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Test Report for Relative Accuracy Test Audit on Municipal Waste Combustor Units 1 and 2 Conducted at Dutchess County Resource Recovery Facility in Poughkeepsie, New York

Covanta Report Number 3391

Prepared for

Covanta Hudson Valley Renewable Energy LLC
Poughkeepsie, New York

Test Dates: February 16-17, 2010
Report Date: April 6, 2010

ACG Contract Number V10742

The Air Compliance Group, LLC

TEST REPORT CERTIFICATION

Air Emissions Test Report for RATA Testing
Conducted at Dutchess County Resource Recovery Facility, Poughkeepsie, NY
Prepared for Covanta Hudson Valley Renewable Energy LLC

Test Dates: February 16 -17, 2010
Report Date: April 6, 2010
ACG Contract Number: V10742

We certify that, to the best of our knowledge, this source test report has been checked for completeness, and that the results presented herein are accurate, error-free, legible, and representative of the actual emissions measured during testing.

Signature ..... *Date* . 4/6/10 .....
David Lohmeyer, QSTI (electronic signature)
Project Manager
The Air Compliance Group, LLC

Signature ..... *Date* . 4/6/10.....
David Vecellio, QSTI (electronic signature)
Project Manager - Reporting
The Air Compliance Group, LLC

I have supplied facility data in Appendix J of this test report, and I certify that I believe the information provided to be true, accurate, and complete. For results of the sites QA/QC program, refer to Covanta Hudson Valley Renewable Energy LLC.

Signature ..... *Date* .....
Dan White
Representative of Covanta Hudson Valley Renewable Energy LLC

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1.0 Introduction

1.1 Background A relative accuracy test audit (RATA) was conducted for Covanta Hudson Valley Renewable Energy LLC on the continuous emission monitoring systems (CEMS) at the Dutchess County Resource Recovery Facility (DCRRF) in Poughkeepsie, New York. The test program was performed on February 16 - 17, 2010 by The Air Compliance Group, LLC (ACG) of Roanoke, Virginia. ACG personnel participating in the test program were David Lohmeyer and Mike Henry. Dan White of Covanta Hudson Valley Renewable Energy LLC coordinated the test program.

CEMS are operated and maintained at the inlet and outlet of the air pollution control (APC) equipment serving each of two combustor trains at the facility. The outlet CEMS include analyzers for oxygen (O_2), carbon monoxide (CO), sulfur dioxide (SO_2), and nitrogen oxides (NO_x). The inlet CEMS include analyzers for oxygen (O_2) and sulfur dioxide (SO_2),

1.2 Test Objective The purpose of the RATA program was to evaluate compliance with the requirements set forth in the *Code of Federal Regulations,* Title 40, Part 60, Appendix F, and in the facility's NYS DEC Title V Permit #3-1345-00019/00013, issued by the New York State Department of Environmental Conservation (NYSDEC). These requirements include by reference the detailed test procedures in 40 CFR 60, Appendix B, Performance Specifications 2, 3 and 4A.

1.3 Test Program The test program consisted of relative accuracy evaluations of each of the following monitoring systems:

- CO stack emissions system;
- SO_2 stack emissions system;
- NO_x stack emissions system; and
- SO_2 reduction efficiency system.

A minimum of nine valid relative accuracy (RA) test runs was performed on each of the above CEMS for each combustor unit. The program scope and reference method (RM) procedures used for conducting the tests are summarized in Table 1, as are the reporting units for each relative accuracy comparison.

All relative accuracy comparisons of pollutant monitoring systems are based on units of ppmdv at 7% O_2. Separate relative accuracy determinations of the outlet dry O_2 analyzers were not performed. These analyzers are used solely for pollutant emissions unit conversions (e.g., correction to 7% O_2), and are thus considered part of the corresponding pollutant analyzing systems.

Table 1 - RATA Program Description: Reference Method Requirements

Parameter	Reporting Units	Measurement for	Units	Test Method
CO Emissions	ppmdv @ 7% O_2	Outlet CO Outlet O_2	ppmdv %dv	EPA 10 EPA 3A
SO_2 Emissions	ppmdv @ 7% O_2	Outlet SO_2 Outlet O_2	ppmdv %dv	EPA 6C EPA 3A
SO_2 Reduction Efficiency	% removal	Inlet/Outlet SO_2 Inlet/Outlet O_2	ppmdv %dv	EPA 6C EPA 3A
NO_x Emissions	ppmdv @ 7% O_2	Outlet NO_x Outlet O_2	ppmdv %dv	EPA 7E EPA 3A

2.0 Summary of Results

2.1 Relative Accuracy Test Results All of the Unit 1 and Unit 2 CEMS passed the RA tests. Table 2 summarizes the average RA results for the test program. RA is determined based on a comparison of the emissions reported by the facility CEMS with those determined by the appropriate reference method. RA may be expressed either as a percentage of the applicable pollutant standard or of the average reference method value. Detailed results for each RA determination are contained in Tables 3 through 10 (at the end of the report text). Appendices D and E contain the facility CEMS data collected during the tests. Comprehensive data and results of the RM testing used to evaluate the facility CEMS are contained in Appendices B and C.

2.2 Acceptance Criteria The acceptance criteria for CEMS relative accuracy performance are presented in Table 2, as are the standards that apply for the purposes of determining RA as a percentage of the emissions standard.

2.3 Test Program Problems and Changes All testing was conducted in accordance with the approved test protocol dated January 14, 2010, and no significant changes were made from the protocol. Noteworthy problems that occurred during the testing are discussed below.

Unit 2 SO_2 Outlet and SO_2 Reduction RATA Run 5 was voided due to a loss of a slurry pump by the facility during the run. The slurry pump in the system was fixed prior to starting Run 6, and this problem did not recur during testing.

Following Unit 1 RATA Run 4, the reference method SO_2 analyzer used at the inlet location was replaced with another SO_2 analyzer due to an electronic problem with the analyzer's source lamp. A calibration and bias check was performed and passed prior to the analyzer being placed into service, and the analyzer was used for the remaining RATA runs.

Table 2 - Overall Summary of Results and Relative Accuracy Evaluation Criteria

RATA TEST PROGRAM: DUTCHESS COUNTY RESOURCE RECOVERY FACILITY (February 2010)

CEMS description	Reporting units	Total valid runs	Valid runs used in RA	Absolute average difference + Conf. Coeff.	Relative accuracy (percent)	Performance (basis)	
Unit 1 SO2	ppmdv @ 7% O2	11	9	Not Applicable	8.55	Pass	(applicable limit)
Unit 1 NOX	ppmdv @ 7% O2	10	9	Not Applicable	3.45	Pass	(average reference method)
Unit 1 CO	ppmdv @ 7% O2	11	9	5.21	2.09	Pass	(applicable limit)
Unit 1 SO2 Reduction	% removal efficiency	10	9	Not Applicable	10.38	Pass	(average reference method)
Unit 2 SO2	ppmdv @ 7% O2	10	9	Not Applicable	5.23	Pass	(applicable limit)
Unit 2 NOX	ppmdv @ 7% O2	10	9	Not Applicable	7.87	Pass	(average reference method)
Unit 2 CO	ppmdv @ 7% O2	10	9	9.37	3.75	Pass	(applicable limit)
Unit 2 SO2 Reduction	% removal efficiency	10	9	Not Applicable	5.01	Pass	(average reference method)

Acceptance Criteria for CEMS Relative Accuracy Testing

Pollutant monitor	Criteria	Basis	References
SO2 stack emissions	20%	Average reference method	40 CFR Part 60, Appendix B, PS 2
	10%	Applicable limit	40 CFR Part 60, Appendix B, PS 2
NOX stack emissions	20%	Average reference method	40 CFR Part 60, Appendix B, PS 2
	10%	Applicable limit	40 CFR Part 60, Appendix B, PS 2
CO stack emissions	10%	Average reference method	40 CFR Part 60, Appendix B, PS 4 and 4A
	5%	Applicable limit	40 CFR Part 60, Appendix B, PS 4 and 4A
	5 ppmdv	Absolute average difference + Confidence Coefficient	40 CFR Part 60, Appendix B, PS 4A
SO2 Reduction	20%	Average reference method	40 CFR Part 60, Appendix B, PS 2
	10%	Applicable limit	40 CFR Part 60, Appendix B, PS 2

Note: The reference method percentage is used when average emissions during the test are ≥ 50% of the emissions standard. The applicable limit is used when average emissions are < 50% of the emissions standard. For CO, the absolute average difference may be used when neither the 10% nor the 5% RA is met.

Applicable Limits

SO2	31 ppmdv @ 7% O2
NOX	170 ppmdv @ 7% O2
CO	250 ppmdv @ 7% O2
SO2 Reduction	75% reduction

3.0 Facility Description

The Dutchess County facility consists of two parallel, identical trains with Westinghouse O'Connor water-walled rotary combustors, each of which is permitted to burn approximately 456 tons per day (228 tpd per unit) of municipal solid waste. Figure 1 shows the general layout for the facility. Each combustor train is served by a spray dryer absorber (SDA) and a fabric filter baghouse (FF). The SDA/FFs are designed to meet particulate matter limits of 27 milligrams per dry standard cubic foot corrected to 7% O_2. Each incinerator train exhausts through a 48-inch inside diameter stack 200' above grade. Stack liners are contained in a common stack. Sampling ports are located at the test platforms at the inlet duct (56" inside diameter) to the spray dryer and the outlet duct (48" inside diameter). Sampling ports are installed on each inlet duct approximately four feet above the test platform. The outlet test ports are located approximately 13 feet from the ground next to the ID fan inlet ducts.

Appendix J contains the facility steam rate data for the testing. Only MSW was burned during the testing.

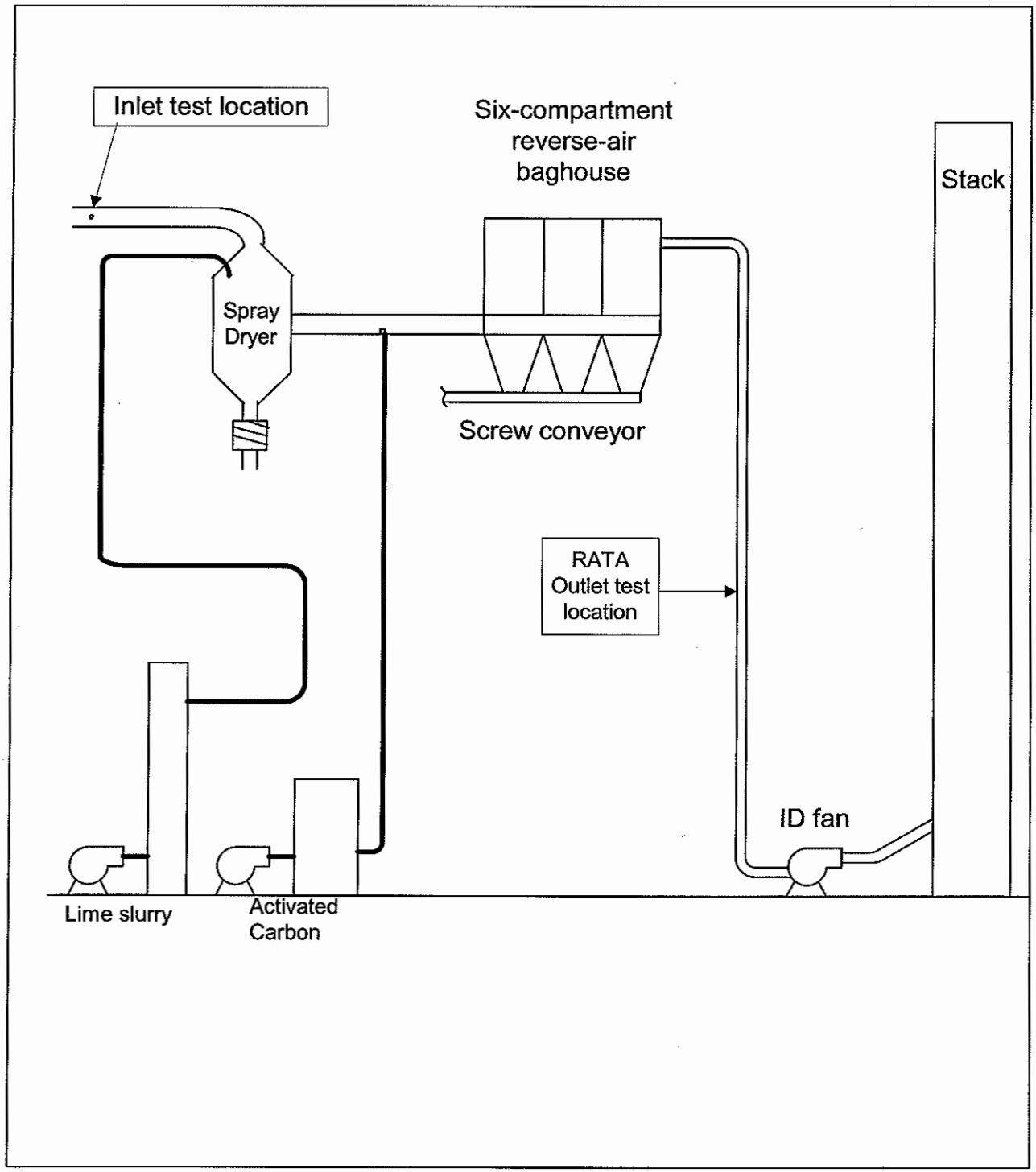

Figure 1 - Schematic of Emissions Control System at DCRRF

3.1 Continuous Emissions Monitoring System Description

CEMS are operated and maintained at the inlet to and the outlet of the air pollution control (APC) equipment of two combustor trains at the facility. The facility operates an Altech Continuous Emissions Monitoring System consisting of a MIR9000 gas analyzer on the SDA outlet of each incinerator train. The outlet analyzers measure SO_2 (0-300 ppm), NO_x (0-250 ppm), CO (0-500 and 0-1000 ppm), and O_2 (0-25%). The SDA inlets each have one Ametek O_2 (0-25%) and a Rosemount SO_2 (0-500 ppm).

The MIR9000 utilizes gas filter correlation infrared (GFCIR) technology to determine emission concentrations of NO_x and CO in specific infrared ranges. A correlation wheel with gas and reference optical filters allows precise selective measurements of each gas, and eliminates cross sensitivity from other gases present. Reference and measurement signals from the infrared detector are utilized by a microprocessor to determine actual gas concentrations. An integral paramagnetic analyzer in the MIR9000 determines O_2 concentration. The inlet sample is analyzed by a Rosemount SO_2 analyzer and Ametek O_2 analyzer. All four analyzing points have an "SEC" box, which is a dry sampling probe that uses the permeation principle to remove excess moisture from the sample gas. Data acquisition is a TRACE data logger that logs data and creates reports through communications with three PLCs, one for each boiler in the CEMS shelter and the third in the control room.

4.0 Relative Accuracy Test Audit Approach

The overall approach of the test program for the gaseous monitors is derived from Performance Specifications 2, 3 and 4A of 40 CFR 60, Appendix B.

Three sampling points were traversed at each test location. The three points were located at 16.7, 50.0, and 83.3 percent of the measurement line from the stack wall. Each point was sampled for 7 minutes during each RA test. Each test lasted 21 minutes, and each test compared 21 consecutive minutes of reference method (RM) data with the 21-minute average from the CEMS computer. RM measurements for each associated component of a given system (e.g., pollutant and O_2 concentrations of a pollutant emissions system) were made simultaneously in order to correct pollutant concentrations to 7% O_2. RM measurements were made on a dry volume basis. The differences between the RM results and the monitor readings were determined for a minimum of nine sets of tests. The RA was then determined directly from these differences, and was based on the units of the applicable standard or operational criteria applied to each system.

5.0 Reference Method Test Procedures

5.1 Sampling and Analytical Procedures The procedures used during this RATA program were all derived from the methods outlined in 40 CFR 60, Appendix A. The reference methods for O_2, CO, SO_2 and NO_x are as follows:

O_2 - EPA Reference Method 3A
SO_2 - EPA Reference Method 6C
NO_x - EPA Reference Method 7E
CO - EPA Reference Method 10

An extractive sampling system was used to perform the instrumental monitoring of all the gases (see Figure 2). The system consisted of a heated stainless steel probe to withdraw the stack gas, an in-stack sintered filter to remove particulate, a refrigerative condensation system to remove the flue gas moisture, and a Teflon diaphragm pump to deliver the gas sample to the gas analyzers. A heated Teflon sample line transported the wet stack gas from the probe and filter to the condenser located at ground level. The dry gases were then transported through an unheated Teflon sample line to a battery of analyzers. All connections from the probe to the monitors were made of either stainless steel or Teflon. Inside the mobile laboratory, the gases entered a sampling manifold, which disperses them to the individual monitors.

The analyzing system consisted of the following: two Western Research Model 721AT (or M) UV photometric SO_2 analyzers, a California Analytical Model 600 HCLD NO_x analyzer,

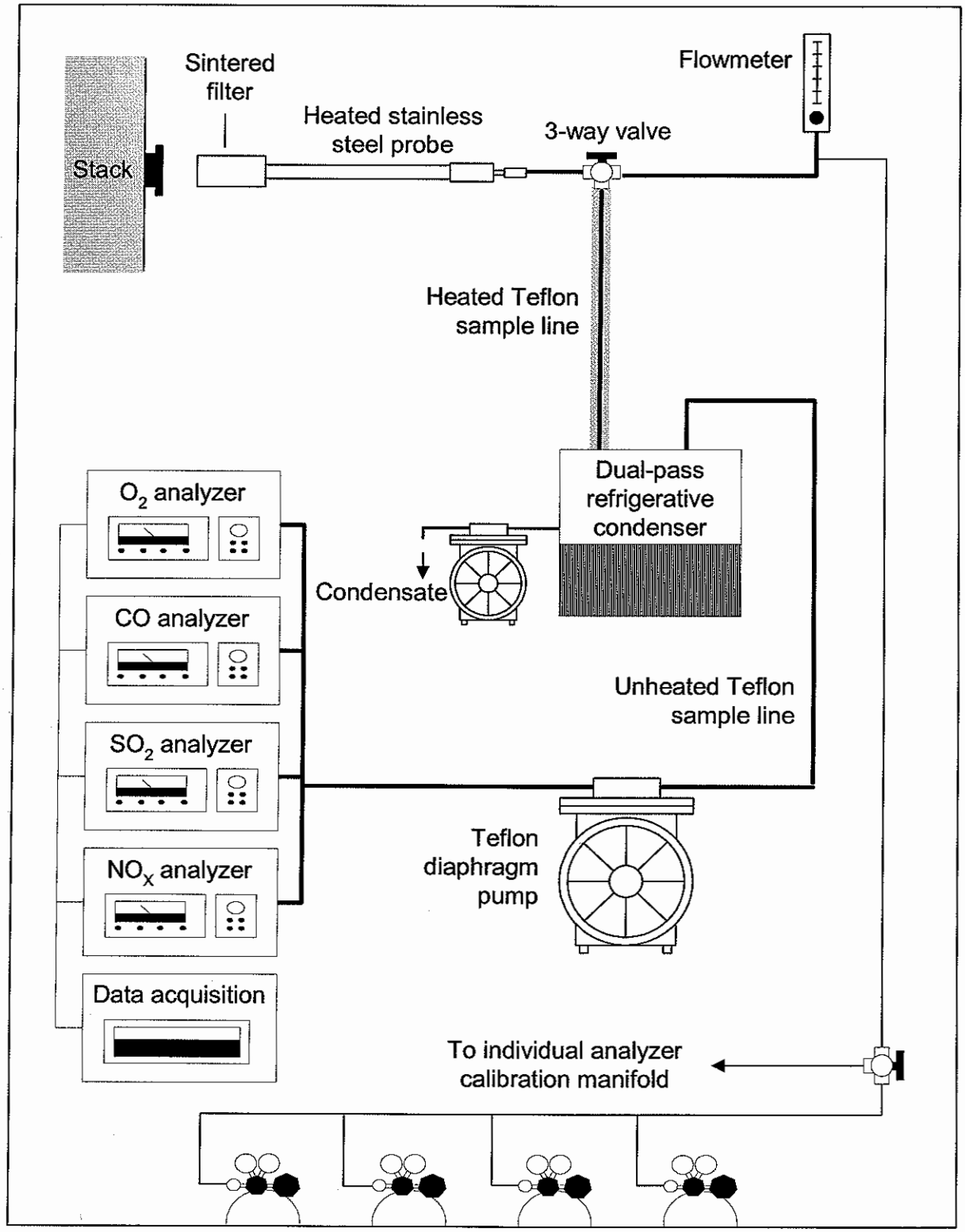

Figure 2 - Instrumental Sampling System for EPA Methods 3A, 6C, 7E and 10

a California Analytical Model 601 CO analyzer, and a California Analytical Model 602 O_2 and CO_2 analyzer. The analyzers were housed remotely inside a controlled-environment mobile laboratory at the base of the stack. Data was recorded by a digital data-acquisition system (Campbell Scientific model CR10-WP 12-channel remote data recorder), and was collected at a rate of one sample per second, with one-minute and 21-minute average values stored and reported.

The analyzers were calibrated using EPA Protocol 1 certified calibration gases blended in nitrogen. Each day, three calibration gases (zero, mid-level and high-level) were introduced into each monitor to determine calibration error. Calibration error was required to be less than two percent in order for testing to proceed. A two-point system calibration bias check was performed before the start of the first run, and periodically after runs, in order to determine system bias and calibration drift. The system bias was required to be less than five percent of span in order to validate a test run.

5.2 Data Analysis All equations related to the reference method sampling and relative accuracy determinations are shown in Appendix F, which also contains sample calculations based on actual data from the test program.

5.3 Equipment Calibration Field equipment was calibrated in accordance with the requirements of the applicable EPA Methods. Appendix G contains records for all of the calibrations. Gas cylinder certificates of analysis are contained in Appendix H. Data for reference method analyzer performance checks are included in Appendix I.

TABLE 3
CO CEMS RELATIVE ACCURACY RESULTS
DUTCHESS COUNTY RESOURCE RECOVERY FACILITY

UNIT 1

				REFERENCE METHOD DATA			CEMS DATA	DIFFERENCE
RUN NUMBER	DATE	START TIME	END TIME	O2 CONC. (%dv)	CO CONC. (ppmdv)	CO CONC @7% O2 (ppmdv)	CO CONC. @7% O2 (ppmdv)	CO CONC. @7% O2 (ppmdv)
U1-RATA-R1	2/16/2010	8:20	8:41	9.68	40.65	50.36	52.00	-1.64
U1-RATA-R2	2/16/2010	9:03	9:24	9.67	101.10	125.14	115.00	10.14
U1-RATA-R3	2/16/2010	9:45	10:06	10.23	64.85	84.48	81.00	3.48
U1-RATA-R4	2/16/2010	10:27	10:48	10.19	99.48	129.11	120.00	9.11
U1-RATA-R5	2/16/2010	13:22	13:43	11.21	27.98	40.14	35.00	5.14
U1-RATA-R6	2/16/2010	14:12	14:33	9.90	47.14	59.57	51.00	8.57
U1-RATA-R7	2/16/2010	14:54	15:15	10.20	21.20	27.54	26.00	1.54
U1-RATA-R8	2/16/2010	18:23	18:44	9.74	23.75	29.58	28.00	1.58
U1-RATA-R9	2/16/2010	19:11	19:32	9.71	35.43	44.01	44.00	0.01
U1-RATA-R10	2/16/2010	20:16	20:37	8.99	49.35	57.60	54.00	3.60
U1-RATA-R11	2/16/2010	21:07	21:28	10.19	33.86	43.95	40.00	3.95
AVERAGE OF 9 TEST RUNS (excluding runs 2 and 4)						48.58	45.67	2.91
ABSOLUTE AVERAGE DIFFERENCE								2.91
STANDARD DEVIATION								2.99
CONFIDENCE COEFFICIENT								2.30
RELATIVE ACCURACY BASED ON REFERENCE METHOD (%)								10.73
RELATIVE ACCURACE BASED ON LIMIT*								2.09
ABSOLUTE AVERAGE DIFFERENCE + CONFIDENCE COEFFICIENT								5.21

* Emission limit is 250 ppmdv @ 7% O2.

