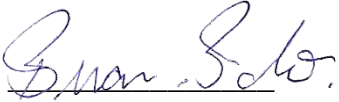


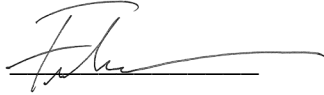
Covanta Durham York Renewable Energy Limited Partnership.

Interim AMESA Evaluation Report

COVANTA REPORT NUMBER: 4053

TEST CONTRACTOR: ORTECH ENVIRONMENTAL

Approved by: 
Brian Bahor
VP, Env., Permitting & Sustainability

Submitted by: 
Frederick R. Kohler, Jr.
Environmental Engineer



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1.0 Overview

The Long Term Sampling System (LTSS) provided by AMESA is subject to two separate and sequential evaluation steps. Step 1 is to evaluate the isokinetic sample characteristics of the AMESA system to determine if the system is extracting an isokinetic sample as compared to the reference method for flow. This step used test data obtained during the October emissions test plan. The AMESA LTSS needs to be evaluated on a long term basis because the amount of gas that is sampled determines the amount of dioxin/furan that is exposed to and collected by the cartridge.

Step 2 commenced with installation of the cartridge after isokinetics were confirmed as being acceptable. The goal is to complete a statistical comparison of results from the LTSS with results from Environment Canada EPS 1/RM/2, EPS 1/RM/23 and Method EPS 1/RM/3 testing (Reference Method for Source Testing: Measurement of Releases of Selected Semi-volatile Organic Compounds from Stationary Sources, referred to as RM23 going forward, for dioxins/furans. The evaluation will be completed in accordance with the principles of 40 CFR 60, Appendix B, Performance Specification 4 (PS 4) which requires procedures at 40 CFR 60 PS2 to conduct relative accuracy (RA) testing. RA testing requires a series of 12 tests, each with a four (4) hour duration. The LTSS results must satisfy two different criteria to be considered valid for characterizing emissions; 1) be within +/- 10 percent as calculated pursuant to PST4 or +/- 5 % of the applicable standard of 60 pg-TEQ/RM3/11 (5 % of 60 is 3 pg-TEQ/RM3/11), and 2) the isomer distributions have not changed versus the reference method. The currently available RA results indicate that the AMESA system has not demonstrated RA correlation with the RM23 compliance test results, as they exceeded the +/- 10 % requirement. (Note: literature search has confirmed that no LTSS installed anywhere has demonstrated RA within the +/-10% criteria).

At the time of this interim report we have completed the initial isokinetic sampling evaluation and three (3) representative and coincident stack measurements of dioxin/furan from both units using both AMESA and RM23. . Additional testing will occur until there are a total of twelve paired sets of results for each of the two units to complete the relative accuracy component of PS 4.

2.0 Isokinetic Evaluation

In order to evaluate the operation of the Amesa LTSS, an isokinetic sampling evaluation was performed on the Unit 1 and Unit 2 sampling systems on September 28 - October 2, 2015. An isokinetic sampling rate assures that the stack gas entering any sampling train is representative of the effluent gas in the duct; the sampling system is designed to collect effluent in the train without bias. This unbiased sampling can be verified by measuring dry stack gas flow in the duct (Q_s), corrected to standard temperature and pressure, with a known stack cross sectional area (A_s), and concurrently extracting a dry, metered volume into the Amesa LTSS sampling train (corrected to standard temperature and pressure), using a sample nozzle with known cross sectional area (A_n). The dry, metered volume measured by the Amesa LTSS is then converted to a flow rate (Q_n) by dividing the sample volume by the sampling time. The isokinetic ratio is calculated as:

$$100 \times \frac{\frac{Q_s}{A_s}}{\frac{Q_n}{A_n}} = \text{Isokinetic Ratio}$$

where:

Q = Dry Standard Stack Flow, m^3/min

A = Stack Cross Sectional Area, m^2

Q = Dry Standard Nozzle Flow, m^3/min

A = Nozzle Cross Sectional Area, m^2

The specified range is 95 – 115% isokinetic flow. A minimum of nine flow measurements were to be taken on each unit.

2.1 Data Collection:

On September 28, thirteen flow traverses were completed on Unit 1, and fourteen flow traverses were completed on Unit 2. Certain paired sets (reference flue gas flow rate and AMESA flow rate) were not available because the AMESA was not logging the amount of flue gas being processed by the LTSS (runs 1 thru 4 on Unit 1 and run 1 thru 8 on Unit 2) during the traverse. The missing paired sets were replaced with AMESA LTSS data and flue gas traverse data from several compliance test runs flue gas flow traverse were paired with Amesa LTSS data recorder logs in 30 minute increments. Table 2-1 below summarizes the origin of paired data sets for each of the nine reference flow measurements.

Table 2-1: Reference Flow Measurements

| | Unit 1 | Unit 2 |
|---|------------------------------|------------------------------|
| 1 | Flow Traverse #5 - #6 (avg) | Flow Traverse #9 - #14 (avg) |
| 2 | Flow Traverse #7 - #13 (avg) | M29 #1 |
| 3 | M26A #1 | M29 #2 |
| 4 | M26A #2 | M29 #3 |
| 5 | M29 #1 | M26A #1 |
| 6 | M29 #2 | M26A #2 |
| 7 | SVOC #1 | SVOC #1 |
| 8 | SVOC #2 | SVOC #2 |
| 9 | SVOC #3 | SVOC #3 |

2.2 Calculations and Results:

The detailed calculations used to determine the isokinetic parameter of each unit are provided as Appendix A. AMESA LTSS data used in that calculation are provided as Appendix B. Appendix E provides the ORTECH report inclusive of field data and calculations. The results are summarized below:

| Parameter | Unit 1 | Unit 2 |
|---------------|--------|--------|
| 9 run average | 108 | 106 |

The results from Unit 1 and Unit 2 AMESA LTSS were within the AMESA acceptable range of 95 to 115 %, therefore both units were deemed to have met the standard during this initial test.

The ability to maintain an isokinetic flow is understood to be a key parameter for any long term dioxin sampling system. This includes the ability of the system to automatically adjust to changes in flow due to changes in duct flow rate.

Therefore this isokinetic test will be repeated during subsequent AMESA LTSS field test programs.

3.0 AMESA LTSS Test Data

3.1 Overview of AMESA System

The AMESA Long Term Sampling System (LTSS) is comprised of three major components; 1) Sample probe 2) Amesa trap box at the sampling location 3) Support cabinet in the CEMS shelter. The operation and maintenance manuals provided with the LTSS were followed throughout the sampling period associated with this report.

The cartridges obtained from ALS were cleaned and re-charged to ensure that there was not any contamination present at the start of any sample event. Cartridges are removed after sampling is complete, sealed, and are then sent to ALS for extraction and analysis. They are then cleaned for re-use. The probe and sample system is run continuously during the sample period and cleaned after sampling is complete through a manually initiated blow back feature that uses clean air to remove solid material that may have accumulated inside the probe

3.2 Test Data

The initial attempt on October 1st and 2nd to secure a paired set of dioxin/furan results (RM23 and AMESA) did not yield representative results that enabled a valid comparison. All field samples were managed by the same laboratory where laboratory procedures did not include the full set of cleanup procedures necessary to remove interference.

The archived samples from ALS laboratory were delivered to a second and independent laboratory, SGS Environmental Services, for the purpose of analyzing the samples for interference. Appendix C provides the SGS report and a note from their laboratory director that confirms the presence of interference and their opinion that the amount of interference cannot be quantified.

Appendix D provides a comparison of the isomer distribution from the ALS and SGS analysis. Figure D.1 and D.2 provides a graphical comparison of the results with Figure D.3 and D.4 providing the linear regression comparison that yielded a coefficient of fit (R^2) of 97.5 % for Unit 1 and 99.6 % for Unit 2.

The conclusion is that both labs identified interference. ALS has assigned an estimate of 15 % to the TEQ which should somehow be related to the increased weight attributable to the interference however the method to assign that value is not understood given that there were twelve samples submitted for analysis. SGS has considerable experience in the analysis of samples from similar units and has stated that in their experience it is not possible to determine the actual bias, and that the samples are considered to be compromised to an unknown extent.

3.3 Results

The current set of data available for evaluation is limited to paired sets of samples taken on October 28th and 29th. Table 1 presents the coincident sample times that verify that the RM23 and AMESA system were sampling flue gas at the same time. The laboratory results from RM23 and AMESA LTSS for Unit 1 are provided in Table 2 with Unit 2 results provided as Table 3. All results represents laboratory procedures that used a third cleanup procedure that according to laboratory reports has less interference.

Table 1. Sample times for RM 23 and AMESA LTSS

| Run | Unit 1 | | | | Unit 2 | | | |
|-----|--------|-------|-------|-------|--------|-------|-------|-------|
| | RM 23 | | AMESA | | RM23 | | AMESA | |
| | Start | Stop | Start | Stop | Start | Stop | Start | Stop |
| 1 | 13:15 | 17:28 | 13:12 | 17:32 | 12:28 | 16:40 | 12:20 | 16:47 |
| 2 | 8:36 | 13:50 | 8:39 | 13:53 | 8:42 | 13:32 | 9:04 | 13:34 |
| 3 | 15:25 | 19:45 | 15:27 | 19:48 | 15:30 | 19:36 | 15:26 | 19:47 |

Table 2. Unit 1 Results: RM23 and AMESA LTSS

| Reference Info | | Unit 1 | | | | | |
|----------------|-----|-----------|--------|------------|-------------------|-------|------------|
| | | pg/RM3/11 | | | pg-TEQ/RM3/11 (a) | | |
| Test Date | Run | RM23 | AMESA | AMESA/RM23 | RM23 | AMESA | AMESA/RM23 |
| 28-Oct | 1 | 1,637 | 35,200 | 21.50 | <25.9 | <843 | 32.5 |
| 29-Oct | 2 | 2,019 | 9,020 | 4.47 | <29.6 | <273 | 9.2 |
| 29-Oct | 3 | 1,515 | 3,409 | 2.25 | <25.5 | <121 | 4.7 |

(a) NATO/CCMS (1989) toxicity equivalency factors with full detection limit.

Table 3. Unit 1 Results: RM23 and AMESA LTSS

| Reference Info | | Unit 2 | | | | | |
|----------------|-----|-----------|--------|------------|-------------------|-------|------------|
| | | pg/RM3/11 | | | pg-TEQ/RM3/11 (a) | | |
| Test Date | Run | RM23 | AMESA | AMESA/RM23 | RM23 | AMESA | AMESA/RM23 |
| 28-Oct | 1 | 772 | 13,653 | 17.69 | <19.5 | <559 | 28.7 |
| 29-Oct | 2 | 1,017 | 5,659 | 5.56 | <23.8 | <258 | 10.8 |
| 29-Oct | 3 | 1,025 | 3,421 | 3.34 | <23.2 | <182 | 7.8 |

(a) NATO/CCMS (1989) toxicity equivalency factors with full detection limit.

Table 4 presents the calculated relative accuracy results for Unit 1 AMESA LTSS when using the data in Table 2. Table 5 presents the calculated relative accuracy results for Unit 2 AMESA LTSS when using the data in Table 3.

Table 4 – Relative Accuracy – AMESA LTSS – Unit 1

| Date | Start Time | Stop time | Run | Run Used | Reference Method pg-TEQ | CEM Monitor pg-TEQ | Difference pg-TEQ |
|------------|------------|-----------|-----|----------|-------------------------------|-----------------------|----------------------|
| 10/28/2015 | 13:15 | 17:28 | 1 | Yes | 25.9 | 843 | -817.1 |
| 10/29/2015 | 8:36 | 13:50 | 2 | Yes | 29.6 | 273 | -243.4 |
| 10/29/2015 | 15:25 | 19:45 | 3 | Yes | 25.5 | 121 | -95.5 |
| | | | | | Average CEM Value | | 412.33 |
| | | | | | Average RM Value | | 27.00 |
| | | | | | Mean Difference | | -385.33 |
| | | | | | Number Of Runs | | 3 |
| | | | | | Standard deviation | | 381.163 |
| | | | | | T - Value | | 4.303 |
| | | | | | Confidence Coefficient | | 946.9385 |
| | | | | | Bias | | -561.6 |
| | | | | | Relative Accuracy (RM) | | 4934.3% |

Table 5 - Relative Accuracy – AMESA LTSS – Unit 2

| Date | Start Time | Stop time | Run | Run Used | Reference Method pg-TEQ | CEM Monitor pg-TEQ | Difference pg-TEQ |
|-------------------------------|------------|-----------|-----|----------|----------------------------|-----------------------|----------------------|
| 10/28/2015 | 12:28 | 16:40 | 1 | Yes | 19.5 | 559 | -539.5 |
| 10/29/2015 | 8:42 | 13:32 | 2 | Yes | 23.8 | 258 | -234.2 |
| 10/29/2015 | 15:30 | 19:36 | 3 | Yes | 23.2 | 182 | -158.8 |
| Average CEM Value | | | | | | | 333.00 |
| Average RM Value | | | | | | | 22.17 |
| Mean Difference | | | | | | | -310.83 |
| Number Of Runs | | | | | | | 3 |
| Standard deviation | | | | | | | 201.588 |
| T - Value | | | | | | | 4.303 |
| Confidence Coefficient | | | | | | | 500.8122 |
| Bias | | | | | | | -190.0 |
| Relative Accuracy (RM) | | | | | | | 3661.6% |

The initial relative accuracy and bias calculations are summarized below;

| | Unit 1 | Unit 2 |
|------------------------|---------|--------|
| Relative Accuracy as % | 4934.3 | 3661.6 |
| Bias | - 561.6 | - 190 |

This initial data base of paired data will be increased through additional paired sets of RM23 and AMESA cartridges. This initial set of data indicates that the standards of Performance Specification 4 are not being met.

Appendix A – Isokinetic flow rate calculations

Tables A-1 and A-2 show a summary of the calculations and results for the isokinetic ratio for each Unit.

Table A-1: Unit 1 Isokinetic Ratio Calculation

| Amesa Date/time | dry metered volume m3 | Q_n flow, dry standard m3/min | A_n nozzle area m2 | dry reference flowrate m3/sec | Q_s flow, dry standard m3/min | A_s stack area m2 | Isokinetic Ratio <u>Q_s/A_s</u> Q _n /A _n |
|-----------------------|--------------------------------|---|--|--|---|---|---|
| 28-09-15/16:58 | 43.065 | | | Flow Traverse #5 - #6 averaged | | | |
| 28-09-15/17:28 | 43.412 | 0.0116 | 0.0000196 | 15.7 | 942 | 1.48 | 108 |
| 28-09-15/17:58 | 43.796 | | | Flow Traverse #7 - #13 averaged | | | |
| 28-09-15/18:28 | 44.163 | 0.0125 | 0.0000196 | 16.8 | 1008 | 1.48 | 107 |
| 29-09-15/08:58 | 54.552 | | | | | | |
| 29-09-15/09:28 | 54.913 | | | | | | |
| 29-09-15/09:58 | 55.280 | | | | | | |
| 29-09-15/10:28 | 55.621 | | | | | | |
| 29-09-15/10:58 | 55.970 | | | | | | |
| 29-09-15/11:28 | 56.301 | | | | | | |
| 29-09-15/11:58 | 56.645 | | | | | | |
| 29-09-15/12:28 | 56.988 | | | | | | |
| 29-09-15/12:58 | 57.327 | | | M26A #1 | | | |
| 29-09-15/13:28 | 57.663 | 0.0115 | 0.0000196 | 15.5 | 930 | 1.48 | 107 |
| 29-09-15/13:58 | 57.993 | | | | | | |
| 29-09-15/14:28 | 58.323 | | | | | | |
| 29-09-15/14:58 | 58.651 | | | | | | |
| 29-09-15/15:28 | 58.970 | | | | | | |
| 29-09-15/15:58 | 59.290 | | | | | | |
| 29-09-15/16:28 | 59.613 | | | | | | |
| 29-09-15/16:58 | 59.950 | | | | | | |
| 29-09-15/17:28 | 60.279 | | | M26A #2 | | | |
| 29-09-15/17:38 | 60.410 | 0.0110 | 0.0000196 | 15.2 | 912 | 1.48 | 110 |
| 30-09-15/11:43 | 72.667 | | | | | | |
| 30-09-15/12:13 | 73.010 | | | | | | |
| 30-09-15/12:43 | 73.344 | | | | | | |
| 30-09-15/13:13 | 73.671 | | | M29 #1 | | | |
| 30-09-15/13:43 | 74.005 | 0.0111 | 0.0000196 | 15.2 | 912 | 1.48 | 108 |

Table A-1 (continued): Unit 1 Isokinetic Ratio Calculation

| Amesa Date/time | dry metered volume m3 | Q_n flow, dry standard m3/min | A_n nozzle area m2 | dry reference flowrate m3/sec | Q_s flow, dry standard m3/min | A_s stack area m2 | Isokinetic Ratio $\frac{Q_s/A_s}{Q_n/A_n}$ |
|-----------------------|--------------------------------|--|-------------------------------|--|--|------------------------------|--|
| 30-09-15/14:43 | 74.704 | | | | | | |
| 30-09-15/15:13 | 75.053 | | | | | | |
| 30-09-15/15:43 | 75.409 | | | | | | |
| 30-09-15/16:13 | 75.761 | | | | | | |
| 30-09-15/16:43 | 76.108 | | | M29 #2 | | | |
| 30-09-15/17:13 | 76.458 | 0.0117 | 0.0000196 | 15.7 | 942 | 1.48 | 107 |
| 01-10-15/11:17 | 0.327 | | | | | | |
| 01-10-15/11:47 | 0.674 | | | | | | |
| 01-10-15/12:17 | 0.999 | | | | | | |
| 01-10-15/12:47 | 1.353 | | | | | | |
| 01-10-15/13:17 | 1.710 | | | | | | |
| 01-10-15/13:47 | 2.036 | | | | | | |
| 01-10-15/14:17 | 2.352 | | | | | | |
| 01-10-15/14:47 | 2.688 | | | SVOC #1 | | | |
| 01-10-15/15:05 | 2.889 | 0.0112 | 0.0000196 | 15.0 | 900 | 1.48 | 107 |
| 02-10-15/08:11 | 0.315 | | | | | | |
| 02-10-15/08:41 | 0.638 | | | | | | |
| 02-10-15/09:11 | 0.951 | | | | | | |
| 02-10-15/09:41 | 1.264 | | | | | | |
| 02-10-15/10:11 | 1.580 | | | | | | |
| 02-10-15/10:41 | 1.901 | | | | | | |
| 02-10-15/11:11 | 2.222 | | | | | | |
| 02-10-15/11:41 | 2.550 | | | SVOC #2 | | | |
| 02-10-15/11:57 | 2.717 | 0.0106 | 0.0000196 | 14.2 | 852 | 1.48 | 106 |
| 02-10-15/13:05 | 0.316 | | | | | | |
| 02-10-15/13:35 | 0.633 | | | | | | |
| 02-10-15/14:05 | 0.946 | | | | | | |
| 02-10-15/14:35 | 1.267 | | | | | | |
| 02-10-15/15:05 | 1.597 | | | | | | |
| 02-10-15/15:35 | 1.915 | | | | | | |
| 02-10-15/16:05 | 2.225 | | | | | | |
| 02-10-15/16:35 | 2.541 | | | SVOC #3 | | | |
| 02-10-15/16:40 | 2.603 | 0.0106 | 0.0000196 | 14.4 | 864 | 1.48 | 108 |

UNIT 1 NINE RUN ISOKINETIC AVERAGE = 108%

ACCEPTABLE RANGE = 95 - 115%

Table A-2: Unit 2 Isokinetic Ratio Calculation

| Amesa Date/time | dry metered volume m3 | Q_n flow, dry standard m3/min | A_n nozzle area m2 | dry reference flowrate m3/sec | Q_s flow, dry standard m3/min | A_s stack area m2 | Isokinetic Ratio $\frac{Q_s/A_s}{Q_n/A_n}$ |
|-----------------------|--------------------------------|--|-------------------------------|--|--|------------------------------|--|
| 28-09-15/17:59 | 37.725 | | | Flow Traverses #9 - #14 averaged | | | |
| 28-09-15/18:29 | 38.099 | 0.0125 | 0.0000196 | 16.4 | 984 | 1.48 | 105 |
| 29-09-15/08:59 | 48.700 | | | | | | |
| 29-09-15/09:29 | 49.050 | | | | | | |
| 29-09-15/09:59 | 49.399 | | | | | | |
| 29-09-15/10:29 | 49.746 | | | | | | |
| 29-09-15/10:59 | 50.093 | | | | | | |
| 29-09-15/11:29 | 50.438 | | | | | | |
| 29-09-15/11:59 | 50.787 | | | M29 #1 | | | |
| 29-09-15/12:29 | 51.147 | 0.0117 | 0.0000196 | 15.1 | 906 | 1.48 | 103 |
| 29-09-15/13:29 | 51.838 | | | | | | |
| 29-09-15/13:59 | 52.179 | | | | | | |
| 29-09-15/14:29 | 52.519 | | | | | | |
| 29-09-15/14:59 | 52.860 | | | | | | |
| 29-09-15/15:29 | 53.202 | | | M29 #2 | | | |
| 29-09-15/15:59 | 53.541 | 0.0114 | 0.0000196 | 15.1 | 906 | 1.48 | 106 |
| 29-09-15/16:29 | 53.884 | | | | | | |
| 29-09-15/16:59 | 54.234 | | | | | | |
| 29-09-15/17:29 | 54.585 | | | | | | |
| 29-09-15/18:06 | 54.946 | | | | | | |
| 29-09-15/18:36 | 55.298 | | | M29 #3 | | | |
| 29-09-15/19:06 | 55.650 | 0.0112 | 0.0000196 | 15.2 | 912 | 1.48 | 108 |
| 30-09-15/11:36 | 67.587 | | | | | | |
| 30-09-15/12:06 | 67.949 | | | | | | |
| 30-09-15/12:36 | 68.307 | | | | | | |
| 30-09-15/13:06 | 68.671 | | | | | | |
| 30-09-15/13:36 | 69.035 | | | | | | |
| 30-09-15/14:06 | 69.401 | | | M26A #1 | | | |
| 30-09-15/14:36 | 69.772 | 0.0121 | 0.0000196 | 16.4 | 984 | 1.48 | 107 |
| 30-09-15/16:06 | 70.882 | | | | | | |
| 30-09-15/16:36 | 71.242 | | | | | | |
| 30-09-15/17:06 | 71.604 | | | | | | |
| 30-09-15/17:36 | 71.973 | | | | | | |
| 30-09-15/18:06 | 72.332 | | | | | | |
| 30-09-15/18:36 | 72.687 | | | | | | |
| 30-09-15/19:06 | 73.047 | | | M26A #2 | | | |
| 30-09-15/19:36 | 73.409 | 0.0120 | 0.0000196 | 16.1 | 966 | 1.48 | 106 |

Table A-2 (continued): Unit 2 Isokinetic Ratio Calculation

| Amesa Date/time | dry metered volume m3 | Q_n flow, dry standard m3/min | A_n nozzle area m2 | dry reference flowrate m3/sec | Q_s flow, dry standard m3/min | A_s stack area m2 | Isokinetic Ratio <u>Qs/As</u> Qn/An |
|-----------------------|--------------------------------|---|--|--|---|---|--|
| 01-10-15/12:44 | 0.313 | | | | | | |
| 01-10-15/13:14 | 0.629 | | | | | | |
| 01-10-15/13:44 | 0.955 | | | | | | |
| 01-10-15/14:14 | 1.276 | | | | | | |
| 01-10-15/14:44 | 1.589 | | | | | | |
| 01-10-15/15:14 | 1.895 | | | | | | |
| 01-10-15/15:44 | 2.204 | | | | | | |
| 01-10-15/16:14 | 2.526 | | | SVOC #1 | | | |
| 01-10-15/16:31 | 2.712 | 0.0106 | 0.0000196 | 14.1 | 846 | 1.48 | 106 |
| 02-10-15/08:12 | 0.323 | | | | | | |
| 02-10-15/08:42 | 0.666 | | | | | | |
| 02-10-15/09:12 | 0.986 | | | | | | |
| 02-10-15/09:42 | 1.290 | | | | | | |
| 02-10-15/10:12 | 1.595 | | | | | | |
| 02-10-15/10:42 | 1.899 | | | | | | |
| 02-10-15/11:12 | 2.207 | | | | | | |
| 02-10-15/11:42 | 2.519 | | | SVOC #2 | | | |
| 02-10-15/11:58 | 2.683 | 0.0105 | 0.0000196 | 14.3 | 858 | 1.48 | 109 |
| 02-10-15/13:06 | 0.321 | | | | | | |
| 02-10-15/13:36 | 0.633 | | | | | | |
| 02-10-15/14:06 | 0.940 | | | | | | |
| 02-10-15/14:36 | 1.254 | | | | | | |
| 02-10-15/15:06 | 1.574 | | | | | | |
| 02-10-15/15:36 | 1.886 | | | | | | |
| 02-10-15/16:06 | 2.187 | | | | | | |
| 02-10-15/16:36 | 2.494 | | | SVOC #3 | | | |
| 02-10-15/16:39 | 2.531 | 0.0104 | 0.0000196 | 13.8 | 828 | 1.48 | 105 |

UNIT 2 NINE RUN ISOKINETIC AVERAGE = 106%

ACCEPTABLE RANGE = 95 –115%

Appendix B – Isokinetic data from AMESA Long term Sampling System

COVANTA CANADA - STACK UNIT 1

| Runtimerecord: | [TGVNMD] [...m3] |
|----------------|---------------------|
| 28-09-15/16:54 | 43.065 |
| 28-09-15/17:28 | 43.412 |
| 28-09-15/17:58 | 43.796 |
| 28-09-15/18:28 | 44.163 |
| 28-09-15/18:58 | 44.528 |
| 28-09-15/19:28 | 44.891 |
| 28-09-15/19:58 | 45.255 |
| 28-09-15/20:28 | 45.62 |
| 28-09-15/20:58 | 45.984 |
| 28-09-15/21:28 | 46.341 |
| 28-09-15/21:58 | 46.697 |
| 28-09-15/22:28 | 47.052 |
| 28-09-15/22:58 | 47.409 |
| 28-09-15/23:28 | 47.76 |
| 28-09-15/23:58 | 48.121 |
| 29-09-15/00:28 | 48.471 |
| 29-09-15/00:58 | 48.82 |
| 29-09-15/01:28 | 49.172 |
| 29-09-15/01:58 | 49.529 |
| 29-09-15/02:28 | 49.887 |
| 29-09-15/02:58 | 50.24 |
| 29-09-15/03:28 | 50.592 |
| 29-09-15/03:58 | 50.943 |
| 29-09-15/04:28 | 51.294 |
| 29-09-15/04:58 | 51.647 |
| 29-09-15/05:28 | 52.004 |
| 29-09-15/05:58 | 52.368 |
| 29-09-15/06:28 | 52.717 |
| 29-09-15/06:58 | 53.097 |
| 29-09-15/07:28 | 53.472 |
| 29-09-15/07:58 | 53.831 |
| 29-09-15/08:28 | 54.193 |
| 29-09-15/08:58 | 54.552 |
| 29-09-15/09:28 | 54.913 |

| | |
|----------------|--------|
| 29-09-15/09:58 | 55.28 |
| 29-09-15/10:28 | 55.621 |
| 29-09-15/10:58 | 55.97 |
| 29-09-15/11:28 | 56.301 |
| 29-09-15/11:58 | 56.645 |
| 29-09-15/12:28 | 56.988 |
| 29-09-15/12:58 | 57.327 |
| 29-09-15/13:28 | 57.663 |
| 29-09-15/13:58 | 57.993 |
| 29-09-15/14:28 | 58.323 |
| 29-09-15/14:58 | 58.651 |
| 29-09-15/15:28 | 58.97 |
| 29-09-15/15:58 | 59.29 |
| 29-09-15/16:28 | 59.613 |
| 29-09-15/16:58 | 59.95 |
| 29-09-15/17:28 | 60.279 |
| 29-09-15/17:38 | 60.41 |
| 29-09-15/18:13 | 60.745 |
| 29-09-15/18:43 | 61.099 |
| 29-09-15/19:13 | 61.43 |
| 29-09-15/19:43 | 61.757 |
| 29-09-15/20:13 | 62.084 |
| 29-09-15/20:43 | 62.42 |
| 29-09-15/21:13 | 62.759 |
| 29-09-15/21:43 | 63.097 |
| 29-09-15/22:13 | 63.425 |
| 29-09-15/22:43 | 63.752 |
| 29-09-15/23:13 | 64.084 |
| 29-09-15/23:43 | 64.433 |
| 30-09-15/00:13 | 64.76 |
| 30-09-15/00:43 | 65.089 |
| 30-09-15/01:13 | 65.435 |
| 30-09-15/01:43 | 65.779 |
| 30-09-15/02:13 | 66.117 |
| 30-09-15/02:43 | 66.455 |
| 30-09-15/03:13 | 66.788 |
| 30-09-15/03:43 | 67.126 |
| 30-09-15/04:13 | 67.462 |
| 30-09-15/04:43 | 67.8 |
| 30-09-15/05:13 | 68.152 |
| 30-09-15/05:43 | 68.511 |
| 30-09-15/06:13 | 68.853 |
| 30-09-15/06:43 | 69.191 |

| | |
|----------------|--------|
| 30-09-15/07:13 | 69.564 |
| 30-09-15/07:43 | 69.902 |
| 30-09-15/08:13 | 70.245 |
| 30-09-15/08:43 | 70.581 |
| 30-09-15/09:13 | 70.92 |
| 30-09-15/09:43 | 71.268 |
| 30-09-15/10:13 | 71.622 |
| 30-09-15/10:43 | 71.971 |
| 30-09-15/11:13 | 72.313 |
| 30-09-15/11:43 | 72.667 |
| 30-09-15/12:13 | 73.01 |
| 30-09-15/12:43 | 73.344 |
| 30-09-15/13:13 | 73.671 |
| 30-09-15/13:43 | 74.005 |
| 30-09-15/14:13 | 74.358 |
| 30-09-15/14:43 | 74.704 |
| 30-09-15/15:13 | 75.053 |
| 30-09-15/15:43 | 75.409 |
| 30-09-15/16:13 | 75.761 |
| 30-09-15/16:43 | 76.108 |
| 30-09-15/17:13 | 76.458 |
| 30-09-15/17:43 | 76.816 |
| 30-09-15/18:13 | 77.157 |
| 30-09-15/18:43 | 77.49 |
| 30-09-15/19:13 | 77.826 |
| 30-09-15/19:43 | 78.165 |
| 01-10-15/11:17 | 0.327 |
| 01-10-15/11:47 | 0.674 |
| 01-10-15/12:17 | 0.999 |
| 01-10-15/12:47 | 1.353 |
| 01-10-15/13:17 | 1.71 |
| 01-10-15/13:47 | 2.036 |
| 01-10-15/14:17 | 2.352 |
| 01-10-15/14:47 | 2.688 |
| 01-10-15/15:05 | 2.889 |
| 02-10-15/08:11 | 0.315 |
| 02-10-15/08:41 | 0.638 |
| 02-10-15/09:11 | 0.951 |
| 02-10-15/09:41 | 1.264 |
| 02-10-15/10:11 | 1.58 |
| 02-10-15/10:41 | 1.901 |
| 02-10-15/11:11 | 2.222 |
| 02-10-15/11:41 | 2.55 |

| | |
|----------------|-------|
| 02-10-15/11:57 | 2.717 |
| 02-10-15/13:05 | 0.316 |
| 02-10-15/13:35 | 0.633 |
| 02-10-15/14:05 | 0.946 |
| 02-10-15/14:35 | 1.267 |
| 02-10-15/15:05 | 1.597 |
| 02-10-15/15:35 | 1.915 |
| 02-10-15/16:05 | 2.225 |
| 02-10-15/16:35 | 2.541 |
| 02-10-15/16:40 | 2.603 |

Appendix B – AMESA Data – Unit 2

COVANTA CANADA - STACK UNIT 2

Runtimerecord: [TGVNMD]
[....m3]

| | |
|----------------|--------|
| 28-09-15/16:59 | |
| 28-09-15/17:29 | 37.34 |
| 28-09-15/17:59 | 37.725 |
| 28-09-15/18:29 | 38.099 |
| 28-09-15/18:59 | 38.475 |
| 28-09-15/19:29 | 38.863 |
| 28-09-15/19:59 | 39.241 |
| 28-09-15/20:29 | 39.617 |
| 28-09-15/20:59 | 39.986 |
| 28-09-15/21:29 | 40.351 |
| 28-09-15/21:59 | 40.713 |
| 28-09-15/22:29 | 41.078 |
| 28-09-15/22:59 | 41.444 |
| 28-09-15/23:29 | 41.805 |
| 28-09-15/23:59 | 42.169 |
| 29-09-15/00:29 | 42.526 |
| 29-09-15/00:59 | 42.885 |
| 29-09-15/01:29 | 43.248 |
| 29-09-15/01:59 | 43.606 |
| 29-09-15/02:29 | 43.966 |
| 29-09-15/02:59 | 44.326 |
| 29-09-15/03:29 | 44.685 |
| 29-09-15/03:59 | 45.046 |
| 29-09-15/04:29 | 45.41 |
| 29-09-15/04:59 | 45.774 |
| 29-09-15/05:29 | 46.144 |
| 29-09-15/05:59 | 46.522 |
| 29-09-15/06:29 | 46.889 |
| 29-09-15/06:59 | 47.25 |
| 29-09-15/07:29 | 47.632 |
| 29-09-15/07:59 | 47.985 |
| 29-09-15/08:29 | 48.342 |
| 29-09-15/08:59 | 48.7 |
| 29-09-15/09:29 | 49.05 |
| 29-09-15/09:59 | 49.399 |
| 29-09-15/10:29 | 49.746 |
| 29-09-15/10:59 | 50.093 |

| | |
|----------------|--------|
| 29-09-15/11:29 | 50.438 |
| 29-09-15/11:59 | 50.787 |
| 29-09-15/12:29 | 51.147 |
| 29-09-15/12:59 | 51.497 |
| 29-09-15/13:29 | 51.838 |
| 29-09-15/13:59 | 52.179 |
| 29-09-15/14:29 | 52.519 |
| 29-09-15/14:59 | 52.86 |
| 29-09-15/15:29 | 53.202 |
| 29-09-15/15:59 | 53.541 |
| 29-09-15/16:29 | 53.884 |
| 29-09-15/16:59 | 54.234 |
| 29-09-15/17:29 | 54.585 |
| 29-09-15/18:06 | 54.946 |
| 29-09-15/18:36 | 55.298 |
| 29-09-15/19:06 | 55.65 |
| 29-09-15/19:36 | 56.001 |
| 29-09-15/20:06 | 56.371 |
| 29-09-15/20:36 | 56.727 |
| 29-09-15/21:06 | 57.085 |
| 29-09-15/21:36 | 57.441 |
| 29-09-15/22:06 | 57.79 |
| 29-09-15/22:36 | 58.138 |
| 29-09-15/23:06 | 58.488 |
| 29-09-15/23:36 | 58.841 |
| 30-09-15/00:06 | 59.196 |
| 30-09-15/00:36 | 59.546 |
| 30-09-15/01:06 | 59.899 |
| 30-09-15/01:36 | 60.254 |
| 30-09-15/02:06 | 60.613 |
| 30-09-15/02:36 | 60.972 |
| 30-09-15/03:06 | 61.335 |
| 30-09-15/03:36 | 61.691 |
| 30-09-15/04:06 | 62.049 |
| 30-09-15/04:36 | 62.406 |
| 30-09-15/05:06 | 62.763 |
| 30-09-15/05:36 | 63.131 |
| 30-09-15/06:06 | 63.504 |
| 30-09-15/06:36 | 63.887 |
| 30-09-15/07:06 | 64.28 |
| 30-09-15/07:36 | 64.667 |
| 30-09-15/08:06 | 65.029 |
| 30-09-15/08:36 | 65.387 |

| | |
|----------------|--------|
| 30-09-15/09:06 | 65.751 |
| 30-09-15/09:36 | 66.114 |
| 30-09-15/10:06 | 66.479 |
| 30-09-15/10:36 | 66.848 |
| 30-09-15/11:06 | 67.215 |
| 30-09-15/11:36 | 67.587 |
| 30-09-15/12:06 | 67.949 |
| 30-09-15/12:36 | 68.307 |
| 30-09-15/13:06 | 68.671 |
| 30-09-15/13:36 | 69.035 |
| 30-09-15/14:06 | 69.401 |
| 30-09-15/14:36 | 69.772 |
| 30-09-15/15:06 | 70.153 |
| 30-09-15/15:36 | 70.521 |
| 30-09-15/16:06 | 70.882 |
| 30-09-15/16:36 | 71.242 |
| 30-09-15/17:06 | 71.604 |
| 30-09-15/17:36 | 71.973 |
| 30-09-15/18:06 | 72.332 |
| 30-09-15/18:36 | 72.687 |
| 30-09-15/19:06 | 73.047 |
| 30-09-15/19:36 | 73.409 |
| 30-09-15/20:06 | 73.77 |
| 01-10-15/12:44 | 0.313 |
| 01-10-15/13:14 | 0.629 |
| 01-10-15/13:44 | 0.955 |
| 01-10-15/14:14 | 1.276 |
| 01-10-15/14:44 | 1.589 |
| 01-10-15/15:14 | 1.895 |
| 01-10-15/15:44 | 2.204 |
| 01-10-15/16:14 | 2.526 |
| 01-10-15/16:31 | 2.712 |
| 02-10-15/08:12 | 0.323 |
| 02-10-15/08:42 | 0.666 |
| 02-10-15/09:12 | 0.986 |
| 02-10-15/09:42 | 1.29 |
| 02-10-15/10:12 | 1.595 |
| 02-10-15/10:42 | 1.899 |
| 02-10-15/11:12 | 2.207 |
| 02-10-15/11:42 | 2.519 |
| 02-10-15/11:58 | 2.683 |
| 02-10-15/13:06 | 0.321 |
| 02-10-15/13:36 | 0.633 |

| | |
|----------------|-------|
| 02-10-15/14:06 | 0.94 |
| 02-10-15/14:36 | 1.254 |
| 02-10-15/15:06 | 1.574 |
| 02-10-15/15:36 | 1.886 |
| 02-10-15/16:06 | 2.187 |
| 02-10-15/16:36 | 2.494 |
| 02-10-15/16:39 | 2.531 |



FINAL LAB REPORT

Prepared by

SGS NORTH AMERICA

Prepared for

This report is approved by

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PROJECT INFORMATION SUMMARY *(When applicable, see QC Annotations for details)*

| |
|--------------------------------|
| Client Project |
| SGS Project # |
| Analytical Protocol(s) |
| No. Samples Submitted |
| Additional QC Sample(s) |
| No. Laboratory Method Blanks |
| No. OPRs / Batch CS3 |
| Date Received |
| Condition Received |
| Temperature upon Receipt (°C) |
| Extraction within Holding Time |
| Analysis within Holding Time |



QC ANNOTATIONS:

1. Please see Appendices attached for data qualifier/attribute and lab identifier descriptions which may be contained in the project.

