



Wheelabrator North Broward
2600 Wiles Road
Pompano Beach, FL 33073

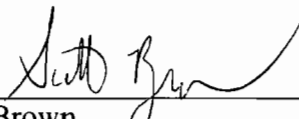
REPORT ON A RELATIVE ACCURACY TEST AUDIT

Performed for:
WHEELABRATOR NORTH BROWARD, INC.
UNITS 1, 2 AND 3 FF OUTLETS
POMPANO BEACH, FL

Client Reference No: Service Agreement
CleanAir Project No: 12218-2
Revision 0: April 30, 2013


To the best of our knowledge, the data presented in this report are accurate, complete, error free, legible and representative of the actual emissions during the test program. Clean Air Engineering operates in conformance with the requirements of ASTM D7036-04 Standard Practice for Competence of Air Emission Testing Bodies.

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REVISION HISTORY

REPORT ON A RELATIVE ACCURACY TEST AUDIT

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CONTENTS

1	PROJECT OVERVIEW.....	1-1
	INTRODUCTION	1-1
	Key Project Participants	1-1
	Test Program Parameters	1-1
	Results Summary	1-2
	Table 1-1: Summary of Test Results	1-2
	Table 1-2: Summary of GHG Test Results	1-2
	Discussion of Test Program	1-3
2	RESULTS	2-1
	Table 2-1: Relative Accuracy, Unit 1 FF Outlet – Oxygen (%dv).....	2-1
	Table 2-2: Relative Accuracy, Unit 1 FF Outlet – Volumetric Flow (SCFM).....	2-1
	Table 2-3: Relative Accuracy, Unit 1 FF Outlet – Carbon Dioxide (lb/hr)	2-2
	Table 2-4: Relative Accuracy, Unit 1 FF Outlet – Carbon Dioxide (%dv)	2-2
	Table 2-5: Relative Accuracy, Unit 1 FF Outlet – Sulfur Dioxide (ppm @ 7% O ₂).....	2-3
	Table 2-6: Relative Accuracy, Unit 1 FF Outlet – Sulfur Dioxide (ppmdv).....	2-3
	Table 2-7: Relative Accuracy, Unit 1 FF Outlet – Nitrogen Oxides (ppm @ 7% O ₂).....	2-4
	Table 2-8: Relative Accuracy, Unit 1 FF Outlet – Nitrogen Oxides (ppmdv).....	2-4
	Table 2-9: Relative Accuracy, Unit 1 FF Outlet – Carbon Monoxide (ppm @ 7% O ₂).....	2-5
	Table 2-10: Relative Accuracy, Unit 1 FF Outlet – Carbon Monoxide (ppmdv).....	2-5
	Table 2-11: Relative Accuracy, Unit 2 FF Outlet – Oxygen (%dv).....	2-6
	Table 2-12: Relative Accuracy, Unit 2 FF Outlet – Volumetric Flow (SCFM).....	2-6
	Table 2-13: Relative Accuracy, Unit 2 FF Outlet – Carbon Dioxide (lb/hr).....	2-7
	Table 2-14: Relative Accuracy, Unit 2 FF Outlet – Carbon Dioxide (%dv).....	2-7
	Table 2-15: Relative Accuracy, Unit 2 FF Outlet – Sulfur Dioxide (ppm @ 7% O ₂)	2-8
	Table 2-16: Relative Accuracy, Unit 2 FF Outlet – Sulfur Dioxide (ppmdv)	2-8
	Table 2-17: Relative Accuracy, Unit 2 FF Outlet – Nitrogen Oxides (ppm @ 7% O ₂).....	2-9
	Table 2-18: Relative Accuracy, Unit 2 FF Outlet – Nitrogen Oxides (ppmdv).....	2-9
	Table 2-19: Relative Accuracy, Unit 2 FF Outlet – Carbon Monoxide (ppm @ 7% O ₂).....	2-10
	Table 2-20: Relative Accuracy, Unit 2 FF Outlet – Carbon Monoxide (ppmdv).....	2-10
	Table 2-21: Relative Accuracy, Unit 3 FF Outlet – Oxygen (%dv).....	2-11
	Table 2-22: Relative Accuracy, Unit 3 FF Outlet – Volumetric Flow (SCFM).....	2-11
	Table 2-23: Relative Accuracy, Unit 3 FF Outlet – Carbon Dioxide (lb/hr).....	2-12
	Table 2-24: Relative Accuracy, Unit 3 FF Outlet – Carbon Dioxide (%dv).....	2-12
	Table 2-25: Relative Accuracy, Unit 3 FF Outlet – Sulfur Dioxide (ppm @ 7% O ₂)	2-13
	Table 2-26: Relative Accuracy, Unit 3 FF Outlet – Sulfur Dioxide (ppmdv)	2-13
	Table 2-27: Relative Accuracy, Unit 3 FF Outlet – Nitrogen Oxides (ppm @ 7% O ₂).....	2-14
	Table 2-28: Relative Accuracy, Unit 3 FF Outlet – Nitrogen Oxides (ppmdv).....	2-14
	Table 2-29: Relative Accuracy, Unit 3 FF Outlet – Carbon Monoxide (ppm @ 7% O ₂).....	2-15
	Table 2-30: Relative Accuracy, Unit 3 FF Outlet – Carbon Monoxide (ppmdv).....	2-15

CONTENTS

3	DESCRIPTION OF INSTALLATION	3-1
	PROCESS DESCRIPTION.....	3-1
	CEMS GENERAL DESCRIPTION.....	3-1
	PERKIN ELMER MCS-100 /E ANALYZER	3-1
	ESC DAS	3-2
	CEM CALIBRATION	3-2
	GAS FLOW MONITOR SYSTEM DESCRIPTION	3-3
	CEMS SCHEMATIC	3-4
	Figure 3-1: General CEMS Schematic	3-4
	Figure 3-2: Process Flow Diagram and CEM Locations.....	3-5
	DESCRIPTION OF SAMPLING LOCATIONS	3-6
	Table 3-2: Sampling Points	3-6
	Figure 3-3: Units 1, 2 and 3 FF Outlets – RATA Sampling Point Determination (PS 2)	3-7
	Figure 3-4: FF Outlets – Velocity Traverse Point Determination	3-8
4	METHODOLOGY	4-1
	Table 4-1: Summary of Sampling Procedures.....	4-1
5	APPENDIX	5-1
	TEST METHOD SPECIFICATIONS	A
	SAMPLE CALCULATIONS	B
	PARAMETERS	C
	QA/QC DATA	D
	FIELD DATA	E
	FIELD DATA PRINTOUTS	F
	PLANT CEM DATA.....	G
	REFERENCE METHOD DATA.....	H

PROJECT OVERVIEW

1-1

INTRODUCTION

Wheelabrator North Broward, Inc. contracted Clean Air Engineering (CleanAir) to perform the relative accuracy test audit (RATA) at the municipal waste combustor (MWC) facility, located in Pompano Beach, Florida.

All testing was conducted in accordance with the regulations set-forth by the United States Environmental Protection Agency (EPA) and the Florida Department of Environmental Protection (DEP).

Key Project Participants

Individuals responsible for coordinating and conducting the test program were:

- C. Faller – Wheelabrator North Broward, Inc.
- D. Dreska – CleanAir
- S. Brown – CleanAir

Test Program Parameters

The testing performed at the Units 1, 2 and 3 fabric filter (FF) baghouse outlets from March 19 through 22, 2013, included the following emissions measurements:

- carbon monoxide (CO)
- nitrogen oxide (NO_x)
- sulfur dioxide (SO₂)
- carbon dioxide (CO₂)
- oxygen (O₂)
- volumetric flow rate (scfm)

PROJECT OVERVIEW

Results Summary

Tables 1-1 and 1-2 summarize the results of the test program. A more detailed presentation of the test conditions and results of analysis are shown in Tables 2-1 through 2-30 on pages 2-1 through 2-15.

**Table 1-1:
Summary of Test Results**

Monitor	CEM Serial Number	RM Avg	CEM Avg	Difference	95% CC	Relative Accuracy Result	Limit	Basis of Limit
<u>Unit 1 FF Outlet CEMS (units of RATA)</u>								
SO ₂ (ppmdv @ 7% O ₂)	280	4.2	3.7	0.5	0.176	2.5%	20%	S ¹
NO _x (ppmdv @ 7% O ₂)	280	185.7	195.4	-9.7	0.682	5.1%	10%	S ²
CO (ppmdv @ 7% O ₂)	280	10.2	10.9	-0.8	0.068	0.8	5 ppm	Mean Diff. ³
CO ₂ (lb/hr)	280	65,200	71,832	-6,632	984	11.7%	20%	RM ⁴
<u>Unit 2 FF Outlet CEMS (units of RATA)</u>								
SO ₂ (ppmdv @ 7% O ₂)	281	0.4	2.0	-1.5	0.046	5.4%	20%	S ¹
NO _x (ppmdv @ 7% O ₂)	281	184.4	192.6	-8.2	0.403	4.2%	10%	S ²
CO (ppmdv @ 7% O ₂)	281	8.0	8.8	-0.8	0.161	0.8	5 ppm	Mean Diff. ³
CO ₂ (lb/hr)	281	67,886	57,580	10,306	2,530	18.9%	20%	RM ⁴
<u>Unit 3 FF Outlet CEMS (units of RATA)</u>								
SO ₂ (ppmdv @ 7% O ₂)	271	14.8	15.3	-0.4	0.368	2.7%	20%	S ¹
NO _x (ppmdv @ 7% O ₂)	271	187.2	194.3	-7.1	0.575	3.8%	10%	S ²
CO (ppmdv @ 7% O ₂)	271	10.6	10.8	-0.2	0.045	0.2	5 ppm	Mean Diff. ³
CO ₂ (lb/hr)	271	66,473	66,307	166	2,281	3.7%	20%	RM ⁴

¹ SO₂ FF Outlet Relative Accuracy calculated as a percentage of the 29 ppm standard as per Performance Specification 2, Section 13.2.

² NO_x FF Outlet Relative Accuracy calculated as a percentage of the 205 ppm standard as per Performance Specification 2, Section 13.2.

³ CO FF Outlet Relative Accuracy calculated as the absolute mean difference per 40CFR60 Section 60.58b.

⁴ Limit from 40 CFR 60 Appendix B Performance Specification 6.

Basis of Limit: RM = Reference Method S = Standard

**Table 1-2:
Summary of GHG Test Results**

	Unit 1	Unit 2	Unit 3
GHG_SCFM	116,092	111,140	113,270
GHG_CO2 %	10.5	11.7	11.2
GHG_H2O %	22.0	23.4	23.2

PROJECT OVERVIEW

1-3

Discussion of Test Program

Each boiler was operated at greater than 50% (93,000 lbs/hr steam flow) during each RATA. The steam load is presented in Appendix G of this report with the plant CEM run data.

A nitrogen oxides (NO_x) analyzer converter check was performed after the final bias check each day and is presented along with each respective calibration error check in Appendix H of this report.

During this year's test program, a mass emission rate-based (lb/hr) RATA on each unit's newly-installed carbon dioxide (CO₂) continuous emission rate monitoring system (CO₂ CERMS) was also performed in conjunction with the usual sulfur dioxide (SO₂), NO_x and carbon monoxide (CO) RATAs. Each CO₂ CERMS consists of a new CO₂ channel configured in the Sick 100e analyzer and an optical-based stack gas flow rate monitor located in each FF outlet duct.

The CO₂ CERMS was installed on each unit to meet EPA Greenhouse Gas Monitoring and Reporting requirements in 40 CFR 98. The CO₂ CERMS RATA was performed utilizing EPA Methods 2, 3A and 4. Flow data was obtained from a single distinct pitot traverse performed during each RATA run and moisture data was obtained from simultaneous Method 26A, Method 5/29 or Method 4 testing. The O₂ and CO₂ utilized for volumetric flow calculations are obtained from each respective RATA test run.

Oxygen (O₂), flow and ppm_{dv} of all measured constituents are presented in Section 2 of this report for comparison purposes only.

All RATA runs on Units 1 and 3 were 27 minutes in duration with ten (10) runs being performed on each Unit.

The Unit 1 bias check (Bias 01) CO after Run 1 failed the calibration drift. This was caused by the initial (Bias 00) CO value reading low due to low CO gas cylinder pressure. The low pressure was not noticed by the RATA operator during the initial bias but was increased prior to the Run 1 post bias. This resulted in a more representative bias which was maintained throughout the rest of the RATA test program. All subsequent CO biases met method criteria. The Run 1 reference method CO was not included in the CO RATA result calculations.

PROJECT OVERVIEW

1-4

On March 21, after the first RATA run on Unit 2, it was noticed that the plant O₂ value was approximately 3% higher (7.5% vs. 10.4%). Even though the RATA for all constituents was within the respective specification, a decision was made to determine where the excess O₂ was entering the plant's CEM system. This process took a majority of the day and went into the evening of March 21.

It is believe that there was a leak at the FF Outlet probe to port connection. Since the RATA on Unit 2 was still meeting all regulatory limits, the full Unit 2 RATA was performed on March 22. In order to expedite the testing, the RATA test runs were reduced to 24 minutes. Two extra 21-minute runs for O₂ and CO₂ only were performed due to the CO₂ lb/hr RATA being so close to the Performance Specification (PS) 6 limit of 20%. The results of the voided March 21 run are presented in Section 2 of this report, along with the respective Unit 2 tables.

End of Section 1 – Project Overview

RESULTS

**Table 2-1:
Relative Accuracy, Unit 1 FF Outlet – Oxygen (%dv)**

Run No.	Start Time	Date (2013)	RM Data (%dv)	CEMS Data (%dv)	Difference (%dv)	Percent Difference
1	8:15	Mar 19	8.39	8.60	-0.21	-2.45% *
2	8:57	Mar 19	8.43	8.60	-0.17	-2.05%
3	9:44	Mar 19	8.86	9.00	-0.14	-1.58%
4	10:33	Mar 19	9.10	9.20	-0.10	-1.10%
5	11:17	Mar 19	8.95	9.10	-0.15	-1.70%
6	12:01	Mar 19	8.73	8.90	-0.17	-1.97%
7	12:54	Mar 19	8.64	8.80	-0.16	-1.84%
8	13:37	Mar 19	8.45	8.60	-0.15	-1.75%
9	14:18	Mar 19	8.95	9.10	-0.15	-1.64%
10	14:59	Mar 19	8.85	9.00	-0.15	-1.68%
Average			8.77	8.92	-0.15	-1.70%

Standard Deviation 0.021

Confidence Coefficient (CC) 0.016

Avg. Absolute Difference (%dv) 0.1 Limit NA

* Indicates that the run was not included in the RATA calculations.

**Table 2-2:
Relative Accuracy, Unit 1 FF Outlet – Volumetric Flow (SCFM)**

Run No.	Start Time	Date (2013)	RM Data (scfm)	CEMS Data (scfm)	Difference (scfm)	Percent Difference
1	8:15	Mar 19	115,201.54	123,475.60	-8274.06	-7.18%
2	8:57	Mar 19	111,895.20	118,893.30	-6998.10	-6.25%
3	9:44	Mar 19	115,784.60	120,132.40	-4347.80	-3.76%
4	10:33	Mar 19	116,514.49	120,952.70	-4438.21	-3.81%
5	11:17	Mar 19	116,866.59	124,665.90	-7799.31	-6.67%
6	12:01	Mar 19	114,877.59	123,656.20	-8778.61	-7.64%
7	12:54	Mar 19	117,951.53	124,915.50	-6963.97	-5.90%
8	13:37	Mar 19	116,271.82	126,558.10	-10286.28	-8.85% *
9	14:18	Mar 19	119,270.40	122,676.30	-3405.90	-2.86%
10	14:59	Mar 19	116,462.17	124,677.30	-8215.13	-7.05%
Average			116,091.57	122,671.69	-6580.12	-5.67%

Standard Deviation 1994.72

Confidence Coefficient (CC) 1533.27

Relative Accuracy (as % of RM) 7.0% Limit NA

* Indicates that the run was not included in the RATA calculations.

RESULTS

2-2

**Table 2-3:
 Relative Accuracy, Unit 1 FF Outlet – Carbon Dioxide (lb/hr)**

Run No.	Start Time	Date (2013)	RM Data (lb/hr)	CEMS Data (lb/hr)	Difference (lb/hr)	Percent Difference
1	8:15	Mar 19	66,692.33	74,235.80	-7543.47	-11.31%
2	8:57	Mar 19	64,721.82	71,555.90	-6834.08	-10.56%
3	9:44	Mar 19	64,621.72	69,807.50	-5185.78	-8.02%
4	10:33	Mar 19	64,161.40	69,301.00	-5139.60	-8.01%
5	11:17	Mar 19	65,379.07	72,436.80	-7057.73	-10.80%
6	12:01	Mar 19	65,249.05	72,858.70	-7609.65	-11.66%
7	12:54	Mar 19	65,466.78	73,741.40	-8274.62	-12.64%
8	13:37	Mar 19	67,016.92	75,747.80	-8730.88	-13.03% *
9	14:18	Mar 19	65,894.29	70,624.40	-4730.11	-7.18%
10	14:59	Mar 19	64,613.64	71,924.40	-7310.76	-11.31%
Average			65,200.01	71,831.77	-6631.75	-10.17%

Standard Deviation 1279.82
 Confidence Coefficient (CC) 983.76
 Relative Accuracy (as % of RM) 11.7% Limit 20.00%

* Indicates that the run was not included in the RATA calculations.

**Table 2-4:
 Relative Accuracy, Unit 1 FF Outlet – Carbon Dioxide (%dv)**

Run No.	Start Time	Date (2013)	RM Data (%dv)	CEMS Data (%dv)	Difference (%dv)	Percent Difference
1	8:15	Mar 19	10.83	11.20	-0.37	-3.45%
2	8:57	Mar 19	10.82	11.30	-0.48	-4.46%
3	9:44	Mar 19	10.43	10.90	-0.47	-4.47%
4	10:33	Mar 19	10.29	10.70	-0.41	-3.94%
5	11:17	Mar 19	10.43	10.90	-0.47	-4.54%
6	12:01	Mar 19	10.59	11.00	-0.41	-3.91%
7	12:54	Mar 19	10.40	11.00	-0.60	-5.73%
8	13:37	Mar 19	10.80	11.20	-0.40	-3.66%
9	14:18	Mar 19	10.36	10.80	-0.44	-4.28%
10	14:59	Mar 19	10.40	10.80	-0.40	-3.85%
Average			10.55	10.98	-0.43	-4.06%

Standard Deviation 0.039
 Confidence Coefficient (CC) 0.030
 Avg. Absolute Difference (%dv) 0.4 Limit NA

* Indicates that the run was not included in the RATA calculations.

RESULTS

**Table 2-5:
Relative Accuracy, Unit 1 FF Outlet – Sulfur Dioxide (ppm @ 7% O₂)**

Run No.	Start Time	Date (2013)	RM Data (ppm@7%O ₂)	CEMS Data (ppm@7%O ₂)	Difference (ppm@7%O ₂)	Percent Difference
1	8:15	Mar 19	6.65	5.90	0.75	11.31%
2	8:57	Mar 19	11.82	11.00	0.82	6.91%
3	9:44	Mar 19	5.09	4.40	0.69	13.62%
4	10:33	Mar 19	3.49	2.80	0.69	19.81%
5	11:17	Mar 19	3.48	2.90	0.58	16.59%
6	12:01	Mar 19	2.21	1.80	0.41	18.58%
7	12:54	Mar 19	2.45	2.00	0.45	18.29%
8	13:37	Mar 19	1.42	1.10	0.32	22.54% *
9	14:18	Mar 19	1.79	1.40	0.39	21.91%
10	14:59	Mar 19	1.09	1.00	0.09	8.35%
Average			4.23	3.69	0.54	12.80%

Standard Deviation 0.229

Confidence Coefficient (CC) 0.176

Relative Accuracy (as % of RM) 17.0% Limit 20.0%

Relative Accuracy (as % of Applicable Std.) 2.5% Limit 20.0%

Standard = 29 (ppm@7%O₂)

* Indicates that the run was not included in the RATA calculations.

**Table 2-6:
Relative Accuracy, Unit 1 FF Outlet – Sulfur Dioxide (ppmdv)**

Run No.	Start Time	Date (2013)	RM Data (ppmdv)	CEMS Data (ppmdv)	Difference (ppmdv)	Percent Difference
1	8:15	Mar 19	5.98	5.30	0.68	11.44%
2	8:57	Mar 19	10.60	9.80	0.80	7.57%
3	9:44	Mar 19	4.41	3.80	0.61	13.88%
4	10:33	Mar 19	2.96	2.40	0.56	19.04%
5	11:17	Mar 19	2.99	2.50	0.49	16.37%
6	12:01	Mar 19	1.94	1.50	0.44	22.52% *
7	12:54	Mar 19	2.16	1.70	0.46	21.25%
8	13:37	Mar 19	1.27	1.00	0.27	21.37%
9	14:18	Mar 19	1.54	1.20	0.34	22.12%
10	14:59	Mar 19	0.95	0.90	0.05	4.85%
Average			3.65	3.18	0.47	12.99%

Standard Deviation 0.230

Confidence Coefficient (CC) 0.177

Relative Accuracy (as % of RM) 17.8% Limit NA

* Indicates that the run was not included in the RATA calculations.

RESULTS

2-4

**Table 2-7:
Relative Accuracy, Unit 1 FF Outlet – Nitrogen Oxides (ppm @ 7% O₂)**

Run No.	Start Time	Date (2013)	RM Data (ppm@7%O ₂)	CEMS Data (ppm@7%O ₂)	Difference (ppm@7%O ₂)	Percent Difference
1	8:15	Mar 19	184.53	192.30	-7.77	-4.21%
2	8:57	Mar 19	188.13	198.50	-10.37	-5.51%
3	9:44	Mar 19	182.69	192.50	-9.81	-5.37%
4	10:33	Mar 19	178.10	187.30	-9.20	-5.17%
5	11:17	Mar 19	181.20	192.10	-10.90	-6.02%
6	12:01	Mar 19	194.22	203.90	-9.68	-4.99%
7	12:54	Mar 19	189.57	200.60	-11.03	-5.82% *
8	13:37	Mar 19	195.50	205.60	-10.10	-5.17%
9	14:18	Mar 19	191.11	201.20	-10.09	-5.28%
10	14:59	Mar 19	175.82	185.20	-9.38	-5.34%
Average			185.70	195.40	-9.70	-5.22%

Standard Deviation 0.888

Confidence Coefficient (CC) 0.682

Relative Accuracy (as % of RM) 5.6% Limit 20.0%

Relative Accuracy (as % of Applicable Std.) 5.1% 10.0%

Standard = 205 (ppm@7%O₂)

* Indicates that the run was not included in the RATA calculations.

**Table 2-8:
Relative Accuracy, Unit 1 FF Outlet – Nitrogen Oxides (ppmdv)**

Run No.	Start Time	Date (2013)	RM Data (ppmdv)	CEMS Data (ppmdv)	Difference (ppmdv)	Percent Difference
1	8:15	Mar 19	166.02	170.80	-4.78	-2.88%
2	8:57	Mar 19	168.81	176.00	-7.19	-4.26%
3	9:44	Mar 19	158.24	165.00	-6.76	-4.27%
4	10:33	Mar 19	151.19	158.10	-6.91	-4.57%
5	11:17	Mar 19	155.80	163.40	-7.60	-4.87% *
6	12:01	Mar 19	170.07	176.60	-6.53	-3.84%
7	12:54	Mar 19	167.19	174.50	-7.31	-4.37%
8	13:37	Mar 19	175.08	182.20	-7.12	-4.07%
9	14:18	Mar 19	164.25	171.40	-7.15	-4.35%
10	14:59	Mar 19	152.40	159.00	-6.60	-4.33%
Average			163.70	170.40	-6.70	-4.10%

Standard Deviation 0.771

Confidence Coefficient (CC) 0.593

Relative Accuracy (as % of RM) 4.5% Limit NA

* Indicates that the run was not included in the RATA calculations.

RESULTS

**Table 2-9:
Relative Accuracy, Unit 1 FF Outlet – Carbon Monoxide (ppm @ 7% O₂)**

Run No.	Start Time	Date (2013)	RM Data (ppm@7%O ₂)	CEMS Data (ppm@7%O ₂)	Difference (ppm@7%O ₂)	Percent Difference
1	8:15	Mar 19	8.98	9.60	-0.62	-6.96% *
2	8:57	Mar 19	7.30	8.20	-0.90	-12.34%
3	9:44	Mar 19	11.37	12.20	-0.83	-7.34%
4	10:33	Mar 19	11.80	12.60	-0.80	-6.80%
5	11:17	Mar 19	12.53	13.30	-0.77	-6.12%
6	12:01	Mar 19	8.95	9.60	-0.65	-7.32%
7	12:54	Mar 19	10.78	11.40	-0.62	-5.72%
8	13:37	Mar 19	8.45	9.20	-0.75	-8.86%
9	14:18	Mar 19	10.48	11.30	-0.82	-7.86%
10	14:59	Mar 19	9.75	10.50	-0.75	-7.66%
Average			10.16	10.92	-0.77	-7.54%

Standard Deviation 0.089
 Confidence Coefficient (CC) 0.068
 Relative Accuracy (as % of RM) 8.2% Limits 10.0%
 Avg. Absolute Difference (ppm@7%O₂) 0.8 5.0

* Indicates that the run was not included in the RATA calculations.

**Table 2-10:
Relative Accuracy, Unit 1 FF Outlet – Carbon Monoxide (ppmdv)**

Run No.	Start Time	Date (2013)	RM Data (ppmdv)	CEMS Data (ppmdv)	Difference (ppmdv)	Percent Difference
1	8:15	Mar 19	8.07	8.50	-0.43	-5.27% *
2	8:57	Mar 19	6.55	7.30	-0.75	-11.46%
3	9:44	Mar 19	9.85	10.40	-0.55	-5.64%
4	10:33	Mar 19	10.02	10.60	-0.58	-5.84%
5	11:17	Mar 19	10.78	11.20	-0.42	-3.93%
6	12:01	Mar 19	7.83	8.20	-0.37	-4.68%
7	12:54	Mar 19	9.51	9.90	-0.39	-4.09%
8	13:37	Mar 19	7.57	8.10	-0.53	-7.03%
9	14:18	Mar 19	9.00	9.60	-0.60	-6.62%
10	14:59	Mar 19	8.45	9.00	-0.55	-6.45%
Average			8.84	9.37	-0.53	-5.96%

Standard Deviation 0.120
 Confidence Coefficient (CC) 0.092
 Relative Accuracy (as % of RM) 7.0% Limit NA

* Indicates that the run was not included in the RATA calculations.

RESULTS

**Table 2-11:
Relative Accuracy, Unit 2 FF Outlet – Oxygen (%dv)**

Run No.	Start Time	Date (2013)	RM Data (%dv)	CEMS Data (%dv)	Difference (%dv)	Percent Difference
1 void	7:53	Mar 21	7.50	10.40	-2.90	-38.67% *
1	7:11	Mar 22	7.86	10.50	-2.64	-33.60%
2	7:47	Mar 22	7.08	9.90	-2.82	-39.83%
3	8:35	Mar 22	7.05	9.90	-2.85	-40.38% *
4	9:10	Mar 22	7.01	9.90	-2.89	-41.21% *
5	9:45	Mar 22	7.07	9.90	-2.83	-40.09%
6	10:21	Mar 22	7.27	10.00	-2.73	-37.47%
7	10:58	Mar 22	7.02	9.90	-2.88	-40.99% *
8	11:34	Mar 22	7.29	10.00	-2.71	-37.19%
9	12:11	Mar 22	7.40	10.10	-2.70	-36.50%
10	12:48	Mar 22	7.49	10.10	-2.61	-34.83%
11	13:26	Mar 22	8.08	10.50	-2.42	-29.90%
12	14:02	Mar 22	7.24	10.00	-2.76	-38.21%
Average			7.42	10.11	-2.69	-36.27%

Standard Deviation 0.127

Confidence Coefficient (CC) 0.097

Avg. Absolute Difference (%dv) 2.7 Limit NA

* Indicates that the run was not included in the RATA calculations.

**Table 2-12:
Relative Accuracy, Unit 2 FF Outlet – Volumetric Flow (SCFM)**

Run No.	Start Time	Date (2013)	RM Data (scfm)	CEMS Data (scfm)	Difference (scfm)	Percent Difference
1 void	7:53	Mar 21	115,201.54	129,240.90	-14039.36	-12.19% *
1	7:11	Mar 22	112,377.89	119,147.40	-6769.51	-6.02%
2	7:47	Mar 22	111,116.02	107,553.00	3563.02	3.21%
3	8:35	Mar 22	112,189.26	104,938.00	7251.26	6.46% *
4	9:10	Mar 22	110,900.24	107,167.30	3732.94	3.37%
5	9:45	Mar 22	112,090.29	113,405.10	-1314.81	-1.17%
6	10:21	Mar 22	110,285.01	112,417.80	-2132.79	-1.93%
7	10:58	Mar 22	111,344.78	122,130.70	-10785.92	-9.69%
8	11:34	Mar 22	110,397.00	108,366.50	2030.50	1.84%
9	12:11	Mar 22	104,329.25	115,841.00	-11511.75	-11.03% *
10	12:48	Mar 22	108,281.47	104,069.30	4212.17	3.89%
11	13:26	Mar 22	116,017.49	112,770.90	3246.59	2.80%
12	14:02	Mar 22	108,593.68	105,575.50	3018.18	2.78%
Average			111,140.39	111,260.35	-119.96	-0.11%

Standard Deviation 5125.55

Confidence Coefficient (CC) 3666.34

Relative Accuracy (as % of RM) 3.4% Limit NA

* Indicates that the run was not included in the RATA calculations.

RESULTS

**Table 2-13:
Relative Accuracy, Unit 2 FF Outlet – Carbon Dioxide (lb/hr)**

Run No.	Start Time	Date (2013)	RM Data (lb/hr)	CEMS Data (lb/hr)	Difference (lb/hr)	Percent Difference
1 void	7:53	Mar 21	70,538.52	64,449.00	6089.52	8.63% *
1	7:11	Mar 22	67,881.37	58,393.20	9488.17	13.98%
2	7:47	Mar 22	71,232.12	55,836.30	15395.82	21.61% *
3	8:35	Mar 22	70,580.86	54,422.30	16158.56	22.89% *
4	9:10	Mar 22	70,278.35	55,834.10	14444.25	20.55%
5	9:45	Mar 22	68,801.82	58,963.50	9838.32	14.30%
6	10:21	Mar 22	66,270.55	57,520.80	8749.75	13.20%
7	10:58	Mar 22	68,751.43	63,200.60	5550.83	8.07%
8	11:34	Mar 22	67,561.85	56,043.60	11518.25	17.05%
9	12:11	Mar 22	65,336.43	59,460.40	5876.03	8.99%
10	12:48	Mar 22	66,753.52	52,846.60	13906.92	20.83% *
11	13:26	Mar 22	68,000.55	54,692.40	13308.15	19.57%
12	14:02	Mar 22	68,088.56	54,109.10	13979.46	20.53%
Average			67,885.66	57,579.74	10305.91	15.18%

Standard Deviation 3291.04
 Confidence Coefficient (CC) 2529.71
 Relative Accuracy (as % of RM) 18.9% Limit 20.0%

* Indicates that the run was not included in the RATA calculations.

**Table 2-14:
Relative Accuracy, Unit 2 FF Outlet – Carbon Dioxide (%dv)**

Run No.	Start Time	Date (2013)	RM Data (%dv)	CEMS Data (%dv)	Difference (%dv)	Percent Difference
1 void	7:53	Mar 21	11.66	9.30	2.36	20.27% *
1	7:11	Mar 22	11.34	9.20	2.14	18.85%
2	7:47	Mar 22	12.03	9.70	2.33	19.38% *
3	8:35	Mar 22	12.01	9.70	2.31	19.21% *
4	9:10	Mar 22	12.09	9.70	2.39	19.79% *
5	9:45	Mar 22	12.03	9.70	2.33	19.37% *
6	10:21	Mar 22	11.78	9.60	2.18	18.49%
7	10:58	Mar 22	11.97	9.70	2.27	18.94%
8	11:34	Mar 22	11.86	9.70	2.16	18.22%
9	12:11	Mar 22	11.74	9.60	2.14	18.22%
10	12:48	Mar 22	11.56	9.50	2.06	17.79%
11	13:26	Mar 22	10.99	9.10	1.89	17.17%
12	14:02	Mar 22	11.75	9.60	2.15	18.32%
Average			11.66	9.52	2.14	18.37%

Standard Deviation 0.121
 Confidence Coefficient (CC) 0.093
 Avg. Absolute Difference (%dv) 2.1 Limit NA

* Indicates that the run was not included in the RATA calculations.

RESULTS

**Table 2-15:
Relative Accuracy, Unit 2 FF Outlet – Sulfur Dioxide (ppm @ 7% O₂)**

Run No.	Start Time	Date (2013)	RM Data (ppm@7%O ₂)	CEMS Data (ppm@7%O ₂)	Difference (ppm@7%O ₂)	Percent Difference
1 void	7:53	Mar 21	0.70	2.00	-1.30	-185.31% *
1	7:11	Mar 22	0.30	1.90	-1.60	-541.15%
2	7:47	Mar 22	0.32	1.80	-1.48	-455.49%
3	8:35	Mar 22	0.26	1.70	-1.44	-545.44%
4	9:10	Mar 22	0.36	1.80	-1.44	-406.57%
5	9:45	Mar 22	0.33	1.90	-1.57	-480.92%
6	10:21	Mar 22	0.55	2.10	-1.55	-281.73%
7	10:58	Mar 22	0.97	2.50	-1.53	-157.81%
8	11:34	Mar 22	0.42	2.00	-1.58	-374.25%
9	12:11	Mar 22	< 0.00	1.90	-1.90	N/A *
10	12:48	Mar 22	0.49	2.00	-1.51	-309.31%
Average			0.44	1.97	-1.52	-342.90%

Standard Deviation 0.060

Confidence Coefficient (CC) 0.046

Relative Accuracy (as % of RM) 353.3% Limits 20.0%

Relative Accuracy (as % of Applicable Std.) 5.4% 20.0%
Standard = 29 (ppm@7%O₂)

* Indicates that the run was not included in the RATA calculations.

**Table 2-16:
Relative Accuracy, Unit 2 FF Outlet – Sulfur Dioxide (ppmdv)**

Run No.	Start Time	Date (2013)	RM Data (ppmdv)	CEMS Data (ppmdv)	Difference (ppmdv)	Percent Difference
1 void	7:53	Mar 21	0.68	1.50	-0.82	-121.89% *
1	7:11	Mar 22	0.28	1.40	-1.12	-403.56%
2	7:47	Mar 22	0.32	1.40	-1.08	-334.55%
3	8:35	Mar 22	0.26	1.40	-1.14	-433.54%
4	9:10	Mar 22	0.36	1.40	-1.04	-294.30%
5	9:45	Mar 22	0.33	1.50	-1.17	-360.84%
6	10:21	Mar 22	0.54	1.70	-1.16	-215.24%
7	10:58	Mar 22	0.97	2.00	-1.03	-106.57%
8	11:34	Mar 22	0.41	1.50	-1.09	-263.24%
9	12:11	Mar 22	< 0.00	1.50	-1.50	N/A *
10	12:48	Mar 22	0.47	1.60	-1.13	-239.43%
Average			0.44	1.54	-1.11	-253.24%

Standard Deviation 0.050

Confidence Coefficient (CC) 0.038

Relative Accuracy (as % of RM) 262.0% Limits NA

* Indicates that the run was not included in the RATA calculations.

RESULTS

**Table 2-17:
Relative Accuracy, Unit 2 FF Outlet – Nitrogen Oxides (ppm @ 7% O₂)**

Run No.	Start Time	Date (2013)	RM Data (ppm@7%O ₂)	CEMS Data (ppm@7%O ₂)	Difference (ppm@7%O ₂)	Percent Difference
1 void	7:53	Mar 21	185.76	193.00	-7.24	-3.90% *
1	7:11	Mar 22	180.66	189.40	-8.74	-4.84%
2	7:47	Mar 22	175.14	183.70	-8.56	-4.89%
3	8:35	Mar 22	185.68	192.90	-7.22	-3.89%
4	9:10	Mar 22	187.49	196.10	-8.61	-4.59%
5	9:45	Mar 22	185.28	193.00	-7.72	-4.17%
6	10:21	Mar 22	194.36	203.00	-8.64	-4.45%
7	10:58	Mar 22	185.67	193.90	-8.23	-4.43%
8	11:34	Mar 22	182.76	190.50	-7.74	-4.23%
9	12:11	Mar 22	164.21	173.60	-9.39	-5.72% *
10	12:48	Mar 22	182.72	191.00	-8.28	-4.53%
Average			184.42	192.61	-8.19	-4.44%

Standard Deviation 0.525
 Confidence Coefficient (CC) 0.403
 Relative Accuracy (as % of RM) 4.7% Limits 20.0%
 Relative Accuracy (as % of Applicable Std.) 4.2% 10.0%
 Standard = 205 (ppm@7%O₂)

* Indicates that the run was not included in the RATA calculations.

**Table 2-18:
Relative Accuracy, Unit 2 FF Outlet – Nitrogen Oxides (ppmdv)**

Run No.	Start Time	Date (2013)	RM Data (ppmdv)	CEMS Data (ppmdv)	Difference (ppmdv)	Percent Difference
1 void	7:53	Mar 21	179.08	145.80	33.28	18.58% *
1	7:11	Mar 22	169.50	141.30	28.20	16.63%
2	7:47	Mar 22	174.13	144.90	29.23	16.79%
3	8:35	Mar 22	184.99	152.60	32.39	17.51% *
4	9:10	Mar 22	187.34	155.10	32.24	17.21%
5	9:45	Mar 22	184.39	152.40	31.99	17.35%
6	10:21	Mar 22	190.52	158.70	31.82	16.70%
7	10:58	Mar 22	185.38	153.50	31.88	17.20%
8	11:34	Mar 22	178.96	149.20	29.76	16.63%
9	12:11	Mar 22	159.49	135.30	24.19	15.17%
10	12:48	Mar 22	176.26	148.40	27.86	15.81%
Average			178.44	148.76	29.69	16.64%

Standard Deviation 2.674
 Confidence Coefficient (CC) 2.055
 Relative Accuracy (as % of RM) 17.8% Limit NA

* Indicates that the run was not included in the RATA calculations.

RESULTS

2-10

**Table 2-19:
Relative Accuracy, Unit 2 FF Outlet – Carbon Monoxide (ppm @ 7% O₂)**

Run No.	Start Time	Date (2013)	RM Data (ppm@7%O ₂)	CEMS Data (ppm@7%O ₂)	Difference (ppm@7%O ₂)	Percent Difference
1 void	7:53	Mar 21	8.22	9.60	-1.38	-16.76% *
1	7:11	Mar 22	12.16	13.20	-1.04	-8.53%
2	7:47	Mar 22	6.48	7.90	-1.42	-21.84% *
3	8:35	Mar 22	7.57	8.20	-0.63	-8.38%
4	9:10	Mar 22	8.77	9.50	-0.73	-8.26%
5	9:45	Mar 22	7.66	8.70	-1.04	-13.60%
6	10:21	Mar 22	9.09	10.30	-1.21	-13.30%
7	10:58	Mar 22	7.95	8.80	-0.85	-10.65%
8	11:34	Mar 22	7.57	8.30	-0.73	-9.68%
9	12:11	Mar 22	5.28	6.00	-0.72	-13.67%
10	12:48	Mar 22	5.69	6.30	-0.61	-10.76%
Average			7.97	8.81	-0.84	-10.54%

Standard Deviation 0.209
 Confidence Coefficient (CC) 0.161
 Relative Accuracy (as % of RM) 12.6% Limits 10.0%
 Avg. Absolute Difference (ppm@7%O₂) 0.8 5.0

* Indicates that the run was not included in the RATA calculations.

**Table 2-20:
Relative Accuracy, Unit 2 FF Outlet – Carbon Monoxide (ppmdv)**

Run No.	Start Time	Date (2013)	RM Data (ppmdv)	CEMS Data (ppmdv)	Difference (ppmdv)	Percent Difference
1 void	7:53	Mar 21	7.93	7.20	0.73	9.16% *
1	7:11	Mar 22	11.41	9.80	1.61	14.11% *
2	7:47	Mar 22	6.45	6.20	0.25	3.83%
3	8:35	Mar 22	7.54	6.50	1.04	13.77%
4	9:10	Mar 22	8.77	7.50	1.27	14.46%
5	9:45	Mar 22	7.62	6.80	0.82	10.78%
6	10:21	Mar 22	8.91	8.00	0.91	10.23%
7	10:58	Mar 22	7.94	7.00	0.94	11.85%
8	11:34	Mar 22	7.41	6.50	0.91	12.28%
9	12:11	Mar 22	5.13	4.60	0.53	10.27%
10	12:48	Mar 22	5.49	4.90	0.59	10.70%
Average			7.25	6.44	0.81	11.11%

Standard Deviation 0.305
 Confidence Coefficient (CC) 0.235
 Relative Accuracy (as % of RM) 14.3% Limits NA

* Indicates that the run was not included in the RATA calculations.

RESULTS

**Table 2-21:
Relative Accuracy, Unit 3 FF Outlet – Oxygen (%dv)**

Run No.	Start Time	Date (2013)	RM Data (scfm)	CEMS Data (scfm)	Difference (scfm)	Percent Difference
1	8:13	Mar 20	110,388.87	98,597.40	11791.47	10.68%
2	8:53	Mar 20	106,193.60	99,592.00	6601.60	6.22%
3	9:37	Mar 20	117,538.24	114,184.40	3353.84	2.85%
4	10:16	Mar 20	112,989.57	112,006.20	983.37	0.87%
5	11:00	Mar 20	106,795.56	105,961.90	833.66	0.78%
6	11:40	Mar 20	116,259.77	104,113.10	12146.67	10.45% *
7	12:30	Mar 20	114,395.43	108,627.80	5767.63	5.04%
8	13:10	Mar 20	118,324.38	120,598.30	-2273.92	-1.92%
9	13:50	Mar 20	117,185.66	120,113.10	-2927.44	-2.50%
10	14:30	Mar 20	115,618.28	110,420.10	5198.18	4.50%
Average			113,269.95	110,011.24	3258.71	2.88%

Standard Deviation 4663.48

Confidence Coefficient (CC) 3584.66

Relative Accuracy (as % of RM) 6.0% Limit NA

* Indicates that the run was not included in the RATA calculations.

**Table 2-22:
Relative Accuracy, Unit 3 FF Outlet – Volumetric Flow (SCFM)**

Run No.	Start Time	Date (2013)	RM Data (scfm)	CEMS Data (scfm)	Difference (scfm)	Percent Difference
1	8:13	Mar 20	110,388.87	98,597.40	11791.47	10.68%
2	8:53	Mar 20	106,193.60	99,592.00	6601.60	6.22%
3	9:37	Mar 20	117,538.24	114,184.40	3353.84	2.85%
4	10:16	Mar 20	112,989.57	112,006.20	983.37	0.87%
5	11:00	Mar 20	106,795.56	105,961.90	833.66	0.78%
6	11:40	Mar 20	116,259.77	104,113.10	12146.67	10.45% *
7	12:30	Mar 20	114,395.43	108,627.80	5767.63	5.04%
8	13:10	Mar 20	118,324.38	120,598.30	-2273.92	-1.92%
9	13:50	Mar 20	117,185.66	120,113.10	-2927.44	-2.50%
10	14:30	Mar 20	115,618.28	110,420.10	5198.18	4.50%
Average			113,269.95	110,011.24	3258.71	2.88%

Standard Deviation 4663.48

Confidence Coefficient (CC) 3584.66

Relative Accuracy (as % of RM) 6.0% Limit NA

* Indicates that the run was not included in the RATA calculations.

RESULTS

**Table 2-23:
Relative Accuracy, Unit 3 FF Outlet – Carbon Dioxide (lb/hr)**

Run No.	Start Time	Date (2013)	RM Data (lb/hr)	CEMS Data (lb/hr)	Difference (lb/hr)	Percent Difference
1	8:13	Mar 20	69,899.50	65,599.20	4300.30	6.15%
2	8:53	Mar 20	66,561.74	65,814.80	746.94	1.12%
3	9:37	Mar 20	68,103.00	69,588.20	-1485.20	-2.18%
4	10:16	Mar 20	67,545.43	70,258.40	-2712.97	-4.02%
5	11:00	Mar 20	63,608.19	64,939.30	-1331.11	-2.09%
6	11:40	Mar 20	67,031.35	62,214.10	4817.25	7.19%
7	12:30	Mar 20	65,377.33	64,806.10	571.23	0.87%
8	13:10	Mar 20	65,985.91	70,034.40	-4048.49	-6.14%
9	13:50	Mar 20	65,686.16	70,151.60	-4465.44	-6.80% *
10	14:30	Mar 20	64,143.51	63,511.10	632.41	0.99%
Average			66,472.89	66,307.29	165.60	0.25%

Standard Deviation 2967.83

Confidence Coefficient (CC) 2281.27

Relative Accuracy (as % of RM) 3.7% Limit 20.0%

* Indicates that the run was not included in the RATA calculations.

**Table 2-24:
Relative Accuracy, Unit 3 FF Outlet – Carbon Dioxide (%dv)**

Run No.	Start Time	Date (2013)	RM Data (%dv)	CEMS Data (%dv)	Difference (%dv)	Percent Difference
1	8:13	Mar 20	12.23	12.40	-0.17	-1.42%
2	8:53	Mar 20	12.10	12.40	-0.30	-2.45%
3	9:37	Mar 20	11.05	11.40	-0.35	-3.18%
4	10:16	Mar 20	11.40	11.70	-0.30	-2.64%
5	11:00	Mar 20	11.19	11.40	-0.21	-1.88%
6	11:40	Mar 20	10.83	11.20	-0.37	-3.40%
7	12:30	Mar 20	10.81	11.20	-0.39	-3.57% *
8	13:10	Mar 20	10.55	10.90	-0.35	-3.29%
9	13:50	Mar 20	10.61	10.90	-0.29	-2.77%
10	14:30	Mar 20	10.50	10.80	-0.30	-2.88%
Average			11.16	11.46	-0.29	-2.63%

Standard Deviation 0.065

Confidence Coefficient (CC) 0.050

Avg. Absolute Difference (%dv) 0.3 Limit NA

* Indicates that the run was not included in the RATA calculations.