TABLE 4
CO CEMS RELATIVE ACCURACY RESULTS
DUTCHESS COUNTY RESOURCE RECOVERY FACILITY

UNIT 2

				REFERENCE METHOD DATA			CEMS DATA	DIFFERENCE
RUN NUMBER	DATE	START TIME	END TIME	O2 CONC. (%dv)	CO CONC. (ppmdv)	CO CONC @7% O2 (ppmdv)	CO CONC. @7% O2 (ppmdv)	CO CONC. @7% O2 (ppmdv)
U2-RATA-R1	2/17/2010	9:35	9:56	10.11	120.11	154.73	144.00	10.73
U2-RATA-R2	2/17/2010	10:15	10:36	10.33	72.57	95.43	90.00	5.43
U2-RATA-R3	2/17/2010	11:00	11:21	10.56	73.36	98.62	88.00	10.62
U2-RATA-R4	2/17/2010	11:38	11:59	10.65	79.39	107.66	98.00	9.66
U2-RATA-R5	2/17/2010	12:21	12:42	10.26	52.22	68.22	60.00	8.22
U2-RATA-R6	2/17/2010	13:05	13:26	10.42	51.43	68.21	77.00	-8.79
U2-RATA-R7	2/17/2010	13:48	14:09	9.82	95.42	119.71	116.00	3.71
U2-RATA-R8	2/17/2010	14:30	14:51	9.72	140.37	174.52	146.00	28.52
U2-RATA-R9	2/17/2010	15:14	15:35	10.04	136.11	174.21	177.00	-2.79
U2-RATA-R10	2/17/2010	15:58	16:19	10.69	41.40	56.36	55.00	1.36
AVERAGE OF 9 TEST RUNS (excluding run 8)						104.79	100.56	4.24
ABSOLUTE AVERAGE DIFFERENCE								4.24
STANDARD DEVIATION								6.68
CONFIDENCE COEFFICIENT								5.14
RELATIVE ACCURACY BASED ON REFERENCE METHOD (%)								8.95
RELATIVE ACCURACE BASED ON LIMIT*								3.75
ABSOLUTE AVERAGE DIFFERENCE + CONFIDENCE COEFFICIENT								9.37

* Emission limit is 250 ppmdv @ 7% O2.

TABLE 5
SO2-CEMS RELATIVE ACCURACY RESULTS
DUTCHESS COUNTY RESOURCE RECOVERY FACILITY

UNIT 1

				REFERENCE METHOD DATA			CEMS DATA	DIFFERENCE
RUN NUMBER	DATE	START TIME	END TIME	O2 CONC. (%dv)	SO2 CONC. (ppmdv)	SO2 CONC. @7% O2 (ppmdv)	SO2 CONC. @7% O2 (ppmdv)	SO2 CONC. @7% O2 (ppmdv)
U1-RATA-R1	2/16/2010	8:20	8:41	9.68	1.88	2.33	0.00	2.33
U1-RATA-R2	2/16/2010	9:03	9:24	9.67	4.04	5.00	1.00	4.00
U1-RATA-R3	2/16/2010	9:45	10:06	10.23	3.64	4.74	0.00	4.74
U1-RATA-R4	2/16/2010	10:27	10:48	10.19	0.87	1.13	0.00	1.13
U1-RATA-R5	2/16/2010	13:22	13:43	11.21	1.87	2.68	3.00	-0.32
U1-RATA-R6	2/16/2010	14:12	14:33	9.90	6.79	8.58	15.00	-6.42
U1-RATA-R7	2/16/2010	14:54	15:15	10.20	11.32	14.71	8.00	6.71
U1-RATA-R8	2/16/2010	18:23	18:44	9.74	20.02	24.94	28.00	-3.06
U1-RATA-R9	2/16/2010	19:11	19:32	9.71	3.48	4.32	1.00	3.32
U1-RATA-R10	2/16/2010	20:16	20:37	8.99	0.22	0.26	1.00	-0.74
U1-RATA-R11	2/16/2010	21:07	21:28	10.19	0.52	0.67	2.00	-1.33
AVERAGE OF 9 TEST RUNS (excluding runs 3 and 7)						5.55	5.67	-0.12
ABSOLUTE AVERAGE DIFFERENCE								0.12
STANDARD DEVIATION								3.29
CONFIDENCE COEFFICIENT								2.53
RELATIVE ACCURACY BASED ON REFERENCE METHOD (%)								47.79
RELATIVE ACCURACY BASED ON LIMIT(%)*								8.55

* Emission limit is 31 ppmdv @ 7% O2.

TABLE 6
SO2-CEMS RELATIVE ACCURACY RESULTS
DUTCHESS COUNTY RESOURCE RECOVERY FACILITY

UNIT 2

				REFERENCE METHOD DATA			CEMS DATA	DIFFERENCE
RUN NUMBER	DATE	START TIME	END TIME	O2 CONC. (%dv)	SO2 CONC. (ppmdv)	SO2 CONC. @7% O2 (ppmdv)	SO2 CONC. @7% O2 (ppmdv)	SO2 CONC. @7% O2 (ppmdv)
U2-RATA-R1	2/17/2010	9:35	9:56	10.11	3.35	4.32	9.00	-4.68
U2-RATA-R2	2/17/2010	10:15	10:36	10.33	1.43	1.88	2.00	-0.12
U2-RATA-R3	2/17/2010	11:00	11:21	10.56	3.13	4.21	5.00	-0.79
U2-RATA-R4	2/17/2010	11:38	11:59	10.65	2.45	3.32	4.00	-0.68
U2-RATA-R5	2/17/2010	12:21	12:42	10.26	13.63	17.81	39.00	-21.19
U2-RATA-R6	2/17/2010	13:05	13:26	10.42	1.43	1.90	0.00	1.90
U2-RATA-R7	2/17/2010	13:48	14:09	9.82	1.03	1.29	0.00	1.29
U2-RATA-R8	2/17/2010	14:30	14:51	9.72	0.99	1.23	1.00	0.23
U2-RATA-R9	2/17/2010	15:14	15:35	10.04	0.68	0.87	0.00	0.87
U2-RATA-R10	2/17/2010	15:58	16:19	10.69	0.48	0.65	0.00	0.65
AVERAGE OF 9 TEST RUNS (excluding run 5)						2.19	2.33	-0.15
ABSOLUTE AVERAGE DIFFERENCE								0.15
STANDARD DEVIATION								1.92
CONFIDENCE COEFFICIENT								1.47
RELATIVE ACCURACY BASED ON REFERENCE METHOD (%)								74.13
RELATIVE ACCURACY BASED ON LIMIT(%)*								5.23

* Emission limit is 31 ppmdv @ 7% O2.

TABLE 7
SO2 REDUCTION CEMS RELATIVE ACCURACY RESULTS
DUTCHESS COUNTY RESOURCE RECOVERY FACILITY

UNIT 1

RUN NUMBER	DATE	START TIME	END TIME	INLET O2 CONC. (%dv)	INLET SO2 CONC. (ppmdv)	REFERENCE METHOD DATA INLET SO2@7%O2 (ppmdv)	OUTLET SO2@7%O2 (ppmdv)	PERCENT REDUCT. (%)	CEMS DATA PERCENT REDUCT. (%)	DIFFERENCE PERCENT REDUCT. (%)
U1-RATA-R1	2/16/2010	8:20	8:41	7.90	21.40	22.88	2.33	89.82	100.00	-10.18
U1-RATA-R2	2/16/2010	9:03	9:24	7.86	33.21	35.40	5.00	85.87	99.00	-13.13
U1-RATA-R3	2/16/2010	9:45	10:06	8.81	28.81	33.12	4.74	85.68	99.00	-13.32
U1-RATA-R4	2/16/2010	10:27	10:48	8.59	23.53	26.57	1.13	95.75	100.00	-4.25
U1-RATA-R5	2/16/2010	13:22	13:43	9.53	64.17	78.45	2.68	96.58	97.00	-0.42
U1-RATA-R6	2/16/2010	14:12	14:33	8.15	102.25	111.47	8.58	92.30	91.00	1.30
U1-RATA-R7	2/16/2010	14:54	15:15	8.70	74.05	84.37	14.71	82.57	95.00	-12.43
U1-RATA-R8	2/16/2010	18:23	18:44	8.20	129.74	142.00	24.94	82.44	86.00	-3.56
U1-RATA-R9	2/16/2010	19:11	19:32	8.14	67.82	73.88	4.32	94.15	99.00	-4.85
U1-RATA-R10	2/16/2010	20:16	20:37	7.56	49.94	52.04	0.26	99.51	99.00	0.51
AVERAGE OF 9 TEST RUNS (excluding run 3)								91.00	96.22	-5.22
ABSOLUTE AVERAGE DIFFERENCE										5.22
STANDARD DEVIATION										5.49
CONFIDENCE COEFFICIENT										4.22
RELATIVE ACCURACY BASED ON REFERENCE METHOD (%)										10.38
RELATIVE ACCURACE BASED ON LIMIT*										12.59

* Limit is 75% reduction efficiency.

TABLE 8
SO2 REDUCTION CEMS RELATIVE ACCURACY RESULTS
DUTCHESS COUNTY RESOURCE RECOVERY FACILITY

UNIT 2

RUN NUMBER	DATE	START TIME	END TIME	INLET O2 CONC. (%dv)	INLET SO2 CONC. (ppmdv)	REFERENCE METHOD DATA INLET SO2@7%O2 (ppmdv)	OUTLET SO2@7%O2 (ppmdv)	PERCENT REDUCT. (%)	CEMS DATA PERCENT REDUCT. (%)	DIFFERENCE PERCENT REDUCT. (%)
U2-RATA-R1	2/17/2010	9:35	9:56	9.12	43.73	51.60	4.32	91.64	91.00	0.64
U2-RATA-R2	2/17/2010	10:15	10:36	10.15	27.87	36.04	1.88	94.78	98.00	-3.22
U2-RATA-R3	2/17/2010	11:00	11:21	11.94	37.75	58.56	4.21	92.82	96.00	-3.18
U2-RATA-R4	2/17/2010	11:38	11:59	12.02	31.49	49.29	3.32	93.26	96.00	-2.74
U2-RATA-R5	2/17/2010	12:21	12:42	11.65	30.57	45.94	17.81	61.24	70.00	-8.76
U2-RATA-R6	2/17/2010	13:05	13:26	11.74	28.12	42.67	1.90	95.56	100.00	-4.44
U2-RATA-R7	2/17/2010	13:48	14:09	11.38	21.95	32.05	1.29	95.97	100.00	-4.03
U2-RATA-R8	2/17/2010	14:30	14:51	11.41	14.28	20.92	1.23	94.12	99.00	-4.88
U2-RATA-R9	2/17/2010	15:14	15:35	11.65	11.95	17.96	0.87	95.15	100.00	-4.85
U2-RATA-R10	2/17/2010	15:58	16:19	12.13	10.02	15.88	0.65	95.89	100.00	-4.11
AVERAGE OF 9 TEST RUNS (excluding run 5)								94.35	97.78	-3.43
ABSOLUTE AVERAGE DIFFERENCE										3.43
STANDARD DEVIATION										1.70
CONFIDENCE COEFFICIENT										1.31
RELATIVE ACCURACY BASED ON REFERENCE METHOD (%)										5.01
RELATIVE ACCURACE BASED ON LIMIT*										6.31

* Limit is 75% reduction efficiency.

TABLE 9
NOx CEMS RELATIVE ACCURACY RESULTS
DUTCHESS COUNTY RESOURCE RECOVERY FACILITY

UNIT 1

				REFERENCE METHOD DATA			CEMS DATA	DIFFERENCE
RUN NUMBER	DATE	START TIME	END TIME	O2 CONC. (%dv)	NOx CONC. (ppmdv)	NOx CONC. @7% O2 (ppmdv)	NOx CONC. @7% O2 (ppmdv)	NOx CONC. @7% O2 (ppmdv)
U1-RATA-R1	2/16/2010	8:20	8:41	9.68	72.91	90.33	92.00	-1.67
U1-RATA-R2	2/16/2010	9:03	9:24	9.67	67.45	83.49	87.00	-3.51
U1-RATA-R3	2/16/2010	9:45	10:06	10.23	78.38	102.11	103.00	-0.89
U1-RATA-R4	2/16/2010	10:27	10:48	10.19	74.54	96.74	102.00	-5.26
U1-RATA-R5	2/16/2010	13:22	13:43	11.21	89.45	128.31	124.00	4.31
U1-RATA-R6	2/16/2010	14:12	14:33	9.90	76.08	96.14	98.00	-1.86
U1-RATA-R7	2/16/2010	14:54	15:15	10.20	84.38	109.62	114.00	-4.38
U1-RATA-R8	2/16/2010	18:23	18:44	9.74	84.33	105.03	103.00	2.03
U1-RATA-R9	2/16/2010	19:11	19:32	9.71	85.11	105.72	104.00	1.72
U1-RATA-R10	2/16/2010	20:16	20:37	8.99	74.08	86.46	94.00	-7.54
AVERAGE OF 9 TEST RUNS (excluding run 10)						101.94	103.00	-1.06
ABSOLUTE AVERAGE DIFFERENCE								1.06
STANDARD DEVIATION								3.20
CONFIDENCE COEFFICIENT								2.46
RELATIVE ACCURACY BASED ON REFERENCE METHOD (%)								3.45
RELATIVE ACCURACE BASED ON LIMIT*								2.07

* Emission limit is 170 ppmdv @ 7% O2.

TABLE 10
NOx CEMS RELATIVE ACCURACY RESULTS
DUTCHESS COUNTY RESOURCE RECOVERY FACILITY

UNIT 2

				REFERENCE METHOD DATA			CEMS DATA	DIFFERENCE
RUN NUMBER	DATE	START TIME	END TIME	O2 CONC. (%dv)	NOx CONC. (ppmdv)	NOx CONC. @7% O2 (ppmdv)	NOx CONC. @7% O2 (ppmdv)	NOx CONC. @7% O2 (ppmdv)
U2-RATA-R1	2/17/2010	9:35	9:56	10.11	75.44	97.18	105.00	-7.82
U2-RATA-R2	2/17/2010	10:15	10:36	10.33	77.10	101.39	107.00	-5.61
U2-RATA-R3	2/17/2010	11:00	11:21	10.56	78.65	105.73	113.00	-7.27
U2-RATA-R4	2/17/2010	11:38	11:59	10.65	82.07	111.29	115.00	-3.71
U2-RATA-R5	2/17/2010	12:21	12:42	10.26	81.07	105.91	111.00	-5.09
U2-RATA-R6	2/17/2010	13:05	13:26	10.42	85.29	113.12	117.00	-3.88
U2-RATA-R7	2/17/2010	13:48	14:09	9.82	74.46	93.41	103.00	-9.59
U2-RATA-R8	2/17/2010	14:30	14:51	9.72	72.15	89.70	99.00	-9.30
U2-RATA-R9	2/17/2010	15:14	15:35	10.04	77.81	99.59	108.00	-8.41
U2-RATA-R10	2/17/2010	15:58	16:19	10.69	88.41	120.36	129.00	-8.64
AVERAGE OF 9 TEST RUNS (excluding run 7)						104.92	111.56	-6.63
ABSOLUTE AVERAGE DIFFERENCE								6.63
STANDARD DEVIATION								2.11
CONFIDENCE COEFFICIENT								1.62
RELATIVE ACCURACY BASED ON REFERENCE METHOD (%)								7.87
RELATIVE ACCURACE BASED ON LIMIT*								4.86

* Emission limit is 170 ppmdv @ 7% O2.

Appendix A

Test Log and List of Contacts

TEST LOG
DUTCHESS RESOURCE MANAGEMENT CENTER
UNIT 1 CEMS

LOCATION	RUN I.D.	DATE	START TIME	END TIME	REFERENCE METHOD(S)	ANALYTE	UNITS	COMMENTS
UNIT 1 OUTLET	U1-RATA-R1	2/16/2010	8:20	8:41	Method 3A	O2	%dv	
UNIT 1 OUTLET	U1-RATA-R2	2/16/2010	9:03	9:24	Method 3A	O2	%dv	
UNIT 1 OUTLET	U1-RATA-R3	2/16/2010	9:45	10:06	Method 3A	O2	%dv	
UNIT 1 OUTLET	U1-RATA-R4	2/16/2010	10:27	10:48	Method 3A	O2	%dv	
UNIT 1 OUTLET	U1-RATA-R5	2/16/2010	13:22	13:43	Method 3A	O2	%dv	
UNIT 1 OUTLET	U1-RATA-R6	2/16/2010	14:12	14:33	Method 3A	O2	%dv	
UNIT 1 OUTLET	U1-RATA-R7	2/16/2010	14:54	15:15	Method 3A	O2	%dv	
UNIT 1 OUTLET	U1-RATA-R8	2/16/2010	18:23	18:44	Method 3A	O2	%dv	
UNIT 1 OUTLET	U1-RATA-R9	2/16/2010	19:11	19:32	Method 3A	O2	%dv	
UNIT 1 OUTLET	U1-RATA-R10	2/16/2010	20:16	20:37	Method 3A	O2	%dv	
UNIT 1 OUTLET	U1-RATA-R11	2/16/2010	21:07	21:28	Method 3A	O2	%dv	
UNIT 1 OUTLET	U1-RATA-R1	2/16/2010	8:20	8:41	Method 6C	SO2	ppmdv	
UNIT 1 OUTLET	U1-RATA-R2	2/16/2010	9:03	9:24	Method 6C	SO2	ppmdv	
UNIT 1 OUTLET	U1-RATA-R3	2/16/2010	9:45	10:06	Method 6C	SO2	ppmdv	
UNIT 1 OUTLET	U1-RATA-R4	2/16/2010	10:27	10:48	Method 6C	SO2	ppmdv	
UNIT 1 OUTLET	U1-RATA-R5	2/16/2010	13:22	13:43	Method 6C	SO2	ppmdv	
UNIT 1 OUTLET	U1-RATA-R6	2/16/2010	14:12	14:33	Method 6C	SO2	ppmdv	
UNIT 1 OUTLET	U1-RATA-R7	2/16/2010	14:54	15:15	Method 6C	SO2	ppmdv	
UNIT 1 OUTLET	U1-RATA-R8	2/16/2010	18:23	18:44	Method 6C	SO2	ppmdv	
UNIT 1 OUTLET	U1-RATA-R9	2/16/2010	19:11	19:32	Method 6C	SO2	ppmdv	
UNIT 1 OUTLET	U1-RATA-R10	2/16/2010	20:16	20:37	Method 6C	SO2	ppmdv	
UNIT 1 OUTLET	U1-RATA-R11	2/16/2010	21:07	21:28	Method 6C	SO2	ppmdv	
UNIT 1 OUTLET	U1-RATA-R1	2/16/2010	8:20	8:41	Method 7E	NOx	ppmdv	
UNIT 1 OUTLET	U1-RATA-R2	2/16/2010	9:03	9:24	Method 7E	NOx	ppmdv	
UNIT 1 OUTLET	U1-RATA-R3	2/16/2010	9:45	10:06	Method 7E	NOx	ppmdv	
UNIT 1 OUTLET	U1-RATA-R4	2/16/2010	10:27	10:48	Method 7E	NOx	ppmdv	
UNIT 1 OUTLET	U1-RATA-R5	2/16/2010	13:22	13:43	Method 7E	NOx	ppmdv	
UNIT 1 OUTLET	U1-RATA-R6	2/16/2010	14:12	14:33	Method 7E	NOx	ppmdv	
UNIT 1 OUTLET	U1-RATA-R7	2/16/2010	14:54	15:15	Method 7E	NOx	ppmdv	
UNIT 1 OUTLET	U1-RATA-R8	2/16/2010	18:23	18:44	Method 7E	NOx	ppmdv	
UNIT 1 OUTLET	U1-RATA-R9	2/16/2010	19:11	19:32	Method 7E	NOx	ppmdv	
UNIT 1 OUTLET	U1-RATA-R10	2/16/2010	20:16	20:37	Method 7E	NOx	ppmdv	
UNIT 1 OUTLET	U1-RATA-R1	2/16/2010	8:20	8:41	Method 10	CO	ppmdv	
UNIT 1 OUTLET	U1-RATA-R2	2/16/2010	9:03	9:24	Method 10	CO	ppmdv	
UNIT 1 OUTLET	U1-RATA-R3	2/16/2010	9:45	10:06	Method 10	CO	ppmdv	
UNIT 1 OUTLET	U1-RATA-R4	2/16/2010	10:27	10:48	Method 10	CO	ppmdv	
UNIT 1 OUTLET	U1-RATA-R5	2/16/2010	13:22	13:43	Method 10	CO	ppmdv	
UNIT 1 OUTLET	U1-RATA-R6	2/16/2010	14:12	14:33	Method 10	CO	ppmdv	
UNIT 1 OUTLET	U1-RATA-R7	2/16/2010	14:54	15:15	Method 10	CO	ppmdv	
UNIT 1 OUTLET	U1-RATA-R8	2/16/2010	18:23	18:44	Method 10	CO	ppmdv	
UNIT 1 OUTLET	U1-RATA-R9	2/16/2010	19:11	19:32	Method 10	CO	ppmdv	
UNIT 1 OUTLET	U1-RATA-R10	2/16/2010	20:16	20:37	Method 10	CO	ppmdv	
UNIT 1 OUTLET	U1-RATA-R11	2/16/2010	21:07	21:28	Method 10	CO	ppmdv	
UNIT 1 INLET	U1-RATA-R1	2/16/2010	8:20	8:41	Method 3A	O2	%dv	
UNIT 1 INLET	U1-RATA-R2	2/16/2010	9:03	9:24	Method 3A	O2	%dv	
UNIT 1 INLET	U1-RATA-R3	2/16/2010	9:45	10:06	Method 3A	O2	%dv	
UNIT 1 INLET	U1-RATA-R4	2/16/2010	10:27	10:48	Method 3A	O2	%dv	
UNIT 1 INLET	U1-RATA-R5	2/16/2010	13:22	13:43	Method 3A	O2	%dv	
UNIT 1 INLET	U1-RATA-R6	2/16/2010	14:12	14:33	Method 3A	O2	%dv	
UNIT 1 INLET	U1-RATA-R7	2/16/2010	14:54	15:15	Method 3A	O2	%dv	
UNIT 1 INLET	U1-RATA-R8	2/16/2010	18:23	18:44	Method 3A	O2	%dv	
UNIT 1 INLET	U1-RATA-R9	2/16/2010	19:11	19:32	Method 3A	O2	%dv	
UNIT 1 INLET	U1-RATA-R10	2/16/2010	20:16	20:37	Method 3A	O2	%dv	
UNIT 1 INLET	U1-RATA-R1	2/16/2010	8:20	8:41	Method 6C	SO2	ppmdv	
UNIT 1 INLET	U1-RATA-R2	2/16/2010	9:03	9:24	Method 6C	SO2	ppmdv	
UNIT 1 INLET	U1-RATA-R3	2/16/2010	9:45	10:06	Method 6C	SO2	ppmdv	
UNIT 1 INLET	U1-RATA-R4	2/16/2010	10:27	10:48	Method 6C	SO2	ppmdv	
UNIT 1 INLET	U1-RATA-R5	2/16/2010	13:22	13:43	Method 6C	SO2	ppmdv	Switched to backup analyzer for Runs 5-10 due to source lamp problem.
UNIT 1 INLET	U1-RATA-R6	2/16/2010	14:12	14:33	Method 6C	SO2	ppmdv	
UNIT 1 INLET	U1-RATA-R7	2/16/2010	14:54	15:15	Method 6C	SO2	ppmdv	
UNIT 1 INLET	U1-RATA-R8	2/16/2010	18:23	18:44	Method 6C	SO2	ppmdv	
UNIT 1 INLET	U1-RATA-R9	2/16/2010	19:11	19:32	Method 6C	SO2	ppmdv	
UNIT 1 INLET	U1-RATA-R10	2/16/2010	20:16	20:37	Method 6C	SO2	ppmdv	

