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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



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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)

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

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°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. 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.

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.

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^{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
Section 2 …….. OTP 1Hr CEMS, Maintenance Log, and Calibration Data
Section 3 …….. 4 Point / 7 Day Drift tests
Section 4 …….. Opacity Certification Tests
Section 5 …….. Bottle and Opacity Filter Certifications

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

Unit #1 Inlet **Year - 2015** **Day 4**

Date:	**September 18, 2015**
Start Time:	**11:24**
Stop Time:	**12:52**

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

Unit #1 Inlet **Year - 2015** **Day 5**

Date:	**September 19, 2015**
Start Time:	**10:47**
Stop Time:	**12:17**

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

Unit #1 Inlet **Year - 2015** **Day 6**

Date:	**September 20, 2015**
Start Time:	**11:33**
Stop Time:	**13:08**

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		153	127	126	133	123	142
SO2	0-200	Mir 9000	92	105	89	82	95	90
NO	0-500		92	85	84	82	95	85
CO low	0-500		92	85	84	82	95	85
Co High	0-2000	Mir 9000	91	98	111	111	105	100
CO2	0-25		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.

03:00 pm 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.

03:00 pm HF linearity test performed again by Jake Kaizer, Altech representative.

04:00 pm 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 span3

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 tetlon 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 200 mb, 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. CI 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 (adjusted) - Unit #1 & Unit #2 THC failed daily Cal. Inlet Daily span 4 regulator was found ~~wide open~~ which causes the calibration to failed. Regulator opened 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

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

Section 4

Opacity Certification Tests

QUARTERLY OPACITY AUDIT REPORT

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

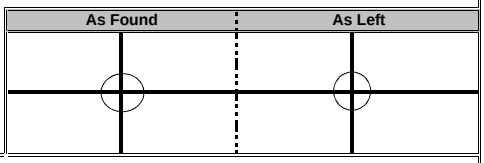
TRANSCEIVER DUST ACCUMULATION CHECK

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.]



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

Page 4

CALCULATION OF AUDIT RESULTS

STACK EXIT CORRELATION ERROR (%)

51 $\dfrac{1.016 \text{ (BLANK 4)} - 0.508 \text{ (BLANK 3)}}{0.508 \text{ (BLANK 3)}} \times 100 =$ **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: $(1 - ((1 - \dfrac{8.40 \text{ (BLANK 22)}}{100}) \times 2.032 \text{ (BLANK 4 x 2)} \times (1 - \dfrac{0.1 \text{ (BLANK 45)}}{100}))) \times 100 =$ **16.4**

60 Mid: $(1 - ((1 - \dfrac{17.10 \text{ (BLANK 23)}}{100}) \times 2.032 \text{ (BLANK 4 x 2)} \times (1 - \dfrac{0.1 \text{ (BLANK 45)}}{100}))) \times 100 =$ **31.8**

61 High: $(1 - ((1 - \dfrac{27.50 \text{ (BLANK 24)}}{100}) \times 2.032 \text{ (BLANK 4 x 2)} \times (1 - \dfrac{0.1 \text{ (BLANK 45)}}{100}))) \times 100 =$ **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		ME	+ CI	= %Error	
5	8.5	8.9	0.4	0.14		0.408	0.068	0.48	
	8.53 AVG	8.94 AVG	2.0 SUM	0.84 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	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		ME	+ CI	= %Error	
5	17.4	17.2	-0.2	0.02		0.156	0.088	0.24	
	17.36 AVG	17.20 AVG	-0.8 SUM	0.14 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	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		ME	+ CI	= %Error	
5	27.9	27.4	-0.5	0.23		0.463	0.056	0.52	
	27.88 AVG	27.42 AVG	-2.3 SUM	1.08 SUM		*(BLANK 64)*	*(BLANK 67)*	*(BLANK 70)*	

QUARTERLY OPACITY AUDIT REPORT

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

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

		Unit #1	Unit #2
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

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
CSHAWA, 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**
Comments: **Values not valid below 150 psig. [O2] is N.I.S.T traceable to SRM # 2657a respectivelY.**

Filling Method: **Gravimetric**
Date of Fill: **08/20/2015**
Expiration Date: **08/25/2020**

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						

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
10-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**
Cylinder No(s). **EB0047069**

Filling Method: **Gravimetric**
Date of Fill: **04/06/2015**
Expiration Date: **04/07/2020**

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						

PRAXAIR.

~~OUTLET~~ SPAN 1

~~[illegible]~~

18-SEP-15

0836

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 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**
Comments: **Values not valid below 150 psig. [O2] is N.I.S.T traceable to SRM # 2657a respectively.**

Filling Method: **Gravimetric**
Date of Fill: **08/20/2015**
Expiration Date: **08/25/2020**

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						

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.

MOTOR GAS MIX

'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

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

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

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

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

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

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

INL57 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

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

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

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

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

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

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:

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**	

Changed
06/18/15

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

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	

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

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

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 %	

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

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 Distribution, Inc.
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Toledo, OH 43611
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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 Distribution, Inc.
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Toledo, OH 43611
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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 GX2M-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**
Comments: **Values not valid below 150 psig. [O2] is N.I.S.T traceable to SRM # 2657a respectively.**

Filling Method: **Gravimetric**
Date of Fill: **08/20/2015**
Expiration Date: **08/25/2020**

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						

Inlet mid span 2
03/20/2015
08:00 am.

PRAXAIR

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

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				

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

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

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 %				

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

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 Spec #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 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 an Address

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

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

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

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

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 %

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

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 Distribution, Inc.
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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**

Changes June 5/15
@ 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 Distribution, Inc.
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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**
Comments: **Values not valid below 150 psig. [O2] is N.I.S.T traceable to SRM # 2657a respectively.**

Filling Method: **Gravimetric**
Date of Fill: **08/20/2015**
Expiration Date: **08/25/2020**

Approved Signer: **Rolonda Kaywood**

QA Reviewer: **Joshua Jones**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a c standard provided is certified against Praxair Distribution, Inc. Reference Materials which a Measurement Canada, or by using NIST Standard Reference Materials where available. d standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration ler prepared by weights tr ceable to the National Institute of Standards and Technology (NIST),

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 with 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

First Analysis Data: **Date:** 9/21/2014

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

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

Second Analysis Data: **Date:** 9/29/2014

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

First Analysis Data: **Date:** 9/21/2014

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

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

Second Analysis Data: **Date:** 9/29/2014

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	

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 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

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

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 Cylincer # : XF003903B

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
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**

Certification 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-68
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				

Changes out June 18/15
@ 8:00am Rm Cal

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.poin: 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 Mennette 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: _____
(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

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: _____
(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 weighs 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

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 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**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **141.6 ft3**
Valve Outlet Connection: **CGA-330**
Cylinder No(s). **CC188770**

Filling Method: **Gravimetric**
Date of Fill: **05/05/2015**
Expiration Date: **05/05/2016**

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

INLET DAILY Spec 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**

Filling Method: **Gravimetric**
Date of Fill: **05/13/2015**
Expiration Date: **05/19/2020**

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 1

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. Sys #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 Spec 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**

Filling Method: **Gravimetric**
Date of Fill: **05/13/2015**
Expiration Date: **05/19/2020**

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

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
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Fax: +1 (419) 729-2411

9/8/15

Inlet Dr. Sys #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			

PRAXAIR.

outlet span 1

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
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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****

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
Section 2 …… OTP 1Hr CEMS, Maintenance Log, and Calibration Data
Section 3 …… 4 Point / 7 Day Drift tests
Section 4 …… Opacity Certification Tests
Section 5 …… Bottle and Opacity Filter Certifications