APPENDIX A: GENERAL DATA QUALIFIERS / DATA ATTRIBUTES

| | |
|----------------|--|
| B | The analyte was found in the method blank, at a concentration that was at least 10% of the concentration in the sample. |
| C | Two or more congeners co-elute. In EDDs, C denotes the lowest IUPAC congener in a co-elution group and additional co-eluters for the group are shown with the number of the lowest IUPAC co-eluter. |
| E | The reported concentration exceeds the calibration range (upper point of the calibration curve) and is an estimated value. |
| EMPC | Represents an Estimated Maximum Possible Concentration. EMPCs arise in cases where the signal/noise ratio is not sufficient for peak identification (the determined ion-abundance ratio is outside the allowed theoretical range), or where there is a co-eluting interference. |
| H/h | If the standard recovery is below the method or SOP specified value "H" is assigned. If the obtained value is less than half the specified value "h" is assigned. |
| J | Indicates that an analyte has a concentration below the reporting limit (lowest point of the calibration curve) and is an estimated value. |
| ND | Indicates a non-detect. |
| NR or R | Indicates a value that is not reportable. |
| PR | Due to interference, the associated congener is poorly resolved. |
| QI | Indicates the presence of a quantitative interference. |
| SI | Denotes "Single Ion Mode" and is utilized for PCBs where the secondary ion trace has a significantly elevated noise level due to background PFK. Responses for such peaks are calculated using an EMPC approach based solely on the primary ion area(s) and may be considered estimates. |
| U | The analyte was not detected. The estimated detection limit (EDL) may be reported for this analyte. |
| V | The labeled standard recovery was found to be outside of the method control limits. |



APPENDIX B: DRBC/TMDL SPECIFIC DATA QUALIFIERS / DATA ATTRIBUTES

| | |
|-------------|---|
| J | The reported result is an estimate. The value is less than the minimum calibration level but greater than the estimated detection limit (EDL). |
| U | The analyte was not detected in the sample at the estimated detection limit (EDL). |
| E | The reported concentration is an estimate. The value exceeds the upper calibration range (upper point of the calibration curve). |
| D | Dilution Data. Result was obtained from the analysis of a dilution. |
| B | Analyte found in the sample and associated method blank. |
| C | Co-eluting congener |
| Cxx | Co-elutes with the indicated congener, data is reported under the lowest IUPAC congener. 'Xx' denotes the IUPAC number with the lowest numerical designated congener. |
| NR | Analyte is not reportable because of problems in sample preparation or analysis. |
| V | Labeled standard recovery is not within method control limits. |
| X | Results from re-injection/repeat/second-column analysis. |
| EMPC | Estimated maximum possible concentration. Indicates that a peak is identified but did not meet the method specified ion-abundance ratio. |

APPENDIX C: LAB IDENTIFIERS

| | |
|------------|--|
| AR | Indicates use of the archived portion of the sample extract. |
| CU | Indicates a sample that required additional clean-up prior to MS injection/processing. |
| D | Indicates a dilution of the sample extract. The number that follows the "D" indicates the dilution factor. |
| DE | Indicates a dilution performed with the addition of ES (extraction standard) solution. |
| DUP | Designation for a duplicate sample. |
| MS | Designation for a matrix spike. |
| MSD | Designation for a matrix spike duplicate. |
| RJ | Indicates a reinjection of the sample extract. |
| S | Indicates a sample split. The number that follows the "S" indicates the split factor. |



SGS CERTIFICATIONS

| | |
|---|-------------------------------|
| Arkansas | 88-0682 |
| California (ELAP) | Interim ELAP Cert #2914 |
| CLIA | 34D1013708 |
| Connecticut | PH-0258 |
| USDA Soil Permit | P330-14-00135 |
| DoD | 2726.01 |
| Florida (Primary NELAP) | E87634 |
| ISO 17025/IEC | 2726.01 |
| Louisiana | 4115 |
| Maine | #2014020 |
| Massachusetts | M-NC919 |
| Minnesota (Primary NELAP For Method 23) | Lab #037-999-459 Cert #688823 |
| New Jersey | NC100 |
| New York | 11685 |
| North Carolina DWR | 481 |
| North Dakota | R-197 |
| Oregon | NC200002 |
| Pennsylvania | 68-03675 |
| South Carolina | Lab #99029 Cert #99029002 |
| Texas | T104704260-13-5 |
| US Coast Guard | 16714/159.317/SGS |
| Virginia | Lab #460214 Cert #3006 |
| Washington | C913 |
| West Virginia | 293 |

Rev. 04-Sep-2014

A8304 - TEQ

Sample Summary Part 1




Method 23

| Analyte | WG2185607-1 | WG2185607-2 | WG2185607-3 | L1682779-1 | L1682779-2 | L1682779-3 | L1682779-5 | L1682779-6 | L1682779-7 | M23 ES#2 20ul |
|--------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g |
| 2,3,7,8-TCDD | (6.68) | 1110 | 1140 | (8.12) | (12.0) | (8.73) | (7.55) | (9.78) | (5.78) | (3.78) |
| 1,2,3,7,8-PeCDD | (7.30) | [5280] | [5330] | [193] | [156] | [225] | [161] | [99.4] | [148] | (5.07) |
| 1,2,3,4,7,8-HxCDD | (5.35) | 4480 | 4530 | 753 | 651 | 1070 | 329 | 196 | 313 | (3.81) |
| 1,2,3,6,7,8-HxCDD | (5.42) | 4720 | 4680 | 2070 | 1690 | 2900 | 1040 | 623 | 980 | (3.86) |
| 1,2,3,7,8,9-HxCDD | (4.93) | 4400 | 4580 | 827 | 657 | 1060 | 444 | 270 | 406 | (3.51) |
| 1,2,3,4,6,7,8-HpCDD | (6.39) | 5200 | 5310 | 16100 | 13900 | 23000 | 5260 | 3330 | 5010 | (5.31) |
| OCDD | (8.46) | 9100 | 9120 | 11300 | 9880 | 16000 | 2750 | 1870 | 2780 | (6.21) |
| 2,3,7,8-TCDF | (5.35) | 949 | 953 | 40.2 | 35.7 | 49.5 | 49.2 | 31.9 | 37.9 | (2.83) |
| 1,2,3,7,8-PeCDF | (4.53) | 4920 | 4920 | 128 | 107 | 149 | 150 | 82.1 | 125 | (2.34) |
| 2,3,4,7,8-PeCDF | (4.72) | 4780 | 4720 | 601 | 491 | 747 | 513 | 311 | 437 | (2.44) |
| 1,2,3,4,7,8-HxCDF | (4.79) | 4750 | 4570 | 780 | 658 | 1080 | 405 | 244 | 362 | (3.41) |
| 1,2,3,6,7,8-HxCDF | (4.39) | 5080 | 5110 | 974 | 768 | 1270 | 544 | 340 | 476 | (3.13) |
| 2,3,4,6,7,8-HxCDF | (4.84) | 5150 | 4990 | 2180 | 1760 | 2780 | 1020 | 632 | 947 | (3.45) |
| 1,2,3,7,8,9-HxCDF | (5.29) | 4950 | 4920 | 114 | 104 | 135 | 118 | [81.9] | 68.8 | (3.77) |
| 1,2,3,4,6,7,8-HpCDF | [10.6] | 4560 | 4710 | 4300 | 3610 | 6070 | 1350 | 784 | 1250 | [7.91] |
| 1,2,3,4,7,8,9-HpCDF | (5.89) | 4450 | 4780 | 1030 | 869 | 1350 | 416 | 246 | 363 | (3.49) |
| OCDF | 107 | 8760 | 8560 | 2730 | 2430 | 3690 | 910 | 676 | 896 | 102 |
| ITEF TEQ (ND=0; EMPC=0) | 1.07 | 7350 | 7340 | 1310 | 1080 | 1740 | 733 | 439 | 654 | 0.102 |
| ITEF TEQ (ND=0; EMPC=EMPC) | 0.213 | 9990 | 10000 | 1410 | 1160 | 1850 | 814 | 497 | 728 | 0.181 |
| ITEF TEQ (ND=DL/2; EMPC=0) | 8.67 | 7350 | 7340 | 1320 | 1090 | 1750 | 739 | 448 | 659 | 5.38 |
| ITEF TEQ (ND=DL/2; EMPC=EMPC) | 8.76 | 9990 | 10000 | 1410 | 1160 | 1850 | 817 | 502 | 730 | 5.44 |
| ITEF TEQ (ND=DL; EMPC=EMPC) | 17.3 | 9990 | 10000 | 1410 | 1170 | 1860 | 821 | 507 | 733 | 10.7 |
| Checkcode | 109-182-CKK | 008-371-DGL | 611-736-PPX | 020-383-FCZ | 593-514-VHJ | 215-857-TQQ | 773-039-VMG | 183-223-QNV | 554-583-FCL | 609-577-JWT |
| Lab ID | 8304_13682_DF_001 | 8304_13682_DF_002 | 8304_13682_DF_003 | 8304_13682_DF_004 | 8304_13682_DF_005 | 8304_13682_DF_006 | 8304_13682_DF_007 | 8304_13682_DF_008 | 8304_13682_DF_009 | 8304_13682_DF_010 |


() = DL
[] = EMPC

A8304 - WHO-2005-TEQ

| Sample Summary Part 1 |  | | | | | | | | | Method 23 |
|--|---|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Analyte | WG2185607-1 | WG2185607-2 | WG2185607-3 | L1682779-1 | L1682779-2 | L1682779-3 | L1682779-5 | L1682779-6 | L1682779-7 | M23 ES#2 20ul |
| | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g |
| 2,3,7,8-TCDD | (6.68) | 1110 | 1140 | (8.12) | (12.0) | (8.73) | (7.55) | (9.78) | (5.78) | (3.78) |
| 1,2,3,7,8-PeCDD | (7.30) | [5280] | [5330] | [193] | [156] | [225] | [161] | [99.4] | [148] | (5.07) |
| 1,2,3,4,7,8-HxCDD | (5.35) | 4480 | 4530 | 753 | 651 | 1070 | 329 | 196 | 313 | (3.81) |
| 1,2,3,6,7,8-HxCDD | (5.42) | 4720 | 4680 | 2070 | 1690 | 2900 | 1040 | 623 | 980 | (3.86) |
| 1,2,3,7,8,9-HxCDD | (4.93) | 4400 | 4580 | 827 | 657 | 1060 | 444 | 270 | 406 | (3.51) |
| 1,2,3,4,6,7,8-HpCDD | (6.39) | 5200 | 5310 | 16100 | 13900 | 23000 | 5260 | 3330 | 5010 | (5.31) |
| OCDD | (8.46) | 9100 | 9120 | 11300 | 9880 | 16000 | 2750 | 1870 | 2780 | (6.21) |
| 2,3,7,8-TCDF | (5.35) | 949 | 953 | 40.2 | 35.7 | 49.5 | 49.2 | 31.9 | 37.9 | (2.83) |
| 1,2,3,7,8-PeCDF | (4.53) | 4920 | 4920 | 128 | 107 | 149 | 150 | 82.1 | 125 | (2.34) |
| 2,3,4,7,8-PeCDF | (4.72) | 4780 | 4720 | 601 | 491 | 747 | 513 | 311 | 437 | (2.44) |
| 1,2,3,4,7,8-HxCDF | (4.79) | 4750 | 4570 | 780 | 658 | 1080 | 405 | 244 | 362 | (3.41) |
| 1,2,3,6,7,8-HxCDF | (4.39) | 5080 | 5110 | 974 | 768 | 1270 | 544 | 340 | 476 | (3.13) |
| 2,3,4,6,7,8-HxCDF | (4.84) | 5150 | 4990 | 2180 | 1760 | 2780 | 1020 | 632 | 947 | (3.45) |
| 1,2,3,7,8,9-HxCDF | (5.29) | 4950 | 4920 | 114 | 104 | 135 | 118 | [81.9] | 68.8 | (3.77) |
| 1,2,3,4,6,7,8-HpCDF | [10.6] | 4560 | 4710 | 4300 | 3610 | 6070 | 1350 | 784 | 1250 | [7.91] |
| 1,2,3,4,7,8,9-HpCDF | (5.89) | 4450 | 4780 | 1030 | 869 | 1350 | 416 | 246 | 363 | (3.49) |
| OCDF | 107 | 8760 | 8560 | 2730 | 2430 | 3690 | 910 | 676 | 896 | 102 |
| WHO-2005 TEQ (ND=0; EMPC=0) | 0.0322 | 6290 | 6290 | 1180 | 971 | 1570 | 625 | 374 | 561 | 0.0306 |
| WHO-2005 TEQ (ND=0; EMPC=EMPC) | 0.138 | 11600 | 11600 | 1370 | 1130 | 1800 | 786 | 481 | 709 | 0.11 |
| WHO-2005 TEQ (ND=DL/2; EMPC=0) | 9.9 | 6290 | 6290 | 1190 | 984 | 1580 | 633 | 385 | 569 | 6.3 |
| WHO-2005 TEQ (ND=DL/2; EMPC=EMPC) | 9.98 | 11600 | 11600 | 1370 | 1130 | 1800 | 790 | 486 | 712 | 6.37 |
| WHO-2005 TEQ (ND=DL; EMPC=EMPC) | 19.8 | 11600 | 11600 | 1380 | 1140 | 1810 | 794 | 491 | 715 | 12.6 |
| Checkcode | 109-182-CKK | 008-371-DGL | 611-736-PPX | 020-383-FCZ | 593-514-VHJ | 215-857-TQQ | 773-039-VMG | 183-223-QNV | 554-583-FCL | 609-577-JWT |
| Lab ID | 8304_13682_DF_001 | 8304_13682_DF_002 | 8304_13682_DF_003 | 8304_13682_DF_004 | 8304_13682_DF_005 | 8304_13682_DF_006 | 8304_13682_DF_007 | 8304_13682_DF_008 | 8304_13682_DF_009 | 8304_13682_DF_010 |


() = DL
[] = EMPC

A8304 - Totals

| Sample Summary Part 2 |  | | | | | | | | | Method 23 |
|--|---|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Analyte | WG2185607-1 | WG2185607-2 | WG2185607-3 | L1682779-1 | L1682779-2 | L1682779-3 | L1682779-5 | L1682779-6 | L1682779-7 | M23 ES#2 20ul |
| | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g |
| Totals | | | | | | | | | | |
| TCDDs | 0 | 1130 | 1140 | 1550 | 1280 | 1920 | 1600 | 941 | 1380 | 0 |
| PeCDDs | 0 | 0 | 6.12 | 8460 | 7520 | 11500 | 7680 | 4250 | 6520 | 0 |
| HxCDDs | 0 | 13600 | 13800 | 25200 | 22000 | 38000 | 12800 | 7380 | 11200 | 0 |
| HpCDDs | 0 | 5240 | 5330 | 33600 | 29700 | 50000 | 10400 | 6430 | 10100 | 0 |
| OCDD | 0 | 9100 | 9120 | 11300 | 9880 | 16000 | 2750 | 1870 | 2780 | 0 |
| TCDFs | 0 | 967 | 972 | 2060 | 2290 | 2540 | 2290 | 1370 | 1900 | 0 |
| PeCDFs | 0 | 9820 | 9860 | 4970 | 4280 | 6440 | 4630 | 2510 | 3990 | 0 |
| HxCDFs | 0 | 19900 | 19600 | 10700 | 8710 | 14400 | 5420 | 3160 | 4740 | 0 |
| HpCDFs | 0 | 9010 | 9490 | 8470 | 7250 | 12000 | 2880 | 1700 | 2660 | 0 |
| OCDF | 107 | 8760 | 8560 | 2730 | 2430 | 3690 | 910 | 676 | 896 | 102 |
| Total PCDD/Fs (ND=0; EMPC=0) | 107 | 77600 | 77900 | 109000 | 95300 | 156000 | 51300 | 30300 | 46100 | 102 |
| Total PCDD/Fs (ND=0; EMPC=EMPC) | 118 | 82900 | 83200 | 109000 | 95900 | 157000 | 51700 | 30700 | 46500 | 110 |
| Checkcode | 109-182-CKK | 008-371-DGL | 611-736-PPX | 020-383-FCZ | 593-514-VHJ | 215-857-TQQ | 773-039-VMG | 183-223-QNV | 554-583-FCL | 609-577-JWT |
| Lab ID | 8304_13682_DF_001 | 8304_13682_DF_002 | 8304_13682_DF_003 | 8304_13682_DF_004 | 8304_13682_DF_005 | 8304_13682_DF_006 | 8304_13682_DF_007 | 8304_13682_DF_008 | 8304_13682_DF_009 | 8304_13682_DF_010 |


() = DL
[] = EMPC

A8304 - Others

| Sample Summary Part 3 (dry weight) |  | | | | | | | | | Method23 |
|---------------------------------------|---|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Analyte | WG2185607-1 | WG2185607-2 | WG2185607-3 | L1682779-1 | L1682779-2 | L1682779-3 | L1682779-5 | L1682779-6 | L1682779-7 | M23 ES#2 20ul |
| | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g |
| Other PCDD/Fs (ND=0, EMPC=0) | | | | | | | | | | |
| Other TCDD | 0 | 20 | 0 | 1550 | 1280 | 1920 | 1600 | 941 | 1380 | 0 |
| Other PeCDD | 0 | 0 | 6.12 | 8460 | 7520 | 11500 | 7680 | 4250 | 6520 | 0 |
| Other HxCDD | 0 | 0 | 10 | 21550 | 19002 | 32970 | 10987 | 6291 | 9501 | 0 |
| Other HpCDD | 0 | 40 | 20 | 17500 | 15800 | 27000 | 5140 | 3100 | 5090 | 0 |
| Other TCDF | 0 | 18 | 19 | 2020 | 2250 | 2490 | 2240 | 1340 | 1860 | 0 |
| Other PeCDF | 0 | 120 | 220 | 4241 | 3682 | 5544 | 3967 | 2120 | 3428 | 0 |
| Other HxCDF | 0 | 0 | 10 | 6650 | 5420 | 9140 | 3330 | 1940 | 2890 | 0 |
| Other HpCDF | 0 | 0 | 0 | 3140 | 2771 | 4580 | 1114 | 670 | 1047 | 0 |
| Checkcode | 109-182-CKK | 008-371-DGL | 611-736-PPX | 020-383-FCZ | 593-514-VHJ | 215-857-TQQ | 773-039-VMG | 183-223-QNV | 554-583-FCL | 609-577-JWT |
| Lab ID | 8304_13682_DF_001 | 8304_13682_DF_002 | 8304_13682_DF_003 | 8304_13682_DF_004 | 8304_13682_DF_005 | 8304_13682_DF_006 | 8304_13682_DF_007 | 8304_13682_DF_008 | 8304_13682_DF_009 | 8304_13682_DF_010 |

() = DL
[] = EMPC

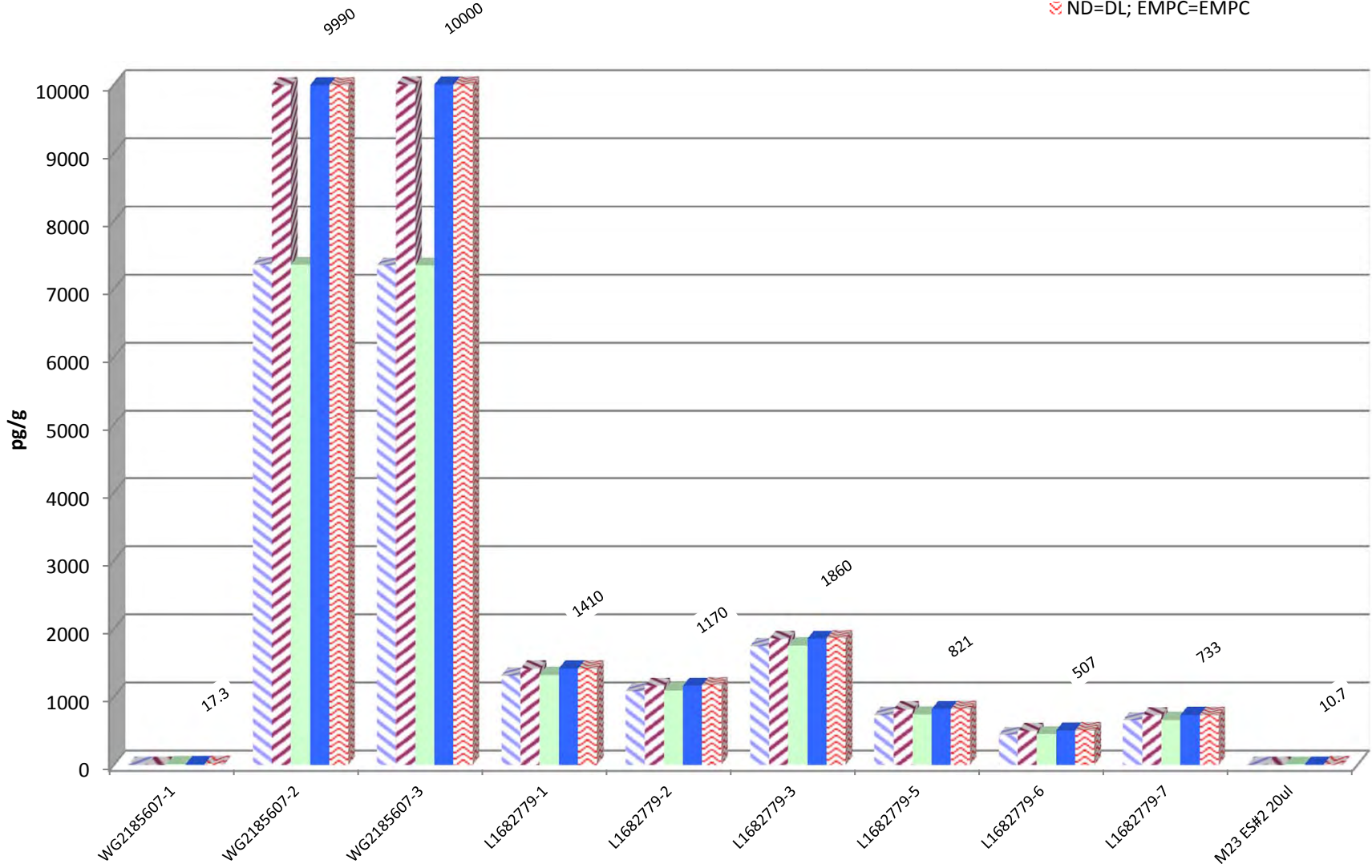
A8304 - DLs

| Sample Summary Part 5 (DLs) |  | | | | | | | | | Method 23 |
|--------------------------------|---|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Analyte | WG2185607-1 | WG2185607-2 | WG2185607-3 | L1682779-1 | L1682779-2 | L1682779-3 | L1682779-5 | L1682779-6 | L1682779-7 | M23 ES#2 20ul |
| | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g | pg/g |
| 2,3,7,8-TCDD | 6.68 | 4.85 | 0.687 | 8.12 | 12 | 8.73 | 7.55 | 9.78 | 5.78 | 3.78 |
| 1,2,3,7,8-PeCDD | 7.3 | 8.53 | 2.12 | 7.93 | 13.6 | 13.4 | 9.92 | 12.1 | 9.82 | 5.07 |
| 1,2,3,4,7,8-HxCDD | 5.35 | 4.74 | 0.858 | 10 | 16.4 | 15.9 | 7.4 | 10.9 | 7.29 | 3.81 |
| 1,2,3,6,7,8-HxCDD | 5.42 | 4.8 | 0.869 | 10.2 | 16.6 | 16.1 | 7.49 | 11.1 | 7.39 | 3.86 |
| 1,2,3,7,8,9-HxCDD | 4.93 | 4.37 | 0.79 | 9.25 | 15.1 | 14.7 | 6.81 | 10.1 | 6.72 | 3.51 |
| 1,2,3,4,6,7,8-HpCDD | 6.39 | 6.84 | 1.59 | 15 | 22.6 | 19.4 | 12.2 | 12.8 | 10.5 | 5.31 |
| OCDD | 8.46 | 7.6 | 1.55 | 20.1 | 19.7 | 24.8 | 15.4 | 13 | 13 | 6.21 |
| 2,3,7,8-TCDF | 5.35 | 4.38 | 0.553 | 9.03 | 8.89 | 9.61 | 8.51 | 8.28 | 6.89 | 2.83 |
| 1,2,3,7,8-PeCDF | 4.53 | 4.62 | 0.634 | 14.5 | 17.9 | 18.7 | 15.6 | 9.98 | 10.7 | 2.34 |
| 2,3,4,7,8-PeCDF | 4.72 | 4.82 | 0.662 | 15.2 | 18.6 | 19.5 | 16.3 | 10.4 | 11.1 | 2.44 |
| 1,2,3,4,7,8-HxCDF | 4.79 | 5.49 | 0.987 | 20.5 | 21.6 | 31.5 | 16 | 13.2 | 15.5 | 3.41 |
| 1,2,3,6,7,8-HxCDF | 4.39 | 5.04 | 0.906 | 18.8 | 19.8 | 28.9 | 14.7 | 12.1 | 14.2 | 3.13 |
| 2,3,4,6,7,8-HxCDF | 4.84 | 5.55 | 0.997 | 20.7 | 21.8 | 31.9 | 16.1 | 13.3 | 15.6 | 3.45 |
| 1,2,3,7,8,9-HxCDF | 5.29 | 6.06 | 1.09 | 22.6 | 23.9 | 34.8 | 17.6 | 14.5 | 17.1 | 3.77 |
| 1,2,3,4,6,7,8-HpCDF | 4.77 | 3.4 | 0.729 | 11.2 | 13 | 18.6 | 8.18 | 7.5 | 6.15 | 2.82 |
| 1,2,3,4,7,8,9-HpCDF | 5.89 | 4.2 | 0.901 | 13.8 | 16 | 23 | 10.1 | 9.27 | 7.6 | 3.49 |
| OCDF | 12.6 | 8.12 | 1.69 | 21.4 | 23.6 | 21.5 | 13.4 | 15.8 | 12.8 | 7.5 |
| Checkcode | 109-182-CKK | 008-371-DGL | 611-736-PPX | 020-383-FCZ | 593-514-VHJ | 215-857-TQQ | 773-039-VMG | 183-223-QNV | 554-583-FCL | 609-577-JWT |
| Lab ID | 8304_13682_DF_001 | 8304_13682_DF_002 | 8304_13682_DF_003 | 8304_13682_DF_004 | 8304_13682_DF_005 | 8304_13682_DF_006 | 8304_13682_DF_007 | 8304_13682_DF_008 | 8304_13682_DF_009 | 8304_13682_DF_010 |

ITEF-TEQ

A8304

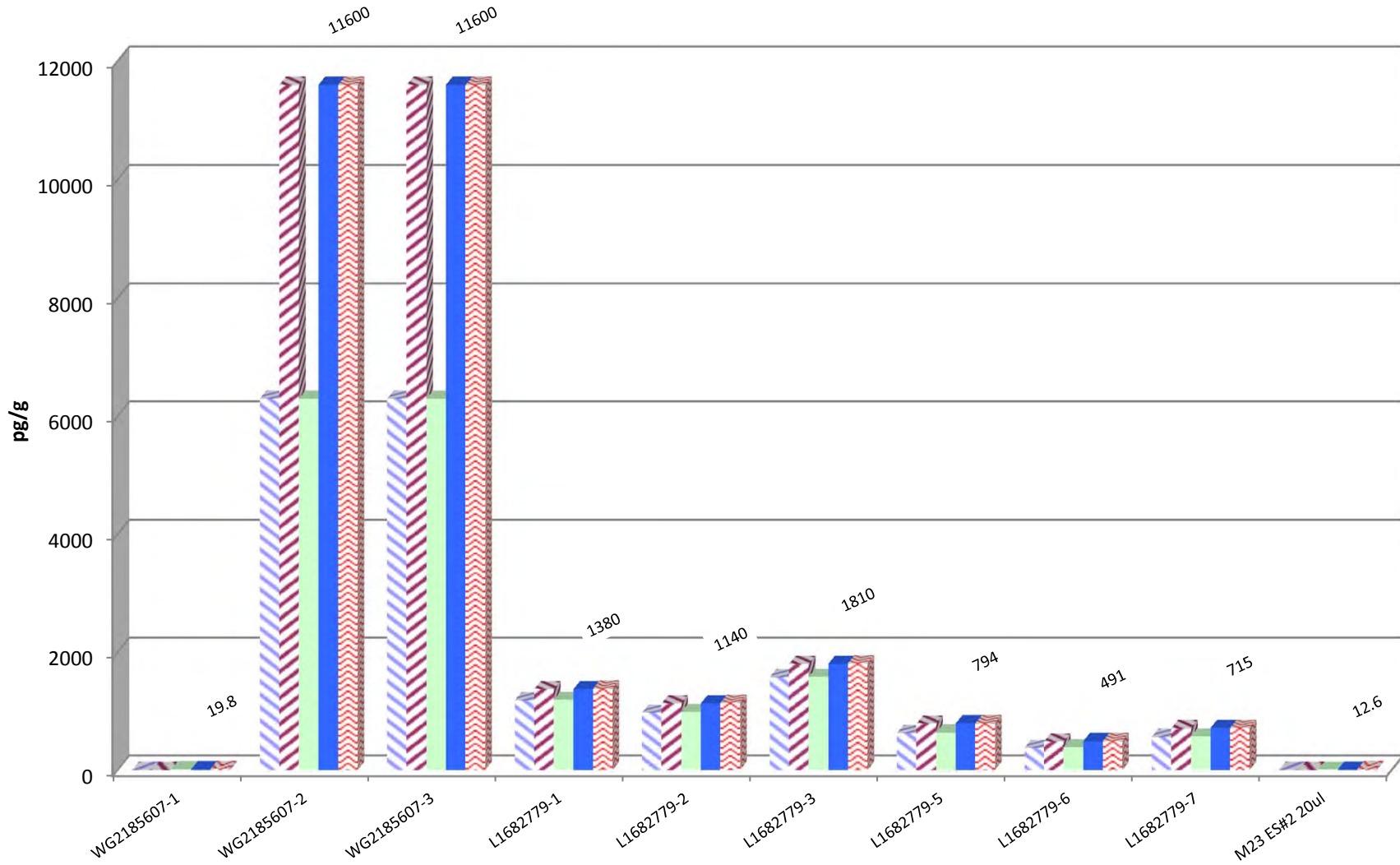
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- ND=0; EMPC=EMPC
- ND=DL/2; EMPC=0
- ND=DL/2; EMPC=EMPC
- ND=DL; EMPC=EMPC



WHO-2005-TEQ

A8304

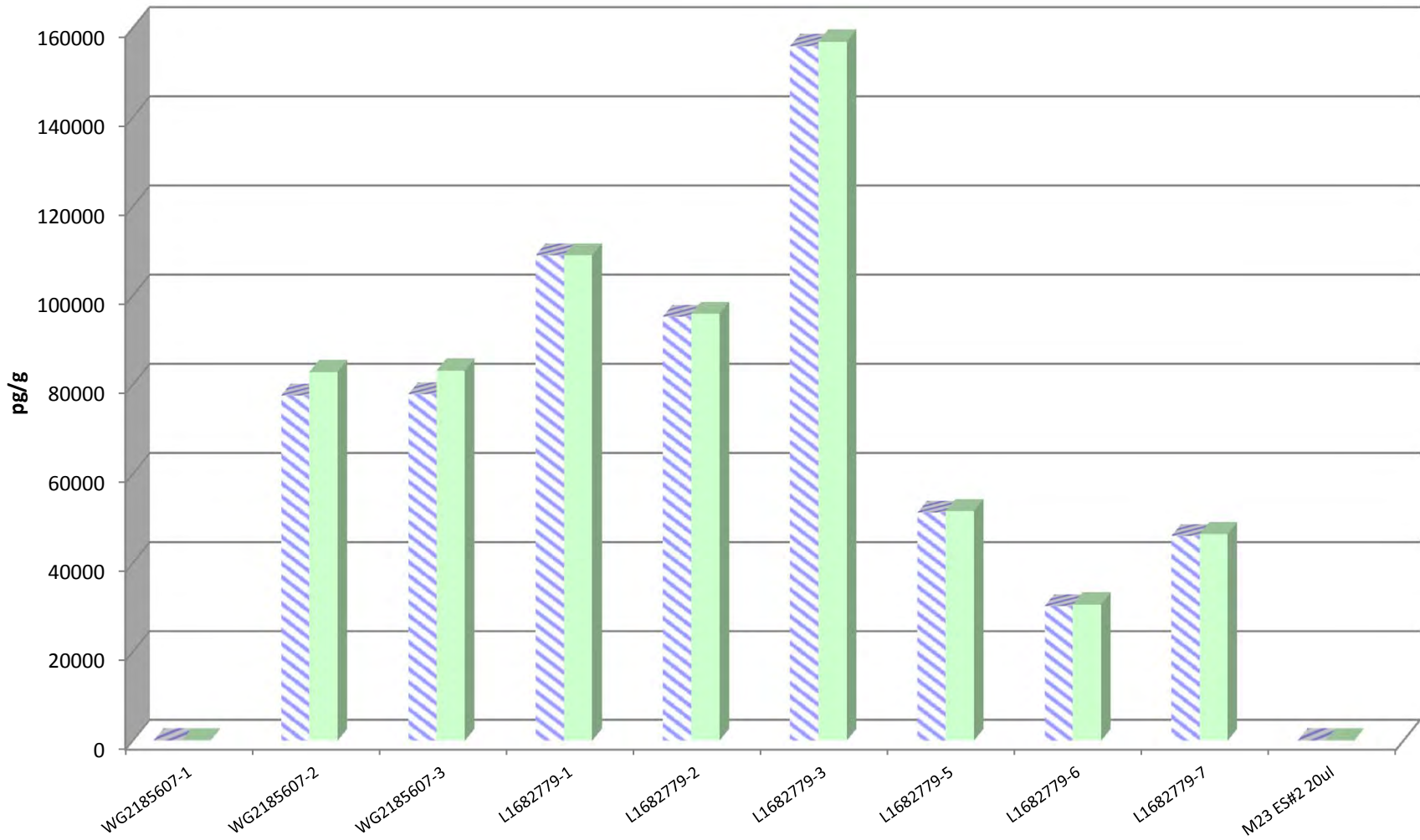
- ND=0; EMPC=0
- ND=0; EMPC=EMPC
- ND=DL/2; EMPC=0
- ND=DL/2; EMPC=EMPC
- ND=DL; EMPC=EMPC



Totals

A8304

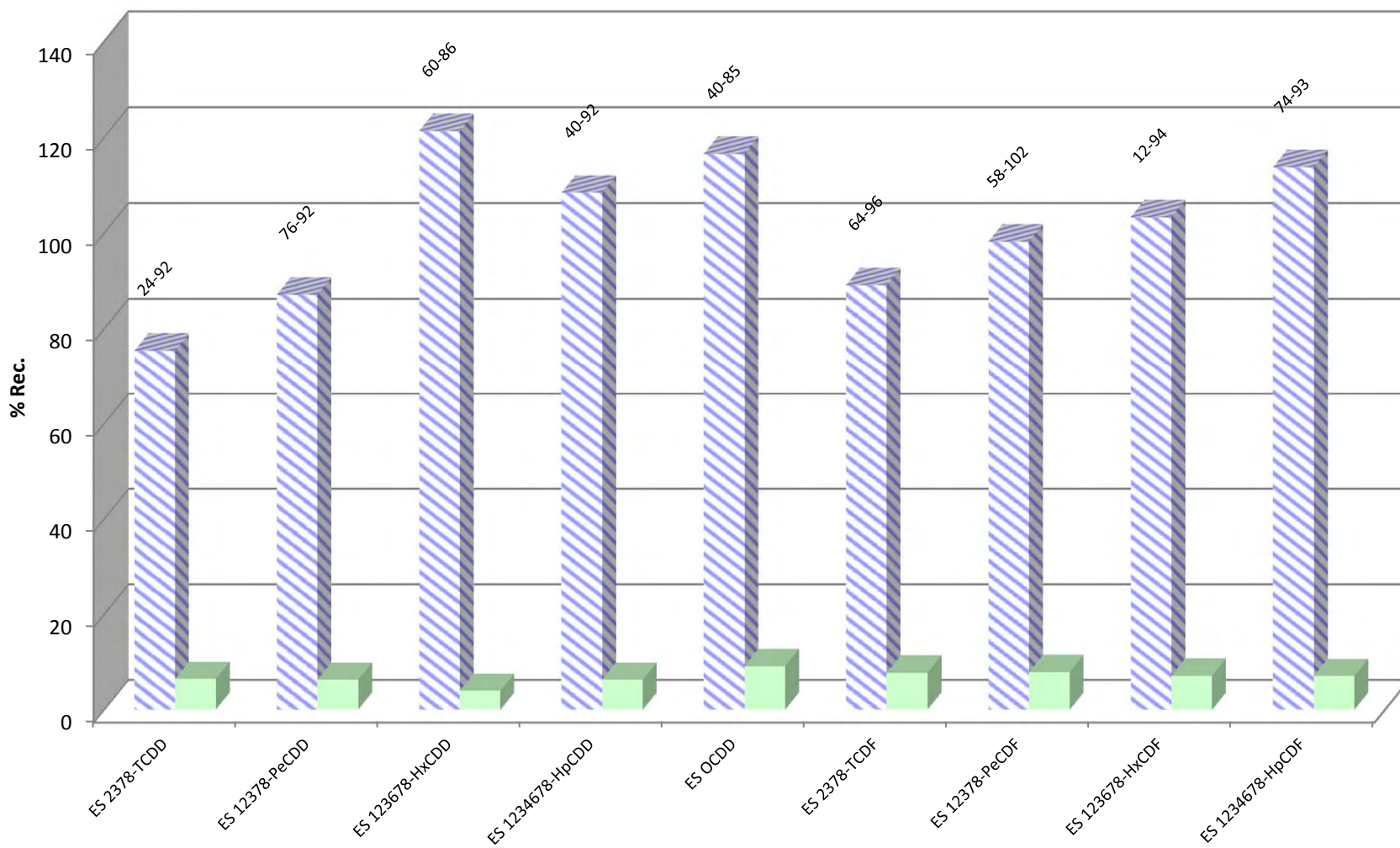
- Total PCDD/Fs (ND=0; EMPC=0)
- Total PCDD/Fs (ND=0; EMPC=EMPC)
- Total PCDD/Fs (2378-X ND=DL; EMPC=EMPC)



Mean Recoveries of Extraction Standards (N=9)

A8304

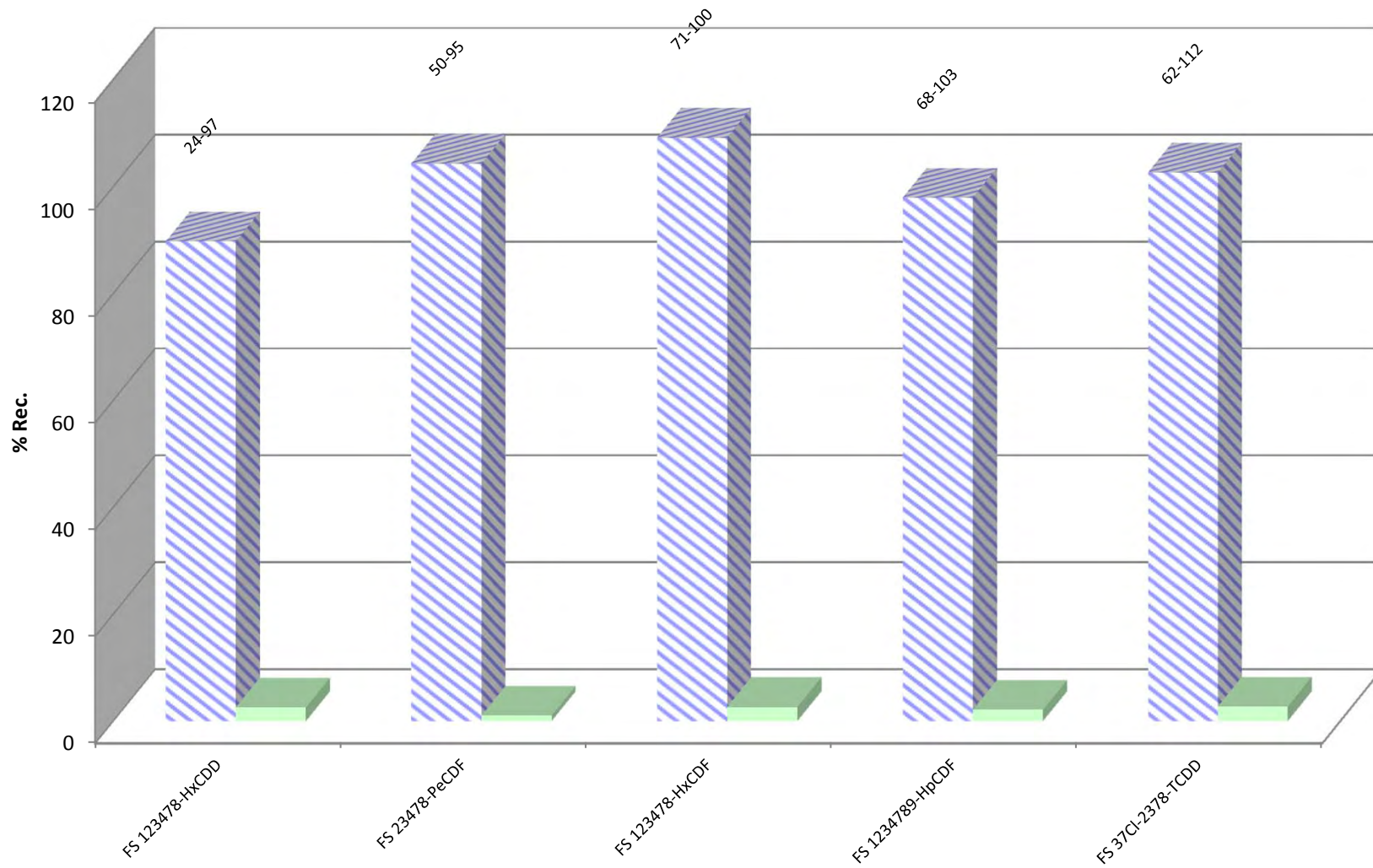
Series1 Series2



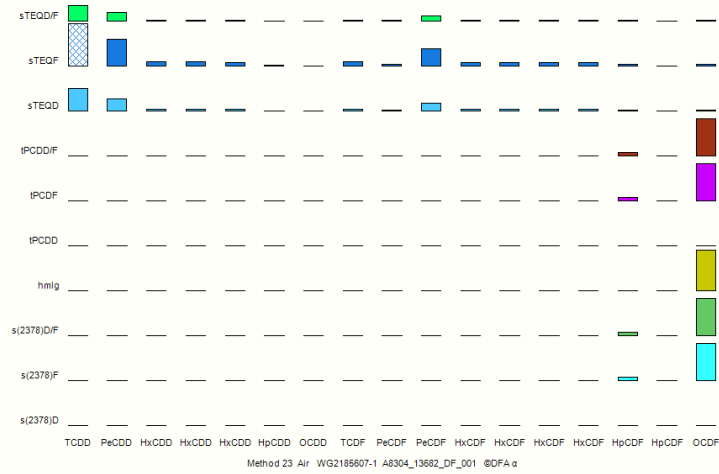
Mean Recoveries of Clean-Up Standards (N=6)

A8304

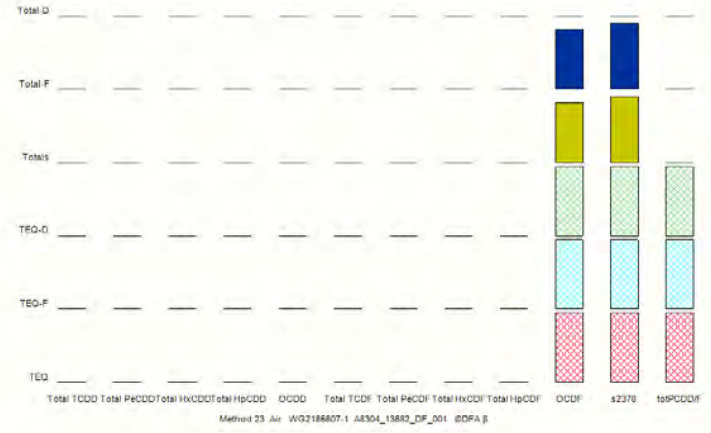
Mean Std. Dev.



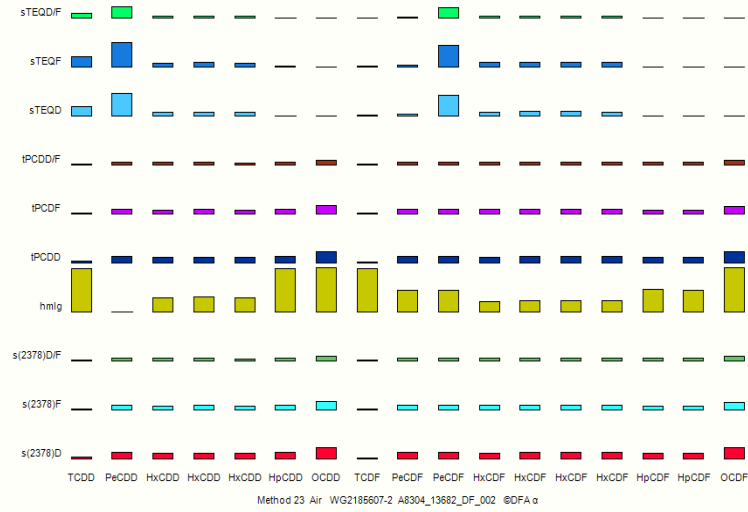
ANALYTICAL PERSPECTIVES



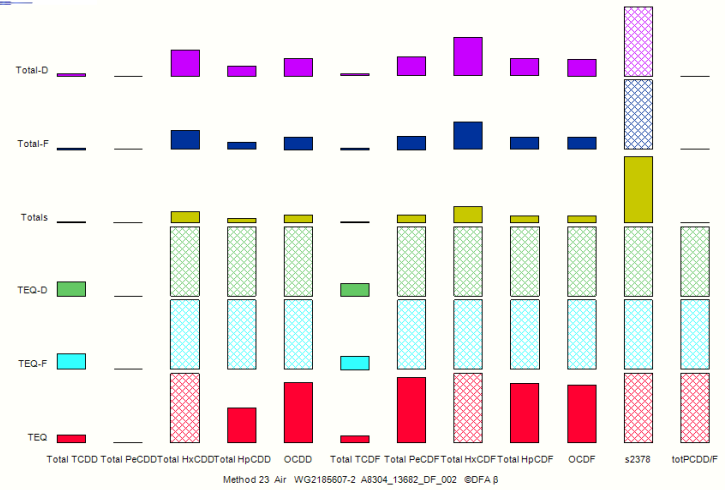
ANALYTICAL PERSPECTIVES



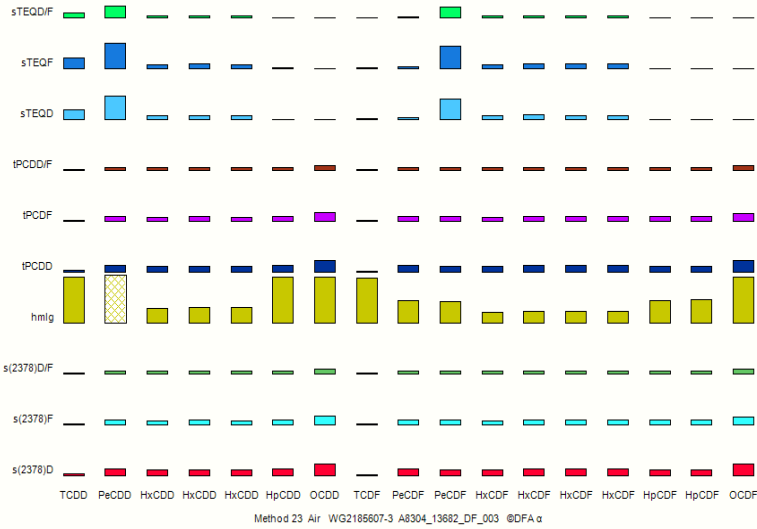
ANALYTICAL PERSPECTIVES



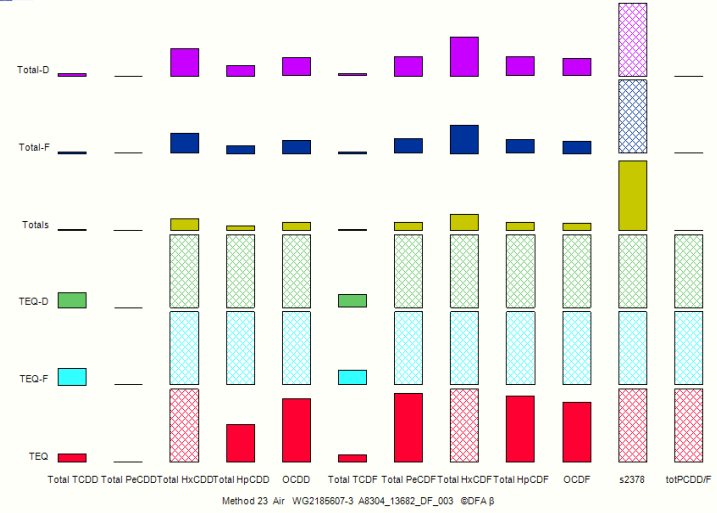
ANALYTICAL PERSPECTIVES



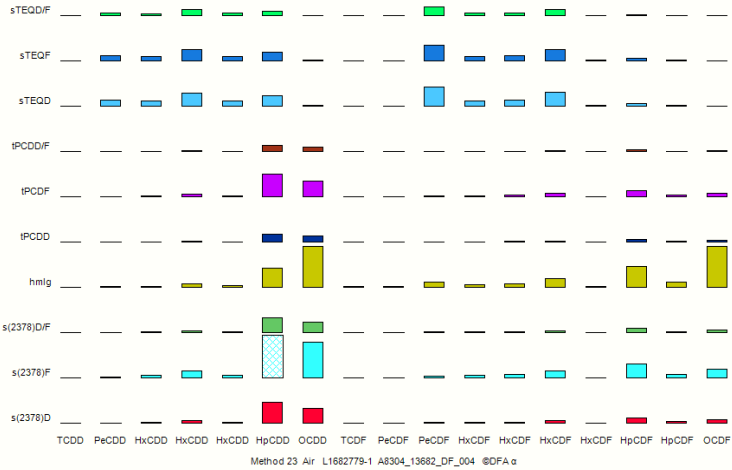
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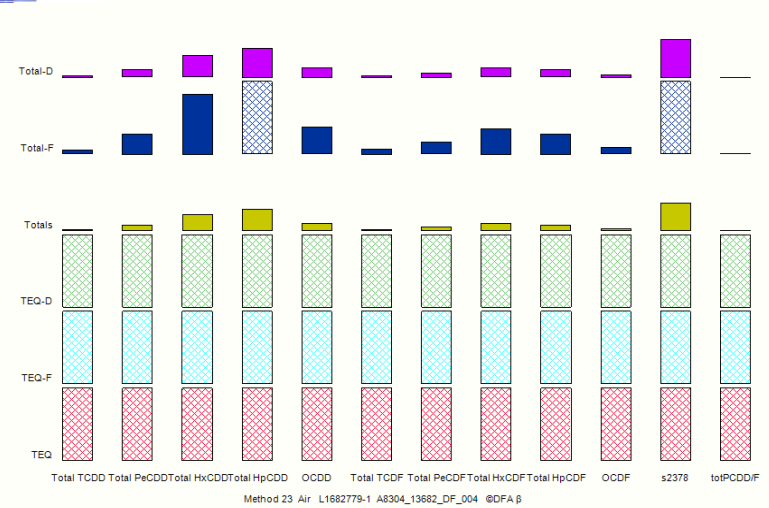
ANALYTICAL PERSPECTIVES