TEST LOG

UNIT 2 CEMS

LOCATION	RUN I.D.	DATE	START TIME	END TIME	REFERENCE METHOD(S)	ANALYTE	UNITS	COMMENTS
UNIT 2 OUTLET	U2-RATA-R1	2/17/2010	9:35	9:56	Method 3A	O2	%dv	
UNIT 2 OUTLET	U2-RATA-R2	2/17/2010	10:15	10:36	Method 3A	O2	%dv	
UNIT 2 OUTLET	U2-RATA-R3	2/17/2010	11:00	11:21	Method 3A	O2	%dv	
UNIT 2 OUTLET	U2-RATA-R4	2/17/2010	11:38	11:59	Method 3A	O2	%dv	
UNIT 2 OUTLET	U2-RATA-R5	2/17/2010	12:21	12:42	Method 3A	O2	%dv	
UNIT 2 OUTLET	U2-RATA-R6	2/17/2010	13:05	13:26	Method 3A	O2	%dv	
UNIT 2 OUTLET	U2-RATA-R7	2/17/2010	13:48	14:09	Method 3A	O2	%dv	
UNIT 2 OUTLET	U2-RATA-R8	2/17/2010	14:30	14:51	Method 3A	O2	%dv	
UNIT 2 OUTLET	U2-RATA-R9	2/17/2010	15:14	15:35	Method 3A	O2	%dv	
UNIT 2 OUTLET	U2-RATA-R10	2/17/2010	15:58	16:19	Method 3A	O2	%dv	
UNIT 2 OUTLET	U2-RATA-R1	2/17/2010	9:35	9:56	Method 6C	SO2	ppmdv	
UNIT 2 OUTLET	U2-RATA-R2	2/17/2010	10:15	10:36	Method 6C	SO2	ppmdv	
UNIT 2 OUTLET	U2-RATA-R3	2/17/2010	11:00	11:21	Method 6C	SO2	ppmdv	
UNIT 2 OUTLET	U2-RATA-R4	2/17/2010	11:38	11:59	Method 6C	SO2	ppmdv	
UNIT 2 OUTLET	U2-RATA-R5	2/17/2010	12:21	12:42	Method 6C	SO2	ppmdv	Facility lost slurry pump during run.
UNIT 2 OUTLET	U2-RATA-R6	2/17/2010	13:05	13:26	Method 6C	SO2	ppmdv	
UNIT 2 OUTLET	U2-RATA-R7	2/17/2010	13:48	14:09	Method 6C	SO2	ppmdv	
UNIT 2 OUTLET	U2-RATA-R8	2/17/2010	14:30	14:51	Method 6C	SO2	ppmdv	
UNIT 2 OUTLET	U2-RATA-R9	2/17/2010	15:14	15:35	Method 6C	SO2	ppmdv	
UNIT 2 OUTLET	U2-RATA-R10	2/17/2010	15:58	16:19	Method 6C	SO2	ppmdv	
UNIT 2 OUTLET	U2-RATA-R1	2/17/2010	9:35	9:56	Method 7E	NOx	ppmdv	
UNIT 2 OUTLET	U2-RATA-R2	2/17/2010	10:15	10:36	Method 7E	NOx	ppmdv	
UNIT 2 OUTLET	U2-RATA-R3	2/17/2010	11:00	11:21	Method 7E	NOx	ppmdv	
UNIT 2 OUTLET	U2-RATA-R4	2/17/2010	11:38	11:59	Method 7E	NOx	ppmdv	
UNIT 2 OUTLET	U2-RATA-R5	2/17/2010	12:21	12:42	Method 7E	NOx	ppmdv	
UNIT 2 OUTLET	U2-RATA-R6	2/17/2010	13:05	13:26	Method 7E	NOx	ppmdv	
UNIT 2 OUTLET	U2-RATA-R7	2/17/2010	13:48	14:09	Method 7E	NOx	ppmdv	
UNIT 2 OUTLET	U2-RATA-R8	2/17/2010	14:30	14:51	Method 7E	NOx	ppmdv	
UNIT 2 OUTLET	U2-RATA-R9	2/17/2010	15:14	15:35	Method 7E	NOx	ppmdv	
UNIT 2 OUTLET	U2-RATA-R10	2/17/2010	15:58	16:19	Method 7E	NOx	ppmdv	
UNIT 2 OUTLET	U2-RATA-R1	2/17/2010	9:35	9:56	Method 10	CO	ppmdv	
UNIT 2 OUTLET	U2-RATA-R2	2/17/2010	10:15	10:36	Method 10	CO	ppmdv	
UNIT 2 OUTLET	U2-RATA-R3	2/17/2010	11:00	11:21	Method 10	CO	ppmdv	
UNIT 2 OUTLET	U2-RATA-R4	2/17/2010	11:38	11:59	Method 10	CO	ppmdv	
UNIT 2 OUTLET	U2-RATA-R5	2/17/2010	12:21	12:42	Method 10	CO	ppmdv	
UNIT 2 OUTLET	U2-RATA-R6	2/17/2010	13:05	13:26	Method 10	CO	ppmdv	
UNIT 2 OUTLET	U2-RATA-R7	2/17/2010	13:48	14:09	Method 10	CO	ppmdv	
UNIT 2 OUTLET	U2-RATA-R8	2/17/2010	14:30	14:51	Method 10	CO	ppmdv	
UNIT 2 OUTLET	U2-RATA-R9	2/17/2010	15:14	15:35	Method 10	CO	ppmdv	
UNIT 2 OUTLET	U2-RATA-R10	2/17/2010	15:58	16:19	Method 10	CO	ppmdv	
UNIT 2 INLET	U2-RATA-R1	2/17/2010	9:35	9:56	Method 3A	O2	%dv	
UNIT 2 INLET	U2-RATA-R2	2/17/2010	10:15	10:36	Method 3A	O2	%dv	
UNIT 2 INLET	U2-RATA-R3	2/17/2010	11:00	11:21	Method 3A	O2	%dv	
UNIT 2 INLET	U2-RATA-R4	2/17/2010	11:38	11:59	Method 3A	O2	%dv	
UNIT 2 INLET	U2-RATA-R5	2/17/2010	12:21	12:42	Method 3A	O2	%dv	
UNIT 2 INLET	U2-RATA-R6	2/17/2010	13:05	13:26	Method 3A	O2	%dv	
UNIT 2 INLET	U2-RATA-R7	2/17/2010	13:48	14:09	Method 3A	O2	%dv	
UNIT 2 INLET	U2-RATA-R8	2/17/2010	14:30	14:51	Method 3A	O2	%dv	
UNIT 2 INLET	U2-RATA-R9	2/17/2010	15:14	15:35	Method 3A	O2	%dv	
UNIT 2 INLET	U2-RATA-R10	2/17/2010	15:58	16:19	Method 3A	O2	%dv	
UNIT 2 INLET	U2-RATA-R1	2/17/2010	9:35	9:56	Method 6C	SO2	ppmdv	
UNIT 2 INLET	U2-RATA-R2	2/17/2010	10:15	10:36	Method 6C	SO2	ppmdv	
UNIT 2 INLET	U2-RATA-R3	2/17/2010	11:00	11:21	Method 6C	SO2	ppmdv	
UNIT 2 INLET	U2-RATA-R4	2/17/2010	11:38	11:59	Method 6C	SO2	ppmdv	
UNIT 2 INLET	U2-RATA-R5	2/17/2010	12:21	12:42	Method 6C	SO2	ppmdv	Facility lost slurry pump during run.
UNIT 2 INLET	U2-RATA-R6	2/17/2010	13:05	13:26	Method 6C	SO2	ppmdv	
UNIT 2 INLET	U2-RATA-R7	2/17/2010	13:48	14:09	Method 6C	SO2	ppmdv	
UNIT 2 INLET	U2-RATA-R8	2/17/2010	14:30	14:51	Method 6C	SO2	ppmdv	
UNIT 2 INLET	U2-RATA-R9	2/17/2010	15:14	15:35	Method 6C	SO2	ppmdv	
UNIT 2 INLET	U2-RATA-R10	2/17/2010	15:58	16:19	Method 6C	SO2	ppmdv	

Contact Information

Facility Dutchess County Resource Recovery Facility Operated by Covanta Hudson Valley Renewable Energy LLC 98 Sand Dock Road Poughkeepsie, New York 12601	*Plant Contact* Mr. Dan White Phone: (845) 462-4650 Ext. 126
Testing Firm The Air Compliance Group, LLC 5075 Hollins Road Roanoke, Virginia 24019	*Testing Firm Contact* Mr. Tony Underwood Phone: (540) 265-1987 ext. 240
Analytical Lab Names, Addresses and Contacts	
None	

Appendix B

Reference Method Data and Results for Unit 1 CEMS

Covanta Hudson Valley
2010 Unit 1 Outlet RATA
February 16, 2010
Run 1 (820-841)

Starting
02-16-10

Time	SO2 Out PPM	NOX Out PPM	CO Out PPM	O2 Out %
08:21	1.70	72.40	45.76	10.21
08:22	1.62	69.97	35.14	10.00
08:23	1.33	74.90	18.83	9.98
08:24	0.91	77.90	19.06	10.48
08:25	1.00	77.80	14.51	10.09
08:26	0.88	73.20	14.45	9.44
08:27	1.06	69.50	49.09	9.12
08:28	1.14	74.30	31.02	9.52
08:29	1.50	65.95	101.70	8.80
08:30	1.73	57.36	142.80	8.99
08:31	1.84	58.86	76.30	8.98
08:32	1.82	64.56	51.76	9.57
08:33	2.18	71.60	46.33	9.58
08:34	2.32	65.94	76.30	9.55
08:35	2.32	66.60	42.01	9.79
08:36	2.55	65.07	28.22	9.66
08:37	2.50	69.59	18.95	9.91
08:38	2.72	81.50	11.47	9.81
08:39	2.94	83.60	10.19	10.27
08:40	3.02	79.60	12.82	10.07
08:41	3.29	85.70	9.32	9.81
21 MinAvg	1.92	71.71	40.76	9.70

Data Corrected for Calibrations

21 MinAvg	1.88	72.91	40.65	9.68

Covanta Hudson Valley
2010 Unit 1 Inlet RATA
February 16, 2010
Run 1 (820-841)

Starting
02-16-10

Time	SO2 In ppm	O2 In %
08:21	20.65	8.32
08:22	21.22	8.26
08:23	19.78	8.55
08:24	16.73	8.97
08:25	19.45	8.15
08:26	23.72	7.60
08:27	26.53	7.53
08:28	25.60	7.37
08:29	28.97	7.10
08:30	23.84	7.40
08:31	23.04	7.46
08:32	22.39	7.93
08:33	21.80	7.87
08:34	20.60	8.03
08:35	20.39	8.17
08:36	22.31	7.93
08:37	18.97	8.19
08:38	17.87	8.18
08:39	17.03	8.45
08:40	17.88	8.25
08:41	19.92	7.92
21 MinAvg	21.37	7.98

Data Corrected for Calibrations

21 MinAvg	21.40	7.90

Covanta Hudson Valley
2010 Unit 1 Outlet RATA
February 16, 2010
Run 2 (903-924)

Starting
02-16-10

Time	SO2 Out PPM	NOX Out PPM	CO Out PPM	O2 Out %
09:04	3.14	55.52	395.50	9.01
09:05	3.73	53.59	345.70	9.26
09:06	3.02	66.61	69.20	10.54
09:07	2.61	70.20	54.13	10.22
09:08	5.55	71.10	83.40	10.12
09:09	5.93	78.30	30.04	10.57
09:10	5.47	82.20	20.12	10.67
09:11	4.62	82.00	13.71	10.22
09:12	4.20	73.10	15.08	9.60
09:13	3.49	75.00	22.56	9.73
09:14	3.34	75.10	20.38	9.60
09:15	3.09	80.70	32.82	9.52
09:16	3.00	76.40	25.66	9.63
09:17	2.43	69.51	15.13	9.37
09:18	3.17	57.04	154.40	9.03
09:19	3.53	53.93	60.27	9.45
09:20	2.40	54.58	32.95	9.24
09:21	5.31	46.61	163.30	9.13
09:22	5.37	54.06	62.97	9.80
09:23	4.65	52.52	270.80	9.23
09:24	4.45	56.96	219.30	9.75
21 MinAvg	3.93	65.95	100.35	9.70

Data Corrected for Calibrations

21 MinAvg	4.04	67.45	101.10	9.67

Covanta Hudson Valley
2010 Unit 1 Inlet RATA
February 16, 2010
Run 2 (903-924)

Starting
02-16-10

Time	SO2 In ppm	O2 In %
09:04	42.67	7.33
09:05	37.56	8.02
09:06	27.09	9.28
09:07	29.41	8.82
09:08	28.39	8.97
09:09	27.01	9.10
09:10	23.28	9.41
09:11	27.11	8.42
09:12	29.77	8.17
09:13	32.09	7.97
09:14	31.04	8.14
09:15	32.95	7.93
09:16	30.76	7.95
09:17	32.31	7.32
09:18	38.56	7.08
09:19	37.03	7.13
09:20	38.08	7.07
09:21	37.37	7.23
09:22	36.37	7.46
09:23	40.10	7.29
09:24	35.08	8.01
21 MinAvg	33.05	8.00

Data Corrected for Calibrations

21 MinAvg	33.21	7.86

Covanta Hudson Valley
2010 Unit 1 Outlet RATA
February 16, 2010
Run 3 (945-1006)

Starting
02-16-10

Time	SO2 Out PPM	NOX Out PPM	CO Out PPM	O2 Out %
09:46	3.28	72.70	46.37	10.48
09:47	3.56	86.90	33.20	10.66
09:48	3.62	100.20	12.26	10.46
09:49	3.41	88.90	25.69	10.66
09:50	3.32	77.10	27.50	10.58
09:51	3.52	78.00	21.68	10.33
09:52	3.48	79.50	20.79	10.26
09:53	3.55	85.40	17.01	9.79
09:54	3.53	80.20	18.87	9.96
09:55	3.68	78.00	24.38	10.08
09:56	3.72	76.00	50.32	9.22
09:57	3.92	64.63	154.30	8.91
09:58	3.77	60.53	117.30	9.50
09:59	3.71	70.40	85.00	9.83
10:00	3.59	64.74	166.30	9.98
10:01	3.46	63.21	189.10	10.31
10:02	3.45	69.50	199.30	10.28
10:03	3.25	82.90	34.49	10.66
10:04	3.22	82.60	26.95	11.26
10:05	3.28	75.10	40.65	11.10
10:06	3.24	74.40	40.59	10.85
21 MinAvg	3.50	76.71	64.38	10.25

Data Corrected for Calibrations

21 MinAvg	3.64	78.38	64.85	10.23

Covanta Hudson Valley
2010 Unit 1 Inlet RATA
February 16, 2010
Run 3 (945-1006)

Starting
02-16-10

Time	SO2 In ppm	O2 In %
09:46	34.63	9.23
09:47	33.15	9.13
09:48	30.35	9.12
09:49	27.53	9.40
09:50	29.04	8.94
09:51	29.00	8.93
09:52	27.94	8.87
09:53	31.70	8.18
09:54	29.43	8.43
09:55	27.18	8.54
09:56	34.92	7.49
09:57	38.60	7.37
09:58	32.25	8.15
09:59	28.94	8.53
10:00	27.94	8.52
10:01	25.26	8.81
10:02	26.26	8.70
10:03	21.90	9.63
10:04	19.24	10.18
10:05	20.92	10.02
10:06	23.81	9.80
21 MinAvg	28.57	8.86

Data Corrected for Calibrations

21 MinAvg	28.81	8.81

Covanta Hudson Valley
2010 Unit 1 Outlet RATA
February 16, 2010
Run 4 (1027-1048)

Starting
02-16-10

Time	SO2 Out PPM	NOX Out PPM	CO Out PPM	O2 Out %
10:28	1.65	85.20	53.18	11.08
10:29	1.21	86.40	44.77	11.15
10:30	1.46	87.00	24.86	11.25
10:31	1.63	83.70	30.23	11.38
10:32	1.27	73.50	53.23	10.74
10:33	2.15	77.50	74.20	10.14
10:34	2.52	67.27	193.20	9.41
10:35	2.13	68.14	137.60	9.41
10:36	1.54	67.98	91.60	9.78
10:37	0.73	61.23	105.00	9.72
10:38	0.15	60.79	208.00	9.25
10:39	-0.11	59.48	405.60	9.64
10:40	-0.29	63.99	222.10	10.21
10:41	-0.61	67.97	72.60	10.52
10:42	-0.84	65.88	89.20	10.16
10:43	-0.84	67.87	61.54	9.59
10:44	-0.72	81.30	61.34	9.96
10:45	0.49	78.90	22.36	10.61
10:46	1.25	83.90	16.27	10.51
10:47	1.43	78.80	30.75	10.24
10:48	2.00	76.10	74.00	9.36
21 MinAvg	0.87	73.47	98.65	10.20

Data Corrected for Calibrations

21 MinAvg	0.87	74.54	99.48	10.19

Covanta Hudson Valley
2010 Unit 1 Inlet RATA
February 16, 2010
Run 4 (1027-1048)

Starting
02-16-10

Time	SO2 In ppm	O2 In %
10:28	20.90	9.85
10:29	21.00	9.80
10:30	20.46	9.96
10:31	19.40	9.92
10:32	21.70	9.15
10:33	24.42	8.41
10:34	28.60	7.69
10:35	26.65	7.62
10:36	23.77	8.38
10:37	25.99	7.67
10:38	29.38	7.48
10:39	27.57	7.99
10:40	20.59	9.31
10:41	19.24	9.04
10:42	22.03	8.36
10:43	24.11	8.14
10:44	21.06	8.68
10:45	19.39	9.06
10:46	20.30	8.80
10:47	22.38	8.54
10:48	29.35	7.53
21 MinAvg	23.25	8.64

Data Corrected for Calibrations

21 MinAvg	23.53	8.59

Covanta Hudson Valley
2010 Unit 1 Outlet RATA
February 16, 2010
Run 5 (1322-1343)

Starting
02-16-10

Time	SO2 Out PPM	NOX Out PPM	CO Out PPM	O2 Out %
13:23	3.85	83.80	29.05	11.75
13:24	2.05	88.70	26.75	11.31
13:25	0.76	95.00	17.21	10.87
13:26	1.15	97.40	17.24	10.98
13:27	1.44	93.20	17.86	11.77
13:28	1.16	87.80	29.77	11.51
13:29	0.78	96.80	17.97	11.26
13:30	2.07	90.30	17.49	10.69
13:31	2.28	89.60	22.25	10.80
13:32	1.69	89.90	22.93	10.61
13:33	1.26	87.80	20.98	11.04
13:34	1.06	86.20	28.78	11.24
13:35	3.88	92.40	26.08	10.99
13:36	3.60	90.50	20.31	10.67
13:37	3.83	85.10	20.96	11.30
13:38	3.01	87.70	24.00	11.21
13:39	2.13	76.80	43.96	11.33
13:40	1.38	74.10	101.90	11.10
13:41	1.08	84.40	45.06	11.03
13:42	0.58	96.40	15.31	11.45
13:43	0.71	96.80	15.49	12.08
21 MinAvg	1.89	89.08	27.68	11.19

Data Corrected for Calibrations

21 MinAvg	1.87	89.45	27.98	11.21

Covanta Hudson Valley
2010 Unit 1 Inlet RATA
February 16, 2010
Run 5 (1322-1343)

Starting
02-16-10

Time	SO2 In ppm	O2 In %
13:23	59.17	10.20
13:24	62.34	9.86
13:25	65.56	9.08
13:26	66.74	9.59
13:27	56.47	10.39
13:28	56.59	9.93
13:29	57.08	9.62
13:30	66.41	8.90
13:31	65.54	9.18
13:32	68.83	8.89
13:33	65.44	9.51
13:34	61.62	9.55
13:35	65.94	9.07
13:36	69.77	9.02
13:37	63.13	9.35
13:38	65.54	9.20
13:39	62.86	9.35
13:40	67.57	8.97
13:41	68.14	9.11
13:42	62.82	9.76
13:43	60.55	10.33
21 MinAvg	63.72	9.47

Data Corrected for Calibrations

21 MinAvg	64.17	9.53

Covanta Hudson Valley
2010 Unit 1 Outlet RATA
February 16, 2010
Run 6 (1412-1433)

Starting
02-16-10

Time	SO2 Out PPM	NOX Out PPM	CO Out PPM	O2 Out %
14:13	6.92	73.50	36.61	10.31
14:14	7.95	76.50	35.30	10.11
14:15	8.76	82.50	36.65	9.65
14:16	3.99	80.40	39.85	9.95
14:17	5.93	77.30	35.98	10.26
14:18	7.94	77.90	35.69	10.54
14:19	8.77	74.70	37.47	10.34
14:20	9.60	74.30	52.31	10.38
14:21	9.12	78.70	35.98	10.66
14:22	7.82	83.30	25.02	10.88
14:23	7.46	82.20	22.37	10.35
14:24	7.07	76.90	32.53	9.84
14:25	7.44	81.10	28.77	9.72
14:26	6.73	78.90	48.71	9.39
14:27	5.74	77.40	36.34	9.59
14:28	5.34	73.30	40.01	9.11
14:29	6.63	72.40	51.62	9.08
14:30	7.19	72.50	43.67	10.01
14:31	5.59	63.46	79.90	9.88
14:32	4.39	58.23	129.40	8.83
14:33	4.52	68.21	93.70	10.05
21 MinAvg	6.90	75.41	46.57	9.95

Data Corrected for Calibrations

21 MinAvg	6.79	76.08	47.14	9.90

Covanta Hudson Valley
2010 Unit 1 Inlet RATA
February 16, 2010
Run 6 (1412-1433)

Starting
02-16-10

Time	SO2 In ppm	O2 In %
14:13	122.40	8.44
14:14	116.30	8.02
14:15	119.30	7.73
14:16	111.60	7.98
14:17	109.80	8.57
14:18	95.60	8.56
14:19	90.10	8.39
14:20	91.10	8.62
14:21	86.30	8.67
14:22	78.20	9.01
14:23	85.40	8.29
14:24	92.20	8.00
14:25	90.50	7.94
14:26	99.70	7.81
14:27	94.40	8.28
14:28	107.20	7.63
14:29	116.30	7.38
14:30	95.20	8.60
14:31	93.90	7.89
14:32	126.90	6.99
14:33	102.40	8.59
21 MinAvg	101.18	8.16

Data Corrected for Calibrations

21 MinAvg	102.25	8.15

Covanta Hudson Valley
2010 Unit 1 Outlet RATA
February 16, 2010
Run 7 (1454-1515)

Starting
02-16-10

Time	SO2 Out PPM	NOX Out PPM	CO Out PPM	O2 Out %
14:55	14.16	79.30	20.75	10.97
14:56	10.34	92.40	13.80	11.18
14:57	8.08	95.30	14.53	10.94
14:58	6.59	88.50	17.06	10.74
14:59	5.96	83.90	15.94	10.28
15:00	5.85	91.30	17.80	10.20
15:01	6.15	84.50	22.66	9.71
15:02	7.03	81.30	26.88	9.40
15:03	6.93	80.50	36.04	9.20
15:04	7.69	79.70	29.89	9.23
15:05	9.69	73.40	24.62	9.12
15:06	11.51	77.40	18.05	9.59
15:07	13.34	74.90	24.11	9.89
15:08	14.55	70.30	39.46	10.32
15:09	14.50	75.20	22.58	10.38
15:10	14.50	86.80	17.02	11.08
15:11	14.78	88.60	17.25	10.98
15:12	15.30	93.90	13.79	10.93
15:13	16.03	90.50	13.90	10.45
15:14	15.96	85.50	17.56	10.86
15:15	18.87	84.60	23.17	10.92
21 MinAvg	11.32	83.70	21.28	10.30

Data Corrected for Calibrations

21 MinAvg	11.32	84.38	21.20	10.20

Covanta Hudson Valley
2010 Unit 1 Inlet RATA
February 16, 2010
Run 7 (1454-1515)

Starting
02-16-10

Time	SO2 In ppm	O2 In %
14:55	59.13	9.23
14:56	55.76	9.35
14:57	63.35	9.06
14:58	65.79	8.94
14:59	79.30	8.45
15:00	82.40	8.40
15:01	87.40	7.98
15:02	89.10	7.76
15:03	93.50	7.64
15:04	86.90	8.21
15:05	76.20	7.84
15:06	72.00	8.30
15:07	73.40	8.50
15:08	66.91	8.74
15:09	70.50	9.15
15:10	64.32	9.64
15:11	71.10	9.42
15:12	66.89	9.26
15:13	71.20	8.86
15:14	68.23	9.42
15:15	72.70	9.12
21 MinAvg	73.15	8.73

Data Corrected for Calibrations

21 MinAvg	74.05	8.70

Covanta Hudson Valley
2010 Unit 1 Outlet RATA
February 16, 2010
Run 8 (1823-1844)

Starting
02-16-10

Time	SO2 Out PPM	NOX Out PPM	CO Out PPM	O2 Out %
18:24	13.99	95.10	17.34	9.55
18:25	16.15	78.60	20.68	9.25
18:26	17.00	88.60	14.85	9.45
18:27	16.54	76.50	23.04	8.90
18:28	17.87	69.57	60.60	9.05
18:29	18.98	81.50	26.17	9.57
18:30	18.38	81.30	32.63	9.11
18:31	11.67	80.60	20.81	9.89
18:32	14.16	78.90	28.80	9.86
18:33	23.54	80.00	28.19	11.04
18:34	22.45	74.10	26.65	10.91
18:35	22.07	80.30	19.39	10.00
18:36	23.55	85.00	14.23	10.08
18:37	23.63	92.30	16.99	10.57
18:38	22.88	96.30	16.34	10.33
18:39	21.95	95.40	13.98	10.13
18:40	21.77	95.20	15.67	9.96
18:41	14.29	81.40	15.49	10.13
18:42	14.25	86.20	38.58	8.96
18:43	26.62	92.00	27.11	9.86
18:44	27.04	83.10	23.32	9.58
21 MinAvg	19.47	84.38	23.85	9.82

Data Corrected for Calibrations

21 MinAvg	20.02	84.33	23.75	9.74

Covanta Hudson Valley
2010 Unit 1 Inlet RATA
February 16, 2010
Run 8 (1823-1844)

Starting
02-16-10

Time	SO2 In ppm	O2 In %
18:24	145.50	7.79
18:25	163.20	7.69
18:26	144.90	7.91
18:27	162.70	7.46
18:28	156.60	7.79
18:29	137.00	7.64
18:30	150.10	7.73
18:31	130.80	8.32
18:32	129.80	8.63
18:33	107.00	9.74
18:34	122.60	8.65
18:35	141.30	7.99
18:36	119.50	8.56
18:37	101.40	8.81
18:38	100.00	8.27
18:39	104.10	8.39
18:40	110.30	8.21
18:41	103.90	7.96
18:42	132.40	7.57
18:43	110.30	8.67
18:44	112.60	7.57
21 MinAvg	127.90	8.16

Data Corrected for Calibrations

21 MinAvg	129.74	8.20

Covanta Hudson Valley
2010 Unit 1 Outlet RATA
February 16, 2010
Run 9 (1911-1932)

