 2015** **Day 6**

Analyzer or Channel	O2			COLo			COHi		
Analyzer Full Range	25			500			2000		
Analyzer Make	Environment SA			Environment SA			Environment SA		
Analyzer Serial Number	2685			2685			2685		
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High
Ca = Cal Gas Value	0.00	9.62	17.90	0.00	281.00	433.00	0.00	1118.00	1708.00
Cylinder ID#	CC31829	CC316057	CC97046	CC31829	EB0047021	EB0047069	CC31829	CC316057	CC97046
Expiration Date	01/14/16	09/23/22	10/14/17	01/14/16	12/10/22	04/07/20	01/14/16	09/23/22	10/14/17
Run #1	**0.00**	**9.69**	**18.09**	**1.50**	**280.50**	**436.40**	**4.00**	**1091.00**	**1738.00**
Run #2	**0.00**	**9.59**	**17.99**	**2.50**	**281.20**	**439.50**	**4.00**	**1087.00**	**1730.00**
Run #3	**0.00**	**9.59**	**18.09**	**2.20**	**285.50**	**435.90**	**4.00**	**1083.00**	**1733.00**
SUM (1+2+3)	0.00	28.87	54.17	6.20	847.20	1311.80	12.00	3261.00	5201.00
Cm = SUM/3	#DIV/0!	9.62	18.06	2.07	282.40	437.27	4.00	1087.00	1733.67
Abs. Diff	#DIV/0!	0.0033333	0.1566667	2.0666667	1.4	4.2666667	4	31	25.666667
%F.S.				0.41	-0.28	-0.85	0.20	1.55	-1.28
Pass/Fail	#DIV/0!	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**

Comments: Changed to N2 Bottle for Zero. Mid bottle Span 2 changed, New Values 9.62 %O2, 1118ppmCO

Technician :	Jake Kieser	Title:	Altech Rep.	Date:
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:

Date/Time	U2 1-min Inlet Data - O2e-dry	Data Status	U2 1-min Inlet Data - COe-l	Data Status	U2 1-min Inlet Data - COe-h	Data Status	
9/20/2015 9:28	0	B	435.8	B	493	B	
9/20/2015 9:29	0	B	436	B	494	B	
9/20/2015 9:30	0	B	436.1	B	494	B	
9/20/2015 9:31	0	B	436.3	B	494	B	
9/20/2015 9:32	0	B	436.4	B	494	B	1
9/20/2015 9:33	0	B	436.6	B	494	B	
9/20/2015 9:34	0	B	394.5	B	448	B	
9/20/2015 9:35	0	B	4.6	B	5	B	
9/20/2015 9:36	0	B	2.8	B	5	B	
9/20/2015 9:37	0	B	1.7	B	4	B	
9/20/2015 9:38	0	B	1.5	B	4	B	1
9/20/2015 9:39	0	B	1.3	B	4	B	
9/20/2015 9:40	0	B	208.5	B	238	B	
9/20/2015 9:41	0	B	279.7	B	320	B	
9/20/2015 9:42	0	B	280.5	B	321	B	
9/20/2015 9:43	0	B	280.5	B	321	B	1
9/20/2015 9:44	0	B	280.6	B	321	B	
9/20/2015 9:45	17.59	B	500	B	1683	B	
9/20/2015 9:46	17.99	B	500	B	1764	B	
9/20/2015 9:47	17.99	B	500	B	1766	B	
9/20/2015 9:48	17.99	B	500	B	1767	B	
9/20/2015 9:49	17.99	B	500	B	1737	B	
9/20/2015 9:50	18.09	B	500	B	1737	B	
9/20/2015 9:51	18.09	B	500	B	1738	B	
9/20/2015 9:52	18.09	B	500	B	1738	B	1
9/20/2015 9:53	10.69	B	500	B	1404	B	
9/20/2015 9:54	9.79	B	500	B	1089	B	
9/20/2015 9:55	9.79	B	500	B	1087	B	
9/20/2015 9:56	9.69	B	500	B	1087	B	
9/20/2015 9:57	9.69	B	500	B	1091	B	
9/20/2015 9:58	9.69	B	500	B	1091	B	
9/20/2015 9:59	9.69	B	500	B	1091	B	1
9/20/2015 10:00	9.69	B	500	B	1081	B	
9/20/2015 10:01	0.39	B	278	B	311	B	
9/20/2015 10:02	0	B	9.5	B	8	B	
9/20/2015 10:03	0	B	6.5	B	6	B	
9/20/2015 10:04	0	B	3.9	B	5	B	
9/20/2015 10:05	0	B	2.9	B	4	B	
9/20/2015 10:06	0	B	2.5	B	4	B	2
9/20/2015 10:07	0	B	1.8	B	4	B	
9/20/2015 10:08	0	B	279.1	B	313	B	
9/20/2015 10:09	0	B	280.9	B	314	B	
9/20/2015 10:10	0	B	281.1	B	315	B	
9/20/2015 10:11	0	B	281.2	B	315	B	2
9/20/2015 10:12	0	B	281.2	B	315	B	
9/20/2015 10:13	17.19	B	500	B	1396	B	
9/20/2015 10:14	17.89	B	500	B	1730	B	
9/20/2015 10:15	17.99	B	500	B	1728	B	
9/20/2015 10:16	17.99	B	500	B	1729	B	

9/20/2015 10:17	17.99	B	500	B	1730	B		2
9/20/2015 10:18	18.09	B	500	B	1731	B		
9/20/2015 10:19	12.89	B	500	B	1556	B		
9/20/2015 10:20	9.79	B	500	B	1083	B		
9/20/2015 10:21	9.79	B	500	B	1089	B		
9/20/2015 10:22	9.79	B	500	B	1087	B		
9/20/2015 10:23	9.79	B	500	B	1088	B		
9/20/2015 10:24	9.59	B	500	B	1087	B		2
9/20/2015 10:25	9.69	B	500	B	1087	B		
9/20/2015 10:26	0.19	B	498.7	B	554	B		
9/20/2015 10:27	0	B	444.5	B	495	B		
9/20/2015 10:28	0	B	441.9	B	492	B		
9/20/2015 10:29	0	B	441.7	B	492	B		
9/20/2015 10:30	0	B	439.9	B	492	B		
9/20/2015 10:31	0	B	439.7	B	491	B		
9/20/2015 10:32	0	B	439.5	B	491	B		2
9/20/2015 10:33	0	B	439.4	B	491	B		
9/20/2015 10:34	17.89	B	500	B	1728	B		
9/20/2015 10:35	17.99	B	500	B	1735	B		
9/20/2015 10:36	18.09	B	500	B	1732	B		
9/20/2015 10:37	18.09	B	500	B	1733	B		3
9/20/2015 10:38	18.09	B	500	B	1733	B		
9/20/2015 10:39	1.49	B	500	B	839	B		
9/20/2015 10:40	0.09	B	294.7	B	330	B		
9/20/2015 10:41	0	B	288.8	B	324	B		
9/20/2015 10:42	0	B	285.5	B	320	B		3
9/20/2015 10:43	0	B	285	B	320	B		
9/20/2015 10:44	0	B	150.4	B	168	B		
9/20/2015 10:45	0	B	4.9	B	5	B		
9/20/2015 10:46	0	B	2.9	B	4	B		
9/20/2015 10:47	0	B	2.2	B	4	B		3
9/20/2015 10:48	0	B	1.9	B	4	B		
9/20/2015 10:49	0	B	174.8	B	195	B		
9/20/2015 10:50	0	B	433.6	B	482	B		
9/20/2015 10:51	0	B	434.3	B	483	B		
9/20/2015 10:52	0	B	435.6	B	484	B		
9/20/2015 10:53	0	B	435.8	B	484	B		
9/20/2015 10:54	0	B	435.9	B	484	B		3
9/20/2015 10:55	0.09	B	436.2	B	484	B		
9/20/2015 10:56	9.49	B	500	B	1075	B		
9/20/2015 10:57	9.59	B	500	B	1081	B		
9/20/2015 10:58	9.59	B	500	B	1082	B		
9/20/2015 10:59	9.59	B	500	B	1083	B		
9/20/2015 11:00	9.59	B	500	B	1083	B		3
9/20/2015 11:01	9.59	B	500	B	1083	B		
9/20/2015 11:02	7.89	B	421.9	B	461	B		
9/20/2015 11:03	7.79	B	36.6	B	31	B		
9/20/2015 11:04	7.69	B	25.7	B	20	B		
9/20/2015 11:05	8.29	B	27	B	21	B		
9/20/2015 11:06	7.69	B	27.2	B	21	B		
9/20/2015 11:07	8.29	B	37.7	B	32	B		
9/20/2015 11:08	8.39	B	23.2	B	17	B		

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 20, 2015
Start Time:	11:39
Stop Time:	13:04

Unit #2 Outlet **Year - 2015** **Day 6**

Analyzer or Channel	O2			SO2			NOX			COLo			COHi				
Analyzer Full Range	25			200			500			500			2000				
Analyzer Make	Environment SA			Environment SA			Environment SA			Environment SA			Environment SA				
Analyzer Serial Number	2686			2686			2686			2686			2686				
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High		
Ca = Cal Gas Value	0.00	9.94	18.00	0.00	104.00	165.00	0.00	283.00	437.00	0.00	276.00	425.00	0.00	1073.00	1679.00		
Cylinder ID#	SA21825	CC164055	EB0002281	SA21825	EB0022279	EB0047080	SA21825	EB0022279	EB0047080	SA21825	EB0022279	EB0047080	SA21825	CC164055	EB0002281		
Expiration Date	08/07/16	09/23/22	12/19/20	08/07/16	10/29/22	07/08/18	08/07/16	10/29/22	07/08/18	08/07/16	10/29/22	07/08/18	08/07/16	09/23/22	12/19/20		
Run #1	**0.00**	**9.99**	**18.17**	**1.20**	**105.70**	**164.60**	**1.80**	**277.90**	**444.50**	**1.50**	**278.90**	**434.00**	**2.00**	**1067.00**	**1694.00**		
Run #2	**0.00**	**9.99**	**18.17**	**0.40**	**105.90**	**165.20**	**1.40**	**277.50**	**441.50**	**1.80**	**279.30**	**429.30**	**2.00**	**1060.00**	**1691.00**		
Run #3	**0.00**	**9.99**	**18.17**	**1.30**	**106.50**	**165.20**	**1.50**	**275.40**	**439.60**	**1.70**	**278.50**	**431.90**	**2.00**	**1062.00**	**1692.00**		
SUM (1+2+3)	0.00	29.97	54.51	2.90	318.10	495.00	4.70	830.80	1325.60	5.00	836.70	1295.20	6.00	3189.00	5077.00		
Cm = SUM/3	0.00	9.99	18.17	0.97	106.03	165.00	1.57	276.93	441.87	1.67	278.90	431.73	2.00	1063.00	1692.33		
Abs. Diff	0	0.05	0.17	0.9666667	2.0333333	2.842E-14	1.5666667	6.0666667	4.8666667	1.6666667	2.9	6.7333333	2	10	13.333333		
%F.S.				0.48	-1.02	0.00	0.31	1.21	-0.97	0.33	-0.58	-1.35	0.10	0.50	-0.67		
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**		

Comments: Mid Span 1 Bottle changed New values 104ppm SO2, 283ppmNOX, 276 ppm CO.

Technician :	Jake Kiser	Title:	Altech Rep.	Date:	
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:	

Date/Time	U2 1-min Outlet Data - O2s-dry	Data Status	U2 1-min Outlet Data - SO2s	Data Status	U2 1-min Outlet Data - NOxs	Data Status	U2 1-min Outlet Data - COs-l	Data Status	U2 1-min Outlet Data - COs-h	Data Status	
9/20/2015 11:30	8.48	B	0	B	58.5	B	15.6	B	16	B	
9/20/2015 11:31	0	B	143.8	B	414.8	B	392.5	B	398	B	
9/20/2015 11:32	0	B	163.9	B	452.8	B	433.1	B	441	B	
9/20/2015 11:33	0	B	164.2	B	452.4	B	434.1	B	442	B	
9/20/2015 11:34	0	B	164.4	B	452.9	B	434	B	442	B	
9/20/2015 11:35	0	B	164.5	B	453	B	434	B	442	B	
9/20/2015 11:36	0	B	164.6	B	453.2	B	434.1	B	442	B	
9/20/2015 11:37	0	B	164.8	B	447.2	B	434.2	B	442	B	
9/20/2015 11:38	0	B	164.9	B	444.4	B	433.9	B	442	B	
9/20/2015 11:39	0	B	165	B	444.5	B	434	B	442	B	1
9/20/2015 11:40	0	B	165.1	B	444.6	B	433.8	B	441	B	
9/20/2015 11:41	0.8	B	104.2	B	263.7	B	256.7	B	267	B	
9/20/2015 11:42	0	B	4.5	B	3.9	B	2.9	B	3	B	
9/20/2015 11:43	0	B	1.9	B	1.9	B	1.5	B	2	B	
9/20/2015 11:44	0	B	1.3	B	1.9	B	1.6	B	2	B	
9/20/2015 11:45	0	B	1.2	B	1.8	B	1.5	B	2	B	1
9/20/2015 11:46	0	B	1.1	B	1.7	B	1.3	B	2	B	
9/20/2015 11:47	0	B	1	B	1.7	B	1.4	B	2	B	
9/20/2015 11:48	0	B	0	B	3.7	B	1.2	B	1	B	
9/20/2015 11:49	0	B	100.8	B	266.6	B	269.7	B	280	B	
9/20/2015 11:50	0	B	105.3	B	276.2	B	277.8	B	288	B	
9/20/2015 11:51	0	B	105.7	B	277.9	B	278.9	B	289	B	1
9/20/2015 11:52	0	B	105.7	B	276.7	B	278.8	B	289	B	
9/20/2015 11:53	0	B	105.8	B	276.2	B	278.3	B	289	B	
9/20/2015 11:54	18.07	B	32.7	B	74.1	B	500	B	1307	B	
9/20/2015 11:55	18.07	B	2	B	3.1	B	500	B	1718	B	
9/20/2015 11:56	18.17	B	1	B	2.2	B	500	B	1727	B	
9/20/2015 11:57	18.17	B	1	B	2	B	500	B	1714	B	
9/20/2015 11:58	18.17	B	0.9	B	1.8	B	500	B	1694	B	1
9/20/2015 11:59	18.17	B	0.8	B	1.9	B	500	B	1707	B	
9/20/2015 12:00	18.17	B	0.8	B	1.8	B	500	B	1703	B	
9/20/2015 12:01	10.09	B	0.6	B	8	B	500	B	1124	B	
9/20/2015 12:02	9.99	B	0.3	B	1.8	B	500	B	1075	B	
9/20/2015 12:03	9.99	B	0.2	B	1.7	B	500	B	1064	B	
9/20/2015 12:04	9.99	B	0.2	B	1.6	B	500	B	1067	B	1
9/20/2015 12:05	10.09	B	0.2	B	1.6	B	500	B	1070	B	
9/20/2015 12:06	0.2	B	0	B	5.3	B	250.7	B	257	B	
9/20/2015 12:07	0	B	0.7	B	1.5	B	3.1	B	4	B	
9/20/2015 12:08	0	B	0.4	B	1.4	B	2.1	B	2	B	
9/20/2015 12:09	0	B	0.4	B	1.4	B	1.7	B	2	B	
9/20/2015 12:10	0	B	0.4	B	1.4	B	1.8	B	2	B	2
9/20/2015 12:11	0.1	B	0.4	B	1.4	B	1.7	B	2	B	
9/20/2015 12:12	0	B	89.8	B	239.7	B	244.3	B	251	B	
9/20/2015 12:13	0	B	104.9	B	275.2	B	278.1	B	285	B	
9/20/2015 12:14	0	B	105.8	B	274.4	B	276.7	B	284	B	
9/20/2015 12:15	0	B	105.8	B	277	B	278.8	B	286	B	
9/20/2015 12:16	0	B	105.9	B	277.5	B	279.8	B	287	B	2
9/20/2015 12:17	0	B	106	B	277.2	B	277.3	B	284	B	
9/20/2015 12:18	18.07	B	30.1	B	68.5	B	500	B	1321	B	
9/20/2015 12:19	18.17	B	1.2	B	2.4	B	500	B	1695	B	
9/20/2015 12:20	18.17	B	1	B	1.9	B	500	B	1705	B	
9/20/2015 12:21	18.07	B	0.9	B	1.9	B	500	B	1694	B	
9/20/2015 12:22	18.17	B	0.8	B	1.7	B	500	B	1691	B	2
9/20/2015 12:23	18.17	B	0.8	B	1.8	B	500	B	1698	B	
9/20/2015 12:24	10.09	B	1.1	B	10.3	B	500	B	1023	B	
9/20/2015 12:25	10.09	B	0.6	B	1.9	B	500	B	1064	B	
9/20/2015 12:26	9.99	B	0.4	B	1.9	B	500	B	1070	B	
9/20/2015 12:27	9.99	B	0.4	B	1.7	B	500	B	1060	B	2
9/20/2015 12:28	9.99	B	0.4	B	1.6	B	500	B	1060	B	
9/20/2015 12:29	8.28	B	24.6	B	66	B	500	B	876	B	
9/20/2015 12:30	0	B	144	B	396.7	B	467.8	B	467	B	
9/20/2015 12:31	0	B	164.5	B	440	B	435.3	B	436	B	
9/20/2015 12:32	0	B	165.1	B	442	B	437.1	B	438	B	
9/20/2015 12:33	0	B	165.2	B	441.5	B	429.3	B	434	B	2

9/20/2015 12:34	0 B	165.3 B	441.2 B	429.1 B	433 B	
9/20/2015 12:35	12.11 B	96.2 B	265 B	500 B	807 B	
9/20/2015 12:36	18.17 B	5.2 B	6.9 B	500 B	1679 B	
9/20/2015 12:37	18.17 B	1.4 B	2.5 B	500 B	1707 B	
9/20/2015 12:38	18.07 B	1.1 B	1.8 B	500 B	1695 B	
9/20/2015 12:39	18.17 B	1.1 B	1.8 B	500 B	1695 B	
9/20/2015 12:40	18.17 B	1 B	1.8 B	500 B	1692 B	3
9/20/2015 12:41	18.17 B	0.9 B	1.8 B	500 B	1686 B	
9/20/2015 12:42	1 B	48 B	142 B	500 B	796 B	
9/20/2015 12:43	0 B	105.3 B	272.4 B	282.5 B	289 B	
9/20/2015 12:44	0 B	106.3 B	275.7 B	279.5 B	287 B	
9/20/2015 12:45	0 B	106.5 B	275.6 B	275.9 B	283 B	
9/20/2015 12:46	0 B	106.5 B	274.4 B	275.8 B	283 B	
9/20/2015 12:47	0 B	106.5 B	275.4 B	278.5 B	286 B	3
9/20/2015 12:48	2.62 B	91.3 B	231.9 B	223.3 B	228 B	
9/20/2015 12:49	0 B	3.9 B	4.4 B	3.8 B	4 B	
9/20/2015 12:50	0 B	1.3 B	1.6 B	1.7 B	2 B	
9/20/2015 12:51	0 B	1.4 B	1.5 B	1.5 B	2 B	
9/20/2015 12:52	0 B	1.3 B	1.5 B	1.7 B	2 B	3
9/20/2015 12:53	0 B	1.2 B	1.5 B	1.5 B	2 B	
9/20/2015 12:54	0.7 B	63.9 B	225.6 B	175.3 B	178 B	
9/20/2015 12:55	0 B	144.6 B	402.5 B	388.2 B	432 B	
9/20/2015 12:56	0 B	164.9 B	437.5 B	428.5 B	431 B	
9/20/2015 12:57	0 B	165.2 B	439.6 B	433.4 B	436 B	
9/20/2015 12:58	0 B	165.2 B	439.6 B	431.9 B	434 B	3
9/20/2015 12:59	0 B	165.3 B	439.5 B	431.7 B	434 B	
9/20/2015 13:00	9.99 B	4.8 B	6.5 B	500 B	1051 B	
9/20/2015 13:01	9.99 B	1.9 B	2.2 B	500 B	1057 B	
9/20/2015 13:02	10.09 B	1.8 B	1.9 B	500 B	1062 B	
9/20/2015 13:03	9.99 B	1.7 B	1.9 B	500 B	1062 B	
9/20/2015 13:04	9.99 B	1.6 B	1.9 B	500 B	1062 B	3
9/20/2015 13:05	9.99 B	1.5 B	1.9 B	500 B	1062 B	
9/20/2015 13:06	9.99 B	1.4 B	1.9 B	500 B	1062 B	
9/20/2015 13:07	8.88 B	2.5 B	102.9 B	66.5 B	69 B	
9/20/2015 13:08	8.07 B	0.7 B	110.4 B	18.3 B	18 B	
9/20/2015 13:09	8.68 B	1 B	106.7 B	15.9 B	16 B	
9/20/2015 13:10	8.68 B	0.7 B	101.8 B	13.7 B	14 B	
9/20/2015 13:11	8.58 B	0.5 B	101.7 B	12.8 B	13 B	
9/20/2015 13:12	8.48 B	0.1 B	102 B	11.7 B	11 B	
9/20/2015 13:13	8.88 B	0.3 B	107.2 B	8.9 B	8 B	
9/20/2015 13:14	8.88 B	0.1 B	109.8 B	9.2 B	8 B	
9/20/2015 13:15	8.88 B	0 B	109.7 B	10.3 B	10 B	
9/20/2015 13:16	8.88 B	0 B	101.9 B	12.6 B	12 B	
9/20/2015 13:17	8.78 B	0 B	102.6 B	9.2 B	9 B	
9/20/2015 13:18	8.98 B	0 B	101.7 B	8.4 B	8 B	
9/20/2015 13:19	8.38 B	0 B	106.5 B	8.7 B	8 B	
9/20/2015 13:20	9.19 B	0 B	92.9 B	10.1 B	10 B	
9/20/2015 13:21	9.29 B	0 B	87 B	12.1 B	12 B	
9/20/2015 13:22	8.78 B	0 B	86.7 B	12.4 B	12 B	
9/20/2015 13:23	8.78 B	0 B	94.3 B	10.4 B	10 B	

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 21, 2015
Start Time:	8:40
Stop Time:	10:44

Unit #2 Inlet **Year - 2015** **Day 7**

Analyzer or Channel	O2			COLo			COHi											
Analyzer Full Range	25			500			2000											
Analyzer Make	Environment SA			Environment SA			Environment SA											
Analyzer Serial Number	2685			2685			2685											
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High									
Ca = Cal Gas Value	0.00	9.62	17.90	0.00	281.00	433.00	0.00	1118.00	1708.00									
Cylinder ID#	CC31829	CC316057	CC97046	CC31829	EB0047035	EB0047069	CC31829	CC316057	CC97046									
Expiration Date	01/14/16	09/23/22	10/14/17	01/14/16	10/10/22	04/07/20	01/14/16	09/23/22	10/14/17									
Run #1	**0.00**	**9.79**	**17.99**	**0.90**	**279.20**	**435.40**	**4.00**	**1088.00**	**1736.00**									
Run #2	**0.00**	**9.79**	**17.99**	**0.70**	**279.80**	**439.40**	**4.00**	**1087.00**	**1736.00**									
Run #3	**0.00**	**9.69**	**18.09**	**1.60**	**285.10**	**434.90**	**4.00**	**1091.00**	**1739.00**									
SUM (1+2+3)	0.00	29.27	54.07	3.20	844.10	1309.70	12.00	3266.00	5211.00									
Cm = SUM/3	#DIV/0!	9.76	18.02	1.07	281.37	436.57	4.00	1088.67	1737.00									
Abs. Diff	#DIV/0!	0.1366667	0.1233333	1.0666667	0.3666667	3.5666667	4	29.333333	29									
%F.S.				0.21	-0.07	-0.71	0.20	1.47	-1.45									
Pass/Fail	#DIV/0!	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**									

Comments: Mid bottle Span 1 changed, New Values are the same as the old. CO 281PPM.

Technician :	Jake Kieser	Title:	Altech Rep.	Date:
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:

Date/Time	U2 1-min Inlet Data - O2e-dry	Data Status	U2 1-min Inlet Data - COe-l	Data Status	U2 1-min Inlet Data - COe-h	Data Status	
9/21/2015 8:31	8.09	B	44.8	B	40	B	
9/21/2015 8:32	7.59	B	35	B	29	B	
9/21/2015 8:33	7.19	B	28.7	B	23	B	
9/21/2015 8:34	7.99	B	10	B	7	B	
9/21/2015 8:35	0.09	B	409.1	B	453	B	
9/21/2015 8:36	0	B	434.3	B	485	B	
9/21/2015 8:37	0	B	435	B	486	B	
9/21/2015 8:38	0	B	435.2	B	486	B	
9/21/2015 8:39	0	B	435.3	B	487	B	
9/21/2015 8:40	0	B	435.4	B	487	B	1
9/21/2015 8:41	0	B	435.5	B	487	B	
9/21/2015 8:42	0	B	435.6	B	487	B	
9/21/2015 8:43	0	B	6.9	B	6	B	
9/21/2015 8:44	0	B	3.2	B	5	B	
9/21/2015 8:45	0	B	2.1	B	4	B	
9/21/2015 8:46	0	B	1.6	B	4	B	
9/21/2015 8:47	0	B	1.2	B	4	B	
9/21/2015 8:48	0	B	1.1	B	4	B	
9/21/2015 8:49	0	B	1.1	B	4	B	
9/21/2015 8:50	0	B	1	B	4	B	
9/21/2015 8:51	0	B	0.9	B	4	B	
9/21/2015 8:52	0	B	0.9	B	4	B	1
9/21/2015 8:53	0	B	0.8	B	4	B	
9/21/2015 8:54	0	B	0.8	B	4	B	
9/21/2015 8:55	0	B	275.6	B	311	B	
9/21/2015 8:56	0	B	278.6	B	315	B	
9/21/2015 8:57	0	B	279.1	B	315	B	
9/21/2015 8:58	0	B	279.1	B	315	B	
9/21/2015 8:59	0	B	279.2	B	315	B	1
9/21/2015 9:00	0	B	279.3	B	316	B	
9/21/2015 9:01	0	B	279.5	B	316	B	
9/21/2015 9:02	17.19	B	500	B	1429	B	
9/21/2015 9:03	17.79	B	500	B	1729	B	
9/21/2015 9:04	17.99	B	500	B	1735	B	
9/21/2015 9:05	17.99	B	500	B	1736	B	1
9/21/2015 9:06	18.09	B	500	B	1737	B	
9/21/2015 9:07	9.89	B	500	B	1094	B	
9/21/2015 9:08	9.79	B	500	B	1089	B	
9/21/2015 9:09	9.79	B	500	B	1089	B	
9/21/2015 9:10	9.79	B	500	B	1088	B	1
9/21/2015 9:11	9.69	B	500	B	1088	B	
9/21/2015 9:12	3.69	B	500	B	802	B	
9/21/2015 9:13	0.09	B	17.6	B	14	B	
9/21/2015 9:14	0	B	7.6	B	7	B	
9/21/2015 9:15	0	B	5.4	B	5	B	
9/21/2015 9:16	0	B	5.8	B	6	B	
9/21/2015 9:17	0	B	4.1	B	5	B	
9/21/2015 9:18	8.49	B	18.2	B	13	B	
9/21/2015 9:19	8.69	B	23.4	B	18	B	

9/21/2015 9:20	8.79	B	18.7	B	14	B	
9/21/2015 9:21	8.99	B	24.4	B	19	B	
9/21/2015 9:22	8.79	B	17.6	B	13	B	
9/21/2015 9:23	9.69	B	43.4	B	39	B	
9/21/2015 9:24	8.59	B	22.6	B	17	B	
9/21/2015 9:25	9.79	B	36.5	B	31	B	
9/21/2015 9:26	8.79	B	25.3	B	19	B	
9/21/2015 9:27	8.99	B	18.7	B	14	B	
9/21/2015 9:28	9.19	B	20.4	B	15	B	
9/21/2015 9:29	8.19	B	11.6	B	8	B	
9/21/2015 9:30	8.39	B	13	B	9	B	
9/21/2015 9:31	9.39	B	28.4	B	23	B	
9/21/2015 9:32	8.79	B	16.5	B	12	B	
9/21/2015 9:33	9.19	B	32.1	B	26	B	
9/21/2015 9:34	9.39	B	37.7	B	32	B	
9/21/2015 9:35	9.19	B	26.1	B	20	B	
9/21/2015 9:36	8.49	B	14	B	10	B	
9/21/2015 9:37	7.89	B	8.3	B	6	B	
9/21/2015 9:38	8.39	B	11	B	8	B	
9/21/2015 9:39	8.99	B	18	B	13	B	
9/21/2015 9:40	9.29	B	29.7	B	24	B	
9/21/2015 9:41	8.69	B	16.6	B	12	B	
9/21/2015 9:42	9.29	B	24.4	B	19	B	
9/21/2015 9:43	1.09	B	18.9	B	14	B	
9/21/2015 9:44	0.09	B	0.9	B	4	B	
9/21/2015 9:45	0	B	0.8	B	4	B	
9/21/2015 9:46	0	B	0.7	B	4	B	
9/21/2015 9:47	0	B	0.7	B	4	B	2
9/21/2015 9:48	0	B	0.7	B	4	B	
9/21/2015 9:49	0	B	276.2	B	312	B	
9/21/2015 9:50	0	B	278.1	B	314	B	
9/21/2015 9:51	0	B	279.7	B	316	B	
9/21/2015 9:52	0	B	279.8	B	316	B	
9/21/2015 9:53	0	B	279.8	B	316	B	2
9/21/2015 9:54	0	B	279.9	B	316	B	
9/21/2015 9:55	17.69	B	500	B	1713	B	
9/21/2015 9:56	17.89	B	500	B	1732	B	
9/21/2015 9:57	17.99	B	500	B	1736	B	
9/21/2015 9:58	17.99	B	500	B	1736	B	2
9/21/2015 9:59	18.09	B	500	B	1736	B	
9/21/2015 10:00	15.89	B	500	B	1644	B	
9/21/2015 10:01	9.89	B	500	B	1093	B	
9/21/2015 10:02	9.89	B	500	B	1088	B	
9/21/2015 10:03	9.79	B	500	B	1087	B	
9/21/2015 10:04	9.79	B	500	B	1087	B	2
9/21/2015 10:05	9.69	B	500	B	1086	B	
9/21/2015 10:06	9.69	B	500	B	1086	B	
9/21/2015 10:07	0.29	B	467.8	B	522	B	
9/21/2015 10:08	0.09	B	442.9	B	495	B	
9/21/2015 10:09	0	B	440.8	B	493	B	
9/21/2015 10:10	0	B	439.7	B	492	B	
9/21/2015 10:11	0	B	439.5	B	491	B	

9/21/2015 10:12	0	B	439.4	B	491	B	2
9/21/2015 10:13	0	B	439.3	B	491	B	
9/21/2015 10:14	17.69	B	500	B	1710	B	
9/21/2015 10:15	17.99	B	500	B	1732	B	
9/21/2015 10:16	17.99	B	500	B	1736	B	
9/21/2015 10:17	18.09	B	500	B	1739	B	
9/21/2015 10:18	18.09	B	500	B	1739	B	3
9/21/2015 10:19	18.19	B	500	B	1739	B	
9/21/2015 10:20	3.09	B	500	B	957	B	
9/21/2015 10:21	0.19	B	298.2	B	336	B	
9/21/2015 10:22	0.09	B	290.7	B	328	B	
9/21/2015 10:23	0	B	286.8	B	324	B	
9/21/2015 10:24	0	B	285.6	B	322	B	
9/21/2015 10:25	0	B	285.1	B	322	B	3
9/21/2015 10:26	0	B	284.1	B	321	B	
9/21/2015 10:27	0	B	9.7	B	8	B	
9/21/2015 10:28	0	B	3.7	B	5	B	
9/21/2015 10:29	0	B	2.9	B	4	B	
9/21/2015 10:30	0	B	2.1	B	4	B	
9/21/2015 10:31	0	B	1.9	B	4	B	
9/21/2015 10:32	0	B	1.6	B	4	B	3
9/21/2015 10:33	0	B	1.4	B	4	B	
9/21/2015 10:34	0	B	1	B	4	B	
9/21/2015 10:35	0	B	429.7	B	480	B	
9/21/2015 10:36	0	B	433.5	B	485	B	
9/21/2015 10:37	0	B	434.8	B	486	B	
9/21/2015 10:38	0	B	434.9	B	486	B	3
9/21/2015 10:39	0	B	435.1	B	486	B	
9/21/2015 10:40	0	B	435.3	B	486	B	
9/21/2015 10:41	9.29	B	500	B	1015	B	
9/21/2015 10:42	9.49	B	500	B	1077	B	
9/21/2015 10:43	9.69	B	500	B	1091	B	
9/21/2015 10:44	9.69	B	500	B	1091	B	3
9/21/2015 10:45	9.59	B	500	B	1091	B	
9/21/2015 10:46	9.59	B	500	B	1091	B	
9/21/2015 10:47	7.69	B	317.8	B	351	B	
9/21/2015 10:48	9.69	B	56.6	B	55	B	
9/21/2015 10:49	8.99	B	50.2	B	47	B	
9/21/2015 10:50	8.89	B	36.6	B	31	B	
9/21/2015 10:51	8.99	B	72.6	B	74	B	
9/21/2015 10:52	9.49	B	127.4	B	140	B	

Covanta Durham York

Cylinder Gas Audit Calculations

Date:	September 21, 2015
Start Time:	11:03
Stop Time:	12:24

Unit #2 Outlet **Year - 2015** **Day7**

Analyzer or Channel	O2			SO2			NOX			COLo			COHi				
Analyzer Full Range	25			200			500			500			2000				
Analyzer Make	Environment SA			Environment SA			Environment SA			Environment SA			Environment SA				
Analyzer Serial Number	2686			2686			2686			2686			2686				
Cal Gas Range	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High		
Ca = Cal Gas Value	0.00	9.94	18.00	0.00	104.00	165.00	0.00	283.00	437.00	0.00	276.00	425.00	0.00	1073.00	1679.00		
Cylinder ID#	SA21825	CC164055	EB0002281	SA21825	EB0022279	EB0047080	SA21825	EB0022279	EB0047080	SA21825	EB0022279	EB0047080	SA21825	CC164055	EB0002281		
Expiration Date	08/07/16	09/23/22	12/19/20	08/07/16	10/29/22	07/08/18	08/07/16	10/29/22	07/08/18	08/07/16	10/29/22	07/08/18	08/07/16	09/23/22	12/19/20		
Run #1	**0.00**	**10.09**	**18.17**	**2.20**	**105.70**	**163.90**	**2.00**	**278.10**	**448.70**	**1.50**	**273.80**	**427.50**	**2.00**	**1054.00**	**1682.00**		
Run #2	**0.00**	**10.09**	**18.17**	**1.40**	**105.50**	**164.70**	**1.80**	**278.20**	**442.80**	**1.70**	**276.00**	**429.20**	**2.00**	**1055.00**	**1701.00**		
Run #3	**0.00**	**9.99**	**18.17**	**1.90**	**106.30**	**164.70**	**1.70**	**276.60**	**441.50**	**1.60**	**276.20**	**432.00**	**2.00**	**1064.00**	**1694.00**		
SUM (1+2+3)	0.00	30.17	54.51	5.50	317.50	493.30	5.50	832.90	1333.00	4.80	826.00	1288.70	6.00	3173.00	5077.00		
Cm = SUM/3	0.00	10.06	18.17	1.83	105.83	164.43	1.83	277.63	444.33	1.60	275.33	429.57	2.00	1057.67	1692.33		
Abs. Diff	0	0.1166667	0.17	1.8333333	1.8333333	0.5666667	1.8333333	5.3666667	7.3333333	1.6	0.6666667	4.5666667	2	15.333333	13.333333		
%F.S.				0.92	-0.92	0.28	0.37	1.07	-1.47	0.32	0.13	-0.91	0.10	0.77	-0.67		
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**		

Comments: Mid Span 1 Bottle changed New values 104ppm SO2, 283ppmNOX, 276 ppm CO.

Technician :	Jake Kiser	Title:	Altech Rep.	Date:	
Reviewed By :	Chuck Davis	Title:	REGIONAL CEMS COORD.	Date:	

Date/Time	U2 1-min C	Data Status	U2 1-min C	Data Status	U2 1-min C	Data Status	U2 1-min C	Data Status	U2 1-min C	Data Status	result6
9/21/2015 10:58	8.68	B	0	B	87.4	B	12.8	B	13	B	
9/21/2015 10:59	4.34	B	25.2	B	148.5	B	106.7	B	110	B	
9/21/2015 11:00	0	B	159.7	B	441.1	B	420.6	B	424	B	
9/21/2015 11:01	0	B	163.3	B	449.5	B	432.6	B	436	B	
9/21/2015 11:02	0	B	163.9	B	449.3	B	427.5	B	431	B	
9/21/2015 11:03	0	B	163.9	B	448.7	B	427.5	B	431	B	1
9/21/2015 11:04	0	B	164	B	446.9	B	432	B	435	B	
9/21/2015 11:05	0	B	164.2	B	442.1	B	426.8	B	430	B	
9/21/2015 11:06	0.2	B	97.9	B	242.9	B	242.3	B	249	B	
9/21/2015 11:07	0	B	3.5	B	3	B	2.3	B	3	B	
9/21/2015 11:08	0	B	2.4	B	2.1	B	1.6	B	2	B	
9/21/2015 11:09	0	B	2.2	B	2	B	1.5	B	2	B	1
9/21/2015 11:10	0	B	2.1	B	2.1	B	1.5	B	2	B	
9/21/2015 11:11	0.2	B	56.8	B	161.3	B	158.9	B	163	B	
9/21/2015 11:12	0	B	104.2	B	275.3	B	275.3	B	283	B	
9/21/2015 11:13	0	B	105	B	274.9	B	275.8	B	283	B	
9/21/2015 11:14	0	B	105.7	B	278.1	B	273.8	B	281	B	1
9/21/2015 11:15	0	B	105.7	B	278.4	B	277.2	B	285	B	
9/21/2015 11:16	18.07	B	19.3	B	37.3	B	500	B	1422	B	
9/21/2015 11:17	18.17	B	1.5	B	2.6	B	500	B	1685	B	
9/21/2015 11:18	18.17	B	1.3	B	2.5	B	500	B	1682	B	1
9/21/2015 11:19	18.17	B	1.3	B	2.3	B	500	B	1679	B	
9/21/2015 11:20	10.09	B	0.2	B	7.2	B	500	B	1167	B	
9/21/2015 11:21	10.09	B	0.8	B	2.5	B	500	B	1057	B	
9/21/2015 11:22	10.09	B	0.8	B	2.1	B	500	B	1057	B	
9/21/2015 11:23	9.99	B	0.8	B	2.2	B	500	B	1062	B	
9/21/2015 11:24	10.09	B	0.7	B	2	B	500	B	1054	B	1
9/21/2015 11:25	10.09	B	0.6	B	2	B	500	B	1055	B	
9/21/2015 11:26	0.1	B	0	B	11.4	B	500	B	516	B	
9/21/2015 11:27	0	B	2.1	B	1.9	B	20	B	22	B	
9/21/2015 11:28	0	B	1.4	B	1.9	B	2.3	B	3	B	
9/21/2015 11:29	0	B	1.5	B	1.8	B	1.8	B	2	B	
9/21/2015 11:30	0	B	1.4	B	1.8	B	1.7	B	2	B	2
9/21/2015 11:31	0	B	1.4	B	1.8	B	1.7	B	2	B	
9/21/2015 11:32	0.6	B	26.5	B	70.9	B	71.6	B	77	B	
9/21/2015 11:33	0	B	103.9	B	276.8	B	274.6	B	282	B	
9/21/2015 11:34	0	B	105.2	B	278.5	B	275.2	B	283	B	
9/21/2015 11:35	0	B	105.5	B	278.2	B	276	B	283	B	2
9/21/2015 11:36	0	B	105.5	B	278.1	B	276.5	B	284	B	
9/21/2015 11:37	18.07	B	18.6	B	33.2	B	500	B	1457	B	
9/21/2015 11:38	18.17	B	0.8	B	2.2	B	500	B	1697	B	
9/21/2015 11:39	18.17	B	0.9	B	2.4	B	500	B	1674	B	
9/21/2015 11:40	18.17	B	0.8	B	2.2	B	500	B	1674	B	
9/21/2015 11:41	18.17	B	0.8	B	2.2	B	500	B	1701	B	2
9/21/2015 11:42	18.17	B	0.7	B	2.2	B	500	B	1677	B	
9/21/2015 11:43	10.2	B	0.6	B	3.1	B	500	B	1123	B	
9/21/2015 11:44	9.99	B	0.5	B	2.5	B	500	B	1065	B	
9/21/2015 11:45	9.99	B	0.5	B	2	B	500	B	1053	B	
9/21/2015 11:46	9.99	B	0.5	B	2	B	500	B	1067	B	
9/21/2015 11:47	9.99	B	0.5	B	1.9	B	500	B	1053	B	
9/21/2015 11:48	10.09	B	0.5	B	1.9	B	500	B	1055	B	2
9/21/2015 11:49	10.09	B	0.4	B	1.9	B	500	B	1069	B	
9/21/2015 11:50	0.3	B	105.3	B	297	B	500	B	592	B	
9/21/2015 11:51	0	B	163.6	B	441.3	B	434	B	441	B	
9/21/2015 11:52	0	B	164.5	B	442	B	430.3	B	437	B	
9/21/2015 11:53	0	B	164.7	B	442.8	B	429.2	B	436	B	2
9/21/2015 11:54	0	B	164.8	B	442.1	B	430	B	437	B	
9/21/2015 11:55	17.67	B	56	B	141.3	B	500	B	1081	B	
9/21/2015 11:56	18.17	B	3.8	B	6.2	B	500	B	1697	B	
9/21/2015 11:57	18.17	B	1.4	B	2.3	B	500	B	1691	B	
9/21/2015 11:58	18.28	B	1.1	B	2.2	B	500	B	1696	B	
9/21/2015 11:59	18.28	B	1	B	2.2	B	500	B	1702	B	
9/21/2015 12:00	18.17	B	1	B	2.1	B	500	B	1694	B	3
9/21/2015 12:01	18.17	B	0.9	B	2.1	B	500	B	1701	B	
9/21/2015 12:02	0.2	B	66	B	191.7	B	500	B	608	B	
9/21/2015 12:03	0	B	105.2	B	272.6	B	278.9	B	288	B	
9/21/2015 12:04	0	B	106.1	B	275.5	B	277.1	B	287	B	

9/21/2015 12:05	0 B	106.3 B	276.6 B	276.2 B	286 B	3
9/21/2015 12:06	0 B	106.3 B	276.9 B	276.3 B	286 B	
9/21/2015 12:07	0 B	11.2 B	19.4 B	17.9 B	19 B	
9/21/2015 12:08	0 B	2.6 B	2.2 B	2 B	2 B	
9/21/2015 12:09	0 B	2.1 B	1.9 B	1.7 B	2 B	
9/21/2015 12:10	0 B	2.1 B	1.7 B	1.5 B	2 B	
9/21/2015 12:11	0 B	2 B	1.7 B	1.7 B	2 B	
9/21/2015 12:12	0 B	1.9 B	1.7 B	1.6 B	2 B	3
9/21/2015 12:13	0 B	1.8 B	1.7 B	1.5 B	2 B	
9/21/2015 12:14	0 B	160 B	435.1 B	423.1 B	430 B	
9/21/2015 12:15	0 B	164.2 B	440.1 B	429.7 B	436 B	
9/21/2015 12:16	0 B	164.6 B	440.9 B	430.1 B	436 B	
9/21/2015 12:17	0 B	164.6 B	440.4 B	430.3 B	436 B	
9/21/2015 12:18	0 B	164.7 B	441.5 B	432 B	438 B	3
9/21/2015 12:19	0 B	164.8 B	441.2 B	430.2 B	436 B	
9/21/2015 12:20	9.99 B	41.7 B	87.4 B	500 B	881 B	
9/21/2015 12:21	10.09 B	2.4 B	2.7 B	500 B	1069 B	
9/21/2015 12:22	9.99 B	1.7 B	2.4 B	500 B	1062 B	
9/21/2015 12:23	9.99 B	1.6 B	2.3 B	500 B	1069 B	
9/21/2015 12:24	9.99 B	1.5 B	2.3 B	500 B	1064 B	3
9/21/2015 12:25	10.09 B	1.4 B	2.2 B	500 B	1066 B	
9/21/2015 12:26	9.99 B	1.4 B	10.1 B	500 B	984 B	
9/21/2015 12:27	9.89 B	20.6 B	93.7 B	27 B	28 B	
9/21/2015 12:28	9.39 B	23.1 B	93.9 B	18.7 B	19 B	
9/21/2015 12:29	9.19 B	19.8 B	127 B	7.6 B	7 B	
9/21/2015 12:30	7.57 B	19.2 B	117.6 B	9.4 B	9 B	

Operational Test Period

System Response Time Test Field Data Sheet

Location:	Durham - York - Courtice Ontario
Source:	Incenerator - Unit 2 OUTLET
Operator:	David with Altech
Test Date:	April 29 2015
OTP System Response Criteria:	

Parameter	CEM Analyzer Model	Scale Reponse Time (seconds)					
		Test 1		Test 2		Test 3	
		Upscale	Downscale	Upscale	Downscale	Upscale	Downscale
Stack System							
Hcl 0-100		127	117	112	100	134	112
SO2 0-200	Mir 9000	97	117	95	108	103	92
NO 0-500		97	117	101	108	103	92
CO 0-500		97	117	101	108	103	92
Co High 0-2000	Mir 9000	125	115	111	113	123	117
CO2 0-25		107	120	114	113	118	117
O2 Dry 0-25	Mir 9000	70	72	66	72	67	80
O2 Wet 0-25	AmeteK	35	19	12	15	14	16
Inlet System							
CO low 0-500	Mir 9000	110	125	120	121	119	124
Co High 0-2000	Mir 9000	119	119	119	119	119	120
THC 0-100	FTIR	50	47	50	47	50	50
O2 Inlet Dry 0-25	Mir 9000	50	52	55	55	52	52

Section 2

OTP 1Hr CEMS, Maintenance Log, and Calibration Data

Date/Time	U2 1-hr Data - O2s-dry	Data Status	U2 1-hr Data - COs	Data Status	U2 1-hr Data - SO2s	Data Status	U2 1-hr Data - NOxs	Data Status	U2 1-hr Data - HCLs	Data Status	U2 1-hr Data - O2e-dry	Data Status	U2 1-hr Data - COe	Data Status	U2 1-hr Data - Steam	Data Status
9/15/2015 13:00	9.48	<	35.6	<	0	<	56.9	<	1.2	<	7.89		49.7		33.49	<
9/15/2015 14:00	8.93	B	927.9	B	43.2	B	107.3	B	0.1	B	6.7		30.5		33.01	
9/15/2015 15:00	7.65	B	15.8	B	1.6	B	125.3	B	1.5	B	7.25	<	22.3	<	33.49	
9/15/2015 16:00	8.83		31.8		0.1		73.5		1.2		6.97	B	299.4	B	33.58	
9/15/2015 17:00	8.37	<	26.1	<	0.1	<	74.6	<	1.1	<	10.52	B	398.1	B	33.56	
9/15/2015 18:00	7.91		12.7		0		83.5		1.5		6.46	B	349.2	B	33.27	
9/15/2015 19:00	7.9		18.6		0		77.2		1.3		6.05	B	310.9	B	33.03	
9/15/2015 20:00	7.51		17.5		0		88.9		1.4		6.24	<	23.4	<	33.62	
9/15/2015 21:00	8.34		21.7		0		75.3		1.8		7.56	<	25.5	<	33.61	
9/15/2015 22:00	8.04		15.2		0		79.5		4.5		7.18		17.1		33.27	
9/15/2015 23:00	7.97	<	17.4	<	0	<	82.3	<	2.4	<	7.04		19.5		33.36	
9/16/2015 0:00	8.12		37.1		0		77.9		3.5		7.66	<	27.9	<	34.3	
9/16/2015 1:00	8.47		15.3		0		78.4		3.2		7.64		16.8		33.28	
9/16/2015 2:00	8.85		17.1		0		72.7		3.3		8.07		18.6		33.72	
9/16/2015 3:00	8.85		23.4		0		75.5		3.2		8.09	<	26	<	33.17	
9/16/2015 4:00	9.12		25.3		0		73.6		3.2		8.28		25.7		32.71	
9/16/2015 5:00	8.97	<	24.1	<	0	<	65.9	<	2.6	<	8.12		25.1		32.59	
9/16/2015 6:00	9.44	<	45.1	<	0	<	59.3	<	1.7	<	8.52	<	60.3	<	33.38	
9/16/2015 7:00	8.52	<	26	<	0	<	71.5	<	1.9	<	7.92	B	37.5	B	33.35	
9/16/2015 8:00	8.98		26.8		0		79.2		1.7		7.81	B	35.2	B	33.45	
9/16/2015 9:00	8.08		20.2		0		79.5		1.3		5.74	B	362	B	34.23	
9/16/2015 10:00	7.95	<	22.7	<	0	<	79.4	<	1.6	<	7.12	<	24.8	<	34.19	
9/16/2015 11:00	10.68	B	1043.7	B	29.5	B	77.8	B	1	B	7.71		24.7		33.41	
9/16/2015 12:00	9.03	B	31.2	B	0	B	84.9	B	1.8	B	8.12	<	27.8	<	33.22	
9/16/2015 13:00	9.09		65.2		0		73.2		1.3		8.3	<	65.2	<	33.03	
9/16/2015 14:00	8.93		14.1		0		73.4		1.5		8.44	<	11.7	<	32.56	
9/16/2015 15:00	7.76		15.7		0		83.6		1.6		6.62	<	17	<	34.74	
9/16/2015 16:00	8.34		35.8		0		74.8		2.1		8.15	<	32.8	<	33.55	
9/16/2015 17:00	7.95	<	28.7	<	0	<	76.6	<	2.3	<	6.89	B	22.6	B	33.15	
9/16/2015 18:00	8.57		35.6		0		66.7		1.5		8.51	<	45.1	<	33.4	
9/16/2015 19:00	8.34		23.6		0		69.6		2.1		7.46		25.3		32.54	
9/16/2015 20:00	8.36		20.2		0		63.1		2.3		7.5		21.9		33.71	
9/16/2015 21:00	8.57		22.9		0		70.2		2.5		7.63	<	23.1	<	33.22	
9/16/2015 22:00	8.99		21.5		0		64.6		3.1		8.03	B	22.4	B	33.21	
9/16/2015 23:00	8.95	<	25.6	<	0	<	66.6	<	2.7	<	8.26		29.5		33.47	
9/17/2015 0:00	8.85		26.7		0		65.6		2.4		8.1	<	28.4	<	32.74	
9/17/2015 1:00	8.7		18.6		0		67		2.4		7.99		20.1		33.37	
9/17/2015 2:00	9.18		28.7		0		61.5		2.4		8.41		30.7		33.37	
9/17/2015 3:00	8.89		20.1		0		66.5		2.3		8.1	<	21.8	<	32.69	
9/17/2015 4:00	8.81		16.8		0		65.2		2.6		8.05		18.1		33.41	
9/17/2015 5:00	9.14	<	16.3	<	0	<	62.7	<	2.3	<	8.41		17.6		32.76	
9/17/2015 6:00	9.01	<	19.4	<	0	<	58.8	<	2	<	8.25	<	18.9	<	33.31	
9/17/2015 7:00	9.05	<	18.5	<	0	<	86.2	<	2	<	8.28	B	13.3	B	32.69	
9/17/2015 8:00	9.21		16		0		82.8		2		7.74	B	15.6	B	31.61	
9/17/2015 9:00	9.16		23.4		0		80.2		2.4		8.15	B	380.6	B	31.39	
9/17/2015 10:00	8.67	<	21.5	<	0	<	87.3	<	2.9	<	8.27	B	20.6	B	33.79	
9/17/2015 11:00	9.19	B	932	B	35.6	B	94.4	B	1.2	B	7.96		18.5		33.33	
9/17/2015 12:00	5.88	B	359.6	B	33.1	B	118.9	B	2.3	B	7.6	<	12.1	<	32.51	
9/17/2015 13:00	8.74	<	14.8	<	0	<	99.3	<	2.7	<	7.93		16.4		33.47	
9/17/2015 14:00	9.5	B	103.5	B	0	B	94.8	B	2.6	B	7.78		15.5		33.56	
9/17/2015 15:00	8.9		15.6		0		83.4		2.4		8.18	<	16.7	<	33.23	
9/17/2015 16:00	8.52		17		0		82		2.9		7.79		18.4		33.92	
9/17/2015 17:00	9.03	<	22.3	<	0	<	62.8	<	2.3	<	8.28		21.8		32.96	
9/17/2015 18:00	10.94		38.2		0.2		49.3		1.7		9.24	<	13	<	27.28	
9/17/2015 19:00	8.96		7.9		2.8		64.7		5		8.29		8.6		33.62	
9/17/2015 20:00	8.46		9.8		2.6		69.2		7		7.71		10.4		33.29	
9/17/2015 21:00	8.39		15		0		65.5		4.6		7.63	<	17	<	33.53	
9/17/2015 22:00	8.87		15.7		0		64.5		3.8		8.09		17		32.99	
9/17/2015 23:00	8.04	<	25.9	<	0.1	<	68.1	<	4.4	<	7.3		27.3		33.13	
9/18/2015 0:00	8.59		20.1		0		63.2		4.6		7.8	<	21.2	<	33.9	
9/18/2015 1:00	8.55		21.8		0		69.9		4.4		7.78		23.3		33.82	
9/18/2015 2:00	9.02		11.2		0		63.1		3.8		8.32		11.7		32.17	
9/18/2015 3:00	8.29		16.3		0		73.1		4		7.58	<	17.7	<	32.56	
9/18/2015 4:00	8.78		19.5		0		59.4		4.4		8.06		20.5		33.49	
9/18/2015 5:00	8.64	<	16.8	<	0	<	70.5	<	3.4	<	7.98		18.2		33.34	
9/18/2015 6:00	8.85	<	18.1	<	0	<	65.9	<	2.9	<	8.12	<	19.1	<	32.97	
9/18/2015 7:00	8.72	<	11.8	<	0	<	87.8	<	2.5	<	7.84	B	12.2	B	33.7	
9/18/2015 8:00	8.87		21.3		0		61		1.8		7.07	B	21.9	B	33.09	
9/18/2015 9:00	8.17		26.5		0		69.5		2.5		4.91	B	307.6	B	35.62	
9/18/2015 10:00	8.66		21.8		0		69.1		3.8		6.15	B	370.2	B	33.5	
9/18/2015 11:00	9.04	B	23	B	0	B	59.1	B	4.3	B	8.57	<	34.4	<	33.75	
9/18/2015 12:00	6.45	B	697.2	B	55.6	B	151.6	B	0.9	B	8.28	<	22	<	32.38	
9/18/2015 13:00	8.77	<	24.8	<	0	<	82.8	<	3.7	<	8.02		24.2		33.7	
9/18/2015 14:00	8.52		18.9		0		73.8		3		7.81		20.8		32.65	
9/18/2015 15:00	8.23		17.8		0		74.4		3.5		7.8	<	20.9	<	33.86	
9/18/2015 16:00	8.83		32.3		0		74.7		3.9		8.1		34		33.36	
9/18/2015 17:00	8.51	<	18.8	<	0	<	71.7	<	3.6	<	7.79		21.3		33.11	
9/18/2015 18:00	8.32	B	22	B	0	B	66.6	B	3.3	B	7.61	<	20.7	<	33.21	
9/18/2015 19:00	0.2	B	0.1	B	3.5	B	1.3	B	0	B	7.78		16.9		33.64	
9/18/2015 20:00	9.59	B	51.5	B	0	B	81.3	B	3.4	B	7.87		25.3		33.74	
9/18/2015 21:00	8.66		20.4		0		81		4		7.88	<	19.1	<	33.21	
9/18/2015 22:00	8.44		17.3		0		73.4		4.2		7.69		19.7		33.59	
9/18/2015 23:00	8.64	<	15.5	<	0	<	69.3	<	7.4	<	7.86		17.4		33.59	
9/19/2015 0:00	8.51		15.6		0		70.8		3.5		7.74	<	16	<	33.34	
9/19/2015 1:00	8.38		12.8		0		78		4.1		7.6		14.4		33.27	
9/19/2015 2:00	8.76		16.8		0		76.6		3.8		8.02		19		33.33	
9/19/2015 3:00	8.61		15.4		0		70.7		3.7		7.84	<	15.9	<	33.37	
9/19/2015 4:00	8.55		13.7		0		72.9		3.6		7.85		15.1		33.26	
9/19/2015 5:00	8.62	<	14.3	<	0	<	75.1	<	3.8	<	7.92		15.9		33.58	
9/19/2015 6:00	8.5	<	14	<	0	<	77.1	<	3	<	7.75	<	15.2	<	33.26	
9/19/2015 7:00	8.55	<	16.6	<	0	<	90.5	<	2.6	<	7.68	B	16.1	B	33.3	
9/19/2015 8:00	8.67		15.8		0		84.3		2.2		6.61	B	12	B	33.51	
9/19/2015 9:00	8.57		14.4		0		77.3		2.5		7.69	B	388.4	B	33.45	
9/19/2015 10:00	8.51	<	15.3	<	0	<	60.1	<	3	<	7.87	<	19.4	<	33.56	
9/19/2015 11:00	6.05	B	693	B	37.7	B	102.6	B	19.8	B	7.75		14.7		33.27	

9/19/2015 12:00	8.64 B	11.5 B	0 B	100.8 B	6 B	7.69 <	15.7 <	33.32
9/19/2015 13:00	8.54	16.2	0	71.7	4.9	7.85	18	33.35
9/19/2015 14:00	8.6	17.8	0	67.3	4.5	7.85	18.7	33.33
9/19/2015 15:00	8.35	16.1	0	66.3	4.3	7.73 <	17.6 <	33.66
9/19/2015 16:00	8.69	20.1	0	67.7	4.3	7.99	21	33.52
9/19/2015 17:00	8.64 <	16.6 <	0 <	66.5 <	3.8 <	7.95	19.2	33.64
9/19/2015 18:00	8.41	17.1	0	67.5	3.1	7.69 <	19.9 <	33.87
9/19/2015 19:00	8.72	16.3	0	65.9	3.1	7.96	18.1	33.29
9/19/2015 20:00	8.6	17.2	0	69	3.3	7.79	18.5	33.47
9/19/2015 21:00	8.8	25.4	0	65.8	3.2	7.96 <	27.9 <	33.5
9/19/2015 22:00	8.74	20.5	0	64.6	3.4	8.03	22.3	33.52
9/19/2015 23:00	8.81 <	20.3 <	0 <	65.9 <	3.5 <	8.07	21.5	33.36
9/20/2015 0:00	8.9	16.7	0	65.4	3.8	8.17 <	19 <	33.38
9/20/2015 1:00	8.83	17.2	0	69.3	3.8	8.06	18.8	33.53
9/20/2015 2:00	8.87	15.7	0	70.5	3.5	8.13	17	33.37
9/20/2015 3:00	8.89	17.3	0	66.1	3.1	8 <	17.4 <	33.31
9/20/2015 4:00	8.84	16.1	0	71.4	3.1	8.14	17.5	33.51
9/20/2015 5:00	8.88 <	18.7 <	0 <	67.1 <	2.7 <	8.12	20.7	33.58
9/20/2015 6:00	8.87 <	14.8 <	0 <	69.1 <	2.9 <	8.1 <	17 <	33.51
9/20/2015 7:00	8.95 <	18.9 <	0 <	89.3 <	2 <	8.05 B	17.5 B	33.62
9/20/2015 8:00	8.89	16	0	66.8	2	8.12 <	17.4 <	33.31
9/20/2015 9:00	8.66	12.7	0	69.7	2.4	8.06 B	15.5 B	33.24
9/20/2015 10:00	8.36	11.7	0.1	69.9	3.3	5.31 B	356.6 B	33.52
9/20/2015 11:00	8.24 <	16.9 <	0.2 <	66.7 <	5.3 <	7.42 <	14.8 <	33.1
9/20/2015 12:00	6.19 B	730 B	52.4 B	139.9 B	16.5 B	7.43 <	13.3 <	33.66
9/20/2015 13:00	8.95 <	11.2 <	0 <	84.1 <	3.2 <	8.09	12.5	33.56
9/20/2015 14:00	8.79	13	0	71.6	2.6	7.99	14.3	33.4
9/20/2015 15:00	8.55	11.5	0	69.8	3.3	7.7 <	12.7 <	33.41
9/20/2015 16:00	8.6	13.1	0	66.4	3.1	7.79	15.2	33.58
9/20/2015 17:00	8.72 <	12.6 <	0 <	71.1 <	3.1 <	8.01	15.4	33.38
9/20/2015 18:00	8.75	13	0	65.1	3.6	8.03 <	15 <	33.39
9/20/2015 19:00	9.54	15.9	0	69.3	3.5	8.78	17.5	31.51
9/20/2015 20:00	10.16	27.4	0	59.4	2.9	9.47	29.3	27.93
9/20/2015 21:00	9.25	15.3	0	64.2	2.6	8.39 <	17.1 <	27.7
9/20/2015 22:00	9.02	12	0	69.6	2.8	8.28	13.1	27.34
9/20/2015 23:00	8.77 <	13.6 <	0 <	69.9 <	2.6 <	7.98	13.4	27.48
9/21/2015 0:00	8.24	9.4	0	68.7	2.6	7.33 <	11.2 <	30.62
9/21/2015 1:00	8.41	10.6	0	74	3.4	7.62	11.7	31.95
9/21/2015 2:00	8.97	14.6	0	70.3	2.5	8.19	15.7	32.7
9/21/2015 3:00	10.4	34.4	0	56.1	1.8	9.8 <	34.9 <	27.87
9/21/2015 4:00	9.73	41.7	0	62.6	1.4	8.99	43.1	26.88
9/21/2015 5:00	9.23 <	32.9 <	0 <	63.9 <	1.1 <	8.37	31.9	25.85
9/21/2015 6:00	8.78 <	22.6 <	0 <	67.1 <	1.2 <	7.9 <	22.4 <	26.6
9/21/2015 7:00	7.29 <	9 <	0 <	91 <	2.1 <	7.76 B	8.2 B	30.21
9/21/2015 8:00	8.3	13.3	20.2	77.8	5.8	6.87 B	18 B	34
9/21/2015 9:00	9.59	16.1	0	61.8	2.9	7.58 B	180.9 B	34
9/21/2015 10:00	9.67 <	28.5 <	0 <	67.6 <	3.2 <	8.27 B	48.9 B	33.56
9/21/2015 11:00	6.74 B	773.2 B	48.3 B	129 B	0.7 B	9.07	33	31.24
9/21/2015 12:00	6.67 B	258.8 B	30.1 B	121.6 B	3.4 B	8.25 <	24.3 <	28.83
9/21/2015 13:00	8.7 <	16.3 <	0 <	79.6 <	2.7 <	7.95	17.5	29.69
9/21/2015 14:00	8.76	17.4	0	66.1	2.7	8.31	18.1	29.45
9/21/2015 15:00	8.43	13.5	0	73.8	3	8.26 <	14.8 <	30.08
9/21/2015 16:00	7.7	10.9	0	76	3.7	8.46	11.5	33.73
9/21/2015 17:00	8.26 <	14.3 <	0 <	75.3 <	3.4 <	7.21 B	13.1 B	33.82
9/21/2015 18:00	8.58	20	0.7	75.3	5.3	7.66 B	17.2 B	33.55
9/21/2015 19:00	8.63	19	3.7	65.1	6.6	7.83	21.4	33.63
9/21/2015 20:00	8.68	13.6	0	71.4	2.5	7.86	15.9	33.55
9/21/2015 21:00	8.57	14.1	0	71.5	2.1	7.77 <	16.2 <	33.47
9/21/2015 22:00	8.77	14.2	0	68.6	2.7	8.02	15.9	33.33
9/21/2015 23:00	8.74 <	16.1 <	0 <	66.5 <	2.9 <	8.16	19.1	33.47
9/22/2015 0:00	8.55	11.7	0	71.5	2	7.92 <	13.2 <	33.69
9/22/2015 1:00	8.48	14.3	0.3	75.2	1.9	7.71	15.6	32.91
9/22/2015 2:00	8.39	16	0.2	66.6	1.6	7.61	17.7	34.47
9/22/2015 3:00	8.73	14.7	0	75.1	1.4	7.89 <	16 <	32.81
9/22/2015 4:00	8.6	11.9	0	64.4	1.6	7.83	13.2	33.83
9/22/2015 5:00	8.78 <	10.8 <	0 <	71.3 <	1.6 <	8.02	11.7	33.25
9/22/2015 6:00	8.81 <	10.5 <	0 <	69.1 <	1.4 <	8.08 <	12 <	33.36
9/22/2015 7:00	8.96 <	9.1 <	0.2 <	88.2 <	2 <	8.23 B	10.4 B	33.38
9/22/2015 8:00	9	14.6	3.1	68.6	2.8	8.17 <	16.4 <	33.36
9/22/2015 9:00	8.15	13.3	2.4	67.6	2.4	13.75 B	7.2 B	33.38
9/22/2015 10:00	8.64	12.8	2	70.9	3.5	7.81 B	14.2 B	33.64
9/22/2015 11:00	9.22 <	12.5 <	4.3 <	69.5 <	5.5 <	7.76 B	13.3 B	33.2
9/22/2015 12:00	8.66	11.1	1.8	71.9	4.4	7.89 <	12.3 <	33.42
9/22/2015 13:00	8.83	11.4	0.4	69.9	4.1	9.86	11.2	33.36

Daily Calibration Summary

Company: Covanta - Durham York Energy
1835 Energy Drive

Clarington Municipality, ON

Stack ID #: Boiler #2

Start of Report: 09/15/15 00:00
End of Report: 09/22/15 23:59

TYPE	PARAMETER	START	STOP	EXPECT.	ACTUAL	ERROR	% FS	STATUS
Zero	CO-HI-IN	09/15/15 07:25	09/15/15 07:31	0.0	4.00	4.00	0.2	OK
Span		09/15/15 07:37	09/15/15 07:43	1699.0	1608.00	-91.00	-4.5	
Zero	CO-HI-IN	09/15/15 12:00	09/15/15 12:06	0.0	5.00	5.00	0.2	OK
Span		09/15/15 12:12	09/15/15 12:18	1699.0	1694.00	-5.00	-0.2	
Zero	CO-HI-OUT	09/15/15 06:45	09/15/15 06:49	0.0	2.00	2.00	0.1	OK
Span		09/15/15 06:53	09/15/15 06:57	1675.0	1694.00	19.00	0.9	
Zero	CO-LOW-IN	09/15/15 07:25	09/15/15 07:31	0.0	0.70	0.70	0.1	OK
Span		09/15/15 07:31	09/15/15 07:37	422.0	404.20	-17.80	-3.6	
Zero	CO-LOW-IN	09/15/15 10:58	09/15/15 11:04	0.0	10.40	10.40	2.1	OK
Span		09/15/15 11:04	09/15/15 11:10	422.0	430.00	8.00	1.6	
Zero	CO-LOW-IN	09/15/15 12:00	09/15/15 12:06	0.0	5.42	5.42	1.1	OK
Span		09/15/15 12:06	09/15/15 12:12	422.0	428.80	6.80	1.4	
Zero	CO-LOW-OUT	09/15/15 06:45	09/15/15 06:49	0.0	1.80	1.80	0.4	OK
Span		09/15/15 06:49	09/15/15 06:53	424.0	431.30	7.30	1.5	
Zero	CO2-OUT	09/15/15 06:45	09/15/15 06:49	0.0	0.06	0.06	0.2	OK
Span		09/15/15 06:53	09/15/15 06:57	19.0	19.16	0.16	0.6	
Zero	FLOW-OUT	09/15/15 06:15	09/15/15 06:16	4.0	4.02	0.02	0.0	OK
Span		09/15/15 06:16	09/15/15 06:17	24.0	24.00	0.00	0.0	
Zero	HCL-OUT	09/15/15 06:53	09/15/15 06:57	0.0	0.00	0.00	0.0	OK
Span		09/15/15 06:57	09/15/15 07:07	88.8	84.70	-4.10	-4.1	
Span	NH3-OUT	09/15/15 06:57	09/15/15 07:07	0.0	0.93	0.93	1.9	OK
		09/15/15 07:07	09/15/15 07:17	42.4	42.69	0.29	0.6	
Zero	NOX-OUT	09/15/15 06:45	09/15/15 06:49	0.0	1.60	1.60	0.3	OK
Span		09/15/15 06:49	09/15/15 06:53	434.0	433.70	-0.30	-0.1	
Zero	O2DRY-IN	09/15/15 07:25	09/15/15 07:31	2.0	1.99	-0.09	-0.4	>1 x
Span		09/15/15 07:37	09/15/15 07:43	18.0	17.39	-0.61	-2.4	
Zero	O2DRY-IN	09/15/15 12:00	09/15/15 12:06	2.0	1.99	-0.01	0.0	OK
Span		09/15/15 12:12	09/15/15 12:18	18.0	17.79	-0.21	-0.8	
Zero	O2DRY-OUT	09/15/15 06:45	09/15/15 06:49	2.0	2.12	0.12	0.5	OK
Span		09/15/15 06:53	09/15/15 06:57	17.8	18.17	0.37	1.5	
Zero	O2WET-OUT	09/15/15 06:45	09/15/15 06:49	2.0	2.23	0.23	0.9	>1 x
Span		09/15/15 06:53	09/15/15 06:57	17.8	17.08	-0.72	-2.9	
Zero	OPACITY	09/15/15 07:00	09/15/15 07:02	0.0	0.00	0.00	0.0	OK
Span		09/15/15 07:02	09/15/15 07:04	26.0	26.34	0.34	0.3	
Zero	SO2-IN	09/15/15 07:25	09/15/15 07:31	0.0	4.90	4.90	1.0	>1 x
Span		09/15/15 07:31	09/15/15 07:37	433.0	411.00	-22.00	-4.4	

Zero	SO2-IN	09/15/15 10:58	09/15/15 11:04	0.0	0.00	0.00	0.0	OK
Span		09/15/15 11:04	09/15/15 11:10	433.0	420.80	-12.20	-2.4	
Zero	SO2-IN	09/15/15 12:00	09/15/15 12:06	0.0	0.00	0.00	0.0	OK
Span		09/15/15 12:06	09/15/15 12:12	433.0	420.30	-12.70	-2.5	
Zero	SO2-OUT	09/15/15 06:45	09/15/15 06:49	0.0	1.70	1.70	0.9	OK
Span		09/15/15 06:49	09/15/15 06:53	167.0	165.70	-1.30	-0.7	
Zero	CO-HI-IN	09/16/15 07:25	09/16/15 07:31	0.0	4.00	4.00	0.2	OK
Span		09/16/15 07:37	09/16/15 07:43	1699.0	1652.00	-47.00	-2.3	
Span	CO-HI-OUT	09/16/15 06:45	09/16/15 06:49	0.0	2.00	2.00	0.1	OK
		09/16/15 06:53	09/16/15 06:57	1679.0	1678.00	-1.00	-0.1	
Zero	CO-LOW-IN	09/16/15 07:25	09/16/15 07:31	0.0	1.10	1.10	0.2	OK
Span		09/16/15 07:31	09/16/15 07:37	422.0	411.10	-10.90	-2.2	
Zero	CO-LOW-OUT	09/16/15 06:45	09/16/15 06:49	0.0	1.60	1.60	0.3	OK
Span		09/16/15 06:49	09/16/15 06:53	424.0	426.50	2.50	0.5	
Zero	CO2-OUT	09/16/15 06:45	09/16/15 06:49	0.0	0.06	0.06	0.2	OK
Span		09/16/15 06:53	09/16/15 06:57	19.1	19.17	0.07	0.3	
Zero	FLOW-OUT	09/16/15 06:15	09/16/15 06:16	4.0	4.01	0.01	0.0	OK
Span		09/16/15 06:16	09/16/15 06:17	24.0	24.00	0.00	0.0	
Zero	HCL-OUT	09/16/15 06:53	09/16/15 06:57	0.0	0.50	0.50	0.5	OK
Span		09/16/15 06:57	09/16/15 07:07	88.8	88.70	-0.10	-0.1	
Zero	NH3-OUT	09/16/15 06:57	09/16/15 07:07	0.0	0.63	0.63	1.3	OK
Span		09/16/15 07:07	09/16/15 07:17	41.6	41.79	0.19	0.4	
Zero	NOX-OUT	09/16/15 06:45	09/16/15 06:49	0.0	0.80	0.80	0.2	OK
Span		09/16/15 06:49	09/16/15 06:53	434.0	431.40	-2.60	-0.5	
Zero	O2DRY-IN	09/16/15 07:25	09/16/15 07:31	2.0	2.09	0.09	0.4	OK
Span		09/16/15 07:37	09/16/15 07:43	18.0	17.89	-0.11	-0.4	
Zero	O2DRY-OUT	09/16/15 06:45	09/16/15 06:49	2.0	2.01	0.01	0.0	OK
Span		09/16/15 06:53	09/16/15 06:57	18.0	18.28	0.28	1.1	
Zero	O2WET-OUT	09/16/15 06:45	09/16/15 06:49	2.0	2.25	0.25	1.0	>1 x
Span		09/16/15 06:53	09/16/15 06:57	18.0	17.28	-0.72	-2.9	
Zero	OPACITY	09/16/15 07:00	09/16/15 07:02	0.0	0.30	0.30	0.3	OK
Span		09/16/15 07:02	09/16/15 07:04	26.0	26.20	0.20	0.2	
Zero	SO2-IN	09/16/15 07:25	09/16/15 07:31	0.0	1.20	1.20	0.2	OK
Span		09/16/15 07:31	09/16/15 07:37	433.0	422.30	-10.70	-2.1	
Zero	SO2-OUT	09/16/15 06:45	09/16/15 06:49	0.0	1.60	1.60	0.8	OK
Span		09/16/15 06:49	09/16/15 06:53	167.0	165.50	-1.50	-0.7	
Zero	THC-IN	09/16/15 07:25	09/16/15 07:31	0.0	0.00	0.00	0.0	>4 x
Span		09/16/15 07:53	09/16/15 07:59	84.6	0.00	-84.60	-84.6	
Zero	THC-IN	09/16/15 22:31	09/16/15 22:36	0.0	0.00	0.00	0.0	OK
Span		09/16/15 22:36	09/16/15 22:41	84.6	85.10	0.50	0.5	
Zero	CO-HI-IN	09/17/15 07:25	09/17/15 07:31	0.0	4.00	4.00	0.2	OK
Span		09/17/15 07:37	09/17/15 07:43	1699.0	1668.00	-31.00	-1.5	
Zero	CO-HI-OUT	09/17/15 06:45	09/17/15 06:49	0.0	2.00	2.00	0.1	OK
Span		09/17/15 06:53	09/17/15 06:57	1679.0	1671.00	-8.00	-0.4	
Span	CO-HI-OUT	09/17/15 13:56	09/17/15 14:00	0.0	2.00	2.00	0.1	OK
		09/17/15 14:00	09/17/15 14:04	1679.0	1673.00	-6.00	-0.3	

Zero	CO-LOW-IN	09/17/15 07:25	09/17/15 07:31	0.0	0.40	0.40	0.1	OK
Span		09/17/15 07:31	09/17/15 07:37	422.0	415.60	-6.40	-1.3	
Zero	CO-LOW-OUT	09/17/15 06:45	09/17/15 06:49	0.0	1.40	1.40	0.3	OK
Span		09/17/15 06:49	09/17/15 06:53	424.0	417.00	-7.00	-1.4	
Zero	CO2-OUT	09/17/15 06:45	09/17/15 06:49	0.0	0.04	0.04	0.2	OK
Span		09/17/15 06:53	09/17/15 06:57	19.1	18.99	-0.11	-0.4	
Zero	CO2-OUT	09/17/15 13:56	09/17/15 14:00	0.0	0.05	0.05	0.2	OK
Span		09/17/15 14:00	09/17/15 14:04	19.1	18.97	-0.13	-0.5	
Zero	FLOW-OUT	09/17/15 06:15	09/17/15 06:16	4.0	4.02	0.02	0.0	OK
Span		09/17/15 06:16	09/17/15 06:17	24.0	24.00	0.00	0.0	
Zero	HCL-OUT	09/17/15 06:53	09/17/15 06:57	0.0	1.00	1.00	1.0	OK
Span		09/17/15 06:57	09/17/15 07:07	88.8	88.40	-0.40	-0.4	
Zero	NH3-OUT	09/17/15 06:57	09/17/15 07:07	0.0	0.71	0.71	1.4	OK
Span		09/17/15 07:07	09/17/15 07:17	41.6	41.67	0.07	0.1	
Zero	NOX-OUT	09/17/15 06:45	09/17/15 06:49	0.0	1.80	1.80	0.4	OK
Span		09/17/15 06:49	09/17/15 06:53	434.0	441.20	7.20	1.4	
Zero	O2DRY-IN	09/17/15 07:25	09/17/15 07:31	2.0	1.89	-0.11	-0.4	OK
Span		09/17/15 07:37	09/17/15 07:43	18.0	17.89	-0.11	-0.4	
Zero	O2DRY-OUT	09/17/15 06:45	09/17/15 06:49	2.0	2.01	0.01	0.0	OK
Span		09/17/15 06:53	09/17/15 06:57	18.0	18.07	0.07	0.3	
Zero	O2DRY-OUT	09/17/15 13:56	09/17/15 14:00	2.0	1.91	-0.09	-0.4	OK
Span		09/17/15 14:00	09/17/15 14:04	18.0	18.07	0.07	0.3	
Zero	O2WET-OUT	09/17/15 06:45	09/17/15 06:49	2.0	2.32	0.32	1.3	>1 x
Span		09/17/15 06:53	09/17/15 06:57	18.0	17.25	-0.75	-3.0	
Zero	O2WET-OUT	09/17/15 13:56	09/17/15 14:00	2.0	1.98	-0.02	-0.1	OK
Span		09/17/15 14:00	09/17/15 14:04	18.0	18.00	0.00	0.0	
Zero	SO2-IN	09/17/15 07:25	09/17/15 07:31	0.0	1.70	1.70	0.3	OK
Span		09/17/15 07:31	09/17/15 07:37	433.0	428.70	-4.30	-0.9	
Zero	SO2-OUT	09/17/15 06:45	09/17/15 06:49	0.0	2.00	2.00	1.0	OK
Span		09/17/15 06:49	09/17/15 06:53	167.0	165.20	-1.80	-0.9	
Zero	THC-IN	09/17/15 07:25	09/17/15 07:31	0.0	8.10	8.10	8.1	>4 x
Span		09/17/15 07:53	09/17/15 07:59	84.6	5.00	-79.60	-79.6	
Zero	THC-IN	09/17/15 08:16	09/17/15 08:21	0.0	0.00	0.00	0.0	OK
Span		09/17/15 08:21	09/17/15 08:26	84.6	84.40	-0.20	-0.2	
Span	CO-HI-IN	09/18/15 07:25	09/18/15 07:31	0.0	4.00	4.00	0.2	OK
		09/18/15 07:37	09/18/15 07:43	1699.0	1659.00	-40.00	-2.0	
Zero	CO-HI-OUT	09/18/15 06:45	09/18/15 06:49	0.0	2.00	2.00	0.1	OK
Span		09/18/15 06:53	09/18/15 06:57	1679.0	1662.00	-17.00	-0.9	
Zero	CO-LOW-IN	09/18/15 07:25	09/18/15 07:31	0.0	0.50	0.50	0.1	OK
Span		09/18/15 07:31	09/18/15 07:37	422.0	413.50	-8.50	-1.7	
Zero	CO-LOW-OUT	09/18/15 06:45	09/18/15 06:49	0.0	1.40	1.40	0.3	OK
Span		09/18/15 06:49	09/18/15 06:53	424.0	412.50	-11.50	-2.3	
Zero	CO2-OUT	09/18/15 06:45	09/18/15 06:49	0.0	0.05	0.05	0.2	OK
Span		09/18/15 06:53	09/18/15 06:57	19.1	18.82	-0.28	-1.1	
Zero	FLOW-OUT	09/18/15 06:15	09/18/15 06:16	4.0	4.01	0.01	0.0	OK
Span		09/18/15 06:16	09/18/15 06:17	24.0	24.00	0.00	0.0	
Zero	HCL-OUT	09/18/15 06:53	09/18/15 06:57	0.0	1.30	1.30	1.3	OK

Span		09/18/15 06:57	09/18/15 07:07	88.8	88.60	-0.20	-0.2	
Zero	NH3-OUT	09/18/15 06:57	09/18/15 07:07	0.0	0.57	0.57	1.1	OK
Span		09/18/15 07:07	09/18/15 07:17	41.6	41.91	0.31	0.6	
Zero	NOX-OUT	09/18/15 06:45	09/18/15 06:49	0.0	2.10	2.10	0.4	OK
Span		09/18/15 06:49	09/18/15 06:53	434.0	437.10	3.10	0.6	
Zero	O2DRY-IN	09/18/15 07:25	09/18/15 07:31	2.0	1.99	-0.01	0.0	OK
Span		09/18/15 07:37	09/18/15 07:43	18.0	17.89	-0.11	-0.4	
Zero	O2DRY-OUT	09/18/15 06:45	09/18/15 06:49	2.0	1.91	-0.09	-0.4	OK
Span		09/18/15 06:53	09/18/15 06:57	18.0	17.97	-0.03	-0.1	
Zero	O2WET-OUT	09/18/15 06:45	09/18/15 06:49	2.0	2.10	0.10	0.4	OK
Span		09/18/15 06:53	09/18/15 06:57	18.0	18.00	0.00	0.0	
Zero	OPACITY	09/18/15 07:00	09/18/15 07:02	0.0	0.00	0.00	0.0	OK
Span		09/18/15 07:02	09/18/15 07:04	26.0	26.33	0.33	0.3	
Zero	SO2-IN	09/18/15 07:25	09/18/15 07:31	0.0	2.80	2.80	0.6	OK
Span		09/18/15 07:31	09/18/15 07:37	433.0	429.00	-4.00	-0.8	
Zero	SO2-OUT	09/18/15 06:45	09/18/15 06:49	0.0	1.50	1.50	0.7	OK
Span		09/18/15 06:49	09/18/15 06:53	167.0	163.80	-3.20	-1.6	
Zero	THC-IN	09/18/15 07:25	09/18/15 07:31	0.0	0.50	0.50	0.5	>1 x
Span		09/18/15 07:53	09/18/15 07:59	84.6	74.80	-9.80	-9.8	
Zero	THC-IN	09/18/15 08:10	09/18/15 08:15	0.0	0.00	0.00	0.0	OK
Span		09/18/15 08:15	09/18/15 08:20	84.6	83.40	-1.20	-1.2	
Zero	CO-HI-IN	09/19/15 07:25	09/19/15 07:31	0.0	4.00	4.00	0.2	OK
Span		09/19/15 07:37	09/19/15 07:43	1708.0	1747.00	39.00	2.0	
Span	CO-HI-OUT	09/19/15 06:45	09/19/15 06:49	0.0	2.00	2.00	0.1	OK
		09/19/15 06:53	09/19/15 06:57	1679.0	1656.00	-23.00	-1.2	
Zero	CO-LOW-IN	09/19/15 07:25	09/19/15 07:31	0.0	0.60	0.60	0.1	OK
Span		09/19/15 07:31	09/19/15 07:37	433.0	428.90	-4.10	-0.8	
Zero	CO-LOW-OUT	09/19/15 06:45	09/19/15 06:49	0.0	1.40	1.40	0.3	OK
Span		09/19/15 06:49	09/19/15 06:53	425.0	418.80	-6.20	-1.2	
Zero	CO2-OUT	09/19/15 06:45	09/19/15 06:49	0.0	0.05	0.05	0.2	OK
Span		09/19/15 06:53	09/19/15 06:57	19.1	18.73	-0.37	-1.5	
Zero	FLOW-OUT	09/19/15 06:15	09/19/15 06:16	4.0	4.02	0.02	0.0	OK
Span		09/19/15 06:16	09/19/15 06:17	24.0	24.00	0.00	0.0	
Zero	HCL-OUT	09/19/15 06:53	09/19/15 06:57	0.0	1.40	1.40	1.4	OK
Span		09/19/15 06:57	09/19/15 07:07	88.8	87.80	-1.00	-1.0	
Zero	NH3-OUT	09/19/15 06:57	09/19/15 07:07	0.0	0.64	0.64	1.3	OK
Span		09/19/15 07:07	09/19/15 07:17	41.6	42.80	1.20	2.4	
Zero	NOX-OUT	09/19/15 06:45	09/19/15 06:49	0.0	1.50	1.50	0.3	OK
Span		09/19/15 06:49	09/19/15 06:53	437.0	442.10	5.10	1.0	
Zero	O2DRY-IN	09/19/15 07:25	09/19/15 07:31	2.0	1.89	-0.11	-0.4	OK
Span		09/19/15 07:37	09/19/15 07:43	17.9	17.69	-0.21	-0.8	
Zero	O2DRY-OUT	09/19/15 06:45	09/19/15 06:49	2.0	1.91	-0.09	-0.4	OK
Span		09/19/15 06:53	09/19/15 06:57	18.0	17.87	-0.13	-0.5	
Zero	O2WET-OUT	09/19/15 06:45	09/19/15 06:49	2.0	1.99	-0.01	0.0	OK
Span		09/19/15 06:53	09/19/15 06:57	18.0	17.92	-0.08	-0.3	
Zero	OPACITY	09/19/15 07:00	09/19/15 07:02	0.0	0.05	0.05	0.1	OK
Span		09/19/15 07:02	09/19/15 07:04	26.0	26.28	0.28	0.3	

Zero	SO2-IN	09/19/15 07:25	09/19/15 07:31	0.0	2.20	2.20	0.4	OK
Span		09/19/15 07:31	09/19/15 07:37	432.0	428.90	-3.10	-0.6	
Zero	SO2-OUT	09/19/15 06:45	09/19/15 06:49	0.0	1.60	1.60	0.8	OK
Span		09/19/15 06:49	09/19/15 06:53	165.0	161.50	-3.50	-1.8	
Zero	THC-IN	09/19/15 07:25	09/19/15 07:31	0.0	0.00	0.00	0.0	>4 x
Span		09/19/15 07:53	09/19/15 07:59	84.6	58.00	-26.60	-26.6	
Zero	THC-IN	09/19/15 08:06	09/19/15 08:11	0.0	0.00	0.00	0.0	OK
Span		09/19/15 08:11	09/19/15 08:16	84.6	85.50	0.90	0.9	
Zero	CO-HI-IN	09/20/15 07:25	09/20/15 07:31	0.0	4.00	4.00	0.2	OK
Span		09/20/15 07:37	09/20/15 07:43	1708.0	1768.00	60.00	3.0	
Zero	CO-HI-OUT	09/20/15 06:45	09/20/15 06:49	0.0	2.00	2.00	0.1	OK
Span		09/20/15 06:53	09/20/15 06:57	1679.0	1709.00	30.00	1.5	
Span	CO-LOW-IN	09/20/15 07:25	09/20/15 07:31	0.0	0.50	0.50	0.1	OK
		09/20/15 07:31	09/20/15 07:37	433.0	436.10	3.10	0.6	
Zero	CO-LOW-OUT	09/20/15 06:45	09/20/15 06:49	0.0	1.30	1.30	0.3	OK
Span		09/20/15 06:49	09/20/15 06:53	425.0	430.30	5.30	1.1	
Zero	CO2-OUT	09/20/15 06:45	09/20/15 06:49	0.0	0.05	0.05	0.2	OK
Span		09/20/15 06:53	09/20/15 06:57	19.1	19.10	0.00	0.0	
Zero	FLOW-OUT	09/20/15 06:15	09/20/15 06:16	4.0	4.02	0.02	0.0	OK
Span		09/20/15 06:16	09/20/15 06:17	24.0	24.00	0.00	0.0	
Zero	HCL-OUT	09/20/15 06:53	09/20/15 06:57	0.0	1.60	1.60	1.6	OK
Span		09/20/15 06:57	09/20/15 07:07	88.8	90.10	1.30	1.3	
Zero	NH3-OUT	09/20/15 06:57	09/20/15 07:07	0.0	0.36	0.36	0.7	OK
Span		09/20/15 07:07	09/20/15 07:17	41.6	43.73	2.13	4.3	
Zero	NOX-OUT	09/20/15 06:45	09/20/15 06:49	0.0	1.60	1.60	0.3	OK
Span		09/20/15 06:49	09/20/15 06:53	437.0	448.00	11.00	2.2	
Zero	O2DRY-IN	09/20/15 07:25	09/20/15 07:31	2.0	1.89	-0.11	-0.4	OK
Span		09/20/15 07:37	09/20/15 07:43	17.9	17.99	0.09	0.4	
Zero	O2DRY-OUT	09/20/15 06:45	09/20/15 06:49	2.0	1.91	-0.09	-0.4	OK
Span		09/20/15 06:53	09/20/15 06:57	18.0	18.17	0.17	0.7	
Zero	O2WET-OUT	09/20/15 06:45	09/20/15 06:49	2.0	1.89	-0.11	-0.4	OK
Span		09/20/15 06:53	09/20/15 06:57	18.0	17.83	-0.17	-0.7	
Zero	OPACITY	09/20/15 07:00	09/20/15 07:02	0.0	0.00	0.00	0.0	OK
Span		09/20/15 07:02	09/20/15 07:04	26.0	26.21	0.21	0.2	
Zero	SO2-IN	09/20/15 07:25	09/20/15 07:31	0.0	3.80	3.80	0.8	OK
Span		09/20/15 07:31	09/20/15 07:37	432.0	432.10	0.10	0.0	
Zero	SO2-OUT	09/20/15 06:45	09/20/15 06:49	0.0	1.90	1.90	0.9	OK
Span		09/20/15 06:49	09/20/15 06:53	165.0	163.80	-1.20	-0.6	
Zero	THC-IN	09/20/15 07:25	09/20/15 07:31	0.0	0.00	0.00	0.0	>2 x
Span		09/20/15 07:53	09/20/15 07:59	84.6	74.50	-10.10	-10.1	
Zero	CO-HI-IN	09/21/15 07:25	09/21/15 07:31	0.0	4.00	4.00	0.2	OK
Span		09/21/15 07:37	09/21/15 07:43	1708.0	1735.00	27.00	1.4	
Zero	CO-HI-OUT	09/21/15 06:45	09/21/15 06:49	0.0	2.00	2.00	0.1	OK
Span		09/21/15 06:53	09/21/15 06:57	1679.0	1692.00	13.00	0.7	
Zero	CO-LOW-IN	09/21/15 07:25	09/21/15 07:31	0.0	0.60	0.60	0.1	OK
Span		09/21/15 07:31	09/21/15 07:37	433.0	433.20	0.20	0.0	

Zero	CO-LOW-OUT	09/21/15 06:45	09/21/15 06:49	0.0	1.50	1.50	0.3	OK
Span		09/21/15 06:49	09/21/15 06:53	425.0	427.60	2.60	0.5	
Span	CO2-OUT	09/21/15 06:45	09/21/15 06:49	0.0	0.04	0.04	0.2	OK
		09/21/15 06:53	09/21/15 06:57	19.1	19.14	0.04	0.2	
Zero	FLOW-OUT	09/21/15 06:15	09/21/15 06:16	4.0	4.01	0.01	0.0	OK
Span		09/21/15 06:16	09/21/15 06:17	24.0	24.00	0.00	0.0	
Zero	HCL-OUT	09/21/15 06:53	09/21/15 06:57	0.0	1.20	1.20	1.2	OK
Span		09/21/15 06:57	09/21/15 07:07	88.4	90.70	2.30	2.3	
Zero	NH3-OUT	09/21/15 06:57	09/21/15 07:07	0.0	0.91	0.91	1.8	OK
Span		09/21/15 07:07	09/21/15 07:17	41.6	43.95	2.35	4.7	
Zero	NOX-OUT	09/21/15 06:45	09/21/15 06:49	0.0	2.00	2.00	0.4	OK
Span		09/21/15 06:49	09/21/15 06:53	437.0	446.80	9.80	2.0	
Zero	O2DRY-IN	09/21/15 07:25	09/21/15 07:31	2.0	1.99	-0.01	0.0	OK
Span		09/21/15 07:37	09/21/15 07:43	17.9	18.09	0.19	0.8	
Zero	O2DRY-OUT	09/21/15 06:45	09/21/15 06:49	2.0	1.91	-0.09	-0.4	OK
Span		09/21/15 06:53	09/21/15 06:57	18.0	18.17	0.17	0.7	
Zero	O2WET-OUT	09/21/15 06:45	09/21/15 06:49	2.0	1.89	-0.11	-0.4	OK
Span		09/21/15 06:53	09/21/15 06:57	18.0	18.03	0.03	0.1	
Zero	OPACITY	09/21/15 07:00	09/21/15 07:02	0.0	0.00	0.00	0.0	OK
Span		09/21/15 07:02	09/21/15 07:04	26.0	26.25	0.25	0.2	
Zero	SO2-IN	09/21/15 07:25	09/21/15 07:31	0.0	2.10	2.10	0.4	OK
Span		09/21/15 07:31	09/21/15 07:37	432.0	430.20	-1.80	-0.4	
Zero	SO2-OUT	09/21/15 06:45	09/21/15 06:49	0.0	1.80	1.80	0.9	OK
Span		09/21/15 06:49	09/21/15 06:53	165.0	164.10	-0.90	-0.4	
Zero	THC-IN	09/21/15 07:25	09/21/15 07:31	0.0	0.00	0.00	0.0	>4 x
Span		09/21/15 07:53	09/21/15 07:59	84.6	23.30	-61.30	-61.3	
Zero	CO-HI-IN	09/22/15 07:25	09/22/15 07:31	0.0	4.00	4.00	0.2	OK
Span		09/22/15 07:37	09/22/15 07:43	1708.0	1744.00	36.00	1.8	
Zero	CO-HI-OUT	09/22/15 06:45	09/22/15 06:49	0.0	2.00	2.00	0.1	OK
Span		09/22/15 06:53	09/22/15 06:57	1679.0	1697.00	18.00	0.9	
Zero	CO-LOW-IN	09/22/15 07:25	09/22/15 07:31	0.0	0.40	0.40	0.1	OK
Span		09/22/15 07:31	09/22/15 07:37	433.0	433.90	0.90	0.2	
Zero	CO-LOW-OUT	09/22/15 06:45	09/22/15 06:49	0.0	1.40	1.40	0.3	OK
Span		09/22/15 06:49	09/22/15 06:53	425.0	427.40	2.40	0.5	
Zero	CO2-OUT	09/22/15 06:45	09/22/15 06:49	0.0	0.05	0.05	0.2	OK
Span		09/22/15 06:53	09/22/15 06:57	19.1	19.13	0.03	0.1	
Zero	FLOW-OUT	09/22/15 06:15	09/22/15 06:16	4.0	4.01	0.01	0.0	OK
Span		09/22/15 06:16	09/22/15 06:17	24.0	24.00	0.00	0.0	
Span	HCL-OUT	09/22/15 06:53	09/22/15 06:57	0.0	0.90	0.90	0.9	OK
		09/22/15 06:57	09/22/15 07:07	88.4	91.20	2.80	2.8	
Zero	NH3-OUT	09/22/15 06:57	09/22/15 07:07	0.0	0.53	0.53	1.1	OK
Span		09/22/15 07:07	09/22/15 07:17	41.6	43.83	2.23	4.5	
Zero	NOX-OUT	09/22/15 06:45	09/22/15 06:49	0.0	1.70	1.70	0.3	OK
Span		09/22/15 06:49	09/22/15 06:53	437.0	447.50	10.50	2.1	
Zero	O2DRY-IN	09/22/15 07:25	09/22/15 07:31	2.0	1.99	-0.01	0.0	OK
Span		09/22/15 07:37	09/22/15 07:43	17.9	18.09	0.19	0.8	
Zero	O2DRY-OUT	09/22/15 06:45	09/22/15 06:49	2.0	2.01	0.01	0.0	OK

Span		09/22/15 06:53	09/22/15 06:57	18.0	18.17	0.17	0.7	
Zero	O2WET-OUT	09/22/15 06:45	09/22/15 06:49	2.0	2.08	0.08	0.3	OK
Span		09/22/15 06:53	09/22/15 06:57	18.0	17.98	-0.02	-0.1	
Zero	OPACITY	09/22/15 07:00	09/22/15 07:02	0.0	0.00	0.00	0.0	OK
Span		09/22/15 07:02	09/22/15 07:04	26.0	26.41	0.41	0.4	
Zero	SO2-IN	09/22/15 07:25	09/22/15 07:31	0.0	4.80	4.80	1.0	OK
Span		09/22/15 07:31	09/22/15 07:37	432.0	429.90	-2.10	-0.4	
Zero	SO2-OUT	09/22/15 06:45	09/22/15 06:49	0.0	1.80	1.80	0.9	OK
Span		09/22/15 06:49	09/22/15 06:53	165.0	164.00	-1.00	-0.5	
Zero	THC-IN	09/22/15 07:25	09/22/15 07:31	0.0	0.40	0.40	0.4	>2 x
Span		09/22/15 07:53	09/22/15 07:59	84.6	73.30	-11.30	-11.3	
Zero	THC-IN	09/22/15 15:42	09/22/15 15:47	0.0	0.00	0.00	0.0	OK
Span		09/22/15 15:47	09/22/15 15:52	84.6	84.70	0.10	0.1	

Sep 13, 2015 AB.