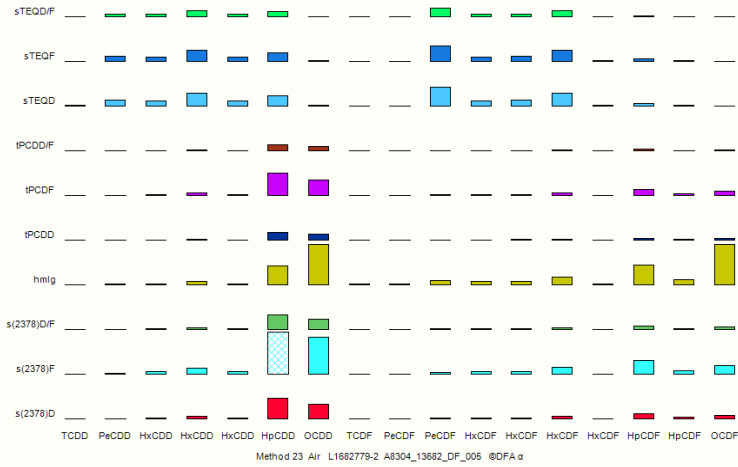
ANALYTICAL PERSPECTIVES



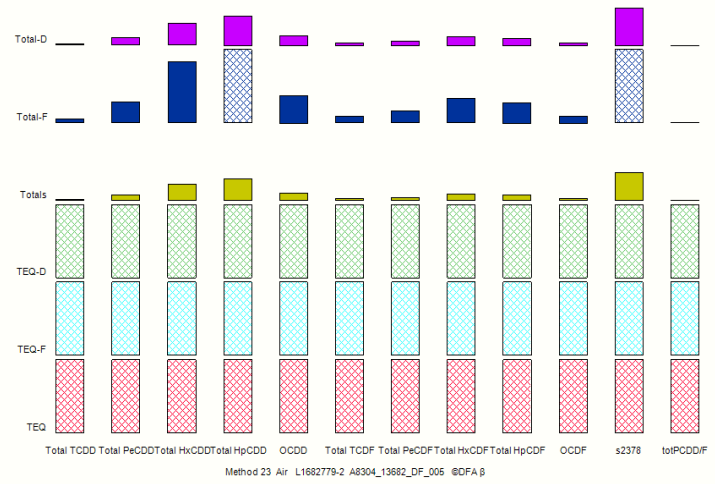
ANALYTICAL PERSPECTIVES



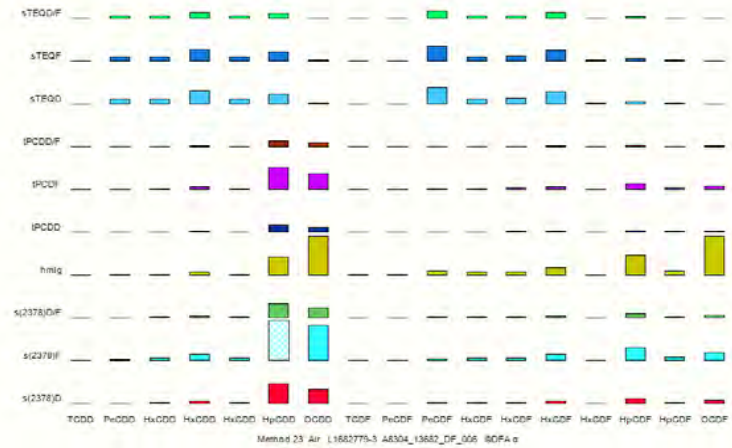
ANALYTICAL PERSPECTIVE



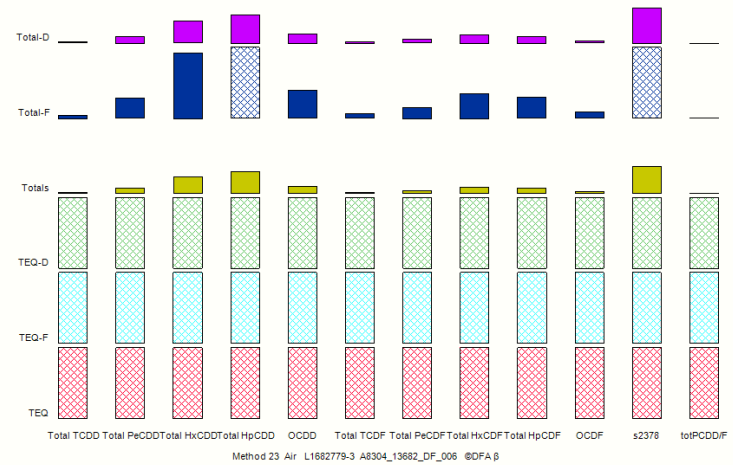
ANALYTICAL PERSPECTIVE



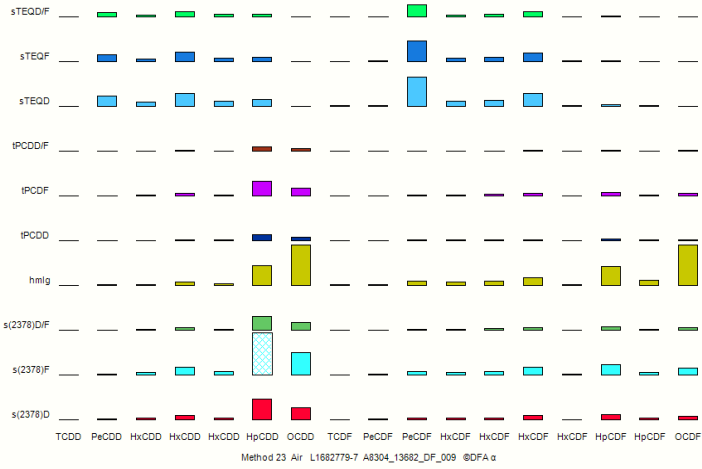
ANALYTICAL PERSPECTIVE



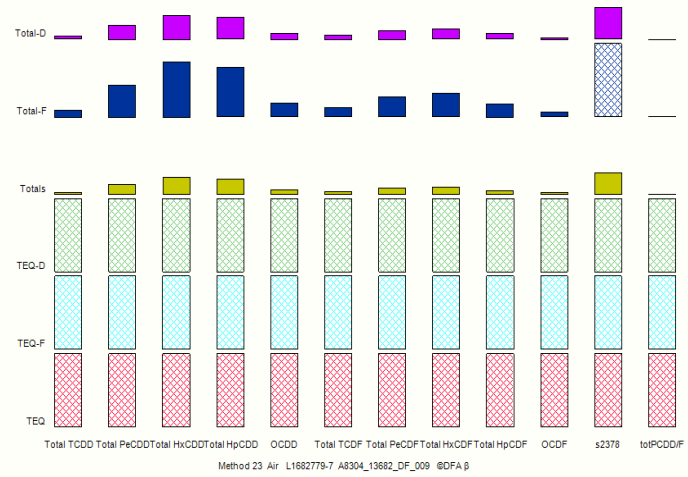
ANALYTICAL PERSPECTIVE



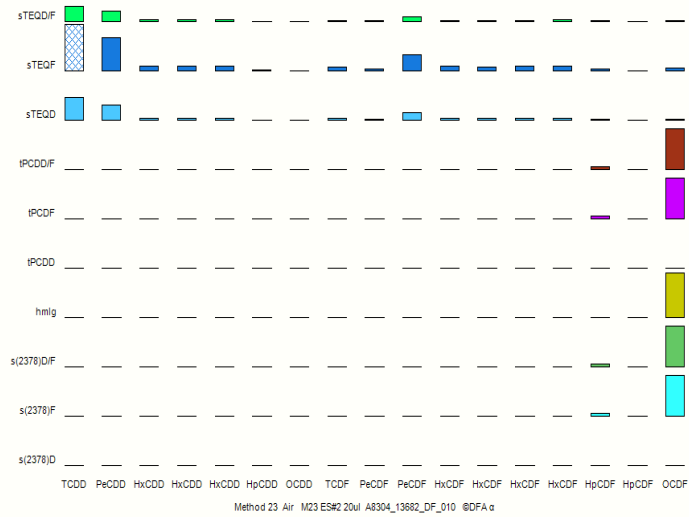
ANALYTICAL PERSPECTIVES



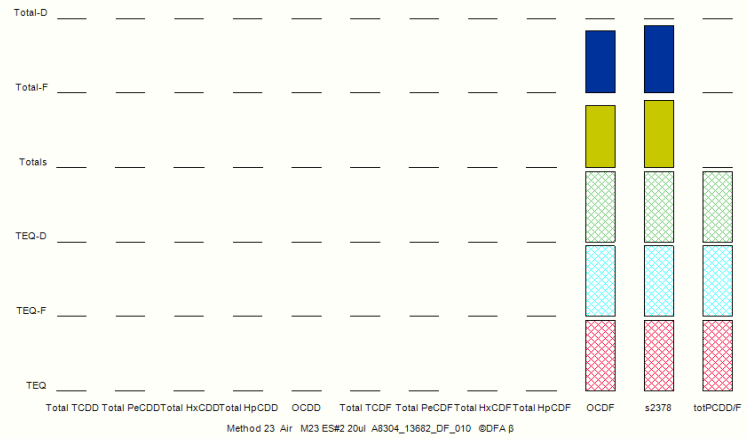
ANALYTICAL PERSPECTIVES



ANALYTICAL PERSPECTIVES



ANALYTICAL PERSPECTIVES



Sample ID: WG2185607-1

Method 23

| Client Data | | Sample Data | | Laboratory Data | | | |
|-----------------|----------------------------|----------------|-----|-----------------|--------------------|-----------------|-------------|
| Name: | Covanta Energy Group, Inc. | Matrix: | Air | Lab Project ID: | A8304 | Date Received: | 17-Oct-2015 |
| Project ID: | Extracts | Weight/Volume: | 1 | Lab Sample ID: | A8304_13682_DF_001 | Date Extracted: | n/a |
| Date Collected: | 20-Oct-2015 | Split: | 5 | QC Batch No: | 13682 | Date Analyzed: | 20-Oct-2015 |
| | | | | Dilution: | - | Time Analyzed: | 15:10:01 |

| Analyte | Conc. (pg) | DL (pg) | EMPC (pg) | Qualifiers | Standard | ES Recoveries | Qualifiers |
|---------------|------------|---------|-----------|------------|------------------|---------------|------------|
| 2378-TCDD | ND | 6.68 | | | ES 2378-TCDD | 77.3 | |
| 12378-PeCDD | ND | 7.3 | | | ES 12378-PeCDD | 94.5 | |
| 123478-HxCDD | ND | 5.35 | | | | | |
| 123678-HxCDD | ND | 5.42 | | | ES 123678-HxCDD | 124 | |
| 123789-HxCDD | ND | 4.93 | | | | | |
| 1234678-HpCDD | ND | 6.39 | | | ES 1234678-HpCDD | 120 | |
| OCDD | ND | 8.46 | | | ES OCDD | 125 | |
| 2378-TCDF | ND | 5.35 | | | ES 2378-TCDF | 90.5 | |
| 12378-PeCDF | ND | 4.53 | | | ES 12378-PeCDF | 105 | |
| 23478-PeCDF | ND | 4.72 | | | | | |
| 123478-HxCDF | ND | 4.79 | | | | | |
| 123678-HxCDF | ND | 4.39 | | | ES 123678-HxCDF | 114 | |
| 234678-HxCDF | ND | 4.84 | | | | | |
| 123789-HxCDF | ND | 5.29 | | | | | |
| 1234678-HpCDF | EMPC | | 10.6 | J | ES 1234678-HpCDF | 125 | |
| 1234789-HpCDF | ND | 5.89 | | | | | |
| OCDF | 107 | | | J | | | |

| Totals | | | | | Standard | SS/AS/FS/TS Recoveries | |
|----------------------|------------|------|------------|--|-------------------|------------------------|--|
| | | | | | FS 123478-HxCDD | n/a | |
| Total TCDD | ND | 6.68 | ND | | FS 23478-PeCDF | n/a | |
| Total PeCDD | ND | 7.3 | ND | | FS 123478-HxCDF | n/a | |
| Total HxCDD | ND | 8.11 | ND | | FS 1234789-HpCDF | n/a | |
| Total HpCDD | ND | 6.39 | ND | | FS 37Cl-2378-TCDD | n/a | |
| | | | | | CS 123789-HxCDF | 122 | |
| Total TCDF | ND | 5.35 | ND | | | | |
| Total PeCDF | ND | 9.24 | ND | | | | |
| Total HxCDF | ND | 13.3 | ND | | | | |
| Total HpCDF | ND | | 10.6 | | | | |
| Total PCDD/Fs | 107 | | 118 | | | | |

| ITEF TEQs | | | | | | | |
|--------------|-------|------|-------|--|--|--|--|
| TEQ: ND=0 | 0.107 | | 0.213 | | | | |
| TEQ: ND=DL/2 | 8.67 | 8.57 | 8.76 | | | | |
| TEQ: ND=DL | 17.2 | 17.1 | 17.3 | | | | |



5500 Business Drive
Wilmington, NC 28405, USA
www.us.sgs.com

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Sample ID: WG2185607-2

Method 23

| Client Data | | Sample Data | | Laboratory Data | | | |
|-----------------|----------------------------|----------------|-----|-----------------|--------------------|-----------------|-------------|
| Name: | Covanta Energy Group, Inc. | Matrix: | Air | Lab Project ID: | A8304 | Date Received: | 17-Oct-2015 |
| Project ID: | Extracts | Weight/Volume: | 1 | Lab Sample ID: | A8304_13682_DF_002 | Date Extracted: | n/a |
| Date Collected: | 20-Oct-2015 | Split: | 5 | QC Batch No: | 13682 | Date Analyzed: | 20-Oct-2015 |
| | | | | Dilution: | - | Time Analyzed: | 16:03:34 |

| Analyte | Conc. (pg) | DL (pg) | EMPC (pg) | Qualifiers | Standard | ES Recoveries | Qualifiers |
|---------------|------------|---------|-----------|------------|------------------|---------------|------------|
| 2378-TCDD | 1,110 | | | | ES 2378-TCDD | 78.8 | |
| 12378-PeCDD | EMPC | | 5,280 | | ES 12378-PeCDD | 92.5 | |
| 123478-HxCDD | 4,480 | | | | | | |
| 123678-HxCDD | 4,720 | | | | ES 123678-HxCDD | 120 | |
| 123789-HxCDD | 4,400 | | | | | | |
| 1234678-HpCDD | 5,200 | | | | ES 1234678-HpCDD | 105 | |
| OCDD | 9,100 | | | | ES OCDD | 122 | |
| 2378-TCDF | 949 | | | | ES 2378-TCDF | 92.9 | |
| 12378-PeCDF | 4,920 | | | | ES 12378-PeCDF | 103 | |
| 23478-PeCDF | 4,780 | | | | | | |
| 123478-HxCDF | 4,750 | | | | | | |
| 123678-HxCDF | 5,080 | | | | ES 123678-HxCDF | 107 | |
| 234678-HxCDF | 5,150 | | | | | | |
| 123789-HxCDF | 4,950 | | | | | | |
| 1234678-HpCDF | 4,560 | | | | ES 1234678-HpCDF | 115 | |
| 1234789-HpCDF | 4,450 | | | | | | |
| OCDF | 8,760 | | | | | | |

| Totals | | | | | Standard | SS/AS/FS/TS Recoveries | |
|----------------------|---------------|--|---------------|--|-------------------|------------------------|--|
| | | | | | FS 123478-HxCDD | n/a | |
| Total TCDD | 1,130 | | 1,130 | | FS 23478-PeCDF | n/a | |
| Total PeCDD | ND | | 5,280 | | FS 123478-HxCDF | n/a | |
| Total HxCDD | 13,600 | | 13,600 | | FS 1234789-HpCDF | n/a | |
| Total HpCDD | 5,240 | | 5,240 | | FS 37Cl-2378-TCDD | n/a | |
| | | | | | CS 123789-HxCDF | 116 | |
| Total TCDF | 967 | | 967 | | | | |
| Total PeCDF | 9,820 | | 9,850 | | | | |
| Total HxCDF | 19,900 | | 19,900 | | | | |
| Total HpCDF | 9,010 | | 9,010 | | | | |
| Total PCDD/Fs | 77,600 | | 82,900 | | | | |

| ITEF TEQs | | | | | | | |
|--------------|------|------|------|--|--|--|--|
| TEQ: ND=0 | 7350 | | 9990 | | | | |
| TEQ: ND=DL/2 | 7350 | 7.98 | 9990 | | | | |
| TEQ: ND=DL | 7360 | 16 | 9990 | | | | |



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Sample ID: WG2185607-3

Method 23

| Client Data | | Sample Data | | Laboratory Data | | | |
|-----------------|----------------------------|----------------|-----|-----------------|--------------------|-----------------|-------------|
| Name: | Covanta Energy Group, Inc. | Matrix: | Air | Lab Project ID: | A8304 | Date Received: | 17-Oct-2015 |
| Project ID: | Extracts | Weight/Volume: | 1 | Lab Sample ID: | A8304_13682_DF_003 | Date Extracted: | n/a |
| Date Collected: | 20-Oct-2015 | Split: | 5 | QC Batch No: | 13682 | Date Analyzed: | 20-Oct-2015 |
| | | | | Dilution: | - | Time Analyzed: | 16:57:08 |

| Analyte | Conc. (pg) | DL (pg) | EMPC (pg) | Qualifiers | Standard | ES Recoveries | Qualifiers |
|---------------|------------|---------|-----------|------------|------------------|---------------|------------|
| 2378-TCDD | 1,140 | | | | ES 2378-TCDD | 448 | V |
| 12378-PeCDD | EMPC | | 5,330 | | ES 12378-PeCDD | 497 | V |
| 123478-HxCDD | 4,530 | | | | | | |
| 123678-HxCDD | 4,680 | | | | ES 123678-HxCDD | 568 | V |
| 123789-HxCDD | 4,580 | | | | | | |
| 1234678-HpCDD | 5,310 | | | | ES 1234678-HpCDD | 525 | V |
| OCDD | 9,120 | | | | ES OCDD | 619 | V |
| 2378-TCDF | 953 | | | | ES 2378-TCDF | 528 | V |
| 12378-PeCDF | 4,920 | | | | ES 12378-PeCDF | 549 | V |
| 23478-PeCDF | 4,720 | | | | | | |
| 123478-HxCDF | 4,570 | | | | | | |
| 123678-HxCDF | 5,110 | | | | ES 123678-HxCDF | 534 | V |
| 234678-HxCDF | 4,990 | | | | | | |
| 123789-HxCDF | 4,920 | | | | | | |
| 1234678-HpCDF | 4,710 | | | | ES 1234678-HpCDF | 552 | V |
| 1234789-HpCDF | 4,780 | | | | | | |
| OCDF | 8,560 | | | | | | |

| Totals | | | | | Standard | SS/AS/FS/TS Recoveries | |
|----------------------|---------------|--|---------------|--|-------------------|------------------------|--|
| Total TCDD | 1,140 | | 1,140 | | FS 123478-HxCDD | n/a | |
| Total PeCDD | 6.12 | | 5,340 | | FS 23478-PeCDF | n/a | |
| Total HxCDD | 13,800 | | 13,800 | | FS 123478-HxCDF | n/a | |
| Total HpCDD | 5,330 | | 5,330 | | FS 1234789-HpCDF | n/a | |
| Total TCDF | 972 | | 974 | | FS 37Cl-2378-TCDD | n/a | |
| Total PeCDF | 9,860 | | 9,860 | | CS 123789-HxCDF | n/a | |
| Total HxCDF | 19,600 | | 19,600 | | | | |
| Total HpCDF | 9,490 | | 9,490 | | | | |
| Total PCDD/Fs | 77,900 | | 83,200 | | | | |

| ITEF TEQs | | | | | | | |
|--------------|------|------|-------|--|--|--|--|
| TEQ: ND=0 | 7340 | | 10000 | | | | |
| TEQ: ND=DL/2 | 7340 | 1.42 | 10000 | | | | |
| TEQ: ND=DL | 7340 | 2.85 | 10000 | | | | |



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Sample ID: L1682779-1

Method 23

| Client Data | | Sample Data | | Laboratory Data | | | |
|----------------------|----------------------------|----------------|----------------|-----------------|--------------------|------------------------|-------------|
| Name: | Covanta Energy Group, Inc. | Matrix: | Air | Lab Project ID: | A8304 | Date Received: | 17-Oct-2015 |
| Project ID: | Extracts | Weight/Volume: | 1 | Lab Sample ID: | A8304_13682_DF_004 | Date Extracted: | n/a |
| Date Collected: | 20-Oct-2015 | Split: | 5 | QC Batch No: | 13682 | Date Analyzed: | 20-Oct-2015 |
| | | | | Dilution: | - | Time Analyzed: | 17:50:40 |
| Analyte | Conc. (pg) | DL (pg) | EMPC (pg) | Qualifiers | Standard | ES Recoveries | Qualifiers |
| 2378-TCDD | ND | 8.12 | | | ES 2378-TCDD | 72.5 | |
| 12378-PeCDD | EMPC | | 193 | | ES 12378-PeCDD | 87.4 | |
| 123478-HxCDD | 753 | | | | | | |
| 123678-HxCDD | 2,070 | | | | ES 123678-HxCDD | 124 | |
| 123789-HxCDD | 827 | | | | | | |
| 1234678-HpCDD | 16,100 | | | | ES 1234678-HpCDD | 109 | |
| OCDD | 11,300 | | | | ES OCDD | 120 | |
| 2378-TCDF | 40.2 | | | | ES 2378-TCDF | 86.6 | |
| 12378-PeCDF | 128 | | | | ES 12378-PeCDF | 95 | |
| 23478-PeCDF | 601 | | | | | | |
| 123478-HxCDF | 780 | | | | | | |
| 123678-HxCDF | 974 | | | | ES 123678-HxCDF | 94.9 | |
| 234678-HxCDF | 2,180 | | | | | | |
| 123789-HxCDF | 114 | | | J | | | |
| 1234678-HpCDF | 4,300 | | | | ES 1234678-HpCDF | 110 | |
| 1234789-HpCDF | 1,030 | | | | | | |
| OCDF | 2,730 | | | | | | |
| Totals | | | | | Standard | SS/AS/FS/TS Recoveries | |
| Total TCDD | 1,550 | | 1,570 | | FS 123478-HxCDD | 90.7 | |
| Total PeCDD | 8,460 | | 8,650 | | FS 23478-PeCDF | 105 | |
| Total HxCDD | 25,200 | | 25,200 | | FS 123478-HxCDF | 114 | |
| Total HpCDD | 33,600 | | 33,600 | | FS 1234789-HpCDF | 98.1 | |
| Total TCDF | 2,060 | | 2,130 | | FS 37Cl-2378-TCDD | 107 | |
| Total PeCDF | 4,970 | | 5,020 | | CS 123789-HxCDF | 112 | |
| Total HxCDF | 10,700 | | 10,700 | | | | |
| Total HpCDF | 8,470 | | 8,470 | | | | |
| Total PCDD/Fs | 109,000 | | 109,000 | | | | |
| ITEF TEQs | | | | | | | |
| TEQ: ND=0 | 1310 | | 1410 | | | | |
| TEQ: ND=DL/2 | 1320 | 16.5 | 1410 | | | | |
| TEQ: ND=DL | 1320 | 32.9 | 1410 | | | | |



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Sample ID: L1682779-2

Method 23

| Client Data | | Sample Data | | Laboratory Data | | | |
|-----------------|----------------------------|----------------|-----|-----------------|--------------------|-----------------|-------------|
| Name: | Covanta Energy Group, Inc. | Matrix: | Air | Lab Project ID: | A8304 | Date Received: | 17-Oct-2015 |
| Project ID: | Extracts | Weight/Volume: | 1 | Lab Sample ID: | A8304_13682_DF_005 | Date Extracted: | n/a |
| Date Collected: | 20-Oct-2015 | Split: | 5 | QC Batch No: | 13682 | Date Analyzed: | 20-Oct-2015 |
| | | | | Dilution: | - | Time Analyzed: | 18:44:15 |

| Analyte | Conc. (pg) | DL (pg) | EMPC (pg) | Qualifiers | Standard | ES Recoveries | Qualifiers |
|---------------|------------|---------|-----------|------------|------------------|---------------|------------|
| 2378-TCDD | ND | 12 | | | ES 2378-TCDD | 75.6 | |
| 12378-PeCDD | EMPC | | 156 | | ES 12378-PeCDD | 92.3 | |
| 123478-HxCDD | 651 | | | | | | |
| 123678-HxCDD | 1,690 | | | | ES 123678-HxCDD | 128 | |
| 123789-HxCDD | 657 | | | | | | |
| 1234678-HpCDD | 13,900 | | | | ES 1234678-HpCDD | 117 | |
| OCDD | 9,880 | | | | ES OCDD | 124 | |
| 2378-TCDF | 35.7 | | | | ES 2378-TCDF | 87 | |
| 12378-PeCDF | 107 | | | J | ES 12378-PeCDF | 103 | |
| 23478-PeCDF | 491 | | | | | | |
| 123478-HxCDF | 658 | | | | | | |
| 123678-HxCDF | 768 | | | | ES 123678-HxCDF | 103 | |
| 234678-HxCDF | 1,760 | | | | | | |
| 123789-HxCDF | 104 | | | J | | | |
| 1234678-HpCDF | 3,610 | | | | ES 1234678-HpCDF | 116 | |
| 1234789-HpCDF | 869 | | | | | | |
| OCDF | 2,430 | | | | | | |

| Totals | | | | | Standard | SS/AS/FS/TS Recoveries | |
|----------------------|---------------|--|---------------|--|-------------------|------------------------|--|
| | | | | | FS 123478-HxCDD | 86.8 | |
| Total TCDD | 1,280 | | 1,590 | | FS 23478-PeCDF | 104 | |
| Total PeCDD | 7,520 | | 7,670 | | FS 123478-HxCDF | 108 | |
| Total HxCDD | 22,000 | | 22,000 | | FS 1234789-HpCDF | 98.4 | |
| Total HpCDD | 29,700 | | 29,700 | | FS 37Cl-2378-TCDD | 102 | |
| | | | | | CS 123789-HxCDF | 108 | |
| Total TCDF | 2,290 | | 2,380 | | | | |
| Total PeCDF | 4,280 | | 4,330 | | | | |
| Total HxCDF | 8,710 | | 8,710 | | | | |
| Total HpCDF | 7,250 | | 7,250 | | | | |
| Total PCDD/Fs | 95,300 | | 95,900 | | | | |

| ITEF TEQs | | | | | | | |
|--------------|------|----|------|--|--|--|--|
| TEQ: ND=0 | 1080 | | 1160 | | | | |
| TEQ: ND=DL/2 | 1090 | 22 | 1160 | | | | |
| TEQ: ND=DL | 1100 | 44 | 1170 | | | | |



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Sample ID: L1682779-3

Method 23

| Client Data | | Sample Data | | Laboratory Data | | | |
|-----------------|----------------------------|----------------|-----|-----------------|--------------------|-----------------|-------------|
| Name: | Covanta Energy Group, Inc. | Matrix: | Air | Lab Project ID: | A8304 | Date Received: | 17-Oct-2015 |
| Project ID: | Extracts | Weight/Volume: | 1 | Lab Sample ID: | A8304_13682_DF_006 | Date Extracted: | n/a |
| Date Collected: | 20-Oct-2015 | Split: | 5 | QC Batch No: | 13682 | Date Analyzed: | 20-Oct-2015 |
| | | | | Dilution: | - | Time Analyzed: | 19:37:47 |

| Analyte | Conc. (pg) | DL (pg) | EMPC (pg) | Qualifiers | Standard | ES Recoveries | Qualifiers |
|---------------|------------|---------|-----------|------------|------------------|---------------|------------|
| 2378-TCDD | ND | 8.73 | | | ES 2378-TCDD | 68.2 | |
| 12378-PeCDD | EMPC | | 225 | | ES 12378-PeCDD | 77.7 | |
| 123478-HxCDD | 1,070 | | | | | | |
| 123678-HxCDD | 2,900 | | | | ES 123678-HxCDD | 117 | |
| 123789-HxCDD | 1,060 | | | | | | |
| 1234678-HpCDD | 23,000 | | | | ES 1234678-HpCDD | 105 | |
| OCDD | 16,000 | | | | ES OCDD | 112 | |
| 2378-TCDF | 49.5 | | | | ES 2378-TCDF | 82.6 | |
| 12378-PeCDF | 149 | | | | ES 12378-PeCDF | 87.1 | |
| 23478-PeCDF | 747 | | | | | | |
| 123478-HxCDF | 1,080 | | | | | | |
| 123678-HxCDF | 1,270 | | | | ES 123678-HxCDF | 98.3 | |
| 234678-HxCDF | 2,780 | | | | | | |
| 123789-HxCDF | 135 | | | | | | |
| 1234678-HpCDF | 6,070 | | | | ES 1234678-HpCDF | 107 | |
| 1234789-HpCDF | 1,350 | | | | | | |
| OCDF | 3,690 | | | | | | |

| Totals | | | | | Standard | SS/AS/FS/TS Recoveries | |
|----------------------|----------------|--|----------------|--|-------------------|------------------------|--|
| Total TCDD | 1,920 | | 1,980 | | FS 123478-HxCDD | 90.5 | |
| Total PeCDD | 11,500 | | 11,700 | | FS 23478-PeCDF | 106 | |
| Total HxCDD | 38,000 | | 38,000 | | FS 123478-HxCDF | 110 | |
| Total HpCDD | 50,000 | | 50,000 | | FS 1234789-HpCDF | 99.8 | |
| Total TCDF | 2,540 | | 2,630 | | FS 37Cl-2378-TCDD | 99 | |
| Total PeCDF | 6,440 | | 6,480 | | CS 123789-HxCDF | 104 | |
| Total HxCDF | 14,400 | | 14,400 | | | | |
| Total HpCDF | 12,000 | | 12,000 | | | | |
| Total PCDD/Fs | 156,000 | | 157,000 | | | | |

| ITEF TEQs | | | | | | | |
|--------------|------|------|------|--|--|--|--|
| TEQ: ND=0 | 1740 | | 1850 | | | | |
| TEQ: ND=DL/2 | 1750 | 22.6 | 1850 | | | | |
| TEQ: ND=DL | 1750 | 45.1 | 1860 | | | | |



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Sample ID: L1682779-5

Method 23

| Client Data | | Sample Data | | Laboratory Data | | | |
|-----------------|----------------------------|----------------|-----|-----------------|--------------------|-----------------|-------------|
| Name: | Covanta Energy Group, Inc. | Matrix: | Air | Lab Project ID: | A8304 | Date Received: | 17-Oct-2015 |
| Project ID: | Extracts | Weight/Volume: | 1 | Lab Sample ID: | A8304_13682_DF_007 | Date Extracted: | n/a |
| Date Collected: | 20-Oct-2015 | Split: | 5 | QC Batch No: | 13682 | Date Analyzed: | 20-Oct-2015 |
| | | | | Dilution: | - | Time Analyzed: | 23:18:29 |

| Analyte | Conc. (pg) | DL (pg) | EMPC (pg) | Qualifiers | Standard | ES Recoveries | Qualifiers |
|----------------------|---------------|---------|---------------|------------|-------------------|-------------------------------|------------|
| 2378-TCDD | ND | 7.55 | | | ES 2378-TCDD | 71.7 | |
| 12378-PeCDD | EMPC | | 161 | | ES 12378-PeCDD | 81.7 | |
| 123478-HxCDD | 329 | | | | | | |
| 123678-HxCDD | 1,040 | | | | ES 123678-HxCDD | 117 | |
| 123789-HxCDD | 444 | | | | | | |
| 1234678-HpCDD | 5,260 | | | | ES 1234678-HpCDD | 106 | |
| OCDD | 2,750 | | | | ES OCDD | 107 | |
| 2378-TCDF | 49.2 | | | | ES 2378-TCDF | 83.3 | |
| 12378-PeCDF | 150 | | | | ES 12378-PeCDF | 91.8 | |
| 23478-PeCDF | 513 | | | | | | |
| 123478-HxCDF | 405 | | | | | | |
| 123678-HxCDF | 544 | | | | ES 123678-HxCDF | 99.6 | |
| 234678-HxCDF | 1,020 | | | | | | |
| 123789-HxCDF | 118 | | | J | | | |
| 1234678-HpCDF | 1,350 | | | | ES 1234678-HpCDF | 110 | |
| 1234789-HpCDF | 416 | | | | | | |
| OCDF | 910 | | | | | | |
| Totals | | | | | Standard | SS/AS/FS/TS Recoveries | |
| | | | | | FS 123478-HxCDD | 86.3 | |
| Total TCDD | 1,600 | | 1,630 | | FS 23478-PeCDF | 104 | |
| Total PeCDD | 7,680 | | 7,840 | | FS 123478-HxCDF | 109 | |
| Total HxCDD | 12,800 | | 12,800 | | FS 1234789-HpCDF | 98.9 | |
| Total HpCDD | 10,400 | | 10,400 | | FS 37Cl-2378-TCDD | 103 | |
| | | | | | CS 123789-HxCDF | 112 | |
| Total TCDF | 2,290 | | 2,510 | | | | |
| Total PeCDF | 4,630 | | 4,680 | | | | |
| Total HxCDF | 5,420 | | 5,420 | | | | |
| Total HpCDF | 2,880 | | 2,880 | | | | |
| Total PCDD/Fs | 51,300 | | 51,700 | | | | |
| ITEF TEQs | | | | | | | |
| TEQ: ND=0 | 733 | | 814 | | | | |
| TEQ: ND=DL/2 | 739 | 15.6 | 817 | | | | |
| TEQ: ND=DL | 745 | 31.2 | 821 | | | | |




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Sample ID: L1682779-6

Method 23

| Client Data | | Sample Data | | Laboratory Data | | | |
|----------------------|----------------------------|----------------|---------------|-----------------|--|------------------------|-------------|
| Name: | Covanta Energy Group, Inc. | Matrix: | Air | Lab Project ID: | A8304 | Date Received: | 17-Oct-2015 |
| Project ID: | Extracts | Weight/Volume: | 1 | Lab Sample ID: | A8304_13682_DF_008 | Date Extracted: | n/a |
| Date Collected: | 20-Oct-2015 | Split: | 5 | QC Batch No: | 13682 | Date Analyzed: | 21-Oct-2015 |
| | | | | Dilution: | - | Time Analyzed: | 00:12:02 |
| Analyte | Conc. (pg) | DL (pg) | EMPC (pg) | Qualifiers | Standard | ES Recoveries | Qualifiers |
| 2378-TCDD | ND | 9.78 | | | ES 2378-TCDD | 72.6 | |
| 12378-PeCDD | EMPC | | 99.4 | J | ES 12378-PeCDD | 83.2 | |
| 123478-HxCDD | 196 | | | | | | |
| 123678-HxCDD | 623 | | | | ES 123678-HxCDD | 118 | |
| 123789-HxCDD | 270 | | | | | | |
| 1234678-HpCDD | 3,330 | | | | ES 1234678-HpCDD | 105 | |
| OCDD | 1,870 | | | | ES OCDD | 108 | |
| 2378-TCDF | 31.9 | | | | ES 2378-TCDF | 85.7 | |
| 12378-PeCDF | 82.1 | | | J | ES 12378-PeCDF | 94.4 | |
| 23478-PeCDF | 311 | | | | | | |
| 123478-HxCDF | 244 | | | | | | |
| 123678-HxCDF | 340 | | | | ES 123678-HxCDF | 98.8 | |
| 234678-HxCDF | 632 | | | | | | |
| 123789-HxCDF | EMPC | | 81.9 | J | | | |
| 1234678-HpCDF | 784 | | | | ES 1234678-HpCDF | 109 | |
| 1234789-HpCDF | 246 | | | | | | |
| OCDF | 676 | | | | | | |
| Totals | | | | | Standard | SS/AS/FS/TS Recoveries | |
| Total TCDD | 941 | | 959 | | FS 123478-HxCDD | 92.2 | |
| Total PeCDD | 4,250 | | 4,430 | | FS 23478-PeCDF | 104 | |
| Total HxCDD | 7,380 | | 7,380 | | FS 123478-HxCDF | 107 | |
| Total HpCDD | 6,430 | | 6,430 | | FS 1234789-HpCDF | 98.7 | |
| | | | | | FS 37Cl-2378-TCDD | 104 | |
| Total TCDF | 1,370 | | 1,400 | | CS 123789-HxCDF | 111 | |
| Total PeCDF | 2,510 | | 2,580 | | | | |
| Total HxCDF | 3,160 | | 3,240 | | | | |
| Total HpCDF | 1,700 | | 1,700 | | | | |
| Total PCDD/Fs | 30,300 | | 30,700 | | | | |
| ITEF TEQs | | | | |  5500 Business Drive Wilmington, NC 28405, USA www.us.sgs.com Tel: +1 910 794-1613; Toll-Free 866 846-8290 | | |
| TEQ: ND=0 | 439 | | 497 | | | | |
| TEQ: ND=DL/2 | 448 | 15.6 | 502 | | | | |
| TEQ: ND=DL | 456 | 31.2 | 507 | | | | |

Sample ID: L1682779-7

Method 23

| Client Data | | Sample Data | | Laboratory Data | | | |
|-----------------|----------------------------|----------------|-----|-----------------|--------------------|-----------------|-------------|
| Name: | Covanta Energy Group, Inc. | Matrix: | Air | Lab Project ID: | A8304 | Date Received: | 17-Oct-2015 |
| Project ID: | Extracts | Weight/Volume: | 1 | Lab Sample ID: | A8304_13682_DF_009 | Date Extracted: | n/a |
| Date Collected: | 20-Oct-2015 | Split: | 5 | QC Batch No: | 13682 | Date Analyzed: | 21-Oct-2015 |
| | | | | Dilution: | - | Time Analyzed: | 01:05:35 |

| Analyte | Conc. (pg) | DL (pg) | EMPC (pg) | Qualifiers | Standard | ES Recoveries | Qualifiers |
|---------------|------------|---------|-----------|------------|------------------|---------------|------------|
| 2378-TCDD | ND | 5.78 | | | ES 2378-TCDD | 71.9 | |
| 12378-PeCDD | EMPC | | 148 | | ES 12378-PeCDD | 81.5 | |
| 123478-HxCDD | 313 | | | | | | |
| 123678-HxCDD | 980 | | | | ES 123678-HxCDD | 119 | |
| 123789-HxCDD | 406 | | | | | | |
| 1234678-HpCDD | 5,010 | | | | ES 1234678-HpCDD | 100 | |
| OCDD | 2,780 | | | | ES OCDD | 103 | |
| 2378-TCDF | 37.9 | | | | ES 2378-TCDF | 85.6 | |
| 12378-PeCDF | 125 | | | | ES 12378-PeCDF | 92.9 | |
| 23478-PeCDF | 437 | | | | | | |
| 123478-HxCDF | 362 | | | | | | |
| 123678-HxCDF | 476 | | | | ES 123678-HxCDF | 99.5 | |
| 234678-HxCDF | 947 | | | | | | |
| 123789-HxCDF | 68.8 | | | J | | | |
| 1234678-HpCDF | 1,250 | | | | ES 1234678-HpCDF | 107 | |
| 1234789-HpCDF | 363 | | | | | | |
| OCDF | 896 | | | | | | |

| Totals | | | | | Standard | SS/AS/FS/TS Recoveries | |
|----------------------|---------------|--|---------------|--|-------------------|------------------------|--|
| | | | | | FS 123478-HxCDD | 91.9 | |
| Total TCDD | 1,380 | | 1,410 | | FS 23478-PeCDF | 103 | |
| Total PeCDD | 6,520 | | 6,830 | | FS 123478-HxCDF | 107 | |
| Total HxCDD | 11,200 | | 11,200 | | FS 1234789-HpCDF | 93.8 | |
| Total HpCDD | 10,100 | | 10,100 | | FS 37Cl-2378-TCDD | 101 | |
| | | | | | CS 123789-HxCDF | 111 | |
| Total TCDF | 1,900 | | 1,910 | | | | |
| Total PeCDF | 3,990 | | 3,990 | | | | |
| Total HxCDF | 4,740 | | 4,740 | | | | |
| Total HpCDF | 2,660 | | 2,660 | | | | |
| Total PCDD/Fs | 46,100 | | 46,500 | | | | |

| ITEF TEQs | | | | | | | |
|--------------|-----|------|-----|--|--|--|--|
| TEQ: ND=0 | 654 | | 728 | | | | |
| TEQ: ND=DL/2 | 659 | 13.1 | 730 | | | | |
| TEQ: ND=DL | 664 | 26.1 | 733 | | | | |



5500 Business Drive
Wilmington, NC 28405, USA
www.us.sgs.com

Tel: +1 910 794-1613; Toll-Free 866 846-8290

Sample ID: M23 ES#2 20ul

Method 23

| Client Data | | Sample Data | | Laboratory Data | | | |
|-----------------|----------------------------|----------------|-----|-----------------|--------------------|-----------------|-------------|
| Name: | Covanta Energy Group, Inc. | Matrix: | Air | Lab Project ID: | A8304 | Date Received: | 17-Oct-2015 |
| Project ID: | Extracts | Weight/Volume: | 1 | Lab Sample ID: | A8304_13682_DF_010 | Date Extracted: | 20-Oct-2015 |
| Date Collected: | 20-Oct-2015 | Split: | 5 | QC Batch No: | 13682 | Date Analyzed: | 21-Oct-2015 |
| | | | | Dilution: | - | Time Analyzed: | 01:59:08 |

| Analyte | Conc. (pg) | DL (pg) | EMPC (pg) | Qualifiers | Standard | ES Recoveries | Qualifiers |
|---------------|------------|---------|-----------|------------|------------------|---------------|------------|
| 2378-TCDD | ND | 3.78 | | | ES 2378-TCDD | 90.4 | |
| 12378-PeCDD | ND | 5.07 | | | ES 12378-PeCDD | 93.5 | |
| 123478-HxCDD | ND | 3.81 | | | | | |
| 123678-HxCDD | ND | 3.86 | | | ES 123678-HxCDD | 125 | |
| 123789-HxCDD | ND | 3.51 | | | | | |
| 1234678-HpCDD | ND | 5.31 | | | ES 1234678-HpCDD | 109 | |
| OCDD | ND | 6.21 | | | ES OCDD | 128 | |
| 2378-TCDF | ND | 2.83 | | | ES 2378-TCDF | 108 | |
| 12378-PeCDF | ND | 2.34 | | | ES 12378-PeCDF | 112 | |
| 23478-PeCDF | ND | 2.44 | | | | | |
| 123478-HxCDF | ND | 3.41 | | | | | |
| 123678-HxCDF | ND | 3.13 | | | ES 123678-HxCDF | 115 | |
| 234678-HxCDF | ND | 3.45 | | | | | |
| 123789-HxCDF | ND | 3.77 | | | | | |
| 1234678-HpCDF | EMPC | | 7.91 | J | ES 1234678-HpCDF | 125 | |
| 1234789-HpCDF | ND | 3.49 | | | | | |
| OCDF | 102 | | | J | | | |

| Totals | | | | | Standard | SS/AS/FS/TS Recoveries | |
|----------------------|------------|------|------------|--|-------------------|------------------------|--|
| Total TCDD | ND | 3.78 | ND | | FS 123478-HxCDD | n/a | |
| Total PeCDD | ND | 5.07 | ND | | FS 23478-PeCDF | n/a | |
| Total HxCDD | ND | 5.8 | ND | | FS 123478-HxCDF | n/a | |
| Total HpCDD | ND | 5.31 | ND | | FS 1234789-HpCDF | n/a | |
| | | | | | FS 37Cl-2378-TCDD | n/a | |
| | | | | | CS 123789-HxCDF | n/a | |
| Total TCDF | ND | 2.83 | ND | | | | |
| Total PeCDF | ND | 4.79 | ND | | | | |
| Total HxCDF | ND | 13.7 | ND | | | | |
| Total HpCDF | ND | | 7.91 | | | | |
| Total PCDD/Fs | 102 | | 110 | | | | |

| ITEF TEQs | | | | | | | |
|--------------|-------|------|-------|--|--|--|--|
| TEQ: ND=0 | 0.102 | | 0.181 | | | | |
| TEQ: ND=DL/2 | 5.38 | 5.28 | 5.44 | | | | |
| TEQ: ND=DL | 10.7 | 10.6 | 10.7 | | | | |



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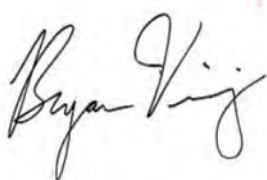
Appendix C – Analytical results from SGS Environmental Services

The Final Lab Report prepared by SGS North America provides analysis of archive samples provided by ALS. The Sample Summary includes ALS sample log information including blank, lab control sample and three runs from each of the two units.

The note provided by Dr. Bryan Vining is provided to explain SGS's interpretation of results.

SGS received the dioxin/furan emission test (DF) archive samples from ALS laboratory and completed high resolution gas chromatography/high resolution mass spectroscopy (GC-HRMS) analyses for all samples. The analyses indicate the presence of chlorinated diphenyl ethers (DPEs) in these samples. DPEs interfere with quantifying the amount of many of the polychlorinated dibenzofuran (PCDF) isomers that are required to be analyzed in the DF analytical method. It is SGS' experience that it is not possible to determine the actual bias to the analyses caused by the presence of DPEs, and, thus, the analyses of these samples from ALS are considered compromised to an unknown extent.

The GC-HRMS analyses also indicated the presence of PCB-169 (a polychlorinated biphenyl isomer). This PCB causes interference in determining the quantities of some polychlorinated dibenzodioxin (PCDD) isomers required for analysis in the DF method. In the GC-HRMS PCDD/F analytical method, PCB-169 interferes with the 12378 penta-dioxin isomer, which is important in the calculation of toxic equivalence. The bias caused by PCB-169 cannot be quantified for these DF archives.