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

Unit #2 Inlet **Year - 2015** **Day 4**

Date:	**September 18, 2015**
Start Time:	**9:16**
Stop Time:	**11:06**

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			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	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**	**9.89**	**17.97**	**1.40**	**106.10**	**161.70**	**1.90**	**276.20**	**442.20**	**1.40**	**277.10**	**417.80**	**2.00**	**1054.00**	**1672.00**		
Run #2	**1.91**	**9.89**	**17.97**	**0.60**	**106.40**	**162.60**	**1.80**	**281.00**	**448.00**	**1.70**	**276.90**	**425.40**	**2.00**	**1053.00**	**1673.00**		
Run #3	**1.91**	**9.89**	**17.97**	**1.50**	**106.90**	**162.30**	**1.70**	**279.20**	**440.40**	**1.60**	**277.40**	**424.30**	**2.00**	**1051.00**	**1673.00**		
SUM (1+2+3)	5.83	29.67	53.91	3.50	319.40	486.60	5.40	836.40	1330.60	4.70	831.40	1267.50	6.00	3158.00	5018.00		
Cm = SUM/3	1.94	9.89	17.97	1.17	106.47	162.20	1.80	278.80	443.53	1.57	277.13	422.50	2.00	1052.67	1672.67		
Abs. Diff	0.0566667	0.05	0.03	1.1666667	0.5333333	2.8	1.8	1.2	6.5333333	1.5666667	4.8666667	2.5	2	20.333333	6.3333333		
%F.S.				0.58	0.27	1.40	0.36	0.24	-1.31	0.31	0.97	0.50	0.10	1.02	0.32		
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	
9/18/2015 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 Statu	U2 1-min C	Data Statu	U2 1-min C	Data Statu	U2 1-min C	Data Statu	U2 1-min C	Data Statu	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 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 200 mb, 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. CI 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 (adjusted) - Unit #1 & Unit #2 THC failed daily Cal. Inlet Daily span 4 regulator was found ~~wide open~~ which causes the calibration to failed. Regulator opened 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.

03:00 pm 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.

03:00 pm HF linearity test performed again by Jake Kaizer, Altech representative.

04:00 pm 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 span3

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 tetlon 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

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

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

Section 4

Opacity Certification Tests

QUARTERLY OPACITY AUDIT REPORT

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

RETROREFLECTOR DUST ACCUMULATION CHECK

15	Pre-cleaning effluent Opacity (% opacity)	-0.80
16	Post-cleaning effluent Opacity (% opacity)	-0.80

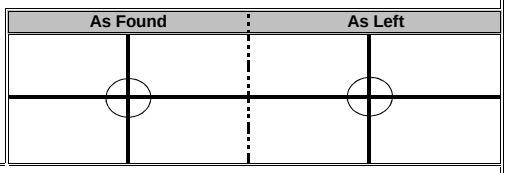
TRANSCEIVER DUST ACCUMULATION CHECK

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.]



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

Page 4

CALCULATION OF AUDIT RESULTS

STACK EXIT CORRELATION ERROR (%)

51 $\dfrac{\text{1.016 (BLANK 4)} - \text{0.508 (BLANK 3)}}{\text{0.508 (BLANK 3)}} \times 100 =$ **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: $(1 - ((1 - \frac{\text{8.40 (BLANK 22)}}{100})^{\text{2.032 (BLANK 4 x 2)}}) \times (1 - \frac{\text{0.1 (BLANK 45)}}{100})) \times 100 =$ **16.4**

60 Mid: $(1 - ((1 - \frac{\text{17.10 (BLANK 23)}}{100})^{\text{2.032 (BLANK 4 x 2)}}) \times (1 - \frac{\text{0.1 (BLANK 45)}}{100})) \times 100 =$ **31.8**

61 High: $(1 - ((1 - \frac{\text{27.50 (BLANK 24)}}{100})^{\text{2.032 (BLANK 4 x 2)}}) \times (1 - \frac{\text{0.1 (BLANK 45)}}{100})) \times 100 =$ **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					
5	8.6	8.5	-0.1	0.02					
	8.62 AVG	8.42 AVG	-1.0 SUM	0.34 SUM					

ME	+	CI	=	%Error
0.204		0.222		0.43
(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					
5	17.4	16.5	-0.9	0.88					
	17.44 AVG	16.54 AVG	-4.5 SUM	4.08 SUM					

ME	+	CI	=	%Error
0.903		0.062		0.96
(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					
5	28.0	27.0	-1.0	0.91					
	27.96 AVG	26.98 AVG	-4.9 SUM	4.77 SUM					

ME	+	CI	=	%Error
0.976		0.056		1.03
(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

		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

		Unit #1	Unit #2
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	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

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
CSHAWA, 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**
Comments: **Values not valid below 150 psig. [O2] is N.I.S.T traceable to SRM # 2657a respectivelY.**

Filling Method: **Gravimetric**
Date of Fill: **08/20/2015**
Expiration Date: **08/25/2020**

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						

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
10-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**
Cylinder No(s). **EB0047069**

Filling Method: **Gravimetric**
Date of Fill: **04/06/2015**
Expiration Date: **04/07/2020**

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						

PRAXAIR.

~~OUTLET~~ SPAN 1

~~[illegible]~~

18-SEP-15

0836

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 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**
Comments: **Values not valid below 150 psig. [O2] is N.I.S.T traceable to SRM # 2657a respectively.**

Filling Method: **Gravimetric**
Date of Fill: **08/20/2015**
Expiration Date: **08/25/2020**

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						

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.

MOTOR GAS MIX

'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

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

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

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

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

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

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

INL57 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

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

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

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

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

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

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:

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**	

Changed
06/18/15

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

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	

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

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

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 %	

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

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 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			

Inlet Daily Zero
9/18/2015
08:15 am.

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 GX2M-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**
Comments: **Values not valid below 150 psig. [O2] is N.I.S.T traceable to SRM # 2657a respectively.**

Filling Method: **Gravimetric**
Date of Fill: **08/20/2015**
Expiration Date: **08/25/2020**

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						

Inlet mid span 2
03/20/2015
08:00 am.

PRAXAIR

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

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				

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

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

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 %				

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

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 Spec #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 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 an Address

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

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

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

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

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 %

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

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 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**

Changes June 5/15
@ 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 Distribution, Inc.
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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**
Comments: **Values not valid below 150 psig. [O2] is N.I.S.T traceable to SRM # 2657a respectively.**

Filling Method: **Gravimetric**
Date of Fill: **08/20/2015**
Expiration Date: **08/25/2020**

Approved Signer: **Rolonda Kaywood**

QA Reviewer: **Joshua Jones**

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a c standard provided is certified against Praxair Distribution, Inc. Reference Materials which a Measurement Canada, or by using NIST Standard Reference Materials where available. d standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration ler prepared by weights tr ceable to the National Institute of Standards and Technology (NIST),

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 with 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

First Analysis Data: **Date:** 9/21/2014

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

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

Second Analysis Data: **Date:** 9/29/2014

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

First Analysis Data: **Date:** 9/21/2014

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

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

Second Analysis Data: **Date:** 9/29/2014

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	

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 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

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

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 Cylincer # : XF003903B

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
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**

Certification 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-68
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				

Changes out June 18/15
@ 8:00am Rm Cal

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.poin: 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 Mennette 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: _____
(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

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: _____
(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 weighs 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

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 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**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **141.6 ft3**
Valve Outlet Connection: **CGA-330**
Cylinder No(s). **CC188770**

Filling Method: **Gravimetric**
Date of Fill: **05/05/2015**
Expiration Date: **05/05/2016**