RESULTS

**Table 2-25:
Relative Accuracy, Unit 3 FF Outlet – Sulfur Dioxide (ppm @ 7% O₂)**

Run No.	Start Time	Date (2013)	RM Data (ppm@7%O ₂)	CEMS Data (ppm@7%O ₂)	Difference (ppm@7%O ₂)	Percent Difference
1	8:13	Mar 20	17.71	18.40	-0.69	-3.90%
2	8:53	Mar 20	19.15	20.40	-1.25	-6.54%
3	9:37	Mar 20	14.22	15.00	-0.78	-5.46%
4	10:16	Mar 20	12.63	12.90	-0.27	-2.13%
5	11:00	Mar 20	16.09	16.60	-0.51	-3.18%
6	11:40	Mar 20	14.72	14.80	-0.08	-0.58%
7	12:30	Mar 20	25.73	27.70	-1.97	-7.64% *
8	13:10	Mar 20	14.56	15.10	-0.54	-3.72%
9	13:50	Mar 20	9.53	9.60	-0.07	-0.73%
10	14:30	Mar 20	14.99	14.60	0.39	2.62%
Average			14.84	15.27	-0.42	-2.85%

Standard Deviation 0.479
 Confidence Coefficient (CC) 0.368
 Relative Accuracy (as % of RM) 5.3% Limits 20.0%
 Relative Accuracy (as % of Applicable Std.) 2.7% 20.0%
 Standard = 29 (ppm@7%O₂)

* Indicates that the run was not included in the RATA calculations.

**Table 2-26:
Relative Accuracy, Unit 3 FF Outlet – Sulfur Dioxide (ppmdv)**

Run No.	Start Time	Date (2013)	RM Data (ppmdv)	CEMS Data (ppmdv)	Difference (ppmdv)	Percent Difference
1	8:13	Mar 20	17.84	18.60	-0.76	-4.28%
2	8:53	Mar 20	19.22	20.40	-1.18	-6.12%
3	9:37	Mar 20	13.11	13.70	-0.59	-4.51%
4	10:16	Mar 20	12.02	12.20	-0.18	-1.46%
5	11:00	Mar 20	14.90	15.30	-0.40	-2.69%
6	11:40	Mar 20	13.28	13.40	-0.12	-0.89%
7	12:30	Mar 20	23.02	24.60	-1.58	-6.88% *
8	13:10	Mar 20	12.73	13.10	-0.37	-2.90%
9	13:50	Mar 20	8.41	8.40	0.01	0.15%
10	14:30	Mar 20	13.08	12.70	0.38	2.93%
Average			13.84	14.20	-0.36	-2.57%

Standard Deviation 0.457
 Confidence Coefficient (CC) 0.351
 Relative Accuracy (as % of RM) 5.1% Limit 20.0%

* Indicates that the run was not included in the RATA calculations.

RESULTS

**Table 2-27:
Relative Accuracy, Unit 3 FF Outlet – Nitrogen Oxides (ppm @ 7% O₂)**

Run No.	Start Time	Date (2013)	RM Data (ppm@7%O ₂)	CEMS Data (ppm@7%O ₂)	Difference (ppm@7%O ₂)	Percent Difference
1	8:13	Mar 20	186.71	193.80	-7.09	-3.80%
2	8:53	Mar 20	188.19	196.70	-8.51	-4.52%
3	9:37	Mar 20	189.40	197.50	-8.10	-4.28%
4	10:16	Mar 20	192.99	200.10	-7.11	-3.68%
5	11:00	Mar 20	180.12	185.60	-5.48	-3.04%
6	11:40	Mar 20	191.39	198.90	-7.51	-3.93%
7	12:30	Mar 20	182.45	189.80	-7.35	-4.03%
8	13:10	Mar 20	184.94	191.50	-6.56	-3.55%
9	13:50	Mar 20	190.85	198.00	-7.15	-3.75%
10	14:30	Mar 20	186.03	193.70	-7.67	-4.12%
Average			187.21	194.32	-7.11	-3.80%

Standard Deviation 0.747

Confidence Coefficient (CC) 0.575

Relative Accuracy (as % of RM) 4.1% Limits 20.0%

Relative Accuracy (as % of Applicable Std.) 3.8% 10.0%

Standard = 205 (ppm@7%O₂)

* Indicates that the run was not included in the RATA calculations.

**Table 2-28:
Relative Accuracy, Unit 3 FF Outlet – Nitrogen Oxides (ppmdv)**

Run No.	Start Time	Date (2013)	RM Data (ppmdv)	CEMS Data (ppmdv)	Difference (ppmdv)	Percent Difference
1	8:13	Mar 20	188.05	194.90	-6.85	-3.64%
2	8:53	Mar 20	188.94	196.70	-7.76	-4.11%
3	9:37	Mar 20	174.56	181.20	-6.64	-3.80%
4	10:16	Mar 20	183.73	189.90	-6.17	-3.36%
5	11:00	Mar 20	166.81	171.00	-4.19	-2.51%
6	11:40	Mar 20	172.75	179.00	-6.25	-3.62%
7	12:30	Mar 20	163.20	169.50	-6.30	-3.86%
8	13:10	Mar 20	161.73	166.90	-5.17	-3.19%
9	13:50	Mar 20	168.47	173.80	-5.33	-3.16%
10	14:30	Mar 20	162.35	168.10	-5.75	-3.54%
Average			171.29	177.14	-5.85	-3.42%

Standard Deviation 0.839

Confidence Coefficient (CC) 0.645

Relative Accuracy (as % of RM) 3.8% Limit 20.0%

* Indicates that the run was not included in the RATA calculations.

RESULTS

**Table 2-29:
Relative Accuracy, Unit 3 FF Outlet – Carbon Monoxide (ppm @ 7% O₂)**

Run No.	Start Time	Date (2013)	RM Data (ppm@7%O ₂)	CEMS Data (ppm@7%O ₂)	Difference (ppm@7%O ₂)	Percent Difference
1	8:13	Mar 20	13.06	13.30	-0.24	-1.82%
2	8:53	Mar 20	7.03	7.30	-0.27	-3.88%
3	9:37	Mar 20	9.46	9.60	-0.14	-1.47%
4	10:16	Mar 20	6.83	7.00	-0.17	-2.54%
5	11:00	Mar 20	9.30	9.80	-0.50	-5.40% *
6	11:40	Mar 20	10.78	10.90	-0.12	-1.08%
7	12:30	Mar 20	10.81	11.00	-0.19	-1.74%
8	13:10	Mar 20	12.54	12.80	-0.26	-2.03%
9	13:50	Mar 20	13.26	13.40	-0.14	-1.09%
10	14:30	Mar 20	11.87	12.00	-0.13	-1.06%
Average			10.63	10.81	-0.18	-1.73%

Standard Deviation 0.059

Confidence Coefficient (CC) 0.045

Relative Accuracy (as % of RM) 2.2% Limits 10.0%

Avg. Absolute Difference (ppm@7%O₂) 0.2 5.0

* Indicates that the run was not included in the RATA calculations.

**Table 2-30:
Relative Accuracy, Unit 3 FF Outlet – Carbon Monoxide (ppmdv)**

Run No.	Start Time	Date (2013)	RM Data (ppmdv)	CEMS Data (ppmdv)	Difference (ppmdv)	Percent Difference
1	8:13	Mar 20	13.16	13.40	-0.24	-1.85%
2	8:53	Mar 20	7.05	7.30	-0.25	-3.47%
3	9:37	Mar 20	8.72	8.80	-0.08	-0.92%
4	10:16	Mar 20	6.50	6.60	-0.10	-1.56%
5	11:00	Mar 20	8.61	8.90	-0.29	-3.35% *
6	11:40	Mar 20	9.73	9.80	-0.07	-0.68%
7	12:30	Mar 20	9.67	9.80	-0.13	-1.33%
8	13:10	Mar 20	10.97	11.10	-0.13	-1.18%
9	13:50	Mar 20	11.70	11.80	-0.10	-0.84%
10	14:30	Mar 20	10.36	10.40	-0.04	-0.36%
Average			9.76	9.89	-0.13	-1.29%

Standard Deviation 0.073

Confidence Coefficient (CC) 0.056

Relative Accuracy (as % of RM) 1.9% Limit NA

* Indicates that the run was not included in the RATA calculations.

DESCRIPTION OF INSTALLATION

3-1

PROCESS DESCRIPTION

The North Broward Resource Recovery facility, located in Pompano Beach, Florida, operates three (3) 750 tons-per-day municipal refuse-fired, water-wall boiler trains. The trains were manufactured by Babcock and Wilcox to produce electricity for sale to a local utility company. Each boiler is equipped with a spray dryer absorber (SDA) for acid gas removal, followed by an FF baghouse for the control of particulate emissions. The control equipment is manufactured by Wheelabrator Air Pollution Control, Inc. Each FF baghouse is followed by an induced draft fan, which directs the flue gas to a dedicated flue in a common stack.

CEMS GENERAL DESCRIPTION

The CEMs was supplied by Aldora Technologies and consists of the following major components: three (3) Perkin Elmer MCS-100 /e infrared-based multi-gas measurement analyzers (one for each unit) and an Environmental System Corporation (ESC) UNIX-based data acquisition system (DAS). With the recent addition of M and C chillers, the MCS-100 /e analyzers measure pollutant and diluent concentrations on a cold-dry basis.

Each MCS-100 /e system includes the following: a SICK 100 /e analyzer with integrated zirconium oxide-based O₂ analyzer, programmable logic controller (PLC) and heated probe and sample line. The FF outlet 100 /e systems monitor O₂, CO₂, CO, SO₂ and NO_x from the respective stack ductwork.

The ESC DAS consists of three (3) Model 8816 data loggers (one for each MWC unit), a central polling (located in the CEM shelter), data archiving and reporting computer, and a remote engineering workstation (located in the control room). An environmentally-controlled shelter houses the MCS-100 /e analyzers, calibration gas systems and ESC Model 8816 data loggers. A general CEMs schematic is shown in Figure 3-1 on page 3-4.

PERKIN ELMER MCS-100 /E ANALYZER

The analyzer uses multiple infrared measurements, including Gas Filter Correlation for measuring NO_x and CO, a single beam-dual wavelength for SO₂ and an integrated heated zirconium oxide (ZrO₂) electrochemical cell for O₂, which is controlled by the 100 /e motherboard. All measurements are performed on a cold-dry basis in a single once-through sample cell with common optical bench (infrared source, filters, chopper wheel and detector). All sampling components (probe, sample line, pump) and measurement cell are maintained at 385°F to prevent condensation prior to the chillers.

The MSC-100 /e includes an integrated PLC that controls all analyzer functions, including optical bench operation, detector signal processing, dynamic gas calibrations, sample system operation and operational status alarms. The dry-based SO₂, NO_x, CO, CO₂ and O₂ measurement signals and operational status outputs are sent to the ESC 8816 data logger.

DESCRIPTION OF INSTALLATION

3-2

ESC DAS

The DAS consists of three (3) Model 8816 data loggers, a central data polling and reporting computer and engineering workstation. The 8816 data loggers receive the measurement signals from the MCS-100 /e analyzers and transmit the data to the central computer. The 8816 data loggers also receive the necessary status inputs from the MCS-100 /e to properly record analyzer calibrations, provide appropriate status flags to data and generate alarms to alert operators of CEM problems or excess emissions events.

The data loggers store up to four (4) weeks of hourly CEM data, consequently, in the event the central computer goes down, data recording and archiving is not affected. The data logger also receives the steam flow rate and fabric filter temperature signals from the control room to provide calculation of appropriate averages and permanent recording.

The Central Polling and Reporting Computer, located in the CEMS building, receives all data from the 8816 data loggers, calculates the required emission units and averaging times, generates the daily calibration reports and provides all required Subpart Cb data recording and reporting. Data from this computer is used for the relative accuracy testing and calibration drift determinations. The computer also provides the necessary permanent data storage using data storage tapes. The engineering workstation provides a remote link to the central computer for data review and generation of reports.

CEM CALIBRATION

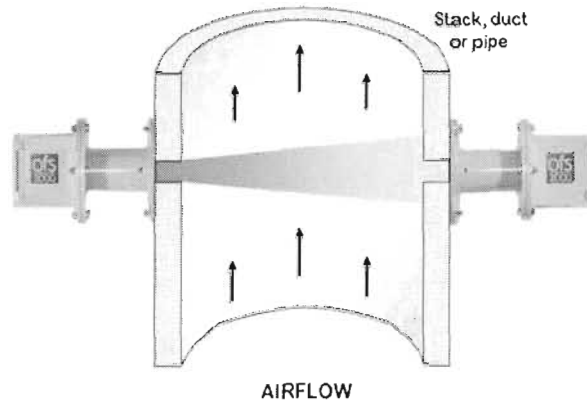
The outlet CEM systems are calibrated daily using the appropriate calibration gases. Calibration gases are injected at the probes to provide a complete assessment of CEM response. The MCS-100 /e performs an automatic zero adjustment to all measurement channels after the calibration is completed and the zero and span responses recorded by the 8816 data logger. No other adjustments or corrections are performed on the data.

DESCRIPTION OF INSTALLATION

GAS FLOW MONITOR SYSTEM DESCRIPTION

The stack gas flow monitor is a primary component of the CO₂ CERM. Stack flow, along with flue gas temperature and CO₂ and H₂O data from the CEMS, is used to calculate and record mass CO₂ emissions in lbs/hr.

A stack gas flow monitor is installed on each MWC unit (see Table 3-1 below). The stack gas flow monitor is an Optical Scientific Inc. Model OFS 2000W Optical Flow Sensor. It consists of three (3) major components: the light transmitter, the receiver and control unit. The ESC Data Logger performs stack gas flow monitor data acquisition, data reduction and reporting functions.



The OFS 2000W uses an optical scintillation technique to continually measure gas velocity at the measurement location. The optical scintillation technique relies on advanced Digital Signal Processing (DSP) electronics to detect and measure the velocity of flue gas turbulence patterns in the stack gas flow stream. The technique provides a monitor path length averaged air velocity which is converted to gas volumetric flow rate using the duct cross-sectional area.

**Table 3-1:
Stack Flow Monitor Information – Units 1, 2 & 3**

Channel	Range	Sampling Location	Manufacturer/ Model Number	Serial Number
Stack Flow (velocity)	0-7872 feet/min	#1 FF Outlet	Optical Scientific Inc. Model OFS 2000W	10100572
		#2 FF Outlet		10100570
		#3 FF Outlet		10100571

DESCRIPTION OF INSTALLATION

CEMS SCHEMATIC

Figure 3-1 is a general schematic of each of the outlet CEM systems. Figure 3-2 on page 3-5 presents the RM and CEM outlet sampling locations, as well as a general facility process flow diagram.

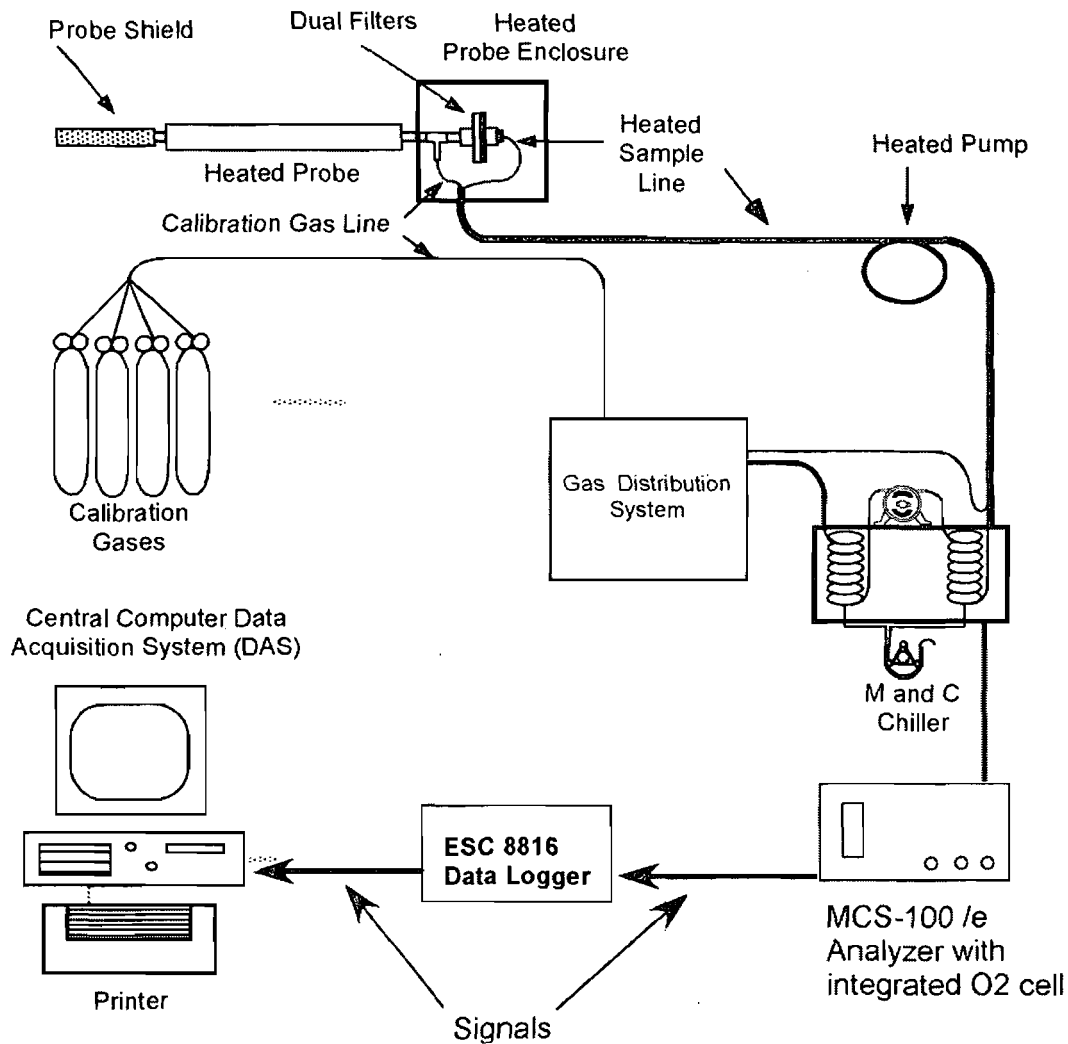


Figure 3-1: General CEMS Schematic

DESCRIPTION OF INSTALLATION

3-5

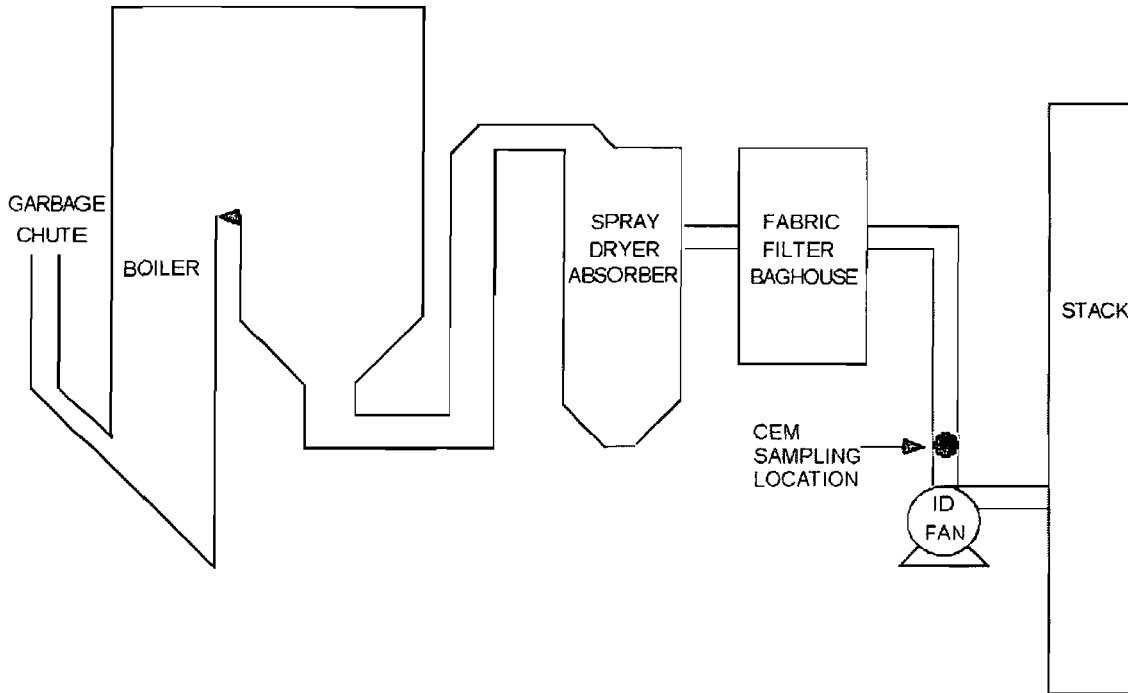


Figure 3-2: Process Flow Diagram and CEM Locations

DESCRIPTION OF INSTALLATION

3-6

DESCRIPTION OF SAMPLING LOCATIONS

Sampling point locations were determined according to EPA Method 1 and PS 2.

Table 3-2 outlines the sampling point configurations. Figures 3-3 and 3-4, on pages 3-7 and 3-8, illustrate the sampling points and orientation of sampling ports for each of the sources tested in the program.

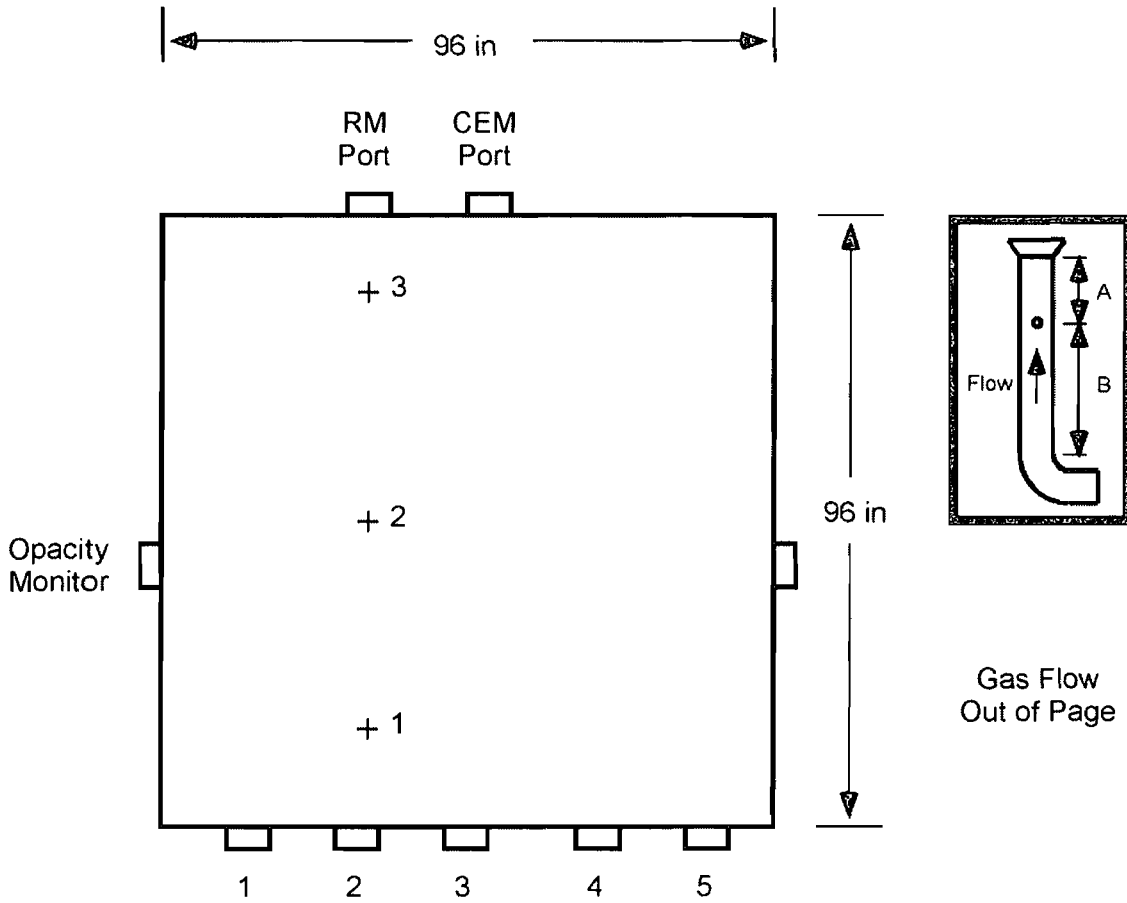
**Table 3-2:
Sampling Points**

Location Constituent	Methods	Run No.	Points Ports	Minutes per Point	Total Minutes	Figure
<u>Unit 1 FF Outlet</u>						
CEM	3A, 6C, 7E, 10	1-10	1	3	9	27 ¹ 3-3
Volumetric Flow	1-4 ¹	1-10	5	5	varied	varied 3-4
<u>Unit 2 FF Outlet</u>						
CEM	3A, 6C, 7E, 10	1-12	1	3	8 / 7	24 / 21 3-3
Volumetric Flow	1-4 ¹	1-12	5	5	varied	varied 3-4
<u>Unit 3 FF Outlet</u>						
CEM	3A, 6C, 7E, 10	1-10	1	3	9	27 3-3
Volumetric Flow	1-4 ¹	1-10	5	5	varied	varied 3-4

¹ Moisture data was obtained from the concurrent Method 26A, Method 5/29 or Method 4 sample trains.

DESCRIPTION OF INSTALLATION

3-7



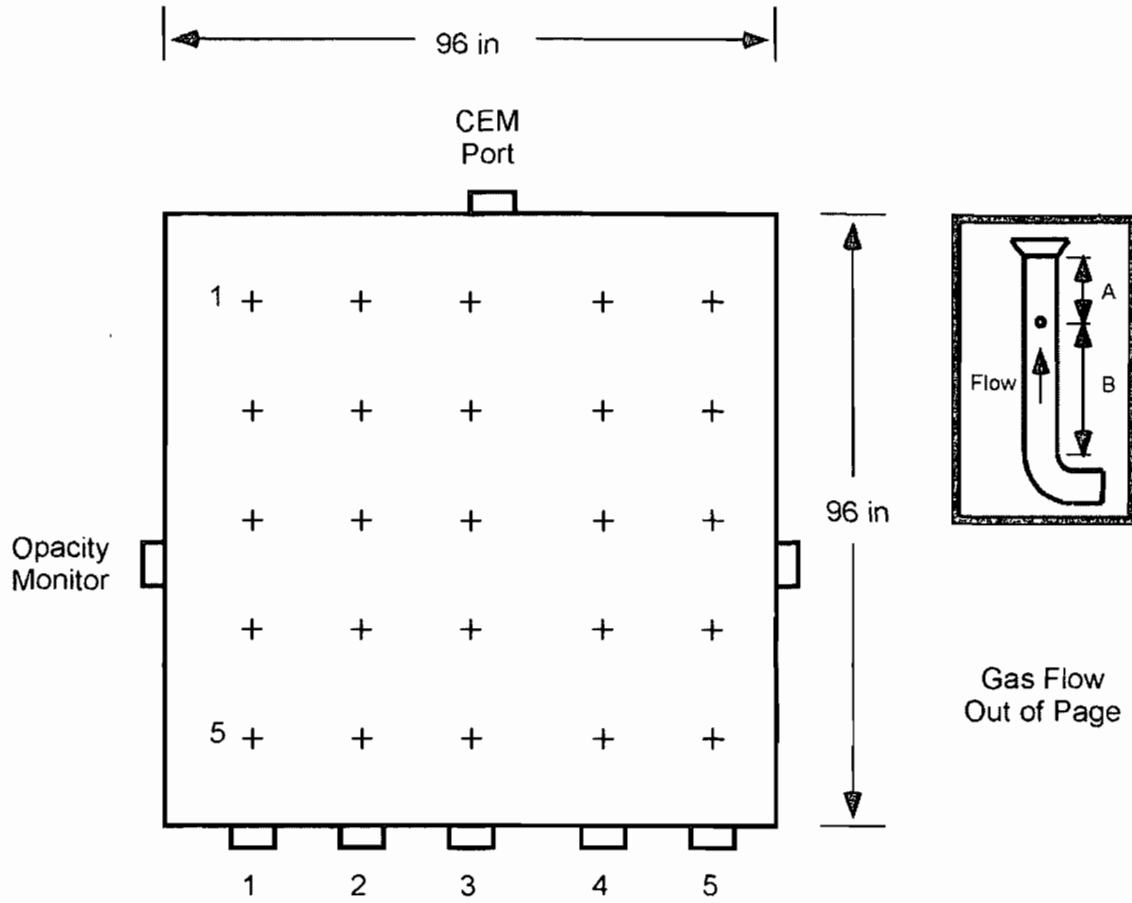
Sampling Point	Port to Point Distance (in.)
1	80
2	48
3	16

Equivalent Duct diameters upstream from flow disturbance (A):	0.92	Limit: 0.5
Equivalent Duct diameters downstream from flow disturbance (B):	2.0	Limit: 2.0

Port to point distances are 2.0 m, 1.2 m and 0.4 m, as specified in PS 2, Section 3.2.

Figure 3-3: Units 1, 2 and 3 FF Outlets – RATA Sampling Point Determination (PS 2)

DESCRIPTION OF INSTALLATION



Traverse Point	Port to Point Distance (in.)
1	86.4
2	67.2
3	48.0
4	28.8
5	9.6

Equivalent Duct diameters upstream from flow disturbance (A): 0.92 Limit: 0.5
 Equivalent Duct diameters downstream from flow disturbance (B): 2.0 Limit: 2.0

**Figure 3-4: FF Outlets – Velocity Traverse Point Determination
 (Units 1, 2 and 3 are identical)**

End of Section 3 – Description of Installation

METHODOLOGY

Clean Air Engineering followed procedures as detailed in EPA Methods 1, 2, 3A, 4, 6C, 7E and 10, as well as Performance Specifications 2, 3, 4A and 6. The following table summarizes the methods and their respective sources.

**Table 4-1:
Summary of Sampling Procedures**

Title 40 CFR Part 60 Appendix A

Method 1	"Sample and Velocity Traverses for Stationary Sources"
Method 2	"Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)"
Method 3A	"Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrumental Analyzer Procedure)"
Method 4	"Determination of Moisture Content in Stack Gases"
Method 6C	"Determination of Sulfur Dioxide Emissions from Stationary Sources (Instrumental Analyzer Procedure)"
Method 7E	"Determination of Nitrogen Oxides Emissions from Stationary Sources (Instrumental Analyzer Procedure)"
Method 10	"Determination of Carbon Monoxide Emissions from Stationary Sources"

Title 40 CFR Part 60 Appendix B (Performance Specifications (PS))

PS2	"Specifications and Test Procedures for SO ₂ and NO _x Continuous Emission Monitoring Systems in Stationary Sources"
PS3	"Specifications and Test Procedures for O ₂ and CO ₂ Continuous Emission Monitoring Systems in Stationary Sources"
PS4A	"Specifications and Test Procedures for Carbon Monoxide Continuous Emission Monitoring Systems in Stationary Sources"
PS6	"Specifications and Test Procedures for Continuous Emission Rate Monitoring Systems in Stationary Sources"

These methods appear in detail in Title 40 of the Code of Federal Regulations (CFR) and can be found on the internet at <http://ecfr.gpoaccess.gov>.

Diagrams of the sampling apparatus and major specifications of the sampling, recovery and analytical procedures are summarized for each method in Appendix A.

CleanAir followed specific quality assurance and quality control (QA/QC) procedures as outlined in the individual methods and as prescribed in CleanAir's internal Quality Manual. Results of all QA/QC activities performed by CleanAir are summarized in Appendix D.

End of Section 4 – Methodology

WHEELABRATOR NORTH BROWARD, INC.
POMPANO BEACH, FL

Client Reference No: Service Agreement
CleanAir Project No: 12218-2

APPENDIX

5-1

TEST METHOD SPECIFICATIONS	A
SAMPLE CALCULATIONS	B
PARAMETERS	C
QA/QC DATA	D
FIELD DATA	E
FIELD DATA PRINTOUTS	F
PLANT CEM DATA	G
REFERENCE METHOD DATA.....	H

WHEELABRATOR NORTH BROWARD, INC.
POMPANO BEACH, FL

Client Reference No: Service Agreement
CleanAir Project No: 12218-2

TEST METHOD SPECIFICATIONS

A

I hereby certify that all pages contained within this Appendix have been reviewed and, to the best of my ability, verified as accurate.

QA/QC Initials: SB

Date: 4/30



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Specification Sheet for

EPA Methods 3A, 6C, 7E and 10

Source Location Name(s) Units 1-3 FF Outlets
 Pollutant(s) to be Determined Sulfur Dioxide (SO₂), Nitrogen Oxides (NO_x) and Carbon Monoxide (CO)
 Other Parameters to be Determined from Train O₂ and CO₂ (EPA Method 3A)

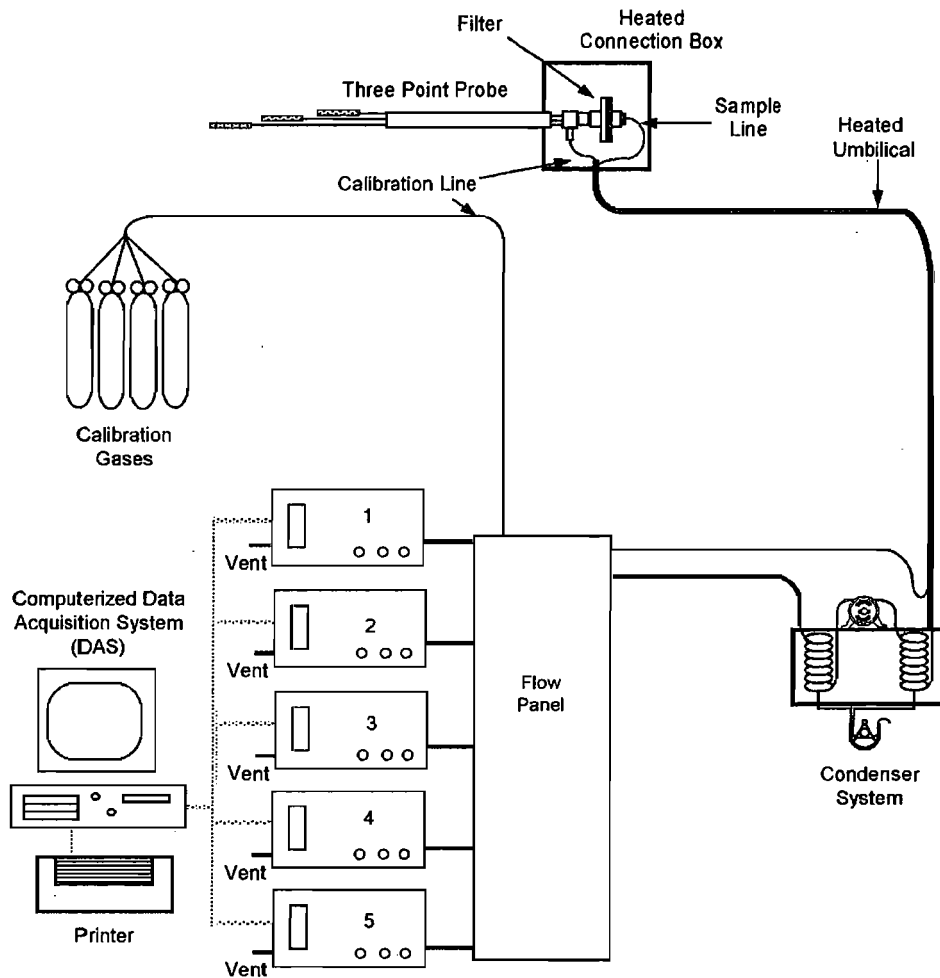
	<u>Standard Method Specification</u>	<u>Actual Specification Used</u>
Pollutant Sampling Information		
Duration of Run	N/A	24 to 27
No. of Sample Traverse Points	N/A	3
Sample Time per Point	N/A	8 to 9 minutes
Sampling Rate	Constant Rate	Constant Rate
Sampling Probe		
Nozzle Material	N/A	None
Nozzle Design	N/A	N/A
Probe Liner Material	Stainless Steel or Pyrex Glass	Stainless Steel
Effective Probe Length	Sufficient to Traverse Points	7 feet
Probe Temperature Set-Point	Prevent Condensation	248°F±25°F
Particulate Filter		
In-Stack Filter	Yes	Yes
In-Stack Filter Material	Non-reactive to gas	Fritted Stainless Steel
External Filter	Yes	Yes
External Filter Material	Borosilicate, Quartz Glass Wool or Fiber Mat	Borosilicate Glass Fiber Mat
External Filter Set-Point	Prevent Condensation	248°F±25°F
Sample Delivery System		
Heated Sample Line Material	Stainless Steel or Teflon	Teflon
Heated Sample Line Set-Point	Prevent Condensation	248°F±25°F
Heated Sample Line Connections	Probe Exit to Moisture Removal System	Probe to Moisture Removal System
Moisture Removal System	Refrigerator-type condenser or similar	Refrigerator-type condenser
Sample Pump Type	Leak-Free, minimal response time	Diaphragm
Sample Pump Material	Non-reactive to sample gases	Teflon
Sample Flow Control	Constant Rate	Constant Rate (±10%)
Non-Heated Sample Line Material	Stainless Steel or Teflon	Teflon
Non-Heated Sample Line Connections	Moisture Removal to Sample Gas Manifold	Moisture Removal to Sample Gas Manifold
Additional Filters	Optional	Yes
Additional Filter Type	N/A	Particulate Removal
Additional Filter Location	Optional	Entrance to Sample Manifold
Filter Material	Non-reactive to sample gases	Glass Fiber
Analyzer Description		
Oxygen (O ₂)	EPA Method 3A (Paramagnetic)	EPA Method 3A (Paramagnetic)
Carbon Dioxide (CO ₂)	EPA Method 3A (NDIR)	EPA Method 3A (NDIR)
Sulfur Dioxide (SO ₂)	EPA Method 6C (UV, NDIR or Fluorescence)	EPA Method 6C (UV Absorption)
Nitrogen Oxides (NO _x)	EPA Method 7E (Chemiluminescent)	EPA Method 7E (Chemiluminescent)
Carbon Monoxide (CO)	EPA Method 10 (Gas Filter Correlation IR)	EPA Method 10 (Gas Filter Correlation IR)
Total Hydrocarbon (THC)	N/A	
Hydrogen Chloride (HCl)	N/A	
Ammonia (NH ₃)	N/A	

Specification Sheet for

EPA Methods 3A, 6C, 7E and 10

	Standard Method Specification	Approximate Specification to be Used
Instrument Span Range		
Oxygen (O ₂)	≤ 1.33 x Expected Maximum	0-20%
Carbon Dioxide (CO ₂)	≤ 1.33 x Expected Maximum	0-20%
Sulfur Dioxide (SO ₂)	≤ 1.33 x Expected Maximum	0-100 ppm
Nitrogen Oxides (NO _x)	≤ 1.33 x Expected Maximum	0-500 ppm
Carbon Monoxide (CO)	≤ 1.33 x Expected Maximum	0-100 ppm
Total Hydrocarbon (THC)	N/A	N/A
Hydrogen Chloride (HCl)	N/A	N/A
Ammonia (NH ₃)	N/A	N/A
Data Acquisition		
Data Recorder	Strip chart, Analog Computer or Digital Recorder	Digital Recorder
Recorder Resolution	0.5 Percent of Span	0.1 Percent of Span
Data Storage	Manually or Automatic	Automatic
Measurement Freq. ≤60 min. Sample Time	1-min. intervals or 30 measurements (less restrictive)	One reading per second
Recording Freq. ≤60 min. Sample Time	1-min. intervals or 30 measurements (less restrictive)	One Minute Average (60, 1 second readings)
Measurement Freq. >60 min. Sample Time	2-min. intervals or 96 measurements (less restrictive)	N/A
Recording Freq. >60 min. Sample Time	2-min. intervals or 96 measurements (less restrictive)	N/A
Calibration Gas Specifications		
Oxygen (O ₂)	EPA Protocol 1	EPA Protocol 1
Carbon Dioxide (CO ₂)	EPA Protocol 1	EPA Protocol 1
Sulfur Dioxide (SO ₂)	EPA Protocol 1	EPA Protocol 1
Nitrogen Oxides (NO _x)	EPA Protocol 1	EPA Protocol 1
Carbon Monoxide (CO)	EPA Protocol 1	EPA Protocol 1
Total Hydrocarbon (THC)	N/A	
Hydrogen Chloride (HCl)	N/A	
Ammonia (NH ₃)	N/A	

EPA Methods 3A, 6C, 7E and 10 FF Outlet RATA Sampling Train Configuration



Number	Gas	Monitor	~Range	Calibration Gas Concentrations
1	O ₂	Servomex 1440C	0-18.1	0, 9.52, 18.1
2	CO ₂	Servomex 1440B	0-17.9	0, 9.53, 17.9
3	SO ₂	W.R. 921L	0-90.8	0, 45.2, 90.8
4	NO _x	T.E.I. 42 iLS	0-448	0, 223.0, 448.0
5	CO	T.E.I. 48i	0-96.3	0, 47.3, 96.3

Specification Sheet for

EPA Method 2

Source Location Name(s) Units 1, 2 and 3 FF Outlets
 Pollutant(s) to be Determined None
 Other Parameters to be Determined from Train Flow Rate

	<u>Standard Method Specification</u>	<u>Actual Specification Used</u>
Pollutant Sampling Information		
Duration of Run	N/A	Varied
No. of Sample Traverse Points	N/A	25
Sample Time per Point	N/A	Varied
Sampling Rate	N/A	N/A
Sampling Probe		
Nozzle Material	N/A	N/A
Nozzle Design	N/A	N/A
Probe Liner Material	N/A	N/A
Effective Probe Length	Sufficient to Traverse Points	8 feet
Probe Temperature Set-Point	N/A	N/A
Velocity Measuring Equipment		
Pitot Tube Design	Type S	Type S
Pitot Tube Coefficient	N/A	0.819
Pitot Tube Calibration by	Geometric or Wind Tunnel	Wind-Tunnel
Pitot Tube Attachment	Attached to Probe	Separate Probe
Metering System Console		
Meter Type	Dry Gas Meter	Dry Gas Meter
Meter Accuracy	N/A	N/A
Meter Resolution	N/A	N/A
Meter Size	N/A	N/A
Meter Calibrated Against	N/A	N/A
Pump Type	N/A	N/A
Temperature Measurements	N/A	Type K Thermocouple/Pyrometer
Temperature Resolution	5.4°F	1.0°F
ΔP Differential Pressure Gauge	Inclined Manometer or Equivalent	Inclined Manometer
ΔH Differential Pressure Gauge	Inclined Manometer or Equivalent	Inclined Manometer
Barometer	Mercury or Aneroid	Digital Barometer calibrated w/Mercury Aneroid
Filter Description		
Filter Location	N/A	N/A
Filter Holder Material	N/A	N/A
Filter Support Material	N/A	N/A
Cyclone Material	N/A	N/A
Filter Heater Set-Point	N/A	N/A
Filter Material	N/A	N/A
Other Components		
Description	N/A	N/A
Location	N/A	N/A
Operating Temperature	N/A	N/A

Specification Sheet for

EPA Method 26A (modified)

Note: Modification includes the use of full-size impingers instead of midget impingers.