Starting
02-16-10

Time	SO2 Out PPM	NOX Out PPM	CO Out PPM	O2 Out %
19:12	4.93	83.50	20.96	9.48
19:13	4.50	84.20	31.56	9.69
19:14	3.90	76.10	100.10	9.30
19:15	3.66	83.30	24.46	9.94
19:16	3.29	84.20	17.86	9.92
19:17	2.95	98.00	26.86	10.30
19:18	2.74	85.20	19.60	10.46
19:19	2.39	95.60	16.98	9.93
19:20	2.16	104.20	14.82	9.77
19:21	2.06	103.20	11.80	9.87
19:22	2.13	87.20	20.42	8.97
19:23	7.89	85.00	28.20	8.76
19:24	5.00	93.30	23.88	9.61
19:25	4.87	80.90	29.72	9.69
19:26	4.85	82.70	49.38	9.44
19:27	4.15	73.90	82.80	9.10
19:28	2.14	75.80	34.82	9.76
19:29	2.17	73.10	35.54	9.84
19:30	2.42	70.20	70.00	9.04
19:31	2.37	85.30	52.15	9.95
19:32	2.21	87.20	23.29	10.97
21 MinAvg	3.47	85.34	35.01	9.70

Data Corrected for Calibrations

21 MinAvg	3.48	85.11	35.43	9.71

Covanta Hudson Valley
2010 Unit 1 Inlet RATA
February 16, 2010
Run 9 (1911-1932)

Starting
02-16-10

Time	SO2 In ppm	O2 In %
19:12	91.40	7.51
19:13	102.20	7.65
19:14	97.60	7.70
19:15	78.90	8.12
19:16	73.10	8.19
19:17	65.12	8.72
19:18	58.83	8.33
19:19	65.41	8.23
19:20	62.79	8.51
19:21	60.22	8.03
19:22	66.36	7.28
19:23	69.74	7.77
19:24	65.57	7.80
19:25	60.07	8.47
19:26	58.46	7.30
19:27	63.93	7.83
19:28	57.11	8.27
19:29	55.28	7.86
19:30	65.42	7.36
19:31	50.84	9.03
19:32	40.82	9.63
21 MinAvg	67.10	8.08

Data Corrected for Calibrations

21 MinAvg	67.82	8.14

Covanta Hudson Valley
2010 Unit 1 Outlet RATA
February 16, 2010
Run 10 (2016-2037)

Starting
02-16-10

Time	SO2 Out PPM	NOX Out PPM	CO Out PPM	O2 Out %
20:17	0.04	83.20	21.91	9.24
20:18	-0.02	86.10	19.20	9.50
20:19	-0.24	84.30	26.65	8.72
20:20	-0.36	80.70	19.96	8.31
20:21	-0.37	80.70	40.49	8.34
20:22	-0.57	79.00	45.96	8.67
20:23	0.44	73.50	46.80	8.91
20:24	0.48	70.60	59.33	8.65
20:25	0.53	61.66	168.20	8.17
20:26	0.44	64.85	93.50	9.02
20:27	0.46	73.00	35.00	9.66
20:28	0.57	67.31	29.08	9.89
20:29	0.77	71.40	28.44	10.22
20:30	0.77	76.50	19.08	10.00
20:31	0.84	79.90	15.37	10.34
20:32	0.99	75.70	17.18	9.59
20:33	1.04	78.00	44.06	8.57
20:34	1.12	77.50	36.92	8.29
20:35	0.76	75.00	46.99	8.34
20:36	1.12	62.22	83.00	7.98
20:37	1.11	57.34	123.70	7.72
21 MinAvg	0.47	74.21	48.61	8.96

Data Corrected for Calibrations

21 MinAvg	0.22	74.08	49.35	8.99

Covanta Hudson Valley
2010 Unit 1 Inlet RATA
February 16, 2010
Run 10 (2016-2037)

Starting
02-16-10

Time	SO2 In ppm	O2 In %
20:17	51.96	7.98
20:18	47.76	7.47
20:19	48.29	7.18
20:20	50.16	6.90
20:21	47.98	7.49
20:22	48.30	7.17
20:23	47.55	7.56
20:24	53.00	6.87
20:25	61.73	7.25
20:26	47.88	7.90
20:27	40.12	8.22
20:28	39.65	8.57
20:29	43.38	8.02
20:30	38.72	8.50
20:31	37.79	8.19
20:32	42.21	7.49
20:33	59.53	6.74
20:34	52.00	7.30
20:35	60.43	6.97
20:36	54.06	7.37
20:37	62.03	6.63
21 MinAvg	49.26	7.51

Data Corrected for Calibrations

21 MinAvg	49.94	7.56

Covanta Hudson Valley
2010 Unit 1 Outlet RATA
February 16, 2010
Run 11 (2107-2128)

Starting
02-16-10

Time	SO2 Out PPM	CO Out PPM	O2 Out %
21:08	5.63	25.95	9.97
21:09	1.59	31.89	10.44
21:10	2.11	25.90	10.25
21:11	1.87	43.86	10.18
21:12	1.55	64.38	10.20
21:13	3.07	42.84	10.32
21:14	1.15	39.58	9.94
21:15	0.81	56.55	9.96
21:16	0.32	27.11	10.23
21:17	-0.66	11.85	10.17
21:18	-0.67	15.67	9.89
21:19	-0.18	16.30	9.94
21:20	0.43	14.80	10.57
21:21	-0.05	19.34	9.95
21:22	-0.37	37.29	10.39
21:23	0.35	15.05	10.10
21:24	0.22	17.63	10.60
21:25	0.18	52.78	10.32
21:26	-0.05	45.73	10.39
21:27	-0.06	67.09	10.05
21:28	0.17	32.29	10.13
21 MinAvg	0.83	33.52	10.19

Data Corrected for Calibrations

21 MinAvg	0.52	33.86	10.19

Appendix C

Reference Method Data and Results for Unit 2 CEMS

Covanta Hudson Valley
2010 Unit 2 Outlet RATA
February 17, 2010
Run 1 (935-956)

Starting
02-17-10

Time	SO2 Out PPM	NOX Out PPM	CO Out PPM	O2 Out %
09:36	3.20	81.70	62.83	10.50
09:37	3.62	79.30	47.12	10.35
09:38	3.90	75.50	30.48	10.41
09:39	3.77	75.30	43.10	10.29
09:40	3.20	70.90	94.30	9.44
09:41	2.81	78.40	131.10	9.32
09:42	3.03	79.70	80.60	9.74
09:43	3.47	80.10	116.90	9.77
09:44	3.98	69.68	156.70	9.93
09:45	4.13	58.79	331.40	9.06
09:46	4.20	57.23	506.00	8.89
09:47	4.45	61.68	328.30	9.45
09:48	4.10	66.65	109.40	10.44
09:49	3.65	74.80	68.82	10.86
09:50	3.30	76.50	43.55	10.84
09:51	3.43	69.51	138.80	10.16
09:52	4.41	74.10	67.96	10.83
09:53	3.53	80.30	54.62	10.66
09:54	2.56	82.50	39.46	10.72
09:55	1.84	73.80	54.21	10.80
09:56	1.25	82.10	44.72	10.86
21 MinAvg	3.42	73.74	121.45	10.16

Data Corrected for Calibrations

21 MinAvg	3.35	75.44	120.11	10.11

Covanta Hudson Valley
2010 Unit 2 Inlet RATA
February 17, 2010
Run 1 (935-956)

Starting
02-17-10

Time	SO2 In ppm	O2 In %
09:36	38.63	9.22
09:37	40.91	9.20
09:38	40.06	9.27
09:39	40.04	9.13
09:40	44.79	8.08
09:41	47.96	8.36
09:42	47.97	8.69
09:43	47.88	8.66
09:44	48.31	8.77
09:45	53.89	7.76
09:46	56.79	7.86
09:47	53.01	8.65
09:48	42.97	9.56
09:49	37.51	10.07
09:50	37.62	9.70
09:51	45.15	9.20
09:52	42.74	10.03
09:53	37.81	9.70
09:54	35.67	9.92
09:55	33.43	9.90
09:56	33.16	9.95
21 MinAvg	43.16	9.13

Data Corrected for Calibrations

21 MinAvg	43.73	9.12

Covanta Hudson Valley
2010 Unit 2 Outlet RATA
February 17, 2010
Run 2 (1015-1036)

Starting
02-17-10

Time	SO2 Out PPM	NOX Out PPM	CO Out PPM	O2 Out %
10:16	3.73	74.50	45.36	11.66
10:17	2.77	68.59	39.39	10.71
10:18	2.51	75.80	32.76	10.49
10:19	2.69	79.10	46.35	9.52
10:20	2.63	74.30	66.97	9.10
10:21	2.12	83.00	55.71	9.67
10:22	1.68	79.60	44.79	9.66
10:23	1.32	81.10	55.02	9.41
10:24	1.04	65.71	251.00	8.94
10:25	1.37	67.32	118.70	9.57
10:26	1.55	66.21	164.60	9.80
10:27	1.46	63.00	118.70	10.20
10:28	1.01	66.35	115.60	10.16
10:29	0.73	76.70	63.62	10.42
10:30	0.73	71.20	64.37	10.89
10:31	0.82	76.80	43.74	11.26
10:32	0.87	80.80	41.88	10.95
10:33	0.72	75.30	25.83	11.04
10:34	0.46	78.30	54.34	11.01
10:35	0.14	86.50	56.07	11.72
10:36	0.20	88.40	38.72	11.59
21 MinAvg	1.45	75.17	73.50	10.37

Data Corrected for Calibrations

21 MinAvg	1.43	77.10	72.57	10.33

Covanta Hudson Valley
2010 Unit 2 Inlet RATA
February 17, 2010
Run 2 (1015-1036)

Starting
02-17-10

Time	SO2 In ppm	O2 In %
10:16	22.63	11.12
10:17	25.43	10.23
10:18	26.88	10.13
10:19	28.89	9.28
10:20	31.19	9.00
10:21	29.67	9.82
10:22	30.11	9.65
10:23	33.57	9.27
10:24	38.54	8.66
10:25	37.01	9.39
10:26	33.67	9.58
10:27	30.35	10.05
10:28	28.85	9.88
10:29	27.26	10.16
10:30	26.25	10.60
10:31	24.07	10.99
10:32	23.27	10.62
10:33	21.78	10.76
10:34	21.53	10.97
10:35	19.39	11.61
10:36	18.85	11.45
21 MinAvg	27.58	10.15

Data Corrected for Calibrations

21 MinAvg	27.87	10.15

Covanta Hudson Valley
2010 Unit 2 Outlet RATA
February 17, 2010
Run 3 (1100-1121)

Starting
02-17-10

Time	SO2 Out PPM	NOX Out PPM	CO Out PPM	O2 Out %
11:01	5.45	84.00	26.17	10.79
11:02	3.50	83.40	27.75	11.42
11:03	2.77	67.92	82.30	10.57
11:04	2.80	63.68	197.10	9.74
11:05	3.26	66.89	198.30	9.51
11:06	3.76	62.62	252.70	9.59
11:07	2.67	68.29	111.10	10.10
11:08	1.75	69.28	83.20	10.71
11:09	1.28	75.00	55.08	11.46
11:10	3.65	80.90	43.93	11.72
11:11	10.47	78.50	40.03	11.31
11:12	6.72	83.90	27.26	10.95
11:13	3.77	85.50	34.61	11.51
11:14	2.28	83.20	36.01	11.28
11:15	1.65	83.60	48.52	10.82
11:16	1.04	71.60	43.03	10.05
11:17	1.01	79.10	80.60	9.51
11:18	1.33	85.30	34.12	9.70
11:19	1.39	80.20	64.28	9.77
11:20	1.49	78.30	38.66	10.47
11:21	2.28	89.70	25.82	10.81
21 MinAvg	3.06	77.18	73.84	10.56

Data Corrected for Calibrations

21 MinAvg	3.13	78.65	73.36	10.56

Covanta Hudson Valley
2010 Unit 2 Inlet RATA
February 17, 2010
Run 3 (1100-1121)

Starting
02-17-10

Time	SO2 In ppm	O2 In %
11:01	29.62	12.35
11:02	31.54	12.83
11:03	35.89	11.90
11:04	42.02	11.17
11:05	50.77	11.03
11:06	52.57	11.18
11:07	44.87	11.54
11:08	40.03	12.10
11:09	34.61	12.67
11:10	36.60	12.89
11:11	41.50	12.46
11:12	40.09	12.28
11:13	32.32	12.74
11:14	29.13	12.44
11:15	30.39	12.05
11:16	33.20	11.43
11:17	39.42	10.95
11:18	39.71	11.11
11:19	39.97	11.21
11:20	34.87	11.86
11:21	30.85	12.02
21 MinAvg	37.62	11.91

Data Corrected for Calibrations

21 MinAvg	37.75	11.94

Covanta Hudson Valley
2010 Unit 2 Outlet RATA
February 17, 2010
Run 4 (1138-1159)

Starting
02-17-10

Time	SO2 Out PPM	NOX Out PPM	CO Out PPM	O2 Out %
11:39	3.89	69.88	140.40	9.12
11:40	3.15	80.20	68.43	9.09
11:41	3.45	76.70	80.00	9.36
11:42	5.61	71.10	71.70	9.60
11:43	5.22	75.00	84.60	9.42
11:44	4.21	64.50	343.40	8.62
11:45	4.70	59.36	321.10	9.68
11:46	5.08	76.00	61.51	10.90
11:47	4.33	74.90	82.20	11.40
11:48	2.81	72.20	58.27	10.92
11:49	1.78	82.10	40.85	10.58
11:50	1.10	86.80	27.95	11.18
11:51	0.69	89.50	29.55	11.34
11:52	0.34	93.20	27.00	11.95
11:53	0.20	94.10	28.17	12.03
11:54	0.03	97.50	27.66	11.92
11:55	0.04	89.40	34.12	11.61
11:56	0.76	85.00	41.42	11.71
11:57	1.54	81.80	37.63	10.90
11:58	1.33	80.00	39.08	10.64
11:59	0.66	93.60	24.13	10.85
21 MinAvg	2.42	80.61	79.48	10.61

Data Corrected for Calibrations

21 MinAvg	2.45	82.07	79.39	10.65

Covanta Hudson Valley
2010 Unit 2 Inlet RATA
February 17, 2010
Run 4 (1138-1159)

Starting
02-17-10

Time	SO2 In ppm	O2 In %
11:39	40.90	10.81
11:40	43.63	10.85
11:41	42.05	11.08
11:42	39.76	11.37
11:43	38.12	11.23
11:44	42.77	10.50
11:45	46.28	11.34
11:46	37.36	12.26
11:47	29.19	12.60
11:48	28.12	12.14
11:49	31.38	11.88
11:50	29.61	12.40
11:51	28.38	12.48
11:52	24.44	13.06
11:53	21.66	13.17
11:54	20.44	12.98
11:55	21.44	12.69
11:56	21.38	12.75
11:57	23.72	12.00
11:58	25.88	11.81
11:59	25.86	12.03
21 MinAvg	31.54	11.97

Data Corrected for Calibrations

21 MinAvg	31.49	12.02

Covanta Hudson Valley
2010 Unit 2 Outlet RATA
February 17, 2010
Run 5 (1221-1242)

Starting
02-17-10

Time	SO2 Out PPM	NOX Out PPM	CO Out PPM	O2 Out %
12:22	4.50	58.52	145.60	9.35
12:23	3.45	64.71	117.50	9.04
12:24	10.35	64.61	118.00	9.47
12:25	10.28	68.78	56.57	10.08
12:26	7.79	76.00	27.77	11.05
12:27	6.20	76.80	33.38	11.12
12:28	7.91	76.60	41.30	10.53
12:29	14.39	73.00	41.74	10.71
12:30	16.34	84.50	22.30	11.24
12:31	13.27	85.10	21.51	11.49
12:32	9.40	87.20	24.37	11.45
12:33	6.86	89.20	23.63	11.23
12:34	5.17	77.50	33.80	10.68
12:35	9.71	75.90	32.95	10.84
12:36	19.26	86.90	32.31	10.00
12:37	20.63	85.60	46.76	9.72
12:38	25.88	93.10	31.65	9.63
12:39	22.65	95.60	24.56	9.18
12:40	24.23	92.10	27.63	9.86
12:41	24.61	80.40	103.90	9.13
12:42	16.35	78.40	89.00	9.42
21 MinAvg	13.30	79.55	52.20	10.25

Data Corrected for Calibrations

21 MinAvg	13.63	81.07	52.22	10.26

Covanta Hudson Valley
2010 Unit 2 Inlet RATA
February 17, 2010
Run 5 (1221-1242)

Starting
02-17-10

Time	SO2 In ppm	O2 In %
12:22	30.90	10.76
12:23	35.38	10.51
12:24	34.22	10.85
12:25	31.09	11.50
12:26	25.51	12.43
12:27	22.95	12.34
12:28	24.73	11.78
12:29	26.34	11.89
12:30	23.71	12.34
12:31	21.64	12.54
12:32	21.92	12.48
12:33	22.41	12.36
12:34	24.04	12.17
12:35	25.76	12.18
12:36	27.65	11.57
12:37	35.28	11.38
12:38	37.66	11.30
12:39	43.40	10.83
12:40	41.80	11.32
12:41	47.06	10.60
12:42	40.69	10.98
21 MinAvg	30.67	11.62

Data Corrected for Calibrations

21 MinAvg	30.57	11.65

Covanta Hudson Valley
2010 Unit 2 Outlet RATA
February 17, 2010
Run 6 (1305-1326)

Starting
02-17-10

Time	SO2 Out PPM	NOX Out PPM	CO Out PPM	O2 Out %
13:06	3.27	80.10	73.70	10.50
13:07	3.25	92.70	25.53	11.09
13:08	2.84	96.90	19.83	10.77
13:09	2.22	100.50	22.69	11.47
13:10	1.99	95.80	22.28	11.15
13:11	1.97	83.90	31.35	10.89
13:12	1.93	87.00	29.78	10.31
13:13	1.65	87.70	42.60	9.75
13:14	1.68	87.40	40.34	9.79
13:15	1.46	86.90	45.95	9.43
13:16	1.42	86.50	39.92	9.51
13:17	1.36	78.90	72.40	9.52
13:18	1.20	73.10	74.20	9.86
13:19	1.05	73.00	81.00	10.07
13:20	0.94	68.95	164.80	9.65
13:21	0.94	81.60	71.00	10.60
13:22	0.85	82.20	63.78	11.40
13:23	0.94	73.30	72.90	11.33
13:24	1.03	70.30	46.98	10.91
13:25	0.86	83.20	25.38	10.37
13:26	0.68	90.50	20.58	11.43
21 MinAvg	1.60	83.83	51.76	10.47

Data Corrected for Calibrations

21 MinAvg	1.43	85.29	51.43	10.42

Covanta Hudson Valley
2010 Unit 2 Inlet RATA
February 17, 2010
Run 6 (1305-1326)

Starting
02-17-10

Time	SO2 In ppm	O2 In %
13:06	32.20	11.59
13:07	27.99	12.29
13:08	28.12	11.97
13:09	26.76	12.60
13:10	26.70	12.32
13:11	25.58	12.10
13:12	26.60	11.64
13:13	30.39	11.18
13:14	31.34	11.28
13:15	35.07	10.97
13:16	37.30	11.03
13:17	38.87	10.96
13:18	35.40	11.19
13:19	31.40	11.43
13:20	32.20	10.98
13:21	30.56	11.82
13:22	25.61	12.48
13:23	23.99	12.40
13:24	23.42	12.07
13:25	24.92	11.62
13:26	22.73	12.50
21 MinAvg	29.39	11.73

Data Corrected for Calibrations

21 MinAvg	28.12	11.74

Covanta Hudson Valley
2010 Unit 2 Outlet RATA
February 17, 2010
Run 7 (1348-1409)

Starting
02-17-10

Time	SO2 Out PPM	NOX Out PPM	CO Out PPM	O2 Out %
13:49	4.39	68.59	136.50	9.15
13:50	2.74	78.20	69.63	9.45
13:51	2.08	81.00	27.77	9.68
13:52	1.83	84.30	24.68	9.22
13:53	1.57	76.50	115.80	8.69
13:54	1.43	76.70	95.10	8.95
13:55	1.35	73.80	131.30	8.98
13:56	1.25	63.42	336.30	8.92
13:57	1.09	49.59	391.10	9.23
13:58	1.05	59.99	111.60	10.00
13:59	0.89	66.17	118.00	9.75
14:00	0.89	66.28	110.20	10.30
14:01	0.70	66.04	46.23	10.58
14:02	0.87	69.13	38.65	10.43
14:03	0.93	78.10	21.85	10.74
14:04	0.78	86.00	31.28	11.05
14:05	0.62	84.90	41.99	10.97
14:06	0.63	77.40	28.28	10.60
14:07	0.71	74.70	35.20	10.46
14:08	0.79	73.50	34.17	10.30
14:09	0.83	76.40	39.75	9.46
21 MinAvg	1.31	72.89	94.54	9.85

Data Corrected for Calibrations

21 MinAvg	1.03	74.46	95.42	9.82

Covanta Hudson Valley
2010 Unit 2 Inlet RATA
February 17, 2010
Run 7 (1348-1409)

Starting
02-17-10

Time	SO2 In ppm	O2 In %
13:49	28.71	10.74
13:50	30.61	11.08
13:51	26.58	11.30
13:52	25.78	10.94
13:53	28.71	10.40
13:54	29.63	10.61
13:55	28.36	10.59
13:56	30.48	10.56
13:57	32.08	10.87
13:58	27.52	11.41
13:59	25.81	11.24
14:00	24.20	11.70
14:01	20.88	12.00
14:02	19.00	11.95
14:03	17.28	12.27
14:04	15.71	12.52
14:05	14.95	12.44
14:06	14.21	12.17
14:07	15.80	12.03
14:08	17.93	11.95
14:09	20.94	11.22
21 MinAvg	23.58	11.43

Data Corrected for Calibrations

21 MinAvg	21.95	11.38

Covanta Hudson Valley
2010 Unit 2 Outlet RATA
February 17, 2010
Run 8 (1430-1451)

Starting
02-17-10

Time	SO2 Out PPM	NOX Out PPM	CO Out PPM	O2 Out %
14:31	3.10	68.25	223.30	8.60
14:32	3.39	65.70	393.00	8.62
14:33	3.51	63.14	546.50	8.20
14:34	2.95	59.45	357.40	8.80
14:35	2.56	70.40	73.20	10.50
14:36	2.27	74.20	71.40	10.68
14:37	2.35	72.30	69.08	10.26
14:38	1.43	69.97	57.63	10.37
14:39	0.81	72.10	96.80	9.91
14:40	0.73	76.10	28.70	10.61
14:41	0.52	76.40	38.21	11.00
14:42	0.26	75.70	50.90	11.09
14:43	0.16	73.90	43.83	10.49
14:44	0.19	68.55	54.45	10.07
14:45	0.04	68.41	63.75	9.97
14:46	0.23	64.78	34.06	10.27
14:47	0.38	69.21	50.00	9.41
14:48	0.20	83.40	42.16	9.17
14:49	0.17	79.10	34.97	9.77
14:50	0.31	70.60	101.90	8.97
14:51	0.26	59.68	479.80	8.00
21 MinAvg	1.23	70.54	138.62	9.75

Data Corrected for Calibrations

21 MinAvg	0.99	72.15	140.37	9.72

Covanta Hudson Valley
2010 Unit 2 Inlet RATA
February 17, 2010
Run 8 (1430-1451)

Starting
02-17-10

Time	SO2 In ppm	O2 In %
14:31	19.11	10.32
14:32	22.07	10.34
14:33	24.43	10.10
14:34	25.54	10.69
14:35	20.96	12.32
14:36	16.44	12.32
14:37	16.15	11.99
14:38	16.52	12.15
14:39	16.15	11.69
14:40	14.35	12.38
14:41	11.70	12.61
14:42	10.73	12.63
14:43	10.61	12.02
14:44	11.77	11.66
14:45	12.62	11.48
14:46	11.51	11.87
14:47	11.26	11.10
14:48	12.62	10.80
14:49	12.17	11.41
14:50	10.84	10.94
14:51	12.86	10.08
21 MinAvg	15.26	11.47

Data Corrected for Calibrations

21 MinAvg	14.28	11.41

Covanta Hudson Valley
2010 Unit 2 Outlet RATA
February 17, 2010
Run 9 (1514-1535)

Starting
02-17-10

Time	SO2 Out PPM	NOX Out PPM	CO Out PPM	O2 Out %
15:15	1.69	66.29	51.46	10.50
15:16	1.46	68.27	58.34	10.08
15:17	1.30	74.00	74.90	9.78
15:18	1.09	79.50	51.72	10.44
15:19	1.15	85.30	29.08	10.74
15:20	1.05	94.00	25.91	11.04
15:21	1.04	83.30	57.14	10.84
15:22	0.90	82.20	37.99	11.03
15:23	0.87	90.70	26.36	11.39
15:24	0.78	77.40	55.50	10.51
15:25	0.74	62.23	208.30	9.95
15:26	0.62	69.79	245.20	9.78
15:27	0.61	73.60	108.10	9.39
15:28	0.78	73.10	332.10	9.06
15:29	0.87	82.50	79.80	10.17
15:30	0.92	88.20	57.91	10.16
15:31	0.75	81.10	78.50	10.22
15:32	0.57	76.10	322.60	8.93
15:33	0.66	64.78	508.00	8.54
15:34	1.05	61.41	289.80	9.27
15:35	1.00	58.33	114.50	9.63
21 MinAvg	0.95	75.81	133.96	10.07