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

INLET DAILY Spec 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**

Filling Method: **Gravimetric**
Date of Fill: **05/13/2015**
Expiration Date: **05/19/2020**

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 1

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. Sys #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 Spec 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**

Filling Method: **Gravimetric**
Date of Fill: **05/13/2015**
Expiration Date: **05/19/2020**

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**

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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

Praxair Distribution, Inc.
6055 Brent Drive
Toledo, OH 43611
Tel: +1 (419) 729-7732
Fax: +1 (419) 729-2411

9/8/15

Inlet Dr. Sys #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			

PRAXAIR.

outlet span 1

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****

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	15
Pitot Factor	.845

Measuring Device	MII Number
Probe/Pitot	B03777
Manometer	B07784
Temperature Indicator	COE 20032
Barometer	ENV. CANADA

Barometric ("Hg)	
Static ("H_2O)	-2.25
Time	12:25

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						
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	327	-.03	5
Traverse 2						
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	.74	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	CAE 20032
Barometer	E/V. 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	.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	.551	.52	.50	272	[illegible]0	[illegible]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	277	.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	CAE 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						
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	330	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 DM

Project No.	21546

Pitot ID	15C
Pitot Factor	0.845

Barometric ("Hg)	
Static ("H_2O)	-12.0
Time	10:41 - 11:10

O2 (%)	
CO2 (%)	
CO (ppm)	

Measuring Device	MII Number
Probe/Pitot	B03777
Manometer	B03784
Temperature Indicator	COE 20032
Barometer	EJU. CANADA

10:41 - 10:56

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	.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	2
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	4
10	.83	.84	.82	271	.09	3
11	.85	.86	.84	269	.09	3
NEAR 12	.79	.80	.78	267	.03	1

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

	O2			CO2			CO			SO2			NOX		
Pont #	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**	

$$**Difference = \frac{(Gas\ Concentration\ at\ Point\ i - Average\ Gas\ Concentration)}{(Average\ Gas\ Concentration)} \times 100$$

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**	

$$**Difference = \frac{(Gas\ Concentration\ at\ Point\ i - Average\ Gas\ Concentration)}{(Average\ Gas\ Concentration)} \times 100$$

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**	

$$**Difference = \frac{(Gas\ Concentration\ at\ Point\ i - Average\ Gas\ Concentration)}{(Average\ Gas\ Concentration)} \times 100$$

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**	

$$**Difference = \frac{(Gas\ Concentration\ at\ Point\ i - Average\ Gas\ Concentration)}{(Average\ Gas\ Concentration)} \times 100$$

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

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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

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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

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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

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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

September 27, 2015

Test No. 1		Test No. 2		Test No. 3		Test No. 4	
	THC		THC		THC		THC
Time	ppm	Time	ppm	Time	ppm	Time	ppm
07:57	0.0	08:28	0.0	08:59	0.0	09:30	0.0
07:58	0.0	08:29	0.0	09:00	0.0	09:31	0.0
07:59	0.0	08:30	0.0	09:01	0.0	09:32	0.0
08:00	0.0	08:31	0.0	09:02	0.0	09:33	0.0
08:01	0.0	08:32	0.0	09:03	0.0	09:34	0.0
08:02	0.0	08:33	0.0	09:04	0.0	09:35	0.0
08:03	0.0	08:34	0.0	09:05	0.0	09:36	0.0
08:04	0.0	08:35	0.0	09:06	0.0	09:37	0.0
08:05	0.0	08:36	0.0	09:07	0.0	09:38	0.0
08:06	0.1	08:37	0.0	09:08	0.0	09:39	0.0
08:07	0.0	08:38	0.0	09:09	0.0	09:40	0.0
08:08	0.0	08:39	0.0	09:10	0.0	09:41	0.0
08:09	0.0	08:40	0.4	09:11	0.0	09:42	0.0
08:10	0.0	08:41	0.2	09:12	0.0	09:43	0.0
08:11	0.0	08:42	0.0	09:13	0.0	09:44	0.0
08:12	0.0	08:43	0.0	09:14	0.0	09:45	0.0
08:13	0.0	08:44	0.0	09:15	0.0	09:46	0.0
08:14	0.3	08:45	0.0	09:16	0.0	09:47	0.0
08:15	0.2	08:46	0.0	09:17	0.4	09:48	0.0
08:16	0.0	08:47	0.0	09:18	0.0	09:49	0.0
08:17	0.0	08:48	0.0	09:19	0.0	09:50	0.0
08:18	0.0	08:49	0.0	09:20	0.0	09:51	0.0
08:19	0.0	08:50	0.0	09:21	0.0	09:52	0.1
08:20	0.0	08:51	0.0	09:22	0.0	09:53	0.0
08:21	0.0	08:52	0.0	09:23	0.0	09:54	0.0
08:22	0.0	08:53	0.0	09:24	0.0	09:55	0.0
08:23	0.0	08:54	0.0	09:25	0.0	09:56	0.0
08:24	0.0	08:55	0.0	09:26	0.0	09:57	0.0
08:25	0.0	08:56	0.0	09:27	0.0	09:58	0.0
08:26	0.0	08:57	0.0	09:28	0.0	09:59	0.0
08:27	0.0	08:58	0.0	09:29	0.0	10:00	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
Avg	0.0	Avg	0.0	Avg	0.0	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	
	THC
Time	ppm
10:10	0.0
10:11	0.0
10:12	0.0
10:13	0.0
10:14	0.0
10:15	0.0
10:16	0.0
10:17	0.8
10:18	0.0
10:19	0.3
10:20	0.0
10:21	0.0
10:22	0.0
10:23	0.0
10:24	0.0
10:25	0.0
10:26	0.0
10:27	0.0
10:28	0.0
10:29	0.0
10:30	0.0
10:31	0.0
10:32	0.0
10:33	0.0
10:34	0.0
10:35	0.0
10:36	0.0
10:37	0.0
10:38	0.0
10:39	0.0
10:40	0.0
Min	0.0
Max	0.8
Avg	0.0

Test No. 6	
	THC
Time	ppm
10:41	0.0
10:42	0.0
10:43	0.0
10:44	0.0
10:45	0.0
10:46	0.0
10:47	0.0
10:48	0.0
10:49	0.0
10:50	0.0
10:51	0.0
10:52	0.0
10:53	0.0
10:54	0.0
10:55	0.0
10:56	0.0
10:57	0.1
10:58	0.0
10:59	0.0
11:00	0.0
11:01	0.0
11:02	0.0
11:03	0.0
11:04	0.0
11:05	0.0
11:06	0.0
11:07	0.0
11:08	0.0
11:09	0.0
11:10	0.0
11:11	0.0
Min	0.0
Max	0.1
Avg	0.0

Test No. 7	
	THC
Time	ppm
12:22	0.0
12:23	0.0
12:24	0.0
12:25	0.0
12:26	0.0
12:27	0.0
12:28	0.0
12:29	0.1
12:30	0.0
12:31	0.0
12:32	0.0
12:33	0.1
12:34	0.0
12:35	0.0
12:36	0.0
12:37	0.0
12:38	0.0
12:39	0.0
12:40	0.0
12:41	0.0
12:42	0.0
12:43	0.0
12:44	0.0
12:45	0.0
12:46	0.0
12:47	0.0
12:48	0.0
12:49	0.0
12:50	0.0
12:51	0.0
12:52	0.5
Min	0.0
Max	0.5
Avg	0.0