Digitally signed by Bryan Vining
DN: cn=Bryan Vining, o=SGS
North America,
ou=Environmental Services,
email=bryan.vining@sgs.com,
c=US
Date: 2015.10.23 17:15:47 -04'00'

Appendix D – Comparison of isomer distribution – ALS and SGS

Detectable concentrations from lab data sheets (as picograms) in Appendix C were used to construct a weight percent distribution of each isomer for comparison with the ALS distribution. The Estimated Maximum Possible Concentration (EMPC) or detection limit was used if an absolute value was not reported. Figure D.1 provides a comparison (ALS and SGS) of results for Unit 1 with Figure D.2 providing a comparison of results for Unit 2. Figure D.3 provides a linear regression correlation of the ALS and SGS isomer distribution for Unit 1 with D.4 providing a linear regression correlation of the ALS and SGS isomer distribution for Unit 1.

Figure D.1

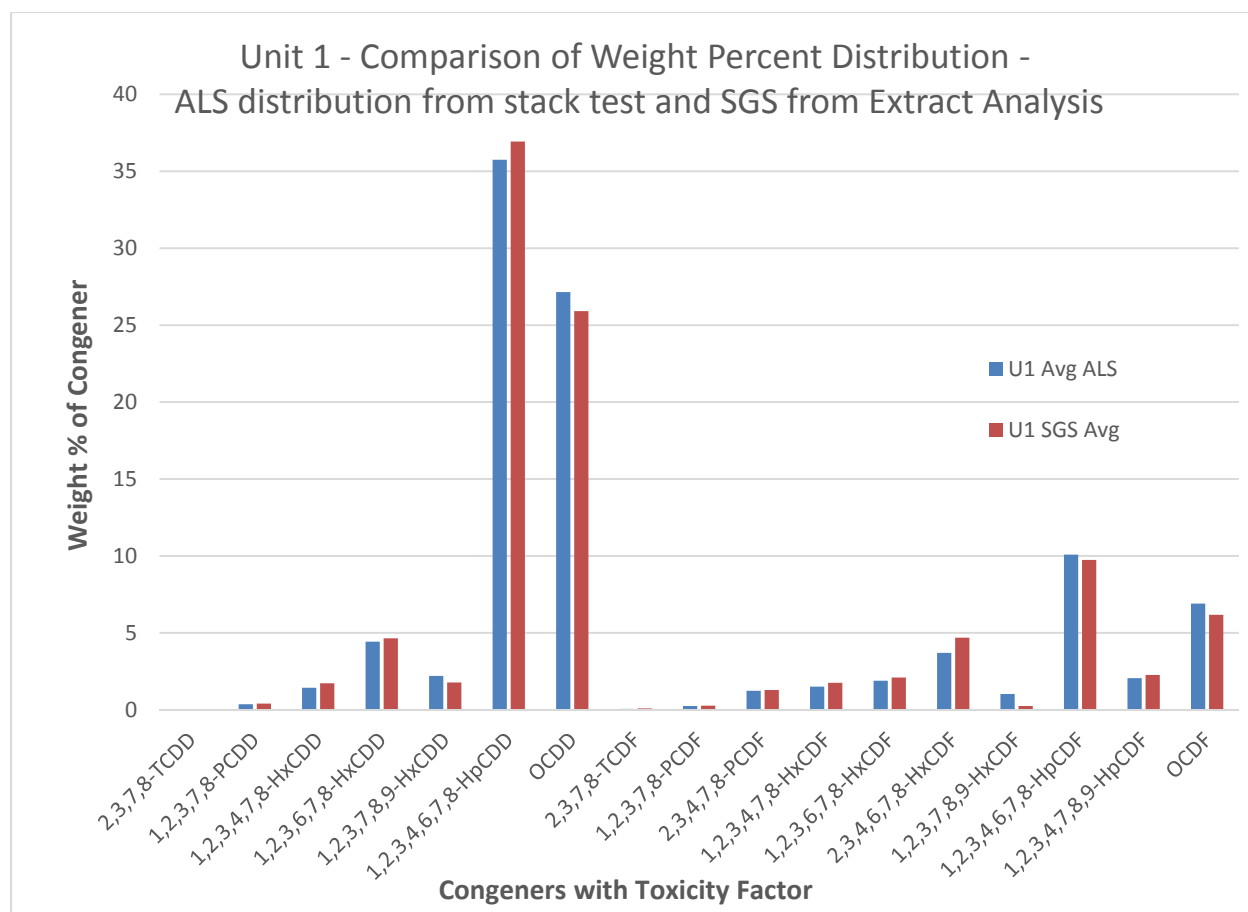


Figure D.2

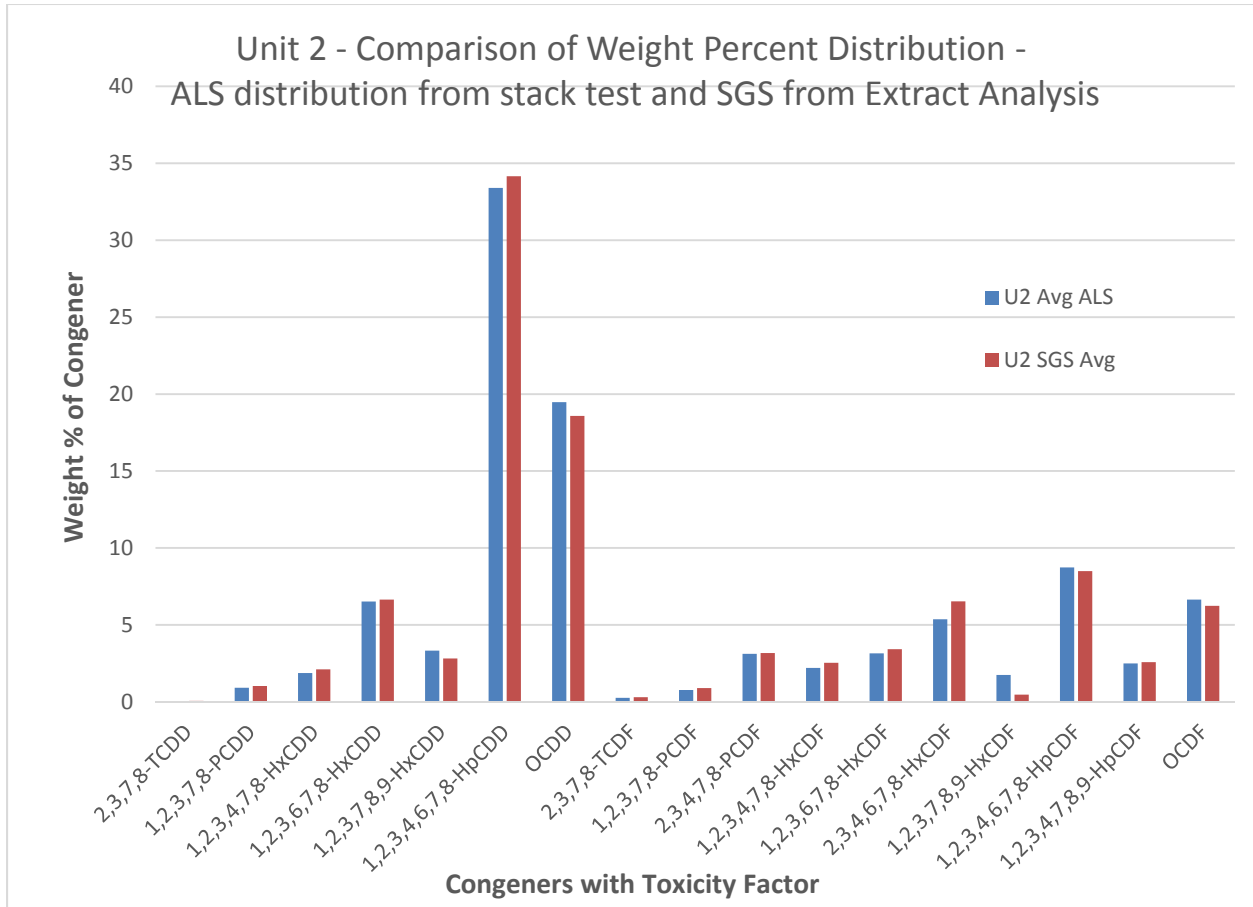


Figure D.3 Linear Regression Correlation: ALS and SGS Isomer Distribution

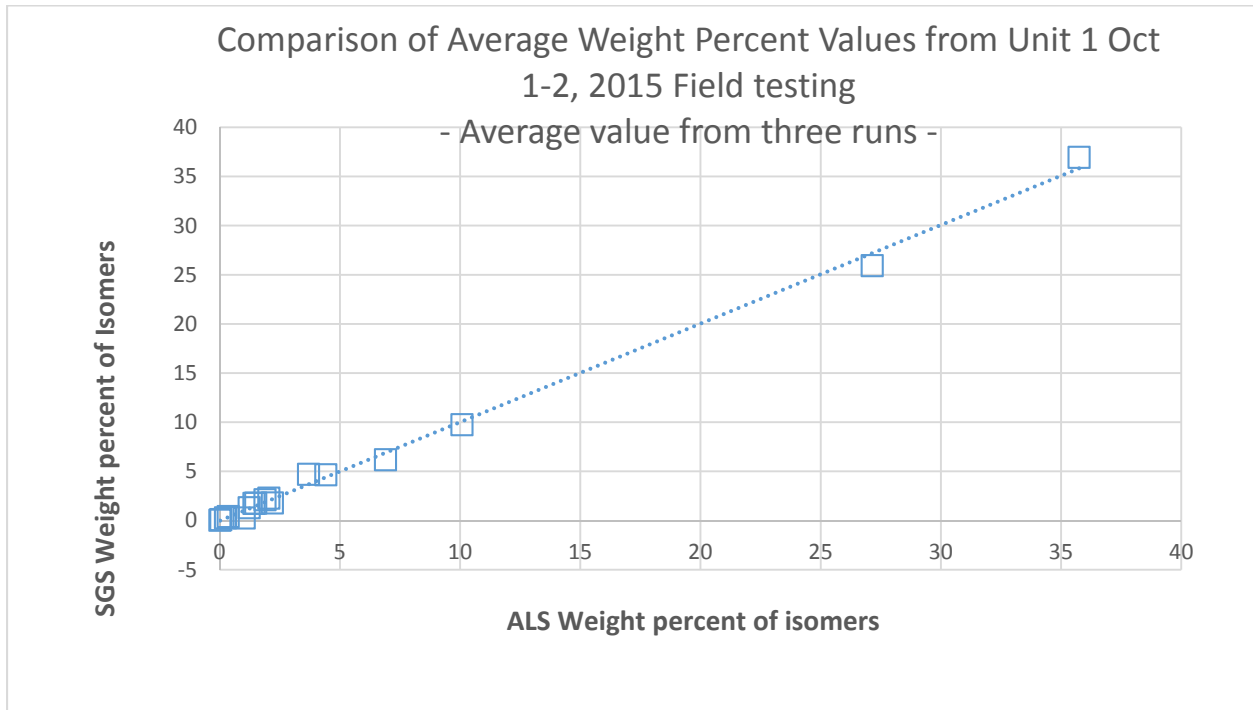
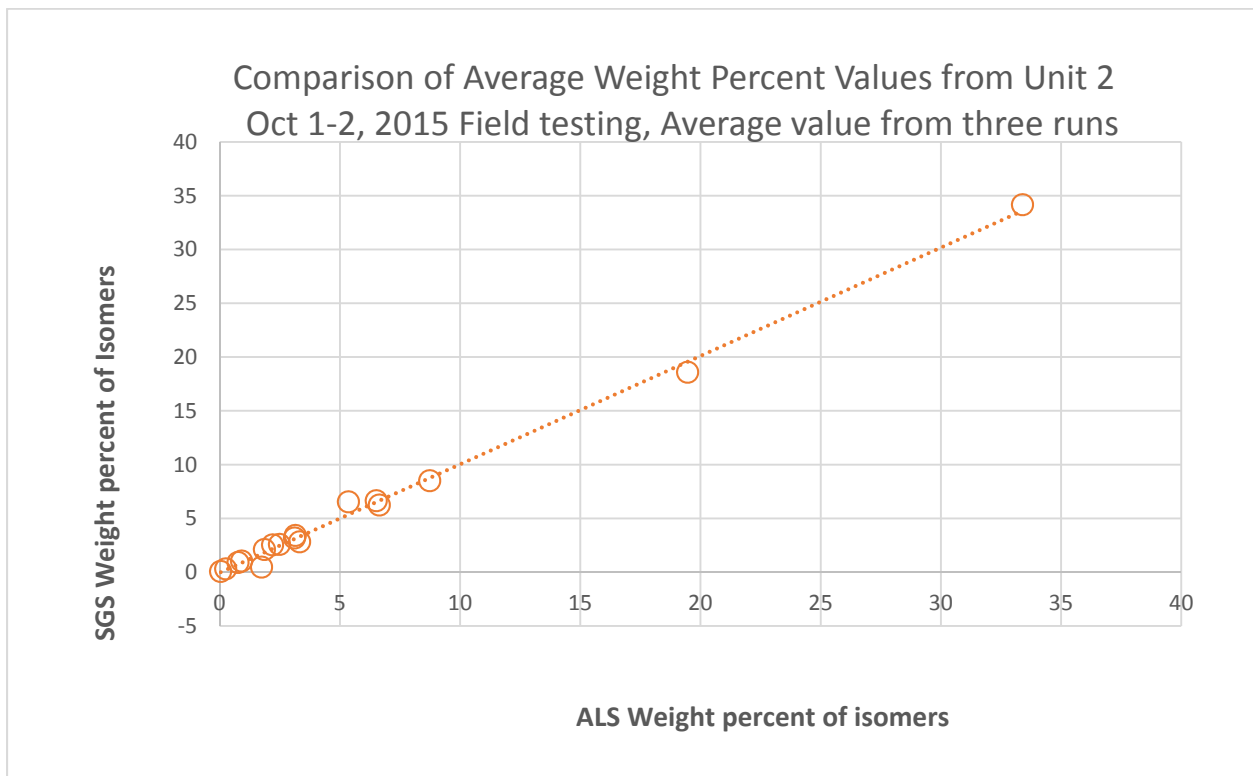


Figure D.4 Linear Regression Correlation: ALS and SGS Isomer Distribution



Appendix E. ORTECH Volumetric Flow rate Measurements



Report:

Covanta Durham York Renewable Energy Limited Partnership Volumetric Flowrate Measurements at Boiler BH Outlets

Date: October 8, 2015



Report:

Covanta Durham York Renewable Energy Limited Partnership Volumetric Flowrate Measurements at Boiler BH Outlets

Submitted to: Mr. Rick Kohler
Environmental Engineer
Covanta Corporation
445 South Street, Morristown NJ, 07960
U.S.A
Tel: (862) 345-5197
E-mail: rkohler@covanta.com

Prepared by: Tina Sanderson, B.Sc.
Senior Specialist, Emission Testing
ORTECH Consulting Inc.
804 Southdown Rd., Mississauga, Ontario L5J 2Y4
Tel: (905) 822-4120, Ext. 522
E-mail: tsanderson@ortech.ca

Report No.: 21546-6
5 pages, 7 Appendices

Revision History

| Version | Date | Summary Changes/Purpose of Revision |
|---------|-----------------|-------------------------------------|
| 1 | October 8, 2015 | None |
| | | |
| | | |

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1. INTRODUCTION

ORTECH Environmental (ORTECH) was requested by Covanta Durham York Renewable Energy Limited Partnership to complete volumetric flowrates measurements and moisture content tests at the BH Outlet sampling location on each Boiler at the Durham York Energy Centre (DYEC) located in Clarington, Ontario.

Volumetric flowrates were measured at the BH Outlet sampling location on each Boiler on September 28, 2015. Thirteen sets of volumetric flowrates were measured at the Boiler No. 1 BH Outlet and fourteen sets of volumetric flowrates were measured at the Boiler No. 2 BH Outlet for comparison to the facility's AMESA Dioxin and Furan sampling monitor measurements.

Volumetric flowrates were also measured at each BH Outlet during the compliance test program, from the isokinetic sampling trains, between September 29 and October 2, 2015.

A summary of the gas velocities volumetric flowrates measured at each location is provided in Appendix 1.

2. SAMPLING METHODOLOGY

The volumetric flowrate measurements completed on September 28, 2015 were conducted using an S-type pitot tube and a Type-K thermocouple in accordance with the Ontario Source Testing Code Methods 1 to 3. Reference method moisture content tests were also completed in conjunction with the flow measurements in accordance with Ontario Source Testing Code Method 4.

The velocity profile field data sheets and the velocity and volumetric flowrate calculations for Boiler No. 1 and Boiler No. 2 are provided in Appendix 2 and Appendix 3, respectively. The moisture field data sheets are provided in Appendix 4.

The velocity was calculated using the equations provided in Section 5.0 of Ontario Source Testing Code Method 2. Velocity is defined as:

$$U_s = 128.6 C_p \sqrt{[(\Delta P T_s)/(M_s P_s)]}$$

where:

- U_s = stack gas velocity (at a point), m/s
- C_p = pitot tube coefficient
- T_s = absolute stack gas temperature, K
- ΔP = stack gas velocity pressure head, kPa
- M_s = stack gas molecular weight, wet basis kg/mol
- P_s = absolute stack gas pressure, kPa

Stack gas physical parameters and volumetric flowrates were also measured during the compliance testing program using the isokinetic sampling trains. Triplicate sets of volumetric flowrates were conducted at each sampling location from the Particulate and Acid Gases trains, Metals trains and Semi-Volatile Organic Compounds (SVOC) test trains. The isokinetic output summary sheets for compliance tests conducted at Boiler No. 1 and Boiler No. 2 are provided in Appendix 5 and Appendix 6, respectively.

The calibration data for the flow and moisture measurement equipment is provided in Appendix 7.

3. RESULTS

Volumetric flowrates were measured at the BH Outlet sampling location on each Boiler on September 28, 2015. Thirteen sets of volumetric flowrates were measured at the Boiler No. 1 BH Outlet and fourteen sets of volumetric flowrates were measured at the Boiler No. 2 BH Outlet for comparison to the facility's AMESA Dioxin and Furan sampling monitor.

Volumetric flowrates were also measured at each BH Outlet during the compliance test program, from the isokinetic sampling trains, between September 29 and October 2, 2015. Triplicate sets of volumetric flowrates were conducted at each sampling location from the Particulate and Acid Gases trains, Metals trains and Semi-Volatile Organic Compounds (SVOC) test trains.

A summary of the gas velocities and volumetric flowrates measured at each location is provided in Appendix 1.

APPENDIX 1

Summary of Results (2 pages)

**Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Stack Gas Physical Parameters and Volumetric Flowrates**

| Test Train | Test No. | Sample Date | Sampling Period | Gas Temp. °C | Moisture by Volume % | Gas Velocity m/s | Static Pressure kPa | Absolute Pressure kPa | Carbon Dioxide by Volume % | Oxygen by Volume % | Actual Flowrate m ³ /s | Dry Reference Flowrate Rm ³ /s** | Wet Reference Flowrate Rm ³ /s** |
|------------|----------|--------------------|-----------------|--------------|----------------------|------------------|---------------------|-----------------------|----------------------------|--------------------|-----------------------------------|---|---|
| Velocity | 1 | September 28, 2015 | 13:46 - 13:56 | 139 | 15.8 | 17.3 | -2.81 | 98.7 | 11.1 | 8.14 | 25.5 | 15.1 | 18.0 |
| Velocity | 2 | September 28, 2015 | 14:16 - 14:23 | 138 | 15.9 | 17.4 | -2.81 | 98.7 | 11.6 | 7.39 | 25.7 | 15.2 | 18.1 |
| Velocity | 3 | September 28, 2015 | 14:24 - 14:31 | 140 | 15.9 | 17.9 | -2.81 | 98.7 | 12.2 | 6.85 | 26.5 | 15.7 | 18.6 |
| Velocity | 4 | September 28, 2015 | 14:49 - 14:56 | 139 | 15.9 | 17.1 | -2.81 | 98.7 | 11.0 | 8.14 | 25.3 | 15.0 | 17.8 |
| Velocity | 5 | September 28, 2015 | 17:19 - 17:26 | 140 | 20.1 | 18.8 | -2.96 | 98.2 | 11.1 | 8.09 | 27.8 | 15.5 | 19.4 |
| Velocity | 6 | September 28, 2015 | 17:27 - 17:32 | 140 | 20.1 | 19.2 | -2.96 | 98.2 | 10.9 | 8.21 | 28.4 | 15.9 | 19.9 |
| Velocity | 7 | September 28, 2015 | 17:33 - 17:38 | 140 | 20.1 | 19.8 | -3.16 | 98.0 | 10.9 | 8.21 | 29.3 | 16.4 | 20.5 |
| Velocity | 8 | September 28, 2015 | 17:39 - 17:46 | 143 | 20.1 | 21.0 | -3.16 | 98.0 | 11.3 | 7.72 | 31.1 | 17.2 | 21.6 |
| Velocity | 9 | September 28, 2015 | 17:47 - 17:52 | 143 | 20.1 | 20.7 | -3.16 | 98.0 | 11.7 | 7.57 | 30.5 | 16.9 | 21.2 |
| Velocity | 10 | September 28, 2015 | 17:53 - 18:00 | 144 | 20.1 | 20.8 | -3.16 | 98.0 | 11.1 | 8.11 | 30.7 | 17.0 | 21.3 |
| Velocity | 11 | September 28, 2015 | 18:04 - 18:11 | 142 | 20.1 | 19.7 | -3.14 | 98.1 | 10.9 | 8.25 | 29.1 | 16.2 | 20.2 |
| Velocity | 12 | September 28, 2015 | 18:12 - 18:16 | 141 | 20.1 | 20.5 | -3.14 | 98.1 | 11.1 | 8.03 | 30.3 | 16.9 | 21.1 |
| Velocity | 13 | September 28, 2015 | 18:17 - 18:24 | 141 | 20.1 | 20.6 | -3.14 | 98.1 | 11.6 | 7.62 | 30.5 | 17.0 | 21.2 |
| M26A | 1 | September 29, 2015 | 9:11 - 13:41 | 130 | 16.4 | 17.6 | -2.79 | 97.6 | 11.3 | 7.67 | 26.1 | 15.5 | 18.6 |
| M26A | 2 | September 29, 2015 | 14:41 - 17:53 | 130 | 16.1 | 17.2 | -2.79 | 97.6 | 11.4 | 7.69 | 25.4 | 15.2 | 18.1 |
| M26A | 3 | October 1, 2015 | 16:22 - 19:37 | 135 | 17.5 | 17.2 | -2.71 | 99.1 | 11.6 | 7.54 | 25.4 | 15.0 | 18.2 |
| M29 | 1 | September 30, 2015 | 8:07 - 13:46 | 140 | 15.9 | 17.5 | -2.79 | 98.1 | 11.2 | 7.91 | 25.9 | 15.2 | 18.1 |
| M29 | 2 | September 30, 2015 | 14:48 - 17:01 | 140 | 16.4 | 18.1 | -2.79 | 98.2 | 11.1 | 7.92 | 26.8 | 15.7 | 18.8 |
| M29 | 3 | October 1, 2015 | 7:41 - 9:54 | 138 | 16.5 | 17.3 | -2.71 | 99.0 | 11.6 | 7.62 | 25.6 | 15.1 | 18.1 |
| SVOC | 1 | October 1, 2015 | 10:48 - 15:05 | 136 | 16.1 | 16.9 | -2.71 | 99.0 | 11.6 | 7.57 | 25.0 | 15.0 | 17.9 |
| SVOC | 2 | October 2, 2015 | 7:40 - 11:57 | 135 | 16.4 | 16.1 | -2.69 | 99.4 | 11.6 | 7.59 | 23.8 | 14.2 | 17.0 |
| SVOC | 3 | October 2, 2015 | 12:26 - 16:41 | 139 | 16.4 | 16.4 | -2.69 | 99.4 | 11.7 | 7.52 | 24.2 | 14.4 | 17.2 |

* Dry basis, measured by the DYEC CEMS

** At 25°C and 1 atmosphere

**Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Stack Gas Physical Parameters and Volumetric Flowrates**

| Test Train | Test No. | Sample Date | Sampling Period | Gas Temp. °C | Moisture by Volume % | Gas Velocity m/s | Static Pressure kPa | Absolute Pressure kPa | Carbon Dioxide by Volume % * | Oxygen by Volume % * | Actual Flowrate m ³ /s | Dry Reference Flowrate Rm ³ /s ** | Wet Reference Flowrate Rm ³ /s ** |
|------------|----------|--------------------|-----------------|--------------|----------------------|------------------|---------------------|-----------------------|------------------------------|----------------------|-----------------------------------|--|--|
| Velocity | 1 | September 28, 2015 | 14:00 - 14:06 | 136 | 15.4 | 18.2 | -2.74 | 98.7 | 10.3 | 8.82 | 26.8 | 16.1 | 19.1 |
| Velocity | 2 | September 28, 2015 | 14:07 - 14:14 | 136 | 15.4 | 18.0 | -2.74 | 98.7 | 11.0 | 8.20 | 26.6 | 16.0 | 18.9 |
| Velocity | 3 | September 28, 2015 | 14:33 - 14:40 | 136 | 15.4 | 18.1 | -2.74 | 98.7 | 11.0 | 8.29 | 26.7 | 16.0 | 19.0 |
| Velocity | 4 | September 28, 2015 | 14:41 - 14:47 | 135 | 15.4 | 18.1 | -2.74 | 98.7 | 10.7 | 8.65 | 26.7 | 16.1 | 19.0 |
| Velocity | 5 | September 28, 2015 | 16:16 - 16:24 | 136 | 17.9 | 18.9 | -2.74 | 98.5 | 10.4 | 8.87 | 28.0 | 16.3 | 19.9 |
| Velocity | 6 | September 28, 2015 | 16:25 - 16:31 | 137 | 17.9 | 19.1 | -2.74 | 98.5 | 11.5 | 7.69 | 28.2 | 16.4 | 20.0 |
| Velocity | 7 | September 28, 2015 | 16:33 - 16:38 | 137 | 17.9 | 18.9 | -2.74 | 98.5 | 11.4 | 8.04 | 27.9 | 16.2 | 19.8 |
| Velocity | 8 | September 28, 2015 | 16:39 - 16:46 | 137 | 17.9 | 19.1 | -2.74 | 98.5 | 11.7 | 7.72 | 28.2 | 16.4 | 20.0 |
| Velocity | 9 | September 28, 2015 | 18:00 - 18:05 | 140 | 18.3 | 19.6 | -2.91 | 98.3 | 10.9 | 8.31 | 28.9 | 16.6 | 20.3 |
| Velocity | 10 | September 28, 2015 | 18:06 - 18:11 | 140 | 18.3 | 19.6 | -2.91 | 98.3 | 11.0 | 8.35 | 28.9 | 16.5 | 20.2 |
| Velocity | 11 | September 28, 2015 | 18:12 - 18:15 | 140 | 18.3 | 19.7 | -2.84 | 98.4 | 11.5 | 7.87 | 29.1 | 16.6 | 20.4 |
| Velocity | 12 | September 28, 2015 | 18:16 - 18:21 | 140 | 18.3 | 19.4 | -2.84 | 98.4 | 11.2 | 8.18 | 28.7 | 16.4 | 20.1 |
| Velocity | 13 | September 28, 2015 | 18:22 - 18:26 | 140 | 18.3 | 18.9 | -2.76 | 98.4 | 11.3 | 7.95 | 27.9 | 16.0 | 19.6 |
| Velocity | 14 | September 28, 2015 | 18:27 - 18:31 | 140 | 18.3 | 19.0 | -2.76 | 98.4 | 11.0 | 8.11 | 28.0 | 16.1 | 19.7 |
| M26A | 1 | September 30, 2015 | 8:13 - 14:34 | 136 | 15.9 | 18.7 | -2.79 | 98.1 | 10.9 | 8.38 | 27.6 | 16.4 | 19.5 |
| M26A | 2 | September 30, 2015 | 16:02 - 19:14 | 134 | 16.3 | 18.3 | -2.79 | 98.4 | 11.0 | 8.28 | 27.1 | 16.1 | 19.3 |
| M26A | 3 | October 1, 2015 | 7:42 - 11:01 | 133 | 16.4 | 17.3 | -2.79 | 98.5 | 11.9 | 7.62 | 25.5 | 15.2 | 18.2 |
| M29 | 1 | September 29, 2015 | 9:15 - 12:32 | 135 | 16.6 | 17.4 | -2.61 | 97.8 | 11.0 | 8.18 | 25.7 | 15.1 | 18.1 |
| M29 | 2 | September 29, 2015 | 13:41 - 15:53 | 136 | 15.7 | 17.2 | -2.61 | 97.7 | 10.8 | 8.25 | 25.4 | 15.1 | 17.9 |
| M29 | 3 | September 29, 2015 | 16:49 - 19:02 | 136 | 15.9 | 17.4 | -2.61 | 97.8 | 10.8 | 8.41 | 25.7 | 15.2 | 18.0 |
| SVOC | 1 | October 1, 2015 | 12:14 - 16:31 | 131 | 17.0 | 16.0 | -2.79 | 98.9 | 12.4 | 7.16 | 23.6 | 14.1 | 17.0 |
| SVOC | 2 | October 2, 2015 | 7:42 - 11:57 | 131 | 16.7 | 16.0 | -2.49 | 99.6 | 12.0 | 7.36 | 23.6 | 14.3 | 17.1 |
| SVOC | 3 | October 2, 2015 | 12:26 - 16:40 | 133 | 16.8 | 15.6 | -2.52 | 99.6 | 12.0 | 7.28 | 23.1 | 13.8 | 16.6 |

* Dry basis, measured by the DYEC CEMS
** At 25°C and 1 atmosphere

APPENDIX 2

Velocity Profile Field Data Sheets and Velocity and Volumetric Flowrate Determination Calculations Boiler No. 1 BH Outlet (26 pages)

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|----------------------|--------------------|--------------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.97 in. Hg | 101.5 kPa |
| Client | Covanta | Pstatic | -11.30 in. H ₂ O | -2.81 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.1 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 1 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1346-1356 | Pitot Coefficient | 0.847 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | |
|---------------------------|-------|--------------------------|------|-----------------|------------------|
| O₂ (%) | 8.14 | | | | |
| CO₂ (%) | 11.07 | | | | |
| CO (ppm) | 20.7 | N₂ (%) | 79.8 | MW (dry) | 30.21 lb/lb mole |
| H₂O (%) | 15.83 | Ar (%) | 1.0 | MW (wet) | 28.28 lb/lb mole |

| | Imperial | Metric |
|---|-----------------------|--------------------------|
| Average Velocity | 57 ft/s | 17.3 m/s |
| Average Temperature | 283 °F | 139 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 54089 cfm | 25.5 m ³ /s |
| Dry Reference Volumetric Flow Rate | 32059 cfm | 15.13 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 38090 cfm | 17.98 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 0.760 | 189 | 279 | 137 | 410 | 59.7 | 18.2 |
| 2 | 0.780 | 194 | 282 | 139 | 412 | 60.6 | 18.5 |
| 3 | 0.790 | 197 | 282 | 139 | 412 | 61.0 | 18.6 |
| 4 | 0.750 | 187 | 283 | 139 | 413 | 59.4 | 18.1 |
| 5 | 0.700 | 174 | 284 | 140 | 413 | 57.5 | 17.5 |
| 6 | 0.590 | 147 | 286 | 141 | 414 | 52.8 | 16.1 |
| 7 | 0.680 | 169 | 285 | 141 | 414 | 56.7 | 17.3 |
| 8 | 0.700 | 174 | 286 | 141 | 414 | 57.5 | 17.5 |
| 9 | 0.720 | 179 | 284 | 140 | 413 | 58.3 | 17.8 |
| 10 | 0.700 | 174 | 284 | 140 | 413 | 57.5 | 17.5 |
| 11 | 0.520 | 130 | 284 | 140 | 413 | 49.5 | 15.1 |
| 12 | 0.400 | 100 | 282 | 139 | 412 | 43.4 | 13.2 |
| 13 | 0.780 | 194 | 280 | 138 | 411 | 60.5 | 18.4 |
| 14 | 0.830 | 207 | 282 | 139 | 412 | 62.5 | 19.0 |
| 15 | 0.830 | 207 | 282 | 139 | 412 | 62.5 | 19.0 |
| 16 | 0.790 | 197 | 283 | 139 | 413 | 61.0 | 18.6 |
| 17 | 0.740 | 184 | 284 | 140 | 413 | 59.1 | 18.0 |
| 18 | 0.680 | 169 | 285 | 141 | 414 | 56.7 | 17.3 |
| 19 | 0.630 | 157 | 284 | 140 | 413 | 54.5 | 16.6 |
| 20 | 0.640 | 159 | 284 | 140 | 413 | 54.9 | 16.7 |
| 21 | 0.680 | 169 | 284 | 140 | 413 | 56.6 | 17.3 |
| 22 | 0.710 | 177 | 283 | 139 | 413 | 57.8 | 17.6 |
| 23 | 0.670 | 167 | 280 | 138 | 411 | 56.1 | 17.1 |
| 24 | 0.420 | 105 | 279 | 137 | 410 | 44.4 | 13.5 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|----------------------|--------------------|--------------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.94 in. Hg | 101.4 kPa |
| Client | Covanta | Pstatic | -11.30 in. H ₂ O | -2.81 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.1 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 2 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1416-1423 | Pitot Coefficient | 0.847 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | |
|---------------------------|-------|--------------------------|------|-----------------|------------------|
| O₂ (%) | 7.39 | | | | |
| CO₂ (%) | 11.61 | | | | |
| CO (ppm) | 23.0 | N₂ (%) | 80.0 | MW (dry) | 30.27 lb/lb mole |
| H₂O (%) | 15.85 | Ar (%) | 1.0 | MW (wet) | 28.32 lb/lb mole |

| | Imperial | Metric |
|---|-----------------------|--------------------------|
| Average Velocity | 57 ft/s | 17.4 m/s |
| Average Temperature | 281 °F | 138 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 54385 cfm | 25.7 m ³ /s |
| Dry Reference Volumetric Flow Rate | 32284 cfm | 15.24 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 38364 cfm | 18.11 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 0.730 | 182 | 277 | 136 | 409 | 58.4 | 17.8 |
| 2 | 0.790 | 197 | 277 | 136 | 409 | 60.7 | 18.5 |
| 3 | 0.800 | 199 | 277 | 136 | 409 | 61.1 | 18.6 |
| 4 | 0.770 | 192 | 280 | 138 | 411 | 60.1 | 18.3 |
| 5 | 0.720 | 179 | 281 | 138 | 411 | 58.1 | 17.7 |
| 6 | 0.660 | 164 | 281 | 138 | 411 | 55.7 | 17.0 |
| 7 | 0.610 | 152 | 282 | 139 | 412 | 53.6 | 16.3 |
| 8 | 0.630 | 157 | 282 | 139 | 412 | 54.4 | 16.6 |
| 9 | 0.670 | 167 | 282 | 139 | 412 | 56.1 | 17.1 |
| 10 | 0.680 | 169 | 282 | 139 | 412 | 56.5 | 17.2 |
| 11 | 0.650 | 162 | 281 | 138 | 411 | 55.2 | 16.8 |
| 12 | 0.510 | 127 | 280 | 138 | 411 | 48.9 | 14.9 |
| 13 | 0.740 | 184 | 279 | 137 | 410 | 58.9 | 17.9 |
| 14 | 0.820 | 204 | 281 | 138 | 411 | 62.0 | 18.9 |
| 15 | 0.800 | 199 | 282 | 139 | 412 | 61.3 | 18.7 |
| 16 | 0.770 | 192 | 282 | 139 | 412 | 60.2 | 18.3 |
| 17 | 0.710 | 177 | 282 | 139 | 412 | 57.8 | 17.6 |
| 18 | 0.630 | 157 | 283 | 139 | 413 | 54.5 | 16.6 |
| 19 | 0.660 | 164 | 283 | 139 | 413 | 55.7 | 17.0 |
| 20 | 0.690 | 172 | 283 | 139 | 413 | 57.0 | 17.4 |
| 21 | 0.750 | 187 | 283 | 139 | 413 | 59.4 | 18.1 |
| 22 | 0.730 | 182 | 281 | 138 | 411 | 58.5 | 17.8 |
| 23 | 0.670 | 167 | 281 | 138 | 411 | 56.1 | 17.1 |
| 24 | 0.480 | 120 | 280 | 138 | 411 | 47.4 | 14.5 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|----------------------|--------------------|--------------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.94 in. Hg | 101.4 kPa |
| Client | Covanta | Pstatic | -11.30 in. H ₂ O | -2.81 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.1 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 3 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1424-1431 | Pitot Coefficient | 0.847 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | |
|---------------------------|-------|--------------------------|------|-----------------|------------------|
| O₂ (%) | 6.85 | | | | |
| CO₂ (%) | 12.16 | | | | |
| CO (ppm) | 39.9 | N₂ (%) | 80.0 | MW (dry) | 30.33 lb/lb mole |
| H₂O (%) | 15.85 | Ar (%) | 1.0 | MW (wet) | 28.38 lb/lb mole |

| | Imperial | Metric |
|---|-----------------------|--------------------------|
| Average Velocity | 59 ft/s | 17.9 m/s |
| Average Temperature | 283 °F | 140 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 56045 cfm | 26.5 m ³ /s |
| Dry Reference Volumetric Flow Rate | 33158 cfm | 15.65 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 39402 cfm | 18.60 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 0.810 | 202 | 282 | 139 | 412 | 61.6 | 18.8 |
| 2 | 0.820 | 204 | 283 | 139 | 413 | 62.1 | 18.9 |
| 3 | 0.810 | 202 | 283 | 139 | 413 | 61.7 | 18.8 |
| 4 | 0.760 | 189 | 284 | 140 | 413 | 59.8 | 18.2 |
| 5 | 0.710 | 177 | 284 | 140 | 413 | 57.8 | 17.6 |
| 6 | 0.620 | 154 | 284 | 140 | 413 | 54.0 | 16.5 |
| 7 | 0.670 | 167 | 284 | 140 | 413 | 56.1 | 17.1 |
| 8 | 0.730 | 182 | 284 | 140 | 413 | 58.6 | 17.9 |
| 9 | 0.730 | 182 | 284 | 140 | 413 | 58.6 | 17.9 |
| 10 | 0.760 | 189 | 284 | 140 | 413 | 59.8 | 18.2 |
| 11 | 0.660 | 164 | 284 | 140 | 413 | 55.7 | 17.0 |
| 12 | 0.530 | 132 | 280 | 138 | 411 | 49.8 | 15.2 |
| 13 | 0.860 | 214 | 280 | 138 | 411 | 63.4 | 19.3 |
| 14 | 0.890 | 222 | 282 | 139 | 412 | 64.6 | 19.7 |
| 15 | 0.850 | 212 | 283 | 139 | 413 | 63.2 | 19.3 |
| 16 | 0.840 | 209 | 284 | 140 | 413 | 62.9 | 19.2 |
| 17 | 0.780 | 194 | 285 | 141 | 414 | 60.6 | 18.5 |
| 18 | 0.720 | 179 | 285 | 141 | 414 | 58.2 | 17.8 |
| 19 | 0.650 | 162 | 285 | 141 | 414 | 55.3 | 16.9 |
| 20 | 0.680 | 169 | 285 | 141 | 414 | 56.6 | 17.3 |
| 21 | 0.710 | 177 | 285 | 141 | 414 | 57.8 | 17.6 |
| 22 | 0.740 | 184 | 285 | 141 | 414 | 59.0 | 18.0 |
| 23 | 0.710 | 177 | 283 | 139 | 413 | 57.8 | 17.6 |
| 24 | 0.630 | 157 | 280 | 138 | 411 | 54.3 | 16.5 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|---------------|--------------------|-------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.94 in. Hg | 101.4 kPa |
| Client | Covanta | Pstatic | -11.30 in. H ₂ O | -2.81 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.1 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 4 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1449-1456 | Pitot Coefficient | 0.847 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | | |
|----------------------|-------|--------------------|------|----------|-------|------------|
| O ₂ (%) | 8.14 | | | | | |
| CO ₂ (%) | 10.98 | | | | | |
| CO (ppm) | 20.0 | N ₂ (%) | 79.9 | MW (dry) | 30.20 | lb/lb mole |
| H ₂ O (%) | 15.85 | Ar (%) | 1.0 | MW (wet) | 28.26 | lb/lb mole |

| | Imperial | Metric |
|------------------------------------|-----------------------|--------------------------|
| Average Velocity | 56 ft/s | 17.1 m/s |
| Average Temperature | 283 °F | 139 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 53509 cfm | 25.3 m ³ /s |
| Dry Reference Volumetric Flow Rate | 31691 cfm | 14.96 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 37659 cfm | 17.77 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 0.720 | 179 | 279 | 137 | 410 | 58.1 | 17.7 |
| 2 | 0.790 | 197 | 280 | 138 | 411 | 60.9 | 18.6 |
| 3 | 0.800 | 199 | 282 | 139 | 412 | 61.4 | 18.7 |
| 4 | 0.740 | 184 | 283 | 139 | 413 | 59.1 | 18.0 |
| 5 | 0.720 | 179 | 284 | 140 | 413 | 58.3 | 17.8 |
| 6 | 0.640 | 159 | 284 | 140 | 413 | 55.0 | 16.8 |
| 7 | 0.600 | 149 | 284 | 140 | 413 | 53.2 | 16.2 |
| 8 | 0.610 | 152 | 284 | 140 | 413 | 53.7 | 16.4 |
| 9 | 0.640 | 159 | 284 | 140 | 413 | 55.0 | 16.8 |
| 10 | 0.660 | 164 | 283 | 139 | 413 | 55.8 | 17.0 |
| 11 | 0.600 | 149 | 282 | 139 | 412 | 53.2 | 16.2 |
| 12 | 0.500 | 125 | 280 | 138 | 411 | 48.5 | 14.8 |
| 13 | 0.720 | 179 | 281 | 138 | 411 | 58.2 | 17.7 |
| 14 | 0.770 | 192 | 281 | 138 | 411 | 60.2 | 18.3 |
| 15 | 0.780 | 194 | 281 | 138 | 411 | 60.6 | 18.5 |
| 16 | 0.730 | 182 | 283 | 139 | 413 | 58.7 | 17.9 |
| 17 | 0.680 | 169 | 284 | 140 | 413 | 56.7 | 17.3 |
| 18 | 0.620 | 154 | 284 | 140 | 413 | 54.1 | 16.5 |
| 19 | 0.660 | 164 | 284 | 140 | 413 | 55.8 | 17.0 |
| 20 | 0.680 | 169 | 284 | 140 | 413 | 56.7 | 17.3 |
| 21 | 0.710 | 177 | 285 | 141 | 414 | 58.0 | 17.7 |
| 22 | 0.650 | 162 | 284 | 140 | 413 | 55.4 | 16.9 |
| 23 | 0.590 | 147 | 283 | 139 | 413 | 52.8 | 16.1 |
| 24 | 0.460 | 115 | 280 | 138 | 411 | 46.5 | 14.2 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|----------------------|--------------------|--------------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.88 in. Hg | 101.2 kPa |
| Client | Covanta | Pstatic | -11.90 in. H ₂ O | -2.96 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.1 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 5 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1719-1726 | Pitot Coefficient | 0.847 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | |
|---------------------------|-------|--------------------------|------|-----------------|------------------|
| O₂ (%) | 8.09 | | | | |
| CO₂ (%) | 11.12 | | | | |
| CO (ppm) | 14.6 | N₂ (%) | 79.8 | MW (dry) | 30.22 lb/lb mole |
| H₂O (%) | 20.10 | Ar (%) | 1.0 | MW (wet) | 27.76 lb/lb mole |

| | Imperial | Metric |
|---|-----------------------|--------------------------|
| Average Velocity | 62 ft/s | 18.8 m/s |
| Average Temperature | 284 °F | 140 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 58861 cfm | 27.8 m ³ /s |
| Dry Reference Volumetric Flow Rate | 32903 cfm | 15.53 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 41181 cfm | 19.44 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 0.840 | 209 | 282 | 139 | 412 | 63.6 | 19.4 |
| 2 | 0.880 | 219 | 285 | 141 | 414 | 65.2 | 19.9 |
| 3 | 0.860 | 214 | 285 | 141 | 414 | 64.5 | 19.7 |
| 4 | 0.850 | 212 | 285 | 141 | 414 | 64.1 | 19.5 |
| 5 | 0.820 | 204 | 286 | 141 | 414 | 63.0 | 19.2 |
| 6 | 0.720 | 179 | 286 | 141 | 414 | 59.0 | 18.0 |
| 7 | 0.770 | 192 | 286 | 141 | 414 | 61.0 | 18.6 |
| 8 | 0.810 | 202 | 286 | 141 | 414 | 62.6 | 19.1 |
| 9 | 0.790 | 197 | 284 | 140 | 413 | 61.8 | 18.8 |
| 10 | 0.730 | 182 | 284 | 140 | 413 | 59.4 | 18.1 |
| 11 | 0.540 | 135 | 283 | 139 | 413 | 51.0 | 15.6 |
| 12 | 0.540 | 135 | 280 | 138 | 411 | 50.9 | 15.5 |
| 13 | 0.890 | 222 | 284 | 140 | 413 | 65.5 | 20.0 |
| 14 | 0.960 | 239 | 285 | 141 | 414 | 68.1 | 20.8 |
| 15 | 0.960 | 239 | 285 | 141 | 414 | 68.1 | 20.8 |
| 16 | 0.920 | 229 | 284 | 140 | 413 | 66.6 | 20.3 |
| 17 | 0.850 | 212 | 285 | 141 | 414 | 64.1 | 19.5 |
| 18 | 0.790 | 197 | 285 | 141 | 414 | 61.8 | 18.8 |
| 19 | 0.730 | 182 | 285 | 141 | 414 | 59.4 | 18.1 |
| 20 | 0.760 | 189 | 285 | 141 | 414 | 60.6 | 18.5 |
| 21 | 0.810 | 202 | 285 | 141 | 414 | 62.6 | 19.1 |
| 22 | 0.820 | 204 | 285 | 141 | 414 | 63.0 | 19.2 |
| 23 | 0.720 | 179 | 284 | 140 | 413 | 59.0 | 18.0 |
| 24 | 0.640 | 159 | 281 | 138 | 411 | 55.5 | 16.9 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|---------------|--------------------|-------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.88 in. Hg | 101.2 kPa |
| Client | Covanta | Pstatic | -11.90 in. H ₂ O | -2.96 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.1 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 6 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1727-1732 | Pitot Coefficient | 0.847 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | |
|----------------------|-------|--------------------|------|----------|------------------|
| O ₂ (%) | 8.21 | | | | |
| CO ₂ (%) | 10.94 | | | | |
| CO (ppm) | 16.6 | N ₂ (%) | 79.9 | MW (dry) | 30.19 lb/lb mole |
| H ₂ O (%) | 20.10 | Ar (%) | 1.0 | MW (wet) | 27.74 lb/lb mole |