Source Location Name(s) Unit 1 and 3 FF Outlet
Pollutant(s) to be Determined Hydrogen Chloride (HCl)
Other Parameters to be Determined from Train Gas Density, Moisture

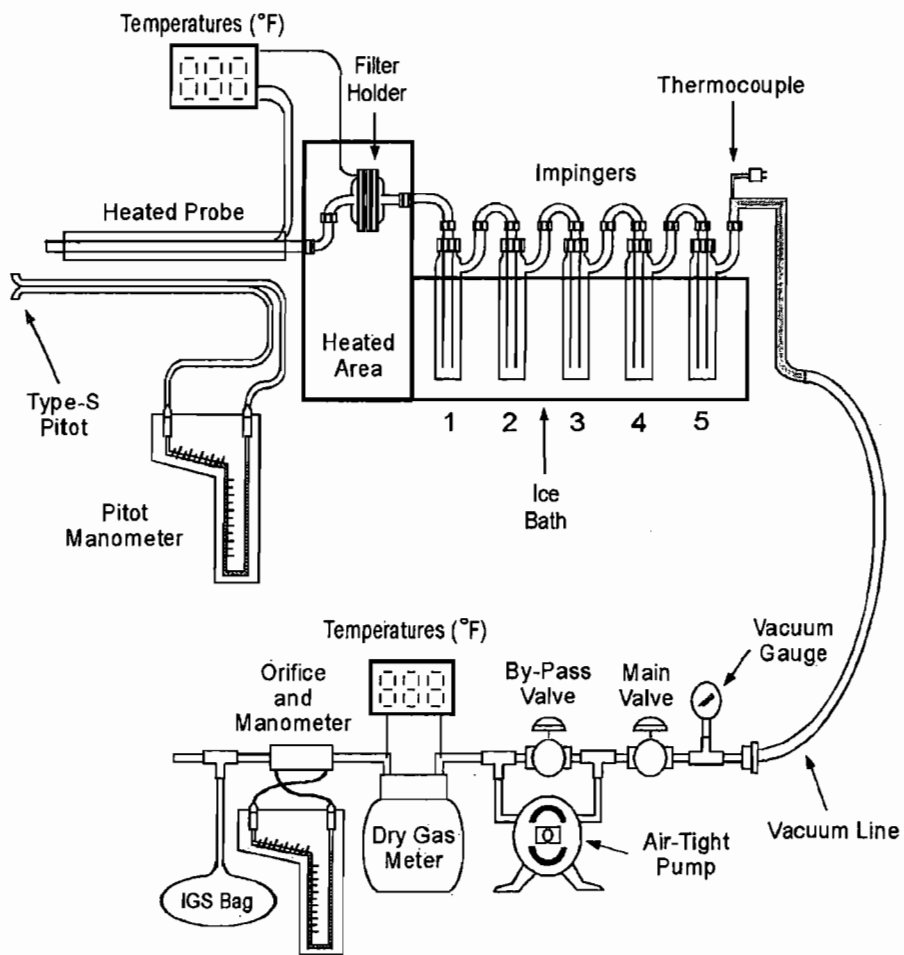
	Standard Method Specification	Actual Specification Used
Pollutant Sampling Information		
Duration of Run	N/A	60 minutes
No. of Sample Traverse Points	N/A	1
Sample Time per Point	N/A	60 minutes
Sampling Rate	Constant Rate ($\pm 10\%$)	Constant Rate ($\pm 10\%$)
Sampling Probe		
Nozzle Material	N/A	None
Nozzle Design	N/A	N/A
Probe Liner Material	Borosilicate Glass	Borosilicate Glass
Effective Probe Length	N/A	4 feet
Probe Temperature Set-Point	>248°F	350°F @ Inlet, Stack Temp @ FF Outlet
Velocity Measuring Equipment		
Pitot Tube Design	None	None
Pitot Tube Coefficient	N/A	N/A
Pitot Tube Calibration by	N/A	N/A
Pitot Tube Attachment	N/A	N/A
Metering System Console		
Meter Type	Dry Gas Meter or Critical Orifice	Dry Gas Meter
Meter Accuracy	$\pm 2\%$	$\pm 1\%$
Meter Resolution	N/A	0.01 cubic feet
Meter Size	2 liters/minute	0.1 dcf/revolution
Meter Calibrated Against	Wet Test Meter	Wet Test Meter
Pump Type	Diaphragm or equivalent	Rotary Vane
Temperature Measurements	Dial Thermometer or equivalent	Type K Thermocouple/Pyrometer
Temperature Resolution	2°F-5.4°F	1.0°F
ΔP Differential Pressure Gauge	N/A	N/A
ΔH Differential Pressure Gauge	N/A	Inclined Manometer
Barometer	Mercury, aneroid or other.	Digital Barometer calibrated w/Mercury Aneroid
Filter Description		
Filter Location	After Probe	Exit of Probe
Filter Holder Material	Teflon or Quartz	Borosilicate Glass
Filter Support Material	Teflon Frit	Teflon
Cyclone Material	N/A	None
Filter Heater Set-Point	>248°F	350°F @ Inlet, Stack Temp @ FF Outlet
Filter Material	Teflon/Glass Mat (Quartz, Optional High Temp>410F)	Quartz Fiber @ Inlet, Teflon on Glass @ Outlet
Other Components		
Description	N/A	N/A
Location	N/A	N/A
Operating Temperature	N/A	N/A

Specification Sheet for

EPA Method 26A (modified)

	<u>Standard Method Specification</u>	<u>Actual Specification Used</u>
Impinger Train Description		
Type of Glassware Connections	Ground Glass or Equivalent	Screw Joint with Silicone Gasket
Connection to Probe or Filter by	Direct Glass Connection	Direct Glass Connection
Number of Impingers	5 or 6 (Midget Impingers)	5
Impinger Stem Types		
Impinger 1	Shortened Stem	Shortened Stem (open tip)
Impinger 2	Greenburg-Smith	Greenburg-Smith
Impinger 3	Greenburg-Smith	Greenburg-Smith
Impinger 4	Modified Greenburg-Smith	Modified Greenburg-Smith
Impinger 5	Modified Greenburg-Smith	Modified Greenburg-Smith
Impinger 6		
Impinger 7		
Impinger 8		
Gas Density Determination		
Sample Collection	N/A	Single Point Integrated
Sample Collection Medium	N/A	Vinyl Bag
Sample Analysis	N/A	CEM
Sample Recovery Information		
Probe Brush Material	N/A	N/A
Probe Rinse Reagent	N/A	N/A
Probe Rinse Wash Bottle Material	N/A	N/A
Probe Rinse Storage Container	N/A	N/A
Filter Recovered?	No	No
Filter Storage Container	N/A	N/A
Impinger Contents Recovered?	Yes	Yes
Impinger Rinse Reagent	Deionized Distilled Water	Deionized Distilled Water
Impinger Wash Bottle	Polyethylene or glass	Polyethylene
Impinger Storage Container	Polyethylene	Polyethylene
Analytical Information		
Method 4 H ₂ O Determination by	N/A	Gravimetric
Filter Preparation Conditions	N/A	N/A
Front-Half Rinse Preparation	N/A	N/A
Back-Half Analysis	Ion Chromatography	Ion Chromatography
Additional Analysis	None	None

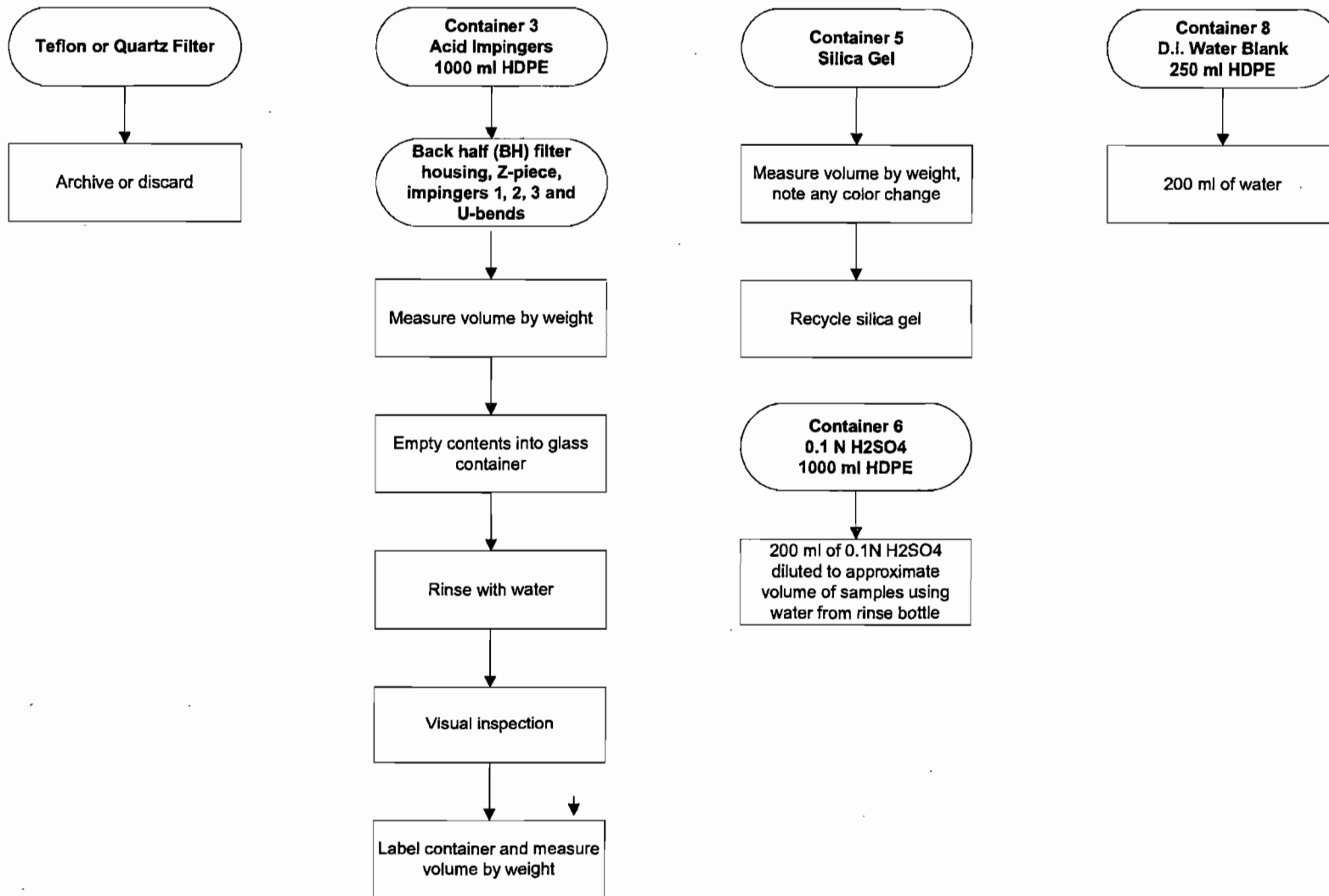
Modified EPA Method 26A Sampling Train Configuration



Impinger Contents

Impinger 1	50 ml 0.1 N H ₂ SO ₄
Impinger 2	100 ml 0.1 N H ₂ SO ₄
Impinger 3	100 ml 0.1 N H ₂ SO ₄
Impinger 4	Empty
Impinger 5	Silica Gel

**Modified EPA Method 26A
Sample Recovery Flowchart
(without Halogens)**



Specification Sheet for

EPA Method 5/29

Source Location Name(s) Unit 1 and 3 FF Outlet
 Pollutant(s) to be Determined Particulate Matter (PM) and Trace Metals (including Mercury)
 Other Parameters to be Determined from Train Gas Density, Moisture, Flow Rate

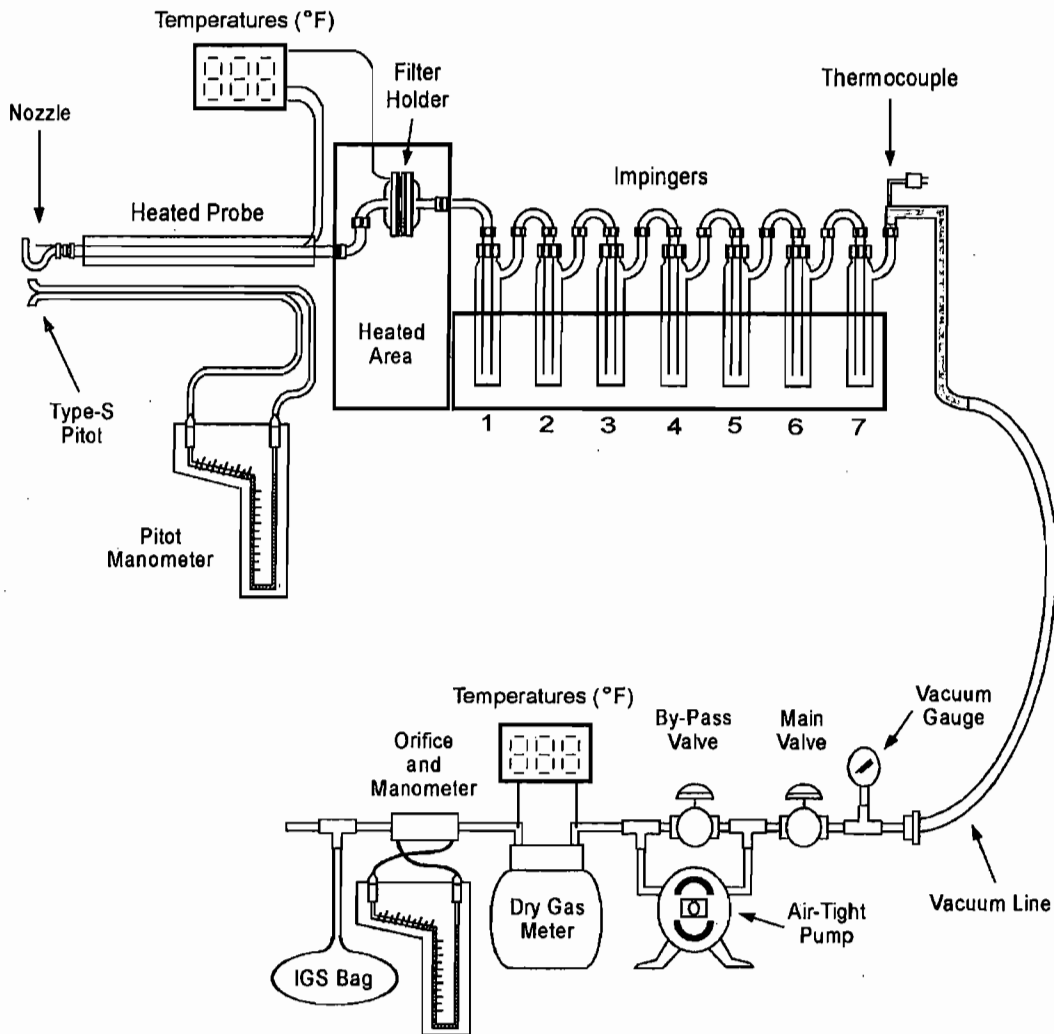
	<u>Standard Method Specification</u>	<u>Actual Specification Used</u>
Pollutant Sampling Information		
Duration of Run	N/A	125 minutes
No. of Sample Traverse Points	N/A	25
Sample Time per Point	N/A	5 minutes
Sampling Rate	Isokinetic (90-110%)	Isokinetic (90-110%)
Sampling Probe		
Nozzle Material	Borosilicate or Quartz Glass	Borosilicate Glass
Nozzle Design	Button-Hook or Elbow	Button-Hook
Probe Liner Material	Borosilicate or Quartz Glass	Borosilicate Glass
Effective Probe Length	N/A	8 feet
Probe Temperature Set-Point	248°F±25°F	248°F±25°F
Velocity Measuring Equipment		
Pitot Tube Design	Type S	Type S
Pitot Tube Coefficient	N/A	varied
Pitot Tube Calibration by	Geometric or Wind Tunnel	Wind-Tunnel
Pitot Tube Attachment	Attached to Probe	Attached to Probe
Metering System Console		
Meter Type	Dry Gas Meter	Dry Gas Meter
Meter Accuracy	±2%	±1%
Meter Resolution	N/A	0.01 cubic feet
Meter Size	N/A	0.1 dcf/revolution
Meter Calibrated Against	Wet Test Meter or Standard DGM	Wet Test Meter
Pump Type	N/A	Rotary Vane
Temperature Measurements	N/A	Type K Thermocouple/Pyrometer
Temperature Resolution	5.4°F	1.0°F
ΔP Differential Pressure Gauge	Inclined Manometer or Equivalent	Inclined Manometer
ΔH Differential Pressure Gauge	Inclined Manometer or Equivalent	Inclined Manometer
Barometer	Mercury or Aneroid	Digital Barometer calibrated w/Mercury Aneroid
Filter Description		
Filter Location	After Probe	Exit of Probe
Filter Holder Material	Borosilicate Glass	Borosilicate Glass
Filter Support Material	Teflon (or other non-metallic material)	Teflon
Cyclone Material	N/A	None
Filter Heater Set-Point	248°F±25°F	248°F±25°F
Filter Material	Quartz or Fiberglass Fiber	Quartz Fiber
Other Components		
Description	N/A	N/A
Location	N/A	N/A
Operating Temperature	N/A	N/A

Specification Sheet for

EPA Method 5/29

	Standard Method Specification	Actual Specification Used
Impinger Train Description		
Type of Glassware Connections	Ground Glass or Equivalent	Screw Joint with Silicone Gasket
Connection to Probe or Filter by	Direct Glass Connection	Direct Glass Connection
Number of Impingers	7	7
Impinger Stem Types		
Impinger 1	Modified Greenburg-Smith	Modified Greenburg-Smith
Impinger 2	Modified Greenburg-Smith	Modified Greenburg-Smith
Impinger 3	Greenburg-Smith	Greenburg-Smith
Impinger 4	Modified Greenburg-Smith	Modified Greenburg-Smith
Impinger 5	Modified Greenburg-Smith	Modified Greenburg-Smith
Impinger 6	Modified Greenburg-Smith	Modified Greenburg-Smith
Impinger 7	Modified Greenburg-Smith	Modified Greenburg-Smith
Impinger 8	Modified Greenburg-Smith	Modified Greenburg-Smith
Gas Density Determination		
Sample Collection	Multi-point integrated	Multi-Point Integrated
Sample Collection Medium	Flexible Gas Bag	Vinyl Bag
Sample Analysis	Orsat or Fyrite Analyzer	CEM
Sample Recovery Information		
Probe Brush Material	Non-metallic swab or bristle	Teflon Mat
Probe Rinse Reagent	Acetone/0.1N Nitric Acid	Acetone/0.1N. Nitric Acid
Probe Rinse Wash Bottle Material	Glass or Teflon	Teflon
Probe Rinse Storage Container	See Method 29 Recovery Flow Chart	See Recovery Flow Chart
Filter Recovered?	Yes	Yes
Filter Storage Container	Petri Dish - Glass or Polystyrene	Glass
Impinger Contents Recovered?	Yes	Yes
Impinger Rinse Reagent	See Method 29 Recovery Flow Chart	See Recovery Flow Chart
Impinger Wash Bottle	Glass or Teflon	Teflon
Impinger Storage Container	See Recovery Flow Chart	See Recovery Flow Chart
Analytical Information		
Method 4 H ₂ O Determination by	Volumetric or Gravimetric	Gravimetric and Volumetric
Filter Preparation Conditions	See Method 29 Analytical Flow Chart	For Metals Analysis
Front-Half Rinse Preparation	See Method 29 Analytical Flow Chart	See Analytical Flow Chart
Back-Half Analysis	See Method 29 Analytical Flow Chart	See Analytical Flow Chart
Additional Analysis	Gravimetric (EPA Method 5)	Gravimetric (EPA Method 5)

EPA Method 5/29 Sampling Train Configuration



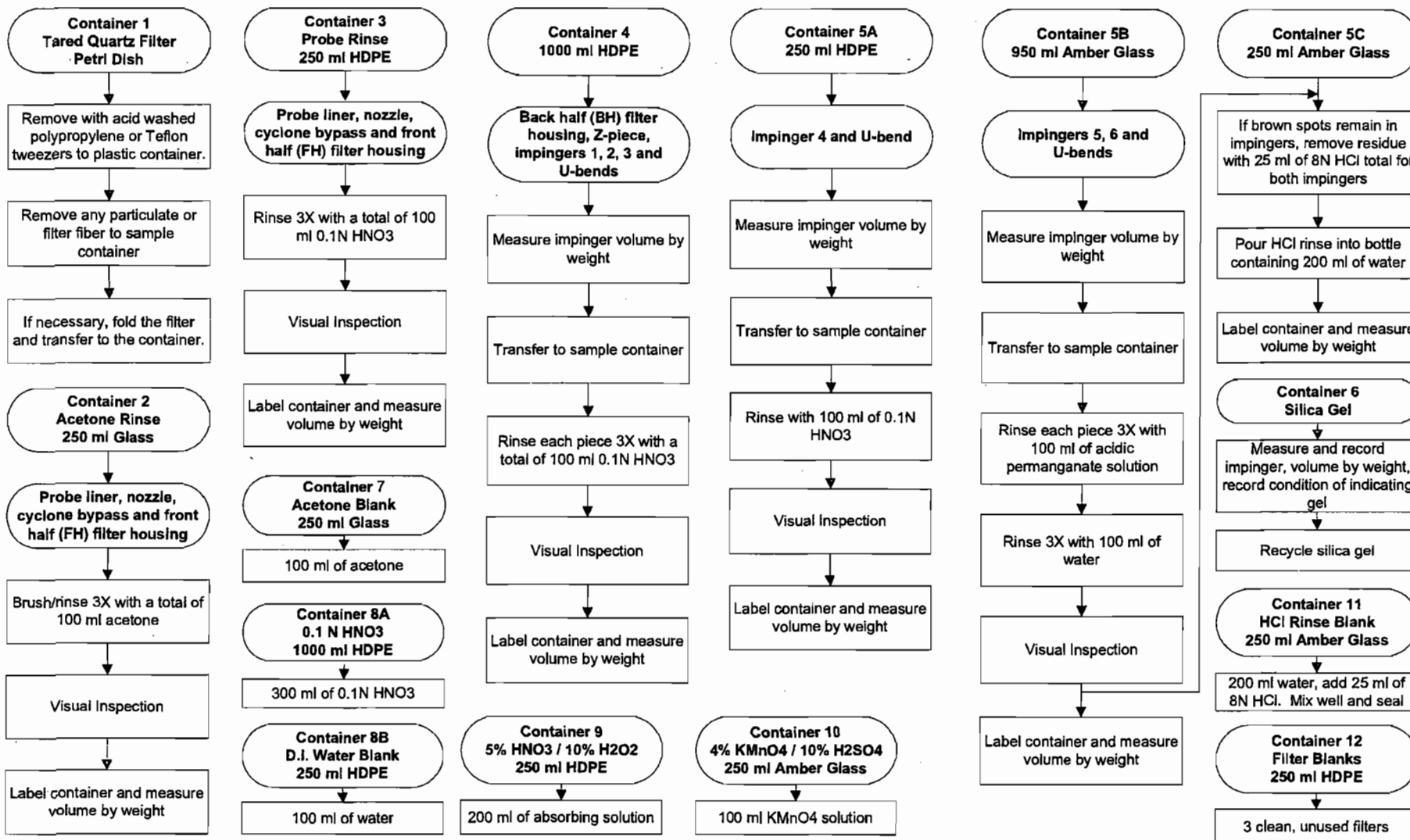
Impinger Contents

Impinger 1	Empty
Impinger 2	100 ml 5% HNO ₃ / 10% H ₂ O ₂
Impinger 3	100 ml 5% HNO ₃ / 10% H ₂ O ₂
Impinger 4	Empty
Impinger 5	100 ml 4% KMnO ₄ / 10% H ₂ SO ₄
Impinger 6	100 ml 4% KMnO ₄ / 10% H ₂ SO ₄
Impinger 7	Silica Gel

EPA Method 29 Sample Recovery Flowchart

(includes Mercury and Particulate Matter)

- Tare all sample containers before sample collection
- Mark all liquid levels and final weights on the outside of each sample container
- Seal all sample containers with Teflon tape
- If recycling, bake silica gel for two hours at 350 degrees F (175 degrees C)
- Collect one complete blank set per field test



Specification Sheet for EPA Method 4

Source Location Name(s) Units 2 FF Outlet
 Pollutant(s) to be Determined None
 Other Parameters to be Determined from Train Moisture, Flow Rate

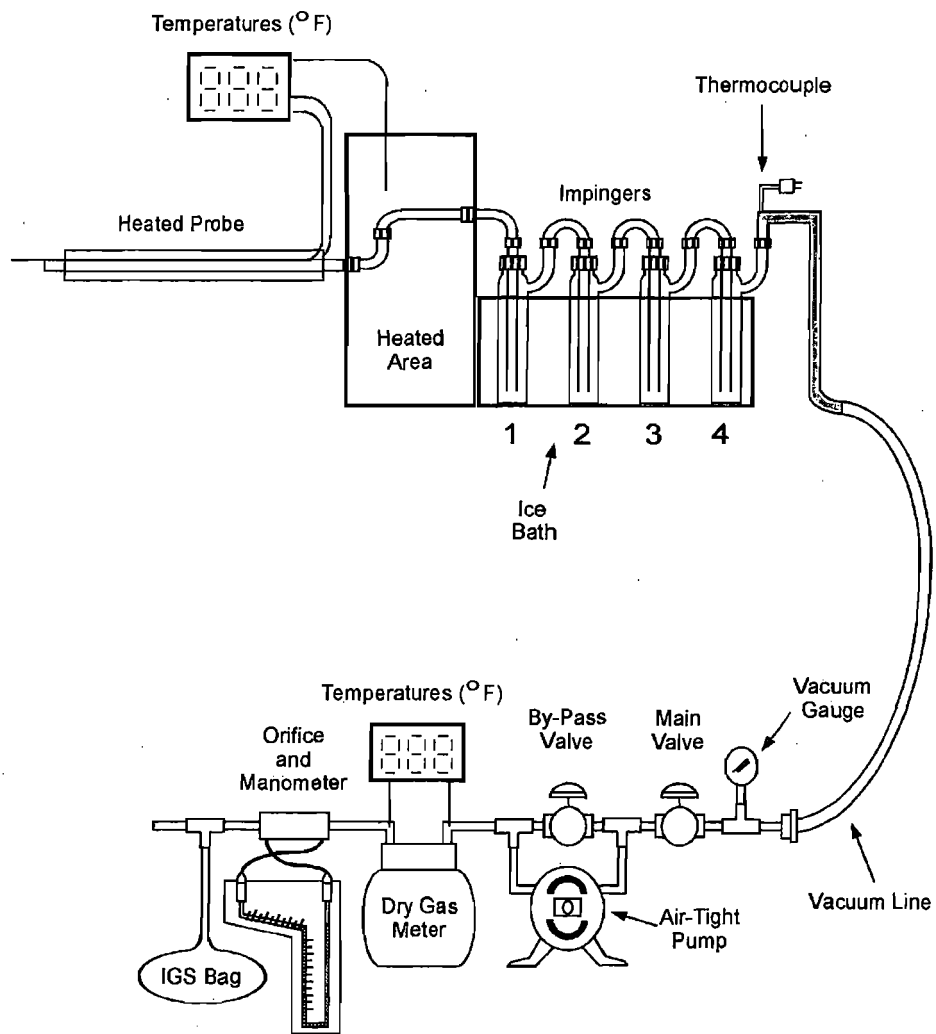
	Standard Method Specification	Actual Specification Used
Pollutant Sampling Information		
Duration of Run	N/A	453 minutes
No. of Sample Traverse Points	N/A	1
Sample Time per Point	N/A	45 minutes
Sampling Rate	Within 10% of Constant Rate	Constant Rate (±10%)
Sampling Probe		
Nozzle Material	N/A	None
Nozzle Design	N/A	N/A
Probe Liner Material	Stainless Steel, Glass, Other Metals, Plastic Tubing	Stainless Steel
Effective Probe Length	N/A	4 feet
Probe Temperature Set-Point	Prevent water condensation	None
Velocity Measuring Equipment		
Pitot Tube Design	N/A	Type S
Pitot Tube Coefficient	N/A	NA
Pitot Tube Calibration by	N/A	Wind-Tunnel
Pitot Tube Attachment	N/A	Separate Probe
Metering System Console		
Meter Type	Dry Gas Meter	Dry Gas Meter
Meter Accuracy	±2%	±1%
Meter Resolution	N/A	0.01 cubic feet
Meter Size	N/A	0.1 dcf/revolution
Meter Calibrated Against	Wet Test Meter or Standard DGM	Wet Test Meter
Pump Type	N/A	Rotary Vane
Temperature Measurements	N/A	Type K Thermocouple/Pyrometer
Temperature Resolution	5.4°F	1.0°F
ΔP Differential Pressure Gauge	Inclined Manometer or Equivalent	Inclined Manometer
ΔH Differential Pressure Gauge	Inclined Manometer or Equivalent	Inclined Manometer
Barometer	Mercury or Aneroid	Digital Barometer calibrated w/Mercury Aneroid
Filter Description		
Filter Location	In Stack or Exit of Probe	None
Filter Holder Material	Borosilicate Glass (for probe exit location)	N/A
Filter Support Material	Glass Frit	N/A
Cyclone Material	N/A	None
Filter Heater Set-Point	Prevent condensation	N/A
Filter Material	Glass Wool (in-stack) or Fiberglass Mat (out of stack)	Glass Fiber
Other Components		
Description	N/A	N/A
Location	N/A	N/A
Operating Temperature	N/A	N/A

Specification Sheet for

EPA Method 4

	<u>Standard Method Specification</u>	<u>Actual Specification Used</u>
Impinger Train Description		
Type of Glassware Connections	Ground Glass or Equivalent	Screw Joint with Silicone Gasket
Connection to Probe or Filter by	Flexible Line	Flexible Rubber Line
Number of Impingers	4	4
Impinger Stem Types		
Impinger 1	Modified-Greenburg Smith	Modified Greenburg-Smith
Impinger 2	Greenburg-Smith	Greenburg-Smith
Impinger 3	Modified Greenburg-Smith	Modified Greenburg-Smith
Impinger 4	Modified Greenburg-Smith	Modified Greenburg-Smith
Impinger 5		
Impinger 6		
Impinger 7		
Impinger 8		
Gas Density Determination		
Sample Collection	N/A	N/A
Sample Collection Medium	N/A	N/A
Sample Analysis	N/A	N/A
Sample Recovery Information		
Probe Brush Material	N/A	N/A
Probe Rinse Reagent	N/A	N/A
Probe Rinse Wash Bottle Material	N/A	N/A
Probe Rinse Storage Container	N/A	N/A
Filter Recovered?	No	No
Filter Storage Container	N/A	N/A
Impinger Contents Recovered?	No	No
Impinger Rinse Reagent	N/A	N/A
Impinger Wash Bottle	N/A	N/A
Impinger Storage Container	N/A	N/A
Analytical Information		
Method 4 H ₂ O Determination by	Volumetric or Gravimetric	Gravimetric and Volumetric
Filter Preparation Conditions	N/A	N/A
Front-Half Rinse Preparation	N/A	N/A
Back-Half Analysis	N/A	N/A
Additional Analysis	N/A	None

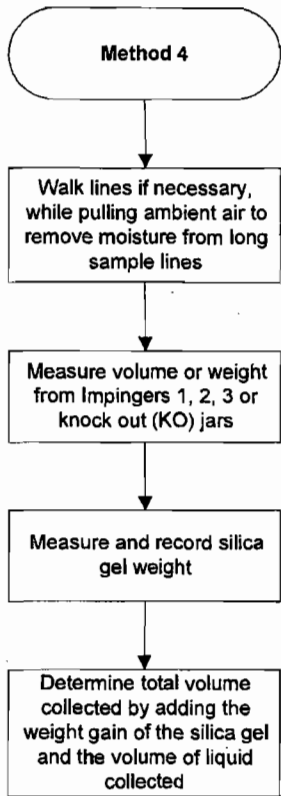
EPA Method 4 Sampling Train Configuration



Knock Out Jar Contents

Knock Out Jar 1	100 ml H ₂ O
Knock Out Jar 2	100 ml H ₂ O
Knock Out Jar 3	Empty
Knock Out Jar 4	Silica gel

EPA Method 4 Analytical Recovery Flowchart



SAMPLE CALCULATIONS

B

I herby certify that all pages contained within this Appendix have been reviewed and, to the best of my ability, verified as accurate.

QA/QC Initials: JB

Date: 4/30



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**CEM Field Sample Calculations
 for NOX FF Outlet**

Sample data taken from **Run 1**
 and Channel 1

Note: The tables presenting the results are generated electronically from raw data. It may not be possible to exactly duplicate these results using a calculator. The reference method data, results and all calculations are carried to sixteen decimal places throughout. The final table is formatted to an appropriate number of significant figures.

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1. Average of a calibration series

$$C_{mce} = \frac{(C_1 + C_2 + C_3)}{3}$$

Where:

C_1, C_2, C_3 = concentrations of 3 consecutive gas samples that are representative of the calibration gas

C_{mce} = average concentration of a calibration series = 223.823 ppmdv
 In this case the low cal series for channel 1

2a. Calibration Error Check for Hydrocarbons (5% of actual calibration gas value error allowed by Method 25A)

$$E_{HC} = \text{abs} \left| \frac{C_{mce} - C_{ma}}{C_{ma}} \right| \leq I_{cal}$$

Where:

C_{mce} = average concentration of a calibration series = 223.823 ppmdv
 In this case the low cal series for channel 1

C_{ma} = concentration of actual calibration gas value = 223.000 ppmdv

I_{cal} = limit for calibration error for hydrocarbons = 5.0%

E_{HC} = calibration error check value = NA

2b. Calibration Error Check for non-Hydrocarbons (2% of Instrument Span)

$$E = \text{abs} \left| \frac{C_{mce} - C_{ma}}{\text{Span}} \right| \leq I_{cal}$$

Where:

C_{mce} = average concentration of a calibration series = 223.823 ppmdv
 In this case the low cal series for channel 1

C_{ma} = concentration of actual calibration gas value = 223.000 ppmdv

Span = instrument span value = 448.000

I_{cal} = limit for calibration error for non-hydrocarbons = 2.0%

E = calibration error check value = 0.18% **Pass**

3. System Bias as Percent of Span Value (5% is allowed)

$$E_{Bias} = \text{abs} \left| \frac{C_{mf} - C_{mce}}{\text{Span}} \right| \leq I_{bias}$$

Where:

C_{mce} = average concentration of a calibration series = 223.823 ppmdv
 in this case the Low cal series for channel 1

C_{mf} = calibration error response concentration for Cal01 = 218.947 ppmdv

Span = instrument span value = 448.000 ppmdv

I_{bias} = limit for system bias error = 5.0%

E_{bias} = calibration bias error check value = 1.09% **Pass**

4. System Drift as Percent of Span Value (3%)

$$E_{Drift} = abs \left| \frac{C_{mf} - C_{mi}}{Span} \right| \leq I_{drift}$$

Where:

C_{mf}	= calibration error response concentration for Cal01 (final)	=	218.947	ppmdv
C_{mi}	= calibration error response concentration for Cal00 (initial)	=	219.463	ppmdv
Span	= instrument span value	=	448.000	ppmdv
I_{drift}	= limit for system drift error	=	3.0%	
E_{drift}	= calibration drift error check value	=	0.11%	Pass

5. Average Concentration for an entire Run

$$C = \frac{\sum_{i=1}^N C_i}{N}$$

Where:

C_i	= All concentration readings for the entirety of Run 1 for the monitor looking for NOX on channel 1	=	172.182	ppmdv
N	= total number of readings in Run 1	=	27	
C	= average NOX concentration for Run 1	=	184.807	ppmdv

6. Drift-Corrected Average Concentration for an entire Run

$$C_{DC} = \left(C - \frac{C_{oi} + C_{of}}{2} \right) \left(\frac{C_{ma}}{\frac{C_{mi} + C_{mf}}{2} - \frac{C_{oi} + C_{of}}{2}} \right)$$

C_{ma}	= concentration of actual calibration gas value	=	223.000	ppmdv
C	= average NOX concentration for Run 1	=	184.807	ppmdv
C_{mf}	= calibration error response concentration for Cal01 (final)	=	218.947	ppmdv
C_{mi}	= calibration error response concentration for Cal00 (initial)	=	219.463	ppmdv
C_{of}	= calibration error response concentration for Cal01 (final) for zero gas	=	-0.261	ppmdv
C_{oi}	= calibration error response concentration for Cal00 (initial) for zero gas	=	-0.247	ppmdv
C_{DC}	= drift corrected average concentration for Run 1	=	188.047	ppmdv

**CEM Emissions Sample Calculations
 for NOX FF Outlet**

Sample data taken from Run 1
 and Channel 1

Note: The tables presenting the results are generated electronically from raw data. It may not be possible to exactly duplicate these results using a calculator. The reference method data, results and all calculations are carried to sixteen decimal places throughout. The final table is formatted to an appropriate number of significant figures.

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1. NOX concentration (ppmdv)

$$C(\text{ppmdv}) = k_1 \times C_{DC} \quad \text{if dry gas}$$

$$C(\text{ppmdv}) = \frac{k_1 \times C_{DC}}{\left(1 - \frac{B_w}{100}\right)} \quad \text{if wet gas}$$

Where:

C_{DC}	= drift corrected average concentration	=	188.047	ppmdv
B_w	= actual water vapor in gas (% v/v)	=	24.433	% v/v
100	= conversion factor to change percentage to decimal	=	100	
k_1	= ppm/% to ppm conversion factor for diluent gases	=	1	
C (ppmdv)	= NOX concentration (ppmdv)	=	188.047	ppmdv

2. NOX concentration (lb/dscf)

$$C(\text{lb/dscf}) = \frac{C(\text{ppmdv}) \times MW(\text{gas})}{10^6 \text{ ppm} \times 385.3}$$

Where:

C (ppmdv)	= NOX concentration (ppmdv)	=	188.047	ppmdv
MW	= Molecular Weight of NOX gas	=	46.0055	lb/lb-mole
10^6	= conversion factor from decimal to ppm	=	1.00E+06	
385.3	= molar volume	=	385.3	dscf/lb-mole
C (lb/dscf)	= NOX concentration (lb/dscf)	=	2.245E-05	lb/dscf

3. NOX concentration (%dv)

$$C(\%dv) = C(\text{ppmdv}) \times \frac{100}{10^6}$$

Where:

C (ppmdv)	= NOX concentration (ppmdv)	=	188.047	ppmdv
100	= conversion factor from decimal to percentage	=	1.00E+02	
10^6	= conversion factor from decimal to ppm	=	1.00E+06	
C (%dv)	= NOX concentration (%dv)	=	0.0188%	%dv

4. NOX concentration (mg/dscm)

$$C(\text{mg/dscm}) = C(\text{lb/dscf}) \times k_2 \times 35.31$$

Where:

C (lb/dscf)	= NOX concentration (lb/dscf)	=	2.245E-05	lb/dscf
k ₂	= conversion factor from lb to mg	=	453515	mg/lb
35.31	= conversion factor from dscf to dscm	=	35.31	ft ³ /m ³
C (mg/dscm)	= NOX concentration (mg/dscm)	=	359.556	mg/dscm

5. NOX concentration corrected to 7% O2 (ppmdv example)

$$C(\text{ppmdv}@x\%O_2) = C(\text{ppmdv}) \times \left(\frac{20.9 - x}{20.9 - O_2} \right)$$

Where:

C (ppmdv)	= NOX concentration (ppmdv)	=	188.047	ppmdv
x	= oxygen content of corrected gas (%)	=	7.00	%
O ₂	= proportion of oxygen in the gas stream by volume (%)	=	6.900	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
C (ppmdv - O ₂)	= NOX concentration corrected to 7% O2 (ppmdv example)	=	186.706	ppmdv @ 7%O ₂

6. NOX concentration corrected to 12% CO2 (ppmdv example)

$$C(\text{ppmdv}@y\%CO_2) = C(\text{ppmdv}) \times \left(\frac{y}{CO_2} \right)$$

Where:

C (ppmdv)	= NOX concentration (ppmdv)	=	188.047	ppmdv
y	= carbon dioxide content of corrected gas (%)	=	12.00	%
CO ₂	= proportion of carbon dioxide in the gas stream by volume (%)	=	12.227	%
C (ppmdv - CO)	= NOX concentration corrected to 12% CO2 (ppmdv example)	=	184.558	ppmdv @ 12%CO ₂

7. NOX emission rate (lb/hr)

$$E_{\text{lb/hr}} = C(\text{lb/dscf}) \times Q_{\text{std}} \times 60$$

Where:

C (lb/dscf)	= NOX concentration (lb/dscf)	=	2.245E-05	lb/dscf
Q _{std}	= volumetric flow rate at standard conditions, dry basis (dscfm)	=	83417.29552	dscfm
60	= conversion factor (min/hr)	=	60	min/hr
E _{lb/hr}	= NOX emission rate (lb/hr)	=	112.379	lb/hr

**CEM RATA Sample Calculations
 for NOX FF Outlet**

Sample data taken from

Run 1
and Channel 1

Note: The tables presenting the results are generated electronically from raw data. It may not be possible to exactly duplicate these results using a calculator. The reference method data, results and all calculations are carried to sixteen decimal places throughout. The final table is formatted to an appropriate number of significant figures.

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1. NOX value difference between Plant CEM Data and CleanAir RM Data (ppm@7%O2)

$$D = C_R - C_P$$

Where:

C_P	= NOX value from Plant CEM Data	=	193.800	ppm@7%O2
C_R	= NOX value from CleanAir RM Data	=	186.706	ppm@7%O2
D	= NOX value difference between 2 methods	=	-7.094	ppm@7%O2

2. Percent Value Difference (%)

$$D \% = \frac{D}{C_R}$$

Where:

C_R	= NOX value from CleanAir RM Data	=	186.706	ppm@7%O2
D	= NOX value difference between 2 methods	=	-7.094	ppm@7%O2
$D\%$	= NOX value difference as a percentage of RM Data	=	-3.8%	

3. Average NOX Value (Plant CEM Data example) (ppm@7%O2)

$$C_{p, avg} = \frac{\sum_{i=1}^N C_{p,i}}{N}$$

Where:

$C_{p,i}$	= NOX value from Plant CEM Data for ith run	=	193.800	ppm@7%O2
N	= total number of runs included in the CEM data	=	9	
$C_{p,avg}$	= Average NOX value from Plant CEM Data	=	194.322	ppm@7%O2

4. Standard Deviation of Plant CEM data and CleanAir RM data

$$STDEV = \sqrt{\frac{\sum_{i=1}^N (C_{R,i} - C_{p,i})^2 - \frac{\left(\sum_{i=1}^N (C_{R,i} - C_{p,i})\right)^2}{N}}{N - 1}}$$

Where:

$C_{R,i}$	= NOX value from CleanAir RM Data for ith run	=	186.706	ppm@7%O2
$C_{p,i}$	= NOX value from Plant CEM Data for ith run	=	193.800	ppm@7%O2
N	= total Number of RATA Runs	=	9	
STDEV	= standard deviation of plant CEM data and CleanAir RM data	=	0.747	ppm@7%O2

5. Confidence Coefficient

$$CC = STDEV \times \frac{t}{\sqrt{N}}$$

Where:

STDEV	= standard deviation of plant CEM data and CleanAir RM data	=	0.747	ppm@7%O2
t	= confidence factor	=	2.306	
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	0.575	ppm@7%O2

6. Relative Accuracy (as a percentage of the reference method)

$$RA = \frac{abs \left| \frac{\sum_{i=1}^N (C_{R,i} - C_{p,i})}{N} \right| + abs |CC|}{\frac{\sum_{i=1}^N C_{R,i}}{N}}$$

Where:

$C_{R,i}$	= NOX value from CleanAir RM Data for ith run	=	186.706	ppm@7%O2
$C_{p,i}$	= NOX value from Plant CEM Data for ith run	=	193.800	ppm@7%O2
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	0.575	ppm@7%O2
RA	= relative accuracy (as a percentage of the reference method)	=	4.106%	
	Limit =		20.000%	

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 FF Outlet

7. Relative Accuracy (as a percentage of the applicable standard)

$$RA_{std} = \frac{abs \left| \frac{\sum_{i=1}^N (C_{R,i} - C_{P,i})}{N} \right| + abs|CC|}{C_{std}}$$

Where:

$C_{R,i}$	= NOX value from CleanAir RM Data for ith run	=	186.706	ppm@7%O2
$C_{P,i}$	= NOX value from Plant CEM Data for ith run	=	193.800	ppm@7%O2
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	0.575	
C_{std}	= NOX value of applicable standard	=	205.000	ppm@7%O2
RA	= relative accuracy (as percentage of the applicable standard)	=	3.750%	
	Limit	=	10.000%	

**CEM Field Sample Calculations
 for SO2 FF Outlet**

Sample data taken from **Run 1**
 and **Channel 2**

Note: The tables presenting the results are generated electronically from raw data. It may not be possible to exactly duplicate these results using a calculator. The reference method data, results and all calculations are carried to sixteen decimal places throughout. The final table is formatted to an appropriate number of significant figures.

040913 093018

1. Average of a calibration series

$$C_{mce} = \frac{(C_1 + C_2 + C_3)}{3}$$

Where:

C_1, C_2, C_3 = concentrations of 3 consecutive gas samples that are representative of the calibration gas

C_{mce} = average concentration of a calibration series = 44.441 ppmvd
 In this case the low cal series for channel 2

2a. Calibration Error Check for Hydrocarbons (5% of actual calibration gas value error allowed by Method 25A)

$$E_{HC} = abs \left| \frac{C_{mce} - C_{ma}}{C_{ma}} \right| \leq l_{cal}$$

Where:

C_{mce} = average concentration of a calibration series = 44.441 ppmvd
 In this case the low cal series for channel 2

C_{ma} = concentration of actual calibration gas value = 45.100 ppmvd

l_{cal} = limit for calibration error for hydrocarbons = 5.0%

E_{HC} = calibration error check value = NA

2b. Calibration Error Check for non-Hydrocarbons (2% of Instrument Span)

$$E = abs \left| \frac{C_{mce} - C_{ma}}{Span} \right| \leq l_{cal}$$

Where:

C_{mce} = average concentration of a calibration series = 44.441 ppmvd
 In this case the low cal series for channel 2

C_{ma} = concentration of actual calibration gas value = 45.100 ppmvd

Span = instrument span value = 90.800

l_{cal} = limit for calibration error for non-hydrocarbons = 2.0%

E = calibration error check value = 0.73% **Pass**

3. System Bias as Percent of Span Value (5% is allowed)

$$E_{Bias} = abs \left| \frac{C_{mf} - C_{mce}}{Span} \right| \leq l_{bias}$$

Where:

C_{mce} = average concentration of a calibration series = 44.441 ppmvd
 in this case the Low cal series for channel 2

C_{mf} = calibration error response concentration for Cal01 = 42.438 ppmvd

Span = instrument span value = 90.800 ppmvd

l_{bias} = limit for system bias error = 5.0%

E_{bias} = calibration bias error check value = 2.21% **Pass**

4. System Drift as Percent of Span Value (3%)

$$E_{Drift} = abs \left| \frac{C_{mf} - C_{mi}}{Span} \right| \leq l_{drift}$$

Where:

C_{mf}	= calibration error response concentration for Cal01 (final)	=	42.438	ppmdv
C_{mi}	= calibration error response concentration for Cal00 (initial)	=	42.817	ppmdv
Span	= instrument span value	=	90.800	ppmdv
l_{drift}	= limit for system drift error	=	3.0%	
E_{drift}	= calibration drift error check value	=	0.42%	Pass

5. Average Concentration for an entire Run

$$C = \frac{\sum_{i=1}^N C_i}{N}$$

Where:

C_i	= All concentration readings for the entirety of Run 1 for the monitor looking for SO2 on channel 2	=	12.195	ppmdv
N	= total number of readings in Run 1	=	27	
C	= average SO2 concentration for Run 1	=	16.886	ppmdv

6. Drift-Corrected Average Concentration for an entire Run

$$C_{DC} = \left(C - \frac{C_{oi} + C_{of}}{2} \right) \left(\frac{C_{ma}}{\frac{C_{mi} + C_{mf}}{2} - \frac{C_{oi} + C_{of}}{2}} \right)$$

C_{ma}	= concentration of actual calibration gas value	=	45.100	ppmdv
C	= average SO2 concentration for Run 1	=	16.886	ppmdv
C_{mf}	= calibration error response concentration for Cal01 (final)	=	42.438	ppmdv
C_{mi}	= calibration error response concentration for Cal00 (initial)	=	42.817	ppmdv
C_{of}	= calibration error response concentration for Cal01 (final) for zero gas	=	0.124	ppmdv
C_{oi}	= calibration error response concentration for Cal00 (initial) for zero gas	=	-0.036	ppmdv
C_{DC}	= drift corrected average concentration for Run 1	=	17.837	ppmdv

**CEM Emissions Sample Calculations
 for SO2 FF Outlet**

Sample data taken from Run 1
 and Channel 2

Note: The tables presenting the results are generated electronically from raw data. It may not be possible to exactly duplicate these results using a calculator. The reference method data, results and all calculations are carried to sixteen decimal places throughout. The final table is formatted to an appropriate number of significant figures.