Test No. 8	
	THC
Time	ppm
12:53	0.0
12:54	0.0
12:55	0.0
12:56	0.0
12:57	0.0
12:58	0.0
12:59	0.0
13:00	0.0
13:01	0.0
13:02	0.0
13:03	0.0
13:04	0.0
13:05	0.0
13:06	0.0
13:07	0.0
13:08	0.0
13:09	0.0
13:10	0.0
13:11	0.0
13:12	0.0
13:13	0.0
13:14	0.0
13:15	0.0
13:16	0.0
13:17	0.0
13:18	0.0
13:19	0.0
13:20	0.0
13:21	0.0
13:22	0.0
13:23	0.0
Min	0.0
Max	0.0
Avg	0.0

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Relative Accuracy Test Audit at the Boiler No. 1 Scrubber Inlet
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Test No. 9	
	THC
Time	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	
	THC
Time	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	
	THC
Time	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	
	THC
Time	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
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

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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 200910
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 Δ H "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	57	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 CQE 20094
Barometer	ENV. CAN

P_{Bar}	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 Δ H "H_2O"	Pump Vacuum "Hg Gauge
0	~~50.2~~	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	76	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 : NY

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 CAL 2009
Barometer	ENV. CAN

P_{Bar}	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	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	~~71~~ 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	4.0

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 CODE 20094
Barometer	ENV. CAN

29.90

P_{Bar}	~~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 Δ H "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	TOAM4 CCE 200940
Barometer	ENV. CAN

P_{Bar}	~~29.79~~ 29.89	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 Δ H "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.:
Date:	Oct 5, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	Rmm I CCE 700944
Barometer	Env. Can

P_{Bar}	29.88 ~~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 Δ H "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:	19:53
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	TEMM 4 CME 7009C
Barometer	ENV. CAN

P_{Bar}	~~29.78~~ 29.87	~~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 Δ H "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 CCE 209964
Barometer	ENV. CAN

P_{Bar}	~~29.8~~ 29.87	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 Δ H "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}	29.86 ~~29.76~~

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 Δ H "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	286	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 CME 260914
Barometer	ENV. CAN.

P_{Bar}	29.86 ~~29.78~~

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 Δ H "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	~~59.~~	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.:	1
Test location:	Outlet No.:
Date:	OCT 5, 2015
Project No.:	21546

Measuring Device	MII Number
Control Module	RAM 4, COE 20010
Barometer	ENV. CAN

P_{Bar}	~~29.8~~ 29.35	~~29.77~~

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 Δ H "H_2O"	Pump Vacuum "Hg Gauge
0	97.28	259	285	62	76	76	2.0	4.0
5	102.0	257	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~~ 120.43	255	285	49	87	77	2.0	4.0

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, COE 20314
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 Δ H "H_2O"	Pump Vacuum "Hg Gauge
0	64.61	255	286	54	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	78	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	Average Dry Gas Meter Temperature °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, COE200-3
Barometer	ENV. CAN

P_{Bar}	30.09

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 Δ H "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:	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, 605 2009 3
Barometer	ENV. CAN

P_{Bar}	30.09

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 Δ H "H_2O"	Pump Vacuum "Hg Gauge
0	47.4	258	286	68	81	81	1.9	2
5	50.0	256	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	256	270	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 : MT

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}	30.88

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 Δ H "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 Δ H "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:	22.24
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 29, 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 1.5 ft^3	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	~~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	60	82	82	1.9	2
25	32.9	254	280	60	82	82	1.9	2
30	~~36.85~~	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:	~~.884~~ .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 (06 200 93
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 Δ H "H_2O"	Pump Vacuum "Hg Gauge
0	37.6	257	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:	22.05
Average DGM Temp:	82.6

Comments:

Operator : MF

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 COC200913
Barometer	ENV. CAN

P_{Bar}	30.00

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 Δ H "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:	~~.864~~ .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 COF 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	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:	284.981
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 Δ H "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	256	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	TEAM 3 CCE 200973
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 Δ H "H_2O"	Pump Vacuum "Hg Gauge
0	28.1	250	280	58	81	81	1.9	2
5	31.72	257	275	61	80	80	1.9	2
10	35.29	257	280	58	80	80	1.9	2
15	39.13	~~257~~ 253	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~~ 50.15	254	281	61	80	80	1.9	2

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 CUE 200913
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	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:	~~.489~~ .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 Δ H "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	251	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:	~~.9884~~ .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 200910
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 Δ H "H_2O"	Pump Vacuum "Hg Gauge
0	17.0	~~278~~ 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 CAE 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 Δ H "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 ft^3	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	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:	~~14:50~~	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 COL 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 Δ H "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 (OE 200910
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 Δ H "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 : MP

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 CCE 26890
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 Δ H "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	51.84	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:	.608	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, COC 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 Δ H "H_2O	Pump Vacuum "Hg Gauge
0	55.31	258	274	63	82	82	1.9	5
5	58.8	252	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	TEAM 4 OE 200910
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 Δ H "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, COC 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 Δ H "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	87	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 20910
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 Δ H "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	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	TEMPEST COG 200900
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 Δ H "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	TEAM4 CDE 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 Δ H "H_2O"	Pump Vacuum "Hg Gauge
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	259	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 #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

Impinger #4 Silica Gel	
Initial Wt:	963.3
Final Wt:	971.6
4 Gain:	8.3

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:	391.6

-25ml almost 630.0

CWTR = 1+2+3:	81.3

WCBDA= 4:	8.3

59.6
2.6
1.9ml
0.7ml

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	

Train Loaded By:	
Train Recovered By:	

11

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_2SO_4	
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
4 Gain:	10.0

Impinger #2 0.1 N H_2SO_4	
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
0.5ml

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	

Train Loaded By: DM

Train Recovered By: DM

2

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:	808.4
Final Wt:	819.0
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:	9.6

87.3

3.55

3.1

.45

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	

Train Loaded By: DM

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_2SO_4	
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_2SO_4	
Empty Wt:	670.0
Initial Wt:	771.5
Final Wt:	785.9
Gain:	14.4
Colour:	CLEAR

Impinger #3 EMPTY	
Empty Wt:	629.5
Final Wt:	630.1
Gain:	1.6
Colour:	CLEAR

CONTAINER TS1 WEIGHTS

Empty Wt:	277.4
With Imp. 1,2,3 Soln:	~~277.5~~ 553.6
Imp. 1,2,3 Volume:	275.5
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: DM

Train Recovered By: DM

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 #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

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	

Impinger #4 Silica Gel	
Initial Wt:	871.5
Final Wt:	877.7
4 Gain:	6.2

CWTR = 1+2+3:	94.4
WCBDA= 4:	6.2
	100.6

4.45
4.05
.40

Train Loaded By: DM
Train Recovered By: DM

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:	281.9
After Rinse:	670.4
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:	RM
Train Recovered By:	RM

X

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	OCTOBER 5, 2015.
Test No.:	4 3.
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:	~~567.2~~
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

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	

5.25
4.85
.40

Train Loaded By:	DL
Train Recovered By:	DL

A

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:	772.9
4 Gain:	6.3

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:	394
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:	6.3 ✓
	98.0
	5.65
	5.25

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	

Train Loaded By:	DM
Train Recovered By:	DM

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 #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:	67.8
Total TS3:	404.3

Impinger #4 Silica Gel	
Initial Wt:	877.6
Final Wt:	883.0
4 Gain:	5.4

CWTR = 1+2+3:	85.9
WCBDA= 4:	5.4

= 90.8 ✓

6.05
5.7

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	

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:	331.4
Final Wt:	341.5
4 Gain:	10.1

Impinger #2 0.1 N H_2SO4	
Empty Wt:	606.6
Initial Wt:	709.0
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

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	

6.60
6.15
.45

Train Loaded By:

Train Recovered By:

X

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: DM

Train Recovered By: DM

A

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 #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