| | Imperial | Metric |
|------------------------------------|-----------------------|--------------------------|
| Average Velocity | 63 ft/s | 19.2 m/s |
| Average Temperature | 284 °F | 140 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 60088 cfm | 28.4 m ³ /s |
| Dry Reference Volumetric Flow Rate | 33604 cfm | 15.86 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 42058 cfm | 19.85 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 0.890 | 222 | 283 | 139 | 413 | 65.5 | 20.0 |
| 2 | 0.940 | 234 | 284 | 140 | 413 | 67.4 | 20.5 |
| 3 | 0.990 | 247 | 284 | 140 | 413 | 69.2 | 21.1 |
| 4 | 0.940 | 234 | 284 | 140 | 413 | 67.4 | 20.5 |
| 5 | 0.890 | 222 | 284 | 140 | 413 | 65.6 | 20.0 |
| 6 | 0.810 | 202 | 285 | 141 | 414 | 62.6 | 19.1 |
| 7 | 0.750 | 187 | 285 | 141 | 414 | 60.2 | 18.4 |
| 8 | 0.770 | 192 | 285 | 141 | 414 | 61.0 | 18.6 |
| 9 | 0.790 | 197 | 285 | 141 | 414 | 61.8 | 18.8 |
| 10 | 0.820 | 204 | 285 | 141 | 414 | 63.0 | 19.2 |
| 11 | 0.810 | 202 | 283 | 139 | 413 | 62.5 | 19.1 |
| 12 | 0.710 | 177 | 280 | 138 | 411 | 58.4 | 17.8 |
| 13 | 0.870 | 217 | 283 | 139 | 413 | 64.8 | 19.7 |
| 14 | 0.920 | 229 | 284 | 140 | 413 | 66.7 | 20.3 |
| 15 | 0.930 | 232 | 284 | 140 | 413 | 67.0 | 20.4 |
| 16 | 0.870 | 217 | 285 | 141 | 414 | 64.9 | 19.8 |
| 17 | 0.840 | 209 | 284 | 140 | 413 | 63.7 | 19.4 |
| 18 | 0.760 | 189 | 285 | 141 | 414 | 60.6 | 18.5 |
| 19 | 0.800 | 199 | 285 | 141 | 414 | 62.2 | 19.0 |
| 20 | 0.830 | 207 | 285 | 141 | 414 | 63.4 | 19.3 |
| 21 | 0.830 | 207 | 285 | 141 | 414 | 63.4 | 19.3 |
| 22 | 0.790 | 197 | 285 | 141 | 414 | 61.8 | 18.8 |
| 23 | 0.680 | 169 | 284 | 140 | 413 | 57.3 | 17.5 |
| 24 | 0.540 | 135 | 281 | 138 | 411 | 51.0 | 15.5 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|---------------|--------------------|-------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.88 in. Hg | 101.2 kPa |
| Client | Covanta | Pstatic | -12.70 in. H ₂ O | -3.16 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.1 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 7 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1733-1738 | Pitot Coefficient | 0.847 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | |
|----------------------|-------|--------------------|------|----------|------------------|
| O ₂ (%) | 8.21 | | | | |
| CO ₂ (%) | 10.94 | | | | |
| CO (ppm) | 16.6 | N ₂ (%) | 79.9 | MW (dry) | 30.19 lb/lb mole |
| H ₂ O (%) | 20.10 | Ar (%) | 1.0 | MW (wet) | 27.74 lb/lb mole |

| | Imperial | Metric |
|------------------------------------|-----------------------|--------------------------|
| Average Velocity | 65 ft/s | 19.8 m/s |
| Average Temperature | 285 °F | 140 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 62142 cfm | 29.3 m ³ /s |
| Dry Reference Volumetric Flow Rate | 34661 cfm | 16.36 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 43381 cfm | 20.47 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 0.870 | 217 | 284 | 140 | 413 | 64.9 | 19.8 |
| 2 | 0.920 | 229 | 284 | 140 | 413 | 66.7 | 20.3 |
| 3 | 0.910 | 227 | 284 | 140 | 413 | 66.4 | 20.2 |
| 4 | 0.890 | 222 | 284 | 140 | 413 | 65.6 | 20.0 |
| 5 | 0.790 | 197 | 284 | 140 | 413 | 61.8 | 18.8 |
| 6 | 0.760 | 189 | 284 | 140 | 413 | 60.6 | 18.5 |
| 7 | 0.820 | 204 | 284 | 140 | 413 | 63.0 | 19.2 |
| 8 | 0.830 | 207 | 284 | 140 | 413 | 63.4 | 19.3 |
| 9 | 0.860 | 214 | 284 | 140 | 413 | 64.5 | 19.7 |
| 10 | 0.810 | 202 | 283 | 139 | 413 | 62.6 | 19.1 |
| 11 | 0.650 | 162 | 282 | 139 | 412 | 56.0 | 17.1 |
| 12 | 0.550 | 137 | 281 | 138 | 411 | 51.5 | 15.7 |
| 13 | 0.930 | 232 | 283 | 139 | 413 | 67.0 | 20.4 |
| 14 | 1.000 | 249 | 284 | 140 | 413 | 69.6 | 21.2 |
| 15 | 1.100 | 274 | 283 | 139 | 413 | 72.9 | 22.2 |
| 16 | 1.000 | 249 | 286 | 141 | 414 | 69.7 | 21.2 |
| 17 | 0.980 | 244 | 287 | 142 | 415 | 69.0 | 21.0 |
| 18 | 0.870 | 217 | 287 | 142 | 415 | 65.0 | 19.8 |
| 19 | 0.870 | 217 | 287 | 142 | 415 | 65.0 | 19.8 |
| 20 | 0.870 | 217 | 287 | 142 | 415 | 65.0 | 19.8 |
| 21 | 0.930 | 232 | 287 | 142 | 415 | 67.2 | 20.5 |
| 22 | 0.960 | 239 | 287 | 142 | 415 | 68.3 | 20.8 |
| 23 | 0.990 | 247 | 285 | 141 | 414 | 69.3 | 21.1 |
| 24 | 0.950 | 237 | 283 | 139 | 413 | 67.8 | 20.7 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|---------------|--------------------|-------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.88 in. Hg | 101.2 kPa |
| Client | Covanta | Pstatic | -12.70 in. H ₂ O | -3.16 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.1 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 8 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1739-1746 | Pitot Coefficient | 0.847 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | | |
|----------------------|-------|--------------------|------|----------|-------|------------|
| O ₂ (%) | 7.72 | | | | | |
| CO ₂ (%) | 11.33 | | | | | |
| CO (ppm) | 13.7 | N ₂ (%) | 80.0 | MW (dry) | 30.24 | lb/lb mole |
| H ₂ O (%) | 20.10 | Ar (%) | 1.0 | MW (wet) | 27.78 | lb/lb mole |

| | Imperial | Metric |
|------------------------------------|-----------------------|--------------------------|
| Average Velocity | 69 ft/s | 21.0 m/s |
| Average Temperature | 289 °F | 143 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 65822 cfm | 31.1 m ³ /s |
| Dry Reference Volumetric Flow Rate | 36517 cfm | 17.23 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 45704 cfm | 21.57 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 1.100 | 274 | 283 | 139 | 413 | 72.9 | 22.2 |
| 2 | 1.100 | 274 | 287 | 142 | 415 | 73.1 | 22.3 |
| 3 | 1.100 | 274 | 287 | 142 | 415 | 73.1 | 22.3 |
| 4 | 1.100 | 274 | 287 | 142 | 415 | 73.1 | 22.3 |
| 5 | 1.100 | 274 | 288 | 142 | 415 | 73.1 | 22.3 |
| 6 | 0.940 | 234 | 288 | 142 | 415 | 67.6 | 20.6 |
| 7 | 0.870 | 217 | 288 | 142 | 415 | 65.0 | 19.8 |
| 8 | 0.910 | 227 | 289 | 143 | 416 | 66.5 | 20.3 |
| 9 | 0.970 | 242 | 288 | 142 | 415 | 68.7 | 20.9 |
| 10 | 1.050 | 262 | 288 | 142 | 415 | 71.4 | 21.8 |
| 11 | 0.960 | 239 | 288 | 142 | 415 | 68.3 | 20.8 |
| 12 | 0.870 | 217 | 285 | 141 | 414 | 64.9 | 19.8 |
| 13 | 1.000 | 249 | 290 | 143 | 416 | 69.8 | 21.3 |
| 14 | 1.100 | 274 | 290 | 143 | 416 | 73.2 | 22.3 |
| 15 | 1.100 | 274 | 290 | 143 | 416 | 73.2 | 22.3 |
| 16 | 1.100 | 274 | 290 | 143 | 416 | 73.2 | 22.3 |
| 17 | 0.880 | 219 | 290 | 143 | 416 | 65.5 | 20.0 |
| 18 | 0.810 | 202 | 291 | 144 | 417 | 62.9 | 19.2 |
| 19 | 0.860 | 214 | 291 | 144 | 417 | 64.8 | 19.7 |
| 20 | 0.970 | 242 | 291 | 144 | 417 | 68.8 | 21.0 |
| 21 | 1.000 | 249 | 291 | 144 | 417 | 69.9 | 21.3 |
| 22 | 1.000 | 249 | 290 | 143 | 416 | 69.8 | 21.3 |
| 23 | 0.920 | 229 | 289 | 143 | 416 | 66.9 | 20.4 |
| 24 | 0.740 | 184 | 285 | 141 | 414 | 59.8 | 18.2 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|----------------------|--------------------|--------------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.88 in. Hg | 101.2 kPa |
| Client | Covanta | Pstatic | -12.70 in. H ₂ O | -3.16 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.1 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 9 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1747-1752 | Pitot Coefficient | 0.847 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | |
|---------------------------|-------|--------------------------|------|-----------------|------------------|
| O₂ (%) | 7.57 | | | | |
| CO₂ (%) | 11.68 | | | | |
| CO (ppm) | 16.7 | N₂ (%) | 79.8 | MW (dry) | 30.29 lb/lb mole |
| H₂O (%) | 20.10 | Ar (%) | 0.9 | MW (wet) | 27.82 lb/lb mole |

| | Imperial | Metric |
|---|-----------------------|--------------------------|
| Average Velocity | 68 ft/s | 20.7 m/s |
| Average Temperature | 290 °F | 143 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 64694 cfm | 30.5 m ³ /s |
| Dry Reference Volumetric Flow Rate | 35810 cfm | 16.90 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 44819 cfm | 21.15 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 1.050 | 262 | 290 | 143 | 416 | 71.5 | 21.8 |
| 2 | 1.100 | 274 | 289 | 143 | 416 | 73.1 | 22.3 |
| 3 | 1.100 | 274 | 290 | 143 | 416 | 73.2 | 22.3 |
| 4 | 1.100 | 274 | 291 | 144 | 417 | 73.2 | 22.3 |
| 5 | 0.980 | 244 | 290 | 143 | 416 | 69.1 | 21.0 |
| 6 | 0.860 | 214 | 291 | 144 | 417 | 64.7 | 19.7 |
| 7 | 0.920 | 229 | 291 | 144 | 417 | 67.0 | 20.4 |
| 8 | 0.960 | 239 | 291 | 144 | 417 | 68.4 | 20.8 |
| 9 | 0.910 | 227 | 292 | 144 | 418 | 66.6 | 20.3 |
| 10 | 0.930 | 232 | 291 | 144 | 417 | 67.3 | 20.5 |
| 11 | 0.830 | 207 | 289 | 143 | 416 | 63.5 | 19.4 |
| 12 | 0.530 | 132 | 285 | 141 | 414 | 50.6 | 15.4 |
| 13 | 1.050 | 262 | 289 | 143 | 416 | 71.4 | 21.8 |
| 14 | 1.100 | 274 | 289 | 143 | 416 | 73.1 | 22.3 |
| 15 | 1.100 | 274 | 289 | 143 | 416 | 73.1 | 22.3 |
| 16 | 1.100 | 274 | 289 | 143 | 416 | 73.1 | 22.3 |
| 17 | 1.020 | 254 | 290 | 143 | 416 | 70.5 | 21.5 |
| 18 | 0.900 | 224 | 292 | 144 | 418 | 66.3 | 20.2 |
| 19 | 0.910 | 227 | 292 | 144 | 418 | 66.6 | 20.3 |
| 20 | 0.960 | 239 | 292 | 144 | 418 | 68.4 | 20.9 |
| 21 | 0.970 | 242 | 292 | 144 | 418 | 68.8 | 21.0 |
| 22 | 0.990 | 247 | 291 | 144 | 417 | 69.5 | 21.2 |
| 23 | 0.880 | 219 | 290 | 143 | 416 | 65.4 | 19.9 |
| 24 | 0.570 | 142 | 290 | 143 | 416 | 52.7 | 16.1 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|---------------|--------------------|-------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.88 in. Hg | 101.2 kPa |
| Client | Covanta | Pstatic | -12.70 in. H ₂ O | -3.16 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.1 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 10 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1753-1800 | Pitot Coefficient | 0.847 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | |
|----------------------|-------|--------------------|------|----------|------------------|
| O ₂ (%) | 8.11 | | | | |
| CO ₂ (%) | 11.12 | | | | |
| CO (ppm) | 28.9 | N ₂ (%) | 79.8 | MW (dry) | 30.22 lb/lb mole |
| H ₂ O (%) | 20.10 | Ar (%) | 0.9 | MW (wet) | 27.76 lb/lb mole |

| | Imperial | Metric |
|------------------------------------|-----------------------|--------------------------|
| Average Velocity | 68 ft/s | 20.8 m/s |
| Average Temperature | 291 °F | 144 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 65081 cfm | 30.7 m ³ /s |
| Dry Reference Volumetric Flow Rate | 35970 cfm | 16.98 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 45020 cfm | 21.25 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 1.050 | 262 | 291 | 144 | 417 | 71.6 | 21.8 |
| 2 | 1.100 | 274 | 291 | 144 | 417 | 73.3 | 22.3 |
| 3 | 1.100 | 274 | 291 | 144 | 417 | 73.3 | 22.3 |
| 4 | 1.100 | 274 | 292 | 144 | 418 | 73.3 | 22.4 |
| 5 | 1.100 | 274 | 292 | 144 | 418 | 73.3 | 22.4 |
| 6 | 0.940 | 234 | 293 | 145 | 418 | 67.8 | 20.7 |
| 7 | 0.950 | 237 | 293 | 145 | 418 | 68.2 | 20.8 |
| 8 | 0.940 | 234 | 294 | 146 | 419 | 67.9 | 20.7 |
| 9 | 1.020 | 254 | 293 | 145 | 418 | 70.7 | 21.5 |
| 10 | 0.980 | 244 | 293 | 145 | 418 | 69.3 | 21.1 |
| 11 | 0.930 | 232 | 292 | 144 | 418 | 67.4 | 20.6 |
| 12 | 0.860 | 214 | 290 | 143 | 416 | 64.8 | 19.7 |
| 13 | 0.980 | 244 | 290 | 143 | 416 | 69.1 | 21.1 |
| 14 | 1.100 | 274 | 291 | 144 | 417 | 73.3 | 22.3 |
| 15 | 1.100 | 274 | 291 | 144 | 417 | 73.3 | 22.3 |
| 16 | 1.000 | 249 | 292 | 144 | 418 | 69.9 | 21.3 |
| 17 | 0.940 | 234 | 292 | 144 | 418 | 67.8 | 20.7 |
| 18 | 0.880 | 219 | 292 | 144 | 418 | 65.6 | 20.0 |
| 19 | 0.880 | 219 | 292 | 144 | 418 | 65.6 | 20.0 |
| 20 | 0.860 | 214 | 292 | 144 | 418 | 64.8 | 19.8 |
| 21 | 0.890 | 222 | 292 | 144 | 418 | 66.0 | 20.1 |
| 22 | 0.900 | 224 | 291 | 144 | 417 | 66.3 | 20.2 |
| 23 | 0.810 | 202 | 287 | 142 | 415 | 62.7 | 19.1 |
| 24 | 0.550 | 137 | 285 | 141 | 414 | 51.6 | 15.7 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|---------------|--------------------|-------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.88 in. Hg | 101.2 kPa |
| Client | Covanta | Pstatic | -12.60 in. H ₂ O | -3.14 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.1 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 11 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1804-1811 | Pitot Coefficient | 0.847 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | |
|----------------------|-------|--------------------|------|----------|------------------|
| O ₂ (%) | 8.25 | | | | |
| CO ₂ (%) | 10.91 | | | | |
| CO (ppm) | 12.8 | N ₂ (%) | 79.9 | MW (dry) | 30.19 lb/lb mole |
| H ₂ O (%) | 20.10 | Ar (%) | 1.0 | MW (wet) | 27.74 lb/lb mole |

| | Imperial | Metric |
|------------------------------------|-----------------------|--------------------------|
| Average Velocity | 65 ft/s | 19.7 m/s |
| Average Temperature | 288 °F | 142 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 61660 cfm | 29.1 m ³ /s |
| Dry Reference Volumetric Flow Rate | 34255 cfm | 16.17 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 42873 cfm | 20.23 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 0.950 | 237 | 289 | 143 | 416 | 68.0 | 20.7 |
| 2 | 1.020 | 254 | 289 | 143 | 416 | 70.5 | 21.5 |
| 3 | 1.000 | 249 | 289 | 143 | 416 | 69.8 | 21.3 |
| 4 | 0.960 | 239 | 289 | 143 | 416 | 68.4 | 20.8 |
| 5 | 0.930 | 232 | 289 | 143 | 416 | 67.3 | 20.5 |
| 6 | 0.800 | 199 | 289 | 143 | 416 | 62.4 | 19.0 |
| 7 | 0.800 | 199 | 289 | 143 | 416 | 62.4 | 19.0 |
| 8 | 0.810 | 202 | 289 | 143 | 416 | 62.8 | 19.1 |
| 9 | 0.880 | 219 | 288 | 142 | 415 | 65.4 | 19.9 |
| 10 | 0.860 | 214 | 288 | 142 | 415 | 64.7 | 19.7 |
| 11 | 0.650 | 162 | 287 | 142 | 415 | 56.2 | 17.1 |
| 12 | 0.470 | 117 | 285 | 141 | 414 | 47.7 | 14.5 |
| 13 | 0.900 | 224 | 288 | 142 | 415 | 66.2 | 20.2 |
| 14 | 1.000 | 249 | 288 | 142 | 415 | 69.8 | 21.3 |
| 15 | 1.050 | 262 | 288 | 142 | 415 | 71.5 | 21.8 |
| 16 | 0.980 | 244 | 288 | 142 | 415 | 69.1 | 21.0 |
| 17 | 0.900 | 224 | 288 | 142 | 415 | 66.2 | 20.2 |
| 18 | 0.860 | 214 | 287 | 142 | 415 | 64.6 | 19.7 |
| 19 | 0.870 | 217 | 287 | 142 | 415 | 65.0 | 19.8 |
| 20 | 0.890 | 222 | 287 | 142 | 415 | 65.8 | 20.0 |
| 21 | 0.920 | 229 | 287 | 142 | 415 | 66.9 | 20.4 |
| 22 | 0.930 | 232 | 287 | 142 | 415 | 67.2 | 20.5 |
| 23 | 0.730 | 182 | 286 | 141 | 414 | 59.5 | 18.1 |
| 24 | 0.590 | 147 | 283 | 139 | 413 | 53.4 | 16.3 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|---------------|--------------------|-------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.88 in. Hg | 101.2 kPa |
| Client | Covanta | Pstatic | -12.60 in. H ₂ O | -3.14 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.1 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 12 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1812-1816 | Pitot Coefficient | 0.847 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | | |
|----------------------|-------|--------------------|------|----------|-------|------------|
| O ₂ (%) | 8.03 | | | | | |
| CO ₂ (%) | 11.12 | | | | | |
| CO (ppm) | 12.9 | N ₂ (%) | 79.9 | MW (dry) | 30.21 | lb/lb mole |
| H ₂ O (%) | 20.10 | Ar (%) | 1.0 | MW (wet) | 27.76 | lb/lb mole |

| | Imperial | Metric |
|------------------------------------|-----------------------|--------------------------|
| Average Velocity | 67 ft/s | 20.5 m/s |
| Average Temperature | 286 °F | 141 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 64286 cfm | 30.3 m ³ /s |
| Dry Reference Volumetric Flow Rate | 35793 cfm | 16.89 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 44799 cfm | 21.14 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 0.990 | 247 | 286 | 141 | 414 | 69.3 | 21.1 |
| 2 | 1.050 | 262 | 286 | 141 | 414 | 71.4 | 21.7 |
| 3 | 1.100 | 274 | 286 | 141 | 414 | 73.0 | 22.3 |
| 4 | 0.980 | 244 | 286 | 141 | 414 | 68.9 | 21.0 |
| 5 | 0.940 | 234 | 287 | 142 | 415 | 67.6 | 20.6 |
| 6 | 0.890 | 222 | 287 | 142 | 415 | 65.7 | 20.0 |
| 7 | 0.870 | 217 | 287 | 142 | 415 | 65.0 | 19.8 |
| 8 | 0.900 | 224 | 287 | 142 | 415 | 66.1 | 20.1 |
| 9 | 0.940 | 234 | 287 | 142 | 415 | 67.6 | 20.6 |
| 10 | 0.910 | 227 | 287 | 142 | 415 | 66.5 | 20.3 |
| 11 | 0.770 | 192 | 286 | 141 | 414 | 61.1 | 18.6 |
| 12 | 0.500 | 125 | 284 | 140 | 413 | 49.2 | 15.0 |
| 13 | 0.980 | 244 | 286 | 141 | 414 | 68.9 | 21.0 |
| 14 | 1.100 | 274 | 286 | 141 | 414 | 73.0 | 22.3 |
| 15 | 1.100 | 274 | 286 | 141 | 414 | 73.0 | 22.3 |
| 16 | 1.050 | 262 | 286 | 141 | 414 | 71.4 | 21.7 |
| 17 | 0.960 | 239 | 286 | 141 | 414 | 68.2 | 20.8 |
| 18 | 0.860 | 214 | 286 | 141 | 414 | 64.6 | 19.7 |
| 19 | 0.910 | 227 | 287 | 142 | 415 | 66.5 | 20.3 |
| 20 | 0.940 | 234 | 286 | 141 | 414 | 67.5 | 20.6 |
| 21 | 0.950 | 237 | 286 | 141 | 414 | 67.9 | 20.7 |
| 22 | 1.100 | 274 | 285 | 141 | 414 | 73.0 | 22.2 |
| 23 | 0.940 | 234 | 285 | 141 | 414 | 67.5 | 20.6 |
| 24 | 0.850 | 212 | 283 | 139 | 413 | 64.1 | 19.5 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|---------------|--------------------|-------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.88 in. Hg | 101.2 kPa |
| Client | Covanta | Pstatic | -12.60 in. H ₂ O | -3.14 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.1 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 13 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1817-1824 | Pitot Coefficient | 0.847 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | | |
|----------------------|-------|--------------------|------|----------|-------|------------|
| O ₂ (%) | 7.62 | | | | | |
| CO ₂ (%) | 11.61 | | | | | |
| CO (ppm) | 12.7 | N ₂ (%) | 79.8 | MW (dry) | 30.28 | lb/lb mole |
| H ₂ O (%) | 20.10 | Ar (%) | 0.9 | MW (wet) | 27.81 | lb/lb mole |

| | Imperial | Metric |
|------------------------------------|-----------------------|--------------------------|
| Average Velocity | 68 ft/s | 20.6 m/s |
| Average Temperature | 286 °F | 141 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 64522 cfm | 30.5 m ³ /s |
| Dry Reference Volumetric Flow Rate | 35905 cfm | 16.95 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 44938 cfm | 21.21 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 0.980 | 244 | 287 | 142 | 415 | 68.9 | 21.0 |
| 2 | 1.050 | 262 | 287 | 142 | 415 | 71.3 | 21.7 |
| 3 | 1.100 | 274 | 287 | 142 | 415 | 73.0 | 22.3 |
| 4 | 0.990 | 247 | 287 | 142 | 415 | 69.3 | 21.1 |
| 5 | 0.960 | 239 | 287 | 142 | 415 | 68.2 | 20.8 |
| 6 | 0.840 | 209 | 287 | 142 | 415 | 63.8 | 19.4 |
| 7 | 0.880 | 219 | 287 | 142 | 415 | 65.3 | 19.9 |
| 8 | 0.930 | 232 | 287 | 142 | 415 | 67.1 | 20.5 |
| 9 | 1.050 | 262 | 287 | 142 | 415 | 71.3 | 21.7 |
| 10 | 1.050 | 262 | 287 | 142 | 415 | 71.3 | 21.7 |
| 11 | 0.970 | 242 | 286 | 141 | 414 | 68.5 | 20.9 |
| 12 | 0.670 | 167 | 284 | 140 | 413 | 56.9 | 17.3 |
| 13 | 1.000 | 249 | 286 | 141 | 414 | 69.6 | 21.2 |
| 14 | 1.100 | 274 | 286 | 141 | 414 | 73.0 | 22.2 |
| 15 | 1.100 | 274 | 286 | 141 | 414 | 73.0 | 22.2 |
| 16 | 1.100 | 274 | 286 | 141 | 414 | 73.0 | 22.2 |
| 17 | 1.050 | 262 | 286 | 141 | 414 | 71.3 | 21.7 |
| 18 | 0.950 | 237 | 287 | 142 | 415 | 67.9 | 20.7 |
| 19 | 0.960 | 239 | 287 | 142 | 415 | 68.2 | 20.8 |
| 20 | 0.870 | 217 | 287 | 142 | 415 | 64.9 | 19.8 |
| 21 | 0.920 | 229 | 287 | 142 | 415 | 66.8 | 20.4 |
| 22 | 0.890 | 222 | 287 | 142 | 415 | 65.7 | 20.0 |
| 23 | 0.750 | 187 | 286 | 141 | 414 | 60.3 | 18.4 |
| 24 | 0.610 | 152 | 283 | 139 | 413 | 54.2 | 16.5 |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company COVANTA Site Location ARC OUTLET #1

Company Location COURTICE, OH Test Date SEPT 28/15

Test No.: 1 Time 1346-1356 Operator DW Signature [Signature]

| Measuring Devices | MII Number |
|-------------------|------------------------|
| Pitot Tube | 56 |
| Pitot Factor | 0.846 0.847 |
| Manometer | COE 20093 |
| Temp meter | |
| Barometer | ENV-CAN |

| Measured Parameters | |
|---------------------|-------------------------|
| Barometric | 29.97 |
| Static | -11.3" H ₂ O |

O₂ - 8.14%
CO₂ - 11.07%
CO - 20.7ppm

| Port | 1 | | 2 | | |
|------|---------|---------|------|---------|------|
| | Point # | Delta P | Temp | Delta P | Temp |
| 1 | | .76 | 279 | .78 | 280 |
| 2 | | .78 | 282 | .83 | 282 |
| 3 | | .79 | 282 | .83 | 282 |
| 4 | | .75 | 283 | .79 | 283 |
| 5 | | .70 | 284 | .74 | 284 |
| 6 | | .59 | 286 | .68 | 285 |
| 7 | | .68 | 285 | .63 | 284 |
| 8 | | .70 | 286 | .61 | 284 |
| 9 | | .72 | 284 | .68 | 284 |
| 10 | | .70 | 284 | .71 | 283 |
| 11 | | .52 | 284 | .67 | 280 |
| 12 | | .40 | 282 | .42 | 279 |

ALL FLOWS START AT FAR WALL



Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company COVANTA Site Location ABC outlet #1

Company Location COURTICE Test Date SEPT 29/15

Test No.: 2 Time 1416HRS Operator RW Signature [Signature]

| Measuring Devices | MII Number |
|-------------------|------------|
| Pitot Tube | 555 |
| Pitot Factor | |
| Manometer | 1651 |
| Temp meter | 1 |
| Barometer | |

| Measured Parameters | |
|---------------------|-------|
| Barometric | 29.94 |
| Static | -11.3 |

O₂ - 7.39%

CO₂ - 11.61%

CO - 23.0ppm

| Port | 2 | | 1 | |
|---------|---------|------|---------|------|
| Point # | Delta P | Temp | Delta P | Temp |
| 1 | .73 | 277 | .74 | 279 |
| 2 | .79 | 277 | .82 | 281 |
| 3 | .80 | 277 | .80 | 282 |
| 4 | .77 | 280 | .77 | 282 |
| 5 | .72 | 281 | .71 | 282 |
| 6 | .66 | 281 | .63 | 283 |
| 7 | .61 | 282 | .66 | 283 |
| 8 | .63 | 282 | .69 | 283 |
| 9 | .67 | 282 | .75 | 283 |
| 10 | .68 | 282 | .73 | 281 |
| 11 | .65 | 281 | .67 | 281 |
| 12 | .57 | 280 | .48 | 280 |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company COVANTA Site Location APC OUTLET #1

Company Location CANTON, OH Test Date SEPT 28 115

Test No.: 3 Time 1424-1431 Operator DW Signature D. J. [Signature]

| Measuring Devices | MII Number |
|-------------------|------------|
| Pitot Tube | SEE |
| Pitot Factor | |
| Manometer | TEST |
| Temp meter | 1 |
| Barometer | |

| Measured Parameters | |
|---------------------|-------|
| Barometric | 29.94 |
| Static | -11.3 |

O₂ - 6.85%
 CO₂ - 12.16%
 CO - 39.9 ppm

| Port | 2 | | 1 | |
|---------|---------|------|---------|------|
| Point # | Delta P | Temp | Delta P | Temp |
| 1 | .81 | 282 | .86 | 280 |
| 2 | .82 | 283 | .89 | 282 |
| 3 | .81 | 283 | .85 | 283 |
| 4 | .76 | 284 | .81 | 284 |
| 5 | .71 | 284 | .78 | 285 |
| 6 | .62 | 284 | .72 | 285 |
| 7 | .67 | 284 | .65 | 285 |
| 8 | .73 | 284 | .68 | 285 |
| 9 | .73 | 284 | .71 | 285 |
| 10 | .76 | 284 | .74 | 285 |
| 11 | .60 | 284 | .71 | 283 |
| 12 | .53 | 280 | .63 | 280 |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21456

Company COVANTA Site Location APC OUTLET #1

Company Location COURTICE, OH Test Date SEPT 28/15

Test No.: 4 Time 1449-1450 Operator RW Signature D. J. U.

| Measuring Devices | MII Number |
|-------------------|------------|
| Pitot Tube | SEE |
| Pitot Factor | |
| Manometer | TEST |
| Temp meter | |
| Barometer | 1 |

| Measured Parameters | |
|---------------------|-------|
| Barometric | 29.94 |
| Static | -11.3 |

O₂ - 8.146
 CO₂ - 10.986
 CO - 20.0ppm

| Port | 1 | | 2 | |
|---------|---------|------|---------|------|
| Point # | Delta P | Temp | Delta P | Temp |
| 1 | .72 | 279 | .72 | 281 |
| 2 | .79 | 280 | .77 | 281 |
| 3 | .80 | 282 | .78 | 281 |
| 4 | .74 | 283 | .73 | 283 |
| 5 | .72 | 284 | .68 | 284 |
| 6 | .64 | 284 | .62 | 284 |
| 7 | .60 | 284 | .66 | 284 |
| 8 | .61 | 284 | .68 | 284 |
| 9 | .64 | 284 | .71 | 285 |
| 10 | .66 | 283 | .65 | 284 |
| 11 | .60 | 282 | .59 | 283 |
| 12 | .50 | 280 | .46 | 280 |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company COUANTA Site Location APC OUTLET #1

Company Location COURTICE, ON Test Date SEPT, 28/15

Test No.: 5 Time 17:19 Operator DM Signature [Signature]

| Measuring Devices | MII Number |
|-------------------|------------|
| Pitot Tube | SEE |
| Pitot Factor | 7657 |
| Manometer | 1 |
| Temp meter | |
| Barometer | |

| Measured Parameters | |
|---------------------|-------|
| Barometric | 29.88 |
| Static | -11.9 |

O₂ - 8.09%
 CO₂ - 11.12%
 CO - 14.6 ppm

| Port | 2 | | 1 | |
|---------|---------|------|---------|------|
| Point # | Delta P | Temp | Delta P | Temp |
| 1 | .84 | 282 | .89 | 284 |
| 2 | .48 | 285 | .96 | 285 |
| 3 | .86 | 285 | .96 | 285 |
| 4 | .45 | 285 | .92 | 284 |
| 5 | .82 | 286 | .85 | 285 |
| 6 | .72 | 286 | .79 | 285 |
| 7 | .77 | 286 | .73 | 285 |
| 8 | .81 | 286 | .76 | 285 |
| 9 | .79 | 284 | .81 | 285 |
| 10 | .73 | 284 | .82 | 285 |
| 11 | .54 | 283 | .72 | 284 |
| 12 | .54 | 280 | .64 | 281 |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company COVANTA Site Location APL OUTLET #1

Company Location COURTICE, ON Test Date SEPT 28/15

Test No.: 6 Time 1721-1732 Operator RW Signature [Signature]

| Measuring Devices | MII Number |
|-------------------|------------|
| Pitot Tube | 3EE |
| Pitot Factor | |
| Manometer | TEST |
| Temp meter | |
| Barometer | 1 |

| Measured Parameters | |
|---------------------|-------|
| Barometric | 29.88 |
| Static | -11.9 |

O₂ - 8.21%
CO₂ - 10.94%
CO - 16.6 ppm

| Port | 1 | | 2 | |
|------|---------|------|---------|------|
| | Delta P | Temp | Delta P | Temp |
| 1 | .89 | 283 | .87 | 283 |
| 2 | .94 | 284 | .92 | 284 |
| 3 | .99 | 284 | .93 | 284 |
| 4 | .94 | 284 | .87 | 285 |
| 5 | .89 | 284 | .84 | 284 |
| 6 | .81 | 285 | .76 | 285 |
| 7 | .75 | 285 | .80 | 285 |
| 8 | .77 | 285 | .83 | 285 |
| 9 | .79 | 285 | .83 | 285 |
| 10 | .82 | 285 | .79 | 285 |
| 11 | .81 | 283 | .66 | 284 |
| 12 | .71 | 280 | .54 | 281 |

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Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company COVANTA Site Location APC OUTLET #1

Company Location CONVERSE, ON Test Date SEPT, 29 2015

Test No.: 7 Time 1733-1738 Operator DW Signature [Signature]

| Measuring Devices | MII Number |
|-------------------|------------|
| Pitot Tube | SEE |
| Pitot Factor | |
| Manometer | TEST |
| Temp meter | |
| Barometer | 1 |

| Measured Parameters | |
|---------------------|-------|
| Barometric | 29.88 |
| Static | -12.7 |

O₂ - 8.21%
CO₂ - 10.94%
CO - 16.6 ppm

| Port | 2 | | 1 | |
|---------|---------|------|---------|------|
| Point # | Delta P | Temp | Delta P | Temp |
| 1 | .87 | 284 | .93 | 283 |
| 2 | .92 | 284 | 1.0 | 284 |
| 3 | .91 | 284 | 1.1 | 283 |
| 4 | .89 | 284 | 1.0 | 286 |
| 5 | .79 | 284 | .98 | 287 |
| 6 | .76 | 284 | -.89 | 287 |
| 7 | .82 | 284 | -.87 | 287 |
| 8 | .83 | 284 | -.87 | 287 |
| 9 | .86 | 284 | .93 | 287 |
| 10 | .81 | 283 | .96 | 287 |
| 11 | .65 | 282 | .99 | 285 |
| 12 | .55 | 281 | .95 | 283 |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company COVANTA Site Location APC OUTLET #1

Company Location COURTICE Test Date SEPT 28, 15

Test No.: 8 Time 17:39-17:46 Operator DW Signature D. Dug

| Measuring Devices | MII Number |
|-------------------|------------|
| Pitot Tube | SEE |
| Pitot Factor | TEST |
| Manometer | |
| Temp meter | 1 |
| Barometer | |

| Measured Parameters | |
|---------------------|-------|
| Barometric | 29.88 |
| Static | -12.7 |

O₂ - 7.72%

CO₂ - 11.33%

CO - 13.7 ppm

| Port | 1 | | 2 | |
|------|---------|------|---------|------|
| | Delta P | Temp | Delta P | Temp |
| 1 | 1.1 | 283 | 1.0 | 290 |
| 2 | 1.1 | 287 | 1.1 | 290 |
| 3 | 1.1 | 287 | 1.1 | 290 |
| 4 | 1.1 | 287 | 1.1 | 290 |
| 5 | 1.1 | 288 | 0.88 | 290 |
| 6 | .94 | 288 | .81 | 291 |
| 7 | .87 | 288 | .86 | 291 |
| 8 | .91 | 289 | .97 | 291 |
| 9 | .97 | 288 | 1.0 | 291 |
| 10 | 1.05 | 288 | 1.0 | 290 |
| 11 | .96 | 288 | .92 | 289 |
| 12 | .87 | 285 | .74 | 285 |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company COVANTA Site Location APC OUTLET #1

Company Location COURTICE, OH Test Date SEPT 25/15

Test No.: 9 Time 1747-1752 Operator DM Signature DM

| Measuring Devices | MIJ Number |
|-------------------|------------|
| Pitot Tube | 336 |
| Pitot Factor | TEST |
| Manometer | |
| Temp meter | 1 |
| Barometer | |

| Measured Parameters | |
|---------------------|-------|
| Barometric | 29.88 |
| Static | -12.7 |

O₂ - 7.57 %
 CO₂ - 11.68 %
 CO - 16.7 ppm

| Port | 2 | | 1 | |
|---------|---------|------|---------|------|
| Point # | Delta P | Temp | Delta P | Temp |
| 1 | 1.05 | 290 | 1.05 | 289 |
| 2 | 1.1 | 289 | 1.1 | 289 |
| 3 | 1.1 | 290 | 1.1 | 289 |
| 4 | 1.1 | 291 | 1.1 | 289 |
| 5 | .98 | 290 | 1.02 | 290 |
| 6 | .86 | 291 | .90 | 292 |
| 7 | .92 | 291 | .91 | 292 |
| 8 | .96 | 291 | .96 | 292 |
| 9 | .91 | 292 | .97 | 292 |
| 10 | .93 | 291 | .99 | 291 |
| 11 | .83 | 289 | .88 | 290 |
| 12 | .53 | 285 | .57 | 290 |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company COVANTA Site Location APC OUTLET #1

Company Location COURTICE, OH Test Date _____

Test No.: 10 Time 1753-1900 Operator _____

Signature [Signature]

| Measuring Devices | MII Number |
|-------------------|-------------|
| Pitot Tube | <u>SEE</u> |
| Pitot Factor | |
| Manometer | <u>TEST</u> |
| Temp meter | <u>1</u> |
| Barometer | |

| Measured Parameters | |
|---------------------|--------------|
| Barometric | <u>29.88</u> |
| Static | <u>-12.7</u> |

O₂ - 8.11%
 CO₂ - 11.12%
 CO - 28.9 ppm

| Port | 1 | | 2 | |
|------|-------------|------------|------------|------------|
| | Delta P | Temp | Delta P | Temp |
| 1 | <u>1.05</u> | <u>291</u> | <u>.98</u> | <u>289</u> |
| 2 | <u>1.1</u> | <u>291</u> | <u>1.1</u> | <u>291</u> |
| 3 | <u>1.1</u> | <u>291</u> | <u>1.1</u> | <u>291</u> |
| 4 | <u>1.1</u> | <u>292</u> | <u>1.0</u> | <u>292</u> |
| 5 | <u>1.1</u> | <u>292</u> | <u>.94</u> | <u>292</u> |
| 6 | <u>.94</u> | <u>293</u> | <u>.88</u> | <u>292</u> |
| 7 | <u>.95</u> | <u>293</u> | <u>.88</u> | <u>292</u> |
| 8 | <u>.94</u> | <u>294</u> | <u>.86</u> | <u>292</u> |
| 9 | <u>1.02</u> | <u>293</u> | <u>.89</u> | <u>292</u> |
| 10 | <u>.98</u> | <u>293</u> | <u>.90</u> | <u>291</u> |
| 11 | <u>.93</u> | <u>292</u> | <u>.81</u> | <u>287</u> |
| 12 | <u>.86</u> | <u>290</u> | <u>.55</u> | <u>285</u> |

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Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21

Company COVANTA Site Location APC OUTLET #1

Company Location COURTICE, ON Test Date SEPT 28/15

Test No.: 11 Time 1304-1311 Operator RW Signature [Signature]

| Measuring Devices | MII Number |
|-------------------|-------------|
| Pitot Tube | <u>355</u> |
| Pitot Factor | |
| Manometer | <u>TEST</u> |
| Temp meter | |
| Barometer | <u>1</u> |

| Measured Parameters | |
|---------------------|--------------|
| Barometric | <u>29.88</u> |
| Static | <u>-12.6</u> |

O₂ - 8.25%
CO₂ - 10.91%
CO - 12.8 ppm

| Port | <u>2</u> | | <u>1</u> | |
|---------|-------------|------------|-------------|------------|
| Point # | Delta P | Temp | Delta P | Temp |
| 1 | <u>.95</u> | <u>289</u> | <u>.90</u> | <u>288</u> |
| 2 | <u>1.02</u> | <u>289</u> | <u>1.0</u> | <u>288</u> |
| 3 | <u>1.0</u> | <u>289</u> | <u>1.05</u> | <u>288</u> |
| 4 | <u>.96</u> | <u>289</u> | <u>.98</u> | <u>288</u> |
| 5 | <u>.93</u> | <u>289</u> | <u>.90</u> | <u>288</u> |
| 6 | <u>.80</u> | <u>289</u> | <u>.86</u> | <u>287</u> |
| 7 | <u>.80</u> | <u>289</u> | <u>.87</u> | <u>287</u> |
| 8 | <u>.81</u> | <u>289</u> | <u>.89</u> | <u>287</u> |
| 9 | <u>.88</u> | <u>288</u> | <u>.92</u> | <u>287</u> |
| 10 | <u>.86</u> | <u>288</u> | <u>.93</u> | <u>287</u> |
| 11 | <u>.65</u> | <u>287</u> | <u>.73</u> | <u>286</u> |
| 12 | <u>.47</u> | <u>285</u> | <u>.59</u> | <u>283</u> |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company COVANTA Site Location APC OUTLET #1

Company Location COURTICE, ON Test Date SEPT 28/15

Test No.: 12 Time 1812-1816 Operator RW Signature D. D. U. J.

| Measuring Devices | MII Number |
|-------------------|------------|
| Pitot Tube | SEE |
| Pitot Factor | |
| Manometer | TEST |
| Temp meter | |
| Barometer | 1 |

| Measured Parameters | |
|---------------------|-------|
| Barometric | 29.88 |
| Static | -12.6 |

O₂ - 8.03%

CO₂ - 11.12%

CO - 12.9 ppm

| Port | 1 | | 2 | |
|------|---------|------|---------|------|
| | Delta P | Temp | Delta P | Temp |
| 1 | .99 | 286 | .98 | 286 |
| 2 | 1.05 | 286 | 1.1 | 286 |
| 3 | 1.1 | 286 | 1.1 | 286 |
| 4 | .98 | 286 | 1.05 | 286 |
| 5 | .94 | 287 | .96 | 286 |
| 6 | .89 | 287 | .86 | 286 |
| 7 | .87 | 287 | .91 | 287 |
| 8 | .90 | 287 | .94 | 286 |
| 9 | .94 | 287 | .95 | 286 |
| 10 | .91 | 287 | 1.1 | 285 |
| 11 | .77 | 286 | .94 | 285 |
| 12 | .50 | 284 | .85 | 283 |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company COVANTA Site Location APC OUTLET #1

Company Location COURTICE, ON Test Date SEPT 28/15

Test No.: 13 Time 1817-1824 Operator DU Signature [Signature]

| Measuring Devices | MII Number |
|-------------------|------------|
| Pitot Tube | SEE |
| Pitot Factor | TEST |
| Manometer | |
| Temp meter | 1 |
| Barometer | |

| Measured Parameters | |
|---------------------|-------|
| Barometric | 29.88 |
| Static | -12.6 |

O₂ - 7.62%
CO₂ - 11.61%
CO - 12.7 ppm

| Port | 2 | | 1 | |
|---------|---------|------|---------|------|
| Point # | Delta P | Temp | Delta P | Temp |
| 1 | .98 | 287 | 1.0 | 286 |
| 2 | 1.05 | 287 | 1.1 | 286 |
| 3 | 1.1 | 287 | 1.1 | 286 |
| 4 | .99 | 287 | 1.1 | 286 |
| 5 | .96 | 287 | 1.05 | 286 |
| 6 | .81 | 287 | .95 | 287 |
| 7 | .88 | 287 | .96 | 287 |
| 8 | .93 | 287 | .87 | 287 |
| 9 | 1.05 | 287 | .92 | 287 |
| 10 | 1.05 | 287 | .89 | 287 |
| 11 | .97 | 286 | .75 | 286 |
| 12 | .67 | 284 | .61 | 283 |