07:30am: Daily cal. bottle pressure checked and found to be within acceptable range.

- Both Boiler #1 & #2 daily cal passed except:

Unit #1 NO_x-out, HCl-out, NH_3-out, CO-hi-In, THC-In } >1 x Cal. Spec (In Control)

Unit #2

THC-In, O_2 wet-out } >4 x Cal spec (out of Control)

HCl-out — >1 x Cal spec (In-control)

- Unit #2 Graphite 52M Sample Inlet pressure was found 999 mb the expected pressure is 200mb, needs further investigation.

Sep 14, 2015 AB.

07:30am Unit #2 Outlet HCL didn't pass daily Cal, k-factor adjusted and run Cems cal again; passed the daily Calibration.

- outlet Daily zero gas bottle replaced.
- 168 hr. Test started by Jake, Altech.

Sep 15, 2015 · AB

- 168 hr. Test Continued.
- Daily Inlet Zero gas bottle replaced.
- outlet span 2 & outlet span 4 gas bottles replaced.

Sep 16, 2015

- 168 hr test continued. (JK & AB)
- Unit #2 Inlet Graphite 52M sample pressure pump replaced with new one. The old one was causing bad pressure reading. Done by Jake, Altech.
- Unit #1 outlet wet O_2 (RM CEM O_2/IQ Analyzer Calibrated by Jake, Altech.
- Unit #2 Inlet THC Analyzer couldn't pass Cal. after sample pressure pump was replaced. C1 sample capilary was found cloged and replaced with a new one. Calibration passed. (done by Jake, Altech)
- Sample press. Sensor for Unit#2 Inlet replaced by new one.

Sep 17, 2015 · (JK, Altech)

08:00am - Unit #1 & Unit #2 THC failed daily Cal; Inlet Daily span 4 regulator was found ~~closed~~ wide open which causes the calibration to failed. Regulator opened (adjusted) and re-run Cal. passed daily Calibration.

08:30am Continued 168 hr test for acceptance. (JK & AB)

12:15pm Unit #2 outlet wet O_2 Analyzer Calibrated by Jake, Altech

02:30pm (AB & RM) Inlet daily span 4 regulator replaced with a new one, as it was unable to control the gas pressure.

02:30pm - Unit #1 & #2 outlet CO_2 and wet O_2 4 point test performed as part of the 168 hr acceptance test by Jake, Altech.

Sep. 18, 2015

08:00am Unit #1 outlet opacity monitor didn't pass daily Cal. Daily Cal re-run again from cpp4794 and passed.

08:30am Inlet Daily Zero, Outlet Daily span1 & Inlet Daily Span1 gas bottles pressure was found below 200psi. bottles replaced with new ones.

08:50 am 168 hr. acceptance test Continued.

02:30 pm Inlet Daily Span2. & Inlet CGA low span1 gas bottles pressure was found around 200psi. Bottles replaced by new one.

03:00pm HF linearity test performed by Jake, Altech. on Unit #1 & Unit #2

Sep 19, 2015.

08:00am Unit #2 Inlet THC analyzer failed daily cal. THC daily Cal re-run again from CPP4794 module and passed.

08:30am 168 hr acceptance test Continued.

03:00pm HF linearity test performed again by Jake Kaizer, Altech representative.

04:00pm Outlet Daily zero gas bottle replaced.

Sep 20, 2015:

- Unit #2 Inlet THC Analyzer failed daily Cal, Jake from Altech to have a look at it.

- 168 hr acceptance test continued.

- The following gas bottles replaced:
  Outlet mid span 1
  Inlet mid span 2
  Inlet Daily Span3
  Outlet Daily span 3

Sep 21, 2015

- 168 hr acceptance test performed & finalized.

- Inlet CGA MID-SPAN 1 gas bottle replaced

- Corrective maintenance continued on Unit #2 Inlet THC analyzer by Jake k., Altech representative.

Sep 22, 2015

- Outlet CGA mid span4 regulator ruptured teflon Seal replaced by new one. (JK & AB)

- Corrective maintenance on Unit #2 Inlet THC analyzer finalized by Jake, Altech.

Sep 23, 2015

- RATA (Relative Accuracy Test Audit) performed by ORETECH Environmental.

Section 3

4 Point / 7 Day Drift tests

Durham York
Unit#1 APC Outlet

LINEARITY TEST - CO2

MANUFACTURER	Ametek	
MODEL NUMBER	CEM/O2-IQ	
SERIAL NUMBER	1018084-2-O2w	
ANALYZER SPAN RANGE	0-25	%
DATE	16-Sep-15	

	GAS VALUE PPM		
Zero	2.00		
LOW	4.94	CC40355	9/6/2021
MID	9.94	CC164055	9/23/2022
HIGH	18.00	DT0006151	12/29/2016

				DIFFERENCES (R-A)			
Run Number	**Run Level**	**Calibration Gas Value (R)**	**Monitor Response**	**ZERO**	**LOW**	**MID**	**HIGH**
1	ZERO	2.00	1.96	0.04			
1	LOW	4.94	4.89		0.05		
1	MID	9.94	9.70			0.24	
1	HIGH	18.00	17.83				0.17
2	ZERO	2.00	1.96	0.04			
2	LOW	4.94	4.89		0.05		
2	MID	9.94	9.70			0.24	
2	HIGH	18.00	17.83				0.17
3	ZERO	2.00	1.96	0.04			
3	LOW	4.94	4.89		0.05		
3	MID	9.94	9.70			0.24	
3	HIGH	18.00	17.83				0.17
			AVERAGE RESPONSE	1.96	4.89	9.70	17.83
			ABS DIFF of AVERAGE	0.04	0.05	0.24	0.17
			LINEARITY ERROR, %	0.04	1.01	2.41	0.94

LE= (|R-A|)/R x 100%
Where:
LE = Percent Linearity Error
R = Refrence Value
A = Average of monitoring system response.

Durham York
Unit#1 APC Outlet

LINEARITY TEST - CO2

MANUFACTURER	SA Envionmental	
MODEL NUMBER	Mir 9000	
SERIAL NUMBER	2682	
ANALYZER SPAN RANGE	0-25	%
DATE	16-Sep-15	

	GAS VALUE PPM		
LOW	5.98	CC40355	9/6/2021
MID	12.10	CC164055	9/23/2022
HIGH	19.10	DT0006151	12/29/2016

				DIFFERENCES (R-A)			
Run Number	**Run Level**	**Calibration Gas Value (R)**	**Monitor Response**	**ZERO**	**LOW**	**MID**	**HIGH**
1	ZERO	0.00	0.00	0.00			
1	LOW	5.98	5.98		0.00		
1	MID	12.10	11.99			0.11	
1	HIGH	19.10	19.07				0.03
2	ZERO	0.00	0.00	0.00			
2	LOW	5.98	5.98		0.00		
2	MID	12.10	11.99			0.11	
2	HIGH	19.10	19.07				0.03
3	ZERO	0.00	0.00	0.00			
3	LOW	5.98	5.10		0.88		
3	MID	12.10	11.99			0.11	
3	HIGH	19.10	19.07				0.03
			AVERAGE RESPONSE	0.00	5.69	11.99	19.07
			ABS DIFF of AVERAGE	0.00	0.29	0.11	0.03

Durham York
Unit#2 APC Outlet

LINEARITY TEST - HCL

MANUFACTURER	SA Environment	
MODEL NUMBER	Mir 9000	
SERIAL NUMBER	2687	
ANALYZER SPAN RANGE	0-100	ppm
DATE	22-Jun-15	

	GAS VALUE PPM	Cyl. No.	Expire
LOW	26.90	CC93565	27-Jun-15
MID	59.50	CC99745	30-Jun-15
HIGH	87.20	CC188770	5-May-16

				DIFFERENCES (R-A)			
Run Number	**Run Level**	**Calibration Gas Value (R)**	**Monitor Response**	**ZERO**	**LOW**	**MID**	**HIGH**
1	ZERO	0.00	0.60	-0.60			
1	LOW	26.90	26.40		0.50		
1	MID	59.50	57.10			2.40	
1	HIGH	87.20	87.10				0.10
2	ZERO	0.00	0.80	-0.80			
2	LOW	26.90	27.10		-0.20		
2	MID	59.50	58.40			1.10	
2	HIGH	87.20	87.80				-0.60
3	ZERO	0.00	0.80	-0.80			
3	LOW	26.90	27.60		-0.70		
3	MID	59.50	59.60			-0.10	
3	HIGH	87.20	88.50				-1.30
			AVERAGE RESPONSE	0.73	27.03	58.37	87.80
			ABS DIFF of AVERAGE	0.73	0.13	1.13	0.60

Durham York
Unit#2 APC Outlet

LINEARITY TEST - NH3

MANUFACTURER	SA Environment	
MODEL NUMBER	FTUV EXM400	
SERIAL NUMBER	F130303	
ANALYZER SPAN RANGE	0-50	ppm
DATE	23-Jun-15	

	GAS VALUE PPM	cyl. No.	Expire
LOW	12.80	DT0004689	14-May-16
MID	27.10	DT0004591	14-Jun-16
HIGH	44.00	DT0007561	5-Mar-16

				DIFFERENCES (R-A)			
Run Number	**Run Level**	**Calibration Gas Value (R)**	**Monitor Response**	**ZERO**	**LOW**	**MID**	**HIGH**
1	ZERO	0.00	1.48	-1.48			
1	LOW	12.80	11.07		1.73		
1	MID	27.10	26.86			0.24	
1	HIGH	44.00	43.56				0.44
2	ZERO	0.00	0.80	-0.80			
2	LOW	12.80	13.27		-0.47		
2	MID	27.10	29.48			-2.38	
2	HIGH	44.00	47.43				-3.43
3	ZERO	0.00	0.73	-0.73			
3	LOW	12.80	13.18		-0.38		
3	MID	27.10	26.90			0.20	
3	HIGH	44.00	46.44				-2.44
			AVERAGE RESPONSE	1.00	12.51	27.75	45.81
			ABS DIFF of AVERAGE	1.00	0.29	0.65	1.81

Durham York
Unit#2 APC Outlet

LINEARITY TEST - THC

MANUFACTURER	SA Environment	
MODEL NUMBER	Graphite 52M	
SERIAL NUMBER	648	
ANALYZER SPAN RANGE	0-100	ppm
DATE	23-Jun-15	

	GAS VALUE PPM	Cyl. No.	Expire	propane
LOW	25.32	EB0002929	12-Nov-22	8.44
MID	54.90	CC15333	12-Nov-22	18.3
HIGH	85.80	EB0005278	3-Feb-18	28.6

				DIFFERENCES (R-A)			
Run Number	**Run Level**	**Calibration Gas Value (R)**	**Monitor Response**	**ZERO**	**LOW**	**MID**	**HIGH**
1	ZERO	0.00	0.00	0.00			
1	LOW	25.32	24.70		0.62		
1	MID	54.90	55.00			-0.10	
1	HIGH	85.80	85.80				0.00
2	ZERO	0.00	0.00	0.00			
2	LOW	25.32	24.50		0.82		
2	MID	54.90	55.40			-0.50	
2	HIGH	85.80	85.80				0.00
3	ZERO	0.00	0.00	0.00			
3	LOW	25.32	25.10		0.22		
3	MID	54.90	55.40			-0.50	
3	HIGH	85.80	85.80				0.00
			AVERAGE RESPONSE	0.00	24.77	55.27	85.80
			ABS DIFF of AVERAGE	0.00	0.55	0.37	0.00

Durham York
Unit#2 APC Outlet

LINEARITY TEST - HF

MANUFACTURER	SA Environment	
MODEL NUMBER	Mir 9000	
SERIAL NUMBER	2682	
ANALYZER SPAN RANGE	0-100	ppm
DATE	18-Sep-15	

	GAS VALUE PPM
LOW	25.10
MID	53.80
HIGH	89.50

				DIFFERENCES (R-A)			
Run Number	**Run Level**	**Calibration Gas Value (R)**	**Monitor Response**	**ZERO**	**LOW**	**MID**	**HIGH**
1	ZERO	0.00	0.00	0.00			
1	LOW	25.10	26.70		-1.60		
1	MID	53.80	53.90			-0.10	
1	HIGH	89.50	89.60				-0.10
			AVERAGE RESPONSE	0.00	26.70	53.90	89.60
			ABS DIFF of AVERAGE	0.00	1.60	0.10	0.10
			LINEARITY ERROR, %	0.00	6.37	0.19	0.11

Calibration Report

Company: Covanta - Durham York Energy
1835 Energy Drive
Lot 27, concessions Broken Front,
Clarington Municipality, ON
Stack Designation: Boiler #2
Parameter: CO2-Out
Units: %
Serial #: 2687-CO2
Start of Report: 09/04/15 00:00
End of Report: 09/10/15 23:59

ZERO READINGS						SPAN READINGS						
START	**STOP**	**EXPECT.**	**ACTUAL**	**ERROR**	**%**	**START**	**STOP**	**EXPECT.**	**ACTUAL**	**ERROR**	**%**	**STATUS**
09/04/15 06:45	09/04/15 06:49	0.00	0.09	0.09	0.4	09/04/15 06:53	09/04/15 06:57	19.00	19.09	0.09	0.4	OK
09/05/15 06:45	09/05/15 06:49	0.00	0.05	0.05	0.2	09/05/15 06:53	09/05/15 06:57	19.00	19.07	0.07	0.3	OK
09/06/15 06:45	09/06/15 06:49	0.00	0.05	0.05	0.2	09/06/15 06:53	09/06/15 06:57	19.00	19.00	0.00	0.0	OK
09/07/15 06:45	09/07/15 06:49	0.00	0.05	0.05	0.2	09/07/15 06:53	09/07/15 06:57	19.00	18.90	-0.10	-0.4	OK
09/08/15 06:45	09/08/15 06:49	0.00	0.04	0.04	0.2	09/08/15 06:53	09/08/15 06:57	19.00	18.86	-0.14	-0.6	OK
09/09/15 06:45	09/09/15 06:49	0.00	0.05	0.05	0.2	09/09/15 06:53	09/09/15 06:57	19.00	18.73	-0.27	-1.1	OK
09/10/15 06:45	09/10/15 06:49	0.00	0.04	0.04	0.2	09/10/15 06:53	09/10/15 06:57	19.00	18.87	-0.13	-0.5	OK

Calibration Report

Company: Covanta - Durham York Energy
1835 Energy Drive
Lot 27, concessions Broken Front,
Clarington Municipality, ON
Stack Designation: Boiler #2
Parameter: HCL-Out
Units: ppm
Serial #: 2687-HCL
Start of Report: 09/04/15 00:00
End of Report: 09/10/15 23:59

ZERO READINGS						SPAN READINGS						
START	**STOP**	**EXPECT.**	**ACTUAL**	**ERROR**	**%**	**START**	**STOP**	**EXPECT.**	**ACTUAL**	**ERROR**	**%**	**STATUS**
09/04/15 06:53	09/04/15 06:57	0.00	1.50	1.50	1.5	09/04/15 06:57	09/04/15 07:07	92.20	94.50	2.30	2.3	OK
09/05/15 06:53	09/05/15 06:57	0.00	0.90	0.90	0.9	09/05/15 06:57	09/05/15 07:07	92.20	93.60	1.40	1.4	OK
09/06/15 06:53	09/06/15 06:57	0.00	0.80	0.80	0.8	09/06/15 06:57	09/06/15 07:07	92.20	94.70	2.50	2.5	OK
09/07/15 06:53	09/07/15 06:57	0.00	0.90	0.90	0.9	09/07/15 06:57	09/07/15 07:07	92.20	94.50	2.30	2.3	OK
09/08/15 06:53	09/08/15 06:57	0.00	0.60	0.60	0.6	09/08/15 06:57	09/08/15 07:07	92.20	92.40	0.20	0.2	OK
09/09/15 06:53	09/09/15 06:57	0.00	0.70	0.70	0.7	09/09/15 06:57	09/09/15 07:07	92.20	87.50	-4.70	-4.7	OK
09/10/15 06:53	09/10/15 06:57	0.00	3.00	3.00	3.0	09/10/15 06:57	09/10/15 07:07	88.80	89.60	0.80	0.8	OK

Date/Time Printed: 09/22/15 11:08

Calibration Report

Company: Covanta - Durham York Energy
1835 Energy Drive
Lot 27, concessions Broken Front,
Clarington Municipality, ON
Stack Designation: Boiler #2
Parameter: THC-In
Units: ppm
Serial #: 2685-THC
Start of Report: 06/05/15 00:00
End of Report: 06/12/15 08:00

ZERO READINGS						SPAN READINGS						
START	**STOP**	**EXPECT.**	**ACTUAL**	**ERROR**	**%**	**START**	**STOP**	**EXPECT.**	**ACTUAL**	**ERROR**	**%**	**STATUS**
06/05/15 06:45	06/05/15 06:51	0.00	0.00	0.00	0.0	06/05/15 07:13	06/05/15 07:19	85.80	84.60	-1.20	-1.2	OK
06/06/15 06:45	06/06/15 06:51	0.00	0.00	0.00	0.0	06/06/15 07:13	06/06/15 07:19	85.80	86.40	0.60	0.6	OK
06/07/15 06:45	06/07/15 06:51	0.00	0.00	0.00	0.0	06/07/15 07:13	06/07/15 07:19	85.80	85.70	-0.10	-0.1	OK
06/08/15 06:45	06/08/15 06:51	0.00	4.70	4.70	4.7	06/08/15 07:13	06/08/15 07:19	85.80	84.90	-0.90	-0.9	OK
06/10/15 06:45	06/10/15 06:51	0.00	0.00	0.00	0.0	06/10/15 07:13	06/10/15 07:19	85.80	85.40	-0.40	-0.4	OK
06/11/15 06:45	06/11/15 06:51	0.00	0.00	0.00	0.0	06/11/15 07:13	06/11/15 07:19	85.80	84.80	-1.00	-1.0	OK
06/12/15 06:45	06/12/15 06:51	0.00	0.00	0.00	0.0	06/12/15 07:13	06/12/15 07:19	85.80	84.30	-1.50	-1.5	OK

Date/Time Printed: 09/19/15 08:23

Calibration Report

Company: Covanta - Durham York Energy
1835 Energy Drive
Lot 27, concessions Broken Front,
Clarington Municipality, ON
Stack Designation: Boiler #2
Parameter: O2wet-Out
Units: %
Serial #: 1018084-2-O2w
Start of Report: 07/02/15 00:00
End of Report: 07/08/15 08:00

ZERO READINGS						SPAN READINGS						
START	**STOP**	**EXPECT.**	**ACTUAL**	**ERROR**	**%**	**START**	**STOP**	**EXPECT.**	**ACTUAL**	**ERROR**	**%**	**STATUS**
07/02/15 06:45	07/02/15 06:49	2.00	1.77	-0.23	-0.9	07/02/15 06:53	07/02/15 06:57	18.00	17.91	-0.09	-0.4	OK
07/03/15 06:45	07/03/15 06:49	2.00	1.77	-0.23	-0.9	07/03/15 06:53	07/03/15 06:57	18.00	17.85	-0.15	-0.6	OK
07/04/15 06:45	07/04/15 06:49	2.00	1.82	-0.18	-0.7	07/04/15 06:53	07/04/15 06:57	18.00	17.79	-0.21	-0.8	OK
07/05/15 06:45	07/05/15 06:49	2.00	1.86	-0.14	-0.6	07/05/15 06:53	07/05/15 06:57	18.00	17.94	-0.06	-0.2	OK
07/06/15 06:45	07/06/15 06:49	2.00	1.88	-0.12	-0.5	07/06/15 06:53	07/06/15 06:57	18.00	17.91	-0.09	-0.4	OK
07/06/15 13:01	07/06/15 13:05	2.00	1.94	-0.06	-0.2	07/06/15 13:09	07/06/15 13:13	18.00	17.91	-0.09	-0.4	OK
07/07/15 06:45	07/07/15 06:49	2.00	1.97	-0.03	-0.1	07/07/15 06:53	07/07/15 06:57	18.00	17.97	-0.03	-0.1	OK
07/08/15 06:45	07/08/15 06:49	2.00	1.86	-0.14	-0.6	07/08/15 06:53	07/08/15 06:57	18.00	18.51	0.51	2.0	OK

Date/Time Printed: 09/22/15 11:12

Section 4

Opacity Certification Tests

QUARTERLY OPACITY AUDIT REPORT

Page 1

IDENTIFICATION (MODEL/SERIAL #):	407538	**MANUFACTURER:**	Teledyne
PROCESS UNIT/STACK IDENTIFICATION:	Unit #2	**FACILITY NAME:**	Covanta Durham York Renewable Energy L.P.
AUDITOR:	Chuck Davis	**REPRESENTING:**	Covanta Energy
TECHNICIAN	Chuck Davis	**REPRESENTING:**	Covanta Energy
TECHNICIAN		**REPRESENTING:**	

DATE: 05/16/13 **START TIME:** 11:47 **END TIME:** 12:19

PRELIMINARY DATA

1	Stack exit inside diameter (FT) = Lx	4.5
2	Stack (or duct) inside diameter (or width) at the transmissometer location (FT) = Lt	4.427
3	Calculated OPLR (Optical Path Length Ratio) = Lx / (Lt * 2)	0.508
4	Source-cited OPLR value	1.016
5	Source-cited Zero automatic calibration value (% opacity)	0.00
6	Source-cited Span automatic calibration value (% opacity)	26.00

FAULT LAMP INSPECTION

		ON	OFF
7	Alarm Indication		X
8	Power Light	X	
9	Fault Indication		X

10	Dust Compensation Value	-0.28

ZERO CHECK

11	ERP Opacity ZERO calibration value (% opacity)	0.00
12	CEMS Cal Report ZERO calibration value (% opacity)	0.00

SPAN CHECK

13	ERP Opacity SPAN calibration value (% opacity) (0.834vdc TP-2&TP-6)	26.20
14	CEMS Cal Report Opacity SPAN calibration value (% opacity)	25.70

QUARTERLY OPACITY AUDIT REPORT

Page 2

RETROREFLECTOR DUST ACCUMULATION CHECK

15	**Pre-cleaning effluent Opacity (% opacity)**	-0.80
16	**Post-cleaning effluent Opacity (% opacity)**	-0.80

TRANSCEIVER DUST ACCUMULATION CHECK

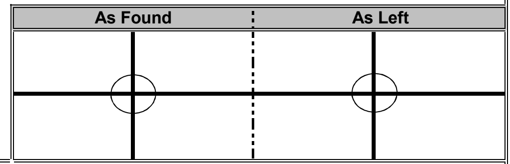
17	**Pre cleaning effluent Opacity (% opacity)**	-0.80
18	**Post-cleaning effluent Opacity (% opacity)**	-0.80

OPTICAL ALIGNMENT CHECK

		YES	NO
20	**Is image centered?**	**Yes**	

[DRAW LOCATION OF BEAM IMAGE.]

As Found **As Left**



SPAN FILTER DATA CHECK

21a	**Zero**	0.00
21b	**Span**	25.70

CALIBRATION ERROR CHECK

[RECORD AUDIT FILTER DATA.]

	FILTER	SERIAL NUMBER	% OPACITY	Expiration Date
22	**LOW**	S10089	8.40	07/27/16
23	**MID**	S10098	17.10	07/27/16
24	**HIGH**	S10082	27.50	07/27/16

QUARTERLY OPACITY AUDIT REPORT

[CALIBRATION FILTER AUDIT DATA.]

LOW		MID		HIGH	
26	8.3	27	16.6	28	27.0
30	8.3	31	16.5	32	26.9
34	8.3	35	16.6	36	27.0
38	8.7	39	16.5	40	27.0
42	8.5	43	16.5	44	27.0

QUARTERLY OPACITY AUDIT REPORT

CALCULATION OF AUDIT RESULTS

STACK EXIT CORRELATION ERROR (%)

51	(1.016 (BLANK 4) - 0.508 (BLANK 3)) / 0.508 (BLANK 3)	X	100	=	99.9

ZERO ERROR (% OPACITY)

52	Control Unit	0.0 (BLANK 13)	-	0.0 (BLANK 5)		=	0.0
53	Opacity Rec. (CEMS)	0.0 (BLANK 14)	-	0.0 (BLANK 5)		=	0.0

SPAN ERROR (% OPACITY)

54	Control Unit	26.2 (BLANK 15)	-	26.0 (BLANK 6)		=	0.2
55	Opacity Recorder (CEMS)	25.7 (BLANK 16)	-	26.0 (BLANK 6)		=	-0.3

OPTICAL SURFACE DUST ACCUMULATION (% OPACITY)

56	Retroreflector	-0.8 (BLANK 17)	-	-0.8 (BLANK 18)		=	0.0
57	Transceiver	-0.8 (BLANK 19)	-	-0.8 (BLANK 20)		=	0.0
58	Total	0.0 (BLANK 56)	+	0.0 (BLANK 57)		=	0.0

OPTICAL PATHLENGTH CORRECTION FACTOR AND ZERO OFFSET CORRECTION OF AUDIT FILTERS

59 Low: (1 - ((1 - 8.40 (BLANK 22) / 100) ^ 2.032 (BLANK 4 x 2) X (1- 0.1 (BLANK 45) / 100))) X 100 = 16.4

60 Mid: (1 - ((1 - 17.10 (BLANK 23) / 100) ^ 2.032 (BLANK 4 x 2) X (1- 0.1 (BLANK 45) / 100))) X 100 = 31.8

61 High: (1 - ((1 - 27.50 (BLANK 24) / 100) ^ 2.032 (BLANK 4 x 2) X (1- 0.1 (BLANK 45) / 100))) X 100 = 48.0

QUARTERLY OPACITY AUDIT REPORT

SOURCE ID.	Unit #2		DATE: 05/16/13	QTR/YR: 2/2013	Time: 11:47-12:19
MONITOR MANUFACTURER :	Teledyne		PERSON CONDUCTING AUDIT :	Chuck Davis	
MODEL / SERIAL NUMBER :	560		AFFILIATION :	Covanta Energy	
MONITOR PATHLENGTH (Lt) :	4.427	FT.	EMISSION OUTLET PATHLENGTH (Lx) :	4.5	FT.
MONITOR OUTPUT PATHLENGTH CORRECTED ?	YES		OPTICAL PATHLENGTH RATIO USED:	1.02 ((Lx / (Lt x 2)) x 2)	

FILTER OPTICAL DENSITY CALCULATION

	SERIAL #	EXP. DATE	VALUE	PATHLENGTH OPTICAL DENSITY	ZERO COMPENSATED VALUES
LOW RANGE	S10089	7/27/16	8.40	8.5	8.6
MID RANGE	S10098	7/27/16	17.10	17.4	17.4
HIGH RANGE	S10082	7/27/16	27.50	27.9	28.0
Audit Final Zero Reading	0.1				

LOW FILTER AUDIT CALCULATIONS

RUN No.	FILTER DATA	OPAC DATA	Di	Di2	t 0.975	N	SUM Di/N	SUM Di2	Result
1	8.6	8.3	-0.3	0.10	0.2776	5	0.20	1.04	PASS
2	8.6	8.3	-0.3	0.10					
3	8.6	8.3	-0.3	0.10					
4	8.6	8.7	0.1	0.01		ME +	CI =	%Error	
5	8.6	8.5	-0.1	0.02		0.204	0.222	0.43	
	8.62 AVG	8.42 AVG	-1.0 SUM	0.34 SUM		(BLANK 62)	(BLANK 65)	(BLANK 68)	

MID FILTER AUDIT CALCULATIONS

RUN No.	FILTER DATA	OPAC DATA	Di	Di2	t 0.975	N	SUM Di/N	SUM Di2	Result
1	17.4	16.6	-0.9	0.74	0.2776	5	0.90	20.37	PASS
2	17.4	16.5	-0.9	0.88					
3	17.4	16.6	-0.8	0.70					
4	17.4	16.5	-0.9	0.88		ME +	CI =	%Error	
5	17.4	16.5	-0.9	0.88		0.903	0.062	0.96	
	17.44 AVG	16.54 AVG	-4.5 SUM	4.08 SUM		(BLANK 63)	(BLANK 66)	(BLANK 69)	

HIGH FILTER AUDIT CALCULATIONS

RUN No.	FILTER DATA	OPAC DATA	Di	Di2	t 0.975	N	SUM Di/N	SUM Di2	Result
1	28.0	27.0	-1.0	0.91	0.2776	5	0.98	23.79	PASS
2	28.0	26.9	-1.1	1.11					
3	28.0	27.0	-1.0	0.91					
4	28.0	27.0	-1.0	0.91		ME +	CI =	%Error	
5	28.0	27.0	-1.0	0.91		0.976	0.056	1.03	
	27.96 AVG	26.98 AVG	-4.9 SUM	4.77 SUM		(BLANK 64)	(BLANK 67)	(BLANK 70)	

QUARTERLY OPACITY AUDIT REPORT

AUDITOR:	**Chuck Davis**	DATE	**5/16/2013**
SOURCE:	**Covanta Durham York Renewable Energy L.P.**	UNIT #	**Unit #2**
QUARTER/YEAR:	**Qtr - 2 2013**	S/N	**407538**

PARAMETER		BLANK NO.	AUDIT RESULT	SPECIFICATION
Fault Lamps				
Alarm Indication		**7**	**Off**	**OFF**
Power Light		**8**	**On**	**ON**
Faults Indication		**9**	**Off**	**OFF**
Dust compensation at Start of Audit		**11**	**-0.28**	**+/- 2 % Opacity**
MONITOR ALIGNMENT ANALYSIS		**21**	**Yes**	**CENTERED**
REFERENCE SIGNAL ANALYSIS (% Error)		**51a**	**na**	**na**
STACK EXIT CORRELATION ERROR		**51**	**99.90**	**+/- 2 % Opacity**
INTERNAL ZERO ERROR	CONTROL UNIT	**52**	**0.00**	**+/- 2 % Opacity**
	DATA RECORDER (CEMS)	**53**	**0.00**	**+/- 2 % Opacity**
INTERNAL SPAN ERROR	CONTROL UNIT	**54**	**0.20**	**+/- 2 % Opacity**
	DATA RECORDER (CEMS)	**55**	**-0.30**	**+/- 2 % Opacity**
OPTICAL SURFACE DUST ACCUMULATION				
RETROREFLECTOR		**56**	**0.00**	**+/- 2 % Opacity**
TRANSCEIVER		**57**	**0.00**	**+/- 2 % Opacity**
TOTAL		**58**	**0.00**	**+/- 2% Opacity**
CALIBRATION ERROR ANALYSIS				
MEAN ERROR				
LOW		**62**	0.20	
MID		**63**	0.90	
HIGH		**64**	0.98	
CONFIDENCE INTERVAL				
LOW		**65**	0.22	
MID		**66**	0.06	
HIGH		**67**	0.06	
CALIBRATION ERROR				
LOW		**68**	**0.43**	**< 2% Opacity**
MID		**69**	**0.96**	**< 2% Opacity**
HIGH		**70**	**1.03**	**< 2% Opacity**
Upscale Response time average		6		**10 Seconds**
Downscale Response time average		6		**10 Seconds**

OPACITY AUDIT DATA ENTRY SCREEN

Preliminary Information

Enter Required Information

#	Item	Unit #1	Unit #2
	Audit Date	9/1/15	5/16/13
	Audit Performed by	McComb, Randy	Chuck Davis
3	**Automatically calculated OPLR**	*0.508*	*0.508*
4	**Source-cited OPLR value**	1.016	1.016
5	**Source-cited Zero automatic expected calibration value (% opacity)**	0	0
6	**Source-cited Span automatic expected calibration value (% opacity)**	26	26

Pre-Clean Cal Check

Select "Force Cal cycle" from Output & Cal tests menu. (4.4.10) and execute cal. After cal is complete, read and record Dust compensation value from ERP

#	Item	Unit #1	Unit #2
10	**Dust Compensation Value** *Read and Record Dust Compensation value from ERP.*	0.5	-0.28
11	**Zero Cal Response Value** *Read and Record cal zero value from ERP.*	0.6	0
12	**Zero Cal Response Value (from Cal Report)** *Read and Record most recently obtained zero value from Trace Cal Report*	0.6	0
13	**Upscale Cal Response Value** *Read and Record cal upscale value from ERP.*	26.2	26.2
14	**Span Cal Response Value (from Cal Report)** *Read and Record most recently obtained span value from Trace Cal Report*	26.2	25.7

OPACITY AUDIT DATA ENTRY SCREEN

Cleaning

		Unit #1	Unit #2
19	**Pre-cleaning effluent Opacity (% opacity)** *Record 1-min Opacity (Optical Head display at location U1) just prior to opening Reflector for cleaning. Clean the Reflector.*	1	-0.8
20	**Post-cleaning effluent Opacity (% opacity)** *Close Reflector, wait 3 minutes, then read and record effluent opacity from display location U1.*	0.5	-0.8
21	**Pre cleaning effluent Opacity (% opacity)** *Record Opacity from display location U1 just prior to opening Transmissometer for cleaning. Clean Optics on Transmissometer side.*	0.5	-0.8
22	**Post-cleaning effluent Opacity (% opacity)** *Close Transmissometer, wait 3 minutes, then read and record effluent opacity from display location U1.*	0.3	-0.8

Filter Information

Form'

		Serial #	Opacity	Exp.Date
29	**Low Filter Data**	S10089	8.4	7/27/16
30	**Mid Filter Data**	S10098	17.1	7/27/16
31	**High Filter Data**	S10082	27.5	7/27/16

Perform Test Audit

Leave the test audit jig in place. Allow three (3) full minutes to record the zero value (display location U1) then insert each filter in turn for three (3) minutes followed by a three (3) minute zero period. Repeat this procedure for 4 additional runs. For the final test, insert the mid-filter and allow thirteen (13) full minutes and record the 6-min value (display location U2). Note that if the zero obtained has drifted by more than 1% opacity over any one run, that run must be eliminated and repeated after the jig is rezeroed.

		Unit #1 DAS Time	Unit #1 1m Average	Unit #2 DAS Time	Unit #2 1m Average
33	**Enter Run 1 Low Filter Response**	15:06	8.9	11:47	8.3
34	**Enter Run 1 Mid Filter Response**		17.2		16.6
35	**Enter Run 1 High Filter Response**		27.4		27.0
37	**Enter Run 2 Low Filter Response**		8.9		8.3
38	**Enter Run 2 Mid Filter Response**		17.1		16.5
39	**Enter Run 2 High Filter Response**		27.4		26.9
41	**Enter Run 3 Low Filter Response**		9.0		8.3
42	**Enter Run 3 Mid Filter Response**		17.2		16.6
43	**Enter Run 3 High Filter Response**		27.4		27.0
45	**Enter Run 4 Low Filter Response**		9.0		8.7
46	**Enter Run 4 Mid Filter Response**		17.3		16.5
47	**Enter Run 4 High Filter Response**		27.5		27.0

49	Enter Run 5 Low Filter Response		8.9		8.5
50	Enter Run 5 Mid Filter Response		17.2		16.5
51	Enter Run 5 High Filter Response	15:55	27.4	12:19	27.0

Response Times (seconds)	Up	Down	UP	Down
Enter Run 1 Response	6	6	6	6
Enter Run 2 Response	6	6	6	6
Enter Run 3 Response	6	6	6	6
Enter Run 4 Response	6	6	6	6
Enter Run 5 Response	6	6	6	6
Average:	6	6	6	6

Date/Time	U2 1-min C	Data Status
9/19/2015 11:36	0	D
9/19/2015 11:37	0	D
9/19/2015 11:38	26.5	D
9/19/2015 11:39	26.3	D
9/19/2015 11:40	26.3	D
9/19/2015 11:41	0	D
9/19/2015 11:42	13.1	D
9/19/2015 11:43	0	D
9/19/2015 11:44	5.3	D
9/19/2015 11:45	0	D
9/19/2015 11:46	0	D
9/19/2015 11:47	8.3	D
9/19/2015 11:48	8.3	D
9/19/2015 11:49	16.6	D
9/19/2015 11:50	14.5	D
9/19/2015 11:51	27	D
9/19/2015 11:52	4.2	D
9/19/2015 11:53	8.2	D
9/19/2015 11:54	1.8	D
9/19/2015 11:55	16.5	D
9/19/2015 11:56	16.8	D
9/19/2015 11:57	26.9	D
9/19/2015 11:58	26.9	D
9/19/2015 11:59	8.3	D
9/19/2015 12:00	8.4	D
9/19/2015 12:01	16.6	D
9/19/2015 12:02	16.6	D
9/19/2015 12:03	27	D
9/19/2015 12:04	27	D
9/19/2015 12:05	8.7	D
9/19/2015 12:06	8.7	D
9/19/2015 12:07	16.5	D
9/19/2015 12:08	16.5	D
9/19/2015 12:09	0	D
9/19/2015 12:10	0	D
9/19/2015 12:11	27	D
9/19/2015 12:12	27	D
9/19/2015 12:13	27	D
9/19/2015 12:14	27	D
9/19/2015 12:15	8.6	D
9/19/2015 12:16	8.5	D
9/19/2015 12:17	16.5	D
9/19/2015 12:18	16.5	D
9/19/2015 12:19	27	D
9/19/2015 12:20	27	D
9/19/2015 12:21	0	D

Calibration Report

Company: Covanta - Durham York Energy
1835 Energy Drive
Lot 27, concessions Broken Front,
Clarington Municipality, ON
Stack Designation: Boiler #2
Parameter: Opacity
Units: %
Serial #: 5602493-Opacity
Start of Report: 09/04/15 00:00
End of Report: 09/10/15 23:59

ZERO READINGS						SPAN READINGS						
START	STOP	EXPECT.	ACTUAL	ERROR	%	START	STOP	EXPECT.	ACTUAL	ERROR	%	STATUS
09/04/15 07:00	09/04/15 07:02	0.00	0.00	0.00	0.0	09/04/15 07:02	09/04/15 07:04	26.00	25.56	-0.44	-0.4	OK
09/05/15 07:00	09/05/15 07:02	0.00	0.40	0.40	0.4	09/05/15 07:02	09/05/15 07:04	26.00	25.34	-0.66	-0.7	OK
09/06/15 07:00	09/06/15 07:02	0.00	0.00	0.00	0.0	09/06/15 07:02	09/06/15 07:04	26.00	25.50	-0.50	-0.5	OK
09/07/15 07:00	09/07/15 07:02	0.00	0.00	0.00	0.0	09/07/15 07:02	09/07/15 07:04	26.00	25.45	-0.55	-0.5	OK
09/08/15 07:00	09/08/15 07:02	0.00	0.17	0.17	0.2	09/08/15 07:02	09/08/15 07:04	26.00	25.38	-0.62	-0.6	OK
09/09/15 07:00	09/09/15 07:02	0.00	0.08	0.08	0.1	09/09/15 07:02	09/09/15 07:04	26.00	25.34	-0.66	-0.7	OK
09/10/15 07:00	09/10/15 07:02	0.00	0.00	0.00	0.0	09/10/15 07:02	09/10/15 07:04	26.00	25.34	-0.66	-0.7	OK

Section 5

Bottle and Opacity Filter Certifications

PRAXAIR.

Daily Inlet Zero
9/15/2015
05:00 pm

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

08/31/2015

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA, ON L1J 1R1

Work Order No.	**24296096**	Product Lot/Batch No.	**0820WD15**
Customer Reference No.		Product Part No.	**NI OX2M-AS**

CERTIFICATE OF ANALYSIS
Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Oxygen	**2.00%**	**2.00%**	**O**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments:	**Servomex~575~~**		
Cylinder Style:	**AS**	Filling Method:	**Gravimetric**
Cylinder Pressure @70F:	**2000 psig**	Date of Fill:	**08/20/2015**
Cylinder Volume:	**144 ft3**	Expiration Date:	**08/25/2020**
Valve Outlet Connection:	**580**		
Cylinder No(s).	**CC332354**		

Comments: **Values not valid below 150 psig. [O2] is N.I.S.T traceable to SRM # 2657a respectively.**

Approved Signer: **Rolonda Kaywood**

QA Reviewer: **Joshua Jones**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g. ppmv) unless otherwise noted.

Key to Analytical Techniques:

- A Flame Ionization with Methanizer
- E Gas Chromatography with Flame Photometric Detector
- I Gas Chromatography with Reduction Gas Analyzer
- M Mass Spectrometry - MS or GC/MS
- Q Total Hydrocarbon Analyzer
- U Chemiluminescence
- Y Vendor Analysis
- B Gas Chromatography with Discharge Ionization Detector
- F Gas Chromatography with Helium Ionization Detector
- J Gas Chromatography with Thermal Conductivity Detector
- N By Difference of Typical Impurities
- R Wet Chemical
- V Gravimetric
- C Gas Chromatography with Electrolytic Conductivity Detector
- G Gas Chromatography with Methanizer Carbonizer
- K Binary Gas Analyzer with Thermal Conductivity Detector
- O Paramagnetic
- S Detector Tube
- W Electrolytic Cell/Electrochemical
- D Gas Chromatography with Flame Ionization Detector
- H Gas Chromatography with Photoionization Detector
- L Infrared - FTIR or NDIR
- P Specific Water Analyzer
- T Odor
- X UV Spectrometry

PRAXAIR.

Inlet Daily Span 2
9/18/2015
02:25 pm

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

04/27/2015

PRAXAIR PKG PARIS P/H 80271
41 CONSOLIDATED DR
PARIS, ON N3L 3G2

Work Order No.	**30967063**	Product Lot/Batch No.	**0422UA15**
Customer Reference No.		Product Part No.	**NI CO1700O5M-AS**

CERTIFICATE OF ANALYSIS

Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Carbon monoxide	**1700 ppm**	**1708 ppm**	**V**	**± 2%**
Oxygen	**18.0%**	**17.9 %**	**V**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **N/A**

Cylinder Style:	**AS**	Filling Method:	**Gravimetric**
Cylinder Pressure @70F:	**2000 psig**	Date of Fill:	**04/22/2015**
Cylinder Volume:	**144 ft3**	Expiration Date:	**04/24/2020**
Valve Outlet Connection:	**590**		

Cylinder No(s). **CC86026**

Comments: **Values not valid below 150 psig. [CO] and [O2] are N.I.S.T traceable to SRM #2637a and 2659a respectively.**

QA Reviewer: **Joshua Jones**

Approved Signer: **Rolonda Kaywood**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

INLET DAILY S1
18-SEPT-15
0840

PRAXAIR

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

04/08/2015

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA, ON L1J 1R1

Work Order No. **23167226**
Customer Reference No.

Product Lot/Batch No. **0406WA15**
Product Part No. **NI CO425S1M-AS**

CERTIFICATE OF ANALYSIS
Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Sulfur dioxide	425 ppm	432 ppm	X	± 2%
Carbon monoxide	425 ppm	433 ppm	L	± 2%
Nitrogen	balance	balance		

Analytical Instruments: **AMETEK~921CE SO2~~**
Horiba~VA 3000 CO~~

Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **660**

Filling Method: **Gravimetric**
Date of Fill: **04/06/2015**
Expiration Date: **04/07/2020**

Cylinder No(s). **EB0047069**
Comments: **Values not valid below 150 psig. [SO2] and [CO] are N.I.S.T traceable to SRM # 1661a and 1681b respectively.**

QA Reviewer: **Joshua Jones**

Approved Signer: **Rolonda Kaywood**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

~~SO4~~ OUTLET SPAN 1
~~FARO 822~~
18-SEP-15
0830

PRAXAIR

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

07/08/2015

PRAXAIR PKG PARIS P/H 80271
41 CONSOLIDATED DR
PARIS, ON N3L 3G2

Work Order No. **31751843**
Customer Reference No.

Product Lot/Batch No. **0706WF15**
Product Part No. **NI CO425NS4M-AS**

CERTIFICATE OF ANALYSIS
Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Nitric oxide	**425 ppm**	**437 ppm**	**U**	**± 2%**
Sulfur dioxide	**170 ppm**	**165 ppm**	**X**	**± 2%**
Carbon monoxide	**425 ppm**	**425 ppm**	**L**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Rosemount Analytical~951A~~**
AMETEK~921CE SO2~~
Horiba~VA 3000 CO~~

Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **660**

Filling Method: **Gravimetric**
Date of Fill: **07/06/2015**
Expiration Date: **07/08/2018**

Cylinder No(s). **EB0047080**
Comments: **Values not valid below 150 psig. [NOx] = 437 ppm. [NO], [SO2], and [CO] are N.I.S.T traceable to SRM # 1686b, 1661a and 1681b respectively.**

QA Reviewer: **Kyle Osborne**

Approved Signer: **Rolonda Kaywood**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

Inlet Daily Zero
9/18/2015
08:15 am

PRAXAIR.

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

08/31/2015

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA, ON L1J 1R1

Work Order No. **24296096**
Customer Reference No.

Product Lot/Batch No. **0820WD15**
Product Part No. **NI OX2M-AS**

CERTIFICATE OF ANALYSIS
Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Oxygen	**2.00%**	**2.00%**	**O**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Servomex~575~~**
Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **580**
Cylinder No(s). **CC320410**

Filling Method: **Gravimetric**
Date of Fill: **08/20/2015**
Expiration Date: **08/25/2020**

Comments: **Values not valid below 150 psig. [O2] is N.I.S.T traceable to SRM # 2657a respectively.**

Approved Signer: **Rolonda Kaywood**

QA Reviewer: **Joshua Jones**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

PRAXAIR

Inlet CGA
Mid span #1

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12014

DocNumber: 000007089

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

<ENTER COUNTRY & PDI LOC # B
ENTER STREET ADDRESS
ANKENY IA 500210

Praxair Order Number: 29355252
Customer P. O. Number:
Customer Reference Number:

Fill Date: 11/18/2014
Part Number: NI CO275S2E-AS
Lot Number: 1118HA14
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:		**12/10/2022**	NIST Traceable
Cylinder Number:		**EB0047021**	Analytical Uncertainty:
278	**ppm**	**SULFUR DIOXIDE**	± 0.8 %
281	**ppm**	**CARBON MONOXIDE**	± 0.3 %
	Balance	**NITROGEN**	

Changed 06/18/15

Certifcation Information: *Certification Date:* 12/10/2014 *Term:* 96 Months *Expiration Date:* 12/10/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
Do Not Use this Standard if Pressure is less than 100 PSIG.

Not on Gas List

nalytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: SULFUR DIOXIDE

Requested Concentration:	275 ppm
Certified Concentration:	278 ppm
Instrument Used:	AMETEK 921
Analytical Method:	NDUV
Last Multipoint Calibration:	12/2/2014

~~Reference Standard Type:~~	~~GMIS~~
Ref. Std. Cylinder #:	EB0024313
Ref. Std. Conc:	502.6 ppm
Ref. Std. Traceable to SRM #:	1661a
SRM Sample #:	94-H-17
SRM Cylinder #:	FF28055

First Analysis Data: Date: 12/3/2014

Z:	0	R:	502	C:	278	Conc:	278.33
R:	502	Z:	0	C:	277	Conc:	277.33
Z:	0	C:	277	R:	502	Conc:	277.33

UOM: PPM Mean Test Assay: 277.67 PPM

Second Analysis Data: Date: 12/10/2014

Z:	0	R:	502	C:	277	Conc:	277.15
R:	502	Z:	0	C:	277	Conc:	277.15
Z:	0	C:	278	R:	503	Conc:	278.15

UOM: PPM Mean Test Assay: 277.48 PPM

2. Component: CARBON MONOXIDE

Requested Concentration:	275 ppm
Certified Concentration:	281 ppm
Instrument Used:	Horiba VIA 510
Analytical Method:	NDIR
Last Multipoint Calibration:	11/21/2014

Reference Standard Type:	GMIS
Ref. Std. Cylinder #:	CC19107
Ref. Std. Conc:	255 ppm
Ref. Std. Traceable to SRM #:	2636a
SRM Sample #:	57-F-15
SRM Cylinder #:	FF30792

First Analysis Data: Date: 12/3/2014

Z:	0	R:	255	C:	281	Conc:	281
R:	255	Z:	0	C:	281	Conc:	281
Z:	0	C:	281	R:	255	Conc:	281

UOM: PPM Mean Test Assay: 281 PPM

Second Analysis Data: Date:

Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0

UOM: PPM Mean Test Assay: 0 PPM

Analyzed by: Kyle Osborne

Certified by: Josh Jones

PRAXAIR INLET GGA MID-SPAN 1
21-SEPT-2015
0815

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12014

DocNumber: 000006151

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA ON L1J 1R

Praxair Order Number: 21760536
Customer P. O. Number: 02930636
Customer Reference Number:

Fill Date: 9/26/2014
Part Number: NI CO275S2E-AS
Lot Number: 0926HC14
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:		10/10/2022	NIST Traceable
Cylinder Number:		EB0047035	Analytical Uncertainty:
280	ppm	SULFUR DIOXIDE	± 0.8 %
281	ppm	CARBON MONOXIDE	± 0.3 %
	Balance	NITROGEN	

Certifcation Information: *Certification Date:* 10/10/2014 *Term:* 96 Months *Expiration Date:* 10/10/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: SULFUR DIOXIDE

Requested Concentration: 275 ppm
Certified Concentration: 280 ppm
Instrument Used: MKS 2031
Analytical Method: FOURIER-TRANSFORM INFRAR
Last Multipoint Calibration: 9/2/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC198966
Ref. Std. Conc: 500.4 ppm
Ref. Std. Traceable to SRM #: 1661a
SRM Sample #: 94-H-17
SRM Cylinder #: FF28055

First Analysis Data:						Date:	10/3/2014
Z: 0		R: 500		C: 281		Conc:	281.23
R: 500		Z: 0		C: 281		Conc:	281.23
Z: 0		C: 281		R: 500		Conc:	281.23
UOM:	PPM			Mean Test Assay:			281.23 PPM

Second Analysis Data:						Date:	0/10/2014
Z: 0		R: 500		C: 279		Conc:	279.22
R: 500		Z: 0		C: 279		Conc:	279.22
Z: 0		C: 279		R: 500		Conc:	279.22
UOM:	PPM			Mean Test Assay:			279.22 PPM

2. Component: CARBON MONOXIDE

Requested Concentration: 275 ppm
Certified Concentration: 281 ppm
Instrument Used: Horiba VA-3000
Analytical Method: NDIR
Last Multipoint Calibration: 9/28/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC19107
Ref. Std. Conc: 255 ppm
Ref. Std. Traceable to SRM #: 2636a
SRM Sample #: 57-F-15
SRM Cylinder #: FF30792

First Analysis Data:						Date:	10/3/2014
Z: 0		R: 255		C: 281		Conc:	281
R: 255		Z: 0		C: 281		Conc:	281
Z: 0		C: 281		R: 255		Conc:	281
UOM:	PPM			Mean Test Assay:			281 PPM

Second Analysis Data:						Date:	
Z: 0		R: 0		C: 0		Conc:	0
R: 0		Z: 0		C: 0		Conc:	0
Z: 0		C: 0		R: 0		Conc:	0
UOM:	PPM			Mean Test Assay:			0 PPM

Analyzed by: Kyle Osborne

Certified by: Josh Jones

PRAXAIR

Inlet CGA mid span 2

DocNumber: 000006895

Praxair Distribution, Inc,
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12014

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

<ENTER COUNTRY & PDI LOC # B
ENTER STREET ADDRESS
ANKENY IA 500210

Praxair Order Number: 29285491
Customer P. O. Number:
Customer Reference Number:

Fill Date: 11/10/2014
Part Number: NI CO1100O2E-AS
Lot Number: 1110UE14
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Changed 06/18/15

Expiration Date:		11/17/2022	NIST Traceable
Cylinder Number:		CC275798	Analytical Uncertainty:
1075	ppm	CARBON MONOXIDE	± 0.4 %
9.99	%	OXYGEN	± 0.7 %
	Balance	NITROGEN	

Certifcation Information: Certification Date: 11/17/2014 Term: 96 Months Expiration Date: 11/17/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
Do Not Use this Standard if Pressure is less than 100 PSIG.

NOT ON GAS LIST

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: CARBON MONOXIDE

Requested Concentration: 1100 ppm
Certified Concentration: 1075 ppm
Instrument Used: Horiba VA-3000
Analytical Method: NDIR
Last Multipoint Calibration: 10/25/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: EB0005133
Ref. Std. Conc: 2427 ppm
Ref. Std. Traceable to SRM #: 2637a
SRM Sample #: 56-F-36
SRM Cylinder #: CAL017141

First Analysis Data:							Date:	11/17/2014
Z:	0	R:	2427	C:	1075		Conc:	1075
R:	2427	Z:	0	C:	1075		Conc:	1075
Z:	0	C:	1075	R:	2427		Conc:	1075
UOM:	PPM			Mean Test Assay:				1075 PPM

Second Analysis Data:							Date:	
Z:	0	R:	0	C:	0		Conc:	0
R:	0	Z:	0	C:	0		Conc:	0
Z:	0	C:	0	R:	0		Conc:	0
UOM:	PPM			Mean Test Assay:				0 PPM

2. Component: OXYGEN

Requested Concentration: 10.0 %
Certified Concentration: 9.99 %
Instrument Used: Servomex 575
Analytical Method: Paramagnetic
Last Multipoint Calibration: 10/25/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: EB0015425
Ref. Std. Conc: 22.37%
Ref. Std. Traceable to SRM #: 2659a
SRM Sample #: 71-D-04
SRM Cylinder #: CAL015785

First Analysis Data:							Date:	11/17/2014
Z:	0	R:	22.37	C:	9.99		Conc:	9.99
R:	22.37	Z:	0	C:	9.99		Conc:	9.99
Z:	0	C:	9.99	R:	22.37		Conc:	9.99
UOM:	%			Mean Test Assay:				9.99 %

Second Analysis Data:							Date:	
Z:	0	R:	0	C:	0		Conc:	0
R:	0	Z:	0	C:	0		Conc:	0
Z:	0	C:	0	R:	0		Conc:	0
UOM:	%			Mean Test Assay:				0 %

Analyzed by: Mike Monnette

Certified by: Josh Jones

PRAXAIR

INLET 1

Praxair Distribution, Inc.
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Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

01/03/2015

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA, ON L1J 1R1

Work Order No. **22453143**
Customer Reference No.

Product Lot/Batch No. **1230SE14**
Product Part No. **NI CO425S1M-AS**

CERTIFICATE OF ANALYSIS

Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Sulfur dioxide	**425 ppm**	**435 ppm**	**L**	**± 2%**
Carbon monoxide	**425 ppm**	**431 ppm**	**L**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **MKS~2031 FTIR~~**
Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **145 ft3**
Valve Outlet Connection: **660**
Cylinder No(s). **DT0006731**

Filling Method: **Gravimetric**
Date of Fill: **12/30/2014**
Expiration Date: **01/02/2017**

Analyst: **Joshua Jones**

QA Reviewer: **Ed Zucal**

0800 Changed 06/17/15

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
	Vendor Analysis						

PRAXAIR

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Toledo, OH 43611
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Fax: +1 (419) 729-2411

10/15/2014

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA, ON L1J 1R1

Work Order No. **21957055**
Customer Reference No.

Product Lot/Batch No. **1013UA14**
Product Part No. **NI CO1700O5M-AS**

CERTIFICATE OF ANALYSIS
Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Oxygen	**18.0%**	**18.0 %**	**O**	**± 2%**
Carbon monoxide	**1700 ppm**	**1662 ppm**	**L**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Servomex~575~~**
Horiba~VA 3000 CO~~

Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **590**
Cylinder No(s). **CC97046**

Filling Method: **Gravimetric**
Date of Fill: **10/13/2014**
Expiration Date: **10/14/2017**

Analyst: **Mike Monnette**

QA Reviewer: **Kyle Osborne**

CHANGED June 19/2015
@ 8:00am

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
*	Vendor Analysis						

Inlet Daily Zero
9/18/2015
08:15 am.

PRAXAIR.

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

08/31/2015

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA, ON L1J 1R1

Work Order No. **24296096**
Customer Reference No.

Product Lot/Batch No. **0820WD15**
Product Part No. **NI OX2M-AS**

CERTIFICATE OF ANALYSIS
Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Oxygen	**2.00%**	**2.00%**	**O**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Servomex~575~~**
Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **580**
Cylinder No(s). **CC320410**

Filling Method: **Gravimetric**
Date of Fill: **08/20/2015**
Expiration Date: **08/25/2020**

Comments: **Values not valid below 150 psig. [O2] is N.I.S.T traceable to SRM # 2657a respectively.**

Approved Signer: **Rolonda Kaywood**

QA Reviewer: **Joshua Jones**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

PRAXAIR

Inlet mid span2
09/20/2015
08:00 am.

Praxair Distribution, Inc,
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12014

DocNumber: 000005795

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA ON L1J 1R

Praxair Order Number: 21760580
Customer P. O. Number: 02930641
Customer Reference Number:

Fill Date: 9/19/2014
Part Number: NI CO1100O2E-AS
Lot Number: 0919WC14
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:		9/23/2022	NIST Traceable
Cylinder Number:		CC316057	Analytical Uncertainty:
1118	**ppm**	**CARBON MONOXIDE**	± 0.9 %
9.62	**%**	**OXYGEN**	± 0.2 %
	Balance	**NITROGEN**	

Certifcation Information: *Certification Date:* 9/23/2014 *Term:* 96 Months *Expiration Date:* 9/23/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: CARBON MONOXIDE

Requested Concentration: 1100 ppm
Certified Concentration: 1118 ppm
Instrument Used: Horiba VA-3000
Analytical Method: NDIR
Last Multipoint Calibration: 8/28/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: EB0005133
Ref. Std. Conc: 2427 ppm
Ref. Std. Traceable to SRM #: 2637a
SRM Sample #: 56-F-36
SRM Cylinder #: CAL017141

First Analysis Data:							**Date:**	9/23/2014
Z: 0		**R:** 2427		**C:** 1118			**Conc:**	1118
R: 2427		**Z:** 0		**C:** 1118			**Conc:**	1118
Z: 0		**C:** 1118		**R:** 2427			**Conc:**	1118
UOM: PPM				**Mean Test Assay:**				1118 PPM

Second Analysis Data:							**Date:**	
Z: 0		**R:** 0		**C:** 0			**Conc:**	0
R: 0		**Z:** 0		**C:** 0			**Conc:**	0
Z: 0		**C:** 0		**R:** 0			**Conc:**	0
UOM: PPM				**Mean Test Assay:**				0 PPM

2. Component: OXYGEN

Requested Concentration: 10 %
Certified Concentration: 9.62 %
Instrument Used: Servomex 575
Analytical Method: Paramagnetic
Last Multipoint Calibration: 8/27/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC200088
Ref. Std. Conc: 22.62%
Ref. Std. Traceable to SRM #: 2659a
SRM Sample #: 71-D-04
SRM Cylinder #: CAL015785

First Analysis Data:							**Date:**	9/23/2014
Z: 0		**R:** 22.62		**C:** 9.63			**Conc:**	9.63
R: 22.62		**Z:** 0		**C:** 9.62			**Conc:**	9.62
Z: 0		**C:** 9.62		**R:** 22.62			**Conc:**	9.62
UOM: %				**Mean Test Assay:**				9.623 %

Second Analysis Data:							**Date:**	
Z: 0		**R:** 0		**C:** 0			**Conc:**	0
R: 0		**Z:** 0		**C:** 0			**Conc:**	0
Z: 0		**C:** 0		**R:** 0			**Conc:**	0
UOM: %				**Mean Test Assay:**				0 %

Analyzed by: Mike Monnette

Certified by: Josh Jones

PRAXAIR Inlet Span #3

Praxair Distribution Inc.
One Steel Road East
Morrisville, PA 19067
Tel: 1-800-638-6360
Fax: 1-215-736-5237

01/24/2015

PDI WHSE PARIS ONTARIO
41 CONSOLIDATED DR
PARIS, ON N1S 3Z4
Attention: FRANK JONES

Work Order No. **05335525**
Customer Reference No.

Product Lot/Batch No. **300024021504**
Product Part No. **NI HC1275C-AS**

CERTIFICATE OF ANALYSIS

Certified Standard

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Hydrogen chloride	**1275 ppm**	**1273 ppm**	**X**	**±2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Vendor Guaranteed Specification~~~**
Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **141.7 ft3**
Valve Outlet Connection: **CGA-330**
Cylinder No(s). **CC31829**

Filling Method: **Gravimetric**
Date of Fill: **01/14/2015**
Expiration Date: **01/14/2016**

Analyst: **Todd Bennett**

The gas calibration cylinder standard prepared by Praxair Distribution Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Gravimetrical Methods	V	Electrochemical	W	Chemiluminescent	X	Vendor Analysis

PRAXAIR

Praxair Distribution, Inc,
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12014

DocNumber: 000005776

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA ON L1J 1R

Praxair Order Number: 21760701
Customer P. O. Number: 02930660
Customer Reference Number:

Fill Date: 9/16/2014
Part Number: NI CD12CO11E-AS
Lot Number: 0916UC14
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:		9/23/2022	NIST Traceable
Cylinder Number:		CC164055	Analytical Uncertainty:
1073	ppm	CARBON MONOXIDE	± 0.5 %
12.1	%	CARBON DIOXIDE	± 0.4 %
9.94	%	OXYGEN	± 0.2 %
	Balance	NITROGEN	

Certifcation Information: Certification Date: 9/23/2014 Term: 96 Months Expiration Date: 9/23/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
Do Not Use this Standard if Pressure is less than 100 PSIG.

Not on Gas hiss

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: CARBON MONOXIDE

Requested Concentration: 1100 ppm
Certified Concentration: 1073 ppm
Instrument Used: MKS 2031
Analytical Method: FOURIER-TRANSFORM INFRAR
Last Multipoint Calibration: 9/2/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: EB0005133
Ref. Std. Conc: 2427 ppm
Ref. Std. Traceable to SRM #: 2637a
SRM Sample #: 56-F-36
SRM Cylinder #: CAL017141

First Analysis Data:						Date:	9/23/2014
Z: 0		R: 2427		C: 1073		Conc:	1073
R: 2427		Z: 0		C: 1073		Conc:	1073
Z: 0		C: 1073		R: 2427		Conc:	1073
UOM: PPM				Mean Test Assay:			1073 PPM

Second Analysis Data:						Date:	
Z: 0		R: 0		C: 0		Conc:	0
R: 0		Z: 0		C: 0		Conc:	0
Z: 0		C: 0		R: 0		Conc:	0
UOM: PPM				Mean Test Assay:			0 PPM

2. Component: CARBON DIOXIDE

Requested Concentration: 12 %
Certified Concentration: 12.1 %
Instrument Used: MKS 2031
Analytical Method: FOURIER-TRANSFORM INFRAR
Last Multipoint Calibration: 9/8/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: EB0023062
Ref. Std. Conc: 19.87
Ref. Std. Traceable to SRM #: 2745
SRM Sample #: 9-C-03
SRM Cylinder #: CAL016000

First Analysis Data:						Date:	9/23/2014
Z: 0		R: 19.87		C: 12.1		Conc:	12.1
R: 19.87		Z: 0		C: 12.1		Conc:	12.1
Z: 0		C: 12.1		R: 19.87		Conc:	12.1
UOM: %				Mean Test Assay:			12.1 %

Second Analysis Data:						Date:	
Z: 0		R: 0		C: 0		Conc:	0
R: 0		Z: 0		C: 0		Conc:	0
Z: 0		C: 0		R: 0		Conc:	0
UOM: %				Mean Test Assay:			0 %

PRAXAIR

Praxair Distribution, Inc.
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Fax: +1 (419) 729-2411

12/29/2014

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA, ON L1J 1R1

Work Order No. **22445449**
Customer Reference No.

Product Lot/Batch No. **1216SH14**
Product Part No. **NI CO425NS4M-AS**

CERTIFICATE OF ANALYSIS

Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Nitric oxide	**425 ppm**	**424 ppm**	**U**	**± 2%**
Sulfur dioxide	**170 ppm**	**165 ppm**	**X**	**± 2%**
Carbon monoxide	**425 ppm**	**420 ppm**	**L**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Rosemount Analytical~951A~~**
AMETEK~921CE SO2~~
Horiba~VA 3000 CO~~

Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **143 ft3**
Valve Outlet Connection: **660**
Cylinder No(s). **DT0006151**

Filling Method: **Gravimetric**
Date of Fill: **12/16/2014**
Expiration Date: **12/29/2016**

Analyst: **Kyle Osborne**

QA Reviewer: **Ed Zucal**

CANGAS June 15/15
@ 2:30pm Arrived

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

PRAXAIR.

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

08/31/2015

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA, ON L1J 1R1

Work Order No.	**24296096**	Product Lot/Batch No.	**0820WD15**
Customer Reference No.		Product Part No.	**NI OX2M-AS**

outlet Daily Zero
9/14/2015
04.30 pm.

CERTIFICATE OF ANALYSIS
Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Oxygen	**2.00%**	**2.00%**	**O**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments:	**Servomex~575~~**		
Cylinder Style:	**AS**	Filling Method:	**Gravimetric**
Cylinder Pressure @70F:	**2000 psig**	Date of Fill:	**08/20/2015**
Cylinder Volume:	**144 ft3**	Expiration Date:	**08/25/2020**
Valve Outlet Connection:	**580**		
Cylinder No(s).	**EB0019268**		

Comments: **Values not valid below 150 psig. [O2] is N.I.S.T traceable to SRM # 2657a respectively.**

Approved Signer: **Rolonda Kaywood**

QA Reviewer: **Joshua Jones**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a c... standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which a... er prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g. ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

IMPORTANT
The information contained herein has been prepared at your request by personnel within Praxair Distribution, Inc. While we believe the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any particular purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall liability of Praxair Distribution, Inc. arising out of the use of the information contained herein exceed the fee established for providing such information.

PRAXAIR

Outlet mid span
09/20/2015
09:00 am

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12014

DocNumber: 000006542

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

<ENTER COUNTRY & PDI LOC # B
ENTER STREET ADDRESS
ANKENY IA 500210

Praxair Order Number: 28930166
Customer P. O. Number:
Customer Reference Number:

Fill Date: 10/17/2014
Part Number: NI CO275NS9E-AS
Lot Number: 1017HB14
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu. ft

Certified Concentration:

Expiration Date:	10/29/2022	NIST Traceable
Cylinder Number:	EB0022279	Analytical Uncertainty:
283 ppm	**NITRIC OXIDE**	± 0.5 %
104 ppm	**SULFUR DIOXIDE**	± 1.1 %
276 ppm	**CARBON MONOXIDE**	± 0.7 %
Balance	**NITROGEN**	

NOx = 283 ppm **NOx for Reference Only**

Certifcation Information: *Certification Date:* 10/29/2014 *Term:* 96 Months *Expiration Date:* 10/29/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: NITRIC OXIDE

Requested Concentration: 275 ppm
Certified Concentration: 283 ppm
Instrument Used: Rosemount 951A
Analytical Method: Chemiluminescent
Last Multipoint Calibration: 9/29/2014

Reference Standard Type: SRM
Ref. Std. Cylinder #: CAL017948
Ref. Std. Conc: 500 ppm
Ref. Std. Traceable to SRM #: 1686b
SRM Sample #: 42-M-44
SRM Cylinder #: CAL017948

First Analysis Data: **Date:** 0/21/2014

Z: 0	**R:** 500	**C:** 282	**Conc:** 281.63
R: 501	**Z:** 0	**C:** 283	**Conc:** 282.62
Z: 0	**C:** 283	**R:** 501	**Conc:** 282.62

UOM: PPM **Mean Test Assay:** 282.29 PPM

Second Analysis Data: **Date:** 0/29/2014

Z: 0	**R:** 501	**C:** 283	**Conc:** 282.25
R: 502	**Z:** 0	**C:** 284	**Conc:** 283.25
Z: 0	**C:** 284	**R:** 501	**Conc:** 283.25

UOM: PPM **Mean Test Assay:** 282.91 PPM

2. Component: SULFUR DIOXIDE

Requested Concentration: 275 ppm
Certified Concentration: 104 ppm
Instrument Used: AMETEK 921
Analytical Method: NDUV
Last Multipoint Calibration: 9/29/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC198966
Ref. Std. Conc: 500.4 ppm
Ref. Std. Traceable to SRM #: 1661a
SRM Sample #: 94-H-17
SRM Cylinder #: FF28055

First Analysis Data: **Date:** 0/21/2014

Z: 0	**R:** 500	**C:** 104	**Conc:** 103.95
R: 501	**Z:** 0	**C:** 105	**Conc:** 104.94
Z: 0	**C:** 104	**R:** 501	**Conc:** 103.95

UOM: PPM **Mean Test Assay:** 104.28 PPM

Second Analysis Data: **Date:** 0/29/2014

Z: 0	**R:** 501	**C:** 104	**Conc:** 103.95
R: 501	**Z:** 0	**C:** 104	**Conc:** 103.95
Z: 0	**C:** 104	**R:** 500	**Conc:** 103.95

UOM: PPM **Mean Test Assay:** 103.95 PPM

OUTLET SPAN 2

15 SEPT 2015 0750

2000 PSI

PRAXAIR.

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

01/21/2015

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA, ON L1J 1R1

Work Order No. **22621641**
Customer Reference No.

Product Lot/Batch No. **0120UC15**
Product Part No. **NI CD10CO48M-AS**

CERTIFICATE OF ANALYSIS

Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Carbon monoxide	**1700 ppm**	**1679 ppm**	**L**	**± 2%**
Carbon dioxide	**19.0%**	**19.1 %**	**L**	**± 2%**
Oxygen	**18.0%**	**18.0 %**	**O**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **MKS~2031 FTIR~~**
Servomex~575~~

Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **153 ft3**
Valve Outlet Connection: **590**
Cylinder No(s). **EB0002281**

Filling Method: **Gravimetric**
Date of Fill: **01/20/2015**
Expiration Date: **01/21/2018**

Analyst: **Joshua Jones**

QA Reviewer: **Kyle Osborne**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A Flame Ionization with Methanizer	B Gas Chromatography with Discharge Ionization Detector	C Gas Chromatography with Electrolytic Conductivity Detector	D Gas Chromatography with Flame Ionization Detector
E Gas Chromatography with Flame Photometric Detector	F Gas Chromatography with Helium Ionization Detector	G Gas Chromatography with Methanizer Carbonizer	H Gas Chromatography with Photoionization Detector
I Gas Chromatography with Reduction Gas Analyzer	J Gas Chromatography with Thermal Conductivity Detector	K Binary Gas Analyzer with Thermal Conductivity Detector	L Infrared - FTIR or NDIR
M Mass Spectrometry - MS or GC/MS	N By Difference of Typical Impurities	O Paramagnetic	P Specific Water Analyzer
Q Total Hydrocarbon Analyzer	R Wet Chemical	S Detector Tube	T Odor
U Chemiluminescence	V Gravimetric	W Electrolytic Cell/Electrochemical	X UV Spectrometry
Y Vendor Analysis			

PRAXAIR

outlet SPM 3
9/8/15

Praxair Distribution Inc.
One Steel Road East
Morrisville, PA 19067
Tel: 1-800-638-6360
Fax: 1-215-736-5237

08/12/2015

PDI WHSE PARIS ONTARIO
41 CONSOLIDATED DR
PO BOX 283
PARIS, ON N1S 3Z4
Attention: PDI WHSE PARIS ONTARIO

Work Order No. **72553222**
Customer Reference No.

Product Lot/Batch No. **300024222502**
Product Part No. **NI HC85MC-AS**

CERTIFICATE OF ANALYSIS

Certified Standard

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Hydrogen chloride	**85 ppm**	**88.8 ppm**	**X**	**±5%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Vendor Guaranteed Specification~~~**

Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **141.6 ft3**
Valve Outlet Connection: **CGA-330**
Cylinder No(s). **LCCO-SA21825**

Filling Method: **Gravimetric**
Date of Fill: **08/07/2015**
Expiration Date: **08/07/2016**

Analyst: **Todd Bennett**

The gas calibration cylinder standard prepared by Praxair Distribution Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Gravimetrical Methods	V	Electrochemical	W	Chemiluminescent	X	Vendor Analysis

PRAXAIR

Praxair Distribution, Inc,
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12014

DocNumber: 000006803

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

<ENTER COUNTRY & PDI LOC # B
ENTER STREET ADDRESS
ANKENY IA 500210

Praxair Order Number: 29200666
Customer P. O. Number:
Customer Reference Number:

Fill Date: 10/31/2014
Part Number: NI PR8.3ME-AS
Lot Number: 1031UI14
Cylinder Style & Outlet: AS CGA 350
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	11/12/2022		NIST Traceable
Cylinder Number:	EB0002929		Analytical Uncertainty:
8.44	ppm	PROPANE	± 0.9 %
	Balance	NITROGEN	

Certifcation Information: Certification Date: 11/12/2014 Term: 96 Months Expiration Date: 11/12/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: PROPANE

Requested Concentration: 8.30 ppm
Certified Concentration: 8.44 ppm
Instrument Used: MKS 2031
Analytical Method: FOURIER TRANSFORM INFRAR
Last Multipoint Calibration: 10/17/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: EB0001221
Ref. Std. Conc: 51.05 ppm
Ref. Std. Traceable to SRM #: 2644a
SRM Sample #: 101-C-40
SRM Cylinder #: XF003903B

First Analysis Data: Date: 11/12/2014

Z: 0	R: 51.1	C: 8.45	Conc: 8.436
R: 51.2	Z: 0	C: 8.45	Conc: 8.436
Z: 0	C: 8.45	R: 51.1	Conc: 8.436
UOM: PPM		Mean Test Assay:	8.436 PPM

Second Analysis Data: Date:

Z: 0	R: 0	C: 0	Conc: 0
R: 0	Z: 0	C: 0	Conc: 0
Z: 0	C: 0	R: 0	Conc: 0
UOM: PPM		Mean Test Assay:	0 PPM

Analyzed by: Josh Jones

Certified by: Edward E Zucal

PRAXAIR

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12014

DocNumber: 000006807

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

<ENTER COUNTRY & PDI LOC # B
ENTER STREET ADDRESS
ANKENY IA 500210

Praxair Order Number: 29200574
Customer P. O. Number:
Customer Reference Number:

Fill Date: 10/31/2014
Part Number: NI PR18ME-AS
Lot Number: 1031UH14
Cylinder Style & Outlet: AS CGA 350
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

			NIST Traceable
Expiration Date:	11/12/2022		
Cylinder Number:	CC15333		Analytical Uncertainty:
18.3	ppm	PROPANE	± 0.6 %
	Balance	NITROGEN	

Certifcation Information: Certification Date: 11/12/2014 Term: 96 Months Expiration Date: 11/12/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: PROPANE

Requested Concentration: 18.0 ppm
Certified Concentration: 18.3 ppm
Instrument Used: MKS 2031
Analytical Method: FOURIER-TRANSFORM INFRAR
Last Multipoint Calibration: 10/17/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: EB0001221
Ref. Std. Conc: 51.05 ppm
Ref. Std. Traceable to SRM #: 2644a
SRM Sample #: 101-C-40
SRM Cylinder #: XF003903B

First Analysis Data: Date: 11/12/2014

Z: 0	R: 51.1	C: 18.3	Conc: 18.27
R: 51.2	Z: 0	C: 18.3	Conc: 18.27
Z: 0	C: 18.3	R: 51.1	Conc: 18.27

UOM: PPM Mean Test Assay: 18.27 PPM

Second Analysis Data: Date:

Z: 0	R: 0	C: 0	Conc: 0
R: 0	Z: 0	C: 0	Conc: 0
Z: 0	C: 0	R: 0	Conc: 0

UOM: PPM Mean Test Assay: 0 PPM

Analyzed by: Josh Jones

Certified by: Kyle Osborne

PRAXAIR

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

02/04/2015

PRAXAIR OSHAWA ON
325 BLOOR ST W
OSHAWA, ON L1J 1R1

Work Order No. **22712467**
Customer Reference No.