040913 093018

1. SO2 concentration (ppmdv)

$$C(\text{ppmdv}) = k_1 \times C_{DC} \quad \text{if dry gas}$$

$$C(\text{ppmdv}) = \frac{k_1 \times C_{DC}}{\left(1 - \frac{B_w}{100}\right)} \quad \text{if wet gas}$$

Where:

C_{DC}	= drift corrected average concentration	=	17.837	ppmdv
B_w	= actual water vapor in gas (% v/v)	=	24.433	% v/v
100	= conversion factor to change percentage to decimal	=	100	
k_1	= ppm/% to ppm conversion factor for diluent gases	=	1	

C (ppmdv)	= SO2 concentration (ppmdv)	=	17.837	ppmdv
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2. SO2 concentration (lb/dscf)

$$C(\text{lb/dscf}) = \frac{C(\text{ppmdv}) \times MW(\text{gas})}{10^6 \text{ ppm} \times 385.3}$$

Where:

C (ppmdv)	= SO2 concentration (ppmdv)	=	17.837	ppmdv
MW	= Molecular Weight of SO2 gas	=	64.0628	lb/lb-mole
10^6	= conversion factor from decimal to ppm	=	1.00E+06	
385.3	= molar volume	=	385.3	dscf/lb-mole

C (lb/dscf)	= SO2 concentration (lb/dscf)	=	2.966E-06	lb/dscf
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3. SO2 concentration (%dv)

$$C(\%dv) = C(\text{ppmdv}) \times \frac{100}{10^6}$$

Where:

C (ppmdv)	= SO2 concentration (ppmdv)	=	17.837	ppmdv
100	= conversion factor from decimal to percentage	=	1.00E+02	
10^6	= conversion factor from decimal to ppm	=	1.00E+06	

C (%dv)	= SO2 concentration (%dv)	=	0.0018%	%dv
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4. SO2 concentration (mg/dscm)

$$C \text{ (mg/dscm)} = C \text{ (lb/dscf)} \times k_2 \times 35.31$$

Where:

C (lb/dscf)	= SO2 concentration (lb/dscf)	=	2.966E-06	lb/dscf
k ₂	= conversion factor from lb to mg	=	453515	mg/lb
35.31	= conversion factor from dscf to dscm	=	35.31	ft ³ /m ³
C (mg/dscm)	= SO2 concentration (mg/dscm)	=	47.493	mg/dscm

5. SO2 concentration corrected to 7% O2 (ppmdv example)

$$C(\text{ppmdv}@x\%O_2) = C(\text{ppmdv}) \times \left(\frac{20.9 - x}{20.9 - O_2} \right)$$

Where:

C (ppmdv)	= SO2 concentration (ppmdv)	=	17.837	ppmdv
x	= oxygen content of corrected gas (%)	=	7.00	%
O ₂	= proportion of oxygen in the gas stream by volume (%)	=	6.900	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
C (ppmdv - O ₂)	= SO2 concentration corrected to 7% O2 (ppmdv example)	=	17.710	ppmdv @ 7%O2

6. SO2 concentration corrected to 12% CO2 (ppmdv example)

$$C(\text{ppmdv}@y\%CO_2) = C(\text{ppmdv}) \times \left(\frac{y}{CO_2} \right)$$

Where:

C (ppmdv)	= SO2 concentration (ppmdv)	=	17.837	ppmdv
y	= carbon dioxide content of corrected gas (%)	=	12.00	%
CO ₂	= proportion of carbon dioxide in the gas stream by volume (%)	=	12.227	%
C (ppmdv - CO)	= SO2 concentration corrected to 12% CO2 (ppmdv example)	=	17.506	ppmdv @ 12%CO2

7. SO2 emission rate (lb/hr)

$$E_{lb/hr} = C \text{ (lb/dscf)} \times Q_{std} \times 60$$

Where:

C (lb/dscf)	= SO2 concentration (lb/dscf)	=	2.966E-06	lb/dscf
Q _{std}	= volumetric flow rate at standard conditions, dry basis (dscfm)	=	83417.29552	dscfm
60	= conversion factor (min/hr)	=	60	min/hr
E _{lb/hr}	= SO2 emission rate (lb/hr)	=	14.844	lb/hr

**CEM RATA Sample Calculations
 for SO2 FF Outlet**

Sample data taken from

Run 1
Channel 2

 and

Run 1
Channel 2

Note: The tables presenting the results are generated electronically from raw data. It may not be possible to exactly duplicate these results using a calculator. The reference method data, results and all calculations are carried to sixteen decimal places throughout. The final table is formatted to an appropriate number of significant figures.

040913 101039

1. SO2 value difference between Plant CEM Data and CleanAir RM Data (ppm@7%O2)

$$D = C_R - C_P$$

Where:

C_P	= SO2 value from Plant CEM Data	=	18.400	ppm@7%O2
C_R	= SO2 value from CleanAir RM Data	=	17.710	ppm@7%O2
D	= SO2 value difference between 2 methods	=	-0.690	ppm@7%O2

2. Percent Value Difference (%)

$$D \% = \frac{D}{C_R}$$

Where:

C_R	= SO2 value from CleanAir RM Data	=	17.710	ppm@7%O2
D	= SO2 value difference between 2 methods	=	-0.690	ppm@7%O2
D%	= SO2 value difference as a percentage of RM Data	=	-3.9%	

3. Average SO2 Value (Plant CEM Data example) (ppm@7%O2)

$$C_{P, avg} = \frac{\sum_{i=1}^N C_{P, i}}{N}$$

Where:

$C_{P, i}$	= SO2 value from Plant CEM Data for ith run	=	18.400	ppm@7%O2
N	= total number of runs included in the CEM data	=	9	
$C_{P, avg}$	= Average SO2 value from Plant CEM Data	=	15.267	ppm@7%O2

4. Standard Deviation of Plant CEM data and CleanAir RM data

$$STDEV = \sqrt{\frac{\sum_{i=1}^N (C_{R,i} - C_{p,i})^2 - \frac{\left(\sum_{i=1}^N (C_{R,i} - C_{p,i})\right)^2}{N}}{N - 1}}$$

Where:

$C_{R,i}$	= SO2 value from CleanAir RM Data for ith run	=	17.710	ppm@7%O2
$C_{p,i}$	= SO2 value from Plant CEM Data for ith run	=	18.400	ppm@7%O2
N	= total Number of RATA Runs	=	9	
STDEV	= standard deviation of plant CEM data and CleanAir RM data	=	0.479	ppm@7%O2

5. Confidence Coefficient

$$CC = STDEV \times \frac{t}{\sqrt{N}}$$

Where:

STDEV	= standard deviation of plant CEM data and CleanAir RM data	=	0.479	ppm@7%O2
t	= confidence factor	=	2.306	
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	0.368	ppm@7%O2

6. Relative Accuracy (as a percentage of the reference method)

$$RA = \frac{abs \left| \frac{\sum_{i=1}^N (C_{R,i} - C_{p,i})}{N} \right| + abs |CC|}{\frac{\sum_{i=1}^N C_{R,i}}{N}}$$

Where:

$C_{R,i}$	= SO2 value from CleanAir RM Data for ith run	=	17.710	ppm@7%O2
$C_{p,i}$	= SO2 value from Plant CEM Data for ith run	=	18.400	ppm@7%O2
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	0.368	ppm@7%O2
RA	= relative accuracy (as a percentage of the reference method)	=	5.326%	
	Limit =		20.000%	

Wheelabrator

CleanAir Project No. 12218

North Broward

FF Outlet

7. Relative Accuracy (as a percentage of the applicable standard)

$$RA_{std} = \frac{abs \left| \frac{\sum_{i=1}^N (C_{R,i} - C_{p,i})}{N} \right| + abs |CC|}{C_{std}}$$

Where:

$C_{R,i}$	= SO2 value from CleanAir RM Data for ith run	=	17.710	ppm@7%O2
$C_{p,i}$	= SO2 value from Plant CEM Data for ith run	=	18.400	ppm@7%O2
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	0.368	
C_{std}	= SO2 value of applicable standard	=	29.000	ppm@7%O2
RA	= relative accuracy (as percentage of the applicable standard)	=	2.726%	
	Limit	=	20.000%	

**CEM Field Sample Calculations
 for CO FF Outlet**

Sample data taken from **Run 1**
 and Channel 3

Note: The tables presenting the results are generated electronically from raw data. It may not be possible to exactly duplicate these results using a calculator. The reference method data, results and all calculations are carried to sixteen decimal places throughout. The final table is formatted to an appropriate number of significant figures.

040913 094107

1. Average of a calibration series

$$C_{mce} = \frac{(C_1 + C_2 + C_3)}{3}$$

Where:

C_1, C_2, C_3 = concentrations of 3 consecutive gas samples that are representative of the calibration gas

C_{mce} = average concentration of a calibration series = 47.903 ppmdv
 In this case the low cal series for channel 3

2a. Calibration Error Check for Hydrocarbons (5% of actual calibration gas value error allowed by Method 25A)

$$E_{HC} = abs \left| \frac{C_{mce} - C_{ma}}{C_{ma}} \right| \leq l_{cal}$$

Where:

C_{mce} = average concentration of a calibration series = 47.903 ppmdv
 In this case the low cal series for channel 3
 C_{ma} = concentration of actual calibration gas value = 47.300 ppmdv
 l_{cal} = limit for calibration error for hydrocarbons = 5.0%
 E_{HC} = calibration error check value = NA

2b. Calibration Error Check for non-Hydrocarbons (2% of Instrument Span)

$$E = abs \left| \frac{C_{mce} - C_{ma}}{Span} \right| \leq l_{cal}$$

Where:

C_{mce} = average concentration of a calibration series = 47.903 ppmdv
 In this case the low cal series for channel 3
 C_{ma} = concentration of actual calibration gas value = 47.300 ppmdv
 Span = instrument span value = 96.300
 l_{cal} = limit for calibration error for non-hydrocarbons = 2.0%
 E = calibration error check value = 0.63% **Pass**

3. System Bias as Percent of Span Value (5% is allowed)

$$E_{Bias} = abs \left| \frac{C_{mf} - C_{mce}}{Span} \right| \leq l_{bias}$$

Where:

C_{mce} = average concentration of a calibration series = 47.903 ppmdv
 In this case the Low cal series for channel 3
 C_{mf} = calibration error response concentration for Cal01 = 47.715 ppmdv
 Span = instrument span value = 96.300 ppmdv
 l_{bias} = limit for system bias error = 5.0%
 E_{bias} = calibration bias error check value = 0.20% **Pass**

4. System Drift as Percent of Span Value (3%)

$$E_{Drift} = \text{abs} \left| \frac{C_{mf} - C_{mi}}{\text{Span}} \right| \leq l_{drift}$$

Where:

C_{mf}	= calibration error response concentration for Cal01 (final)	=	47.715	ppmdv
C_{mi}	= calibration error response concentration for Cal00 (initial)	=	48.099	ppmdv
Span	= instrument span value	=	96.300	ppmdv
l_{drift}	= limit for system drift error	=	3.0%	
E_{drift}	= calibration drift error check value	=	0.40%	Pass

5. Average Concentration for an entire Run

$$C = \frac{\sum_{i=1}^N C_i}{N}$$

Where:

C_i	= All concentration readings for the entirety of Run 1 for the monitor looking for CO on channel 3	=	10.418	ppmdv
N	= total number of readings in Run 1	=	27	
C	= average CO concentration for Run 1	=	13.344	ppmdv

6. Drift-Corrected Average Concentration for an entire Run

$$C_{DC} = \left(C - \frac{C_{oi} + C_{of}}{2} \right) \left(\frac{C_{ma}}{\frac{C_{mi} + C_{mf}}{2} - \frac{C_{oi} + C_{of}}{2}} \right)$$

C_{ma}	= concentration of actual calibration gas value	=	47.300	ppmdv
C	= average CO concentration for Run 1	=	13.344	ppmdv
C_{mf}	= calibration error response concentration for Cal01 (final)	=	47.715	ppmdv
C_{mi}	= calibration error response concentration for Cal00 (initial)	=	48.099	ppmdv
C_{of}	= calibration error response concentration for Cal01 (final) for zero gas	=	0.027	ppmdv
C_{oi}	= calibration error response concentration for Cal00 (initial) for zero gas	=	0.025	ppmdv
C_{DC}	= drift corrected average concentration for Run 1	=	13.156	ppmdv

**CEM Emissions Sample Calculations
 for CO FF Outlet**

Sample data taken from Run 1
 and Channel 3

Note: The tables presenting the results are generated electronically from raw data. It may not be possible to exactly duplicate these results using a calculator. The reference method data, results and all calculations are carried to sixteen decimal places throughout. The final table is formatted to an appropriate number of significant figures.

040913 094107

1. CO concentration (ppmdv)

$$C(\text{ppmdv}) = k_1 \times C_{DC} \quad \text{if dry gas}$$

$$C(\text{ppmdv}) = \frac{k_1 \times C_{DC}}{\left(1 - \frac{B_w}{100}\right)} \quad \text{if wet gas}$$

Where:

C_{DC}	= drift corrected average concentration	=	13.156	ppmdv
B_w	= actual water vapor in gas (% v/v)	=	24.433	% v/v
100	= conversion factor to change percentage to decimal	=	100	
k_1	= ppm/% to ppm conversion factor for diluent gases	=	1	

$C(\text{ppmdv})$	= CO concentration (ppmdv)	=	13.156	ppmdv
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2. CO concentration (lb/dscf)

$$C(\text{lb/dscf}) = \frac{C(\text{ppmdv}) \times MW(\text{gas})}{10^6 \text{ ppm} \times 385.3}$$

Where:

$C(\text{ppmdv})$	= CO concentration (ppmdv)	=	13.156	ppmdv
MW	= Molecular Weight of CO gas	=	28.0106	lb/lb-mole
10^6	= conversion factor from decimal to ppm	=	1.00E+06	
385.3	= molar volume	=	385.3	dscf/lb-mole

$C(\text{lb/dscf})$	= CO concentration (lb/dscf)	=	9.564E-07	lb/dscf
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3. CO concentration (%dv)

$$C(\%dv) = C(\text{ppmdv}) \times \frac{100}{10^6}$$

Where:

$C(\text{ppmdv})$	= CO concentration (ppmdv)	=	13.156	ppmdv
100	= conversion factor from decimal to percentage	=	1.00E+02	
10^6	= conversion factor from decimal to ppm	=	1.00E+06	

$C(\%dv)$	= CO concentration (%dv)	=	0.0013%	%dv
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4. CO concentration (mg/dscm)

$$C(\text{mg/dscm}) = C(\text{lb/dscf}) \times k_2 \times 35.31$$

Where:

C (lb/dscf)	= CO concentration (lb/dscf)	=	9.564E-07	lb/dscf
k_2	= conversion factor from lb to mg	=	453515	mg/lb
35.31	= conversion factor from dscf to dscm	=	35.31	ft ³ /m ³
C (mg/dscm)	= CO concentration (mg/dscm)	=	15.316	mg/dscm

5. CO concentration corrected to 7% O₂ (ppmdv example)

$$C(\text{ppmdv}@x\%O_2) = C(\text{ppmdv}) \times \left(\frac{20.9 - x}{20.9 - O_2} \right)$$

Where:

C (ppmdv)	= CO concentration (ppmdv)	=	13.156	ppmdv
x	= oxygen content of corrected gas (%)	=	7.00	%
O ₂	= proportion of oxygen in the gas stream by volume (%)	=	6.900	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
C (ppmdv - O ₂)	= CO concentration corrected to 7% O ₂ (ppmdv example)	=	13.062	ppmdv @ 7%O ₂

6. CO concentration corrected to 12% CO₂ (ppmdv example)

$$C(\text{ppmdv}@y\%CO_2) = C(\text{ppmdv}) \times \left(\frac{y}{CO_2} \right)$$

Where:

C (ppmdv)	= CO concentration (ppmdv)	=	13.156	ppmdv
y	= carbon dioxide content of corrected gas (%)	=	12.00	%
CO ₂	= proportion of carbon dioxide in the gas stream by volume (%)	=	12.227	%
C (ppmdv - CO)	= CO concentration corrected to 12% CO ₂ (ppmdv example)	=	12.912	ppmdv @ 12%CO ₂

7. CO emission rate (lb/hr)

$$E_{\text{lb/hr}} = C(\text{lb/dscf}) \times Q_{\text{std}} \times 60$$

Where:

C (lb/dscf)	= CO concentration (lb/dscf)	=	9.564E-07	lb/dscf
Q _{std}	= volumetric flow rate at standard conditions, dry basis (dscfm)	=	83417.29552	dscfm
60	= conversion factor (min/hr)	=	60	min/hr
E _{lb/hr}	= CO emission rate (lb/hr)	=	4.787	lb/hr

**CEM RATA Sample Calculations
 for CO FF Outlet**

Sample data taken from

Run 1
Channel 3

 and

Channel 3

Note: The tables presenting the results are generated electronically from raw data. It may not be possible to exactly duplicate these results using a calculator. The reference method data, results and all calculations are carried to sixteen decimal places throughout. The final table is formatted to an appropriate number of significant figures.

040913 102057

1. CO value difference between Plant CEM Data and CleanAir RM Data (ppm@7%O2)

$$D = C_R - C_P$$

Where:

C_P	= CO value from Plant CEM Data	=	13.300	ppm@7%O2
C_R	= CO value from CleanAir RM Data	=	13.062	ppm@7%O2
D	= CO value difference between 2 methods	=	-0.238	ppm@7%O2

2. Percent Value Difference (%)

$$D \% = \frac{D}{C_R}$$

Where:

C_R	= CO value from CleanAir RM Data	=	13.062	ppm@7%O2
D	= CO value difference between 2 methods	=	-0.238	ppm@7%O2
$D\%$	= CO value difference as a percentage of RM Data	=	-1.8%	

3. Average CO Value (Plant CEM Data example) (ppm@7%O2)

$$C_{p, avg} = \frac{\sum_{i=1}^N C_{p,i}}{N}$$

Where:

$C_{p,i}$	= CO value from Plant CEM Data for ith run	=	13.300	ppm@7%O2
N	= total number of runs included in the CEM data	=	9	
$C_{p, avg}$	= Average CO value from Plant CEM Data	=	10.811	ppm@7%O2

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 FF Outlet

4. Standard Deviation of Plant CEM data and CleanAir RM data

$$STDEV = \sqrt{\frac{\sum_{i=1}^N (C_{R,i} - C_{P,i})^2 - \frac{\left(\sum_{i=1}^N (C_{R,i} - C_{P,i})\right)^2}{N}}{N - 1}}$$

Where:

$C_{R,i}$	= CO value from CleanAir RM Data for ith run	=	13.062	ppm@7%O2
$C_{P,i}$	= CO value from Plant CEM Data for ith run	=	13.300	ppm@7%O2
N	= total Number of RATA Runs	=	9	
STDEV	= standard deviation of plant CEM data and CleanAir RM data	=	0.059	ppm@7%O2

5. Confidence Coefficient

$$CC = STDEV \times \frac{t}{\sqrt{N}}$$

Where:

STDEV	= standard deviation of plant CEM data and CleanAir RM data	=	0.059	ppm@7%O2
t	= confidence factor	=	2.306	
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	0.045	ppm@7%O2

6. Relative Accuracy (as a percentage of the reference method)

$$RA = \frac{abs \left| \frac{\sum_{i=1}^N (C_{R,i} - C_{P,i})}{N} \right| + abs |CC|}{\frac{\sum_{i=1}^N C_{R,i}}{N}}$$

Where:

$C_{R,i}$	= CO value from CleanAir RM Data for ith run	=	13.062	ppm@7%O2
$C_{P,i}$	= CO value from Plant CEM Data for ith run	=	13.300	ppm@7%O2
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	0.045	ppm@7%O2
RA	= relative accuracy (as a percentage of the reference method)	=	2.152%	
	Limit =		10.000%	

7. Relative Accuracy (as a percentage of the applicable standard)

$$RA_{std} = \frac{abs \left| \frac{\sum_{i=1}^N (C_{R,i} - C_{P,i})}{N} \right| + abs|CC|}{C_{std}}$$

Where:

$C_{R,i}$	= CO value from CleanAir RM Data for ith run	=	13.062	ppm@7%O2
$C_{P,i}$	= CO value from Plant CEM Data for ith run	=	13.300	ppm@7%O2
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	0.045	
C_{std}	= CO value of applicable standard	=	0.000	ppm@7%O2
RA	= relative accuracy (as percentage of the applicable standard)	=	NA	
	Limit =		NA	

8. Average Absolute Difference

$$AAD = \frac{\sum_{i=1}^N abs|C_{R,i} - C_{P,i}|}{N}$$

Where:

$C_{R,i}$	= CO value from CleanAir RM Data for ith run	=	13.062	ppm@7%O2
$C_{P,i}$	= CO value from Plant CEM Data for ith run	=	13.300	ppm@7%O2
N	= total Number of RATA Runs	=	9	
AAD	= average absolute difference	=	0.183	ppm@7%O2
	Limit =		5.000	ppm@7%O2

**CEM Field Sample Calculations
 for CO2 FF Outlet**

Sample data taken from **Run: 094122**
 and Channel 5

Note: The tables presenting the results are generated electronically from raw data. It may not be possible to exactly duplicate these results using a calculator. The reference method data, results and all calculations are carried to sixteen decimal places throughout. The final table is formatted to an appropriate number of significant figures.

040913 094122

1. Average of a calibration series

$$C_{mce} = \frac{(C_1 + C_2 + C_3)}{3}$$

Where:

C_1, C_2, C_3 = concentrations of 3 consecutive gas samples that are representative of the calibration gas

C_{mce} = average concentration of a calibration series = 9.493 %dv
 In this case the low cal series for channel 5

2a. Calibration Error Check for Hydrocarbons (5% of actual calibration gas value error allowed by Method 25A)

$$E_{HC} = abs \left| \frac{C_{mce} - C_{ma}}{C_{ma}} \right| \leq l_{cal}$$

Where:

C_{mce} = average concentration of a calibration series = 9.493 %dv
 In this case the low cal series for channel 5
 C_{ma} = concentration of actual calibration gas value = 9.530 %dv
 l_{cal} = limit for calibration error for hydrocarbons = 5.0%

E_{HC} = calibration error check value = NA

2b. Calibration Error Check for non-Hydrocarbons (2% of Instrument Span)

$$E = abs \left| \frac{C_{mce} - C_{ma}}{Span} \right| \leq l_{cal}$$

Where:

C_{mce} = average concentration of a calibration series = 9.493 %dv
 In this case the low cal series for channel 5
 C_{ma} = concentration of actual calibration gas value = 9.530 %dv
 Span = instrument span value = 17.900
 l_{cal} = limit for calibration error for non-hydrocarbons = 2.0%

E = calibration error check value = 0.21% **Pass**

3. System Bias as Percent of Span Value (5% is allowed)

$$E_{Bias} = abs \left| \frac{C_{mf} - C_{mce}}{Span} \right| \leq l_{bias}$$

Where:

C_{mce} = average concentration of a calibration series = 9.493 %dv
 in this case the Low cal series for channel 5
 C_{mf} = calibration error response concentration for Cal01 = 9.567 %dv
 Span = instrument span value = 17.900 %dv
 l_{bias} = limit for system bias error = 5.0%

E_{bias} = calibration bias error check value = 0.42% **Pass**

4. System Drift as Percent of Span Value (3%)

$$E_{Drift} = abs \left| \frac{C_{mf} - C_{mi}}{Span} \right| \leq l_{drift}$$

Where:

C_{mf}	= calibration error response concentration for Cal01 (final)	= 9.567	%dv
C_{mi}	= calibration error response concentration for Cal00 (initial)	= 9.480	%dv
Span	= instrument span value	= 17.900	%dv
l_{drift}	= limit for system drift error	= 3.0%	
E_{drift}	= calibration drift error check value	= 0.49%	Pass

5. Average Concentration for an entire Run

$$C = \frac{\sum_{i=1}^N C_i}{N}$$

Where:

C_i	= All concentration readings for the entirety of Run 1 for the monitor looking for CO2 on channel 5	= 11.357	%dv
N	= total number of readings in Run 1	= 27	
C	= average CO2 concentration for Run 1	= 12.233	%dv

6. Drift-Corrected Average Concentration for an entire Run

$$C_{DC} = \left(C - \frac{C_{oi} + C_{of}}{2} \right) \left(\frac{C_{ma}}{\frac{C_{mi} + C_{mf}}{2} - \frac{C_{oi} + C_{of}}{2}} \right)$$

C_{ma}	= concentration of actual calibration gas value	= 9.530	%dv
C	= average CO2 concentration for Run 1	= 12.233	%dv
C_{mf}	= calibration error response concentration for Cal01 (final)	= 9.567	%dv
C_{mi}	= calibration error response concentration for Cal00 (initial)	= 9.480	%dv
C_{of}	= calibration error response concentration for Cal01 (final) for zero gas	= -0.010	%dv
C_{oi}	= calibration error response concentration for Cal00 (initial) for zero gas	= -0.092	%dv
C_{DC}	= drift corrected average concentration for Run 1	= 12.227	%dv

**CEM Emissions Sample Calculations
 for CO2 FF Outlet**

Sample data taken from Run 1
 and Channel 5

Note: The tables presenting the results are generated electronically from raw data. It may not be possible to exactly duplicate these results using a calculator. The reference method data, results and all calculations are carried to sixteen decimal places throughout. The final table is formatted to an appropriate number of significant figures.

040913 094122

1. CO2 concentration (ppmdv)

$$C(\text{ppmdv}) = k_1 \times C_{DC} \quad \text{if} \quad \text{dry} \quad \text{gas}$$

$$C(\text{ppmdv}) = \frac{k_1 \times C_{DC}}{\left(1 - \frac{B_w}{100}\right)} \quad \text{if} \quad \text{wet} \quad \text{gas}$$

Where:

C_{DC}	= drift corrected average concentration	=	12.227	%dv
B_w	= actual water vapor in gas (% v/v)	=	24.433	% v/v
100	= conversion factor to change percentage to decimal	=	100	
k_1	= ppm/% to ppm conversion factor for diluent gases	=	10000	
$C(\text{ppmdv})$	= CO2 concentration (ppmdv)	=	122268.431	ppmdv

2. CO2 concentration (lb/dscf)

$$C(\text{lb} / \text{dscf}) = \frac{C(\text{ppmdv}) \times MW(\text{gas})}{10^6 \text{ ppm} \times 385.3}$$

Where:

$C(\text{ppmdv})$	= CO2 concentration (ppmdv)	=	122268.431	ppmdv
MW	= Molecular Weight of CO2 gas	=	44.01	lb/lb-mole
10^6	= conversion factor from decimal to ppm	=	1.00E+06	
385.3	= molar volume	=	385.3	dscf/lb-mole
$C(\text{lb/dscf})$	= CO2 concentration (lb/dscf)	=	1.397E-02	lb/dscf

3. CO2 concentration (%dv)

$$C(\% \text{dv}) = C(\text{ppmdv}) \times \frac{100}{10^6}$$

Where:

$C(\text{ppmdv})$	= CO2 concentration (ppmdv)	=	122268.431	ppmdv
100	= conversion factor from decimal to percentage	=	1.00E+02	
10^6	= conversion factor from decimal to ppm	=	1.00E+06	
$C(\% \text{dv})$	= CO2 concentration (%dv)	=	12.2268%	%dv

4. CO2 concentration (mg/dscm)

$$C \text{ (mg/dscm)} = C \text{ (lb/dscf)} \times k_2 \times 35.31$$

Where:

C (lb/dscf)	= CO2 concentration (lb/dscf)	=	1.397E-02	lb/dscf
k ₂	= conversion factor from lb to mg	=	453515	mg/lb
35.31	= conversion factor from dscf to dscm	=	35.31	ft ³ /m ³
C (mg/dscm)	= CO2 concentration (mg/dscm)	=	223643.265	mg/dscm

5. CO2 concentration corrected to 7% O2 (ppmdv example)

$$C \text{ (ppmdv@x\%O}_2\text{)} = C \text{ (ppmdv)} \times \left(\frac{20.9 - x}{20.9 - O_2} \right)$$

Where:

C (ppmdv)	= CO2 concentration (ppmdv)	=	122268.431	ppmdv
x	= oxygen content of corrected gas (%)	=	7.00	%
O ₂	= proportion of oxygen in the gas stream by volume (%)	=	6.900	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
C (ppmdv - O ₂)	= CO2 concentration corrected to 7% O2 (ppmdv example)	=	121396.191	ppmdv @ 7%O ₂

6. CO2 concentration corrected to 12% CO2 (ppmdv example)

$$C \text{ (ppmdv@y\%CO}_2\text{)} = C \text{ (ppmdv)} \times \left(\frac{y}{CO_2} \right)$$

Where:

C (ppmdv)	= CO2 concentration (ppmdv)	=	122268.431	ppmdv
y	= carbon dioxide content of corrected gas (%)	=	12.00	%
CO ₂	= proportion of carbon dioxide in the gas stream by volume (%)	=	12.227	%
C (ppmdv - CO ₂)	= CO2 concentration corrected to 12% CO2 (ppmdv example)	=	120000.000	ppmdv @ 12%CO ₂

7. CO2 emission rate (lb/hr)

$$E_{lb/hr} = C \text{ (lb/dscf)} \times Q_{std} \times 60$$

Where:

C (lb/dscf)	= CO2 concentration (lb/dscf)	=	1.397E-02	lb/dscf
Q _{std}	= volumetric flow rate at standard conditions, dry basis (dscfm)	=	83417.29552	dscfm
60	= conversion factor (min/hr)	=	60	min/hr
E _{lb/hr}	= CO2 emission rate (lb/hr)	=	69899.498	lb/hr

**CEM RATA Sample Calculations
 for CO2 FF Outlet**

Sample data taken from

Run 1
and Channel 5

Note: The tables presenting the results are generated electronically from raw data. It may not be possible to exactly duplicate these results using a calculator. The reference method data, results and all calculations are carried to sixteen decimal places throughout. The final table is formatted to an appropriate number of significant figures.

040913 102135

1. CO2 value difference between Plant CEM Data and CleanAir RM Data (lb/hr)

$$D = C_R - C_P$$

Where:

C_P	= CO2 value from Plant CEM Data	=	65599.200	lb/hr
C_R	= CO2 value from CleanAir RM Data	=	69899.498	lb/hr
D	= CO2 value difference between 2 methods	=	4300.298	lb/hr

2. Percent Value Difference (%)

$$D \% = \frac{D}{C_R}$$

Where:

C_R	= CO2 value from CleanAir RM Data	=	69899.498	lb/hr
D	= CO2 value difference between 2 methods	=	4300.298	lb/hr
D%	= CO2 value difference as a percentage of RM Data	=	6.2%	

3. Average CO2 Value (Plant CEM Data example) (lb/hr)

$$C_{p, avg} = \frac{\sum_{i=1}^N C_{p,i}}{N}$$

Where:

$C_{p,i}$	= CO2 value from Plant CEM Data for ith run	=	65599.200	lb/hr
N	= total number of runs included in the CEM data	=	9	
$C_{p,avg}$	= Average CO2 value from Plant CEM Data	=	66307.289	lb/hr

4. Standard Deviation of Plant CEM data and CleanAir RM data

$$STDEV = \sqrt{\frac{\sum_{i=1}^N (C_{R,i} - C_{p,i})^2 - \frac{\left(\sum_{i=1}^N (C_{R,i} - C_{p,i})\right)^2}{N}}{N - 1}}$$

Where:

$C_{R,i}$	= CO2 value from CleanAir RM Data for ith run	=	69899.498	lb/hr
$C_{p,i}$	= CO2 value from Plant CEM Data for ith run	=	65599.200	lb/hr
N	= total Number of RATA Runs	=	9	
STDEV	= standard deviation of plant CEM data and CleanAir RM data	=	2967.827	lb/hr

5. Confidence Coefficient

$$CC = STDEV \times \frac{t}{\sqrt{N}}$$

Where:

STDEV	= standard deviation of plant CEM data and CleanAir RM data	=	2967.827	lb/hr
t	= confidence factor	=	2.306	
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	2281.270	lb/hr

6. Relative Accuracy (as a percentage of the reference method)

$$RA = \frac{abs \left| \frac{\sum_{i=1}^N (C_{R,i} - C_{p,i})}{N} \right| + abs |CC|}{\frac{\sum_{i=1}^N C_{R,i}}{N}}$$

Where:

$C_{R,i}$	= CO2 value from CleanAir RM Data for ith run	=	69899.498	lb/hr
$C_{p,i}$	= CO2 value from Plant CEM Data for ith run	=	65599.200	lb/hr
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	2281.270	lb/hr
RA	= relative accuracy (as a percentage of the reference method)	=	3.681%	
	Limit =		20.000%	

**USEPA Method 2 (Velocity & Flow Rate)
 Sampling, Velocity and Moisture Sample Calculations**

Sample data taken from Run 1

Note: The tables presenting the results are generated electronically from raw data. It may not be possible to exactly duplicate these results using a calculator. The reference method data, results, and all calculations are carried to sixteen decimal places throughout. The final table is formatted to an appropriate number of significant figures.

040913 102548

1. Sample gas pressure (in. Hg)

$$P_s = P_{bar} + \left(\frac{P_g}{13.6} \right)$$

Where:

P_{bar}	= barometric pressure (in. Hg)	=	29.80	in. Hg
P_g	= sample gas static pressure (in. H ₂ O)	=	-8.00	in. H ₂ O
13.6	= conversion factor (in. H ₂ O/in. Hg)	=	13.6	in. H ₂ O/in. Hg
P_s	= absolute sample gas pressure (in. Hg)	=	29.21	in. Hg

2. Actual water vapor pressure at sample gas temperature less than 212°F (in. Hg)

$$P_v = \frac{e^{\left(\frac{18.3036 - \frac{3816.44}{\frac{5}{9}(T_s - 32) + 273.15 - 46.13}}{25.4} \right)}}{25.4}$$

Where:

T_s	= average sample gas temperature (°F)	=	311.92	°F
18.3036	= Antoine coefficient	=	18.3036	°K
3816.44	= Antoine coefficient	=	3816.44	°K
273.15	= temperature conversion factor	=	273.15	°K
46.13	= Antoine coefficient	=	46.13	°K
25.4	= conversion factor	=	25.4	mm Hg/in. Hg
5/9	= Fahrenheit to Celsius conversion factor	=	5/9	°C/°F
32	= temperature conversion (°F)	=	32	°F
P_v	= vapor pressure, actual (in. Hg)	=	29.21	in. Hg

3. Water vapor pressure at gas temperature greater than 212°F (in. Hg)

$$P_v = P_s$$

Where:

P_s	= absolute sample gas pressure (in. Hg)	=	29.21	in. Hg
P_v	= water vapor pressure, actual (in. Hg)	=	29.21	in. Hg

4. Actual water vapor in gas (% by volume)

$$B_w = \text{MINIMUM} [B_{wo}, B_{ws}]$$

Where:

B_{ws}	= proportion of water vapor in the gas stream by volume at saturated conditions	=	1.0000	
B_{wo}	= proportion of water measured in the gas stream by volume	=	0.2443	
B_w	= actual water vapor in gas	=	0.2443	
		=	24.43	%

Moisture from Method 26A Run 1

5. Nitrogen (plus carbon monoxide) in gas stream (% by volume, dry)

$$N_2 + CO = 100 - CO_2 - O_2$$

Where:

CO_2	= proportion of carbon dioxide in the gas stream by volume (%)	=	12.2	%
O_2	= proportion of oxygen in the gas stream by volume (%)	=	6.9	%
100	= conversion factor (%)	=	100	%
N_2+CO	= proportion of nitrogen and CO in the gas stream by volume (%)	=	80.87	%

6. Molecular weight of dry gas stream (lb/lb-mole)

$$M_d = (M_{CO_2}) \frac{(CO_2)}{(100)} + (M_{O_2}) \frac{(O_2)}{(100)} + (M_{N_2+CO}) \frac{(N_2 + CO)}{(100)}$$

Where:

M_{CO_2}	= molecular weight of carbon dioxide (lb/lb-mole)	=	44.00	lb/lb-mole
M_{O_2}	= molecular weight of oxygen (lb/lb-mole)	=	32.00	lb/lb-mole
M_{N_2+CO}	= molecular weight of nitrogen and carbon monoxide (lb/lb-mole)	=	28.00	lb/lb-mole
CO_2	= proportion of carbon dioxide in the gas stream by volume (%)	=	12.2	%
O_2	= proportion of oxygen in the gas stream by volume (%)	=	6.9	%
N_2+CO	= proportion of nitrogen and CO in the gas stream by volume (%)	=	80.9	%
100	= conversion factor (%)	=	100	%
M_d	= dry molecular weight of sample gas (lb/lb-mole)	=	30.23	lb/lb-mole

7. Molecular weight of sample gas (lb/lb-mole)

$$M_s = (M_d)(1 - B_w) + (M_{H_2O})(B_w)$$

Where:

B_w	= proportion of water vapor in the gas stream by volume	=	0.2443	
M_d	= dry molecular weight of sample gas (lb/lb-mole)	=	30.23	lb/lb-mole
M_{H_2O}	= molecular weight of water (lb/lb-mole)	=	18.00	lb/lb-mole
M_s	= molecular weight of sample gas, wet basis (lb/lb-mole)	=	27.24	lb/lb-mole

8. Velocity of sample gas (ft/sec)

$$V_s = (K_p)(C_p)(\sqrt{\Delta P}) \left(\sqrt{\frac{(T_s + 460)}{(M_s)(P_s)}} \right)$$

Where:

K_p	= velocity pressure constant	=	85.49	
C_p	= pitot tube coefficient	=	0.82	
M_s	= wet molecular weight of sample gas, wet basis (lb/lb-mole)	=	27.24	lb/lb-mole
P_s	= absolute sample gas pressure (in. Hg)	=	29.21	in. Hg
T_s	= average sample gas temperature (°F)	=	311.92	°F
$\sqrt{\Delta P}$	= average square roots of velocity heads of sample gas (in. H ₂ O)	=	0.624	√in. H ₂ O
460	= °F to °R conversion constant	=	460	
V_s	= sample gas velocity (ft/sec)	=	43.05	ft/sec

9. Volumetric flow rate of sample gas at actual gas conditions (acfm)

$$Q_a = (60)(A_s)(V_s)$$

Where:

A_s	= cross sectional area of sampling location (ft ²)	=	64.00	ft ²
V_s	= sample gas velocity (ft/sec)	=	43.05	ft/sec
60	conversion factor (sec/min)	=	60	sec/min
Q_a	= volumetric flow rate at actual conditions (acfm)	=	165,298	acfm

10. Total flow of sample gas (scfm)

$$Q_s = (Q_a) \left(\frac{P_s}{29.92} \right) \left(\frac{68 + 460}{T_s + 460} \right)$$

Where:

Q_a	= volumetric flow rate at actual conditions (acfm)	=	165,298	acfm
P_s	= absolute sample gas pressure (in. Hg)	=	29.21	in. Hg
29.92	= standard pressure (in. Hg)	=	29.92	in. Hg
T_s	= average sample gas temperature (°F)	=	311.9	°F
68	= standard temperature (°F)	=	68	°F
460	= °F to °R conversion constant	=	460	
Q_s	= volumetric flow rate at standard conditions, wet basis (scfm)	=	110,389	scfm

11. Dry flow of sample gas (dscfm)

$$Q_{std} = (Q_s)(1 - B_w)$$

Where:

B_w	= proportion of water vapor in the gas stream by volume	=	0.2443	
Q_s	= volumetric flow rate at standard conditions, wet basis (scfm)	=	110,389	scfm
Q_{std}	= volumetric flow rate at standard conditions, dry basis (dscfm)	=	83,417	dscfm

12. Dry flow of sample gas corrected to 7%O₂ (dscfm)

$$Q_{std7} = (Q_{std}) \left(\frac{20.9 - O_2}{20.9 - 7} \right)$$

Where:

Q _{std}	= volumetric flow rate at standard conditions, dry basis (dscfm)	=	83,417	dscfm
O ₂	= proportion of oxygen in the gas stream by volume (%)	=	6.9	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
7	= oxygen content of corrected gas (%)	=	7.0	%
Q _{std7}	= volumetric flow rate at STP and 7%O ₂ , dry basis (dscfm)	=	84,017	dscfm

13. Hourly time basis conversion of volumetric flow rate (Q_{std} example)

$$Q_{std-hr} = (Q_{std-min}) (60)$$

Where

Q _{std-min}	= volumetric flow rate, english units (ft ³ /min)	=	83,417	dscfm
60	= conversion factor (min/hr)	=	60	min/hr
Q _{std-hr}	= volumetric flow rate, hourly basis (dscf/hr)	=	5,005,038	dscf/hr

14. Metric Conversion of Gas Volumes (Q_{std} example)

$$Q_{std-metric} = (Q_{std-english}) \left(\frac{60}{35.31} \right)$$

Where:

Q _{std-english}	= volumetric flow rate, english units (ft ³ /min)	=	83,417	dscfm
35.31	= conversion factor (ft ³ /m ³)	=	35.31	ft ³ /m ³
60	= conversion factor (min/hr)	=	60	min/hr
Q _{std-metric}	= volumetric flow rate, metric units (m ³ /hr)	=	141,746	dry std m ³ /hr

15. Standard to Normal Conversion of Gas Volumes (Q_{std} example)

$$Q_{Normal} = (Q_{std-metric}) \left(\frac{32 + 460}{68 + 460} \right)$$

Where:

Q _{std-metric}	= volumetric flow rate, metric units (dry std m ³ /hr)	=	141,746	dry std m ³ /hr
32	= normal temperature (°F)	=	32	°F
68	= standard temperature (°F)	=	68	°F
460	= standard temperature in Rankine (68°F)	=	460	
Q _{Normal}	= volumetric flow rate, metric units (dry Nm ³ /hr)	=	132,081	dry Nm ³ /hr

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PARAMETERS

C

I hereby certify that all pages contained within this Appendix have been reviewed and, to the best of my ability, verified as accurate.

QA/QC Initials: SB

Date: 4/30



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**Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 1**

Continuous Emissions Monitoring Parameters

Run Number 1
Date (2013) Mar 19
Start Time 8:15
End Time 8:42
Elapsed Time (hh:mm) 00:27

Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	166.02	5.98	8.07	8.39	10.83
Concentration (ppmdv)	166.02	5.98	8.07		108266.94
Concentration (%dv)	0.017	0.001	0.001	8.395	10.827
Concentration @7%O2 (ppm)	184.53	6.65	8.98		120341.14
Mass Rate (lb/hr)	106.90	5.37	3.17		66692.33

Run Number 2
Date (2013) Mar 19
Start Time 8:57
End Time 9:24
Elapsed Time (hh:mm) 00:27

Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	168.81	10.60	6.55	8.43	10.82
Concentration (ppmdv)	168.81	10.60	6.55		108172.67
Concentration (%dv)				8.428	10.817
Concentration @7%O2 (ppm)	188.13	11.82	7.30		120553.63
Mass Rate (lb/hr)	105.58	9.23	2.49		64721.82

Run Number 3
Date (2013) Mar 19
Start Time 9:44
End Time 10:11
Elapsed Time (hh:mm) 00:27

Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	158.24	4.41	9.85	8.86	10.43
Concentration (ppmdv)	158.24	4.41	9.85		104334.21
Concentration (%dv)				8.860	10.433
Concentration @7%O2 (ppm)	182.69	5.09	11.37		120453.91
Mass Rate (lb/hr)	102.46	3.98	3.88		64621.72

**Wheelabrator
Clean Air Project No. 12218
North Broward
Unit 1**

Continuous Emissions Monitoring Parameters

Run Number 4
Date (2013) Mar 19
Start Time 10:33
End Time 11:00
Elapsed Time (hh:mm) 00:27

Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	151.19	2.96	10.02	9.10	10.29
Concentration (ppmdv)	151.19	2.96	10.02		102942.07
Concentration (%dv)				9.100	10.294
Concentration @7%O2 (ppm)	178.10	3.49	11.80		121260.37
Mass Rate (lb/hr)	98.51	2.69	3.97		64161.40

Run Number 5
Date (2013) Mar 19
Start Time 11:17
End Time 11:44
Elapsed Time (hh:mm) 00:27

Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	155.80	2.99	10.78	8.95	10.43
Concentration (ppmdv)	155.80	2.99	10.78		104269.44
Concentration (%dv)				8.948	10.427
Concentration @7%O2 (ppm)	181.20	3.48	12.53		121263.58
Mass Rate (lb/hr)	102.12	2.73	4.30		65379.07

Run Number 6
Date (2013) Mar 19
Start Time 12:01
End Time 12:28
Elapsed Time (hh:mm) 00:27

Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	170.07	1.94	7.83	8.73	10.59
Concentration (ppmdv)	170.07	1.94	7.83		105863.83
Concentration (%dv)				8.728	10.586
Concentration @7%O2 (ppm)	194.22	2.21	8.95		120893.35
Mass Rate (lb/hr)	109.58	1.74	3.07		65249.05

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SS CEM Version 06-2004a

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**Wheelabrator
Clean Air Project No. 12218
North Broward
Unit 1**

Continuous Emissions Monitoring Parameters

Run Number	7				
Date (2013)	Mar 19				
Start Time	12:54				
End Time	13:21				
Elapsed Time (hh:mm)	00:27				
Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	167.19	2.16	9.51	8.64	10.40
Concentration (ppmdv)	167.19	2.16	9.51		104043.15
Concentration (%dv)				8.641	10.404
Concentration @7%O2 (ppm)	189.57	2.45	10.78		117966.52
Mass Rate (lb/hr)	109.97	1.98	3.81		65466.78
Run Number	8				
Date (2013)	Mar 19				
Start Time	13:37				
End Time	14:04				
Elapsed Time (hh:mm)	00:27				
Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	175.08	1.27	7.57	8.45	10.80
Concentration (ppmdv)	175.08	1.27	7.57		108045.34
Concentration (%dv)				8.452	10.805
Concentration @7%O2 (ppm)	195.50	1.42	8.45		120650.83
Mass Rate (lb/hr)	113.52	1.15	2.99		67016.92

**Wheelabrator
Clean Air Project No. 12218
North Broward
Unit 1**

Continuous Emissions Monitoring Parameters

Run Number	9				
Date (2013)	Mar 19				
Start Time	14:18				
End Time	14:45				
Elapsed Time (hh:mm)	00:27				
Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	164.25	1.54	9.00	8.95	10.36
Concentration (ppmdv)	164.25	1.54	9.00		103564.58
Concentration (%dv)				8.953	10.356
Concentration @7%O2 (ppm)	191.11	1.79	10.48		120497.68
Mass Rate (lb/hr)	109.24	1.43	3.65		65894.29
Run Number	10				
Date (2013)	Mar 19				
Start Time	14:59				
End Time	15:26				
Elapsed Time (hh:mm)	00:27				
Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	152.40	0.95	8.45	8.85	10.40
Concentration (ppmdv)	152.40	0.95	8.45		104000.50
Concentration (%dv)				8.851	10.400
Concentration @7%O2 (ppm)	175.82	1.09	9.75		119978.47
Mass Rate (lb/hr)	98.98	0.86	3.34		64613.64

Wheelabrator North Broward, Inc.
 Clean Air Project No: 12218
 Unit 1 FF Outlet

**USEPA Method 2 (Velocity & Flow Rate)
 Sampling, Velocity and Moisture Parameters**

Run No.		1	2	3	4	Average
Date (2013)		Mar 19	Mar 19	Mar 19	Mar 19	
Start Time (approx.)		08:25	09:01	09:50	10:39	
Stop Time (approx.)		08:40	09:11	10:02	10:48	
Sampling Conditions						
C _p	Pitot tube coefficient	0.8190	0.8190	0.8190	0.8190	
P _g	Static pressure (in. H ₂ O)	-9.2000	-9.2000	-9.9000	-9.9000	
A _s	Sample location area (ft ²)	64.0000	64.0000	64.0000	64.0000	
P _{bar}	Barometric pressure (in. Hg)	29.80	29.80	29.80	29.80	29.8000
O ₂	Oxygen (dry volume %)	8.3946	8.4275	8.8602	9.0998	8.6955
CO ₂	Carbon dioxide (dry volume %)	10.8267	10.8173	10.4334	10.2942	10.5929
N ₂ +CO	Nitrogen plus carbon monoxide (dry volume %)	80.7787	80.7552	80.7064	80.6060	80.7116
T _s	Sample temperature (°F)	300.4800	301.1600	301.8000	301.6000	301.2600
Flow Results						
P _s	Sample gas pressure, absolute (in. Hg)	29.1235	29.1235	29.0721	29.0721	29.0978
P _v	Vapor pressure, actual (in. Hg)	29.1235	29.1235	29.0721	29.0721	29.0978
B _{w0}	Moisture measured in sample (% by volume)	21.9778	21.9778	21.9456	21.9456	21.9617
B _{ws}	Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	100.0000	100.0000
B _w	Actual water vapor in gas (% by volume)	21.9778	21.9778	21.9456	21.9456	21.9617
√ΔP	Velocity head (√in. H ₂ O)	0.6496	0.6313	0.6531	0.6576	0.6479
M _d	MW of sample gas, dry (lb/lb-mole)	30.0681	30.0679	30.0238	30.0111	30.0427
M _s	MW of sample gas, wet (lb/lb-mole)	27.4158	27.4156	27.3851	27.3752	27.3979
V _s	Velocity of sample (ft/sec)	44.3914	43.1559	44.7330	45.0430	44.3308
Q _a	Volumetric flow rate, actual (acfm)	170,463	165,719	171,775	172,965	170,230
Q _s	Volumetric flow rate, standard (scfm)	115,202	111,895	115,682	116,514	114,823
Q _{std}	Volumetric flow rate, dry standard (dscfm)	89,883	87,303	90,295	90,945	89,606
Q _{std7}	Volumetric flow rate, dry std@7%O ₂ (dscfm)	80,865	78,337	78,211	77,206	78,655
Q _a	Volumetric flow rate, actual (acf/hr)	10,227,771	9,943,112	10,306,490	10,377,913	10,213,821
Q _s	Volumetric flow rate, standard (scf/hr)	6,912,092	6,713,712	6,940,935	6,990,870	6,889,402
Q _{std}	Volumetric flow rate, dry standard (dscf/hr)	5,392,966	5,238,185	5,417,704	5,456,681	5,376,384
Q _a	Volumetric flow rate, actual (m ³ /hr)	289,656	281,595	291,886	293,909	289,261
Q _s	Volumetric flow rate, standard (m ³ /hr)	195,755	190,136	196,571	197,986	195,112
Q _{std}	Volumetric flow rate, dry standard (dry m ³ /hr)	152,732	148,348	153,433	154,536	152,262
Q _{std7}	Volumetric flow rate, dry std@7%O ₂ (dry m ³ /hr)	137,408	133,113	132,900	131,191	133,653
Q _s	Volumetric flow rate, normal (Nm ³ /hr)	182,408	177,172	183,169	184,487	181,809
Q _{std}	Volumetric flow rate, dry normal (Nm ³ /hr)	142,318	138,234	142,971	144,000	141,881
Q _{std7}	Volumetric flow rate, dry normal @7%O ₂ (Nm ³ /hr)	128,039	124,037	123,838	122,246	124,540

Comments:

Average includes 4 runs.