APPENDIX 3

**Velocity Profile Field Data Sheets and
Velocity and Volumetric Flowrate Determination Calculations
Boiler No. 2 BH Outlet
(28 pages)**

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|----------------------|--------------------|--------------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.94 in. Hg | 101.4 kPa |
| Client | Covanta | Pstatic | -11.00 in. H ₂ O | -2.74 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.2 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 1 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1400-1406 | Pitot Coefficient | 0.849 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | |
|---------------------------|-------|--------------------------|------|-----------------|------------------|
| O₂ (%) | 8.82 | | | | |
| CO₂ (%) | 10.33 | | | | |
| CO (ppm) | 18.6 | N₂ (%) | 79.9 | MW (dry) | 30.12 lb/lb mole |
| H₂O (%) | 15.44 | Ar (%) | 1.0 | MW (wet) | 28.25 lb/lb mole |

| | Imperial | Metric |
|---|-----------------------|--------------------------|
| Average Velocity | 60 ft/s | 18.2 m/s |
| Average Temperature | 277 °F | 136 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 56859 cfm | 26.8 m ³ /s |
| Dry Reference Volumetric Flow Rate | 34137 cfm | 16.11 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 40372 cfm | 19.05 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 0.860 | 214 | 277 | 136 | 409 | 63.6 | 19.4 |
| 2 | 0.890 | 222 | 278 | 137 | 410 | 64.7 | 19.7 |
| 3 | 0.870 | 217 | 278 | 137 | 410 | 64.0 | 19.5 |
| 4 | 0.830 | 207 | 278 | 137 | 410 | 62.5 | 19.1 |
| 5 | 0.770 | 192 | 278 | 137 | 410 | 60.2 | 18.4 |
| 6 | 0.730 | 182 | 278 | 137 | 410 | 58.6 | 17.9 |
| 7 | 0.760 | 189 | 278 | 137 | 410 | 59.8 | 18.2 |
| 8 | 0.760 | 189 | 277 | 136 | 409 | 59.8 | 18.2 |
| 9 | 0.780 | 194 | 277 | 136 | 409 | 60.6 | 18.5 |
| 10 | 0.810 | 202 | 277 | 136 | 409 | 61.7 | 18.8 |
| 11 | 0.810 | 202 | 276 | 136 | 409 | 61.7 | 18.8 |
| 12 | 0.740 | 184 | 271 | 133 | 406 | 58.7 | 17.9 |
| 13 | 0.870 | 217 | 277 | 136 | 409 | 64.0 | 19.5 |
| 14 | 0.890 | 222 | 277 | 136 | 409 | 64.7 | 19.7 |
| 15 | 0.880 | 219 | 277 | 136 | 409 | 64.3 | 19.6 |
| 16 | 0.820 | 204 | 277 | 136 | 409 | 62.1 | 18.9 |
| 17 | 0.740 | 184 | 277 | 136 | 409 | 59.0 | 18.0 |
| 18 | 0.720 | 179 | 277 | 136 | 409 | 58.2 | 17.7 |
| 19 | 0.680 | 169 | 277 | 136 | 409 | 56.5 | 17.2 |
| 20 | 0.700 | 174 | 277 | 136 | 409 | 57.4 | 17.5 |
| 21 | 0.720 | 179 | 276 | 136 | 409 | 58.1 | 17.7 |
| 22 | 0.640 | 159 | 275 | 135 | 408 | 54.8 | 16.7 |
| 23 | 0.550 | 137 | 275 | 135 | 408 | 50.8 | 15.5 |
| 24 | 0.420 | 105 | 275 | 135 | 408 | 44.4 | 13.5 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|---------------|--------------------|-------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.94 in. Hg | 101.4 kPa |
| Client | Covanta | Pstatic | -11.00 in. H ₂ O | -2.74 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.2 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 2 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1407-1414 | Pitot Coefficient | 0.849 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | |
|----------------------|-------|--------------------|------|----------|------------------|
| O ₂ (%) | 8.20 | | | | |
| CO ₂ (%) | 10.98 | | | | |
| CO (ppm) | 25.3 | N ₂ (%) | 79.9 | MW (dry) | 30.20 lb/lb mole |
| H ₂ O (%) | 15.44 | Ar (%) | 1.0 | MW (wet) | 28.31 lb/lb mole |

| | Imperial | Metric |
|------------------------------------|-----------------------|--------------------------|
| Average Velocity | 59 ft/s | 18.0 m/s |
| Average Temperature | 276 °F | 136 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 56366 cfm | 26.6 m ³ /s |
| Dry Reference Volumetric Flow Rate | 33858 cfm | 15.98 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 40042 cfm | 18.90 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 0.850 | 212 | 277 | 136 | 409 | 63.1 | 19.2 |
| 2 | 0.880 | 219 | 277 | 136 | 409 | 64.2 | 19.6 |
| 3 | 0.860 | 214 | 277 | 136 | 409 | 63.5 | 19.4 |
| 4 | 0.830 | 207 | 277 | 136 | 409 | 62.4 | 19.0 |
| 5 | 0.770 | 192 | 277 | 136 | 409 | 60.1 | 18.3 |
| 6 | 0.750 | 187 | 277 | 136 | 409 | 59.3 | 18.1 |
| 7 | 0.690 | 172 | 277 | 136 | 409 | 56.9 | 17.3 |
| 8 | 0.690 | 172 | 277 | 136 | 409 | 56.9 | 17.3 |
| 9 | 0.740 | 184 | 277 | 136 | 409 | 58.9 | 18.0 |
| 10 | 0.720 | 179 | 276 | 136 | 409 | 58.1 | 17.7 |
| 11 | 0.640 | 159 | 274 | 134 | 408 | 54.7 | 16.7 |
| 12 | 0.560 | 139 | 270 | 132 | 405 | 51.0 | 15.5 |
| 13 | 0.830 | 207 | 277 | 136 | 409 | 62.4 | 19.0 |
| 14 | 0.880 | 219 | 277 | 136 | 409 | 64.2 | 19.6 |
| 15 | 0.880 | 219 | 277 | 136 | 409 | 64.2 | 19.6 |
| 16 | 0.830 | 207 | 277 | 136 | 409 | 62.4 | 19.0 |
| 17 | 0.780 | 194 | 277 | 136 | 409 | 60.5 | 18.4 |
| 18 | 0.720 | 179 | 277 | 136 | 409 | 58.1 | 17.7 |
| 19 | 0.740 | 184 | 277 | 136 | 409 | 58.9 | 18.0 |
| 20 | 0.740 | 184 | 277 | 136 | 409 | 58.9 | 18.0 |
| 21 | 0.760 | 189 | 277 | 136 | 409 | 59.7 | 18.2 |
| 22 | 0.690 | 172 | 277 | 136 | 409 | 56.9 | 17.3 |
| 23 | 0.580 | 144 | 277 | 136 | 409 | 52.2 | 15.9 |
| 24 | 0.540 | 135 | 271 | 133 | 406 | 50.1 | 15.3 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|---------------|--------------------|-------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.94 in. Hg | 101.4 kPa |
| Client | Covanta | Pstatic | -11.00 in. H ₂ O | -2.74 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.2 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 3 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1433-1440 | Pitot Coefficient | 0.849 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | |
|----------------------|-------|--------------------|------|----------|------------------|
| O ₂ (%) | 8.29 | | | | |
| CO ₂ (%) | 10.98 | | | | |
| CO (ppm) | 20.2 | N ₂ (%) | 79.8 | MW (dry) | 30.20 lb/lb mole |
| H ₂ O (%) | 15.44 | Ar (%) | 0.9 | MW (wet) | 28.32 lb/lb mole |

| | Imperial | Metric |
|------------------------------------|-----------------------|--------------------------|
| Average Velocity | 59 ft/s | 18.1 m/s |
| Average Temperature | 277 °F | 136 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 56609 cfm | 26.7 m ³ /s |
| Dry Reference Volumetric Flow Rate | 33986 cfm | 16.04 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 40194 cfm | 18.97 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 0.870 | 217 | 278 | 137 | 410 | 63.9 | 19.5 |
| 2 | 0.900 | 224 | 277 | 136 | 409 | 65.0 | 19.8 |
| 3 | 0.870 | 217 | 277 | 136 | 409 | 63.9 | 19.5 |
| 4 | 0.810 | 202 | 277 | 136 | 409 | 61.6 | 18.8 |
| 5 | 0.760 | 189 | 277 | 136 | 409 | 59.7 | 18.2 |
| 6 | 0.700 | 174 | 277 | 136 | 409 | 57.3 | 17.5 |
| 7 | 0.640 | 159 | 277 | 136 | 409 | 54.8 | 16.7 |
| 8 | 0.680 | 169 | 277 | 136 | 409 | 56.5 | 17.2 |
| 9 | 0.720 | 179 | 277 | 136 | 409 | 58.1 | 17.7 |
| 10 | 0.730 | 182 | 277 | 136 | 409 | 58.5 | 17.8 |
| 11 | 0.670 | 167 | 276 | 136 | 409 | 56.0 | 17.1 |
| 12 | 0.510 | 127 | 274 | 134 | 408 | 48.8 | 14.9 |
| 13 | 0.860 | 214 | 277 | 136 | 409 | 63.5 | 19.4 |
| 14 | 0.890 | 222 | 277 | 136 | 409 | 64.6 | 19.7 |
| 15 | 0.900 | 224 | 277 | 136 | 409 | 65.0 | 19.8 |
| 16 | 0.860 | 214 | 277 | 136 | 409 | 63.5 | 19.4 |
| 17 | 0.800 | 199 | 277 | 136 | 409 | 61.2 | 18.7 |
| 18 | 0.730 | 182 | 277 | 136 | 409 | 58.5 | 17.8 |
| 19 | 0.730 | 182 | 277 | 136 | 409 | 58.5 | 17.8 |
| 20 | 0.750 | 187 | 277 | 136 | 409 | 59.3 | 18.1 |
| 21 | 0.760 | 189 | 277 | 136 | 409 | 59.7 | 18.2 |
| 22 | 0.760 | 189 | 277 | 136 | 409 | 59.7 | 18.2 |
| 23 | 0.680 | 169 | 276 | 136 | 409 | 56.4 | 17.2 |
| 24 | 0.530 | 132 | 273 | 134 | 407 | 49.7 | 15.2 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|----------------------|--------------------|--------------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.94 in. Hg | 101.4 kPa |
| Client | Covanta | Pstatic | -11.00 in. H ₂ O | -2.74 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.2 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 4 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1441-1447 | Pitot Coefficient | 0.849 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | | |
|---------------------------|-------|--------------------------|------|-----------------|-------|------------|
| O₂ (%) | 8.65 | | | | | |
| CO₂ (%) | 10.72 | | | | | |
| CO (ppm) | 24.4 | N₂ (%) | 79.7 | MW (dry) | 30.17 | lb/lb mole |
| H₂O (%) | 15.44 | Ar (%) | 0.9 | MW (wet) | 28.29 | lb/lb mole |

| | Imperial | Metric |
|---|-----------------------|--------------------------|
| Average Velocity | 59 ft/s | 18.1 m/s |
| Average Temperature | 276 °F | 135 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 56598 cfm | 26.7 m ³ /s |
| Dry Reference Volumetric Flow Rate | 34024 cfm | 16.06 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 40239 cfm | 18.99 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 0.820 | 204 | 276 | 136 | 409 | 62.0 | 18.9 |
| 2 | 0.830 | 207 | 276 | 136 | 409 | 62.4 | 19.0 |
| 3 | 0.840 | 209 | 276 | 136 | 409 | 62.7 | 19.1 |
| 4 | 0.810 | 202 | 276 | 136 | 409 | 61.6 | 18.8 |
| 5 | 0.760 | 189 | 277 | 136 | 409 | 59.7 | 18.2 |
| 6 | 0.720 | 179 | 277 | 136 | 409 | 58.1 | 17.7 |
| 7 | 0.730 | 182 | 276 | 136 | 409 | 58.5 | 17.8 |
| 8 | 0.730 | 182 | 276 | 136 | 409 | 58.5 | 17.8 |
| 9 | 0.750 | 187 | 276 | 136 | 409 | 59.3 | 18.1 |
| 10 | 0.750 | 187 | 276 | 136 | 409 | 59.3 | 18.1 |
| 11 | 0.650 | 162 | 274 | 134 | 408 | 55.1 | 16.8 |
| 12 | 0.630 | 157 | 273 | 134 | 407 | 54.2 | 16.5 |
| 13 | 0.890 | 222 | 275 | 135 | 408 | 64.5 | 19.7 |
| 14 | 0.910 | 227 | 276 | 136 | 409 | 65.3 | 19.9 |
| 15 | 0.880 | 219 | 276 | 136 | 409 | 64.2 | 19.6 |
| 16 | 0.830 | 207 | 276 | 136 | 409 | 62.4 | 19.0 |
| 17 | 0.750 | 187 | 276 | 136 | 409 | 59.3 | 18.1 |
| 18 | 0.730 | 182 | 276 | 136 | 409 | 58.5 | 17.8 |
| 19 | 0.670 | 167 | 276 | 136 | 409 | 56.0 | 17.1 |
| 20 | 0.710 | 177 | 276 | 136 | 409 | 57.7 | 17.6 |
| 21 | 0.760 | 189 | 276 | 136 | 409 | 59.7 | 18.2 |
| 22 | 0.710 | 177 | 276 | 136 | 409 | 57.7 | 17.6 |
| 23 | 0.670 | 167 | 275 | 135 | 408 | 56.0 | 17.1 |
| 24 | 0.550 | 137 | 274 | 134 | 408 | 50.7 | 15.5 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|---------------|--------------------|-------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.90 in. Hg | 101.2 kPa |
| Client | Covanta | Pstatic | -11.00 in. H ₂ O | -2.74 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.2 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 5 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1616-1624 | Pitot Coefficient | 0.849 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | | |
|----------------------|-------|--------------------|------|----------|-------|------------|
| O ₂ (%) | 8.87 | | | | | |
| CO ₂ (%) | 10.44 | | | | | |
| CO (ppm) | 26.0 | N ₂ (%) | 79.7 | MW (dry) | 30.14 | lb/lb mole |
| H ₂ O (%) | 17.87 | Ar (%) | 0.9 | MW (wet) | 27.97 | lb/lb mole |

| | Imperial | Metric |
|------------------------------------|-----------------------|--------------------------|
| Average Velocity | 62 ft/s | 18.9 m/s |
| Average Temperature | 277 °F | 136 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 59325 cfm | 28.0 m ³ /s |
| Dry Reference Volumetric Flow Rate | 34555 cfm | 16.31 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 42072 cfm | 19.86 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 0.920 | 229 | 276 | 136 | 409 | 66.1 | 20.1 |
| 2 | 0.980 | 244 | 276 | 136 | 409 | 68.2 | 20.8 |
| 3 | 0.930 | 232 | 276 | 136 | 409 | 66.4 | 20.3 |
| 4 | 0.870 | 217 | 277 | 136 | 409 | 64.3 | 19.6 |
| 5 | 0.840 | 209 | 277 | 136 | 409 | 63.2 | 19.3 |
| 6 | 0.770 | 192 | 277 | 136 | 409 | 60.5 | 18.4 |
| 7 | 0.710 | 177 | 277 | 136 | 409 | 58.1 | 17.7 |
| 8 | 0.760 | 189 | 277 | 136 | 409 | 60.1 | 18.3 |
| 9 | 0.790 | 197 | 277 | 136 | 409 | 61.3 | 18.7 |
| 10 | 0.820 | 204 | 277 | 136 | 409 | 62.4 | 19.0 |
| 11 | 0.710 | 177 | 275 | 135 | 408 | 58.0 | 17.7 |
| 12 | 0.620 | 154 | 271 | 133 | 406 | 54.1 | 16.5 |
| 13 | 0.900 | 224 | 276 | 136 | 409 | 65.4 | 19.9 |
| 14 | 0.930 | 232 | 277 | 136 | 409 | 66.5 | 20.3 |
| 15 | 0.930 | 232 | 277 | 136 | 409 | 66.5 | 20.3 |
| 16 | 0.870 | 217 | 278 | 137 | 410 | 64.4 | 19.6 |
| 17 | 0.840 | 209 | 278 | 137 | 410 | 63.2 | 19.3 |
| 18 | 0.740 | 184 | 278 | 137 | 410 | 59.4 | 18.1 |
| 19 | 0.830 | 207 | 278 | 137 | 410 | 62.9 | 19.2 |
| 20 | 0.830 | 207 | 278 | 137 | 410 | 62.9 | 19.2 |
| 21 | 0.850 | 212 | 278 | 137 | 410 | 63.6 | 19.4 |
| 22 | 0.840 | 209 | 278 | 137 | 410 | 63.2 | 19.3 |
| 23 | 0.770 | 192 | 276 | 136 | 409 | 60.5 | 18.4 |
| 24 | 0.550 | 137 | 272 | 133 | 406 | 51.0 | 15.5 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|----------------------|--------------------|--------------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.90 in. Hg | 101.2 kPa |
| Client | Covanta | Pstatic | -11.00 in. H ₂ O | -2.74 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.2 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 6 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1625-1631 | Pitot Coefficient | 0.849 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | |
|---------------------------|-------|--------------------------|------|-----------------|------------------|
| O₂ (%) | 7.69 | | | | |
| CO₂ (%) | 11.52 | | | | |
| CO (ppm) | 8.9 | N₂ (%) | 79.8 | MW (dry) | 30.26 lb/lb mole |
| H₂O (%) | 17.87 | Ar (%) | 1.0 | MW (wet) | 28.07 lb/lb mole |

| | Imperial | Metric |
|---|-----------------------|--------------------------|
| Average Velocity | 63 ft/s | 19.1 m/s |
| Average Temperature | 278 °F | 137 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 59772 cfm | 28.2 m ³ /s |
| Dry Reference Volumetric Flow Rate | 34756 cfm | 16.40 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 42317 cfm | 19.97 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 0.910 | 227 | 278 | 137 | 410 | 65.7 | 20.0 |
| 2 | 0.980 | 244 | 278 | 137 | 410 | 68.2 | 20.8 |
| 3 | 0.990 | 247 | 278 | 137 | 410 | 68.5 | 20.9 |
| 4 | 0.940 | 234 | 278 | 137 | 410 | 66.8 | 20.4 |
| 5 | 0.860 | 214 | 278 | 137 | 410 | 63.9 | 19.5 |
| 6 | 0.810 | 202 | 278 | 137 | 410 | 62.0 | 18.9 |
| 7 | 0.810 | 202 | 278 | 137 | 410 | 62.0 | 18.9 |
| 8 | 0.810 | 202 | 278 | 137 | 410 | 62.0 | 18.9 |
| 9 | 0.840 | 209 | 278 | 137 | 410 | 63.1 | 19.2 |
| 10 | 0.840 | 209 | 278 | 137 | 410 | 63.1 | 19.2 |
| 11 | 0.750 | 187 | 277 | 136 | 409 | 59.6 | 18.2 |
| 12 | 0.580 | 144 | 272 | 133 | 406 | 52.2 | 15.9 |
| 13 | 0.920 | 229 | 278 | 137 | 410 | 66.1 | 20.1 |
| 14 | 0.970 | 242 | 278 | 137 | 410 | 67.8 | 20.7 |
| 15 | 0.940 | 234 | 278 | 137 | 410 | 66.8 | 20.4 |
| 16 | 0.910 | 227 | 278 | 137 | 410 | 65.7 | 20.0 |
| 17 | 0.810 | 202 | 278 | 137 | 410 | 62.0 | 18.9 |
| 18 | 0.780 | 194 | 278 | 137 | 410 | 60.8 | 18.5 |
| 19 | 0.730 | 182 | 279 | 137 | 410 | 58.9 | 17.9 |
| 20 | 0.750 | 187 | 279 | 137 | 410 | 59.7 | 18.2 |
| 21 | 0.790 | 197 | 279 | 137 | 410 | 61.3 | 18.7 |
| 22 | 0.770 | 192 | 279 | 137 | 410 | 60.5 | 18.4 |
| 23 | 0.710 | 177 | 279 | 137 | 410 | 58.1 | 17.7 |
| 24 | 0.730 | 182 | 275 | 135 | 408 | 58.7 | 17.9 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|----------------------|--------------------|--------------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.90 in. Hg | 101.2 kPa |
| Client | Covanta | Pstatic | -11.00 in. H ₂ O | -2.74 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.2 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 7 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1633-1638 | Pitot Coefficient | 0.849 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | |
|---------------------------|-------|--------------------------|------|-----------------|------------------|
| O₂ (%) | 8.04 | | | | |
| CO₂ (%) | 11.40 | | | | |
| CO (ppm) | 14.4 | N₂ (%) | 79.6 | MW (dry) | 30.26 lb/lb mole |
| H₂O (%) | 17.87 | Ar (%) | 0.9 | MW (wet) | 28.07 lb/lb mole |

| | Imperial | Metric |
|---|-----------------------|--------------------------|
| Average Velocity | 62 ft/s | 18.9 m/s |
| Average Temperature | 278 °F | 137 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 59128 cfm | 27.9 m ³ /s |
| Dry Reference Volumetric Flow Rate | 34363 cfm | 16.22 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 41838 cfm | 19.75 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 0.910 | 227 | 278 | 137 | 410 | 65.7 | 20.0 |
| 2 | 0.940 | 234 | 278 | 137 | 410 | 66.8 | 20.4 |
| 3 | 0.930 | 232 | 278 | 137 | 410 | 66.4 | 20.2 |
| 4 | 0.890 | 222 | 278 | 137 | 410 | 65.0 | 19.8 |
| 5 | 0.830 | 207 | 278 | 137 | 410 | 62.7 | 19.1 |
| 6 | 0.770 | 192 | 279 | 137 | 410 | 60.5 | 18.4 |
| 7 | 0.730 | 182 | 279 | 137 | 410 | 58.9 | 17.9 |
| 8 | 0.740 | 184 | 279 | 137 | 410 | 59.3 | 18.1 |
| 9 | 0.770 | 192 | 279 | 137 | 410 | 60.5 | 18.4 |
| 10 | 0.770 | 192 | 279 | 137 | 410 | 60.5 | 18.4 |
| 11 | 0.730 | 182 | 278 | 137 | 410 | 58.8 | 17.9 |
| 12 | 0.710 | 177 | 275 | 135 | 408 | 57.9 | 17.7 |
| 13 | 0.900 | 224 | 278 | 137 | 410 | 65.3 | 19.9 |
| 14 | 0.940 | 234 | 278 | 137 | 410 | 66.8 | 20.4 |
| 15 | 0.920 | 229 | 279 | 137 | 410 | 66.1 | 20.1 |
| 16 | 0.890 | 222 | 279 | 137 | 410 | 65.0 | 19.8 |
| 17 | 0.840 | 209 | 279 | 137 | 410 | 63.2 | 19.3 |
| 18 | 0.770 | 192 | 279 | 137 | 410 | 60.5 | 18.4 |
| 19 | 0.800 | 199 | 279 | 137 | 410 | 61.6 | 18.8 |
| 20 | 0.790 | 197 | 279 | 137 | 410 | 61.3 | 18.7 |
| 21 | 0.840 | 209 | 279 | 137 | 410 | 63.2 | 19.3 |
| 22 | 0.810 | 202 | 279 | 137 | 410 | 62.0 | 18.9 |
| 23 | 0.660 | 164 | 276 | 136 | 409 | 55.9 | 17.0 |
| 24 | 0.600 | 149 | 275 | 135 | 408 | 53.2 | 16.2 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|---------------|--------------------|-------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.90 in. Hg | 101.2 kPa |
| Client | Covanta | Pstatic | -11.00 in. H ₂ O | -2.74 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.2 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 8 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1639-1646 | Pitot Coefficient | 0.849 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | | |
|----------------------|-------|--------------------|------|----------|-------|------------|
| O ₂ (%) | 7.72 | | | | | |
| CO ₂ (%) | 11.68 | | | | | |
| CO (ppm) | 11.9 | N ₂ (%) | 79.7 | MW (dry) | 30.29 | lb/lb mole |
| H ₂ O (%) | 17.87 | Ar (%) | 0.9 | MW (wet) | 28.10 | lb/lb mole |

| | Imperial | Metric |
|------------------------------------|-----------------------|--------------------------|
| Average Velocity | 63 ft/s | 19.1 m/s |
| Average Temperature | 278 °F | 137 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 59842 cfm | 28.2 m ³ /s |
| Dry Reference Volumetric Flow Rate | 34777 cfm | 16.41 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 42343 cfm | 19.98 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 0.940 | 234 | 278 | 137 | 410 | 66.7 | 20.3 |
| 2 | 0.960 | 239 | 278 | 137 | 410 | 67.5 | 20.6 |
| 3 | 0.930 | 232 | 278 | 137 | 410 | 66.4 | 20.2 |
| 4 | 0.890 | 222 | 278 | 137 | 410 | 64.9 | 19.8 |
| 5 | 0.850 | 212 | 279 | 137 | 410 | 63.5 | 19.4 |
| 6 | 0.770 | 192 | 279 | 137 | 410 | 60.4 | 18.4 |
| 7 | 0.780 | 194 | 279 | 137 | 410 | 60.8 | 18.5 |
| 8 | 0.810 | 202 | 279 | 137 | 410 | 62.0 | 18.9 |
| 9 | 0.840 | 209 | 279 | 137 | 410 | 63.1 | 19.2 |
| 10 | 0.850 | 212 | 279 | 137 | 410 | 63.5 | 19.4 |
| 11 | 0.750 | 187 | 278 | 137 | 410 | 59.6 | 18.2 |
| 12 | 0.620 | 154 | 270 | 132 | 405 | 53.9 | 16.4 |
| 13 | 0.960 | 239 | 279 | 137 | 410 | 67.5 | 20.6 |
| 14 | 1.000 | 249 | 279 | 137 | 410 | 68.9 | 21.0 |
| 15 | 0.970 | 242 | 279 | 137 | 410 | 67.8 | 20.7 |
| 16 | 0.910 | 227 | 279 | 137 | 410 | 65.7 | 20.0 |
| 17 | 0.850 | 212 | 279 | 137 | 410 | 63.5 | 19.4 |
| 18 | 0.800 | 199 | 279 | 137 | 410 | 61.6 | 18.8 |
| 19 | 0.730 | 182 | 279 | 137 | 410 | 58.9 | 17.9 |
| 20 | 0.750 | 187 | 279 | 137 | 410 | 59.7 | 18.2 |
| 21 | 0.820 | 204 | 279 | 137 | 410 | 62.4 | 19.0 |
| 22 | 0.840 | 209 | 279 | 137 | 410 | 63.1 | 19.2 |
| 23 | 0.690 | 172 | 278 | 137 | 410 | 57.2 | 17.4 |
| 24 | 0.670 | 167 | 275 | 135 | 408 | 56.2 | 17.1 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|---------------|--------------------|-------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.88 in. Hg | 101.2 kPa |
| Client | Covanta | Pstatic | -11.70 in. H ₂ O | -2.91 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.2 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 9 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1800-1805 | Pitot Coefficient | 0.849 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | |
|----------------------|-------|--------------------|------|----------|------------------|
| O ₂ (%) | 8.31 | | | | |
| CO ₂ (%) | 10.94 | | | | |
| CO (ppm) | 15.8 | N ₂ (%) | 79.8 | MW (dry) | 30.20 lb/lb mole |
| H ₂ O (%) | 18.33 | Ar (%) | 0.9 | MW (wet) | 27.96 lb/lb mole |

| | Imperial | Metric |
|------------------------------------|-----------------------|--------------------------|
| Average Velocity | 64 ft/s | 19.6 m/s |
| Average Temperature | 284 °F | 140 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 61333 cfm | 28.9 m ³ /s |
| Dry Reference Volumetric Flow Rate | 35082 cfm | 16.56 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 42954 cfm | 20.27 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 1.050 | 262 | 284 | 140 | 413 | 71.1 | 21.7 |
| 2 | 1.050 | 262 | 284 | 140 | 413 | 71.1 | 21.7 |
| 3 | 0.990 | 247 | 284 | 140 | 413 | 69.0 | 21.0 |
| 4 | 0.950 | 237 | 284 | 140 | 413 | 67.6 | 20.6 |
| 5 | 0.860 | 214 | 284 | 140 | 413 | 64.3 | 19.6 |
| 6 | 0.800 | 199 | 284 | 140 | 413 | 62.0 | 18.9 |
| 7 | 0.750 | 187 | 284 | 140 | 413 | 60.1 | 18.3 |
| 8 | 0.760 | 189 | 284 | 140 | 413 | 60.5 | 18.4 |
| 9 | 0.830 | 207 | 284 | 140 | 413 | 63.2 | 19.3 |
| 10 | 0.790 | 197 | 284 | 140 | 413 | 61.7 | 18.8 |
| 11 | 0.500 | 125 | 284 | 140 | 413 | 49.1 | 15.0 |
| 12 | 0.480 | 120 | 284 | 140 | 413 | 48.1 | 14.6 |
| 13 | 1.050 | 262 | 284 | 140 | 413 | 71.1 | 21.7 |
| 14 | 0.960 | 239 | 284 | 140 | 413 | 68.0 | 20.7 |
| 15 | 0.940 | 234 | 284 | 140 | 413 | 67.3 | 20.5 |
| 16 | 0.900 | 224 | 284 | 140 | 413 | 65.8 | 20.1 |
| 17 | 0.840 | 209 | 284 | 140 | 413 | 63.6 | 19.4 |
| 18 | 0.860 | 214 | 284 | 140 | 413 | 64.3 | 19.6 |
| 19 | 0.890 | 222 | 284 | 140 | 413 | 65.4 | 19.9 |
| 20 | 0.840 | 209 | 284 | 140 | 413 | 63.6 | 19.4 |
| 21 | 0.880 | 219 | 284 | 140 | 413 | 65.1 | 19.8 |
| 22 | 0.900 | 224 | 284 | 140 | 413 | 65.8 | 20.1 |
| 23 | 0.940 | 234 | 284 | 140 | 413 | 67.3 | 20.5 |
| 24 | 0.950 | 237 | 284 | 140 | 413 | 67.6 | 20.6 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|---------------|--------------------|-------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.88 in. Hg | 101.2 kPa |
| Client | Covanta | Pstatic | -11.70 in. H ₂ O | -2.91 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.2 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 10 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 18:06-1811 | Pitot Coefficient | 0.849 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | | |
|----------------------|-------|--------------------|------|----------|-------|------------|
| O ₂ (%) | 8.35 | | | | | |
| CO ₂ (%) | 11.03 | | | | | |
| CO (ppm) | 13.7 | N ₂ (%) | 79.7 | MW (dry) | 30.21 | lb/lb mole |
| H ₂ O (%) | 18.33 | Ar (%) | 0.9 | MW (wet) | 27.97 | lb/lb mole |

| | Imperial | Metric |
|------------------------------------|-----------------------|--------------------------|
| Average Velocity | 64 ft/s | 19.6 m/s |
| Average Temperature | 284 °F | 140 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 61220 cfm | 28.9 m ³ /s |
| Dry Reference Volumetric Flow Rate | 35017 cfm | 16.53 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 42874 cfm | 20.23 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 0.950 | 237 | 284 | 140 | 413 | 67.6 | 20.6 |
| 2 | 0.960 | 239 | 284 | 140 | 413 | 68.0 | 20.7 |
| 3 | 0.920 | 229 | 284 | 140 | 413 | 66.5 | 20.3 |
| 4 | 0.890 | 222 | 284 | 140 | 413 | 65.4 | 19.9 |
| 5 | 0.820 | 204 | 284 | 140 | 413 | 62.8 | 19.1 |
| 6 | 0.790 | 197 | 284 | 140 | 413 | 61.6 | 18.8 |
| 7 | 0.790 | 197 | 284 | 140 | 413 | 61.6 | 18.8 |
| 8 | 0.850 | 212 | 284 | 140 | 413 | 63.9 | 19.5 |
| 9 | 0.870 | 217 | 284 | 140 | 413 | 64.7 | 19.7 |
| 10 | 0.850 | 212 | 284 | 140 | 413 | 63.9 | 19.5 |
| 11 | 0.730 | 182 | 284 | 140 | 413 | 59.3 | 18.1 |
| 12 | 0.700 | 174 | 284 | 140 | 413 | 58.0 | 17.7 |
| 13 | 1.100 | 274 | 284 | 140 | 413 | 72.7 | 22.2 |
| 14 | 1.050 | 262 | 284 | 140 | 413 | 71.1 | 21.7 |
| 15 | 1.000 | 249 | 284 | 140 | 413 | 69.4 | 21.1 |
| 16 | 0.920 | 229 | 284 | 140 | 413 | 66.5 | 20.3 |
| 17 | 0.870 | 217 | 284 | 140 | 413 | 64.7 | 19.7 |
| 18 | 0.850 | 212 | 284 | 140 | 413 | 63.9 | 19.5 |
| 19 | 0.800 | 199 | 284 | 140 | 413 | 62.0 | 18.9 |
| 20 | 0.800 | 199 | 284 | 140 | 413 | 62.0 | 18.9 |
| 21 | 0.860 | 214 | 284 | 140 | 413 | 64.3 | 19.6 |
| 22 | 0.850 | 212 | 284 | 140 | 413 | 63.9 | 19.5 |
| 23 | 0.740 | 184 | 284 | 140 | 413 | 59.7 | 18.2 |
| 24 | 0.650 | 162 | 284 | 140 | 413 | 55.9 | 17.0 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|----------------------|--------------------|--------------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.88 in. Hg | 101.2 kPa |
| Client | Covanta | Pstatic | -11.40 in. H ₂ O | -2.84 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.2 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 11 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1812-1815 | Pitot Coefficient | 0.849 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | |
|---------------------------|-------|--------------------------|------|-----------------|------------------|
| O₂ (%) | 7.87 | | | | |
| CO₂ (%) | 11.54 | | | | |
| CO (ppm) | 11.0 | N₂ (%) | 79.6 | MW (dry) | 30.27 lb/lb mole |
| H₂O (%) | 18.33 | Ar (%) | 0.9 | MW (wet) | 28.03 lb/lb mole |

| | Imperial | Metric |
|---|-----------------------|--------------------------|
| Average Velocity | 65 ft/s | 19.7 m/s |
| Average Temperature | 284 °F | 140 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 61567 cfm | 29.1 m ³ /s |
| Dry Reference Volumetric Flow Rate | 35242 cfm | 16.63 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 43150 cfm | 20.36 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 0.970 | 242 | 284 | 140 | 413 | 68.2 | 20.8 |
| 2 | 0.990 | 247 | 284 | 140 | 413 | 68.9 | 21.0 |
| 3 | 0.970 | 242 | 284 | 140 | 413 | 68.2 | 20.8 |
| 4 | 0.920 | 229 | 284 | 140 | 413 | 66.4 | 20.3 |
| 5 | 0.870 | 217 | 284 | 140 | 413 | 64.6 | 19.7 |
| 6 | 0.830 | 207 | 284 | 140 | 413 | 63.1 | 19.2 |
| 7 | 0.790 | 197 | 284 | 140 | 413 | 61.6 | 18.8 |
| 8 | 0.810 | 202 | 284 | 140 | 413 | 62.3 | 19.0 |
| 9 | 0.870 | 217 | 284 | 140 | 413 | 64.6 | 19.7 |
| 10 | 0.860 | 214 | 284 | 140 | 413 | 64.2 | 19.6 |
| 11 | 0.780 | 194 | 284 | 140 | 413 | 61.2 | 18.6 |
| 12 | 0.740 | 184 | 284 | 140 | 413 | 59.6 | 18.2 |
| 13 | 0.990 | 247 | 284 | 140 | 413 | 68.9 | 21.0 |
| 14 | 0.980 | 244 | 284 | 140 | 413 | 68.6 | 20.9 |
| 15 | 0.920 | 229 | 284 | 140 | 413 | 66.4 | 20.3 |
| 16 | 0.880 | 219 | 284 | 140 | 413 | 65.0 | 19.8 |
| 17 | 0.850 | 212 | 284 | 140 | 413 | 63.9 | 19.5 |
| 18 | 0.830 | 207 | 284 | 140 | 413 | 63.1 | 19.2 |
| 19 | 0.850 | 212 | 284 | 140 | 413 | 63.9 | 19.5 |
| 20 | 0.910 | 227 | 284 | 140 | 413 | 66.1 | 20.1 |
| 21 | 0.920 | 229 | 284 | 140 | 413 | 66.4 | 20.3 |
| 22 | 0.920 | 229 | 284 | 140 | 413 | 66.4 | 20.3 |
| 23 | 0.710 | 177 | 284 | 140 | 413 | 58.4 | 17.8 |
| 24 | 0.710 | 177 | 284 | 140 | 413 | 58.4 | 17.8 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|----------------------|--------------------|--------------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.88 in. Hg | 101.2 kPa |
| Client | Covanta | Pstatic | -11.40 in. H ₂ O | -2.84 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.2 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 12 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1816-1821 | Pitot Coefficient | 0.849 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | |
|---------------------------|-------|--------------------------|------|-----------------|------------------|
| O₂ (%) | 8.18 | | | | |
| CO₂ (%) | 11.21 | | | | |
| CO (ppm) | 14.8 | N₂ (%) | 79.7 | MW (dry) | 30.23 lb/lb mole |
| H₂O (%) | 18.33 | Ar (%) | 0.9 | MW (wet) | 27.99 lb/lb mole |

| | Imperial | Metric |
|---|-----------------------|--------------------------|
| Average Velocity | 64 ft/s | 19.4 m/s |
| Average Temperature | 284 °F | 140 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 60851 cfm | 28.7 m ³ /s |
| Dry Reference Volumetric Flow Rate | 34833 cfm | 16.44 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 42649 cfm | 20.13 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 1.100 | 274 | 284 | 140 | 413 | 72.7 | 22.2 |
| 2 | 1.000 | 249 | 284 | 140 | 413 | 69.3 | 21.1 |
| 3 | 0.950 | 237 | 284 | 140 | 413 | 67.6 | 20.6 |
| 4 | 0.920 | 229 | 284 | 140 | 413 | 66.5 | 20.3 |
| 5 | 0.850 | 212 | 284 | 140 | 413 | 63.9 | 19.5 |
| 6 | 0.790 | 197 | 284 | 140 | 413 | 61.6 | 18.8 |
| 7 | 0.830 | 207 | 284 | 140 | 413 | 63.1 | 19.2 |
| 8 | 0.850 | 212 | 284 | 140 | 413 | 63.9 | 19.5 |
| 9 | 0.900 | 224 | 284 | 140 | 413 | 65.8 | 20.0 |
| 10 | 0.890 | 222 | 284 | 140 | 413 | 65.4 | 19.9 |
| 11 | 0.700 | 174 | 284 | 140 | 413 | 58.0 | 17.7 |
| 12 | 0.720 | 179 | 284 | 140 | 413 | 58.8 | 17.9 |
| 13 | 1.100 | 274 | 284 | 140 | 413 | 72.7 | 22.2 |
| 14 | 1.100 | 274 | 284 | 140 | 413 | 72.7 | 22.2 |
| 15 | 1.050 | 262 | 284 | 140 | 413 | 71.0 | 21.6 |
| 16 | 0.910 | 227 | 284 | 140 | 413 | 66.1 | 20.2 |
| 17 | 0.850 | 212 | 284 | 140 | 413 | 63.9 | 19.5 |
| 18 | 0.810 | 202 | 284 | 140 | 413 | 62.4 | 19.0 |
| 19 | 0.740 | 184 | 284 | 140 | 413 | 59.6 | 18.2 |
| 20 | 0.760 | 189 | 284 | 140 | 413 | 60.4 | 18.4 |
| 21 | 0.730 | 182 | 284 | 140 | 413 | 59.2 | 18.0 |
| 22 | 0.660 | 164 | 284 | 140 | 413 | 56.3 | 17.2 |
| 23 | 0.640 | 159 | 284 | 140 | 413 | 55.4 | 16.9 |
| 24 | 0.610 | 152 | 284 | 140 | 413 | 54.1 | 16.5 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|----------------------|--------------------|--------------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.88 in. Hg | 101.2 kPa |
| Client | Covanta | Pstatic | -11.10 in. H ₂ O | -2.76 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.2 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 13 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1822-1826 | Pitot Coefficient | 0.849 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | |
|---------------------------|-------|--------------------------|------|-----------------|------------------|
| O₂ (%) | 7.95 | | | | |
| CO₂ (%) | 11.34 | | | | |
| CO (ppm) | 10.4 | N₂ (%) | 79.8 | MW (dry) | 30.25 lb/lb mole |
| H₂O (%) | 18.33 | Ar (%) | 0.9 | MW (wet) | 28.00 lb/lb mole |

| | Imperial | Metric |
|---|-----------------------|--------------------------|
| Average Velocity | 62 ft/s | 18.9 m/s |
| Average Temperature | 284 °F | 140 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 59170 cfm | 27.9 m ³ /s |
| Dry Reference Volumetric Flow Rate | 33896 cfm | 16.00 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 41502 cfm | 19.59 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 1.000 | 249 | 284 | 140 | 413 | 69.3 | 21.1 |
| 2 | 0.980 | 244 | 284 | 140 | 413 | 68.6 | 20.9 |
| 3 | 0.940 | 234 | 284 | 140 | 413 | 67.2 | 20.5 |
| 4 | 0.880 | 219 | 284 | 140 | 413 | 65.0 | 19.8 |
| 5 | 0.850 | 212 | 284 | 140 | 413 | 63.9 | 19.5 |
| 6 | 0.820 | 204 | 284 | 140 | 413 | 62.7 | 19.1 |
| 7 | 0.720 | 179 | 284 | 140 | 413 | 58.8 | 17.9 |
| 8 | 0.770 | 192 | 284 | 140 | 413 | 60.8 | 18.5 |
| 9 | 0.700 | 174 | 284 | 140 | 413 | 58.0 | 17.7 |
| 10 | 0.550 | 137 | 284 | 140 | 413 | 51.4 | 15.7 |
| 11 | 0.530 | 132 | 284 | 140 | 413 | 50.4 | 15.4 |
| 12 | 0.510 | 127 | 284 | 140 | 413 | 49.5 | 15.1 |
| 13 | 0.950 | 237 | 284 | 140 | 413 | 67.5 | 20.6 |
| 14 | 0.940 | 234 | 284 | 140 | 413 | 67.2 | 20.5 |
| 15 | 0.910 | 227 | 284 | 140 | 413 | 66.1 | 20.1 |
| 16 | 0.810 | 202 | 284 | 140 | 413 | 62.3 | 19.0 |
| 17 | 0.790 | 197 | 284 | 140 | 413 | 61.6 | 18.8 |
| 18 | 0.770 | 192 | 284 | 140 | 413 | 60.8 | 18.5 |
| 19 | 0.810 | 202 | 284 | 140 | 413 | 62.3 | 19.0 |
| 20 | 0.840 | 209 | 284 | 140 | 413 | 63.5 | 19.4 |
| 21 | 0.880 | 219 | 284 | 140 | 413 | 65.0 | 19.8 |
| 22 | 0.860 | 214 | 284 | 140 | 413 | 64.2 | 19.6 |
| 23 | 0.820 | 204 | 284 | 140 | 413 | 62.7 | 19.1 |
| 24 | 0.740 | 184 | 284 | 140 | 413 | 59.6 | 18.2 |

ORTECH Environmental
Velocity and Volume Flowrate Determination
Covanta

| | | | | |
|----------------------|--------------------|--------------------------|-----------------------------|---------------------|
| Project No. | 21546 | Pbar | 29.88 in. Hg | 101.2 kPa |
| Client | Covanta | Pstatic | -11.10 in. H ₂ O | -2.76 kPa |
| Location | Courtice, Ontario | Stack Diameter | 4.500 ft | 1.37 m |
| Test Location | APC Outlet No.2 | Stack Width | 0.00 ft | 0.00 m |
| Date | September 28, 2015 | Stack Length | 0.00 ft | 0.00 m |
| Test Number | 14 | Stack Area | 15.90 ft ² | 1.48 m ² |
| Test Time | 1827-1831 | Pitot Coefficient | 0.849 | |
| Operator | DU | Number of Points | 24 | |

| | | | | | |
|---------------------------|-------|--------------------------|------|-----------------|------------------|
| O₂ (%) | 8.11 | | | | |
| CO₂ (%) | 11.01 | | | | |
| CO (ppm) | 21.8 | N₂ (%) | 79.9 | MW (dry) | 30.20 lb/lb mole |
| H₂O (%) | 18.33 | Ar (%) | 1.0 | MW (wet) | 27.96 lb/lb mole |

| | Imperial | Metric |
|---|-----------------------|--------------------------|
| Average Velocity | 62 ft/s | 19.0 m/s |
| Average Temperature | 284 °F | 140 °C |
| Duct Cross-sectional Area | 15.90 ft ² | 1.48 m ² |
| Actual Volumetric Flow Rate | 59386 cfm | 28.0 m ³ /s |
| Dry Reference Volumetric Flow Rate | 34020 cfm | 16.06 Rm ³ /s |
| Wet Reference Volumetric Flow Rate | 41654 cfm | 19.66 Rm ³ /s |