Product Lot/Batch No. **0123GD15**
Product Part No. **NI PR28MM-AS**

CERTIFICATE OF ANALYSIS

Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Propane	**28.0 ppm**	**28.6 ppm**	**L**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **MKS~2031 FTIR~~**
Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **350**
Cylinder No(s). **EB0005278**

Filling Method: **Gravimetric**
Date of Fill: **01/23/2015**
Expiration Date: **02/03/2018**

Analyst: **Kyle Osborne**

QA Reviewer: **Joshua Jones**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g. % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

PRAXAIR

Praxair Distribution, Inc,
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411

DocNumber: 000005932

PGVP ID: F12014

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

<ENTER COUNTRY & PDI LOC # B
ENTER STREET ADDRESS
ANKENY IA 500210

Praxair Order Number: 28656961
Customer P. O. Number:
Customer Reference Number:

Fill Date: 9/26/2014
Part Number: NI CO275NS9E-AS
Lot Number: 0926HD14
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:		10/8/2022	NIST Traceable
Cylinder Number:		EB0016778	Analytical Uncertainty:
280	ppm	NITRIC OXIDE	± 0.6 %
107	ppm	SULFUR DIOXIDE	± 1.1 %
282	ppm	CARBON MONOXIDE	± 0.3 %
	Balance	NITROGEN	

NOx = 280 ppm

NOx for Reference Only

Certifcation Information: Certification Date: 10/8/2014 Term: 96 Months Expiration Date: 10/8/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1
Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: NITRIC OXIDE

Requested Concentration: 275 ppm
Certified Concentration: 280 ppm
Instrument Used: MKS 2031
Analytical Method: FOURIER-TRANSFORM INFRAR
Last Multipoint Calibration: 9/15/2014

First Analysis Data:						**Date:**	10/1/2014
Z:	0	R:	508.1	C:	279	Conc:	279
R:	508.1	Z:	0	C:	279	Conc:	279
Z:	0	C:	279	R:	508.1	Conc:	279
UOM:	PPM			**Mean Test Assay:**			279 PPM

Reference Standard Type: GMIS
Ref. Std. Cylinder #: EB0015083
Ref. Std. Conc: 508.1 ppm
Ref. Std. Traceable to SRM #: 1686b
SRM Sample #: 42-M-44
SRM Cylinder #: CAL017948

Second Analysis Data:						**Date:**	10/8/2014
Z:	0	R:	508	C:	280	Conc:	280.06
R:	508	Z:	0	C:	280	Conc:	280.06
Z:	0	C:	280	R:	508	Conc:	280.06
UOM:	PPM			**Mean Test Assay:**			280.06 PPM

2. Component: SULFUR DIOXIDE

Requested Concentration: 110 ppm
Certified Concentration: 107 ppm
Instrument Used: MKS 2031
Analytical Method: FOURIER-TRANSFORM INFRAR
Last Multipoint Calibration: 9/2/2014

First Analysis Data:						**Date:**	10/1/2014
Z:	0	R:	97.57	C:	106.8	Conc:	106.8
R:	97.57	Z:	0	C:	106.8	Conc:	106.8
Z:	0	C:	106.8	R:	97.57	Conc:	106.8
UOM:	PPM			**Mean Test Assay:**			106.8 PPM

Reference Standard Type: GMIS
Ref. Std. Cylinder #: EB0023798
Ref. Std. Conc: 97.57 ppm
Ref. Std. Traceable to SRM #: 1694a
SRM Sample #: 95-J-88
SRM Cylinder #: CAL016706

Second Analysis Data:						**Date:**	10/8/2014
Z:	0	R:	97.6	C:	107	Conc:	106.97
R:	97.6	Z:	0	C:	107	Conc:	106.97
Z:	0	C:	107	R:	97.6	Conc:	106.97
UOM:	PPM			**Mean Test Assay:**			106.97 PPM

Changed out June 18/15
@ 8:00am [illegible]

PRAXAIR

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12014

DocNumber: 000005932

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

3 . Component: CARBON MONOXIDE

Requested Concentration:	275 ppm
Certified Concentration:	282 ppm
Instrument Used:	MKS 2031
Analytical Method:	FOURIER-TRANSFORM INFRAR
Last Mult point Calibration:	9/29/2014

Reference Standard Type:	GMIS
Ref. Std. Cylinder #	CC19107
Ref. Std. Conc:	255 ppm
Ref. Std. Traceable to SRM #:	2636a
SRM Sample #:	57-F-15
SRM Cylinder #:	FF30792

First Analysis Data: Date: 10/1/2014

Z:	0	R:	255	C:	281.6	Conc:	281.6
R:	255	Z:	0	C:	281.6	Conc:	281.6
Z:	0	C:	281.6	R:	255	Conc:	281.6

UOM: PPM Mean Test Assay: 281.6 PPM

Second Analysis Data: Date:

Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0

UOM: PPM Mean Test Assay: 0 PPM

Analyzed by: Mike Monnette FOR

Certified by: Josh Jones

PRAXAIR

One Steel Road East • Morrisville, PA 19067 • Phone: 800-638-6360 • Fax: 215-736-5240

Issue Date: January 5, 2015

To: PRAXAIR PARIS

Attn: PARIS ONTARIO

Praxair OrderNumber: 05255801
Customer Order Number: NA
Customer Reference Number: LD578

Product Lot Number: 300024005505
ProductPartNumber: NI HC25MZC-AS

CERTIFICATE OF ANALYSIS

CERTIFIED STANDARD

(PADER Gas Mixture)

Cylinder SerialNumber	Analytes	Specification		Analytical Results		Analytical Principle	Analytical Uncertainty
LCCO-SA11804	Hydrogen Chloride	25.0	ppm	26.9	ppm	Vendor Analysis	±2 %
	Nitrogen	balance		Balance			

Date:	12/13/14		1ST TRIAD ANALYSIS							Avg. Concentration	
ZERO:	0.00	ppm	REFERENCE	25.2	ppm	TEST CYL	26.9	ppm		26.8	ppm
REFERENCE	25.2	ppm	ZERO	0.00	ppm	TEST CYL	26.8	ppm			
ZERO	0.00	ppm	TEST	26.8	ppm	REFERENCE	25.2	ppm			
Date:	12/20/14		2ND TRIAD ANALYSIS							Avg. Concentration	
ZERO:	0.00	ppm	REFERENCE	25.2	ppm	TEST CYL	27.0	ppm		27.0	ppm
REFERENCE	25.2	ppm	ZERO	0.00	ppm	TEST CYL	27.1	ppm			
ZERO	0.00	ppm	TEST	26.9	ppm	REFERENCE	25.2	ppm			
Date:	12/27/14		3RD TRIAD ANALYSIS							Avg. Concentration	
ZERO:	0.00	ppm	REFERENCE	25.2	ppm	TEST CYL	27.1	ppm		26.9	ppm
REFERENCE	25.2	ppm	ZERO	0.00	Ppm	TEST CYL	26.7	ppm			
ZERO	0.00	ppm	TEST	27.0	ppm	REFERENCE	25.2	ppm			

Reference Standard	Type/Std No.	Cyl #	Concentration	Exp Date
	CGMIS	CC93565	25.2 ppm HCL/N2	01/21/2015

Pressure: 1800 PSIA@20°C/70°F
Valve: CGA-330
Analysis Date: 12/27/2014
Expiration Date: 06/27/2015

Approved Signer: M Tan
(Mohamad Bentaher)

This analysis of the product described herein was prepared by Praxair Distribution using instruments whose calibration is certified using Praxair Reference Materials. Praxair Reference Materials are prepared either by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada or by using NIST Standard Reference Materials where available.

Note. All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted

Analytical Principle:

VENDOR GUARANTEED SPECIFICATIONS

PRAXAIR

One Steel Road East • Morrisville, PA 19067 • Phone: 800-638-6360 • Fax: 215-736-5240

Issue Date: January 5, 2015

To: PRAXAIR PARIS

Attn: PARIS ONTARIO

Praxair OrderNumber: 05255811
Customer Order Number: NA
Customer Reference Number: LD578

Product Lot Number: 300024005504
ProductPartNumber: NI HC55MZC-AS

CERTIFICATE OF ANALYSIS

CERTIFIED STANDARD

(PADER Gas Mixture)

Cylinder SerialNumber	Analytes	Specification		Analytical Results		Analytical Principle	Analytical Uncertainty
CC99745	Hydrogen Chloride	55.0	ppm	59.5	ppm	Vendor Analysis	±2 %
	Nitrogen	balance		Balance			

Date:	12/16/14		1ST TRIAD ANALYSIS						Avg. Concentration	
ZERO:	0.00	ppm	REFERENCE	50.8	ppm	TEST CYL	59.7	ppm	59.8	ppm
REFERENCE	50.8	ppm	ZERO	0.00	ppm	TEST CYL	59.6	ppm		
ZERO	0.00	ppm	TEST	60.0	ppm	REFERENCE	50.8	ppm		
Date:	12/23/14		2ND TRIAD ANALYSIS						Avg. Concentration	
ZERO:	0.00	ppm	REFERENCE	50.8	ppm	TEST CYL	59.3	ppm	59.4	ppm
REFERENCE	50.8	ppm	ZERO	0.00	ppm	TEST CYL	59.4	ppm		
ZERO	0.00	ppm	TEST	59.6	ppm	REFERENCE	50.8	ppm		
Date:	12/30/14		3RD TRIAD ANALYSIS						Avg. Concentration	
ZERO:	0.00	ppm	REFERENCE	50.8	ppm	TEST CYL	59.1	ppm	59.3	ppm
REFERENCE	50.8	ppm	ZERO	0.00	Ppm	TEST CYL	59.3	ppm		
ZERO	0.00	ppm	TEST	59.4	ppm	REFERENCE	50.8	ppm		

Reference Standard	Type/Std No.	Cyl #	Concentration	Exp Date
	CGMIS	SG9809750	50.8ppm HCL/N2	01/21/2015

Pressure: 1800 PSIA@20°C/70°F
Valve: CGA-330
Analysis Date: 12/30/2014
Expiration Date: 06/30/2015

Approved Signer: M Ben
(Mohamad Bentaher)

This analysis of the product described herein was prepared by Praxair Distribution using instruments whose calibration is certified using Praxair Reference Materials. Praxair Reference Materials are prepared either by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted

Analytical Principle:

VENDOR GUARANTEED SPECIFICATIONS

IMPORTANT
The information contained herein has been prepared at your request by personnel within Praxair Distribution. While we believe the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any particular purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall liability of Praxair Distribution arising out of the use of the information contained herein exceed the fee established for providing such information.

COAP1 – REV 05/2006

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Praxair Distribution, Inc.
One Steel Rd East
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Tel: 1-800-638-6360
Fax: 1-215-736-5237

05/11/2015

PDI WHSE PARIS ONTARIO
41 CONSOLIDATED DR
PARIS, ON N1S 3Z4
Attention: FRANK JONES

6/22/15
Outled Duty 3

Work Order No. **05508135**
Customer Reference No.

Product Lot/Batch No. **300024131501**
Product Part No. **NI HC85MC-AS**

CERTIFICATE OF ANALYSIS

Certified Standard

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Hydrogen chloride	**85 ppm**	**87.2 ppm**	**X**	**±5%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Vendor Guaranteed Specification~~~**

Cylinder Style:	**AS**	Filling Method:	**Gravimetric**
Cylinder Pressure @70F:	**2000 psig**	Date of Fill:	**05/05/2015**
Cylinder Volume:	**141.6 ft3**	Expiration Date:	**05/05/2016**
Valve Outlet Connection:	**CGA-330**		
Cylinder No(s):	**CC188770**		

Analyst: **Todd Bennett**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Gravimetrical Methods	V	Electrochemical	W	Chemiluminescent	X	Vendor Analysis

INLET DAILY SPAN 2
SEPT 11/2015
2:15pm

PRAXAIR.

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
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Fax: +1 (419) 729-2411

05/20/2015

PRAXAIR PKG PARIS P/H 80271
41 CONSOLIDATED DR
PARIS, ON N3L 3G2

Work Order No.	**31233283**	Product Lot/Batch No.	**0513GJ15**
Customer Reference No.		Product Part No.	**NI CO1700O5M-AS**

CERTIFICATE OF ANALYSIS
Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Carbon monoxide	**1700 ppm**	**1699 ppm**	**L**	**± 2%**
Oxygen	**18.0 %**	**18.0 %**	**O**	**± 2$**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Horiba~VA 3000 CO~~**
Servomex~575~~

Cylinder Style:	**AS**	Filling Method:	**Gravimetric**
Cylinder Pressure @70F:	**2000 psig**	Date of Fill:	**05/13/2015**
Cylinder Volume:	**144 ft3**	Expiration Date:	**05/19/2020**
Valve Outlet Connection:	**590**		
Cylinder No(s).	**CC239156**		

Comments: **Values not valid below 1510 psig. [CO] and [O2] are N.I.S.T traceable to SRM #2637a and 2659a respectively**

Approved Signer: **Rolonda Kaywood**

QA Reviewer: **Joshua Jones**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

PRAXAIR.

Outlet span)

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Fax: +1 (419) 729-2411

06/29/2015

PRAXAIR PKG PARIS P/H 80271
41 CONSOLIDATED DR
PARIS, ON N3L 3G2

Work Order No. **31702311** Product Lot/Batch No. **0625WA15**
Customer Reference No. Product Part No. **NI CO425NS4M-AS**

CERTIFICATE OF ANALYSIS

Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Nitric oxide	**425 ppm**	**434 ppm**	**U**	**± 2%**
Sulfur dioxide	**170 ppm**	**167 ppm**	**X**	**± 2%**
Carbon monoxide	**425 ppm**	**424 ppm**	**L**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Rosemount Analytical~951A~~**
AMETEK~921CE SO2~~
Horiba~VA 3000 CO~~

Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **660**

Filling Method: **Gravimetric**
Date of Fill: **06/25/2015**
Expiration Date: **06/26/2018**

Cylinder No(s). **CC248887**
Comments: **Values not valid below 150 psig. [NOx] = 438 ppm. [NO], [SO2], and [CO] are N.I.S.T traceable to SRM # 1686b, 1661a and 1681b respectively.**

QA Reviewer: **Kyle Osborne**

Approved Signer: **Rolonda Kaywood**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

PRAXAIR

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9/8/15

Inlet Dec. Spa #1

04/27/2015

PRAXAIR PKG PARIS P/H 80271
41 CONSOLIDATED DR
PARIS, ON N3L 3G2

Work Order No. **30984385**
Customer Reference No.

Product Lot/Batch No. **0423WC15**
Product Part No. **NI CO425S1M-AS**

CERTIFICATE OF ANALYSIS

Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Sulfur dioxide	**425 ppm**	**433 ppm**	**X**	**± 2%**
Carbon monoxide	**425 ppm**	**422 ppm**	**L**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **AMETEK~921CE SO2~~**
Horiba~VA 3000 CO~~

Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **660**
Cylinder No(s). **CC10010**

Filling Method: **Gravimetric**
Date of Fill: **04/23/2015**
Expiration Date: **04/27/2020**

Comments: **Values not valid below 150 psig. [SO2] and [CO] are N.I.S.T traceable to SRM #1661a and 1681b respectively.**

QA Reviewer: **Joshua Jones**

Approved Signer: **Rolonda Kaywood**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

INLET DAILY SPAN 2
SEPT 11/2015
2:15pm

PRAXAIR.

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Toledo, OH 43611
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Fax: +1 (419) 729-2411

05/20/2015

PRAXAIR PKG PARIS P/H 80271
41 CONSOLIDATED DR
PARIS, ON N3L 3G2

Work Order No.	**31233283**	Product Lot/Batch No.	**0513GJ15**
Customer Reference No.		Product Part No.	**NI CO1700O5M-AS**

CERTIFICATE OF ANALYSIS

Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Carbon monoxide	**1700 ppm**	**1699 ppm**	**L**	**± 2%**
Oxygen	**18.0 %**	**18.0 %**	**O**	**± 2$**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Horiba~VA 3000 CO~~**
Servomex~575~~

Cylinder Style:	**AS**	Filling Method:	**Gravimetric**
Cylinder Pressure @70F:	**2000 psig**	Date of Fill:	**05/13/2015**
Cylinder Volume:	**144 ft3**	Expiration Date:	**05/19/2020**
Valve Outlet Connection:	**590**		
Cylinder No(s).	**CC239156**		

Comments: **Values not valid below 1510 psig. [CO] and [O2] are N.I.S.T traceable to SRM #2637a and 2659a respectively**

Approved Signer: **Rolonda Kaywood**

QA Reviewer: **Joshua Jones**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

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9/8/15

Praxair Distribution, Inc.
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Fax: +1 (419) 729-2411

04/27/2015

PRAXAIR PKG PARIS P/H 80271
41 CONSOLIDATED DR
PARIS, ON N3L 3G2

Inlet Dil. Spa #1

Work Order No. **30984385**
Customer Reference No.

Product Lot/Batch No. **0423WC15**
Product Part No. **NI CO425S1M-AS**

CERTIFICATE OF ANALYSIS

Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Sulfur dioxide	**425 ppm**	**433 ppm**	**X**	**± 2%**
Carbon monoxide	**425 ppm**	**422 ppm**	**L**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **AMETEK~921CE SO2~~**
Horiba~VA 3000 CO~~

Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **660**
Cylinder No(s). **CC10010**

Filling Method: **Gravimetric**
Date of Fill: **04/23/2015**
Expiration Date: **04/27/2020**

Comments: **Values not valid below 150 psig. [SO2] and [CO] are N.I.S.T traceable to SRM #1661a and 1681b respectively.**

QA Reviewer: **Joshua Jones**

Approved Signer: **Rolonda Kaywood**

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Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

PRAXAIR

Outlet span)

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06/29/2015

PRAXAIR PKG PARIS P/H 80271
41 CONSOLIDATED DR
PARIS, ON N3L 3G2

Work Order No. **31702311**
Customer Reference No.

Product Lot/Batch No. **0625WA15**
Product Part No. **NI CO425NS4M-AS**

CERTIFICATE OF ANALYSIS

Certified Master

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Nitric oxide	**425 ppm**	**434 ppm**	**U**	**± 2%**
Sulfur dioxide	**170 ppm**	**167 ppm**	**X**	**± 2%**
Carbon monoxide	**425 ppm**	**424 ppm**	**L**	**± 2%**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Rosemount Analytical~951A~~**
AMETEK~921CE SO2~~
Horiba~VA 3000 CO~~

Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **144 ft3**
Valve Outlet Connection: **660**

Filling Method: **Gravimetric**
Date of Fill: **06/25/2015**
Expiration Date: **06/26/2018**

Cylinder No(s). **CC248887**
Comments: **Values not valid below 150 psig. [NOx] = 438 ppm. [NO], [SO2], and [CO] are N.I.S.T traceable to SRM # 1686b, 1661a and 1681b respectively.**

QA Reviewer: **Kyle Osborne**

Approved Signer: **Rolonda Kaywood**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	UV Spectrometry
Y	Vendor Analysis						

CAL CHECK

11600 Black Horse Run, Raleigh, North Carolina 27613 Phone (919) 847-1898 FAX (919) 847-8005

REPORT OF CERTIFICATION OF NEUTRAL DENSITY AUDIT FILTERS

Report prepared for: **Covanta York, LLC**

Date of Filter Certification: **July 27, 2015**
Date of Filter Expiration: July 26, 2016

Monitor Make/Model: **Teledyne-Monitor Labs 560**

Audit Device/Filter Slot Angle of Incidence: **10** Degrees
Path-Length Correction: **1.000** (Straight Stack)

Table 1-1: Individual Filter Certification Data

Serial Number	Opacity Value (%)	Transmittance (%)	Optical Density	Accuracy (%)
S10089	8.4	91.6	0.0379	± 0.5
S10098	17.1	82.9	0.0813	± 0.5
S10082	27.5	72.5	0.1395	± 0.5

Table 1-2: Individual Filter Certification Data @ 567 nM

Serial Number	Opacity Value (%)	Transmittance (%)	Optical Density
S10089	8.4	91.6	0.0381
S10098	17.6	82.4	0.0841
S10082	27.2	72.8	0.1379

Eileen Rosenquest

Eileen Rosenquest
Instrument Operator

****See second page for Instrument Information and Details of Certification****

APPENDIX 4

Cyclonic Flow Check Results
(4 pages)

Cyclonic/Reverse Flow Data Sheet

Method 2: SOP Number 93-T62-SP-002

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.	1
Test Date	SEPT. 22, 2015
Test Location	UNIT #4 INLET
Operator CB RW	Signature CHRIS BELORE

Project No.	21546

Pitot ID	15C
Pitot Factor	.845

Barometric ("Hg)	
Static ("H_2O)	-2.25
Time	17:25

Measuring Device	MII Number
Probe/Pitot	B03777
Manometer	B03784
Temperature Indicator	CGF 20032
Barometer	ENV. CANADA

O2 (%)	/
CO2 (%)	/
CO (ppm)	/

Point Number	Delta P			Stack Temp	Delta P at 90°	Angle from 90° to
	" H_2O			°F	"H_2O	obtain 0"H_2O
	Delta P	Max	Min			
Traverse 1						
FAR 1	.38	.39	.37	328	.09	9
2	.46	.47	.45	330	.07	9
3	.50	.51	.49	330	.08	9
4	.52	.52	.51	330	.06	9
5	.53	.53	.52	330	.08	10
6	.52	.53	.51	330	.07	9
7	.69	.70	.66	330	.07	8
8	.75	.75	.74	330	.02	5
9	.71	.72	.70	330	0	0
10	.68	.68	.67	330	0	0
11	.55	.56	.54	326	-.02	7
12	.47	.48	.46	322	-.03	5
Traverse 2						
FAR 1	.58	.59	.57	335	.05	7
2	.63	.64	.62	337	.02	7
3	.65	.65	.64	337	.04	8
4	.63	.64	.62	337	.03	8
5	.63	.64	.62	337	.03	8
6	.58	.59	.57	337	.05	2
7	.66	.66	.64	337	.07	6
8	.74	.75	.74	337	.04	8
9	.84	.85	.84	338	.04	5
10	.84	.85	.84	338	0	0
11	.74	.75	.73	333	-.04	8
12	.74	.75	.70	330	-.05	8

Average Angle (°)	6.6

Notes: Flow cyclonic if average angle > 15°

Cyclonic/Reverse Flow Data Sheet

Method 2: SOP Number 93-T62-SP-002

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.	1
Test Date	SEPT. 22 / 2015
Test Location	UNIT 1 OUTLET
Operator DM / CB	Signature C. BELOTTE

Project No.	21546
Pitot ID	15C
Pitot Factor	0.845
Barometric ("Hg)	
Static ("H_2O)	-11.1
Time	09:50 - 10:35

Measuring Device	MII Number
Probe/Pitot	B03777
Manometer	B03784
Temperature Indicator	COE 20032
Barometer	ENV. CANADA

O2 (%)	/
CO2 (%)	/
CO (ppm)	/

09:50 - 10:15

Point Number	Delta P			Stack Temp	Delta P at 90°	Angle from 90° to
	" H_2O			°F	"H_2O	obtain 0"H_2O
	Delta P	Max	Min			
Traverse 1						
1	.67	.68	.66	274	.11	6
2	.76	.77	.76	275	.07	9
3	.76	.77	.76	276	.06	8
4	.72	.73	.71	276	.06	8
5	.70	.72	.70	276	.08	10
6	.64	.67	.64	276	.08	12
7	.56	.57	.55	276	.10	14
8	.60	.61	.59	276	.07	14
9	.63	.64	.61	275	.08	12
10	.58	.59	.58	273	.03	10
11	.57	.58	.57	272	-0.02	0
12	~~.45~~ .51	.52	.50	272	~~.00~~ 0	~~20~~ 0	7.7
Traverse 2						
1	.66	.66	.65	277	.13	11
2	.73	.74	.73	277	.10	14
3	.75	.76	.74	277	.06	9
4	.71	.72	.70	277	.07	8
5	.67	.67	.66	277	.10	8
6	.61	.62	.60	277	.07	8
7	.61	.62	.60	277	.05	7
8	.62	.63	.61	277	.10	7
9	.66	.66	.65	277	.09	8
10	.61	.62	.60	274	.04	7
11	.61	.62	.60	271	.08	12
12	.55	.56	.54	270	.01	8

10:18 - 10:35

Average Angle (°)	~~7.6~~ 8.8

Notes: Flow cyclonic if average angle > 15°

Cyclonic/Reverse Flow Data Sheet

Method 2: SOP Number 93-T62-SP-002

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.	1
Test Date	SEPT. 22, 2015
Test Location	UNIT 2 INLET
Operator	Signature CR RW

Project No.	21546

Pitot ID	15 C
Pitot Factor	.845

Barometric ("Hg)	
Static ("H_2O)	3.10
Time	12:00 - 12:20

Measuring Device	MII Number
Probe/Pitot	B03777
Manometer	B03784
Temperature Indicator	COE 20032
Barometer	ENV. CANADA

O2 (%)	
CO2 (%)	
CO (ppm)	

Point Number	Delta P " H_2O			Stack Temp °F	Delta P at 90° "H_2O	Angle from 90° to obtain 0"H_2O
	Delta P	Max	Min			
Traverse 1						
1	.61	.62	.60	330	.12	10
2	.63	.64	.63	330	.10	8
3	.66	.67	.65	330	.08	9
4	.68	.69	.67	330	.10	7
5	.63	.64	.62	330	.08	8
6	.62	.64	.61	330	.08	8
7	.78	.79	.77	330	.12	9
8	.87	.87	.86	330	.10	9
9	.90	.91	.90	330	.07	10
10	.90	.91	.89	330	0	0
11	.78	.79	.77	330	-.03	7
12	.76	.77	.75	330	-.05	6
Traverse 2						
1	.66	.67	.65	332	.07	9
2	.65	.65	.64	333	.06	9
3	.65	.66	.64	333	.08	10
4	.66	.67	.65	333	.09	10
5	.67	.67	.66	333	.10	11
6	.65	.66	.65	333	.14	12
7	.84	.86	.83	332	.10	11
8	.91	.92	.90	332	.10	11
9	.97	.97	.95	332	.07	11
10	.91	.91	.90	331	.05	17
11	.84	.85	.83	323	0	0
12	.68	.69	.67	320	0	0

FAR

Average Angle (°)	8.4

Notes: Flow cyclonic if average angle >15°

Cyclonic/Reverse Flow Data Sheet

Method 2: SOP Number 93-T62-SP-002

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.	1
Test Date	SEPT. 22 2015
Test Location	UNIT No. 2 OUTLET
Operator	Signature CB DM

Project No.	21546
Pitot ID	15C
Pitot Factor	0.845
Barometric ("Hg)	
Static ("H_2O)	-12.0
Time	10:41 - 11:10

Measuring Device	MII Number
Probe/Pitot	B03777
Manometer	B03784
Temperature Indicator	CoE 20032
Barometer	ENV. CANADA

O2 (%)	
CO2 (%)	/
CO (ppm)	

10:41 - 10:56

	Point Number	Delta P " H_2O			Stack Temp °F	Delta P at 90° "H_2O	Angle from 90° to obtain 0"H_2O
		Delta P	Max	Min			
	Traverse 1						
FAR	1	.71	.72	.71	273	.08	6
	2	.83	.85	.83	273	.08	6
	3	.88	.89	.87	273	.07	8
	4	.82	.83	.81	273	.10	9
	5	.72	.73	.71	273	.11	11
	6	.68	.68	.67	273	.11	12
	7	.73	.74	.73	273	.11	12
	8	.74	.75	.74	273	.11	10
	9	.74	.75	.74	273	.07	5
	10	.75	.76	.74	273	.02	7
	11	.71	.71	.70	271	.06	7
NEAR	12	.67	.68	.66	268	.12	14
	Traverse 2						
FAR	1	.91	.92	.90	272	.19	8
	2	.93	.93	.92	273	.15	9
	3	.91	.92	.90	274	.11	8
	4	.85	.86	.84	274	.11	8
	5	.81	.82	.80	274	.11	8
	6	.75	.76	.74	274	.09	8
	7	.73	.73	.72	274	.11	6
	8	.79	.80	.78	274	.11	5
	9	.83	.84	.82	273	.10	7
	10	.83	.84	.82	271	.09	8
	11	.85	.86	.84	269	.09	7
NEAR	12	.79	.80	.78	267	.03	5

8.9

10:58 - 11:10

Average Angle (°)	8.1

Notes: Flow cyclonic if average angle > 15°

APPENDIX 5

Stratification Test Results
(8 pages)

Covanta Fixed Probe Compared to ORTECH Stratificaton Data
Boiler No. 1 BH Outlet
September 22, 2015 15:49 - 16:35

Pont #	O2			CO2			CO			SO2			NOX		
	COVANTA	ORTECH	% Difference	COVANTA	ORTECH	% Difference	COVANTA	ORTECH	% Difference	COVANTA	ORTECH	% Difference	COVANTA	ORTECH	% Difference
1	7.67	7.58	1.2	11.72	11.40	2.7	7.6	8.5	-11.2	0.0	2.9	-377.8	67.5	78.3	-16.0
2	7.67	7.84	-2.2	11.54	11.21	2.9	9.0	9.1	-1.1	2.5	4.3	-70.8	85.9	75.8	11.7
3	8.18	8.10	1.0	11.26	10.97	2.6	9.6	10.2	-6.3	2.7	4.9	-81.9	56.1	73.5	-31.0
4	7.77	7.65	1.5	11.76	11.40	3.1	19.0	19.3	-1.6	4.4	7.0	-58.2	64.3	65.0	-1.1
5	7.17	7.21	-0.6	11.92	11.75	1.4	16.0	14.0	12.3	5.7	8.4	-47.5	73.6	81.7	-11.0
6	7.47	7.75	-3.7	11.80	11.28	4.4	10.5	12.5	-19.4	0.0	4.7	-200.4	79.4	77.0	3.0
1	7.57	7.62	-0.6	11.68	11.47	1.8	14.4	15.5	-7.6	0.0	3.0	-368.2	63.9	68.8	-7.7
1	8.18	7.97	2.5	11.08	11.03	0.5	10.8	12.8	-18.4	0.0	1.9	-629.2	53.8	61.3	-14.0
2	7.67	7.40	3.5	11.65	11.52	1.1	13.6	15.4	-13.5	0.0	1.6	-764.2	89.5	86.9	2.9
3	7.67	7.60	0.9	11.59	11.33	2.2	12.9	13.8	-7.2	0.0	1.4	-892.9	73.3	81.1	-10.6
4	7.57	7.50	0.9	11.74	11.41	2.8	11.1	11.3	-2.1	0.0	1.5	-852.4	89.8	93.2	-3.7
5	7.57	7.64	-0.9	11.65	11.29	3.1	10.4	11.1	-6.7	0.0	1.1	-1170.4	93.5	94.0	-0.6
6	7.47	7.58	-1.5	11.66	11.32	2.9	8.6	10.2	-18.4	0.0	1.2	-1106.9	95.3	96.9	-1.7
1	7.47	7.38	1.2	11.79	11.52	2.3	11.3	12.8	-13.2	0.0	0.9	-1405.4	94.9	90.8	4.3

STRATIFICATION DATA SHEET

ORTECH CEMS - TRAVERSING SYSTEM

Client	Covanta
Project No.	21546
Location	Courtice, ON
Date	September 22, 2015
Sample Location	Boiler No. 1 BH Outlet
Gas Stream	Oxygen

TEST DATA

Point	Distance from far Wall (in)	Gas Concentration	% Difference From Mean**
1	2.35	7.58	-0.7
2	7.91	7.84	2.8
3	15.98	8.10	6.2
4	38.02	7.65	0.3
5	46.09	7.21	-5.5
6	51.65	7.75	1.6
1	2.35	7.62	-0.2
1	2.35	7.97	4.5
2	7.91	7.40	-3.0
3	15.98	7.60	-0.4
4	38.02	7.50	-1.7
5	46.09	7.64	0.1
6	51.65	7.58	-0.7
1	2.35	7.38	-3.3
Average		**7.63**	

$$**Difference = \frac{(\text{Gas Concentration at Point } i - \text{Average Gas Concentration})}{(\text{Average Gas Concentration})} \times 100$$

STRATIFICATION DATA SHEET

ORTECH CEMS - TRAVERSING SYSTEM

Client	Covanta
Project No.	21546
Location	Courtice, ON
Date	September 22, 2015
Sample Location	Boiler No. 1 BH Outlet
Gas Stream	Nitric Oxide

TEST DATA

Point	Distance from Wall (in)	Gas Concentration	% Difference From Mean**
1	2.35	78.3	-2.5
2	7.91	75.8	-5.6
3	15.98	73.5	-8.5
4	38.02	65.0	-19.0
5	46.09	81.7	1.7
6	51.65	77.0	-4.1
1	2.35	68.8	-14.3
1	2.35	61.3	-23.6
2	7.91	86.9	8.2
3	15.98	81.1	0.9
4	38.02	93.2	16.0
5	46.09	94.0	17.1
6	51.65	96.9	20.7
1	2.35	90.8	13.0
Average		**80.3**	

$$**Difference = \frac{\text{(Gas Concentration at Point i - Average Gas Concentration)}}{\text{(Average Gas Concentration)}} x\ 100$$

Covanta CEMS Data During Boiler No. 1 BH Outlet Stratification Testing

Date/Time	U1 1-min Calcs - O2s-dry	Data Status	U1 1-min Calcs - CO2s	Data Status	U1 1-min Calcs - COs-lh	Data Status	U1 1-min Calcs - SO2s	Data Status	U1 1-min Calcs - NOxs
22/09/2015 15:49	7.37		11.70		8.8		0.0		88.6
22/09/2015 15:50	7.87		11.55		7.2		0.1		78.6
22/09/2015 15:51	7.47		11.75		9.8		0.0		62.0
22/09/2015 15:52	7.67		11.72		7.6		0.0		75.1
22/09/2015 15:53	7.67		11.72		7.6		0.0		67.5
22/09/2015 15:54	7.67		11.75		7.3		0.2		84.5
22/09/2015 15:55	8.18		11.37		9.3		1.0		65.3
22/09/2015 15:56	7.67		11.54		9.0		2.5		85.9
22/09/2015 15:57	7.67		11.55		9.7		2.5		83.3
22/09/2015 15:58	8.18		11.26		9.6		2.7		56.1
22/09/2015 15:59	8.07		11.30		12.1		3.0		62.6
22/09/2015 16:00	7.87		11.43		16.6		3.9		59.5
22/09/2015 16:01	7.77		11.76		19.0		4.4		64.3
22/09/2015 16:02	8.07		11.42		13.6		6.6		66.4
22/09/2015 16:03	7.17		11.92		16.0		5.7		73.6
22/09/2015 16:04	6.66		12.43		10.9		4.3		93.3
22/09/2015 16:05	7.27		11.98		10.9		0.5		81.7
22/09/2015 16:06	7.47		11.80		10.5		0.0		79.4
22/09/2015 16:07	7.47		11.74		17.6		0.0		63.2
22/09/2015 16:08	7.57		11.69		14.3		0.0		63.2
22/09/2015 16:09	7.77		11.59		13.8		0.0		67.5
22/09/2015 16:10	7.57		11.68		14.4		0.0		63.9
22/09/2015 16:11	7.47		11.86		16.0		0.0		68.1
22/09/2015 16:12	7.06		12.09		14.7		0.0		72.8
22/09/2015 16:13	7.27		11.95		12.0		0.0		71.3
22/09/2015 16:14	8.28		11.17		9.6		0.0		56.6
22/09/2015 16:15	8.38		11.01		12.7		0.0		57.4
22/09/2015 16:16	7.67		11.41		12.3		0.0		60.3
22/09/2015 16:17	8.58		10.84		11.4		0.0		50.3
22/09/2015 16:18	8.18		11.08		10.8		0.0		53.8
22/09/2015 16:19	8.18		11.08		10.8		0.0		53.8
22/09/2015 16:20	7.17		11.86		16.5		0.0		76.7
22/09/2015 16:21	7.67		11.65		13.6		0.0		89.5
22/09/2015 16:22	7.97		11.39		10.1		0.0		73.4
22/09/2015 16:23	7.47		11.60		12.2		0.0		79.0
22/09/2015 16:24	7.67		11.59		12.9		0.0		73.3
22/09/2015 16:25	7.17		11.96		13.4		0.0		84.1
22/09/2015 16:26	7.57		11.74		11.1		0.0		89.8
22/09/2015 16:27	7.57		11.54		12.3		0.0		87.2
22/09/2015 16:28	7.57		11.65		10.4		0.0		93.5
22/09/2015 16:29	7.77		11.49		10.4		0.0		92.0
22/09/2015 16:30	7.57		11.47		8.8		0.0		78.8
22/09/2015 16:31	7.47		11.66		8.6		0.0		95.3
22/09/2015 16:32	8.18		11.31		10.2		0.0		76.3
22/09/2015 16:33	7.37		12.06		10.0		0.0		109.0
22/09/2015 16:34	7.67		11.55		12.0		0.0		70.1
22/09/2015 16:35	7.47		11.79		11.3		0.0		94.9
Max	8.58		12.43		19.0		6.6		109.0
Min	6.66		10.84		7.2		0.0		50.3
Average	7.67		11.61		11.7		0.8		74.3

Covanta Fixed Probe Compared to ORTECH Stratificaton Data
Boiler No. 2 BH Outlet
September 22, 2015 12:49 - 13:34

	O2			CO2			CO			SO2			NOX		
Pont #	COVANTA	ORTECH	% Difference	COVANTA	ORTECH	% Difference	COVANTA	ORTECH	% Difference	COVANTA	ORTECH	% Difference	COVANTA	ORTECH	% Difference
1	8.58	8.61	-0.3	10.93	10.73	1.8	13	10.7	17.5	2.1	1.1	46.1	69.7	66.6	4.4
2	8.98	9.14	-1.8	10.46	10.27	1.8	12	13.9	-15.8	2.8	1.9	31.1	59.2	56.4	4.7
3	9.19	9.33	-1.5	10.46	10.08	3.6	13	18.2	-40.0	7.7	3.6	53.4	65.3	64.6	1.1
4	8.88	8.87	0.1	10.53	10.44	0.9	13	14.0	-7.8	7.8	5.9	24.5	69.9	69.7	0.2
5	8.28	8.49	-2.5	10.92	10.71	1.9	9	11.2	-24.9	0.4	4.7	-1078.8	84.5	82.3	2.6
6	9.19	9.16	0.3	10.34	10.12	2.1	13	14.3	-9.8	0	3.8	-272.3	65.6	69.0	-5.2
1	8.68	8.41	3.1	10.72	10.4	3.0	11	11.8	-7.2	0	2.7	-416.6	67.7	71.8	-6.1
1	8.48	8.7	-2.6	10.73	10.44	2.7	7	9.6	-37.1	0	1.6	-791.7	77.7	73.9	4.8
2	8.38	8.68	-3.6	10.63	10.48	1.4	9	11.4	-26.8	0	1.3	-960.6	66.5	64.3	3.4
3	8.58	8.8	-2.6	10.63	10.39	2.3	10	11.7	-16.6	0	1.3	-1020.0	68.0	62.3	8.4
4	8.98	9.09	-1.2	10.31	10.14	1.6	13	14.3	-10.1	0	1.1	-1182.1	72.0	68.5	4.8
5	9.19	9.34	-1.6	10.09	9.93	1.6	11	13.6	-23.5	0	1.0	-1331.5	65.4	67.5	-3.1
6	8.78	8.87	-1.0	10.53	10.37	1.5	8	10.1	-26.5	0	1.0	-1361.4	78.1	81.2	-4.0
1	8.98	9.13	-1.7	10.24	10.14	1.0	14	16.2	-15.4	0	0.7	-1874.6	69.6	69.6	0.0

STRATIFICATION DATA SHEET

ORTECH CEMS - TRAVERSING SYSTEM

Client	Covanta
Project No.	21546
Location	Courtice
Date	September 22, 2015
Sample Location	Boiler No. 2 BH Outlet
Gas Stream	Oxygen

TEST DATA

Point	Distance from far Wall (in)	Gas Concentration	% Difference From Mean**
1	2.35	8.61	-3.3
2	7.91	9.14	2.7
3	15.98	9.33	4.8
4	38.02	8.87	-0.4
5	46.09	8.49	-4.6
6	51.65	9.16	2.9
1	2.35	8.41	-5.5
1	2.35	8.70	-2.3
2	7.91	8.68	-2.5
3	15.98	8.80	-1.1
4	38.02	9.09	2.1
5	46.09	9.34	4.9
6	51.65	8.87	-0.4
1	2.35	9.13	2.6
Average		**8.90**	

$$**Difference = \frac{(\text{Gas Concentration at Point } i \text{ - Average Gas Concentration})}{(\text{Average Gas Concentration})} x\ 100$$

STRATIFICATION DATA SHEET

ORTECH CEMS - TRAVERSING SYSTEM

Client	Covanta
Project No.	21546
Location	Courtice
Date	September 22, 2015
Sample Location	Boiler No. 2 BH Outlet
Gas Stream	Nitric Oxide

TEST DATA

Point	Distance from far Wall (in)	Gas Concentration	% Difference From Mean**
1	2.35	66.6	-3.6
2	7.91	56.4	-18.4
3	15.98	64.6	-6.6
4	38.02	69.7	0.9
5	46.09	82.3	19.1
6	51.65	69.0	-0.2
1	2.35	71.8	3.9
1	2.35	73.9	7.0
2	7.91	64.3	-7.1
3	15.98	62.3	-9.9
4	38.02	68.5	-0.9
5	46.09	67.5	-2.4
6	51.65	81.2	17.5
1	2.35	69.6	0.7
Average		**69.1**	

$$**Difference = \frac{(Gas\ Concentration\ at\ Point\ i\ -\ Average\ Gas\ Concentration)}{(Average\ Gas\ Concentration)} x\ 100$$

Covanta CEMS Data during Boiler No. 2 BH Outlet Stratification Testing

Date/Time	U2 1-min Calcs - O2s-dry	Data Status	U2 1-min Calcs - CO2s	Data Status	U2 1-min Calcs - COs-lh	Data Status	U2 1-min Calcs - SO2s	Data Status	U2 1-min Calcs - NOxs
22/09/2015 12:49	9.39		9.97		16		1.3		41.9
22/09/2015 12:50	9.19		10.13		15		0.2		47.6
22/09/2015 12:51	8.18		10.91		12		0		80.5
22/09/2015 12:52	8.98		10.54		11		2.6		75.7
22/09/2015 12:53	8.58		10.93		13		2.1		69.7
22/09/2015 12:54	8.68		10.94		9		2.4		75.5
22/09/2015 12:55	8.48		10.83		9		2.5		58.8
22/09/2015 12:56	8.98		10.46		12		2.8		59.2
22/09/2015 12:57	8.78		10.74		12		4.9		72.1
22/09/2015 12:58	9.19		10.46		13		7.7		65.3
22/09/2015 12:59	8.48		10.31		18		7.1		66.9
22/09/2015 13:00	8.78		10.56		10		8.1		77.8
22/09/2015 13:01	8.88		10.53		13		7.8		69.9
22/09/2015 13:02	8.07		11.02		9		3.6		78.0
22/09/2015 13:03	8.48		10.92		6		2.5		89.0
22/09/2015 13:04	8.28		10.92		9		0.4		84.5
22/09/2015 13:05	8.38		10.94		8		0.3		83.2
22/09/2015 13:06	9.19		10.34		13		0		65.6
22/09/2015 13:07	9.19		10.32		15		0		60.4
22/09/2015 13:08	8.98		10.53		11		0		71.0
22/09/2015 13:09	8.88		10.6		11		0		68.0
22/09/2015 13:10	8.88		10.63		9		0		70.4
22/09/2015 13:11	8.68		10.72		11		0		65.7
22/09/2015 13:14	8.07		11.07		8		0		89.6
22/09/2015 13:15	7.77		11.36		7		0		104.7
22/09/2015 13:16	7.97		11.27		6		0		94.0
22/09/2015 13:17	8.38		10.87		7		0		79.0
22/09/2015 13:18	8.48		10.73		7		0		77.7
22/09/2015 13:19	8.68		10.52		9		0		70.4
22/09/2015 13:20	8.38		10.63		9		0		66.5
22/09/2015 13:21	8.88		10.47		9		0		61.5
22/09/2015 13:22	8.58		10.63		10		0		68.0
22/09/2015 13:23	9.19		10.19		14		0		49.6
22/09/2015 13:24	8.88		10.54		11		0		76.7
22/09/2015 13:25	8.98		10.31		13		0		72.6
22/09/2015 13:26	9.19		10.32		9		0		85.5
22/09/2015 13:27	9.19		10.09		11		0		65.4
22/09/2015 13:28	8.68		10.42		10		0		74.0
22/09/2015 13:29	8.48		10.87		9		0		84.3
22/09/2015 13:30	8.78		10.53		8		0		78.1
22/09/2015 13:31	9.19		10.22		9		0		81.2
22/09/2015 13:32	9.19		10.25		10		0		70.9
22/09/2015 13:33	9.19		10.2		13		0		66.3
22/09/2015 13:34	8.98		10.24		14		0		72.2
Max	9.39		11.36		18		8.1		104.7
Min	7.77		9.97		6		0		41.9
Average	8.74		10.59		10.6		1.3		72.4

APPENDIX 6

ORTECH 1-Minute Combustion Gas Data
for the Boiler No. 1 Scrubber Inlet
(15 pages)

Covanta - Durham York Energy Centre

Relative Accuracy Test Audit at the Boiler No. 1 Scrubber Inlet

Test 1 - September 24, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
10:31	7.18	11.87	173.6	7.3	3.8
10:32	7.70	11.41	155.4	10.5	3.5
10:33	7.97	11.22	147.5	15.1	3.6
10:34	7.55	11.45	151.3	12.0	4.2
10:35	7.66	11.43	139.0	8.9	3.5
10:36	7.73	11.30	132.4	6.6	3.1
10:37	7.90	11.19	137.6	6.9	3.1
10:38	7.90	11.20	138.8	6.8	3.0
10:39	7.67	11.33	137.9	8.8	3.2
10:40	7.28	11.68	145.8	9.2	3.1
10:41	7.39	11.72	134.4	7.0	3.4
10:42	7.81	11.21	109.7	5.9	2.9
10:43	7.92	11.17	113.2	5.9	3.0
10:44	7.81	11.19	112.9	8.7	2.6
10:45	7.46	11.48	116.8	10.2	2.5
10:46	7.28	11.72	125.6	9.2	2.4
10:47	6.82	12.05	130.3	9.1	2.2
10:48	7.25	11.79	121.0	9.4	2.5
10:49	7.12	11.75	117.4	12.3	2.7
10:50	7.17	11.75	114.1	9.7	2.6
10:51	7.12	11.80	113.2	9.6	2.4
10:52	7.26	11.68	111.2	8.9	2.5
10:53	7.30	11.68	110.4	9.2	2.1
10:54	7.37	11.60	110.7	11.8	2.1
10:55	7.48	11.47	109.5	10.6	2.4
10:56	7.69	11.33	107.5	12.0	2.2
10:57	7.74	11.28	104.4	10.7	2.1
10:58	7.71	11.30	100.1	12.0	2.4
10:59	7.57	11.47	103.6	9.3	2.8
11:00	7.63	11.40	99.3	7.1	2.9
11:01	7.33	11.64	101.9	6.8	2.5

Min	6.82	11.17	99.3	5.9	2.1
Max	7.97	12.05	173.6	15.1	4.2
Avg	7.51	11.50	123.4	9.3	2.8

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 1 Scrubber Inlet
Test 2 -September 24, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
12:08	7.61	11.34	72.7	40.0	2.4
12:09	7.89	11.12	69.2	26.9	2.4
12:10	7.21	11.61	77.0	53.2	1.6
12:11	7.98	11.24	75.1	19.1	2.1
12:12	8.58	10.54	68.2	16.2	2.1
12:13	7.32	11.52	72.1	15.1	2.3
12:14	7.94	11.25	72.0	13.5	2.3
12:15	8.52	10.60	72.5	22.0	1.8
12:16	7.97	11.05	75.5	28.0	2.0
12:17	8.35	10.84	75.7	24.8	1.8
12:18	8.82	10.38	74.1	22.2	1.6
12:19	8.09	10.89	77.9	21.4	1.6
12:20	8.57	10.59	72.5	16.9	1.5
12:21	8.38	10.68	71.0	14.7	1.6
12:22	8.60	10.56	67.7	27.8	1.6
12:23	8.70	10.45	71.7	19.4	1.2
12:24	7.98	10.99	73.6	21.7	1.2
12:25	7.83	11.21	77.4	28.6	1.4
12:26	8.58	10.54	75.0	42.1	1.1
12:27	8.91	10.23	76.9	28.2	0.8
12:28	9.00	10.15	81.0	19.2	0.8
12:29	8.19	10.85	97.0	14.1	1.1
12:30	8.20	10.95	103.3	13.3	1.3
12:31	8.62	10.53	106.9	32.2	1.5
12:32	8.42	10.68	112.3	26.6	1.2
12:33	8.61	10.52	115.5	21.8	0.9
12:34	7.90	11.14	131.3	13.1	0.8
12:35	8.21	10.94	139.5	10.5	1.2
12:36	8.36	10.82	153.2	21.2	1.5
12:37	8.47	10.77	163.6	21.7	1.3
12:38	8.12	11.04	172.7	22.0	1.3
Min	7.21	10.15	67.7	10.5	0.8
Max	9.00	11.61	172.7	53.2	2.4
Avg	8.26	10.84	91.7	23.1	1.5

Covanta - Durham York Energy Centre

Relative Accuracy Test Audit at the Boiler No. 1 Scrubber Inlet

Test 3 - September 24, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
12:44	7.31	11.75	187.2	8.9	1.2
12:45	7.33	11.83	195.2	7.7	1.6
12:46	7.43	11.61	187.1	8.9	2.2
12:47	7.29	11.85	190.1	11.3	2.3
12:48	7.77	11.34	178.3	16.5	2.0
12:49	7.78	11.33	175.5	14.6	2.0
12:50	7.86	11.27	173.7	13.0	1.7
12:51	8.16	10.94	172.2	12.9	1.5
12:52	8.23	10.87	165.4	19.3	1.5
12:53	7.86	11.17	165.6	12.5	1.9
12:54	7.54	11.42	155.7	13.3	2.1
12:55	7.23	11.72	149.6	20.7	2.1
12:56	7.67	11.32	142.8	12.3	1.8
12:57	6.89	11.90	140.3	6.9	1.8
12:58	7.04	11.97	125.0	3.5	1.8
12:59	7.60	11.44	111.8	11.5	1.8
13:00	7.79	11.22	109.8	19.4	2.3
13:01	8.29	10.81	103.8	9.7	2.3
13:02	7.99	11.03	107.6	10.9	2.0
13:03	7.70	11.37	108.2	10.7	1.7
13:04	7.58	11.38	102.2	24.5	2.3
13:05	6.95	12.10	98.9	14.9	2.5
13:06	7.92	11.23	84.5	16.2	1.7
13:07	8.04	11.02	83.6	19.6	1.6
13:08	8.12	10.96	80.4	38.1	2.3
13:09	7.98	11.11	76.5	43.4	1.9
13:10	7.82	11.21	74.9	16.6	1.6
13:11	7.68	11.40	76.4	8.1	1.5
13:12	7.18	11.84	77.4	10.0	1.5
13:13	7.52	11.62	71.7	5.6	1.4
13:14	7.82	11.24	63.9	9.8	1.4
Min	6.89	10.81	63.9	3.5	1.2
Max	8.29	12.10	195.2	43.4	2.5
Avg	7.66	11.40	126.9	14.6	1.8

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 1 Scrubber Inlet
Test 4 - September 24, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
13:45	7.22	11.78	50.7	15.1	0.8
13:46	7.38	11.66	50.1	14.9	0.7
13:47	7.60	11.41	50.5	15.9	0.6
13:48	7.94	11.27	52.1	15.2	0.8
13:49	7.65	11.27	50.5	15.9	1.0
13:50	7.27	11.66	54.5	13.0	0.8
13:51	7.45	11.60	48.7	10.8	0.8
13:52	7.49	11.50	44.0	11.4	0.9
13:53	7.47	11.46	40.3	13.0	0.6
13:54	6.58	12.20	44.3	20.7	1.0
13:55	6.76	12.08	46.9	15.5	1.3
13:56	7.06	11.79	44.5	9.5	1.2
13:57	7.26	11.55	41.0	10.1	0.9
13:58	6.83	11.97	42.1	11.6	0.9
13:59	6.33	12.37	43.6	13.0	1.0
14:00	6.01	12.66	48.0	13.3	1.0
14:01	6.61	12.15	46.8	12.1	0.9
14:02	6.93	11.85	42.2	10.1	1.0
14:03	7.07	11.73	39.5	9.8	1.0
14:04	7.53	11.34	36.9	9.5	1.0
14:05	7.50	11.35	36.6	10.2	1.2
14:06	7.62	11.20	34.9	11.1	0.8
14:07	7.85	11.06	35.5	16.1	1.1
14:08	7.68	11.19	36.3	11.4	1.1
14:09	7.49	11.39	37.6	10.6	1.3
14:10	7.36	11.51	38.1	10.8	3.1
14:11	9.01	10.14	36.7	51.3	2.0
14:12	8.73	10.03	30.2	141.0	0.5
14:13	7.10	11.75	35.3	32.1	1.1
14:14	8.93	10.17	36.4	11.2	1.2
14:15	8.89	10.18	33.3	8.3	1.4

Min	6.01	10.03	30.2	8.3	0.5
Max	9.01	12.66	54.5	141.0	3.1
Avg	7.44	11.46	42.2	18.5	1.1

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 1 Scrubber Inlet
Test 5 - September 24, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
14:30	8.00	11.04	35.4	9.4	0.9
14:31	7.87	11.13	35.8	6.6	0.8
14:32	7.29	11.64	38.4	17.0	0.8
14:33	7.95	11.08	41.7	9.1	0.7
14:34	9.10	10.12	41.9	21.6	0.6
14:35	8.87	10.30	41.6	32.0	0.7
14:36	8.95	10.27	43.6	19.4	0.5
14:37	9.39	9.88	42.6	14.6	0.5
14:38	9.43	9.86	40.4	19.8	0.7
14:39	8.68	10.51	39.5	34.7	0.8
14:40	8.83	10.43	40.2	16.6	0.6
14:41	9.16	10.13	38.8	10.6	0.7
14:42	9.35	9.98	36.8	10.9	0.7
14:43	9.08	10.20	36.3	14.0	0.7
14:44	9.14	10.15	34.8	10.3	0.5
14:45	9.39	9.90	33.5	12.1	0.4
14:46	9.29	9.98	34.2	15.3	0.5
14:47	9.19	10.07	36.4	20.6	0.4
14:48	9.31	9.97	40.3	14.8	0.5
14:49	9.51	9.82	44.1	15.1	0.7
14:50	9.43	9.91	47.3	14.1	0.9
14:51	9.31	10.00	48.4	8.3	0.3
14:52	9.05	10.25	53.8	7.2	0.4
14:53	8.31	10.95	83.4	7.4	0.5
14:54	7.74	11.53	103.1	5.7	0.5
14:55	7.23	11.95	117.9	5.1	0.5
14:56	7.30	11.94	126.6	7.6	0.6
14:57	7.68	11.63	125.6	10.2	0.5
14:58	7.96	11.31	127.4	13.1	0.4
14:59	7.64	11.67	142.1	12.9	0.3
15:00	8.14	11.15	131.7	9.7	0.4
Min	7.23	9.82	33.5	5.1	0.3
Max	9.51	11.95	142.1	34.7	0.9
Avg	8.63	10.60	60.8	13.7	0.6

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 1 Scrubber Inlet
Test 6 - September 24, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
15:06	8.26	11.01	178.3	19.8	0.6
15:07	7.55	11.67	180.4	10.9	0.8
15:08	7.54	11.64	179.8	9.7	0.7
15:09	8.05	11.28	188.8	15.6	0.6
15:10	8.13	11.14	184.4	19.0	1.0
15:11	8.49	10.94	192.1	31.3	1.0
15:12	9.03	10.42	204.4	23.1	0.7
15:13	8.90	10.48	214.2	16.4	0.5
15:14	8.32	11.07	210.8	8.8	0.7
15:15	7.82	11.42	199.3	9.4	0.8
15:16	8.23	11.14	188.0	11.1	1.0
15:17	8.64	10.72	180.7	13.6	0.8
15:18	8.71	10.67	178.8	14.8	0.7
15:19	8.50	10.79	164.3	8.9	0.7
15:20	8.54	10.81	150.3	11.4	0.8
15:21	8.66	10.70	129.6	9.3	0.8
15:22	8.37	10.82	122.1	7.2	0.7
15:23	7.34	11.68	117.2	15.0	1.1
15:24	7.20	11.89	121.6	11.6	1.2
15:25	8.06	11.19	115.3	11.2	0.6
15:26	8.72	10.52	103.5	12.8	0.3
15:27	8.47	10.73	101.1	14.8	0.3
15:28	8.69	10.58	99.1	16.6	0.6
15:29	8.89	10.31	96.5	16.2	0.6
15:30	8.37	10.84	96.4	10.7	0.5
15:31	8.97	10.35	93.0	14.6	0.5
15:32	9.45	9.83	84.1	13.4	0.4
15:33	8.35	10.61	87.3	16.6	0.5
15:34	7.14	11.85	117.8	6.6	0.6
15:35	8.29	10.94	112.2	6.2	0.4
15:36	9.30	9.96	90.8	16.3	0.2

Min	7.14	9.83	84.1	6.2	0.2
Max	9.45	11.89	214.2	31.3	1.2
Avg	8.35	10.90	144.6	13.6	0.7

Covanta - Durham York Energy Centre

Relative Accuracy Test Audit at the Boiler No. 1 Scrubber Inlet

Test 7 - September 24, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
16:07	7.74	11.23	62.0	58.6	1.6
16:08	7.61	11.32	67.1	38.6	1.7
16:09	7.83	11.24	68.2	23.3	1.7
16:10	7.64	11.38	76.3	35.7	1.8
16:11	7.75	11.36	79.5	35.7	1.6
16:12	7.78	11.14	74.9	25.3	1.4
16:13	7.65	11.40	73.4	23.5	1.5
16:14	6.95	11.90	74.9	20.6	1.6
16:15	7.49	11.59	72.3	19.4	1.7
16:16	7.72	11.28	79.4	22.1	1.7
16:17	7.44	11.62	90.5	28.8	1.7
16:18	8.30	10.88	81.3	18.4	1.8
16:19	9.27	10.05	64.2	22.2	1.7
16:20	8.15	10.69	66.1	77.0	1.7
16:21	7.92	11.19	71.7	138.2	3.8
16:22	5.80	12.82	85.0	425.6	1.7
16:23	7.73	11.35	69.9	29.6	1.4
16:24	7.65	11.29	72.5	22.1	1.4
16:25	7.65	11.37	77.6	19.8	1.5
16:26	7.16	11.80	81.6	43.3	1.4
16:27	7.99	11.10	67.0	20.8	1.3
16:28	7.87	11.18	64.1	12.2	1.2
16:29	8.05	11.05	57.8	8.7	1.4
16:30	7.85	11.09	50.5	21.1	1.3
16:31	8.13	10.95	44.8	14.6	1.3
16:32	7.18	11.45	50.0	35.5	1.3
16:33	6.21	12.56	63.9	16.4	1.3
16:34	6.80	12.05	59.4	9.0	1.4
16:35	7.83	11.15	50.6	16.8	1.6
16:36	8.03	10.91	43.5	15.0	1.4
16:37	8.58	10.51	43.4	19.3	1.5
Min	5.80	10.05	43.4	8.7	1.2
Max	9.27	12.82	90.5	425.6	3.8
Avg	7.67	11.32	67.2	42.5	1.6

Covanta - Durham York Energy Centre

Relative Accuracy Test Audit at the Boiler No. 1 Scrubber Inlet

Test 8 - September 24, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
16:43	7.76	11.26	47.8	28.4	1.4
16:44	7.87	11.13	45.4	8.9	1.2
16:45	8.40	10.78	42.2	22.5	1.4
16:46	8.61	10.53	43.1	48.5	1.6
16:47	8.31	10.74	43.2	67.8	1.8
16:48	8.28	10.77	45.1	43.9	1.9
16:49	8.42	10.77	45.1	18.9	2.0
16:50	8.76	10.35	43.1	17.3	2.4
16:51	8.79	10.30	41.0	18.4	2.7
16:52	8.65	10.48	39.4	11.5	2.6
16:53	8.31	10.62	39.4	11.2	2.5
16:54	5.52	12.96	52.6	5.7	3.0
16:55	6.49	12.45	55.4	3.5	2.7
16:56	7.94	11.06	47.4	4.7	2.7
16:57	8.47	10.63	45.0	9.2	2.7
16:58	8.71	10.32	44.9	18.9	2.9
16:59	8.63	10.45	47.4	25.4	3.0
17:00	8.32	10.70	48.4	13.6	2.8
17:01	8.26	10.80	49.4	9.0	2.5
17:02	7.91	11.06	50.8	7.2	2.4
17:03	6.75	12.10	59.7	6.3	2.2
17:04	7.36	11.64	60.5	8.8	1.9
17:05	7.90	11.16	62.8	14.6	2.0
17:06	6.87	11.92	70.0	10.3	1.9
17:07	6.77	12.19	77.5	10.7	2.1
17:08	8.14	11.05	73.2	10.0	2.3
17:09	7.93	11.02	72.0	11.3	2.6
17:10	7.86	11.26	71.6	21.5	2.6
17:11	8.00	10.99	70.5	36.5	2.6
17:12	7.99	10.99	72.5	49.7	2.4
17:13	8.37	10.73	69.7	21.3	2.3
Min	5.52	10.30	39.4	3.5	1.2
Max	8.79	12.96	77.5	67.8	3.0
Avg	7.95	11.07	54.1	19.2	2.3

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 1 Scrubber Inlet
Test 9 - September 24, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
17:20	8.41	10.59	60.6	20.4	2.8
17:21	8.45	10.66	61.3	20.6	2.8
17:22	8.98	10.15	59.6	37.5	2.6
17:23	8.55	10.49	61.6	100.3	3.0
17:24	8.89	10.27	58.9	123.1	2.8
17:25	8.60	10.38	58.3	29.4	2.9
17:26	8.45	10.66	61.3	10.9	3.0
17:27	8.20	10.71	53.8	127.0	3.8
17:28	8.49	10.60	53.2	159.0	3.5
17:29	9.08	10.03	50.9	114.2	3.1
17:30	9.06	10.08	52.2	54.6	3.0
17:31	7.45	11.31	63.7	20.6	3.1
17:32	7.78	11.29	62.8	7.9	3.4
17:33	8.35	10.72	57.1	8.0	3.7
17:34	7.87	11.10	57.1	15.6	3.3
17:35	8.54	10.59	53.3	33.2	3.3
17:36	8.45	10.65	51.2	18.8	2.9
17:37	8.45	10.67	50.5	12.5	3.1
17:38	8.22	10.79	49.1	10.1	3.0
17:39	7.38	11.55	54.1	19.2	3.3
17:40	8.05	11.06	52.0	30.0	3.7
17:41	8.65	10.40	52.3	88.8	3.5
17:42	7.53	11.32	62.9	64.5	3.5
17:43	8.48	10.76	58.1	25.6	3.2
17:44	8.63	10.50	50.1	12.4	2.9
17:45	8.40	10.69	49.4	11.2	2.7
17:46	7.64	11.35	49.8	9.1	3.2
17:47	7.62	11.40	47.0	12.0	3.3
17:48	8.05	11.02	44.3	19.5	3.1
17:49	8.18	10.81	44.0	37.1	2.4
17:50	5.95	12.67	53.2	71.9	3.2
Min	5.95	10.03	44.0	7.9	2.4
Max	9.08	12.67	63.7	159.0	3.8
Avg	8.22	10.82	54.6	42.7	3.1

Covanta - Durham York Energy Centre

Relative Accuracy Test Audit at the Boiler No. 1 Scrubber Inlet

Test 10 - September 24, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
17:58	8.66	10.49	42.1	11.8	2.9
17:59	7.97	11.08	42.9	13.3	3.3
18:00	7.69	11.35	43.8	9.2	3.1
18:01	7.61	11.39	42.5	10.2	3.1
18:02	7.55	11.45	43.5	14.0	3.1
18:03	7.89	11.19	46.0	13.8	3.1
18:04	8.21	10.86	43.9	10.7	2.9
18:05	8.02	10.98	41.0	14.5	3.5
18:06	7.76	11.25	41.6	9.5	3.2
18:07	7.67	11.30	41.9	8.3	3.4
18:08	7.64	11.37	42.3	9.7	3.1
18:09	8.08	11.01	41.8	10.0	3.0
18:10	7.91	11.08	43.2	10.1	2.9
18:11	7.82	11.19	44.4	12.5	2.9
18:12	7.65	11.34	46.6	12.6	2.8
18:13	7.20	11.78	48.8	10.2	2.9
18:14	7.43	11.54	48.6	10.5	3.0
18:15	7.67	11.40	53.4	10.0	3.1
18:16	7.70	11.27	57.1	9.8	2.9
18:17	7.05	11.78	71.4	11.5	3.1
18:18	7.17	11.82	80.8	9.2	3.2
18:19	7.60	11.41	79.2	12.1	3.1
18:20	8.00	11.10	72.8	11.2	3.4
18:21	7.99	11.02	70.7	12.4	3.5
18:22	7.75	11.18	73.6	16.0	3.5
18:23	7.47	11.49	74.0	11.0	3.0
18:24	8.26	10.85	62.7	9.1	3.3
18:25	8.32	10.73	54.4	9.4	3.4
18:26	8.05	10.97	55.3	9.4	3.1
18:27	7.74	11.24	53.3	10.8	3.1
18:28	6.75	12.03	58.6	9.7	2.9

Min	6.75	10.49	41.0	8.3	2.8
Max	8.66	12.03	80.8	16.0	3.5
Avg	7.75	11.26	53.6	11.1	3.1

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Relative Accuracy Test Audit at the Boiler No. 1 Scrubber Inlet

Test 11 - September 24, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
18:35	7.40	11.54	59.3	12.2	3.3
18:36	7.72	11.28	58.2	13.0	3.4
18:37	8.02	10.97	57.0	23.3	3.2
18:38	8.03	10.94	59.4	19.2	2.7
18:39	8.09	10.90	56.0	12.1	2.3
18:40	7.92	11.04	51.4	8.9	2.3
18:41	7.53	11.34	48.6	7.7	2.7
18:42	7.89	11.01	44.6	7.5	3.3
18:43	8.09	10.89	41.4	9.4	3.5
18:44	7.76	11.18	42.6	9.6	3.3
18:45	7.71	11.22	44.3	22.7	3.6
18:46	7.69	11.23	45.2	23.8	3.6
18:47	7.74	11.25	44.6	11.2	3.2
18:48	8.01	11.02	44.1	8.0	3.1
18:49	8.53	10.58	43.5	14.3	2.7
18:50	8.83	10.27	42.0	22.3	2.9
18:51	9.04	10.05	39.5	22.0	3.1
18:52	9.28	9.83	36.5	15.0	3.0
18:53	9.62	9.50	34.6	17.4	2.9
18:54	9.85	9.28	33.8	19.2	2.7
18:55	10.00	8.99	33.2	21.2	2.7
18:56	10.18	8.71	32.1	21.7	3.0
18:57	11.26	7.96	23.5	17.2	2.7
18:58	7.42	11.50	43.0	11.2	2.6
18:59	7.27	11.78	51.8	8.2	2.7
19:00	7.56	11.52	53.0	7.3	2.7
19:01	7.34	11.71	58.6	15.8	3.1
19:02	7.50	11.55	61.3	20.6	2.7
19:03	8.05	11.11	58.8	22.6	2.5
19:04	8.56	10.66	56.1	18.9	2.3
19:05	9.24	10.07	54.8	23.7	2.4
Min	7.27	7.96	23.5	7.3	2.3
Max	11.26	11.78	61.3	23.8	3.6
Avg	8.36	10.67	46.9	15.7	2.9

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Relative Accuracy Test Audit at the Boiler No. 1 Scrubber Inlet

Test 12 - September 24, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
19:11	7.61	11.47	53.8	10.8	1.9
19:12	7.83	11.39	52.2	9.2	2.0
19:13	7.92	11.22	52.9	13.9	2.2
19:14	8.02	11.10	54.3	7.4	2.4
19:15	7.97	11.15	51.9	10.0	2.4
19:16	8.17	10.98	53.1	29.8	2.4
19:17	8.16	10.97	55.6	23.9	2.1
19:18	8.51	10.70	56.6	20.3	2.0
19:19	8.62	10.57	54.2	13.2	1.6
19:20	8.68	10.50	54.1	15.9	1.9
19:21	8.63	10.56	56.1	9.4	1.8
19:22	8.64	10.51	53.0	8.6	1.7
19:23	7.87	11.13	52.4	7.2	1.7
19:24	7.21	11.66	54.3	6.4	1.9
19:25	7.07	11.84	55.5	5.6	2.2
19:26	7.38	11.53	56.7	13.3	2.3
19:27	7.40	11.53	56.7	6.4	2.6
19:28	7.89	11.14	56.1	9.7	2.2
19:29	7.85	11.16	57.6	31.3	2.1
19:30	7.81	11.23	58.2	18.4	1.9
19:31	7.85	11.17	57.0	11.3	1.8
19:32	7.94	11.08	54.2	8.0	1.9
19:33	7.82	11.20	51.5	6.8	2.0
19:34	7.87	11.16	52.1	10.2	1.8
19:35	8.20	10.88	53.0	7.7	2.2
19:36	7.92	11.19	57.1	9.8	2.4
19:37	8.43	10.71	59.6	15.9	2.4
19:38	8.12	11.00	67.1	10.6	2.1
19:39	8.04	11.03	70.8	10.7	2.5
19:40	7.93	11.17	75.5	17.8	2.5
19:41	8.05	11.04	77.2	15.9	2.1
Min	7.07	10.50	51.5	5.6	1.6
Max	8.68	11.84	77.2	31.3	2.6
Avg	7.98	11.10	57.1	12.7	2.1

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Relative Accuracy Test Audit at the Boiler No. 1 Scrubber Inlet
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Test No. 1

Time	THC ppm
07:57	0.0
07:58	0.0
07:59	0.0
08:00	0.0
08:01	0.0
08:02	0.0
08:03	0.0
08:04	0.0
08:05	0.0
08:06	0.1
08:07	0.0
08:08	0.0
08:09	0.0
08:10	0.0
08:11	0.0
08:12	0.0
08:13	0.0
08:14	0.3
08:15	0.2
08:16	0.0
08:17	0.0
08:18	0.0
08:19	0.0
08:20	0.0
08:21	0.0
08:22	0.0
08:23	0.0
08:24	0.0
08:25	0.0
08:26	0.0
08:27	0.0
Min	0.0
Max	0.3
Avg	0.0

Test No. 2

Time	THC ppm
08:28	0.0
08:29	0.0
08:30	0.0
08:31	0.0
08:32	0.0
08:33	0.0
08:34	0.0
08:35	0.0
08:36	0.0
08:37	0.0
08:38	0.0
08:39	0.0
08:40	0.4
08:41	0.2
08:42	0.0
08:43	0.0
08:44	0.0
08:45	0.0
08:46	0.0
08:47	0.0
08:48	0.0
08:49	0.0
08:50	0.0
08:51	0.0
08:52	0.0
08:53	0.0
08:54	0.0
08:55	0.0
08:56	0.0
08:57	0.0
08:58	0.0
Min	0.0
Max	0.4
Avg	0.0

Test No. 3

Time	THC ppm
08:59	0.0
09:00	0.0
09:01	0.0
09:02	0.0
09:03	0.0
09:04	0.0
09:05	0.0
09:06	0.0
09:07	0.0
09:08	0.0
09:09	0.0
09:10	0.0
09:11	0.0
09:12	0.0
09:13	0.0
09:14	0.0
09:15	0.0
09:16	0.0
09:17	0.4
09:18	0.0
09:19	0.0
09:20	0.0
09:21	0.0
09:22	0.0
09:23	0.0
09:24	0.0
09:25	0.0
09:26	0.0
09:27	0.0
09:28	0.0
09:29	0.0
Min	0.0
Max	0.4
Avg	0.0

Test No. 4

Time	THC ppm
09:30	0.0
09:31	0.0
09:32	0.0
09:33	0.0
09:34	0.0
09:35	0.0
09:36	0.0
09:37	0.0
09:38	0.0
09:39	0.0
09:40	0.0
09:41	0.0
09:42	0.0
09:43	0.0
09:44	0.0
09:45	0.0
09:46	0.0
09:47	0.0
09:48	0.0
09:49	0.0
09:50	0.0
09:51	0.0
09:52	0.1
09:53	0.0
09:54	0.0
09:55	0.0
09:56	0.0
09:57	0.0
09:58	0.0
09:59	0.0
10:00	0.0
Min	0.0
Max	0.1
Avg	0.0

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Relative Accuracy Test Audit at the Boiler No. 1 Scrubber Inlet

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Test No. 5		Test No. 6		Test No. 7		Test No. 8	
	THC		THC		THC		THC
Time	ppm	Time	ppm	Time	ppm	Time	ppm
10:10	0.0	10:41	0.0	12:22	0.0	12:53	0.0
10:11	0.0	10:42	0.0	12:23	0.0	12:54	0.0
10:12	0.0	10:43	0.0	12:24	0.0	12:55	0.0
10:13	0.0	10:44	0.0	12:25	0.0	12:56	0.0
10:14	0.0	10:45	0.0	12:26	0.0	12:57	0.0
10:15	0.0	10:46	0.0	12:27	0.0	12:58	0.0
10:16	0.0	10:47	0.0	12:28	0.0	12:59	0.0
10:17	0.8	10:48	0.0	12:29	0.1	13:00	0.0
10:18	0.0	10:49	0.0	12:30	0.0	13:01	0.0
10:19	0.3	10:50	0.0	12:31	0.0	13:02	0.0
10:20	0.0	10:51	0.0	12:32	0.0	13:03	0.0
10:21	0.0	10:52	0.0	12:33	0.1	13:04	0.0
10:22	0.0	10:53	0.0	12:34	0.0	13:05	0.0
10:23	0.0	10:54	0.0	12:35	0.0	13:06	0.0
10:24	0.0	10:55	0.0	12:36	0.0	13:07	0.0
10:25	0.0	10:56	0.0	12:37	0.0	13:08	0.0
10:26	0.0	10:57	0.1	12:38	0.0	13:09	0.0
10:27	0.0	10:58	0.0	12:39	0.0	13:10	0.0
10:28	0.0	10:59	0.0	12:40	0.0	13:11	0.0
10:29	0.0	11:00	0.0	12:41	0.0	13:12	0.0
10:30	0.0	11:01	0.0	12:42	0.0	13:13	0.0
10:31	0.0	11:02	0.0	12:43	0.0	13:14	0.0
10:32	0.0	11:03	0.0	12:44	0.0	13:15	0.0
10:33	0.0	11:04	0.0	12:45	0.0	13:16	0.0
10:34	0.0	11:05	0.0	12:46	0.0	13:17	0.0
10:35	0.0	11:06	0.0	12:47	0.0	13:18	0.0
10:36	0.0	11:07	0.0	12:48	0.0	13:19	0.0
10:37	0.0	11:08	0.0	12:49	0.0	13:20	0.0
10:38	0.0	11:09	0.0	12:50	0.0	13:21	0.0
10:39	0.0	11:10	0.0	12:51	0.0	13:22	0.0
10:40	0.0	11:11	0.0	12:52	0.5	13:23	0.0
Min	0.0	Min	0.0	Min	0.0	Min	0.0
Max	0.8	Max	0.1	Max	0.5	Max	0.0
Avg	0.0	Avg	0.0	Avg	0.0	Avg	0.0

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Test No. 9

Time	THC ppm
13:24	0.0
13:25	0.0
13:26	0.0
13:27	0.0
13:28	0.0
13:29	0.2
13:30	0.2
13:31	0.1
13:32	0.1
13:33	0.1
13:34	0.0
13:35	0.2
13:36	0.0
13:37	0.1
13:38	0.3
13:39	0.2
13:40	0.5
13:41	0.3
13:42	0.3
13:43	0.2
13:44	0.2
13:45	0.1
13:46	0.1
13:47	0.1
13:48	0.2
13:49	0.5
13:50	0.4
13:51	0.3
13:52	0.1
13:53	0.3
13:54	0.6
Min	0.0
Max	0.6
Avg	0.2

Test No. 10

Time	THC ppm
13:55	0.5
13:56	0.5
13:57	0.9
13:58	0.7
13:59	0.3
14:00	0.4
14:01	0.4
14:02	0.6
14:03	0.6
14:04	0.6
14:05	0.8
14:06	1.5
14:07	0.6
14:08	1.8
14:09	4.1
14:10	5.6
14:11	0.7
14:12	0.9
14:13	0.4
14:14	0.6
14:15	0.6
14:16	0.5
14:17	0.4
14:18	0.5
14:19	0.4
14:20	0.4
14:21	0.4
14:22	0.4
14:23	0.3
14:24	0.3
14:25	0.4
Min	0.3
Max	5.6
Avg	0.9

Test No. 11

Time	THC ppm
14:26	0.3
14:27	0.4
14:28	0.3
14:29	0.4
14:30	0.3
14:31	0.4
14:32	0.1
14:33	0.0
14:34	0.2
14:35	0.1
14:36	0.0
14:37	0.1
14:38	0.0
14:39	0.0
14:40	0.0
14:41	0.0
14:42	0.0
14:43	0.0
14:44	0.0
14:45	0.0
14:46	0.0
14:47	0.0
14:48	0.0
14:49	0.0
14:50	0.0
14:51	0.0
14:52	0.0
14:53	0.0
14:54	0.0
14:55	1.0
14:56	0.0
Min	0.0
Max	1.0
Avg	0.1

Test No. 12

Time	THC ppm
14:57	0.0
14:58	0.0
14:59	0.0
15:00	0.0
15:01	0.0
15:02	0.1
15:03	0.2
15:04	0.3
15:05	0.3
15:06	0.3
15:07	0.3
15:08	0.3
15:09	0.4
15:10	0.4
15:11	0.4
15:12	0.4
15:13	0.2
15:14	0.3
15:15	0.4
15:16	0.8
15:17	0.6
15:18	0.3
15:19	0.3
15:20	0.4
15:21	0.5
15:22	0.4
15:23	0.3
15:24	0.2
15:25	0.3
15:26	0.2
15:27	0.4
Min	0.0
Max	0.8
Avg	0.3

APPENDIX 7

ORTECH 1-Minute Combustion Gas Data for the Boiler No. 1 BH Outlet (12 pages)

Covanta - Durham York Energy Centre

Relative Accuracy Test Audit at the Boiler No. 1 BH Outlet

Test 1 - September 24, 2015

Time	THC ppm	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
10:31	0.7	8.10	11.80	9.0	3.5	78.4	78.5
10:32	0.4	8.53	11.41	9.4	3.4	72.6	76.5
10:33	2.5	8.77	11.21	15.7	3.0	58.5	61.5
10:34	10.4	8.63	11.29	14.0	2.8	61.6	62.3
10:35	10.6	8.54	11.36	10.9	2.5	77.7	78.8
10:36	16.3	8.72	11.18	7.5	2.6	79.1	79.0
10:37	20.2	8.81	11.12	7.3	2.3	73.9	75.6
10:38	21.6	8.78	11.13	7.5	2.2	73.9	73.6
10:39	24.2	8.75	11.18	8.9	2.2	73.5	74.0
10:40	25.0	8.36	11.47	9.3	2.3	79.6	80.4
10:41	24.0	8.07	11.77	8.1	2.4	74.7	76.4
10:42	22.3	8.79	11.09	6.0	2.6	79.3	79.7
10:43	19.8	8.78	11.13	6.5	2.4	73.6	81.8
10:44	18.3	8.87	11.01	8.3	2.3	63.5	63.6
10:45	17.9	8.49	11.32	10.2	2.2	56.6	59.5
10:46	16.7	8.24	11.58	9.5	2.1	64.5	64.6
10:47	17.9	7.89	11.86	9.9	2.1	71.3	70.3
10:48	15.2	7.96	11.82	9.5	2.0	71.7	76.2
10:49	11.9	8.24	11.61	12.5	1.7	61.5	63.1
10:50	8.7	8.08	11.71	10.8	1.7	62.2	61.9
10:51	7.2	8.01	11.77	9.9	1.7	71.5	71.4
10:52	5.4	8.22	11.62	9.2	1.6	63.3	64.7
10:53	2.7	8.18	11.68	9.3	1.6	68.7	71.2
10:54	1.2	8.23	11.60	11.4	1.6	59.8	60.3
10:55	1.2	8.41	11.43	11.0	1.5	60.8	59.4
10:56	1.5	8.54	11.36	12.0	1.4	64.2	64.0
10:57	1.2	8.65	11.27	11.6	1.5	62.9	62.4
10:58	0.1	8.65	11.29	11.9	1.2	56.5	57.9
10:59	1.3	8.46	11.45	10.0	1.3	61.2	60.3
11:00	0.4	8.53	11.39	7.8	1.2	70.9	69.3
11:01	0.0	8.29	11.60	7.2	1.3	73.8	73.1

	THC ppm	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
Min	0.0	7.89	11.01	6.0	1.2	56.5	57.9
Max	25.0	8.87	11.86	15.7	3.5	79.6	81.8
Avg	10.5	8.44	11.44	9.7	2.1	68.4	69.4

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 1 BH Outlet
Test 2 -September 24, 2015

Time	THC ppm	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
12:08	0.0	8.42	11.44	42.7	0.7	86.4	89.2
12:09	0.4	8.76	11.07	26.7	0.6	72.8	75.0
12:10	0.0	8.35	11.54	52.2	0.6	94.7	94.2
12:11	0.0	8.48	11.30	24.2	0.5	100.6	103.8
12:12	0.0	9.51	10.55	17.8	0.6	82.6	87.7
12:13	0.0	8.62	11.42	15.4	0.7	89.1	89.5
12:14	0.0	8.45	11.38	14.7	0.7	89.3	93.9
12:15	0.0	9.34	10.66	20.7	0.5	69.4	72.8
12:16	0.0	9.00	10.97	29.3	0.5	63.6	64.5
12:17	0.0	9.14	10.84	25.5	0.5	66.3	67.6
12:18	0.0	9.58	10.47	22.3	0.4	66.0	68.1
12:19	0.0	9.12	10.88	23.5	0.5	63.7	65.4
12:20	0.0	9.35	10.60	17.4	0.5	65.6	70.0
12:21	0.0	9.24	10.73	16.1	0.4	67.1	66.2
12:22	0.0	9.26	10.66	28.6	0.4	67.2	70.8
12:23	0.0	9.44	10.52	20.9	0.6	68.7	68.6
12:24	0.0	8.97	11.00	23.7	0.6	78.7	81.1
12:25	0.3	8.52	11.30	26.2	0.5	83.6	83.2
12:26	0.6	9.18	10.67	41.4	0.4	54.3	57.6
12:27	0.1	9.64	10.35	32.9	0.3	49.6	50.3
12:28	0.0	9.82	10.22	22.5	0.3	45.4	47.3
12:29	0.1	9.18	10.82	16.0	0.5	58.0	56.9
12:30	0.0	8.88	11.03	11.8	0.7	86.3	90.6
12:31	0.5	9.41	10.59	33.6	0.4	61.8	67.3
12:32	0.7	9.24	10.72	29.2	0.3	61.4	60.4
12:33	0.1	9.39	10.63	23.8	0.5	67.8	68.7
12:34	0.0	8.76	11.19	15.6	0.7	81.2	81.8
12:35	0.4	8.95	11.04	11.1	0.8	95.0	97.2
12:36	1.2	9.13	10.93	20.2	0.7	81.3	85.2
12:37	1.0	9.21	10.86	23.5	0.6	66.8	67.9
12:38	0.6	9.00	11.10	23.8	0.7	63.4	64.8
Min	0.0	8.35	10.22	11.1	0.3	45.4	47.3
Max	1.2	9.82	11.54	52.2	0.8	100.6	103.8
Avg	0.2	9.07	10.89	24.3	0.5	72.5	74.4

Covanta - Durham York Energy Centre

Relative Accuracy Test Audit at the Boiler No. 1 BH Outlet

Test 3 - September 24, 2015

Time	THC ppm	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
12:44	0.0	8.23	11.83	10.1	2.6	92.8	92.8
12:45	0.8	8.00	11.98	8.7	2.5	94.0	95.3
12:46	2.7	8.35	11.73	9.6	2.4	94.3	96.2
12:47	4.3	7.88	12.00	11.4	2.3	103.3	108.0
12:48	4.8	8.49	11.51	17.0	1.9	79.4	83.7
12:49	4.1	8.55	11.43	15.3	1.9	84.3	84.7
12:50	2.6	8.53	11.40	14.2	1.7	72.2	73.7
12:51	1.0	8.91	11.07	12.8	1.7	69.2	69.3
12:52	0.3	9.02	10.95	19.9	1.6	61.2	64.3
12:53	1.2	8.67	11.28	14.7	1.5	68.2	67.9
12:54	3.5	8.37	11.56	12.5	1.8	83.0	83.4
12:55	3.5	7.89	11.87	22.3	1.6	73.2	76.0
12:56	4.0	8.35	11.46	14.2	1.4	68.5	67.8
12:57	6.4	7.73	12.06	8.2	1.6	87.0	91.4
12:58	6.0	7.59	12.11	4.1	2.0	134.6	136.9
12:59	4.9	8.17	11.59	11.8	1.5	104.2	116.2
13:00	4.1	8.44	11.40	20.9	1.5	80.1	82.8
13:01	2.6	8.97	10.95	11.1	1.5	83.9	86.4
13:02	1.6	8.78	11.15	11.9	1.2	76.6	77.0
13:03	2.8	8.36	11.52	10.5	1.3	84.0	84.0
13:04	4.3	8.53	11.45	23.3	1.1	61.6	72.7
13:05	4.4	7.53	12.25	18.2	1.1	78.7	81.3
13:06	2.8	8.53	11.35	16.2	1.2	76.7	83.8
13:07	1.7	8.84	11.15	19.8	1.1	57.0	54.6
13:08	1.7	8.84	11.09	36.0	1.0	65.9	66.3
13:09	0.4	8.65	11.25	48.1	1.1	72.3	71.8
13:10	0.0	8.68	11.35	20.0	1.0	74.8	77.6
13:11	0.0	8.34	11.51	9.2	1.2	91.3	91.7
13:12	0.0	7.91	11.93	10.7	1.2	98.0	97.0
13:13	0.0	8.17	11.69	5.6	1.0	93.4	96.4
13:14	0.0	8.54	11.36	9.7	0.9	82.3	84.2

Min	0.0	7.53	10.95	4.1	0.9	57.0	54.6
Max	6.4	9.02	12.25	48.1	2.6	134.6	136.9
Avg	2.5	8.38	11.52	15.4	1.5	82.1	84.4

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 1 BH Outlet
Test 4 - September 24, 2015