Impinger #4 Silica Gel	
Initial Wt:	772.8
Final Wt:	778.7
4 Gain:	5.9

CONTAINER TS1 WEIGHTS

Empty Wt:	276.8
With Imp. 1,2,3 Soln:	550.6
Imp. 1,2,3 Volume:	273.8
After Rinse:	692.7
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

Train Loaded By: RM
Train Recovered By: RM

7.32
B 7.3

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
Imp. 1,2,3 Volume:	265.0
After Rinse:	620.9
Total TS3:	342.4

-NOT INCL 25ml ALIQUOT

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: RM

Train Recovered By: RM

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:	671.5
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: DM

Train Recovered By: DM

B

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_2SO_4	
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_2SO_4	
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:	579.0
Imp. 1,2,3 Volume:	301.8
After Rinse:	604.1
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_2SO_4	
Empty Wt:	680.4
Initial Wt:	781.5
Final Wt:	853.5
Gain:	72.0
Colour:	CLEAR

97.7

Impinger #4 Silica Gel	
Initial Wt:	835.8
Final Wt:	841.3
4 Gain:	5.5

Impinger #2 0.1 N H_2SO_4	
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 +6
Colour:	CLEAR

CONTAINER TS1 WEIGHTS	
Empty Wt:	274.3
With Imp. 1,2,3 Soln:	561.8
Imp. 1,2,3 Volume:	283.5
After Rinse:	637.9
Total TS3:	351.6

- WITH 25ml ALIQUOT

CWTR = 1+2+3:	287.2 ✓
WCBDA= 4:	5.5

276.90.7

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_2SO_4	
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_2SO_4	
Empty Wt:	671.5
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
Imp. 1,2,3 Volume:	272.3
After Rinse:	609.1
Total TS3:	331.3

- Not Incl 25mL aliquot

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:	DU
Train Recovered By:	RW

B

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_2SO_4	
Empty Wt:	680.6
Initial Wt:	790.2
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_2SO_4	
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~~ ~~750.7~~
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_2SO_4	
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_2SO_4	
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

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_2SO_4	
Empty Wt:	660.0
Initial Wt:	782.7
Final Wt:	855.7
Gain:	73.0
Colour:	Clear

204.7

Impinger #4 Silica Gel	
Initial Wt:	850.9
Final Wt:	855.9
4 Gain:	5.0

Impinger #2 0.1 N H_2SO_4	
Empty Wt:	676.6
Initial Wt:	778.6
Final Wt:	791.8
Gain:	~~13.2~~
Colour:	Clear

Impinger #3 EMPTY	
Empty Wt:	606.2
Final Wt:	608.3
Gain:	2.1 ++
Colour:	Clear

CONTAINER TS1 WEIGHTS	
Empty Wt:	284.5
With Imp. 1,2,3 Soln:	5565
Imp. 1,2,3 Volume:	272.0
After Rinse:	653.0
Total TS3:	366.5

- Without 25mL aliquot

CWTR = 1+2+3:	88.3 ✓
WCBDA= 4:	~~93~~ 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

Impinger #3 EMPTY	
Empty Wt:	637.2
Final Wt:	638.4
Gain:	1.2 0.2
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

93.7

CWTR = 1+2+3:	92.7 ✓

WCBDA= 4:	4.8

98.5

SAMPLE IDENTIFICATION	12
TS1(Impinger 1,2,3 Sol'n)	

Train Loaded By:	RL
Train Recovered By:	RL

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

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

Impinger #1 0.1 N H_2SO_4	
Empty Wt:	676.3
Initial Wt:	790.1
Final Wt:	862.9
Gain:	72.8
Colour:	Clear

INITIAL VOL 209.6

FINAL VOL 324.4

Impinger #4 Silica Gel	
Initial Wt:	854.0
Final Wt:	859.7
Gain:	5.7

4

Impinger #2 0.1 N H_2SO_4	
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:	605.7
Final Wt:	609.3
Gain:	2.4
Colour:	Clear

CONTAINER TS1 WEIGHTS	
Empty Wt:	291.9
With Imp. 1,2,3 Soln:	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)	15-2546-M26-13

Train Loaded By: MT

Train Recovered By: DU

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:	~~453.2~~
Gain:	69.3
Colour:	CLEAR

202.9

70.1

Impinger #4 Silica Gel	
Initial Wt:	839.4
Final Wt:	846.6
Gain:	7.2

4

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: DM

Train Recovered By: DM

6

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	SEPT 23, 2015
Test No.:	3 - ~~4~~
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

UNIT 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:	RM
Train Recovered By:	RM

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:	~~537.8~~ 534.2
Initial Wt:	639.6
Final Wt:	717.5
Gain:	77.9
Colour:	CLEAR

INITIAL 209.7

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:	290.0
With Imp. 1,2,3 Soln:	534.5
Imp. 1,2,3 Volume:	279.5
After Rinse:	63.1
Total TS3:	343.1

-25 ml ALIQUOT NOT INCL.

CWTR = 1+2+3:	90.9 ✓
WCBDA= 4:	7.5
	99.4

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	16

Train Loaded By:	RM
Train Recovered By:	RM

B

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:	779.4
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:	12.8
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

~25ml 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:	RM
Train Recovered By:	RM

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
4 Gain:	6.5

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

25ml 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:	781.7
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: RM

Train Recovered By: RM

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:	527.9
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: DV

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:	859.9
Gain:	69.3
Colour:	CLEAR

Impinger #4 Silica Gel	
Initial Wt:	881.5
Final Wt:	888.6
4 Gain:	7.1

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
	928.

SAMPLE IDENTIFICATION	
TS1(Impinger 1,2,3 Sol'n)	21

Train Loaded By: RM

Train Recovered By: RM

RM A.

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:	244.9
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: RM

Train Recovered By: RM

B

Method 26A Recovery Sheet

Client :	Covanta
Project No.:	21546
Date:	August 23, 2015
Test No.:	11
Test Location:	UNIT 2

Impingers 1, 2, 3

Impinger 4

CONTAINER TS1

Impinger #1 0.1 N H_2SO_4	
Empty Wt:	680.6
Initial Wt:	782.3
Final Wt:	846.3
Gain:	64.0
Colour:	CLEAR

202.6

Impinger #4 Silica Gel	
Initial Wt:	888.4
Final Wt:	895.1
4 Gain:	6.7

Impinger #2 0.1 N H_2SO_4	
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

- 25ml 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

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_2SO_4	
Empty Wt:	533.6
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
Gain:	6.9

4

Impinger #2 0.1 N H_2SO_4	
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:	269.1
Imp. 1,2,3 Volume:	~~632.2~~ 547.4
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: RM

Train Recovered By: RM

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%)

Certified by: R. Stolys

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

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	0.745	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%)

Certified by. R. Stolys

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

ALS Environmental

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%)

Certified by: R. Stolys

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				
High	90	A2	90.8	B2	C				
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
Mfl 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
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	0.27	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				
High	90	A2	89.97	B2	C				
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					
High	90	A2	89.97	B2		C				
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

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%
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					
High	90	A2	90.22	B2		C				
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					
High	90	A2	90.22	B2		C				
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					
High	90	A2	90.22	B2		C				
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

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

	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

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
Mfl 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

	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		PAS5	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					
High	90	A2	90.22	B2		C				
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				
High	90	A2	90.22	B2	C				
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.