Moisture obtained from Method 26A Runs 1 and 2

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Wheelabrator North Broward, Inc.
 Clean Air Project No: 12218
 Unit 1 FF Outlet

USEPA Method 2 (Velocity & Flow Rate) Sampling, Velocity and Moisture Parameters

Run No.		5	6	7	Average
Date (2013)		Mar 19	Mar 19	Mar 19	
Start Time (approx.)		11:25	12:08	13:06	
Stop Time (approx.)		11:39	12:17	13:20	
Sampling Conditions					
C _p	Pitot tube coefficient	0.8190	0.8190	0.8190	
P _g	Static pressure (in. H ₂ O)	-9.9000	-9.9000	-9.8000	
A _s	Sample location area (ft ²)	64.0000	64.0000	64.0000	
P _{bar}	Barometric pressure (in. Hg)	29.80	29.80	29.80	29.8000
O ₂	Oxygen (dry volume %)	8.9480	8.7281	8.6406	8.7722
CO ₂	Carbon dioxide (dry volume %)	10.4269	10.5864	10.4043	10.4725
N ₂ +CO	Nitrogen plus carbon monoxide (dry volume %)	80.6251	80.6856	80.9551	80.7552
T _s	Sample temperature (°F)	302.1200	301.8400	302.2400	302.0667
Flow Results					
P _s	Sample gas pressure, absolute (in. Hg)	29.0721	29.0721	29.0794	29.0745
P _v	Vapor pressure, actual (in. Hg)	29.0721	29.0721	29.0794	29.0745
B _{w0}	Moisture measured in sample (% by volume)	21.7133	21.7133	22.1605	21.8624
B _{ws}	Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	100.0000
B _w	Actual water vapor in gas (% by volume)	21.7133	21.7133	22.1605	21.8624
√ΔP	Velocity head (√in. H ₂ O)	0.6603	0.6491	0.6656	0.6584
M _d	MW of sample gas, dry (lb/lb-mole)	30.0262	30.0429	30.0103	30.0265
M _s	MW of sample gas, wet (lb/lb-mole)	27.4149	27.4280	27.3488	27.3972
V _s	Velocity of sample (ft/sec)	45.2100	44.4242	45.6253	45.0865
Q _a	Volumetric flow rate, actual (acfm)	173,606	170,589	175,201	173,132
Q _s	Volumetric flow rate, standard (scfm)	116,867	114,878	117,952	116,565
Q _{std}	Volumetric flow rate, dry standard (dscfm)	91,491	89,934	91,813	91,079
Q _{std7}	Volumetric flow rate, dry std@7%O ₂ (dscfm)	78,669	78,753	80,976	79,466
Q _a	Volumetric flow rate, actual (acf/hr)	10,416,381	10,235,338	10,512,079	10,387,933
Q _s	Volumetric flow rate, standard (scf/hr)	7,011,996	6,892,655	7,077,092	6,993,914
Q _{std}	Volumetric flow rate, dry standard (dscf/hr)	5,489,457	5,396,029	5,508,776	5,464,754
Q _a	Volumetric flow rate, actual (m ³ /hr)	294,998	289,871	297,708	294,192
Q _s	Volumetric flow rate, standard (m ³ /hr)	198,584	195,204	200,427	198,072
Q _{std}	Volumetric flow rate, dry standard (dry m ³ /hr)	155,465	152,819	156,012	154,765
Q _{std7}	Volumetric flow rate, dry std@7%O ₂ (dry m ³ /hr)	133,677	133,820	137,598	135,032
Q _s	Volumetric flow rate, normal (Nm ³ /hr)	185,044	181,895	186,762	184,567
Q _{std}	Volumetric flow rate, dry normal (Nm ³ /hr)	144,865	142,399	145,375	144,213
Q _{std7}	Volumetric flow rate, dry normal @7%O ₂ (Nm ³ /hr)	124,563	124,696	128,216	125,825

Comments:

Average includes 3 runs.

Moisture obtained from Method 26A Run 3 and Method 5/29 Run 1

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Wheelabrator North Broward, Inc.
 Clean Air Project No: 12218
 Unit 1 FF Outlet

**USEPA Method 2 (Velocity & Flow Rate)
 Sampling, Velocity and Moisture Parameters**

Run No.	8	9	10	Average	
Date (2013)	Mar 19	Mar 19	Mar 19		
Start Time (approx.)	13:41	14:22	15:00		
Stop Time (approx.)	13:58	14:39	15:13		
Sampling Conditions					
C _p	Pitot tube coefficient	0.8190	0.8190	0.8190	
P _g	Static pressure (in. H ₂ O)	-9.5000	-9.6000	-9.6000	
A _s	Sample location area (ft ²)	64.0000	64.0000	64.0000	
P _{bar}	Barometric pressure (in. Hg)	29.80	29.80	29.80	29.8000
O ₂	Oxygen (dry volume %)	8.4523	8.9533	8.8511	8.7522
CO ₂	Carbon dioxide (dry volume %)	10.8045	10.3565	10.4001	10.5203
N ₂ +CO	Nitrogen plus carbon monoxide (dry volume %)	80.7432	80.6902	80.7488	80.7274
T _s	Sample temperature (°F)	302.7600	302.8000	302.7600	302.7733
Flow Results					
P _s	Sample gas pressure, absolute (in. Hg)	29.1015	29.0941	29.0941	29.0966
P _v	Vapor pressure, actual (in. Hg)	29.1015	29.0941	29.0941	29.0966
B _{wo}	Moisture measured in sample (% by volume)	22.1605	22.1605	22.1605	22.1605
B _{ws}	Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	100.0000
B _w	Actual water vapor in gas (% by volume)	22.1605	22.1605	22.1605	22.1605
√ΔP	Velocity head (√in. H ₂ O)	0.6566	0.6732	0.6573	0.6624
M _d	MW of sample gas, dry (lb/lb-mole)	30.0668	30.0152	30.0181	30.0333
M _s	MW of sample gas, wet (lb/lb-mole)	27.3928	27.3526	27.3548	27.3667
V _s	Velocity of sample (ft/sec)	44.9722	46.1461	45.0572	45.3918
Q _a	Volumetric flow rate, actual (acfm)	172,693	177,201	173,020	174,305
Q _s	Volumetric flow rate, standard (scfm)	116,272	119,270	116,462	117,335
Q _{std}	Volumetric flow rate, dry standard (dscfm)	90,505	92,840	90,654	91,333
Q _{std7}	Volumetric flow rate, dry std@7%O ₂ (dscfm)	81,050	79,793	78,581	79,808
Q _a	Volumetric flow rate, actual (acf/hr)	10,361,589	10,632,051	10,381,175	10,458,272
Q _s	Volumetric flow rate, standard (scf/hr)	6,976,309	7,156,224	6,987,730	7,040,088
Q _{std}	Volumetric flow rate, dry standard (dscf/hr)	5,430,328	5,570,372	5,439,217	5,479,972
Q _a	Volumetric flow rate, actual (m ³ /hr)	293,446	301,106	294,001	296,184
Q _s	Volumetric flow rate, standard (m ³ /hr)	197,573	202,668	197,897	199,379
Q _{std}	Volumetric flow rate, dry standard (dry m ³ /hr)	153,790	157,756	154,042	155,196
Q _{std7}	Volumetric flow rate, dry std@7%O ₂ (dry m ³ /hr)	137,722	135,587	133,528	135,612
Q _s	Volumetric flow rate, normal (Nm ³ /hr)	184,102	188,850	184,404	185,785
Q _{std}	Volumetric flow rate, dry normal (Nm ³ /hr)	143,304	147,000	143,539	144,614
Q _{std7}	Volumetric flow rate, dry normal @7%O ₂ (Nm ³ /hr)	128,332	126,343	124,423	126,366

Comments:

Average includes 3 runs.

Moisture obtained from Method 5/29 Run 1

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Wheelabrator North Broward, Inc.
 Clean Air Project No: 12218
 Unit 1 FF Outlet

**USEPA Method 26A (HCl)
 Sampling, Velocity and Moisture Parameters**

Run No.	1	2	3	Average
Date (2013)	Mar 19	Mar 19	Mar 19	
Start Time (approx.)	08:15	09:48	11:19	
Stop Time (approx.)	09:15	10:48	12:19	
Sampling Conditions				
Y_d Dry gas meter correction factor	0.9879	0.9879	0.9879	
P_g Static pressure (in. H ₂ O)	-9.2000	-9.9000	-9.9000	
A_s Sample location area (ft ²)	64.0000	64.0000	64.0000	
P_{bar} Barometric pressure (in. Hg)	29.80	29.80	29.80	29.8000
O_2 Oxygen (dry volume %)	8.5200	8.8100	9.0600	8.7967
CO_2 Carbon dioxide (dry volume %)	10.6100	10.5000	10.3300	10.4800
N_2+CO Nitrogen plus carbon monoxide (dry volume %)	80.8700	80.6900	80.6100	80.7233
V_{lc} Total Liquid collected (ml)	236.50	237.30	233.10	
V_m Volume metered, meter conditions (ft ³)	40.7850	40.9650	40.9400	
T_m Dry gas meter temperature (°F)	78.0417	77.5833	79.5417	
T_s Sample temperature (°F)	300.5833	301.7500	302.3333	301.5556
ΔH Meter box orifice pressure drop (in. H ₂ O)	1.5000	1.5000	1.5000	
θ Total sampling time (min)	60.0	60.0	60.0	
Flow Results				
V_{wstd} Volume of water collected (ft ³)	11.1297	11.1673	10.9697	11.0889
V_{mstd} Volume metered, standard (dscf)	39.5109	39.7191	39.5508	39.5936
P_s Sample gas pressure, absolute (in. Hg)	29.1235	29.0721	29.0721	29.0892
P_v Vapor pressure, actual (in. Hg)	29.1235	29.0721	29.0721	29.0892
B_{wo} Moisture measured in sample (% by volume)	21.9778	21.9456	21.7133	21.8789
B_{ws} Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	100.0000
B_w Actual water vapor in gas (% by volume)	21.9778	21.9456	21.7133	21.8789
M_d MW of sample gas, dry (lb/lb-mole)	30.0384	30.0324	30.0152	30.0287
M_s MW of sample gas, wet (lb/lb-mole)	27.3926	27.3918	27.4063	27.3969

Comments:

Average includes 3 runs.

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Wheelabrator North Broward, Inc.
 Clean Air Project No: 12218
 Unit 1.FF Outlet

**USEPA Method 5/29 (Particulate/Metals)
 Sampling, Velocity and Moisture Parameters**

Run No.		1	2	3	Average
Date (2013)		Mar 19	Mar 20	Mar 20	
Start Time (approx.)		12:58	07:43	10:17	
Stop Time (approx.)		15:14	09:55	12:28	
Sampling Conditions					
Y _d	Dry gas meter correction factor	0.9854	0.9854	0.9854	
C _p	Pitot tube coefficient	0.8250	0.8250	0.8250	
P _g	Static pressure (in. H ₂ O)	-9.8000	-10.4000	-10.4000	
A _s	Sample location area (ft ²)	64.0000	64.0000	64.0000	
P _{bar}	Barometric pressure (in. Hg)	29.80	29.80	29.80	29.8000
D _n	Nozzle diameter (in.)	0.2760	0.2760	0.2760	
O ₂	Oxygen (dry volume %)	8.6700	9.2700	9.3200	9.0867
CO ₂	Carbon dioxide (dry volume %)	10.6500	9.9900	9.5500	10.0633
N ₂ +CO	Nitrogen plus carbon monoxide (dry volume %)	80.6800	80.7400	81.1300	80.8500
V _{lc}	Total Liquid collected (ml)	453.70	493.20	467.60	
V _m	Volume metered, meter conditions (ft ³)	79.3900	83.0800	84.1050	
T _m	Dry gas meter temperature (°F)	90.0600	78.7400	88.3400	
T _s	Sample temperature (°F)	304.4000	305.2800	304.9600	304.8800
ΔH	Meter box orifice pressure drop (in. H ₂ O)	1.2704	1.3600	1.3876	
θ	Total sampling time (min)	125.0	125.0	125.0	
Flow Results					
V _{wstd}	Volume of water collected (ft ³)	21.3511	23.2100	22.0053	22.1888
V _{mstd}	Volume metered, standard (dscf)	74.9967	80.1493	79.7230	78.2897
P _s	Sample gas pressure, absolute (in. Hg)	29.0794	29.0353	29.0353	29.0500
P _v	Vapor pressure, actual (in. Hg)	29.0794	29.0353	29.0353	29.0500
B _{wv}	Moisture measured in sample (% by volume)	22.1605	22.4556	21.6314	22.0825
B _{ws}	Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	100.0000
B _w	Actual water vapor in gas (% by volume)	22.1605	22.4556	21.6314	22.0825
√ΔP	Velocity head (√in. H ₂ O)	0.6645	0.6924	0.6981	0.6850
M _d	MW of sample gas, dry (lb/lb-mole)	30.0508	29.9692	29.9008	29.9736
M _s	MW of sample gas, wet (lb/lb-mole)	27.3803	27.2814	27.3265	27.3294
V _s	Velocity of sample (ft/sec)	45.9197	47.9980	48.3432	47.4203
%I	Isokinetic sampling (%)	100.3586	103.2753	100.8777	101.5039
Q _a	Volumetric flow rate, actual (acfm)	176,331	184,312	185,638	182,094
Q _s	Volumetric flow rate, standard (scfm)	118,377	123,405	124,344	122,042
Q _{std}	Volumetric flow rate, dry standard (dscfm)	92,144	95,694	97,447	95,095
Q _{std7}	Volumetric flow rate, dry std@7%O ₂ (dscfm)	81,074	80,066	81,182	80,774
Q _a	Volumetric flow rate, actual (acf/hr)	10,579,888	11,058,744	11,138,274	10,925,635
Q _s	Volumetric flow rate, standard (scf/hr)	7,102,616	7,404,300	7,460,668	7,322,528
Q _{std}	Volumetric flow rate, dry standard (dscf/hr)	5,528,644	5,741,616	5,846,821	5,705,694
Q _a	Volumetric flow rate, actual (m ³ /hr)	299,629	313,190	315,442	309,420
Q _s	Volumetric flow rate, standard (m ³ /hr)	201,150	209,694	211,291	207,378
Q _{std}	Volumetric flow rate, dry standard (dry m ³ /hr)	156,574	162,606	165,585	161,589
Q _{std7}	Volumetric flow rate, dry std@7%O ₂ (dry m ³ /hr)	137,763	136,051	137,948	137,254
Q _s	Volumetric flow rate, normal (Nm ³ /hr)	187,435	195,397	196,884	193,239
Q _{std}	Volumetric flow rate, dry normal (Nm ³ /hr)	145,899	151,519	154,295	150,571
Q _{std7}	Volumetric flow rate, dry normal @7%O ₂ (Nm ³ /hr)	128,370	126,775	128,543	127,896

Comments:

Average includes 3 runs.

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**Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 2**

Continuous Emissions Monitoring Parameters

Run Number	1				
Date (2013)	Mar 22				
Start Time	7:11				
End Time	7:35				
Elapsed Time (hh:mm)	00:24				
Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	169.50	0.28	11.41	7.86	11.34
Concentration (ppmdv)	169.50	0.28	11.41		113375.05
Concentration (%dv)	0.017	0.000	0.001	7.859	11.338
Concentration @7%O2 (ppm)	180.66	0.30	12.16		120845.61
Mass Rate (lb/hr)	106.08	0.24	4.35		67881.37
Run Number	2				
Date (2013)	Mar 22				
Start Time	7:47				
End Time	8:11				
Elapsed Time (hh:mm)	00:24				
Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	174.13	0.32	6.45	7.08	12.03
Concentration (ppmdv)	174.13	0.32	6.45		120322.52
Concentration (%dv)				7.080	12.032
Concentration @7%O2 (ppm)	175.14	0.32	6.48		121017.90
Mass Rate (lb/hr)	107.76	0.28	2.43		71232.12
Run Number	3				
Date (2013)	Mar 22				
Start Time	8:35				
End Time	8:59				
Elapsed Time (hh:mm)	00:24				
Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	184.99	0.26	7.54	7.05	12.01
Concentration (ppmdv)	184.99	0.26	7.54		120061.07
Concentration (%dv)				7.052	12.006
Concentration @7%O2 (ppm)	185.68	0.26	7.57		120513.77
Mass Rate (lb/hr)	113.68	0.22	2.82		70580.86

**Wheelabrator
Clean Air Project No. 12218
North Broward
Unit 2**

Continuous Emissions Monitoring Parameters

Run Number	4				
Date (2013)	Mar 22				
Start Time	9:10				
End Time	9:34				
Elapsed Time (hh:mm)	00:24				
Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	187.34	0.36	8.77	7.01	12.09
Concentration (ppmdv)	187.34	0.36	8.77		120936.01
Concentration (%dv)				7.011	12.094
Concentration @7%O2 (ppm)	187.49	0.36	8.77		121028.82
Mass Rate (lb/hr)	113.80	0.30	3.24		70278.35
Run Number	5				
Date (2013)	Mar 22				
Start Time	9:45				
End Time	10:09				
Elapsed Time (hh:mm)	00:24				
Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	184.39	0.33	7.62	7.07	12.03
Concentration (ppmdv)	184.39	0.33	7.62		120305.90
Concentration (%dv)				7.067	12.031
Concentration @7%O2 (ppm)	185.28	0.33	7.66		120887.72
Mass Rate (lb/hr)	110.23	0.27	2.77		68801.82
Run Number	6				
Date (2013)	Mar 22				
Start Time	10:21				
End Time	10:45				
Elapsed Time (hh:mm)	00:24				
Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	190.52	0.54	8.91	7.27	11.78
Concentration (ppmdv)	190.52	0.54	8.91		117776.61
Concentration (%dv)				7.274	11.778
Concentration @7%O2 (ppm)	194.36	0.55	9.09		120146.96
Mass Rate (lb/hr)	112.06	0.44	3.19		66270.55

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**Wheelabrator
Clean Air Project No. 12218
North Broward
Unit 2**

Continuous Emissions Monitoring Parameters

Run Number 7
Date (2013) Mar 22
Start Time 10:58
End Time 11:22
Elapsed Time (hh:mm) 00:24

Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	185.38	0.97	7.94	7.02	11.97
Concentration (ppmdv)	185.38	0.97	7.94		119664.69
Concentration (%dv)				7.022	11.966
Concentration @7%O2 (ppm)	185.67	0.97	7.95		119850.95
Mass Rate (lb/hr)	111.34	0.81	2.90		68751.43

Run Number 8
Date (2013) Mar 22
Start Time 11:34
End Time 11:58
Elapsed Time (hh:mm) 00:24

Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	178.96	0.41	7.41	7.29	11.86
Concentration (ppmdv)	178.96	0.41	7.41		118603.74
Concentration (%dv)				7.289	11.860
Concentration @7%O2 (ppm)	182.76	0.42	7.57		121121.75
Mass Rate (lb/hr)	106.57	0.34	2.69		67561.85

Run Number 9
Date (2013) Mar 22
Start Time 12:11
End Time 12:35
Elapsed Time (hh:mm) 00:24

Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	159.49	-0.09	5.13	7.40	11.74
Concentration (ppmdv)	159.49	-0.09	5.13		117388.88
Concentration (%dv)				7.399	11.739
Concentration @7%O2 (ppm)	164.21	-0.09	5.28		120860.38
Mass Rate (lb/hr)	92.79	-0.07	1.82		65336.43

**Wheelabrator
Clean Air Project No. 12218
North Broward
Unit 2**

Continuous Emissions Monitoring Parameters

Run Number 10
Date (2013) Mar 22
Start Time 12:48
End Time 13:12
Elapsed Time (hh:mm) 00:24

Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	176.26	0.47	5.49	7.49	11.56
Concentration (ppmdv)	176.26	0.47	5.49		115557.39
Concentration (%dv)				7.491	11.556
Concentration @7%O2 (ppm)	182.72	0.49	5.69		119787.39
Mass Rate (lb/hr)	106.44	0.40	2.02		66753.52

Run Number 11
Date (2013) Mar 22
Start Time 13:26
End Time 13:47
Elapsed Time (hh:mm) 00:21

Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)				8.08	10.99
Concentration (ppmdv)					109866.84
Concentration (%dv)				8.083	10.987
Concentration @7%O2 (ppm)					119150.79
Mass Rate (lb/hr)					68000.55

Run Number 12
Date (2013) Mar 22
Start Time 14:02
End Time 14:23
Elapsed Time (hh:mm) 00:21

Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)				7.24	11.75
Concentration (ppmdv)					117529.59
Concentration (%dv)				7.235	11.753
Concentration @7%O2 (ppm)					119553.00
Mass Rate (lb/hr)					68088.56

Continuous Emissions Monitoring Parameters

Run Number	Aborted Run				
Date (2013)	Mar 21				
Start Time	7:53				
End Time	8:20				
Elapsed Time (hh:mm)	00:27				
Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	179.08	0.68	7.93	7.50	11.66
Concentration (ppmdv)	179.08	0.68	7.93		116643.34
Concentration (%dv)	0.018	0.000	0.001	7.500	11.664
Concentration @7%O2 (ppm)	185.76	0.70	8.22		120995.68
Mass Rate (lb/hr)					70538.52

Wheelabrator North Broward, Inc.
 Clean Air Project No: 12218
 Unit 2 FF Outlet

**USEPA Method 2 (Velocity & Flow Rate)
 Sampling, Velocity and Moisture Parameters**

Run No.	1
Date (2013)	Mar 21
Start Time (approx.)	08:25
Stop Time (approx.)	08:40

Sampling Conditions

C _p	Pitot tube coefficient	0.8190
P _g	Static pressure (in. H ₂ O)	-9.2000
A _s	Sample location area (ft ²)	64.0000
P _{bar}	Barometric pressure (in. Hg)	29.80
O ₂	Oxygen (dry volume %)	7.5000
CO ₂	Carbon dioxide (dry volume %)	11.6643
N ₂ +CO	Nitrogen plus carbon monoxide (dry volume %)	80.8357
T _s	Sample temperature (°F)	300.4800

Flow Results

P _s	Sample gas pressure, absolute (in. Hg)	29.1235
P _v	Vapor pressure, actual (in. Hg)	29.1235
B _{w0}	Moisture measured in sample (% by volume)	23.5676
B _{ws}	Saturated moisture content (% by volume)	100.0000
B _w	Actual water vapor in gas (% by volume)	23.5676
√ΔP	Velocity head (in. H ₂ O)	0.6496
M _d	MW of sample gas, dry (lb/lb-mole)	30.1663
M _s	MW of sample gas, wet (lb/lb-mole)	27.2990
V _s	Velocity of sample (ft/sec)	44.4862
Q _a	Volumetric flow rate, actual (acfm)	170,827
Q _s	Volumetric flow rate, standard (scfm)	115,448
Q _{std}	Volumetric flow rate, dry standard (dscfm)	88,239
Q _{std7}	Volumetric flow rate, dry std@7%O ₂ (dscfm)	85,065
Q _a	Volumetric flow rate, actual (acf/hr)	10,249,621
Q _s	Volumetric flow rate, standard (scf/hr)	6,926,859
Q _{std}	Volumetric flow rate, dry standard (dscf/hr)	5,294,367
Q _a	Volumetric flow rate, actual (m ³ /hr)	290,275
Q _s	Volumetric flow rate, standard (m ³ /hr)	196,173
Q _{std}	Volumetric flow rate, dry standard (dry m ³ /hr)	149,940
Q _{std7}	Volumetric flow rate, dry std@7%O ₂ (dry m ³ /hr)	144,546
Q _s	Volumetric flow rate, normal (Nm ³ /hr)	182,797
Q _{std}	Volumetric flow rate, dry normal (Nm ³ /hr)	139,716
Q _{std7}	Volumetric flow rate, dry normal @7%O ₂ (Nm ³ /hr)	134,691

Comments:

Average includes 1 run.

Wheelabrator North Broward, Inc.
 Clean Air Project No: 12218
 Unit 2 FF Outlet

**USEPA Methods 2 & 4 (Velocity & Moisture)
 Sampling, Velocity and Moisture Parameters**

Run No.	1	2	3	4	Average
Date (2013)	Mar 22	Mar 22	Mar 22	Mar 22	
Start Time (approx.)	07:20	07:45	08:35	09:12	
Stop Time (approx.)	07:33	08:00	08:43	09:27	
Sampling Conditions					
Y _d	0.9972	0.9972	0.9972	0.9972	
C _p	0.8190	0.8190	0.8190	0.8190	
P _g	-9.7000	-9.7000	-9.7000	-9.7000	
A _s	64.0000	64.0000	64.0000	64.0000	
P _{bar}	29.80	29.80	29.80	29.80	29.8000
O ₂	7.8593	7.0799	7.0522	7.0107	7.2505
CO ₂	11.3375	12.0323	12.0061	12.0936	11.8674
N ₂ +CO	80.8032	80.8879	80.9417	80.8957	80.8821
V _{lc}	179.00	179.00	192.10	192.10	
V _m	29.6700	29.6700	29.9000	29.9000	
T _m	70.6111	70.6111	75.7778	75.7778	
T _s	304.7200	303.3600	303.6000	303.5600	303.8100
ΔH	1.5000	1.5000	1.5000	1.5000	
θ	45.0	45.0	45.0	45.0	
Flow Results					
V _{wstd}	8.4237	8.4237	9.0402	9.0402	8.7320
V _{mstd}	29.4200	29.4200	29.3622	29.3622	29.3911
P _g	29.0868	29.0868	29.0868	29.0868	29.0868
P _v	29.0868	29.0868	29.0868	29.0868	29.0868
B _{wo}	22.2593	22.2593	23.5408	23.5408	22.9000
B _{ws}	100.0000	100.0000	100.0000	100.0000	100.0000
B _w	22.2593	22.2593	23.5408	23.5408	22.9000
√ΔP	0.6360	0.6290	0.6334	0.6262	0.6312
M _d	30.1284	30.2084	30.2031	30.2154	30.1888
M _s	27.4287	27.4909	27.3304	27.3398	27.3974
V _s	43.5998	43.0335	43.4629	42.9612	43.2644
Q _a	167,423	165,249	166,897	164,971	166,135
Q _s	112,378	111,116	112,189	110,900	111,646
Q _{std}	87,363	86,382	85,779	84,793	86,080
Q _{std7}	81,963	85,886	85,457	84,728	84,508
Q _a	10,045,390	9,914,929	10,013,841	9,898,267	9,968,107
Q _s	6,742,673	6,666,961	6,731,356	6,654,015	6,698,751
Q _{std}	5,241,804	5,182,945	5,146,741	5,087,607	5,164,774
Q _a	284,491	280,797	283,598	280,325	282,303
Q _s	190,956	188,812	190,636	188,446	189,713
Q _{std}	148,451	146,784	145,759	144,084	146,269
Q _{std7}	139,274	145,941	145,211	143,974	143,600
Q _s	177,937	175,939	177,638	175,597	176,778
Q _{std}	138,329	136,776	135,821	134,260	136,297
Q _{std7}	129,778	135,990	135,310	134,157	133,809

Comments:

Average includes 4 runs.
 Moisture obtained from Method 4 sample train

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Wheelabrator North Broward, Inc.
 Clean Air Project No: 12218
 Unit 2 FF Outlet

**USEPA Methods 2 & 4 (Velocity & Moisture)
 Sampling, Velocity and Moisture Parameters**

Run No.	5	6	7	8	Average
Date (2013)	Mar 22	Mar 22	Mar 22	Mar 22	
Start Time (approx.)	09:46	10:21	11:00	11:35	
Stop Time (approx.)	09:58	10:34	11:14	11:47	
Sampling Conditions					
Y _d Dry gas meter correction factor	0.9972	0.9972	0.9972	0.9972	
C _p Pitot tube coefficient	0.8190	0.8190	0.8190	0.8190	
P _g Static pressure (in. H ₂ O)	-9.7000	-9.7000	-9.7000	-9.7000	
A _s Sample location area (ft ²)	64.0000	64.0000	64.0000	64.0000	
P _{bar} Barometric pressure (in. Hg)	29.80	29.80	29.80	29.80	29.8000
O ₂ Oxygen (dry volume %)	7.0669	7.2742	7.0216	7.2890	7.1629
CO ₂ Carbon dioxide (dry volume %)	12.0306	11.7777	11.9665	11.8604	11.9088
N ₂ +CO Nitrogen plus carbon monoxide (dry volume %)	80.9025	80.9481	81.0119	80.8507	80.9283
V _{lc} Total Liquid collected (ml)	210.20	210.20	204.30	204.30	
V _m Volume metered, meter conditions (ft ³)	29.4800	29.4800	30.2500	30.2500	
T _m Dry gas meter temperature (°F)	78.2222	78.2222	83.2778	83.2778	
T _a Sample temperature (°F)	302.8800	302.6000	301.7200	302.4000	302.4000
ΔH Meter box orifice pressure drop (in. H ₂ O)	1.5000	1.5000	1.5000	1.5000	
θ Total sampling time (min)	45.0	45.0	45.0	45.0	
Flow Results					
V _{wstd} Volume of water collected (ft ³)	9.8920	9.8920	9.6144	9.6144	9.7532
V _{mstd} Volume metered, standard (dscf)	28.8182	28.8182	29.2958	29.2958	29.0570
P _s Sample gas pressure, absolute (in. Hg)	29.0868	29.0868	29.0868	29.0868	29.0868
P _v Vapor pressure, actual (in. Hg)	29.0868	29.0868	29.0868	29.0868	29.0868
B _{wo} Moisture measured in sample (% by volume)	25.5540	25.5540	24.7091	24.7091	25.1316
B _{we} Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	100.0000	100.0000
B _w Actual water vapor in gas (% by volume)	25.5540	25.5540	24.7091	24.7091	25.1316
√ΔP Velocity head (√in. H ₂ O)	0.6297	0.6192	0.6261	0.6210	0.6240
M _d MW of sample gas, dry (lb/lb-mole)	30.2076	30.1754	30.1955	30.1892	30.1919
M _w MW of sample gas, wet (lb/lb-mole)	27.0880	27.0641	27.1821	27.1774	27.1279
V _s Velocity of sample (ft/sec)	43.3836	42.6692	43.0295	42.7013	42.9459
Q _a Volumetric flow rate, actual (acfm)	166,593	163,850	165,233	163,973	164,912
Q _s Volumetric flow rate, standard (scfm)	112,090	110,285	111,345	110,397	111,029
Q _{std} Volumetric flow rate, dry standard (dscfm)	83,447	82,103	83,832	83,119	83,125
Q _{std7} Volumetric flow rate, dry std@7%O ₂ (dscfm)	83,045	80,483	83,702	81,391	82,155
Q _a Volumetric flow rate, actual (acf/hr)	9,995,573	9,830,979	9,913,996	9,838,381	9,894,732
Q _s Volumetric flow rate, standard (scf/hr)	6,725,417	6,617,101	6,680,687	6,623,820	6,661,756
Q _{std} Volumetric flow rate, dry standard (dscf/hr)	5,006,805	4,926,168	5,029,947	4,987,131	4,987,513
Q _a Volumetric flow rate, actual (m ³ /hr)	283,081	278,419	280,770	278,629	280,225
Q _s Volumetric flow rate, standard (m ³ /hr)	190,468	187,400	189,201	187,590	188,665
Q _{std} Volumetric flow rate, dry standard (dry m ³ /hr)	141,796	139,512	142,451	141,238	141,249
Q _{std7} Volumetric flow rate, dry std@7%O ₂ (dry m ³ /hr)	141,113	136,760	142,230	138,302	139,601
Q _s Volumetric flow rate, normal (Nm ³ /hr)	177,481	174,623	176,301	174,800	175,801
Q _{std} Volumetric flow rate, dry normal (Nm ³ /hr)	132,128	130,000	132,738	131,609	131,619
Q _{std7} Volumetric flow rate, dry normal @7%O ₂ (Nm ³ /hr)	131,492	127,435	132,532	128,873	130,083

Comments:

Average includes 4 runs.

Moisture obtained from Method 4 sample train

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Wheelabrator North Broward, Inc.
 Clean Air Project No: 12218
 Unit 2 FF Outlet

USEPA Methods 2 & 4 (Velocity & Moisture) Sampling, Velocity and Moisture Parameters

Run No.	9	10	11	12	Average
Date (2013)	Mar 22	Mar 22	Mar 22	Mar 22	
Start Time (approx.)	12:15	12:50	13:33	14:06	
Stop Time (approx.)	12:28	13:03	13:47	14:20	
Sampling Conditions					
Y _d Dry gas meter correction factor	0.9972	0.9972	0.9972	0.9972	
C _p Pitot tube coefficient	0.8190	0.8190	0.8190	0.8190	
P _g Static pressure (in. H ₂ O)	-9.7000	-9.7000	-9.7000	-9.7000	
A _s Sample location area (ft ²)	64.0000	64.0000	64.0000	64.0000	
P _{bar} Barometric pressure (in. Hg)	29.80	29.80	29.80	29.80	29.8000
O ₂ Oxygen (dry volume %)	7.3993	7.4908	8.0831	7.2353	7.5521
CO ₂ Carbon dioxide (dry volume %)	11.7389	11.5557	10.9867	11.7530	11.5086
N ₂ +CO Nitrogen plus carbon monoxide (dry volume %)	80.8619	80.9534	80.9303	81.0118	80.9393
V _{lc} Total Liquid collected (ml)	174.80	174.80	174.80	174.80	
V _m Volume metered, meter conditions (ft ³)	29.8200	29.8200	29.8200	29.8200	
T _m Dry gas meter temperature (°F)	82.8889	82.8889	82.8889	82.8889	
T _s Sample temperature (°F)	301.0000	302.9200	303.4800	303.4000	302.7000
ΔH Meter box orifice pressure drop (in. H ₂ O)	1.5000	1.5000	1.5000	1.5000	
θ Total sampling time (min)	45.0	45.0	45.0	45.0	
Flow Results					
V _{wstd} Volume of water collected (ft ³)	8.2261	8.2261	8.2261	8.2261	8.2261
V _{mstd} Volume metered, standard (dscf)	28.9000	28.9000	28.9000	28.9000	28.9000
P _a Sample gas pressure, absolute (in. Hg)	29.0868	29.0868	29.0868	29.0868	29.0868
P _v Vapor pressure, actual (in. Hg)	29.0868	29.0868	29.0868	29.0868	29.0868
B _{wo} Moisture measured in sample (% by volume)	22.1571	22.1571	22.1571	22.1571	22.1571
B _{ws} Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	100.0000	100.0000
B _w Actual water vapor in gas (% by volume)	22.1571	22.1571	23.6441	23.6441	22.9006
√ΔP Velocity head (√in. H ₂ O)	0.5896	0.6124	0.6558	0.6146	0.6181
M _d MW of sample gas, dry (lb/lb-mole)	30.1742	30.1486	30.0812	30.1699	30.1435
M _w MW of sample gas, wet (lb/lb-mole)	27.4767	27.4568	27.4043	27.4734	27.4528
V _s Velocity of sample (ft/sec)	40.2802	41.9116	44.9389	42.0589	42.2974
Q _a Volumetric flow rate, actual (acfm)	154,676	160,941	172,565	161,506	162,422
Q _s Volumetric flow rate, standard (scfm)	104,329	108,281	116,017	108,594	109,305
Q _{std} Volumetric flow rate, dry standard (dscfm)	81,213	84,289	90,311	84,532	85,086
Q _{std7} Volumetric flow rate, dry std@7%O ₂ (dscfm)	78,880	81,313	83,274	83,102	81,642
Q _a Volumetric flow rate, actual (acf/hr)	9,280,562	9,656,431	10,353,916	9,690,366	9,745,319
Q _s Volumetric flow rate, standard (scf/hr)	6,259,755	6,496,888	6,961,049	6,515,621	6,558,328
Q _{std} Volumetric flow rate, dry standard (dscf/hr)	4,872,772	5,057,363	5,418,679	5,071,945	5,105,190
Q _a Volumetric flow rate, actual (m ³ /hr)	262,831	273,476	293,229	274,437	275,993
Q _s Volumetric flow rate, standard (m ³ /hr)	177,280	183,996	197,141	184,526	185,736
Q _{std} Volumetric flow rate, dry standard (dry m ³ /hr)	138,000	143,227	153,460	143,640	144,582
Q _{std7} Volumetric flow rate, dry std@7%O ₂ (dry m ³ /hr)	134,036	138,170	141,503	141,209	138,730
Q _s Volumetric flow rate, normal (Nm ³ /hr)	165,193	171,451	183,700	171,945	173,072
Q _{std} Volumetric flow rate, dry normal (Nm ³ /hr)	128,591	133,462	142,997	133,847	134,724
Q _{std7} Volumetric flow rate, dry normal @7%O ₂ (Nm ³ /hr)	124,897	128,749	131,855	131,581	129,271

Comments:

Average includes 4 runs.

Runs 9 and 10 moisture obtained from Method 4 sample train. Runs 11 and 12 are an average of Method 4 Runs 1-5.

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**Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 3**

Continuous Emissions Monitoring Parameters

Run Number 1
Date (2013) Mar 20
Start Time 8:13
End Time 8:40
Elapsed Time (hh:mm) 00:27

Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	188.05	17.84	13.16	6.90	12.23
Concentration (ppmdv)	188.05	17.84	13.16		122268.43
Concentration (%dv)	0.019	0.002	0.001	6.900	12.227
Concentration @7%O2 (ppm)	186.71	17.71	13.06		121396.19
Mass Rate (lb/hr)	112.38	14.84	4.79		69899.50

Run Number 2
Date (2013) Mar 20
Start Time 8:53
End Time 9:20
Elapsed Time (hh:mm) 00:27

Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	188.94	19.22	7.05	6.94	12.10
Concentration (ppmdv)	188.94	19.22	7.05		121029.68
Concentration (%dv)				6.945	12.103
Concentration @7%O2 (ppm)	188.19	19.15	7.03		120552.18
Mass Rate (lb/hr)	108.62	15.39	2.47		66561.74

Run Number 3
Date (2013) Mar 20
Start Time 9:37
End Time 10:04
Elapsed Time (hh:mm) 00:27

Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	174.56	13.11	8.72	8.09	11.05
Concentration (ppmdv)	174.56	13.11	8.72		110487.79
Concentration (%dv)				8.089	11.049
Concentration @7%O2 (ppm)	189.40	14.22	9.46		119880.95
Mass Rate (lb/hr)	112.47	11.76	3.42		68103.00

**Wheelabrator
Clean Air Project No. 12218
North Broward
Unit 3**

Continuous Emissions Monitoring Parameters

Run Number	4				
Date (2013)	Mar 20				
Start Time	10:16				
End Time	10:43				
Elapsed Time (hh:mm)	00:27				
Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	183.73	12.02	6.50	7.67	11.40
Concentration (ppmdv)	183.73	12.02	6.50		113994.75
Concentration (%dv)				7.668	11.399
Concentration @7%O2 (ppm)	192.99	12.63	6.83		119745.55
Mass Rate (lb/hr)	113.80	10.37	2.45		67545.43
Run Number	5				
Date (2013)	Mar 20				
Start Time	11:00				
End Time	11:27				
Elapsed Time (hh:mm)	00:27				
Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	166.81	14.90	8.61	8.03	11.19
Concentration (ppmdv)	166.81	14.90	8.61		111894.38
Concentration (%dv)				8.027	11.189
Concentration @7%O2 (ppm)	180.12	16.09	9.30		120818.32
Mass Rate (lb/hr)	99.13	12.33	3.12		63608.19
Run Number	6				
Date (2013)	Mar 20				
Start Time	11:40				
End Time	12:07				
Elapsed Time (hh:mm)	00:27				
Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	172.75	13.28	9.73	8.35	10.83
Concentration (ppmdv)	172.75	13.28	9.73		108317.09
Concentration (%dv)				8.354	10.832
Concentration @7%O2 (ppm)	191.39	14.72	10.78		120005.62
Mass Rate (lb/hr)	111.75	11.96	3.83		67031.35

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**Wheelabrator
Clean Air Project No. 12218
North Broward
Unit 3**

Continuous Emissions Monitoring Parameters

Run Number 7
Date (2013) Mar 20
Start Time 12:30
End Time 12:57
Elapsed Time (hh:mm) 00:27

Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	163.20	23.02	9.67	8.47	10.81
Concentration (ppmdv)	163.20	23.02	9.67		108142.41
Concentration (%dv)				8.467	10.814
Concentration @7%O2 (ppm)	182.45	25.73	10.81		120900.98
Mass Rate (lb/hr)	103.13	20.26	3.72		65377.33

Run Number 8
Date (2013) Mar 20
Start Time 13:10
End Time 13:37
Elapsed Time (hh:mm) 00:27

Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	161.73	12.73	10.97	8.74	10.55
Concentration (ppmdv)	161.73	12.73	10.97		105524.79
Concentration (%dv)				8.744	10.552
Concentration @7%O2 (ppm)	184.94	14.56	12.54		120667.38
Mass Rate (lb/hr)	105.72	11.59	4.37		65985.91

Wheelabrator
Clean Air Project No. 12218
North Broward
Unit 3

Continuous Emissions Monitoring Parameters

Run Number 9
 Date (2013) Mar 20
 Start Time 13:50
 End Time 14:17
 Elapsed Time (hh:mm) 00:26

Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	168.47	8.41	11.70	8.63	10.61
Concentration (ppmdv)	168.47	8.41	11.70		106066.19
Concentration (%dv)				8.630	10.607
Concentration @7%O2 (ppm)	190.85	9.53	13.26		120153.44
Mass Rate (lb/hr)	109.07	7.58	4.61		65686.16

Run Number 10
 Date (2013) Mar 20
 Start Time 14:30
 End Time 14:57
 Elapsed Time (hh:mm) 00:27

Channel	1	2	3	4	5
Parameter	NOX	SO2	CO	O2	CO2
Location	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
Measurement Units	ppmdv	ppmdv	ppmdv	%dv	%dv
Measured Average (drift-corrected)	162.35	13.08	10.36	8.77	10.50
Concentration (ppmdv)	162.35	13.08	10.36		104979.31
Concentration (%dv)				8.769	10.498
Concentration @7%O2 (ppm)	186.03	14.99	11.87		120291.81
Mass Rate (lb/hr)	103.70	11.64	4.03		64143.51

Wheelabrator North Broward, Inc.
 Clean Air Project No: 12218
 Unit 3 FF Outlet

**USEPA Method 2 (Velocity & Flow Rate)
 Sampling, Velocity and Moisture Parameters**

Run No.	1	2	3	4	Average
Date (2013)	Mar 20	Mar 20	Mar 20	Mar 20	
Start Time (approx.)	08:19	08:54	09:39	10:16	
Stop Time (approx.)	08:29	09:04	09:50	10:28	
Sampling Conditions					
C _p Pitot tube coefficient	0.8190	0.8190	0.8190	0.8190	
P _g Static pressure (in. H ₂ O)	-8.0000	-8.0000	-8.8000	-8.8000	
A _s Sample location area (ft ²)	64.0000	64.0000	64.0000	64.0000	
P _{bar} Barometric pressure (in. Hg)	29.80	29.80	29.80	29.80	29.8000
O ₂ Oxygen (dry volume %)	6.9001	6.9449	8.0891	7.6675	7.4004
CO ₂ Carbon dioxide (dry volume %)	12.2268	12.1030	11.0488	11.3995	11.6945
N ₂ +CO Nitrogen plus carbon monoxide (dry volume %)	80.8730	80.9521	80.8621	80.9330	80.9050
T _s Sample temperature (°F)	311.9200	310.4400	312.8000	312.0400	311.8000
Flow Results					
P _s Sample gas pressure, absolute (in. Hg)	29.2118	29.2118	29.1529	29.1529	29.1824
P _v Vapor pressure, actual (in. Hg)	29.2118	29.2118	29.1529	29.1529	29.1824
B _{wc} Moisture measured in sample (% by volume)	24.4332	24.4332	23.4810	23.4810	23.9571
B _{ws} Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	100.0000	100.0000
B _w Actual water vapor in gas (% by volume)	24.4332	24.4332	23.4810	23.4810	23.9571
√ΔP Velocity head (√in. H ₂ O)	0.6243	0.5998	0.6658	0.6401	0.6325
M _d MW of sample gas, dry (lb/lb-mole)	30.2323	30.2143	30.0914	30.1306	30.1671
M _s MW of sample gas, wet (lb/lb-mole)	27.2436	27.2299	27.2522	27.2822	27.2520
V _s Velocity of sample (ft/sec)	43.0463	41.3310	45.9791	44.1563	43.6282
Q _a Volumetric flow rate, actual (acfm)	165,298	158,711	176,560	169,560	167,532
Q _s Volumetric flow rate, standard (scfm)	110,389	106,194	117,538	112,990	111,778
Q _{std} Volumetric flow rate, dry standard (dscfm)	83,417	80,247	89,939	86,458	85,015
Q _{std7} Volumetric flow rate, dry std@7%O ₂ (dscfm)	84,017	80,565	82,892	82,306	82,445
Q _a Volumetric flow rate, actual (acf/hr)	9,917,876	9,522,660	10,593,582	10,173,601	10,051,930
Q _s Volumetric flow rate, standard (scf/hr)	6,623,332	6,371,616	7,052,294	6,779,374	6,706,654
Q _{std} Volumetric flow rate, dry standard (dscf/hr)	5,005,038	4,814,824	5,396,344	5,187,508	5,100,928
Q _a Volumetric flow rate, actual (m ³ /hr)	280,880	269,687	300,016	288,122	284,677
Q _s Volumetric flow rate, standard (m ³ /hr)	187,577	180,448	199,725	191,996	189,936
Q _{std} Volumetric flow rate, dry standard (dry m ³ /hr)	141,746	136,359	152,828	146,913	144,461
Q _{std7} Volumetric flow rate, dry std@7%O ₂ (dry m ³ /hr)	142,764	136,899	140,853	139,858	140,093
Q _s Volumetric flow rate, normal (Nm ³ /hr)	174,787	168,145	186,108	178,905	176,986
Q _{std} Volumetric flow rate, dry normal (Nm ³ /hr)	132,081	127,061	142,408	136,896	134,612
Q _{std7} Volumetric flow rate, dry normal @7%O ₂ (Nm ³ /hr)	133,030	127,565	131,249	130,322	130,542

Comments:

Average includes 4 runs.