Time	THC ppm	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
13:45	6.5	7.41	11.14	14.7	0.5	66.3	68.3
13:46	6.2	7.47	11.10	14.4	0.5	69.9	70.0
13:47	6.9	7.77	10.87	14.3	0.4	55.3	59.4
13:48	7.6	7.79	10.82	15.6	0.3	51.3	50.3
13:49	9.3	8.12	10.56	15.4	0.3	57.4	55.9
13:50	10.1	7.54	11.08	13.7	0.6	69.5	68.3
13:51	10.8	7.38	11.20	11.2	0.6	80.4	82.8
13:52	11.0	7.37	11.23	11.9	0.7	86.8	87.3
13:53	11.6	7.31	11.27	13.8	0.5	80.6	82.5
13:54	12.9	6.37	12.00	22.2	0.5	81.8	81.6
13:55	16.0	6.64	11.78	15.0	0.6	89.0	90.8
13:56	18.3	7.08	11.36	9.7	0.6	80.3	83.7
13:57	19.3	7.14	11.34	10.3	0.7	89.1	90.0
13:58	19.6	6.68	11.73	11.4	0.6	80.7	85.1
13:59	20.0	6.11	12.22	13.6	0.5	64.5	67.7
14:00	20.1	5.83	12.41	13.3	0.7	86.3	86.1
14:01	18.6	6.40	11.94	12.0	0.6	81.2	85.7
14:02	18.1	6.62	11.75	10.2	0.5	79.9	80.0
14:03	21.7	6.80	11.65	10.0	0.7	89.4	89.8
14:04	22.7	7.22	11.35	9.8	0.7	82.1	82.7
14:05	22.2	7.29	11.23	10.1	0.7	83.1	84.5
14:06	22.7	7.35	11.22	12.4	0.5	75.5	77.5
14:07	23.0	7.59	11.05	15.7	0.5	65.1	68.1
14:08	24.5	7.29	11.36	11.2	0.7	69.9	69.3
14:09	24.6	7.20	11.42	10.9	0.7	68.6	70.5
14:10	26.7	7.16	11.43	9.9	0.7	65.6	66.0
14:11	29.0	9.24	9.58	79.8	0.5	55.0	60.4
14:12	25.9	7.02	11.55	119.5	0.5	30.6	31.5
14:13	22.8	7.45	11.16	21.5	0.7	55.2	53.8
14:14	22.9	8.63	10.24	11.0	0.9	74.5	73.2
14:15	21.4	8.44	10.40	8.5	1.0	85.8	87.6
Min	6.2	5.83	9.58	8.5	0.3	30.6	31.5
Max	29.0	9.24	12.41	119.5	1.0	89.4	90.8
Avg	17.8	7.28	11.27	18.5	0.6	72.6	73.9

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 1 BH Outlet
Test 5 - September 24, 2015

Time	THC ppm	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
14:30	0.0	7.55	11.15	8.4	2.8	85.7	85.9
14:31	0.0	7.33	11.34	9.5	3.0	88.9	89.8
14:32	0.0	6.94	11.65	15.7	3.3	98.5	103.0
14:33	0.0	7.74	10.92	11.2	3.4	86.7	92.5
14:34	0.0	8.83	10.08	28.7	3.7	56.7	64.8
14:35	0.0	8.31	10.51	30.5	3.7	43.3	42.1
14:36	0.0	8.69	10.22	19.2	3.9	51.7	50.8
14:37	0.0	9.03	9.95	16.0	4.5	55.1	54.8
14:38	0.0	9.00	9.99	24.0	4.5	55.4	57.6
14:39	0.0	7.99	10.91	34.8	4.0	62.1	64.2
14:40	0.0	8.55	10.38	16.2	3.4	59.1	62.2
14:41	0.0	8.76	10.21	9.7	3.0	68.6	68.1
14:42	0.0	8.81	10.17	14.5	2.6	63.6	66.4
14:43	0.0	8.51	10.43	13.5	2.2	68.4	68.4
14:44	0.0	8.81	10.16	10.6	2.1	76.3	78.2
14:45	0.0	8.80	10.15	14.6	1.9	72.1	72.5
14:46	0.0	8.69	10.25	19.6	1.6	63.0	66.5
14:47	0.0	8.72	10.23	20.8	1.5	61.6	61.9
14:48	0.0	8.77	10.19	15.5	1.7	78.8	78.3
14:49	0.0	8.98	10.06	16.4	1.5	70.8	73.6
14:50	0.0	8.93	10.10	12.7	1.4	69.5	68.8
14:51	0.0	8.51	10.49	7.9	1.4	78.9	78.5
14:52	0.0	8.45	10.52	7.7	1.4	78.3	79.0
14:53	0.1	8.38	10.67	7.9	1.4	76.5	77.0
14:54	0.9	7.71	11.25	6.3	1.4	82.8	83.0
14:55	0.3	7.19	11.65	5.2	1.5	80.7	81.5
14:56	0.5	7.06	11.76	7.5	1.3	75.5	77.4
14:57	0.0	7.29	11.57	10.3	1.3	62.4	64.7
14:58	0.0	7.73	11.20	12.5	1.2	56.8	56.8
14:59	0.0	7.39	11.54	15.2	1.3	62.3	63.9
15:00	0.0	7.88	11.04	9.5	1.5	77.6	77.2
Min	0.0	6.94	9.95	5.2	1.2	43.3	42.1
Max	0.9	9.03	11.76	34.8	4.5	98.5	103.0
Avg	0.1	8.24	10.67	14.6	2.4	69.9	71.3

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 1 BH Outlet
Test 6 - September 24, 2015

Time	THC ppm	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
15:06	18.4	8.19	10.87	19.2	2.0	67.9	68.0
15:07	23.5	7.42	11.50	15.0	2.2	73.6	75.3
15:08	23.9	7.45	11.45	8.8	2.5	83.8	84.0
15:09	24.8	7.58	11.30	14.9	2.6	77.3	81.1
15:10	21.4	7.87	11.04	18.5	2.6	66.8	67.1
15:11	0.9	8.14	10.84	28.3	2.8	73.7	73.9
15:12	0.0	8.71	10.38	26.4	2.6	68.4	69.7
15:13	0.2	8.80	10.33	19.2	2.7	58.8	60.4
15:14	0.5	8.30	10.82	10.9	3.0	72.8	72.4
15:15	0.0	7.85	11.18	9.2	3.3	87.8	87.7
15:16	0.1	7.79	11.15	10.9	3.7	84.5	87.9
15:17	0.0	8.32	10.69	13.7	3.7	70.5	72.6
15:18	0.0	8.45	10.59	15.9	3.5	73.4	74.7
15:19	1.0	8.36	10.65	9.9	3.0	81.3	81.0
15:20	0.0	8.17	10.77	11.5	2.6	84.1	89.2
15:21	0.0	8.36	10.61	9.8	2.3	80.0	79.2
15:22	1.7	8.33	10.63	7.8	2.1	88.2	89.8
15:23	3.3	7.45	11.37	12.3	1.8	89.2	90.9
15:24	2.3	6.92	11.73	14.9	1.6	68.3	72.2
15:25	0.1	7.55	11.15	11.8	1.6	71.4	75.0
15:26	0.0	8.37	10.49	12.8	1.4	61.9	64.6
15:27	0.0	8.34	10.57	15.0	1.3	60.3	60.6
15:28	0.1	8.42	10.48	17.0	1.0	58.7	59.2
15:29	1.6	8.67	10.32	18.4	1.2	50.7	53.2
15:30	0.1	8.09	10.77	12.9	1.1	64.0	63.2
15:31	1.8	8.46	10.43	15.0	1.2	65.0	66.9
15:32	3.2	9.09	9.90	14.3	1.1	59.1	59.2
15:33	3.4	8.66	10.34	18.7	0.9	65.1	64.4
15:34	1.9	7.00	11.68	8.5	1.2	97.5	101.4
15:35	0.2	7.66	10.99	7.3	1.2	101.8	107.4
15:36	0.0	8.83	10.04	14.4	1.0	64.1	70.9
Min	0.0	6.92	9.90	7.3	0.9	50.7	53.2
Max	24.8	9.09	11.73	28.3	3.7	101.8	107.4
Avg	4.3	8.12	10.81	14.3	2.1	73.2	74.9

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 1 BH Outlet
Test 7 - September 24, 2015

Time	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
16:07	7.56	11.19	68.8	0.7	64.7	63.2
16:08	7.50	11.23	49.5	0.8	70.6	70.2
16:09	7.38	11.32	27.8	0.8	90.4	94.4
16:10	7.32	11.40	36.0	0.9	94.2	94.4
16:11	7.24	11.46	41.0	0.8	91.5	94.6
16:12	7.78	11.07	31.6	0.7	70.4	77.0
16:13	7.23	11.44	22.8	0.7	86.5	86.0
16:14	6.94	11.73	27.7	0.6	83.0	84.9
16:15	6.98	11.63	21.3	0.8	91.3	94.6
16:16	7.45	11.26	24.0	0.6	76.4	78.7
16:17	7.03	11.65	34.7	0.7	75.6	76.9
16:18	7.69	11.06	20.8	0.7	69.6	72.5
16:19	8.58	10.26	22.4	0.6	64.0	64.0
16:20	8.60	10.28	61.1	0.7	62.7	65.6
16:21	7.49	11.19	72.2	0.8	73.8	77.8
16:22	5.88	12.69	353.9	0.5	63.5	63.4
16:23	6.97	11.54	61.9	1.0	90.2	89.3
16:24	7.55	11.18	30.4	0.8	99.1	99.9
16:25	7.33	11.39	20.5	0.9	96.4	97.3
16:26	6.98	11.70	46.6	1.0	97.5	97.8
16:27	7.45	11.22	29.8	0.9	86.1	90.7
16:28	7.56	11.18	18.2	0.9	85.4	84.4
16:29	7.68	11.03	11.6	1.1	101.1	101.7
16:30	7.76	10.97	18.9	1.0	103.2	106.0
16:31	7.66	10.96	20.5	0.8	69.5	74.4
16:32	7.53	11.08	38.0	0.9	75.3	74.5
16:33	5.95	12.46	18.9	1.2	117.8	117.0
16:34	6.31	12.08	13.7	1.2	127.9	129.9
16:35	7.34	11.19	17.9	1.0	115.1	120.4
16:36	7.81	10.86	19.8	0.9	74.4	78.4
16:37	8.22	10.48	15.2	0.8	76.3	76.8
Min	5.88	10.26	11.6	0.5	62.7	63.2
Max	8.60	12.69	353.9	1.2	127.9	129.9
Avg	7.38	11.30	41.9	0.8	85.3	87.0

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 1 BH Outlet
Test 8 - September 24, 2015

Time	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
16:43	7.34	11.30	41.0	1.0	81.2	77.9
16:44	7.59	11.14	13.8	0.9	93.9	94.7
16:45	7.90	10.86	18.3	1.1	101.2	105.8
16:46	8.22	10.62	44.5	1.1	75.6	78.8
16:47	8.23	10.65	67.7	1.1	77.2	77.5
16:48	8.17	10.66	65.7	1.0	76.6	78.9
16:49	7.92	10.84	25.9	1.1	86.5	88.6
16:50	8.39	10.42	20.4	1.2	90.3	93.2
16:51	8.52	10.30	21.6	1.1	75.9	79.7
16:52	8.26	10.52	16.3	1.0	78.4	78.1
16:53	8.36	10.48	12.7	1.2	85.0	85.8
16:54	5.75	12.70	11.4	1.4	107.7	108.8
16:55	5.74	12.57	6.1	1.7	151.3	154.0
16:56	7.49	11.10	7.1	1.5	127.5	135.1
16:57	7.97	10.70	9.3	1.4	110.1	110.7
16:58	8.51	10.26	20.1	1.4	103.8	110.1
16:59	8.35	10.40	27.9	0.9	64.6	71.1
17:00	8.18	10.58	19.4	1.0	59.2	58.1
17:01	8.06	10.69	13.3	1.1	77.5	78.9
17:02	7.84	10.87	9.9	1.2	89.0	89.5
17:03	6.67	11.91	9.2	1.3	101.6	100.4
17:04	6.99	11.53	9.5	1.3	118.8	122.7
17:05	7.52	11.10	17.1	1.3	104.4	110.7
17:06	7.01	11.59	12.0	1.3	89.5	88.8
17:07	6.28	12.13	14.0	1.4	123.8	123.3
17:08	7.42	11.17	11.7	1.6	121.6	127.6
17:09	7.95	10.83	14.6	1.6	94.8	99.4
17:10	7.32	11.27	16.1	1.7	96.9	99.4
17:11	7.73	10.93	42.3	1.3	81.7	85.3
17:12	7.70	10.93	51.4	1.4	68.8	71.2
17:13	7.89	10.74	32.2	1.2	52.2	51.9

Min	5.74	10.26	6.1	0.9	52.2	51.9
Max	8.52	12.70	67.7	1.7	151.3	154.0
Avg	7.65	11.03	22.6	1.2	92.5	94.7

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 1 BH Outlet
Test 9 - September 24, 2015

Time	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
17:20	8.23	10.51	25.1	1.2	49.8	52.0
17:21	8.00	10.69	21.6	1.2	63.1	62.1
17:22	8.52	10.23	37.2	0.9	46.1	49.8
17:23	8.42	10.39	86.7	0.9	34.7	34.8
17:24	8.39	10.35	122.6	0.7	33.5	33.4
17:25	8.49	10.29	57.8	0.9	35.5	34.6
17:26	8.01	10.70	15.1	1.2	69.5	68.2
17:27	8.07	10.62	81.1	1.0	72.4	72.1
17:28	7.88	10.71	173.4	0.9	56.7	60.3
17:29	8.57	10.12	142.4	0.8	45.8	45.9
17:30	8.64	10.06	68.8	0.6	43.3	43.4
17:31	7.66	11.02	30.4	1.0	51.1	54.9
17:32	7.12	11.40	12.3	1.2	100.3	101.0
17:33	7.83	10.80	10.4	1.1	85.8	90.9
17:34	7.54	11.10	14.7	1.0	83.2	83.6
17:35	7.96	10.66	36.0	1.0	74.8	78.3
17:36	8.02	10.68	22.7	1.0	68.0	68.6
17:37	8.02	10.68	18.1	0.9	57.3	59.6
17:38	7.95	10.75	10.7	0.9	70.8	70.9
17:39	7.13	11.45	21.3	1.3	81.1	85.1
17:40	7.26	11.21	24.5	1.3	98.7	101.0
17:41	8.24	10.43	88.4	0.9	65.1	72.5
17:42	7.50	11.15	77.4	0.9	54.1	55.6
17:43	7.66	10.92	36.4	1.2	69.9	71.7
17:44	8.22	10.49	17.7	1.1	59.2	62.4
17:45	8.12	10.62	13.1	1.0	66.0	67.1
17:46	7.33	11.32	11.9	1.2	78.6	79.2
17:47	7.12	11.42	15.6	1.3	89.9	91.3
17:48	7.57	11.03	16.3	1.1	82.3	83.4
17:49	7.96	10.74	33.3	1.0	60.3	64.8
17:50	6.12	12.34	73.9	1.1	68.6	67.1

Min	6.12	10.06	10.4	0.6	33.5	33.4
Max	8.64	12.34	173.4	1.3	100.3	101.0
Avg	7.86	10.80	45.7	1.0	65.0	66.6

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 1 BH Outlet
Test 10 - September 24, 2015

Time	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
17:58	8.32	10.54	14.7	0.9	71.5	72.3
17:59	7.74	11.06	16.7	0.9	70.9	72.9
18:00	7.24	11.43	13.0	0.9	73.6	74.0
18:01	7.23	11.41	13.5	0.9	72.9	75.0
18:02	7.11	11.50	15.8	0.7	71.7	71.9
18:03	7.30	11.30	18.1	0.9	61.5	61.5
18:04	7.78	10.94	14.7	0.9	64.7	64.2
18:05	7.68	11.04	16.7	0.8	70.5	72.2
18:06	7.27	11.31	13.6	0.9	75.7	75.1
18:07	7.23	11.34	10.7	1.0	80.7	80.0
18:08	7.13	11.45	12.8	1.0	81.9	81.7
18:09	7.54	11.09	12.5	0.9	81.2	82.5
18:10	7.53	11.12	14.1	0.9	75.7	75.3
18:11	7.34	11.25	15.0	0.9	74.3	75.7
18:12	7.24	11.37	16.0	0.9	69.9	70.0
18:13	6.71	11.81	13.6	1.0	84.8	84.0
18:14	6.92	11.63	12.8	1.0	86.2	87.3
18:15	7.08	11.48	13.4	1.1	86.5	87.9
18:16	7.26	11.35	12.6	1.1	82.9	83.3
18:17	6.75	11.80	13.7	1.0	92.0	90.4
18:18	6.55	11.90	11.8	1.1	112.7	114.0
18:19	7.05	11.54	14.5	0.9	94.0	98.6
18:20	7.46	11.16	14.0	1.0	80.6	83.5
18:21	7.54	11.13	14.8	1.1	79.1	79.4
18:22	7.28	11.34	19.2	1.0	79.4	79.8
18:23	6.84	11.64	14.8	1.1	90.8	90.1
18:24	7.66	10.97	11.7	1.1	79.2	84.6
18:25	7.76	10.90	12.2	1.0	75.7	75.3
18:26	7.44	11.20	12.4	1.1	76.7	77.2
18:27	7.39	11.25	13.3	1.0	81.1	81.5
18:28	6.55	11.97	12.6	1.1	92.5	91.5
Min	6.55	10.54	10.7	0.7	61.5	61.5
Max	8.32	11.97	19.2	1.1	112.7	114.0
Avg	7.29	11.33	14.0	1.0	79.7	80.4

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 1 BH Outlet
Test 11 - September 24, 2015

Time	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
18:35	6.86	11.47	14.9	1.3	97.4	98.6
18:36	7.17	11.18	16.0	1.2	87.7	89.8
18:37	7.40	11.00	26.3	1.3	87.6	87.5
18:38	7.42	11.00	23.5	1.4	81.1	83.6
18:39	7.49	10.94	16.4	1.6	74.9	77.5
18:40	7.31	11.08	12.7	1.7	73.9	74.3
18:41	7.03	11.31	11.2	1.8	86.0	85.8
18:42	7.18	11.13	11.1	1.8	88.0	89.3
18:43	7.23	11.11	13.5	1.9	93.9	96.0
18:44	6.80	11.54	13.5	1.5	80.5	85.1
18:45	6.56	11.74	35.8	1.6	83.3	83.5
18:46	6.53	11.75	22.3	1.7	97.0	98.0
18:47	6.85	11.50	14.8	1.6	94.4	95.9
18:48	7.04	11.35	12.4	1.5	84.8	89.1
18:49	7.56	10.91	22.6	1.3	69.4	73.3
18:50	7.58	10.88	29.7	1.4	74.9	76.2
18:51	7.60	10.85	21.3	1.4	77.5	78.0
18:52	7.71	10.79	25.0	1.3	72.5	73.4
18:53	7.52	11.00	28.0	1.2	63.3	65.5
18:54	7.50	11.01	37.0	1.2	56.6	59.3
18:55	7.18	11.31	38.3	1.2	57.5	56.5
18:56	7.13	11.33	21.0	1.3	79.9	77.9
18:57	7.95	10.64	15.3	1.3	63.8	70.9
18:58	7.48	11.08	15.5	1.3	67.6	66.5
18:59	6.95	11.50	11.9	1.3	78.7	80.0
19:00	7.07	11.37	9.5	1.4	87.8	89.1
19:01	6.99	11.48	17.2	1.3	73.9	81.0
19:02	7.05	11.40	23.6	1.3	54.8	56.9
19:03	7.42	11.07	25.9	1.3	60.5	60.1
19:04	8.03	10.57	22.9	0.9	45.7	48.7
19:05	8.64	10.03	27.5	1.1	45.6	45.2

Min	6.53	10.03	9.5	0.9	45.6	45.2
Max	8.64	11.75	38.3	1.9	97.4	98.6
Avg	7.30	11.14	20.5	1.4	75.5	77.2

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 1 BH Outlet
Test 12 - September 24, 2015

Time	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
19:11	7.33	11.22	13.2	1.3	84.1	82.9
19:12	7.23	11.27	12.7	1.2	85.2	87.8
19:13	7.49	11.06	15.8	1.3	75.0	75.3
19:14	7.54	10.99	10.8	1.3	88.8	88.7
19:15	7.47	11.04	11.6	1.4	96.6	96.8
19:16	7.63	10.91	30.9	1.2	82.3	89.3
19:17	7.70	10.87	30.1	0.9	61.3	62.6
19:18	7.96	10.62	24.4	1.1	64.3	67.5
19:19	8.22	10.42	17.0	0.9	62.6	61.0
19:20	8.33	10.37	19.6	1.1	75.2	74.0
19:21	8.12	10.52	12.5	1.0	94.7	95.0
19:22	8.25	10.43	11.4	1.1	91.8	93.5
19:23	7.53	11.04	9.8	1.3	94.6	92.6
19:24	6.88	11.55	8.6	1.3	96.1	97.9
19:25	6.52	11.76	7.5	1.4	106.8	107.5
19:26	6.86	11.46	14.7	1.4	100.6	104.8
19:27	6.85	11.49	9.5	1.4	97.2	97.4
19:28	7.30	11.11	10.6	1.4	84.0	89.0
19:29	7.40	11.09	32.4	1.2	70.6	71.4
19:30	7.28	11.18	22.7	1.2	71.1	70.7
19:31	7.30	11.15	15.3	1.1	72.7	72.5
19:32	7.51	11.04	11.2	1.3	71.0	72.2
19:33	7.29	11.18	9.0	1.2	80.0	80.2
19:34	7.34	11.14	12.4	1.2	82.3	82.8
19:35	7.71	10.80	10.1	1.2	78.6	79.1
19:36	7.37	11.15	11.7	1.1	75.1	75.3
19:37	7.89	10.71	18.4	1.1	65.3	68.2
19:38	7.72	10.93	14.2	0.9	67.0	65.7
19:39	7.64	10.97	12.9	1.3	74.2	73.9
19:40	7.36	11.20	21.2	1.3	77.0	78.4
19:41	7.57	11.05	18.8	1.3	85.5	85.4
Min	6.52	10.37	7.5	0.9	61.3	61.0
Max	8.33	11.76	32.4	1.4	106.8	107.5
Avg	7.50	11.02	15.5	1.2	81.0	81.9

APPENDIX 8

ORTECH 1-Minute Combustion Gas Data
for the Boiler No. 2 Scrubber Inlet
(12 pages)

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 2 Scrubber Inlet
Test 1 - September 23, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
10:31	9.25	10.03	62.6	20.1	3.7
10:32	8.63	10.54	61.8	21.5	3.8
10:33	8.40	10.81	62.7	16.1	4.7
10:34	8.45	10.74	55.5	13.4	4.8
10:35	8.32	10.79	56.7	13.1	3.9
10:36	7.95	11.17	58.1	13.8	3.8
10:37	8.30	10.83	54.5	13.2	5.0
10:38	8.51	10.68	51.9	18.7	3.9
10:39	8.45	10.70	51.4	16.7	4.4
10:40	8.26	10.86	53.7	19.2	4.2
10:41	8.26	10.86	58.4	19.0	4.5
10:42	7.89	11.24	60.2	19.8	3.6
10:43	8.87	10.40	55.5	18.8	3.8
10:44	8.58	10.64	58.8	18.6	4.4
10:45	8.68	10.58	63.2	24.4	4.2
10:46	8.77	10.55	72.5	37.8	3.5
10:47	8.77	10.53	73.7	34.7	3.2
10:48	8.00	11.03	75.8	30.9	3.2
10:49	6.58	12.53	89.9	12.6	3.2
10:50	8.14	11.27	86.2	14.1	4.1
10:51	9.13	10.22	77.6	24.5	3.5
10:52	8.87	10.49	80.7	31.0	3.9
10:53	9.13	10.24	80.3	41.9	4.3
10:54	8.83	10.49	81.7	30.2	3.3
10:55	8.79	10.64	72.5	20.1	3.3
10:56	8.83	10.55	63.5	16.1	3.0
10:57	9.27	10.14	55.6	18.3	3.5
10:58	9.46	9.91	52.6	24.6	3.2
10:59	9.10	10.32	52.4	21.2	2.7
11:00	8.80	10.56	57.8	18.5	3.4
11:01	8.07	11.11	61.4	10.6	3.3
Min	6.58	9.91	51.4	10.6	2.7
Max	9.46	12.53	89.9	41.9	5.0
Avg	8.56	10.69	64.5	21.1	3.8

Covanta - Durham York Energy Centre

Relative Accuracy Test Audit at the Boiler No. 2 Scrubber Inlet

Test 2 -September 23, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
11:10	8.42	10.85	97.3	10.1	2.8
11:11	8.10	11.16	120.2	8.0	3.1
11:12	8.51	10.86	121.8	12.1	2.8
11:13	8.93	10.45	127.6	16.6	2.9
11:14	8.86	10.57	136.0	12.6	2.5
11:15	8.96	10.52	136.4	14.8	2.7
11:16	8.76	10.57	140.7	18.4	2.4
11:17	8.81	10.68	136.5	14.3	3.3
11:18	8.82	10.63	130.7	16.1	2.6
11:19	8.72	10.66	126.6	16.8	2.8
11:20	9.38	10.15	124.6	29.3	3.6
11:21	8.50	10.85	138.0	15.3	3.2
11:22	8.17	11.20	143.3	13.0	3.7
11:23	8.38	10.94	134.6	12.5	4.9
11:24	8.57	10.85	127.2	10.1	4.6
11:25	8.21	11.06	123.0	11.2	4.5
11:26	8.68	10.82	125.8	20.9	3.8
11:27	9.06	10.34	125.9	29.9	4.2
11:28	9.21	10.22	121.0	34.0	4.3
11:29	8.61	10.76	123.8	18.3	4.8
11:30	9.18	10.29	113.6	17.9	4.8
11:31	8.86	10.50	110.2	15.7	4.6
11:32	8.25	10.97	113.4	13.4	4.8
11:33	8.74	10.66	109.9	21.3	4.9
11:34	8.83	10.48	106.3	20.6	4.6
11:35	8.35	10.79	101.1	22.9	4.1
11:36	8.51	10.83	93.3	17.2	4.3
11:37	8.75	10.49	88.1	23.1	4.6
11:38	8.82	10.51	87.5	26.9	5.0
11:39	8.48	10.58	91.1	30.4	4.7
11:40	6.18	12.68	109.8	9.0	4.6

Min	6.18	10.15	87.5	8.0	2.4
Max	9.38	12.68	143.3	34.0	5.0
Avg	8.60	10.74	118.9	17.8	3.9

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 2 Scrubber Inlet
Test 3 - September 23, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
13:22	7.38	11.75	118.3	8.0	3.6
13:23	8.24	11.03	101.2	10.3	2.9
13:24	8.37	10.88	92.7	13.6	3.8
13:25	8.36	10.84	95.1	13.0	3.2
13:26	8.25	11.01	98.2	11.3	2.8
13:27	8.33	10.87	90.8	16.9	2.9
13:28	8.09	11.02	94.9	15.5	2.6
13:29	7.42	11.72	104.3	11.2	2.9
13:30	7.50	11.63	97.1	9.1	2.4
13:31	7.54	11.60	97.0	8.2	2.6
13:32	7.90	11.32	91.9	7.1	2.0
13:33	8.71	10.66	83.6	17.2	2.2
13:34	9.07	10.28	79.9	26.0	3.1
13:35	8.97	10.31	78.9	21.2	2.0
13:36	8.59	10.69	78.0	13.3	1.8
13:37	9.06	10.31	71.1	11.6	2.8
13:38	8.90	10.37	70.6	21.5	2.3
13:39	8.56	10.70	74.9	23.3	1.9
13:40	8.60	10.64	76.1	24.7	2.4
13:41	9.01	10.42	78.9	14.8	2.8
13:42	9.03	10.26	72.0	19.1	1.9
13:43	8.77	10.51	71.6	15.0	2.3
13:44	8.28	10.90	73.7	13.2	2.1
13:45	8.20	11.04	77.1	10.4	2.7
13:46	8.52	10.73	70.8	9.4	1.6
13:47	8.50	10.73	69.6	11.7	1.8
13:48	8.08	11.05	75.1	11.9	2.4
13:49	8.08	11.09	76.9	10.8	2.3
13:50	8.53	10.73	72.1	12.1	2.3
13:51	9.01	10.28	66.8	16.5	2.0
13:52	8.94	10.34	62.8	18.6	1.8
Min	7.38	10.26	62.8	7.1	1.6
Max	9.07	11.75	118.3	26.0	3.8
Avg	8.41	10.83	82.6	14.4	2.5

Covanta - Durham York Energy Centre

Relative Accuracy Test Audit at the Boiler No. 2 Scrubber Inlet

Test 4 - September 23, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
14:01	8.19	10.99	66.1	9.9	2.6
14:02	8.22	10.97	68.0	11.5	2.4
14:03	7.96	11.16	72.5	12.5	1.8
14:04	7.85	11.27	76.3	12.0	1.6
14:05	8.15	11.04	73.2	12.3	1.4
14:06	8.16	10.98	69.9	12.0	1.9
14:07	8.18	10.98	67.0	11.9	1.6
14:08	8.23	10.93	68.2	13.6	1.8
14:09	8.54	10.71	70.5	13.8	2.0
14:10	8.38	10.69	68.2	15.9	0.9
14:11	8.42	10.83	69.9	13.6	2.3
14:12	8.67	10.53	65.4	15.7	1.8
14:13	8.39	10.66	62.7	17.9	1.7
14:14	8.30	10.89	60.9	15.1	2.1
14:15	8.50	10.64	56.5	19.1	2.2
14:16	8.08	10.99	56.9	17.5	1.7
14:17	8.13	11.02	55.0	14.0	1.8
14:18	8.17	10.96	52.3	17.8	1.4
14:19	7.91	11.18	66.3	26.0	1.7
14:20	7.83	11.26	70.3	22.1	2.1
14:21	7.67	11.37	76.4	19.6	1.7
14:22	6.82	11.94	93.5	18.9	1.9
14:23	6.53	12.31	108.9	13.4	2.0
14:24	6.77	12.03	112.7	13.8	1.6
14:25	6.71	12.08	102.9	15.6	1.2
14:26	6.99	11.88	100.3	13.6	2.3
14:27	7.17	11.75	90.8	12.9	1.8
14:28	7.91	11.13	78.8	12.7	1.6
14:29	7.77	11.23	72.1	11.4	1.8
14:30	7.60	11.42	72.3	12.2	1.7
14:31	8.26	10.89	76.0	13.8	1.7
Min	6.53	10.53	52.3	9.9	0.9
Max	8.67	12.31	112.7	26.0	2.6
Avg	7.88	11.18	74.2	14.9	1.8

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 2 Scrubber Inlet
Test 5 - September 23, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
15:04	8.23	10.73	69.2	18.5	2.4
15:05	8.13	10.92	78.3	23.6	2.9
15:06	8.19	10.90	68.5	27.6	3.9
15:07	8.92	10.35	63.5	32.3	4.6
15:08	9.37	9.83	60.0	44.1	4.3
15:09	9.22	9.92	64.2	32.3	4.4
15:10	8.36	10.64	72.1	15.9	5.2
15:11	8.46	10.64	69.5	12.0	4.9
15:12	9.29	9.96	60.5	16.2	17.6
15:13	9.36	9.70	56.5	23.8	11.7
15:14	8.42	10.61	62.8	20.5	9.2
15:15	8.23	10.85	68.5	32.9	7.8
15:16	8.76	10.39	66.3	35.9	7.7
15:17	8.88	10.27	63.8	25.7	7.9
15:18	8.34	10.73	64.3	14.5	14.6
15:19	8.14	10.89	62.6	10.2	23.4
15:20	8.18	10.92	62.8	12.9	16.5
15:21	8.78	10.41	67.1	41.1	13.9
15:22	9.18	9.93	66.2	70.7	11.0
15:23	8.10	10.94	66.2	33.6	9.9
15:24	8.88	10.37	64.0	24.9	8.2
15:25	8.88	10.23	79.3	22.8	7.5
15:26	9.03	10.13	82.4	22.8	7.2
15:27	8.38	10.69	70.4	15.0	7.6
15:28	8.79	10.40	69.5	18.1	7.5
15:29	8.47	10.68	74.8	17.0	6.8
15:30	8.44	10.75	81.2	18.7	7.1
15:31	8.86	10.41	76.1	19.7	6.6
15:32	8.74	10.42	76.3	24.6	6.1
15:33	8.48	10.59	83.1	20.3	5.7
15:34	8.67	10.56	90.1	32.7	6.1
Min	8.10	9.70	56.5	10.2	2.4
Max	9.37	10.94	90.1	70.7	23.4
Avg	8.65	10.48	69.7	25.2	8.4

Covanta - Durham York Energy Centre

Relative Accuracy Test Audit at the Boiler No. 2 Scrubber Inlet

Test 6 - September 23, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
15:45	8.35	10.93	79.4	15.0	4.5
15:46	8.82	10.44	76.6	13.7	3.7
15:47	8.55	10.60	77.4	12.7	4.0
15:48	7.98	11.15	75.5	11.8	3.5
15:49	8.46	10.76	75.8	20.8	3.4
15:50	8.49	10.66	82.2	25.9	3.7
15:51	7.95	11.10	88.5	18.2	3.5
15:52	7.22	11.75	77.9	10.7	3.1
15:53	7.26	11.81	80.6	7.9	3.3
15:54	7.42	11.70	85.7	9.3	3.3
15:55	7.65	11.48	91.7	10.7	4.1
15:56	8.13	11.10	100.3	14.7	4.4
15:57	8.49	10.80	97.9	19.2	4.5
15:58	8.82	10.41	97.8	21.4	4.2
15:59	8.53	10.77	101.6	19.0	4.4
16:00	8.68	10.59	100.2	22.4	4.5
16:01	8.65	10.65	101.7	14.3	4.4
16:02	8.71	10.58	97.3	12.6	4.3
16:03	8.33	10.90	106.1	14.0	4.2
16:04	8.33	10.96	119.8	15.7	4.5
16:05	8.28	10.98	111.5	17.2	4.4
16:06	8.08	11.12	112.0	21.5	5.1
16:07	8.04	11.15	107.8	19.5	4.8
16:08	7.65	11.48	107.5	22.4	5.0
16:09	8.24	11.01	98.7	19.0	4.7
16:10	8.33	10.88	95.5	22.5	4.6
16:11	8.44	10.79	95.3	24.0	4.8
16:12	8.20	11.03	93.5	28.8	4.6
16:13	8.17	10.99	94.1	26.8	4.9
16:14	8.28	11.00	87.8	18.4	4.4
16:15	7.61	11.49	101.2	22.0	4.7

Min	7.22	10.41	75.5	7.9	3.1
Max	8.82	11.81	119.8	28.8	5.1
Avg	8.20	11.00	94.2	17.8	4.2

Covanta - Durham York Energy Centre

Relative Accuracy Test Audit at the Boiler No. 2 Scrubber Inlet

Test 7 - September 23, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
16:30	8.66	10.61	62.6	13.6	2.2
16:31	8.80	10.49	61.2	17.4	3.0
16:32	8.86	10.45	59.4	19.4	2.2
16:33	8.39	10.86	60.1	18.0	2.4
16:34	8.86	10.49	56.0	12.4	3.2
16:35	8.74	10.55	52.4	16.3	2.6
16:36	8.64	10.60	53.2	15.6	2.7
16:37	8.37	10.86	59.9	16.1	2.2
16:38	8.80	10.48	60.6	13.2	2.7
16:39	8.20	10.91	64.2	19.0	2.4
16:40	7.54	11.59	76.3	16.6	2.6
16:41	7.77	11.32	75.1	10.4	2.5
16:42	6.91	12.12	88.9	13.8	2.2
16:43	8.10	11.11	78.5	10.6	2.8
16:44	7.51	11.54	78.6	9.7	2.5
16:45	7.18	11.92	89.3	8.9	2.3
16:46	7.28	11.85	94.6	8.9	2.7
16:47	7.69	11.51	96.3	13.8	2.3
16:48	8.30	10.98	97.4	21.5	2.8
16:49	8.56	10.67	98.3	21.0	2.7
16:50	8.64	10.60	101.4	23.9	2.2
16:51	8.73	10.52	93.5	22.5	3.6
16:52	8.57	10.67	89.3	18.1	3.3
16:53	8.92	10.38	81.5	17.1	2.5
16:54	8.92	10.34	82.1	20.8	3.2
16:55	8.63	10.59	76.7	17.1	3.4
16:56	8.19	10.88	72.1	16.2	3.6
16:57	7.81	11.28	67.9	10.1	3.6
16:58	8.06	11.06	65.8	9.1	2.9
16:59	8.19	10.98	69.2	11.0	3.7
17:00	8.05	11.06	75.1	18.6	3.6

Min	6.91	10.34	52.4	8.9	2.2
Max	8.92	12.12	101.4	23.9	3.7
Avg	8.25	10.94	75.4	15.5	2.8

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 2 Scrubber Inlet
Test 8 - September 23, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
17:19	8.30	10.86	70.1	15.8	4.2
17:20	8.73	10.42	62.9	44.2	4.3
17:21	8.95	10.25	59.7	40.6	4.7
17:22	8.77	10.37	57.5	21.7	4.4
17:23	9.16	10.09	53.7	15.5	4.1
17:24	9.03	10.15	57.1	16.2	4.1
17:25	8.66	10.46	59.3	13.6	4.2
17:26	8.32	10.81	57.8	19.0	4.1
17:27	8.85	10.36	50.6	25.0	3.9
17:28	9.27	9.91	45.3	37.1	3.5
17:29	8.44	10.67	46.1	28.8	4.0
17:30	8.50	10.60	47.8	33.2	3.7
17:31	8.62	10.55	48.7	29.1	3.9
17:32	9.08	10.15	47.4	42.3	3.5
17:33	9.05	10.18	48.8	32.2	3.1
17:34	8.86	10.26	48.4	25.2	3.4
17:35	7.69	11.22	52.0	14.7	3.7
17:36	7.89	11.25	54.1	16.8	3.4
17:37	9.08	10.24	49.1	38.3	3.2
17:38	9.61	9.67	44.6	73.9	3.1
17:39	9.28	9.95	45.4	101.3	3.4
17:40	9.54	9.77	46.0	47.7	3.1
17:41	9.07	10.18	44.8	18.1	3.4
17:42	8.60	10.33	41.7	17.9	3.6
17:43	8.07	11.23	46.8	12.2	3.1
17:44	8.99	10.27	39.9	17.1	3.7
17:45	8.72	10.53	40.1	17.3	3.7
17:46	8.71	10.53	41.6	23.6	4.1
17:47	8.54	10.70	45.7	26.7	3.6
17:48	8.53	10.78	50.5	28.7	3.4
17:49	8.50	10.76	55.3	24.7	3.6
Min	7.69	9.67	39.9	12.2	3.1
Max	9.61	11.25	70.1	101.3	4.7
Avg	8.75	10.44	50.3	29.6	3.7

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 2 Scrubber Inlet
Test 9 - September 23, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
18:50	7.88	11.30	97.8	16.6	3.7
18:51	7.88	11.40	109.5	17.2	3.5
18:52	8.80	10.49	96.2	16.3	3.7
18:53	7.96	11.22	103.9	16.4	6.6
18:54	7.80	11.36	97.4	15.4	3.8
18:55	7.23	11.77	105.8	8.4	3.6
18:56	6.90	12.15	119.5	6.9	3.8
18:57	7.27	11.92	124.8	6.3	3.5
18:58	6.95	12.04	116.3	8.4	3.5
18:59	7.33	11.92	113.1	6.3	3.5
19:00	8.17	11.09	95.8	8.4	3.3
19:01	8.60	10.75	93.6	10.3	3.5
19:02	8.65	10.70	101.9	13.7	3.6
19:03	8.44	10.84	113.5	15.5	3.3
19:04	8.46	10.88	109.6	10.4	3.5
19:05	8.70	10.67	112.2	11.2	3.3
19:06	8.68	10.68	129.5	11.7	3.2
19:07	7.86	11.31	141.5	14.1	3.2
19:08	7.60	11.65	141.4	8.9	3.2
19:09	7.88	11.43	124.9	10.1	3.3
19:10	8.03	11.28	124.8	10.9	3.1
19:11	7.85	11.41	132.6	11.1	3.0
19:12	7.95	11.42	140.1	14.9	3.2
19:13	8.64	10.72	124.9	18.9	3.2
19:14	8.64	10.73	127.9	25.8	3.1
19:15	8.54	10.83	132.3	24.5	3.6
19:16	8.95	10.48	127.4	29.6	3.1
19:17	8.97	10.47	130.0	23.5	3.1
19:18	9.30	10.20	128.6	29.2	3.0
19:19	8.75	10.58	135.0	17.5	3.1
19:20	8.54	10.89	138.2	13.8	2.9
Min	6.90	10.20	93.6	6.3	2.9
Max	9.30	12.15	141.5	29.6	6.6
Avg	8.17	11.12	119.0	14.6	3.4

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 2 Scrubber Inlet
Test 10 - September 23, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
19:27	8.60	10.79	111.2	13.0	2.9
19:28	8.55	10.73	117.2	18.9	2.9
19:29	7.85	11.37	132.6	17.8	3.0
19:30	8.34	11.02	128.7	16.9	2.9
19:31	8.59	10.75	122.9	16.2	2.8
19:32	8.18	11.05	131.1	23.8	2.8
19:33	7.52	11.66	147.9	15.3	2.8
19:34	7.80	11.50	139.8	16.7	2.9
19:35	8.92	10.52	128.3	14.6	2.7
19:36	8.79	10.52	128.0	19.3	2.8
19:37	8.55	10.76	135.4	23.4	2.9
19:38	8.62	10.80	128.7	18.9	2.8
19:39	9.21	10.24	119.2	21.7	2.9
19:40	9.30	10.15	111.0	16.3	2.9
19:41	8.37	10.85	119.2	16.7	2.9
19:42	7.43	11.66	127.3	11.9	2.8
19:43	7.33	11.72	114.4	9.8	2.8
19:44	7.28	11.88	129.0	10.5	3.0
19:45	7.88	11.39	125.5	10.5	3.0
19:46	7.93	11.30	126.3	11.9	2.8
19:47	8.39	10.94	128.2	8.9	2.9
19:48	8.89	10.49	121.2	8.9	2.8
19:49	9.02	10.30	118.5	10.5	2.8
19:50	8.83	10.50	123.5	10.0	2.8
19:51	8.64	10.63	128.7	12.2	2.8
19:52	8.75	10.55	131.0	17.2	2.8
19:53	8.71	10.60	132.6	16.9	2.7
19:54	8.49	10.74	122.8	18.4	3.2
19:55	8.72	10.67	123.6	19.7	2.8
19:56	8.72	10.57	122.3	17.7	2.7
19:57	8.20	11.03	117.2	13.3	2.8
Min	7.28	10.15	111.0	8.9	2.7
Max	9.30	11.88	147.9	23.8	3.2
Avg	8.40	10.89	125.6	15.4	2.9

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 2 Scrubber Inlet
Test 11 - September 23, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
20:06	8.45	10.75	109.8	10.3	2.7
20:07	8.93	10.40	107.1	20.2	2.7
20:08	8.29	10.85	112.7	17.1	2.7
20:09	8.96	10.41	106.7	20.9	2.7
20:10	8.74	10.52	107.1	16.9	2.7
20:11	8.57	10.70	100.5	15.0	2.9
20:12	8.80	10.51	94.0	14.1	2.7
20:13	8.51	10.60	99.4	18.5	2.7
20:14	8.31	10.96	100.8	18.7	2.7
20:15	9.12	10.21	93.7	31.3	2.7
20:16	8.91	10.34	99.0	35.4	2.9
20:17	9.07	10.31	99.1	24.5	2.7
20:18	9.42	9.98	89.1	16.9	2.7
20:19	9.02	10.26	94.2	16.4	2.7
20:20	9.02	10.34	92.4	16.5	2.7
20:21	8.92	10.36	94.9	25.2	2.9
20:22	8.80	10.51	92.4	18.7	2.7
20:23	8.35	10.77	82.0	17.3	2.7
20:24	7.34	11.68	90.0	11.4	2.8
20:25	6.93	12.05	99.0	10.7	2.7
20:26	7.61	11.56	101.4	12.2	2.7
20:27	7.97	11.23	101.3	13.9	2.6
20:28	8.69	10.55	97.8	15.6	2.8
20:29	8.82	10.43	98.1	22.0	2.7
20:30	8.63	10.70	106.1	18.2	2.8
20:31	8.75	10.47	100.5	17.4	2.6
20:32	8.22	10.91	107.5	11.5	2.6
20:33	8.23	10.95	106.3	10.6	2.7
20:34	8.47	10.76	114.1	12.6	2.7
20:35	8.76	10.55	117.7	14.5	2.7
20:36	8.79	10.47	119.8	21.5	2.7
Min	6.93	9.98	82.0	10.3	2.6
Max	9.42	12.05	119.8	35.4	2.9
Avg	8.56	10.68	101.1	17.6	2.7

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 2 Scrubber Inlet
Test 12 - September 23, 2015

Time	O_2 %	CO_2 %	SO_2 ppm	CO ppm	THC ppm
20:42	8.77	10.47	112.7	10.8	2.6
20:43	8.98	10.34	111.9	11.6	2.7
20:44	8.86	10.36	111.6	14.0	2.8
20:45	8.06	11.08	119.6	10.9	2.7
20:46	8.51	10.77	113.0	11.2	2.6
20:47	8.34	10.83	122.2	13.8	2.7
20:48	7.94	11.19	126.1	12.5	2.6
20:49	7.99	11.20	119.9	12.8	2.6
20:50	8.24	11.01	112.2	14.4	2.8
20:51	8.71	10.65	103.7	17.7	2.6
20:52	8.80	10.48	101.0	20.1	2.7
20:53	9.25	10.13	101.8	17.9	2.7
20:54	9.37	10.10	106.0	22.7	2.7
20:55	9.51	9.97	99.0	20.8	2.7
20:56	9.23	10.16	93.3	15.3	2.7
20:57	8.14	10.95	103.8	13.5	2.6
20:58	8.52	10.83	100.9	10.2	2.6
20:59	8.74	10.65	96.2	9.4	2.7
21:00	9.25	10.16	93.5	11.1	2.7
21:01	8.61	10.66	98.1	12.5	2.6
21:02	8.66	10.74	98.3	10.3	2.6
21:03	8.94	10.31	97.6	16.4	2.7
21:04	8.45	10.93	114.5	10.5	2.7
21:05	8.95	10.48	113.4	12.0	2.7
21:06	8.83	10.59	109.8	15.3	2.7
21:07	8.56	10.81	112.8	15.4	2.7
21:08	8.41	10.95	108.3	12.5	2.7
21:09	8.46	10.89	110.8	13.6	2.7
21:10	8.02	11.19	108.0	10.1	2.8
21:11	6.79	12.26	126.8	9.4	2.8
21:12	6.95	12.21	137.3	8.1	2.7
Min	6.79	9.97	93.3	8.1	2.6
Max	9.51	12.26	137.3	22.7	2.8
Avg	8.54	10.75	109.2	13.4	2.7

APPENDIX 9

ORTECH 1-Minute Combustion Gas Data
for the Boiler No. 2 BH Outlet
(12 pages)

Covanta - Durham York Energy Centre

Relative Accuracy Test Audit at the Boiler No. 2 BH Outlet

Test 1 - September 23, 2015

Time	THC ppm	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
10:31	0.2	10.01	9.81	21.7	2.2	59.2	60.2
10:32	0.2	9.52	10.22	24.8	1.9	59.2	58.9
10:33	0.1	9.11	10.53	19.0	1.7	62.3	61.8
10:34	0.0	9.14	10.52	16.1	1.7	66.9	67.9
10:35	0.0	9.13	10.52	15.8	1.5	64.7	66.0
10:36	0.2	8.65	10.92	16.6	1.3	69.2	70.7
10:37	0.8	8.99	10.60	15.4	1.4	64.8	66.2
10:38	0.7	9.16	10.47	21.3	1.1	60.1	61.3
10:39	0.7	9.20	10.45	20.0	1.1	60.6	60.0
10:40	0.6	9.01	10.60	21.7	1.1	67.1	67.0
10:41	0.6	8.99	10.61	21.6	0.8	64.2	65.3
10:42	0.7	8.65	10.91	22.4	0.9	63.2	62.7
10:43	0.7	9.50	10.19	21.6	0.9	62.6	63.3
10:44	0.7	9.38	10.36	21.7	0.7	61.1	61.0
10:45	0.6	9.30	10.39	25.3	0.8	59.1	60.9
10:46	0.7	9.46	10.27	40.5	0.8	55.8	55.9
10:47	0.8	9.44	10.30	37.3	0.6	58.6	58.9
10:48	0.7	9.22	10.57	34.9	0.7	61.5	61.4
10:49	0.7	7.29	12.19	15.9	1.0	91.6	91.8
10:50	0.5	8.46	11.14	16.5	1.0	88.0	94.3
10:51	0.7	9.73	10.10	26.4	0.7	63.1	66.7
10:52	0.6	9.48	10.36	33.0	0.6	61.0	61.5
10:53	0.6	9.84	10.07	44.2	0.8	55.7	56.9
10:54	0.5	9.65	10.31	34.8	0.8	61.6	61.5
10:55	0.7	9.43	10.43	23.3	1.0	71.9	73.1
10:56	0.5	9.52	10.32	19.6	0.9	72.6	73.8
10:57	0.6	9.87	9.96	20.6	0.9	70.3	72.3
10:58	0.6	10.26	9.65	28.3	0.6	63.9	65.3
10:59	0.7	9.81	10.07	24.4	0.6	66.9	65.8
11:00	0.6	9.58	10.25	21.6	0.7	66.1	66.9
11:01	0.5	8.95	10.75	13.9	0.7	79.0	79.0
Min	0.0	7.29	9.65	13.9	0.6	55.7	55.9
Max	0.8	10.26	12.19	44.2	2.2	91.6	94.3
Avg	0.5	9.28	10.45	23.9	1.0	65.5	66.4

Covanta - Durham York Energy Centre

Relative Accuracy Test Audit at the Boiler No. 2 BH Outlet

Test 2 -September 23, 2015

Time	THC ppm	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
11:10	0.7	9.31	10.43	13.9	0.7	62.2	61.7
11:11	0.8	8.89	10.74	10.6	0.7	86.4	86.5
11:12	0.8	9.09	10.53	13.9	0.8	76.8	82.1
11:13	0.8	9.64	10.12	20.0	0.8	60.1	64.4
11:14	0.8	9.54	10.23	15.2	0.8	73.6	75.1
11:15	1.0	9.59	10.19	16.6	0.7	70.8	72.6
11:16	0.7	9.63	10.18	20.9	0.7	63.8	65.4
11:17	0.9	9.42	10.33	16.7	0.8	58.0	60.1
11:18	0.7	9.48	10.26	18.3	1.0	58.1	58.0
11:19	1.0	9.47	10.28	19.1	0.9	57.9	58.6
11:20	0.9	10.03	9.81	31.6	1.0	49.1	52.0
11:21	1.3	9.40	10.38	18.6	1.1	60.9	60.8
11:22	1.1	8.87	10.81	16.2	0.8	66.3	67.4
11:23	1.1	9.14	10.55	15.6	0.9	63.1	64.2
11:24	0.8	9.15	10.52	12.7	0.8	72.9	74.1
11:25	0.8	9.07	10.64	14.0	1.1	68.6	70.6
11:26	1.1	9.22	10.50	21.5	1.3	63.9	67.1
11:27	1.1	9.80	10.02	32.8	1.6	54.2	56.0
11:28	1.3	9.92	9.89	36.3	2.2	50.2	52.2
11:29	1.1	9.31	10.40	23.3	2.9	60.8	60.7
11:30	1.0	9.81	9.98	21.2	3.4	68.3	69.3
11:31	0.9	9.64	10.12	18.8	3.7	73.5	73.8
11:32	0.9	9.09	10.55	17.0	4.0	76.6	76.7
11:33	0.7	9.28	10.32	23.2	4.6	80.4	84.4
11:34	0.9	9.50	10.16	23.5	5.5	66.8	69.0
11:35	0.8	9.31	10.38	28.3	5.7	66.1	67.8
11:36	0.7	9.03	10.57	19.9	5.6	69.3	71.9
11:37	0.8	9.51	10.23	25.8	5.7	66.6	68.3
11:38	0.8	9.39	10.32	27.9	6.2	62.2	65.1
11:39	0.9	9.52	10.26	36.0	6.4	54.2	55.7
11:40	0.8	7.19	12.27	13.3	8.1	90.5	90.5
Min	0.7	7.19	9.81	10.6	0.7	49.1	52.0
Max	1.3	10.03	12.27	36.3	8.1	90.5	90.5
Avg	0.9	9.33	10.39	20.7	2.6	66.2	67.8

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 2 BH Outlet
Test 3 - September 23, 2015

Time	THC ppm	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
13:22	0.4	8.00	11.42	11.7	0.3	82.1	81.9
13:23	0.4	8.84	10.76	13.3	0.4	85.1	87.9
13:24	0.6	9.03	10.63	16.8	0.1	69.7	74.6
13:25	0.6	9.05	10.60	16.5	0.2	56.6	58.0
13:26	0.3	8.85	10.74	14.4	0.2	57.9	61.4
13:27	0.4	8.99	10.65	20.1	0.1	53.5	55.0
13:28	0.4	8.84	10.80	19.3	0.2	63.2	63.3
13:29	0.2	8.08	11.44	14.9	0.3	83.5	83.2
13:30	0.3	8.16	11.36	12.6	0.4	91.6	91.5
13:31	0.1	8.19	11.34	11.3	0.5	89.6	91.4
13:32	0.1	8.45	11.11	10.1	0.3	84.2	86.3
13:33	0.4	9.23	10.46	18.9	0.3	62.7	68.6
13:34	0.5	9.71	10.09	29.6	0.0	44.6	45.7
13:35	0.2	9.67	10.15	24.9	0.1	48.1	48.1
13:36	0.2	9.25	10.49	17.9	0.2	62.9	63.3
13:37	0.3	9.64	10.15	14.7	0.2	58.1	61.0
13:38	0.3	9.61	10.21	24.3	0.2	57.9	58.6
13:39	0.3	9.24	10.52	26.2	0.0	60.2	60.4
13:40	0.3	9.28	10.50	29.1	0.1	57.0	58.9
13:41	0.1	9.51	10.30	18.6	0.3	70.9	71.0
13:42	0.3	9.75	10.14	22.6	0.3	69.7	72.4
13:43	0.2	9.47	10.35	18.6	0.3	77.5	78.7
13:44	0.1	9.00	10.75	16.2	0.3	84.6	85.8
13:45	0.3	8.79	10.90	14.0	0.2	76.3	77.7
13:46	0.2	9.16	10.61	12.7	0.2	70.1	73.0
13:47	0.3	9.15	10.62	14.9	0.1	64.2	65.3
13:48	0.3	8.80	10.93	15.1	0.3	71.0	70.6
13:49	0.1	8.72	10.96	14.1	0.1	69.3	72.5
13:50	0.1	9.10	10.62	15.1	0.0	62.2	63.7
13:51	0.3	9.61	10.22	19.8	0.1	56.0	58.0
13:52	0.3	9.55	10.29	21.6	0.1	60.5	61.1
Min	0.1	8.00	10.09	10.1	0.0	44.6	45.7
Max	0.6	9.75	11.44	29.6	0.5	91.6	91.5
Avg	0.3	9.05	10.65	17.7	0.2	67.8	69.3

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 2 BH Outlet
Test 4 - September 23, 2015

Time	THC ppm	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
14:01	1.0	8.83	10.85	13.0	0.0	65.2	67.9
14:02	0.9	8.87	10.83	14.5	0.1	65.4	65.5
14:03	0.9	8.65	11.02	15.6	0.1	66.5	69.0
14:04	1.0	8.51	11.10	15.0	0.0	56.8	58.6
14:05	0.9	8.77	10.85	15.2	0.0	58.6	58.2
14:06	1.0	8.81	10.79	15.1	0.1	59.1	58.9
14:07	0.9	8.81	10.80	15.2	0.0	53.8	55.8
14:08	1.0	8.88	10.73	16.4	0.0	49.6	51.0
14:09	0.8	9.11	10.52	16.7	0.0	59.2	61.8
14:10	1.0	9.10	10.54	19.2	0.1	51.8	53.4
14:11	0.9	9.00	10.63	17.1	0.0	62.2	63.4
14:12	0.8	9.31	10.34	18.3	0.1	67.7	68.3
14:13	0.9	9.10	10.50	21.3	0.1	69.9	72.7
14:14	0.9	8.87	10.66	18.0	0.1	66.4	69.1
14:15	1.0	9.18	10.44	22.1	0.1	72.3	72.2
14:16	1.0	8.82	10.78	20.8	0.3	80.3	80.1
14:17	1.0	8.76	10.80	17.1	0.2	84.9	87.5
14:18	0.9	8.81	10.78	21.0	0.2	79.0	81.6
14:19	0.9	8.57	11.01	29.3	0.2	75.2	75.7
14:20	0.9	8.47	11.10	26.3	0.2	78.9	78.6
14:21	0.9	8.33	11.22	23.5	0.2	79.1	78.8
14:22	1.0	7.63	11.79	23.3	0.2	79.5	79.8
14:23	1.0	7.12	12.15	17.5	0.2	86.0	87.7
14:24	1.0	7.43	11.89	17.6	0.2	81.5	82.9
14:25	0.9	7.36	11.94	19.3	0.2	84.1	83.7
14:26	0.8	7.62	11.73	17.3	0.2	82.7	83.8
14:27	0.8	7.81	11.59	16.9	0.2	77.8	81.5
14:28	0.8	8.54	10.98	16.3	0.2	73.1	74.7
14:29	0.8	8.52	11.05	15.1	0.2	71.3	72.7
14:30	0.8	8.31	11.23	15.7	0.2	76.3	76.9
14:31	0.8	8.77	10.82	17.5	0.2	71.5	74.7
Min	0.8	7.12	10.34	13.0	0.0	49.6	51.0
Max	1.0	9.31	12.15	29.3	0.3	86.0	87.7
Avg	0.9	8.54	11.01	18.3	0.1	70.5	71.8

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 2 BH Outlet
Test 5 - September 23, 2015

Time	THC ppm	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
15:04	1.0	9.19	10.34	18.8	0.8	56.9	57.8
15:05	0.9	8.78	10.66	23.7	0.6	53.9	55.2
15:06	0.7	8.80	10.65	25.9	0.7	54.5	54.2
15:07	0.8	9.28	10.23	30.3	0.6	53.2	54.1
15:08	0.7	9.99	9.64	43.8	0.6	46.6	48.8
15:09	0.7	9.92	9.72	37.8	0.5	43.1	43.9
15:10	0.7	9.21	10.35	19.5	0.5	56.7	56.7
15:11	0.6	9.07	10.43	12.6	0.7	70.6	70.3
15:12	0.5	9.67	9.92	14.3	0.4	62.7	67.2
15:13	0.5	10.26	9.44	24.0	0.3	53.9	54.7
15:14	0.6	9.27	10.30	21.7	0.5	61.0	60.7
15:15	0.5	8.92	10.59	28.4	0.5	69.9	70.0
15:16	0.5	9.34	10.21	39.0	0.3	70.2	70.8
15:17	0.4	9.53	10.04	26.9	0.4	64.5	65.8
15:18	0.3	9.12	10.40	18.1	0.5	70.3	69.8
15:19	0.4	8.88	10.60	10.7	0.5	79.9	80.2
15:20	0.4	8.77	10.67	11.6	0.5	79.8	79.8
15:21	0.5	9.26	10.25	32.8	0.4	70.3	73.9
15:22	0.5	9.91	9.69	71.2	0.2	52.5	56.3
15:23	0.5	8.89	10.60	36.9	0.3	60.5	60.7
15:24	0.5	9.25	10.25	27.4	0.4	65.1	65.1
15:25	0.4	9.58	10.01	23.4	0.5	65.9	67.4
15:26	0.4	9.71	9.90	24.2	0.3	72.8	74.3
15:27	0.6	9.20	10.34	16.1	0.4	81.3	81.4
15:28	0.5	9.41	10.18	17.8	0.3	70.1	74.9
15:29	0.5	9.18	10.40	16.7	0.4	69.8	72.0
15:30	0.4	9.08	10.51	19.4	0.3	62.0	64.5
15:31	0.4	9.35	10.27	18.4	0.5	69.1	70.0
15:32	0.4	9.50	10.17	25.1	0.3	57.5	60.2
15:33	0.4	9.25	10.36	20.3	0.2	52.6	54.2
15:34	0.6	9.20	10.41	31.7	0.3	62.1	63.3
Min	0.3	8.77	9.44	10.7	0.2	43.1	43.9
Max	1.0	10.26	10.67	71.2	0.8	81.3	81.4
Avg	0.5	9.31	10.24	25.4	0.4	63.2	64.5

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 2 BH Outlet
Test 6 - September 23, 2015

Time	THC ppm	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
15:45	0.6	8.77	10.84	14.6	0.2	64.3	67.7
15:46	0.7	9.44	10.27	14.1	0.3	59.1	61.2
15:47	0.8	9.35	10.36	12.3	0.3	61.7	60.9
15:48	0.4	8.70	10.90	11.5	0.4	70.7	71.5
15:49	0.5	9.05	10.58	18.3	0.4	65.3	67.5
15:50	0.6	9.18	10.47	25.5	0.3	60.2	60.9
15:51	0.7	8.83	10.78	20.4	0.4	60.8	60.7
15:52	0.7	8.08	11.40	11.8	0.4	64.6	64.1
15:53	0.6	7.89	11.53	8.0	0.6	83.5	84.2
15:54	0.6	7.98	11.46	8.6	0.6	85.5	86.4
15:55	0.7	8.26	11.25	9.8	0.7	79.0	80.3
15:56	0.8	8.62	10.93	13.7	1.0	66.9	71.0
15:57	0.6	9.05	10.58	17.1	1.3	61.9	63.4
15:58	0.8	9.53	10.17	22.7	1.7	57.3	58.4
15:59	0.8	9.06	10.57	17.8	1.8	68.2	68.7
16:00	1.0	9.33	10.35	22.5	1.7	63.8	65.7
16:01	0.9	9.25	10.42	14.6	2.1	73.3	73.5
16:02	0.8	9.35	10.33	11.8	2.6	82.5	82.8
16:03	1.0	9.12	10.56	12.2	3.5	91.6	91.5
16:04	0.9	8.93	10.68	15.2	4.2	85.1	89.7
16:05	1.0	8.97	10.64	16.5	4.6	73.5	74.5
16:06	1.0	8.82	10.77	20.4	4.0	69.5	71.2
16:07	1.1	8.68	10.85	19.1	3.4	71.0	70.4
16:08	0.8	8.31	11.16	23.2	3.0	73.1	73.1
16:09	1.0	8.70	10.79	19.0	2.9	74.4	73.7
16:10	1.0	8.96	10.60	21.4	2.6	71.8	74.1
16:11	0.8	9.09	10.49	23.9	2.5	74.1	73.7
16:12	1.3	8.87	10.67	26.4	2.5	78.1	77.7
16:13	1.0	8.91	10.65	28.2	2.2	73.2	74.6
16:14	0.8	8.85	10.70	18.8	2.3	86.8	87.4
16:15	1.2	8.46	11.08	22.1	1.9	81.9	85.0
Min	0.4	7.89	10.17	8.0	0.2	57.3	58.4
Max	1.3	9.53	11.53	28.2	4.6	91.6	91.5
Avg	0.8	8.85	10.74	17.5	1.8	72.0	73.1

Covanta - Durham York Energy Centre

Relative Accuracy Test Audit at the Boiler No. 2 BH Outlet

Test 7 - September 23, 2015

Time	THC ppm	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
16:30	0.3	9.27	10.46	12.8	1.2	64.3	66.1
16:31	0.5	9.44	10.33	16.8	1.1	55.3	56.3
16:32	0.5	9.50	10.29	19.3	0.9	55.9	55.5
16:33	0.3	9.11	10.63	18.6	0.8	67.3	67.0
16:34	0.4	9.38	10.37	12.7	0.8	76.5	79.7
16:35	0.7	9.42	10.34	15.9	0.7	79.8	79.7
16:36	0.4	9.33	10.40	15.1	0.7	78.1	81.4
16:37	0.4	8.99	10.70	16.6	0.7	82.6	82.7
16:38	0.5	9.35	10.36	13.1	0.7	71.3	76.6
16:39	0.3	9.07	10.63	18.1	0.6	69.6	69.9
16:40	0.4	8.17	11.36	18.0	0.4	70.2	69.9
16:41	0.2	8.48	11.10	10.9	0.6	71.3	71.1
16:42	0.3	7.67	11.82	13.7	0.7	77.4	77.3
16:43	0.0	8.56	11.01	10.5	0.8	78.8	81.5
16:44	0.2	8.32	11.25	9.8	0.8	79.2	79.2
16:45	0.2	7.82	11.68	9.0	0.9	87.6	87.4
16:46	0.3	7.88	11.65	8.6	1.0	97.4	98.0
16:47	0.2	8.20	11.36	12.3	0.9	83.1	89.3
16:48	0.1	8.75	10.86	20.4	0.8	59.2	64.2
16:49	0.5	9.16	10.52	21.6	0.8	51.7	52.7
16:50	0.3	9.28	10.41	22.7	0.8	47.3	48.5
16:51	0.4	9.38	10.34	23.0	0.6	44.7	45.0
16:52	0.2	9.23	10.48	19.1	0.6	52.6	52.9
16:53	0.4	9.47	10.27	16.0	0.6	48.7	51.9
16:54	0.5	9.57	10.21	20.1	0.5	48.4	49.9
16:55	0.5	9.32	10.42	18.2	0.4	46.8	47.3
16:56	0.2	8.99	10.70	16.1	0.5	56.1	55.9
16:57	0.2	8.46	11.15	10.7	0.5	72.8	72.6
16:58	0.3	8.72	10.94	9.7	0.6	69.1	74.8
16:59	0.4	8.73	10.92	9.5	0.5	73.2	75.0
17:00	0.5	8.76	10.91	18.3	0.4	65.5	66.7
Min	0.0	7.67	10.21	8.6	0.4	44.7	45.0
Max	0.7	9.57	11.82	23.0	1.2	97.4	98.0
Avg	0.3	8.90	10.77	15.4	0.7	67.1	68.6

Covanta - Durham York Energy Centre

Relative Accuracy Test Audit at the Boiler No. 2 BH Outlet

Test 8 - September 23, 2015

Time	THC ppm	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
17:19	0.4	8.82	10.73	13.4	0.5	79.2	80.8
17:20	0.4	9.34	10.26	37.8	0.4	63.5	66.5
17:21	0.4	9.47	10.13	44.4	0.3	56.7	56.3
17:22	0.4	9.45	10.17	24.1	0.4	58.7	58.2
17:23	0.5	9.65	10.00	17.5	0.4	61.6	61.4
17:24	0.4	9.75	9.98	16.1	0.4	62.7	62.5
17:25	0.5	9.43	10.25	14.2	0.4	67.4	66.5
17:26	0.3	8.93	10.66	17.8	0.5	73.6	75.3
17:27	0.4	9.36	10.27	24.0	0.3	60.8	64.3
17:28	0.6	9.98	9.77	36.3	0.3	51.6	53.5
17:29	0.7	9.14	10.49	28.8	0.2	59.2	59.2
17:30	0.6	9.15	10.47	34.1	0.4	65.3	65.7
17:31	0.6	9.19	10.46	27.2	0.4	64.6	65.5
17:32	0.4	9.65	10.09	41.4	0.3	60.4	61.8
17:33	0.6	9.61	10.12	34.6	0.4	60.0	60.2
17:34	0.6	9.64	10.11	28.5	0.4	62.0	62.1
17:35	0.5	8.68	10.96	16.0	0.4	78.7	78.5
17:36	0.5	8.34	11.18	15.4	0.7	90.6	92.1
17:37	0.6	9.41	10.25	30.7	0.8	72.9	78.0
17:38	0.5	10.16	9.63	70.4	0.7	55.0	58.6
17:39	0.8	9.98	9.82	90.7	0.8	52.5	52.8
17:40	0.5	10.11	9.73	67.2	0.8	54.6	54.8
17:41	0.5	9.75	10.06	20.0	1.2	61.7	63.3
17:42	0.4	9.80	10.08	18.8	1.2	63.8	66.9
17:43	0.4	8.47	11.18	13.1	1.4	85.4	86.4
17:44	0.4	9.54	10.21	15.6	1.6	70.7	76.4
17:45	0.3	9.38	10.40	16.9	1.5	72.7	72.4
17:46	0.5	9.37	10.41	23.1	1.4	72.3	73.7
17:47	0.2	9.23	10.56	27.2	1.6	73.0	72.8
17:48	0.4	9.12	10.68	27.4	2.1	74.9	74.5
17:49	0.3	9.28	10.59	27.2	2.6	74.1	75.1
Min	0.2	8.34	9.63	13.1	0.2	51.6	52.8
Max	0.8	10.16	11.18	90.7	2.6	90.6	92.1
Avg	0.5	9.39	10.31	29.7	0.8	66.4	67.6

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 2 BH Outlet
Test 9 - September 23, 2015

Time	THC ppm	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
18:50	0.4	8.44	11.19	14.9	1.5	79.1	81.6
18:51	0.3	8.31	11.31	16.3	1.2	72.1	72.8
18:52	0.3	9.19	10.51	13.1	1.0	70.6	72.1
18:53	0.3	8.73	10.94	15.6	0.9	70.7	70.1
18:54	0.3	8.40	11.17	13.8	0.9	73.9	73.3
18:55	0.4	8.05	11.45	8.4	0.9	80.4	80.1
18:56	0.3	7.40	11.97	5.1	1.0	94.1	94.2
18:57	0.0	7.56	11.85	5.4	0.9	89.7	92.3
18:58	0.0	7.79	11.69	6.4	0.9	96.3	96.7
18:59	0.1	7.35	12.00	4.8	1.0	104.6	105.9
19:00	0.3	8.47	11.06	6.1	0.7	80.4	86.2
19:01	0.3	8.96	10.66	8.1	0.7	57.9	63.1
19:02	0.1	9.12	10.55	10.2	0.5	57.1	57.8
19:03	0.3	9.11	10.59	15.1	0.7	60.7	61.1
19:04	0.2	8.88	10.77	8.8	0.6	64.4	65.6
19:05	0.2	9.17	10.53	9.7	0.6	56.8	61.3
19:06	0.2	9.26	10.47	9.2	0.4	53.1	52.9
19:07	0.5	8.76	10.92	12.0	0.6	60.4	60.3
19:08	0.4	8.06	11.50	8.8	0.7	73.5	73.5
19:09	0.3	8.28	11.30	7.7	0.8	81.0	82.0
19:10	0.5	8.56	11.09	9.5	0.8	68.8	72.6
19:11	0.1	8.44	11.17	8.4	0.8	69.9	70.8
19:12	0.2	8.27	11.30	13.1	0.5	66.0	68.5
19:13	0.1	9.08	10.58	16.2	0.5	58.3	59.0
19:14	0.2	9.09	10.58	20.8	0.3	51.7	54.0
19:15	0.5	9.03	10.64	23.7	0.4	48.7	49.6
19:16	0.3	9.33	10.38	26.8	0.3	47.8	47.5
19:17	0.4	9.47	10.27	25.4	0.2	44.0	44.9
19:18	0.2	9.65	10.13	26.4	0.4	44.9	44.8
19:19	0.0	9.61	10.19	20.2	0.3	51.4	51.5
19:20	0.4	8.96	10.74	14.1	0.4	72.8	73.6

Min	0.0	7.35	10.13	4.8	0.2	44.0	44.8
Max	0.5	9.65	12.00	26.8	1.5	104.6	105.9
Avg	0.3	8.67	10.95	13.0	0.7	67.8	69.0

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 2 BH Outlet
Test 10 - September 23, 2015

Time	THC ppm	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
19:27	0.1	9.08	10.66	12.0	0.5	77.7	78.7
19:28	0.1	9.16	10.56	15.8	0.7	77.0	77.1
19:29	0.3	8.51	11.12	16.6	0.6	78.9	79.0
19:30	0.2	8.61	11.02	15.7	0.6	77.4	80.3
19:31	0.4	9.05	10.64	15.0	0.5	72.4	74.1
19:32	0.2	8.94	10.76	21.0	0.6	70.3	71.9
19:33	0.1	8.05	11.49	17.3	0.5	65.1	65.8
19:34	0.1	8.09	11.42	14.0	0.8	76.7	77.0
19:35	0.0	9.07	10.58	13.4	0.6	72.1	74.3
19:36	0.0	9.39	10.34	16.9	0.6	65.0	65.7
19:37	0.0	9.13	10.57	22.4	0.3	65.1	65.0
19:38	0.0	9.00	10.70	16.8	0.4	66.7	66.4
19:39	0.0	9.53	10.26	21.6	0.5	63.9	66.0
19:40	0.2	9.78	10.06	16.5	0.3	64.3	64.3
19:41	0.2	9.21	10.57	16.1	0.5	83.3	84.6
19:42	0.1	8.11	11.49	11.4	0.5	101.2	100.7
19:43	0.0	8.00	11.59	8.4	0.7	127.1	128.8
19:44	0.0	7.62	11.96	8.3	0.6	114.0	117.3
19:45	0.2	8.12	11.57	9.1	0.6	107.3	110.9
19:46	0.6	8.44	11.29	10.2	0.6	94.3	97.3
19:47	0.4	8.69	11.06	7.3	0.5	90.2	92.0
19:48	0.3	9.22	10.61	7.1	0.5	79.6	82.4
19:49	0.5	9.52	10.35	8.0	0.4	68.2	70.3
19:50	0.3	9.32	10.50	8.8	0.5	72.4	73.0
19:51	0.4	9.20	10.61	9.7	0.6	70.2	71.9
19:52	0.2	9.20	10.58	14.0	0.6	63.6	67.9
19:53	0.3	9.20	10.60	16.6	0.6	55.5	56.4
19:54	0.4	9.19	10.63	16.1	0.6	55.8	55.7
19:55	0.2	8.99	10.78	17.9	0.6	61.0	61.9
19:56	0.2	9.33	10.52	16.8	0.6	55.8	57.6
19:57	0.2	8.77	10.98	13.4	0.6	63.1	63.6
Min	0.0	7.62	10.06	7.1	0.3	55.5	55.7
Max	0.6	9.78	11.96	22.4	0.8	127.1	128.8
Avg	0.2	8.89	10.83	14.0	0.6	76.0	77.3

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 2 BH Outlet
Test 11 - September 23, 2015

Time	THC ppm	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
20:06	0.4	9.06	10.68	9.7	0.6	69.8	69.7
20:07	0.2	9.22	10.49	16.0	0.4	74.6	79.1
20:08	0.4	9.03	10.70	17.2	0.3	58.2	59.3
20:09	0.5	9.13	10.57	18.0	0.4	61.9	66.5
20:10	0.4	9.40	10.40	18.2	0.4	57.6	59.2
20:11	0.5	9.06	10.66	13.5	0.5	69.2	70.7
20:12	0.8	9.08	10.59	12.7	0.5	62.5	63.6
20:13	1.4	9.30	10.42	17.9	0.3	61.0	61.0
20:14	1.6	8.63	10.97	14.5	0.5	68.4	70.5
20:15	1.9	9.32	10.36	29.1	0.3	59.2	63.5
20:16	2.4	9.54	10.23	34.4	0.4	53.9	54.6
20:17	3.0	9.39	10.37	25.4	0.4	54.3	54.2
20:18	3.6	9.81	10.05	17.8	0.3	52.7	52.2
20:19	4.0	9.60	10.23	15.3	0.5	64.4	64.5
20:20	4.3	9.37	10.41	15.6	0.5	63.2	65.2
20:21	4.3	9.52	10.31	21.5	0.4	59.2	60.1
20:22	4.5	9.25	10.56	19.5	0.4	66.3	66.4
20:23	4.4	9.07	10.70	16.4	0.3	70.6	70.5
20:24	4.5	7.99	11.60	11.6	0.4	75.9	75.5
20:25	4.4	7.46	12.06	8.8	0.5	91.7	91.8
20:26	4.4	7.82	11.74	10.0	0.4	81.8	87.9
20:27	4.5	8.30	11.36	13.0	0.1	59.7	61.9
20:28	4.9	9.04	10.68	13.9	0.2	65.1	68.5
20:29	5.4	9.26	10.52	18.9	0.3	54.4	57.3
20:30	5.4	9.00	10.80	18.6	0.2	56.2	56.4
20:31	5.3	9.33	10.49	16.0	0.1	54.4	56.4
20:32	6.5	8.75	10.95	11.0	0.3	66.8	66.6
20:33	8.8	8.61	11.05	9.2	0.4	71.8	72.3
20:34	11.6	8.88	10.83	10.8	0.2	62.6	65.0
20:35	13.8	9.04	10.70	12.0	0.2	62.5	63.9
20:36	14.8	9.30	10.50	19.6	0.2	55.4	57.5
Min	0.2	7.46	10.05	8.8	0.1	52.7	52.2
Max	14.8	9.81	12.06	34.4	0.6	91.7	91.8
Avg	4.3	9.02	10.71	16.3	0.4	64.0	65.5

Covanta - Durham York Energy Centre
Relative Accuracy Test Audit at the Boiler No. 2 BH Outlet
Test 12 - September 23, 2015

Time	THC ppm	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NOx ppm
20:42	11.4	9.27	10.54	9.4	0.3	61.4	61.6
20:43	10.5	9.28	10.50	10.8	0.5	67.3	68.6
20:44	9.9	9.43	10.36	11.4	0.4	62.2	62.8
20:45	9.8	8.64	11.05	10.0	0.3	71.9	72.1
20:46	9.5	8.79	10.88	9.2	0.4	70.0	70.7
20:47	2.8	8.92	10.81	11.3	0.4	73.3	73.1
20:48	2.3	8.48	11.16	11.6	0.5	75.0	75.3
20:49	1.8	8.34	11.26	11.2	0.4	74.7	75.3
20:50	1.5	8.61	11.04	12.7	0.3	70.4	71.9
20:51	1.0	9.01	10.70	15.0	0.3	67.4	68.3
20:52	0.5	9.23	10.51	20.1	0.4	63.3	64.4
20:53	0.0	9.61	10.16	15.7	0.2	63.0	63.0
20:54	0.0	9.74	10.09	21.0	0.3	59.6	61.9
20:55	0.0	9.86	10.00	19.3	0.2	58.9	59.1
20:56	0.0	9.71	10.12	16.0	0.3	66.8	67.2
20:57	0.0	9.01	10.73	13.3	0.3	72.2	73.5
20:58	0.0	8.78	10.85	9.2	0.4	84.7	87.2
20:59	0.0	9.02	10.66	8.3	0.3	82.4	84.6
21:00	0.0	9.62	10.16	9.8	0.3	76.2	77.3
21:01	0.0	9.24	10.53	10.8	0.2	73.3	75.0
21:02	0.0	8.93	10.76	9.1	0.4	78.0	79.2
21:03	0.0	9.49	10.28	14.8	0.1	64.2	67.7
21:04	0.0	8.72	10.94	9.9	0.3	71.2	71.5
21:05	0.0	9.33	10.44	10.1	0.3	76.7	77.6
21:06	0.0	9.26	10.52	13.6	0.4	81.3	81.6
21:07	0.4	9.01	10.72	14.9	0.4	79.6	80.1
21:08	1.1	8.86	10.83	10.6	0.3	83.8	83.3
21:09	1.5	8.86	10.83	13.6	0.3	80.1	82.4
21:10	1.5	8.64	11.01	9.8	0.4	85.3	85.6
21:11	1.4	7.43	12.03	8.5	0.5	98.1	97.8
21:12	1.5	7.23	12.14	7.4	0.5	98.0	98.7

Min	0.0	7.23	10.00	7.4	0.1	58.9	59.1
Max	11.4	9.86	12.14	21.0	0.5	98.1	98.7
Avg	2.2	8.98	10.73	12.2	0.3	73.9	74.8

APPENDIX 10

Hydrogen Chloride Field Data Sheets
for the Boiler No. 1 BH Outlet
(26 pages)

Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
HCl Train Data

Test Date	Test Time	Test No.	Dry Gas Meter Correction Factor	Initial Dry Gas Meter Reading ft^3	Final Dry Gas Meter Reading ft^3	Actual Volume Sampled ft^3	Barometric Pressure in. mercury	Average Dry Gas Meter Pressure in. water	Average Dry Gas Meter Temperature °F	Average Dry Gas Meter Temperature °C	Corrected Gas Volume Sampled Rm^3 *	Total Gain (g)	Moisture (%)	Total HCl Collected (mg)	HCl Concentration (ppm)
October 5, 2015	9:56 - 10:26	1	1.004	379.43	402.15	22.72	29.93	2.0	72.0	22.2	0.6555	89.6	15.7	4.15	4.2
October 5, 2015	10:28 - 10:58	2	1.017	50.20	72.90	22.70	29.93	1.7	69.8	21.0	0.6658	86.4	15.0	3.43	3.5
October 5, 2015	11:00 - 11:30	3	1.004	2.59	25.87	23.28	29.93	2.0	74.2	23.5	0.6689	87.3	15.1	3.41	3.4
October 5, 2015	13:19 - 13:49	4	1.017	973.30	995.57	22.27	29.90	1.7	72.8	22.7	0.6488	87.1	15.4	3.15	3.3
October 5, 2015	13:51 - 14:21	5	1.004	27.19	50.19	23.00	29.89	2.0	76.7	24.8	0.6569	100.6	17.2	3.06	3.1
October 5, 2015	14:23 - 14:53	6	1.017	995.87	1017.70	21.83	29.88	1.9	75.0	23.9	0.6332	93.6	16.7	3.29	3.5
October 5, 2015	14:55 - 15:25	7	1.004	50.61	73.68	23.07	29.87	2.0	79.0	26.1	0.6557	97.1	16.8	3.19	3.3
October 5, 2015	15:26 - 15:56	8	1.017	17.89	40.50	22.61	29.87	1.8	75.3	24.1	0.6551	98.0	16.9	3.23	3.3
October 5, 2015	15:57 - 16:27	9	1.004	73.92	96.86	22.94	29.86	2.0	79.6	26.5	0.6510	90.8	15.9	3.00	3.1
October 5, 2015	16:28 - 16:58	10	1.017	40.87	64.02	23.15	29.86	1.8	75.8	24.3	0.6699	88.4	15.2	3.11	3.1
October 5, 2015	16:59 - 17:29	11	1.004	97.28	120.43	23.15	29.85	2.0	79.3	26.3	0.6571	80.3	14.3	2.80	2.9
October 5, 2015	17:30 - 18:00	12	1.017	64.61	87.17	22.56	29.86	1.8	76.1	24.5	0.6524	79.8	14.3	2.13	2.2

* Dry at 25°C and 1 atmosphere

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	1
Test location:	Outlet No.: 1
Date:	OCT 5, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 4 CCE 20090
Barometer	ENV. CAN

P_{Bar}	~~29.6~~ 29.93

~~29.84~~

Clock Time	Dry Gas Meter ft^3	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	379.43	255	288	69	69	68	1.8	4.0
5	383.13	255	289	58	69	69	2.0	4.0
10	386.92	255	290	55	69	69	2.0	4.0
15	390.70	257	289	52	69	75	2.0	4.0
20	394.72	261	287	51	70	78	2.0	4.0
25	398.4	259	285	51	70	80	2.0	4.0
30	402.15	258	285	52	71	81	2.0	4.0

Start Time:	9:56
Finish Time:	10:26
Initial Leak Check:	.001 cu.ft @ 10 " Hg
Final Leak Check:	.001 cu.ft @ 11 " Hg

DGMCF:	1.004
Sample Volume:	~~22.78~~ 22.72
Average DGM Temp:	71.9

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	2
Test location:	Outlet No.: 1
Date:	Oct 5, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 1 COE 20094
Barometer	ENV. CAN

P_{Bar}	~~29.84~~ 29.93

Clock Time	Dry Gas Meter ft^3 50.2	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	~~50~~	255	280	62	77	68	1.8	1.0
5	54.72	255	280	62	75	68	1.8	1.0
10	58.9	255	280	60	73	68	1.8	1.0
15	62.05	254	281	58	70	67	1.7	1.0
20	65.7	254	280	55	70	67	1.7	1.0
25	~~68~~ 69.29	254	280	60	70	67	1.7	1.0
30	72.9	255	281	61	70	67	1.7	1.0

Start Time:	10:28
Finish Time:	10:58
Initial Leak Check:	.001 cu.ft @ 10 " Hg
Final Leak Check:	.001 cu.ft @ 12 " Hg

DGMCF:	1.017
Sample Volume:	22.7
Average DGM Temp:	69.8

Comments:

Operator : MY

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	3
Test location:	Outlet No.: 1
Date:	Oct 5, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 4 CDE 20090
Barometer	ENV. CAN

P_{Bar}	~~29.84~~ 29.93

Clock Time	Dry Gas Meter ft³	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	2.59	257	279	69	71	71	2.0	4.0
5	6.7	256	284	52	71	72	2.0	4.0
10	10.9	261	284	52	71	72	2.0	4.0
15	14.24	259	284	54	~~77~~ 71	77	2.0	4.0
20	18.1	260	284	59	71	82	2.0	4.0
25	21.88	258	284	60	72	83	2.0	4.0
30	25.87	258	284	61	72	83	2.0	40

Start Time:	11:00
Finish Time:	11:30
Initial Leak Check:	.007 cu.ft @ 10 " Hg
Final Leak Check:	.005 cu.ft @ 10 " Hg

DGMCF:	1.004
Sample Volume:	23.28
Average DGM Temp:	74.2

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	4
Test location:	Outlet No.: 1
Date:	Oct 5, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	Team 1 COE 20094
Barometer	ENV. CAN

P_{Bar}	~~29.81~~ 29.90

Clock Time	Dry Gas Meter ft³	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	973.3	255	286	68	72	72	1.7	2.0
5	977.3	255	286	60	72	72	1.7	2.0
10	980.94	255	286	53	72	73	1.7	2.0
15	984.62	255	285	50	72	74	1.7	2.0
20	988.31	254	285	51	72	74	1.7	2.0
25	991.5	255	284	53	72	75	1.7	2.0
30	995.57	255	284	57	72	75	1.7	2.0

Start Time:	13:19			
Finish Time:	13:49			
Initial Leak Check:	.003	cu.ft @	10	" Hg
Final Leak Check:	.005	cu.ft @	11	" Hg

DGMCF:	1.017
Sample Volume:	22.27
Average DGM Temp:	72.8

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	5
Test location:	Outlet No.:
Date:	OCT 5, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TOAM 4 CCE 20090
Barometer	ENV. CAN

P_{Bar}	~~29.79~~ 29.89	29.79

Clock Time	Dry Gas Meter ft^3	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	27.19	262	280	62	74	73	2.0	4.5
5	31.8	262	288	48	75	74	2.0	4.5
10	35.18	262	288	48	74	77	2.0	4.5
15	38.99	261	289	48	74	80	2.0	4.5
20	42.75	258	289	51	74	82	2.0	4.5
25	46.3	260	288	51	74	82	2.0	4.5
30	50.19	260	289	55	75	86	2.0	4.5

Start Time:	13:51			
Finish Time:	14:21			
Initial Leak Check:	0.005	cu.ft @	11	" Hg
Final Leak Check:	0.005	cu.ft @	10	" Hg

DGMCF:	1.004
Sample Volume:	23.0
Average DGM Temp:	76.7

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	6
Test location:	Outlet No.: 1
Date:	OCT 5, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 1 CDE70094
Barometer	ENV. CAN

P_{Bar}	~~29.78~~ 29.88

Clock Time	Dry Gas Meter ft³	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	995.87	256	288	61	74	73	1.9	1.0
5	1000.25	256	289	60	74	73	1.9	1.0
10	1004.5	255	284	63	76	73	1.9	1.0
15	1007.2	254	285	62	76	73	1.9	1.0
20	1011.09	255	284	63	78	74	1.9	1.0
25	1014.04	255	285	64	78	74	1.9	1.0
30	1017.7	255	285	66	80	74	1.9	1.0

Start Time:	14:23
Finish Time:	14:53
Initial Leak Check:	<0.003 cu.ft @ 10 "Hg
Final Leak Check:	.005 cu.ft @ 11 "Hg

DGMCF:	1.017
Sample Volume:	21.83
Average DGM Temp:	75.0

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	7
Test location:	Outlet No.: 1
Date:	Oct 5, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	Team 4 COE 70090
Barometer	Env. Can

P_{Bar}	~~29.76~~ 29.87

29.79

Clock Time	Dry Gas Meter ft³	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	50.61	260	285	54	75	76	2.0	4.0
5	54.47	261	287	54	75	76	2.0	4.0
10	58.7	259	288	50	75	81	2.0	4.0
15	62.45	262	284	50	76	84	2.0	4.0
20	66.07	262	285	51	76	86	2.0	4.0
25	69.84	263	286	53	77	86	2.0	4.0
30	73.68	260	285	54	77	86	2.0	4.0

Start Time:	14:55
Finish Time:	15:25
Initial Leak Check:	005 cu.ft @ 10 " Hg
Final Leak Check:	.005 cu.ft @ 12 " Hg

DGMCF:	1.004
Sample Volume:	23.07
Average DGM Temp:	79.0

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	8
Test location:	Outlet No.: 1
Date:	OCT 5, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 1 COE 200914
Barometer	ENV. CAN

P_{Bar}	~~29.8~~ 29.87 ~~29.79~~

Clock Time	Dry Gas Meter ft³	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	17.89	253	280	54	74	74	1.8	2.0
5	21.7	254	283	49	74	74	1.8	2.0
10	25.32	255	286	51	75	74	1.8	2.0
15	29.15	255	285	53	77	74	1.8	2.0
20	33.19	253	287	57	78	74	1.8	2.0
25	36.75	255	286	59	79	74	1.8	2.0
30	40.5	255	286	59	79	74	1.8	2.0

Start Time:	15:26	
Finish Time:	15:56	
Initial Leak Check:	.002 cu.ft @	12 " Hg
Final Leak Check:	.002 cu.ft @	10 " Hg

DGMCF:	1.017
Sample Volume:	22.61
Average DGM Temp:	75.3

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	9
Test location:	Outlet No.: 1
Date:	Oct 5, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	Team 9 COE 20090
Barometer	Env. Can

P_{Bar}	~~29.78~~ 29.86

Clock Time	Dry Gas Meter ft^3	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	73.92	259	283	66	76	76	2.0	4.0
5	76.13	258	286	54	79	76	2.0	4.0
10	79.9	260	287	50	77	80	2.0	4.0
15	83.74	259	287	49	77	82	2.0	4.0
20	87.52	260	287	49	77	85	2.0	4.0
25	92.98	261	287	49	77	87	2.0	4.0
30	96.86	260	288	49	77	89	2.0	4.0

Start Time:	15:57
Finish Time:	16:27
Initial Leak Check:	0.005 cu.ft @ 10 " Hg
Final Leak Check:	.004 cu.ft @ 11 " Hg

DGMCF:	1.004
Sample Volume:	22.94
Average DGM Temp:	79.6

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	10
Test location:	Outlet No.: 1
Date:	OCT 5, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	Team 1 CGE 200919
Barometer	ENV. CAN.