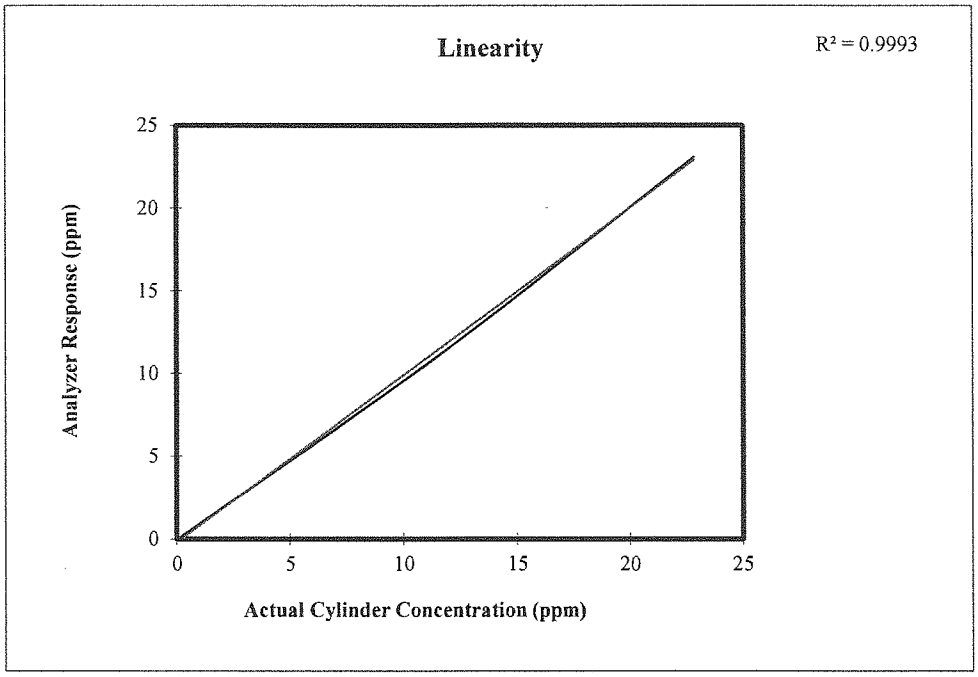
	Zero Response Time (seconds)		Upscale Response Time (seconds)
Run 1	30		43
Run 2	30		45
Run 3	30		41
Average	**30**		**43**

APPENDIX 16

ORTECH CEM Analyzer Linearity Determination,
Response Time and Reproducibility and Converter Efficiency
(11 pages)

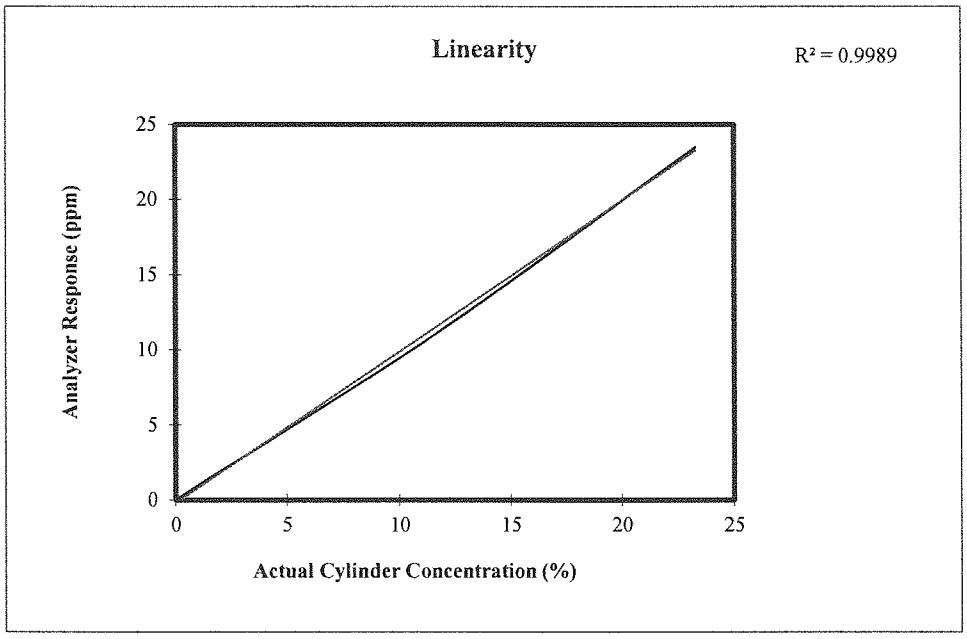
Covanta
September 22, 2015
Analyzer Linearity Determination
Oxygen Analyzer
Horiba VA 3000

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



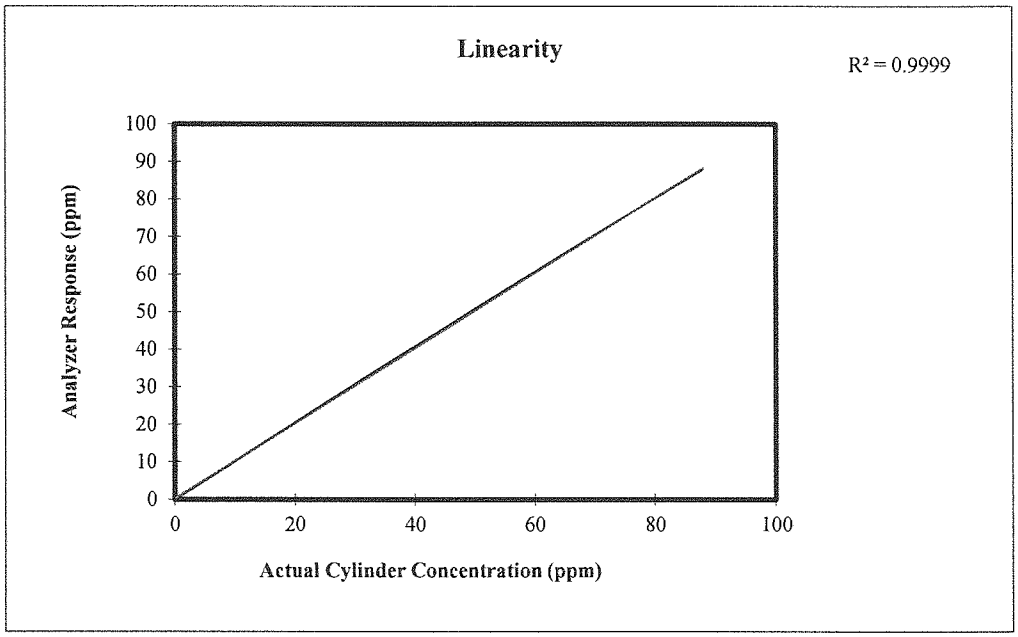
Covanta
September 22, 2015
Analyzer Linearity Determination
Carbon Dioxide Analyzer
Horiba VA 3000