Moistures obtained from Method 26A Runs 1 and 2.

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Wheelabrator North Broward, Inc.
 Clean Air Project No: 12218
 Unit 3 FF Outlet

USEPA Method 2 (Velocity & Flow Rate) Sampling, Velocity and Moisture Parameters

Run No.		8	9	10	Average
Date (2013)		Mar 20	Mar 20	Mar 20	
Start Time (approx.)		13:12	13:55	14:26	
Stop Time (approx.)		13:28	14:11	14:41	
Sampling Conditions					
C _p	Pitot tube coefficient	0.8190	0.8190	0.8190	
P _g	Static pressure (in. H ₂ O)	-9.1000	-9.1000	-9.1000	
A _s	Sample location area (ft ²)	64.0000	64.0000	64.0000	
P _{bar}	Barometric pressure (in. Hg)	29.80	29.80	29.80	29.8000
O ₂	Oxygen (dry volume %)	8.7443	8.6297	8.7694	8.7145
CO ₂	Carbon dioxide (dry volume %)	10.5525	10.6066	10.4979	10.5523
N ₂ +CO	Nitrogen plus carbon monoxide (dry volume %)	80.7032	80.7637	80.7327	80.7332
T _s	Sample temperature (°F)	312.1600	312.7600	312.4800	312.4667
Flow Results					
P _s	Sample gas pressure, absolute (in. Hg)	29.1309	29.1309	29.1309	29.1309
P _v	Vapor pressure, actual (in. Hg)	29.1309	29.1309	29.1309	29.1309
B _{wo}	Moisture measured in sample (% by volume)	22.8886	22.8886	22.8886	22.8886
B _{ws}	Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	100.0000
B _w	Actual water vapor in gas (% by volume)	22.8886	22.8886	22.8886	22.8886
√ΔP	Velocity head (√in. H ₂ O)	0.6706	0.6645	0.6554	0.6635
M _d	MW of sample gas, dry (lb/lb-mole)	30.0382	30.0422	30.0304	30.0370
M _s	MW of sample gas, wet (lb/lb-mole)	27.2828	27.2860	27.2769	27.2819
V _s	Velocity of sample (ft/sec)	46.2833	45.8735	45.2435	45.8001
Q _a	Volumetric flow rate, actual (acfm)	177,728	176,154	173,735	175,872
Q _s	Volumetric flow rate, standard (scfm)	118,324	117,186	115,618	117,043
Q _{std}	Volumetric flow rate, dry standard (dscfm)	91,242	90,364	89,155	90,253
Q _{std7}	Volumetric flow rate, dry std@7%O ₂ (dscfm)	79,792	79,769	77,806	79,122
Q _a	Volumetric flow rate, actual (acf/hr)	10,663,673	10,569,255	10,424,111	10,552,346
Q _s	Volumetric flow rate, standard (scf/hr)	7,099,463	7,031,139	6,937,097	7,022,566
Q _{std}	Volumetric flow rate, dry standard (dscf/hr)	5,474,499	5,421,813	5,349,296	5,415,203
Q _a	Volumetric flow rate, actual (m ³ /hr)	302,001	299,328	295,217	298,849
Q _s	Volumetric flow rate, standard (m ³ /hr)	201,061	199,126	196,463	198,883
Q _{std}	Volumetric flow rate, dry standard (dry m ³ /hr)	155,041	153,549	151,495	153,362
Q _{std7}	Volumetric flow rate, dry std@7%O ₂ (dry m ³ /hr)	135,585	135,546	132,211	134,447
Q _s	Volumetric flow rate, normal (Nm ³ /hr)	187,352	185,549	183,067	185,323
Q _{std}	Volumetric flow rate, dry normal (Nm ³ /hr)	144,470	143,080	141,166	142,905
Q _{std7}	Volumetric flow rate, dry normal @7%O ₂ (Nm ³ /hr)	126,340	126,304	123,196	125,280

Comments:

Average includes 3 runs.

Moistures obtained from Method 5/29 Run 1.

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Wheelabrator North Broward, Inc.
 Clean Air Project No: 12218
 Unit 3 FF Outlet

USEPA Method 26A (HCI) Sampling, Velocity and Moisture Parameters

Run No.		1	2	3	Average
Date (2013)		Mar 20	Mar 20	Mar 20	
Start Time (approx.)		08:13	09:39	11:00	
Stop Time (approx.)		09:13	10:39	12:00	
Sampling Conditions					
Y_d	Dry gas meter correction factor	1.0039	1.0039	1.0039	
P_g	Static pressure (in. H ₂ O)	-8.0000	-8.8000	-9.1000	
A_s	Sample location area (ft ²)	64.0000	64.0000	64.0000	
P_{bar}	Barometric pressure (in. Hg)	29.80	29.80	29.80	29.8000
O ₂	Oxygen (dry volume %)	6.9600	7.8400	8.5300	7.7767
CO ₂	Carbon dioxide (dry volume %)	12.1100	11.2600	10.8000	11.3900
N ₂ +CO	Nitrogen plus carbon monoxide (dry volume %)	80.9300	80.9000	80.6700	80.8333
V_{lc}	Total Liquid collected (ml)	274.70	264.30	248.10	
V_m	Volume metered, meter conditions (ft ³)	41.0000	41.9250	42.3650	
T_m	Dry gas meter temperature (°F)	83.1667	87.8750	92.5833	
T_s	Sample temperature (°F)	311.5000	312.7500	313.2500	312.5000
ΔH	Meter box orifice pressure drop (in. H ₂ O)	1.5000	1.5000	1.5000	
θ	Total sampling time (min)	60.0	60.0	60.0	
Flow Results					
V_{wstd}	Volume of water collected (ft ³)	12.9274	12.4380	11.6756	12.3470
V_{mstd}	Volume metered, standard (dscf)	39.9816	40.5323	40.6087	40.3742
P_s	Sample gas pressure, absolute (in. Hg)	29.2118	29.1529	29.1309	29.1652
P_v	Vapor pressure, actual (in. Hg)	29.2118	29.1529	29.1309	29.1652
B_{wo}	Moisture measured in sample (% by volume)	24.4332	23.4810	22.3310	23.4151
B_{ws}	Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	100.0000
B_w	Actual water vapor in gas (% by volume)	24.4332	23.4810	22.3310	23.4151
M_d	MW of sample gas, dry (lb/lb-mole)	30.2160	30.1152	30.0692	30.1335
M_s	MW of sample gas, wet (lb/lb-mole)	27.2312	27.2704	27.3740	27.2919

Comments:

Average includes 3 runs.

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Wheelabrator North Broward, Inc.
 Clean Air Project No: 12218
 Unit 3 FF Outlet

**USEPA Method 5/29 (Particulate/Metals)
 Sampling, Velocity and Moisture Parameters**

Run No.		1	2	3	Average
Date (2013)		Mar 20	Mar 21	Mar 21	
Start Time (approx.)		12:35	07:42	10:15	
Stop Time (approx.)		14:50	09:54	12:27	
Sampling Conditions					
Y _d	Dry gas meter correction factor	0.9906	0.9906	0.9906	
C _p	Pitot tube coefficient	0.8240	0.8240	0.8240	
P _g	Static pressure (in. H ₂ O)	-9.1000	-10.0000	-8.8000	
A _s	Sample location area (ft ²)	64.0000	64.0000	64.0000	
P _{bar}	Barometric pressure (in. Hg)	29.80	29.75	29.75	29.7667
D _n	Nozzle diameter (in.)	0.2725	0.2725	0.2725	
O ₂	Oxygen (dry volume %)	8.7400	7.9800	7.8300	8.1833
CO ₂	Carbon dioxide (dry volume %)	10.1800	11.0400	11.4400	10.8867
N ₂ +CO	Nitrogen plus carbon monoxide (dry volume %)	81.0800	80.9800	80.7300	80.9300
V _{lc}	Total Liquid collected (ml)	427.90	428.40	412.20	
V _m	Volume metered, meter conditions (ft ³)	72.3500	67.6700	66.4050	
T _m	Dry gas meter temperature (°F)	96.8200	68.5000	74.3800	
T _s	Sample temperature (°F)	309.5200	306.2800	305.9600	307.2533
ΔH	Meter box orifice pressure drop (in. H ₂ O)	1.0820	0.9752	0.9404	
θ	Total sampling time (min)	125.0	125.0	125.0	
Flow Results					
V _{watd}	Volume of water collected (ft ³)	20.1370	20.1605	19.3981	19.8985
V _{mstd}	Volume metered, standard (dscf)	67.8414	66.7238	64.7504	66.4385
P _s	Sample gas pressure, absolute (in. Hg)	29.1309	29.0147	29.1029	29.0828
P _v	Vapor pressure, actual (in. Hg)	29.1309	29.0147	29.1029	29.0828
B _{wc}	Moisture measured in sample (% by volume)	22.8886	23.2039	23.0522	23.0482
B _{ws}	Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	100.0000
B _w	Actual water vapor in gas (% by volume)	22.8886	23.2039	23.0522	23.0482
√ΔP	Velocity head (√in. H ₂ O)	0.6371	0.6152	0.5986	0.6169
M _d	MW of sample gas, dry (lb/lb-mole)	29.9784	30.0856	30.1436	30.0692
M _w	MW of sample gas, wet (lb/lb-mole)	27.2367	27.2813	27.3442	27.2874
V _s	Velocity of sample (ft/sec)	44.1951	42.6372	41.3705	42.7343
%I	Isokinetic sampling (%)	98.1589	100.4576	99.9278	99.5148
Q _a	Volumetric flow rate, actual (acfm)	169,709	163,727	158,863	164,100
Q _s	Volumetric flow rate, standard (scfm)	113,373	109,401	106,519	109,764
Q _{std}	Volumetric flow rate, dry standard (dscfm)	87,424	84,016	81,964	84,468
Q _{std7}	Volumetric flow rate, dry std@7%O ₂ (dscfm)	76,480	78,093	77,069	77,214
Q _a	Volumetric flow rate, actual (acf/hr)	10,182,544	9,823,618	9,531,767	9,845,976
Q _s	Volumetric flow rate, standard (scf/hr)	6,802,403	6,564,089	6,391,114	6,585,869
Q _{std}	Volumetric flow rate, dry standard (dscf/hr)	5,245,431	5,040,967	4,917,819	5,068,072
Q _a	Volumetric flow rate, actual (m ³ /hr)	288,376	278,211	269,945	278,844
Q _s	Volumetric flow rate, standard (m ³ /hr)	192,648	185,899	181,000	186,516
Q _{std}	Volumetric flow rate, dry standard (dry m ³ /hr)	148,554	142,763	139,276	143,531
Q _{std7}	Volumetric flow rate, dry std@7%O ₂ (dry m ³ /hr)	129,958	132,698	130,959	131,205
Q _s	Volumetric flow rate, normal (Nm ³ /hr)	179,513	173,224	168,659	173,799
Q _{std}	Volumetric flow rate, dry normal (Nm ³ /hr)	138,425	133,029	129,779	133,745
Q _{std7}	Volumetric flow rate, dry normal @7%O ₂ (Nm ³ /hr)	121,097	123,650	122,030	122,259

Comments:

Average includes 3 runs.

040813 114313
 MIM®

QA/QC DATA

D

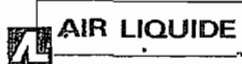
I herby certify that all pages contained within this Appendix have been reviewed and, to the best of my ability, verified as accurate.

QA/QC Initials: SB

Date: 4/30



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Air Liquide America
Specialty Gases LLC



RATA CLASS
Dual-Analyzed Calibration Standard

1290 COMBERMERE STREET, TROY, MI 48083

Phone: 248-589-2950

Fax: 248-589-2134

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory - PGVP Vendor ID: A22012

AIR LIQUIDE AMERICA SPECIALTY GASES LLC
1290 COMBERMERE STREET
TROY, MI 48083

P.O. No.: 60126-71-65000
Document #: 48472837-001

Customer
CLEAN AIR ENGINEERING

500 WEST WOOD STREET
PALATINE IL 60067
US

ANALYTICAL INFORMATION Gas Type : OC2

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: CC196768 Certification Date: 27Nov2012 Exp. Date: 28Nov2020
Cylinder Pressure***: 2000 PSIG Batch No: TRO0070277

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY**	TRACEABILITY
OXYGEN	9.52 %	+/- 1 %	Direct NIST and VSL
CARBON DIOXIDE	9.53 %	+/- 1 %	Direct NIST and VSL
NITROGEN	BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 2350 23	04Jan2018	K024582	23.20 %	OXYGEN
NTRM 2300	17Aug2018	1D002807	23.04 %	CARBON DIOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
CAI/110P/V03018	26Nov2012	PARAMAGNETIC
PIR/2000/809015	12Nov2012	NDIR

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis

Second Triad Analysis

Calibration Curve

OXYGEN

Date: 27Nov2012 Response Unit: %
Z1 = 0.00000 R1 = 23.20000 T1 = 9.53000
R2 = 23.20000 Z2 = 0.00000 T2 = 9.53000
Z3 = 0.00000 T3 = 9.53000 R3 = 23.20000
Avg. Concentration: 9.520 %

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999999
Constants: A = -0.01175669
B = 1.000226328 C = 0
D = 0 E = 0

CARBON DIOXIDE

Date: 27Nov2012 Response Unit: MV
Z1 = 0.00000 R1 = 97.90000 T1 = 57.50000
R2 = 97.90000 Z2 = 0.00000 T2 = 57.50000
Z3 = 0.00000 T3 = 57.50000 R3 = 97.90000
Avg. Concentration: 9.527 %

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999987
Constants: A = -0.00466369
B = 0.134173465 C = -7.139E-05
D = 1.21594-05 E = 0

Special Notes: DELIVERY DOC# IS 48472675

APPROVED BY:

JEFF CROTEAU



AIR LIQUIDE

Air Liquide America
Specialty Gases LLC



RATA CLASS

Dual-Analyzed Calibration Standard

1290 COMBERMERE STREET, TROY, MI 48083

Phone: 248-589-2950

Fax: 248-589-2134

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory - PGVP Vendor ID: A22011

AIR LIQUIDE AMERICA SPECIALTY GASES LLC
1290 COMBERMERE STREET
TROY, MI 48083

P.O. No.: 59343-71-65000
Document #: 44083920-002

Customer
CLEAN AIR

DON ALLEN
500 WEST WOOD STREET
PALATINE IL 60067
US

ANALYTICAL INFORMATION Gas Type : OC2

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: **ALM040868** Certification Date: **28Nov2011** Exp. Date: **27Nov2014**
Cylinder Pressure***: **2000 PSIG** Batch No: **TRO0047087**

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY**	TRACEABILITY
CARBON DIOXIDE	17.9 %	+/- 1 %	Direct NIST and VSL
OXYGEN	18.1 %	+/- 1 %	Direct NIST and VSL
NITROGEN	BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 2300	17Aug2018	K026052	23.04 %	CARBON DIOXIDE
NTRM 2350	01Dec2011	K016398	23.20 %	OXYGEN

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
PIR/2000/609015	10Nov2011	NDIR
CAI/110P/V03018	17Nov2011	PARAMAGNETIC

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis

Second Triad Analysis

Calibration Curve

CARBON DIOXIDE

Date: 29Nov2011 Response Unit: MV
 Z1=0.00000 R1=98.20000 T1=86.20000
 R2=98.20000 Z2=0.00000 T2=86.20000
 Z3=0.00000 T3=86.20000 R3=98.20000
 Avg. Concentration: 17.90 %

Concentration = A + Bx + Cx² + Dx³ + Ex⁴
 r = 0.999986
 Constants: A = -0.00224432
 B = 0.138734928 C = -0.0004578
 D = 1.39269E-05 E = 0

OXYGEN

Date: 29Nov2011 Response Unit: %
 Z1=0.00000 R1=23.20000 T1=18.15000
 R2=23.20000 Z2=0.00000 T2=18.15000
 Z3=0.00000 T3=18.15000 R3=23.20000
 Avg. Concentration: 18.14 %

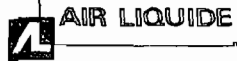
Concentration = A + Bx + Cx² + Dx³ + Ex⁴
 r = 0.999999
 Constants: A = -0.00577277
 B = 0.999884783 C = 0
 D = 0 E = 0

Special Notes:

DELIVER ON DOC# 44063869

APPROVED BY:

JEFF CROTEAU



Air Liquide America
Specialty Gases LLC



RATA CLASS
Dual-Analyzed Calibration Standard

1 290 COMBERMERE STREET, TROY, MI 48083

Phone: 248-589-2950

Fax: 248-589-2134

CERTIFICATE OF ACCURACY: Interference Free Multi-Component EPA Protocol Gas

Assay Laboratory - PGVP Vendor ID: A22012

P.O. No.: CAE

Customer

ALA-CYL-ROMEDEVILLE, IL (84131)

AIR LIQUIDE AMERICA SPECIALTY GASES LLC Document #: 44720881-001
1290 COMBERMERE STREET
TROY, MI 48083

UNIT A FOR CAE
TRANSFER ACCOUNT
27 FORESTWOOD CT
ROMEDEVILLE IL 60446
US

ANALYTICAL INFORMATION Gas Type : SNC2

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: **ALM019186** Certification Date: **24Jan2012** Exp. Date: **23Jan2014**
Cylinder Pressure***: **1963 PSIG** Batch No: **TRO0050001**

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY**	TRACEABILITY
CARBON DIOXIDE	9.97 %	+/- 1%	Direct NIST and VSL
NITRIC OXIDE	223 PPM	+/- 1%	Direct NIST and VSL
SULFUR DIOXIDE *	45.1 PPM	+/- 1%	Direct NIST and VSL
NITROGEN - OXYGEN FREE	BALANCE		
TOTAL OXIDES OF NITROGEN	223. PPM		Reference Value Only

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1800 C	01Mar2013	1D004854	17.87 %	CARBON DIOXIDE
NTRM 1885	01Oct2015	AAL071072	246.1 PPM	NITRIC OXIDE
NTRM 0280 2	20May2016	AAL073224	255.3 PPM	SULFUR DIOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR//0928821	08Jan2012	FTIR
FTIR//0928821	19Jan2012	FTIR
FTIR//0928821	20Jan2012	FTIR

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis

Second Triad Analysis

Calibration Curve

CARBON DIOXIDE

Date: 17Jan2012 Response Unit: %
Z1 = -0.00072 R1 = 17.77379 T1 = 9.92219
R2 = 17.78153 Z2 = 0.00818 T2 = 9.92356
Z3 = 0.01745 T3 = 9.93209 R3 = 17.81853
Avg. Concentration: 9.968 %

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 9.99984E-1
Constants: A = 0.00000E+0
B = 9.90204E-1 C = 1.23260E-2
D = 1.90000E-5 E = 0.00000E+0

NITRIC OXIDE

Date: 17Jan2012 Response Unit: PPM
Z1 = -0.60538 R1 = 246.2617 T1 = 220.3657
R2 = 246.3206 Z2 = -0.57518 T2 = 223.1174
Z3 = -0.53722 T3 = 223.6502 R3 = 247.1208
Avg. Concentration: 222.0 PPM

Date: 24Jan2012 Response Unit: PPM
Z1 = -0.21240 R1 = 247.5818 T1 = 224.2750
R2 = 247.6069 Z2 = -0.08971 T2 = 224.7174
Z3 = -0.04259 T3 = 228.2480 R3 = 247.9820
Avg. Concentration: 223.6 PPM

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 9.99999E-1
Constants: A = 0.00000E+0
B = 9.99897E-1 C = 3.00000E-5
D = 0.00000E+0 E = 0.00000E+0

SULFUR DIOXIDE *

Date: 17Jan2012 Response Unit: PPM
Z1 = -0.05065 R1 = 253.7164 T1 = 45.04455
R2 = 253.9392 Z2 = 0.03183 T2 = 45.12106
Z3 = 0.04278 T3 = 45.14300 R3 = 254.1837
Avg. Concentration: 45.34 PPM

Date: 24Jan2012 Response Unit: PPM
Z1 = -0.00017 R1 = 253.6599 T1 = 44.68305
R2 = 253.7981 Z2 = 0.04865 T2 = 44.73362
Z3 = 0.18248 T3 = 44.81375 R3 = 253.8572
Avg. Concentration: 44.95 PPM

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 9.99991E-1
Constants: A = 0.00000E+0
B = 1.00555E+0 C = -4.00000E-6
D = 0.00000E+0 E = 0.00000E+0

APPROVED BY:

Rob McCrandall



Download as...

1290 COMBERMERE STREET, TROY, MI 48083 Phone: 248-589-2950 Fax: 248-589-2134

RATA CLASS

Dual-Analyzed Calibration Standard

CERTIFICATE OF ACCURACY: Interference Free™ Multi-Component EPA Protocol Gas

Assay Laboratory - PGVP Vendor ID: A22012
 AIR LIQUIDE AMERICA SPECIALTY GASES LLC
 1290 COMBERMERE STREET
 TROY, MI 48083

P.O. No.: CAE
 Document #: 44720881-002

Customer
 ALA-CYL-ROMEDEVILLE, IL (84131)
 UNIT A FOR CAE
 TRANSFER ACCOUNT
 27 FORESTWOOD CT
 ROMEDEVILLE IL 60446
 US

ANALYTICAL INFORMATION Gas Type : SNC2

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: ALM012619
 Cylinder Pressure***: 1968 PSIG

Certification Date: 24Jan2012

Exp. Date: 25Jan2020
 Batch No: TRO0050002

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY**	TRACEABILITY
CARBON DIOXIDE	9.97 %	+/- 1%	Direct NIST and VSL
NITRIC OXIDE	448 PPM	+/- 1%	Direct NIST and VSL
SULFUR DIOXIDE *	90.8 PPM	+/- 1%	Direct NIST and VSL
NITROGEN - OXYGEN FREE	BALANCE		
TOTAL OXIDES OF NITROGEN	448. PPM		Reference Value Only

*** Do not use when cylinder pressure is below 150 psig.
 ** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

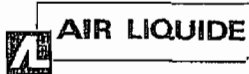
TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1800 C	01Mar2013	1D004854	17.87 %	CARBON DIOXIDE
NTRM 1685	01Oct2015	AAL071072	246.1 PPM	NITRIC OXIDE
NTRM 0260 2	20May2016	AAL073224	255.3 PPM	SULFUR DIOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR/0928621	06Jan2012	FTIR
FTIR/0928621	19Jan2012	FTIR
FTIR/0928621	20Jan2012	FTIR

ANALYZER READINGS

First Triad Analysis	(Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)	Second Triad Analysis	Calibration Curve
CARBON DIOXIDE Date: 17Jan2012 Response Unit: % Z1=-0.00072 R1=17.77379 T1=9.93180 R2=17.78153 Z2=0.00818 T2=9.93257 Z3=0.01745 T3=9.93373 R3=17.81853 Avg. Concentration: 9.973 %		Date: 24Jan2012 Response Unit: PPM Z1=-0.21240 R1=247.5818 T1=448.0163 R2=247.6069 Z2=-0.08971 T2=450.0441 Z3=-0.04259 T3=450.2402 R3=247.9820 Avg. Concentration: 446.4 PPM	Concentration=A+Bx+Cx2+Dx3+Ex4 r=9.99984E-1 Constants: A=0.00000E+0 B=9.90204E-1 C=1.23260E-2 D=1.90000E-5 E=0.00000E+0
NITRIC OXIDE Date: 17Jan2012 Response Unit: PPM Z1=-0.60538 R1=246.2617 T1=450.1221 R2=246.3206 Z2=-0.57518 T2=450.9347 Z3=-0.53722 T3=451.2103 R3=247.1208 Avg. Concentration: 449.4 PPM		Date: 24Jan2012 Response Unit: PPM Z1=-0.00017 R1=253.6599 T1=90.14060 R2=253.7981 Z2=0.04665 T2=90.32017	Concentration=A+Bx+Cx2+Dx3+Ex4 r=9.99999E-1 Constants: A=0.00000E+0 B=9.99897E-1 C=3.00000E-5 D=0.00000E+0 E=0.00000E+0
SULFUR DIOXIDE * Date: 17Jan2012 Response Unit: PPM Z1=-0.05065 R1=253.7164 T1=90.15717 R2=253.9392 Z2=0.03183 T2=90.34216			Concentration=A+Bx+Cx2+Dx3+Ex4 r=9.99991E-1 Constants: A=0.00000E+0



Air Liquide America
Specialty Gases LLC



RATA CLASS
Dual-Analyzed Calibration Standard

1290 COMBERMERE STREET, TROY, MI 48083

Phone: 248-589-2950

Fax: 248-589-2134

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory - PGVP Vendor ID: A22012

AIR LIQUIDE AMERICA SPECIALTY GASES LLC
1290 COMBERMERE STREET
TROY, MI 48083

P.O. No.: 59536-71-65000
Document #: 45255248-001

Customer
CLEAN AIR ENGINEERING

500 WEST WOOD STREET
PALATINE IL 60067
US

ANALYTICAL INFORMATION Gas Type : NONE

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: AL0340 Certification Date: 13Mar2012 Exp. Date: 13Mar2015
Cylinder Pressure***: 2015 PSIG Batch No: TR00053626

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY**	TRACEABILITY
CARBON MONOXIDE	47.3 PPM	+/- 1%	Direct NIST and VSL
NITROGEN	BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1678 50	14Nov2017	KAL004153	48.60 PPM	CARBON MONOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR/0928621	02Mar2012	FTIR

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis

Second Triad Analysis

Calibration Curve

CARBON MONOXIDE

Date: 06Mar2012 Response Unit: PPM

Z1=0.04098	R1=48.43588	T1=47.07781
R2=48.44878	Z2=0.04736	T2=47.09408
Z3=0.06449	T3=47.20847	R3=48.47101
Avg. Concentration: 47.27 PPM		

Date: 13Mar2012 Response Unit: PPM

Z1=0.01671	R1=48.38816	T1=47.11527
R2=48.46730	Z2=0.04327	T2=47.13097
Z3=0.05791	T3=47.18999	R3=48.50182
Avg. Concentration: 47.29 PPM		

Concentration = A + Bx + Cx² + Dx³ + Ex⁴
r = 9.99998E-1

Constants:	A = 0.00000E+0
B = 9.88821E-1	C = 6.27000E-4
D = 1.00000E-6	E = 0.00000E+0

APPROVED BY:

Rob McCrandall



Air Liquide America
Specialty Gases LLC



RATA CLASS
Dual-Analyzed Calibration Standard

1290 COMBERMERE STREET, TROY, MI 48083

Phone: 248-589-2950

Fax: 248-589-2134

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory - PGVP Vendor ID: A22011

AIR LIQUIDE AMERICA SPECIALTY GASES LLC
1290 COMBERMERE STREET
TROY, MI 48083

P.O. No.: 59343-71-65000
Document #: 44063920-001

Customer
CLEAN AIR

DON ALLEN
500 WEST WOOD STREET
PALATINE IL 60067
US

ANALYTICAL INFORMATION Gas Type : NONE

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: CC181272 Certification Date: 29Nov2011 Exp. Date: 28Nov2014
Cylinder Pressure***: 1955 PSIG Batch No: TRO0046582

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY**	TRACEABILITY
CARBON MONOXIDE	96.3 PPM	+/- 1%	Direct NIST and VSL
NITROGEN	BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1679 1	25Aug2016	KAL003115	101.0 PPM	CARBON MONOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR/0928621	28Nov2011	FTIR

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis

CARBON MONOXIDE

Date: 21Nov2011 Response Unit: PPM

Z1 = -0.01152	R1 = 101.1884	T1 = 96.36357
R2 = 101.2626	Z2 = 0.07064	T2 = 96.46207
Z3 = 0.09866	T3 = 96.49303	R3 = 101.3349
Avg. Concentration:		96.19 PPM

Second Triad Analysis

Date: 29Nov2011 Response Unit: PPM

Z1 = -0.03982	R1 = 100.8843	T1 = 96.04078
R2 = 100.7658	Z2 = -0.01546	T2 = 96.14331
Z3 = 0.06891	T3 = 96.38446	R3 = 101.0479
Avg. Concentration:		96.35 PPM

Calibration Curve

Concentration = A + Bx + Cx² + Dx³ + Ex⁴
r = 9.99998E-1

Constants: A = 0.00000E+0
B = 6.94248E-1 C = 3.64000E-4
D = 0.00000E+0 E = 0.00000E+0

APPROVED BY:

Rob McCrandall



AIR LIQUIDE

Air Liquide America
Specialty Gases LLC



Shipped 1290 COMBERMERE STREET
 From: TROY MI 48083
 Phone: 248-589-2950 Fax: 248-589-2134
 C E R T I F I C A T E O F A N A L Y S I S

ALA-CYL-ROMEDEVILLE, IL (84131) DOCUMENT#:46415023 -001
 UNIT A GEN. STOCK PO#: GEN. STOCK
 TRANSFER ACCOUNT ITEM #: 763-30AL
 27 FORESTWOOD CT DATE: 05Jun2012
 ROMEDEVILLE IL 60446
 US

CYLINDER #: EB0008643
 FILL PRESSURE: 02000 PSIG PRODUCT EXPIRATION: 05Jun2015

PURE MATERIAL: NITROGEN CAS# 7727-37-9

GRADE: ZERO GAS

PURITY: 99.998%

<u>IMPURITY</u>	<u>MAXIMUM</u> <u>CONCENTRATIONS</u>	<u>ACTUAL</u> <u>CONCENTRATIONS</u>
THC	0.5 PPM	< 0.5 PPM

LOT # NITFILL051512

QC BATCH : TRO0059810

ANALYST: SAJAD HYDER

CERTIFIED MASTER CLASS



Air Liquide America
Specialty Gases LLC



Single-Certified Calibration Standard

1290 COMBERMERE STREET, TROY, MI 48083

Phone: 248-589-2950 Fax: 248-589-2134

CERTIFICATE OF ACCURACY: Certified Master Class Calibration Standard

Product Information

Document #: 45946565-038
Item No.: M0002680-P-30AL
P.O. No.: 59660-70-65000

Cylinder Number: ALM022574
Cylinder Size: 30AL
Certification Date: 30May2012
Expiration Date: 30May2013
Lot Number: TRO0059322

Customer

CLEAN AIR INSTRUMENT RENTAL
JACK BIONDA
110 TECHNOLOGY DRIVE
RID PARK, FINLAY TOWNSHIP
CORAOPOLIS, PA 15108
US

CERTIFIED CONCENTRATION

<u>Component Name</u>	<u>Concentration (Moles)</u>	<u>Accuracy (+/-%)</u>
NITROGEN DIOXIDE	50.4	2
NITROGEN	PPM BALANCE	

TRACEABILITY

Traceable To

Scott Reference Standard

APPROVED BY:

Hilary Thatcher
HILARY THATCHER

DATE:

5/31/12

Wheelabrator
 Clean Air Project No: 12218
 Unit 1 FF Outlet



500 West Wood Street
 Palatine, IL 60067
 800-627-0033 (phone)
 847-991-3385 (fax)

NO₂ - NO Conversion Efficiency

Cylinder ID #	ALM22574	
NO ₂	50.4	ppmdv Certified Test Gas Concentration

Date	3/19/2013
------	-----------

Time	NO _x
03:42:14	46.032
03:42:29	46.260
15:42:44	46.130
Average	46.14

$$Eff_{NO_2} = \frac{C_{Dir}}{C_V} \times 100$$

Where:

- C_{dir} = Measured Concentration of calibration GAS when introduced in direct calibration mode, (ppmv)
- C_v = Certified test gas concentration (ppmv)

Eff_{NO2} = NO₂ - NO Conversion Efficiency (%)

= **91.5**

(Note: Eff_{NO2} must be ≥ 90 % of certified test gas concentration)

Wheelabrator
 Clean Air Project No: 12218
 Unit 2 FF Outlet



500 West Wood Street
 Palatine, IL 60067
 800-627-0033 (phone)
 847-991-3385 (fax)

NO₂ - NO Conversion Efficiency

Cylinder ID #	ALM22574		
NO ₂	50.4	ppmdv	Certified Test Gas Concentration

Date	3/22/2013
------	-----------

Time	NO _x
14:38:37	47.212
14:38:52	47.049
14:39:07	47.538
14:39:22	47.537
14:39:37	47.692
Average	47.41

$$Eff_{NO_2} = \frac{C_{Dir}}{C_V} \times 100$$

Where:

- C_{dir} = Measured Concentration of calibration GAS when introduced in direct calibration mode, (ppmv)
- C_v = Certified test gas concentration (ppmv)

Eff_{NO2} = NO₂ - NO Conversion Efficiency (%)

= **94.1**

(Note: Eff_{NO2} must be ≥ 90 % of certified test gas concentration)

Wheelabrator
 Clean Air Project No: 12218
 Unit 3 FF Outlet



500 West Wood Street
 Palatine, IL 60067
 800-627-0033 (phone)
 847-991-3385 (fax)

NO₂ - NO Conversion Efficiency

Cylinder ID #	ALM22574	
NO ₂	50.4	ppmdv Certified Test Gas Concentration

Date	3/20/2013
------	-----------

Time	NO _x
15:12:29	45.894
15:12:44	46.056
15:12:59	46.227
15:13:14	46.390
15:13:29	46.398
Average	46.19

$$Eff_{NO_2} = \frac{C_{Dir}}{C_V} \times 100$$

Where:

- C_{dir} = Measured Concentration of calibration GAS when introduced in direct calibration mode, (ppmv)
- C_v = Certified test gas concentration (ppmv)

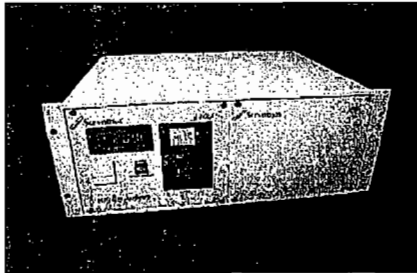
Eff_{NO₂} = NO₂ - NO Conversion Efficiency (%)

= **91.7**

(Note: Eff_{NO₂} must be ≥ 90 % of certified test gas concentration)



Servomex 1420C Oxygen Analyzer



The 1420C Includes:

- Analyzer
- Power cord
- Signal cable
- Manual
- Calibration sheet
- Instrument Rental Shipping Container

Specifications:

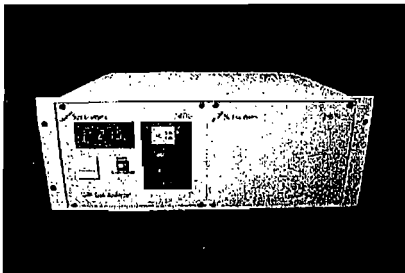
- Weight: 12 lbs.
- Dimensions: 9" x 5" x 7" (single unit)
- Range: 0-25 & 100% O₂.
- Accuracy: +/- 0.1%
- Linearity: +/- 0.1% O₂
- Repeatability: +/- 0.1% O₂
- Response time (T₉₀): 2.5 seconds at 200 ml/min;
2.0 seconds at 250 ml/min
- Zero Drift: <+/- .002% O₂/hour
- Span Drift: <+/- .002% O₂/hour
- Warm up time: typically 1 hour
- Electrical output: 0-1V non-isolated (min load 1K)
or 4-20mA isolated (max load 600?).
- Display: 3.5 digit green LED display
- Display resolution: 0.1%
- AC Supply: 88-264VAC, 47-63 Hz
- Power required: 45 VA
- Operating ambient temperature: 32oF to 113oF
(0oC to 45oC) as standard. 32oF to 104oF (0oC to
40oC) when fitted in bench top case.
- Storage temperature: -4oF to 158oF (-20oC to
70oC).
- Relative humidity: 0-90% non-condensing.

Rental/Application Notes:

- Effect of ambient temperature: <+/- 0.03% O₂/C
zero; <+/- 0.10% O₂/C span
- Effect of barometric pressure: The analyzer mea-
sures the partial pressure of oxygen in the sample
gas. Therefore, any change in sample pressure at the
measuring cell will have an effect, which is propor-
tional to the change in absolute pressure from time
of calibration. An analyzer for oxygen purity (with
pressure compensation) reduces error by a factor of
approximately 5.
- Inlet pressure: 1-10 psig (7-70 kPag)
- Vent pressure: 11.6 to 15.9 psia (80-110 kPag)
- Flow rate: 1-6 lpm
- The Servomex 1420C/1415C can be plumbed
together in a 19" rack mount (Model 1440C). The
combined weight is 44 lbs. These units are compat-
ible with the older 1400B series.
- When renting, equipment must be returned in its
original packaging.



Servomex 1415C CO2 Analyzer



The 1415C Includes:

- Analyzer
- Power cord
- Signal cable
- Manual
- Calibration sheet
- Instrument Rental Shipping Container

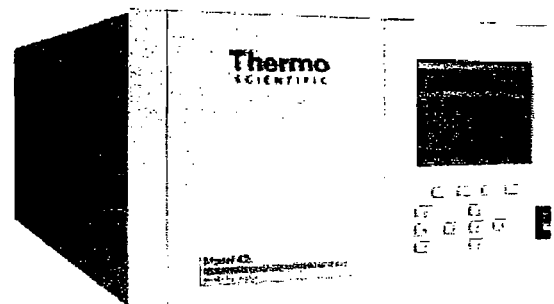
Specifications:

- Weight: 12 lbs.
- Dimensions: 9" x 5" x 7" (single unit)
- Range: 0-20 & 25% CO₂.
- Accuracy: 1% of selected range
- Linearity: 1% of selected range
- Repeatability: 1% of selected range
- Response time (T90): <10 seconds
- Zero Drift: 2% of full scale/week
- Span Drift: 1% of reading/day
- Warm up time: typically 1 hour
- Electrical output: 0-1 V non-isolated (min load 1K) or 4-20mA isolated (max load 600?).
- Display: 3.5 digit green LED display reading.
- Display resolution: 0.1%
- AC Supply: 88-264VAC, 47-63 Hz
- Power required: 45 VA
- Operating ambient temperature: 32°F to 113°F (0°C to 45°C) as standard. 32°F to 104°F (0°C to 40°C) when fitted in bench top case.
- Storage temperature: -4°F to 158°F (-20°C to 70°C)
- Relative humidity: 0-90% non-condensing.

Rental/Application Notes:

- Effect of ambient temperature: 1% of full scale per 10°C change.
- Effect of barometric pressure: 0.15% of reading per mbar within specified range.
- Inlet pressure: 1-10 psig (7-70 kPag)
- Vent pressure: 11.6 to 15.9 psia (80-110 kPag)
- Flow rate: 1-6 lpm
- The Servomex 1420C/1415C can be plumbed together in a 19" rack mount (Model 1440C). The combined weight is 44 lbs. These units are compatible with the older 1400B series.
- Equipment must be returned in its original packaging.

Thermo Model 42iHL NO, NO₂, NO_x Analyzer



Rental/Application Notes:

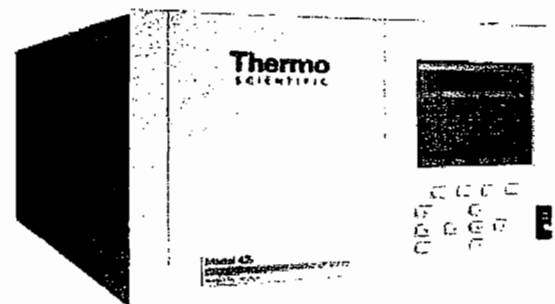
- User programmable software capabilities allow individual measurement range settings to be stored in memory for subsequent recall and NO, NO₂, NO_x hourly average storage for up to one month.
- Can be remotely controlled with bi-directional RS-232 Communication Port, or Ethernet Port
- Troubleshooting diagnostics provide instant indication of instrument operating parameters including pressure, flow, DC supply voltages, internal temperature, reaction chamber temperature, PMT operating voltage, and converter temperature.
- Programmable 1, 5, 15, 30, or 60 min. avg. readings or instantaneous readings.
- Dual Range capabilities.

Specifications:

Unit Weight	47 lbs.
Shipping Weight	62 lbs. w/access. (2 pumps=36 lbs)(1 pump=30 lbs)
Number of Boxes	2
Dimensions	16.75"(w)x8.62"(h)x23"(d)
Detection Method	Chemiluminescence
Detection Limit	0.05 ppm
Manufacturer's Ranges	0-10ppm to 5000ppm (custom ranges available)
CleanAir Suggested Ranges	0-500 ppm
Operating Temperature	0-45° C
Sample Temperature	Ambient Temp
Power in Watts	500W
Voltage Range	100 VAC@50/60Hz, 115 VAC@50/60Hz, 220-240 VAC@50/60Hz
Sample Flow Rate	25 cc/min. with bypass 2 SCFH
Software Requirements	486 or Higher Computer - Win 98, 2000, XP
Outputs	Analog Outputs: 6 voltage outputs; 0-100mV, 1V, 5V, 10V Digital Outputs: 1 pwr fail relay, 10 digital relays, user sel. alarm. relay logic, 100mA@200 VDC
Drift	Span Drift: ± 1% FS Zero Drift: 0.05 ppm FS
Linearity	±1% FS
Response Time	Manual Mode: 2.5 sec. NO mode, 5.0 sec. NO _x mode



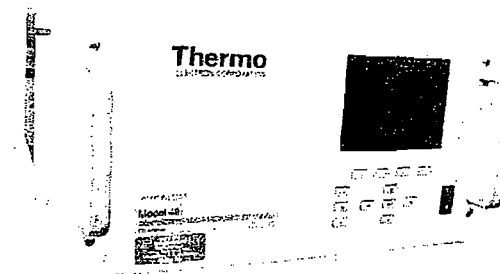
Thermo Model 42iHL NO, NO₂, NO_x Analyzer



Specifications:

Warm Up Time	90 mins
Serial Port	1 RS232 or RS485 w/2 connectors
Ethernet	RJ45 for 10 mbs, static or dynamic TCP/IP Addressing

Thermo Model 48i CO Analyzer



Rental/Application Notes:

- Designed for EPA Designated Method RFCA-0981-054
- Can be remotely controlled with bi-directional RS-232 Communication Port
- Analog data outputs with selectable voltages
- Analog status outputs (optional)
- Instrument diagnostics can be performed locally and remotely.
- CO gases are available from CleanAir Instrument Rental.
- Equipment must be returned in its original packaging.

Specifications:

Unit Weight	50 lbs.
Shipping Weight	60 lbs.
Number of Boxes	1
Dimensions	16.75"x8.62"x23"
Detection Method	Gas Filter Correlation
Detection Limit	0.04 ppm
Manufacturer's Ranges	0-1ppm to 5000ppm (custom ranges available)
CleanAir Suggested Ranges	0-10ppm to 1000ppm
Operating Temperature	20-30° C
Power	100W
Sample Flow Rate	0.5 - 2 LPM
Outputs	Selectable Voltage, RS232/RS485, TCP/IP, 10 Status Relays, and Power Fail Indication (standard). 0-20 or 4-20 mA Isolated Current Outout (optional)
Drift	Span Drift: ± 1% FS in 24hrs. Zero Drift: <0.1ppm in 24hrs.
Linearity	±1% FS
Response Time	1 min. (30 sec. avg.)
Warm Up Time	2 hrs.



Ametek Model 921NMP SO2 Analyzer



Model 921NMP Includes:

- Analyzer
- Power Cord
- Signal Cable
- Manual
- Instrument Rental Shipping Carton

Specifications:

- Approximate Shipping Weight: 60 lbs.
- Size: 7" x 19" x 23.5"
- Electrical Requirements: 120VAC/60Hz or 220VAC/50Hz
- Measuring Range: Set to 0-100ppm (Min.0-25ppm, Max.0-3000ppm)
- Accuracy: >1% full scale
- Zero Drift: +/-1ppm 24 hours
- Reproducibility: >0.5% full scale
- Linearity: >1% full scale
- Response Time: Typically <30 Secs. to 90%
- Typical Sample Flow: 1-2 L/Min.
- Detection Method: Ultraviolet-Photometric, Dual Lamps so No Moving Parts (NMP).
- Ambient Temperature: 5 to 50° C
- Relative Humidity: 5 to 95%, Non-Condensing
- Outputs: Set at 0-1V and 0-10V, each available simultaneously for each range (0-100mV, 4-20mA are also available upon request)

Rental/Application Notes:

- There is no internal sample pump
- A sample pump must be provided.
- This unit is recommended for low-level SO2 measurements (<100ppm).
- The sample gas must be dry.
- Equipment must be returned in its original packaging.
- Specify range/output requirements.