P_{Bar}	~~29.78~~ 29.86

Clock Time	Dry Gas Meter ft³	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	40.87	255	280	63	75	75	1.8	2.0
5	45.04	254	284	58	74	74	1.8	2.0
10	48.81	256	283	60	76	75	1.8	2.0
15	52.63	255	285	60	76	75	1.8	2.0
20	56.29	255	284	63	78	75	1.8	2.0
25	60.13	255	283	65	79	75	1.8	2.0
30	~~63.~~	255	283	60	79	75	1.8	2.0
	64.02							

Start Time:	16:28			
Finish Time:	16:58			
Initial Leak Check:	0.003	cu.ft @	11	"Hg
Final Leak Check:	0.005	cu.ft @	15	"Hg

DGMCF:	1.017
Sample Volume:	23.15
Average DGM Temp:	75.8

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	1J
Test location:	Outlet No.:
Date:	OCT 5, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	RAM 4, COE 20090
Barometer	ENV. CAN

P_{Bar}	~~29.8~~ ~~29.77~~ 29.85

Clock Time	Dry Gas Meter ft^3	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	97.28	259	285	62	76	76	2.0	4.0
5	102.0	251	283	46	78	76	2.0	4.0
10	105.78	255	284	46	80	77	2.0	4.0
15	109.13	258	284	46	82	77	2.0	4.0
20	112.41	257	285	48	84	77	2.0	4.0
25	116.6	255	286	49	86	77	2.0	4.0
30	~~116.6~~	255	285	49	87	77	2.0	4.0
	120.43							

Start Time:	16:59			
Finish Time:	17:29			
Initial Leak Check:	.003	cu.ft @	15	" Hg
Final Leak Check:	.005	cu.ft @	14	" Hg

DGMCF:	1.004
Sample Volume:	23.15
Average DGM Temp:	85.4

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	12
Test location:	Outlet No.: 1
Date:	OCT 5, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 1, COE70894
Barometer	ENV. CAN

P_{Bar}	~~29.77~~ ~~29.8~~ 29.86.

Clock Time	Dry Gas Meter ft^3	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	64.61	255	286	64	74	74	1.8	2.0
5	68.96	255	286	53	74	74	1.8	2.0
10	72.21	254	282	51	76	75	1.8	2.0
15	76.54	254	282	51	78	75	1.8	2.0
20	79.67	255	282	53	79	75	1.8	2.0
25	83.35	256	282	50	80	76	1.8	2.0
30	87.17	257	282	50	80	76	1.8	2.0

Start Time:	17:30
Finish Time:	18:00
Initial Leak Check:	.004 cu.ft @ 14 " Hg
Final Leak Check:	.005 cu.ft @ 12 " Hg

DGMCF:	1.017
Sample Volume:	22.56
Average DGM Temp:	76.1

Comments:

Operator : MT

Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
HCl Train Data

Test Date	Test Time	Test No.	Dry Gas Meter Correction Factor	Initial Dry Gas Meter Reading ft^3	Final Dry Gas Meter Reading ft^3	Actual Volume Sampled ft^3	Barometric Pressure in. mercury	Average Dry Gas Meter Pressure in. water	Average Dry Gas Meter Temperature °F	°C	Corrected Gas Volume Sampled Rm^3 *	Total Gain (g)	Moisture (%)	Total HCl Collected (mg)	HCl Concentration (ppm)
September 24, 2015	10:31 - 11:01	1	0.981	88.90	110.17	21.27	30.09	1.8	80.0	26.7	0.5936	92.4	17.5	5.80	6.6
September 24, 2015	12:08 - 12:38	2	0.981	47.40	69.00	21.60	30.09	1.9	81.0	27.2	0.6018	84.1	16.0	5.33	5.9
September 24, 2015	12:44 - 13:14	3	0.981	69.80	91.63	21.83	30.08	1.9	80.1	26.7	0.6090	87.0	16.3	6.09	6.7
September 24, 2015	13:45 - 14:15	4	0.981	2.10	24.39	22.29	30.07	1.9	81.3	27.4	0.6203	110.2	19.5	6.63	7.2
September 24, 2015	14:30 - 15:00	5	0.981	15.00	36.98	21.98	30.06	1.9	81.7	27.6	0.6110	92.7	17.1	7.98	8.8
September 24, 2015	15:06 - 15:36	6	0.981	37.60	59.65	22.05	30.06	1.9	82.6	28.1	0.6119	97.1	17.7	6.85	7.5
September 24, 2015	16:07 - 16:37	7	0.981	60.20	82.61	22.41	30.06	1.9	82.0	27.8	0.6226	93.2	16.9	6.45	7.0
September 24, 2015	16:43 - 17:13	8	0.981	83.05	105.35	22.30	30.06	1.9	82.0	27.8	0.6196	92.8	16.9	7.10	7.7
September 24, 2015	17:20 - 17:50	9	0.981	5.78	27.72	21.94	30.06	1.9	80.8	27.1	0.6109	78.6	14.9	5.91	6.5
September 24, 2015	17:58 - 18:28	10	0.981	28.10	50.15	22.05	30.06	1.9	80.1	26.7	0.6148	103.0	18.6	6.49	7.1
September 24, 2015	18:35 - 19:05	11	0.981	50.85	72.88	22.03	30.06	1.9	80.0	26.7	0.6143	93.3	17.1	7.44	8.1
September 24, 2015	19:11 - 19:41	12	0.981	73.30	95.67	22.37	30.06	1.9	80.1	26.7	0.6237	98.5	17.7	7.13	7.7

* Dry at 25°C and 1 atmosphere

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	1
Test location:	Outlet No.: 1
Date:	SEPT 29, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 3, COE200963
Barometer	ENV. CAN

P_{Bar}	30.09

Clock Time	Dry Gas Meter ft³	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	88.9	246	274	69	79	79	1.8	2
5	92.9	250	281	67	79	80	1.8	2
10	95.96	255	281	64	80	80	1.8	2
15	100.2	255	282	63	80	80	1.8	2
20	103.11	255	282	63	81	80	1.8	2
25	106.66	252	281	65	80	81	1.8	2
30	110.17	255	282	65	80	81	1.8	2

Start Time:	10:31			
Finish Time:	~~10~~ 11:01			
Initial Leak Check:	<0.005	cu.ft @	11	" Hg
Final Leak Check:	.006	cu.ft @	17	" Hg

DGMCF:	.981
Sample Volume:	21.27
Average DGM Temp:	80.0

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	2
Test location:	Outlet No.:
Date:	SEPT 24, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 3, 2005 20093
Barometer	ENV. CAN

P_{Bar}	30.09

Clock Time	Dry Gas Meter ft³	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	47.4	258	280	68	81	81	1.9	2
5	50.0	255	280	64	81	81	1.9	2
10	54.6	256	281	64	81	81	1.9	2
15	58.31	258	278	61	81	81	1.9	2
20	62.02	258	280	61	81	81	1.9	2
25	65.65	252	277	65	81	81	1.9	2
30	69.0	255	277	66	81	81	1.9	2

Start Time:	12:08
Finish Time:	12:38
Initial Leak Check:	.005 cu.ft @ 15 " Hg
Final Leak Check:	.004 cu.ft @ 20 " Hg

DGMCF:	~~.984~~ .981
Sample Volume:	21.8
Average DGM Temp:	81

Comments:

Operator : TT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	3
Test location:	Outlet No.: 1
Date:	Sept 24, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	Team 3 COE 20093
Barometer	Env. Can

P_{Bar}	30.83

Clock Time	Dry Gas Meter ft^3	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	69.8	257	274	66	~~80~~ 81	80	1.9	2
5	73.0	256	277	56	80	80	1.9	2
10	77.0	257	276	55	80	80	1.9	2
15	80.72	255	277	54	80	80	1.9	2
20	84.42	256	277	55	80	81	1.9	2
25	88.13	257	277	56	80	80	1.9	2
30	91.63	260	277	55	80	80	1.9	2

Start Time:	12:44
Finish Time:	13:14
Initial Leak Check:	.005 cu.ft @ 15 " Hg
Final Leak Check:	.004 cu.ft @ 12 " Hg

DGMCF:	~~.984~~ .981
Sample Volume:	21.83
Average DGM Temp:	80.1

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	4
Test location:	Outlet No.: 1
Date:	Sept 24, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	Team 3 COE 20093
Barometer	

P_{Bar}	30.07

Clock Time	Dry Gas Meter ft^3	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	2.1	255	279	60	81	81	1.9	2
5	6.0	255	280	60	81	81	1.9	2
10	9.8	255	280	60	81	81	1.9	2
15	13.6	259	284	58	81	82	1.9	2
20	16.98	257	285	60	81	82	1.9	2
25	20.65	254	285	57	81	82	1.9	2
30	24.39	254	285	57	81	82	1.9	2

Start Time:	13:45
Finish Time:	14:15
Initial Leak Check:	.005 cu.ft @ 15 " Hg
Final Leak Check:	.007 cu.ft @ 13 " Hg

DGMCF:	~~.989~~ .981
Sample Volume:	22.29
Average DGM Temp:	81.3

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	5
Test location:	Outlet No.: 1
Date:	Sept 24, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 3 COE 20093
Barometer	ENV. CAN

P_{Bar}	30.06

Clock Time	Dry Gas Meter 15 ft^3 0	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	~~14.88~~	254	281	67	82	81	1.9	2
5	19.0	254	281	57	82	81	1.9	2
10	22.26	254	281	87	82	81	1.9	2
15	26.21	254	279	58	81	82	1.9	2
20	29.74	254	280	66	82	82	1.9	2
25	32.9	254	280	60	82	82	1.9	2
30	~~36.86~~	254	280	63	82	82	1.9	2
	36.98							

Start Time:	~~14:20~~ ~~14:21~~ 14:30
Finish Time:	15:00
Initial Leak Check:	0.005 cu.ft @ 13 " Hg
Final Leak Check:	.007 cu.ft @ 15 " Hg

DGMCF:	~~.984~~ .981
Sample Volume:	21.98
Average DGM Temp:	81.7

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	6
Test location:	Outlet No.: 1
Date:	SEPT 24, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 3 COE20093
Barometer	ENV. CAN

P_{Bar}	30.06

Clock Time	Dry Gas Meter ft³	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	37.6	252	284	62	82	82	1.9	2
5	41.0	257	281	58	82	83	1.9	2
10	44.89	257	281	58	82	83	1.9	2
15	48.5	255	280	57	82	83	1.9	2
20	52.37	258	280	57	82	83	1.9	2
25	56.15	254	279	58	83	83	1.9	2
30	59.65	256	278	58	83	83	1.9	2

Start Time:	15:06
Finish Time:	~~15:30~~ 15:36
Initial Leak Check:	.008 cu.ft @ 14 " Hg
Final Leak Check:	.009 cu.ft @ 15 " Hg

DGMCF:	~~.984~~ .981
Sample Volume:	22.08
Average DGM Temp:	82.6

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	7
Test location:	Outlet No.: 1
Date:	SEPT 24, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 3 COE200913
Barometer	ENV. CAN

P_{Bar}	30.06

Clock Time	Dry Gas Meter ft³	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	60.2	256	277	61	82	82	1.9	2
5	63.85	258	280	60	82	82	1.9	2
10	67.7	258	282	59	82	82	1.9	2
15	71.0	258	282	58	82	82	1.9	2
20	75.15	258	282	58	82	82	1.9	2
25	78.9	255	283	56	82	82	1.9	2
30	82.61	256	283	56	82	82	1.9	2

Start Time:	16:07
Finish Time:	16:37
Initial Leak Check:	.003 cu.ft @ 15 " Hg
Final Leak Check:	.003 cu.ft @ 13 " Hg

DGMCF:	~~.984~~ .981
Sample Volume:	22.41
Average DGM Temp:	82

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	8
Test location:	Outlet No.: 1
Date:	SEPT 24, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 3 COE 20093
Barometer	ENV. CAN

P_{Bar}	30.06

Clock Time	Dry Gas Meter ft³	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	83.05	258	280	68	82	82	1.9	2
5	86.7	260	282	62	82	82	1.9	2
10	90.5	259	283	~~8~~ 59	82	82	1.9	2
15	94.22	259	284	59	82	82	1.9	2
20	97.97	259	284	60	82	82	1.9	2
25	101.7	258	284	61	82	82	1.9	2
30	105.35	258	284	61	82	82	1.9	2

Start Time:	16:43		
Finish Time:	17:13		
Initial Leak Check:	.005 cu.ft @	15	" Hg
Final Leak Check:	.006 cu.ft @	12	" Hg

DGMCF:	~~.984~~ .981
Sample Volume:	22.3
Average DGM Temp:	82.0

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	9
Test location:	Outlet No.: 1
Date:	Sept 24, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	Team 3 COE 20093
Barometer	ENV. CAN

P_{Bar}	30.06

Clock Time	Dry Gas Meter ft^3	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	5.78	258	280	66	81	81	1.9	2
5	9.34	257	280	59	81	81	1.9	2
10	12.99	258	280	56	81	81	1.9	2
15	16.75	258	280	55	81	81	1.9	2
20	20.42	259	280	56	80	80	1.9	2
25	24.07	261	279	57	81	80	1.9	2
30	27.72	260	279	57	81	81	1.9	2

Start Time:	17:20
Finish Time:	17:50
Initial Leak Check:	0.008 cu.ft @ 15 " Hg
Final Leak Check:	0.005 cu.ft @ 12 " Hg

DGMCF:	~~.984~~ .981
Sample Volume:	21.94
Average DGM Temp:	80.8

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	10
Test location:	Outlet No.: 1
Date:	SEPT 24, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TGAM 3 CCE 20093
Barometer	ENV. CAN

P_{Bar}	30.06

Clock Time	Dry Gas Meter ft^3	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	28.1	250	280	58	81	81	1.9	2
5	31.72	257	276	61	80	80	1.9	2
10	35.29	257	280	58	80	80	1.9	2
15	39.13	~~257~~ 257	280	59	80	80	1.9	2
20	43.32	257	280	59	80	80	1.9	2
25	46.67	254	281	61	80	80	1.9	2
30	~~49~~	254	281	61	80	80	1.9	2
	50.15							

Start Time:	17:58			
Finish Time:	18:28			
Initial Leak Check:	.004	cu.ft @	14	" Hg
Final Leak Check:	.004	cu.ft @	13	" Hg

DGMCF:	~~.984~~ .981
Sample Volume:	22.05
Average DGM Temp:	80.1

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	11
Test location:	Outlet No.: 1
Date:	SEPT 24, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 3 COE 700913
Barometer	ENV. CAN

P_{Bar}	30.06

Clock Time	Dry Gas Meter ft³	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	50.85	255	276	~~80~~ 67	80	80	1.9	2
5	54.55	255	276	66	80	80	1.9	2
10	59.63	256	283	63	80	80	1.9	2
15	64.69	256	282	60	80	80	1.9	2
20	65.52	256	282	60	80	80	1.9	2
25	69.16	259	282	60	80	80	1.9	2
30	72.88	259	282	60	80	80	1.9	2

Start Time:	18:35
Finish Time:	19:07
Initial Leak Check:	0.005 cu.ft @ 14 " Hg
Final Leak Check:	.003 cu.ft @ 12 " Hg

DGMCF:	~~.984~~ .981
Sample Volume:	22.03
Average DGM Temp:	80.0

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	12
Test location:	Outlet No.: 1
Date:	SEPT 24, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 3 20093
Barometer	ENV. CAN

P_{Bar}	30.06

Clock Time	Dry Gas Meter ft³	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	73.3	251	280	65	80	80	1.9	2
5	76.8	255	280	62	80	80	1.9	2
10	80.58	256	280	61	80	80	1.9	2
15	84.31	256	280	61	80	80	1.9	2
20	87.99	259	281	61	80	80	1.9	2
25	91.74	258	281	62	81	80	1.9	2
30	95.67	257	281	62	80	80	1.9	2

Start Time:	19:11
Finish Time:	19:41
Initial Leak Check:	<0.005 cu.ft @ 15 " Hg
Final Leak Check:	cu.ft @ " Hg

DGMCF:	~~.984~~ .981
Sample Volume:	22.37
Average DGM Temp:	80.1

Comments:

Operator : MT

APPENDIX 11

Hydrogen Chloride Field Data Sheets
for the Boiler No. 2 BH Outlet
(13 pages)

Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
HCl Train

Test Date	Test Time	Test No.	Dry Gas Meter Correction Factor	Initial Dry Gas Meter Reading ft^3	Final Dry Gas Meter Reading ft^3	Actual Volume Sampled ft^3	Barometric Pressure in. mercury	Average Dry Gas Meter Pressure in. water	Average Dry Gas Meter Temperature °F	Average Dry Gas Meter Temperature °C	Corrected Gas Volume Sampled Rm^3 *	Total Gain (g)	Moisture (%)	Total HCl Collected (mg)	HCl Concentration (ppm)
September 23, 2015	10:32 - 11:02	1	1.004	17.00	39.15	22.15	30.03	1.9	78.1	25.6	0.6338	94.5	16.9	6.90	7.3
September 23, 2015	11:10 - 11:40	2	1.004	39.47	62.70	23.23	30.04	1.9	81.8	27.7	0.6603	88.3	15.4	7.88	8.0
September 23, 2015	13:22 - 13:52	3	1.004	63.79	86.43	22.64	29.99	1.9	79.2	26.2	0.6456	92.5	16.3	4.96	5.2
September 23, 2015	14:01 - 14:31	4	1.004	86.78	108.83	22.05	29.98	1.9	82.1	27.8	0.6252	98.4	17.6	4.47	4.8
September 23, 2015	15:04 - 15:34	5	1.004	9.30	31.96	22.66	29.98	1.9	81.2	27.3	0.6436	85.5	15.3	4.91	5.1
September 23, 2015	15:45 - 16:15	6	1.004	32.57	55.01	22.44	29.98	1.9	83.5	28.6	0.6346	95.4	17.0	7.19	7.6
September 23, 2015	16:30 - 17:00	7	1.004	55.31	77.39	22.08	29.97	1.9	84.9	29.4	0.6226	95.5	17.3	6.67	7.2
September 23, 2015	17:19 - 17:49	8	1.004	77.75	100.17	22.42	29.97	1.9	86.3	30.2	0.6306	80.7	14.8	5.92	6.3
September 23, 2015	18:50 - 19:20	9	1.004	0.59	23.22	22.63	29.98	1.9	85.1	29.5	0.6381	92.8	16.5	5.67	6.0
September 23, 2015	19:27 - 19:57	10	1.004	23.70	46.07	22.37	29.98	1.9	87.9	31.1	0.6276	89.5	16.2	5.86	6.3
September 23, 2015	20:06 - 20:36	11	1.004	46.92	69.32	22.40	29.99	1.9	86.8	30.4	0.6299	85.5	15.6	5.35	5.7
September 23, 2015	20:42 - 21:12	12	1.004	69.65	92.23	22.58	29.99	1.9	87.0	30.6	0.6347	90.7	16.3	5.33	5.6

* Dry at 25°C and 1 atmosphere

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	1
Test location:	Outlet No.: 2
Date:	SEPT 23, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 4 COE 20090
Barometer	ENV. CAN

P_{Bar}	30.03

Clock Time	Dry Gas Meter ft^3	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	17.0	~~28~~ 256	280	51	75	76	1.9	5
5	20.51	256	280	50	75	76	1.9	5
10	24.17	280	257	50	76	78	1.9	5
15	27.94	261	279	51	76	80	1.9	5
20	32.24	258	280	50	77	81	1.9	5
25	35.42	258	279	53	77	84	1.9	5
30	39.15	257	281	54	77	85	1.9	5

Start Time:	10:32
Finish Time:	11:02
Initial Leak Check:	<0.005 cu.ft @ 12 " Hg
Final Leak Check:	0.005 cu.ft @ 16 " Hg

DGMCF:	1.004
Sample Volume:	22.15
Average DGM Temp:	78.1

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	2
Test location:	Outlet No.:
Date:	Sept 23, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 4 COE 70090
Barometer	ENV. CAN

P_{Bar}	30.04

Clock Time	Dry Gas Meter ft^3	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	39.47	260	275	62	78	80	1.9	5
5	43.44	260	280	58	78	82	1.9	5
10	47.21	260	280	58	78	85	1.9	5
15	51.5	260	278	60	78	87	1.9	5
20	54.72	260	280	59	78	88	1.9	5
25	58.49	258	277	62	78	88	1.9	5
30	62.7	260	276	60	79	88	1.9	5

Start Time:	11:10			
Finish Time:	11:40			
Initial Leak Check:	.006	cu.ft @	17	" Hg
Final Leak Check:	.006	cu.ft @	17	" Hg

DGMCF:	1.004
Sample Volume:	23.23
Average DGM Temp:	81.8

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	3
Test location:	Outlet No.:
Date:	SEPT 23, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 4 COE 20090
Barometer	ENV. CAN

P_{Bar}	29.99

Clock Time	Dry Gas Meter ft³	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	63.79	256	280	65	76	76	1.9	5
5	67.72	259	275	63	76	78	1.9	5
10	71.45	~~275~~ 259	275	62	76	80	1.9	5
15	75.15	259	274	62	76	82	1.9	5
20	78.87	259	274	65	77	84	1.9	5
25	82.65	255	274	65	77	86	1.9	5
30	86.43	258	274	62	77	88	1.9	5

Start Time:	~~11:50~~ 13:22	
Finish Time:	13:52	
Initial Leak Check:	.01	cu.ft @ 17 " Hg
Final Leak Check:	.006	cu.ft @ 15 " Hg

DGMCF:	1.004
Sample Volume:	22.64
Average DGM Temp:	79.2

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	4
Test location:	Outlet No.:
Date:	SEPT 23, 2014
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 4 COE 20090
Barometer	ENV. CAN

P_{Bar}	29.98

Clock Time	Dry Gas Meter ft³	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	86.78	257	275	63	78	80	1.9	5
5	90.48	256	273	61	78	84	1.9	5
10	94.41	256	273	61	78	86	1.9	5
15	97.87	257	273	61	78	87	1.9	5
20	101.55	260	273	62	78	88	1.9	5
25	105.22	256	275	62	79	88	1.9	5
30	108.83	256	275	62	79	89	1.9	5

Start Time:	14:01
Finish Time:	14:31
Initial Leak Check:	.006 cu.ft @ 15 " Hg
Final Leak Check:	.005 cu.ft @ 22 " Hg

DGMCF:	1.004
Sample Volume:	22.05
Average DGM Temp:	82.1

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	5
Test location:	Outlet No.: 2
Date:	SEPT 23, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 4, CDE 20090
Barometer	ENV. CAN

P_{Bar}	29.98

Clock Time	Dry Gas Meter ft^3	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	9.3	257	274	63	79	79	1.9	5
5	13.16	259	274	63	79	81	1.9	5
10	16.9	260	273	58	79	81	1.9	5
15	20.7	260	273	59	79	83	1.9	5
20	24.5	260	273	59	79	86	1.9	5
25	28.3	260	273	59	79	86	1.9	5
30	31.96	257	273	61	80	87	1.9	5

Start Time:	15:04	
Finish Time:	15:34	
Initial Leak Check:	.005	cu.ft @ 22 " Hg
Final Leak Check:		cu.ft @ 17 " Hg

DGMCF: 1.004
Sample Volume: 22.66
Average DGM Temp: 81.2

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	6
Test location:	Outlet No.: 2
Date:	SEPT 23, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 4 OOE 20090
Barometer	ENV. CAN

P_{Bar}	29.98

Clock Time	Dry Gas Meter ft^3	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	32.57	256	273	63	80	81	1.9	5
5	36.0	260	274	60	80	84	1.9	5
10	40.1	260	274	58	80	86	1.9	5
15	43.3	260	273	58	80	87	1.9	5
20	47.59	260	273	61	81	89	1.9	5
25	51.34	260	273	62	81	89	1.9	5
30	55.01	259	274	63	81	90	1.9	5

Start Time:	15:45	
Finish Time:	16:15	
Initial Leak Check:	.008	cu.ft @ 23 " Hg
Final Leak Check:	.008	cu.ft @ 18 " Hg

DGMCF:	1.004
Sample Volume:	22.44
Average DGM Temp:	83.5

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	7
Test location:	Outlet No.: 2
Date:	SEPT 23, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 4, COE 20090
Barometer	ENV. CAN

P_{Bar}	29.97

Clock Time	Dry Gas Meter ft³	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	55.31	258	274	63	82	82	1.9	5
5	58.8	258	276	59	82	87	1.9	5
10	63.14	260	278	59	82	88	1.9	5
15	66.43	261	276	59	82	88	1.9	5
20	70.13	260	276	60	82	90	1.9	5
25	73.85	260	276	61	82	90	1.9	5
30	77.39	260	276	61	82	90	1.9	5

Start Time:	16:30
Finish Time:	17:00
Initial Leak Check:	.009 cu.ft @ 16 " Hg
Final Leak Check:	.007 cu.ft @ 18 " Hg

DGMCF:	1.004
Sample Volume:	22.08
Average DGM Temp:	84.9

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	8
Test location:	Outlet No.: 2
Date:	Sept 23, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TGAM 4 OC 20090
Barometer	ENV. CAN

P_{Bar}	29.97

Clock Time	Dry Gas Meter ft^3	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	77.75	259	270	64	83	83	1.9	5
5	81.5	260	270	62	83	85	1.9	5
10	85.23	260	270	61	83	89	1.9	5
15	89.0	255	269	61	83	91	1.9	5
20	92.74	258	269	63	83	92	1.9	5
25	96.49	259	269	65	83	93	1.9	5
30	100.17	260	270	65	~~93~~ 84	~~84~~ 93	1.9	5

Start Time:	17:19
Finish Time:	17:49
Initial Leak Check:	.005 cu.ft @ 18 " Hg
Final Leak Check:	.002 cu.ft @ 15 " Hg

DGMCF:	1.004
Sample Volume:	22.42
Average DGM Temp:	86.3

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	9
Test location:	Outlet No.: 2
Date:	SEPT 23, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 4, COE 20090
Barometer	ENV: CAN

P_{Bar}	29.98

Clock Time	Dry Gas Meter ft³	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	~~180~~.59	259	270	60	82	82	1.9	5
5	4.2	259	270	60	82	83	1.9	5
10	7.95	259	274	62	82	86	1.9	5
15	11.99	259	274	63	82	82	1.9	5
20	15.6	260	274	62	82	89	1.9	5
25	19.42	261	273	62	83	93	1.9	5
30	23.22	257	273	62	84	94	1.9	5

Start Time:	18:50
Finish Time:	19:20
Initial Leak Check:	.005 cu.ft @ 12 " Hg
Final Leak Check:	.002 cu.ft @ 13 " Hg

DGMCF:	1.004
Sample Volume:	22.63
Average DGM Temp:	85.1

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	10
Test location:	Outlet No.: 2
Date:	SEPT 23, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 4, COE 20090
Barometer	ENV. CAN

P_{Bar}	29.98

Clock Time	Dry Gas Meter ft^3	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	23.7	257	263	60	83	87	1.9	5
5	27.5	257	274	62	83	90	1.9	5
10	31.09	256	274	64	83	92	1.9	5
15	34.7	256	275	64	84	93	1.9	5
20	38.71	258	274	64	84	94	1.9	5
25	~~8~~ 42.46	261	274	62	84	94	1.9	5
30	46.07	260	274	62	84	95	1.9	5

Start Time:	19:27
Finish Time:	19:57
Initial Leak Check:	.004 cu.ft @ 13 " Hg
Final Leak Check:	.002 cu.ft @ 16.5 " Hg

DGMCF:	1.004
Sample Volume:	22.37
Average DGM Temp:	87.9

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	11
Test location:	Outlet No.: 2
Date:	SEPT 23, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TEAM 4 COG 20090
Barometer	ENV. CAN

P_{Bar}	29.99

Clock Time	Dry Gas Meter ft^3	Probe Temp °F	Stack Temp °F	Impinger Outlet °F	Meter Temperature Outlet °F	Meter Temperature Inlet °F	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	46.92	260	270	65	83	87	1.9	5
5	50.41	259	274	62	83	89	1.9	5
10	54.38	260	274	62	83	90	1.9	5
15	58.15	258	274	61	83	91	1.9	5
20	61.9	260	274	62	83	92	1.9	5
25	65.65	258	274	62	83	92	1.9	5
30	69.32	261	273	62	83	93	1.9	5

Start Time:	20:06
Finish Time:	20:36
Initial Leak Check:	.004 cu.ft @ 16.5 " Hg
Final Leak Check:	.002 cu.ft @ 12 " Hg

DGMCF:	1.004
Sample Volume:	22.4
Average DGM Temp:	86.8

Comments:

Operator : MT

ORTECH Environmental
HCl Data Sheet

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	12
Test location:	Outlet No.: 2
Date:	SEPT 23, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	TGAM4 COK 20090
Barometer	ENV. CAN

P_{Bar}	29.99

Clock Time	Dry Gas Meter	Probe Temp	Stack Temp	Impinger Outlet	Meter Temperature Outlet	Meter Temperature Inlet	Meter Pressure ΔH	Pump Vacuum "Hg Gauge
	ft^3	°F	°F	°F	°F	°F	"H_2O	
0	69.65	260	274	61	83	87	1.9	5
5	73.42	260	275	62	83	89	1.9	5
10	77.17	261	275	61	84	91	1.9	5
15	81.04	260	275	61	83	92	1.9	5
20	84.9	260	275	63	83	92	1.9	5
25	88.47	257	275	66	83	92	1.9	5
30	92.23	259	276	66	83	93	1.9	5

Start Time:	20:42	
Finish Time:	21:12	
Initial Leak Check:	.003 cu.ft @	12 " Hg
Final Leak Check:	.003 cu.ft @	12 " Hg

DGMCF: 1.004
Sample Volume: 22.58
Average DGM Temp: 87.0

Comments:

Operator : MT

APPENDIX 12

Hydrogen Chloride Recovery Sheets
for the Boiler No. 1 BH Outlet
(25 pages)

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	Oct 5/15
Test No.:	1
Test Location:	OUTLET #1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	671.6
Initial Wt:	773.4
Final Wt:	837.9
Gain:	64.5
Colour:	CLEAR

Impinger #4 Silica Gel	
Initial Wt:	863.3
Final Wt:	871.6
4 Gain:	8.3

Impinger #2 0.1 N H_2SO4	
Empty Wt:	670.5
Initial Wt:	769.8
Final Wt:	784.4
Gain:	14.6
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	603.0
Final Wt:	605.2
Gain:	2.2
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	273.4
With Imp. 1,2,3 Soln:	550.1
Imp. 1,2,3 Volume:	276.7
After Rinse:	655.0
Total TS3:	381.6

-25ml aliquot 630.0

CWTR = 1+2+3:	81.3

WCBDA= 4:	8.3

59.6
2.6
1.9 ml
0.7 ml

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	

Train Loaded By:	Dn
Train Recovered By:	Dn

11

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	OCT 5/15
Test No.:	2
Test Location:	OUTLET #1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	662.1
Initial Wt:	762.5
Final Wt:	816.5
Gain:	54.0
Colour:	CLEAR

Impinger #4 Silica Gel	
Initial Wt:	812.0
Final Wt:	822.0
Gain:	10.0

4

Impinger #2 0.1 N H_2SO4	
Empty Wt:	605.9
Initial Wt:	706.4
Final Wt:	727.4
Gain:	21.0
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	628.9
Final Wt:	630.3
Gain:	1.4
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	272.0
With Imp. 1,2,3 Soln:	544.3
Imp. 1,2,3 Volume:	272.3
After Rinse:	661.9
Total TS3:	389.9

~25ml ALIQUOT 636.9

CWTR = 1+2+3:	76.4
WCBDA= 4:	10.0

86.4

3.1

2.6

0.5 ml

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	

Train Loaded By: [signature]

Train Recovered By: [signature]

2

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	OCT 5/15
Test No.:	3
Test Location:	OUTLET #1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	670.0
Initial Wt:	771.0
Final Wt:	831.6
Gain:	60.6
Colour:	CLEAR

Impinger #4 Silica Gel	
Initial Wt:	809.4
Final Wt:	818.0
4 Gain:	8.6

Impinger #2 0.1 N H_2SO4	
Empty Wt:	679.2
Initial Wt:	780.5
Final Wt:	795.8
Gain:	15.3
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	668.1
Final Wt:	670.9
Gain:	2.8
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	274.1
With Imp. 1,2,3 Soln:	553.6
Imp. 1,2,3 Volume:	279.5
After Rinse:	675.1
Total TS3:	401.0

≈25ml 650.1

CWTR = 1+2+3:	78.7 ✓
WCBDA= 4:	8.6

87.3

3.55
3.1
.45

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	

Train Loaded By: DW

Train Recovered By: JG

AK

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	Oct 5/15
Test No.:	4
Test Location:	OUTLET #1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	678.2
Initial Wt:	779.5
Final Wt:	841.2
Gain:	62.7
Colour:	CLEAR

Impinger #4 Silica Gel	
Initial Wt:	853.7
Final Wt:	862.1
4 Gain:	8.4

Impinger #2 0.1 N H_2SO4	
Empty Wt:	670.0
Initial Wt:	771.5
Final Wt:	785.9
Gain:	14.4
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	628.5
Final Wt:	630.1
Gain:	1.6
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	277.4
With Imp. 1,2,3 Soln:	~~278.5~~ 553.6
Imp. 1,2,3 Volume:	278.5
After Rinse:	686.5
Total TS3:	409.1
-25ml	661.5

CWTR = 1+2+3:	78.7
WCBDA= 4:	8.4

87.1
4.00
.3.55
.45

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	

Train Loaded By:	[illegible initials]
Train Recovered By:	[illegible initials]

B

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	OCT 5/15
Test No.:	5
Test Location:	OUTLET #1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	672.8
Initial Wt:	771.1
Final Wt:	848.3
Gain:	77.2
Colour:	CLEAR

Impinger #4 Silica Gel	
Initial Wt:	871.5
Final Wt:	877.7
4 Gain:	6.2

Impinger #2 0.1 N H_2SO4	
Empty Wt:	671.2
Initial Wt:	771.5
Final Wt:	786.7
Gain:	15.2
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	603.6
Final Wt:	605.6
Gain:	2.0
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	271.5
With Imp. 1,2,3 Soln:	562.9
Imp. 1,2,3 Volume:	291.4
After Rinse:	699.1
Total TS3:	427.6
-25ml	674.1

CWTR = 1+2+3:	94.4
WCBDA= 4:	6.2

100.6

4.45
4.05
.40

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	

Train Loaded By: DW

Train Recovered By: DW

C

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	OCT 5/15
Test No.:	6
Test Location:	OUTLET #1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	663.5
Initial Wt:	763.5
Final Wt:	828.6
Gain:	65.1
Colour:	CLEAR

Impinger #4 Silica Gel	
Initial Wt:	822.0
Final Wt:	831.4
4 Gain:	9.4

Impinger #2 0.1 N H_2SO4	
Empty Wt:	606.8
Initial Wt:	705.2
Final Wt:	723.5
Gain:	18.3
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	630.1
Final Wt:	630.9
Gain:	0.8
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	274.2
With Imp. 1,2,3 Soln:	556.1
Imp. 1,2,3 Volume:	281.8
After Rinse:	690.4
Total TS3:	416.2
-25ml	665.4

CWTR = 1+2+3:	84.2
WCBDA= 4:	9.4

93.6

4.85
4.45
.4

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	

Train Loaded By:	DM
Train Recovered By:	DM

X

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	October 5, 2015.
Test No.:	~~4~~ 7.
Test Location:	Outlet #1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	670.4
Initial Wt:	772.4
Final Wt:	845.5
Gain:	73.1
Colour:	CLEAR

Impinger #4 Silica Gel		
Initial Wt:	817.9	
Final Wt:	~~826.4~~	824.5
4 Gain:	6.6	

Impinger #2 0.1 N H_2SO4	
Empty Wt:	679.3
Initial Wt:	780.7
Final Wt:	795.3
Gain:	14.6
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	669.1
Final Wt:	671.9
Gain:	2.8
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	274.9
With Imp. 1,2,3 Soln:	557.2
Imp. 1,2,3 Volume:	282.3
After Rinse:	692.1
Total TS3:	417.2
-25ml	667.1

CWTR = 1+2+3:	90.5 ✓
WCBDA= 4:	6.6

97.1

5.25
4.85
.40

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	

Train Loaded By: DL

Train Recovered By: DL

A

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	Oct 5/15
Test No.:	8
Test Location:	Outlet #1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	678.5
Initial Wt:	778.0
Final Wt:	852.6
Gain:	74.6
Colour:	CLEAR

Impinger #4 Silica Gel	
Initial Wt:	766.3
Final Wt:	772.8
4 Gain:	6.5

Impinger #2 0.1 N H_2SO4	
Empty Wt:	670.7
Initial Wt:	774.4
Final Wt:	789.7
Gain:	15.3
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	629.6
Final Wt:	631.2
Gain:	1.6
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	273.0
With Imp. 1,2,3 Soln:	294
Imp. 1,2,3 Volume:	567.0
After Rinse:	687.0
Total TS3:	414.0
-25ml	662.0

CWTR = 1+2+3:	91.5
WCBDA= 4:	6.5

98.0

5.65

5.25

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	

Train Loaded By:	[signature]
Train Recovered By:	[signature]

B

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	OCT 5, 2015
Test No.:	9
Test Location:	UNIT 1 OUTLET

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	673.7
Initial Wt:	774.0
Final Wt:	844.4
Gain:	70.4
Colour:	CLEAR

Impinger #4 Silica Gel	
Initial Wt:	877.6
Final Wt:	883.0
Gain:	5.4

4

Impinger #2 0.1 N H_2SO4	
Empty Wt:	671.0
Initial Wt:	772.4
Final Wt:	785.3
Gain:	12.9
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	603.5
Final Wt:	605.6
Gain:	2.1
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	273.5
With Imp. 1,2,3 Soln:	554.5
Imp. 1,2,3 Volume:	281.0
After Rinse:	677.8
Total TS3:	404.3

CWTR = 1+2+3:	85.4
WCBDA= 4:	5.4

= 90.8 ✓

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	

6.05
5.7

Train Loaded By:	DU
Train Recovered By:	MT

C

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	OCT 5/15
Test No.:	10
Test Location:	OUTLET #1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	664.2
Initial Wt:	765.6
Final Wt:	826.4
Gain:	60.8
Colour:	

Impinger #4 Silica Gel	
Initial Wt:	831.4
Final Wt:	841.5
4 Gain:	10.1

Impinger #2 0.1 N H_2SO4	
Empty Wt:	606.6
Initial Wt:	708.0
Final Wt:	724.1
Gain:	16.1
Colour:	

Impinger #3 EMPTY	
Empty Wt:	629.0
Final Wt:	630.4
Gain:	1.4
Colour:	

CONTAINER TS1 WEIGHTS	
Empty Wt:	271.7
With Imp. 1,2,3 Soln:	552.4
Imp. 1,2,3 Volume:	280.7
After Rinse:	694.3
Total TS3:	422.6

669.3

CWTR = 1+2+3:	78.3
WCBDA= 4:	10.1

88.4

6.60
6.15
.45

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	

Train Loaded By:

Train Recovered By:

X

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	OCT 5/15
Test No.:	11
Test Location:	OUTLET #1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	670.1
Initial Wt:	773.2
Final Wt:	835.2
Gain:	62.0
Colour:	CLEAR

Impinger #4 Silica Gel	
Initial Wt:	824.3
Final Wt:	829.1
4 Gain:	4.8

Impinger #2 0.1 N H_2SO4	
Empty Wt:	680.7
Initial Wt:	780.4
Final Wt:	792.1
Gain:	11.7
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	668.9
Final Wt:	670.7
Gain:	1.8
Colour:	CLEAR

CONTAINER TS1 WEIGHTS

Empty Wt:	277.0
With Imp. 1,2,3 Soln:	554.0
Imp. 1,2,3 Volume:	277.0
After Rinse:	683.1
Total TS3:	406.1

-25ml 658.1

CWTR = 1+2+3:	75.5
WCBDA= 4:	4.8

80.3

7.0

6.6

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	

Train Loaded By: Du

Train Recovered By: Du

A

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	OCT 5/12
Test No.:	12
Test Location:	OUTLET #1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	678.0
Initial Wt:	778.3
Final Wt:	839.0
Gain:	60.7
Colour:	CLEAR

Impinger #4 Silica Gel	
Initial Wt:	772.8
Final Wt:	778.7
4 Gain:	5.9

Impinger #2 0.1 N H_2SO4	
Empty Wt:	669.9
Initial Wt:	775.3
Final Wt:	786.4
Gain:	11.1
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	629.7
Final Wt:	631.8
Gain:	2.1
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	276.8
With Imp. 1,2,3 Soln:	550.6
Imp. 1,2,3 Volume:	273.8
After Rinse:	692.2
Total TS3:	415.4

CWTR = 1+2+3:	73.9
WCBDA= 4:	5.9

79.8

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	

7.25
7.0

BLANK
0.1 H_2SO_4 200.7
RINSE 300.5

7.32
B 7.3

Train Loaded By: DW
Train Recovered By: DW

ORTECH

Method 26A Recovery Sheet

Client :	**Covanta**
Project No.:	**21546**
Date:	SEPT 24, 2015
Test No.:	1
Test Location:	UNIT 1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	680.0
Initial Wt:	782.7
Final Wt:	852.1
Gain:	69.4
Colour:	CLEAR

201.3

Impinger #4 Silica Gel	
Initial Wt:	818.4
Final Wt:	826.3
4 **Gain:**	7.9

Impinger #2 0.1 N H_2SO4	
Empty Wt:	676.3
Initial Wt:	774.9
Final Wt:	788.6
Gain:	13.7
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	606.3
Final Wt:	607.7
Gain:	1.4
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	278.5
With Imp. 1,2,3 Soln:	543.5 — NOT INCL 25ml ALIQUOT
Imp. 1,2,3 Volume:	265.0
After Rinse:	620.9
Total TS3:	342.4

CWTR = 1+2+3:	84.5 ✓
WCBDA= 4:	7.9
	92.4

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	1

Train Loaded By: KM

Train Recovered By: KM

A

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	SEPT 24, 2015
Test No.:	2
Test Location:	UNIT 1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	533.9
Initial Wt:	636.7
Final Wt:	703.3
Gain:	66.6
Colour:	CLEAR

206.1

Impinger #4 Silica Gel	
Initial Wt:	852.7
Final Wt:	859.2
4 Gain:	6.5

Impinger #2 0.1 N H_2SO4	
Empty Wt:	677.5
Initial Wt:	780.8
Final Wt:	790.8
Gain:	10.0
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	636.8
Final Wt:	637.8
Gain:	1.0
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	277.5
With Imp. 1,2,3 Soln:	560.9
Imp. 1,2,3 Volume:	283.4
After Rinse:	616.9
Total TS3:	339.4

INCLUDES 25ml ALIQUOT

535.9 NOT INCL ALIQUOT

CWTR = 1+2+3:	77.6

WCBDA= 4:	6.5

84.1

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	2

NO

Train Loaded By:	[signature]
Train Recovered By:	[signature]

B

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	SEPT 24/15
Test No.:	3
Test Location:	UNIT 1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	680.2
Initial Wt:	777.2
Final Wt:	843.2
Gain:	66.0
Colour:	CLEAR

199.2

	Impinger #4 Silica Gel	
	Initial Wt:	830.4
	Final Wt:	836.3
4	Gain:	5.9

Impinger #2 0.1 N H_2SO4	
Empty Wt:	676.4
Initial Wt:	778.6
Final Wt:	791.3
Gain:	12.7
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	606.2
Final Wt:	608.6
Gain:	2.4
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	276.5
With Imp. 1,2,3 Soln:	556.3
Imp. 1,2,3 Volume:	279.8
After Rinse:	625.9
Total TS3:	349.4

- INCL 25ml

CWTR = 1+2+3:	81.1
WCBDA= 4:	5.9

87.0

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	3

Train Loaded By:

Train Recovered By:

A

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	SEPT 24/15
Test No.:	4
Test Location:	UNIT 1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	534.1
Initial Wt:	634.1
Final Wt:	722.1
Gain:	88.0
Colour:	CLEAR

200.0

Impinger #4 Silica Gel	
Initial Wt:	858.9
Final Wt:	865.4
4 Gain:	6.5

Impinger #2 0.1 N H_2SO4	
Empty Wt:	677.3
Initial Wt:	777.3
Final Wt:	791.0
Gain:	13.7
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	637.9
Final Wt:	639.9
Gain:	2.0
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	276.2
With Imp. 1,2,3 Soln:	578.0
Imp. 1,2,3 Volume:	301.8
After Rinse:	664.1
Total TS3:	387.9

– WITH 25ml ALIQUOT

CWTR = 1+2+3:	103.7
WCBDA= 4:	6.5

110.2

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	4

Train Loaded By: DW

Train Recovered By: DW

B

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	SEPT 24/15
Test No.:	5
Test Location:	UNIT 1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	680.4
Initial Wt:	781.5
Final Wt:	853.5
Gain:	72.0
Colour:	CLEAR

197.7

Impinger #4 Silica Gel	
Initial Wt:	835.8
Final Wt:	841.3
Gain:	5.5

4

Impinger #2 0.1 N H_2SO4	
Empty Wt:	676.6
Initial Wt:	773.2
Final Wt:	786.5
Gain:	13.3
Colour:	

Impinger #3 EMPTY	
Empty Wt:	605.6
Final Wt:	607.5
Gain:	1.9 ~~1.8~~
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	279.3
With Imp. 1,2,3 Soln:	561.8
Imp. 1,2,3 Volume:	283.5
After Rinse:	637.9
Total TS3:	358.6

- WITH 25ml ALIQUOT

CWTR = 1+2+3:	87.2

WCBDA= 4:	5.5

~~92.6~~ 92.7

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	5

Train Loaded By: DM

Train Recovered By: DM

A

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	Sept. 24/15
Test No.:	6
Test Location:	Unit 1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	534.7
Initial Wt:	634.6
Final Wt:	713.0
Gain:	78.4
Colour:	Clear

200.6

Impinger #4 Silica Gel	
Initial Wt:	865.0
Final Wt:	870.2
4 Gain:	5.2

Impinger #2 0.1 N H_2SO4	
Empty Wt:	677.5
Initial Wt:	777.7
Final Wt:	789.5
Gain:	11.8
Colour:	Clear

Impinger #3 EMPTY	
Empty Wt:	637.5
Final Wt:	639.2
Gain:	1.7
Colour:	Clear

CONTAINER TS1 WEIGHTS	
Empty Wt:	277.8
With Imp. 1,2,3 Soln:	550.1 ← Not Incl 25mL aliquot
Imp. 1,2,3 Volume:	272.3
After Rinse:	609.1
Total TS3:	331.3

CWTR = 1+2+3:	91.9
WCBDA= 4:	5.2

97.1

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	6

Train Loaded By:	DV
Train Recovered By:	RW

B

ORTECH

Method 26A Recovery Sheet

Client :	**Covanta**
Project No.:	**21546**
Date:	Sept. 24/15
Test No.:	7
Test Location:	Unit 1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	680.6
Initial Wt:	780.2
Final Wt:	852.0
Gain:	71.8
Colour:	Clear

193.5

Impinger #4 Silica Gel	
Initial Wt:	841.0
Final Wt:	846.5
4 **Gain:**	5.5

Impinger #2 0.1 N H_2SO4	
Empty Wt:	676.5
Initial Wt:	770.4
Final Wt:	784.0
Gain:	~~14.4~~ 13.6
Colour:	Clear

Impinger #3 EMPTY	
Empty Wt:	605.6
Final Wt:	607.9
Gain:	2.3
Colour:	Clear

CONTAINER TS1 WEIGHTS	
Empty Wt:	276.2
With Imp. 1,2,3 Soln:	530.2
Imp. 1,2,3 Volume:	254.0
After Rinse:	602.5
Total TS3:	326.3

← Not Incl. 25mL Aliquot

CWTR = 1+2+3:	~~88.5~~ 87.7
WCBDA= 4:	5.5

~~94.0~~ 93.2

SAMPLE IDENTIFICATION	7
TS1(Impinger 1,2,3 Sol'n)	

Train Loaded By: DU

Train Recovered By: RW

A

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	Sept. 24/15
Test No.:	8
Test Location:	Unit 1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	574.1
Initial Wt:	635.7
Final Wt:	711.3
Gain:	75.6
Colour:	Clear

209.0

Impinger #4 Silica Gel	
Initial Wt:	869.7
Final Wt:	874.6
4 Gain:	4.9

Impinger #2 0.1 N H_2SO4	
Empty Wt:	677.9
Initial Wt:	~~635~~ 785.3
Final Wt:	796.2
Gain:	10.9
Colour:	Clear

Impinger #3 EMPTY	
Empty Wt:	637.3
Final Wt:	638.7 ~~759.7~~
Gain:	1.4
Colour:	Clear

CONTAINER TS1 WEIGHTS	
Empty Wt:	283.2
With Imp. 1,2,3 Soln:	557.8
Imp. 1,2,3 Volume:	274.6
After Rinse:	668.6
Total TS3:	385.4

← Without 25mL aliquot

CWTR = 1+2+3:	87.9

WCBDA= 4:	4.9

92.8

SAMPLE IDENTIFICATION	8
TS1(Impinger 1,2,3 Sol'n)	

Train Loaded By:	RW
Train Recovered By:	RW

B

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	Sept. 24/15
Test No.:	9
Test Location:	~~Sept. 24~~ Unit 1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	680.4
Initial Wt:	785.3
Final Wt:	846.3
Gain:	61.0
Colour:	Clear

2065

Impinger #4 Silica Gel	
Initial Wt:	846.5
Final Wt:	851.0
4 Gain:	4.5

Impinger #2 0.1 N H_2SO4	
Empty Wt:	675.9
Initial Wt:	777.5
Final Wt:	788.9
Gain:	11.4
Colour:	Clear

Impinger #3 EMPTY	
Empty Wt:	~~607.9~~ 606.2
Final Wt:	607.9
Gain:	1.7
Colour:	Clear

CONTAINER TS1 WEIGHTS	
Empty Wt:	274.6
With Imp. 1,2,3 Soln:	529.5
Imp. 1,2,3 Volume:	254.9
After Rinse:	632.6
Total TS3:	358.0

– Without 25mL aliquot

CWTR = 1+2+3:	74.1

WCBDA= 4:	4.5

78.6

SAMPLE IDENTIFICATION	9
TS1(Impinger 1,2,3 Sol'n)	

Train Loaded By:	RW
Train Recovered By:	RW

A

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	Sept 24/15
Test No.:	10
Test Location:	Unit 1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	534.8
Initial Wt:	636.4
Final Wt:	720.7
Gain:	84.3 ~~185.9~~
Colour:	Clear

204.0

Impinger #4 Silica Gel	
Initial Wt:	874.6
Final Wt:	880.0
4 Gain:	5.4

Impinger #2 0.1 N H_2SO4	
Empty Wt:	678.2
Initial Wt:	780.6
Final Wt:	792.4
Gain:	11.8
Colour:	Clear

Impinger #3 EMPTY	
Empty Wt:	637.3
Final Wt:	638.8
Gain:	1.5
Colour:	Clear

CONTAINER TS1 WEIGHTS	
Empty Wt:	271.8
With Imp. 1,2,3 Soln:	556.6
Imp. 1,2,3 Volume:	284.8
After Rinse:	647.5
Total TS3:	375.7

Without 25mL aliquot

- ~~284~~

CWTR = 1+2+3:	97.6

WCBDA= 4:	5.4

103.0

SAMPLE IDENTIFICATION	10
TS1(Impinger 1,2,3 Sol'n)	

Train Loaded By: RW

Train Recovered By: RW

B

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	Sept. 24/15
Test No.:	11
Test Location:	Unit 1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	680.0
Initial Wt:	782.7
Final Wt:	855.7
Gain:	73.0
Colour:	Clean

204.7

Impinger #4 Silica Gel	
Initial Wt:	850.9
Final Wt:	855.9
4 Gain:	5.0

Impinger #2 0.1 N H_2SO4	
Empty Wt:	676.6
Initial Wt:	778.6
Final Wt:	791.8
Gain:	~~23~~.2
Colour:	Clean

Impinger #3 EMPTY	
Empty Wt:	606.2
Final Wt:	608.3
Gain:	2.1 ~~1.1~~
Colour:	Clean

CONTAINER TS1 WEIGHTS	
Empty Wt:	284.5
With Imp. 1,2,3 Soln:	556.5
Imp. 1,2,3 Volume:	272.0
After Rinse:	653.0
Total TS3:	368.5

- Without 25mL aliquot

CWTR = 1+2+3:	88.3
WCBDA= 4:	~~92~~ 5.0

~~92.3~~
93.3

SAMPLE IDENTIFICATION	11
TS1(Impinger 1,2,3 Sol'n)	

Train Loaded By:	RW
Train Recovered By:	RW

A

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	Sept 24/15
Test No.:	12
Test Location:	Unit 1

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	534.4
Initial Wt:	635.9
Final Wt:	717.0
Gain:	81.1
Colour:	Clear

201.8

Impinger #4 Silica Gel	
Initial Wt:	879.9
Final Wt:	884.7
4 Gain:	4.8

Impinger #2 0.1 N H_2SO4	
Empty Wt:	677.3
Initial Wt:	777.6
Final Wt:	789.0
Gain:	11.4
Colour:	Clear

CONTAINER TS1 WEIGHTS	
Empty Wt:	283.0
With Imp. 1,2,3 Soln:	558.0
Imp. 1,2,3 Volume:	275.0
After Rinse:	637.9
Total TS3:	354.9

Impinger #3 EMPTY	
Empty Wt:	637.2
Final Wt:	638.4
Gain:	~~1.0~~ 1.2
Colour:	Clear

CWTR = 1+2+3:	~~92.7~~ 93.7
WCBDA= 4:	4.8

98.5

SAMPLE IDENTIFICATION	12
TS1(Impinger 1,2,3 Sol'n)	

Train Loaded By:	RW
Train Recovered By:	RW

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	Sept. 24/15
Test No.:	Blank
Test Location:	

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	
Initial Wt:	
Final Wt:	
Gain:	
Colour:	

Impinger #4 Silica Gel	
Initial Wt:	
Final Wt:	
4 Gain:	

Impinger #2 0.1 N H_2SO4	
Empty Wt:	
Initial Wt:	
Final Wt:	
Gain:	
Colour:	

Impinger #3 EMPTY	
Empty Wt:	
Final Wt:	
Gain:	
Colour:	

CONTAINER TS1 WEIGHTS	
Empty Wt:	278.1
With Imp. 1,2,3 Soln:	549.8
Imp. 1,2,3 Volume:	271.7
After Rinse:	651.3
Total TS3:	373.2

CWTR = 1+2+3:	
WCBDA= 4:	

SAMPLE IDENTIFICATION	Blank
TS1(Impinger 1,2,3 Sol'n)	

Train Loaded By:

Train Recovered By: RW

ORTECH

APPENDIX 13

Hydrogen Chloride Recovery Sheets
for the Boiler No. 2 BH Outlet
(12 pages)

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	SEPT 23, 2015
Test No.:	1
Test Location:	OUTLET UNIT 2

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

INITIAL VOL 209.6

FINAL VOL 324.4

Impinger #1 0.1 N H_2SO4	
Empty Wt:	678.3
Initial Wt:	790.1
Final Wt:	862.9
Gain:	72.8
Colour:	Clear

Impinger #4 Silica Gel	
Initial Wt:	854.0
Final Wt:	859.7
4 Gain:	5.7

Impinger #2 0.1 N H_2SO4	
Empty Wt:	675.3
Initial Wt:	770.1
Final Wt:	783.7
Gain:	13.6
Colour:	Clear

26ml REMOVED BEFORE WEIGHING

Impinger #3 EMPTY	
Empty Wt:	605.9
Final Wt:	608.3
Gain:	2.4
Colour:	Clear

CONTAINER TS1 WEIGHTS	
Empty Wt:	281.9
With Imp. 1,2,3 Soln:	~~57~~ 550.9
Imp. 1,2,3 Volume:	269.0
After Rinse:	606.3
Total TS3:	324.4

CWTR = 1+2+3:	88.8
WCBDA= 4:	5.7

94.5

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	15-21546-M26-13

Train Loaded By: MT

Train Recovered By: DU

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	SEPT 23 2015
Test No.:	2
Test Location:	UNIT 2

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	531.3
Initial Wt:	631.8
Final Wt:	~~653.2~~
Gain:	69.3
Colour:	CLEAR

701.1

202.9

Impinger #4 Silica Gel	
Initial Wt:	839.4
Final Wt:	846.6
4 Gain:	7.2

Impinger #2 0.1 N H_2SO4	
Empty Wt:	674.6
Initial Wt:	777.0
Final Wt:	787.8
Gain:	10.8
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	634.7
Final Wt:	635.7
Gain:	1.0
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	282.8
With Imp. 1,2,3 Soln:	537.8
Imp. 1,2,3 Volume:	255.0
After Rinse:	597.4
Total TS3:	314.6

~25ml ALIQUOT

CWTR = 1+2+3:	81.1
WCBDA= 4:	7.2

88.3

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	14

Train Loaded By: DW

Train Recovered By: DW

6

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	SEPT 23, 2015
Test No.:	3 - ~~HW~~
Test Location:	UNIT 2

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	679.6
Initial Wt:	782.2
Final Wt:	850.5
Gain:	68.3
Colour:	CLEAR

INIT VOL. 206.4

351.2

4

Impinger #4 Silica Gel	
Initial Wt:	859.7
Final Wt:	868.7
Gain:	9.0

Impinger #2 0.1 N H_2SO4	
Empty Wt:	675.8
Initial Wt:	779.6
Final Wt:	793.6
Gain:	14.0
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	605.9
Final Wt:	607.1
Gain:	1.2
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	278.4
With Imp. 1,2,3 Soln:	543.6
Imp. 1,2,3 Volume:	265.2
After Rinse:	629.6
Total TS3:	351.2

-25ml ALIQUOT NOT INCL

CWTR = 1+2+3:	83.5
WCBDA= 4:	9.0

92.5

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	15

Train Loaded By: DM

Train Recovered By: DM

A

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	SEPT 23 2015
Test No.:	4
Test Location:	UNIT 2

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	~~533.8~~ 534.2
Initial Wt:	639.6
Final Wt:	717.5
Gain:	77.9
Colour:	CLEAR

INITIAL 208.7

Impinger #4 Silica Gel	
Initial Wt:	847.1
Final Wt:	854.6
4 Gain:	7.5

Impinger #2 0.1 N H_2SO4	
Empty Wt:	677.2
Initial Wt:	780.5
Final Wt:	792.4
Gain:	11.9
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	636.7
Final Wt:	637.9
Gain:	1.1
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	240.0
With Imp. 1,2,3 Soln:	514.5
Imp. 1,2,3 Volume:	274.5
After Rinse:	123.1
Total TS3:	343.1

-25ml ALIQUOT NOT INCL.

CWTR = 1+2+3:	90.9

WCBDA= 4:	7.5

99.4

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	116

Train Loaded By: BM

Train Recovered By: BM

B

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	SEPT 23 2015
Test No.:	5
Test Location:	UNIT 2

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	679.4
Initial Wt:	778.4
Final Wt:	842.3
Gain:	63.9
Colour:	CLEAR

INITIAL 201.2

FINAL 359.7

4

Impinger #4 Silica Gel	
Initial Wt:	868.7
Final Wt:	875.6
Gain:	6.9

Impinger #2 0.1 N H_2SO4	
Empty Wt:	675.6
Initial Wt:	777.8
Final Wt:	790.6
Gain:	12.9
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	605.2
Final Wt:	607.1
Gain:	1.9
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	280.5
With Imp. 1,2,3 Soln:	534.9
Imp. 1,2,3 Volume:	254.4
After Rinse:	640.2
Total TS3:	359.7

~25 ml NOT INCL

CWTR = 1+2+3:	78.6
WCBDA= 4:	6.9

85.5

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	17

Train Loaded By: KM

Train Recovered By: KM

A

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	SEPT 23, 2015
Test No.:	6
Test Location:	UNIT 2

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	534.3
Initial Wt:	636.2
Final Wt:	712.1
Gain:	75.9
Colour:	CLEAR

200.1

Impinger #4 Silica Gel	
Initial Wt:	854.5
Final Wt:	861.0
Gain:	6.5

4

Impinger #2 0.1 N H_2SO4	
Empty Wt:	678.0
Initial Wt:	776.2
Final Wt:	788.1
Gain:	11.9
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	636.8
Final Wt:	637.9
Gain:	1.1
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	279.6
With Imp. 1,2,3 Soln:	544.2
Imp. 1,2,3 Volume:	264.6
After Rinse:	617.6
Total TS3:	338.0

25 ml ALIQUOT NOT INCL.

– ~~125~~

CWTR = 1+2+3:	88.9
WCBDA= 4:	6.5

95.4

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	18

Train Loaded By: RM

Train Recovered By: RM

B

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	SEPT 23 2015
Test No.:	7
Test Location:	UNIT 2

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	679.4
Initial Wt:	981.7
Final Wt:	855.5
Gain:	73.8
Colour:	CLEAR

INIT. 205.2

Impinger #4 Silica Gel	
Initial Wt:	875.5
Final Wt:	881.6
4 Gain:	6.1

Impinger #2 0.1 N H_2SO4	
Empty Wt:	676.2
Initial Wt:	779.1
Final Wt:	793.3
Gain:	14.2
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	605.8
Final Wt:	607.2
Gain:	1.4
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	279.8
With Imp. 1,2,3 Soln:	544.7
Imp. 1,2,3 Volume:	264.9
After Rinse:	641.8
Total TS3:	362.0

- NOT INCL 25ml ALIQUOT

CWTR = 1+2+3:	89.4
WCBDA= 4:	6.1

95.5

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	19

Train Loaded By: [signature]

Train Recovered By: [signature]

A

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	SEPT 23, 2015
Test No.:	8
Test Location:	UNIT 2

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	533.5
Initial Wt:	634.1
Final Wt:	696.5
Gain:	62.4
Colour:	CLEAR

INIT. 200.1 ml

Impinger #4 Silica Gel	
Initial Wt:	860.9
Final Wt:	867.8
4 Gain:	6.9

Impinger #2 0.1 N H_2SO4	
Empty Wt:	677.4
Initial Wt:	776.9
Final Wt:	787.0
Gain:	10.1
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	637.0
Final Wt:	638.3
Gain:	1.3
Colour:	—

CONTAINER TS1 WEIGHTS	
Empty Wt:	279.8
With Imp. 1,2,3 Soln:	527.8
Imp. 1,2,3 Volume:	248.0
After Rinse:	606.7
Total TS3:	326.9

-25ml ALIQUOT NOT INCL.

CWTR = 1+2+3:	73.8

WCBDA= 4:	6.9

80.7

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	20

Train Loaded By: DU

Train Recovered By: MT

B

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	SEPT 23, 2015
Test No.:	9
Test Location:	UNIT 2

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	651.1
Initial Wt:	782.6
Final Wt:	851.9
Gain:	69.3
Colour:	CLEAR

Impinger #4 Silica Gel	
Initial Wt:	881.5
Final Wt:	888.6
Gain:	7.1

4

Impinger #2 0.1 N H_2SO4	
Empty Wt:	676.5
Initial Wt:	772.6
Final Wt:	786.7
Gain:	14.1
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	606.3
Final Wt:	608.6
Gain:	2.3
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	278.5
With Imp. 1,2,3 Soln:	543.8
Imp. 1,2,3 Volume:	265.3
After Rinse:	618.0
Total TS3:	339.5

CWTR = 1+2+3:	85.7
WCBDA= 4:	7.1

92.8.

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	21

Train Loaded By: DM

Train Recovered By: DM

RA.

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	SEPT 23, 2015
Test No.:	10
Test Location:	UNIT 2

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	534.0
Initial Wt:	633.9
Final Wt:	704.6
Gain:	70.7
Colour:	CLEAR

199.6

Impinger #4 Silica Gel	
Initial Wt:	867.6
Final Wt:	874.4
4 Gain:	6.8

Impinger #2 0.1 N H_2SO4	
Empty Wt:	676.3
Initial Wt:	776.0
Final Wt:	786.7
Gain:	10.7
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	637.1
Final Wt:	638.4
Gain:	1.3
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	279.6
With Imp. 1,2,3 Soln:	524.5
Imp. 1,2,3 Volume:	244.8
After Rinse:	611.1
Total TS3:	331.5

– 25ml ALIQUOT NOT INCL.

CWTR = 1+2+3:	82.7
WCBDA= 4:	6.8

89.5

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	22

Train Loaded By: [signature]

Train Recovered By: [signature]

B

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	~~2~~ SEPT 23, 2015
Test No.:	11
Test Location:	UNIT 2

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	680.6
Initial Wt:	782.3
Final Wt:	846.3
Gain:	64.0
Colour:	CLEAR

202.6

4

Impinger #4 Silica Gel	
Initial Wt:	888.4
Final Wt:	895.1
Gain:	6.7

Impinger #2 0.1 N H_2SO4	
Empty Wt:	676.3
Initial Wt:	777.2
Final Wt:	790.0
Gain:	12.8
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	606.1
Final Wt:	608.1
Gain:	2.0
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	280.0
With Imp. 1,2,3 Soln:	260.0
Imp. 1,2,3 Volume:	540.0
After Rinse:	612.6
Total TS3:	332.6

– 25 ml ALIQUOT NOT INCL

CWTR = 1+2+3:	78.8 ✓
WCBDA= 4:	6.7

85.5

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	23

Train Loaded By: DW

Train Recovered By: DW

A

ORTECH

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	SEPT 23/15
Test No.:	12
Test Location:	UNIT 2

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO4	
Empty Wt:	533.8
Initial Wt:	635.4
Final Wt:	707.1
Gain:	71.7
Colour:	CLEAR

202.1

Impinger #4 Silica Gel	
Initial Wt:	874.3
Final Wt:	881.2
4 Gain:	6.9

Impinger #2 0.1 N H_2SO4	
Empty Wt:	677.1
Initial Wt:	777.6
Final Wt:	788.6
Gain:	11.0
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	637.4
Final Wt:	638.5
Gain:	1.1
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	279.7
With Imp. 1,2,3 Soln:	268.1
Imp. 1,2,3 Volume:	~~632.2~~ 547.8
After Rinse:	632.2
Total TS3:	352.5

CWTR = 1+2+3:	83.8 ✓
WCBDA= 4:	6.9

90.7

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	24

Train Loaded By: [signature]

Train Recovered By: [signature]

B

ORTECH

APPENDIX 14

Hydrogen Chloride Analytical Report
(18 pages)

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 SOUTHDOWN ROAD
ALS WO#:	L1678387		MISSISSAUGA, ON L5J 2Y4
Date of Report	25-Sep-15		(905)822-4120
Date of Sample Receipt	24-Sep-2015	**Client Contact:**	Chris Belore
		Client Project ID:	21546

COMMENTS:

Cl as HCl Anion Analysed via Ion Chromatography Method USEPA 26 (FE 24-Sep-2015)

LOR = Limit of Reporting
LCB = Laboratory Control Blank (limits: <LOR)
LCS = Laboratory Control Sample (limits: 90-110%)
MS = Matrix Spike Sample (limits: 90-110%, NH_3: 85-115%)
RPD = Relative Percent Difference (limits: <20% for sample duplicate, <10% for duplicate injection)
CVS = Calibration Verification Standard (limits: 90-110%)

R. Stolys

Certified by: ______________________

Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name	15-21546-M26-1 #1 APC OUTLET TEST#1	15-21546-M26-2 #1 APC OUTLET TEST#2	15-21546-M26-3 #1 APC OUTLET TEST#3	15-21546-M26-4 #1 APC OUTLET TEST#4	15-21546-M26-5 #1 APC OUTLET TEST#5
ALS Sample ID	L1678387-1	L1678387-2	L1678387-3	L1678387-4	L1678387-5
Matrix	Stack	Stack	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample	Sample	Sample
Sampling Date/Time	24-Sep-15	24-Sep-15	24-Sep-15	24-Sep-15	24-Sep-15
Date of Receipt	24-Sep-15	24-Sep-15	24-Sep-15	24-Sep-15	24-Sep-15
Ion Chromatography Analysis Method 26A	**mg**	**mg**	**mg**	**mg**	**mg**
Total Cl^- as HCl (ave)	5.80	5.33	6.09	6.63	7.98
Analysis 1	5.79	5.19	6.09	6.65	7.98
Analysis 2	5.82	5.47	6.09	6.62	7.98

ALS Environmental

Sample Analysis Summary Report

Sample Name	15-21546-M26-6 #1 APC OUTLET TEST#6	15-21546-M26-7 #1 APC OUTLET TEST#7	15-21546-M26-8 #1 APC OUTLET TEST#8	15-21546-M26-9 #1 APC OUTLET TEST#9	15-21546-M26-10 #1 APC OUTLET TEST#10
ALS Sample ID	L1678387-6	L1678387-7	L1678387-8	L1678387-9	L1678387-10
Matrix	Stack	Stack	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample	Sample	Sample
Sampling Date/Time	24-Sep-15	24-Sep-15	24-Sep-15	24-Sep-15	24-Sep-15
Date of Receipt	24-Sep-15	24-Sep-15	24-Sep-15	24-Sep-15	24-Sep-15
Ion Chromatography Analysis					
Method 26A	**mg**	**mg**	**mg**	**mg**	**mg**
Total Cl^- as HCl (ave)	6.85	6.45	7.10	5.91	6.49
Analysis 1	6.92	6.48	7.11	5.93	6.51
Analysis 2	6.79	6.41	7.08	5.90	6.47

ALS Environmental

Sample Analysis Summary Report

Sample Name	15-21546-M26-11 #1 APC OUTLET TEST#11	15-21546-M26-12 #1 APC OUTLET TEST#12	15-21546-M26-BLANK #1 APC OUTLET
ALS Sample ID	L1678387-11	L1678387-12	L1678387-13
Matrix	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample
Sampling Date/Time	24-Sep-15	24-Sep-15	24-Sep-15
Date of Receipt	24-Sep-15	24-Sep-15	24-Sep-15
Ion Chromatography Analysis			
Method 26A	**mg**	**mg**	**mg**
Total Cl^- as HCl (ave)	7.44	7.13	<0.243
Analysis 1	7.46	7.17	<0.243
Analysis 2	7.43	7.10	<0.243

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Sample Analysis Summary Report

Sample Name	**LCB**	**LCS**	**LCS**
ALS Sample ID	LCB	LCS	LCS
Matrix	Stack	Stack	Stack
Analysis type	Method Blank	Blank Spike	Blank Spike
Sampling Date/Time	N/A	N/A	N/A
Date of Receipt	N/A	N/A	N/A
Ion Chromatography Analysis Method 26A	**mg**	**mg**	**% Rec**
Total Cl^- as HCl (ave)	<0.0309	0.745	94%
Analysis 1	<0.0309	0.756	
Analysis 2	<0.0309	0.735	

ALS Environmental

Sample Analysis Summary Report

Sample Name	15-21546-M26-1 #1 APC OUTLET TEST#1	15-21546-M26-1 #1 APC OUTLET TEST#1	15-21546-M26-1 #1 APC OUTLET TEST#1	15-21546-M26-1 #1 APC OUTLET TEST#1
ALS Sample ID	L1678387-1	L1678387-1DUP	L1678387-1MS	L1678387-1MS
Matrix	Stack	Stack	Stack	Stack
Analysis type	Sample	Duplicate	Matrix Spike	Matrix Spike
Sampling Date/Time	24-Sep-15	24-Sep-15	24-Sep-15	24-Sep-15
Date of Receipt	24-Sep-15	24-Sep-15	24-Sep-15	24-Sep-15
Ion Chromatography Analysis Method 26A	**mg**	**mg**	**mg**	**% Rec**
Total Cl^- as HCl (ave)	5.80	5.84	11.7	99%
Analysis 1	5.79	5.86	11.7	
Analysis 2	5.82	5.82	11.7	

ALS Environmental
1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 SOUTHDOWN ROAD
ALS WO#:	L1676358		MISSISSAUGA, ON L5J 2Y4
Date of Report	24-Sep-15		(905)822-4120
Date of Sample Receipt	23-Sep-2015	**Client Contact:**	Chris Belore
		Client Project ID:	21546

COMMENTS:

Cl as HCl Anion Analysed via Ion Chromatography Method USEPA 26 (FE 23-Sep-2015)

LOR = Limit of Reporting
LCB = Laboratory Control Blank (limits: <LOR)
LCS = Laboratory Control Sample (limits: 90-110%)
MS = Matrix Spike Sample (limits: 90-110%, NH_3: 85-115%)
RPD = Relative Percent Difference (limits: <20% for sample duplicate, <10% for duplicate injection)
CVS = Calibration Verification Standard (limits: 90-110%)

R. Stolys

Certified by. ______________________

Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name	15-21546-M26-13 #2 APC OUTLET TEST#1	15-21546-M26-14 #2 APC OUTLET TEST#2	15-21546-M26-15 #2 APC OUTLET TEST#3	15-21546-M26-16 #2 APC OUTLET TEST#4	15-21546-M26-17 #2 APC OUTLET TEST#5
ALS Sample ID	L1676358-1	L1676358-2	L1676358-3	L1676358-4	L1676358-5
Matrix	Stack	Stack	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample	Sample	Sample
Sampling Date/Time	23-Sep-15	23-Sep-15	23-Sep-15	23-Sep-15	23-Sep-15
Date of Receipt	23-Sep-15	23-Sep-15	23-Sep-15	23-Sep-15	23-Sep-15
Ion Chromatography Analysis					
Method 26A	**mg**	**mg**	**mg**	**mg**	**mg**
Total Cl^- as HCl (ave)	6.90	7.88	4.96	4.47	4.91
Analysis 1	6.89	7.82	4.96	4.46	4.90
Analysis 2	6.91	7.94	4.96	4.47	4.92

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Sample Analysis Summary Report

Sample Name	15-21546-M26-18 #2 APC OUTLET TEST#6	15-21546-M26-19 #2 APC OUTLET TEST#7	15-21546-M26-20 #2 APC OUTLET TEST#8	15-21546-M26-21 #2 APC OUTLET TEST#9	15-21546-M26-22 #2 APC OUTLET TEST#10
ALS Sample ID	L1676358-6	L1676358-7	L1676358-8	L1676358-9	L1676358-10
Matrix	Stack	Stack	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample	Sample	Sample
Sampling Date/Time	23-Sep-15	23-Sep-15	23-Sep-15	23-Sep-15	23-Sep-15
Date of Receipt	23-Sep-15	23-Sep-15	23-Sep-15	23-Sep-15	23-Sep-15
Ion Chromatography Analysis					
Method 26A	**mg**	**mg**	**mg**	**mg**	**mg**
Total Cl^- as HCl (ave)	7.19	6.67	5.92	5.67	5.86
Analysis 1	7.20	6.68	5.97	5.67	5.93
Analysis 2	7.17	6.67	5.87	5.66	5.79

ALS Environmental

Sample Analysis Summary Report

Sample Name	15-21546-M26-23 #2 APC OUTLET TEST#11	15-21546-M26-24 #2 APC OUTLET TEST#12
ALS Sample ID	L1676358-11	L1676358-12
Matrix	Stack	Stack
Analysis type	Sample	Sample
Sampling Date/Time	23-Sep-15	23-Sep-15
Date of Receipt	23-Sep-15	23-Sep-15
Ion Chromatography Analysis Method 26A	**mg**	**mg**
Total Cl^- as HCl (ave)	5.35	5.33
Analysis 1	5.44	5.36
Analysis 2	5.26	5.30

ALS Environmental

Sample Analysis Summary Report

Sample Name	**LCB**	**LCS**	**LCS**
ALS Sample ID	LCB	LCS	LCS
Matrix	Stack	Stack	Stack
Analysis type	Method Blank	Blank Spike	Blank Spike
Sampling Date/Time	N/A	N/A	N/A
Date of Receipt	N/A	N/A	N/A
Ion Chromatography Analysis			
Method 26A	**mg**	**mg**	**% Rec**
Total Cl^- as HCl (ave)	<0.0309	0.749	94%
Analysis 1	<0.0309	0.754	
Analysis 2	<0.0309	0.743	

ALS Environmental

Sample Analysis Summary Report

Sample Name	**15-21546-M26-13 #2 APC OUTLET TEST#1**	**15-21546-M26-13 #2 APC OUTLET TEST#1**	**15-21546-M26-13 #2 APC OUTLET TEST#1**	**15-21546-M26-13 #2 APC OUTLET TEST#1**
ALS Sample ID	L1676358-1	L1676358-1DUP	L1676358-1MS	L1676358-1MS
Matrix	Stack	Stack	Stack	Stack
Analysis type	Sample	Duplicate	Matrix Spike	Matrix Spike
Sampling Date/Time	23-Sep-15	23-Sep-15	23-Sep-15	23-Sep-15
Date of Receipt	23-Sep-15	23-Sep-15	23-Sep-15	23-Sep-15
Ion Chromatography Analysis				
Method 26A	**mg**	**mg**	**mg**	**% Rec**
Total Cl^- as HCl (ave)	6.90	6.97	12.7	101%
Analysis 1	6.89	7.00	12.8	
Analysis 2	6.91	6.95	12.6	

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Ron McLeod	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L1684215		Mississauga, ON L5J 2Y4
Date of Report	8-Oct-15		Canada
Date of Sample Receipt	7-Oct-15	**Client Contact:**	Chris Belore
		Client Project ID:	21546, COVANTA

COMMENTS:

Cl as HCl Anion Analysed via Ion Chromatography Method USEPA 26 (FE 7-Oct-2015)

LOR = Limit of Reporting
LCB = Laboratory Control Blank (limits: <LOR)
LCS = Laboratory Control Sample (limits: 90-110%)
MS = Matrix Spike Sample (limits: 90-110%, NH_3: 85-115%)
RPD = Relative Percent Difference (limits: <20% for sample duplicate, <10% for duplicate injection)
CVS = Calibration Verification Standard (limits: 90-110%)

R. Stolys

Certified by: ______________________
Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name	15-21546-M26A-26 APC OUTLET #1	15-21546-M26A-27 APC OUTLET #1	15-21546-M26A-28 APC OUTLET #1	15-21546-M26A-29 APC OUTLET #1	15-21546-M26A-30 APC OUTLET #1
ALS Sample ID	L1684215-1	L1684215-2	L1684215-3	L1684215-4	L1684215-5
Matrix	Stack	Stack	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample	Sample	Sample
Sampling Date/Time	5-Oct-15	5-Oct-15	5-Oct-15	5-Oct-15	5-Oct-15
Date of Receipt	7-Oct-15	7-Oct-15	7-Oct-15	7-Oct-15	7-Oct-15
Ion Chromatography Analysis Method 26A	**mg**	**mg**	**mg**	**mg**	**mg**
Total Cl^- as HCl (ave)	4.15	3.43	3.41	3.15	3.06
Analysis 1	4.14	3.41	3.40	3.16	3.08
Analysis 2	4.16	3.44	3.41	3.14	3.04

ALS Environmental

Sample Analysis Summary Report

Sample Name	**15-21546-M26A-31 APC OUTLET #1**	**15-21546-M26A-32 APC OUTLET #1**	**15-21546-M26A-33 APC OUTLET #1**	**15-21546-M26A-34 APC OUTLET #1**	**15-21546-M26A-35 APC OUTLET #1**
ALS Sample ID	L1684215-6	L1684215-7	L1684215-8	L1684215-9	L1684215-10
Matrix	Stack	Stack	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample	Sample	Sample
Sampling Date/Time	5-Oct-15	5-Oct-15	5-Oct-15	5-Oct-15	5-Oct-15
Date of Receipt	7-Oct-15	7-Oct-15	7-Oct-15	7-Oct-15	7-Oct-15
Ion Chromatography Analysis Method 26A	**mg**	**mg**	**mg**	**mg**	**mg**
Total Cl^- as HCl (ave)	3.29	3.19	3.23	3.00	3.11
Analysis 1	3.28	3.20	3.23	3.01	3.12
Analysis 2	3.29	3.19	3.22	3.00	3.10

ALS Environmental

Sample Analysis Summary Report

Sample Name	15-21546-M26A-36 APC OUTLET #1	15-21546-M26A-37 APC OUTLET #1
ALS Sample ID	L1684215-11	L1684215-12
Matrix	Stack	Stack
Analysis type	Sample	Sample
Sampling Date/Time	5-Oct-15	5-Oct-15
Date of Receipt	7-Oct-15	7-Oct-15
Ion Chromatography Analysis Method 26A	**mg**	**mg**
Total Cl^- as HCl (ave)	2.80	2.13
Analysis 1	2.80	2.13
Analysis 2	2.79	2.13

ALS Environmental

Sample Analysis Summary Report

Sample Name	**LCB**	**LCS**	**LCS**
ALS Sample ID	LCB	LCS	LCS
Matrix	Stack	Stack	Stack
Analysis type	Method Blank	Blank Spike	Blank Spike
Sampling Date/Time	N/A	N/A	N/A
Date of Receipt	N/A	N/A	N/A
Ion Chromatography Analysis			
Method 26A	**mg**	**mg**	**% Rec**
Total Cl^- as HCl (ave)	<0.0309	0.758	96%
Analysis 1	<0.0309	0.762	
Analysis 2	<0.0309	0.755	

ALS Environmental

Sample Analysis Summary Report

Sample Name	**15-21546-M26A-26 APC OUTLET #1**	**15-21546-M26A-26 APC OUTLET #1**	**15-21546-M26A-26 APC OUTLET #1**	**15-21546-M26A-26 APC OUTLET #1**
ALS Sample ID	L1684215-1	L1684215-1DUP	L1684215-1MS	L1684215-1MS
Matrix	Stack	Stack	Stack	Stack
Analysis type	Sample	Duplicate	Matrix Spike	Matrix Spike
Sampling Date/Time	5-Oct-15	5-Oct-15	5-Oct-15	5-Oct-15
Date of Receipt	7-Oct-15	7-Oct-15	7-Oct-15	7-Oct-15

Ion Chromatography Analysis Method 26A	**mg**	**mg**	**mg**	**% Rec**
Total Cl^- as HCl (ave)	4.15	4.17	10.3	99%
Analysis 1	4.14	4.20	10.4	
Analysis 2	4.16	4.14	10.3	

APPENDIX 15

ORTECH CEM Calibration Data
(23 pages)

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21546	Date:	September 22, 2015
Company:	COVANTA	Operator:	J. Grollman
Location:	Courtice	Analyzer ID	Ratfish RS55
Test Location:	Unit #1 and Unit #2		

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0.6 B1	1.002 C		
High	90 A2	90.8 B2			
Mid	48 A4	48.62 B4		48.1 D4	1.1 E4
Low	30.6 A3	30.73 B3		30.7 D3	0.2 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.6	0.25	0.35
Mid	48.62	48.0	0.6