Reference conditions: 25°C, 101.3 kPa (77°F, 29.92 in. Hg)

| Point No. | Velocity Pressure | | Stack Temp. | | | Velocity | |
|-----------|----------------------|-----|-------------|-----|-----|----------|------|
| | in. H ₂ O | Pa | °F | °C | K | ft/s | m/s |
| 1 | 0.930 | 232 | 284 | 140 | 413 | 66.8 | 20.4 |
| 2 | 0.910 | 227 | 284 | 140 | 413 | 66.1 | 20.2 |
| 3 | 0.940 | 234 | 284 | 140 | 413 | 67.2 | 20.5 |
| 4 | 0.840 | 209 | 284 | 140 | 413 | 63.5 | 19.4 |
| 5 | 0.820 | 204 | 284 | 140 | 413 | 62.8 | 19.1 |
| 6 | 0.820 | 204 | 284 | 140 | 413 | 62.8 | 19.1 |
| 7 | 0.800 | 199 | 284 | 140 | 413 | 62.0 | 18.9 |
| 8 | 0.840 | 209 | 284 | 140 | 413 | 63.5 | 19.4 |
| 9 | 0.900 | 224 | 284 | 140 | 413 | 65.8 | 20.0 |
| 10 | 0.840 | 209 | 284 | 140 | 413 | 63.5 | 19.4 |
| 11 | 0.640 | 159 | 284 | 140 | 413 | 55.5 | 16.9 |
| 12 | 0.600 | 149 | 284 | 140 | 413 | 53.7 | 16.4 |
| 13 | 0.990 | 247 | 284 | 140 | 413 | 69.0 | 21.0 |
| 14 | 0.960 | 239 | 284 | 140 | 413 | 67.9 | 20.7 |
| 15 | 0.940 | 234 | 284 | 140 | 413 | 67.2 | 20.5 |
| 16 | 0.890 | 222 | 284 | 140 | 413 | 65.4 | 19.9 |
| 17 | 0.830 | 207 | 284 | 140 | 413 | 63.1 | 19.2 |
| 18 | 0.780 | 194 | 284 | 140 | 413 | 61.2 | 18.7 |
| 19 | 0.730 | 182 | 284 | 140 | 413 | 59.2 | 18.1 |
| 20 | 0.750 | 187 | 284 | 140 | 413 | 60.0 | 18.3 |
| 21 | 0.720 | 179 | 284 | 140 | 413 | 58.8 | 17.9 |
| 22 | 0.690 | 172 | 284 | 140 | 413 | 57.6 | 17.5 |
| 23 | 0.660 | 164 | 284 | 140 | 413 | 56.3 | 17.2 |
| 24 | 0.620 | 154 | 284 | 140 | 413 | 54.6 | 16.6 |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company COUANTIA Site Location APL OUTLET #2

Company Location COURTICE, ON Test Date SEPT 28/15

Test No.: 1 Time 1400-1406 Operator RW Signature D J W

| Measuring Devices | MII Number |
|-------------------|------------|
| Pitot Tube | D2 |
| Pitot Factor | .849 |
| Manometer | COE 20090 |
| Temp meter | |
| Barometer | ENV. CAN |

| Measured Parameters | |
|---------------------|-------|
| Barometric | 39.94 |
| Static | -11.0 |

O₂ - 8.52%
 CO₂ - 10.33%
 CO - 18.6 ppm

| Port | 1 | | 2 | |
|------|---------|------|---------|------|
| | Delta P | Temp | Delta P | Temp |
| 1 | .86 | 277 | .87 | 277 |
| 2 | .89 | 278 | .89 | 277 |
| 3 | .87 | 278 | .88 | 277 |
| 4 | .83 | 278 | .82 | 277 |
| 5 | .77 | 278 | .74 | 277 |
| 6 | .73 | 278 | .72 | 277 |
| 7 | .76 | 278 | .68 | 277 |
| 8 | .76 | 277 | .70 | 277 |
| 9 | .78 | 277 | .72 | 276 |
| 10 | .81 | 277 | .84 | 275 |
| 11 | .81 | 276 | .55 | 275 |
| 12 | .74 | 277 | .42 | 275 |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company COUANTA Site Location APC OUTLET #2

Company Location CAUDICE Test Date SEPT 28 / 15

Test No.: 2 Time 1407H44 Operator Rm Signature RDU

| Measuring Devices | MII Number |
|-------------------|------------|
| Pitot Tube | 45E |
| Pitot Factor | 7851 |
| Manometer | |
| Temp meter | 1 |
| Barometer | |

| Measured Parameters | |
|---------------------|-------|
| Barometric | 29.94 |
| Static | -11.0 |

O₂ - 8.206
 CO₂ - 10.986
 CO - 25.3ppm

| Port | 2 | | 1 | |
|---------|---------|------|---------|------|
| Point # | Delta P | Temp | Delta P | Temp |
| 1 | .85 | 277 | .83 | 277 |
| 2 | .88 | 277 | .88 | 277 |
| 3 | .86 | 277 | .88 | 277 |
| 4 | .83 | 277 | .83 | 277 |
| 5 | .77 | 277 | .78 | 277 |
| 6 | .75 | 277 | .72 | 277 |
| 7 | .69 | 277 | .74 | 277 |
| 8 | .69 | 277 | .74 | 277 |
| 9 | .74 | 277 | .76 | 277 |
| 10 | .72 | 276 | .69 | 277 |
| 11 | .64 | 274 | .58 | 277 |
| 12 | .56 | 270 | .54 | 271 |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company COVANTA Site Location APC OUTLET #2

Company Location COURTICE Test Date SEP 28/15

Test No.: 3 Time 1433-1440 Operator DW Signature D. J. [unclear]

| Measuring Devices | MII Number |
|-------------------|------------|
| Pitot Tube | SEE |
| Pitot Factor | 7831 |
| Manometer | |
| Temp meter | 1 |
| Barometer | |

| Measured Parameters | |
|---------------------|-------|
| Barometric | 29.94 |
| Static | 11.0 |

O₂ - 8.29%
CO₂ - 10.98%
CO - 20.2 ppm

| Port | 2 | | 1 | |
|---------|---------|------|---------|------|
| Point # | Delta P | Temp | Delta P | Temp |
| 1 | .87 | 278 | .86 | 277 |
| 2 | .90 | 277 | .89 | 277 |
| 3 | .87 | 277 | .90 | 277 |
| 4 | .81 | 277 | .86 | 277 |
| 5 | .76 | 277 | .80 | 277 |
| 6 | .70 | 277 | .73 | 277 |
| 7 | .64 | 277 | .73 | 277 |
| 8 | .68 | 277 | .75 | 277 |
| 9 | .72 | 277 | .76 | 277 |
| 10 | .73 | 277 | .76 | 277 |
| 11 | .67 | 276 | .68 | 276 |
| 12 | .51 | 274 | .53 | 273 |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company COVANTA Site Location APC OUTLET #2

Company Location COUNTIES Test Date SEPT 28/15

Test No.: 4 Time 1441-1447 Operator DM Signature DM

| Measuring Devices | MII Number |
|-------------------|------------|
| Pitot Tube | SEE |
| Pitot Factor | 7851 |
| Manometer | |
| Temp meter | 1 |
| Barometer | |

| Measured Parameters | |
|---------------------|-------|
| Barometric | 29.94 |
| Static | -1.0 |

O₂ - 8.65%
 CO₂ - 10.72%
 CO - 24.4ppm

| Port | 1 | | 2 | |
|------|---------|------|---------|------|
| | Delta P | Temp | Delta P | Temp |
| 1 | .82 | 276 | .89 | 275 |
| 2 | .83 | 276 | .91 | 276 |
| 3 | .84 | 276 | .88 | 276 |
| 4 | .81 | 276 | .83 | 276 |
| 5 | .76 | 277 | .75 | 276 |
| 6 | .72 | 277 | .73 | 276 |
| 7 | .73 | 276 | .67 | 276 |
| 8 | .73 | 276 | .71 | 276 |
| 9 | .75 | 276 | .76 | 276 |
| 10 | .75 | 276 | .71 | 276 |
| 11 | .65 | 274 | .67 | 275 |
| 12 | .63 | 273 | .55 | 274 |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company COVANTA Site Location APC OUTLET #2

Company Location COURTICE Test Date SEPT 28 / 15

Test No.: 5 Time 1616-1624 Operator DM Signature D. D. U.

| Measuring Devices | MII Number |
|-------------------|------------|
| Pitot Tube | SEE |
| Pitot Factor | TEST |
| Manometer | |
| Temp meter | 1 |
| Barometer | |

| Measured Parameters | |
|---------------------|-------|
| Barometric | 29.90 |
| Static | 71.0 |

O₂ - 8.87%
CO₂ - 10.44%
CO - 26.0 ppm

| Port | 2 | | 1 | |
|---------|---------|------|---------|------|
| Point # | Delta P | Temp | Delta P | Temp |
| 1 | .92 | 276 | .90 | 276 |
| 2 | .98 | 276 | .93 | 277 |
| 3 | .93 | 276 | .93 | 277 |
| 4 | .87 | 277 | .87 | 278 |
| 5 | .84 | 277 | .84 | 278 |
| 6 | .77 | 277 | .74 | 278 |
| 7 | .71 | 277 | .83 | 278 |
| 8 | .76 | 277 | .83 | 278 |
| 9 | .79 | 277 | .85 | 278 |
| 10 | .82 | 277 | .84 | 278 |
| 11 | .71 | 275 | .77 | 276 |
| 12 | .62 | 271 | .55 | 272 |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company COVANTA Site Location APC OUTLET #2

Company Location COURTICE, OH Test Date SEPT 28/15

Test No.: 6 Time 1625 - 1631 Operator [Signature] Signature [Signature]

| Measuring Devices | MIH Number |
|-------------------|------------|
| Pitot Tube | SEE |
| Pitot Factor | TEST |
| Manometer | |
| Temp meter | 1 |
| Barometer | |

| Measured Parameters | |
|---------------------|-------|
| Barometric | 29.90 |
| Static | -11.0 |

O₂ - 7.69%

CO₂ - 11.52%

CO - 8.9ppm

| Port | 1 | | 2 | |
|------|---------|------|---------|------|
| | Delta P | Temp | Delta P | Temp |
| 1 | .91 | 278 | .92 | 278 |
| 2 | .98 | 278 | .97 | 278 |
| 3 | .99 | 278 | .94 | 278 |
| 4 | .94 | 278 | .91 | 278 |
| 5 | .86 | 278 | .81 | 278 |
| 6 | .81 | 278 | .78 | 278 |
| 7 | .81 | 278 | .73 | 279 |
| 8 | .81 | 278 | .75 | 279 |
| 9 | .84 | 278 | .79 | 279 |
| 10 | .84 | 278 | .77 | 279 |
| 11 | .75 | 277 | .71 | 279 |
| 12 | .58 | 272 | .73 | 275 |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company COVANTA Site Location AIR OUTLET #2

Company Location COURTICE, OH Test Date SEPT 28/15

Test No.: 7 Time 16:33 - 16:35 16:38 Operator DM Signature DM

| Measuring Devices | MII Number |
|-------------------|------------|
| Pitot Tube | SEE |
| Pitot Factor | 751 |
| Manometer | |
| Temp meter | |
| Barometer | |

| Measured Parameters | |
|---------------------|-------|
| Barometric | 29.90 |
| Static | -11.0 |

O₂ - 8.04%
CO₂ - 11.40%
CO - 14.4ppm

| Port | 2 | | 1 | |
|---------|---------|------|---------|------|
| Point # | Delta P | Temp | Delta P | Temp |
| 1 | .91 | 278 | .90 | 278 |
| 2 | .94 | 278 | .94 | 278 |
| 3 | .93 | 278 | .92 | 279 |
| 4 | .89 | 278 | .89 | 279 |
| 5 | .83 | 278 | .84 | 279 |
| 6 | .77 | 279 | .77 | 279 |
| 7 | .73 | 279 | .80 | 279 |
| 8 | .74 | 279 | .79 | 279 |
| 9 | .77 | 279 | .84 | 279 |
| 10 | .77 | 279 | .81 | 279 |
| 11 | .73 | 278 | .66 | 276 |
| 12 | .71 | 275 | .60 | 275 |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company COVANTA Site Location APC OUTLET #2

Company Location COURTICE, OH Test Date SEPT 28/15

Test No.: 88 Time 1639-1646 Operator DM Signature [Signature]

| Measuring Devices | MII Number |
|-------------------|------------|
| Pitot Tube | 586 |
| Pitot Factor | TEST |
| Manometer | |
| Temp meter | 1 |
| Barometer | |

| Measured Parameters | |
|---------------------|-------|
| Barometric | 29.90 |
| Static | -11.0 |

O₂ - 7.72%
CO₂ - 11.68%
CO - 11.9ppm

| Port | 1 | | 2 | |
|------|---------|------|---------|------|
| | Delta P | Temp | Delta P | Temp |
| 1 | .94 | 278 | .96 | 279 |
| 2 | .96 | 278 | 1.00 | 279 |
| 3 | .93 | 278 | .97 | 279 |
| 4 | .89 | 278 | .91 | 279 |
| 5 | .85 | 279 | .85 | 279 |
| 6 | .77 | 279 | .80 | 279 |
| 7 | .78 | 279 | .73 | 279 |
| 8 | .81 | 279 | .75 | 279 |
| 9 | .84 | 279 | .82 | 279 |
| 10 | .85 | 279 | .84 | 279 |
| 11 | .75 | 278 | .69 | 278 |
| 12 | .62 | 270 | .67 | 275 |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company Covanta Site Location Unit 2 Outlet

Company Location Covance ON Test Date Sept. 28/15

Test No.: 4 Time 18:00-18:05 Operator Ru Signature [Signature]

| Measuring Devices | MII Number |
|-------------------|------------|
| Pitot Tube | D2 |
| Pitot Factor | |
| Manometer | Team 4 |
| Temp meter | Team 4 |
| Barometer | Env. Cam. |

| Measured Parameters | |
|---------------------|-------|
| Barometric | 29.88 |
| Static | -11.7 |

O₂ - 8.31%

CO₂ - 10.94%

CO - 15.8ppm

| Port | 1 | | 2 | |
|---------|---------|------|---------|------|
| Point # | Delta P | Temp | Delta P | Temp |
| 1 | 1.05 | 284 | 1.05 | 284 |
| 2 | 1.05 | 284 | .96 | 284 |
| 3 | .99 | 284 | .94 | 284 |
| 4 | .95 | 284 | .90 | 284 |
| 5 | .86 | 284 | .84 | 284 |
| 6 | .80 | 284 | .86 | 284 |
| 7 | .75 | 284 | .89 | 284 |
| 8 | .76 | 284 | .84 | 284 |
| 9 | .83 | 284 | .88 | 284 |
| 10 | .79 | 284 | .90 | 284 |
| 11 | .50 | 284 | .94 | 284 |
| 12 | .48 | 284 | .95 | 284 |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company Counts Site Location Unit 2 Outlet

Company Location _____ Test Date Sept. 28/15

Test No.: 210 Time 18:06-18:41 Operator RW Signature [Signature]

| Measuring Devices | MII Number |
|-------------------|-------------|
| Pitot Tube | |
| Pitot Factor | <u>See</u> |
| Manometer | <u>Test</u> |
| Temp meter | |
| Barometer | |

| Measured Parameters | |
|---------------------|--------------|
| Barometric | <u>29.88</u> |
| Static | <u>-11.7</u> |

O₂ - 8.356
 CO₂ - 11.036
 CO - 13.7 ppm

| Port | <u>2</u> | | <u>1</u> | |
|---------|------------|------------|-------------|------------|
| Point # | Delta P | Temp | Delta P | Temp |
| 1 | <u>.95</u> | <u>284</u> | <u>1.10</u> | <u>284</u> |
| 2 | <u>.96</u> | <u>284</u> | <u>1.05</u> | <u>284</u> |
| 3 | <u>.92</u> | <u>284</u> | <u>1.00</u> | <u>284</u> |
| 4 | <u>.89</u> | <u>284</u> | <u>.92</u> | <u>284</u> |
| 5 | <u>.82</u> | <u>284</u> | <u>.87</u> | <u>284</u> |
| 6 | <u>.79</u> | <u>284</u> | <u>.85</u> | <u>284</u> |
| 7 | <u>.79</u> | <u>284</u> | <u>.80</u> | <u>284</u> |
| 8 | <u>.85</u> | <u>284</u> | <u>.80</u> | <u>284</u> |
| 9 | <u>.87</u> | <u>284</u> | <u>.86</u> | <u>284</u> |
| 10 | <u>.85</u> | <u>284</u> | <u>.85</u> | <u>284</u> |
| 11 | <u>.73</u> | <u>284</u> | <u>.74</u> | <u>284</u> |
| 12 | <u>.70</u> | <u>284</u> | <u>.65</u> | <u>284</u> |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company Coranta Site Location Unit 2 Outlet

Company Location _____ Test Date Sept. 28/15

Test No.: 211 Time 18:12-18:15 Operator RW Signature [Signature]

| Measuring Devices | MII Number |
|-------------------|-------------|
| Pitot Tube | |
| Pitot Factor | <u>See</u> |
| Manometer | <u>Test</u> |
| Temp meter | |
| Barometer | |

| Measured Parameters | |
|---------------------|--------------|
| Barometric | <u>29.88</u> |
| Static | <u>-11.4</u> |

O₂ - 7.87%
CO₂ - 11.54%
CO - 11.0ppm

| Port | 1 | | 2 | |
|---------|------------|------------|------------|------------|
| Point # | Delta P | Temp | Delta P | Temp |
| 1 | <u>.97</u> | <u>284</u> | <u>.99</u> | <u>284</u> |
| 2 | <u>.99</u> | <u>284</u> | <u>.98</u> | <u>284</u> |
| 3 | <u>.97</u> | <u>284</u> | <u>.92</u> | <u>284</u> |
| 4 | <u>.92</u> | <u>284</u> | <u>.88</u> | <u>284</u> |
| 5 | <u>.87</u> | <u>284</u> | <u>.85</u> | <u>284</u> |
| 6 | <u>.83</u> | <u>284</u> | <u>.83</u> | <u>284</u> |
| 7 | <u>.79</u> | <u>284</u> | <u>.85</u> | <u>284</u> |
| 8 | <u>.81</u> | <u>284</u> | <u>.91</u> | <u>284</u> |
| 9 | <u>.87</u> | <u>284</u> | <u>.92</u> | <u>284</u> |
| 10 | <u>.86</u> | <u>284</u> | <u>.92</u> | <u>284</u> |
| 11 | <u>.78</u> | <u>284</u> | <u>.71</u> | <u>284</u> |
| 12 | <u>.74</u> | <u>284</u> | <u>.71</u> | <u>284</u> |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company Covanta Site Location Unit 2 Outlet

Company Location _____ Test Date sep-1 28/15

Test No.: 412 Time 18:16-18:21 Operator RV Signature [Signature]

| Measuring Devices | MII Number |
|-------------------|-------------|
| Pitot Tube | |
| Pitot Factor | <u>see</u> |
| Manometer | <u>test</u> |
| Temp meter | |
| Barometer | |

| Measured Parameters | |
|---------------------|--------------|
| Barometric | <u>59.88</u> |
| Static | <u>-11.4</u> |

O₂ - 8.18%

CO₂ - 11.21%

CO - 14.8 ppm

| Port | <u>2</u> | | <u>1</u> | |
|---------|-------------|------------|-------------|------------|
| Point # | Delta P | Temp | Delta P | Temp |
| 1 | <u>1.1</u> | <u>284</u> | <u>1.1</u> | <u>284</u> |
| 2 | <u>1.0</u> | <u>284</u> | <u>1.1</u> | <u>284</u> |
| 3 | <u>0.95</u> | <u>284</u> | <u>1.05</u> | <u>284</u> |
| 4 | <u>.92</u> | <u>284</u> | <u>.91</u> | <u>284</u> |
| 5 | <u>.85</u> | <u>284</u> | <u>.85</u> | <u>284</u> |
| 6 | <u>.79</u> | <u>284</u> | <u>.81</u> | <u>284</u> |
| 7 | <u>.83</u> | <u>284</u> | <u>.74</u> | <u>284</u> |
| 8 | <u>.85</u> | <u>284</u> | <u>.76</u> | <u>284</u> |
| 9 | <u>.90</u> | <u>284</u> | <u>.73</u> | <u>284</u> |
| 10 | <u>.89</u> | <u>284</u> | <u>.66</u> | <u>284</u> |
| 11 | <u>.70</u> | <u>284</u> | <u>.64</u> | <u>284</u> |
| 12 | <u>.72</u> | <u>284</u> | <u>.61</u> | <u>284</u> |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 21546

Company Covanta Site Location Unit 2 Outlet

Company Location _____ Test Date Sept. 28/15

Test No.: 413 Time 10:22-10:26 Operator RV Signature [Signature]

| Measuring Devices | MII Number |
|-------------------|-------------|
| Pitot Tube | |
| Pitot Factor | <u>See</u> |
| Manometer | <u>Test</u> |
| Temp meter | <u>1</u> |
| Barometer | |

| Measured Parameters | |
|---------------------|--------------|
| Barometric | <u>29.88</u> |
| Static | <u>-11.1</u> |

O₂ - 7.95%
 CO₂ - 11.34%
 CO - 10.4ppm

| Port | 1 | | 2 | |
|---------|------------|------------|------------|------------|
| Point # | Delta P | Temp | Delta P | Temp |
| 1 | <u>1.0</u> | <u>284</u> | <u>.95</u> | <u>284</u> |
| 2 | <u>.98</u> | <u>284</u> | <u>.94</u> | <u>284</u> |
| 3 | <u>.94</u> | <u>284</u> | <u>.91</u> | <u>284</u> |
| 4 | <u>.88</u> | <u>284</u> | <u>.81</u> | <u>284</u> |
| 5 | <u>.85</u> | <u>284</u> | <u>.79</u> | <u>284</u> |
| 6 | <u>.82</u> | <u>284</u> | <u>.77</u> | <u>284</u> |
| 7 | <u>.72</u> | <u>284</u> | <u>.81</u> | <u>284</u> |
| 8 | <u>.77</u> | <u>284</u> | <u>.84</u> | <u>284</u> |
| 9 | <u>.70</u> | <u>284</u> | <u>.88</u> | <u>284</u> |
| 10 | <u>.55</u> | <u>284</u> | <u>.86</u> | <u>284</u> |
| 11 | <u>.53</u> | <u>284</u> | <u>.82</u> | <u>284</u> |
| 12 | <u>.51</u> | <u>284</u> | <u>.74</u> | <u>284</u> |

Stack Gas Velocity and Volumetric Flow Rate Data Sheet

Method 2: S.O.P. Number 93 - T62 - SP - 002

Project No.: 6000 21546

Company Covanta Site Location Unit 2 Outlet

Company Location _____ Test Date Sept. 28/15

Test No.: 414 Time 18:27 - 18:31 Operator RW Signature [Signature]

| Measuring Devices | MII Number |
|-------------------|-------------|
| Pitot Tube | |
| Pitot Factor | <u>See</u> |
| Manometer | <u>Test</u> |
| Temp meter | <u>1</u> |
| Barometer | |

| Measured Parameters | |
|---------------------|--------------|
| Barometric | <u>29.88</u> |
| Static | <u>-11.1</u> |

O₂ - 8.11%
CO₂ - 11.01%
CO - 21.8 ppm

| Port | <u>2</u> | | <u>1</u> | |
|---------|------------|------------|------------|------------|
| Point # | Delta P | Temp | Delta P | Temp |
| 1 | <u>.93</u> | <u>284</u> | <u>.99</u> | <u>284</u> |
| 2 | <u>.91</u> | <u>284</u> | <u>.96</u> | <u>284</u> |
| 3 | <u>.94</u> | <u>284</u> | <u>.94</u> | <u>284</u> |
| 4 | <u>.84</u> | <u>284</u> | <u>.89</u> | <u>284</u> |
| 5 | <u>.82</u> | <u>284</u> | <u>.83</u> | <u>284</u> |
| 6 | <u>.82</u> | <u>284</u> | <u>.78</u> | <u>284</u> |
| 7 | <u>.80</u> | <u>284</u> | <u>.73</u> | <u>284</u> |
| 8 | <u>.84</u> | <u>284</u> | <u>.75</u> | <u>284</u> |
| 9 | <u>.80</u> | <u>284</u> | <u>.72</u> | <u>284</u> |
| 10 | <u>.84</u> | <u>284</u> | <u>.69</u> | <u>284</u> |
| 11 | <u>.64</u> | <u>284</u> | <u>.66</u> | <u>284</u> |
| 12 | <u>.60</u> | <u>284</u> | <u>.62</u> | <u>284</u> |

APPENDIX 4

**Moisture Field Data Sheets
(5 pages)**

Moisture Train Recovery Sheet

Client: Covanta
Project No.: 21546
Test : 1-4
Test Location: UNIT 2 Outlet
Test Date: SEPT. 28, 2015
Test Condition: _____

DGM MII: COE20090
DGMCF: 1.004

| Volume of Stack Gas Sampled | | | | |
|-----------------------------|----------------------|-------------------|-------------|-------------------|
| Time | Dry Gas Meter Volume | Meter Temperature | | Meter Pressure |
| | | Inlet | Outlet | "H ₂ O |
| On: <u>1340</u> | <u>92.65</u> | <u>77</u> | <u>78</u> | <u>1.9</u> |
| Off: <u>1445</u> | <u>142.99</u> | <u>77</u> | <u>78</u> | <u>1.9</u> |
| Total: | <u>50.34</u> | Average: | <u>77.5</u> | <u>1.9</u> |

Initial Leak Check: .002 @ 15" H₂O
 Final Leak Check: 1.002 @ 11" H₂O

| Impinger 1 H ₂ O / glycol | |
|--------------------------------------|--------------|
| Initial Mass: | <u>762.2</u> |
| Final Mass: | <u>893.3</u> |
| 1 Gain: | <u>131.1</u> |

| Impinger 3 (Empty) | |
|--------------------|--------------|
| Initial Mass: | <u>668.0</u> |
| Final Mass: | <u>678.9</u> |
| 3 Gain: | <u>10.9</u> |

| Impinger 2 H ₂ O / glycol | |
|--------------------------------------|--------------|
| Initial Mass: | <u>763.5</u> |
| Final Mass: | <u>793.6</u> |
| 2 Gain: | <u>30.1</u> |

| Impinger 4 (Silica Gel) | |
|-------------------------|--------------|
| Initial Mass: | <u>789.8</u> |
| Final Mass: | <u>811.0</u> |
| 4 Gain: | <u>21.2</u> |

| | |
|---------------|--------------|
| CWTR = 1+2+3: | <u>172.1</u> |
| WCBDA = 4: | <u>21.2</u> |
| Total: | <u>193.3</u> |

Train Loaded By: CS
Train Recovered By: _____
Date: SEPT. 28, 15

I

Moisture Train Recovery Sheet

Client: Covanta
 Project No.: 21546
 Test: S-8 UNIT 2
 Test Location: UNIT #2 OUTLET
 Test Date: SEPT. 28, 2015
 Test Condition: _____

DGM MII: COE 200090
 DGMCF: 1.004

| Volume of Stack Gas Sampled | | | | |
|-----------------------------|----------------------|-------------------|--------|-------------------|
| Time | Dry Gas Meter Volume | Meter Temperature | | Meter Pressure |
| | | Inlet | Outlet | "H ₂ O |
| On: 1615 | 42.24 | 78 | 78 | 1.9 |
| Off: 1647 | 65.92 | 80 | 91 | 1.9 |
| Total: | 23.68 | Average: | 81.8 | 1.9 |

Initial Leak Check: 1.003 @ 10
 Final Leak Check: 1.002 @ 11

| Impinger 1 H ₂ O / glycol | |
|--------------------------------------|-------|
| Initial Mass: | 893.3 |
| Final Mass: | 986.6 |
| 1 Gain: | 93.3 |

| Impinger 3 (Empty) | |
|--------------------|-------|
| Initial Mass: | 678.9 |
| Final Mass: | 680.4 |
| 3 Gain: | 1.5 |

| Impinger 2 H ₂ O / glycol | |
|--------------------------------------|-------|
| Initial Mass: | 793.6 |
| Final Mass: | 801.6 |
| 2 Gain: | 8.0 |

| Impinger 4 (Silica Gel) | |
|-------------------------|-------|
| Initial Mass: | 811.0 |
| Final Mass: | 815.5 |
| 4 Gain: | 4.5 |

CWTR = 1+2+3: 102.8
 WCBDA = 4: 4.5
 Total: 107.3 ✓

Train Loaded By: CB
 Train Recovered By: CB
 Date: SEPT. 28 / 2015

Box I

Moisture Train Recovery Sheet

Client: Covanta
Project No.: 21546
Test : 9-14
Test Location: UNIT #2 OUTLET
Test Date: SEPT. 28, 2015
Test Condition: _____

DGM MII: Team 4 COG 20090
DGMCF: 1.004

| Volume of Stack Gas Sampled | | | | |
|-----------------------------|----------------------|-------------------|--------|-------------------|
| Time | Dry Gas Meter Volume | Meter Temperature | | Meter Pressure |
| | | Inlet | Outlet | "H ₂ O |
| On: 17:55 | 66.63 | 79 | 79 | 1.9 |
| Off: 18:33 | 94.50 | 90 | 82 | 1.9 |
| Total: | 27.87 | Average: | 82.5 | 1.9 |

Initial Leak Check: 2.001 @ 12"
 Final Leak Check: _____

| Impinger 1 H ₂ O / glycol |
|--------------------------------------|
| Initial Mass: <u>966.6</u> |
| Final Mass: <u>913.2</u> |
| 1 Gain: <u>-53.4</u> |

| Impinger 3 (Empty) |
|----------------------------|
| Initial Mass: <u>680.4</u> |
| Final Mass: <u>712.0</u> |
| 3 Gain: <u>31.6</u> |

| Impinger 2 H ₂ O / glycol |
|--------------------------------------|
| Initial Mass: <u>801.6</u> |
| Final Mass: <u>948.7</u> |
| 2 Gain: <u>147.1</u> |

| Impinger 4 (Silica Gel) |
|----------------------------|
| Initial Mass: <u>815.5</u> |
| Final Mass: <u>820.2</u> |
| 4 Gain: <u>4.7</u> |

CWTR = 1+2+3: 125.3
 WCBDA = 4: 4.7
 Total: 130.0 ✓

Train Loaded By: CB
Train Recovered By: CB
Date: SEPT. 28, 2015

Moisture Train Recovery Sheet

Client: Covanta
Project No.: 21546
Test: 1-4
Test Location: Unit 1 Outlet
Test Date: SEPT. 28 / 15
Test Condition: _____

DGM MII: COE 20093
DGMCF: ,981

| Volume of Stack Gas Sampled | | | | |
|-----------------------------|----------------------|-------------------|--------|-------------------|
| Time | Dry Gas Meter Volume | Meter Temperature | | Meter Pressure |
| | | Inlet | Outlet | "H ₂ O |
| On: 1344 | 96.09 | 77 | 77 | 1.8 |
| Off: 1457 | 145.73 | 79 | 79 | 1.8 |
| Total: | 49.64 | Average: | 78.0 | 1.8 |

Initial Leak Check: .003 @ 13
 Final Leak Check: .003 @ 13

| Impinger 1 H ₂ O / glycol | |
|--------------------------------------|--------------|
| Initial Mass: | <u>776.4</u> |
| Final Mass: | <u>897.1</u> |
| 1 Gain: | <u>120.7</u> |

| Impinger 3 (Empty) | |
|--------------------|--------------|
| Initial Mass: | <u>657.4</u> |
| Final Mass: | <u>671.5</u> |
| 3 Gain: | <u>14.1</u> |

| Impinger 2 H ₂ O / glycol | |
|--------------------------------------|--------------|
| Initial Mass: | <u>775.0</u> |
| Final Mass: | <u>806.8</u> |
| 2 Gain: | <u>31.8</u> |

| Impinger 4 (Silica Gel) | |
|-------------------------|--------------|
| Initial Mass: | <u>791.2</u> |
| Final Mass: | <u>816.5</u> |
| 4 Gain: | <u>25.2</u> |

CWTR = 1+2+3: 166.6
 WCBDA = 4: 25.2 ✓
 Total: 191.8

Train Loaded By: CB
Train Recovered By: _____
Date: SEPT. 28 / 15

Box D

Moisture Train Recovery Sheet

Client: Covanta
Project No.: 21546
Test: NAVB 5-13
Test Location: UNIT 1 OUTLET
Test Date: SEPT. 28, 2015
Test Condition: _____

DGM MII: COE 20093
DGMCF: 0.981

| Volume of Stack Gas Sampled | | | | |
|-----------------------------|----------------------|-------------------|--------|-------------------|
| Time | Dry Gas Meter Volume | Meter Temperature | | Meter Pressure |
| | | Inlet | Outlet | "H ₂ O |
| On: 1710 | 45.90 | 79 | 79 | 1.8 |
| Off: 1826 | 96.30 | 83 | 83 | 1.8 |
| Total: | 50.4 | Average: | 81.0 | 1.8 |

Initial Leak Check: 004@17
 Final Leak Check: _____

| Impinger 1 H ₂ O / glycol | |
|--------------------------------------|--------|
| Initial Mass: | 897.1 |
| Final Mass: | 1004.3 |
| 1 Gain: | 107.2 |

| Impinger 3 (Empty) | |
|--------------------|-------|
| Initial Mass: | 671.5 |
| Final Mass: | 681.0 |
| 3 Gain: | 9.5 |

| Impinger 2 H ₂ O / glycol | |
|--------------------------------------|-------|
| Initial Mass: | 806.8 |
| Final Mass: | 931.0 |
| 2 Gain: | 124.2 |

| Impinger 4 (Silica Gel) | |
|-------------------------|-------|
| Initial Mass: | 816.5 |
| Final Mass: | 833.8 |
| 4 Gain: | 17.3 |

CWTR = 1+2+3: 240.9
 WCBDA= 4: 17.3
 Total: NAVB

258.2

Train Loaded By: CB
Train Recovered By: CB
Date: SEPT. 28 / 2015

Box D

APPENDIX 5

**Isokinetic Output Summary Sheets
Boiler No. 1 BH Outlet
(9 pages)**

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Unit No. 1 BH Outlet
Test No.: 1 - Particulate & Acid Gases
Date: September 29, 2015

STACK GAS SAMPLING PARAMETERS

| | |
|----------------------------|----------------------|
| PITOT TUBE COEFFICIENT | 0.845 |
| DGM CORRECTION FACTOR | 0.981 |
| NOZZLE DIAMETER | 6.50 mm |
| DRY REF GAS VOLUME SAMPLED | 3.796 m ³ |
| AVGERGE ISOKINETICITY | 100.9 % |
| STACK DIAMETER | 1.37 m |
| LENGTH | 0.00 m |
| WIDTH | 0.00 m |
| AREA OF STACK or DUCT | 1.48 m ³ |

STACK GAS PHYSICAL PARAMETERS

| | |
|--------------------------------|-------------|
| AVERAGE GAS TEMPERATURE | 130.4 °C |
| AVERAGE GAS MOISTURE BY VOLUME | 16.4 % |
| AVERAGE GAS VELOCITY | 17.64 m/s |
| BAROMETRIC PRESSURE (Station) | 100.406 Kpa |
| STATIC PRESSURE | -2.789 Kpa |
| ABSOLUTE GAS PRESSURE | 97.618 Kpa |
| OXYGEN CONCENTRATION | 7.67 % |
| CARBON DIOXIDE CONCENTRATION | 11.33 % |
| CARBON MONOXIDE CONCENTRATION | 16.9 ppm |

FLOWRATE

| | |
|----------------------|--------------------------|
| ACTUAL GAS FLOWRATE | 26.07 m ³ /s |
| DRY REF GAS FLOWRATE | 15.51 Rm ³ /s |
| DRY ADJ GAS FLOWRATE | 20.73 Rm ³ /s |
| WET REF GAS FLOWRATE | 18.56 Rm ³ /s |

PARTICULATE EMISSION DATA

| | | |
|-----------------------------|---------|-------------------------|
| PARTICULATE COLLECTED | -PROBE | 0 mg |
| | -FILTER | 0 mg |
| | -TOTAL | 0 mg |
| DRY REF GAS VOLUME SAMPLED | | 3.796 m ³ |
| PARTICULATE CONC. - ACTUAL | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY REF | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY ADJ | | 0.000 mg/m ⁴ |
| PARTICULATE CONC. - WET REF | | 0.000 mg/m ³ |
| PARTICULATE EMISSION RATE | | 0.00000 g/s |

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F) and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Unit No. 1 BH Outlet
Test No.: 2 - Particulate & Acid Gases
Date: September 29, 2015

STACK GAS SAMPLING PARAMETERS

| | |
|----------------------------|----------------------|
| PITOT TUBE COEFFICIENT | 0.845 |
| DGM CORRECTION FACTOR | 0.981 |
| NOZZLE DIAMETER | 6.50 mm |
| DRY REF GAS VOLUME SAMPLED | 3.734 m ³ |
| AVGERGE ISOKINETICITY | 101.2 % |
| STACK DIAMETER | 1.37 m |
| LENGTH | 0.00 m |
| WIDTH | 0.00 m |
| AREA OF STACK or DUCT | 1.48 m ³ |

STACK GAS PHYSICAL PARAMETERS

| | |
|--------------------------------|-------------|
| AVERAGE GAS TEMPERATURE | 129.7 °C |
| AVERAGE GAS MOISTURE BY VOLUME | 16.1 % |
| AVERAGE GAS VELOCITY | 17.20 m/s |
| BAROMETRIC PRESSURE (Station) | 100.373 Kpa |
| STATIC PRESSURE | -2.789 Kpa |
| ABSOLUTE GAS PRESSURE | 97.584 Kpa |
| OXYGEN CONCENTRATION | 7.69 % |
| CARBON DIOXIDE CONCENTRATION | 11.39 % |
| CARBON MONOXIDE CONCENTRATION | 22.4 ppm |

FLOWRATE

| | |
|----------------------|--------------------------|
| ACTUAL GAS FLOWRATE | 25.41 m ³ /s |
| DRY REF GAS FLOWRATE | 15.20 Rm ³ /s |
| DRY ADJ GAS FLOWRATE | 20.28 Rm ³ /s |
| WET REF GAS FLOWRATE | 18.11 Rm ³ /s |

PARTICULATE EMISSION DATA

| | | |
|-----------------------------|---------|-------------------------|
| PARTICULATE COLLECTED | -PROBE | 0 mg |
| | -FILTER | 0 mg |
| | -TOTAL | 0 mg |
| DRY REF GAS VOLUME SAMPLED | | 3.734 m ³ |
| PARTICULATE CONC. - ACTUAL | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY REF | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY ADJ | | 0.000 mg/m ⁴ |
| PARTICULATE CONC. - WET REF | | 0.000 mg/m ³ |
| PARTICULATE EMISSION RATE | | 0.00000 g/s |

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F) and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Unit No. 1 BH Outlet
Test No.: 3 - Particulate & Acid Gases
Date: October 1, 2015

STACK GAS SAMPLING PARAMETERS

| | |
|----------------------------|----------------------|
| PITOT TUBE COEFFICIENT | 0.847 |
| DGM CORRECTION FACTOR | 1.017 |
| NOZZLE DIAMETER | 6.46 mm |
| DRY REF GAS VOLUME SAMPLED | 3.668 m ³ |
| AVGERGE ISOKINETICITY | 102.0 % |
| STACK DIAMETER | 1.37 m |
| LENGTH | 0.00 m |
| WIDTH | 0.00 m |
| AREA OF STACK or DUCT | 1.48 m ³ |

STACK GAS PHYSICAL PARAMETERS

| | |
|--------------------------------|-------------|
| AVERAGE GAS TEMPERATURE | 135.3 °C |
| AVERAGE GAS MOISTURE BY VOLUME | 17.5 % |
| AVERAGE GAS VELOCITY | 17.21 m/s |
| BAROMETRIC PRESSURE (Station) | 101.795 Kpa |
| STATIC PRESSURE | -2.714 Kpa |
| ABSOLUTE GAS PRESSURE | 99.081 Kpa |
| OXYGEN CONCENTRATION | 7.54 % |
| CARBON DIOXIDE CONCENTRATION | 11.62 % |
| CARBON MONOXIDE CONCENTRATION | 16.0 ppm |

FLOWRATE

| | |
|----------------------|--------------------------|
| ACTUAL GAS FLOWRATE | 25.43 m ³ /s |
| DRY REF GAS FLOWRATE | 14.98 Rm ³ /s |
| DRY ADJ GAS FLOWRATE | 20.21 Rm ³ /s |
| WET REF GAS FLOWRATE | 18.16 Rm ³ /s |

PARTICULATE EMISSION DATA

| | | |
|-----------------------------|---------|-------------------------|
| PARTICULATE COLLECTED | -PROBE | 0 mg |
| | -FILTER | 0 mg |
| | -TOTAL | 0 mg |
| DRY REF GAS VOLUME SAMPLED | | 3.668 m ³ |
| PARTICULATE CONC. - ACTUAL | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY REF | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY ADJ | | 0.000 mg/m ⁴ |
| PARTICULATE CONC. - WET REF | | 0.000 mg/m ³ |
| PARTICULATE EMISSION RATE | | 0.00000 g/s |

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F) and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Unit No. 1 BH Outlet
Test No.: 1 - Metals
Date: September 30, 2015

STACK GAS SAMPLING PARAMETERS

| | |
|----------------------------|----------------------|
| PITOT TUBE COEFFICIENT | 0.847 |
| DGM CORRECTION FACTOR | 1.017 |
| NOZZLE DIAMETER | 6.46 mm |
| DRY REF GAS VOLUME SAMPLED | 2.445 m ³ |
| AVGERGE ISOKINETICITY | 100.4 % |
| STACK DIAMETER | 1.37 m |
| LENGTH | 0.00 m |
| WIDTH | 0.00 m |
| AREA OF STACK or DUCT | 1.48 m ³ |

STACK GAS PHYSICAL PARAMETERS

| | |
|--------------------------------|-------------|
| AVERAGE GAS TEMPERATURE | 139.9 °C |
| AVERAGE GAS MOISTURE BY VOLUME | 15.9 % |
| AVERAGE GAS VELOCITY | 17.52 m/s |
| BAROMETRIC PRESSURE (Station) | 100.914 Kpa |
| STATIC PRESSURE | -2.789 Kpa |
| ABSOLUTE GAS PRESSURE | 98.126 Kpa |
| OXYGEN CONCENTRATION | 7.91 % |
| CARBON DIOXIDE CONCENTRATION | 11.23 % |
| CARBON MONOXIDE CONCENTRATION | 15.5 ppm |

FLOWRATE

| | |
|----------------------|--------------------------|
| ACTUAL GAS FLOWRATE | 25.89 m ³ /s |
| DRY REF GAS FLOWRATE | 15.23 Rm ³ /s |
| DRY ADJ GAS FLOWRATE | 19.98 Rm ³ /s |
| WET REF GAS FLOWRATE | 18.10 Rm ³ /s |

PARTICULATE EMISSION DATA

| | | |
|-----------------------------|---------|-------------------------|
| PARTICULATE COLLECTED | -PROBE | 0 mg |
| | -FILTER | 0 mg |
| | -TOTAL | 0 mg |
| DRY REF GAS VOLUME SAMPLED | | 2.445 m ³ |
| PARTICULATE CONC. - ACTUAL | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY REF | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY ADJ | | 0.000 mg/m ⁴ |
| PARTICULATE CONC. - WET REF | | 0.000 mg/m ³ |
| PARTICULATE EMISSION RATE | | 0.00000 g/s |

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F) and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Unit No. 1 BH Outlet
Test No.: 2 - Metals
Date: September 30, 2015

STACK GAS SAMPLING PARAMETERS

| | |
|----------------------------|----------------------|
| PITOT TUBE COEFFICIENT | 0.847 |
| DGM CORRECTION FACTOR | 1.017 |
| NOZZLE DIAMETER | 6.46 mm |
| DRY REF GAS VOLUME SAMPLED | 2.524 m ³ |
| AVGERGE ISOKINETICITY | 100.6 % |
| STACK DIAMETER | 1.37 m |
| LENGTH | 0.00 m |
| WIDTH | 0.00 m |
| AREA OF STACK or DUCT | 1.48 m ³ |

STACK GAS PHYSICAL PARAMETERS

| | |
|--------------------------------|-------------|
| AVERAGE GAS TEMPERATURE | 140.1 °C |
| AVERAGE GAS MOISTURE BY VOLUME | 16.4 % |
| AVERAGE GAS VELOCITY | 18.14 m/s |
| BAROMETRIC PRESSURE (Station) | 101.016 Kpa |
| STATIC PRESSURE | -2.789 Kpa |
| ABSOLUTE GAS PRESSURE | 98.227 Kpa |
| OXYGEN CONCENTRATION | 7.92 % |
| CARBON DIOXIDE CONCENTRATION | 11.12 % |
| CARBON MONOXIDE CONCENTRATION | 21.3 ppm |

FLOWRATE

| | |
|----------------------|--------------------------|
| ACTUAL GAS FLOWRATE | 26.81 m ³ /s |
| DRY REF GAS FLOWRATE | 15.68 Rm ³ /s |
| DRY ADJ GAS FLOWRATE | 20.55 Rm ³ /s |
| WET REF GAS FLOWRATE | 18.75 Rm ³ /s |

PARTICULATE EMISSION DATA

| | | |
|-----------------------------|---------|-------------------------|
| PARTICULATE COLLECTED | -PROBE | 0 mg |
| | -FILTER | 0 mg |
| | -TOTAL | 0 mg |
| DRY REF GAS VOLUME SAMPLED | | 2.524 m ³ |
| PARTICULATE CONC. - ACTUAL | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY REF | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY ADJ | | 0.000 mg/m ⁴ |
| PARTICULATE CONC. - WET REF | | 0.000 mg/m ³ |
| PARTICULATE EMISSION RATE | | 0.00000 g/s |

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F) and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Unit No. 1 BH Outlet
Test No.: 3 - Metals
Date: October 1, 2015