Data Corrected for Calibrations

21 MinAvg	0.68	77.81	136.11	10.04

Covanta Hudson Valley
2010 Unit 2 Inlet RATA
February 17, 2010
Run 9 (1514-1535)

Starting
02-17-10

Time	SO2 In ppm	O2 In %
15:15	11.98	12.15
15:16	12.43	11.72
15:17	12.91	11.43
15:18	13.56	11.94
15:19	11.74	12.25
15:20	10.85	12.60
15:21	9.88	12.30
15:22	10.73	12.46
15:23	10.20	12.74
15:24	10.26	11.95
15:25	12.44	11.49
15:26	13.97	11.48
15:27	13.55	11.31
15:28	15.73	10.89
15:29	14.72	11.87
15:30	12.62	11.84
15:31	13.10	11.84
15:32	13.67	10.77
15:33	18.91	10.32
15:34	20.02	10.99
15:35	17.45	11.46
21 MinAvg	13.37	11.70

Data Corrected for Calibrations

21 MinAvg	11.95	11.65

Covanta Hudson Valley
2010 Unit 2 Outlet RATA
February 17, 2010
Run 10 (1558-1619)

Starting
02-17-10

Time	SO2 Out PPM	NOX Out PPM	CO Out PPM	O2 Out %
15:59	2.43	81.70	40.83	10.58
16:00	2.26	84.80	28.53	10.91
16:01	1.97	88.30	25.09	11.25
16:02	1.82	84.20	33.02	10.79
16:03	1.58	84.20	23.81	11.40
16:04	1.29	90.30	22.59	10.91
16:05	0.80	90.10	29.55	11.19
16:06	0.52	87.00	33.76	11.51
16:07	0.36	94.50	20.95	11.74
16:08	0.32	100.90	18.34	11.83
16:09	0.24	90.10	32.51	11.39
16:10	0.26	77.70	49.77	11.05
16:11	0.14	74.00	35.69	11.10
16:12	0.10	74.00	58.30	10.29
16:13	0.14	79.80	87.00	10.00
16:14	0.14	95.20	125.60	9.54
16:15	0.09	93.60	28.06	10.26
16:16	0.04	81.70	55.86	9.82
16:17	0.02	84.20	47.63	9.36
16:18	0.51	78.40	44.64	9.77
16:19	0.37	76.30	65.17	9.61
21 MinAvg	0.73	85.29	43.18	10.68

Data Corrected for Calibrations

21 MinAvg	0.48	88.41	41.40	10.69

Covanta Hudson Valley
2010 Unit 2 Inlet RATA
February 17, 2010
Run 10 (1558-1619)

Starting
02-17-10

Time	SO2 In ppm	O2 In %
15:59	13.06	12.21
16:00	12.40	12.41
16:01	12.05	12.73
16:02	11.40	12.29
16:03	11.51	12.84
16:04	10.98	12.49
16:05	10.87	12.61
16:06	10.50	12.92
16:07	9.48	13.09
16:08	9.56	13.11
16:09	9.55	12.69
16:10	9.92	12.37
16:11	10.30	12.47
16:12	10.71	11.70
16:13	11.94	11.62
16:14	12.36	11.43
16:15	12.31	12.04
16:16	11.44	11.74
16:17	12.72	11.31
16:18	14.30	11.72
16:19	14.40	11.55
21 MinAvg	11.51	12.25

Data Corrected for Calibrations

21 MinAvg	10.02	12.13

Appendix D

Facility CEMS Data and Results: Unit 1

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company: Covanta Hudson Valley Renewable
Dutchess Co. Resource Recovery
Poughkeepsie, NY 12601

Data Group: T1 1-Min Calcs
Report Name: RATA - T1 Calcs
Start of Report: 02/16/2010 08:20
End of Report: 02/16/2010 08:40
Validation: All Available Data
Report Comments: U1-RATA-R1

Group#-Channel#	G4-C2	G4-C3	G4-C9	G4-C7
Long Descrip.	NOx Corr.	SO2 Corr.	CO Corr.	SO2 Reduc
Short Descrip.	1-NOx@7%	1-SO2@7%	1-CO@7%	1-SO2 Red
Units	ppm	ppm	ppm	%
Range	0-500	0-900	0-1100	0-100
02/16/2010 08:20	92	0	58	100
02/16/2010 08:21	96	0	55	100
02/16/2010 08:22	97	0	50	100
02/16/2010 08:23	98	0	29	100
02/16/2010 08:24	102	0	23	100
02/16/2010 08:25	104	0	18	100
02/16/2010 08:26	98	0	23	100
02/16/2010 08:27	91	0	54	100
02/16/2010 08:28	92	0	51	100
02/16/2010 08:29	83	2	104	97
02/16/2010 08:30	71	1	157	98
02/16/2010 08:31	74	1	108	98
02/16/2010 08:32	79	0	60	100
02/16/2010 08:33	89	0	57	100
02/16/2010 08:34	85	0	83	100
02/16/2010 08:35	85	0	53	100
02/16/2010 08:36	85	0	36	100
02/16/2010 08:37	90	0	26	100
02/16/2010 08:38	104	0	16	100
02/16/2010 08:39	105	0	15	100
02/16/2010 08:40	107	0	18	100
Period Average =	92	0	52	100
Period Max Value =	107	2	157	100
Period Min Value =	71	0	15	97
Period Totals =	1.9270E+3	4.0000E+0	1.0940E+3	2.0930E+3
Period % Recovery =	100.0	100.0	100.0	100.0

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company: Covanta Hudson Valley Renewable
Dutchess Co. Resource Recovery
Poughkeepsie, NY 12601

Data Group: T1 1-Min Calcs
Report Name: RATA - T1 Calcs
Start of Report: 02/16/2010 09:03
End of Report: 02/16/2010 09:23
Validation: All Available Data
Report Comments: U1-RATA-R2

Group#-Channel#	G4-C2	G4-C3	G4-C9	G4-C7
Long Descrip.	NOx Corr.	SO2 Corr.	CO Corr.	SO2 Reduc
Short Descrip.	1-NOx@7%	1-SO2@7%	1-CO@7%	1-SO2 Red
Units	ppm	ppm	ppm	%
Range	0-500	0-900	0-1100	0-100
02/16/2010 09:03	76	1	189	99
02/16/2010 09:04	71	0	437	100
02/16/2010 09:05	70	0	357	100
02/16/2010 09:06	84	0	100	100
02/16/2010 09:07	94	0	78	100
02/16/2010 09:08	99	0	98	100
02/16/2010 09:09	104	0	44	100
02/16/2010 09:10	114	0	25	100
02/16/2010 09:11	113	0	19	100
02/16/2010 09:12	101	0	19	100
02/16/2010 09:13	97	0	27	100
02/16/2010 09:14	100	1	27	99
02/16/2010 09:15	103	1	41	99
02/16/2010 09:16	99	2	33	97
02/16/2010 09:17	90	1	28	99
02/16/2010 09:18	75	2	157	97
02/16/2010 09:19	67	1	86	99
02/16/2010 09:20	70	1	63	99
02/16/2010 09:21	63	1	167	99
02/16/2010 09:22	67	0	140	100
02/16/2010 09:23	71	0	277	100
Period Average =	87	1	115	99
Period Max Value =	114	2	437	100
Period Min Value =	63	0	19	97
Period Totals =	1.8280E+3	1.1000E+1	2.4120E+3	2.0870E+3
Period % Recovery =	100.0	100.0	100.0	100.0

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company: Covanta Hudson Valley Renewable
Dutchess Co. Resource Recovery
Poughkeepsie, NY 12601

Data Group: T1 1-Min Calcs
Report Name: RATA - T1 Calcs
Start of Report: 02/16/2010 09:45
End of Report: 02/16/2010 10:05
Validation: All Available Data
Report Comments: U1-RATA-R3

Group#-Channel#	G4-C2	G4-C3	G4-C9	G4-C7
Long Descrip.	NOx Corr.	SO2 Corr.	CO Corr.	SO2 Reduc
Short Descrip.	1-NOx@7%	1-SO2@7%	1-CO@7%	1-SO2 Red
Units	ppm	ppm	ppm	%
Range	0-500	0-900	0-1100	0-100
02/16/2010 09:45	87	0	58	100
02/16/2010 09:46	96	0	57	100
02/16/2010 09:47	119	0	41	100
02/16/2010 09:48	134	1	18	98
02/16/2010 09:49	122	0	31	100
02/16/2010 09:50	109	0	38	100
02/16/2010 09:51	108	0	29	100
02/16/2010 09:52	114	0	27	100
02/16/2010 09:53	114	1	26	98
02/16/2010 09:54	107	1	24	98
02/16/2010 09:55	104	0	31	100
02/16/2010 09:56	98	2	70	97
02/16/2010 09:57	82	2	163	97
02/16/2010 09:58	77	2	140	97
02/16/2010 09:59	89	0	103	100
02/16/2010 10:00	83	0	199	100
02/16/2010 10:01	88	0	246	100
02/16/2010 10:02	96	0	251	100
02/16/2010 10:03	110	0	63	100
02/16/2010 10:04	117	0	37	100
02/16/2010 10:05	112	0	53	100
Period Average =	103	0	81	99
Period Max Value =	134	2	251	100
Period Min Value =	77	0	18	97
Period Totals =	2.1660E+3	9.0000E+0	1.7050E+3	2.0850E+3
Period % Recovery =	100.0	100.0	100.0	100.0

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company: Covanta Hudson Valley Renewable
Dutchess Co. Resource Recovery
Poughkeepsie, NY 12601

Data Group: T1 1-Min Calcs
Report Name: RATA - T1 Calcs
Start of Report: 02/16/2010 10:27
End of Report: 02/16/2010 10:47
Validation: All Available Data
Report Comments: U1-RATA-R4

Group#-Channel#	G4-C2	G4-C3	G4-C9	G4-C7
Long Descrip.	NOx Corr.	SO2 Corr.	CO Corr.	SO2 Reduc
Short Descrip.	1-NOx@7%	1-SO2@7%	1-CO@7%	1-SO2 Red
Units	ppm	ppm	ppm	%
Range	0-500	0-900	0-1100	0-100
02/16/2010 10:27	118	0	57	100
02/16/2010 10:28	125	0	71	100
02/16/2010 10:29	129	0	58	100
02/16/2010 10:30	126	0	39	100
02/16/2010 10:31	124	0	45	100
02/16/2010 10:32	112	0	72	100
02/16/2010 10:33	111	0	110	100
02/16/2010 10:34	93	0	227	100
02/16/2010 10:35	90	0	170	100
02/16/2010 10:36	86	0	112	100
02/16/2010 10:37	80	0	130	100
02/16/2010 10:38	81	0	230	100
02/16/2010 10:39	80	0	455	100
02/16/2010 10:40	84	0	269	100
02/16/2010 10:41	90	0	106	100
02/16/2010 10:42	94	0	110	100
02/16/2010 10:43	96	0	90	100
02/16/2010 10:44	105	0	73	100
02/16/2010 10:45	105	0	33	100
02/16/2010 10:46	114	0	24	100
02/16/2010 10:47	108	0	48	100
Period Average =	102	0	120	100
Period Max Value =	129	0	455	100
Period Min Value =	80	0	24	100
Period Totals =	2.1510E+3	0.0000E+0	2.5290E+3	2.1000E+3
Period % Recovery =	100.0	100.0	100.0	100.0

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company: Covanta Hudson Valley Renewable
Dutchess Co. Resource Recovery
Poughkeepsie, NY 12601

Data Group: T1 1-Min Calcs
Report Name: RATA - T1 Calcs
Start of Report: 02/16/2010 13:22
End of Report: 02/16/2010 13:42
Validation: All Available Data
Report Comments: U1-RATA-R5

Group#-Channel#	G4-C2	G4-C3	G4-C9	G4-C7
Long Descrip.	NOx Corr.	SO2 Corr.	CO Corr.	SO2 Reduc
Short Descrip.	1-NOx@7%	1-SO2@7%	1-CO@7%	1-SO2 Red
Units	ppm	ppm	ppm	%
Range	0-500	0-900	0-1100	0-100
02/16/2010 13:22	118	0	34	100
02/16/2010 13:23	122	1	36	99
02/16/2010 13:24	132	1	35	99
02/16/2010 13:25	138	3	30	98
02/16/2010 13:26	133	7	20	94
02/16/2010 13:27	128	5	20	96
02/16/2010 13:28	130	3	34	97
02/16/2010 13:29	138	3	26	97
02/16/2010 13:30	127	8	24	93
02/16/2010 13:31	123	8	24	93
02/16/2010 13:32	121	4	26	97
02/16/2010 13:33	119	1	24	99
02/16/2010 13:34	119	0	32	100
02/16/2010 13:35	127	1	31	99
02/16/2010 13:36	123	5	24	96
02/16/2010 13:37	119	3	23	97
02/16/2010 13:38	119	1	31	99
02/16/2010 13:39	108	1	59	99
02/16/2010 13:40	106	0	119	100
02/16/2010 13:41	119	4	60	97
02/16/2010 13:42	132	5	20	96
Period Average =	124	3	35	97
Period Max Value =	138	8	119	100
Period Min Value =	106	0	20	93
Period Totals =	2.6010E+3	6.4000E+1	7.3200E+2	2.0450E+3
Period % Recovery =	100.0	100.0	100.0	100.0

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company: Covanta Hudson Valley Renewable
Dutchess Co. Resource Recovery
Poughkeepsie, NY 12601

Data Group: T1 1-Min Calcs
Report Name: RATA - T1 Calcs
Start of Report: 02/16/2010 14:12
End of Report: 02/16/2010 14:32
Validation: All Available Data
Report Comments: U1-RATA-R6

Group#-Channel#	G4-C2	G4-C3	G4-C9	G4-C7
Long Descrip.	NOx Corr.	SO2 Corr.	CO Corr.	SO2 Reduc
Short Descrip.	1-NOx@7%	1-SO2@7%	1-CO@7%	1-SO2 Red
Units	ppm	ppm	ppm	%
Range	0-500	0-900	0-1100	0-100
02/16/2010 14:12	102	18	39	91
02/16/2010 14:13	92	17	41	91
02/16/2010 14:14	99	21	41	88
02/16/2010 14:15	105	28	43	84
02/16/2010 14:16	100	25	44	86
02/16/2010 14:17	99	18	39	89
02/16/2010 14:18	101	11	42	93
02/16/2010 14:19	101	13	47	92
02/16/2010 14:20	102	15	60	90
02/16/2010 14:21	106	15	46	90
02/16/2010 14:22	112	13	33	92
02/16/2010 14:23	112	14	33	91
02/16/2010 14:24	105	14	38	91
02/16/2010 14:25	105	14	35	92
02/16/2010 14:26	100	12	53	93
02/16/2010 14:27	96	11	43	94
02/16/2010 14:28	91	12	47	94
02/16/2010 14:29	90	19	55	88
02/16/2010 14:30	88	17	51	90
02/16/2010 14:31	82	7	95	96
02/16/2010 14:32	76	8	156	95
Period Average =	98	15	51	91
Period Max Value =	112	28	156	96
Period Min Value =	76	7	33	84
Period Totals =	2.0640E+3	3.2200E+2	1.0810E+3	1.9100E+3
Period % Recovery =	100.0	100.0	100.0	100.0

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company: Covanta Hudson Valley Renewable
Dutchess Co. Resource Recovery
Poughkeepsie, NY 12601

Data Group: T1 1-Min Calcs
Report Name: RATA - T1 Calcs
Start of Report: 02/16/2010 14:54
End of Report: 02/16/2010 15:14
Report Comments: U1-RATA-R7

Validation: All Available Data

Group#-Channel#	G4-C2	G4-C3	G4-C9	G4-C7
Long Descrip.	NOx Corr.	SO2 Corr.	CO Corr.	SO2 Reduc
Short Descrip.	1-NOx@7%	1-SO2@7%	1-CO@7%	1-SO2 Red
Units	ppm	ppm	ppm	%
Range	0-500	0-900	0-1100	0-100
02/16/2010 14:54	105	3	36	98
02/16/2010 14:55	113	3	24	98
02/16/2010 14:56	130	4	16	97
02/16/2010 14:57	131	5	16	97
02/16/2010 14:58	126	5	19	97
02/16/2010 14:59	120	7	19	96
02/16/2010 15:00	123	13	27	93
02/16/2010 15:01	113	14	28	92
02/16/2010 15:02	106	14	31	93
02/16/2010 15:03	102	12	40	93
02/16/2010 15:04	99	11	34	93
02/16/2010 15:05	92	6	28	96
02/16/2010 15:06	98	8	21	95
02/16/2010 15:07	95	10	26	93
02/16/2010 15:08	94	6	44	96
02/16/2010 15:09	104	4	34	97
02/16/2010 15:10	120	3	21	98
02/16/2010 15:11	128	8	19	95
02/16/2010 15:12	134	12	16	93
02/16/2010 15:13	130	7	20	96
02/16/2010 15:14	121	4	21	98
Period Average =	114	8	26	95
Period Max Value =	134	14	44	98
Period Min Value =	92	3	16	92
Period Totals =	2.3840E+3	1.5900E+2	5.4000E+2	2.0040E+3
Period % Recovery =	100.0	100.0	100.0	100.0

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company: Covanta Hudson Valley Renewable
Dutchess Co. Resource Recovery
Poughkeepsie, NY 12601

Data Group: T1 1-Min Calcs
Report Name: RATA - T1 Calcs
Start of Report: 02/16/2010 18:23
End of Report: 02/16/2010 18:43
Validation: All Available Data
Report Comments: U1-RATA-R8

Group#-Channel#	G4-C2	G4-C3	G4-C9	G4-C7
Long Descrip.	NOx Corr.	SO2 Corr.	CO Corr.	SO2 Reduc
Short Descrip.	1-NOx@7%	1-SO2@7%	1-CO@7%	1-SO2 Red
Units	ppm	ppm	ppm	%
Range	0-500	0-900	0-1100	0-100
02/16/2010 18:23	123	41	19	81
02/16/2010 18:24	104	49	20	80
02/16/2010 18:25	95	54	23	75
02/16/2010 18:26	100	49	15	79
02/16/2010 18:27	84	34	33	85
02/16/2010 18:28	82	27	63	86
02/16/2010 18:29	93	22	35	90
02/16/2010 18:30	92	28	34	86
02/16/2010 18:31	92	25	24	87
02/16/2010 18:32	95	23	34	87
02/16/2010 18:33	96	15	35	93
02/16/2010 18:34	100	13	35	94
02/16/2010 18:35	105	27	23	84
02/16/2010 18:36	111	29	17	81
02/16/2010 18:37	114	24	20	84
02/16/2010 18:38	123	21	17	87
02/16/2010 18:39	120	21	17	88
02/16/2010 18:40	110	22	22	86
02/16/2010 18:41	104	18	27	91
02/16/2010 18:42	107	22	44	86
02/16/2010 18:43	103	17	29	90
Period Average =	103	28	28	86
Period Max Value =	123	54	63	94
Period Min Value =	82	13	15	75
Period Totals =	2.1530E+3	5.8100E+2	5.8600E+2	1.8000E+3
Period % Recovery =	100.0	100.0	100.0	100.0

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company: Covanta Hudson Valley Renewable
Dutchess Co. Resource Recovery
Poughkeepsie, NY 12601

Data Group: T1 1-Min Calcs
Report Name: RATA - T1 Calcs
Start of Report: 02/16/2010 19:11
End of Report: 02/16/2010 19:31
Validation: All Available Data
Report Comments: U1-RATA-R9

Group#-Channel#	G4-C2	G4-C3	G4-C9	G4-C7
Long Descrip.	NOx Corr.	SO2 Corr.	CO Corr.	SO2 Reduc
Short Descrip.	1-NOx@7%	1-SO2@7%	1-CO@7%	1-SO2 Red
Units	ppm	ppm	ppm	%
Range	0-500	0-900	0-1100	0-100
02/16/2010 19:11	102	5	16	97
02/16/2010 19:12	103	4	29	98
02/16/2010 19:13	98	4	70	97
02/16/2010 19:14	95	4	98	97
02/16/2010 19:15	101	1	32	99
02/16/2010 19:16	109	1	29	99
02/16/2010 19:17	115	2	35	98
02/16/2010 19:18	110	0	32	100
02/16/2010 19:19	128	1	20	99
02/16/2010 19:20	134	1	19	99
02/16/2010 19:21	119	1	19	99
02/16/2010 19:22	106	0	32	100
02/16/2010 19:23	103	1	29	99
02/16/2010 19:24	104	1	36	99
02/16/2010 19:25	97	0	31	100
02/16/2010 19:26	97	0	70	100
02/16/2010 19:27	89	0	91	100
02/16/2010 19:28	89	0	42	100
02/16/2010 19:29	88	0	47	100
02/16/2010 19:30	87	0	88	100
02/16/2010 19:31	102	1	59	99
Period Average =	104	1	44	99
Period Max Value =	134	5	98	100
Period Min Value =	87	0	16	97
Period Totals =	2.1760E+3	2.7000E+1	9.2400E+2	2.0790E+3
Period % Recovery =	100.0	100.0	100.0	100.0

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company: Covanta Hudson Valley Renewable
Dutchess Co. Resource Recovery
Poughkeepsie, NY 12601

Data Group: T1 1-Min Calcs
Report Name: RATA - T1 Calcs
Start of Report: 02/16/2010 20:16
End of Report: 02/16/2010 20:36
Validation: All Available Data
Report Comments: U1-RATA-R10

Group#-Channel#	G4-C2	G4-C3	G4-C9	G4-C7
Long Descrip.	NOx Corr.	SO2 Corr.	CO Corr.	SO2 Reduc
Short Descrip.	1-NOx@7%	1-SO2@7%	1-CO@7%	1-SO2 Red
Units	ppm	ppm	ppm	%
Range	0-500	0-900	0-1100	0-100
02/16/2010 20:16	102	1	27	99
02/16/2010 20:17	107	3	24	97
02/16/2010 20:18	109	1	29	99
02/16/2010 20:19	103	2	26	98
02/16/2010 20:20	102	4	29	96
02/16/2010 20:21	97	2	46	98
02/16/2010 20:22	92	2	60	98
02/16/2010 20:23	88	1	60	99
02/16/2010 20:24	83	0	103	100
02/16/2010 20:25	76	1	193	99
02/16/2010 20:26	84	1	73	99
02/16/2010 20:27	87	0	42	100
02/16/2010 20:28	92	0	34	100
02/16/2010 20:29	92	0	32	100
02/16/2010 20:30	102	0	21	100
02/16/2010 20:31	102	0	18	100
02/16/2010 20:32	105	0	25	100
02/16/2010 20:33	96	1	62	99
02/16/2010 20:34	94	1	39	99
02/16/2010 20:35	83	0	89	100
02/16/2010 20:36	72	0	105	100
Period Average =	94	1	54	99
Period Max Value =	109	4	193	100
Period Min Value =	72	0	18	96
Period Totals =	1.9680E+3	2.0000E+1	1.1370E+3	2.0800E+3
Period % Recovery =	100.0	100.0	100.0	100.0

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company: Covanta Hudson Valley Renewable
Dutchess Co. Resource Recovery
Poughkeepsie, NY 12601

Data Group: T1 1-Min Calcs
Report Name: RATA - T1 Calcs
Start of Report: 02/16/2010 21:07
End of Report: 02/16/2010 21:27
Validation: All Available Data
Report Comments: U1-RATA-R11

Group#-Channel#	G4-C2	G4-C3	G4-C9	G4-C7
Long Descrip.	NOx Corr.	SO2 Corr.	CO Corr.	SO2 Reduc
Short Descrip.	1-NOx@7%	1-SO2@7%	1-CO@7%	1-SO2 Red
Units	ppm	ppm	ppm	%
Range	0-500	0-900	0-1100	0-100
02/16/2010 21:07	96	2	49	98
02/16/2010 21:08	93	0	34	100
02/16/2010 21:09	101	0	30	100
02/16/2010 21:10	91	1	45	99
02/16/2010 21:11	87	1	49	99
02/16/2010 21:12	95	0	79	100
02/16/2010 21:13	102	0	45	100
02/16/2010 21:14	96	0	62	100
02/16/2010 21:15	93	0	51	100
02/16/2010 21:16	112	0	23	100
02/16/2010 21:17	125	0	14	100
02/16/2010 21:18	110	0	18	100
02/16/2010 21:19	114	0	16	100
02/16/2010 21:20	118	0	16	100
02/16/2010 21:21	112	2	30	98
02/16/2010 21:22	102	6	35	94
02/16/2010 21:23	105	8	17	92
02/16/2010 21:24	100	7	22	93
02/16/2010 21:25	90	6	72	94
02/16/2010 21:26	86	1	60	99
02/16/2010 21:27	92	1	64	99
Period Average =	101	2	40	98
Period Max Value =	125	8	79	100
Period Min Value =	86	0	14	92
Period Totals =	2.1200E+3	3.5000E+1	8.3100E+2	2.0650E+3
Period % Recovery =	100.0	100.0	100.0	100.0