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		43
Run 2	30		45
Run 3	30		41
Average	**30**		**43**

Covanta
Mobile Source Monitoring Laboratory # 1
Daily Analyser Calibration Evaluation
Job No. 21546
September 21, 2015
Test 1 Final Calculations Unit # 1 and Unit # 2

Analyser		O2	CO2	SO2	CO	NO	NOx
MII Number/Serial Number		710689	710689		710689		
Model		Horiba VA 3000	Horiba VA 3000	Teledyne T-100	Horiba - VA3000	Teledyne 200EH	
Range		25.00	20.00	230	500	260	260
Actual Cylinder Value	High	12.40	12.70	225.1	455	252	252
	Mid.	6.02	5.94	89.97	225.4	90.49	90.49
	Zero	0.00	0.00	0	0	0	0

Analyzer Initial Calibration	Zero	0.02	0.03	0.07	0.0	0.0	0.4
	Mid	6.08	5.98	90.2	222.4	89.6	90.2
	High	12.46	12.61	225.1	454.6	252.3	253.7
System Initial Calibration	Zero	0.08	0.04	0.2	0.1	0.1	0.8
	Upscale	6.09	5.86	87.6	221.5	90.5	91.5
System Final Calibration	Zero	0.06	0.11	0.29	2.1	0.1	0.1
	Upscale	6.14	5.85	87.8	221.5	90.4	90.7

Calibration Error Results

Analyzer Calibration Error = (Measured Concentration of Cal Gas in Direct Mode - Manufacturer Certified Cal Gas Concentration)/Analyzer Range)*100

		Analyser	O2	CO2	SO2	CO	NO	NOx
		Analyzer Span Range	25.00	20.00	230	500	260	260
Calibration Error	Zero	%	0.08	0.15	0.03	0.00	0.00	0.15
	Mid	%	0.24	0.20	0.10	0.60	0.34	0.11
	High	%	0.24	0.45	0.00	0.08	0.12	0.65
Acceptable Limits	of Span		+-2%	+-2%	+-2%	+-2%	+-2%	+-2%
Error Results			PASS	PASS	PASS	PASS	PASS	PASS

System Drift

Drift Calculation = | System Bias $_{final}$ - System Bias $_{initial}$ |

	Analyser	O2	CO2	SO2	CO	NO	NOx
	Span	25.00	20.00	230	500	260	260
Initial System Bias	Zero	0.24	0.05	0.06	0.02	0.04	0.16
	Upscale	0.04	-0.60	-1.13	-0.2	0.3	0.5
Final System Bias	Zero	-0.02	-0.04	0.26	2.1	0.1	0.0
	Upscale	0.24	-0.65	-1.04	-0.2	0.3	0.2

System Zero Drift	%	0.26	0.09	0.20	2.08	0.03	0.18
System Cal Drift	%	0.20	0.05	0.09	0.00	0.06	0.31
Acceptable Limits	of Span	+-3%	+-3%	+-3%	+-3%	+-3%	+-3%
Drift Result		PASS	PASS	PASS	PASS	PASS	PASS

System Calibration Bias

System Bias Calculation = ((Measured Concentration of Cal Gas in System Calibration Mode - Measured Concentration of Cal Gas in Direct Mode)/Analyzer Range))* 100

Analyser		O2	CO2	SO2	CO	NO	Nox
Analyzer Full Scale Span		25	20	230	500	260	260
Analyzer Initial	Zero	0.02	0.03	0.07	0.0	0.0	0.4
	Upscale	6.08	5.98	90.20	222.4	89.6	90.2
System Initial	Zero	0.08	0.04	0.20	0.1	0.1	0.8
	Upscale	6.09	5.86	87.60	221.5	90.5	91.5
Analyzer Final	Zero	0.00	0.00	0.00	0.0	0.0	0.0
	Upscale	0.00	0.00	0.00	0.0	0.0	0.0
System Final	Zero	0.06	0.11	0.29	2.1	0.1	0.1
	Upscale	6.14	5.85	87.80	221.5	90.4	90.7

Initial System Bias	Zero	%	0.24	0.05	0.06	0.02	0.04	0.16
	Upscale	%	0.04	-0.60	-1.13	-0.18	0.35	0.50
Final System Bias	Zero	%	-0.02	-0.04	0.26	2.10	0.07	-0.02
	Upscale	%	0.24	-0.65	-1.04	-0.18	0.29	0.19
Acceptable Limits	of Span		+-5%	+-5%	+-5%	+-5%	+-5%	+-5%
Bias Results			PASS	PASS	PASS	PASS	PASS	PASS

COVANTA
Mobile Source Monitoring Laboratory # 1
Daily Analyser Calibration Evaluation
Job No. 21584
September 24, 2015
Test 1-6 Final Calculations Inlet Unit #1

Analyser		O2	CO2	SO2	CO
MII Number/Serial Number		COE 20060	COE 20060	COE 20099	COE 20101
Model		Sick/Maihak S710	Sick/Maihak S710	Ametek 922	Sick/Maihak S710
Range		25	20	100	100
Actual Cylinder Value	High	23.30	19.90	90.99	91
	Mid.	12.30	12.70	20.3	52.86
	Zero	0.00	0.00	0	0

Analyzer Initial Calibration	Zero	0.00	0.01	0	0.0
	Mid	12.26	12.86	20.4	52.7
	High	23.28	19.91	91.4	91.6
System Initial Calibration	Zero	0.27	0.02	0.8	0.0
	Upscale	12.36	12.53	88.5	50.7
System Final Calibration	Zero	0.32	0.01	1	0.0
	Upscale	12.55	12.27	87.9	50.7

Calibration Error Results

Analyzer Calibration Error = (Measured Concentration of Cal Gas in Direct Mode - Manufacturer Certified Cal Gas Concentration)/Analyzer Range)*100

	Analyser		O2	CO2	SO2	CO
	Analyzer Span Range		25.00	20.00	100	100
Calibration Error	Zero	%	0.00	0.05	0.00	0.00
	Mid	%	0.16	0.80	0.10	0.16
	High	%	0.08	0.05	0.41	0.60
Acceptable Limits	of Span		+-2%	+-2%	+-2%	+-2%

Error Results		PASS	PASS	PASS	PASS

System Drift

Drift Calculation = | System Bias$_{final}$ - System Bias$_{initial}$ |

	Analyser	O2	CO2	SO2	CO
	Span	25.00	20.00	100	100
Initial System Bias	Zero	1.08	0.05	0.80	0.00
	Upscale	0.40	-1.65	-2.90	-2.0
Final System Bias	Zero	0.32	-0.04	1.00	0.0
	Upscale	1.16	-2.95	-3.50	-2.0

System Zero Drift	%	0.76	0.09	0.20	0.00
System Cal Drift	%	0.76	1.30	0.60	0.00
Acceptable Limits	of Span	+-3%	+-3%	+-3%	+-3%

Drift Result		PASS	PASS	PASS	PASS

System Calibration Bias

System Bias Calculation = ((Measured Concentration of Cal Gas in System Calibration Mode - Measured Concentration of Cal Gas in Direct Mode)/Analyzer Range))* 100

Analyser		O2	CO2	SO2	CO
Analyzer Full Scale Span		25	20	100	100
Analyzer Initial	Zero	0.00	0.01	0.00	0.0
	Upscale	12.26	12.86	91.40	52.7
System Initial	Zero	0.27	0.02	0.80	0.0
	Upscale	12.36	12.53	88.50	50.7
Analyzer Final	Zero	0.00	0.00	0.00	0.0
	Upscale	0.00	0.00	0.00	0.0
System Final	Zero	0.32	0.01	1.00	0.0
	Upscale	12.55	12.27	87.90	50.7

Initial System Bias	Zero	%	1.08	0.05	0.80	0.00
	Upscale	%	0.40	-1.65	-2.90	-2.00
Final System Bias	Zero	%	0.32	-0.04	1.00	0.00
	Upscale	%	1.16	-2.95	-3.50	-2.00
Acceptable Limits	of Span		+-5%	+-5%	+-5%	+-5%

Bias Results		PASS	PASS	PASS	PASS

COVANTA
Mobile Source Monitoring Laboratory # 1
Daily Analyser Calibration Evaluation
Job No. 21584
September 24, 2015
Test 7 - 12 Final Calculations Inlet Unit #1

Analyser		O2	CO2	SO2	CO
Mil Number/Serial Number		COE 20060	COE 20060	COE 20099	COE 20101
Model		Sick/Maihak S710	Sick/Maihak S710	Ametek 922	Sick/Maihak S710
Range		25	20	100	100
Actual Cylinder Value	High	23.30	19.90	90.99	91
	Mid.	12.30	12.70	20.3	52.86
	Zero	0.00	0.00	0	0

Analyzer Initial Calibration	Zero	0.00	0.01	0	0.0
	Mid	12.26	12.86	20.4	52.7
	High	23.28	19.91	91.4	91.6
System Initial Calibration	Zero	0.32	0.01	1	0.0
	Upscale	12.55	12.27	87.9	50.7
System Final Calibration	Zero	0.61	0.01	1.1	0.0
	Upscale	12.62	12.26	86.9	49.2

Calibration Error Results

Analyzer Calibration Error = (Measured Concentration of Cal Gas in Direct Mode - Manufacturer Certified Cal Gas Concentration)/Analyzer Range)*100

		Analyser	O2	CO2	SO2	CO
		Analyzer Span Range	25.00	20.00	100	100
Calibration Error	Zero	%	0.00	0.05	0.00	0.00
	Mid	%	0.16	0.80	0.10	0.16
	High	%	0.08	0.05	0.41	0.60
Acceptable Limits	**of Span**		**+-2%**	**+-2%**	**+-2%**	**+-2%**

Error Results	**PASS**	**PASS**	**PASS**	**PASS**

System Drift

Drift Calculation = | System Bias$_{final}$ - System Bias$_{initial}$ |

	Analyser	O2	CO2	SO2	CO
	Span	25.00	20.00	100	100
Initial System Bias	Zero	1.28	0.00	1.00	0.00
	Upscale	1.16	-2.95	-3.50	-2.0
Final System Bias	Zero	0.61	-0.04	1.10	0.0
	Upscale	1.44	-3.00	-4.50	-3.5

System Zero Drift	%	0.67	0.04	0.10	0.00
System Cal Drift	%	0.28	0.05	1.00	1.50
Acceptable Limits	**of Span**	**+ - 3 %**	**+ - 3 %**	**+ - 3 %**	**+ - 3 %**

Drift Result	**PASS**	**PASS**	**PASS**	**PASS**

System Calibration Bias

System Bias Calculation = ((Measured Concentration of Cal Gas in System Calibration Mode - Measured Concentration of Cal Gas in Direct Mode)/Analyzer Range))* 100

Analyser		O2	CO2	SO2	CO
Analyzer Full Scale Span		25	20	100	100
Analyzer Initial	Zero	0.00	0.01	0.00	0.0
	Upscale	12.26	12.86	91.40	52.7
System Initial	Zero	0.32	0.01	1.00	0.0
	Upscale	12.55	12.27	87.90	50.7
Analyzer Final	Zero	0.00	0.00	0.00	0.0
	Upscale	0.00	0.00	0.00	0.0
System Final	Zero	0.61	0.01	1.10	0.0
	Upscale	12.62	12.26	86.90	49.2

Initial System Bias	Zero	%	1.28	0.00	1.00	0.00
	Upscale	%	1.16	-2.95	-3.50	-2.00
Final System Bias	Zero	%	0.61	-0.04	1.10	0.00
	Upscale	%	1.44	-3.00	-4.50	-3.50
Acceptable Limits	**of Span**		**+ - 5 %**	**+ - 5 %**	**+ - 5 %**	**+ - 5 %**

Bias Results	**PASS**	**PASS**	**PASS**	**PASS**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21584	Date:	September 24, 2015
Company:	COVANTA	Operator:	T, Timar
Location:		Analyzer ID	Ratfiche
Test Location:	Inlet unit #1	Test 1 - 6	

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)		Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.04	B1	0.999	C				
High	90	A2	89.97	B2						
Mid	53.1	A4	52.65	B4			53.1	D4	-0.8	E4
Low	29.1	A3	29.44	B3			29.1	D3	1.2	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.04	0	0.04
Low	28.14	28.1	0.0

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	26		30
Run 2	25		28
Run 3	25		28
Average	**25**		**29**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21584	Date:	September 24, 2015
Company:	COVANTA	Operator:	T, Timar
Location:		Analyzer ID	Ratfiche
Test Location:	Inlet unit #1	Test 7 - 12	

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0.04 B1	0.999 C		
High	90 A2	89.97 B2			
Mid	53.1 A4	52.65 B4		53.1 D4	-0.8 E4
Low	29.1 A3	28.14 B3		29.1 D3	-3.2 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.04	0	0.04
Low	28.14	27.8	0.3

Criteria 3%

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	26		30
Run 2	25		28
Run 3	25		28
Average	**25**		**29**

Covanta
Mobile Source Monitoring Laboratory # 1
Daily Analyser Calibration Evaluation
Job No. 21546
September 24, 2015
Test 1 - 3 Final Calculations Unit #1

Analyser		O2	CO2	SO2	CO	NO	NOx
MII Number/Serial Number		710689	710689		710689		
Model		Horiba VA 3000	Horiba VA 3000	Teledyne T-100	Horiba - VA3000	Teledyne 200EH	
Range		25.00	20.00	230	500	260	260
Actual Cylinder Value	High	23.67	19.36	225.1	455	252	252
	Mid.	12.40	12.70	89.97	225.4	90.49	90.49
	Zero	0.00	0.00	0	0	0	0

Analyzer Initial Calibration	Zero	0.00	0.00	0	0.0	0.0	0.0
	Mid	12.41	12.71	89.93	223.0	90.3	90.4
	High	23.72	19.35	225	455.0	251.9	252.3
System Initial Calibration	Zero	0.17	0.04	0	0.1	0.0	0.0
	Upscale	12.76	12.89	87.2	224.0	91.6	91.7
System Final Calibration	Zero	0.17	0.04	0	0.0	0.0	0.0
	Upscale	13.03	12.91	87	224.0	91.2	92.4

Calibration Error Results

Analyzer Calibration Error = (Measured Concentration of Cal Gas in Direct Mode - Manufacturer Certified Cal Gas Concentration)/Analyzer Range)*100

			O2	CO2	SO2	CO	NO	NOx
	Analyser		O2	CO2	SO2	CO	NO	NOx
	Analyzer Span Range		25.00	20.00	230	500	260	260
Calibration Error	Zero	%	0.00	0.00	0.00	0.00	0.00	0.00
	Mid	%	0.04	0.05	0.02	0.48	0.08	0.05
	High	%	0.20	0.05	0.04	0.00	0.05	0.13
Acceptable Limits	of Span		+-2%	+-2%	+-2%	+-2%	+-2%	+-2%

	O2	CO2	SO2	CO	NO	NOx
Error Results	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**

System Drift

Drift Calculation = | System Bias $_{final}$ - System Bias $_{initial}$ |

	Analyser	O2	CO2	SO2	CO	NO	NOx
	Span	25.00	20.00	230	500	260	260
Initial System Bias	Zero	0.68	0.20	0.00	0.02	0.00	0.00
	Upscale	1.40	0.90	-1.19	0.2	0.5	0.5
Final System Bias	Zero	0.17	0.04	0.00	0.0	0.0	0.0
	Upscale	2.48	1.00	-1.27	0.2	0.3	0.8
System Zero Drift	%	0.51	0.16	0.00	0.02	0.00	0.00
System Cal Drift	%	1.08	0.10	0.09	0.00	0.15	0.26
Acceptable Limits	**of Span**	**+-3%**	**+-3%**	**+-3%**	**+-3%**	**+-3%**	**+-3%**
Drift Result		**PASS**	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**

System Calibration Bias

System Bias Calculation = ((Measured Concentration of Cal Gas in System Calibration Mode - Measured Concentration of Cal Gas in Direct Mode)/Analyzer Range))* 100

Analyser			O2	CO2	SO2	CO	NO	Nox
Analyzer Full Scale Span			25	20	230	500	260	260
Analyzer Initial	Zero		0.00	0.00	0.00	0.0	0.0	0.0
	Upscale		12.41	12.71	89.93	223.0	90.3	90.4
System Initial	Zero		0.17	0.04	0.00	0.1	0.0	0.0
	Upscale		12.76	12.89	87.20	224.0	91.6	91.7
Analyzer Final	Zero		0.00	0.00	0.00	0.0	0.0	0.0
	Upscale		0.00	0.00	0.00	0.0	0.0	0.0
System Final	Zero		0.17	0.04	0.00	0.0	0.0	0.0
	Upscale		13.03	12.91	87.00	224.0	91.2	92.4
Initial System Bias	Zero	%	0.68	0.20	0.00	0.02	0.00	0.00
	Upscale	%	1.40	0.90	-1.19	0.20	0.50	0.53
Final System Bias	Zero	%	0.17	0.04	0.00	0.00	0.00	0.00
	Upscale	%	2.48	1.00	-1.27	0.20	0.35	0.79
Acceptable Limits	**of Span**		**+-5%**	**+-5%**	**+-5%**	**+-5%**	**+-5%**	**+-5%**
Bias Results			**PASS**	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**

Covanta
Mobile Source Monitoring Laboratory # 1
Daily Analyser Calibration Evaluation
Job No. 21546
September 24, 2015
Test 4 - 6 Final Calculations Unit #1

Analyser		O2	CO2	SO2	CO	NO	NOx
MII Number/Serial Number		710689	710689		710689		
Model		Horiba VA 3000	Horiba VA 3000	Teledyne T-100	Horiba - VA3000	Teledyne 200EH	
Range		25.00	20.00	230	500	260	260
Actual Cylinder Value	High	23.67	19.36	225.1	455	252	252
	Mid.	12.40	12.70	89.97	225.4	90.49	90.49
	Zero	0.00	0.00	0	0	0	0

Analyzer Initial Calibration	Zero	0.00	0.09	0	0.0	0.0	0.0
	Mid	12.50	12.59	89.93	223.0	90.3	90.4
	High	23.68	19.35	225	455.0	251.9	252.3
System Initial Calibration	Zero	0.00	0.09	0.1	0.0	0.2	0.3
	Upscale	12.50	12.56	87.1	223.0	93.4	94.0
System Final Calibration	Zero	0.24	0.27	0	0.0	0.0	0.0
	Upscale	12.32	12.36	87	224.0	91.2	92.4

Calibration Error Results

Analyzer Calibration Error = (Measured Concentration of Cal Gas in Direct Mode - Manufacturer Certified Cal Gas Concentration)/Analyzer Range)*100

	Analyser		O2	CO2	SO2	CO	NO	NOx
	Analyzer Span Range		25.00	20.00	230	500	260	260
Calibration Error	Zero	%	0.00	0.45	0.00	0.00	0.00	0.00
	Mid	%	0.40	0.55	0.02	0.48	0.08	0.05
	High	%	0.04	0.05	0.04	0.00	0.05	0.13
Acceptable Limits	of Span		+-2%	+-2%	+-2%	+-2%	+-2%	+-2%

Error Results		PASS	PASS	PASS	PASS	PASS	PASS

System Drift

Drift Calculation = | System Bias $_{final}$ - System Bias $_{initial}$ |

	Analyser	O2	CO2	SO2	CO	NO	NOx
	Span	25.00	20.00	230	500	260	260
Initial System Bias	Zero	0.00	0.00	0.04	0.00	0.07	0.13
	Upscale	0.00	-0.15	-1.23	0.0	1.2	1.4
Final System Bias	Zero	0.24	-0.18	0.00	0.0	0.0	0.0
	Upscale	-0.72	-1.15	-1.27	0.2	0.3	0.8

System Zero Drift	%	0.24	0.18	0.04	0.00	0.08	0.13
System Cal Drift	%	0.72	1.00	0.04	0.20	0.85	0.61
Acceptable Limits	of Span	+ - 3 %	+ - 3 %	+ - 3 %	+ - 3 %	+ - 3 %	+ - 3 %

Drift Result		PASS	PASS	PASS	PASS	PASS	PASS

System Calibration Bias

System Bias Calculation = ((Measured Concentration of Cal Gas in System Calibration Mode - Measured Concentration of Cal Gas in Direct Mode)/Analyzer Range))* 100

Analyser		O2	CO2	SO2	CO	NO	Nox
Analyzer Full Scale Span		25	20	230	500	260	260
Analyzer Initial	Zero	0.00	0.09	0.00	0.0	0.0	0.0
	Upscale	12.50	12.59	89.93	223.0	90.3	90.4
System Initial	Zero	0.00	0.09	0.10	0.0	0.2	0.3
	Upscale	12.50	12.56	87.10	223.0	93.4	94.0
Analyzer Final	Zero	0.00	0.00	0.00	0.0	0.0	0.0
	Upscale	0.00	0.00	0.00	0.0	0.0	0.0
System Final	Zero	0.24	0.27	0.00	0.0	0.0	0.0
	Upscale	12.32	12.36	87.00	224.0	91.2	92.4

Initial System Bias	Zero	%	0.00	0.00	0.04	0.00	0.07	0.13
	Upscale	%	0.00	-0.15	-1.23	0.00	1.20	1.40
Final System Bias	Zero	%	0.24	-0.18	0.00	0.00	0.00	0.00
	Upscale	%	-0.72	-1.15	-1.27	0.20	0.35	0.79
Acceptable Limits	of Span		+ - 5 %	+ - 5 %	+ - 5 %	+ - 5 %	+ - 5 %	+ - 5 %

Bias Results		PASS	PASS	PASS	PASS	PASS	PASS

Covanta
Mobile Source Monitoring Laboratory # 1
Daily Analyser Calibration Evaluation
Job No. 21546
September 24, 2015
Test 7 - 12 Final Calculations Unit #1

Analyser		O2	CO2	SO2	CO	NO	NOx
MII Number/Serial Number		710689	710689		710689		
Model		Horiba VA 3000	Horiba VA 3000	Teledyne T-100	Horiba - VA3000	Teledyne 200EH	
Range		25.00	20.00	230	500	260	260
Actual Cylinder Value	High	23.67	19.36	225.1	455	252	252
	Mid.	12.40	12.70	89.97	225.4	90.49	90.49
	Zero	0.00	0.00	0	0	0	0

Analyzer Initial Calibration	Zero	0.00	0.01	0	0.0	0.0	0.0
	Mid	12.09	12.72	89.7	224.8	89.8	89.9
	High	23.72	19.37	225.46	454.9	252.4	253.3
System Initial Calibration	Zero	0.24	0.27	0	0.0	0.0	0.0
	Upscale	12.32	12.36	87	224.0	91.2	92.4
System Final Calibration	Zero	0.01	0.09	0.17	0.3	0.1	0.0
	Upscale	12.05	12.36	87.52	231.0	93.9	94.2

Calibration Error Results

Analyzer Calibration Error = (Measured Concentration of Cal Gas in Direct Mode - Manufacturer Certified Cal Gas Concentration)/Analyzer Range)*100

			Analyser	O2	CO2	SO2	CO	NO	NOx
Analyzer Span Range				25.00	20.00	230	500	260	260
Calibration Error	Zero	%		0.00	0.05	0.00	0.00	0.00	0.00
	Mid	%		1.24	0.10	0.12	0.13	0.28	0.25
	High	%		0.20	0.05	0.16	0.02	0.15	0.49
Acceptable Limits	of Span			+-2%	+-2%	+-2%	+-2%	+-2%	+-2%

Error Results	PASS	PASS	PASS	PASS	PASS	PASS

System Drift

Drift Calculation = | System Bias $_{final}$ - System Bias $_{initial}$ |

	Analyser	O2	CO2	SO2	CO	NO	NOx
	Span	25.00	20.00	230	500	260	260
Initial System Bias	Zero	0.96	1.30	0.00	0.00	0.00	0.00
	Upscale	-0.44	-1.80	-1.17	-0.2	0.6	1.0
Final System Bias	Zero	0.01	0.04	0.17	0.3	0.1	0.0
	Upscale	-1.52	-1.80	-0.95	1.2	1.6	1.7

System Zero Drift	%	0.95	1.26	0.17	0.25	0.13	0.00
System Cal Drift	%	1.08	0.00	0.23	1.40	1.02	0.69
Acceptable Limits	of Span	+-3%	+-3%	+-3%	+-3%	+-3%	+-3%

Drift Result	PASS	PASS	PASS	PASS	PASS	PASS

System Calibration Bias

System Bias Calculation = ((Measured Concentration of Cal Gas in System Calibration Mode - Measured Concentration of Cal Gas in Direct Mode)/Analyzer Range))* 100

Analyser		O2	CO2	SO2	CO	NO	Nox
Analyzer Full Scale Span		25	20	230	500	260	260
Analyzer Initial	Zero	0.00	0.01	0.00	0.0	0.0	0.0
	Upscale	12.43	12.72	89.70	224.8	89.8	89.9
System Initial	Zero	0.24	0.27	0.00	0.0	0.0	0.0
	Upscale	12.32	12.36	87.00	224.0	91.2	92.4
Analyzer Final	Zero	0.00	0.00	0.00	0.0	0.0	0.0
	Upscale	0.00	0.00	0.00	0.0	0.0	0.0
System Final	Zero	0.01	0.09	0.17	0.3	0.1	0.0
	Upscale	12.05	12.36	87.52	231.0	93.9	94.2

Initial System Bias	Zero	%	0.96	1.30	0.00	0.00	0.00	0.00
	Upscale	%	-0.44	-1.80	-1.17	-0.15	0.55	0.98
Final System Bias	Zero	%	0.01	0.04	0.17	0.25	0.13	0.00
	Upscale	%	-1.52	-1.80	-0.95	1.25	1.57	1.67
Acceptable Limits	of Span		+-5%	+-5%	+-5%	+-5%	+-5%	+-5%

Bias Results	PASS	PASS	PASS	PASS	PASS	PASS

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21546	Date:	September 24, 2015
Company:	Covanta	Operator:	J. Grollman
Location:	Courtice	Analyzer ID	Ratfish RS55
Test Location:	Unit # 1 (Test 9-12)		

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0.2 B1	1.000 C		
High	90 A2	90.22 B2			
Mid	48 A4	49 B4		48.0 D4	2.1 E4
Low	30.6 A3	30.8 B3		30.6 D3	0.6 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.6	0	0.6
Mid	31.15	31.0	0.1

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		43
Run 2	30		45
Run 3	30		41
Average	**30**		**43**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21546	Date:	September 24, 2015
Company:	Covanta	Operator:	J. Grollman
Location:	Courtice	Analyzer ID	Ratfish RS55
Test Location:	Unit # 1 (Test 5-8)		

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0.2 B1	1.000 C		
High	90 A2	90.22 B2			
Mid	48 A4	49 B4		48.0 D4	2.1 E4
Low	30.6 A3	30.8 B3		30.6 D3	0.6 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.6	0	0.6
Mid	31.15	31.0	0.1

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		43
Run 2	30		45
Run 3	30		41
Average	**30**		**43**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21546	Date:	September 24, 2015
Company:	Covanta	Operator:	J. Grollman
Location:	Courtice	Analyzer ID	Ratfish RS55
Test Location:	Unit # 1 (Test 1-4)		

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0.2 B1	1.000 C		
High	90 A2	90.22 B2			
Mid	48 A4	49 B4		48.0 D4	2.1 E4
Low	30.6 A3	30.8 B3		30.6 D3	0.6 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.2	0.6	-0.4
Mid	30.8	31.2	-0.3

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		43
Run 2	30		45
Run 3	30		41
Average	**30**		**43**

Covanta
Mobile Source Monitoring Laboratory # 1
Daily Analyser Calibration Evaluation
Job No. 21546
September 23, 2015
Test 1 - 3 Final Calculations Unit #2 Inlet

Analyser		O2	CO2	SO2	CO
MII Number/Serial Number		710689	710689	COE 20099	710689
Model		Horiba VA 3000	Horiba VA 3000	Ametek 922	Horiba - VA3000
Range		25.00	20.00	100	100
Actual Cylinder Value	High	23.30	19.90	90.99	91
	Mid.	12.30	12.70	20.3	52.86
	Zero	0.00	0.00	0	0

Analyzer Initial Calibration	**Zero**	0.01	0.01	0	0.0
	Mid	12.31	12.81	19.8	53.1
	High	23.29	19.96	91.7	91.3
System Initial Calibration	**Zero**	0.21	0.02	0.9	0.0
	Upscale	12.34	12.71	18.8	51.2
System Final Calibration	**Zero**	0.27	0.02	1	0.0
	Upscale	12.37	12.60	20.6	51.2

Calibration Error Results

Analyzer Calibration Error = (Measured Concentration of Cal Gas in Direct Mode - Manufacturer Certified Cal Gas Concentration)/Analyzer Range)*100

			O2	CO2	SO2	CO
	Analyser		O2	CO2	SO2	CO
	Analyzer Span Range		25.00	20.00	100	100
Calibration Error	Zero	%	0.04	0.05	0.00	0.00
	Mid	%	0.04	0.55	0.50	0.24
	High	%	0.04	0.30	0.71	0.30
Acceptable Limits	**of Span**		**+-2%**	**+-2%**	**+-2%**	**+-2%**

Error Results	**PASS**	**PASS**	**PASS**	**PASS**

System Drift

Drift Calculation = | System Bias $_{final}$ - System Bias $_{initial}$ |

	Analyser	**O2**	**CO2**	**SO2**	**CO**
	Span	**25.00**	**20.00**	**100**	**100**
Initial System Bias	Zero	0.80	0.05	0.90	0.00
	Upscale	0.12	-0.50	-1.00	-1.9
Final System Bias	Zero	0.23	-0.03	1.00	0.0
	Upscale	0.24	-1.05	0.80	-1.9

System Zero Drift	%	0.57	0.08	0.10	0.00
System Cal Drift	%	0.12	0.55	1.80	0.00
Acceptable Limits	**of Span**	**+ - 3 %**	**+ - 3 %**	**+ - 3 %**	**+ - 3 %**

Drift Result	**PASS**	**PASS**	**PASS**	**PASS**

System Calibration Bias

System Bias Calculation = ((Measured Concentration of Cal Gas in System Calibration Mode - Measured Concentration of Cal Gas in Direct Mode)/Analyzer Range))* 100

Analyser		**O2**	**CO2**	**SO2**	**CO**
Analyzer Full Scale Span		**25**	**20**	**100**	**100**
Analyzer Initial	Zero	0.01	0.01	0.00	0.0
	Upscale	12.31	12.81	19.80	53.1
System Initial	Zero	0.21	0.02	0.90	0.0
	Upscale	12.34	12.71	18.80	51.2
Analyzer Final	Zero	0.00	0.00	0.00	0.0
	Upscale	0.00	0.00	0.00	0.0
System Final	Zero	0.27	0.02	1.00	0.0
	Upscale	12.37	12.60	20.60	51.2

Initial System Bias	Zero	%	0.80	0.05	0.90	0.00
	Upscale	%	0.12	-0.50	-1.00	-1.90
Final System Bias	Zero	%	0.23	-0.03	1.00	0.00
	Upscale	%	0.24	-1.05	0.80	-1.90
Acceptable Limits	**of Span**		**+ - 5 %**	**+ - 5 %**	**+ - 5 %**	**+ - 5 %**

Bias Results	**PASS**	**PASS**	**PASS**	**PASS**

Covanta
Mobile Source Monitoring Laboratory # 1
Daily Analyser Calibration Evaluation
Job No. 21546
September 23, 2015
Test 4 - 8 Final Calculations Unit #2 Inlet

Analyser		O2	CO2	SO2	CO
MII Number/Serial Number		710689	710689	COE 20099	710689
Model		Horiba VA 3000	Horiba VA 3000	Ametek 922	Horiba - VA3000
Range		25.00	20.00	100	100
Actual Cylinder Value	High	23.30	19.90	90.99	91
	Mid.	12.30	12.70	20.3	52.86
	Zero	0.00	0.00	0	0

Analyzer Initial Calibration	Zero	0.01	0.01	0	0.0
	Mid	12.31	12.81	19.8	53.1
	High	23.29	19.96	91.7	91.3
System Initial Calibration	Zero	0.27	0.02	1	0.0
	Upscale	12.37	12.60	20.6	51.2
System Final Calibration	Zero	0.28	0.01	1	0.3
	Upscale	12.45	12.64	19.54	51.3

Calibration Error Results

Analyzer Calibration Error = (Measured Concentration of Cal Gas in Direct Mode - Manufacturer Certified Cal Gas Concentration)/Analyzer Range)*100

			O2	CO2	SO2	CO
	Analyser		O2	CO2	SO2	CO
	Analyzer Span Range		25.00	20.00	100	100
Calibration Error	Zero	%	0.04	0.05	0.00	0.00
	Mid	%	0.04	0.55	0.50	0.24
	High	%	0.04	0.30	0.71	0.30
Acceptable Limits	of Span		+-2%	+-2%	+-2%	+-2%

Error Results PASS PASS PASS PASS

System Drift

Drift Calculation = | System Bias $_{final}$ - System Bias $_{initial}$ |

	Analyser	O2	CO2	SO2	CO
	Span	25.00	20.00	100	100
Initial System Bias	Zero	1.04	0.05	1.00	0.00
	Upscale	0.24	-1.05	0.80	-1.9
Final System Bias	Zero	0.24	-0.04	1.00	0.3
	Upscale	0.56	-0.85	-0.26	-1.8

System Zero Drift	%	0.80	0.09	0.00	0.30
System Cal Drift	%	0.32	0.20	1.06	0.10
Acceptable Limits	of Span	+ - 3 %	+ - 3 %	+ - 3 %	+ - 3 %

Drift Result PASS PASS PASS PASS

System Calibration Bias

System Bias Calculation = ((Measured Concentration of Cal Gas in System Calibration Mode - Measured Concentration of Cal Gas in Direct Mode)/Analyzer Range))* 100

Analyser		O2	CO2	SO2	CO
Analyzer Full Scale Span		25	20	100	100
Analyzer Initial	Zero	0.01	0.01	0.00	0.0
	Upscale	12.31	12.81	19.80	53.1
System Initial	Zero	0.27	0.02	1.00	0.0
	Upscale	12.37	12.60	20.60	51.2
Analyzer Final	Zero	0.00	0.00	0.00	0.0
	Upscale	0.00	0.00	0.00	0.0
System Final	Zero	0.28	0.01	1.00	0.3
	Upscale	12.45	12.64	19.54	51.3

Initial System Bias	Zero	%	1.04	0.05	1.00	0.00
	Upscale	%	0.24	-1.05	0.80	-1.90
Final System Bias	Zero	%	0.24	-0.04	1.00	0.30
	Upscale	%	0.56	-0.85	-0.26	-1.80
Acceptable Limits	of Span		+ - 5 %	+ - 5 %	+ - 5 %	+ - 5 %

Bias Results PASS PASS PASS PASS

Covanta
Mobile Source Monitoring Laboratory # 1
Daily Analyser Calibration Evaluation
Job No. 21546
September 23, 2015
Test 9 - 12 Final Calculations Unit #2 Inlet

Analyser		O2	CO2	SO2	CO
MII Number/Serial Number		710689	710689	COE 20099	710689
Model		Horiba VA 3000	Horiba VA 3000	Ametek 922	Horiba - VA3000
Range		25.00	20.00	100	100
Actual Cylinder Value	High	23.30	19.90	90.99	91
	Mid.	12.30	12.70	20.3	52.86
	Zero	0.00	0.00	0	0

Analyzer Initial Calibration	**Zero**	0.01	0.01	0	0.0
	Mid	12.31	12.81	19.8	53.1
	High	23.29	19.96	91.7	91.3
System Initial Calibration	**Zero**	0.28	0.01	1	0.3
	Upscale	12.45	12.64	19.54	51.3
System Final Calibration	**Zero**	0.32	0.02	1.1	0.0
	Upscale	12.49	12.42	21.4	49.9

Calibration Error Results

Analyzer Calibration Error = (Measured Concentration of Cal Gas in Direct Mode - Manufacturer Certified Cal Gas Concentration)/Analyzer Range)*100

			O2	CO2	SO2	CO
	Analyser		O2	CO2	SO2	CO
	Analyzer Span Range		25.00	20.00	100	100
Calibration Error	Zero	%	0.04	0.05	0.00	0.00
	Mid	%	0.04	0.55	0.50	0.24
	High	%	0.04	0.30	0.71	0.30
Acceptable Limits	**of Span**		+-2%	+-2%	+-2%	+-2%

Error Results **PASS** **PASS** **PASS** **PASS**

System Drift

Drift Calculation = | System Bias $_{final}$ - System Bias $_{initial}$ |

	Analyser	O2	CO2	SO2	CO
	Span	**25.00**	**20.00**	**100**	**100**
Initial System Bias	Zero	1.08	0.00	1.00	0.30
	Upscale	0.56	-0.85	-0.26	-1.8
Final System Bias	Zero	0.28	-0.03	1.10	0.0
	Upscale	0.72	-1.95	1.60	-3.2

System Zero Drift	%	0.80	0.03	0.10	0.30
System Cal Drift	%	0.16	1.10	1.86	1.40
Acceptable Limits	**of Span**	+ - 3 %	+ - 3 %	+ - 3 %	+ - 3 %

Drift Result **PASS** **PASS** **PASS** **PASS**

System Calibration Bias

System Bias Calculation = ((Measured Concentration of Cal Gas in System Calibration Mode - Measured Concentration of Cal Gas in Direct Mode)/Analyzer Range))* 100

Analyser		O2	CO2	SO2	CO
Analyzer Full Scale Span		25	20	100	100
Analyzer Initial	Zero	0.01	0.01	0.00	0.0
	Upscale	12.31	12.81	19.80	53.1
System Initial	Zero	0.28	0.01	1.00	0.3
	Upscale	12.45	12.64	19.54	51.3
Analyzer Final	Zero	0.00	0.00	0.00	0.0
	Upscale	0.00	0.00	0.00	0.0
System Final	Zero	0.32	0.02	1.10	0.0
	Upscale	12.49	12.42	21.40	49.9

Initial System Bias	Zero	%	1.08	0.00	1.00	0.30
	Upscale	%	0.56	-0.85	-0.26	-1.80
Final System Bias	Zero	%	0.28	-0.03	1.10	0.00
	Upscale	%	0.72	-1.95	1.60	-3.20
Acceptable Limits	**of Span**		+ - 5 %	+ - 5 %	+ - 5 %	+ - 5 %

Bias Results **PASS** **PASS** **PASS** **PASS**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21546	Date:	September 23, 2015
Company:	Covanta	Operator:	T. TIMAR
Location:	Courtice	Analyzer ID	Ratfish RS55
Test Location:	Unit # 2 INLET (Test 1-3)		

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0.7 B1	0.997 C		
High	90 A2	90.39 B2			
Mid	53.1 A4	52.83 B4		52.9 D4	-0.2 E4
Low	29.1 A3	28.95 B3		29.0 D3	-0.2 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.7	0.61	0.09
Mid	28.95	27.4	1.5

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		43
Run 2	30		45
Run 3	30		41
Average	**30**		**43**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21546	Date:	September 23, 2015
Company:	Covanta	Operator:	T. TIMAR
Location:	Courtice	Analyzer ID	Ratfish RS55
Test Location:	Unit # 2 INLET (Test 4 - 12)		

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)		Initial Analyzer Response (B)		Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)		Calibration Error % ((B)-(D)/AX100	
Zero	0	A1	0.7	B1	0.997 C				
High	90	A2	90.39	B2					
Mid	53.1	A4	52.83	B4		52.9	D4	-0.2	E4
Low	29.1	A3	28.95	B3		29.0	D3	-0.2	E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.61	0.61	0
Mid	27.42	27.9	-0.4

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		43
Run 2	30		45
Run 3	30		41
Average	**30**		**43**

Covanta
Mobile Source Monitoring Laboratory # 1
Daily Analyser Calibration Evaluation
Job No. 21546
September 23, 2015
Test 1 - 3 Final Calculations Unit #2

Analyser		O2	CO2	SO2	CO	NO	NOx
MII Number/Serial Number		710689	710689		710689		
Model		Horiba VA 3000	Horiba VA 3000	Teledyne T-100	Horiba - VA3000	Teledyne 200EH	
Range		25.00	20.00	230	500	260	260
Actual Cylinder Value	High	23.67	19.36	225.1	455	252	252
	Mid.	12.40	12.70	89.97	225.4	90.49	90.49
	Zero	0.00	0.00	0	0	0	0

Analyzer Initial Calibration	Zero	0.00	0.01	0	0.0	0.0	0.0
	Mid	12.43	12.72	89.7	224.8	89.8	89.9
	High	23.72	19.37	225.46	454.9	252.4	253.3
System Initial Calibration	Zero	0.08	0.04	0	0.0	0.0	0.0
	Upscale	12.71	12.71	89.7	224.5	88.2	88.6
System Final Calibration	Zero	0.08	0.10	0	0.1	0.3	0.8
	Upscale	12.60	12.83	89.3	223.7	88.1	88.2

Calibration Error Results

Analyzer Calibration Error = (Measured Concentration of Cal Gas in Direct Mode - Manufacturer Certified Cal Gas Concentration)/Analyzer Range)*100

			O2	CO2	SO2	CO	NO	NOx
Analyser			O2	CO2	SO2	CO	NO	NOx
Analyzer Span Range			25.00	20.00	230	500	260	260
Calibration Error	Zero	%	0.00	0.05	0.00	0.00	0.00	0.00
	Mid	%	0.12	0.10	0.12	0.13	0.28	0.25
	High	%	0.20	0.05	0.16	0.02	0.15	0.49
Acceptable Limits	of Span		+-2%	+-2%	+-2%	+-2%	+-2%	+-2%
Error Results			PASS	PASS	PASS	PASS	PASS	PASS

System Drift

Drift Calculation = | System Bias $_{final}$ - System Bias $_{initial}$ |

	Analyser	O2	CO2	SO2	CO	NO	NOx
	Span	25.00	20.00	230	500	260	260
Initial System Bias	Zero	0.32	0.15	0.00	0.00	0.00	0.00
	Upscale	1.12	-0.05	0.00	-0.1	-0.6	-0.5
Final System Bias	Zero	0.08	0.05	0.00	0.1	0.3	0.8
	Upscale	0.68	0.55	-0.17	-0.2	-0.6	-0.6
System Zero Drift	%	0.24	0.10	0.00	0.12	0.26	0.78
System Cal Drift	%	0.44	0.60	0.17	0.16	0.05	0.15
Acceptable Limits	of Span	+ - 3 %	+ - 3 %	+ - 3 %	+ - 3 %	+ - 3 %	+ - 3 %
Drift Result		PASS	PASS	PASS	PASS	PASS	PASS

System Calibration Bias

System Bias Calculation = ((Measured Concentration of Cal Gas in System Calibration Mode - Measured Concentration of Cal Gas in Direct Mode)/Analyzer Range))* 100

Analyser			O2	CO2	SO2	CO	NO	Nox
Analyzer Full Scale Span			25	20	230	500	260	260
Analyzer Initial	Zero		0.00	0.01	0.00	0.0	0.0	0.0
	Upscale		12.43	12.72	89.70	224.8	89.8	89.9
System Initial	Zero		0.08	0.04	0.00	0.0	0.0	0.0
	Upscale		12.71	12.71	89.70	224.5	88.2	88.6
Analyzer Final	Zero		0.00	0.00	0.00	0.0	0.0	0.0
	Upscale		0.00	0.00	0.00	0.0	0.0	0.0
System Final	Zero		0.08	0.10	0.00	0.1	0.3	0.8
	Upscale		12.60	12.83	89.30	223.7	88.1	88.2
Initial System Bias	Zero	%	0.32	0.15	0.00	0.00	0.00	0.00
	Upscale	%	1.12	-0.05	0.00	-0.05	-0.60	-0.47
Final System Bias	Zero	%	0.08	0.05	0.00	0.12	0.26	0.78
	Upscale	%	0.68	0.55	-0.17	-0.21	-0.65	-0.62
Acceptable Limits	of Span		+ - 5 %	+ - 5 %	+ - 5 %	+ - 5 %	+ - 5 %	+ - 5 %
Bias Results			PASS	PASS	PASS	PASS	PASS	PASS

Covanta
Mobile Source Monitoring Laboratory # 1
Daily Analyser Calibration Evaluation
Job No. 21546
September 23, 2015
Test 4 - 8 Final Calculations Unit #2

Analyser		O2	CO2	SO2	CO	NO	NOx
Mll Number/Serial Number		710689	710689		710689		
Model		Horiba VA 3000	Horiba VA 3000	Teledyne T-100	Horiba - VA3000	Teledyne 200EH	
Range		25.00	20.00	230	500	260	260
Actual Cylinder Value	High	23.67	19.36	225.1	455	252	252
	Mid.	12.40	12.70	89.97	225.4	90.49	90.49
	Zero	0.00	0.00	0	0	0	0

Analyzer Initial Calibration	Zero	0.00	0.01	0	0.0	0.0	0.0
	Mid	12.43	12.72	89.7	224.8	89.8	89.9
	High	23.72	19.37	225.46	454.9	252.4	253.3
System Initial Calibration	Zero	0.08	0.10	0	0.1	0.3	0.8
	Upscale	12.60	12.83	89.3	223.7	88.1	88.2
System Final Calibration	Zero	0.04	0.05	0	0.5	0.8	1.0
	Upscale	12.52	12.82	89.13	222.5	87.2	87.5

Calibration Error Results

Analyzer Calibration Error = (Measured Concentration of Cal Gas in Direct Mode - Manufacturer Certified Cal Gas Concentration)/Analyzer Range)*100

	Analyser		O2	CO2	SO2	CO	NO	NOx
	Analyzer Span Range		25.00	20.00	230	500	260	260
Calibration Error	Zero	%	0.00	0.05	0.00	0.00	0.00	0.00
	Mid	%	0.12	0.10	0.12	0.13	0.28	0.25
	High	%	0.20	0.05	0.16	0.02	0.15	0.49
Acceptable Limits	of Span		+-2%	+-2%	+-2%	+-2%	+-2%	+-2%

Error Results	PASS	PASS	PASS	PASS	PASS	PASS

System Drift

Drift Calculation = | System Bias $_{final}$ - System Bias $_{initial}$ |

	Analyser	O2	CO2	SO2	CO	NO	NOx
	Span	25.00	20.00	230	500	260	260
Initial System Bias	Zero	0.32	0.45	0.00	0.02	0.10	0.30
	Upscale	0.68	0.55	-0.17	-0.2	-0.6	-0.6
Final System Bias	Zero	0.04	0.00	0.00	0.5	0.8	1.0
	Upscale	0.36	0.50	-0.25	-0.5	-1.0	-0.9

System Zero Drift	%	0.28	0.45	0.00	0.48	0.74	0.67
System Cal Drift	%	0.32	0.05	0.07	0.24	0.35	0.27
Acceptable Limits	of Span	+-3%	+-3%	+-3%	+-3%	+-3%	+-3%

Drift Result	PASS	PASS	PASS	PASS	PASS	PASS

System Calibration Bias

System Bias Calculation = ((Measured Concentration of Cal Gas in System Calibration Mode - Measured Concentration of Cal Gas in Direct Mode)/Analyzer Range))* 100

Analyser		O2	CO2	SO2	CO	NO	Nox
Analyzer Full Scale Span		25	20	230	500	260	260
Analyzer Initial	Zero	0.00	0.01	0.00	0.0	0.0	0.0
	Upscale	12.43	12.72	89.70	224.8	89.8	89.9
System Initial	Zero	0.08	0.10	0.00	0.1	0.3	0.8
	Upscale	12.60	12.83	89.30	223.7	88.1	88.2
Analyzer Final	Zero	0.00	0.00	0.00	0.0	0.0	0.0
	Upscale	0.00	0.00	0.00	0.0	0.0	0.0
System Final	Zero	0.04	0.05	0.00	0.5	0.8	1.0
	Upscale	12.52	12.82	89.13	222.5	87.2	87.5

Initial System Bias	Zero	%	0.32	0.45	0.00	0.02	0.10	0.30
	Upscale	%	0.68	0.55	-0.17	-0.21	-0.65	-0.62
Final System Bias	Zero	%	0.04	0.00	0.00	0.50	0.84	0.97
	Upscale	%	0.36	0.50	-0.25	-0.45	-1.00	-0.89
Acceptable Limits	of Span		+-5%	+-5%	+-5%	+-5%	+-5%	+-5%

Bias Results	PASS	PASS	PASS	PASS	PASS	PASS

Covanta
Mobile Source Monitoring Laboratory # 1
Daily Analyser Calibration Evaluation
Job No. 21546
September 23, 2015
Test 9 - 12 Final Calculations Unit #2

Analyser		O2	CO2	SO2	CO	NO	NOx
MII Number/Serial Number		710689	710689		710689		
Model		Horiba VA 3000	Horiba VA 3000	Teledyne T-100	Horiba - VA3000	Teledyne 200EH	
Range		25.00	20.00	230	500	260	260
Actual Cylinder Value	High	23.67	19.36	225.1	455	252	252
	Mid.	12.40	12.70	89.97	225.4	90.49	90.49
	Zero	0.00	0.00	0	0	0	0

Analyzer Initial Calibration	Zero	0.00	0.01	0	0.0	0.0	0.0
	Mid	12.43	12.72	89.7	224.8	89.8	89.9
	High	23.72	19.37	225.46	454.9	252.4	253.3
System Initial Calibration	Zero	0.04	0.05	0	0.5	0.8	1.0
	Upscale	12.52	12.82	89.13	222.5	87.2	87.5
System Final Calibration	Zero	0.05	0.07	0	0.6	0.9	0.9
	Upscale	12.59	12.82	89.5	223.0	87.2	87.5

Calibration Error Results

Analyzer Calibration Error = (Measured Concentration of Cal Gas in Direct Mode - Manufacturer Certified Cal Gas Concentration)/Analyzer Range)*100

	Analyser		O2	CO2	SO2	CO	NO	NOx
	Analyzer Span Range		25.00	20.00	230	500	260	260
Calibration Error	Zero	%	0.00	0.05	0.00	0.00	0.00	0.00
	Mid	%	0.12	0.10	0.12	0.13	0.28	0.25
	High	%	0.20	0.05	0.16	0.02	0.15	0.49
Acceptable Limits	of Span		+-2%	+-2%	+-2%	+-2%	+-2%	+-2%

Error Results	PASS	PASS	PASS	PASS	PASS	PASS

System Drift

Drift Calculation = | System Bias $_{final}$ - System Bias $_{initial}$ |

	Analyser	O2	CO2	SO2	CO	NO	NOx
	Span	25.00	20.00	230	500	260	260
Initial System Bias	Zero	0.16	0.20	0.00	0.10	0.32	0.37
	Upscale	0.36	0.50	-0.25	-0.5	-1.0	-0.9
Final System Bias	Zero	0.05	0.02	0.00	0.6	0.9	0.9
	Upscale	0.64	0.50	-0.09	-0.4	-1.0	-0.9

System Zero Drift	%	0.11	0.18	0.00	0.50	0.57	0.53
System Cal Drift	%	0.28	0.00	0.16	0.10	0.00	0.00
Acceptable Limits	**of Span**	**+-3%**	**+-3%**	**+-3%**	**+-3%**	**+-3%**	**+-3%**

Drift Result	PASS	PASS	PASS	PASS	PASS	PASS

System Calibration Bias

System Bias Calculation = ((Measured Concentration of Cal Gas in System Calibration Mode - Measured Concentration of Cal Gas in Direct Mode)/Analyzer Range))* 100

Analyser		O2	CO2	SO2	CO	NO	Nox
Analyzer Full Scale Span		25	20	230	500	260	260
Analyzer Initial	Zero	0.00	0.01	0.00	0.0	0.0	0.0
	Upscale	12.43	12.72	89.70	224.8	89.8	89.9
System Initial	Zero	0.04	0.05	0.00	0.5	0.8	1.0
	Upscale	12.52	12.82	89.13	222.5	87.2	87.5
Analyzer Final	Zero	0.00	0.00	0.00	0.0	0.0	0.0
	Upscale	0.00	0.00	0.00	0.0	0.0	0.0
System Final	Zero	0.05	0.07	0.00	0.6	0.9	0.9
	Upscale	12.59	12.82	89.50	223.0	87.2	87.5

Initial System Bias	Zero	%	0.16	0.20	0.00	0.10	0.32	0.37
	Upscale	%	0.36	0.50	-0.25	-0.45	-1.00	-0.89
Final System Bias	Zero	%	0.05	0.02	0.00	0.60	0.89	0.90
	Upscale	%	0.64	0.50	-0.09	-0.35	-1.00	-0.89
Acceptable Limits	**of Span**		**+-5%**	**+-5%**	**+-5%**	**+-5%**	**+-5%**	**+-5%**

Bias Results	PASS	PASS	PASS	PASS	PASS	PASS

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21546	Date:	September 23, 2015
Company:	Covanta	Operator:	J. Grollman
Location:	Courtice	Analyzer ID	Ratfish RS55
Test Location:	Unit # 2 (Test 1-4)		

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0.2 B1	1.000 C		
High	90 A2	90.22 B2			
Mid	48 A4	49 B4		48.0 D4	2.1 E4
Low	30.6 A3	30.8 B3		30.6 D3	0.6 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.2	0	0.2
Mid	30.8	31.2	-0.3

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		43
Run 2	30		45
Run 3	30		41
Average	**30**		**43**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21546	Date:	September 23, 2015
Company:	Covanta	Operator:	J. Grollman
Location:	Courtice	Analyzer ID	Ratfish RS55
Test Location:	Unit # 2 (Test 5 - 8)		

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0.2 B1	1.000 C		
High	90 A2	90.22 B2			
Mid	48 A4	49 B4		48.0 D4	2.1 E4
Low	30.6 A3	30.8 B3		30.6 D3	0.6 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0.5	-0.5
Mid	31.15	31.0	0.1

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		43
Run 2	30		45
Run 3	30		41
Average	**30**		**43**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21546	Date:	September 23, 2015
Company:	Covanta	Operator:	J. Grollman
Location:	Courtice	Analyzer ID	Ratfish RS55
Test Location:	Unit # 2 (Test 9 - 12)		

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0.2 B1	1.000 C		
High	90 A2	90.22 B2			
Mid	48 A4	49 B4		48.0 D4	2.1 E4
Low	30.6 A3	30.8 B3		30.6 D3	0.6 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.5	0.8	-0.3
Mid	31	32.1	-1.1

Calculate systen response time by introducing zero gas to the probe, record time to reach 95% of calibration gas value.
Repeat with upscale gas. Perform three runs and calculate average of the runs.

	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		43
Run 2	30		45
Run 3	30		41
Average	**30**		**43**

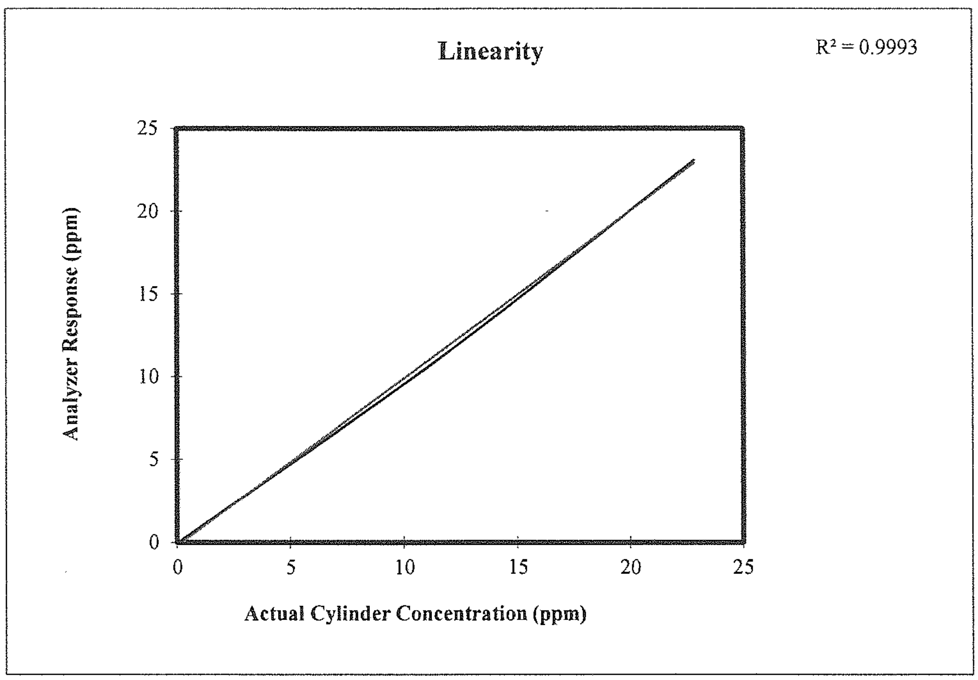
ORTECH

APPENDIX 16

**ORTECH CEM Analyzer Linearity Determination,
Response Time and Reproducibility and Converter Efficiency
(11 pages)**

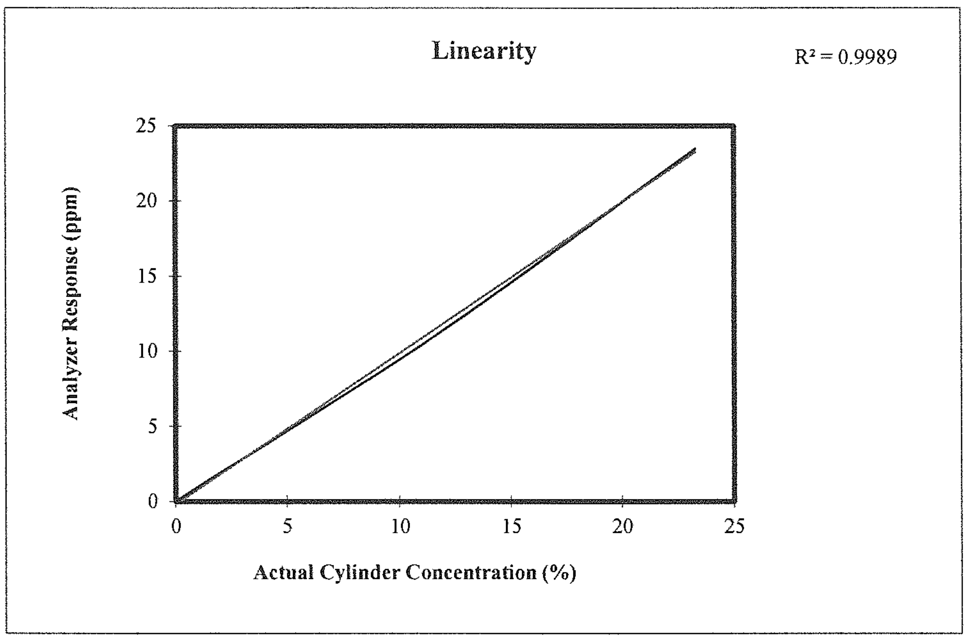
Covanta
September 22, 2015
Analyzer Linearity Determination
Oxygen Analyzer
Horiba VA 3000

Range	Analyzer I.D.	Actual Concentration	Instrument Response	Calibration Error (as % of span)
25.00	710689	0.00	0.02	0.1
		6.02	6.08	0.2
		12.40	12.46	0.2



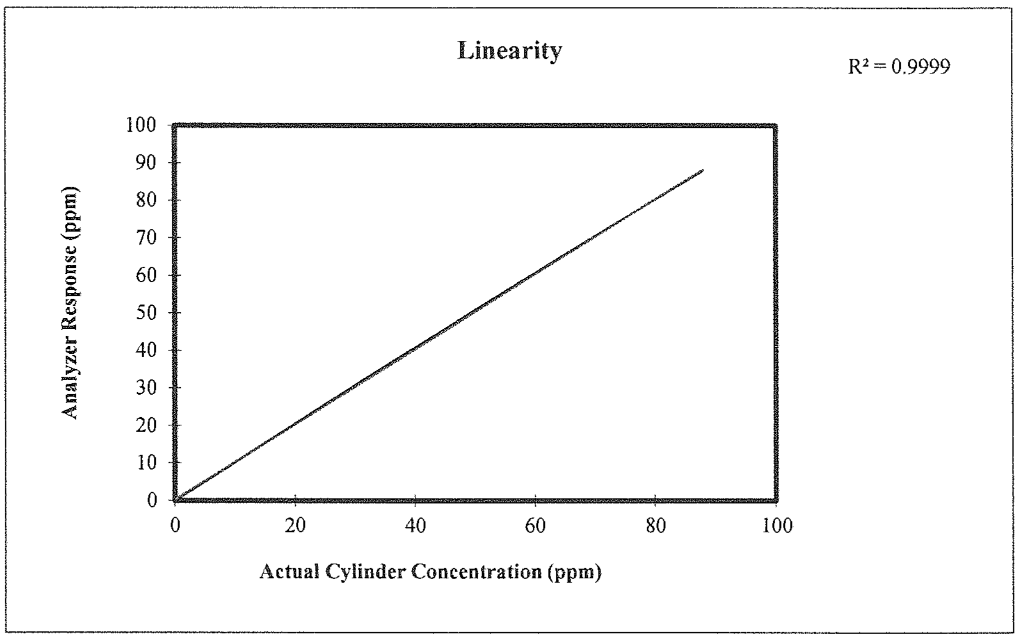
Covanta
September 22, 2015
Analyzer Linearity Determination
Carbon Dioxide Analyzer
Horiba VA 3000

Range	Analyzer I.D.	Actual Concentration	Instrument Response	Calibration Error (as % of span)
20.00	710689	0.00	0.03	0.2
		5.94	5.98	0.2
		12.70	12.61	-0.4



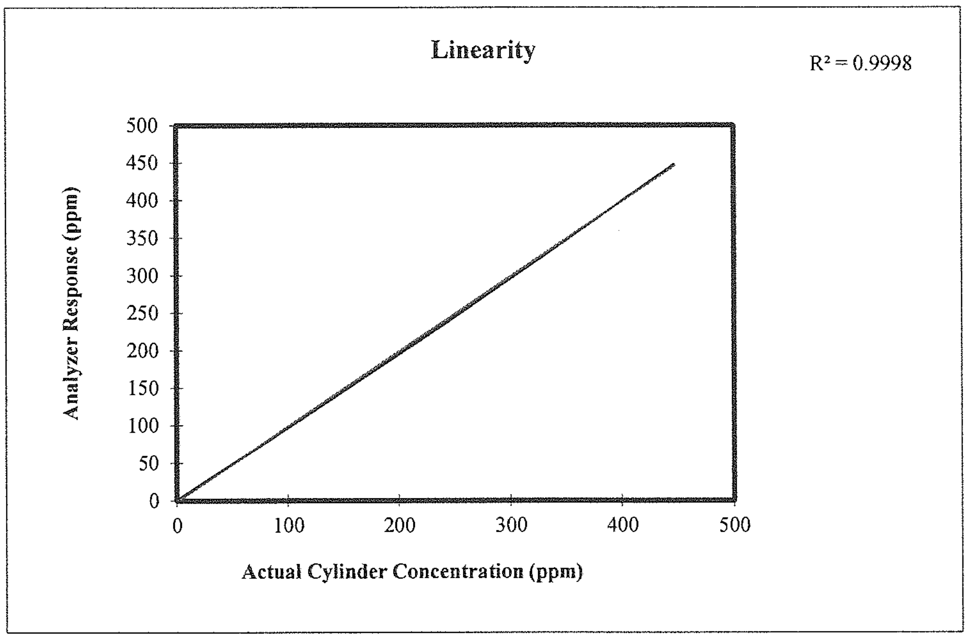
Covanta
September 22, 2015
Analyzer Linearity Determination
Sulphur Dioxide Analyzer
Teledyne T-100

Range	Analyzer I.D.	Actual Concentration	Instrument Response	Calibration Error (as % of span)
230		0.0	0.1	0.0
		90.0	90.2	0.1
		225.1	225.1	0.0



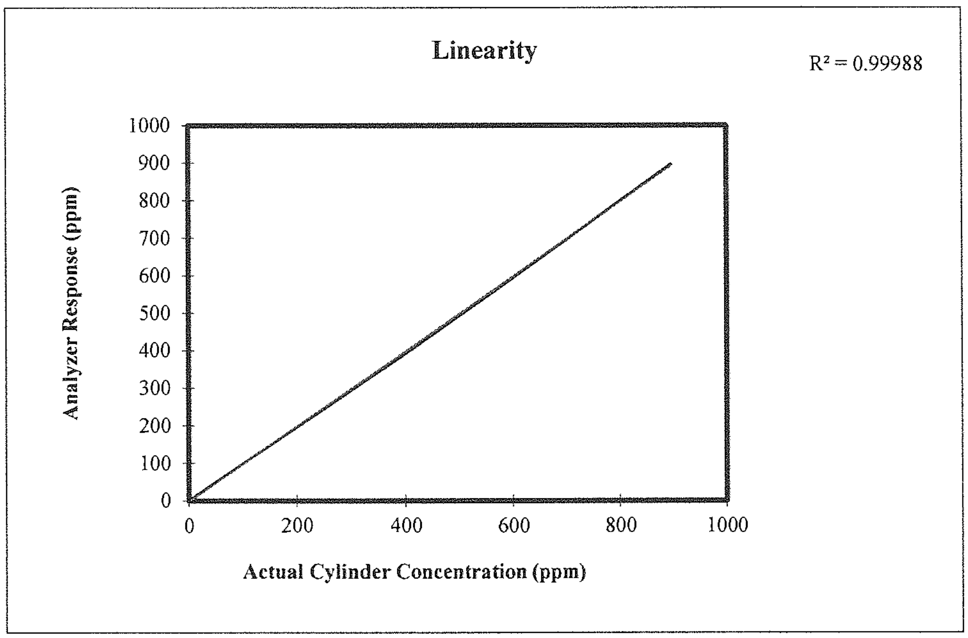
Covanta
September 22, 2015
Analyzer Linearity Determination
Carbon Monoxide Analyzer
Horiba VA 3000

Range	Analyzer I.D.	Actual Concentration	Instrument Response	Calibration Error (as % of span)
500	710689	0.0	0.0	0.0
		225.4	222.4	-0.6
		455.0	454.6	-0.1



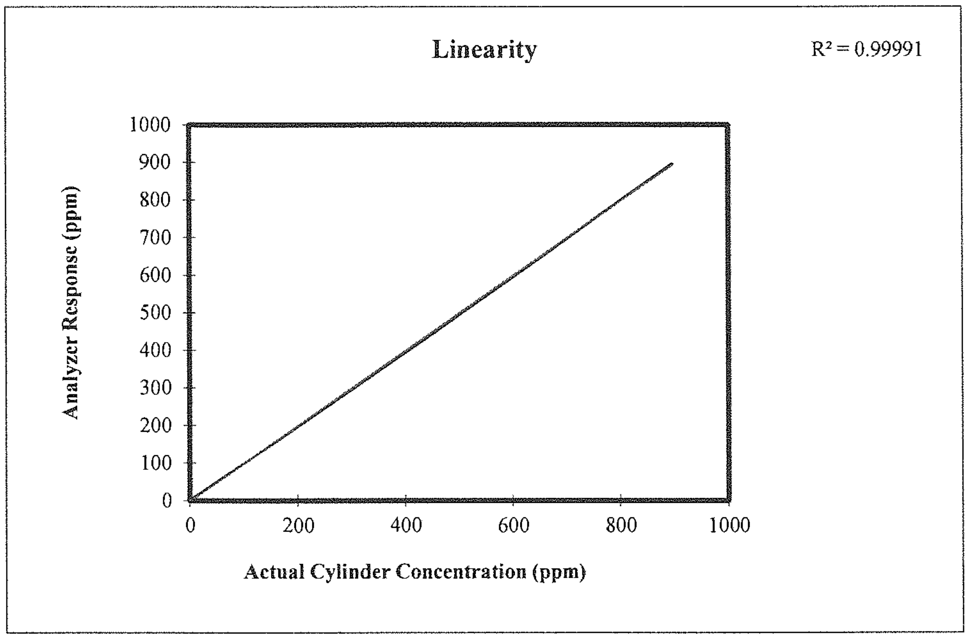
Covanta
September 22, 2015
Analyzer Linearity Determination
Nitric Oxide Analyzer
Teledyne API 200EH

Range	Analyzer I.D.	Actual Concentration	Instrument Response	Calibration Error (as % of span)
260	252	0.0	0.0	0.0
		90.5	89.6	-0.4
		252.0	252.3	0.1



Covanta
September 22, 2015
Analyzer Linearity Determination
Nitrogen Oxides Analyzer
Teledyne API 200EH

Range	Analyzer I.D.	Actual Concentration	Instrument Response	Calibration Error (as % of span)
260	252	0.0	0.4	0.2
		90.5	90.2	-0.1
		252.0	253.7	0.7



RESPONSE TIME CHECK

Client	Covanta	**Analyzer Type**	Oxygen
Location	Courtice	**Analyzer ID.**	Horiba VA 3000
Project No.	21546	**Analyzer Span Setting**	25%

Span Gas Concentration	23.67

Response Time Test No.	Upscale Response Time (seconds)	Downscale Response Time (seconds)
1	42	53
2	40	52
3	40	49

System Response Time* 53 Seconds
Average Time 43 Seconds

* Reported as Greatest Value of all Response Time Checks
Criteria: < 200 seconds for a 95% response to a step change in concentration of gas at the probe exit

Run	Analyzer Value
1	23.79
2	23.62
3	23.64
4	23.64
5	23.74
Mean	23.69
Standard Deviation (SD)	0.07
% RSD Criteria <3%	**0.32**

% RSD = SD/Mean X 100

RESPONSE TIME CHECK

Client	Covanta	**Analyzer Type**	Carbon Monoxide
Location	Courtice	**Analyzer ID.**	Horiba VA 3000
Project No.	21546	**Analyzer Span Setting**	500 ppm

Span Gas Concentration	225.4

Response Time Test No.	Upscale Response Time (seconds)	Downscale Response Time (seconds)
1	21	53
2	34	36
3	30	35

System Response Time*	53	Seconds
Average Time	35	Seconds

* Reported as Greatest Value of all Response Time Checks
Criteria: < 200 seconds for a 95% response to a step change in concentration of gas at the probe exit

REPRODUCIBILITY CHECKS

Run	Analyzer Value
1	224.64
2	224.14
3	225.14
4	222.4
5	221.5
Mean	223.56
Standard Deviation (SD)	1.55
% RSD Criteria <3%	**0.69**

% RSD = SD/Mean X 100

RESPONSE TIME CHECK

Client	Covanta	**Analyzer Type**	Sulphur Dioxide
Location	Courtice	**Analyzer ID.**	Teledyne T-100
Project No.	21546	**Analyzer Span Setting**	230 ppm

Span Gas Concentration	50.8

Response Time Test No.	Upscale Response Time (seconds)	Downscale Response Time (seconds)
1	198	156
2	177	162
3	180	180

System Response Time* 180 Seconds
Average Time 146 Seconds

* Reported as Greatest Value of all Response Time Checks
Criteria: < 200 seconds for a 95% response to a step change in concentration of gas at the probe exit

REPRODUCIBILITY CHECKS

Run	Analyzer Value
1	48.99
2	49.05
3	49.62
4	50.9
5	50.6
Mean	49.83
Standard Deviation (SD)	0.88
% RSD Criteria <3%	**1.77**

% RSD = SD/Mean X 100

RESPONSE TIME CHECK

Client	Covanta	**Analyzer Type**	Nitrogen Oxides
Location	Courtice	**Analyzer ID.**	Teledyne API 200EH
Project No.	21546	**Analyzer Span Setting**	260 ppm

Span Gas Concentration	90.49

Response Time Test No.	Upscale Response Time (seconds)	Downscale Response Time (seconds)
1	78	84
2	72	60
3	88	60

System Response Time* 88 Seconds
Average Time 65 Seconds

* Reported as Greatest Value of all Response Time Checks
Criteria: < 200 seconds for a 95% response to a step change in concentration of gas at the probe exit

REPRODUCIBILITY CHECKS

Run	Analyzer Value
1	89.34
2	90.56
3	90.89
4	90.2
5	91.5
Mean	90.50
Standard Deviation (SD)	0.80
% RSD Criteria <3%	**0.89**

% RSD = SD/Mean X 100

METHOD 7E - Determination of Nitrogen Oxides Emissions From Stationary Sources

(Instrumental Analyzer Procedure)

NO_2 to NO Conversion Efficiency Test Procedure

Client: Covanta	Job No. 21546
Date: September 22, 2015	Location: Courtice

Certified Concentration of NO_2 Calibration Gas	**79.4**

Analyzer Reading in Direct Mode	**74**

Equation 7E-7 (EPA Method 7E Section 12.7)

$$Eff_{NO2} = \frac{\text{Measured Concentration in Direct Mode}}{\text{Manufacturer Certified Concentration of Cal. Gas}} \times 100$$

$$Eff_{NO2} = \frac{74}{79.4} \times 100 = \mathbf{93.2\ \%}$$

Method 7E criteria is >/= 90%

Efficiency Test Result	**Pass**

APPENDIX 17

ORTECH Calibration Gas Certificates
(18 pages)

PRAXAIR

Praxair Distribution Mid-Atlantic
One Steel Road East,
Morrisville, PA 19067
Tel: (800) 638-6360 Fax:(215) 736 5240

DocNumber: 000006689

PGVP ID: F32013

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

PDI WHSE PARIS ONTARIO
41 CONSOLIDATED DR
PARIS ON ON N1S 3Z

Praxair Order Number: 04640714
Customer P. O. Number: 19632723 9
Customer Reference Number:

Fill Date: 11/22/2013
Part Number: NI CD20O7E-AS
Lot Number: 301732326303
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 158 cu. ft.

Certified Concentration:

Expiration Date:	11/29/2021	NIST Traceable
Cylinder Number:	SA21047	Analytical Uncertainty:
19.36 %	CARBON DIOXIDE	± 1 %
23.67 %	OXYGEN	± 1 %
Balance	NITROGEN	

Certifcation Information: Certification Date: 11/29/2013 Term: 96 Months Expiration Date: 11/29/2021

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: CARBON DIOXIDE

Requested Concentration: 20 %
Certified Concentration: 19.36 %
Instrument Used: SIEMENS ULTRAMAT 5E SN: D2-412
Analytical Method: NON-DISPERSIVE INFRARED
Last Multipoint Calibration: 11/26/2013

Reference Standard Type: GMIS
Ref. Std. Cylinder # : SA20650
Ref. Std. Conc: 19.69%
Ref. Std. Traceable to SRM # : 2745
SRM Sample # :
SRM Cylinder # :

First Analysis Data:						Date:	11/29/2013
Z:	0	R:	20.57	C:	20.27	Conc:	19.35
R:	20.62	Z:	0	C:	20.3	Conc:	19.38
Z:	0	C:	20.27	R:	20.69	Conc:	19.35
UOM:	%			Mean Test Assay:			19.36 %

Second Analysis Data:						Date:	
Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	%			Mean Test Assay:			0 %

2. Component: OXYGEN

Requested Concentration: 23 %
Certified Concentration: 23.67 %
Instrument Used: SIEMENS OXYMAT 5F
Analytical Method: PARAMAGNETIC
Last Multipoint Calibration: 11/22/2013

Reference Standard Type: GMIS
Ref. Std. Cylinder # : CC154730
Ref. Std. Conc: 22.50 %
Ref. Std. Traceable to SRM # : 2659a
SRM Sample # :
SRM Cylinder # :

First Analysis Data:						Date:	11/29/2103
Z:	0	R:	22.5	C:	23.7	Conc:	23.7
R:	22.5	Z:	0	C:	23.65	Conc:	23.65
Z:	0	C:	23.65	R:	22.5	Conc:	23.65
UOM:	%			Mean Test Assay:			23.67 %

Second Analysis Data:						Date:	
Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	%			Mean Test Assay:			0 %

Analyzed by: Jeff Gosner

Certified by: Judith Imperial

PRAXAIR

Praxair Distribution, Inc,
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12015

DocNumber: 000008253

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

PRAXAIR PKG PARIS P/H 80271
41 CONSOLIDATED DR
PARIS ON N3L 3G

Praxair Order Number: 30210375
Customer P. O. Number:
Customer Reference Number:

Fill Date: 2/19/2015
Part Number: NI CD20O7E-AS
Lot Number: 0219UD15
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date: 2/25/2023 NIST Traceable
Cylinder Number: SA17171 Analytical Uncertainty:

19.9	%	CARBON DIOXIDE	± 0.6 %
23.3	%	OXYGEN	± 0.2 %
	Balance	NITROGEN 56.8	

Certifcation Information: Certification Date: 2/25/2015 Term: 96 Months Expiration Date: 2/25/2023

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: CARBON DIOXIDE

Requested Concentration: 20.0 %
Certified Concentration: 19.9 %
Instrument Used: MKS 2031
Analytical Method: FOURIER-TRANSFORM INFRAR
Last Multipoint Calibration: 2/1/2015

Reference Standard Type: GMIS
Ref. Std. Cylinder #: EB0023062
Ref. Std. Conc: 19.92 %
Ref. Std. Traceable to SRM #: 2745
SRM Sample #: 9-C-03
SRM Cylinder #: CAL016000

First Analysis Data: Date: 2/25/2015

Z: 0	R: 19.9	C: 19.9	Conc: 19.92				
R: 19.9	Z: 0	C: 19.9	Conc: 19.92				
Z: 0	C: 19.9	R: 19.9	Conc: 19.92				

UOM: % Mean Test Assay: 19.92 %

Second Analysis Data: Date:

Z: 0	R: 0	C: 0	Conc: 0
R: 0	Z: 0	C: 0	Conc: 0
Z: 0	C: 0	R: 0	Conc: 0

UOM: % Mean Test Assay: 0 %

2. Component: OXYGEN

Requested Concentration: 23.0 %
Certified Concentration: 23.3 %
Instrument Used: Servomex 575
Analytical Method: Paramagnetic
Last Multipoint Calibration: 2/23/2015

Reference Standard Type: GMIS
Ref. Std. Cylinder #: EB0015474
Ref. Std. Conc: 22.28%
Ref. Std. Traceable to SRM #: 2659a
SRM Sample #: 71-D-04
SRM Cylinder #: CAL015785

First Analysis Data: Date: 2/25/2015

Z: 0	R: 22.28	C: 23.26	Conc: 23.26
R: 22.28	Z: 0	C: 23.26	Conc: 23.26
Z: 0	C: 23.26	R: 22.28	Conc: 23.26

UOM: % Mean Test Assay: 23.26 %

Second Analysis Data: Date:

Z: 0	R: 0	C: 0	Conc: 0
R: 0	Z: 0	C: 0	Conc: 0
Z: 0	C: 0	R: 0	Conc: 0

UOM: % Mean Test Assay: 0 %

Analyzed by: Josh Jones

Certified by: Rolonda Kaywood

PRAXAIR

Praxair Distribution, Inc,
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12015

DocNumber: 000007482

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

<ENTER COUNTRY & PDI LOC # B
ENTER STREET ADDRESS
ANKENY IA 500210

Praxair Order Number: 29722795
Customer P. O. Number:
Customer Reference Number:

Fill Date: 12/24/2014
Part Number: NI CD12.5O3E-AS
Lot Number: 1224UB14
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date: 1/7/2023
Cylinder Number: EB0009787

			NIST Traceable Analytical Uncertainty:
12.7	%	CARBON DIOXIDE	± 0.7 %
12.4	%	OXYGEN	± 0.3 %
	Balance	NITROGEN	

Certifcation Information: Certification Date: 1/7/2015 Term: 96 Months Expiration Date: 1/7/2023

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: CARBON DIOXIDE

Requested Concentration: 12.5 %
Certified Concentration: 12.7 %
Instrument Used: MKS 2031
Analytical Method: FOURIER-TRANSFORM INFRAR
Last Multipoint Calibration: 11/20/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder # : EB0024829
Ref. Std. Conc: 18.0%
Ref. Std. Traceable to SRM # : 2745a
SRM Sample # : 9-C-03
SRM Cylinder # : CAL016000

First Analysis Data: Date: 12/7/2014

Z: 0	R: 18	C: 12.7	Conc: 12.7
R: 18	Z: 0	C: 12.7	Conc: 12.7
Z: 0	C: 12.7	R: 18	Conc: 12.7
UOM: %		Mean Test Assay:	12.7 %

Second Analysis Data: Date:

Z: 0	R: 0	C: 0	Conc: 0
R: 0	Z: 0	C: 0	Conc: 0
Z: 0	C: 0	R: 0	Conc: 0
UOM: %		Mean Test Assay:	0 %

2. Component: OXYGEN

Requested Concentration: 12.5 %
Certified Concentration: 12.4 %
Instrument Used: Servomex 575
Analytical Method: Paramagnetic
Last Multipoint Calibration: 12/22/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder # : EB0015474
Ref. Std. Conc: 22.28%
Ref. Std. Traceable to SRM # : 2659a
SRM Sample # : 71-D-04
SRM Cylinder # : CAL015785

First Analysis Data: Date: 1/7/2015

Z: 0	R: 22.28	C: 12.4	Conc: 12.4
R: 22.28	Z: 0	C: 12.4	Conc: 12.4
Z: 0	C: 12.4	R: 22.28	Conc: 12.4
UOM: %		Mean Test Assay:	12.4 %

Second Analysis Data: Date:

Z: 0	R: 0	C: 0	Conc: 0
R: 0	Z: 0	C: 0	Conc: 0
Z: 0	C: 0	R: 0	Conc: 0
UOM: %		Mean Test Assay:	0 %

Analyzed by: Mike Monnette

Certified by: Josh Jones

PRAXAIR

Praxair Distribution, Inc,
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12015

DocNumber: 000007481

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

<ENTER COUNTRY & PDI LOC # B
ENTER STREET ADDRESS
ANKENY IA 500210

Praxair Order Number: 29722795
Customer P. O. Number:
Customer Reference Number:

Fill Date: 12/24/2014
Part Number: NI CD12.5O3E-AS
Lot Number: 1224UB14
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	1/7/2023	NIST Traceable
Cylinder Number:	SA7717	Analytical Uncertainty:
12.7 %	CARBON DIOXIDE	± 0.7 %
12.3 %	OXYGEN	± 0.3 %
Balance	NITROGEN	

Certifcation Information: *Certification Date:* 1/7/2015 *Term:* 96 Months *Expiration Date:* 1/7/2023

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: CARBON DIOXIDE

Requested Concentration: 12.5 %
Certified Concentration: 12.7 %
Instrument Used: MKS 2031
Analytical Method: FOURIER-TRANSFORM INFRAR
Last Multipoint Calibration: 11/20/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder # : EB0024829
Ref. Std. Conc: 18.0%
Ref. Std. Traceable to SRM # : 2745a
SRM Sample # : 9-C-03
SRM Cylinder # : CAL016000

First Analysis Data: Date: 12/7/2014

Z:	0	R:	18	C:	12.7	Conc:	12.7
R:	18	Z:	0	C:	12.7	Conc:	12.7
Z:	0	C:	12.7	R:	18	Conc:	12.7

UOM: % Mean Test Assay: 12.7 %

Second Analysis Data: Date:

Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0

UOM: % Mean Test Assay: 0 %

2. Component: OXYGEN

Requested Concentration: 12.5 %
Certified Concentration: 12.3 %
Instrument Used: Servomex 575
Analytical Method: Paramagnetic
Last Multipoint Calibration: 12/22/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder # : EB0015474
Ref. Std. Conc: 22.28%
Ref. Std. Traceable to SRM # : 2659a
SRM Sample # : 71-D-04
SRM Cylinder # : CAL015785

First Analysis Data: Date: 1/7/2015

Z:	0	R:	22.28	C:	12.3	Conc:	12.3
R:	22.28	Z:	0	C:	12.3	Conc:	12.3
Z:	0	C:	12.3	R:	22.28	Conc:	12.3

UOM: % Mean Test Assay: 12.3 %

Second Analysis Data: Date:

Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0

UOM: % Mean Test Assay: 0 %

Analyzed by: Mike Monnette

Certified by: Josh Jones

PRAXAIR

DocNumber: 000007063

Praxair Distribution Mid-Atlantic
One Steel Road East,
Morrisville, PA 19067
Tel:(800)638-6360 Fax:(215)736-5240
PGVP ID: F32014

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

PDI WHSE PARIS ONTARIO
41 CONSOLIDATED DR
PARIS ON ON N1S 3Z

Praxair Order Number: 04684386
Customer P. O. Number: 19836725 9
Customer Reference Number:

Fill Date: 12/31/2013
Part Number: NI CO450E-AS
Lot Number: 304613365301
Cylinder Style & Outlet: AS CGA 350
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	1/6/2022		NIST Traceable
Cylinder Number:	SA6465		Analytical Uncertainty:
455	ppm	CARBON MONOXIDE	± 1 %
	Balance	NITROGEN	

Certifcation Information: Certification Date: 1/6/2014 Term: 96 Months Expiration Date: 1/6/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: CARBON MONOXIDE

Requested Concentration:	450 ppm
Certified Concentration:	455 ppm
Instrument Used:	HORIBA VIA-3000 S/N Y9EY78L6
Analytical Method:	NDIR
Last Multipoint Calibration:	12/19/2013

Reference Standard Type:	GMIS
Ref. Std. Cylinder # :	HA4929
Ref. Std. Conc:	652 PPM
Ref. Std. Traceable to SRM # :	1680b
SRM Sample # :	2-J-49
SRM Cylinder # :	CAL018038

First Analysis Data: **Date:** 1/6/2014

Z: 0	R: 652	C: 455	Conc: 454.77
R: 652	Z: 0	C: 455	Conc: 454.77
Z: 0	C: 455	R: 653	Conc: 454.77
UOM: PPM		Mean Test Assay:	454.77 PPM

Second Analysis Data: **Date:**

Z: 0	R: 0	C: 0	Conc: 0
R: 0	Z: 0	C: 0	Conc: 0
Z: 0	C: 0	R: 0	Conc: 0
UOM: PPM		Mean Test Assay:	0 PPM

Analyzed by: Judith Imperial

Certified by: Jeff Gosner

AIR LIQUIDE Air Liquide America Specialty Gases LLC Scott

RATA CLASS

Guaranteed +/- 1% Accuracy

6141 EASTON ROAD, BLDG 1, PLUMSTEADVILLE, PA 18949-0310 Phone: 800-331-4953 Fax: 215-766-7226

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory - PGVP Vendor ID: A12014
AIR LIQUIDE AMERICA SPECIALTY GASES LLC
6141 EASTON ROAD, BLDG 1
PLUMSTEADVILLE, PA 18949-0310

P.O. No.: 1252728
Document # : 56218054-001

Customer
AIR LIQUIDE CANADA INC-BRAMALEA
ANDREI BARBU/PO 1252728
1700 STEELES AVENUE
L6T 1A6 BRAMALEA
ONTARIO CANADA

ANALYTICAL INFORMATION Gas Type : CO,BALN

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1. EPA/600/R-12/531; May 2012. Do not use this standard if pressure is less than 100 psig.