EPA Method 7E Interference Check
 40 CFR Part 60, 7E-3 & 7E-4

Analyzer Type: Servomex O2
 Model No: 1440C O2
 Serial Number: 1440C/STD/2557
 CleanAir Asset#: 207362
 Hovacal Asset#: 207427

Calibration Error Cal Span: 20.50 %

	Gas (%)	Resp.	Error
High	20.50	20.42	-0.39 %
Mid	10.50	10.49	-0.05 %
Low	2.80	2.73	-0.34 %

Interferent Gas Mixed With Zero N2

Interferent Gas	Conc	Response	Zero: 0.00 % Calculated Interference
N ₂ O	15.00 ppm	0.00	0.00%
NH ₃	15.00 ppm	0.00	0.00%
NO ₂	15.00 ppm	0.08	0.39%
CH ₄	50.00 ppm	0.00	0.00%
H ₂	50.00 ppm	0.00	0.00%
HCL	40.00 ppm	0.05	0.24%
NO	300.00 ppm	0.03	0.15%
SO ₂	500.00 ppm	0.00	0.00%
CO	500.00 ppm	0.00	0.00%
CO ₂	15.00 %	-0.05	0.24%
H ₂ O	1.00 %	0.00	0.00%

Interferent Gas Mixed With Pollutant (O2)

Interferent Gas	Conc	Response	Pollutant: 9.65 % Calculated Interference
N ₂ O	15.00 ppm	9.68	0.15%
NH ₃	15.00 ppm	9.70	0.24%
NO ₂	15.00 ppm	9.75	0.49%
CH ₄	50.00 ppm	9.68	0.15%
H ₂	50.00 ppm	9.70	0.24%
HCL	N/A	N/A	N/A
NO	300.00 ppm	9.70	0.24%
SO ₂	500.00 ppm	9.70	0.24%
CO	500.00 ppm	9.68	0.15%
CO ₂	15.00 %	9.65	0.00%
H ₂ O	1.00 %	9.75	0.49%

Cylinder	Conc	Cylinder	Cylinder	Conc	Cylinder
N ₂ O	151 ppm	CC163990-1011	HCL	99.5 ppm	NXA1558-1011
NH ₃	111.2 ppm	ALM21715-1011	NO	2490 ppm	ALM55875-0110
NO ₂	200 ppm	150800-1011	SO ₂	4730 ppm	ALM57442-1111
CH ₄	451 ppm	ALM9169-0910	CO	3050 ppm	ALM6624-0711
H ₂	552 ppm	ALM48043-1011	CO ₂	99.99 %	A9753-0906
N ₂	99.99 %	D4181-0811	Zero Air	100.00 %	K695-0212



EPA Method 7E Interference Check
 40 CFR Part 60, 7E-3 & 7E-4

Analyzer Type: Servomex
 Model No: 1440C
 Serial Number: 01440C/CO2/2528
 CleanAir Asset#: 205795
 Hovacal Asset#: 207427

Calibration Error Cal Span: 70.00 %

	Gas (%)	Resp.	Error
High	70	70.05	0.07 %
Mid	40.1	39.33	-1.10 %
Low	19.5	18.69	-1.16 %

Interferent Gas Mixed With Zero N2

Interferent Gas	Conc	Response	Zero: 0.00 % Calculated Interference
N ₂ O	15.00 ppm	0.00	0.00%
NH ₃	15.00 ppm	0.00	0.00%
NO ₂	15.00 ppm	0.00	0.00%
CH ₄	50.00 ppm	0.00	0.00%
H ₂	50.00 ppm	0.00	0.00%
HCL	40.00 ppm	0.00	0.00%
NO	300.00 ppm	0.00	0.00%
SO ₂	500.00 ppm	0.00	0.00%
CO	500.00 ppm	0.00	0.00%
CO ₂	N/A	N/A	N/A
H ₂ O	1.00 %	0.00	0.00%

Interferent Gas Mixed With Pollutant (CO2)

Interferent Gas	Conc	Response	Pollutant: 14.80 % Calculated Interference
N ₂ O	15.00 ppm	14.80	0.00%
NH ₃	15.00 ppm	14.80	0.00%
NO ₂	15.00 ppm	14.80	0.00%
CH ₄	50.00 ppm	14.80	0.00%
H ₂	50.00 ppm	14.80	0.00%
HCL	N/A	N/A	N/A
NO	300.00 ppm	14.80	0.00%
SO ₂	500.00 ppm	14.80	0.00%
CO	500.00 ppm	14.80	0.00%
CO ₂	N/A	N/A	N/A
H ₂ O	1.00 %	14.90	0.14%

Cylinder	Conc	Cylinder	Cylinder	Conc	Cylinder
N ₂ O	151 ppm	CC163990-1011	HCL	99.5 ppm	NXA1558-1011
NH ₃	111.2 ppm	ALM21715-1011	NO	2490 ppm	ALM55875-0110
NO ₂	200 ppm	150800-1011	SO ₂	4730 ppm	ALM57442-1111
CH ₄	451 ppm	ALM9169-0910	CO	3050 ppm	ALM6624-0711
H ₂	552 ppm	ALM48043-1011	CO ₂	99.99 %	A9753-0906
N ₂	99.99 %	D4181-0811	Zero Air	100.00 %	K695-0212



EPA Method 7E Interference Check
 40 CFR Part 60, 7E-3 & 7E-4

Analyzer Type: Thermo
 Model No: 42i-LS
 Serial Number: 713421688
 CleanAir Asset#: 205175
 Hovacal Asset#: 207427

Calibration Error		Cal Span: 19.40 ppm	
Gas (ppm)	Resp.	Error	
High	19.40	19.47	0.36 %
Mid			0.00 %
Low	8.10	8.06	-0.21 %

Interferent Gas Mixed With Zero AIR

Interferent Gas	Conc	Response	Zero: 0.00 ppm Calculated Interference
N ₂ O	15.00 ppm	0.01	0.05%
NH ₃	15.00 ppm	0.00	0.00%
NO ₂	N/A	0.33	N/A
CH ₄	50.00 ppm	0.07	0.36%
H ₂	50.00 ppm	0.04	0.21%
HCL	40.00 ppm	0.82	4.23%
NO	N/A	N/A	N/A
SO ₂	500.00 ppm	0.09	0.46%
CO	500.00 ppm	0.04	0.21%
CO ₂	15.00 %	0.01	0.05%
H ₂ O	1.00 %	0.02	0.10%

Interferent Gas Mixed With Pollutant (NOX)

Interferent Gas	Conc	Response	Pollutant: 14.76 ppm Calculated Interference
N ₂ O	15.00 ppm	14.84	0.41%
NH ₃	15.00 ppm	14.81	0.26%
NO ₂	N/A	N/A	N/A
CH ₄	50.00 ppm	14.84	0.41%
H ₂	50.00 ppm	14.83	0.36%
HCL	N/A	N/A	N/A
NO	N/A	N/A	N/A
SO ₂	500.00 ppm	14.89	0.67%
CO	500.00 ppm	14.88	0.62%
CO ₂	15.00 %	13.52	6.39%
H ₂ O	1.00 %	14.91	0.77%

Cylinder	Conc	Cylinder	Cylinder	Conc	Cylinder
N ₂ O	151 ppm	CC163990-1011	HCL	99.5 ppm	NXA1558-1011
NH ₃	111.2 ppm	ALM21715-1011	NO	50.4 ppm	ALM38089-0811
NO ₂	200 ppm	150800-1011	SO ₂	4730 ppm	ALM57442-1111
CH ₄	451 ppm	ALM9169-0910	CO	3050 ppm	ALM6624-0711
H ₂	552 ppm	ALM48043-1011	CO ₂	99.99 %	A9753-0906
N ₂	99.99 %	K695-0212	Zero Air	100.00 %	K695-0212



EPA Method 7E Interference Check
 40 CFR Part 60, 7E-3 & 7E-4

Analyzer Type: Thermo
 Model No: 42i-LS
 Serial Number: 713421688
 CleanAir Asset#: 205175
 Hovacal Asset#: 207427

Calibration Error		Cal Span: 19.40 ppm	
Gas (ppm)	Resp.	Error	
High	19.40	19.44	0.21 %
Mid			0.00 %
Low	8.07	8.02	-0.26 %

Interferent Gas Mixed With Zero AIR

Interferent Gas	Conc	Response	Zero: 0.00 ppm Calculated Interference
N ₂ O	15.00 ppm	0.00	0.00%
NH ₃	15.00 ppm	0.00	0.00%
NO ₂	15.00 ppm	0.33	1.70%
CH ₄	50.00 ppm	0.02	0.10%
H ₂	50.00 ppm	0.01	0.05%
HCL	40.00 ppm	0.02	0.10%
NO	N/A	N/A	N/A
SO ₂	500.00 ppm	0.05	0.26%
CO	500.00 ppm	0.02	0.10%
CO ₂	15.00 %	0.00	0.00%
H ₂ O	1.00 %	0.02	0.10%

Interferent Gas Mixed With Pollutant (NO)

Interferent Gas	Conc	Response	Pollutant: 14.66 ppm Calculated Interference
N ₂ O	15.00 ppm	14.71	0.26%
NH ₃	15.00 ppm	14.69	0.15%
NO ₂	N/A	N/A	N/A
CH ₄	50.00 ppm	14.72	0.31%
H ₂	50.00 ppm	14.70	0.21%
HCL	N/A	N/A	N/A
NO	N/A	N/A	N/A
SO ₂	500.00 ppm	14.74	0.41%
CO	500.00 ppm	14.76	0.52%
CO ₂	15.00 %	13.41	6.44%
H ₂ O	1.00 %	14.81	0.77%

Cylinder	Conc	Cylinder	Cylinder	Conc	Cylinder
N ₂ O	151 ppm	CC163990-1011	HCL	99.5 ppm	NXA1558-1011
NH ₃	111.2 ppm	ALM21715-1011	NO	50.4 ppm	ALM38089-0811
NO ₂	200 ppm	150800-1011	SO ₂	4730 ppm	ALM57442-1111
CH ₄	451 ppm	ALM9169-0910	CO	3050 ppm	ALM6624-0711
H ₂	552 ppm	ALM48043-1011	CO ₂	99.99 %	A9753-0906
N ₂	99.99 %	D4181-0811	Zero Air	100.00 %	K695-0212



EPA Method 7E Interference Check
 40 CFR Part 60, 7E-3 & 7E-4

Analyzer Type: Thermo
 Model No: 42i-LS
 Serial Number: 713421688
 CleanAir Asset#: 205175
 Hovacal Asset#: 207427

Calibration Error Cal Span: 50.6 ppm

	Gas (ppm)	Resp.	Error
High	50.6	46.73	-7.65 %
Mid			0.00 %
Low			0.00 %

Interferent Gas Mixed With Zero AIR

Interferent Gas	Conc	Response	Zero: 0.00 ppm Calculated Interference
N ₂ O	15.00 ppm	0.01	0.02%
NH ₃	15.00 ppm	0.00	0.00%
NO ₂	N/A	N/A	N/A
CH ₄	50.00 ppm	0.05	0.10%
H ₂	50.00 ppm	0.03	0.06%
HCL	40.00 ppm	0.79	1.56%
NO	N/A	N/A	N/A
SO ₂	500.00 ppm	0.04	0.08%
CO	500.00 ppm	0.02	0.04%
CO ₂	15.00 %	0.01	0.02%
H ₂ O	1.00 %	0.000	0.00%

Interferent Gas Mixed With Pollutant (NO2)

Interferent Gas	Conc	Response	Pollutant: 0.11 ppm Calculated Interference
N ₂ O	15.00 ppm	0.11	0.00%
NH ₃	15.00 ppm	0.11	0.00%
NO ₂	N/A	N/A	N/A
CH ₄	50.00 ppm	0.12	0.02%
H ₂	50.00 ppm	0.13	0.04%
HCL	N/A	N/A	N/A
NO	300.00 ppm	0.11	0.00%
SO ₂	500.00 ppm	0.12	0.02%
CO	500.00 ppm	0.11	0.00%
CO ₂	15.00 %	0.11	0.00%
H ₂ O	N/A	N/A	N/A

Cylinder	Conc	Cylinder	Cylinder	Conc	Cylinder
N ₂ O	151 ppm	CC163990-1011	HCL	99.5 ppm	NXA1558-1011
NH ₃	111.2 ppm	ALM21715-1011	NO	50.4 ppm	ALM38089-0811
NO ₂	200 ppm	150800-1011	SO ₂	4730 ppm	ALM57442-1111
CH ₄	451 ppm	ALM9169-0910	CO	3050 ppm	ALM6624-0711
H ₂	552 ppm	ALM48043-1011	CO ₂	99.99 %	A9753-0906
N ₂	99.99 %	K695-0212	Zero Air	100.00 %	K695-0212



EPA Method 7E Interference Check
 40 CFR Part 60, 7E-3 & 7E-4

Analyzer Type: Ametek Sox Monitor
 Model No: 921L
 Serial Number: AE-921-S394
 CleanAir Asset#: 205543
 Hovacal Asset#: 207427

Calibration Error		Cal Span: 80.10 ppm	
	Gas (ppm)	Resp.	Error
High	80.10	80.16	0.07 %
Mid	45.20	45.95	0.94 %
Low	25.30	25.35	0.06 %

Interferent Gas Mixed With Zero N2

Interferent Gas	Conc	Response	Zero: 0.00 ppm Calculated Interference
N ₂ O	15.00 ppm	0.09	0.11%
NH ₃	15.00 ppm	0.00	0.00%
NO ₂	15.00 ppm	0.73	0.91%
CH ₄	50.00 ppm	0.00	0.00%
H ₂	50.00 ppm	-0.05	0.06%
HCL	40.00 ppm	0.06	0.07%
NO	300.00 ppm	0.00	0.00%
SO ₂	N/A	N/A	N/A
CO	500.00 ppm	0.00	0.00%
CO ₂	15.00 %	-0.11	0.14%
H ₂ O	1.00 %	0.00	0.00%

Interferent Gas Mixed With Pollutant (SO2)

Interferent Gas	Conc	Response	Pollutant: 67.70 ppm Calculated Interference
N ₂ O	15.00 ppm	67.78	0.10%
NH ₃	15.00 ppm	67.70	0.00%
NO ₂	15.00 ppm	68.47	0.96%
CH ₄	50.00 ppm	67.70	0.00%
H ₂	50.00 ppm	67.75	0.06%
HCL	N/A	N/A	N/A
NO	300.00 ppm	67.81	0.14%
SO ₂	N/A	N/A	N/A
CO	500.00 ppm	67.75	0.06%
CO ₂	15.00 %	67.83	0.16%
H ₂ O	1.00 %	67.67	0.04%

Cylinder	Conc	Cylinder	Cylinder	Conc	Cylinder
N ₂ O	151 ppm	CC163990-1011	HCL	99.5 ppm	NXA1558-1011
NH ₃	111.2 ppm	ALM21715-1011	NO	2490 ppm	ALM55875-0110
NO ₂	200 ppm	150800-1011	SO ₂	4730 ppm	ALM57442-1111
CH ₄	451 ppm	ALM9169-0910	CO	3050 ppm	ALM6624-0711
H ₂	552 ppm	ALM48043-1011	CO ₂	99.99 %	A9753-0906
N ₂	99.99 %	D4181-0811	Zero Air	100.00 %	K695-0212



EPA Method 7E Interference Check 40 CFR Part 60, 7E-3 & 7E-4

Analyzer Type: Thermo Scientific
 Model No: 48i
 Serial Number: 1127350060
 CleanAir Asset#: 207881
 Hovacal Asset#: 207427

Calibration Error		Cal Span: 800 ppm	
Gas (ppm)	Resp.	Error	
High	800	800.99	0.12 %
Mid	499	500.80	0.23 %
Low	249	250.03	0.13 %

Interferent Gas Mixed With Zero N2

Interferent Gas	Conc	Response	Zero: 0.00 ppm Calculated Interference
N ₂ O	15.00 ppm	1.10	0.14%
NH ₃	15.00 ppm	0.30	0.04%
NO ₂	15.00 ppm	0.50	0.06%
CH ₄	50.00 ppm	0.70	0.09%
H ₂	50.00 ppm	0.10	0.01%
HCL	40.00 ppm	0.00	0.00%
NO	300.00 ppm	0.10	0.01%
SO ₂	500.00 ppm	0.10	0.01%
CO	N/A	N/A	N/A
CO ₂	15.00 %	-0.50	0.06%
H ₂ O	1.00 %	0.00	0.00%

Interferent Gas Mixed With Pollutant (CO)

Interferent Gas	Conc	Response	Pollutant: 492.0 ppm Calculated Interference
N ₂ O	15.00 ppm	496.0	0.50%
NH ₃	15.00 ppm	493.0	0.13%
NO ₂	15.00 ppm	493.0	0.13%
CH ₄	50.00 ppm	494.0	0.25%
H ₂	50.00 ppm	494.0	0.25%
HCL	N/A	N/A	N/A
NO	300.00 ppm	494.0	0.25%
SO ₂	500.00 ppm	494.0	0.25%
CO	N/A	N/A	N/A
CO ₂	15.00 %	499.0	0.88%
H ₂ O	1.00 %	498.0	0.75%

Cylinder	Conc	Cylinder	Cylinder	Conc	Cylinder
N ₂ O	151 ppm	CC163990-1011	HCL	99.5 ppm	NXA1558-1011
NH ₃	111.2 ppm	ALM21715-1011	NO	2490 ppm	ALM55875-0110
NO ₂	200 ppm	150800-1011	SO ₂	4730 ppm	ALM57442-1111
CH ₄	451 ppm	ALM9169-0910	CO	3050 ppm	ALM9169-0910
H ₂	552 ppm	ALM48043-1011	CO ₂	99.99 %	A9743-0906
N ₂	99.99 %	D4181-0811	Zero Air	100.00 %	K695-0212

Sample Probe Calibration

Probe Type: S-Type Pitot I.D. Number: 67-8P-12
 Project Number: _____

Thermocouple Calibration

Reference Type: Thermocouple Reference I.D. No: 15-078-39 Pyrometer I.D. No: 80512890 Units: °F

Point No.	Target Temp.	Reference Temp.	Indicated Temp.	Temp. Difference	% Difference*	Specification
1	Ambient	77	78	-1	0.19%	%Difference ≤ 1.5
2	200°F-250°F	298	297	1	0.13%	

* Based on Absolute Temperature (Rankine)

Does thermocouple assembly meet specifications? → YES

Pitot Tube Calibration (Wind Tunnel Method @ 49 ft/sec)

Reference Pitot I.D. No: Wind Tunnel Reference Pitot Cp: 0.99

Pitot Side 'A':				Abs. Deviation from Avg. C _{p(A)} **	Specification Avg. C _p Deviations ≤ 0.01
Trial No.	Reference ΔP	Probe ΔP	Probe C _{p(S)} *		
1	0.543	0.796	0.818	0.001	
2	0.549	0.803	0.819	0.001	
3	0.554	0.812	0.818	0.000	
Side 'A' Average Probe C _{p(A)} =			0.8181	0.0007	

Pitot Side 'B':				Abs. Deviation from Avg. C _{p(B)} **	Specification Avg. C _p Deviations ≤ 0.01
Trial No.	Reference ΔP	Probe ΔP	Probe C _{p(S)} *		
1	0.552	0.799	0.823	0.003	
2	0.547	0.805	0.816	0.004	
3	0.552	0.800	0.822	0.002	
Side 'B' Average Probe C _{p(B)} =			0.8205	0.0030	

'A' Average C _p 0.818	—	'B' Average C _p 0.821	=	Difference -0.003	Specification Difference ≤ 0.01
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Does assembly meet specifications?

YES



If "Yes", C_p = Average of Side 'A' and 'B' values. If "No", Pitot must be replaced.

$$C_{P(S)} = C_{P(STD)} \sqrt{\frac{\Delta P_{(STD)}}{\Delta P_{(S)}}}$$

$$** \text{ Deviation} = |C_{P(S)} - \overline{C_{P(A \text{ or } B)}}|$$

All specifications are from EPA-600/9-78-005, section 3.1

Probe Cp= 0.819 Calibrated by: G. PAVLOVICS Date: 11/21/2012

Clean Air Engineering - Meter Box Full Test Calibration

Client: Source

Reviewed By: M. Vaquero

Calibration Signature: 

ID No: 61-11

Calibrated By: Jeff Ivens

Meter Box Yd: 1.0050

Dept No: Source

Date of Calibration: 07/10/12

Meter Box ΔH@: 1.6964

Meter Box Serial No: n/a

Due Date of Calibration: 07/11/13

Barometer Serial No: W12637

Manufacturer Part No: 0028

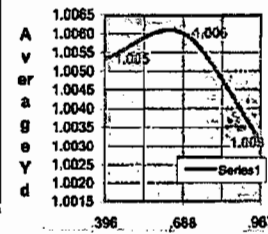
Meter Box Vacuum: 1.0 in. H₂O

Barometric Pressure: 29.34 in. Hg

			Standard Meter Gas Volume (ft ³)			Meter Box Gas Volume (ft ³)			Std. Meter Temperature (°F)			Meter Box Temperature (°F)			Time (min.)	Calibration Results		
Q	ΔH	ΔP	Y _{ds}	Initial	Final	V _{ds} Net	Initial	Final	V _d Net	T _{is} In	T _{os} Out	T _{ds} Avg.	T _i In	T _o Out	T _d Avg.	θ	Y _d	ΔH@
0.396	0.50	-1.20	1.0000	0.000	5.000	5.000	748.300	753.335	5.035	80.0	80.0	80.00	92.0	87.0	89.50	12.10	1.0062	1.6872
0.395	0.50	-1.20	1.0000	0.000	5.000	5.000	753.335	758.379	5.044	80.0	80.0	80.00	92.0	87.0	89.50	12.12	1.0044	1.7028
0.688	1.50	-1.50	1.0000	0.000	10.000	10.000	766.700	776.806	10.108	80.0	80.0	80.00	98.0	89.0	93.50	13.94	1.0087	1.6833
0.689	1.50	-1.50	1.0000	0.000	10.000	10.000	776.806	786.934	10.128	80.0	80.0	80.00	99.0	89.0	94.00	13.91	1.0054	1.8781
0.968	3.00	-1.80	1.0000	0.000	10.000	10.000	720.100	730.169	10.069	80.0	80.0	80.00	98.0	86.0	92.00	9.90	1.0031	1.7073
0.965	3.00	-1.80	1.0000	0.000	10.000	10.000	730.169	740.262	10.093	80.0	80.0	80.00	100.0	86.0	94.00	9.93	1.0043	1.7114
Averages																	1.00502	1.69635

Nomenclature	Equations
<p>P_b Barometric Pressure (in. Hg)</p> <p>Q Flow Rate (cfm)</p> <p>ΔH Orifice Pressure differential (in. H₂O)</p> <p>ΔP Inlet Pressure Differential (in. H₂O)</p> <p>V_d Gas Meter Volume - Dry (ft³)</p> <p>V_{ds} Standard Meter Volume - Dry (ft³)</p> <p>T_a Average Meter Box Temperature (°F)</p> <p>T_o Outlet Meter Box Temperature (°F)</p> <p>T_{ds} Average Standard Meter Temperature (°F)</p> <p>Y_d Meter Correction Factor (unitless), Y₁ ≤ Y_{avg} ± 0.02</p> <p>Y_{ds} Standard Meter Correction Factor (unitless)</p> <p>ΔH@ Orifice Pressure Differential giving 0.75 cfm of air at 68°F and 29.92 in. Hg (in. H₂O)</p> <p>ΔH@ ≤ ΔH@_{avg} ± 0.2</p> <p>θ Duration of Run (minutes)</p>	$Y_d = (Y_{ds}) \left[\frac{V_{ds}}{V_d} \right] \left[\frac{T_d + 460}{T_{ds} + 460} \right] \left[\frac{P_b + \Delta P / 13.6}{P_b + \Delta H / 13.6} \right]$ $\Delta H@ = \frac{(0.0319)(\Delta H)}{P_b(T_a + 460)} \left[\frac{(T_{ds} + 460)\theta}{(V_{ds})(Y_{ds})} \right]^2$ $Q = \frac{17.64(V_{ds})(P_b)}{(T_{ds} + 460)(\theta)}$

Average YD vs. Average CFM



Vacuum Gauge	
Standard (in. Hg)	Gauge (in. Hg)
5.2	5.0
10.1	10.0
14.6	15.0
19.6	20.0
24.6	25.0

Calibration Reference Information (Standard Meter)	
Reference Used: <u>Wet Test Meter</u>	Serial No: <u>11AH6</u>
Calibrated By: <u>Martin Vaquero</u>	Date Calibrated: <u>10/26/2011</u>
Percent Error: <u>0.230%</u>	Calibration Due Date: <u>10/26/2012</u>

Meter Box Pre-Calibration Inspection	
Positive Leak Check: <u>Pass</u>	Electrical Check: <u>Pass</u>
Negative Leak Check: <u>Pass</u>	Pyrometer Check: <u>Pass</u>
Vacuum Gauge Check: <u>Pass</u>	YD Tolerance: <u>Pass</u>



Meter Box - Pyrometer Calibration Sheet

Meter Box No: 61-11 Office: n/a
 Calibrated by: Jeff Ivens Client: Source
 Date: 7/10/12 Job No: n/a
 Temperature Scale Used: Fahrenheit Type of Calibration: Full-Test

Calibration Reference Settings (°F)	Pyrometer Reading for each Channel (°F)						
	1 Stack	2 Probe	3 Filter	4 Imp Out	5 Aux	6	7
50	51	52	52	51	51		
100	101	102	102	101	101		
150	151	152	152	151	151		
200	201	202	202	201	201		
250	251	252	252	251	251		
300	301	302	302	301	301		
350	351	352	352	351	351		
400	401	402	402	401	401		
450	451	452	452	451	451		
500	501	502	502	501	501		
550	551	552	551	551	551		
600	601	602	601	601	601		

Tolerance = $\pm 2^{\circ}\text{F}$ difference from reference setting.

Calibration Reference Information

Reference Used: <u>Omega CL23A</u>	Serial No: <u>T-279500</u>
Calibrated By: <u>JH Metrology</u>	Date Calibrated: <u>8/18/2011</u>
Calibration Report No: <u>1000150187</u>	Calibration Due Date: <u>8/18/2012</u>

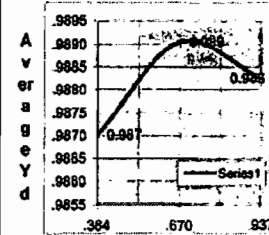
Clean Air Engineering - Meter Box Full Test Calibration

Client: Source Reviewed By: M. Vaquero Calibration Signature: [Signature]
 ID No: 66-14 Calibrated By: Jeff Ivens Meter Box Yd: 0.9879
 Dept No: Source Date of Calibration: 09/12/12 Meter Box ΔH@: 1.8015
 Meter Box Serial No: n/a Due Date of Calibration: 09/13/13 Barometer Serial No: W12637
 Manufacturer Part No: 0028 Meter Box Vacuum: 1.0 in. H₂O Barometric Pressure: 29.36 in. Hg

Q	ΔH	ΔP	Y _{ds}	Standard Meter Gas Volume (ft ³)			Meter Box Gas Volume (ft ³)			Std. Meter Temperature (°F)			Meter Box Temperature (°F)			Time (min.)	Calibration Results	
				Initial	Final	V _{ds} Net	Initial	Final	V _d Net	T _{is} In	T _{os} Out	T _{ds} Avg.	T _i In	T _o Out	T _d Avg.		Θ	Y _d
0.384	0.50	-1.20	1.0000	0.000	5.000	5.000	31.900	37.035	5.135	79.0	79.0	79.00	90.0	88.0	89.00	12.51	0.9876	1.8029
0.384	0.50	-1.20	1.0000	0.000	5.000	5.000	37.035	42.171	5.136	79.0	79.0	79.00	90.0	87.0	88.50	12.51	0.9865	1.8062
0.670	1.50	-1.50	1.0000	0.000	10.000	10.000	51.301	61.594	10.293	79.0	79.0	79.00	96.0	89.0	92.50	14.35	0.9884	1.7780
0.670	1.50	-1.50	1.0000	0.000	10.000	10.000	61.584	71.883	10.289	79.0	79.0	79.00	87.0	89.0	93.00	14.35	0.9887	1.7760
0.938	3.00	-1.80	1.0000	0.000	10.000	10.000	0.003	10.233	10.230	79.0	79.0	79.00	97.0	86.0	91.50	10.24	0.9883	1.8185
0.935	3.00	-1.80	1.0000	0.000	10.000	10.000	10.233	20.482	10.249	79.0	79.0	79.00	97.0	87.0	92.00	10.28	0.9873	1.8295
Averages																0.98795	1.80153	

Nomenclature	Equations
<p>P_b Barometric Pressure (in. Hg) Q Flow Rate (cfm) ΔH Orifice Pressure differential (in. H₂O) ΔP Inlet Pressure Differential (in. H₂O) V_d Gas Meter Volume - Dry (ft³) V_{ds} Standard Meter Volume - Dry (ft³) T_a Average Meter Box Temperature (°F) T_o Outlet Meter Box Temperature (°F) T_{ds} Average Standard Meter Temperature (°F) Y_d Meter Correction Factor (unitless), Y_d ≤ Y_{avg} ± 0.02 Y_{ds} Standard Meter Correction Factor (unitless) ΔH@ Orifice Pressure Differential giving 0.75 cfm of air at 68°F and 29.92 in. Hg (in. H₂O) ΔH@_s ≤ ΔH@_{avg} ± 0.2 Θ Duration of Run (minutes)</p>	$Y_d = (Y_{ds}) \left[\frac{V_{ds}}{V_d} \right] \left[\frac{T_d + 460}{T_{ds} + 460} \right] \left[\frac{P_b + \Delta P / 13.6}{P_b + \Delta H / 13.6} \right]$ $\Delta H@ = \frac{(0.0319)(\Delta H)}{P_b(T_a + 460)} \left[\frac{(T_{ds} + 460)\Theta}{(V_{ds})(Y_{ds})} \right]^2$ $Q = \frac{17.64(V_{ds})(P_b)}{(T_{ds} + 460)(\Theta)}$

Average YD vs. Average CFM



Average CFM

12.47

Vacuum Gauge

Standard (in. Hg)	Gauge (in. Hg)
5.0	5.0
10.5	10.0
15.6	15.0
20.6	20.0
25.5	25.0

Calibration Reference Information (Standard Meter)

Reference Used: Wet Test Meter Serial No: 11AH6
 Calibrated By: Martin Vaquero Date Calibrated: 10/26/2011
 Percent Error: 0.230% Calibration Due Date: 10/26/2012

Meter Box Pre-Calibration Inspection

Positive Leak Check: Pass Electrical Check: Pass
 Negative Leak Check: Pass Pyrometer Check: Pass
 Vacuum Gauge Check: Pass YD Tolerance: Pass



Meter Box - Pyrometer Calibration Sheet

Meter Box No: 66-14

Office: n/a

Calibrated by: Jeff Ivens

Client: Source

Date: 9/12/12

Job No: n/a

Temperature Scale Used: Fahrenheit

Type of Calibration: Full-Test

Calibration Reference Settings (°F)	Pyrometer Reading for each Channel (°F)						
	1 Stack	2 Probe	3 Filter	4 Imp Out	5 Aux	6	7
50	50	51	48	49	49		
100	99	101	98	99	99		
150	149	151	149	149	149		
200	199	201	200	199	199		
250	249	251	249	249	249		
300	299	301	299	299	299		
350	349	351	349	349	349		
400	399	401	399	398	399		
450	449	451	449	449	449		
500	499	501	499	499	499		
550	549	551	549	549	549		
600	599	601	599	598	599		

Tolerance = $\pm 2^{\circ}\text{F}$ difference from reference setting.

Calibration Reference Information

Reference Used: <u>Omega CL23A</u>	Serial No: <u>T-279500</u>
Calibrated By: <u>JH Metrology</u>	Date Calibrated: <u>8/20/2012</u>
Calibration Report No: <u>1000164078</u>	Calibration Due Date: <u>8/20/2013</u>

Client: SOURCE 66

Reviewed By: R.Redel

Calibration Signature: 

ID No: 66-22

Calibrated By: O.Lavrov

Meter Box Yd: 0.9972

Job No: N/A

Date of Calibration: 10/12/12

Meter Box ΔH@: 1.8840

Meter Box Serial No: 28-080307-1

Due Date of Calibration: 10/13/13

Barometer Serial No: W12637

Manufacturer Part No: 0928

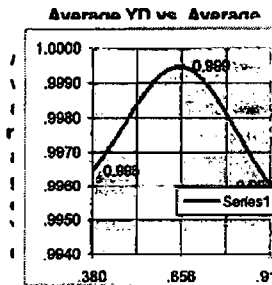
Meter Box Vacuum: 1.0 in. H₂O

Barometric Pressure: 29.61 in. Hg

Q	ΔH	ΔP	Y _{ds}	Standard Meter Gas Volume (ft ³)			Meter Box Gas Volume (ft ³)			Std. Meter Temperature (°F)			Meter Box Temperature (°F)			Time (min.)	Calibration Results	
				Initial	Final	V _{ds} Net	Initial	Final	V _d Net	T _{is} In	T _{os} Out	T _{ds} Avg.	T _i In	T _o Out	T _d Avg.		Θ	Y _d
0.380	0.50	-1.10	1.0000	0.000	5.000	5.000	958.243	963.397	5.154	72.5	72.5	72.50	91.0	88.0	88.50	12.91	0.9971	1.8582
0.379	0.50	-1.10	1.0000	0.000	5.000	5.000	963.397	968.558	5.161	72.5	72.5	72.50	91.0	88.0	88.50	12.93	0.9958	1.8640
0.656	1.50	-1.30	1.0000	0.000	10.000	10.000	2.359	12.646	10.287	72.5	72.5	72.50	95.0	88.0	91.50	14.96	0.9998	1.8714
0.657	1.50	-1.30	1.0000	0.000	10.000	10.000	12.646	22.940	10.294	72.5	72.5	72.50	95.0	88.0	91.50	14.94	0.9991	1.8664
0.913	3.00	-1.80	1.0000	0.000	10.000	10.000	932.821	943.162	10.341	72.0	72.0	72.00	99.0	90.0	94.50	10.75	0.9980	1.9220
0.913	3.00	-1.80	1.0000	0.000	10.000	10.000	943.162	953.512	10.350	72.0	72.0	72.00	99.0	90.0	94.50	10.75	0.9951	1.9220
Averages																	0.99716	1.88399

D - 32

Nomenclature	Equations
<p>P_b Barometric Pressure (in. Hg)</p> <p>Q Flow Rate (cfm)</p> <p>ΔH Orifice Pressure differential (in. H₂O)</p> <p>ΔP Inlet Pressure Differential (in. H₂O)</p> <p>V_d Gas Meter Volume - Dry (ft³)</p> <p>V_{ds} Standard Meter Volume - Dry (ft³)</p> <p>T_d Average Meter Box Temperature (°F)</p> <p>T_o Outlet Meter Box Temperature (°F)</p> <p>T_{ds} Average Standard Meter Temperature (°F)</p> <p>Y_d Meter Correction Factor (unitless), Y_i ≤ Y_{avg} ± 0.02</p> <p>Y_{ds} Standard Meter Correction Factor (unitless)</p> <p>ΔH@ Orifice Pressure Differential giving 0.75 cfm of air at 68°F and 29.92 in. Hg (in. H₂O)</p> <p>ΔH@_i ≤ ΔH@_{avg} ± 0.2</p> <p>Θ Duration of Run (minutes)</p>	$Y_d = (Y_{ds}) \left[\frac{V_{ds}}{V_d} \right] \left[\frac{T_d + 460}{T_{ds} + 460} \right] \left[\frac{P_b + \Delta P / 13.6}{P_b + \Delta H / 13.6} \right]$ $\Delta H@ = \frac{(0.0319)(\Delta H)}{P_b(T_o + 460)} \left[\frac{(T_{ds} + 460)\Theta}{(V_{ds})(Y_{ds})} \right]^2$ $Q = \frac{17.64(V_{ds})(P_b)}{(T_{ds} + 460)(\Theta)}$



Vacuum Gauge	
Standard (in. Hg)	Gauge (in. Hg)
5.5	5.0
9.9	10.0
15.1	15.0
20.2	20.0
25.1	25.0

Calibration Reference Information (Standard Meter)	
Reference Used: <u>Wet Test Meter</u>	Serial No: <u>11AG9</u>
Calibrated By: <u>Martin Vaquero</u>	Date Calibrated: <u>7/22/2012</u>
Percent Error: <u>0.245%</u>	Calibration Due Date: <u>7/23/2013</u>

Meter Box Pre-Calibration Inspection			
Positive Leak Check:	Pass	Electrical Check:	Pass
Negative Leak Check:	Pass	Pyrometer Check:	Pass
Vacuum Gauge Check:	Pass	YD Tolerance:	Pass
± 2% of 1.0000			

Meter Box - Pyrometer Calibration Sheet

Meter Box No: 66-22

Office: Express

Calibrated by: O.Lavrov

Client: SOURCE 66

Date: 10/12/12

Job No: n/a

Temperature Scale Used: Fahrenheit

Type of Calibration: Full-Test

Calibration Reference Settings (°F)	Pyrometer Reading for each Channel (°F)						
	1 Stack	2 Probe	3 Filter	4 Imp Out	5 Aux		
50	50	49	48	50	50		
100	100	99	98	100	100		
150	150	149	148	150	150		
200	200	199	198	200	200		
250	250	249	248	250	250		
300	300	299	298	300	300		
350	350	349	348	350	350		
400	400	399	399	400	400		
450	450	449	449	450	450		
500	500	499	498	500	500		
550	550	549	549	550	550		
600	600	599	598	600	600		

Tolerance = $\pm 2^{\circ}F$ difference from reference setting.

Calibration Reference Information

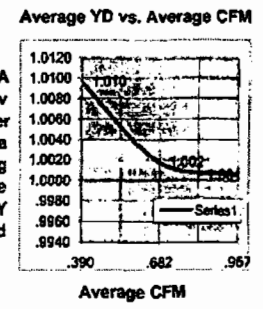
Reference Used: <u>Omega CL23A</u>	Serial No: <u>T-279500</u>
Calibrated By: <u>JH Metrology</u>	Date Calibrated: <u>8/20/2012</u>
Calibration Report No: <u>1000164078</u>	Calibration Due Date: <u>8/20/2013</u>

Clean Air Engineering - Meter Box Full Test Calibration

Client: Source Reviewed By: R. Redel Calibration Signature: [Signature]
 ID No: 85-2 Calibrated By: Jeff Ivens Meter Box Yd: 1.0039
 Dept No: Source 66 Date of Calibration: 12/21/12 Meter Box ΔH@: 1.7413
 Meter Box Serial No: n/a Due Date of Calibration: 12/22/13 Barometer Serial No: W12637
 Manufacturer Part No: 0028 Meter Box Vacuum: 1.0 in. H₂O Barometric Pressure: 29.05 in. Hg

Q	ΔH	ΔP	Y _{ds}	Standard Meter Gas Volume (ft ³)			Meter Box Gas Volume (ft ³)			Std. Meter Temperature (°F)			Meter Box Temperature (°F)			Time (min.)	Calibration Results	
				Initial	Final	V _{ds} Net	Initial	Final	V _d Net	T _{is} In	T _{os} Out	T _{ds} Avg.	T _i In	T _o Out	T _d Avg.		ϕ	Y _d
0.392	0.50	-1.20	1.0000	0.000	5.000	5.000	96.200	101.271	5.071	66.0	66.0	66.00	83.0	79.0	81.00	12.44	1.0098	1.7446
0.389	0.50	-1.20	1.0000	0.000	5.000	5.000	106.319	111.396	5.077	66.0	66.0	66.00	83.0	80.0	81.50	12.52	1.0095	1.7638
0.682	1.50	-1.50	1.0000	0.000	10.000	10.000	127.792	138.085	10.293	66.5	66.5	66.50	91.0	82.0	86.50	14.27	1.0008	1.7155
0.682	1.50	-1.50	1.0000	0.000	10.000	10.000	148.410	158.693	10.283	66.5	66.5	66.50	91.0	83.0	87.00	14.27	1.0027	1.7123
0.857	3.00	-1.80	1.0000	0.000	10.000	10.000	67.605	77.808	10.203	65.5	65.5	65.50	89.0	77.0	83.00	10.19	1.0005	1.7591
0.658	3.00	-1.80	1.0000	0.000	10.000	10.000	77.808	88.043	10.235	65.5	65.5	65.50	91.0	78.0	84.50	10.18	1.0002	1.7524
Averages																	1.00391	1.74128

Nomenclature	Equations
<p>P_b Barometric Pressure (in. Hg)</p> <p>Q Flow Rate (cfm)</p> <p>ΔH Orifice Pressure differential (in. H₂O)</p> <p>ΔP Inlet Pressure Differential (in. H₂O)</p> <p>V_d Gas Meter Volume - Dry (ft³)</p> <p>V_{ds} Standard Meter Volume - Dry (ft³)</p> <p>T_d Average Meter Box Temperature (°F)</p> <p>T_o Outlet Meter Box Temperature (°F)</p> <p>T_{ds} Average Standard Meter Temperature (°F)</p> <p>Y_d Meter Correction Factor (unitless), Y_i ≤ Y_{avg} ± 0.02</p> <p>Y_{ds} Standard Meter Correction Factor (unitless)</p> <p>ΔH@ Orifice Pressure Differential giving 0.75 cfm of air at 68°F and 29.92 in. Hg (in. H₂O)</p> <p>ΔH@ ≤ ΔH@_{avg} ± 0.2</p> <p>ϕ Duration of Run (minutes)</p>	$Y_d = (Y_{ds}) \left[\frac{V_{ds}}{V_d} \right] \left[\frac{T_d + 460}{T_{ds} + 460} \right] \left[\frac{P_b + \Delta P / 13.6}{P_b + \Delta H / 13.6} \right]$ $\Delta H@ = \frac{(0.0319)(\Delta H)}{P_b(T_d + 460)} \left[\frac{(T_{ds} + 460)\phi}{(V_{ds})(Y_{ds})} \right]^2$ $Q = \frac{17.64(Y_{ds})(P_b)}{(T_{ds} + 460)(\phi)}$



Vacuum Gauge

Standard (in.Hg)	Gauge (in.Hg)
5.3	5.0
10.2	10.0
15.4	15.0
20.4	20.0
25.4	25.0

Calibration Reference Information (Standard Meter)

Reference Used: <u>Wet Test Meter</u>	Serial No: <u>11AG9</u>
Calibrated By: <u>Martin Vaquero</u>	Date Calibrated: <u>7/22/2012</u>
Percent Error: <u>0.245%</u>	Calibration Due Date: <u>7/23/2013</u>

Meter Box Pre-Calibration Inspection

Positive Leak Check: <u>Pass</u>	Electrical Check: <u>Pass</u>
Negative Leak Check: <u>Pass</u>	Pyrometer Check: <u>Pass</u>
Vacuum Gauge Check: <u>Pass</u>	YD Tolerance: <u>Pass</u>



D - 34

Meter Box - Pyrometer Calibration Sheet

Meter Box No: 85-2

Office: n/a

Calibrated by: Jeff Ivens

Client: Source

Date: 12/21/12

Job No: n/a

Temperature Scale Used: Fahrenheit

Type of Calibration: Full-Test

Calibration Reference Settings (°F)	Pyrometer Reading for each Channel (°F)						
	1 Stack	2 Probe	3 Filter	4 Imp Out	5 Aux	6	7
50	51	51	51	51	50		
100	101	101	101	101	101		
150	151	152	150	151	151		
200	201	202	201	201	201		
250	252	252	250	251	251		
300	301	302	300	301	301		
350	351	352	350	351	351		
400	401	402	400	401	401		
450	452	451	450	451	451		
500	501	501	500	501	501		
550	552	552	549	551	551		
600	601	602	600	600	601		

Tolerance = $\pm 2^{\circ}\text{F}$ difference from reference setting.

Calibration Reference Information

Reference Used: <u>Omega CL23A</u>	Serial No: <u>T-279500</u>
Calibrated By: <u>JH Metrology</u>	Date Calibrated: <u>10/18/2012</u>
Calibration Report No: <u>1000164938</u>	Calibration Due Date: <u>10/18/2013</u>

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FIELD DATA

E

I herby certify that all pages contained within this Appendix have been reviewed and, to the best of my ability, verified as accurate.

QA/QC Initials: SB

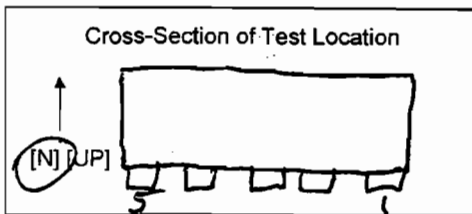
Date: 4/30



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TEST LOCATION: FF OUTLOT VELOCITY DETERMINATION
 UNIT: 1 FIELD DATA SHEET

Client <u>WHEELABRATOR</u>	Project No. <u>12218</u>
Plant <u>NORTH BROADWAY</u>	Date <u>3/19/13</u>
Meter Operator <u>WAYNE BENNY</u>	
Probe Operator <u>ANDY D.</u>	
Source of Moisture and Molecular Weight Data <u>WOT METHOD</u>	



Amb. Temp. (°F) <u>71</u>	Bar. Press. <u>29.82</u> (in. Hg) (mbar)
Pilot Cp <u>0.819</u>	Probe I.D. No. <u>67-89-12</u>
Duct Diameters from Disturbance	
Downstream	Upstream
First point all the way (In) (Out)	Port Len. (In) <u>10</u>
Gas Flow (In) (Out) of page	
Duct Dimensions (in.) <u>96 X 96</u>	

Run	Load	Run	Load	Run	Load	Run	Load								
1	NORMAL	2	NORMAL	2	NORMAL										
Start Time <u>0825</u>	Stop Time <u>0840</u>	Start Time	Stop Time	Start Time <u>0901</u>	Stop Time <u>0911</u>	Start Time	Stop Time								
Static Press. (in. H ₂ O) <u>-9.2</u>	Static Press. (in. H ₂ O)	Static Press. (in. H ₂ O)	Static Press. (in. H ₂ O)	Static Press. (in. H ₂ O) <u>-9.2</u>	Static Press. (in. H ₂ O)	Static Press. (in. H ₂ O)	Static Press. (in. H ₂ O)								
Post-Test Leak Check: Pass <input checked="" type="checkbox"/> Fail <input type="checkbox"/>	Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Post-Test Leak Check: Pass <input checked="" type="checkbox"/> Fail <input type="checkbox"/>	Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>								
Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes
5-1	300	0.35		2-1	300	0.47		5-1	301	0.38		2-1	299	0.47	
5-2	301	0.36		2-2	301	0.40		5-2	301	0.38		2-2	301	0.36	
5-3	301	0.40		2-3	301	0.39		5-3	301	0.42		2-3	301	0.31	
5-4	301	0.45		2-4	301	0.44		5-4	301	0.46		2-4	301	0.39	
5-5	301	0.44		2-5	301	0.53		5-5	301	0.42		2-5	301	0.41	
4-1	299	0.40		1-1	301	0.43		4-1	300	0.43		1-1	301	0.39	
4-2	300	0.37		1-2	301	0.38		4-2	301	0.40		1-2	301	0.37	
4-3	300	0.40		1-3	301	0.35		4-3	302	0.41		1-3	301	0.30	
4-4	301	0.48		1-4	300	0.37		4-4	302	0.45		1-4	300	0.34	
4-5	301	0.49		1-5	301	0.45		4-5	302	0.44		1-5	301	0.44	
3-1	300	0.45						3-1	302	0.44					
3-2	299	0.40						3-2	302	0.36					
3-3	300	0.39						3-3	302	0.32					
3-4	300	0.45						3-4	302	0.41					
3-5	300	0.55						3-5	302	0.46					
Total															
Average															

Sum of square roots.