STACK GAS SAMPLING PARAMETERS

| | |
|----------------------------|----------------------|
| PITOT TUBE COEFFICIENT | 0.847 |
| DGM CORRECTION FACTOR | 1.017 |
| NOZZLE DIAMETER | 6.46 mm |
| DRY REF GAS VOLUME SAMPLED | 2.429 m ³ |
| AVGERGE ISOKINETICITY | 100.4 % |
| STACK DIAMETER | 1.37 m |
| LENGTH | 0.00 m |
| WIDTH | 0.00 m |
| AREA OF STACK or DUCT | 1.48 m ³ |

STACK GAS PHYSICAL PARAMETERS

| | |
|--------------------------------|-------------|
| AVERAGE GAS TEMPERATURE | 138.1 °C |
| AVERAGE GAS MOISTURE BY VOLUME | 16.5 % |
| AVERAGE GAS VELOCITY | 17.30 m/s |
| BAROMETRIC PRESSURE (Station) | 101.761 Kpa |
| STATIC PRESSURE | -2.714 Kpa |
| ABSOLUTE GAS PRESSURE | 99.047 Kpa |
| OXYGEN CONCENTRATION | 7.62 % |
| CARBON DIOXIDE CONCENTRATION | 11.58 % |
| CARBON MONOXIDE CONCENTRATION | 18.3 ppm |

FLOWRATE

| | |
|----------------------|--------------------------|
| ACTUAL GAS FLOWRATE | 25.57 m ³ /s |
| DRY REF GAS FLOWRATE | 15.13 Rm ³ /s |
| DRY ADJ GAS FLOWRATE | 20.29 Rm ³ /s |
| WET REF GAS FLOWRATE | 18.12 Rm ³ /s |

PARTICULATE EMISSION DATA

| | | |
|-----------------------------|---------|-------------------------|
| PARTICULATE COLLECTED | -PROBE | 0 mg |
| | -FILTER | 0 mg |
| | -TOTAL | 0 mg |
| DRY REF GAS VOLUME SAMPLED | | 2.429 m ³ |
| PARTICULATE CONC. - ACTUAL | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY REF | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY ADJ | | 0.000 mg/m ⁴ |
| PARTICULATE CONC. - WET REF | | 0.000 mg/m ³ |
| PARTICULATE EMISSION RATE | | 0.00000 g/s |

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F) and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Unit No. 1 BH Outlet
Test No.: 1 - SVOC
Date: October 1, 2015

STACK GAS SAMPLING PARAMETERS

| | |
|----------------------------|----------------------|
| PITOT TUBE COEFFICIENT | 0.847 |
| DGM CORRECTION FACTOR | 1.017 |
| NOZZLE DIAMETER | 6.46 mm |
| DRY REF GAS VOLUME SAMPLED | 4.811 m ³ |
| AVGERGE ISOKINETICITY | 100.4 % |
| STACK DIAMETER | 1.37 m |
| LENGTH | 0.00 m |
| WIDTH | 0.00 m |
| AREA OF STACK or DUCT | 1.48 m ³ |

STACK GAS PHYSICAL PARAMETERS

| | |
|--------------------------------|-------------|
| AVERAGE GAS TEMPERATURE | 135.5 °C |
| AVERAGE GAS MOISTURE BY VOLUME | 16.1 % |
| AVERAGE GAS VELOCITY | 16.94 m/s |
| BAROMETRIC PRESSURE (Station) | 101.761 Kpa |
| STATIC PRESSURE | -2.714 Kpa |
| ABSOLUTE GAS PRESSURE | 99.047 Kpa |
| OXYGEN CONCENTRATION | 7.57 % |
| CARBON DIOXIDE CONCENTRATION | 11.59 % |
| CARBON MONOXIDE CONCENTRATION | 16.6 ppm |

FLOWRATE

| | |
|----------------------|--------------------------|
| ACTUAL GAS FLOWRATE | 25.03 m ³ /s |
| DRY REF GAS FLOWRATE | 14.98 Rm ³ /s |
| DRY ADJ GAS FLOWRATE | 20.17 Rm ³ /s |
| WET REF GAS FLOWRATE | 17.85 Rm ³ /s |

PARTICULATE EMISSION DATA

| | | |
|-----------------------------|---------|-------------------------|
| PARTICULATE COLLECTED | -PROBE | 0 mg |
| | -FILTER | 0 mg |
| | -TOTAL | 0 mg |
| DRY REF GAS VOLUME SAMPLED | | 4.811 m ³ |
| PARTICULATE CONC. - ACTUAL | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY REF | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY ADJ | | 0.000 mg/m ⁴ |
| PARTICULATE CONC. - WET REF | | 0.000 mg/m ³ |
| PARTICULATE EMISSION RATE | | 0.00000 g/s |

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F) and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Unit No. 1 BH Outlet
Test No.: 2 - SVOC
Date: October 2, 2015

STACK GAS SAMPLING PARAMETERS

| | |
|----------------------------|----------------------|
| PITOT TUBE COEFFICIENT | 0.847 |
| DGM CORRECTION FACTOR | 1.017 |
| NOZZLE DIAMETER | 6.46 mm |
| DRY REF GAS VOLUME SAMPLED | 4.599 m ³ |
| AVGERGE ISOKINETICITY | 101.0 % |
| STACK DIAMETER | 1.37 m |
| LENGTH | 0.00 m |
| WIDTH | 0.00 m |
| AREA OF STACK or DUCT | 1.48 m ³ |

STACK GAS PHYSICAL PARAMETERS

| | |
|--------------------------------|-------------|
| AVERAGE GAS TEMPERATURE | 134.7 °C |
| AVERAGE GAS MOISTURE BY VOLUME | 16.4 % |
| AVERAGE GAS VELOCITY | 16.08 m/s |
| BAROMETRIC PRESSURE (Station) | 102.133 Kpa |
| STATIC PRESSURE | -2.689 Kpa |
| ABSOLUTE GAS PRESSURE | 99.444 Kpa |
| OXYGEN CONCENTRATION | 7.59 % |
| CARBON DIOXIDE CONCENTRATION | 11.61 % |
| CARBON MONOXIDE CONCENTRATION | 19.6 ppm |

FLOWRATE

| | |
|----------------------|--------------------------|
| ACTUAL GAS FLOWRATE | 23.75 m ³ /s |
| DRY REF GAS FLOWRATE | 14.24 Rm ³ /s |
| DRY ADJ GAS FLOWRATE | 19.14 Rm ³ /s |
| WET REF GAS FLOWRATE | 17.04 Rm ³ /s |

PARTICULATE EMISSION DATA

| | | |
|-----------------------------|---------|-------------------------|
| PARTICULATE COLLECTED | -PROBE | 0 mg |
| | -FILTER | 0 mg |
| | -TOTAL | 0 mg |
| DRY REF GAS VOLUME SAMPLED | | 4.599 m ³ |
| PARTICULATE CONC. - ACTUAL | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY REF | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY ADJ | | 0.000 mg/m ⁴ |
| PARTICULATE CONC. - WET REF | | 0.000 mg/m ³ |
| PARTICULATE EMISSION RATE | | 0.00000 g/s |

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F) and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Unit No. 1 BH Outlet
Test No.: 3 - SVOC
Date: October 2, 2015

STACK GAS SAMPLING PARAMETERS

| | |
|----------------------------|----------------------|
| PITOT TUBE COEFFICIENT | 0.847 |
| DGM CORRECTION FACTOR | 1.017 |
| NOZZLE DIAMETER | 6.46 mm |
| DRY REF GAS VOLUME SAMPLED | 4.644 m ³ |
| AVGERGE ISOKINETICITY | 100.9 % |
| STACK DIAMETER | 1.37 m |
| LENGTH | 0.00 m |
| WIDTH | 0.00 m |
| AREA OF STACK or DUCT | 1.48 m ³ |

STACK GAS PHYSICAL PARAMETERS

| | |
|--------------------------------|-------------|
| AVERAGE GAS TEMPERATURE | 138.7 °C |
| AVERAGE GAS MOISTURE BY VOLUME | 16.4 % |
| AVERAGE GAS VELOCITY | 16.41 m/s |
| BAROMETRIC PRESSURE (Station) | 102.066 Kpa |
| STATIC PRESSURE | -2.689 Kpa |
| ABSOLUTE GAS PRESSURE | 99.377 Kpa |
| OXYGEN CONCENTRATION | 7.52 % |
| CARBON DIOXIDE CONCENTRATION | 11.69 % |
| CARBON MONOXIDE CONCENTRATION | 20.9 ppm |

FLOWRATE

| | |
|----------------------|--------------------------|
| ACTUAL GAS FLOWRATE | 24.24 m ³ /s |
| DRY REF GAS FLOWRATE | 14.39 Rm ³ /s |
| DRY ADJ GAS FLOWRATE | 19.45 Rm ³ /s |
| WET REF GAS FLOWRATE | 17.22 Rm ³ /s |

PARTICULATE EMISSION DATA

| | | |
|-----------------------------|---------|-------------------------|
| PARTICULATE COLLECTED | -PROBE | 0 mg |
| | -FILTER | 0 mg |
| | -TOTAL | 0 mg |
| DRY REF GAS VOLUME SAMPLED | | 4.644 m ³ |
| PARTICULATE CONC. - ACTUAL | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY REF | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY ADJ | | 0.000 mg/m ⁴ |
| PARTICULATE CONC. - WET REF | | 0.000 mg/m ³ |
| PARTICULATE EMISSION RATE | | 0.00000 g/s |

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F) and 1 atmosphere, adjusted to 11% oxygen by volume

APPENDIX 6

Isokinetic Output Summary Sheets Boiler No. 2 BH Outlet (9 pages)

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Unit No. 2 BH Outlet
Test No.: 1 - Particulate & Acid Gases
Date: September 30, 2015

STACK GAS SAMPLING PARAMETERS

| | |
|----------------------------|----------------------|
| PITOT TUBE COEFFICIENT | 0.845 |
| DGM CORRECTION FACTOR | 1.004 |
| NOZZLE DIAMETER | 6.50 mm |
| DRY REF GAS VOLUME SAMPLED | 3.995 m ³ |
| AVGERGE ISOKINETICITY | 100.7 % |
| STACK DIAMETER | 1.37 m |
| LENGTH | 0.00 m |
| WIDTH | 0.00 m |
| AREA OF STACK or DUCT | 1.48 m ³ |

STACK GAS PHYSICAL PARAMETERS

| | |
|--------------------------------|-------------|
| AVERAGE GAS TEMPERATURE | 135.6 °C |
| AVERAGE GAS MOISTURE BY VOLUME | 15.9 % |
| AVERAGE GAS VELOCITY | 18.65 m/s |
| BAROMETRIC PRESSURE (Station) | 100.914 Kpa |
| STATIC PRESSURE | -2.789 Kpa |
| ABSOLUTE GAS PRESSURE | 98.126 Kpa |
| OXYGEN CONCENTRATION | 8.38 % |
| CARBON DIOXIDE CONCENTRATION | 10.89 % |
| CARBON MONOXIDE CONCENTRATION | 13.5 ppm |

FLOWRATE

| | |
|----------------------|--------------------------|
| ACTUAL GAS FLOWRATE | 27.55 m ³ /s |
| DRY REF GAS FLOWRATE | 16.37 Rm ³ /s |
| DRY ADJ GAS FLOWRATE | 20.70 Rm ³ /s |
| WET REF GAS FLOWRATE | 19.47 Rm ³ /s |

PARTICULATE EMISSION DATA

| | | |
|-----------------------------|---------|-------------------------|
| PARTICULATE COLLECTED | -PROBE | 0 mg |
| | -FILTER | 0 mg |
| | -TOTAL | 0 mg |
| DRY REF GAS VOLUME SAMPLED | | 3.995 m ³ |
| PARTICULATE CONC. - ACTUAL | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY REF | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY ADJ | | 0.000 mg/m ⁴ |
| PARTICULATE CONC. - WET REF | | 0.000 mg/m ³ |
| PARTICULATE EMISSION RATE | | 0.00000 g/s |

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F) and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Unit No. 2 BH Outlet
Test No.: 2 - Particulate & Acid Gases
Date: September 30, 2015

STACK GAS SAMPLING PARAMETERS

| | |
|----------------------------|----------------------|
| PITOT TUBE COEFFICIENT | 0.845 |
| DGM CORRECTION FACTOR | 1.004 |
| NOZZLE DIAMETER | 6.50 mm |
| DRY REF GAS VOLUME SAMPLED | 3.949 m ³ |
| AVGERGE ISOKINETICITY | 101.1 % |
| STACK DIAMETER | 1.37 m |
| LENGTH | 0.00 m |
| WIDTH | 0.00 m |
| AREA OF STACK or DUCT | 1.48 m ³ |

STACK GAS PHYSICAL PARAMETERS

| | |
|--------------------------------|-------------|
| AVERAGE GAS TEMPERATURE | 133.8 °C |
| AVERAGE GAS MOISTURE BY VOLUME | 16.3 % |
| AVERAGE GAS VELOCITY | 18.31 m/s |
| BAROMETRIC PRESSURE (Station) | 101.185 Kpa |
| STATIC PRESSURE | -2.789 Kpa |
| ABSOLUTE GAS PRESSURE | 98.396 Kpa |
| OXYGEN CONCENTRATION | 8.28 % |
| CARBON DIOXIDE CONCENTRATION | 10.98 % |
| CARBON MONOXIDE CONCENTRATION | 14.1 ppm |

FLOWRATE

| | |
|----------------------|--------------------------|
| ACTUAL GAS FLOWRATE | 27.05 m ³ /s |
| DRY REF GAS FLOWRATE | 16.11 Rm ³ /s |
| DRY ADJ GAS FLOWRATE | 20.54 Rm ³ /s |
| WET REF GAS FLOWRATE | 19.25 Rm ³ /s |

PARTICULATE EMISSION DATA

| | | |
|-----------------------------|---------|-------------------------|
| PARTICULATE COLLECTED | -PROBE | 0 mg |
| | -FILTER | 0 mg |
| | -TOTAL | 0 mg |
| DRY REF GAS VOLUME SAMPLED | | 3.949 m ³ |
| PARTICULATE CONC. - ACTUAL | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY REF | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY ADJ | | 0.000 mg/m ⁴ |
| PARTICULATE CONC. - WET REF | | 0.000 mg/m ³ |
| PARTICULATE.EMISSION RATE | | 0.00000 g/s |

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F) and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Unit No. 2 BH Outlet
Test No.: 3 - Particulate & Acid Gases
Date: October 1, 2015

STACK GAS SAMPLING PARAMETERS

| | |
|----------------------------|----------------------|
| PITOT TUBE COEFFICIENT | 0.845 |
| DGM CORRECTION FACTOR | 1.004 |
| NOZZLE DIAMETER | 6.50 mm |
| DRY REF GAS VOLUME SAMPLED | 3.769 m ³ |
| AVGERGE ISOKINETICITY | 102.2 % |
| STACK DIAMETER | 1.37 m |
| LENGTH | 0.00 m |
| WIDTH | 0.00 m |
| AREA OF STACK or DUCT | 1.48 m ³ |

STACK GAS PHYSICAL PARAMETERS

| | |
|--------------------------------|-------------|
| AVERAGE GAS TEMPERATURE | 132.5 °C |
| AVERAGE GAS MOISTURE BY VOLUME | 16.4 % |
| AVERAGE GAS VELOCITY | 17.25 m/s |
| BAROMETRIC PRESSURE (Station) | 101.321 Kpa |
| STATIC PRESSURE | -2.789 Kpa |
| ABSOLUTE GAS PRESSURE | 98.532 Kpa |
| OXYGEN CONCENTRATION | 7.62 % |
| CARBON DIOXIDE CONCENTRATION | 11.85 % |
| CARBON MONOXIDE CONCENTRATION | 16.8 ppm |

FLOWRATE

| | |
|----------------------|--------------------------|
| ACTUAL GAS FLOWRATE | 25.49 m ³ /s |
| DRY REF GAS FLOWRATE | 15.22 Rm ³ /s |
| DRY ADJ GAS FLOWRATE | 20.42 Rm ³ /s |
| WET REF GAS FLOWRATE | 18.22 Rm ³ /s |

PARTICULATE EMISSION DATA

| | | |
|-----------------------------|---------|-------------------------|
| PARTICULATE COLLECTED | -PROBE | 0 mg |
| | -FILTER | 0 mg |
| | -TOTAL | 0 mg |
| DRY REF GAS VOLUME SAMPLED | | 3.769 m ³ |
| PARTICULATE CONC. - ACTUAL | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY REF | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY ADJ | | 0.000 mg/m ⁴ |
| PARTICULATE CONC. - WET REF | | 0.000 mg/m ³ |
| PARTICULATE EMISSION RATE | | 0.00000 g/s |

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F) and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Unit No. 2 BH Outlet
Test No.: 1 - Metals
Date: September 29, 2015

STACK GAS SAMPLING PARAMETERS

| | |
|----------------------------|----------------------|
| PITOT TUBE COEFFICIENT | 0.847 |
| DGM CORRECTION FACTOR | 0.985 |
| NOZZLE DIAMETER | 6.46 mm |
| DRY REF GAS VOLUME SAMPLED | 2.454 m ³ |
| AVGERGE ISOKINETICITY | 101.7 % |
| STACK DIAMETER | 1.37 m |
| LENGTH | 0.00 m |
| WIDTH | 0.00 m |
| AREA OF STACK or DUCT | 1.48 m ³ |

STACK GAS PHYSICAL PARAMETERS

| | |
|--------------------------------|-------------|
| AVERAGE GAS TEMPERATURE | 134.9 °C |
| AVERAGE GAS MOISTURE BY VOLUME | 16.6 % |
| AVERAGE GAS VELOCITY | 17.36 m/s |
| BAROMETRIC PRESSURE (Station) | 100.406 Kpa |
| STATIC PRESSURE | -2.614 Kpa |
| ABSOLUTE GAS PRESSURE | 97.792 Kpa |
| OXYGEN CONCENTRATION | 8.18 % |
| CARBON DIOXIDE CONCENTRATION | 10.99 % |
| CARBON MONOXIDE CONCENTRATION | 21.0 ppm |

FLOWRATE

| | |
|----------------------|--------------------------|
| ACTUAL GAS FLOWRATE | 25.65 m ³ /s |
| DRY REF GAS FLOWRATE | 15.08 Rm ³ /s |
| DRY ADJ GAS FLOWRATE | 19.38 Rm ³ /s |
| WET REF GAS FLOWRATE | 18.09 Rm ³ /s |

PARTICULATE EMISSION DATA

| | | |
|-----------------------------|---------|-------------------------|
| PARTICULATE COLLECTED | -PROBE | 0 mg |
| | -FILTER | 0 mg |
| | -TOTAL | 0 mg |
| DRY REF GAS VOLUME SAMPLED | | 2.454 m ³ |
| PARTICULATE CONC. - ACTUAL | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY REF | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY ADJ | | 0.000 mg/m ⁴ |
| PARTICULATE CONC. - WET REF | | 0.000 mg/m ³ |
| PARTICULATE EMISSION RATE | | 0.00000 g/s |

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F) and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Unit No. 2 BH Outlet
Test No.: 2 - Metals
Date: September 29, 2015

STACK GAS SAMPLING PARAMETERS

| | |
|----------------------------|----------------------|
| PITOT TUBE COEFFICIENT | 0.847 |
| DGM CORRECTION FACTOR | 0.985 |
| NOZZLE DIAMETER | 6.46 mm |
| DRY REF GAS VOLUME SAMPLED | 2.406 m ³ |
| AVGERGE ISOKINETICITY | 99.7 % |
| STACK DIAMETER | 1.37 m |
| LENGTH | 0.00 m |
| WIDTH | 0.00 m |
| AREA OF STACK or DUCT | 1.48 m ³ |

STACK GAS PHYSICAL PARAMETERS

| | |
|--------------------------------|-------------|
| AVERAGE GAS TEMPERATURE | 135.6 °C |
| AVERAGE GAS MOISTURE BY VOLUME | 15.7 % |
| AVERAGE GAS VELOCITY | 17.22 m/s |
| BAROMETRIC PRESSURE (Station) | 100.339 Kpa |
| STATIC PRESSURE | -2.614 Kpa |
| ABSOLUTE GAS PRESSURE | 97.724 Kpa |
| OXYGEN CONCENTRATION | 8.25 % |
| CARBON DIOXIDE CONCENTRATION | 10.81 % |
| CARBON MONOXIDE CONCENTRATION | 22.2 ppm |

FLOWRATE

| | |
|----------------------|--------------------------|
| ACTUAL GAS FLOWRATE | 25.44 m ³ /s |
| DRY REF GAS FLOWRATE | 15.09 Rm ³ /s |
| DRY ADJ GAS FLOWRATE | 19.28 Rm ³ /s |
| WET REF GAS FLOWRATE | 17.90 Rm ³ /s |

PARTICULATE EMISSION DATA

| | | |
|-----------------------------|---------|-------------------------|
| PARTICULATE COLLECTED | -PROBE | 0 mg |
| | -FILTER | 0 mg |
| | -TOTAL | 0 mg |
| DRY REF GAS VOLUME SAMPLED | | 2.406 m ³ |
| PARTICULATE CONC. - ACTUAL | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY REF | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY ADJ | | 0.000 mg/m ⁴ |
| PARTICULATE CONC. - WET REF | | 0.000 mg/m ³ |
| PARTICULATE EMISSION RATE | | 0.00000 g/s |

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F) and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Unit No. 2 BH Outlet
Test No.: 3 - Metals
Date: September 29, 2015

STACK GAS SAMPLING PARAMETERS

| | |
|----------------------------|----------------------|
| PITOT TUBE COEFFICIENT | 0.847 |
| DGM CORRECTION FACTOR | 0.985 |
| NOZZLE DIAMETER | 6.46 mm |
| DRY REF GAS VOLUME SAMPLED | 2.435 m ³ |
| AVGERGE ISOKINETICITY | 100.4 % |
| STACK DIAMETER | 1.37 m |
| LENGTH | 0.00 m |
| WIDTH | 0.00 m |
| AREA OF STACK or DUCT | 1.48 m ³ |

STACK GAS PHYSICAL PARAMETERS

| | |
|--------------------------------|-------------|
| AVERAGE GAS TEMPERATURE | 136.3 °C |
| AVERAGE GAS MOISTURE BY VOLUME | 15.9 % |
| AVERAGE GAS VELOCITY | 17.36 m/s |
| BAROMETRIC PRESSURE (Station) | 100.406 Kpa |
| STATIC PRESSURE | -2.614 Kpa |
| ABSOLUTE GAS PRESSURE | 97.792 Kpa |
| OXYGEN CONCENTRATION | 8.41 % |
| CARBON DIOXIDE CONCENTRATION | 10.78 % |
| CARBON MONOXIDE CONCENTRATION | 18.9 ppm |

FLOWRATE

| | |
|----------------------|--------------------------|
| ACTUAL GAS FLOWRATE | 25.66 m ³ /s |
| DRY REF GAS FLOWRATE | 15.16 Rm ³ /s |
| DRY ADJ GAS FLOWRATE | 19.13 Rm ³ /s |
| WET REF GAS FLOWRATE | 18.04 Rm ³ /s |

PARTICULATE EMISSION DATA

| | | |
|-----------------------------|---------|-------------------------|
| PARTICULATE COLLECTED | -PROBE | 0 mg |
| | -FILTER | 0 mg |
| | -TOTAL | 0 mg |
| DRY REF GAS VOLUME SAMPLED | | 2.435 m ³ |
| PARTICULATE CONC. - ACTUAL | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY REF | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY ADJ | | 0.000 mg/m ⁴ |
| PARTICULATE CONC. - WET REF | | 0.000 mg/m ³ |
| PARTICULATE EMISSION RATE | | 0.00000 g/s |

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F) and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Unit No. 2 BH Outlet
Test No.: 1 - SVOC
Date: October 1, 2015

STACK GAS SAMPLING PARAMETERS

| | |
|----------------------------|----------------------|
| PITOT TUBE COEFFICIENT | 0.845 |
| DGM CORRECTION FACTOR | 1.004 |
| NOZZLE DIAMETER | 6.50 mm |
| DRY REF GAS VOLUME SAMPLED | 4.661 m ³ |
| AVGERGE ISOKINETICITY | 102.2 % |
| STACK DIAMETER | 1.37 m |
| LENGTH | 0.00 m |
| WIDTH | 0.00 m |
| AREA OF STACK or DUCT | 1.48 m ³ |

STACK GAS PHYSICAL PARAMETERS

| | |
|--------------------------------|-------------|
| AVERAGE GAS TEMPERATURE | 131.2 °C |
| AVERAGE GAS MOISTURE BY VOLUME | 17.0 % |
| AVERAGE GAS VELOCITY | 15.99 m/s |
| BAROMETRIC PRESSURE (Station) | 101.727 Kpa |
| STATIC PRESSURE | -2.789 Kpa |
| ABSOLUTE GAS PRESSURE | 98.938 Kpa |
| OXYGEN CONCENTRATION | 7.16 % |
| CARBON DIOXIDE CONCENTRATION | 12.43 % |
| CARBON MONOXIDE CONCENTRATION | 29.1 ppm |

FLOWRATE

| | |
|----------------------|--------------------------|
| ACTUAL GAS FLOWRATE | 23.62 m ³ /s |
| DRY REF GAS FLOWRATE | 14.11 Rm ³ /s |
| DRY ADJ GAS FLOWRATE | 19.59 Rm ³ /s |
| WET REF GAS FLOWRATE | 17.01 Rm ³ /s |

PARTICULATE EMISSION DATA

| | | |
|-----------------------------|---------|-------------------------|
| PARTICULATE COLLECTED | -PROBE | 0 mg |
| | -FILTER | 0 mg |
| | -TOTAL | 0 mg |
| DRY REF GAS VOLUME SAMPLED | | 4.661 m ³ |
| PARTICULATE CONC. - ACTUAL | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY REF | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY ADJ | | 0.000 mg/m ⁴ |
| PARTICULATE CONC. - WET REF | | 0.000 mg/m ³ |
| PARTICULATE EMISSION RATE | | 0.00000 g/s |

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F) and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Unit No. 2 BH Outlet
Test No.: 2 - SVOC
Date: October 2, 2015

STACK GAS SAMPLING PARAMETERS

| | |
|----------------------------|----------------------|
| PITOT TUBE COEFFICIENT | 0.845 |
| DGM CORRECTION FACTOR | 1.004 |
| NOZZLE DIAMETER | 6.46 mm |
| DRY REF GAS VOLUME SAMPLED | 4.685 m ³ |
| AVGERGE ISOKINETICITY | 102.9 % |
| STACK DIAMETER | 1.37 m |
| LENGTH | 0.00 m |
| WIDTH | 0.00 m |
| AREA OF STACK or DUCT | 1.48 m ³ |

STACK GAS PHYSICAL PARAMETERS

| | |
|--------------------------------|-------------|
| AVERAGE GAS TEMPERATURE | 130.9 °C |
| AVERAGE GAS MOISTURE BY VOLUME | 16.7 % |
| AVERAGE GAS VELOCITY | 15.97 m/s |
| BAROMETRIC PRESSURE (Station) | 102.133 Kpa |
| STATIC PRESSURE | -2.490 Kpa |
| ABSOLUTE GAS PRESSURE | 99.643 Kpa |
| OXYGEN CONCENTRATION | 7.36 % |
| CARBON DIOXIDE CONCENTRATION | 12.03 % |
| CARBON MONOXIDE CONCENTRATION | 14.0 ppm |

FLOWRATE

| | |
|----------------------|--------------------------|
| ACTUAL GAS FLOWRATE | 23.59 m ³ /s |
| DRY REF GAS FLOWRATE | 14.27 Rm ³ /s |
| DRY ADJ GAS FLOWRATE | 19.51 Rm ³ /s |
| WET REF GAS FLOWRATE | 17.12 Rm ³ /s |

PARTICULATE EMISSION DATA

| | | |
|-----------------------------|---------|-------------------------|
| PARTICULATE COLLECTED | -PROBE | 0 mg |
| | -FILTER | 0 mg |
| | -TOTAL | 0 mg |
| DRY REF GAS VOLUME SAMPLED | | 4.685 m ³ |
| PARTICULATE CONC. - ACTUAL | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY REF | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY ADJ | | 0.000 mg/m ⁴ |
| PARTICULATE CONC. - WET REF | | 0.000 mg/m ³ |
| PARTICULATE EMISSION RATE | | 0.00000 g/s |

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)

Note: Dry Adj condition refers to 25 deg C (77 deg F) and 1 atmosphere, adjusted to 11% oxygen by volume

ORTECH Environmental

Plant: Covanta - DYEC
Plant Location: Courtice, ON
Test Location: Unit No. 2 BH Outlet
Test No.: 3 - SVOC
Date: October 2, 2015

STACK GAS SAMPLING PARAMETERS

| | |
|----------------------------|----------------------|
| PITOT TUBE COEFFICIENT | 0.845 |
| DGM CORRECTION FACTOR | 1.004 |
| NOZZLE DIAMETER | 6.46 mm |
| DRY REF GAS VOLUME SAMPLED | 4.538 m ³ |
| AVGERGE ISOKINETICITY | 102.7 % |
| STACK DIAMETER | 1.37 m |
| LENGTH | 0.00 m |
| WIDTH | 0.00 m |
| AREA OF STACK or DUCT | 1.48 m ³ |

STACK GAS PHYSICAL PARAMETERS

| | |
|--------------------------------|-------------|
| AVERAGE GAS TEMPERATURE | 133.4 °C |
| AVERAGE GAS MOISTURE BY VOLUME | 16.8 % |
| AVERAGE GAS VELOCITY | 15.63 m/s |
| BAROMETRIC PRESSURE (Station) | 102.066 Kpa |
| STATIC PRESSURE | -2.515 Kpa |
| ABSOLUTE GAS PRESSURE | 99.551 Kpa |
| OXYGEN CONCENTRATION | 7.28 % |
| CARBON DIOXIDE CONCENTRATION | 12.04 % |
| CARBON MONOXIDE CONCENTRATION | 11.8 ppm |

FLOWRATE

| | |
|----------------------|--------------------------|
| ACTUAL GAS FLOWRATE | 23.09 m ³ /s |
| DRY REF GAS FLOWRATE | 13.84 Rm ³ /s |
| DRY ADJ GAS FLOWRATE | 19.04 Rm ³ /s |
| WET REF GAS FLOWRATE | 16.64 Rm ³ /s |

PARTICULATE EMISSION DATA

| | | |
|-----------------------------|---------|-------------------------|
| PARTICULATE COLLECTED | -PROBE | 0 mg |
| | -FILTER | 0 mg |
| | -TOTAL | 0 mg |
| DRY REF GAS VOLUME SAMPLED | | 4.538 m ³ |
| PARTICULATE CONC. - ACTUAL | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY REF | | 0.000 mg/m ³ |
| PARTICULATE CONC. - DRY ADJ | | 0.000 mg/m ⁴ |
| PARTICULATE CONC. - WET REF | | 0.000 mg/m ³ |
| PARTICULATE EMISSION RATE | | 0.00000 g/s |

Note: * Reference conditions refers to 25 deg C (77 deg F) and 101.325 kPa (29.92 in. Hg)


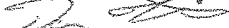
Note: Dry Adj condition refers to 25 deg C (77 deg F) and 1 atmosphere, adjusted to 11% oxygen by volume

APPENDIX 7

**ORTECH Equipment Calibrations
(8 pages)**

**ORTECH Environmental
Pitot Tube Calibration**

| | |
|-----------------------|------------------|
| Date | January 19, 2015 |
| Probe/Pitot ID | S6 |
| MII Number | B03767 |
| Calibrated Against | B02911 |
| Cp standard | 0.99948 |
| Calibration Procedure | 93-T62-SP-012 |

| | |
|----------------------|---|
| Calibration Facility | ORTECH Environmental |
| Calibrated By | David Utley |
| Signature |  |
| Reviewed/Accepted By |  |

| |
|---|
| $C_p = C_{pstd} * \sqrt{\frac{P_{std}}{P_s}}$ |
|---|

| Configuration | Wind Tunnel Velocity m/s | Velocity Head Standard Pitot in. H ₂ O Pstd | Velocity Head S-Type Pitot in. H ₂ O Ps | S-Type Pitot Coefficient Cp _s | Deviation From The Mean |
|------------------------|-----------------------------|---|---|--|-------------------------------|
| With Nozzle (0.25") | 7.88 | 0.150 | 0.210 | 0.845 | 0.0048 |
| | 10.13 | 0.248 | 0.340 | 0.854 | 0.0041 |
| | 12.03 | 0.350 | 0.490 | 0.845 | 0.0048 |
| | 14.45 | 0.505 | 0.700 | 0.849 | 0.0006 |
| | 15.73 | 0.598 | 0.816 | 0.856 | 0.0061 |
| | | | Mean | 0.850 | 0.0041 |

| | | | | | |
|----------------|-------|-------|-------|-------|--------|
| Without Nozzle | 7.98 | 0.154 | 0.215 | 0.846 | 0.0013 |
| | 10.21 | 0.252 | 0.348 | 0.851 | 0.0033 |
| | 12.10 | 0.354 | 0.486 | 0.853 | 0.0058 |
| | 14.23 | 0.490 | 0.690 | 0.842 | 0.0049 |
| | 15.73 | 0.598 | 0.838 | 0.844 | 0.0029 |
| | | | Mean | 0.847 | 0.0037 |

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:

The Cp of Standard Pitots must be in the range of 0.99 ±0.01.

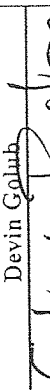
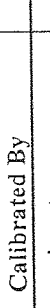
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the MOE Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated.

(Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Environmental Dry Gas Meter Calibration Data

| | |
|-----------------------|---------------------|
| Calibration Procedure | 03 - J004 |
| Meter Number | Team 4 |
| Date | 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 |  |

ft³ = cm * 1.332 litres per cm/28.3168 litres per ft³


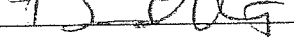
$$DGMCf = \frac{V_{std} \text{ ft}^3}{V_{dgm} \text{ ft}^3} \cdot \frac{T_{dgm} \text{ } ^\circ\text{F} + 460}{T_{std} \text{ } ^\circ\text{F} + 460} \cdot \frac{P_{bar} \text{ (in. Hg)}}{(P_{bar} \text{ in. Hg} + DGMP \text{ Pressure}/13.6)}$$

| Gasometer Reading | | Gasometer Volume ft ³ | Gasometer Temperature °C | DGM Reading ft ³ | | DGM Volume ft ³ | DGM Average Temperature °F | DGM Pressure in. H ₂ O | DGM Outlet °F | DGM Calibration Factor | Time min. |
|-------------------|-------|----------------------------------|--------------------------|-----------------------------|---------|----------------------------|----------------------------|-----------------------------------|---------------|------------------------|-----------|
| Initial | Final | | | Initial | Final | | | | | | |
| 87.80 | 23.90 | 3.006 | 23.0 | 175.285 | 178.325 | 3.040 | 80 | 0.8 | 77 | 0.999 | 6 |
| 88.30 | 24.60 | 2.996 | 23.0 | 143.240 | 146.265 | 3.025 | 79.5 | 0.8 | 75 | 1.000 | 6 |
| 88.30 | 24.70 | 2.992 | 23.0 | 146.265 | 149.280 | 3.015 | 80.5 | 0.8 | 76 | 1.003 | 6 |
| 88.10 | 23.80 | 3.025 | 23.0 | 153.035 | 156.070 | 3.035 | 81 | 1.9 | 76 | 1.006 | 4 |
| 88.00 | 23.70 | 3.025 | 23.0 | 156.070 | 159.120 | 3.050 | 82 | 1.9 | 77 | 1.003 | 4 |
| 88.00 | 23.50 | 3.034 | 23.0 | 159.120 | 162.175 | 3.055 | 81.5 | 1.9 | 77 | 1.003 | 4 |
| 87.80 | 21.00 | 3.142 | 23.0 | 171.950 | 175.080 | 3.130 | 80.5 | 3.5 | 77 | 1.008 | 3 |
| 87.90 | 21.00 | 3.147 | 23.0 | 165.675 | 168.820 | 3.145 | 79.5 | 3.5 | 77 | 1.003 | 3 |
| 88.00 | 21.30 | 3.138 | 23.0 | 168.820 | 171.950 | 3.130 | 79.5 | 3.5 | 77 | 1.005 | 3 |

DGMCf AVERAGE 1.004
BEFORE 0.976

Acceptance Criteria:
Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCf average value must be 1.00 ± 0.05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use. (Environment Canada Reference Method EPS 1/RM/8, Section 6)

ORTECH Environmental Trendicator Calibration

| | |
|--------------------------|--|
| Calibration Procedure | 03 - J005 |
| Trendicator Type | Omega DP116 |
| MIH | COE 20090 |
| Date | August 21, 2015 |
| Calibrated By | Devin Golub |
| Signature |  |
| Reviewed and Accepted By |  |

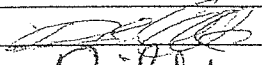
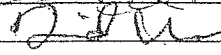
| Fluke Calibrator Output (COE 20024) (°F) | Trendicator Display Value | | Percent Difference (%) |
|--|---------------------------|--------------------------|------------------------------|
| | Before Adjustment (°F) | After Adjustment (°F) | |
| 32 | 32 | N/A | 0.0 |
| 70 | 70 | | 0.0 |
| 100 | 100 | | 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 |

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

Acceptance Criteria:

Trendicator display must read within $\pm 1.5\%$ 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 | | |
| MIH Number | B02679 | | |
| Calibration Procedure | 03 - J010 | | |

Front Leg

| Manometer Scale "H ₂ O | Manometer Reading "H ₂ O | | Reference Manometer Reading "H ₂ O | Percent Difference % |
|--------------------------------------|--|------------------|--|-------------------------|
| | Before Adjustment | After Adjustment | | |
| | 0.850 | NA | 0.840 | -1.2 |
| 0-1.0 | 0.505 | ↓ | 0.500 | -1.0 |
| | 0.240 | | 0.233 | -3.0 |
| 1.0-10.0 | 8.50 | | 8.500 | 0.0 |
| | 4.85 | 4.870 | 0.4 | |
| | 2.00 | 1.950 | -2.6 | |

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer} - \text{Instrument Reading})}{\text{Ref. Manometer}} \times 100$$


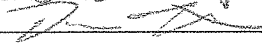
Acceptance Criteria:

The manometer being calibrated must be within $\pm 5.0\%$ 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 "H₂O on the 0 to 1 inch scale, and 0.05 "H₂O on the 1 to 10 inch scales.

(Environment Canada Reference Method 1/RM/8, Section 2)

ORTECH Environmental Pitot Tube Calibration

| | |
|-----------------------|------------------|
| Date | January 19, 2015 |
| Probe/Pitot ID | (D2) |
| MII Number | COE20108 |
| Calibrated Against | B02911 |
| Cp standard | 0.99948 |
| Calibration Procedure | 93-T62-SP-012 |

| | |
|----------------------|---|
| Calibration Facility | ORTECH Environmental |
| Calibrated By | David Utley |
| Signature |  |
| Reviewed/Accepted By |  |

$$C_p = C_{pstd} * \sqrt{\frac{P_{std}}{P_s}}$$

| Configuration | Wind Tunnel Velocity m/s | Velocity Head Standard Pitot in. H ₂ O P _{std} | Velocity Head S-Type Pitot in. H ₂ O P _s | S-Type Pitot Coefficient C _{p_s} | Deviation From The Mean |
|------------------------|-----------------------------|---|---|---|-------------------------------|
| With Nozzle (0.25") | 8.06 | 0.157 | 0.218 | 0.848 | 0.0018 |
| | 9.96 | 0.240 | 0.337 | 0.843 | 0.0029 |
| | 12.29 | 0.365 | 0.510 | 0.846 | 0.0008 |
| | 14.79 | 0.529 | 0.723 | 0.855 | 0.0086 |
| | 15.78 | 0.602 | 0.853 | 0.840 | 0.0067 |
| | | | Mean | 0.846 | 0.0042 |

| | | | | | |
|----------------|-------|-------|-------|-------|--------|
| Without Nozzle | 7.88 | 0.150 | 0.206 | 0.853 | 0.0043 |
| | 9.71 | 0.228 | 0.310 | 0.857 | 0.0086 |
| | 12.45 | 0.375 | 0.519 | 0.850 | 0.0011 |
| | 14.66 | 0.520 | 0.733 | 0.842 | 0.0067 |
| | 15.75 | 0.600 | 0.847 | 0.841 | 0.0073 |
| | | | Mean | 0.849 | 0.0056 |

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:

The C_p of Standard Pitots must be in the range of 0.99 ±0.01.


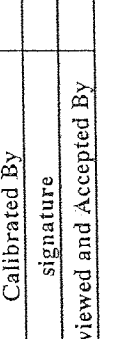
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the MOE Source Testing Code. If the pitot meets these measurement requirements it is assigned a C_p of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated.

(Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Environmental
Dry Gas Meter Calibration Data

| | |
|-----------------------|--------------------|
| Calibration Procedure | 03-J004 |
| Meter Number | Team 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 |  |

ft³ = cm³ * 1.332 litres per cm³ / 28.3168 litres per ft³



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

| Gasometer Reading | | Gasometer Volume ft ³ | Gasometer Temperature °C | DGM Reading ft ³ | | DGM Volume ft ³ | DGM Average Temperature °F | DGM Pressure in. H ₂ O | DGM Outlet °F | DGM Calibration Factor | Time min. |
|-------------------|-------|----------------------------------|--------------------------|-----------------------------|---------|----------------------------|----------------------------|-----------------------------------|---------------|------------------------|-----------|
| Initial | Final | | | Initial | Final | | | | | | |
| 88.50 | 26.20 | 2.931 | 23.0 | 89.970 | 92.985 | 3.015 | 76 | 0.83 | 76 | 0.975 | 6 |
| 88.40 | 26.20 | 2.926 | 23.0 | 92.985 | 95.985 | 3.000 | 76.5 | 0.83 | 76 | 0.979 | 6 |
| 88.60 | 26.50 | 2.921 | 23.0 | 95.985 | 98.970 | 2.985 | 77 | 0.83 | 76 | 0.983 | 6 |
| 88.60 | 28.50 | 2.827 | 23.0 | 99.250 | 102.160 | 2.910 | 77 | 1.8 | 77 | 0.974 | 4 |
| 88.60 | 28.00 | 2.851 | 23.0 | 102.160 | 105.050 | 2.890 | 77.5 | 1.8 | 77 | 0.990 | 4 |
| 88.00 | 27.30 | 2.855 | 23.0 | 105.050 | 107.970 | 2.920 | 77.5 | 1.8 | 77 | 0.981 | 4 |
| 88.60 | 25.00 | 2.992 | 23.0 | 108.300 | 111.355 | 3.055 | 77.5 | 3.4 | 77 | 0.979 | 3 |
| 88.50 | 24.90 | 2.992 | 23.0 | 111.355 | 114.395 | 3.040 | 78.5 | 3.4 | 77 | 0.985 | 3 |
| 88.50 | 24.90 | 2.992 | 23.0 | 114.395 | 117.425 | 3.030 | 77.5 | 3.4 | 77 | 0.987 | 3 |

DGMCF AVERAGE 0.981
BEFORE 0.970

Acceptance Criteria:
Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0.05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

ORTECH Environmental Trendicator Calibration

| | |
|--------------------------|--|
| Calibration Procedure | 03 - J005 |
| Trendicator Type | Team 3 |
| MII | COE 20093 |
| Date | August 20, 2015 |
| Calibrated By | Devin Golub |
| Signature |  |
| Reviewed and Accepted By |  |



| Fluke Calibrator Output (COE 20024) (°F) | Trendicator Display Value | | Percent Difference (%) |
|--|---------------------------|--------------------------|------------------------------|
| | Before Adjustment (°F) | After Adjustment (°F) | |
| 32 | 32 | NA | 0.0 |
| 70 | 70 | | 0.0 |
| 100 | 100 | | 0.0 |
| 200 | 201 | | -0.5 |
| 250 | 251 | | -0.4 |
| 300 | 301 | | -0.3 |
| 400 | 400 | | 0.0 |
| 500 | 499 | | 0.2 |
| 600 | 600 | | 0.0 |
| 700 | 702 | | -0.3 |
| 800 | 801 | | -0.1 |
| 900 | 901 | | -0.1 |
| 1000 | 1002 | | -0.2 |
| 1100 | 1102 | | -0.2 |
| 1200 | 1202 | | -0.2 |
| 1250 | 1252 | | -0.2 |

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

Acceptance Criteria:

Trendicator display must read within $\pm 1.5\%$ 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 | | |
| MIJ Number | B02679 | | |
| Calibration Procedure | 03 - J010 | | |

Front Leg

| Manometer Scale "H ₂ O | Manometer Reading "H ₂ O | | Reference Manometer Reading "H ₂ O | Percent Difference % |
|--------------------------------------|--|------------------|--|-------------------------|
| | Before Adjustment | After Adjustment | | |
| | 0.930 | NA | 0.925 | -0.5 |
| 0-1.0 | 0.525 | ↓ | 0.524 | -0.2 |
| | 0.200 | | 0.198 | -1.0 |
| | 7.70 | | 7.66 | -0.5 |
| 1.0-10.0 | 5.20 | | 5.17 | -0.6 |
| | 2.25 | 2.22 | -1.4 | |

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer} - \text{Instrument Reading})}{\text{Ref. Manometer}} \times 100$$

Acceptance Criteria:

The manometer being calibrated must be within $\pm 5.0\%$ 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 "H₂O on the 0 to 1 inch scale, and 0.05 "H₂O on the 1 to 10 inch scales.

(Environment Canada Reference Method 1/RM/8, Section 2)