Appendix E

Facility CEMS Data and Results: Unit 2

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company: Covanta Hudson Valley Renewable
Dutchess Co. Resource Recovery
Poughkeepsie, NY 12601

Data Group: All Data Groups
Report Name: No Title
Start of Report: 02/17/2010 09:35
End of Report: 02/17/2010 09:55
Report Comments: U2-RATA-R1

Validation: All Available Data

Group#-Channel#	G19-C2	G19-C3	G19-C9	G19-C7
Long Descrip.	NOx Corr.	SO2 Corr.	CO Corr.	SO2 Reduc
Short Descrip.	2-NOx@7%	2-SO2@7%	2-CO@7%	2-SO2 Red
Units	ppm	ppm	ppm	%
Range	0-500	0-900	0-1100	0-100
02/17/2010 09:35	117	3	37	97
02/17/2010 09:36	120	4	71	96
02/17/2010 09:37	116	9	65	90
02/17/2010 09:38	109	10	38	89
02/17/2010 09:39	110	8	47	92
02/17/2010 09:40	102	5	101	95
02/17/2010 09:41	101	6	143	94
02/17/2010 09:42	106	10	109	90
02/17/2010 09:43	108	11	124	89
02/17/2010 09:44	98	11	191	90
02/17/2010 09:45	82	11	364	90
02/17/2010 09:46	75	10	570	90
02/17/2010 09:47	78	11	395	87
02/17/2010 09:48	90	9	169	90
02/17/2010 09:49	108	5	92	95
02/17/2010 09:50	115	5	62	95
02/17/2010 09:51	105	12	152	88
02/17/2010 09:52	105	15	110	84
02/17/2010 09:53	118	16	68	82
02/17/2010 09:54	120	11	48	88
02/17/2010 09:55	112	4	64	96
Period Average =	105	9	144	91
Period Max Value =	120	16	570	97
Period Min Value =	75	3	37	82
Period Totals =	2.1950E+3	1.8600E+2	3.0200E+3	1.9070E+3
Period % Recovery =	100.0	100.0	100.0	100.0

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company: Covanta Hudson Valley Renewable
Dutchess Co. Resource Recovery
Poughkeepsie, NY 12601

Data Group: All Data Groups
Report Name: No Title
Start of Report: 02/17/2010 10:15
End of Report: 02/17/2010 10:35
Validation: All Available Data
Report Comments: U2-RATA-R2

Group#-Channel#	G19-C2	G19-C3	G19-C9	G19-C7
Long Descrip.	NOx Corr.	SO2 Corr.	CO Corr.	SO2 Reduc
Short Descrip.	2-NOx@7%	2-SO2@7%	2-CO@7%	2-SO2 Red
Units	ppm	ppm	ppm	%
Range	0-500	0-900	0-1100	0-100
02/17/2010 10:15	127	0	86	100
02/17/2010 10:16	124	0	75	100
02/17/2010 10:17	113	0	60	100
02/17/2010 10:18	110	1	40	99
02/17/2010 10:19	111	6	50	94
02/17/2010 10:20	99	6	65	94
02/17/2010 10:21	105	4	68	96
02/17/2010 10:22	107	1	50	99
02/17/2010 10:23	107	1	62	99
02/17/2010 10:24	90	4	243	96
02/17/2010 10:25	86	5	171	95
02/17/2010 10:26	89	4	173	96
02/17/2010 10:27	88	0	150	100
02/17/2010 10:28	93	0	135	100
02/17/2010 10:29	106	0	101	100
02/17/2010 10:30	104	0	82	100
02/17/2010 10:31	113	0	59	100
02/17/2010 10:32	122	0	53	100
02/17/2010 10:33	117	0	37	100
02/17/2010 10:34	116	0	61	100
02/17/2010 10:35	129	0	72	100
Period Average =	107	2	90	98
Period Max Value =	129	6	243	100
Period Min Value =	86	0	37	94
Period Totals =	2.2560E+3	3.2000E+1	1.8930E+3	2.0680E+3
Period % Recovery =	100.0	100.0	100.0	100.0

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company: Covanta Hudson Valley Renewable
Dutchess Co. Resource Recovery
Poughkeepsie, NY 12601

Data Group: All Data Groups
Report Name: No Title
Start of Report: 02/17/2010 11:00
End of Report: 02/17/2010 11:20
Validation: All Available Data
Report Comments: U2-RATA-R3

Group#-Channel#	G19-C2	G19-C3	G19-C9	G19-C7
Long Descrip.	NOx Corr.	SO2 Corr.	CO Corr.	SO2 Reduc
Short Descrip.	2-NOx@7%	2-SO2@7%	2-CO@7%	2-SO2 Red
Units	ppm	ppm	ppm	%
Range	0-500	0-900	0-1100	0-100
02/17/2010 11:00	125	3	39	98
02/17/2010 11:01	123	3	30	98
02/17/2010 11:02	127	0	31	100
02/17/2010 11:03	111	0	94	100
02/17/2010 11:04	96	4	212	98
02/17/2010 11:05	91	7	251	95
02/17/2010 11:06	86	7	268	95
02/17/2010 11:07	93	5	159	96
02/17/2010 11:08	99	1	109	99
02/17/2010 11:09	111	0	73	100
02/17/2010 11:10	127	19	58	89
02/17/2010 11:11	130	34	49	76
02/17/2010 11:12	128	10	34	92
02/17/2010 11:13	132	0	37	100
02/17/2010 11:14	132	0	43	100
02/17/2010 11:15	125	0	57	100
02/17/2010 11:16	109	0	57	100
02/17/2010 11:17	105	3	89	98
02/17/2010 11:18	110	5	48	96
02/17/2010 11:19	107	5	64	96
02/17/2010 11:20	106	5	46	96
Period Average =	113	5	88	96
Period Max Value =	132	34	268	100
Period Min Value =	86	0	30	76
Period Totals =	2.3730E+3	1.1100E+2	1.8480E+3	2.0220E+3
Period % Recovery =	100.0	100.0	100.0	100.0

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company: Covanta Hudson Valley Renewable
Dutchess Co. Resource Recovery
Poughkeepsie, NY 12601

Data Group: All Data Groups
Report Name: No Title
Start of Report: 02/17/2010 11:38
End of Report: 02/17/2010 11:58
Report Comments: U2-RATA-R4

Validation: All Available Data

Group#-Channel#	G19-C2	G19-C3	G19-C9	G19-C7
Long Descrip.	NOx Corr.	SO2 Corr.	CO Corr.	SO2 Reduc
Short Descrip.	2-NOx@7%	2-SO2@7%	2-CO@7%	2-SO2 Red
Units	ppm	ppm	ppm	%
Range	0-500	0-900	0-1100	0-100
02/17/2010 11:38	94	1	92	99
02/17/2010 11:39	93	2	148	99
02/17/2010 11:40	99	7	95	95
02/17/2010 11:41	99	8	87	93
02/17/2010 11:42	93	14	87	88
02/17/2010 11:43	98	10	97	93
02/17/2010 11:44	86	13	333	90
02/17/2010 11:45	76	14	381	88
02/17/2010 11:46	100	10	125	91
02/17/2010 11:47	113	3	102	97
02/17/2010 11:48	112	0	82	100
02/17/2010 11:49	117	0	54	100
02/17/2010 11:50	126	0	38	100
02/17/2010 11:51	135	0	35	100
02/17/2010 11:52	143	0	33	100
02/17/2010 11:53	151	0	35	100
02/17/2010 11:54	156	0	35	100
02/17/2010 11:55	145	0	43	100
02/17/2010 11:56	138	1	53	99
02/17/2010 11:57	129	4	55	96
02/17/2010 11:58	120	3	50	97
Period Average =	115	4	98	96
Period Max Value =	156	14	381	100
Period Min Value =	76	0	33	88
Period Totals =	2.4230E+3	9.0000E+1	2.0600E+3	2.0250E+3
Period % Recovery =	100.0	100.0	100.0	100.0

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company: Covanta Hudson Valley Renewable
Dutchess Co. Resource Recovery
Poughkeepsie, NY 12601

Data Group: All Data Groups
Report Name: No Title
Start of Report: 02/17/2010 12:21
End of Report: 02/17/2010 12:41
Report Comments: U2-RATA-R5

Validation: All Available Data

Group#-Channel#	G19-C2	G19-C3	G19-C9	G19-C7
Long Descrip.	NOx Corr.	SO2 Corr.	CO Corr.	SO2 Reduc
Short Descrip.	2-NOx@7%	2-SO2@7%	2-CO@7%	2-SO2 Red
Units	ppm	ppm	ppm	%
Range	0-500	0-900	0-1100	0-100
02/17/2010 12:21	104	2	27	98
02/17/2010 12:22	85	0	155	100
02/17/2010 12:23	83	12	147	89
02/17/2010 12:24	85	27	134	74
02/17/2010 12:25	92	18	80	81
02/17/2010 12:26	107	9	36	91
02/17/2010 12:27	117	8	47	93
02/17/2010 12:28	113	26	61	76
02/17/2010 12:29	107	45	53	54
02/17/2010 12:30	120	46	28	53
02/17/2010 12:31	128	34	24	68
02/17/2010 12:32	132	17	29	84
02/17/2010 12:33	135	13	34	89
02/17/2010 12:34	117	10	51	92
02/17/2010 12:35	110	51	43	60
02/17/2010 12:36	122	75	40	52
02/17/2010 12:37	114	79	52	46
02/17/2010 12:38	119	93	41	43
02/17/2010 12:39	120	77	28	50
02/17/2010 12:40	116	90	41	38
02/17/2010 12:41	104	77	110	43
Period Average =	111	39	60	70
Period Max Value =	135	93	156	100
Period Min Value =	83	0	24	38
Period Totals =	2.3300E+3	8.0900E+2	1.2610E+3	1.4740E+3
Period % Recovery =	100.0	100.0	100.0	100.0

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company: Covanta Hudson Valley Renewable
Dutchess Co. Resource Recovery
Poughkeepsie, NY 12601

Data Group: All Data Groups
Report Name: No Title
Start of Report: 02/17/2010 13:05
End of Report: 02/17/2010 13:25
Validation: All Available Data
Report Comments: U2-RATA-R6

Group#-Channel#	G19-C2	G19-C3	G19-C9	G19-C7
Long Descrip.	NOx Corr.	SO2 Corr.	CO Corr.	SO2 Reduc
Short Descrip.	2-NOx@7%	2-SO2@7%	2-CO@7%	2-SO2 Red
Units	ppm	ppm	ppm	%
Range	0-500	0-900	0-1100	0-100
02/17/2010 13:05	111	1	231	99
02/17/2010 13:06	110	3	110	97
02/17/2010 13:07	130	3	49	97
02/17/2010 13:08	139	3	28	97
02/17/2010 13:09	147	0	25	100
02/17/2010 13:10	146	0	26	100
02/17/2010 13:11	129	0	36	100
02/17/2010 13:12	126	0	37	100
02/17/2010 13:13	119	0	48	100
02/17/2010 13:14	117	0	51	100
02/17/2010 13:15	115	0	52	100
02/17/2010 13:16	111	0	53	100
02/17/2010 13:17	105	0	79	100
02/17/2010 13:18	98	0	88	100
02/17/2010 13:19	99	0	98	100
02/17/2010 13:20	94	0	192	100
02/17/2010 13:21	107	0	118	100
02/17/2010 13:22	119	0	90	100
02/17/2010 13:23	115	0	99	100
02/17/2010 13:24	110	0	76	100
02/17/2010 13:25	118	0	37	100
Period Average =	117	0	77	100
Period Max Value =	147	3	231	100
Period Min Value =	94	0	25	97
Period Totals =	2.4650E+3	1.0000E+1	1.6230E+3	2.0900E+3
Period % Recovery =	100.0	100.0	100.0	100.0

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company: Covanta Hudson Valley Renewable
Dutchess Co. Resource Recovery
Poughkeepsie, NY 12601

Data Group: All Data Groups
Report Name: No Title
Start of Report: 02/17/2010 13:48
End of Report: 02/17/2010 14:08
Validation: All Available Data
Report Comments: U2-RATA-R7

Group#-Channel#	G19-C2	G19-C3	G19-C9	G19-C7
Long Descrip.	NOx Corr.	SO2 Corr.	CO Corr.	SO2 Reduc
Short Descrip.	2-NOx@7%	2-SO2@7%	2-CO@7%	2-SO2 Red
Units	ppm	ppm	ppm	%
Range	0-500	0-900	0-1100	0-100
02/17/2010 13:48	119	0	53	100
02/17/2010 13:49	99	0	147	100
02/17/2010 13:50	101	0	90	100
02/17/2010 13:51	109	0	35	100
02/17/2010 13:52	112	0	34	100
02/17/2010 13:53	100	1	118	99
02/17/2010 13:54	98	1	105	99
02/17/2010 13:55	95	1	157	99
02/17/2010 13:56	84	1	380	99
02/17/2010 13:57	67	0	474	100
02/17/2010 13:58	80	0	193	100
02/17/2010 13:59	91	0	161	100
02/17/2010 14:00	94	0	135	100
02/17/2010 14:01	96	0	67	100
02/17/2010 14:02	102	0	48	100
02/17/2010 14:03	112	0	25	100
02/17/2010 14:04	128	0	36	100
02/17/2010 14:05	131	0	52	100
02/17/2010 14:06	120	0	35	100
02/17/2010 14:07	111	0	41	100
02/17/2010 14:08	108	0	43	100
Period Average =	103	0	116	100
Period Max Value =	131	1	474	100
Period Min Value =	67	0	25	99
Period Totals =	2.1570E+3	4.0000E+0	2.4290E+3	2.0960E+3
Period % Recovery =	100.0	100.0	100.0	100.0

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company: Covanta Hudson Valley Renewable
Dutchess Co. Resource Recovery
Poughkeepsie, NY 12601

Data Group: All Data Groups
Report Name: No Title
Start of Report: 02/17/2010 14:30
End of Report: 02/17/2010 14:50
Validation: All Available Data
Report Comments: U2-RATA-R8

Group#-Channel#	G19-C2	G19-C3	G19-C9	G19-C7
Long Descrip.	NOx Corr.	SO2 Corr.	CO Corr.	SO2 Reduc
Short Descrip.	2-NOx@7%	2-SO2@7%	2-CO@7%	2-SO2 Red
Units	ppm	ppm	ppm	%
Range	0-500	0-900	0-1100	0-100
02/17/2010 14:30	109	0	50	100
02/17/2010 14:31	90	4	241	95
02/17/2010 14:32	81	5	436	94
02/17/2010 14:33	78	4	654	95
02/17/2010 14:34	73	0	452	100
02/17/2010 14:35	90	0	140	100
02/17/2010 14:36	104	0	99	100
02/17/2010 14:37	107	0	95	100
02/17/2010 14:38	101	0	85	100
02/17/2010 14:39	102	0	115	100
02/17/2010 14:40	107	0	42	100
02/17/2010 14:41	114	0	42	100
02/17/2010 14:42	114	0	65	100
02/17/2010 14:43	114	0	64	100
02/17/2010 14:44	102	0	71	100
02/17/2010 14:45	97	0	77	100
02/17/2010 14:46	94	0	45	100
02/17/2010 14:47	96	0	62	100
02/17/2010 14:48	108	1	50	98
02/17/2010 14:49	107	1	40	98
02/17/2010 14:50	97	1	135	98
Period Average =	99	1	146	99
Period Max Value =	114	5	654	100
Period Min Value =	73	0	40	94
Period Totals =	2.0850E+3	1.6000E+1	3.0600E+3	2.0780E+3
Period % Recovery =	100.0	100.0	100.0	100.0

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company: Covanta Hudson Valley Renewable
Dutchess Co. Resource Recovery
Poughkeepsie, NY 12601

Data Group: All Data Groups
Report Name: No Title
Start of Report: 02/17/2010 15:14
End of Report: 02/17/2010 15:34
Validation: All Available Data
Report Comments: U2-RATA-R9

Group#-Channel#	G19-C2	G19-C3	G19-C9	G19-C7
Long Descrip.	NOx Corr.	SO2 Corr.	CO Corr.	SO2 Reduc
Short Descrip.	2-NOx@7%	2-SO2@7%	2-CO@7%	2-SO2 Red
Units	ppm	ppm	ppm	%
Range	0-500	0-900	0-1100	0-100
02/17/2010 15:14	86	0	178	100
02/17/2010 15:15	97	0	73	100
02/17/2010 15:16	98	0	79	100
02/17/2010 15:17	103	0	96	100
02/17/2010 15:18	110	0	72	100
02/17/2010 15:19	124	0	37	100
02/17/2010 15:20	139	0	29	100
02/17/2010 15:21	131	0	66	100
02/17/2010 15:22	123	0	64	100
02/17/2010 15:23	135	0	38	100
02/17/2010 15:24	123	0	71	100
02/17/2010 15:25	95	0	262	100
02/17/2010 15:26	96	0	298	100
02/17/2010 15:27	101	0	160	100
02/17/2010 15:28	96	0	350	100
02/17/2010 15:29	104	0	175	100
02/17/2010 15:30	120	0	84	100
02/17/2010 15:31	117	0	97	100
02/17/2010 15:32	106	0	370	100
02/17/2010 15:33	87	3	758	96
02/17/2010 15:34	79	2	368	97
Period Average =	108	0	177	100
Period Max Value =	139	3	758	100
Period Min Value =	79	0	29	96
Period Totals =	2.2700E+3	5.0000E+0	3.7250E+3	2.0930E+3
Period % Recovery =	100.0	100.0	100.0	100.0

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company: Covanta Hudson Valley Renewable
Dutchess Co. Resource Recovery
Poughkeepsie, NY 12601

Data Group: All Data Groups
Report Name: No Title
Start of Report: 02/17/2010 15:58
End of Report: 02/17/2010 16:18
Validation: All Available Data
Report Comments: U2-RATA-R10

Group#-Channel#	G19-C2	G19-C3	G19-C9	G19-C7
Long Descrip.	NOx Corr.	SO2 Corr.	CO Corr.	SO2 Reduc
Short Descrip.	2-NOx@7%	2-SO2@7%	2-CO@7%	2-SO2 Red
Units	ppm	ppm	ppm	%
Range	0-500	0-900	0-1100	0-100
02/17/2010 15:58	98	0	111	100
02/17/2010 15:59	118	0	58	100
02/17/2010 16:00	127	0	39	100
02/17/2010 16:01	136	0	34	100
02/17/2010 16:02	133	0	38	100
02/17/2010 16:03	131	0	28	100
02/17/2010 16:04	139	0	26	100
02/17/2010 16:05	140	0	35	100
02/17/2010 16:06	139	0	39	100
02/17/2010 16:07	152	0	24	100
02/17/2010 16:08	165	0	21	100
02/17/2010 16:09	149	0	43	100
02/17/2010 16:10	127	0	65	100
02/17/2010 16:11	118	0	52	100
02/17/2010 16:12	114	0	74	100
02/17/2010 16:13	114	0	120	100
02/17/2010 16:14	128	0	140	100
02/17/2010 16:15	129	0	46	100
02/17/2010 16:16	121	0	59	100
02/17/2010 16:17	114	0	57	100
02/17/2010 16:18	107	0	51	100
Period Average =	129	0	55	100
Period Max Value =	165	0	140	100
Period Min Value =	98	0	21	100
Period Totals =	2.6990E+3	0.0000E+0	1.1600E+3	2.1000E+3
Period % Recovery =	100.0	100.0	100.0	100.0

Appendix F

Calculations

INSTRUMENT ANALYZER CALCULATIONS

1. **Analyzer Calibration Error is determined by:**

$$ACE = \frac{C_{dir} - C_v}{CS} x\, 100$$

2. **System Bias is determined by:**

$$SB = \frac{C_s - C_{dir}}{CS} x\, 100$$

3. **Drift Assessment is determined by:**

$$D = |SB_f - SB_i|$$

4. **The Effluent Gas Concentration is determined by:**

$$C_{gas} = (C_{Avg} - C_0)\, x \frac{C_{ma}}{C_m - C_0}$$

Nomenclature

ACE	=	Analyzer calibration error, percent of calibration span
C_{Avg}	=	Average unadjusted gas concentration indicated by the data recorder for the test run
C_{Dir}	=	Measured concentration of a calibration gas when introduced in direct calibration mode
C_{Gas}	=	Average effluent gas concentration adjusted for bias
C_M	=	Average of the initial and final system calibration bias check responses for the upscale calibration gas
C_{Ma}	=	Actual concentration of the upscale calibration gas
C_o	=	Average of the initial and final system calibration bias check responses for the zero gas
C_v	=	Manufacturer certified concentration of a calibration gas
C_s	=	Measured concentration of a calibration gas when introduced in system calibration
CS	=	Calibration span
D	=	Drift Assessment, percent of calibration span
SB	=	System bias, percent of calibration span
SB_f	=	Post-run system bias, percent of calibration span
SB_i	=	Pre-run system bias, percent of calibration span

Sample Calculations for Montenay Dutchess
March 2010 RATAs

Example: EPA Method 6C: Actual Calculations for Unit 1 SO2 CEMS Outlet RATA, Run 1
Run ID: U1-RATA-R1

1. Analyzer calibration error

ACE(SO2) = ((50.61-50.50)/99.56)*100

= 0.11 %

2. System bias

SB(SO2) = (50.50-49.53)/99.56*100

= 0.97 %

3. Calibration drift

Dc(SO2) = (Abs(-0.97-(-0.87)))

= 0.1 %

4. Adjusted data value

Cgas(SO2) = (1.92-((0.12+0.04)/2))*50.61/(((49.53+49.64)/2)-((0.12+0.04)/2))

= 1.88 ppmdv

Sample Calculations for Montenay Dutchess
March 2010 RATAs

Example: EPA Method 7E: Actual Calculations for Unit 2 NOx CEMS RATA, Run 1
Run ID: U2-RATA-R1

1. Analyzer calibration error

ACE(NOx) = ((126.50-124.30)/253.4)*100

= 0.87 %

2. System bias

SB(NOx) = (121.58-126.50)/253.4*100

= -1.94 %

3. Calibration drift

D(NOx) = (Abs(-1.94-(-2.09)))

= 0.15 %

4. Adjusted data value

Cgas(NOx) = (73.74-((0.18+0.14)/2))*124.3/(((121.58+121.21)/2)-((0.18+0.14)/2))

= 75.44 ppmdv

GASEOUS EMISSIONS MONITORING CALCULATIONS

1. Correction of Gas Concentration to 7% O_2

$$C_{7i} = C_i \times \frac{20.9 - 7.0}{20.9 - \%O_2}$$

Nomenclature

i	=	SO_2, NO_X, or CO
C_{7i}	=	Gas concentration of i in stack gas, corrected to 7% O_2 (ppmdv @7% O_2)
C_i	=	Gas concentration of i in stack gas, (ppmdv)
$\%O_2$	=	Actual gas concentration of O_2 (% dry volume)

Sample Calculations for Montenay Dutchess
March 2010 RATAs

Example: EPA Method 6C: Actual Calculations for Unit 1 SO2 CEMS Outlet RATA, Run 1
Run ID: U1-RATA-R1

1. To convert SO2 conc. measured by analyzer to SO2 conc. at 7% O2

SO2 conc. @ 7%dv O2 = SO2 conc. (analyzer) x [(20.9 - 7)/(20.9 - %dvO2)]

= 1.88*(20.9-7)/(20.9-9.68)

= 2.33 ppmdv

Sample Calculations for Montenay Dutchess
March 2010 RATAs

Example: EPA Method 7E: Actual Calculations for Unit 2 NOx CEMS RATA, Run 1
Run ID: U2-RATA-R1

1. To convert NOx conc. measured by analyzer to NOx conc. at 7% O2

NOx conc. @ 7%dv O2 = NOx conc. (analyzer) x [(20.9 - 7)/(20.9 - %dvO2)]

= 75.44*(20.9-7)/(20.9-10.11)

= 97.18 ppmdv

CALCULATIONS FOR RELATIVE ACCURACY

1. **Difference in Reference Method and CEMS - d_i**

$$d_i = RM_i - CEMS_i$$

2. **Arithmetic Mean of Difference - $\bar{d}$**

$$\bar{d} = \frac{\sum d_i}{n}$$

3. **Standard Deviation - S_D**

$$S_d = \left[\frac{\Sigma d_i^2 - \frac{(\Sigma d_i)^2}{n}}{n-1} \right]^{\frac{1}{2}}$$

4. **2.5% Confidence Coefficient - CC**

$$CC = \frac{t_{0.975} \, x \, S_D}{\sqrt{n}}$$

5. **Arithmetic Mean of Reference Method - $\overline{RM}$**

$$\overline{RM} = \frac{\sum RM_i}{n}$$

6. **Arithmetic Mean of CEMS - $\overline{CEMS}$**

$$\overline{CEMS} = \frac{\sum CEMS_i}{n}$$

7. **Relative Accuracy - RA (based on average RM)**

$$RA = \frac{|\bar{d}| + |CC|}{RM} \, x \, 100\%$$

CALCULATIONS FOR RELATIVE ACCURACY (CONTINUED)

8. Relative Accuracy - RA (based on Applicable Standard)

$$RA = \frac{|\bar{d}| + |CC|}{AS} x\,100\%$$

9. Relative Accuracy - RA (based on abs. avg. diff. of means + 2.5% CC)

$$RA = |\bar{d}| + |CC|$$

Nomenclature

AS	=	Applicable standard or emission limit
$CEM^{monitor}$	=	CEMS data value as measured by monitor
d_i	=	Difference between Reference Method (RM) point *i* and CEMS point *i*
$\bar{d}$	=	Arithmetic mean of the difference between the RM and CEMS
n	=	Number of runs used in RA determination (minimum of 9)
S_D	=	Standard Deviation of the data set
t	=	"t" value for 97.5% confidence interval and (n-1) data points
CC	=	the 2.5% error confidence coefficient (one-tailed) of the data set
RM_i	=	Individual RM run result "i"
$CEMS_i$	=	Individual CEMS run result "i"
$\overline{RM}$	=	Average value for the RM data
$\overline{CEMS}$	=	Average value for the CEMS data
RA	=	Relative Accuracy

t-Values used for relative accuracy determination

n[a]	$t_{0.975}$	n[a]	$t_{0.975}$	n[a]	$t_{0.975}$
2	12.706	7	2.447	12	2.201
3	4.303	8	2.365	13	2.179
4	3.182	9	2.306	14	2.160
5	2.776	10	2.262	15	2.145
6	2.571	11	2.228	16	2.131

[a] The t-values are already corrected for n-1 degrees of freedom. Use n equal to the number of individual values.