Cylinder Number: ALM017079 **Certification Date:** 12Aug2014 **Exp. Date:** 13Aug2022
Cylinder Pressure: 2010 PSIG **Batch No:** PLUO295140

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY (ABSOLUTE / RELATIVE)
CARBON MONOXIDE	225.4 PPM	1.0 PPM / 0.5 %
NITROGEN	BALANCE	

TRACEABILITY

REFERENCE STANDARD COMPONENT	CONCENTRATION	UNCERTAINTY	CYLINDER	TYPE/SRM SAMPLE	EXP. DATE
CARBON MONOXIDE	249.1000 PPM	1.0000 PPM	AAL073126	NTRM 2636	18Feb2017

ANALYTICAL METHOD

1st Analysis: 12Aug2014

COMPONENT	INSTRUMENT	ANALYTICAL/PRINCIPLE	CALIBRATED	CONCENTRATION
CARBON MONOXIDE	FTIR//000928781	FTIR	07Aug2014	225.4 PPM

Special Notes: ALC Stock Number: SPG-2MX0022674

APPROVED BY: Michael A. Kuhns

PRAXAIR

Praxair Distribution, Inc,
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411

DocNumber: 000007537

PGVP ID: F12015

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

<ENTER COUNTRY & PDI LOC # B
ENTER STREET ADDRESS
ANKENY IA 500210

Praxair Order Number: 29739388
Customer P. O. Number:
Customer Reference Number:

Fill Date: 12/30/2014
Part Number: NI CO90ME-AS
Lot Number: 1230TA14
Cylinder Style & Outlet: AS CGA 350
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date: 1/9/2023
Cylinder Number: CC348878

NIST Traceable
Analytical Uncertainty:

91.0 ppm	CARBON MONOXIDE	± 0.4 %
Balance	NITROGEN	

Certifcation Information: Certification Date: 1/9/2015 Term: 96 Months Expiration Date: 1/9/2023

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: CARBON MONOXIDE

Requested Concentration: 90.0 ppm
Certified Concentration: 91.0 ppm
Instrument Used: Horiba VIA 510
Analytical Method: NDIR
Last Multipoint Calibration: 12/22/2014

Reference Standard Type: GMIS
Ref. Std. Cylinder #: EB0014731
Ref. Std. Conc: 101.6
Ref. Std. Traceable to SRM #: 1679c
SRM Sample #: 3-I-10
SRM Cylinder #: FF28531

First Analysis Data: Date: 1/9/2015

Z: 0	R: 101.6	C: 91	Conc: 91
R: 101.6	Z: 0	C: 91	Conc: 91
Z: 0	C: 91	R: 101.6	Conc: 91
UOM: PPM		Mean Test Assay:	91 PPM

Second Analysis Data: Date:

Z: 0	R: 0	C: 0	Conc: 0
R: 0	Z: 0	C: 0	Conc: 0
Z: 0	C: 0	R: 0	Conc: 0
UOM: PPM		Mean Test Assay:	0 PPM

Analyzed by: Mike Monnette MM

Certified by: Josh Jones

THE LINDE GROUP

530 Watson St. E.

EPA PROTOCOL GAS ANALYSIS

COMPONENT NAME	CERTIFIED CONCENTRATION
Carbon Monoxide	52.86 ppm

Balance Gas: Nitrogen

PROCEDURE: G1

ASSAY DATE: 9/7/13

EXPIRATION DATE: 9/8/21

NOTE: this mixture should not be used when the pressure falls below 100 psig.

CYL NUMBER: SG 9138690B

LAB REFERENCE #: 4501255714

LOT NUMBER: 1268504

SIZE: 152 CGA: 350

Volume: 141 cuft

Pressure: 2000 psig @ 70F

This mixture has been analyzed according to EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards revised in 2012

Keith Cybulski

analyst's name

THE LINDE GROUP

530 Watson St. E.

EPA PROTOCOL GAS ANALYSIS

COMPONENT NAME	CERTIFIED CONCENTRATION
Sulfur Dioxide	225.16 %

Balance Gas: Nitrogen

PROCEDURE: G2

ASSAY DATE: 9/3/13

EXPIRATION DATE: 9/4/21

NOTE: this mixture should not be used when the pressure falls below 100 psig.

CYL NUMBER: SX 10844

LAB REFERENCE #: 4501255714

LOT NUMBER: 1268518

SIZE: 152 CGA: 660

Volume: 141 cuft

Pressure: 2000 psig @ 70F

This mixture has been analyzed according to EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards revised in 2012

Joey Zhao

analyst's name

THE LINDE GROUP

530 Watson St. E.

EPA PROTOCOL GAS ANALYSIS

COMPONENT NAME	CERTIFIED CONCENTRATION
Sulfur Dioxide	90.99 %

Balance Gas: Nitrogen

PROCEDURE: G2

ASSAY DATE: 9/3/13

EXPIRATION DATE: 9/4/21

NOTE: this mixture should not be used when the pressure falls below 100 psig.

CYL NUMBER: SX 19546

LAB REFERENCE #: 4501255714

LOT NUMBER: 1268511

SIZE: 152 CGA: 660

Volume: 141 cuft

Pressure: 2000 psig @ 70F

This mixture has been analyzed according to EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards revised in 2012

Joey Zhao

analyst's name

THE LINDE GROUP

530 Watson St. E.

EPA PROTOCOL GAS ANALYSIS

COMPONENT NAME	MEAN CONCENTRATION
Sulfur Dioxide	89.97 ppm

CYL NUMBER: SX 12432

LAB REFERENCE #: 4501218190

LOT NUMBER: 1256215

SIZE: 152 CGA: 660

Volume: 141 cuft

Pressure: 2000 psig @ 70F

This mixture has been analyzed according to EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards revised September 1997

Balance Gas: Nitrogen

PROCEDURE: G1 ASSAY DATE: 5/13/13

EXPIRATION DATE: 5/14/21

NOTE: this mixture should not be used when the pressure falls below 100 psig.

analyst's name

PRAXAIR

Praxair Distribution, Inc,
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: C12014

DocNumber: 000002667

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

PRAXAIR WAREHOUSE PARIS O
41 CONSOLIDATED DR
PARIS ON N3L 3G

Praxair Order Number: 19833716
Customer P. O. Number:
Customer Reference Number:

Fill Date: 12/23/2013
Part Number: EV NISD20ME-AS
Lot Number: 1223UD13
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	**1/8/2018**		NIST Traceable
Cylinder Number:	**EB0024817**		Analytical Uncertainty:
20.3	ppm	SULFUR DIOXIDE	± 1 %
	Balance	NITROGEN	

Certifcation Information: *Certification Date:* 1/8/2014 *Term:* 48 Months *Expiration Date:* 1/8/2018

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. **Component: SULFUR DIOXIDE**

Requested Concentration: 20.0 ppm
Certified Concentration: 20.3 ppm
Instrument Used: AMETEK 921
Analytical Method: NDUV
Last Multipoint Calibration: 12/30/2013

Reference Standard Type: GMIS
Ref. Std. Cylinder # : EB0015315
Ref. Std. Conc: 52.24 PPM
Ref. Std. Traceable to SRM # : 1693a
SRM Sample # : 96-K-078
SRM Cylinder # : CAL015221

First Analysis Data:							**Date:**	12/30/2013
Z: 0	R: 52.24	C: 20.3	Conc:	20.3				
R: 52.24	Z: 0	C: 20.3	Conc:	20.3				
Z: 0	C: 20.3	R: 52.24	Conc:	20.3				
UOM: PPM		Mean Test Assay:		20.3 PPM				

Second Analysis Data:							**Date:**	1/8/2014
Z: 0	R: 52.24	C: 20.3	Conc:	20.3				
R: 52.24	Z: 0	C: 20.3	Conc:	20.3				
Z: 0	C: 20.3	R: 52.24	Conc:	20.3				
UOM: PPM		Mean Test Assay:		20.3 PPM				

Analyzed by: Josh Godfrey

Certified by: Josh Jones

PRAXAIR

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: (419) 729-7732 Fax:(419) 729-2411
PGVP ID: F12014

DocNumber: 000004176

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

<ENTER COUNTRY & PDI LOC # B
ENTER STREET ADDRESS
ANKENY IA 500210

Praxair Order Number: 27494041
Customer P. O. Number:
Customer Reference Number:

Fill Date: 5/24/2014
Part Number: NI NO250E-AS
Lot Number: 0524HD14
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	**6/4/2022**		NIST Traceable
Cylinder Number:	**CC165792**		Analytical Uncertainty:
252	ppm	**NITRIC OXIDE**	± 0.5 %
	Balance	**NITROGEN**	

NOx = 253 ppm **NOx for Reference Only**

Certifcation Information: *Certification Date:* 6/4/2014 *Term:* 96 Months *Expiration Date:* 6/4/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. **Component: NITRIC OXIDE**

Requested Concentration:	250 ppm
Certified Concentration:	252 ppm
Instrument Used:	MKS 2031
Analytical Method:	FOURIER-TRANSFORM INFRAR
Last Multipoint Calibration:	5/13/2014

Reference Standard Type:	GMIS
Ref. Std. Cylinder # :	ND28626
Ref. Std. Conc:	251.9
Ref. Std. Traceable to SRM # :	1685B
SRM Sample # :	43-L-16
SRM Cylinder # :	CAL017397

First Analysis Data: **Date:** 5/28/2014

Z: 0	**R:** 252	**C:** 252	**Conc:** 251.9
R: 252	**Z:** 0	**C:** 252	**Conc:** 251.9
Z: 0	**C:** 252	**R:** 252	**Conc:** 251.9

UOM: PPM **Mean Test Assay:** 251.9 PPM

Second Analysis Data: **Date:** 6/4/2014

Z: 0	**R:** 252	**C:** 253	**Conc:** 252.9
R: 252	**Z:** 0	**C:** 253	**Conc:** 252.9
Z: 0	**C:** 253	**R:** 252	**Conc:** 252.9

UOM: PPM **Mean Test Assay:** 252.9 PPM

Analyzed by: Kyle Osborne

Certified by: Josh Jones

THE LINDE GROUP

530 Watson St. E.

EPA PROTOCOL GAS ANALYSIS

COMPONENT NAME	CERTIFIED CONCENTRATION
Nitric Oxide	90.49 ppm

NOx concentration: 90.99 ppm ± 0.14 ppm

Balance Gas: Nitrogen

PROCEDURE: G1

ASSAY DATE: 8/13/13

EXPIRATION DATE: 8/14/21

NOTE: this mixture should not be used when the pressure falls below 100 psig.

CYL NUMBER: CC 168618

LAB REFERENCE #: 4501250124

LOT NUMBER: 1266609

SIZE: 152 CGA: 660

Volume: 141 cuft

Pressure: 2000 psig @ 70F

This mixture has been analyzed according to EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards revised in 2012

Keith Cybulski

analyst's name

PRAXAIR

Praxair Canada Inc.
41 Consolidated Drive
Paris, Ontario N3L 3G2
Tel: 519-442-6373
Fax: 519-442-1540

05/08/2015

PRAXAIR BRAMPTON ON GRC
165 BISCAYNE CRES
ATT TODD SMITH
BRAMPTON, ON L6W 4R3

Work Order No. **23448105**
Customer Reference No.

Product Lot/Batch No. **Y787512507**
Product Part No. **NI PRR2P-AS**

CERTIFICATE OF ANALYSIS

Primary Standard

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Propane	**30ppm**	**30.0 ppm**	**V**	**±0.3ppm**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Gravimetric Analysis~~~**
Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **4.011 M3**
Valve Outlet Connection: **350**
Cylinder No(s). **EB0061945**

Filling Method: **Gravimetric**
Date of Fill: **05/05/2015**

Comments: **This mixture was filled gravimetrically on a scale calibrated using NCR traceable weights - certificate #1345343, M14-0374, 1346477.**

Approved Signer: **Courtney Edwards**

QA Reviewer: **Alice Ntow**

The gas calibration cylinder standard prepared by Praxair Canada Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Canada Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Binary Gas Analyzer with Thermal Conductivity Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	By Difference of Typical Impurities	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetrical Methods	W	Electrolytic Cell/Electrochemical	X	Electron Capture

HiQ® Certificate / Certificat HiQ®

530 Watson Street East
Whitby ON L1N 5R9

MPRI PROPANE 30PPM N2 BAL 152SZ/ MPRI PROPANE 30PPM N2 BAL 152SZ *PRIMARY STANDARD*

Component / Composant	Nominal / Nominale	Certified / Certifiée
Propane / PROPANE	30 PPM	30.0 PPM
Nitrogen / AZOTE	BAL	

Cylinder Details/ Détails - bouteille:
Cylinder Size/ Taille de la bouteille: 152 Contents/ Capacité: 3.960 M3 Valve Outlet/ Robinet de sortie: 350 Nominal Pressure/Pression nominale: 2,000 PSI

Analytical Details/ Détails d'analyse:
Certification Accuracy ± 0.02 mole % for concentrations > 5%, ± 1% for concentrations 0.1 % to 5%, ± 2% for concentrations < 1000 ppm.
INMS and NIST traceability by Mass calibration certificate Mass calibration certificate 1518209A, E161199 or W-017181-11799. Certification de précision de ± 0,02 mole % pour des concentrations > 5%, ± 1% pour des concentrations de 0,1 % à 5%, ± 2% pour des concentrations < 1000 ppm.
Traçabilité IÉNM et NIST par certificat d'étalonnage de la masse 1518209A, E161199 ou W-017181-11799.

To reorder, please quote/ Pour renouveler une commande, veuillez indiquer le code: 24079014
Certificate Date (mm/dd/yy) / Date du certificat (mm/jj/aa) :08/19/2013 Use by / Utilisé par: 08/19/2016

Approved Signature/ Approbation du Signataire ____________________
Analyst/Analyste: Mike Yao

Lot No./ No. lot	Cylinder No./ No. bouteille	Code	Page
1268516	XC000807B	24079014	1/1

Linde HiQ® Certificate / Certificat HiQ®

MCRT PROPANE 10PPM N2 BAL 152SZ CERTIFIED

Certificate Date : 08/12/2013 Use by : 08/12/2016
Cylinder Size : 152
Nominal Pressure : 2,000 PSG
Lot Number : 1266955 Cylinder No. : CC402039
Product Code : 24078335

Component	Nominal	Certified
Propane	10PPM	10.2PPM
Nitrogen		Balance

MCRT PROPANE 10PPM N2 BAL 152SZ CERTIFIED

Date du certificat : 08/12/2013 Utilisé par : 08/12/2016
Taille de la bouteille : 152
Pression nominale : 2,000 PSG
Numéro de lot : 1266955 Numéro de bouteille : CC402039
Code du produit : 24078335

Composant	Nominale	Certifiée
PROPANE	10PPM	10.2PPM
AZOTE		Balance

Linde Canada Ltd / ltee
530 Watson Street East
Whitby ON L1N 5R9

HiQ® Certificate / Certificat HiQ®

MCRT PROPANE 10PPM N2 BAL 152SZ/ MCRT PROPANE 10PPM N2 BAL 152SZ *CERTIFIED*

Component / Composant	Nominal / Nominale	Certified / Certifiée
Propane / PROPANE	10 PPM	9.7 PPM
Nitrogen / AZOTE	BAL	

Cylinder Details/ Détails - bouteille:

Cylinder Size/ Taille de la bouteille: 152 Contents/ Capacité: 3.960 M3 Valve Outlet/ Robinet de sortie: 350 Nominal Pressure/Pression nominale: 2,000 PSG

Analytical Details/ Détails d'analyse:

Certification Accuracy ± 2% for concentrations 10 ppm and above, ± 5% for concentrations < 10 ppm.
INMS and NIST traceability by one of the following: 1) Mass calibration certificate 1518209A, E161199 or W-017181-11799; 2) Primary Standard Reagent 136e, 84j; 3) Comparison to SRM or NTRM gas mixture.
Certification de précision ± 2% pour des concentrations de 10 ppm et plus, ± 5% pour des concentrations < 10 ppm.
Traçabilité IÉNM et NIST par l'une des façons suivantes : 1) Certificat d'étalonnage de la masse 1518209A, E161199 ou W-017181-11799; 2) Réactif type-primaire 136e, 84j; 3) Comparaison avec le mélange gazeux SRM ou NTRM.

Linde Canada Limited plant management quality system is ISO 9001 registered. The product furnished under the referenced lot number is certified to contain the component concentration listed above. All values are mole/mole basis gas phase unless otherwise indicated. The reported uncertainty is at the 95% confidence level assuming a normal distribution. Linde Canada Limited warrants that the above product conforms at time of shipment to the above description. The customers exclusive remedy should any of the products furnished under this certificate of analysis not conform to the manufacturers description shall be to receive replacement of the product or refund of the purchase price.

Le système de gestion de la qualité des usines de Linde Canada limitée a été enregistré avec la Norme internationale ISO 9001. Il est certifié que tout produit fourni, avec un numéro de lot spécifié, contient la concentration d'éléments ci-dessus mentionnés. Tous les valeurs sont exprimés en mole/ phase gazeuse, sauf indication contraire. Les incertitudes indiquées dans les descriptions sont des incertitudes élargies correspondant à un niveau de confiance d'environ 95 p. 100. Elles sont fondées sur une distribution normale. Linde Canada limitée garantit qu'au moment de l'expédition, le produit est conforme à la description ci-dessus. Si l'un des produits fournis en vertu de ce certificat d'analyse n'est pas conforme à la description du fabricant, le recours exclusif du client sera d'exiger le remboursement ou le remplacement du produit.

To reorder, please quote/ Pour renouveler une commande, veuillez indiquer le code: 24078335
Certificate Date (mm/dd/yy) / Date du certificat (mm/jj/aa) :08/21/2013 Use by / Utilisé par: 08/21/2016

Approved Signature/ Approbation du Signataire
Analyst/Analyste: Guihai Zhao

Lot No./ No. lot	Cylinder No./ No. bouteille	Code	Page
1268515	SX29186	24078335	1/1

APPENDIX 18

ORTECH Sampling Equipment Calibration Data
(9 pages)

ORTECH Environmental
Dry Gas Meter Calibration Data

Calibration Procedure	03 - J004
Meter Number	Team 3
Date	August 20, 2015
Barometric Pressure	29.50
System Leak Check	<.001 cfm @ 24 "Hg

MII NUMBERS	
DGM	COE 20093
Gasometer	A01463
Barometer	COE 20028

Calibrated By	Devin Golub
signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^oF+460}{Tstd\ ^oF+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading ft^3		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration Factor	Time
Initial	Final	cm	ft^3	^oC	Initial	Final	ft^3	^oF	in. H_2O	^oF		min.
88.50	26.20	62.30	2.931	23.0	89.970	92.985	3.015	76	0.83	76	0.975	6
88.40	26.20	62.20	2.926	23.0	92.985	95.985	3.000	76.5	0.83	76	0.979	6
88.60	26.50	62.10	2.921	23.0	95.985	98.970	2.985	77	0.83	76	0.983	6
88.60	28.50	60.10	2.827	23.0	99.250	102.160	2.910	77	1.8	77	0.974	4
88.60	28.00	60.60	2.851	23.0	102.160	105.050	2.890	77.5	1.8	77	0.990	4
88.00	27.30	60.70	2.855	23.0	105.050	107.970	2.920	77.5	1.8	77	0.981	4
88.60	25.00	63.60	2.992	23.0	108.300	111.355	3.055	77.5	3.4	77	0.979	3
88.50	24.90	63.60	2.992	23.0	111.355	114.395	3.040	78.5	3.4	77	0.985	3
88.50	24.90	63.60	2.992	23.0	114.395	117.425	3.030	77.5	3.4	77	0.987	3

DGMCF AVERAGE: 0.981

BEFORE: 0.970

Acceptance Criteria:
Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0.05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Team 3
MII	COE 20093
Date	August 20, 2015
Calibrated By	Devin Golub
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference
	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32	NA	0.0
70	70		0.0
100	100		0.0
200	201		-0.5
250	251		-0.4
300	301		-0.3
400	400		0.0
500	499		0.2
600	600		0.0
700	702		-0.3
800	801		-0.1
900	901		-0.1
1000	1002		-0.2
1100	1102		-0.2
1200	1202		-0.2
1250	1252		-0.2

$$\% \text{ Difference} = \frac{(\text{micromite - after adjustment reading})}{\text{micromite}} \times 100$$

Acceptance Criteria:
Trendicator display must read within ± 1.5% of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

ORTECH Environmental
Manometer Calibration Data

Date	August 20, 2015	Calibrated By	Devin Golub
Manometer Number	Team 3	Signature	
Manometer MII Number	COE 20093	Reviewed/Accepted By	
Calibrated Against	Omega HHP		
MII Number	B02679		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale	Manometer Reading "H_2O		Reference Manometer Reading	Percent Difference
"H_20	Before Adjustment	After Adjustment	"H_2O	%
	0.930	N/A	0.925	-0.5
0-1.0	0.525		0.524	-0.2
	0.200		0.198	-1.0
	7.70		7.66	-0.5
1.0-10.0	5.20		5.17	-0.6
	2.25		2.22	-1.4

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer - Instrument Reading})}{\text{Ref. Manometer}} \times 100$$

Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 0 to 1 inch scale, and 0.05 "H_2O on the 1 to 10 inch scales.
(Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH Environmental

Dry Gas Meter Calibration Data

Calibration Procedure	03 - J004
Meter Number	Team 4
Date	August 21, 2015
Barometric Pressure	29.60
System Leak Check	< .001 cfm @ 22 "Hg

MII NUMBERS	
DGM	COE 20090
Gasometer	A01463
Barometer	COE20028

Calibrated By	Devin Golub
signature	Chris Betore
Reviewed and Accepted By	CHRIS BETORE

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^oF+460}{Tstd\ ^oF+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading ft^3		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration Factor	Time
Initial	Final	cm	ft^3	^oC	Initial	Final	ft^3	^oF	in. H_2O	^oF		min.
87.80	23.90	63.90	3.006	23.0	175.285	178.325	3.040	80	0.8	77	0.999	6
88.30	24.60	63.70	2.996	23.0	143.240	146.265	3.025	79.5	0.8	75	1.000	6
88.30	24.70	63.60	2.992	23.0	146.265	149.280	3.015	80.5	0.8	76	1.003	6
88.10	23.80	64.30	3.025	23.0	153.035	156.070	3.035	81	1.9	76	1.006	4
88.00	23.70	64.30	3.025	23.0	156.070	159.120	3.050	82	1.9	77	1.003	4
88.00	23.50	64.50	3.034	23.0	159.120	162.175	3.055	81.5	1.9	77	1.003	4
87.80	21.00	66.80	3.142	23.0	171.950	175.080	3.130	80.5	3.5	77	1.008	3
87.90	21.00	66.90	3.147	23.0	165.675	168.820	3.145	79.5	3.5	77	1.003	3
88.00	21.30	66.70	3.138	23.0	168.820	171.950	3.130	79.5	3.5	77	1.005	3

DGMCF AVERAGE	1.004
BEFORE	0.976

Acceptance Criteria:
Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0.05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Omega DP116
MII	COE 20090
Date	August 21, 2015
Calibrated By	Devin Golub
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference
	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32	N/A	0.0
70	70		0.0
100	100		0.0
200	201		-0.5
250	251		-0.4
300	301		-0.3
400	400		0.0
500	499		0.2
600	600		0.0
700	701		-0.1
800	800		0.0
900	900		0.0
1000	1001		-0.1
1100	1101		-0.1
1200	1201		-0.1
1250	1250		0.0

$$\% \text{ Difference} = \frac{(\text{micromite - after adjustment reading})}{\text{micromite}} \times 100$$

Acceptance Criteria:
Trendicator display must read within ± 1.5% of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

ORTECH Environmental
Manometer Calibration Data

Date	August 21, 2015	Calibrated By	Devin Golub
Manometer Number	Team 4	Signature	
Manometer MII Number	COE 20090	Reviewed/Accepted By	
Calibrated Against	Omega HHP		
MII Number	B02679		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale "H_20	Manometer Reading "H_2O Before Adjustment	Manometer Reading "H_2O After Adjustment	Reference Manometer Reading "H_2O	Percent Difference %
	0.850	NA	0.840	-1.2
0-1.0	0.505		0.500	-1.0
	0.240		0.233	-3.0
	8.50		8.500	0.0
1.0-10.0	4.85		4.870	0.4
	2.00		1.950	-2.6

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer - Instrument Reading})}{\text{Ref. Manometer}} \times 100$$

Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 0 to 1 inch scale, and 0.05 "H_2O on the 1 to 10 inch scales.
(Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH Environmental
Dry Gas Meter Calibration Data

Calibration Procedure	03 - J004
Meter Number	Team 1
Date	August 20, 2015
Barometric Pressure	29.50
System Leak Check	< .001 cfm @ 20 "Hg

MII NUMBERS	
DGM	COE 20094
Gasometer	A01463
Barometer	COE 20028

Calibrated By	Devin Golub
Signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF= \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ {}^oF+460}{Tstd\ {}^oF+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading ft^3		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration Factor	Time
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°F	in. H_2O	°F		min.
88.70	24.10	64.60	3.039	23.0	795.025	798.040	3.015	75	0.7	74	1.009	6
88.50	23.80	64.70	3.043	23.0	807.290	810.325	3.035	75.5	0.7	75	1.005	6
88.30	23.30	65.00	3.058	23.0	804.260	807.290	3.030	75.5	0.7	75	1.011	6
88.50	23.20	65.30	3.072	23.0	810.590	813.620	3.030	75.5	1.7	75	1.013	4
87.80	23.50	64.30	3.025	23.0	813.620	816.620	3.000	75.5	1.7	75	1.008	4
88.00	22.80	65.20	3.067	23.0	822.635	825.640	3.005	77	1.7	76	1.023	4
88.50	23.20	65.30	3.072	23.0	826.165	829.160	2.995	77	3	76	1.025	3
88.40	22.80	65.60	3.086	23.0	829.160	832.160	3.000	77	3	76	1.028	3
88.00	22.80	65.20	3.067	23.0	832.160	835.140	2.980	77	3	76	1.028	3

DGMCF AVERAGE: 1.017

BEFORE: 1.009

Acceptance Criteria:
Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0.05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Team 1
MII	COE 20094
Date	August 20, 2015
Calibrated By	Devin Golub
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference
	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32	NA	0.0
70	70		0.0
100	100		0.0
200	201		-0.5
250	252		-0.8
300	301		-0.3
400	400		0.0
500	500		0.0
600	601		-0.2
700	700		0.0
800	800		0.0
900	900		0.0
1000	1000		0.0
1100	1100		0.0
1200	1200		0.0
1250	1250		0.0

$$\% \text{ Difference} = \frac{(\text{micromite - after adjustment reading})}{\text{micromite}} \times 100$$

Acceptance Criteria:
Trendicator display must read within ± 1.5% of the micromite value at each output. Otherwise, the Trendicator must be repaired and/or adjusted as necessary, and recalibrated prior to use. (MOE Source Testing Code, Version #2, Method 5)

ORTECH Environmental
Manometer Calibration Data

Date	August 20, 2015	Calibrated By	Devin Golub
Manometer Number	Team 1	Signature	
Manometer MII Number	COE 20094	Reviewed/Accepted By	
Calibrated Against	Omega HHP		
MII Number	B02679		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale "H_20	Manometer Reading "H_2O		Reference Manometer Reading "H_2O	Percent Difference %
	Before Adjustment	After Adjustment		
	0.915	NA	0.911	-0.4
0-1.0	0.540		0.544	0.7
	0.260		0.261	0.4
	8.15		8.12	-0.4
1.0-10.0	5.00		4.97	-0.6
	2.30		2.34	1.7

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer - Instrument Reading})}{\text{Ref. Manometer}} \times 100$$

Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 0 to 1 inch scale, and 0.05 "H_2O on the 1 to 10 inch scales.
(Environment Canada Reference Method 1/RM/8, Section 2)

APPENDIX 19

DYEC CEM and Process Data
for Boiler No. 1
(18 pages)

	Boiler No. 1 BH Outlet							Boiler No. 1 Scrubber Inlet				
Date/Time	U1 1-min Calcs - O2s-dry	U1 1-min Calcs - O2s-wet	U1 1-min Calcs - SO2s	U1 1-min Calcs - COs-lh	U1 1-min Calcs - NOxs	U1 1-min Calcs - NH3s	U1 1-min Calcs - HCLs	U1 1-min Calcs - O2e-dry	U1 1-min Calcs - THCe	U1 1-min Calcs - COe-lh	U1 1-min Calcs - SO2e	U1 1-min Calcs - CarbInj
24/09/2015 10:31	7.37	6.12	0.0	8.3	74.3	18.1	2.4	7.69	6.4	11.2	217.0	2.49
24/09/2015 10:32	8.07	6.61	0.0	7.7	61.8	18.1	2.4	8.29	6.4	9.1	190.0	2.61
24/09/2015 10:33	8.18	6.82	0.0	14.0	47.1	18.5	2.3	8.39	6.4	16.0	188.0	2.39
24/09/2015 10:34	8.38	6.51	0.0	15.1	52.8	17.5	2.3	8.19	6.2	17.3	197.0	2.53
24/09/2015 10:35	7.97	6.58	0.0	10.5	71.5	17.3	2.3	8.19	6.3	13.5	179.0	2.5
24/09/2015 10:36	8.38	6.70	0.0	6.9	72.0	17.4	2.2	8.49	6.3	8.3	162.0	2.6
24/09/2015 10:37	8.38	6.84	0.0	6.5	63.5	17.5	2.2	8.39	6.5	8.5	178.0	2.49
24/09/2015 10:38	8.18	6.81	0.0	6.5	68.2	17.0	2.2	8.49	6.6	8.6	178.0	2.35
24/09/2015 10:39	8.07	6.66	0.0	8.6	65.0	17.7	2.1	8.59	6.5	8.9	167.0	2.52
24/09/2015 10:40	7.97	6.30	0.0	7.3	77.5	17.7	2.1	8.19	6.7	9.0	171.0	2.48
24/09/2015 10:41	7.67	6.22	0.0	8.2	68.4	18.2	2.1	7.59	6.7	10.2	171.0	2.46
24/09/2015 10:42	8.28	6.74	0.0	5.4	82.8	17.4	2.1	8.39	6.6	7.1	134.0	2.28
24/09/2015 10:43	8.38	6.78	0.0	6.1	59.3	18.5	2.1	8.29	6.7	8.5	150.0	2.48
24/09/2015 10:44	8.18	6.68	0.0	8.3	57.4	19.3	2.1	8.59	6.7	8.5	142.0	2.6
24/09/2015 10:45	7.97	6.37	0.0	9.5	56.6	19.5	2.1	8.19	6.5	10.8	141.0	2.61
24/09/2015 10:46	7.67	6.18	0.0	8.7	61.5	19.4	2.1	7.89	6.6	11.3	160.0	2.62
24/09/2015 10:47	7.17	5.78	0.0	9.3	70.1	19.0	2.1	7.49	6.4	11.9	168.0	2.52
24/09/2015 10:48	7.47	6.10	0.0	8.7	59.5	19.5	2.1	7.39	6.3	10.9	156.0	2.35
24/09/2015 10:49	7.47	6.01	0.0	12.4	59.1	19.7	2.0	7.69	6.4	15.0	153.0	2.58
24/09/2015 10:50	7.67	6.09	0.0	9.7	59.6	18.9	2.0	7.59	6.5	12.5	149.0	2.37
24/09/2015 10:51	7.37	6.05	0.0	8.7	65.8	18.9	2.0	7.59	6.7	10.6	153.0	2.68
24/09/2015 10:52	7.77	6.22	0.0	8.6	56.7	19.1	2.0	7.89	6.9	11.6	150.0	2.45
24/09/2015 10:53	7.87	6.27	0.0	8.9	57.7	19.2	2.0	7.69	6.5	10.9	148.0	2.39
24/09/2015 10:54	7.77	6.29	0.0	9.4	56.9	19.0	2.0	7.69	6.5	11.3	152.0	2.53
24/09/2015 10:55	7.97	6.41	0.0	10.7	52.9	18.8	2.0	7.99	6.1	12.3	147.0	2.48
24/09/2015 10:56	8.07	6.58	0.0	10.6	58.6	19.0	2.0	8.19	6.6	13.0	146.0	2.47
24/09/2015 10:57	8.18	6.62	0.0	10.4	56.2	19.2	2.0	8.39	6.4	13.1	142.0	2.46
24/09/2015 10:58	8.18	6.62	0.0	10.9	49.6	19.3	1.9	8.39	6.5	12.4	133.0	2.59
24/09/2015 10:59	7.97	6.42	0.0	9.1	56.4	19.3	1.9	8.09	6.6	11.9	143.0	2.55
24/09/2015 11:00	7.97	6.50	0.0	6.8	66.3	19.0	1.9	8.19	7.3	9.0	132.0	2.4
24/09/2015 11:01	7.67	6.25	0.0	7.1	77.9	18.2	1.9	7.79	7.1	9.3	140.0	2.33
Average	7.92	6.42	0.0	9.0	62.7	18.6	2.1	8.06	6.5	11.0	159.3	2.49
Min	7.17	5.78	0.0	5.4	47.1	17.0	1.9	7.39	6.1	7.1	132.0	2.28
Max	8.38	6.84	0.0	15.1	82.8	19.7	2.4	8.59	7.3	17.3	217.0	2.68

	Boiler No. 1 BH Outlet							Boiler No. 1 Scrubber Inlet				
Date/Time	U1 1-min Calcs - O2s-dry	U1 1-min Calcs - O2s-wet	U1 1-min Calcs - SO2s	U1 1-min Calcs - COs-lh	U1 1-min Calcs - NOxs	U1 1-min Calcs - NH3s	U1 1-min Calcs - HCLs	U1 1-min Calcs - O2e-dry	U1 1-min Calcs - THCe	U1 1-min Calcs - COe-lh	U1 1-min Calcs - SO2e	U1 1-min Calcs - CarbInj
24/09/2015 12:08	7.47	6.17	0.0	46.1	79.5	21.3	2.1	7.89	7.3	42.3	87.0	2.54
24/09/2015 12:09	8.07	6.75	0.0	24.9	76.7	18.4	2.1	8.49	7.4	29.1	82.0	2.43
24/09/2015 12:10	7.47	6.04	0.0	54.3	90.3	20.7	2.2	7.89	7.4	57.8	90.0	2.59
24/09/2015 12:11	8.38	6.68	0.0	19.1	90.4	18.5	2.2	8.09	6.8	24.4	87.0	2.47
24/09/2015 12:12	8.78	7.39	0.0	16.8	72.6	17.6	2.2	9.19	4.5	19.4	80.0	2.44
24/09/2015 12:13	7.27	6.04	0.0	14.3	85.6	22.3	2.2	8.29	6.7	15.8	83.0	2.42
24/09/2015 12:14	8.38	6.72	0.0	12.7	73.4	18.2	2.2	8.29	7.2	16.7	87.0	2.6
24/09/2015 12:15	8.78	7.30	0.0	20.1	60.9	18.2	2.2	9.09	7.5	18.5	87.0	2.38
24/09/2015 12:16	8.18	6.62	0.0	27.9	60.4	21.4	2.2	8.39	7.0	30.8	91.0	2.52
24/09/2015 12:17	8.48	7.23	0.0	26.7	64.3	17.8	2.3	8.49	7.1	27.1	93.0	2.52
24/09/2015 12:18	8.78	7.61	0.0	21.0	62.6	17.4	2.3	8.99	6.8	24.0	89.0	2.61
24/09/2015 12:19	7.97	6.98	0.0	24.6	70.0	18.0	2.2	8.19	6.7	31.6	93.0	2.73
24/09/2015 12:20	8.98	7.42	0.0	14.1	59.7	18.3	2.2	9.09	6.8	15.5	79.0	2.49
24/09/2015 12:21	8.58	7.20	0.0	19.0	57.9	17.6	2.2	9.19	6.8	15.5	78.0	2.35
24/09/2015 12:22	8.88	7.38	0.0	29.2	50.3	18.2	2.2	9.09	7.4	29.1	74.0	2.6
24/09/2015 12:23	8.88	7.45	0.0	19.2	75.9	17.1	2.2	9.19	7.2	21.2	86.0	2.55
24/09/2015 12:24	8.07	6.85	0.0	21.9	71.9	17.7	2.2	8.69	7.0	25.4	85.0	2.38
24/09/2015 12:25	7.97	6.60	0.0	25.1	67.2	18.4	2.2	8.29	6.9	17.2	89.0	2.55
24/09/2015 12:26	8.58	7.32	0.0	36.7	49.0	17.4	2.2	8.69	6.9	37.3	88.0	2.77
24/09/2015 12:27	8.98	7.62	0.0	28.6	50.1	16.9	2.2	9.39	6.4	37.0	90.0	2.39
24/09/2015 12:28	9.19	7.75	0.0	23.8	42.9	17.1	2.2	9.59	6.2	25.8	95.0	2.54
24/09/2015 12:29	7.97	6.98	0.0	17.3	71.8	17.2	2.2	8.59	6.4	22.0	125.0	2.72
24/09/2015 12:30	8.48	7.01	0.0	10.4	70.0	17.3	2.2	8.49	6.6	10.2	121.0	2.56
24/09/2015 12:31	8.98	7.42	0.0	33.9	48.4	17.4	2.1	9.19	6.7	31.5	126.0	2.21
24/09/2015 12:32	8.58	7.23	0.0	29.3	55.5	17.3	2.0	8.69	6.7	32.8	136.0	2.46
24/09/2015 12:33	8.88	7.40	0.0	21.9	59.0	17.7	2.0	9.09	6.2	24.5	130.0	2.42
24/09/2015 12:34	7.87	6.72	0.0	15.0	91.6	17.1	2.0	8.09	6.2	17.3	164.0	2.31
24/09/2015 12:35	8.48	7.05	0.0	9.9	86.1	16.9	2.0	8.89	6.0	11.2	164.0	2.49
24/09/2015 12:36	8.68	7.20	0.0	15.4	74.0	16.8	2.0	8.99	6.6	14.6	176.0	2.5
24/09/2015 12:37	8.68	7.31	0.0	20.6	58.3	16.8	2.0	8.89	6.7	25.3	190.0	2.61
24/09/2015 12:38	8.18	6.99	0.0	21.7	67.2	16.5	2.0	8.69	6.9	26.3	201.0	2.31
Average	8.42	7.05	0.0	23.3	67.5	18.0	2.2	8.71	6.7	25.1	107.9	2.50
Min	7.27	6.04	0.0	9.9	42.9	16.5	2.0	7.89	4.5	10.2	74.0	2.21
Max	9.19	7.75	0.0	54.3	91.6	22.3	2.3	9.59	7.5	57.8	201.0	2.77

Date/Time	Boiler No. 1 BH Outlet U1 1-min Calcs - O2s-dry	U1 1-min Calcs - O2s-wet	U1 1-min Calcs - SO2s	U1 1-min Calcs - COs-lh	U1 1-min Calcs - NOxs	U1 1-min Calcs - NH3s	U1 1-min Calcs - HCLs	Boiler No. 1 Scrubber Inlet U1 1-min Calcs - O2e-dry	U1 1-min Calcs - THCe	U1 1-min Calcs - COe-lh	U1 1-min Calcs - SO2e	U1 1-min Calcs - CarbInj
24/09/2015 12:44	7.47	6.22	0.0	9.5	88.4	17.7	2.3	8.19	6.5	10.8	226.0	2.88
24/09/2015 12:45	7.17	6.20	0.0	9.0	90.1	16.3	2.3	7.69	6.5	10.0	235.0	2.66
24/09/2015 12:46	8.07	6.34	0.0	8.2	86.8	16.5	2.3	8.19	6.8	9.2	217.0	2.47
24/09/2015 12:47	7.37	6.15	0.0	8.9	93.4	17.1	2.3	7.69	7.2	10.6	228.0	2.55
24/09/2015 12:48	7.87	6.60	0.0	17.5	69.9	16.8	2.3	8.29	7.4	15.9	211.0	2.85
24/09/2015 12:49	7.97	6.63	0.0	14.5	76.3	16.9	2.3	8.19	7.3	16.1	208.0	2.54
24/09/2015 12:50	7.87	6.66	0.0	14.0	63.4	17.0	2.3	8.09	7.5	16.4	208.0	2.47
24/09/2015 12:51	8.38	6.95	0.0	9.6	64.7	16.6	2.3	8.79	7.1	12.5	196.0	2.56
24/09/2015 12:52	8.48	7.07	0.0	17.5	49.4	16.8	2.3	8.99	7.2	21.4	185.0	2.45
24/09/2015 12:53	8.18	6.69	0.0	13.0	65.9	16.7	2.3	8.19	7.2	18.1	203.0	2.27
24/09/2015 12:54	7.87	6.42	0.0	9.4	80.2	16.8	2.3	8.29	7.6	10.0	181.0	2.33
24/09/2015 12:55	7.37	6.09	0.0	22.2	62.5	17.4	2.3	7.59	7.5	27.6	178.0	2.38
24/09/2015 12:56	7.87	6.52	0.0	12.1	63.6	16.6	2.2	8.09	7.3	15.9	169.0	2.27
24/09/2015 12:57	6.96	5.73	0.0	8.6	102.0	16.4	2.2	7.79	6.9	9.9	164.0	2.58
24/09/2015 12:58	7.37	5.92	0.0	3.2	127.7	16.0	2.2	7.09	7.1	5.3	151.0	2.41
24/09/2015 12:59	7.97	6.47	0.0	11.2	74.8	16.8	2.2	7.89	7.2	11.4	130.0	2.65
24/09/2015 13:00	7.77	6.61	0.0	21.1	86.5	15.9	2.2	8.19	7.3	22.5	130.0	2.53
24/09/2015 13:01	8.38	7.13	0.0	9.3	74.8	15.4	2.2	8.69	7.6	11.4	122.0	2.42
24/09/2015 13:02	7.97	6.85	0.0	10.3	69.8	15.6	2.2	8.49	7.6	12.1	127.0	2.36
24/09/2015 13:03	7.67	6.54	0.0	7.7	81.7	16.1	2.2	7.89	7.3	9.1	127.0	2.41
24/09/2015 13:04	7.77	6.48	0.0	18.4	48.3	16.8	2.2	8.09	7.5	20.7	123.0	2.57
24/09/2015 13:05	7.17	5.82	0.0	13.2	86.3	16.6	2.1	7.29	7.7	18.7	117.0	2.54
24/09/2015 13:06	8.07	6.76	0.0	13.0	57.0	17.1	2.1	8.39	7.7	13.8	98.0	2.7
24/09/2015 13:07	8.38	6.86	0.0	16.2	51.2	16.5	2.1	8.79	7.1	17.6	103.0	2.6
24/09/2015 13:08	8.48	6.93	0.0	26.0	59.1	16.7	2.1	8.39	7.2	29.8	99.0	2.4
24/09/2015 13:09	8.18	6.78	0.0	52.3	67.5	16.7	2.1	8.39	7.9	49.3	94.0	2.63
24/09/2015 13:10	8.38	6.63	0.0	22.0	71.0	16.5	2.1	8.59	7.4	24.1	89.0	2.36
24/09/2015 13:11	7.87	6.55	0.0	7.8	85.2	16.3	2.1	8.29	7.0	9.3	91.0	2.35
24/09/2015 13:12	7.27	6.06	0.0	11.6	89.6	16.6	2.1	7.39	6.9	15.1	101.0	2.47
24/09/2015 13:13	7.77	6.44	0.0	5.0	84.2	16.3	2.1	7.89	6.9	6.6	84.0	2.58
24/09/2015 13:14	7.87	6.68	0.0	9.0	80.4	16.4	2.1	8.39	6.4	11.7	79.0	2.54

Average	7.85	6.51	0.0	13.9	75.9	16.6	2.2	8.14	7.2	15.9	150.8	2.51
Min	6.96	5.73	0.0	3.2	48.3	15.4	2.1	7.09	6.4	5.3	79.0	2.27
Max	8.48	7.13	0.0	52.3	127.7	17.7	2.3	8.99	7.9	49.3	235.0	2.88

	Boiler No. 1 BH Outlet							Boiler No. 1 Scrubber Inlet				
Date/Time	U1 1-min Calcs - O2s-dry	U1 1-min Calcs - O2s-wet	U1 1-min Calcs - SO2s	U1 1-min Calcs - COs-lh	U1 1-min Calcs - NOxs	U1 1-min Calcs - NH3s	U1 1-min Calcs - HCLs	U1 1-min Calcs - O2e-dry	U1 1-min Calcs - THCe	U1 1-min Calcs - COe-lh	U1 1-min Calcs - SO2e	U1 1-min Calcs - CarbInj
24/09/2015 13:45	7.47	5.96	0.0	15.0	69.3	20.4	2.2	7.79	6.7	17.9	61.0	2.41
24/09/2015 13:46	7.67	6.07	0.0	14.8	58.9	20.5	2.2	7.99	6.6	17.5	61.0	2.54
24/09/2015 13:47	8.07	6.32	0.0	14.5	45.6	21.2	2.2	8.19	6.5	17.1	62.0	2.8
24/09/2015 13:48	7.87	6.35	0.0	14.8	48.8	20.8	2.2	7.79	6.1	18.4	69.0	2.63
24/09/2015 13:49	8.28	6.48	0.0	16.0	53.5	20.8	2.2	8.29	6.4	18.8	59.0	2.43
24/09/2015 13:50	7.67	5.91	0.0	12.3	68.6	20.9	2.2	7.69	6.5	18.0	77.0	2.46
24/09/2015 13:51	7.57	5.99	0.0	12.2	75.5	20.4	2.2	7.79	6.7	15.1	65.0	2.37
24/09/2015 13:52	7.57	5.86	0.0	11.4	83.2	20.1	2.2	7.49	6.5	13.8	62.0	2.53
24/09/2015 13:53	7.57	5.73	0.0	12.6	69.9	20.6	2.2	7.89	6.6	15.6	53.0	2.52
24/09/2015 13:54	6.66	5.06	0.0	18.2	75.7	20.9	2.1	6.89	6.6	15.2	68.0	2.38
24/09/2015 13:55	6.76	5.35	0.0	14.7	80.4	20.7	2.1	6.69	6.9	20.1	65.0	2.4
24/09/2015 13:56	7.06	5.70	0.0	9.5	81.7	20.2	2.1	7.09	6.8	11.1	60.0	2.67
24/09/2015 13:57	7.06	5.61	0.0	10.4	84.7	20.5	2.2	7.29	7.0	11.7	57.0	2.67
24/09/2015 13:58	6.76	5.26	0.0	12.2	75.4	21.7	2.2	6.89	6.7	14.6	63.0	2.32
24/09/2015 13:59	5.85	4.72	0.0	13.5	58.0	21.8	2.2	6.39	6.7	14.8	63.0	2.44
24/09/2015 14:00	5.85	4.67	0.0	12.7	82.2	21.1	2.2	6.09	6.6	14.6	72.0	2.44
24/09/2015 14:01	6.66	5.17	0.0	12.3	63.8	21.2	2.3	6.79	6.7	14.7	65.0	2.53
24/09/2015 14:02	6.76	5.33	0.0	10.2	76.0	20.6	2.3	6.89	6.8	12.2	63.0	2.44
24/09/2015 14:03	6.86	5.52	0.0	10.0	82.0	20.3	2.3	6.89	7.0	12.3	59.0	2.56
24/09/2015 14:04	7.27	5.80	0.0	9.3	76.8	19.9	2.4	7.39	6.9	11.9	57.0	2.52
24/09/2015 14:05	7.47	5.98	0.0	9.9	78.1	19.5	2.4	7.69	7.1	11.7	56.0	2.4
24/09/2015 14:06	7.27	5.96	0.0	10.5	67.9	19.6	2.4	7.59	7.1	12.4	58.0	2.33
24/09/2015 14:07	7.67	6.21	0.0	18.0	60.3	19.5	2.4	7.89	7.1	19.6	58.0	2.53
24/09/2015 14:08	7.57	5.85	0.0	12.0	64.3	19.7	2.5	7.59	6.8	12.6	62.0	2.62
24/09/2015 14:09	7.37	5.85	0.0	10.2	61.1	20.1	2.5	7.69	6.8	11.9	61.0	2.59
24/09/2015 14:10	7.17	5.91	0.0	11.3	60.6	19.9	2.5	7.19	6.9	13.2	66.0	1.34
24/09/2015 14:11	10.20	8.07	0.2	42.1	37.0	20.7	2.6	9.69	10.2	38.3	50.0	2.56
24/09/2015 14:12	5.04	8.07	0.0	118.3	45.3	22.0	2.6	6.09	7.2	152.6	59.0	2.34
24/09/2015 14:13	6.96	6.45	0.0	35.5	49.9	19.1	2.6	7.59	6.5	29.2	69.0	2.37
24/09/2015 14:14	8.78	7.14	0.0	10.3	79.1	17.9	2.6	9.59	7.3	13.6	51.0	2.42
24/09/2015 14:15	8.58	6.96	0.0	7.6	81.1	17.8	2.6	8.89	7.4	9.7	53.0	2.35

Average	7.33	5.98	0.0	17.5	67.6	20.3	2.3	7.54	6.9	20.3	61.4	2.45
Min	5.04	4.67	0.0	7.6	37.0	17.8	2.1	6.09	6.1	9.7	50.0	1.34
Max	10.20	8.07	0.2	118.3	84.7	22.0	2.6	9.69	10.2	152.6	77.0	2.8

	Boiler No. 1 BH Outlet							Boiler No. 1 Scrubber Inlet				
Date/Time	U1 1-min Calcs - O2s-dry	U1 1-min Calcs - O2s-wet	U1 1-min Calcs - SO2s	U1 1-min Calcs - COs-lh	U1 1-min Calcs - NOxs	U1 1-min Calcs - NH3s	U1 1-min Calcs - HCLs	U1 1-min Calcs - O2e-dry	U1 1-min Calcs - THCe	U1 1-min Calcs - COe-lh	U1 1-min Calcs - SO2e	U1 1-min Calcs - CarbInj
24/09/2015 14:30	7.67	6.19	0.0	7.9	80.0	18.8	7.1	7.89	7.1	13.6	60.0	2.46
24/09/2015 14:31	7.27	5.97	0.0	7.4	87.6	18.7	7.1	7.99	6.7	7.9	60.0	2.35
24/09/2015 14:32	7.37	5.76	0.1	13.2	93.8	18.2	7.1	7.19	7.1	23.5	78.0	2.37
24/09/2015 14:33	7.87	6.63	1.0	8.6	74.8	18.2	7.1	7.99	6.8	10.1	71.0	2.46
24/09/2015 14:34	9.08	7.55	0.2	26.9	39.9	18.2	7.3	9.39	6.9	24.3	61.0	2.46
24/09/2015 14:35	8.48	7.07	1.0	30.9	40.8	18.2	7.4	8.69	6.7	34.6	73.0	2.42
24/09/2015 14:36	8.88	7.42	2.0	18.2	50.7	17.6	7.5	9.09	6.7	20.6	66.0	2.55
24/09/2015 14:37	9.08	7.42	2.3	14.8	50.5	17.4	7.6	9.59	6.4	16.3	61.0	2.62
24/09/2015 14:38	9.08	7.63	1.5	24.8	48.7	17.8	8.0	9.79	6.7	23.2	55.0	2.52
24/09/2015 14:39	8.18	6.58	0.0	26.9	67.7	18.5	8.0	7.79	6.6	54.8	69.0	2.45
24/09/2015 14:40	8.78	7.26	0.0	16.3	50.1	18.2	7.9	9.09	6.8	19.2	60.0	2.55
24/09/2015 14:41	8.98	7.46	0.0	8.8	66.9	17.8	7.8	9.29	6.6	11.5	56.0	2.55
24/09/2015 14:42	8.98	7.42	0.0	13.5	55.1	17.9	7.1	9.19	6.9	14.1	54.0	2.54
24/09/2015 14:43	8.68	7.16	0.0	12.9	64.9	17.3	3.2	8.89	6.9	15.7	55.0	2.51
24/09/2015 14:44	9.08	7.51	0.0	10.2	70.0	17.2	3.2	9.39	6.7	12.1	52.0	2.38
24/09/2015 14:45	8.98	7.41	0.0	14.5	62.6	17.6	3.0	9.29	6.4	16.1	56.0	2.3
24/09/2015 14:46	8.78	7.29	0.0	20.3	52.6	18.4	2.9	9.19	6.5	15.5	61.0	2.4
24/09/2015 14:47	8.98	7.34	0.0	19.7	62.3	17.4	2.9	9.19	6.5	25.3	69.0	2.5
24/09/2015 14:48	8.88	7.47	0.0	14.1	73.9	17.1	2.9	9.19	6.3	15.4	74.0	2.45
24/09/2015 14:49	9.19	7.55	0.0	15.6	66.5	17.5	2.8	8.99	6.4	17.4	80.0	2.45
24/09/2015 14:50	9.29	7.47	0.0	13.2	64.2	17.8	2.8	9.59	6.7	16.3	79.0	2.59
24/09/2015 14:51	8.78	7.00	0.0	7.6	71.9	18.4	2.8	9.29	6.7	9.2	96.0	2.67
24/09/2015 14:52	8.78	7.00	0.0	8.0	70.7	18.9	2.8	9.09	6.6	9.9	97.0	2.58
24/09/2015 14:53	8.48	6.85	0.0	7.8	71.8	19.4	2.8	8.89	6.3	9.7	110.0	2.53
24/09/2015 14:54	7.97	6.25	0.0	7.2	78.6	19.3	2.8	8.19	6.5	8.4	128.0	2.53
24/09/2015 14:55	7.27	5.82	0.0	5.4	75.4	19.2	2.8	7.39	6.5	6.8	150.0	2.58
24/09/2015 14:56	7.17	5.82	0.0	6.8	70.2	19.2	2.8	7.39	6.8	8.5	164.0	2.5
24/09/2015 14:57	7.37	6.09	0.0	10.0	55.5	19.1	2.7	7.59	6.7	11.7	167.0	2.51
24/09/2015 14:58	7.87	6.46	0.0	12.7	52.4	18.7	2.7	8.39	6.7	14.6	165.0	2.5
24/09/2015 14:59	7.27	6.15	0.0	15.5	73.8	18.0	2.7	7.79	6.3	19.0	192.0	2.51
24/09/2015 15:00	8.18	6.66	0.0	8.6	75.4	17.3	2.7	8.39	6.2	10.5	172.0	2.48

Average	8.41	6.89	0.3	13.8	65.1	18.2	4.8	8.68	6.6	16.6	90.0	2.49
Min	7.17	5.76	0.0	5.4	39.9	17.1	2.7	7.19	6.2	6.8	52.0	2.3
Max	9.29	7.63	2.3	30.9	93.8	19.4	8.0	9.79	7.1	54.8	192.0	2.67

	Boiler No. 1 BH Outlet							Boiler No. 1 Scrubber Inlet				
Date/Time	U1 1-min Calcs - O2s-dry	U1 1-min Calcs - O2s-wet	U1 1-min Calcs - SO2s	U1 1-min Calcs - COs-lh	U1 1-min Calcs - NOxs	U1 1-min Calcs - NH3s	U1 1-min Calcs - HCLs	U1 1-min Calcs - O2e-dry	U1 1-min Calcs - THCe	U1 1-min Calcs - COe-lh	U1 1-min Calcs - SO2e	U1 1-min Calcs - CarbInj
24/09/2015 15:06	8.38	6.93	0.0	19.0	61.7	17.5	2.8	8.79	6.7	21.7	234.0	2.49
24/09/2015 15:07	7.27	6.01	0.0	13.9	77.6	19.0	2.8	7.49	6.9	21.0	257.0	2.46
24/09/2015 15:08	7.57	6.11	0.0	8.0	79.3	18.8	2.8	7.99	6.7	9.1	226.0	2.55
24/09/2015 15:09	8.07	6.36	0.0	14.3	66.9	18.9	2.8	7.89	6.6	15.8	260.0	2.52
24/09/2015 15:10	7.97	6.54	0.0	17.3	61.3	18.7	2.8	8.19	6.6	20.0	250.0	2.53
24/09/2015 15:11	8.28	6.87	0.0	25.5	68.0	17.6	2.8	8.59	6.9	25.3	245.0	2.55
24/09/2015 15:12	8.98	7.40	0.0	23.2	62.4	17.4	2.8	9.39		25.7	254.0	2.52
24/09/2015 15:13	8.88	7.41	0.0	18.3	53.0	18.1	2.8	9.29		20.2	279.0	2.5
24/09/2015 15:14	8.28	6.77	0.0	10.0	81.3	18.3	2.8	8.29	4.6	13.3	291.0	2.44
24/09/2015 15:15	7.67	6.35	0.0	9.9	82.9	18.7	2.8	8.09	6.2	11.5	266.0	2.51
24/09/2015 15:16	8.07	6.51	0.8	10.8	74.0	18.4	2.9	8.09	6.4	12.2	255.0	2.6
24/09/2015 15:17	8.48	6.98	0.8	14.0	60.3	18.6	2.9	8.89	6.4	15.9	240.0	2.6
24/09/2015 15:18	8.68	7.01	0.0	16.2	66.6	19.1	2.9	8.89	6.1	18.6	246.0	2.54
24/09/2015 15:19	8.58	6.86	0.0	9.9	81.0	18.8	2.9	8.79	6.4	12.5	226.0	2.46
24/09/2015 15:20	8.28	6.79	0.0	11.9	72.5	19.3	2.9	8.39	6.3	12.4	211.0	2.4
24/09/2015 15:21	8.58	6.89	0.0	9.4	81.6	19.0	2.8	8.49	6.7	12.0	179.0	2.44
24/09/2015 15:22	8.38	6.73	0.0	8.3	83.2	19.3	2.8	8.59	6.4	9.6	169.0	2.57
24/09/2015 15:23	7.37	5.90	0.0	7.8	69.8	20.7	2.7	7.99	6.6	9.1	153.0	2.56
24/09/2015 15:24	7.17	5.65	0.0	11.9	76.1	19.7	2.4	7.19	6.8	17.7	166.0	2.5
24/09/2015 15:25	7.87	6.33	0.0	10.4	64.6	19.5	2.4	7.79	6.7	11.8	160.0	2.41
24/09/2015 15:26	8.58	7.09	0.0	12.1	59.5	18.9	2.4	8.69	6.2	14.0	141.0	2.42
24/09/2015 15:27	8.28	6.88	0.0	14.5	54.3	19.4	2.4	8.59	6.4	16.3	134.0	2.56
24/09/2015 15:28	8.58	7.04	0.0	16.0	54.1	19.5	2.3	8.89	6.2	18.2	134.0	2.56
24/09/2015 15:29	8.68	7.24	0.0	16.8	50.3	19.4	2.3	8.99	6.5	20.1	132.0	2.56
24/09/2015 15:30	8.28	6.68	0.0	11.3	65.9	19.5	2.3	8.19	6.2	14.9	137.0	2.64
24/09/2015 15:31	8.58	7.16	0.0	11.5	60.9	19.4	2.3	8.59	6.5	12.4	128.0	2.48
24/09/2015 15:32	9.29	7.72	0.0	13.0	57.4	18.8	2.2	9.69	6.1	15.9	122.0	2.63
24/09/2015 15:33	8.38	7.02	0.0	17.9	65.6	18.9	2.2	9.19	6.1	20.0	115.0	2.44
24/09/2015 15:34	7.06	5.64	0.0	7.5	105.0	19.1	2.1	7.19	6.1	9.3	168.0	2.51
24/09/2015 15:35	8.07	6.56	0.0	6.9	82.4	18.2	2.1	7.99	6.6	8.7	167.0	2.57
24/09/2015 15:36	9.19	7.61	0.0	11.9	53.9	18.0	2.1	9.39	6.4	11.1	130.0	2.52

Average	8.25	6.74	0.1	13.2	68.8	18.9	2.6	8.47	6.4	15.4	196.0	2.52
Min	7.06	5.64	0.0	6.9	50.3	17.4	2.1	7.19	4.6	8.7	115.0	2.4
Max	9.29	7.72	0.8	25.5	105.0	20.7	2.9	9.69	6.9	25.7	291.0	2.64

Date/Time	Boiler No. 1 BH Outlet							Boiler No. 1 Scrubber Inlet				
	U1 1-min Calcs - O2s-dry	U1 1-min Calcs - O2s-wet	U1 1-min Calcs - SO2s	U1 1-min Calcs - COs-lh	U1 1-min Calcs - NOxs	U1 1-min Calcs - NH3s	U1 1-min Calcs - HCLs	U1 1-min Calcs - O2e-dry	U1 1-min Calcs - THCe	U1 1-min Calcs - COe-lh	U1 1-min Calcs - SO2e	U1 1-min Calcs - CarbInj
24/09/2015 16:07	7.57	6.21	0.0	57.4	64.0	21.3	1.7	7.99	6.5	75.3	79.0	2.34
24/09/2015 16:08	7.87	6.15	0.0	48.0	66.6	20.2	1.7	8.29	7.1	52.3	82.0	2.43
24/09/2015 16:09	7.97	6.26	0.0	21.2	86.6	19.5	1.7	8.19	6.9	23.9	80.0	2.47
24/09/2015 16:10	7.67	6.14	0.0	29.1	89.9	19.4	1.8	8.19	6.8	27.0	90.0	2.5
24/09/2015 16:11	7.47	6.11	0.0	37.6	80.7	19.6	1.9	7.59	6.9	46.5	102.0	2.51
24/09/2015 16:12	8.18	6.51	0.0	28.8	65.3	19.9	1.9	8.59	6.8	32.4	94.0	2.47
24/09/2015 16:13	7.57	6.06	0.0	18.2	86.1	20.1	2.0	7.59	6.5	20.9	89.0	2.5
24/09/2015 16:14	7.27	5.63	0.0	33.3	77.0	20.5	2.0	7.19	6.8	35.2	97.0	2.36
24/09/2015 16:15	7.27	5.90	0.0	19.0	82.6	20.0	2.0	7.29	6.7	22.4	88.0	2.36
24/09/2015 16:16	7.67	6.31	0.0	20.0	66.2	19.3	2.0	7.79	7.1	27.8	98.0	2.48
24/09/2015 16:17	7.06	5.92	0.0	36.7	72.8	19.2	2.0	7.39	6.8	41.7	115.0	2.44
24/09/2015 16:18	8.07	6.65	0.0	19.8	61.0	18.7	2.0	8.19	7.0	22.0	100.0	2.54
24/09/2015 16:19	9.08	7.58	0.0	22.8	59.4	17.4	2.0	9.09	6.9	22.9	76.0	2.47
24/09/2015 16:20	7.37	7.25	0.0	26.3	52.3	18.1	2.0	10.39	6.8	29.8	66.0	2.41
24/09/2015 16:21	8.28	6.58	0.0	56.8	59.5	18.7	2.0	8.19	7.0	90.3	87.0	2.48
24/09/2015 16:22	5.04	4.53	0.0	500.0	64.4	20.5	2.0	4.99	9.3		108.0	2.44
24/09/2015 16:23	7.27	6.18	0.0	76.6	88.9	17.6	2.0	7.49	6.9	66.5	86.0	2.47
24/09/2015 16:24	7.67	6.40	0.0	25.9	91.2	17.8	2.1	7.69	6.7	37.0	93.0	2.51
24/09/2015 16:25	7.67	6.25	0.0	16.1	90.1	17.8	2.1	7.89	6.5	19.4	93.0	2.55
24/09/2015 16:26	7.06	5.87	0.0	45.7	88.7	18.2	2.1	7.29	6.6	52.3	107.0	2.58
24/09/2015 16:27	8.07	6.50	0.0	22.1	72.4	18.0	2.2	7.99	6.9	33.5	77.0	2.57
24/09/2015 16:28	7.97	6.46	0.0	14.0	81.9	17.5	2.2	8.09	6.9	20.0	83.0	2.57
24/09/2015 16:29	7.97	6.59	0.0	8.7	94.3	17.1	2.2	8.09	6.7	11.7	73.0	2.53
24/09/2015 16:30	7.97	6.52	0.0	15.5	87.8	17.9	2.2	8.19	7.1	15.2	61.0	2.44
24/09/2015 16:31	7.97	6.58	0.0	17.1	60.7	18.4	2.2	8.19	6.5	21.5	54.0	2.38
24/09/2015 16:32	8.07	6.28	0.0	29.2	63.1	18.0	2.2	8.29	6.7	39.4	54.0	2.49
24/09/2015 16:33	5.95	4.92	0.0	13.3	126.5	18.5	2.2	6.39	6.4	10.0	83.0	2.5
24/09/2015 16:34	6.36	5.35	0.0	15.0	120.8	17.9	2.2	6.49	6.7	15.8	78.0	2.34
24/09/2015 16:35	7.87	6.30	0.0	13.2	86.4	18.3	2.2	7.79	6.5	14.9	61.0	2.34
24/09/2015 16:36	7.77	6.65	0.0	19.5	69.6	18.3	2.2	8.59	6.8	18.0	48.0	2.37
24/09/2015 16:37	8.68	7.15	0.0	10.1	68.2	17.7	2.3	8.59	6.4	11.9	53.0	2.5

Average	7.60	6.25	0.0	42.5	78.2	18.8	2.0	7.87	6.8	31.9	82.4	2.46
Min	5.04	4.53	0.0	8.7	52.3	17.1	1.7	4.99	6.4	10.0	48.0	2.34
Max	9.08	7.58	0.0	500.0	126.5	21.3	2.3	10.39	9.3	90.3	115.0	2.58

Date/Time	Boiler No. 1 BH Outlet U1 1-min Calcs - O2s-dry	U1 1-min Calcs - O2s-wet	U1 1-min Calcs - SO2s	U1 1-min Calcs - COs-lh	U1 1-min Calcs - NOxs	U1 1-min Calcs - NH3s	U1 1-min Calcs - HCLs	Boiler No. 1 Scrubber Inlet U1 1-min Calcs - O2e-dry	U1 1-min Calcs - THCe	U1 1-min Calcs - COe-lh	U1 1-min Calcs - SO2e	U1 1-min Calcs - CarbInj
24/09/2015 16:43	7.57	6.16	0.0	34.9	86.8	18.7	2.3	7.59	7.5	42.7	67.0	2.51
24/09/2015 16:44	7.87	6.35	0.0	15.8	83.6	18.5	2.2	7.79	7.1	12.6	59.0	2.53
24/09/2015 16:45	7.97	6.81	0.0	11.9	93.8	18.1	2.2	8.29	6.9	17.9	54.0	2.4
24/09/2015 16:46	8.28	7.03	0.0	40.1	72.4	17.5	2.2	8.29	7.1	49.4	60.0	2.4
24/09/2015 16:47	8.18	6.92	0.0	57.0	73.7	17.6	2.2	8.79	6.9	67.8	57.0	2.43
24/09/2015 16:48	8.68	6.99	0.0	64.7	67.7	17.5	2.2	8.89	7.1	95.6	56.0	2.44
24/09/2015 16:49	8.28	6.89	0.0	26.3	85.8	16.9	2.2	7.99	7.2	28.9	61.0	2.45
24/09/2015 16:50	8.68	7.24	0.0	17.0	78.6	17.0	2.2	9.09	7.2	17.3	55.0	2.56
24/09/2015 16:51	8.68	7.37	0.0	17.5	71.5	17.7	2.3	9.29	7.5	17.9	50.0	2.56
24/09/2015 16:52	8.68	7.11	0.0	12.7	71.9	17.6	2.3	8.49	7.6	16.3	54.0	2.41
24/09/2015 16:53	8.68	7.08	0.0	8.5	90.1	18.3	2.3	8.59	7.8	11.5	52.0	2.4
24/09/2015 16:54	5.25	4.30	0.0	8.1	126.3	20.5	2.3	5.49	7.7	14.1	75.0	2.48
24/09/2015 16:55	5.85	4.82	0.0	4.2	146.5	19.1	2.3	5.89	8.0	5.8	78.0	2.51
24/09/2015 16:56	7.97	6.35	0.0	5.2	101.8	18.6	2.3	8.19	8.0	6.8	57.0	2.49
24/09/2015 16:57	8.38	6.80	0.0	6.9	101.7	17.7	2.3	8.49	8.1	7.8	56.0	2.49
24/09/2015 16:58	8.78	7.27	0.0	17.1	80.5	18.2	2.4	9.19	8.3	21.1	54.0	2.57
24/09/2015 16:59	8.58	7.06	0.0	25.8	47.3	19.9	2.3	8.69	8.5	25.5	62.0	2.6
24/09/2015 17:00	8.48	6.78	0.0	20.9	59.4	19.4	2.3	8.69	8.4	23.4	62.0	2.48
24/09/2015 17:01	8.48	6.70	0.0	10.3	72.5	19.7	2.3	8.59	8.0	13.8	63.0	2.45
24/09/2015 17:02	8.28	6.43	0.0	7.4	82.2	20.1	2.3	8.49	7.7	9.9	66.0	2.44
24/09/2015 17:03	6.46	5.30	0.0	7.8	103.0	20.3	2.3	6.99	7.7	10.5	82.0	2.35
24/09/2015 17:04	7.27	5.80	0.0	7.4	109.7	19.5	2.3	7.49	7.4	7.2	77.0	2.43
24/09/2015 17:05	8.18	6.30	0.0	15.4	77.3	19.9	2.3	7.89	7.2	15.9	83.0	2.52
24/09/2015 17:06	6.86	5.63	0.0	8.7	91.9	20.0	2.3	7.69	7.1	12.6	89.0	2.5
24/09/2015 17:07	6.46	5.20	0.0	11.3	127.5	19.0	2.3	6.59	7.2	13.9	104.0	2.52
24/09/2015 17:08	7.87	6.34	0.0	9.0	107.8	18.4	2.3	7.89	7.3	11.0	99.0	2.51
24/09/2015 17:09	8.48	6.63	0.0	12.2	82.3	18.7	2.3	8.69	7.7	13.7	94.0	2.52
24/09/2015 17:10	7.47	6.13	0.0	9.8	96.1	19.1	2.3	7.69	7.7	11.7	97.0	2.51
24/09/2015 17:11	7.77	6.48	0.0	36.4	66.3	19.0	2.3	8.39	8.0	49.6	92.0	2.4
24/09/2015 17:12	7.87	6.51	0.0	40.4	50.5	19.3	2.3	8.19	7.7	42.1	96.0	2.42
24/09/2015 17:13	8.28	6.78	0.0	28.4	48.3	18.7	2.3	8.49	7.5	36.2	91.0	2.55
Average	7.89	6.44	0.0	19.3	85.6	18.7	2.3	8.09	7.6	23.6	71.0	2.48
Min	5.25	4.30	0.0	4.2	47.3	16.9	2.2	5.49	6.9	5.8	50.0	2.35
Max	8.78	7.37	0.0	64.7	146.5	20.5	2.4	9.29	8.5	95.6	104.0	2.6

	Boiler No. 1 BH Outlet							Boiler No. 1 Scrubber Inlet				
Date/Time	U1 1-min Calcs - O2s-dry	U1 1-min Calcs - O2s-wet	U1 1-min Calcs - SO2s	U1 1-min Calcs - COs-lh	U1 1-min Calcs - NOxs	U1 1-min Calcs - NH3s	U1 1-min Calcs - HCLs	U1 1-min Calcs - O2e-dry	U1 1-min Calcs - THCe	U1 1-min Calcs - COe-lh	U1 1-min Calcs - SO2e	U1 1-min Calcs - CarbInj
24/09/2015 17:20	8.58	7.02	0.0	24.1	46.1	18.3	2.3	8.59	7.4	22.6	82.0	2.41
24/09/2015 17:21	8.18	6.86	0.0	18.2	55.9	17.8	2.3	8.29	8.1	17.5	84.0	2.49
24/09/2015 17:22	8.88	7.39	0.0	33.0	36.8	18.2	2.3	8.89	7.8	33.9	79.0	2.52
24/09/2015 17:23	8.58	7.18	0.0	49.6	32.1	18.9	2.3	8.59	8.2	72.3	84.0	2.42
24/09/2015 17:24	8.58	7.27	0.0	118.1	30.1	18.6	2.2	8.79	8.2	103.8	79.0	2.51
24/09/2015 17:25	8.58	7.32	0.0	54.6	40.5	17.9	2.2	9.09	8.0	81.4	75.0	2.55
24/09/2015 17:26	8.28	6.84	0.0	11.6	78.5	17.4	2.2	8.39	7.9	11.6	90.0	2.63
24/09/2015 17:27	8.48	6.91	0.0	14.6	59.9	17.5	2.1	8.69	8.3	19.6	68.0	2.58
24/09/2015 17:28	8.18	6.85	0.0	158.6	49.0	17.8	2.1	8.29	8.8	203.4	69.0	2.43
24/09/2015 17:29	8.88	7.57	0.0	153.5	40.2	17.1	2.1	9.09	9.1	152.3	67.0	2.36
24/09/2015 17:30	8.68	7.56	0.0	60.9	39.9	16.8	2.0	9.39	8.6	76.4	67.0	2.56
24/09/2015 17:31	7.27	6.46	0.0	28.6	66.9	16.9	2.0	7.39	8.4	27.5	94.0	2.62
24/09/2015 17:32	7.57	6.17	0.0	8.5	92.1	17.0	2.0	7.59	8.2	12.2	82.0	2.51
24/09/2015 17:33	8.18	6.84	0.0	7.7	79.5	17.0	2.0	8.39	8.5	9.2	74.0	2.45
24/09/2015 17:34	7.47	6.47	0.0	11.2	78.8	16.9	2.0	7.99	9.0	11.2	73.0	2.52
24/09/2015 17:35	8.58	7.04	0.0	39.0	63.5	16.6	2.0	8.69	8.7	42.0	67.0	2.54
24/09/2015 17:36	8.28	7.02	0.0	20.8	62.0	16.9	2.0	8.69	8.5	22.8	62.0	2.58
24/09/2015 17:37	8.38	7.03	0.0	16.1	49.4	17.2	2.0	8.69	8.3	20.6	65.0	2.59
24/09/2015 17:38	8.28	6.93	0.0	8.7	75.1	16.7	2.0	8.59	8.2	9.8	62.0	2.46
24/09/2015 17:39	7.06	6.07	0.0	22.3	84.5	17.0	2.0	7.29	8.2	25.7	74.0	2.39
24/09/2015 17:40	7.27	6.36	0.0	23.6	89.5	16.9	2.0	7.49	8.4	26.8	72.0	2.42
24/09/2015 17:41	8.48	7.27	0.0	95.3	38.1	17.2	2.0	8.89	8.7	70.9	66.0	2.43
24/09/2015 17:42	7.77	6.36	0.0	71.2	55.9	16.8	2.0	8.19	8.7	74.2	81.0	2.43
24/09/2015 17:43	8.07	6.82	0.0	35.6	60.4	16.9	2.0	8.09	8.6	41.2	78.0	2.48
24/09/2015 17:44	8.48	7.15	0.0	14.0	64.0	16.8	2.0	8.39	8.3	18.7	68.0	2.48
24/09/2015 17:45	8.58	7.06	0.0	9.1	58.6	17.0	2.0	8.89	7.9	10.6	63.0	2.48
24/09/2015 17:46	7.57	7.06	0.0	8.7	81.3	17.3	2.0	7.69	8.0	12.1	66.0	2.4
24/09/2015 17:47	7.37	6.10	0.0	15.6	86.3	16.9	2.0	7.39	8.3	19.3	64.0	2.48
24/09/2015 17:48	7.67	6.59	0.0	12.8	75.3	16.9	2.1	7.89	8.5	14.4	60.0	2.59
24/09/2015 17:49	8.38	6.91	0.0	24.8	50.1	17.3	2.1	8.49	8.5	28.0	56.0	2.54
24/09/2015 17:50	5.55	4.94	0.0	53.6	91.4	18.2	2.0	6.89	7.7	59.5	72.0	2.59

Average	8.07	6.82	0.0	39.5	61.7	17.3	2.1	8.31	8.3	43.6	72.4	2.50
Min	5.55	4.94	0.0	7.7	30.1	16.6	2.0	6.89	7.4	9.2	56.0	2.36
Max	8.88	7.57	0.0	158.6	92.1	18.9	2.3	9.39	9.1	203.4	94.0	2.63

	Boiler No. 1 BH Outlet							Boiler No. 1 Scrubber Inlet				
Date/Time	U1 1-min Calcs - O2s-dry	U1 1-min Calcs - O2s-wet	U1 1-min Calcs - SO2s	U1 1-min Calcs - COs-lh	U1 1-min Calcs - NOxs	U1 1-min Calcs - NH3s	U1 1-min Calcs - HCLs	U1 1-min Calcs - O2e-dry	U1 1-min Calcs - THCe	U1 1-min Calcs - COe-lh	U1 1-min Calcs - SO2e	U1 1-min Calcs - CarbInj
24/09/2015 17:58	8.58	7.13	0.0	11.1	65.9	17.5	2.1	8.89	7.9	12.1	55.0	2.38
24/09/2015 17:59	8.18	6.41	0.0	12.3	63.8	19.7	2.1	8.19	7.9	15.1	58.0	2.41
24/09/2015 18:00	7.37	5.98	0.0	10.3	73.2	19.7	2.1	7.59	8.7	12.2	58.0	2.48
24/09/2015 18:01	7.27	5.99	0.0	10.1	64.4	20.1	2.1	7.99	8.5	11.5	55.0	2.48
24/09/2015 18:02	7.37	5.89	0.0	11.5	60.3	20.3	2.0	7.69	8.9	12.6	54.0	2.48
24/09/2015 18:03	7.67	6.13	0.0	17.3	55.5	20.0	2.0	7.69	8.4	17.3	65.0	2.44
24/09/2015 18:04	8.07	6.49	0.0	13.7	60.7	20.1	2.0	8.19	8.4	16.0	59.0	2.39
24/09/2015 18:05	8.07	6.65	0.0	10.7	66.0	20.2	2.0	8.39	8.0	12.5	55.0	2.45
24/09/2015 18:06	7.57	6.13	0.0	13.1	72.0	19.4	2.0	7.69	8.7	13.8	56.0	2.39
24/09/2015 18:07	7.47	6.00	0.0	8.1	75.7	19.2	2.0	7.69	8.5	10.0	55.0	2.39
24/09/2015 18:08	7.37	5.92	0.0	10.2	75.2	19.4	2.0	7.59	8.8	12.7	55.0	2.45
24/09/2015 18:09	7.77	6.33	0.0	9.7	76.2	19.7	2.0	7.99	8.6	11.6	51.0	2.4
24/09/2015 18:10	7.77	6.22	0.0	11.1	71.4	20.2	2.0	8.19	8.6	14.4	59.0	2.49
24/09/2015 18:11	7.47	6.08	0.0	9.7	68.1	20.9	2.0	7.79	8.0	11.7	59.0	2.52
24/09/2015 18:12	7.47	5.97	0.0	13.6	66.0	21.3	2.0	7.89	6.1	17.3	64.0	2.46
24/09/2015 18:13	6.76	5.50	0.0	11.5	81.2	21.0	2.1	7.09	0.0	13.6	70.0	2.5
24/09/2015 18:14	7.27	5.73	0.0	10.3	80.4	20.5	2.1	7.39	5.6	11.4	66.0	2.45
24/09/2015 18:15	7.37	5.85	0.0	11.9	79.1	20.4	2.1	7.49	7.5	14.4	79.0	2.41
24/09/2015 18:16	7.37	5.98	0.0	9.7	78.2	20.6	2.1	7.79	8.2	11.5	79.0	2.44
24/09/2015 18:17	6.86	5.51	0.0	10.3	85.3	20.3	2.1	7.59	7.8	10.3	92.0	2.48
24/09/2015 18:18	6.86	5.40	0.0	9.4	104.0	19.5	2.1	6.99	8.2	11.9	116.0	2.49
24/09/2015 18:19	7.27	5.85	0.0	12.3	82.5	19.9	2.1	7.49	8.3	13.7	112.0	2.41
24/09/2015 18:20	7.97	6.23	0.0	11.8	71.6	19.7	2.1	7.39	8.4	14.3	104.0	2.38
24/09/2015 18:21	7.77	6.25	0.0	11.1	73.8	19.7	2.2	7.89	8.6	12.7	100.0	2.5
24/09/2015 18:22	7.37	6.05	0.0	16.3	75.2	19.6	2.2	7.79	9.1	19.3	105.0	2.5
24/09/2015 18:23	6.76	5.68	0.0	13.4	88.4	19.5	2.2	7.09	8.7	16.7	111.0	2.5
24/09/2015 18:24	7.97	6.42	0.0	9.3	65.2	19.7	2.2	8.29	8.5	10.6	88.0	2.54
24/09/2015 18:25	7.77	6.46	0.0	10.4	69.9	19.9	2.2	8.09	8.3	12.3	75.0	2.5
24/09/2015 18:26	7.37	6.16	0.0	10.6	74.8	20.2	2.3	7.79	8.4	12.0	81.0	2.47
24/09/2015 18:27	7.47	6.15	0.0	10.9	73.8	20.2	2.3	8.09	8.1	12.0	73.0	2.46
24/09/2015 18:28	6.26	5.35	0.0	9.6	91.4	20.4	2.3	7.19	8.2	11.6	81.0	2.4

Average	7.48	6.06	0.0	11.3	73.8	20.0	2.1	7.77	7.9	13.2	73.9	2.45
Min	6.26	5.35	0.0	8.1	55.5	17.5	2.0	6.99	0.0	10.0	51.0	2.38
Max	8.58	7.13	0.0	17.3	104.0	21.3	2.3	8.89	9.1	19.3	116.0	2.54

	Boiler No. 1 BH Outlet							Boiler No. 1 Scrubber Inlet				
Date/Time	U1 1-min Calcs - O2s-dry	U1 1-min Calcs - O2s-wet	U1 1-min Calcs - SO2s	U1 1-min Calcs - COs-lh	U1 1-min Calcs - NOxs	U1 1-min Calcs - NH3s	U1 1-min Calcs - HCLs	U1 1-min Calcs - O2e-dry	U1 1-min Calcs - THCe	U1 1-min Calcs - COe-lh	U1 1-min Calcs - SO2e	U1 1-min Calcs - CarbInj
24/09/2015 18:35	7.27	5.69	0.0	10.8	90.5	19.1	2.4	6.69	8.2	10.1	87.0	2.47
24/09/2015 18:36	7.27	5.97	0.0	12.7	81.3	19.0	2.4	7.39	8.6	15.8	84.0	2.49
24/09/2015 18:37	7.57	6.17	0.0	22.1	86.4	19.0	2.4	7.79	8.7	17.0	80.0	2.47
24/09/2015 18:38	7.57	6.17	0.0	19.8	73.0	19.2	2.5	7.89	8.6	24.0	89.0	2.47
24/09/2015 18:39	7.67	6.25	0.0	12.9	63.3	19.5	2.6	8.09	8.1	16.8	79.0	2.53
24/09/2015 18:40	7.57	6.08	0.0	9.4	69.8	19.6	2.6	7.79	7.9	11.0	73.0	2.48
24/09/2015 18:41	7.06	5.77	0.0	8.6	83.9	19.6	2.7	7.29	7.8	10.4	74.0	2.46
24/09/2015 18:42	7.37	5.95	0.0	7.2	78.6	19.5	2.7	7.79	7.9	8.8	64.0	2.53
24/09/2015 18:43	7.67	6.04	0.0	10.8	90.8	19.2	2.7	7.89	8.3	12.4	63.0	2.53
24/09/2015 18:44	6.96	5.65	0.0	10.7	74.1	20.0	2.7	7.29	8.7	13.0	74.0	2.47
24/09/2015 18:45	6.46	5.45	0.0	36.6	84.1	19.5	2.8	7.29	8.6	12.7	69.0	2.45
24/09/2015 18:46	6.56	5.45	0.0	43.7	89.2	19.0	2.8	7.09	8.8	24.8	73.0	2.48
24/09/2015 18:47	7.06	5.76	0.0	12.3	85.9	18.5	2.8	7.29	8.8	14.3	71.0	2.45
24/09/2015 18:48	7.17	5.94	0.0	8.6	81.5	18.3	2.8	7.29	8.4	10.3	72.0	2.39
24/09/2015 18:49	7.97	6.44	0.0	18.8	61.2	18.1	2.8	7.99	8.3	16.8	69.0	2.46
24/09/2015 18:50	7.97	6.46	0.0	26.8	72.7	17.9	2.8	8.09	8.1	26.5	73.0	2.42
24/09/2015 18:51	7.77	6.48	0.0	23.1	72.5	18.0	2.8	8.09	8.4	27.4	72.0	2.46
24/09/2015 18:52	7.77	6.56	0.0	25.7	64.5	18.1	2.8	7.99	8.5	23.2	72.0	2.42
24/09/2015 18:53	7.57	6.38	0.0	26.0	61.6	18.5	2.8	7.89	8.4	27.4	78.0	2.49
24/09/2015 18:54	7.67	6.42	0.0	34.5	50.9	18.7	2.9	7.99	8.1	36.0	74.0	2.5
24/09/2015 18:55	7.37	6.10	0.0	28.6	51.8	18.3	2.9	7.79	8.0	30.7	77.0	2.48
24/09/2015 18:56	7.27	6.07	0.0	16.2	77.3	17.9	2.8	7.59	8.1	26.4	77.0	2.52
24/09/2015 18:57	8.58	6.88	0.0	12.3	51.3	17.9	2.8	8.69	8.1	13.5	69.0	2.54
24/09/2015 18:58	7.77	6.38	0.0	13.2	68.4	17.8	2.8	8.39	7.9	15.4	71.0	2.26
24/09/2015 18:59	7.17	5.91	0.0	9.9	68.8	18.1	2.8	7.59	8.4	11.7	74.0	5.31
24/09/2015 19:00	7.37	6.00	0.0	7.0	84.9	17.9	2.8	7.59	8.3	8.3	70.0	6.49
24/09/2015 19:01	7.06	5.90	0.0	13.2	64.3	18.9	2.8	7.69	8.5	13.2	74.0	0.91
24/09/2015 19:02	7.27	5.99	0.0	18.6	49.1	19.0	2.8	7.69	8.5	25.9	76.0	1.79
24/09/2015 19:03	7.87	6.36	0.0	24.7	55.2	18.2	2.8	7.89	8.3	27.0	73.0	2.42
24/09/2015 19:04	8.38	6.92	0.0	20.8	39.5	18.1	2.8	8.69	8.0	23.9	69.0	2.4
24/09/2015 19:05	9.19	7.57	0.0	28.4	41.5	17.4	2.8	8.99	7.9	24.2	69.0	2.47

Average	7.52	6.17	0.0	18.5	69.9	18.6	2.7	7.79	8.3	18.7	73.8	2.61
Min	6.46	5.45	0.0	7.0	39.5	17.4	2.4	6.69	7.8	8.3	63.0	0.91
Max	9.19	7.57	0.0	43.7	90.8	20.0	2.9	8.99	8.8	36.0	89.0	6.49

Date/Time	Boiler No. 1 BH Outlet U1 1-min Calcs - O2s-dry	U1 1-min Calcs - O2s-wet	U1 1-min Calcs - SO2s	U1 1-min Calcs - COs-lh	U1 1-min Calcs - NOxs	U1 1-min Calcs - NH3s	U1 1-min Calcs - HCLs	Boiler No. 1 Scrubber Inlet U1 1-min Calcs - O2e-dry	U1 1-min Calcs - THCe	U1 1-min Calcs - COe-lh	U1 1-min Calcs - SO2e	U1 1-min Calcs - CarbInj
24/09/2015 19:11	7.27	6.18	0.0	11.2	92.4	19.0	2.7	8.09	7.6	11.1	69.0	2.42
24/09/2015 19:12	7.57	6.07	0.0	10.1	68.0	19.3	2.6	7.89	7.3	12.2	66.0	2.58
24/09/2015 19:13	7.67	6.33	0.0	14.1	70.6	18.6	2.6	7.99	8.1	13.4	70.0	2.43
24/09/2015 19:14	7.77	6.36	0.0	9.0	84.0	18.3	2.6	8.09	7.9	9.9	66.0	2.48
24/09/2015 19:15	7.77	6.36	0.0	8.6	90.9	17.9	2.6	7.79	8.2	9.9	69.0	2.38
24/09/2015 19:16	7.87	6.46	0.0	29.9	66.9	18.5	2.6	8.09	8.0	25.0	70.0	2.52
24/09/2015 19:17	7.77	6.54	0.0	28.5	58.0	18.7	2.6	8.29	8.2	28.6	72.0	2.4
24/09/2015 19:18	8.07	6.79	0.0	20.1	64.3	18.7	2.6	8.59	7.8	20.9	73.0	2.44
24/09/2015 19:19	8.48	7.02	0.0	14.3	56.3	18.3	2.6	8.79	7.6	16.5	69.0	2.52
24/09/2015 19:20	8.78	7.11	0.0	17.9	71.9	17.9	2.6	8.69	7.4	20.2	73.0	2.42
24/09/2015 19:21	8.28	6.91	0.0	11.8	91.5	17.5	2.6	8.59	7.9	13.2	76.0	2.47
24/09/2015 19:22	8.48	6.99	0.0	9.2	81.7	18.6	2.5	8.89	7.5	11.0	68.0	2.44
24/09/2015 19:23	7.47	6.26	0.0	7.6	86.3	19.5	2.5	8.19	7.5	9.3	70.0	2.43
24/09/2015 19:24	6.76	5.68	0.0	6.7	87.9	19.6	2.5	7.49	7.4	8.0	69.0	2.53
24/09/2015 19:25	6.76	5.38	0.0	5.4	99.8	19.0	2.5	6.99	7.6	6.8	71.0	2.5
24/09/2015 19:26	7.17	5.73	0.0	14.0	89.1	18.9	2.5	7.29	7.6	13.4	78.0	2.45
24/09/2015 19:27	7.06	5.72	0.0	9.1	91.3	18.8	2.5	7.29	8.2	9.8	75.0	2.65
24/09/2015 19:28	7.67	6.17	0.0	7.6	72.7	18.9	2.6	7.79	8.2	8.3	76.0	2.41
24/09/2015 19:29	7.57	6.24	0.0	33.5	61.3	19.2	2.6	7.89	8.3	24.2	81.0	2.51
24/09/2015 19:30	7.47	6.16	0.0	19.7	67.2	19.1	2.6	7.79	7.8	26.7	77.0	2.43
24/09/2015 19:31	7.47	6.18	0.0	14.8	68.5	18.9	2.6	7.79	7.5	15.9	78.0	2.39
24/09/2015 19:32	7.77	6.36	0.0	9.3	62.6	19.1	2.6	8.29	7.2	10.8	69.0	2.52
24/09/2015 19:33	7.47	6.12	0.0	6.8	73.8	19.1	2.6	7.79	7.2	7.8	66.0	2.51
24/09/2015 19:34	7.57	6.14	0.0	10.6	71.9	19.1	2.6	7.89	7.5	10.5	73.0	2.44
24/09/2015 19:35	8.18	6.53	0.0	7.5	67.0	18.9	2.6	8.49	7.1	8.5	71.0	2.36
24/09/2015 19:36	7.47	6.18	0.0	8.9	79.2	18.9	2.6	7.79	7.7	10.3	78.0	2.48
24/09/2015 19:37	8.07	6.69	0.0	17.2	57.3	18.7	2.6	8.39	7.9	19.3	81.0	2.41
24/09/2015 19:38	8.18	6.55	0.0	16.3	59.2	18.4	2.6	8.29	7.9	14.0	95.0	2.52
24/09/2015 19:39	7.97	6.54	0.0	9.6	68.9	18.3	2.5	8.29	7.7	11.5	100.0	2.5
24/09/2015 19:40	7.67	6.25	0.0	15.1	71.0	18.2	2.6	7.99	7.7	16.5	102.0	2.42
24/09/2015 19:41	7.87	6.45	0.0	15.0	80.2	17.6	2.6	8.19	8.0	14.9	102.0	2.48
Average	7.72	6.34	0.0	13.5	74.6	18.7	2.6	8.05	7.7	14.1	75.9	2.47
Min	6.76	5.38	0.0	5.4	56.3	17.5	2.5	6.99	7.1	6.8	66.0	2.36
Max	8.78	7.11	0.0	33.5	99.8	19.6	2.7	8.89	8.3	28.6	102.0	2.65

Covanta - Durham York Energy Centre
Boiler No. 1 Scrubber Inlet
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Test No. 1		Test No. 2		Test No. 3		Test No. 4	
Time	U1 1-min Calcs - THCe ppm	Time	U1 1-min Calcs - THCe ppm	Time	U1 1-min Calcs - THCe ppm	Time	U1 1-min Calcs - THCe ppm
07:57	3.1	08:28	3.7	08:59	3.4	09:30	3.4
07:58	2.8	08:29	4.1	09:00		09:31	4.2
07:59	3.0	08:30	3.9	09:01		09:32	4.0
08:00	2.9	08:31	3.7	09:02		09:33	3.7
08:01	3.2	08:32	3.6	09:03		09:34	3.6
08:02	3.1	08:33	3.4	09:04	3.2	09:35	3.8
08:03	3.1	08:34	4.1	09:05	3.0	09:36	3.4
08:04	3.2	08:35	3.7	09:06	3.1	09:37	3.3
08:05	3.4	08:36	3.7	09:07	2.9	09:38	3.1
08:06	3.2	08:37	3.7	09:08		09:39	3.3
08:07	3.5	08:38	3.6	09:09		09:40	3.9
08:08	3.2	08:39	3.9	09:10	2.9	09:41	4.0
08:09	3.3	08:40	3.8	09:11	2.7	09:42	3.9
08:10	3.2	08:41	3.7	09:12		09:43	3.7
08:11	3.3	08:42	3.8	09:13		09:44	3.5
08:12	3.2	08:43	3.6	09:14	2.8	09:45	3.6
08:13	3.3	08:44	3.8	09:15	3.3	09:46	3.7
08:14	3.3	08:45	3.8	09:16	3.6	09:47	3.9
08:15	3.6	08:46	3.9	09:17	3.4	09:48	3.5
08:16	3.3	08:47	3.5	09:18	3.5	09:49	3.5
08:17	3.6	08:48	3.6	09:19	3.5	09:50	3.6
08:18	3.7	08:49	3.6	09:20	3.5	09:51	3.6
08:19	3.9	08:50	3.8	09:21	3.5	09:52	3.5
08:20	4.2	08:51	3.8	09:22	3.5	09:53	3.7
08:21	3.7	08:52	3.8	09:23	3.4	09:54	3.7
08:22	3.6	08:53	3.7	09:24	3.4	09:55	3.8
08:23	4.0	08:54	3.8	09:25	3.4	09:56	3.7
08:24	3.8	08:55	3.7	09:26	3.5	09:57	3.8
08:25	4.1	08:56	3.7	09:27	3.5	09:58	3.3
08:26	3.8	08:57	3.5	09:28	3.6	09:59	3.6
08:27	3.8	08:58	3.6	09:29	3.3	10:00	3.9
Min	2.8	Min	3.4	Min	2.7	Min	3.1
Max	4.2	Max	4.1	Max	3.6	Max	4.2
Avg	3.4	Avg	3.7	Avg	3.3	Avg	3.7

Note: CEM went into blow back during Test No. 3.