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



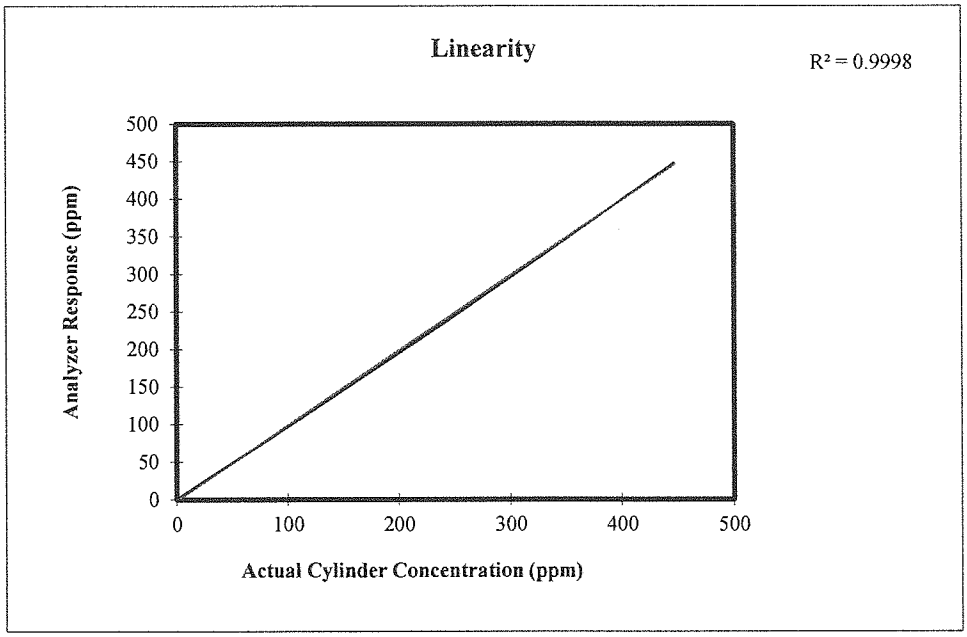
Covanta
September 22, 2015
Analyzer Linearity Determination
Sulphur Dioxide Analyzer
Teledyne T-100

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



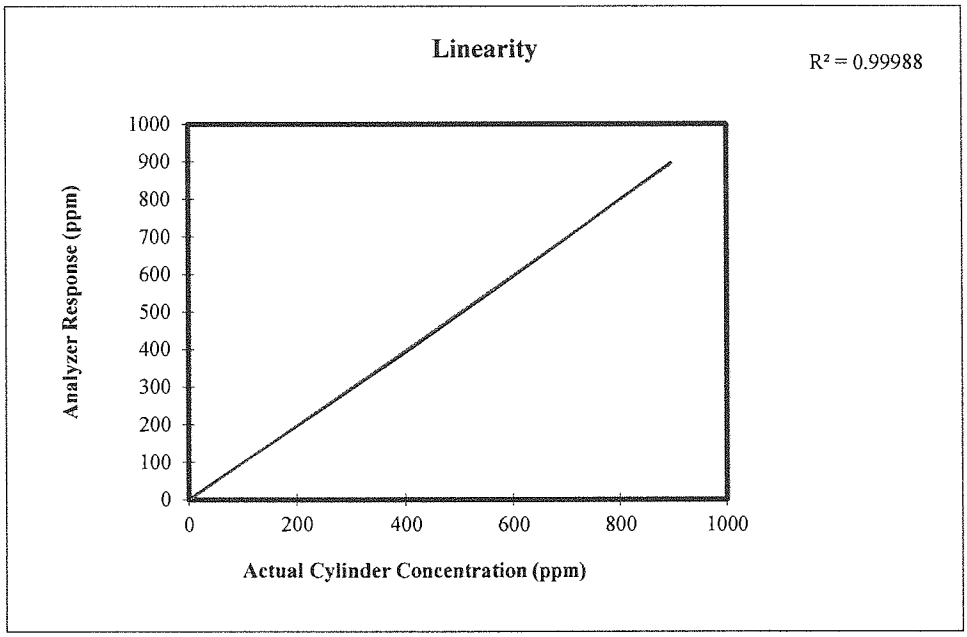
Covanta
September 22, 2015
Analyzer Linearity Determination
Carbon Monoxide Analyzer
Horiba VA 3000

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



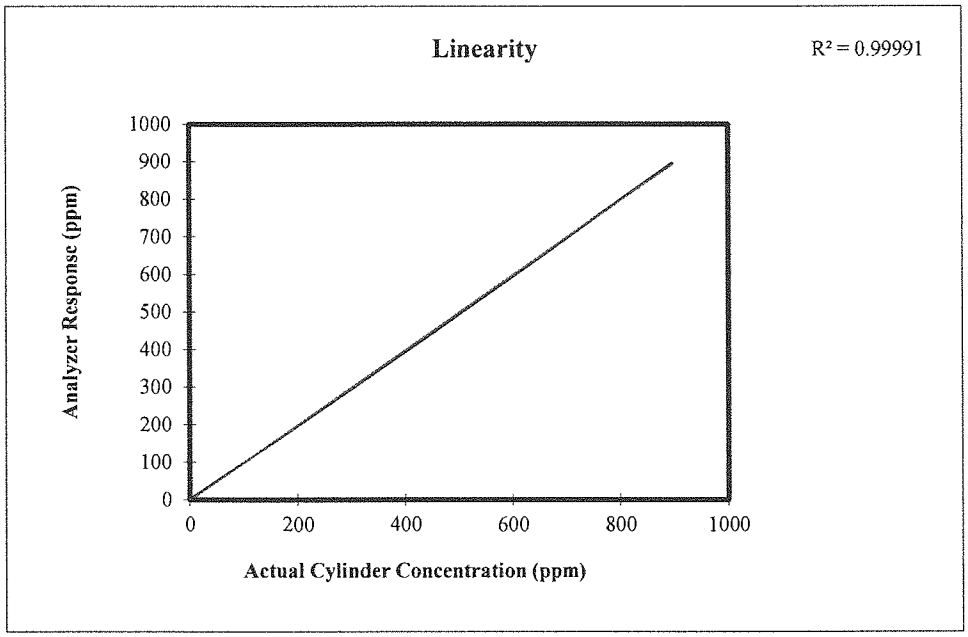
Covanta
September 22, 2015
Analyzer Linearity Determination
Nitric Oxide Analyzer
Teledyne API 200EH

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 Distribution Mid-Atlantic
One Steel Road East,
Morrisville, PA 19067
Tel: (800) 638-6360 Fax:(215) 736 5240
PGVP ID: F32013

DocNumber: 000006689

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

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 %

Reference Standard Type: GMIS
Ref. Std. Cylinder # : SA20650
Ref. Std. Conc: 19.69%
Ref. Std. Traceable to SRM # : 2745
SRM Sample # :
SRM Cylinder # :

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

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 %

Reference Standard Type: GMIS
Ref. Std. Cylinder # : CC154730
Ref. Std. Conc: 22.50 %
Ref. Std. Traceable to SRM # : 2659a
SRM Sample # :
SRM Cylinder # :

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	

Certification 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

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 %

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

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

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 %

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

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	NIST Traceable
Cylinder Number:	EB0009787	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

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 %				

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

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

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 %				

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

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

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 %

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

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

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 %

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

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 Mid-Atlantic
One Steel Road East,
Morrisville, PA 19067
Tel:(800)638-6360 Fax:(215)736-5240
PGVP ID: F32014

DocNumber: 000007063

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
PGVP ID: F12015

DocNumber: 000007537

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		NIST Traceable
Cylinder Number:	CC348878		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

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

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

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

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

CYL NUMBER: SX 12432

LAB REFERENCE #: 4501218190

LOT NUMBER: 1256215

COMPONENT NAME	MEAN CONCENTRATION
Sulfur Dioxide	89.97 ppm

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

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			

Analyzed by: Josh Godfrey

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

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			

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

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

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

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 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
Comments: This mixture was filled gravimetrically on a scale calibrated using NCR traceable weights - certificate #1345343, M14-0374, 1346477.

Filling Method: Gravimetric
Date of Fill: 05/05/2015

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.

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: 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

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

HiQ® Certificate / Certificat HiQ®

Linde Canada Ltd / ltée
530 Watson Street East
Whitby ON L1N 5R9

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.