Sample Calculations for Montenay Dutchess
March 2010 RATAs

Example: EPA Method 6C: Actual Calculations for Unit 1 SO2 CEMS Outlet RATA, Run 1
Run ID: U1-RATA-R1

	RMi	CEMSi	di	di2
R1	2.33	0.00	2.33	5.42
R2	5.00	1.00	4.00	16.00
R3	0.00	0.00	0.00	0.00
R4	1.13	0.00	1.13	1.27
R5	2.68	3.00	-0.32	0.10
R6	8.58	15.00	-6.42	41.22
R7	0.00	0.00	0.00	0.00
R8	24.94	28.00	-3.06	9.39
R9	4.32	1.00	3.32	11.04
R10	0.26	1.00	-0.74	0.55
	0.67	2.00	-1.33	1.76
Sum	49.91	51.00	-1.09	86.76

1. Difference in reference method and CEMS

di(SO2) = 2.33-0.0

= 2.33

2. Arithmetic mean of difference

$\bar{d}$ = (-1.09/9)

= -0.12

3. Standard deviation

Sd = ((86.76-(-1.09^2)/9)/(9-1))^0.5

= 3.29

4. Confidence coefficient

CC = 2.306*3.29/(9^0.5)

= 2.53

5. Arithmetic mean of reference method

$\overline{RM}$ = 49.91/9

= 5.55

6. Arithmetic mean of CEMS

$\overline{CEMS}$ = 51.0/9

= 5.67

7. Relative accuracy (based on reference method)

RA = (0.12+2.53)/5.55*100

= 47.748 %

8. Relative accuracy (based on applicable standard)

RA = (0.12+2.53)/31*100

= 8.548 %

Sample Calculations for Montenay Dutchess
March 2010 RATAs

Example: EPA Method 7E: Actual Calculations for Unit 2 SO2 CEMS RATA, Run 1
Run ID: U2-RATA-R1

	RMi	CEMSi	di	di2
R1	4.32	9.00	-4.68	21.94
R2	1.88	2.00	-0.12	0.01
R3	4.21	5.00	-0.79	0.63
R4	3.32	4.00	-0.68	0.46
R5	0.00	0.00	0.00	0.00
R6	1.90	0.00	1.90	3.60
R7	1.29	0.00	1.29	1.67
R8	1.23	1.00	0.23	0.05
R9	0.87	0.00	0.87	0.76
R10	0.65	0.00	0.65	0.43
Sum	**19.67**	**21.00**	**-1.33**	**29.55**

1. Difference in reference method and CEMS

di(SO2) = 4.32-9.0

= -4.68

2. Arithmetic mean of difference

$\bar{d}$ = (-1.33/9)

= -0.15

3. Standard deviation

Sd = ((29.55-(-1.33^2)/9)/(9-1))^0.5

= 1.92

4. Confidence coefficient

CC = 2.306*1.92/(9^0.5)

= 1.48

5. Arithmetic mean of reference method

$\overline{RM}$ = 19.67/9

= 2.19

6. Arithmetic mean of CEMS

$\overline{CEMS}$ = 21.00/9

= 2.33

7. Relative accuracy (based on reference method)

RA = (0.15+1.48)/2.19*100

= 74.43 %

8. Relative accuracy (based on applicable standard)

RA = (0.15+1.48)/31.0*100

= 5.26 %

Appendix G

Reference Method Analyzer Calibration Data

GAS ANALYZER CALIBRATION ERROR \ SYSTEM BIAS \ DRIFT DATA

UNIT 1 OUTLET
February 16, 2010

Calibration Error Data
(± 2% of Span Allowable)

Analyzer	Span Value (% or ppm)	Cal Gas Concentration (% or ppm)			Analyzer Response (% or ppm)			Absolute Difference (% or ppm)			Calibration Error (% of span)		
		Zero	Mid	High	Zero	Mid	High	Zero	Mid	High	Zero	Mid	High
O2	20.94	0	12.21	20.94	-0.05	12.22	20.94	0.05	0.01	0.00	-0.24	0.05	0.00
CO	278	0	124.60	278.00	0.12	127.70	277.90	0.12	3.10	0.10	0.04	1.12	-0.04
SO2	99.56	0	50.61	99.56	0.22	50.50	99.30	0.22	0.11	0.26	0.22	-0.11	-0.26
NOx	253.4	0	124.30	253.40	0.05	124.60	254.20	0.05	0.30	0.80	0.02	0.12	0.32

System Bias and Drift Data
(± 5% of Span Allowable for System Bias and ± 3% of Span Allowable for Drift)

Run I.D.: RATA Run 1	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.08	12.19	0.16	12.21	0.61	-0.13	1.01	-0.04	0.40	0.09
CO	0.30	125.37	-0.08	124.06	0.06	-0.84	-0.07	-1.30	-0.14	-0.46
SO2	0.12	49.53	0.04	49.64	-0.10	-0.97	-0.18	-0.87	-0.09	0.10
NOx	-0.17	123.02	0.23	121.44	-0.08	-0.62	0.07	-1.25	0.16	-0.62

Run I.D.: RATA Run 2	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.16	12.21	0.05	12.23	1.01	-0.04	0.50	0.05	-0.51	0.09
CO	-0.08	124.08	0.18	123.26	-0.07	-1.30	0.02	-1.60	0.09	-0.29
SO2	0.04	49.64	-0.13	50.00	-0.18	-0.87	-0.36	-0.50	-0.17	0.36
NOx	0.23	121.44	0.03	121.42	0.07	-1.25	-0.01	-1.25	-0.08	-0.01

Run I.D.: RATA Run 3	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.05	12.23	-0.01	12.21	0.50	0.05	0.20	-0.04	-0.30	-0.09
CO	0.18	123.26	0.13	123.85	0.02	-1.60	0.00	-1.38	-0.02	0.21
SO2	-0.13	50.00	-0.02	49.31	-0.36	-0.50	-0.24	-1.19	0.11	-0.69
NOx	0.03	121.42	0.09	121.82	-0.01	-1.25	0.02	-1.10	0.02	0.16

Run I.D.: RATA Run 4	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	-0.01	12.21	0.08	12.20	0.20	-0.04	0.64	-0.09	0.44	-0.05
CO	0.13	123.85	-0.20	123.28	0.00	-1.38	-0.11	-1.59	-0.12	-0.21
SO2	-0.02	49.31	0.07	49.33	-0.24	-1.19	-0.16	-1.18	0.09	0.02
NOx	0.09	121.82	-0.12	123.22	0.02	-1.10	-0.07	-0.54	-0.08	0.55

Run I.D.: RATA Run 5	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	-0.02	12.16	0.04	12.20	0.12	-0.29	0.44	-0.09	0.32	0.20
CO	-0.03	121.85	0.15	124.32	-0.06	-2.10	0.01	-1.22	0.07	0.89
SO2	0.14	48.68	0.06	48.49	-0.08	-1.83	-0.16	-2.02	-0.08	-0.19
NOx	0.33	123.79	0.17	123.59	0.11	-0.32	0.05	-0.40	-0.07	-0.08

Run I.D.: RATA Run 6	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.04	12.20	0.17	12.30	0.44	-0.09	1.05	0.36	0.61	0.45
CO	0.15	124.32	0.21	121.28	0.01	-1.22	0.03	-2.31	0.02	-1.09
SO2	0.06	48.49	0.87	48.32	-0.16	-2.02	0.65	-2.19	0.82	-0.17
NOx	0.17	123.59	0.07	122.68	0.05	-0.40	0.01	-0.76	-0.04	-0.36

Run I.D.: RATA Run 7	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.17	12.30	0.07	12.32	1.05	0.36	0.56	0.47	-0.49	0.11
CO	0.21	121.28	0.98	123.03	0.03	-2.31	0.31	-1.68	0.28	0.63
SO2	0.87	48.32	0.34	48.74	0.65	-2.19	0.12	-1.76	-0.53	0.43
NOx	0.07	122.68	0.17	123.83	0.01	-0.76	0.05	-0.30	0.04	0.45

Run I.D.: RATA Run 8	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.07	12.32	0.02	12.26	0.56	0.47	0.32	0.21	-0.24	-0.27
CO	0.98	123.03	0.27	121.91	0.31	-1.68	0.05	-2.08	-0.26	-0.40
SO2	0.34	48.74	0.11	48.98	0.12	-1.76	-0.11	-1.52	-0.24	0.24
NOx	0.17	123.83	0.66	124.53	0.05	-0.30	0.24	-0.03	0.20	0.28

Run I.D.: RATA Run 9	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.02	12.26	0.09	12.11	0.32	0.21	0.66	-0.53	0.34	-0.73
CO	0.27	121.91	-0.01	123.65	0.05	-2.08	-0.05	-1.46	-0.10	0.63
SO2	0.11	48.98	0.15	48.33	-0.11	-1.52	-0.07	-2.18	0.04	-0.66
NOx	0.66	124.53	0.37	124.27	0.24	-0.03	0.12	-0.13	-0.12	-0.10

Run I.D.: RATA Run 10	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.09	12.11	0.00	12.18	0.66	-0.53	0.26	-0.17	-0.40	0.35
CO	-0.01	123.65	0.57	120.94	-0.05	-1.46	0.16	-2.43	0.21	-0.97
SO2	0.15	48.33	0.38	49.50	-0.07	-2.18	0.16	-1.01	0.23	1.17
NOx	0.37	124.27	0.64	124.08	0.12	-0.13	0.23	-0.21	0.11	-0.07

Run I.D.: RATA Run 11	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.00	12.18	0.08	12.23	0.26	-0.17	0.63	0.05	0.37	0.22
CO	0.57	120.94	0.90	121.78	0.16	-2.43	0.28	-2.13	0.12	0.30
SO2	0.38	49.50	0.27	49.19	0.16	-1.01	0.05	-1.31	-0.10	-0.31

GAS ANALYZER CALIBRATION ERROR \ SYSTEM BIAS \ DRIFT DATA

UNIT 1 INLET
February 16, 2010

Calibration Error Data
(± 2% of Span Allowable)

Analyzer	Span Value (% or ppm)	Cal Gas Concentration (% or ppm)			Analyzer Response (% or ppm)			Absolute Difference (% or ppm)			Calibration Error (% of span)		
		Zero	Mid	High	Zero	Mid	High	Zero	Mid	High	Zero	Mid	High
O2	20.94	0	12.21	20.94	-0.01	12.39	21.02	0.01	0.18	0.08	-0.05	0.86	0.38
SO2 (1)	494.5	0	252.80	494.50	-0.08	251.60	494.10	0.08	1.20	0.40	-0.02	-0.24	-0.08
SO2 (2)	494.5	0	252.80	494.50	-0.19	252.00	494.00	0.19	0.80	0.50	-0.04	-0.16	-0.10

(1) SO2 Analyzer used for runs 1 -4
(2) SO2 Analyzer used for runs 5 - 10

System Bias and Drift Data
(± 5% of Span Allowable for System Bias and ± 3% of Span Allowable for Drift)

Run I.D.: RATA Run 1	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.06	12.18	0.16	12.38	0.31	-1.01	0.82	-0.04	0.50	0.96
SO2 (1)	0.31	248.08	0.37	249.41	0.08	-0.71	0.09	-0.44	0.01	0.27

Run I.D.: RATA Run 2	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.16	12.38	0.18	12.31	0.82	-0.04	0.92	-0.37	0.10	-0.33
SO2 (1)	0.37	249.41	0.46	248.14	0.09	-0.44	0.11	-0.70	0.02	-0.26

Run I.D.: RATA Run 3	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.18	12.31	0.17	12.11	0.92	-0.37	0.87	-1.35	-0.05	-0.98
SO2 (1)	0.46	248.14	0.11	248.81	0.11	-0.70	0.04	-0.56	-0.07	0.14

Run I.D.: RATA Run 4	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.17	12.11	0.15	12.32	0.87	-1.35	0.75	-0.33	-0.12	1.02
SO2 (1)	0.11	248.81	0.11	248.64	0.04	-0.56	0.04	-0.60	0.00	-0.03

Run I.D.: RATA Run 5	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.12	12.07	0.04	12.15	0.64	-1.52	0.22	-1.17	-0.42	0.35
SO2 (2)	0.19	249.98	0.83	249.09	0.08	-0.41	0.21	-0.59	0.13	-0.18

Run I.D.: RATA Run 6	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.04	12.15	0.11	12.22	0.22	-1.17	0.58	-0.80	0.36	0.37
SO2 (2)	0.83	249.09	0.29	249.56	0.21	-0.59	0.10	-0.49	-0.11	0.10

Run I.D.: RATA Run 7	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.11	12.22	0.10	12.18	0.58	-0.80	0.53	-1.00	-0.05	-0.20
SO2 (2)	0.29	249.56	0.27	248.52	0.10	-0.49	0.09	-0.70	0.00	-0.21

Run I.D.: RATA Run 8	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.10	12.18	0.11	12.01	0.53	-1.00	0.57	-1.83	0.05	-0.84
SO2 (2)	0.27	248.52	0.52	249.18	0.09	-0.70	0.14	-0.57	0.05	0.13

Run I.D.: RATA Run 9	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.11	12.01	0.07	12.14	0.57	-1.83	0.39	-1.22	-0.19	0.62
SO2 (2)	0.52	249.18	0.18	249.13	0.14	-0.57	0.07	-0.58	-0.07	-0.01

Run I.D.: RATA Run 10	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.07	12.14	0.14	12.01	0.39	-1.22	0.73	-1.81	0.34	-0.59
SO2 (2)	0.18	249.13	0.20	248.07	0.07	-0.58	0.08	-0.79	0.00	-0.21

GAS ANALYZER CALIBRATION ERROR \ SYSTEM BIAS \ DRIFT DATA

UNIT 2 OUTLET
February 17, 2010

Calibration Error Data
(± 2% of Span Allowable)

Analyzer	Span Value (% or ppm)	Concentration (% or ppm)			Analyzer Response (% or ppm)			Absolute Difference (% or ppm)			Calibration Error (% of span)		
		Zero	Mid	High	Zero	Mid	High	Zero	Mid	High	Zero	Mid	High
O2	20.94	0	12.21	20.94	-0.06	12.17	20.92	0.06	0.04	0.02	-0.29	-0.19	-0.10
CO	278	0	124.60	278.00	0.11	127.70	277.60	0.11	3.10	0.40	0.04	1.12	-0.14
SO2	99.58	0	50.61	99.56	0.02	50.49	100.10	0.02	0.12	0.54	0.02	-0.12	0.54
NOx	253.4	0	124.30	253.40	0.18	126.50	254.20	0.18	2.20	0.80	0.07	0.87	0.32

System Bias and Drift Data
(± 5% of Span Allowable for System Bias and ± 3% of Span Allowable for Drift)

		System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
		Initial		Final		Initial		Final			
	Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
Run I.D.: RATA Run 1	O2	0.09	12.20	0.08	12.30	0.73	0.13	0.69	0.62	-0.04	0.49
	CO	0.38	125.45	0.64	126.48	0.10	-0.81	0.19	-0.44	0.09	0.37
	SO2	0.32	48.99	0.09	48.70	0.30	-1.51	0.07	-1.60	-0.23	-0.29
	NOx	0.18	121.58	0.14	121.21	0.00	-1.94	-0.02	-2.09	-0.01	-0.15

		System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
		Initial		Final		Initial		Final			
	Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
Run I.D.: RATA Run 2	O2	0.08	12.30	0.06	12.18	0.69	0.62	0.56	0.06	-0.12	-0.56
	CO	0.64	126.48	0.50	125.11	0.19	-0.44	0.14	-0.93	-0.05	-0.49
	SO2	0.09	48.70	0.06	49.10	0.07	-1.60	0.04	-1.40	-0.03	0.40
	NOx	0.14	121.21	0.08	121.03	-0.02	-2.09	-0.04	-2.16	-0.02	-0.07

		System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
		Initial		Final		Initial		Final			
	Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
Run I.D.: RATA Run 3	O2	0.06	12.18	0.15	12.20	0.56	0.06	0.99	0.14	0.42	0.09
	CO	0.50	125.11	0.46	125.05	0.14	-0.93	0.12	-0.95	-0.02	-0.02
	SO2	0.06	49.10	0.02	48.60	0.04	-1.40	0.00	-1.89	-0.03	-0.50
	NOx	0.08	121.03	0.28	122.74	-0.04	-2.16	0.04	-1.48	0.08	0.67

		System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
		Initial		Final		Initial		Final			
	Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
Run I.D.: RATA Run 4	O2	0.15	12.20	-0.01	12.11	0.99	0.14	0.23	-0.30	-0.76	-0.44
	CO	0.46	125.05	0.89	123.69	0.12	-0.95	0.28	-1.44	0.16	-0.49
	SO2	0.02	48.60	0.11	48.94	0.00	-1.89	0.09	-1.56	0.09	0.34
	NOx	0.28	122.74	0.17	121.21	0.04	-1.48	-0.01	-2.09	-0.05	-0.60

		System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
		Initial		Final		Initial		Final			
	Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
Run I.D.: RATA Run 5	O2	-0.01	12.11	0.02	12.27	0.23	-0.30	0.39	0.49	0.16	0.79
	CO	0.89	123.69	0.92	122.89	0.28	-1.44	0.29	-1.73	0.01	-0.29
	SO2	0.11	48.94	0.09	49.42	0.09	-1.56	0.07	-1.07	-0.02	0.48
	NOx	0.17	121.21	0.17	122.55	-0.01	-2.09	-0.01	-1.56	0.00	0.53

		System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
		Initial		Final		Initial		Final			
	Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
Run I.D.: RATA Run 6	O2	0.02	12.27	0.10	12.24	0.39	0.49	0.76	0.33	0.36	-0.16
	CO	0.92	122.89	3.20	122.05	0.29	-1.73	1.11	-2.03	0.82	-0.30
	SO2	0.09	49.24	0.32	49.51	0.07	-1.26	0.30	-0.99	0.23	0.27
	NOx	0.17	122.55	0.15	121.66	-0.01	-1.56	-0.01	-1.91	0.00	-0.35

		System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
		Initial		Final		Initial		Final			
	Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
Run I.D.: RATA Run 7	O2	0.10	12.24	0.07	12.23	0.76	0.33	0.61	0.28	-0.15	-0.05
	CO	3.20	122.05	2.19	123.21	1.11	-2.03	0.75	-1.62	-0.36	0.42
	SO2	0.32	49.51	0.29	49.61	0.30	-0.99	0.27	-0.88	-0.03	0.11
	NOx	0.15	121.66	0.11	121.53	-0.01	-1.91	-0.03	-1.96	-0.02	-0.05

		System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
		Initial		Final		Initial		Final			
	Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
Run I.D.: RATA Run 8	O2	0.07	12.23	0.09	12.23	0.61	0.28	0.74	0.29	0.13	0.01
	CO	2.19	123.21	1.84	123.34	0.75	-1.62	0.62	-1.57	-0.13	0.05
	SO2	0.29	49.61	0.25	49.35	0.27	-0.88	0.23	-1.15	-0.03	-0.27
	NOx	0.11	121.53	0.13	121.36	-0.03	-1.96	-0.02	-2.03	0.01	-0.07

		System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
		Initial		Final		Initial		Final			
	Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
Run I.D.: RATA Run 9	O2	0.09	12.23	0.10	12.22	0.74	0.29	0.74	0.24	0.00	-0.05
	CO	1.84	123.34	3.61	122.38	0.62	-1.57	1.26	-1.91	0.64	-0.35
	SO2	0.25	49.35	0.33	49.68	0.23	-1.15	0.31	-0.81	0.08	0.33
	NOx	0.13	121.36	0.11	120.72	-0.02	-2.03	-0.03	-2.28	-0.01	-0.25

		System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
		Initial		Final		Initial		Final			
	Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
Run I.D.: RATA Run 10	O2	0.10	12.22	-0.02	12.18	0.74	0.24	0.19	0.03	-0.55	-0.21
	CO	3.61	122.38	3.42	123.40	1.26	-1.91	1.19	-1.55	-0.07	0.37
	SO2	0.33	49.68	0.21	49.01	0.31	-0.81	0.19	-1.49	-0.13	-0.68
	NOx	0.11	120.72	0.15	119.00	-0.03	-2.28	-0.01	-2.96	0.02	-0.68

GAS ANALYZER CALIBRATION ERROR \ SYSTEM BIAS \ DRIFT DATA

UNIT 2 INLET
February 17, 2010

Calibration Error Data
(± 2% of Span Allowable)

Analyzer	Span Value (% or ppm)	oncentration (% or ppm) Zero	Mid	High	Analyzer Response (% or ppm) Zero	Mid	High	Absolute Difference (% or ppm) Zero	Mid	High	Calibration Error (% of span) Zero	Mid	High
O2	20.94	0	12.21	20.94	0.35	11.99	20.80	0.35	0.22	0.14	1.67	-1.05	-0.67
SO2	494.5	0	252.80	494.50	0.22	251.10	497.80	0.22	1.70	3.30	0.04	-0.34	0.67

System Bias and Drift Data
(± 5% of Span Allowable for System Bias and ± 3% of Span Allowable for Drift)

Run I.D.: RATA Run 1	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.00	12.22	0.12	12.17	-1.67	1.08	-1.11	0.88	0.56	-0.20
SO2	0.08	249.06	0.10	249.05	-0.03	-0.41	-0.02	-0.41	0.01	0.00

Run I.D.: RATA Run 2	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.12	12.17	0.07	12.21	-1.11	0.88	-1.35	1.03	-0.24	0.15
SO2	0.10	249.05	0.14	249.37	-0.02	-0.41	-0.02	-0.35	0.01	0.06

Run I.D.: RATA Run 3	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.07	12.21	0.02	12.16	-1.35	1.03	-1.58	0.82	-0.22	-0.21
SO2	0.14	249.37	0.62	250.09	-0.02	-0.35	0.08	-0.20	0.10	0.15

Run I.D.: RATA Run 4	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.02	12.16	0.01	12.17	-1.58	0.82	-1.62	0.86	-0.04	0.04
SO2	0.62	250.09	0.37	249.30	0.08	-0.20	0.03	-0.36	-0.05	-0.16

Run I.D.: RATA Run 5	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.01	12.17	0.10	12.19	-1.62	0.86	-1.21	0.94	0.41	0.07
SO2	0.37	249.30	0.62	250.81	0.03	-0.36	0.08	-0.06	0.05	0.31

Run I.D.: RATA Run 6	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.10	12.19	0.09	12.22	-1.21	0.94	-1.23	1.08	-0.02	0.15
SO2	0.62	250.81	2.84	249.98	0.08	-0.06	0.53	-0.23	0.45	-0.17

Run I.D.: RATA Run 7	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.09	12.22	0.04	12.29	-1.23	1.08	-1.47	1.45	-0.23	0.37
SO2	2.84	249.98	1.36	249.05	0.53	-0.23	0.23	-0.41	-0.30	-0.19

Run I.D.: RATA Run 8	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.04	12.29	0.06	12.25	-1.47	1.45	-1.37	1.22	0.10	-0.23
SO2	1.36	249.05	1.16	249.23	0.23	-0.41	0.19	-0.38	-0.04	0.04

Run I.D.: RATA Run 9	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.06	12.25	0.09	12.28	-1.37	1.22	-1.26	1.38	0.10	0.16
SO2	1.16	249.23	2.13	250.18	0.19	-0.38	0.39	-0.19	0.20	0.19

Run I.D.: RATA Run 10	System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
	Initial		Final		Initial		Final			
Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
O2	0.09	12.28	0.06	12.39	-1.26	1.38	-1.37	1.89	-0.11	0.50
SO2	2.13	250.18	1.18	250.53	0.39	-0.19	0.19	-0.12	-0.19	0.07

NOx CONVERTER CHECK

UNIT 1 OUTLET
February 24, 2009

NOx Converter Efficiency Data
(90% Efficiency = ± 10% of Gas Value Allowable for EPA Method 7E)

Analyzer	NO2 Gas Value (ppm)	Analyzer Response (ppm)	Absolute Difference (ppm)	Calibration Error (% of gas value)	Converter Efficiency (%)
NOx	50.24	46.21	4.03	-8.02	91.98

NOx CONVERTER CHECK

UNIT 2 OUTLET
February 17, 2010

NOx Converter Efficiency Data
(90% Efficiency = ± 10% of Gas Value Allowable for EPA Method 7E)

Analyzer	NO2 Gas Value (ppm)	Analyzer Response (ppm)	Absolute Difference (ppm)	Calibration Error (% of gas value)	Converter Efficiency (%)
NOx	50.24	45.50	4.74	-9.43	90.57

Marker	Description	Display	Average
A	Data was Absent from original raw data file.	√	
C	NOx Converter Calibration Gas	√	
H	High Calibration Gas	√	
M	Mid Calibration Gas	√	
Z	Zero Calibration Gas	√	
*	Data was not used in calculated parameter averages.		