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Test No. 5

Time	U1 1-min Calcs - THCe ppm
10:10	4.0
10:11	4.0
10:12	3.9
10:13	4.1
10:14	4.6
10:15	4.5
10:16	4.1
10:17	4.2
10:18	4.0
10:19	4.1
10:20	4.0
10:21	3.8
10:22	3.7
10:23	3.8
10:24	4.0
10:25	4.0
10:26	4.6
10:27	4.4
10:28	4.2
10:29	4.1
10:30	4.0
10:31	3.6
10:32	3.8
10:33	3.9
10:34	3.9
10:35	3.7
10:36	3.8
10:37	3.6
10:38	3.8
10:39	3.6
10:40	4.4
Min	3.6
Max	4.6
Avg	4.0

Test No. 6

Time	U1 1-min Calcs - THCe ppm
10:41	4.3
10:42	4.4
10:43	4.7
10:44	4.5
10:45	4.0
10:46	3.9
10:47	3.7
10:48	3.7
10:49	3.8
10:50	3.8
10:51	3.7
10:52	4.0
10:53	3.8
10:54	4.1
10:55	3.9
10:56	4.3
10:57	4.7
10:58	4.8
10:59	4.3
11:00	4.5
11:01	4.2
11:02	4.1
11:03	4.0
11:04	4.2
11:05	4.1
11:06	4.3
11:07	4.3
11:08	4.3
11:09	4.1
11:10	4.1
11:11	4.2
Min	3.7
Max	4.8
Avg	4.2

Test No. 7

Time	U1 1-min Calcs - THCe ppm
12:22	4.0
12:23	3.9
12:24	3.9
12:25	3.8
12:26	3.9
12:27	3.7
12:28	4.0
12:29	4.1
12:30	4.4
12:31	4.0
12:32	4.0
12:33	3.9
12:34	4.2
12:35	3.9
12:36	4.0
12:37	3.9
12:38	3.9
12:39	3.8
12:40	4.2
12:41	4.1
12:42	4.2
12:43	4.2
12:44	4.1
12:45	3.9
12:46	4.5
12:47	4.2
12:48	4.3
12:49	4.2
12:50	4.1
12:51	4.0
12:52	4.2
Min	3.7
Max	4.5
Avg	4.0

Test No. 8

Time	U1 1-min Calcs - THCe ppm
12:53	4.7
12:54	4.3
12:55	4.0
12:56	4.1
12:57	4.0
12:58	4.5
12:59	4.5
13:00	4.5
13:01	4.4
13:02	4.1
13:03	4.4
13:04	4.5
13:05	4.4
13:06	4.3
13:07	4.2
13:08	3.9
13:09	4.4
13:10	4.1
13:11	4.1
13:12	4.1
13:13	4.4
13:14	4.2
13:15	4.2
13:16	4.1
13:17	4.2
13:18	4.1
13:19	4.2
13:20	3.9
13:21	4.2
13:22	4.1
13:23	4.4
Min	3.9
Max	4.7
Avg	4.2

Covanta - Durham York Energy Centre
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Test No. 9 Time	U1 1-min Calcs - THCe ppm	Test No. 10 Time	U1 1-min Calcs - THCe ppm	Test No. 11 Time	U1 1-min Calcs - THCe ppm	Test No. 12 Time	U1 1-min Calcs - THCe ppm
13:24	4.2	13:55	5.0	14:26	5.2	14:57	4.8
13:25	4.4	13:56	5.0	14:27	4.8	14:58	4.8
13:26	4.4	13:57	5.3	14:28	5.0	14:59	4.9
13:27	4.3	13:58	5.5	14:29	4.8	15:00	
13:28	4.5	13:59	5.1	14:30	5.2	15:01	
13:29	4.7	14:00	5.1	14:31	5.1	15:02	
13:30	4.9	14:01	5.0	14:32	5.2	15:03	
13:31	5.1	14:02	5.1	14:33	5.4	15:04	3.9
13:32	4.9	14:03	5.3	14:34	5.6	15:05	4.0
13:33	5.1	14:04	5.3	14:35	5.2	15:06	3.8
13:34	4.9	14:05	5.5	14:36	5.0	15:07	4.0
13:35	5.1	14:06	5.6	14:37	4.8	15:08	3.9
13:36	4.8	14:07	5.4	14:38	5.0	15:09	
13:37	4.9	14:08	5.2	14:39	4.8	15:10	
13:38	4.7	14:09	5.1	14:40	4.8	15:11	5.3
13:39	5.0	14:10	5.1	14:41	4.5	15:12	3.0
13:40	5.1	14:11	5.1	14:42	4.5	15:13	4.8
13:41	5.6	14:12	5.1	14:43	4.6	15:14	4.7
13:42	5.1	14:13	4.8	14:44	4.6	15:15	4.8
13:43	4.9	14:14	5.4	14:45	4.8	15:16	4.7
13:44	4.8	14:15	5.3	14:46	4.9	15:17	5.0
13:45	4.9	14:16	5.5	14:47	4.9	15:18	4.8
13:46	5.1	14:17	5.2	14:48	4.7	15:19	4.9
13:47	4.8	14:18	5.6	14:49	4.6	15:20	4.7
13:48	5.0	14:19	5.5	14:50	4.5	15:21	5.0
13:49	5.4	14:20	5.5	14:51	4.5	15:22	4.9
13:50	5.5	14:21	5.4	14:52	4.7	15:23	5.0
13:51	5.1	14:22	5.4	14:53	4.5	15:24	4.8
13:52	4.8	14:23	4.9	14:54	4.6	15:25	4.8
13:53	4.9	14:24	5.1	14:55	4.6	15:26	4.7
13:54	4.9	14:25	4.9	14:56	4.7	15:27	4.8
Min	4.2	Min	4.8	Min	4.5	Min	3.0
Max	5.6	Max	5.6	Max	5.6	Max	5.3
Avg	4.9	Avg	5.2	Avg	4.8	Avg	4.6

Note: CEM went into blow back during Test No. 12.

Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
October 5, 2015

Test No. 1		Test No. 2		Test No. 3		Test No. 4	
Time	U1 1-min Calcs - HCL ppm	Time	U1 1-min Calcs - HCL ppm	Time	U1 1-min Calcs - HCL ppm	Time	U1 1-min Calcs - HCL ppm
9:56	1.1	10:28	1.1	11:00	1.0	13:19	1.5
9:57	1.1	10:29	1.1	11:01	1.0	13:20	1.5
9:58	1.1	10:30	1.1	11:02	1.0	13:21	1.5
9:59	1.2	10:31	1.1	11:03	1.0	13:22	1.5
10:00	1.2	10:32	1.2	11:04	1.1	13:23	1.5
10:01	1.1	10:33	1.2	11:05	1.1	13:24	1.5
10:02	1.1	10:34	1.2	11:06	1.1	13:25	1.5
10:03	1.2	10:35	1.2	11:07	1.1	13:26	1.5
10:04	1.2	10:36	1.2	11:08	1.1	13:27	1.5
10:05	1.2	10:37	1.1	11:09	1.1	13:28	1.5
10:06	1.2	10:38	1.1	11:10	1.1	13:29	1.4
10:07	1.2	10:39	1.1	11:11	1.1	13:30	1.4
10:08	1.2	10:40	1.1	11:12	1.1	13:31	1.4
10:09	1.2	10:41	1.1	11:13	1.1	13:32	1.4
10:10	1.2	10:42	1.1	11:14	1.1	13:33	1.4
10:11	1.2	10:43	1.1	11:15	1.1	13:34	1.4
10:12	1.3	10:44	1.1	11:16	1.1	13:35	1.4
10:13	1.3	10:45	1.1	11:17	1.1	13:36	1.4
10:14	1.3	10:46	1.1	11:18	1.1	13:37	1.4
10:15	1.3	10:47	1.1	11:19	1.1	13:38	1.4
10:16	1.3	10:48	1.1	11:20	1.1	13:39	1.4
10:17	1.5	10:49	1.1	11:21	1.1	13:40	1.3
10:18	1.6	10:50	1.1	11:22	1.1	13:41	1.3
10:19	1.6	10:51	1.1	11:23	1.0	13:42	1.3
10:20	1.5	10:52	1.1	11:24	1.0	13:43	1.3
10:21	1.5	10:53	1.1	11:25	1.1	13:44	1.3
10:22	1.5	10:54	1.1	11:26	1.1	13:45	1.3
10:23	1.5	10:55	1.1	11:27	1.1	13:46	1.2
10:24	1.5	10:56	1.1	11:28	1.1	13:47	1.2
10:25	1.5	10:57	1.0	11:29	1.1	13:48	1.2
10:26	1.5	10:58	1.0	11:30	1.0	13:49	1.2
Min	1.1	Min	1.0	Min	1.0	Min	1.2
Max	1.6	Max	1.2	Max	1.1	Max	1.5
Avg	1.3	Avg	1.1	Avg	1.1	Avg	1.4

Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
October 5, 2015

Test No. 5

Time	U1 1-min Calcs - HCL ppm
13:51	1.2
13:52	1.2
13:53	1.2
13:54	1.2
13:55	1.2
13:56	1.2
13:57	1.2
13:58	1.2
13:59	1.2
14:00	1.2
14:01	1.2
14:02	1.2
14:03	1.2
14:04	1.1
14:05	1.1
14:06	1.2
14:07	1.1
14:08	1.1
14:09	1.1
14:10	1.1
14:11	1.1
14:12	1.1
14:13	1.1
14:14	1.1
14:15	1.1
14:16	1.1
14:17	1.1
14:18	1.2
14:19	1.2
14:20	1.2
14:21	1.2
Min	1.1
Max	1.2
Avg	1.2

Test No. 6

Time	U1 1-min Calcs - HCL ppm
14:23	1.2
14:24	1.2
14:25	1.2
14:26	1.2
14:27	1.2
14:28	1.2
14:29	1.2
14:30	1.2
14:31	1.3
14:32	1.2
14:33	1.3
14:34	1.3
14:35	1.2
14:36	1.2
14:37	1.2
14:38	1.2
14:39	1.2
14:40	1.2
14:41	1.2
14:42	1.2
14:43	1.2
14:44	1.2
14:45	1.2
14:46	1.2
14:47	1.2
14:48	1.2
14:49	1.1
14:50	1.1
14:51	1.1
14:52	1.1
14:53	1.1
Min	1.1
Max	1.3
Avg	1.2

Test No. 7

Time	U1 1-min Calcs - HCL ppm
14:55	1.1
14:56	1.1
14:57	1.2
14:58	1.1
14:59	1.2
15:00	1.2
15:01	1.1
15:02	1.1
15:03	1.1
15:04	1.1
15:05	1.1
15:06	1.1
15:07	1.1
15:08	1.2
15:09	1.2
15:10	1.2
15:11	1.1
15:12	1.2
15:13	1.2
15:14	1.1
15:15	1.1
15:16	1.1
15:17	1.1
15:18	1.1
15:19	1.1
15:20	1.1
15:21	1.1
15:22	1.1
15:23	1.1
15:24	1.1
15:25	1.1
Min	1.1
Max	1.2
Avg	1.1

Test No. 8

Time	U1 1-min Calcs - HCL ppm
15:26	1.1
15:27	1.1
15:28	1.1
15:29	1.1
15:30	1.1
15:31	1.1
15:32	1.1
15:33	1.0
15:34	1.0
15:35	1.0
15:36	1.0
15:37	1.0
15:38	1.0
15:39	1.0
15:40	1.0
15:41	1.0
15:42	1.0
15:43	1.0
15:44	1.0
15:45	1.1
15:46	1.1
15:47	1.1
15:48	1.1
15:49	1.1
15:50	1.1
15:51	1.1
15:52	1.1
15:53	1.1
15:54	1.1
15:55	1.1
15:56	1.1
Min	1.0
Max	1.1
Avg	1.1

Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
October 5, 2015

Test No. 9		Test No. 10		Test No. 11		Test No. 12	
Time	U1 1-min Calcs - HCL ppm	Time	U1 1-min Calcs - HCL ppm	Time	U1 1-min Calcs - HCL ppm	Time	U1 1-min Calcs - HCL ppm
15:57	1.1	16:28	1.0	16:59	1.0	17:30	
15:58	1.1	16:29	1.0	17:00	1.1	17:31	
15:59	1.1	16:30	1.0	17:01	1.1	17:32	
16:00	1.1	16:31	1.0	17:02	1.1	17:33	
16:01	1.0	16:32	1.0	17:03	1.0	17:34	
16:02	1.0	16:33	1.0	17:04	0.9	17:35	
16:03	1.0	16:34	1.0	17:05	0.6	17:36	
16:04	1.0	16:35	1.0	17:06	0.6	17:37	
16:05	1.0	16:36	1.1	17:07	1.7	17:38	
16:06	1.0	16:37	1.1	17:08	1.7	17:39	
16:07	1.0	16:38	1.1	17:09	1.4	17:40	
16:08	1.0	16:39	1.0	17:10	1.0	17:41	
16:09	1.0	16:40	1.0	17:11	1.0	17:42	
16:10	0.9	16:41	1.0	17:12	1.0	17:43	
16:11	1.0	16:42	1.0	17:13	0.8	17:44	
16:12	1.0	16:43	1.0	17:14	0.8	17:45	
16:13	1.0	16:44	1.0	17:15	0.8	17:46	
16:14	1.0	16:45	1.0	17:16	0.7	17:47	
16:15	1.0	16:46	1.0	17:17	0.7	17:48	
16:16	1.0	16:47	0.9	17:18	0.8	17:49	
16:17	1.0	16:48	0.9	17:19	0.8	17:50	
16:18	1.0	16:49	1.0	17:20	0.8	17:51	
16:19	1.0	16:50	0.9	17:21	0.8	17:52	
16:20	1.0	16:51	0.9	17:22	0.8	17:53	
16:21	1.0	16:52	0.9	17:23	0.8	17:54	
16:22	1.0	16:53	1.0	17:24	0.8	17:55	
16:23	1.0	16:54	0.9	17:25	0.8	17:56	
16:24	1.0	16:55	1.0	17:26	0.8	17:57	
16:25	1.0	16:56	1.0	17:27	0.8	17:58	
16:26	1.0	16:57	0.9	17:28	0.7	17:59	
16:27	1.0	16:58	0.9	17:29	0.7	18:00	
Min	0.9	Min	0.9	Min	0.6	Min	
Max	1.1	Max	1.1	Max	1.7	Max	
Avg	1.0	Avg	1.0	Avg	0.9	Avg	

Note: CEM went into blow back during Test No. 12.

APPENDIX 20

DYEC CEM and Process Data
for Boiler No. 2
(12 pages)

Date/Time	Boiler No. 2 BH Outlet							Boiler No. 2 Scrubber Inlet				
	U2 1-min Calcs - O2s-dry	U2 1-min Calcs - O2s-wet	U2 1-min Calcs - SO2s	U2 1-min Calcs - COs-lh	U2 1-min Calcs - NOxs	U2 1-min Calcs - NH3s	U2 1-min Calcs - HCLs	U2 1-min Calcs - O2e-dry	U2 1-min Calcs - THCe	U2 1-min Calcs - COe-lh	U2 1-min Calcs - SO2e	U2 1-min Calcs - CarbInj
23/09/2015 10:31	9.79	7.88	0.0	18.0	61.8	19.6	7.8	9.19	4.9	18.3	70.0	2.44
23/09/2015 10:32	9.08	7.29	0.0	23.0	64.8	20.7	7.3	8.99	4.8	22.1	70.0	2.47
23/09/2015 10:33	8.78	7.07	0.0	16.0	64.7	21.1	7.0	8.19	5.2	22.7	73.0	2.52
23/09/2015 10:34	8.98	7.09	0.0	13.0	73.2	20.9	7.0	8.19	5.2	18.1	66.0	2.47
23/09/2015 10:35	8.68	7.02	0.0	13.0	71.8	21.0	6.9	8.19	4.8	14.3	63.0	2.5
23/09/2015 10:36	8.18	6.70	0.0	14.0	72.6	21.2	6.8	8.09	5.0	14.3	66.0	2.43
23/09/2015 10:37	8.78	7.01	0.0	11.0	69.1	21.1	6.7	7.49	4.7	15.5	68.0	2.57
23/09/2015 10:38	8.98	7.20	0.0	18.0	62.2	20.8	6.5	7.99	5.1	16.9	61.0	2.48
23/09/2015 10:39	8.88	7.10	0.0	19.0	64.9	20.7	6.4	8.19	4.8	20.6	58.0	2.43
23/09/2015 10:40	8.58	6.99	0.0	19.0	71.9	20.6	6.3	8.19	5.0	18.7	60.0	2.53
23/09/2015 10:41	8.68	7.02	0.0	19.0	67.1	20.3	6.2	7.99	4.9	22.4	64.0	2.51
23/09/2015 10:42	8.07	6.71	0.0	20.0	69.2	20.4	6.1	7.99	5.0	21.3	70.0	2.52
23/09/2015 10:43	9.49	7.63	0.0	18.0	66.8	19.9	6.0	7.59	4.7	22.1	69.0	2.48
23/09/2015 10:44	9.29	7.33	0.0	19.0	65.4	20.1	5.9	8.79	4.9	21.1	61.0	2.46
23/09/2015 10:45	8.98	7.42	0.0	19.0	62.8	20.0	5.9	8.29	4.8	20.1	68.0	2.56
23/09/2015 10:46	9.19	7.51	0.0	39.0	59.2	20.1	5.8	8.29	5.0	21.1	75.0	2.48
23/09/2015 10:47	9.08	7.51	0.0	36.0	63.0	19.8	5.8	8.69	5.0	43.7	84.0	2.54
23/09/2015 10:48	8.98	6.94	0.0	32.0	69.2	19.9	5.7	8.59	5.4	38.7	86.0	2.44
23/09/2015 10:49	7.06	5.60	0.0	13.0	109.7	21.3	5.8	7.39	4.9	35.0	96.0	2.54
23/09/2015 10:50	8.88	6.90	0.0	13.0	91.4	19.9	5.8	6.19	5.2	14.4	106.0	2.54
23/09/2015 10:51	9.79	7.88	0.0	24.0	63.9	18.8	5.8	7.99	5.1	15.4	97.0	2.5
23/09/2015 10:52	8.98	7.55	0.0	29.0	65.6	19.1	5.8	9.09	5.1	27.2	88.0	2.44
23/09/2015 10:53	9.49	7.84	0.0	43.0	58.4	18.9	5.7	8.39	5.0	30.4	97.0	2.56
23/09/2015 10:54	9.49	7.59	0.0	37.0	67.7	19.3	5.7	8.89	5.0	46.0	94.0	2.51
23/09/2015 10:55	9.29	7.51	0.0	18.0	77.5	19.4	5.7	8.59	5.2	32.2	95.0	2.44
23/09/2015 10:56	9.19	7.50	0.0	17.0	79.0	19.8	5.7	8.79	5.2	23.0	73.0	2.47
23/09/2015 10:57	9.49	7.87	0.0	16.0	75.6	19.3	5.6	8.59	5.0	16.2	69.0	2.51
23/09/2015 10:58	10.20	8.12	0.0	28.0	68.2	19.5	5.6	9.19	4.9	20.7	64.0	2.62
23/09/2015 10:59	9.49	7.70	0.0	22.0	73.4	20.3	5.5	9.09	5.1	26.2	59.0	2.5
23/09/2015 11:00	9.39	7.40	0.0	20.0	68.5	20.7	5.4	8.89	5.1	22.8	62.0	2.41
23/09/2015 11:01	8.58	6.80	0.0	12.0	88.2	20.8	5.4	8.49	5.1	21.1	73.0	2.53

Average	9.03	7.28	0.0	21.2	70.5	20.2	6.1	8.34	5.0	23.3	74.4	2.50
Min	7.06	5.60	0.0	11.0	58.4	18.8	5.4	6.19	4.7	14.3	58.0	2.41
Max	10.20	8.12	0.0	43.0	109.7	21.3	7.8	9.19	5.4	46.0	106.0	2.62

Date/Time	Boiler No. 2 BH Outlet							Boiler No. 2 Scrubber Inlet				
	U2 1-min Calcs - O2s-dry	U2 1-min Calcs - O2s-wet	U2 1-min Calcs - SO2s	U2 1-min Calcs - COs-lh	U2 1-min Calcs - NOxs	U2 1-min Calcs - NH3s	U2 1-min Calcs - HCLs	U2 1-min Calcs - O2e-dry	U2 1-min Calcs - THCe	U2 1-min Calcs - COe-lh	U2 1-min Calcs - SO2e	U2 1-min Calcs - CarbInj
23/09/2015 11:10	8.88	7.20	0.0	13.0	77.3	20.1	5.0	8.79	4.6	23.0	129.0	2.45
23/09/2015 11:11	8.58	6.95	0.0	7.0	93.4	19.8	5.1	7.99	5.3	8.7	138.0	2.5
23/09/2015 11:12	8.98	7.31	0.0	11.0	82.1	19.0	5.1	7.79	4.9	9.0	143.0	2.46
23/09/2015 11:13	9.19	7.72	0.0	17.0	74.9	18.5	5.0	8.19	4.8	13.5	144.0	2.53
23/09/2015 11:14	9.39	7.62	0.0	12.0	76.7	19.0	5.1	8.39	4.9	18.2	160.0	2.51
23/09/2015 11:15	9.39	7.70	0.0	12.0	75.8	18.6	5.1	8.59	5.2	13.8	161.0	2.52
23/09/2015 11:16	9.69	7.56	0.0	20.0	65.5	19.1	5.0	8.59	5.0	14.8	158.0	2.51
23/09/2015 11:17	9.39	7.57	0.0	13.0	60.8	19.0	5.1	8.39	5.1	21.0	172.0	2.47
23/09/2015 11:18	9.29	7.59	0.0	15.0	64.9	19.1	5.1	8.69	4.9	15.3	154.0	2.45
23/09/2015 11:19	8.98	7.49	0.0	16.0	62.5	19.0	5.1	8.49	5.0	17.2	150.0	2.59
23/09/2015 11:20	9.99	8.17	0.0	32.0	49.5	18.6	5.1	8.29	5.7	17.7	152.0	2.44
23/09/2015 11:21	9.19	7.34	0.0	14.0	69.0	19.3	5.1	9.29	5.2	36.6	146.0	2.49
23/09/2015 11:22	8.48	6.99	0.0	14.0	71.0	19.6	5.0	8.29	4.9	16.7	160.0	2.45
23/09/2015 11:23	9.08	7.21	0.0	14.0	64.6	19.2	5.0	7.79	4.9	14.6	164.0	2.53
23/09/2015 11:24	9.08	7.33	0.0	10.0	77.7	19.4	5.0	7.99	5.1	15.0	156.0	2.5
23/09/2015 11:25	8.58	6.99	0.0	11.0	74.6	19.4	5.1	8.49	5.1	10.9	137.0	2.39
23/09/2015 11:26	8.88	7.50	0.0	13.0	70.4	18.6	5.1	7.59	5.4	11.9	151.0	2.48
23/09/2015 11:27	9.59	7.88	0.0	31.0	55.9	18.1	5.1	8.49	5.4	24.0	145.0	2.49
23/09/2015 11:28	10.09	8.05	0.0	36.0	52.4	17.7	5.2	8.89	5.0	33.9	148.0	2.6
23/09/2015 11:29	9.08	7.41	0.0	20.0	67.9	18.8	5.4	8.69	5.1	38.3	142.0	2.53
23/09/2015 11:30	9.69	7.92	0.0	18.0	72.1	18.2	5.5	8.49	5.0	18.1	136.0	2.5
23/09/2015 11:31	9.19	7.60	0.0	15.0	79.7	18.7	5.7	8.89	5.2	21.2	133.0	2.46
23/09/2015 11:32	8.68	7.09	0.0	14.0	89.6	18.9	5.8	8.89	5.1	19.1	128.0	2.49
23/09/2015 11:33	9.19	7.58	0.0	18.0	84.0	18.2	6.0	7.79	5.3	13.7	135.0	2.47
23/09/2015 11:34	9.29	7.65	0.0	25.0	70.4	18.3	6.2	8.59	5.1	24.9	123.0	2.44
23/09/2015 11:35	8.58	7.17	0.0	30.0	68.1	19.1	6.8	8.79	5.0	21.0	116.0	2.56
23/09/2015 11:36	8.88	7.38	0.4	16.0	70.9	18.3	6.9	7.29	5.1	22.1	128.0	2.52
23/09/2015 11:37	9.19	7.60	0.6	22.0	72.3	18.1	7.0	8.49	5.2	19.2	103.0	2.51
23/09/2015 11:38	9.19	7.64	1.4	23.0	64.6	17.8	7.2	8.49	5.1	23.3	102.0	2.48
23/09/2015 11:39	9.08	7.37	0.3	36.0	66.1	17.9	7.4	8.39	5.2	25.0	101.0	2.58
23/09/2015 11:40	6.46	5.24	6.7	10.0	113.2	20.3	7.7	7.59	5.3	31.8	118.0	2.5

Average	9.07	7.41	0.3	18.0	72.2	18.8	5.6	8.37	5.1	19.8	139.8	2.50
Min	6.46	5.24	0.0	7.0	49.5	17.7	5.0	7.29	4.6	8.7	101.0	2.39
Max	10.09	8.17	6.7	36.0	113.2	20.3	7.7	9.29	5.7	38.3	172.0	2.6

	Boiler No. 2 BH Outlet							Boiler No. 2 Scrubber Inlet				
Date/Time	U2 1-min Calcs - O2s-dry	U2 1-min Calcs - O2s-wet	U2 1-min Calcs - SO2s	U2 1-min Calcs - COs-lh	U2 1-min Calcs - NOxs	U2 1-min Calcs - NH3s	U2 1-min Calcs - HCLs	U2 1-min Calcs - O2e-dry	U2 1-min Calcs - THCe	U2 1-min Calcs - COe-lh	U2 1-min Calcs - SO2e	U2 1-min Calcs - CarbInj
23/09/2015 13:22	7.77	6.34	0.0	9.0	90.4	19.2	3.0	7.09	4.8	17.2	147.0	2.54
23/09/2015 13:23	8.78	7.09	0.0	10.0	87.9	18.2	2.9	7.39	5.4	8.6	139.0	2.49
23/09/2015 13:24	8.78	7.20	0.0	14.0	67.2	18.5	2.9	7.89	5.1	13.2	117.0	2.45
23/09/2015 13:25	8.98	7.15	0.0	13.0	59.6	18.8	2.9	7.99	5.4	15.8	116.0	2.51
23/09/2015 13:26	8.38	7.08	0.0	11.0	68.7	18.8	2.9	8.09	5.3	15.7	120.0	2.41
23/09/2015 13:27	8.68	7.11	0.0	17.0	56.7	18.7	2.9	7.89	5.2	13.1	113.0	2.52
23/09/2015 13:28	8.68	6.95	0.0	16.0	66.2	18.9	2.8	7.69	4.9	19.2	123.0	2.45
23/09/2015 13:29	7.87	6.39	0.0	13.0	89.3	18.9	2.9	8.49	5.2	20.0	110.0	2.47
23/09/2015 13:30	7.97	6.40	0.0	9.0	97.9	18.8	2.9	6.99	5.2	13.5	128.0	2.44
23/09/2015 13:31	7.87	6.48	0.0	9.0	93.5	18.9	2.9	6.99	5.3	11.7	126.0	2.45
23/09/2015 13:32	8.38	6.82	0.0	7.0	90.1	18.4	3.0	7.09	5.2	9.6	124.0	2.52
23/09/2015 13:33	9.19	7.54	0.0	14.0	54.5	18.0	2.9	7.79	5.2	8.5	111.0	2.57
23/09/2015 13:34	9.39	7.90	0.0	26.0	46.1	17.6	2.8	8.59	5.0	21.2	101.0	2.54
23/09/2015 13:35	9.19	7.72	0.0	22.0	60.5	17.8	2.8	8.79	5.1	28.4	104.0	2.44
23/09/2015 13:36	8.88	7.33	0.0	15.0	67.0	18.5	2.8	8.59	5.1	23.7	102.0	2.49
23/09/2015 13:37	9.49	7.81	0.0	10.0	59.1	18.1	2.7	8.19	5.1	15.1	103.0	2.48
23/09/2015 13:38	9.39	7.65	0.0	22.0	63.2	18.1	2.7	8.79	5.0	15.1	86.0	2.48
23/09/2015 13:39	8.98	7.33	0.0	22.0	64.1	18.6	2.6	8.69	5.1	24.3	93.0	2.46
23/09/2015 13:40	9.08	7.39	0.0	26.0	61.7	18.6	2.6	8.29	5.1	24.3	98.0	2.44
23/09/2015 13:41	9.39	7.76	0.0	15.0	78.2	18.1	2.6	8.29	5.1	27.5	103.0	2.45
23/09/2015 13:42	9.39	7.71	0.0	19.0	71.5	18.3	2.6	8.59	5.0	16.6	101.0	2.41
23/09/2015 13:43	9.08	7.50	0.0	16.0	80.4	18.5	2.5	8.39	4.8	23.5	102.0	2.47
23/09/2015 13:44	8.68	7.05	0.0	11.0	89.4	18.5	2.5	8.29	5.2	17.4	96.0	2.5
23/09/2015 13:45	8.68	7.02	0.0	11.0	76.7	18.6	2.5	7.79	5.1	16.5	103.0	2.52
23/09/2015 13:46	9.08	7.26	0.0	10.0	71.2	18.9	2.5	7.79	5.2	11.5	98.0	2.5
23/09/2015 13:47	8.88	7.18	0.0	11.0	67.0	19.3	2.5	8.19	5.1	10.8	90.0	2.59
23/09/2015 13:48	8.28	6.78	0.0	12.0	79.0	19.7	2.4	8.19	5.1	14.0	99.0	2.48
23/09/2015 13:49	8.38	6.88	0.0	11.0	70.0	19.7	2.4	7.49	5.5	13.7	109.0	2.44
23/09/2015 13:50	8.78	7.25	0.0	11.0	64.2	19.5	2.4	7.69	5.2	12.2	100.0	2.44
23/09/2015 13:51	9.49	7.67	0.0	14.0	59.9	19.3	2.4	8.29	5.0	13.3	93.0	2.52
23/09/2015 13:52	9.39	7.58	0.0	16.0	67.6	19.3	2.4	8.69	5.0	20.3	83.0	2.51

Average	8.81	7.20	0.0	14.3	71.6	18.7	2.7	8.03	5.1	16.6	107.7	2.48
Min	7.77	6.34	0.0	7.0	46.1	17.6	2.4	6.99	4.8	8.5	83.0	2.41
Max	9.49	7.90	0.0	26.0	97.9	19.7	3.0	8.79	5.5	28.4	147.0	2.59

	Boiler No. 2 BH Outlet							Boiler No. 2 Scrubber Inlet				
Date/Time	U2 1-min Calcs - O2s-dry	U2 1-min Calcs - O2s-wet	U2 1-min Calcs - SO2s	U2 1-min Calcs - COs-lh	U2 1-min Calcs - NOxs	U2 1-min Calcs - NH3s	U2 1-min Calcs - HCLs	U2 1-min Calcs - O2e-dry	U2 1-min Calcs - THCe	U2 1-min Calcs - COe-lh	U2 1-min Calcs - SO2e	U2 1-min Calcs - CarbInj
23/09/2015 14:01	8.58	6.93	0.0	9.0	66.4	20.2	2.3	7.69	5.1	11.4	88.0	2.46
23/09/2015 14:02	8.68	6.95	0.0	10.0	71.0	20.0	2.3	7.79	5.4	11.3	89.0	2.54
23/09/2015 14:03	8.38	6.71	0.0	12.0	70.3	20.3	2.3	7.89	5.2	13.3	95.0	2.47
23/09/2015 14:04	8.28	6.67	0.0	12.0	59.3	20.4	2.3	7.49	5.5	14.8	103.0	2.54
23/09/2015 14:05	8.78	6.95	0.0	12.0	61.1	19.9	2.3	7.49	5.1	13.7	101.0	2.49
23/09/2015 14:06	8.68	6.95	0.0	12.0	64.8	19.6	2.3	7.89	5.2	13.6	94.0	2.47
23/09/2015 14:07	8.58	6.96	0.0	13.0	56.7	19.9	2.3	7.79	5.0	13.6	90.0	2.48
23/09/2015 14:08	8.78	6.99	0.0	13.0	50.7	19.6	2.3	7.79	5.2	13.7	89.0	2.62
23/09/2015 14:09	8.88	7.33	0.0	13.0	62.5	19.3	2.3	7.89	5.3	14.5	93.0	2.38
23/09/2015 14:10	8.88	7.08	0.0	15.0	54.9	19.2	2.2	8.09	5.3	14.8	94.0	2.51
23/09/2015 14:11	8.88	7.23	0.0	13.0	67.9	19.0	2.2	8.39	5.4	17.3	88.0	2.51
23/09/2015 14:12	9.08	7.38	0.0	16.0	74.4	18.9	2.2	8.29	5.3	16.2	86.0	2.49
23/09/2015 14:13	9.19	7.09	0.0	17.0	71.3	19.3	2.2	8.29	5.2	17.9	89.0	2.48
23/09/2015 14:14	8.48	7.08	0.0	14.0	70.1	19.6	2.2	7.49	5.5	22.1	82.0	2.49
23/09/2015 14:15	8.88	7.16	0.0	17.0	76.8	19.8	2.2	8.09	5.3	17.1	80.0	2.51
23/09/2015 14:16	8.38	6.78	0.0	18.0	89.8	20.0	2.1	7.99	5.5	22.7	78.0	2.48
23/09/2015 14:17	8.58	6.87	0.0	13.0	87.7	20.1	2.1	7.29	5.5	20.1	84.0	2.44
23/09/2015 14:18	8.78	6.86	0.0	17.0	79.6	20.2	2.1	7.89	5.6	14.8	68.0	2.46
23/09/2015 14:19	8.38	6.62	0.0	26.0	77.2	20.6	2.1	7.79	5.3	19.6	74.0	2.46
23/09/2015 14:20	8.48	6.52	0.0	24.0	81.9	20.7	2.0	7.49	5.5	30.3	113.0	2.47
23/09/2015 14:21	8.18	6.37	0.0	19.0	83.7	20.9	2.0	7.19	5.3	24.2	93.0	2.52
23/09/2015 14:22	7.27	5.65	0.0	19.0	87.3	21.3	2.0	7.09	5.5	23.8	129.0	2.48
23/09/2015 14:23	6.86	5.51	0.0	14.0	91.0	21.4	2.0	6.19	5.5	20.9	128.0	2.47
23/09/2015 14:24	7.17	5.66	0.0	14.0	85.3	21.2	2.0	6.39	5.4	15.0	152.0	2.49
23/09/2015 14:25	7.17	5.59	0.0	16.0	89.8	21.3	2.0	6.39	5.4	16.2	138.0	2.42
23/09/2015 14:26	7.47	5.84	0.0	13.0	87.3	21.4	1.9	6.19	6.2	19.1	135.0	2.51
23/09/2015 14:27	7.77	6.01	0.0	14.0	82.2	21.4	2.0	6.59	5.7	16.1	127.0	2.44
23/09/2015 14:28	8.68	6.70	0.0	13.0	76.8	20.8	2.0	6.69	5.5	15.1	106.0	2.51
23/09/2015 14:29	8.38	6.55	0.0	12.0	73.1	20.9	2.0	7.49	5.7	14.7	95.0	2.51
23/09/2015 14:30	8.18	6.42	0.0	12.0	81.0	20.8	2.1	7.29	5.6	13.0	90.0	2.51
23/09/2015 14:31	8.68	6.94	0.0	13.0	75.0	20.4	2.1	7.19	5.6	13.4	98.0	2.54

Average	8.37	6.66	0.0	14.7	74.4	20.3	2.1	7.47	5.4	16.9	99.0	2.49
Min	6.86	5.51	0.0	9.0	50.7	18.9	1.9	6.19	5.0	11.3	68.0	2.38
Max	9.19	7.38	0.0	26.0	91.0	21.4	2.3	8.39	6.2	30.3	152.0	2.62

	Boiler No. 2 BH Outlet							Boiler No. 2 Scrubber Inlet				
Date/Time	U2 1-min Calcs - O2s-dry	U2 1-min Calcs - O2s-wet	U2 1-min Calcs - SO2s	U2 1-min Calcs - COs-lh	U2 1-min Calcs - NOxs	U2 1-min Calcs - NH3s	U2 1-min Calcs - HCLs	U2 1-min Calcs - O2e-dry	U2 1-min Calcs - THCe	U2 1-min Calcs - COe-lh	U2 1-min Calcs - SO2e	U2 1-min Calcs - CarbInj
23/09/2015 15:04	8.68	7.11	0.0	16.0	60.6	18.7	2.1	8.79	5.2	18.6	77.0	2.46
23/09/2015 15:05	8.68	6.98	0.0	25.0	56.0	18.6	2.1	7.79	5.5	18.0	88.0	2.42
23/09/2015 15:06	8.58	7.02	0.0	24.0	63.5	18.4	2.1	7.79	4.9	24.4	89.0	2.45
23/09/2015 15:07	9.29	7.61	0.0	28.0	53.7	17.7	1.9	7.89	0.0	29.6	81.0	2.48
23/09/2015 15:08	9.89	8.10	0.0	43.0	48.7	17.1	1.9	8.29	5.1	30.3	77.0	2.53
23/09/2015 15:09	9.69	8.03	0.0	39.0	47.2	17.2	1.9	9.09	5.3	49.0	68.0	2.45
23/09/2015 15:10	8.68	7.22	0.0	19.0	65.6	17.7	2.0	8.89	5.2	39.6	75.0	2.51
23/09/2015 15:11	8.78	7.25	0.0	12.0	74.3	17.6	2.0	7.89	5.1	18.7	90.0	2.51
23/09/2015 15:12	9.69	7.93	0.0	14.0	60.8	17.2	1.9	8.09	5.1	13.4	81.0	2.6
23/09/2015 15:13	9.89	8.25	0.0	24.0	58.9	17.2	1.9	8.99	5.1	15.9	67.0	2.49
23/09/2015 15:14	8.78	7.28	0.0	21.0	69.0	18.2	1.9	8.99	5.1	25.3	67.0	2.56
23/09/2015 15:15	8.68	7.04	0.0	22.0	71.8	18.1	1.9	8.09	5.2	23.8	76.0	2.53
23/09/2015 15:16	9.39	7.57	0.0	43.0	72.2	17.5	1.9	7.79	5.2	30.6	85.0	2.47
23/09/2015 15:17	9.49	7.71	0.0	27.0	65.9	17.5	2.0	8.49	5.5	44.4	77.0	2.47
23/09/2015 15:18	8.78	7.19	0.0	21.0	72.8	17.8	2.0	8.69	5.0	29.0	74.0	2.42
23/09/2015 15:19	8.58	7.01	0.0	10.0	82.5	17.9	2.0	7.99	5.1	17.1	78.0	2.48
23/09/2015 15:20	8.38	6.98	0.0	11.0	85.0	17.8	2.0	7.89	5.1	11.9	73.0	2.42
23/09/2015 15:21	9.08	7.53	0.0	33.0	68.4	17.3	2.0	7.79	5.8	12.9	76.0	2.47
23/09/2015 15:22	9.89	8.04	0.0	77.0	51.8	17.0	1.9	8.49	5.3	40.9	82.0	2.5
23/09/2015 15:23	8.48	7.02	0.0	42.0	64.7	17.5	1.9	9.09	5.3	86.9	79.0	2.51
23/09/2015 15:24	9.19	7.60	0.0	29.0	69.3	16.6	1.9	7.69	5.2	39.4	83.0	2.52
23/09/2015 15:25	9.08	7.69	0.0	24.0	77.1	16.5	1.9	8.49	5.0	26.7	75.0	2.46
23/09/2015 15:26	9.39	7.82	0.0	26.0	80.5	16.7	1.9	8.59	5.1	22.7	106.0	2.56
23/09/2015 15:27	8.68	7.15	0.0	18.0	86.0	17.7	1.9	8.69	5.1	26.8	93.0	2.47
23/09/2015 15:28	9.49	7.56	0.0	16.0	70.1	17.6	2.0	7.79	5.0	16.8	83.0	2.47
23/09/2015 15:29	8.88	7.24	0.0	16.0	74.9	18.2	2.0	8.29	5.2	22.4	83.0	2.52
23/09/2015 15:30	8.88	7.21	0.0	20.0	62.9	18.1	2.0	8.19	5.2	17.9	90.0	2.48
23/09/2015 15:31	9.08	7.56	0.0	17.0	73.3	17.5	2.0	8.09	5.0	21.0	96.0	2.47
23/09/2015 15:32	9.19	7.56	0.0	26.0	61.1	17.6	2.0	8.49	5.0	21.2	85.0	2.41
23/09/2015 15:33	8.98	7.33	0.0	21.0	55.8	17.8	2.0	8.29	5.1	26.9	95.0	2.47
23/09/2015 15:34	9.08	7.37	0.0	32.0	65.8	18.0	1.9	8.19	5.1	21.7	100.0	2.51

Average	9.07	7.45	0.0	25.7	66.8	17.6	2.0	8.31	5.0	27.2	82.2	2.49
Min	8.38	6.98	0.0	10.0	47.2	16.5	1.9	7.69	0.0	11.9	67.0	2.41
Max	9.89	8.25	0.0	77.0	86.0	18.7	2.1	9.09	5.8	86.9	106.0	2.6

	Boiler No. 2 BH Outlet							Boiler No. 2 Scrubber Inlet				
Date/Time	U2 1-min Calcs - O2s-dry	U2 1-min Calcs - O2s-wet	U2 1-min Calcs - SO2s	U2 1-min Calcs - COs-lh	U2 1-min Calcs - NOxs	U2 1-min Calcs - NH3s	U2 1-min Calcs - HCLs	U2 1-min Calcs - O2e-dry	U2 1-min Calcs - THCe	U2 1-min Calcs - COe-lh	U2 1-min Calcs - SO2e	U2 1-min Calcs - CarbInj
23/09/2015 15:45	8.68	7.03	0.0	14.0	65.2	19.1	2.0	7.39	5.1	12.8	91.0	2.5
23/09/2015 15:46	9.29	7.49	0.0	14.0	61.5	18.7	2.0	7.99	5.3	16.1	90.0	2.5
23/09/2015 15:47	9.08	7.32	0.0	12.0	68.0	18.9	2.0	8.39	5.0	14.8	89.0	2.44
23/09/2015 15:48	8.28	6.77	0.0	12.0	76.2	19.1	2.0	8.29	5.0	14.1	89.0	2.5
23/09/2015 15:49	9.08	7.20	0.0	20.0	64.2	18.8	2.0	7.69	5.3	12.6	83.0	2.51
23/09/2015 15:50	8.88	7.23	0.0	25.0	64.4	18.9	2.0	8.19	5.4	24.9	80.0	2.49
23/09/2015 15:51	8.48	6.78	0.0	25.0	64.8	19.2	2.0	8.29	5.4	31.1	93.0	2.49
23/09/2015 15:52	7.77	6.14	0.0	12.0	75.8	19.5	2.0	7.59	5.4	19.4	89.0	2.46
23/09/2015 15:53	7.77	6.15	0.0	8.0	89.0	19.2	2.1	6.69	5.2	11.7	90.0	2.42
23/09/2015 15:54	7.87	6.26	0.0	8.0	89.1	19.1	2.1	6.89	5.5	8.7	97.0	2.49
23/09/2015 15:55	8.07	6.47	0.0	8.0	84.7	19.0	2.2	6.99	5.5	10.9	105.0	2.55
23/09/2015 15:56	8.68	6.88	0.0	13.0	68.9	18.7	2.3	7.19	5.8	10.8	115.0	2.43
23/09/2015 15:57	8.98	7.22	0.0	16.0	63.6	18.2	2.5	7.59	5.7	15.5	123.0	2.39
23/09/2015 15:58	9.49	7.60	0.0	24.0	61.2	17.6	2.6	8.09	5.4	19.2	117.0	2.49
23/09/2015 15:59	8.98	7.24	0.0	18.0	73.7	18.0	2.7	8.29	5.3	22.1	116.0	2.51
23/09/2015 16:00	9.08	7.40	0.0	25.0	67.0	17.8	2.8	8.09	5.3	20.1	117.0	2.5
23/09/2015 16:01	9.08	7.35	0.0	15.0	75.4	17.7	2.9	8.39	5.1	29.0	120.0	2.5
23/09/2015 16:02	9.29	7.42	1.2	12.0	87.8	17.7	3.1	8.29	5.3	17.5	123.0	2.42
23/09/2015 16:03	8.88	7.11	2.8	12.0	96.6	17.8	3.2	8.29	5.1	13.0	115.0	2.46
23/09/2015 16:04	8.78	7.04	4.4	15.0	86.2	18.5	3.6	8.09	5.3	14.0	122.0	2.51
23/09/2015 16:05	8.68	6.99	3.1	16.0	77.1	18.7	4.3	7.89	5.1	16.8	141.0	2.48
23/09/2015 16:06	8.68	6.85	2.1	18.0	71.3	19.0	4.3	7.89	5.3	17.9	137.0	2.5
23/09/2015 16:07	8.58	6.80	0.7	20.0	75.8	19.0	4.4	7.59	5.1	24.5	143.0	2.52
23/09/2015 16:08	7.97	6.42	0.0	24.0	77.1	19.3	4.3	7.69	5.2	20.2	127.0	2.51
23/09/2015 16:09	8.68	6.93	0.0	20.0	80.0	18.7	4.3	7.19	5.2	24.9	130.0	2.49
23/09/2015 16:10	8.68	6.99	0.0	22.0	74.9	18.8	4.2	7.59	5.2	22.3	126.0	2.51
23/09/2015 16:11	8.68	7.11	0.0	24.0	80.5	18.6	4.2	7.89	5.2	24.9	123.0	2.55
23/09/2015 16:12	8.38	6.88	0.0	25.0	84.7	18.9	4.1	7.99	5.5	27.9	124.0	2.55
23/09/2015 16:13	8.68	6.89	0.0	31.0	77.6	18.9	4.1	7.99	5.2	32.2	116.0	2.49
23/09/2015 16:14	8.88	6.96	0.0	18.0	95.3	18.5	4.0	7.59	5.3	26.9	122.0	2.48
23/09/2015 16:15	7.97	6.42	0.0	24.0	88.1	19.2	4.0	7.99	5.1	19.8	105.0	2.52

Average	8.66	6.95	0.5	17.7	76.3	18.7	3.0	7.81	5.3	19.2	111.5	2.49
Min	7.77	6.14	0.0	8.0	61.2	17.6	2.0	6.69	5.0	8.7	80.0	2.39
Max	9.49	7.60	4.4	31.0	96.6	19.5	4.4	8.39	5.8	32.2	143.0	2.55

Date/Time	Boiler No. 2 BH Outlet							Boiler No. 2 Scrubber Inlet				
	U2 1-min Calcs - O2s-dry	U2 1-min Calcs - O2s-wet	U2 1-min Calcs - SO2s	U2 1-min Calcs - COs-lh	U2 1-min Calcs - NOxs	U2 1-min Calcs - NH3s	U2 1-min Calcs - HCLs	U2 1-min Calcs - O2e-dry	U2 1-min Calcs - THCe	U2 1-min Calcs - COe-lh	U2 1-min Calcs - SO2e	U2 1-min Calcs - CarbInj
23/09/2015 16:30	9.08	7.29	0.0	13.0	68.0	18.8	4.5	8.29	5.0	14.2	84.0	2.45
23/09/2015 16:31	9.19	7.43	0.0	17.0	57.7	18.9	4.4	8.19	5.4	14.9	83.0	2.45
23/09/2015 16:32	9.39	7.50	0.0	19.0	62.5	18.7	4.3	8.39	5.1	18.8	80.0	2.52
23/09/2015 16:33	8.68	7.06	0.0	21.0	79.0	18.6	4.1	8.49	5.2	20.8	79.0	2.49
23/09/2015 16:34	9.19	7.48	0.0	14.0	79.5	18.2	4.0	7.79	5.1	21.0	85.0	2.47
23/09/2015 16:35	9.19	7.37	0.0	15.0	86.0	18.4	3.8	8.49	5.1	14.0	73.0	2.46
23/09/2015 16:36	9.19	7.29	0.0	14.0	79.8	18.7	3.6	8.29	5.1	20.1	70.0	2.45
23/09/2015 16:37	8.68	7.03	0.0	18.0	88.1	18.8	3.5	8.29	5.1	17.1	76.0	2.53
23/09/2015 16:38	9.29	7.40	0.0	13.0	72.1	18.9	3.4	7.99	5.2	19.5	85.0	2.5
23/09/2015 16:39	8.68	6.93	0.0	17.0	74.7	19.3	3.3	8.49	5.1	14.8	81.0	2.53
23/09/2015 16:40	8.07	6.29	0.0	20.0	72.6	19.9	3.2	7.69	5.1	23.1	92.0	2.55
23/09/2015 16:41	8.28	6.55	0.0	11.0	75.8	19.6	3.2	7.39	5.3	17.4	105.0	2.45
23/09/2015 16:42	7.17	5.75	0.0	14.0	84.6	20.2	3.2	7.39	5.9	12.5	100.0	2.43
23/09/2015 16:43	8.58	6.78	0.0	11.0	81.5	19.4	3.2	6.29	5.3	15.5	130.0	2.48
23/09/2015 16:44	8.07	6.30	0.0	10.0	84.9	19.8	3.2	7.69	5.1	12.1	96.0	2.5
23/09/2015 16:45	7.47	6.00	0.0	9.0	93.0	19.9	3.2	7.09	5.2	11.2	107.0	2.47
23/09/2015 16:46	7.67	6.07	0.0	9.0	101.7	19.6	3.2	6.59	5.1	10.6	123.0	2.52
23/09/2015 16:47	8.07	6.42	0.0	12.0	82.7	19.5	3.2	6.89	5.4	10.1	126.0	2.46
23/09/2015 16:48	8.58	6.95	0.0	20.0	59.0	19.3	3.3	7.09	5.2	14.8	127.0	2.48
23/09/2015 16:49	8.88	7.20	0.0	24.0	54.8	18.9	3.3	7.99	5.5	23.6	124.0	2.51
23/09/2015 16:50	9.19	7.29	0.0	20.0	48.8	19.0	3.3	8.09	5.4	23.5	129.0	2.45
23/09/2015 16:51	9.19	7.38	0.0	25.0	47.8	19.0	3.3	8.19	5.7	28.2	137.0	2.47
23/09/2015 16:52	8.98	7.24	0.0	20.0	60.3	18.8	3.3	8.29	5.5	25.2	119.0	2.47
23/09/2015 16:53	9.19	7.54	0.0	15.0	54.2	18.6	3.3	8.19	5.4	20.1	118.0	2.47
23/09/2015 16:54	9.29	7.54	0.0	20.0	53.4	18.8	3.2	8.59	5.3	18.8	108.0	2.47
23/09/2015 16:55	9.19	7.28	0.0	20.0	49.0	19.0	3.2	8.69	5.3	22.0	107.0	2.47
23/09/2015 16:56	8.68	6.94	0.0	18.0	61.0	19.5	3.1	8.19	5.2	18.9	103.0	2.46
23/09/2015 16:57	8.28	6.52	0.0	13.0	76.1	19.6	3.1	7.79	5.3	17.9	93.0	2.49
23/09/2015 16:58	8.98	6.83	0.0	9.0	74.1	19.2	3.1	7.39	5.1	10.8	91.0	2.49
23/09/2015 16:59	8.58	6.92	0.0	8.0	75.7	19.0	3.0	7.49	5.3	11.2	92.0	2.46
23/09/2015 17:00	8.38	6.81	0.0	18.0	68.3	18.9	3.0	7.79	5.3	13.2	93.0	2.52

Average	8.69	6.95	0.0	15.7	71.2	19.1	3.4	7.85	5.3	17.3	100.5	2.48
Min	7.17	5.75	0.0	8.0	47.8	18.2	3.0	6.29	5.0	10.1	70.0	2.43
Max	9.39	7.54	0.0	25.0	101.7	20.2	4.5	8.69	5.9	28.2	137.0	2.55

	Boiler No. 2 BH Outlet							Boiler No. 2 Scrubber Inlet				
Date/Time	U2 1-min Calcs - O2s-dry	U2 1-min Calcs - O2s-wet	U2 1-min Calcs - SO2s	U2 1-min Calcs - COs-lh	U2 1-min Calcs - NOxs	U2 1-min Calcs - NH3s	U2 1-min Calcs - HCLs	U2 1-min Calcs - O2e-dry	U2 1-min Calcs - THCe	U2 1-min Calcs - COe-lh	U2 1-min Calcs - SO2e	U2 1-min Calcs - CarbInj
23/09/2015 17:19	8.68	7.10	0.0	11.0	82.9	17.2	2.7	7.59	4.8	13.6	97.0	2.46
23/09/2015 17:20	9.19	7.55	0.0	35.0	58.3	17.0	2.6	7.79	5.4	14.8	86.0	2.53
23/09/2015 17:21	9.08	7.72	0.0	53.0	59.9	16.5	2.6	8.39	5.3	48.8	77.0	2.53
23/09/2015 17:22	9.08	7.61	0.0	24.0	64.1	16.4	2.6	8.69	5.3	44.8	74.0	2.53
23/09/2015 17:23	9.49	7.89	0.0	19.0	66.4	16.4	2.6	8.39	5.0	23.4	67.0	2.51
23/09/2015 17:24	9.49	7.84	0.0	16.0	67.6	16.6	2.6	8.89	4.9	17.1	65.0	2.49
23/09/2015 17:25	9.29	7.52	0.0	14.0	72.6	17.1	2.6	8.69	4.9	18.9	80.0	2.5
23/09/2015 17:26	8.78	7.14	0.0	18.0	75.6	17.4	2.6	8.49	5.0	14.8	74.0	2.48
23/09/2015 17:27	9.08	7.61	0.0	24.0	59.3	17.0	2.5	7.69	5.1	17.4	80.0	2.45
23/09/2015 17:28	10.30	8.14	0.0	35.0	52.6	16.5	2.5	8.59	5.0	29.3	63.0	2.48
23/09/2015 17:29	8.78	7.30	0.0	28.0	66.8	17.1	2.5	8.59	5.1	48.5	61.0	2.49
23/09/2015 17:30	8.98	7.40	0.0	36.0	69.2	16.6	2.5	8.09	5.2	31.3	62.0	2.5
23/09/2015 17:31	9.08	7.47	0.0	27.0	67.4	16.4	2.5	8.19	7.1	40.7	66.0	2.51
23/09/2015 17:32	9.39	7.91	0.0	44.0	60.9	15.9	2.5	8.29	5.9	30.3	62.0	2.5
23/09/2015 17:33	9.49	7.85	0.0	39.0	63.1	16.0	2.5	8.89	5.3	44.9	62.0	2.45
23/09/2015 17:34	9.19	7.74	0.0	31.0	64.5	16.0	2.5	8.69	5.1	36.0	61.0	2.47
23/09/2015 17:35	7.97	6.71	0.0	17.0	86.9	16.9	2.5	8.79	4.9	37.7	61.0	2.45
23/09/2015 17:36	8.28	6.80	0.5	15.0	91.3	16.6	2.6	7.19	5.2	16.5	70.0	2.52
23/09/2015 17:37	9.49	7.87	0.5	29.0	72.5	15.8	2.6	7.39	5.1	16.4	71.0	2.54
23/09/2015 17:38	9.99	8.39	0.0	72.0	54.6	15.3	2.6	8.89	5.2	36.8	59.0	2.51
23/09/2015 17:39	9.59	8.12	0.0	85.0	55.3	15.5	2.7	9.19	5.2	73.0	57.0	2.5
23/09/2015 17:40	9.89	8.36	0.0	85.0	57.4	15.3	2.7	8.79	5.4	91.9	58.0	2.49
23/09/2015 17:41	9.08	7.85	0.0	20.0	77.2	15.8	2.8	9.09	5.3	42.9	50.0	2.5
23/09/2015 17:42	9.69	7.68	0.0	18.0	66.0	16.0	2.9	8.59	5.6	20.3	49.0	2.49
23/09/2015 17:43	8.07	6.91	0.0	14.0	95.5	16.5	3.0	7.89	5.3	20.6	53.0	2.5
23/09/2015 17:44	9.59	7.81	0.7	14.0	70.9	16.0	3.1	7.59	5.7	14.2	59.0	2.52
23/09/2015 17:45	9.19	7.50	0.4	17.0	77.3	16.8	3.2	8.79	5.5	19.4	54.0	2.49
23/09/2015 17:46	9.19	7.48	0.0	24.0	75.4	17.2	3.2	8.39	5.6	18.4	58.0	2.46
23/09/2015 17:47	8.98	7.33	0.0	28.0	76.8	17.3	3.3	8.39	5.4	24.9	61.0	2.47
23/09/2015 17:48	8.88	7.29	0.0	28.0	80.5	17.2	3.4	8.29	5.6	29.6	65.0	2.43
23/09/2015 17:49	9.08	7.33	0.0	29.0	76.1	17.3	3.7	8.09	5.4	33.1	70.0	2.47
Average	9.17	7.59	0.1	30.6	69.8	16.5	2.7	8.36	5.3	31.3	65.5	2.49
Min	7.97	6.71	0.0	11.0	52.6	15.3	2.5	7.19	4.8	13.6	49.0	2.43
Max	10.30	8.39	0.7	85.0	95.5	17.4	3.7	9.19	7.1	91.9	97.0	2.54

	Boiler No. 2 BH Outlet							Boiler No. 2 Scrubber Inlet				
Date/Time	U2 1-min Calcs - O2s-dry	U2 1-min Calcs - O2s-wet	U2 1-min Calcs - SO2s	U2 1-min Calcs - COs-lh	U2 1-min Calcs - NOxs	U2 1-min Calcs - NH3s	U2 1-min Calcs - HCLs	U2 1-min Calcs - O2e-dry	U2 1-min Calcs - THCe	U2 1-min Calcs - COe-lh	U2 1-min Calcs - SO2e	U2 1-min Calcs - CarbInj
23/09/2015 18:50	8.18	6.59	0.0	17.0	84.1	19.7	4.3	7.79	5.4	15.8	108.0	2.48
23/09/2015 18:51	7.77	6.50	0.0	19.0	76.7	19.9	4.2	7.39	5.8	18.1	122.0	2.49
23/09/2015 18:52	9.49	7.44	0.0	14.0	70.8	19.1	4.2	6.89	5.8	21.6	139.0	2.48
23/09/2015 18:53	8.38	6.75	0.0	18.0	76.3	20.0	4.1	8.49	5.9	16.1	108.0	2.48
23/09/2015 18:54	8.28	6.53	0.0	17.0	80.9	20.2	4.0	7.49	5.6	20.9	127.0	2.5
23/09/2015 18:55	7.97	6.15	0.0	13.0	83.2	20.8	3.9	7.29	5.5	18.6	117.0	2.5
23/09/2015 18:56	7.17	5.65	0.0	7.0	101.1	20.9	3.8	6.89	5.5	11.0	125.0	2.46
23/09/2015 18:57	7.47	5.92	0.0	7.0	92.2	20.5	3.7	6.29	5.6	7.9	143.0	2.42
23/09/2015 18:58	7.87	5.96	0.0	7.0	99.8	20.2	3.7	6.39	5.4	8.3	148.0	2.48
23/09/2015 18:59	7.06	5.93	0.0	8.0	108.1	20.2	3.7	5.89	5.5	12.1	143.0	2.5
23/09/2015 19:00	8.48	6.78	0.3	8.0	80.8	19.8	3.6	6.89	5.6	7.4	127.0	2.47
23/09/2015 19:01	8.78	7.17	0.0	10.0	59.4	19.5	3.6	7.39	5.5	9.2	114.0	2.48
23/09/2015 19:02	8.98	7.25	0.0	12.0	61.6	19.4	3.6	7.89	5.6	11.1	111.0	2.46
23/09/2015 19:03	8.88	7.17	0.0	18.0	61.0	19.3	3.5	7.99	5.5	13.1	120.0	2.44
23/09/2015 19:04	8.68	7.06	0.0	11.0	76.0	19.3	3.5	7.99	5.4	21.1	134.0	2.46
23/09/2015 19:05	8.98	7.33	0.0	12.0	57.2	19.4	3.4	7.99	6.2	11.8	122.0	2.45
23/09/2015 19:06	9.08	7.33	0.0	10.0	55.2	19.6	3.3	8.09	5.7	13.7	122.0	1.8
23/09/2015 19:07	8.78	6.75	0.0	13.0	62.8	20.2	3.3	8.19	5.5	13.6	142.0	9.39
23/09/2015 19:08	7.67	6.27	0.0	11.0	79.3	20.4	3.2	7.59	5.7	16.9	147.0	1.86
23/09/2015 19:09	8.07	6.53	0.0	9.0	87.8	19.7	3.2	6.79	6.0	13.9	165.0	1.02
23/09/2015 19:10	8.28	6.78	0.0	11.0	74.7	19.4	3.1	7.19	5.7	11.2	132.0	1.12
23/09/2015 19:11	8.28	6.68	0.0	10.0	76.3	19.0	3.1	7.59	5.5	12.9	133.0	2.19
23/09/2015 19:12	7.97	6.58	0.0	15.0	68.7	19.1	3.1	7.39	5.4	11.8	140.0	2.44
23/09/2015 19:13	9.19	7.38	0.0	17.0	59.9	18.4	3.0	7.19	5.3	17.5	151.0	2.41
23/09/2015 19:14	8.98	7.36	0.0	21.0	52.9	18.5	3.0	8.09	5.5	22.0	130.0	2.49
23/09/2015 19:15	8.58	7.27	0.0	26.0	52.9	18.4	2.9	8.09	5.3	28.8	133.0	2.47
23/09/2015 19:16	9.29	7.66	0.0	27.0	49.1	18.1	2.9	7.89	5.3	27.0	142.0	2.48
23/09/2015 19:17	9.29	7.66	0.0	28.0	46.4	18.3	2.8	8.29	5.2	31.0	131.0	2.53
23/09/2015 19:18	9.39	7.93	0.0	27.0	49.7	18.2	2.8	8.49	5.4	28.5	131.0	2.49
23/09/2015 19:19	9.39	7.63	0.0	20.0	59.6	17.9	2.8	8.79	5.1	32.1	131.0	2.44
23/09/2015 19:20	8.68	7.19	0.0	17.0	76.7	18.4	2.8	8.19	5.3	19.7	140.0	2.46

Average	8.49	6.88	0.0	14.8	71.7	19.4	3.4	7.57	5.5	16.9	131.5	2.55
Min	7.06	5.65	0.0	7.0	46.4	17.9	2.8	5.89	5.1	7.4	108.0	1.02
Max	9.49	7.93	0.3	28.0	108.1	20.9	4.3	8.79	6.2	32.1	165.0	9.39

	Boiler No. 2 BH Outlet							Boiler No. 2 Scrubber Inlet				
Date/Time	U2 1-min Calcs - O2s-dry	U2 1-min Calcs - O2s-wet	U2 1-min Calcs - SO2s	U2 1-min Calcs - COs-lh	U2 1-min Calcs - NOxs	U2 1-min Calcs - NH3s	U2 1-min Calcs - HCLs	U2 1-min Calcs - O2e-dry	U2 1-min Calcs - THCe	U2 1-min Calcs - COe-lh	U2 1-min Calcs - SO2e	U2 1-min Calcs - CarbInj
23/09/2015 19:27	8.88	7.13	0.0	14.0	80.7	19.7	2.7	8.19	5.1	17.5	124.0	2.56
23/09/2015 19:28	8.78	7.24	0.0	18.0	79.3	19.4	2.7	8.09	5.5	14.8	120.0	2.48
23/09/2015 19:29	8.07	6.63	0.0	21.0	83.3	19.6	2.7	7.79	5.6	22.6	129.0	2.53
23/09/2015 19:30	8.48	6.93	0.0	17.0	82.5	19.4	2.7	7.19	5.4	20.7	149.0	2.47
23/09/2015 19:31	8.98	7.26	0.0	16.0	74.0	19.0	2.7	7.59	5.4	19.0	135.0	2.5
23/09/2015 19:32	8.88	7.03	0.0	20.0	72.0	19.3	2.8	7.99	5.5	18.4	129.0	2.51
23/09/2015 19:33	7.67	6.31	0.0	23.0	67.2	19.7	2.8	7.59	5.5	28.9	142.0	2.47
23/09/2015 19:34	7.87	6.46	0.0	15.0	81.9	19.2	2.9	6.79	6.0	19.1	165.0	2.49
23/09/2015 19:35	8.88	7.45	0.0	16.0	73.3	18.4	2.9	6.99	5.4	17.5	153.0	2.49
23/09/2015 19:36	9.08	7.46	0.0	19.0	68.3	18.8	2.9	8.39	5.5	15.8	131.0	2.51
23/09/2015 19:37	8.78	7.23	0.0	26.0	66.9	19.2	2.9	8.29	5.5	21.8	140.0	2.49
23/09/2015 19:38	8.68	7.16	0.0	19.0	71.7	19.1	2.9	8.09	5.7	27.4	147.0	2.47
23/09/2015 19:39	9.59	7.70	0.0	24.0	63.4	18.9	2.9	8.09	5.5	18.2	137.0	2.43
23/09/2015 19:40	9.89	7.85	0.0	18.0	69.0	18.9	2.8	8.79	5.5	26.0	128.0	2.49
23/09/2015 19:41	8.98	7.15	0.0	17.0	88.0	19.5	2.8	8.79	5.3	18.4	117.0	2.46
23/09/2015 19:42	7.67	6.22	0.0	14.0	108.5	19.7	2.8	7.79	5.4	20.7	140.0	2.49
23/09/2015 19:43	8.18	6.23	0.0	10.0	131.9	19.2	2.7	6.69	5.3	14.3	146.0	2.51
23/09/2015 19:44	7.57	6.00	0.0	11.0	116.9	19.7	2.7	6.39	5.5	11.5	121.0	2.56
23/09/2015 19:45	7.77	6.50	0.0	11.0	113.4	19.6	2.7	6.59	5.4	12.2	146.0	2.46
23/09/2015 19:46	8.07	6.66	0.3	13.0	96.0	19.3	2.7	7.29	5.5	13.7	143.0	2.46
23/09/2015 19:47	8.58	7.01	0.5	9.0	92.6	18.9	2.7	7.19	5.5	15.9	145.0	2.5
23/09/2015 19:48	9.19	7.43	0.4	9.0	82.1	18.8	2.7	7.79	5.5	10.4	142.0	2.52
23/09/2015 19:49	9.29	7.65	0.0	9.0	69.3	18.8	2.7	8.29	5.5	10.3	134.0	2.49
23/09/2015 19:50	8.98	7.44	0.0	11.0	77.6	18.9	2.8	8.49	5.6	11.2	131.0	2.53
23/09/2015 19:51	8.98	7.29	0.0	11.0	73.2	18.8	2.7	8.29	5.4	11.4	140.0	2.46
23/09/2015 19:52	9.08	7.36	0.0	16.0	61.7	18.9	2.7	8.09	5.6	13.1	148.0	2.44
23/09/2015 19:53	8.88	7.34	0.0	19.0	59.0	19.2	2.8	8.19	5.8	18.5	148.0	2.52
23/09/2015 19:54	8.88	7.27	0.0	16.0	59.0	19.4	2.8	8.19	5.6	20.1	150.0	2.53
23/09/2015 19:55	8.98	7.22	0.0	20.0	62.2	19.5	2.8	8.19	5.4	21.6	129.0	2.53
23/09/2015 19:56	9.08	7.38	0.0	20.0	58.7	19.5	2.9	8.09	5.4	22.5	139.0	2.49
23/09/2015 19:57	8.48	6.88	0.0	17.0	65.9	19.8	2.9	8.19	5.4	20.1	139.0	2.51

Average	8.68	7.06	0.0	16.1	79.0	19.2	2.8	7.82	5.5	17.9	138.3	2.50
Min	7.57	6.00	0.0	9.0	58.7	18.4	2.7	6.39	5.1	10.3	117.0	2.43
Max	9.89	7.85	0.5	26.0	131.9	19.8	2.9	8.79	6.0	28.9	165.0	2.56

Date/Time	Boiler No. 2 BH Outlet							Boiler No. 2 Scrubber Inlet				
	U2 1-min Calcs - O2s-dry	U2 1-min Calcs - O2s-wet	U2 1-min Calcs - SO2s	U2 1-min Calcs - COs-lh	U2 1-min Calcs - NOxs	U2 1-min Calcs - NH3s	U2 1-min Calcs - HCLs	U2 1-min Calcs - O2e-dry	U2 1-min Calcs - THCe	U2 1-min Calcs - COe-lh	U2 1-min Calcs - SO2e	U2 1-min Calcs - CarbInj
23/09/2015 20:06	8.68	7.25	0.0	12.0	74.1	18.1	2.7	7.99	5.2	19.0	135.0	2.53
23/09/2015 20:07	8.88	7.60	0.0	14.0	71.9	18.0	2.8	7.99	5.3	12.5	131.0	2.48
23/09/2015 20:08	8.68	7.13	0.0	20.0	71.0	18.4	2.8	8.39	5.1	23.4	123.0	2.48
23/09/2015 20:09	9.19	7.54	0.0	20.0	65.0	18.3	2.8	7.59	5.6	19.7	138.0	2.49
23/09/2015 20:10	9.19	7.48	0.0	21.0	62.8	18.3	2.8	8.69	5.4	23.1	118.0	2.44
23/09/2015 20:11	8.98	7.28	0.0	15.0	71.2	18.7	2.9	8.19	5.3	21.2	127.0	2.53
23/09/2015 20:12	8.98	7.36	0.0	14.0	68.7	18.4	2.8	8.09	5.2	16.7	114.0	2.5
23/09/2015 20:13	9.49	7.39	0.0	20.0	63.0	18.2	2.8	8.29	5.0	15.4	107.0	2.5
23/09/2015 20:14	8.68	7.00	0.0	16.0	69.2	18.6	2.8	7.39	5.3	24.1	132.0	2.51
23/09/2015 20:15	9.49	7.71	0.0	35.0	59.3	18.0	2.8	7.79	5.5	18.7	113.0	2.51
23/09/2015 20:16	9.49	7.64	0.0	39.0	55.3	18.1	2.7	8.59	5.4	36.3	107.0	2.52
23/09/2015 20:17	9.39	7.66	0.0	28.0	59.1	18.2	2.7	8.59	5.6	42.6	116.0	2.51
23/09/2015 20:18	9.69	8.00	0.0	20.0	57.5	17.7	2.7	8.59	5.3	28.2	117.0	2.49
23/09/2015 20:19	9.39	7.66	0.0	18.0	69.3	18.4	2.8	8.99	5.8	19.6	103.0	2.52
23/09/2015 20:20	9.19	7.55	0.0	18.0	64.7	18.9	2.8	8.59	5.6	19.3	113.0	2.44
23/09/2015 20:21	9.29	7.58	0.0	21.0	61.4	19.0	2.7	8.49	5.5	18.7	106.0	2.55
23/09/2015 20:22	8.98	7.33	0.0	22.0	72.9	19.3	2.8	8.49	5.3	29.9	119.0	2.55
23/09/2015 20:23	8.58	7.06	0.0	19.0	76.6	19.8	2.7	8.19	5.4	23.2	104.0	2.44
23/09/2015 20:24	7.57	6.07	0.0	14.0	87.9	20.6	2.7	7.59	5.4	21.9	101.0	2.53
23/09/2015 20:25	7.06	5.72	0.0	11.0	96.3	20.6	2.7	6.59	5.5	14.5	110.0	2.49
23/09/2015 20:26	7.87	6.25	0.0	11.0	75.4	20.6	2.7	6.19	5.5	12.2	122.0	2.53
23/09/2015 20:27	8.07	6.57	0.0	14.0	65.6	20.0	2.7	6.99	5.7	12.1	113.0	2.47
23/09/2015 20:28	8.78	7.30	0.0	15.0	69.4	19.0	2.7	7.19	5.3	16.9	118.0	2.48
23/09/2015 20:29	9.29	7.43	0.0	21.0	54.5	18.9	2.7	8.09	5.5	18.4	108.0	2.49
23/09/2015 20:30	8.68	7.20	0.0	23.0	62.8	19.1	2.6	8.49	5.5	25.1	108.0	2.57
23/09/2015 20:31	8.98	7.40	0.0	19.0	56.8	19.2	2.6	7.79	5.6	24.6	130.0	2.54
23/09/2015 20:32	8.38	6.87	0.0	14.0	68.3	19.6	2.5	8.09	5.4	21.8	127.0	2.49
23/09/2015 20:33	8.48	6.83	0.0	11.0	74.8	19.7	2.5	7.69	5.5	13.6	128.0	2.48
23/09/2015 20:34	8.78	7.11	0.0	12.0	63.6	19.3	2.5	7.59	5.3	12.8	127.0	2.53
23/09/2015 20:35	8.88	7.30	0.0	14.0	67.0	19.1	2.6	7.89	5.6	14.2	131.0	2.52
23/09/2015 20:36	9.29	7.40	0.0	22.0	55.1	19.3	2.6	8.09	5.4	15.1	128.0	2.49

Average	8.85	7.22	0.0	18.5	67.4	18.9	2.7	7.97	5.4	20.5	118.5	2.50
Min	7.06	5.72	0.0	11.0	54.5	17.7	2.5	6.19	5.0	12.1	101.0	2.44
Max	9.69	8.00	0.0	39.0	96.3	20.6	2.9	8.99	5.8	42.6	138.0	2.57

Date/Time	Boiler No. 2 BH Outlet							Boiler No. 2 Scrubber Inlet				
	U2 1-min Calcs - O2s-dry	U2 1-min Calcs - O2s-wet	U2 1-min Calcs - SO2s	U2 1-min Calcs - COs-lh	U2 1-min Calcs - NOxs	U2 1-min Calcs - NH3s	U2 1-min Calcs - HCLs	U2 1-min Calcs - O2e-dry	U2 1-min Calcs - THCe	U2 1-min Calcs - COe-lh	U2 1-min Calcs - SO2e	U2 1-min Calcs - CarbInj
23/09/2015 20:42	9.19	7.38	0.0	11.0	65.8	18.7	2.7	8.09	5.5	13.9	140.0	2.46
23/09/2015 20:43	9.19	7.52	0.0	13.0	68.8	18.7	2.7	8.19	5.4	12.3	130.0	2.46
23/09/2015 20:44	9.39	7.52	0.0	12.0	64.7	18.5	2.7	8.39	5.9	14.5	126.0	2.49
23/09/2015 20:45	8.07	6.70	0.0	11.0	76.0	20.1	2.6	8.49	5.5	14.0	124.0	2.54
23/09/2015 20:46	8.78	7.04	0.0	12.0	72.4	19.8	2.6	7.29	5.6	14.2	138.0	2.51
23/09/2015 20:47	8.58	6.96	0.0	13.0	77.9	19.8	2.6	7.99	5.5	12.9	128.0	2.51
23/09/2015 20:48	8.18	6.60	0.0	14.0	78.5	20.2	2.6	7.79	5.5	15.9	144.0	2.47
23/09/2015 20:49	8.18	6.59	0.0	13.0	78.7	20.2	2.6	7.39	5.7	14.9	146.0	2.5
23/09/2015 20:50	8.38	6.82	0.0	14.0	73.7	19.9	2.6	7.29	5.6	15.0	133.0	2.49
23/09/2015 20:51	8.88	7.24	0.0	16.0	70.0	19.3	2.6	7.59	5.5	16.7	128.0	2.57
23/09/2015 20:52	8.98	7.37	0.0	24.0	64.7	19.1	2.6	8.09	5.5	19.1	118.0	2.49
23/09/2015 20:53	9.59	7.81	0.0	17.0	65.7	18.5	2.6	8.09	5.7	26.1	119.0	2.52
23/09/2015 20:54	9.79	7.84	0.0	22.0	60.0	18.9	2.6	8.69	5.5	19.5	116.0	2.45
23/09/2015 20:55	9.79	7.91	0.0	20.0	63.1	19.3	2.6	8.99	5.6	25.1	118.0	2.52
23/09/2015 20:56	9.08	7.65	0.0	18.0	73.8	19.5	2.5	9.09	5.6	24.4	116.0	2.46
23/09/2015 20:57	8.38	6.74	0.0	16.0	80.2	20.0	2.5	8.99	5.6	15.8	106.0	2.45
23/09/2015 20:58	8.98	7.08	0.0	11.0	85.7	19.6	2.5	6.99	5.3	15.5	133.0	2.47
23/09/2015 20:59	8.78	7.26	0.0	10.0	85.0	19.2	2.4	7.99	5.6	12.6	117.0	2.53
23/09/2015 21:00	9.49	7.77	0.0	12.0	79.4	18.9	2.4	7.99	5.5	11.4	114.0	2.49
23/09/2015 21:01	8.88	7.18	0.0	12.0	77.1	19.6	2.4	8.79	5.4	13.5	112.0	2.53
23/09/2015 21:02	8.78	7.14	0.0	11.0	82.6	19.6	2.4	7.99	5.6	14.4	115.0	2.53
23/09/2015 21:03	9.49	7.53	0.0	16.0	66.1	19.5	2.3	7.99	5.6	11.8	109.0	2.49
23/09/2015 21:04	8.68	6.93	0.0	11.0	85.0	19.8	2.3	8.69	5.7	20.4	112.0	2.59
23/09/2015 21:05	9.19	7.43	0.0	11.0	82.2	19.4	2.3	7.99	6.3	12.5	131.0	2.51
23/09/2015 21:06	9.08	7.31	0.0	15.0	85.5	19.7	2.3	8.39	5.1	13.2	125.0	2.51
23/09/2015 21:07	8.48	7.05	0.0	18.0	83.1	19.9	2.3	8.19	0.4	17.5	129.0	2.5
23/09/2015 21:08	8.78	6.90	0.0	13.0	86.2	20.1	2.3	7.89	5.9	20.3	138.0	2.49
23/09/2015 21:09	8.38	6.89	0.0	15.0	76.8	20.4	2.3	7.79	5.5	12.5	129.0	2.54
23/09/2015 21:10	8.38	6.60	0.0	11.0	89.7	20.6	2.3	7.69	5.7	15.2	133.0	2.54
23/09/2015 21:11	6.96	5.56	0.0	10.0	102.2	21.3	2.3	7.29	5.9	13.0	127.0	2.51
23/09/2015 21:12	7.17	5.65	0.0	9.0	102.8	20.8	2.3	5.99	6.2	11.5	155.0	2.55

Average	8.77	7.10	0.0	13.9	77.5	19.6	2.5	8.00	5.4	15.8	126.1	2.51
Min	6.96	5.56	0.0	9.0	60.0	18.5	2.3	5.99	0.4	11.4	106.0	2.45
Max	9.79	7.91	0.0	24.0	102.8	21.3	2.7	9.09	6.3	26.1	155.0	2.59