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

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^\circ F+460}{Tstd\ ^\circ F+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading ft^3		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration	Time
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°F	in. H_2O	°F	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

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	0.981
BEFORE	0.970

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	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	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

$$\% \text{ Difference} = \frac{(\text{micromite} - \text{after adjustment reading}) \times 100}{\text{micromite}}$$

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 "H_20	Manometer Reading "H_2O Before Adjustment	Manometer Reading "H_2O After Adjustment	Reference Manometer Reading "H_2O	Percent Difference %
	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

Percent Difference = (Ref. Manometer - Instrument Reading) x 100
Ref. Manometer

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	
Reviewed and Accepted By	CHRIS BEFORE

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.
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

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	1.004
BEFORE	0.976

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

$$\% \text{ Difference} = \frac{(\text{micromite} - \text{after adjustment reading})}{\text{micromite}} \times 100$$

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_2O	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

Percent Difference = (Ref. Manometer - Instrument Reading) x 100
Ref. Manometer

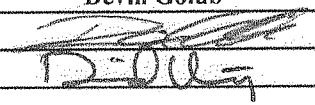
Acceptance Criteria:
The manometer being calibrated must be within ± 5.0% of the Standard value at each reading. Otherwise, the manometer must be repaired and/or adjusted as necessary and recalibrated prior to use. Manometers must be capable of measuring velocity pressure to within 0.005 "H_2O on the 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

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^\circ F+460}{Tstd\ ^\circ F+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading ft^3		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration	Time
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°F	in. H_2O	°F	Factor	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

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	1.017
BEFORE	1.009

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

$$\% \text{ Difference} = \frac{(\text{micromite} - \text{after adjustment reading}) \times 100}{\text{micromite}}$$

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 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		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

Percent Difference = (Ref. Manometer - Instrument Reading) x 100
Ref. Manometer

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

	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 12:44	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

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 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

	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 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

	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 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

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 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							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 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

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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		Test No. 6		Test No. 7		Test No. 8	
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
10:10	4.0	10:41	4.3	12:22	4.0	12:53	4.7
10:11	4.0	10:42	4.4	12:23	3.9	12:54	4.3
10:12	3.9	10:43	4.7	12:24	3.9	12:55	4.0
10:13	4.1	10:44	4.5	12:25	3.8	12:56	4.1
10:14	4.6	10:45	4.0	12:26	3.9	12:57	4.0
10:15	4.5	10:46	3.9	12:27	3.7	12:58	4.5
10:16	4.1	10:47	3.7	12:28	4.0	12:59	4.5
10:17	4.2	10:48	3.7	12:29	4.1	13:00	4.5
10:18	4.0	10:49	3.8	12:30	4.4	13:01	4.4
10:19	4.1	10:50	3.8	12:31	4.0	13:02	4.1
10:20	4.0	10:51	3.7	12:32	4.0	13:03	4.4
10:21	3.8	10:52	4.0	12:33	3.9	13:04	4.5
10:22	3.7	10:53	3.8	12:34	4.2	13:05	4.4
10:23	3.8	10:54	4.1	12:35	3.9	13:06	4.3
10:24	4.0	10:55	3.9	12:36	4.0	13:07	4.2
10:25	4.0	10:56	4.3	12:37	3.9	13:08	3.9
10:26	4.6	10:57	4.7	12:38	3.9	13:09	4.4
10:27	4.4	10:58	4.8	12:39	3.8	13:10	4.1
10:28	4.2	10:59	4.3	12:40	4.2	13:11	4.1
10:29	4.1	11:00	4.5	12:41	4.1	13:12	4.1
10:30	4.0	11:01	4.2	12:42	4.2	13:13	4.4
10:31	3.6	11:02	4.1	12:43	4.2	13:14	4.2
10:32	3.8	11:03	4.0	12:44	4.1	13:15	4.2
10:33	3.9	11:04	4.2	12:45	3.9	13:16	4.1
10:34	3.9	11:05	4.1	12:46	4.5	13:17	4.2
10:35	3.7	11:06	4.3	12:47	4.2	13:18	4.1
10:36	3.8	11:07	4.3	12:48	4.3	13:19	4.2
10:37	3.6	11:08	4.3	12:49	4.2	13:20	3.9
10:38	3.8	11:09	4.1	12:50	4.1	13:21	4.2
10:39	3.6	11:10	4.1	12:51	4.0	13:22	4.1
10:40	4.4	11:11	4.2	12:52	4.2	13:23	4.4
Min	3.6	Min	3.7	Min	3.7	Min	3.9
Max	4.6	Max	4.8	Max	4.5	Max	4.7
Avg	4.0	Avg	4.2	Avg	4.0	Avg	4.2

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Test No. 9		Test No. 10		Test No. 11		Test No. 12	
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
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	
	U1 1-min Calcs - HCL		U1 1-min Calcs - HCL		U1 1-min Calcs - HCL		U1 1-min Calcs - HCL
Time	ppm	Time	ppm	Time	ppm	Time	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		Test No. 6		Test No. 7		Test No. 8	
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
13:51	1.2	14:23	1.2	14:55	1.1	15:26	1.1
13:52	1.2	14:24	1.2	14:56	1.1	15:27	1.1
13:53	1.2	14:25	1.2	14:57	1.2	15:28	1.1
13:54	1.2	14:26	1.2	14:58	1.1	15:29	1.1
13:55	1.2	14:27	1.2	14:59	1.2	15:30	1.1
13:56	1.2	14:28	1.2	15:00	1.2	15:31	1.1
13:57	1.2	14:29	1.2	15:01	1.1	15:32	1.1
13:58	1.2	14:30	1.2	15:02	1.1	15:33	1.0
13:59	1.2	14:31	1.3	15:03	1.1	15:34	1.0
14:00	1.2	14:32	1.2	15:04	1.1	15:35	1.0
14:01	1.2	14:33	1.3	15:05	1.1	15:36	1.0
14:02	1.2	14:34	1.3	15:06	1.1	15:37	1.0
14:03	1.2	14:35	1.2	15:07	1.1	15:38	1.0
14:04	1.1	14:36	1.2	15:08	1.2	15:39	1.0
14:05	1.1	14:37	1.2	15:09	1.2	15:40	1.0
14:06	1.2	14:38	1.2	15:10	1.2	15:41	1.0
14:07	1.1	14:39	1.2	15:11	1.1	15:42	1.0
14:08	1.1	14:40	1.2	15:12	1.2	15:43	1.0
14:09	1.1	14:41	1.2	15:13	1.2	15:44	1.0
14:10	1.1	14:42	1.2	15:14	1.1	15:45	1.1
14:11	1.1	14:43	1.2	15:15	1.1	15:46	1.1
14:12	1.1	14:44	1.2	15:16	1.1	15:47	1.1
14:13	1.1	14:45	1.2	15:17	1.1	15:48	1.1
14:14	1.1	14:46	1.2	15:18	1.1	15:49	1.1
14:15	1.1	14:47	1.2	15:19	1.1	15:50	1.1
14:16	1.1	14:48	1.2	15:20	1.1	15:51	1.1
14:17	1.1	14:49	1.1	15:21	1.1	15:52	1.1
14:18	1.2	14:50	1.1	15:22	1.1	15:53	1.1
14:19	1.2	14:51	1.1	15:23	1.1	15:54	1.1
14:20	1.2	14:52	1.1	15:24	1.1	15:55	1.1
14:21	1.2	14:53	1.1	15:25	1.1	15:56	1.1
Min	1.1	Min	1.1	Min	1.1	Min	1.0
Max	1.2	Max	1.3	Max	1.2	Max	1.1
Avg	1.2	Avg	1.2	Avg	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	
	U1 1-min Calcs - HCL		U1 1-min Calcs - HCL		U1 1-min Calcs - HCL		U1 1-min Calcs - HCL
Time	ppm	Time	ppm	Time	ppm	Time	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

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 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

	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 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

	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 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