Covanta Hudson Valley
2010 Unit 1 RATA
February 16, 2010
Outlet Direct Calibration

Starting
02-16-10

Time	SO2 Out ppm	NOx Out ppm	CO Out ppm	O2 Out %
07:02	0.42	-1.17	9.69	-0.05Z
07:03	0.45	-0.59	9.26	-0.05
07:04	0.22Z	-0.33	8.63	-0.05
07:05	0.27	-0.34	0.56	-0.05
07:06	-41.43	-0.30	3.20	16.44
07:07	-47.71	-0.34	5.04	22.33
07:08	-47.16	-0.36	5.80	21.96
07:09	-26.30	-0.37	6.21	20.94H
07:10	2.18	-0.35	4.29	15.00
07:11	13.52	-0.42	3.33	12.22M
07:12	81.60	0.75	1.21	6.18
07:13	91.70	0.35	0.12Z	-0.00
07:14	99.30H	0.40	0.01	-0.04
07:15	73.90	0.05Z	0.25	13.08
07:16	51.50	0.92	0.01	0.21
07:17	50.50M	0.73	0.03	-0.05
07:18	39.40	0.44	114.90	3.16
07:19	0.65	-0.32	328.50	-0.06
07:20	0.14	-0.33	277.90H	-0.06
07:21	-0.10	-0.33	255.80	1.21
07:22	-0.06	-0.32	130.60	0.04
07:23	-0.36	-0.33	127.70M	-0.05
07:24	-13.27	152.00	40.38	2.11
07:25	-50.33	291.60	0.35	-0.05
07:26	-50.06	254.20H	0.16	-0.04
07:27	-22.12	163.70	0.34	1.60
07:28	1.37	124.60M	0.12	-0.05
07:29	2.19	125.80	0.13	-0.05
07:30	24.15	63.79	0.26	16.19
07:31	3.09	46.21C	0.65	21.15
07:32	2.47	45.61	1.14	21.17
07:33	2.05	16.17	1.65	21.17

Covanta Hudson Valley
2010 Unit 1 RATA
Februaary 16, 2010
Inlet Direct Calibration

Starting
02-16-10

Time	SO2 In ppm	O2 In %
07:34	3.07	-0.35
07:35	-0.83	-0.01Z
07:36	-0.25	-0.01
07:37	-0.08Z	-0.01
07:38	54.21	15.56
07:39	81.86	21.02H
07:40	165.40	21.04
07:41	266.30	15.46
07:42	326.30	12.39M
07:43	384.71	6.22
07:44	494.10H	0.01
07:45	440.10	-0.01
07:46	397.80	18.52
07:47	279.30	7.87
07:48	251.60M	0.76
07:49	340.50	16.33

Covanta Hudson Valley
2010 Unit 1 RATA
February 16, 2010
Inlet Direct Calibration

Starting
02-16-10

Time	SO2 In ppm
12:46	-1.32
12:47	-0.20Z
12:48	170.10
12:49	476.20
12:50	494.60H
12:51	486.00
12:52	330.60
12:53	260.40
12:54	255.20
12:55	252.60M
12:56	142.70

Covanta Hudson Valley
2010 Unit 2 RATA
February 17, 2010
Outlet Direct Calibration

Starting
02-17-10

Time	SO2 Out ppm	NOx Out ppm	CO Out ppm	O2 Out %
07:21	383.30	1.06	-1.64	-0.06Z
07:22	95.30	0.92	-1.76	4.43
07:23	1.92	0.24	-1.16	-0.06
07:24	0.06	0.18Z	-0.27	-0.07
07:25	0.02Z	0.22	2.08	19.86
07:26	0.01	0.19	3.58	22.52
07:27	0.02	0.22	3.88	20.92H
07:28	0.09	0.22	2.87	16.87
07:29	0.10	0.25	1.84	12.17M
07:30	0.17	111.50	0.55	7.38
07:31	0.14	258.40	-0.24	-0.04
07:32	0.16	254.20H	-0.43	-0.05
07:33	0.09	163.40	-0.61	1.53
07:34	0.18	126.50M	-0.69	-0.06
07:35	1.77	70.70	-0.38	15.24
07:36	1.24	45.50C	0.11Z	20.93
07:37	0.58	17.57	130.30	8.28
07:38	0.13	0.52	261.30	-0.06
07:39	0.17	0.37	277.60H	-0.07
07:40	0.20	0.40	176.00	2.52
07:41	0.17	0.31	127.70M	-0.07
07:42	33.40	0.61	50.72	7.91
07:43	100.10H	1.00	0.51	-0.06
07:44	98.30	0.51	1.01	17.52
07:45	67.77	0.45	0.97	5.43
07:46	50.49M	0.22	0.78	-0.06
07:47	24.64	4.63	2.16	13.43

Covanta Hudson Valley
2010 Unit 2 RATA
February 17, 2010
Inlet Direct Calibration

Starting
02-17-10

Time	SO2 In ppm	O2 In %
07:49	0.22Z	0.35Z
07:50	0.46	4.13
07:51	0.35	17.72
07:52	-0.02	20.80H
07:53	-0.23	18.72
07:54	-0.45	14.33
07:55	-0.41	9.87
07:56	-0.73	11.22
07:57	-0.58	11.99M
07:58	210.20	4.83
07:59	499.80	-2.45
08:00	497.80H	-2.46
08:01	496.60	-2.46
08:02	462.60	15.49
08:03	241.40	0.23
08:04	251.10M	-2.47
08:05	206.60	13.70

Appendix H

Gas Cylinder Certification Data

Airgas

4011

Airgas Specialty Gases
12722 S. Wentworth Avenue
Chicago, IL 60628
1-773-785-3000
FAX: 1-773-785-1928
www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E03NI78E15A1066	Reference Number:	54-124192386-6
Cylinder Number:	CC140151	Cylinder Volume:	151 Cu.Ft.
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2015 PSIG
Analysis Date:	Sep 28, 2009	Valve Outlet:	590

Expiration Date: Sep 28, 2012

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON DIOXIDE	10.00 %	9.770 %	G1	+/- 1% NIST Traceable
OXYGEN	12.00 %	12.21 %	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM/CO2	1	CC59142	13.78% CARBON DIOXIDE/	Oct 02, 2012
NTRM/O2	82658	SG9168259BAL	16.04% OXYGEN/	Jan 01, 2010

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
HORIBA CLA-510	Chemiluminescence	Sep 21, 2009
HORIBA MPA-510	Paramagnetic	Sep 21, 2009

Triad Data Available Upon Request

Notes:

QA Approval

Airgas 4021

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Airgas Speciality Gases
12722 S. Wentworth Avenue
Chicago, IL 60628
1-773-785-3000
FAX: 1-773-785-1928
www.airgas.com

Part Number:	E03NI60E15A2996	Reference Number:	54-124173569-9
Cylinder Number:	CC9337	Cylinder Volume:	159 Cu.Ft.
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2015 PSIG
Analysis Date:	Apr 09, 2009	Valve Outlet:	590

Expiration Date: Apr 09, 2012

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON DIOXIDE	19.00 %	18.66 %	G1	+/- 1% NIST Traceable
OXYGEN	21.00 %	20.94 %	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM/O2	60608	CC206134	22.51% OXYGEN/NITROGEN	May 01, 2010
NTRM/CO2	40604	XC034297B	19.84% CARBON DIOXIDE/	May 15, 2012

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
HORIBA 510	NDIR	Apr 06, 2009
(P-1) CAI 110	Paramagnetic	Apr 06, 2009

Triad Data Available Upon Request

Notes:

Carl Stewart

QA Approval

Airgas

5125

Airgas Speciality Gases
12722 S. Wentworth Avenue
Chicago, IL 60628
1-773-785-3000
FAX: 1-773-785-1928
www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0041	Reference Number:	54-124195544-3
Cylinder Number:	CC138910	Cylinder Volume:	144 Cu.Ft.
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2015 PSIG
Analysis Date:	Oct 27, 2009	Valve Outlet:	350

Expiration Date: Oct 27, 2012

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON MONOXIDE	125.0 PPM	124.6 PPM	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM/CO	1	CC274123	501.3PPM CARBON MONOXIDE/NITROGEN	Feb 01, 2013

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet Nexus	FTIR	Oct 21, 2009

Triad Data Available Upon Request

Notes:

Curt Stewart

QA Approval

PRAXAIR

Praxair Distribution Mid-Atlantic LLC

145 Shimersville Road • Bethlehem, PA 18015 • Phone: 610.317.1608 • Fax: 610.758.8384

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:
PDI WHSE KNOXVILLE HUB
3020 E INDUSTRIAL PKWY
KNOXVILLE TN 37921

Doc Number: 00000005397
Order Number: 149940600 - 8
Customer P. O. Number: AGG09-816
Customer Reference Number: LB216

Fill Date: 2/13/2009
Part Number: EV NICO270ME-AS
Lot Number:
Cylinder Style & Outlet: AS 350
Cylinder Pressure & Volume: 2000 psi 140 cu ft
Customer Order Number:

Certified Concentration:

Expiration Date:		2/27/2012	
Cylinder Number:		CC139126	Analytical Uncertainty:
278	ppm	CARBON MONOXIDE	± 1 %
	Balance	NITROGEN	

NOx ppm = NA (NOX Values for Reference Only)

Certification Information: Certification Date: 2/27/2009 Term: 36 Months Expiration Date: 2/27/2012

1. This cylinder was certified according to the 1997 EPA Traceability Protocol, document #EPA-600/R-97/121, using procedure G1
2. Do not use this standard if pressure is less than 150 PSIG.

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: CARBON MONOXIDE

Requested Concentration:	270 ppm	Reference Standard Type:	GMIS
Certified Concentration:	278 ppm	Ref. Std. Cylinder # :	SA2092
Instrument Used:	SIEMENS ULTRAMAT 5E S/N BS-900	Ref. Std. Conc:	504 PPM
Analytical Method:	NON-DISPERSIVE INFRARED	Ref. Std. Traceable to Stand #	[illegible]
Last Multipoint Calibration:	2/10/2009		

First Analysis Data:						Date:	2/20/2009
Z:	0	R:	504.9	C:	278.3	Conc:	278
R:	504.7	Z:	0	C:	278.2	Conc:	278
Z:	0	C:	278.2	R:	505	Conc:	278
UOM:	PPM			Mean Test Assay:			278 PPM

Second Analysis Data:						Date:	2/27/2009
Z:	0	R:	501	C:	276.8	Conc:	278
R:	500.9	Z:	0	C:	276.9	Conc:	278
Z:	0	C:	276.8	R:	501.6	Conc:	278
UOM:	PPM			Mean Test Assay:			278 PPM

Analyzed by: Melissa Santana

Certified by: [signature] 3.2.09

Information contained herein has been prepared at your request by qualified experts within GTS-Welco, Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of GTS-Welco, Inc., arising out of the use of the information contained herein exceed the fee established for providing such information.

Airgas

2051

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0350	Reference Number:	122-124202704-1
Cylinder Number:	CC260783	Cylinder Volume:	144 Cu.Ft.
Laboratory:	ASG - Durham - NC	Cylinder Pressure:	2015 PSIG
Analysis Date:	Jan 04, 2010	Valve Outlet:	660

Expiration Date: Jan 04, 2012

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
SULFUR DIOXIDE	50.00 PPM	50.61 PPM	G1	1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	080601	CC237945	50.6PPM SULFUR DIOXIDE/NITROGEN	Dec 15, 2011

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 #2 SO2	FTIR	Dec 05, 2009

Triad Data Available Upon Request

Notes:

Signature on file

QA Approval

Airgas

2099

Airgas Speciality Gases
12722 S. Wentworth Avenue
Chicago, IL 60628
1-773-785-3000
FAX: 1-773-785-1928
www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E02NI99E15A2639	Reference Number:	54-124192386-5
Cylinder Number:	XC022665B	Cylinder Volume:	144 Cu.Ft.
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2015 PSIG
Analysis Date:	Oct 05, 2009	Valve Outlet:	660

2099

Expiration Date: Oct 05, 2011

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
SULFUR DIOXIDE	98.00 PPM	99.56 PPM	G1	+/-1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM/SO2	08061603	CC254551	247PPM SULFUR DIOXIDE/	Oct 15, 2012

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Thermo 6700	FTIR	Sep 29, 2009

Triad Data Available Upon Request

Notes:

QA Approval

Airgas 7252

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Airgas Speciality Gases
12722 S. Wentworth Avenue
Chicago, IL 60628
1-773-785-3000
FAX: 1-773-785-1928
www.airgas.com

Part Number:	E02NI99E15A0016	Reference Number:	54-124173569-2
Cylinder Number:	CC230791	Cylinder Volume:	144 Cu.Ft.
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2015 PSIG
Analysis Date:	Apr 14, 2009	Valve Outlet:	660

Expiration Date: Apr 14, 2011

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
SULFUR DIOXIDE	250.0 PPM	252.8 PPM	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM/SO2	10509	SG9196968BAL	173.0PPM SULFUR DIOXIDE/	May 01, 2011

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Thermo 6700	FTIR	Apr 06, 2009

Triad Data Available Upon Request

Notes:

Curt Stewart

QA Approval

Spectra Gases, Inc.

3434 Route 22 West, Branchburg, New Jersey 08876 USA

ISO 9001:2000

2494

Shipped from: 80 Industrial Drive, Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

CUSTOMER: Air Compliance
SGI ORDER # : 126761
ITEM# : 3
P.O.# : ACG08-687

CYLINDER # : CC-52983
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 660

CERTIFICATION DATE: 4/14/2008
EXPIRATION DATE: 4/14/2010

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Sulfur Dioxide	4/4/2008 4/14/2008	494.5 ppm 494.5 ppm	494 ppm	+/- 1%

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Sulfur Dioxide	NTRM-81662	CC-172989	990 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Sulfur Dioxide	Horiba VIA-510	851221093	NDIR	3/18/2008

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: _____ **DATE:** 4/14/2008
FRED PIKULA

Tel: +1 908-252-9300 Fax: +1 908-252-0811
www.spectragases.com

Airgas

3003

Airgas Specialty Gases
630 United Drive
Durham, NC 27713
Phone (919) 544-3773
Fax (919) 544-3774
www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E02AI99E15A1704	Reference Number:	122-124202736-1
Cylinder Number:	CC323081	Cylinder Volume:	146 Cu.Ft.
Laboratory:	ASG - Durham - NC	Cylinder Pressure:	2015 PSIG
Analysis Date:	Dec 31, 2009	Valve Outlet:	660

Expiration Date: Jun 30, 2010

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
NITROGEN DIOXIDE	50.00 PPM	50.24 PPM	G1	+/- 2% NIST Traceable
Air	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
GMIS	GMIS	CC208219	59.81PPM NITROGEN DIOXIDE/NITROGEN	Oct 06, 2011

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
California Instruments NH3, Nox (0-100)	Chemiluminescence	Dec 08, 2009

Triad Data Available Upon Request

Notes:

Amber Williams

QA Approval

Airgas

3124

Airgas Speciality Gases
12722 S. Wentworth Avenue
Chicago, IL 60628
1-773-785-3000
FAX: 1-773-785-1928
www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E02NI99E15A00B9	Reference Number:	54-124192386-4
Cylinder Number:	CC67208	Cylinder Volume:	144 Cu.Ft.
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2015 PSIG
Analysis Date:	Sep 23, 2009	Valve Outlet:	660

Expiration Date: Sep 23, 2011

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
NITRIC OXIDE	125.0 PPM	124.3 PPM	G1	+/- 1% NIST Traceable
NITROGEN	Balance			
Total oxides of nitrogen		124.5 PPM		For Reference Only

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM/NO	090603	CC286519	250.6PPM NITRIC OXIDE/	Feb 01, 2011

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Thermo 6700	FTIR	Aug 29, 2009

Triad Data Available Upon Request

Notes:

QA Approval

3253

Airgas

Airgas Specialty Gases
12722 S. Wentworth Avenue
Chicago, IL 60628
1-773-785-3000
FAX: 1-773-785-1928
www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0015	Reference Number:	54-124185863-1
Cylinder Number:	CC37283	Cylinder Volume:	144 Cu.Ft.
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2015 PSIG
Analysis Date:	Jul 24, 2009	Valve Outlet:	660

Expiration Date: Jul 24, 2011

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
NITRIC OXIDE	255.0 PPM	253.4 PPM	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

Total oxides of nitrogen 254.3 PPM For Reference Only

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM/NO	1	CC286519	250.6PPM NITRIC OXIDE/NITROGEN	Feb 01, 2011

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Thermo 6700	FTIR	Jul 02, 2009

Triad Data Available Upon Request

Notes:

QA Approval

Airgas

CERTIFICATE OF BATCH ANALYSIS

NITROGEN - CEM-CAL ZERO

Part Number:	NI CZ300	Reference Number:	40-111627854-4
Cylinder Analyzed:	8728@	Cylinder Volume:	304 Cubic Feet
Laboratory:	MID - Saint Louis SGL - MO	Cylinder Pressure:	2640 PSIG
Analysis Date:	Mar 10, 2009	Valve Outlet:	580
Lot #:	40-111627854-4		

ANALYTICAL RESULTS

Component	Requested Purity	Certified Concentration
NitrogenCEM	99.9995%	99.9995%
CARBON DIOXIDE	< 1 PPM	< 1 PPM
Moisture	< 1 PPM	0.093 PPM
NOx	< 0.1 PPM	< 0.1 PPM
SO2	< 0.1 PPM	< 0.1 PPM
THC	< 0.1 PPM	0.05 PPM
CARBON MONOXIDE	< 0.5 PPM	< 0.5 PPM
Oxygen	< 0.5 PPM	0.36 PPM

Cylinders in Batch:

8728@, SG1016325, T322115, T602931@, T998166, W420222@

Notes:

Impurities verified against analytical standards traceable to NIST by weight and/or analysis.

Signature On File

QA Approval

Appendix I

Analyzer Performance Checks

Model 602
CO_2 Interference Data

Interference Response

Date of Test	6/28/2006
Analyzer Type	CO2
Model No.	602
Serial No.	T04050
Calibration Span	10%

Test Gas Type		Concentration		Analyzer Response	
		(ppm)		Wet	Dry
H2O		2.5%		0.01	0
CO		50		0	0
CH4		50		0.01	0
SO2		20		0	0
NH3		15		0	0
NO		13		0.01	0
N2O		11		0.02	0.01
NO2		9		0.01	0

Model 600 HCLD
NO Interference Data

Interference Response

Date of Test	7/26/2006
Analyzer Type	NO
Model No.	600-HCLD
Serial No.	S050301
Calibration Span	3000ppm

Test Gas Type		Concentration		Analyzer Response	
		(ppm)		Wet	Dry
H2O		2.5%		0	0
CO2		5%		0	0
CO2		15%		0	0
CO		50		0	0
CH4		50		0	0
SO2		N/A		N/A	N/A
NH3		15		0	0
NO		N/A		N/A	N/A
N2O		9		0	0
NO2		N/A		N/A	N/A

Model 601
CO Interference Data

Interference Response

Date of Test 6/28/2006

Analyzer Type CO
Model No. 602
Serial No. T06034-M

Calibration Span 3000ppm

Test Gas Type		Concentration		Analyzer Response	
		(ppm)		Wet	Dry
H2O		2.5%		-5	0
CO2		5%		-6	-1
CO2		15%		-7	-2
CO		N/A		N/A	N/A
CH4		50		-5	0
SO2		20		0	0
NH3		15		0	0
NO		13		-5	0
N2O		11		-3	2
NO2		9		-4	2

INTERFERENCE RESPONSE TABLE

Date:	08/18/06
Analyzer Type:	Western Research SO2
Model Number:	721AT2
Serial Number:	89-721AT2-7607-1
Span Value:	92.1 %

Test Gas Type	Cylinder ID	Concentration (ppmdv)	Analyzer Output	% of Span
O2	CC-94721	11.87	0.05	0.0543
CO2	CC-94721	10.06	0.05	0.0543
NO	CC51586	8.96	0.08	0.0869
CO	ALM044078	60.4	0.07	0.0760
Total				0.2172

% of Span = (Analyzer output response / Instrument span) x 100
The sum of the (% of Span) values should not exceed 2%.

INTERFERENCE RESPONSE TABLE

Date:	08/18/06
Analyzer Type:	Western Research BOVAR SO2
Model Number:	721M
Serial Number:	94-721M-8178-3
Span Value:	92.1 %

Test Gas Type	Cylinder ID	Concentration (ppmdv)	Analyzer Output	% of Span
O2	CC-94721	11.87	0.11	0.1194
CO2	CC-94721	10.06	0.11	0.1194
NO	CC51586	8.96	0.09	0.0977
CO	ALM044078	60.4	0.12	0.1303
Total				0.3474

% of Span = (Analyzer output response / Instrument span) x 100
The sum of the (% of Span) values should not exceed 2%.

Appendix J

Facility Operating Data

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company:	Covanta Hudson Valley Renewable Dutchess Co. Resource Recovery Poughkeepsie, NY 12601
Data Group:	All Data Groups
Report Name:	No Title
Start of Report:	02/16/2010 00:00
End of Report:	02/16/2010 23:59

Validation: All Available Data

Group#-Channel#	G6-C17
Long Descrip.	SteamLoad
Short Descrip.	1-StmLoad
Units	klb/hr
Range	0-~~226~~ 261

02/16/2010 00:00	47.1
02/16/2010 01:00	49.1
02/16/2010 02:00	47.5
02/16/2010 03:00	52.1
02/16/2010 04:00	52.2
02/16/2010 05:00	52.2
02/16/2010 06:00	51.6
02/16/2010 07:00	53.2
02/16/2010 08:00	54.2
02/16/2010 09:00	54.8
02/16/2010 10:00	53.4
02/16/2010 11:00	54.8
02/16/2010 12:00	53.6
02/16/2010 13:00	52.3
02/16/2010 14:00	54.6
02/16/2010 15:00	54.4
02/16/2010 16:00	52.1
02/16/2010 17:00	54.4
02/16/2010 18:00	54.8
02/16/2010 19:00	53.8
02/16/2010 20:00	54.3
02/16/2010 21:00	54.5
02/16/2010 22:00	46.0
02/16/2010 23:00	44.7

Period Average =	52.2
Period Max Value =	54.8
Period Min Value =	44.7
Period Totals =	1.2517E+3
Period % Recovery =	100.0

Data Summary Report

COVANTA ENERGY
for a cleaner world

Company:	Covanta Hudson Valley Renewable Dutchess Co. Resource Recovery Poughkeepsie, NY 12601
Data Group:	All Data Groups
Report Name:	No Title
Start of Report:	02/17/2010 00:00
End of Report:	02/17/2010 23:59

Validation: All Available Data

Group#-Channel#	G21-C17
Long Descrip.	StmLoad
Short Descrip.	2-StmLoad
Units	klb/hr
Range	0-~~82~~ 61

02/17/2010 00:00	49.6
02/17/2010 01:00	47.9
02/17/2010 02:00	42.4
02/17/2010 03:00	47.6
02/17/2010 04:00	47.6
02/17/2010 05:00	53.8
02/17/2010 06:00	54.1
02/17/2010 07:00	55.2
02/17/2010 08:00	53.5
02/17/2010 09:00	54.3
02/17/2010 10:00	52.5
02/17/2010 11:00	52.6
02/17/2010 12:00	53.9
02/17/2010 13:00	53.4
02/17/2010 14:00	53.3
02/17/2010 15:00	54.2
02/17/2010 16:00	51.2
02/17/2010 17:00	47.0
02/17/2010 18:00	47.6
02/17/2010 19:00	47.8
02/17/2010 20:00	46.8
02/17/2010 21:00	47.5
02/17/2010 22:00	49.3
02/17/2010 23:00	49.6

Period Average =	50.5
Period Max Value =	55.2
Period Min Value =	42.4
Period Totals =	1.2127E+3
Period % Recovery =	100.0

Date/Time Printed: 03/15/2010 17:43