Circle correct bracketed units on data sheet.

SB 4/1/13
0.6246 300.44
0.64965 300.48

SB 4/1/13
300.16 0.610
0.63120



E-3

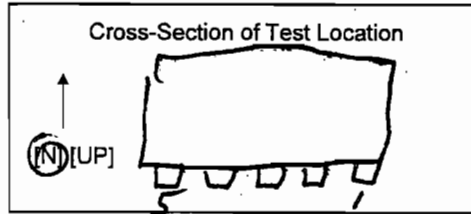
TEST LOCATION: FF OUTLET

VELOCITY DETERMINATION

UNIT: 1

FIELD DATA SHEET

Client <u>УХОДАВАТА</u>	Project No. <u>12218</u>
Plant <u>ВОТНО РАБОТНИ</u>	Date <u>3/19/13</u>
Meter Operator <u>КАЧУБЕРНУ</u>	
Probe Operator <u>АНДЪ Д.</u>	
Source of Moisture and Molecular Weight Data <u>ВОТНОТНО</u>	



Amb. Temp. (°F) <u>74</u>	Bar. Press <u>29.800</u> [mmHg] [mbar]
Pilot Cp <u>0.219</u>	Probe I.D. No. <u>67-8P-12</u>
Duct Diameters from Disturbance	
Downstream	Upstream
First point all the way <u>(IN)</u> [Out]	Port Len. (in) <u>10</u>
Gas Flow <u>(IN)</u> [Out] of page	
Duct Dimensions (in.) <u>96x96</u>	

Run	Load	Run	Load	Run	Load	Run	Load								
<u>3</u>	<u>NORMAL</u>			<u>4</u>	<u>NORMAL</u>										
Start Time <u>0950</u>	Stop Time <u>1002</u>	Start Time	Stop Time	Start Time <u>1039</u>	Stop Time <u>1048</u>	Start Time	Stop Time								
Static Press. (in. H ₂ O) <u>-9.9</u>		Static Press. (in. H ₂ O)		Static Press. (in. H ₂ O) <u>-9.9</u>		Static Press. (in. H ₂ O)									
Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>									
Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in.H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in.H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in.H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in.H ₂ O)	Notes
<u>5-1</u>	<u>301</u>	<u>0.37</u>		<u>2-1</u>	<u>302</u>	<u>0.47</u>		<u>5-1</u>	<u>300</u>	<u>0.35</u>		<u>2-1</u>	<u>301</u>	<u>0.42</u>	
<u>5-2</u>	<u>301</u>	<u>0.40</u>		<u>2-2</u>	<u>302</u>	<u>0.39</u>		<u>5-2</u>	<u>301</u>	<u>0.36</u>		<u>2-2</u>	<u>301</u>	<u>0.37</u>	
<u>5-3</u>	<u>302</u>	<u>0.45</u>		<u>2-3</u>	<u>302</u>	<u>0.33</u>		<u>5-3</u>	<u>301</u>	<u>0.41</u>		<u>2-3</u>	<u>302</u>	<u>0.39</u>	
<u>5-4</u>	<u>302</u>	<u>0.50</u>		<u>2-4</u>	<u>302</u>	<u>0.42</u>		<u>5-4</u>	<u>302</u>	<u>0.48</u>		<u>2-4</u>	<u>302</u>	<u>0.40</u>	
<u>5-5</u>	<u>302</u>	<u>0.49</u>		<u>2-5</u>	<u>302</u>	<u>0.53</u>		<u>5-5</u>	<u>302</u>	<u>0.50</u>		<u>2-5</u>	<u>302</u>	<u>0.50</u>	
<u>4-1</u>	<u>302</u>	<u>0.39</u>		<u>1-1</u>	<u>302</u>	<u>0.42</u>		<u>4-1</u>	<u>300</u>	<u>0.39</u>		<u>1-1</u>	<u>302</u>	<u>0.46</u>	
<u>4-2</u>	<u>302</u>	<u>0.38</u>		<u>1-2</u>	<u>302</u>	<u>0.40</u>		<u>4-2</u>	<u>301</u>	<u>0.39</u>		<u>1-2</u>	<u>302</u>	<u>0.40</u>	
<u>4-3</u>	<u>302</u>	<u>0.42</u>		<u>1-3</u>	<u>302</u>	<u>0.33</u>		<u>4-3</u>	<u>302</u>	<u>0.42</u>		<u>1-3</u>	<u>301</u>	<u>0.36</u>	
<u>4-4</u>	<u>303</u>	<u>0.46</u>		<u>1-4</u>	<u>302</u>	<u>0.36</u>		<u>4-4</u>	<u>302</u>	<u>0.48</u>		<u>1-4</u>	<u>301</u>	<u>0.48</u>	
<u>4-5</u>	<u>303</u>	<u>0.41</u>		<u>1-5</u>	<u>302</u>	<u>0.54</u>		<u>4-5</u>	<u>303</u>	<u>0.50</u>		<u>1-5</u>	<u>302</u>	<u>0.51</u>	
<u>3-1</u>	<u>300</u>	<u>0.50</u>						<u>3-1</u>	<u>302</u>	<u>0.43</u>					
<u>3-2</u>	<u>301</u>	<u>0.42</u>						<u>3-2</u>	<u>302</u>	<u>0.42</u>					
<u>3-3</u>	<u>301</u>	<u>0.35</u>						<u>3-3</u>	<u>302</u>	<u>0.44</u>					
<u>3-4</u>	<u>301</u>	<u>0.44</u>						<u>3-4</u>	<u>302</u>	<u>0.47</u>					
<u>3-5</u>	<u>302</u>	<u>0.55</u>						<u>3-5</u>	<u>302</u>	<u>0.52</u>					
Total															
Average															

Sum of square roots.

Circle correct bracketed units on data sheet.

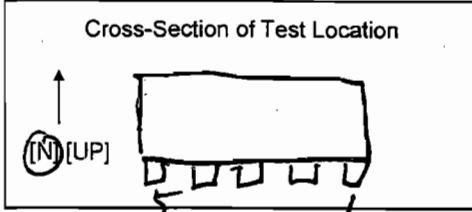
(301.84) (0.6280)
301.80 (0.6331)

(301.60) (0.6323)
0.6576



TEST LOCATION: FF OUTLET VELOCITY DETERMINATION
 UNIT: 1 FIELD DATA SHEET

Client <u>WHEELABRATOR</u>	Project No. <u>12218</u>
Plant <u>NON-FLOW</u>	Date
Meter Operator <u>WAYNE BERRY</u>	
Probe Operator	
Source of Moisture and Molecular Weight Data <u>WET METHOD</u>	



Amb. Temp. (°F) <u>76</u>	Bar. Press. <u>29.80</u> (in. Hg) [mbar]
Pitot Cp <u>0.819</u>	Probe I.D. No. <u>67-8P-12</u>
Duct Diameters from Disturbance	
Downstream	Upstream
First point all the way (in) [Out]	Port Len. (in) <u>10</u>
Gas Flow (in) [Out] of page	
Duct Dimensions (in.) <u>96 x 96</u>	

Run	Load	Run	Load	Run	Load	Run	Load								
5	NORMAL			6	NORMAL										
Start Time <u>1125</u>	Stop Time <u>1139</u>	Start Time	Stop Time	Start Time <u>1208</u>	Stop Time <u>1217</u>	Start Time	Stop Time								
Static Press. (in. H ₂ O) <u>-9.9</u>		Static Press. (in. H ₂ O)		Static Press. (in. H ₂ O) <u>-9.9</u>		Static Press. (in. H ₂ O)									
Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>									
Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes
5-1	302	0.36		2-1	303	0.52		5-1	301	0.32		2-1	300	0.47	
5-2	302	0.37		2-2	303	0.39		5-2	301	0.34		2-2	301	0.40	
5-3	302	0.46		2-3	303	0.37		5-3	302	0.38		2-3	302	0.41	
5-4	302	0.51		2-4	303	0.47		5-4	302	0.48		2-4	302	0.45 ← 0.4518	
5-5	302	0.50		2-5	303	0.52		5-5	302	0.44		2-5	302	0.51	
4-1	300	0.39		1-1	300	0.44		4-1	303	0.36		1-1	301	0.43	
4-2	302	0.39		1-2	301	0.42		4-2	302	0.38		1-2	302	0.39	
4-3	302	0.43		1-3	301	0.31		4-3	302	0.39		1-3	302	0.34	
4-4	302	0.52		1-4	301	0.35		4-4	302	0.48		1-4	301	0.40	
4-5	303	0.54		1-5	301	0.52		4-5	302	0.47		1-5	302	0.50	
3-1	303	0.47						3-1	303	0.46					
3-2	303	0.39						3-2	303	0.38					
3-3	307	0.34						3-3	302	0.40					
3-4	303	0.44						3-4	302	0.48					
3-5	303	0.55						3-5	302	0.52					
Total															
Average															

Sum of square roots.

Circle correct bracketed units on data sheet.

SB 4/8/13
301.16 0.6399
302.12 0.6603

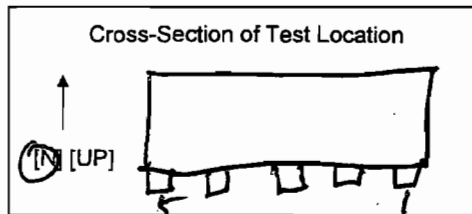
SB 4/8/13
301.84 0.6242
0.6491



E-5

TEST LOCATION: FF OUTLOT VELOCITY DETERMINATION
 UNIT: 1 FIELD DATA SHEET

Client: <u>WATERLABORATORY</u>	Project No. <u>12218</u>
Plant: <u>NORTH BROWARD</u>	Date
Meter Operator: <u>WAYNE BURN</u>	
Probe Operator	
Source of Moisture and Molecular Weight Data <u>WOT METHOD</u>	



Amb. Temp. (°F)	Bar. Press. <u>29.80</u> [in. Hg] [mbar]
Pitot Cp <u>0.819</u>	Probe I.D. No. <u>67-8P-12</u>
Duct Diameters from Disturbance	
Downstream	Upstream
First point all the way <input checked="" type="checkbox"/> [In] <input type="checkbox"/> [Out]	Port Len. <input checked="" type="checkbox"/> <u>10</u>
Gas Flow <input checked="" type="checkbox"/> [In] <input type="checkbox"/> [Out] of page	
Duct Dimensions (in.) <u>96x96</u>	

Run	Load	Run	Load	Run	Load	Run	Load								
7	NORMAL	8	NORMAL												
Start Time <u>13:06</u>	Stop Time <u>13:20</u>	Start Time <u>13:41</u>	Stop Time <u>13:58</u>												
Static Press. (in. H ₂ O) <u>-9.5</u>		Static Press. (in. H ₂ O) <u>-9.5</u>		Static Press. (in. H ₂ O)		Static Press. (in. H ₂ O)									
Post-Test Leak Check: Pass <input checked="" type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input checked="" type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>									
Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes
5-1	301	0.37		2-1	301	0.44		5-1	303	0.33		2-1	305	0.48	
5-2	301	0.36		2-2	301	0.40		5-2	303	0.38		2-2	305	0.37	
5-3	301	0.43		2-3	302	0.46		5-3	303	0.44		2-3	304	0.35	
5-4	301	0.51		2-4	302	0.51		5-4	303	0.51		2-4	306	0.42	
5-5	301	0.48		2-5	303	0.52		5-5	303	0.50		2-5	305	0.50	
4-1	301	0.33		1-1	306	0.48		4-1	301	0.36		1-1	300	0.41	
4-2	302	0.37		1-2	305	0.43		4-2	302	0.38		1-2	301	0.40	
4-3	302	0.41		1-3	302	0.33		4-3	302	0.43		1-3	301	0.35	
4-4	302	0.51		1-4	305	0.49		4-4	303	0.50		1-4	301	0.41	
4-5	302	0.54		1-5	305	0.61		4-5	303	0.48		1-5	301	0.53	
3-1	302	0.39						3-1	303	0.47					
3-2	302	0.40						3-2	303	0.38					
3-3	302	0.44						3-3	302	0.40					
3-4	302	0.50						3-4	303	0.50					
3-5	302	0.53						3-5	303	0.57					
Total															
Average															

7556
 (302.240) 0.6656

(302.7600) 0.6566

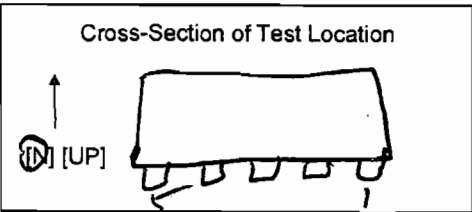
Sum of square roots. Circle correct bracketed bits on data sheet.



E-6

TEST LOCATION: FF OUTLOT VELOCITY DETERMINATION
 UNIT: 1 FIELD DATA SHEET

Client <u>WHEELABRATOR</u>	Project No. <u>12218</u>
Plant <u>NORTH BROWNS</u>	Date <u>3/19/13</u>
Meter Operator <u>WAYNE BOUNT</u>	
Probe Operator <u>ANDY O.</u>	
Source of Moisture and Molecular Weight Data <u>WET</u>	



Amb. Temp. (°F)	Bar. Press. <u>29.90</u> [in. Hg] (mbar)
Pitot Cp <u>0.819</u>	Probe I.D. No. <u>67-8P-12</u>
Duct Diameters from Disturbance	
Downstream	Upstream
First point all the way (in) [Out]	Port Len. (in) <u>10</u>
Gas Flow (ft³) [Out] of page	
Duct Dimensions (in.) <u>96x96</u>	

Run: <u>9</u>	Load	Run	Load	Run <u>10</u>	Load	Run	Load								
Start Time <u>14:22</u>	Stop Time <u>14:39</u>	Start Time	Stop Time	Start Time <u>15:00</u>	Stop Time <u>15:13</u>	Start Time	Stop Time								
Static Press. (in. H ₂ O) <u>-9.6</u>		Static Press. (in. H ₂ O)		Static Press. (in. H ₂ O) <u>-9.6</u>		Static Press. (in. H ₂ O)									
Post-Test Leak Check: Pass <input checked="" type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input checked="" type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>									
Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes
5-1	302	0.39		2-1	302	0.48		5-1	304	0.31		2-1	303	0.42	
5-2	303	0.40		2-2	303	0.42		5-2	304	0.43		2-2	303	0.37	
5-3	303	0.45		2-3	302	0.43		5-3	304	0.45		2-3	303	0.36	
5-4	303	0.51		2-4	303	0.49		5-4	304	0.49		2-4	302	0.46	
5-5	303	0.55		2-5	303	0.53		5-5	304	0.50		2-5	303	0.53	
4-1	303	0.35		1-1	302	0.45		4-1	302	0.37		1-1	303	0.41	
4-2	304	0.38		1-2	302	0.37		4-2	302	0.40		1-2	303	0.42	
4-3	305	0.44		1-3	302	0.36		4-3	303	0.46		1-3	303	0.37	
4-4	305	0.50		1-4	302	0.43		4-4	303	0.53		1-4	303	0.40	
4-5	304	0.54		1-5	302	0.51		4-5	303	0.56		1-5	303	0.54	
3-1	301	0.42						3-1	300	0.30					
3-2	302	0.43						3-2	301	0.34					
3-3	303	0.47						3-3	301	0.41					
3-4	303	0.55						3-4	302	0.48					
3-5	303	0.53						3-5	303	0.56					
Total															
Average															

302.9000 0.6732
 Circle correct bracketed units on data sheet.

302.7600 0.6573

Sum of square roots.



E-7

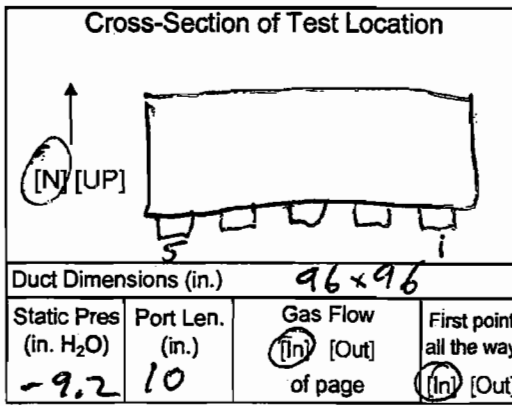
TEST LOCATION: FF OUTLOT
 UNIT: 1 RUN: 1

HCL TESTING
FIELD DATA SHEET

METHOD: 26A PAGE 1 OF 1

Client WHEELABATOR Project No. 12218
 Plant NORTH BROWARD Date 3/19/13
 Meter Operator WAYNE BENNY
 Probe Operator _____

Meter Box 66-14 Sample Box No. B-24
 Meter Y_d 0.9879 Meter ΔH_@ 1.8015
 K Factor — Pitot C_p —
 Leak Rate Before 0.002 [cfm] [Lpm] @ 15 (in. Hg)
 Leak Rate After 0.001 [cfm] [Lpm] @ 10 (in. Hg)
 Pitot Leak Check Before After: Bad



Amb. Temp. (°F) 71 Bar. Press. 29.80 (in. Hg) [mbar]
 Probe I.D. No. 67-4-3
 Liner Material GLASS

Filter No. —
 Thimble No. —
 Nozzle Diameter — Nozzle I.D. —

Start Time: 0815 Stop Time: 0915

E-8

Traverse Point Number	Min/pt Elapsed Time	Velocity Head ΔP (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume V _m Init. Vol. [ft ³] [L]	Stack Temp. T _s (°F)	Probe T _p (°F)		Filter T _f (°F)	Cond. Temp. T _c (°F)	DGM Inlet T _{min} (°F)	DGM Outlet T _{max} (°F)	Pump Vacuum (in. Hg)	Oxygen Indicator, approx (%dv)	<input type="checkbox"/> Amb Filter <input type="checkbox"/> Dioxin Trap	Notes
						300	300								
3-1	5	N/A	1.5	283.07	301	298	305	55	76	73	4	8.6			
	10		1.5	286.44	301	298	295	50	77	73	4	8.4			
	15		1.5	289.81	299	296	305	47	81	74	4	9.1			
	20		1.5	293.20	300	293	309	47	81	74	4	9.5			
	25		1.5	296.61	301	288	306	48	81	75	4	9.1			
	30		1.5	300.02	300	285	296	51	81	75	4	9.2			
	35		1.5	303.44	300	284	299	54	81	75	4	8.4			
	40		1.5	306.83	300	287	300	56	82	75	4	9.1			
	45		1.5	310.21	301	292	301	56	82	75	4	8.9			
	50		1.5	313.59	301	295	301	58	84	75	4	8.3			
	55		1.5	316.98	301	298	304	59	85	76	4	9.5			
	60		1.5	320.400	302	299	298	61	86	76	4	9.7			
	Total			40.785					977	896					
	Average		<u>1.5</u>			<u>300.5833</u>			<u>78.046</u>						

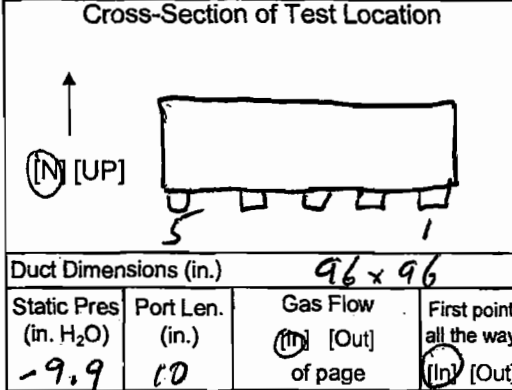
*Sum of square roots.

Circle correct bracketed units on data sheet.



TEST LOCATION: FF OUTLOT HCL TESTING METHOD: 26A PAGE 1 OF 1
 UNIT: 1 RUN: 2

FIELD DATA SHEET



Client: WHEELABRATOR Project No. 12218
 Plant: NORTH BROWARD Date: 3/19/13
 Meter Operator: WAYNE BENNY
 Probe Operator: _____

Amb. Temp. (°F) 74 Bar. Press. 29.80 (in. Hg) [mbar]
 Probe I.D. No. 67-4-3
 Liner Material GLASS

Meter Box 66-14 Sample Box No. B-01
 Meter Y_d 0.9879 Meter ΔH@ 1.8015
 K Factor: _____ Pitot C_p _____

Filter No. —
 Thimble No. —
 Nozzle Diameter — Nozzle I.D. —

Leak Rate Before 0.002 [cfm] [Lpm] @ 15 (in. Hg)
 Leak Rate After 0.001 [cfm] [Lpm] @ 10 (in. Hg)
 Pitot Leak Check Before After: Good Bad

Duct Dimensions (in.) 96 x 96
 Static Pres (in. H₂O) -9.9 Port Len. (in.) 10 Gas Flow (in) [Out] of page (in) [Out] First point all the way (in) [Out]

Start Time: 0948 Stop Time: 1048

Traverse Point Number	Min/pt Elapsed Time	Velocity Head ΔP (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume V _m Init. Vol. [ft ³] [L]	Stack Temp. T _s (°F)	Probe T _p (°F)	Filter T _f (°F)	Cond. Temp. T _c (°F)	DGM Inlet T _{m in} (°F)	DGM Outlet T _{m out} (°F)	Pump Vacuum (in. Hg)	Oxygen Indicator, approx (%dv)	<input type="checkbox"/> Amb Filter <input type="checkbox"/> Dioxin Trap <input type="checkbox"/> _____	Notes
						Set Points								
3-1	5	N/A	1.5	326.85	302	299	295	57	75	74	4	9.2		
	10		1.5	329.38	302	298	307	51	76	74	4	8.5		
	15		1.5	332.74	301	298	300	46	79	74	4	8.5		
	20		1.5	336.11	301	299	308	45	81	74	4	8.4		
	25		1.5	339.22	303	300	306	45	81	74	4	9.2		
	30		1.5	342.87	302	299	300	47	83	75	4	9.1		
	35		1.5	346.26	302	300	297	50	83	75	4	8.5		
	40		1.5	349.66	301	301	306	56	84	75	4	8.5		
	45		1.5	353.13	301	300	305	63	83	76	4	9.0		
	50		1.5	356.59	302	288	307	64	81	75	4	8.6		
	55		1.5	360.01	303	286	301	64	81	75	4	8.3		
	60		1.5	363.445	301	288	304	65	80	74	4	9.0		
	Total			40.965	3621				967	895				
	Average		1.5		301.750				77.5833					

* Sum of square roots.

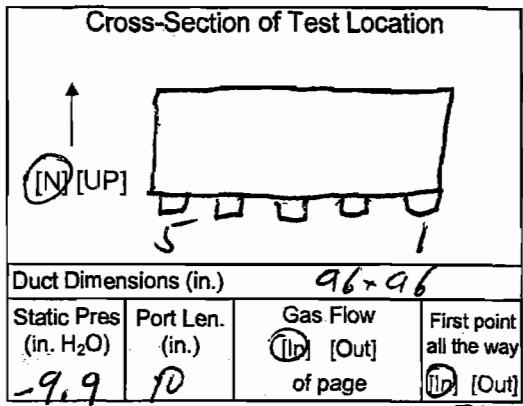
Circle correct bracketed units on data sheet.



TEST LOCATION: PP OUTLET HCL TESTING METHOD: 26A PAGE 1 OF 1
 UNIT: 1 RUN: 3
FIELD DATA SHEET

Client: HSE LABORATORY Project No. 12218
 Plant: NORTH BROWNS Date: 3/19/13
 Meter Operator: WAYNE BERRY
 Probe Operator: _____

Meter Box: 66-14 Sample Box No. _____
 Meter Yd: 0.9879 Meter ΔH@: 1,8015
 K Factor: _____ Pitot Cp: _____
 Leak Rate Before: 0.03 [cfm] [Lpm] @ 13 (in. Hg)
 Leak Rate After: 0.01 [cfm] [Lpm] @ 10 (in. Hg)
 Pitot Leak Check Before: After: Bad



Amb. Temp. (°F) 76 Bar. Press. 29.80 (in. Hg) [mbar]
 Probe I.D. No. 67-4-3
 Liner Material GLASS

Filter No. _____
 Thimble No. _____
 Nozzle Diameter _____ Nozzle I.D. _____

Start Time: 1119 Stop Time: 1219

Static Pres (in. H₂O) -9.9 Port Len. (in.) 10 Gas Flow (in.) [Out] _____ of page _____ First point all the way (in.) [Out] _____

E-10

Traverse Point Number	Min/pt Elapsed Time	Velocity Head ΔP (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume V _m Init. Vol. (ft ³) [L]	Stack Temp. T _s (°F)	Probe T _p (°F)	Filter T _f (°F)	Cond. Temp. T _c (°F)	DGM Inlet T _{m in} (°F)	DGM Outlet T _{m out} (°F)	Pump Vacuum (in. Hg)	Oxygen Indicator, approx (% dv)	<input type="checkbox"/> Amb Filter <input type="checkbox"/> Dioxin Trap <input type="checkbox"/> _____	Notes
						Set Points								
3-1	5	N/A	1.5	364.830	301	291	303	57	78	76	4	9.3		
	10		1.5	371.70	302	293	305	51	80	77	4	9.6		
	15		1.5	375.07	303	292	300	46	81	76	4	8.9		
	20		1.5	378.46	302	292	304	46	81	76	4	8.9		
	25		1.5	381.84	303	300	303	47	82	77	4	8.9		
	30		1.5	385.26	303	300	295	48	82	77	4	8.5		
	35		1.5	388.70	303	294	305	50	82	77	4	8.7		
	40		1.5	392.10	302	296	302	52	83	77	4	9.0		
	45		1.5	395.50	303	300	296	54	83	77	4	9.0		
	50		1.5	398.95	302	300	299	54	84	78	4	8.4		
	55		1.5	402.36	302	298	298	55	84	78	4	8.9		
	60		1.5	405.770	302	301	303	57	84	79	4	9.1		
	Total			40.94	3628				984	925				
	Average		<u>1.5</u>		<u>302.333</u>				<u>79.5416</u>					

*Sum of square roots.

Circle correct bracketed units on data sheet.



Impinger Weight Sheet

Client Wheelabrator		Unit Name / Location Unit 1 FF Outlet	
Plant North Broward	Job No. 12218	Method Modified M26A	

Balance Calibration Check			
Balance ID	TL 07-04	Reference Weight Mass	500.0g
Reference Weight ID	60150	Reference Weight Reading	499.3g
Check must be performed at least Once per Method per Job		Reference Weight Mass must agree with Reference Weight Reading to within ±0.5 g.	

Run No. 1	1	Filter Type Teflon Mat	Sample Box No. B24
Date 3-19-13		Lot No.	pH
Analyst		Filter No. NA	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	50 mL 0.1N H2SO4	488.1	446.4	41.7	
Impinger 2	100 mL 0.1N H2SO4	700.2	561.0	139.2	QA/QC SB
Impinger 3	100 mL 0.1N H2SO4	574.1	539.5	34.6	Date 3/19
Impinger 4	Empty	446.8	439.9	6.9	
Impinger 5	Silica Gel	764.9	750.8	14.1	Total Weight (gm)
Impinger 6					222.4
Impinger 7					4/5/13 241.5 236.5

Run No. 2	2	Filter Type Teflon Mat	Sample Box No. B1
Date 3-19-13		Lot No.	pH
Analyst		Filter No. NA	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	50 mL 0.1N H2SO4	497.1	454.0	43.1	
Impinger 2	100 mL 0.1N H2SO4	650.7	544.2	106.5	QA/QC SB
Impinger 3	100 mL 0.1N H2SO4	582.2	535.2	47.0	Date 3/19
Impinger 4	Empty	482.8	464.6	18.2	
Impinger 5	Silica Gel	781.3	758.8	22.5	Total Weight (gm)
Impinger 6					214.8
Impinger 7					237.3

Run No. 3	3	Filter Type Teflon Mat	Sample Box No. B24
Date 3-19-13		Lot No.	pH
Analyst HN		Filter No. NA	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	50 mL 0.1N H2SO4	493.7	449.6	44.1	
Impinger 2	100 mL 0.1N H2SO4	694.6	558.2	136.4	QA/QC SB
Impinger 3	100 mL 0.1N H2SO4	571.3	539.0	32.3	Date 3/19
Impinger 4	Empty	449.3	441.6	7.7	
Impinger 5	Silica Gel	777.1	764.5	12.6	Total Weight (gm)
Impinger 6					220.5
Impinger 7					233.1

QA/QC SB
Date 3/19

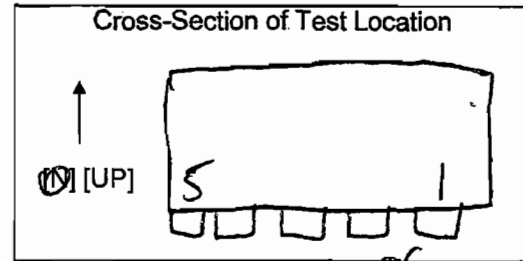


TEST LOCATION: FF OUTLET
 UNIT: 1 RUN: 1

METALS/PART. TESTING
FIELD DATA SHEET

METHODS 5-29 PAGE 1 OF 2

Client WHEELABRATOR Project No. 11217
 Plant NORTH DROWARD Date 3-1-13
 Meter Operator ST
 Probe Operator WB



Amb. Temp. (°F) 81 Bar. Press. 29.90 [in. Hg] [mbar]
 Probe I.D. No. 67-8-16
 Liner Material GLASS

Meter Box 66-6 Sample Box No. M-01
 Meter Y_d 0.9854 Meter ΔH_@ 0.9286
 K Factor 2.86 Pitot C_p 0.825
 Leak Rate Before 0.001 [Lpm] @ 5 (in. Hg)
 Leak Rate After 0.001 [Lpm] @ 6 (in. Hg)
 Pitot Leak Check Before: After: Good Bad

Duct Dimensions (in.) 96x96
 Static Pres (in. H₂O) -9.8 Port Len. (in.) 10 Gas Flow [In] [Out] of page 10 [Out] First point all the way

Filter No. E45-02
 Thimble No. NA
 Nozzle Diameter 0.2760 Nozzle I.D. 2760-1

Start Time: 12:58 Stop Time: 15:14 53 3/13

E-12

Traverse Point Number	Min/pt Elapsed Time	Velocity Head ΔP (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume V _m Init. Vol. [ft ³] [L]	Stack Temp. T _s (°F)	Probe T _p (°F)	Filter T _f (°F)	Cond. Temp. T _c (°F)	DGM Inlet T _{m in} (°F)	DGM Outlet T _{m out} (°F)	Pump Vacuum (in. Hg)	Oxygen Indicator, approx (% dv)	<input type="checkbox"/> Amb Filter <input type="checkbox"/> Dioxin Trap <input type="checkbox"/>	Notes
						Set Points								
P1-1	5	0.48	1.40	44.240	306	250	250	54	83	78	5	7.9		
2	10	0.43	1.20	50.77	305	252	254	54	86	79	5	7.8		
3	15	0.33	0.94	53.47	302	251	252	54	88	79	5	7.9		
4	20	0.49	1.40	56.76	305	250	250	52	90	80	6	7.7		
5	25	0.61	1.70	60.47	305	250	250	53	91	81	6	7.5		ΔV = -.27
P2-1	30	0.48	1.40	64.08	305	249	250	53	92	83	6	7.3		
2	35	0.37	1.10	67.08	305	250	251	54	93	83	5	7.8		
3	40	0.35	1.00	69.96	304	251	251	55	93	84	5	7.9		
4	45	0.42	1.20	73.00	306	250	249	56	94	85	5	7.8		
5	50	0.50	1.40	76.39	305	250	250	58	94	85	5	7.4		ΔV = -.31
P3-1	55	0.44	1.30	79.90	304	249	250	50	95	86	5	7.5		
2	60	0.37	1.10	82.87	304	251	250	50	96	87	5	7.6		
Total		7.9235	15.1400	79.390	3656				1095	990				
Average		0.6645	1.2709		304.4000				190.0600					

Sum of square roots.

Circle correct bracketed units on data sheet.



QA/QC 84
 Date 3-1-13

TEST LOCATION: FF OUTLET

METALS TESTING

METHOD: 29 PAGE 2 OF 2

UNIT: 1 RUN: _____

Cross-Section of Test Location

↑
[N] [UP]

Duct Dimensions (in.)

Static Pres (in. H ₂ O)	Port Len. (in.)	Gas Flow (in) [Out]	First point all the way (in) [Out]
		of page	

Client: <u>WHEELABRATOR</u>	Project No. <u>12217</u>
Plant <u>North Broward</u>	Date <u>3-14-13</u>
Meter Operator <u>ST</u>	
Probe Operator <u>WB</u>	

Amb. Temp. (°F)	Bar. Press. (in. Hg) [mbar]
Probe I.D. No.	
Liner Material	

Meter Box	Sample Box No.
Meter Y _d	Meter ΔH _@
K Factor	Pitot C _p
Leak Rate Before [cfm] [Lpm] @ (in. Hg)	
Leak Rate After [cfm] [Lpm] @ (in. Hg)	
Pitot Leak Check Before: <input type="checkbox"/> After: Good <input type="checkbox"/> Bad <input type="checkbox"/>	

Filter No.	
Thimble No.	
Nozzle Diameter	Nozzle I.D.

Start Time:	Stop Time:
-------------	------------

Traverse Point Number	Min/pt Elapsed Time	Velocity Head ΔP (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume V _m Init. Vol. [ft ³] [L]	Stack Temp. T _s (°F)	Probe T _p (°F)	Filter T _f (°F)	Cond. Temp. T _c (°F)	DGM Inlet T _{m in} (°F)	DGM Outlet T _{m out} (°F)	Pump Vacuum (in. Hg)	Oxygen Indicator, approx (% dv)	<input type="checkbox"/> Amb Filter <input type="checkbox"/> Dioxin Trap <input type="checkbox"/> _____	Notes
						Set Points								
P3-3	65	0.42	1.20	82.970	304	250	250	47	97	87	5	7.5		
4	70	0.48	1.40	89.31	305	250	251	47	98	88	6	7.6		
5	75	0.54	1.50	92.71	304	250	250	46	98	88	6	7.8		ΔV = -.2P
P4-1	80	0.35	1.00	95.80	303	250	251	46	94	87	5	7.7		
2	85	0.38	1.10	98.86	304	250	250	48	95	87	5	7.6		
3	90	0.44	1.30	101.99	305	251	250	50	97	88	5	7.8		
4	95	0.50	1.40	105.37	305	251	250	50	97	88	5	7.7		
5	100	0.54	1.50	108.92	304	250	250	52	99	89	6	7.8		ΔV = .35
P5-1	105	0.32	0.92	111.77	304	250	250	54	96	89	6	7.9		
2	110	0.43	1.20	114.80	304	250	250	56	98	90	6	7.7		
3	115	0.45	1.30	118.04	304	251	251	57	99	90	6	7.8		
4	120	0.49	1.40	121.48	304	250	250	58	99	90	6	7.8		
5	125	0.50	1.40	124.84	304	250	251	59	99	90				
Total		8.6884	16.6000		3954				1167	1062	14			
Average									1266	1152				

Sum of square roots.

Circle correct bracketed units on data sheet.



QA/QC 84
Date 3-14-13

E-13

Impinger Weight Sheet

Client Wheelabrator		Unit Name / Location Unit 1 FF Outlet	
Plant North	Job No. 12218	Method	5/29

Balance Calibration Check			
Balance ID	PL 07-04	Reference Weight Mass	500g
Reference Weight ID	60150	Reference Weight Reading	499.3g

Check must be performed at least Once per Method per Job Reference Weight Mass must agree with Reference Weight Reading to within ±0.5 g.

Run No. 1	Filter Type Quartz	Sample Box No. M1
Date 3-19-13	Lot No.	pH NA
Analyst	Filter No. e45-02	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	Empty	715.8	439.8	276.0	
Impinger 2	100 ml 5% HNO ₃ /10% H ₂ O ₂	639.7	527.6	112.1	QA/QC 28 Date 4/5
Impinger 3	100 ml 5% HNO ₃ /10% H ₂ O ₂	578.1	543.7	34.4	
Impinger 4	Empty	449.2	443.5	5.7	
Impinger 5	100 ml 4% KMnO ₄ /10% H ₂ SO ₄	540.7	533.4	7.3	Total Weight (gm)
Impinger 6	100 ml 4% KMnO ₄ /10% H ₂ SO ₄	538.9	538.1	0.8	436.3
Impinger 7	≈ 250 g Silica Gel	758.8	741.4	17.4	453.7

Run No. 2	Filter Type Quartz	Sample Box No. M9
Date 3-20-13	Lot No.	pH NA
Analyst	Filter No. e45-04	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	Empty	720.7	457.8	262.9	
Impinger 2	100 ml 5% HNO ₃ /10% H ₂ O ₂	698.4	556.8	141.9	QA/QC 30 Date 3/20
Impinger 3	100 ml 5% HNO ₃ /10% H ₂ O ₂	592.7	545.6	47.1	
Impinger 4	Empty	449.2	437.7	11.5	
Impinger 5	100 ml 4% KMnO ₄ /10% H ₂ SO ₄	553.1	544.8	8.3	Total Weight (gm)
Impinger 6	100 ml 4% KMnO ₄ /10% H ₂ SO ₄	553.9	549.5	4.4	475.8
Impinger 7	≈ 250 g Silica Gel	800.1	782.7	17.4	493.2

Run No. 3	Filter Type Quartz	Sample Box No. M1
Date 3/20/13	Lot No.	pH NA
Analyst DL	Filter No. e45-05	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	Empty	707.5	443.1	264.4	
Impinger 2	100 ml 5% HNO ₃ /10% H ₂ O ₂	655.9	530.6	125.3	QA/QC 33 Date 3/20
Impinger 3	100 ml 5% HNO ₃ /10% H ₂ O ₂	581.6	538.6	43.0	
Impinger 4	Empty	453.2	444.4	8.8	
Impinger 5	100 ml 4% KMnO ₄ /10% H ₂ SO ₄	552.2	547.0	5.2	Total Weight (gm)
Impinger 6	100 ml 4% KMnO ₄ /10% H ₂ SO ₄	538.2	534.8	3.4	450.1
Impinger 7	≈ 250 g Silica Gel	776.1	758.6	17.5	467.6

QA/QC 56
Date 3/20

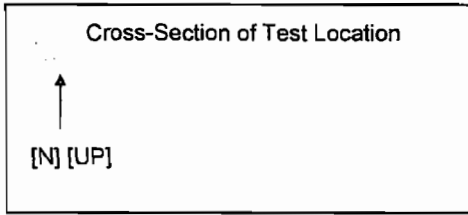


TEST LOCATION: FF Outlet
 UNIT: 2

VELOCITY DETERMINATION FIELD DATA SHEET

PAGE 1 OF

Client	<u>Wheelabrator</u>	Project No.	<u>2218</u>
Plant	<u>North Broward</u>	Date	<u>3-22-13</u>
Meter Operator	<u>Huy NGUYEN</u>		
Probe Operator	<u>Shawn JONES</u>		
Source of Moisture and Molecular Weight Data	<u>MA</u>		



Amb. Temp. (°F)	<u>70</u>	Bar. Press. <u>29.80</u> (in. Hg) (mbar)
Pitot Cp	<u>0.819</u>	Probe I.D. No. <u>67-8P-12</u>
Duct Diameters from Disturbance		
Downstream		Upstream
First point all the way (In) [Out]		Port Len. (in.) <u>10</u>
Gas Flow (In) (Out) of page		
Duct Dimensions (in.)	<u>96 x 96</u>	

Run	Load	Run	Load	Run	Load	Run	Load								
1		1		2		2									
Start Time	<u>07:20</u>	Start Time	<u>7:33</u>	Start Time	<u>07:45</u>	Start Time	<u>08:00</u>								
Stop Time		Stop Time		Stop Time		Stop Time									
Static Press. (in. H ₂ O)	<u>-9.7</u>	Static Press. (in. H ₂ O)	<u>-9.7</u>	Static Press. (in. H ₂ O)	<u>-9.7</u>	Static Press. (in. H ₂ O)	<u>-9.7</u>								
Post-Test Leak Check:	Pass <input checked="" type="checkbox"/> Fail <input type="checkbox"/>	Post-Test Leak Check:	Pass <input checked="" type="checkbox"/> Fail <input type="checkbox"/>	Post-Test Leak Check:	Pass <input checked="" type="checkbox"/> Fail <input type="checkbox"/>	Post-Test Leak Check:	Pass <input checked="" type="checkbox"/> Fail <input type="checkbox"/>								
Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes
5-1	305	0.35		2-1	304	0.41		5-1	305	0.34		2-1	301	0.42	
2	305	0.39		2	304	0.43		2	305	0.37		2	301	0.43	
3	305	0.40		3	304	0.42		3	305	0.37		3	301	0.43	
4	305	0.40		4	304	0.45		4	305	0.39		4	301	0.47	
5	305	0.37		5	304	0.48		5	305	0.36		5	301	0.46	
4-1	304	0.36		1-1	305	0.43		4-1	304	0.44		1-1	304	0.42	
2	305	0.35		2	305	0.42		2	304	0.42		2	304	0.42	
3	305	0.37		3	305	0.43		3	304	0.40		3	304	0.43	
4	305	0.37		4	305	0.50		4	304	0.39		4	304	0.46	
5	305	0.35		5	305	0.49		5	304	0.38		5	304	0.43	
3-1	305	0.36						3-1	302	0.27					
2	305	0.39						2	303	0.31					
3	304	0.40						3	303	0.34					
4	305	0.42						4	303	0.37					
5	305	0.40						5	303	0.41					
Total	<u>7618</u>					<u>15.9010</u>				<u>7584</u>					<u>15.7262</u>
Average	<u>304.7200</u>					<u>0.6360</u>				<u>303.36</u>					<u>0.6290</u>

Sum of square roots.

Circle correct bracketed units on data sheet.



E-15

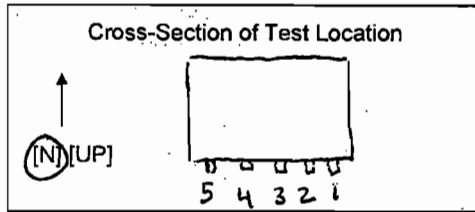
TEST LOCATION: FF OUTLET

VELOCITY DETERMINATION FIELD DATA SHEET

PAGE 1 OF 1

UNIT: 2

Client: <u>Wheelabrator</u>	Project No. <u>12218</u>
Plant: <u>N. Broward</u>	Date: <u>3-22-13</u>
Meter Operator: <u>H. Nguyen</u>	
Probe Operator: <u>S. Joint</u>	
Source of Moisture and Molecular Weight Data <u>M4-RW 2</u>	



Amb. Temp. (°F) <u>67</u>	Bar. Press. <u>29.88</u> (in. Hg) (mbar)
Pitot Cp <u>0.819</u>	Probe I.D. No. <u>67-8P-12</u>
Duct Diameters from Disturbance Downstream _____ Upstream _____	
First point all the way <input checked="" type="checkbox"/> (In) <input type="checkbox"/> (Out)	Port Len. (in.) <u>10</u>
Gas Flow <input checked="" type="checkbox"/> (In) <input type="checkbox"/> (Out) of page	
Duct Dimensions (in.)	<u>96x96</u>

Run: <u>3</u>	Load	Run <u>3</u>	Load	Run <u>4</u>	Load	Run <u>4</u>	Load								
Start Time <u>8:35</u>	Stop Time	Start Time	Stop Time <u>8:43</u>	Start Time <u>9:12</u>	Stop Time <u>9:27</u>	Start Time	Stop Time								
Static Press. (in. H ₂ O) <u>-9.7</u>		Static Press. (in. H ₂ O) <u>-9.7</u>		Static Press. (in. H ₂ O) <u>-9.7</u>		Static Press. (in. H ₂ O) <u>-9.7</u>									
Post-Test Leak Check: Pass <input checked="" type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input checked="" type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input checked="" type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input checked="" type="checkbox"/> Fail <input type="checkbox"/>									
Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes
1-1	304	0.41		4-1	304	0.37		1-1	303	0.41		4-1	303	0.42	
2	304	0.43		2	304	0.37		2	303	0.44		2	303	0.40	
3	304	0.49		3	304	0.35		3	303	0.43		3	304	0.33	
4	304	0.50		4	304	0.34		4	303	0.41		4	304	0.35	
5	304	0.46		5	304	0.33		5	303	0.42		5	304	0.33	
2-1	304	0.45		5-1	303	0.38		2-1	303	0.52		5-1	304	0.38	
2	304	0.49		2	303	0.39		2	303	0.50		2	304	0.37	
3	304	0.49		3	303	0.37		3	303	0.49		3	304	0.35	
4	304	0.42		4	303	0.36		4	303	0.41		4	304	0.34	
5	304	0.45		5	303	0.33		5	304	0.38		5	304	0.32	
3-1	303	0.37						3-1	304	0.38					
2	303	0.39						2	304	0.38					
3	303	0.39						3	304	0.41					
4	303	0.36						4	304	0.39					
5	303	0.38						5	304	0.40					
Total	7590				15.8342				7589					15.6546	
Average	303.6000				0.6334				303.5600					0.6262	

Sum of square roots.

Circle correct bracketed units on data sheet.



E - 16

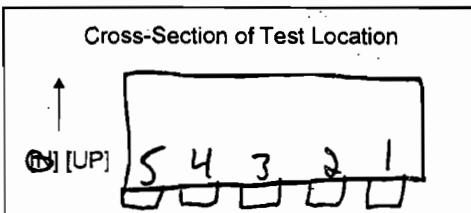
TEST LOCATION: FF OUTLET

VELOCITY DETERMINATION FIELD DATA SHEET

PAGE 1 OF 1

UNIT: 2

Client: <u>WHEELABRATOR</u>	Project No. <u>12218</u>
Plant: <u>N. Broadway</u>	Date: <u>3-22-13</u>
Meter Operator: <u>ST</u>	
Probe Operator: <u>DD</u>	
Source of Moisture and Molecular Weight Data: <u>M4-Rin3</u>	



Amb. Temp. (°F)	Bar. Press. (in. Hg [mbar])
Pitot Cp <u>0.819</u>	Probe I.D. No. <u>67-8P-12</u>
Duct Diameters from Disturbance	
Downstream	Upstream
First point all the way (in) [Out]	Port Len. (in.) <u>10</u>
Gas Flow (in) [Out] of page	
Duct Dimensions (in.)	<u>96x96</u>

Run <u>5</u>	Load	Run <u>5</u>	Load	Run <u>6</u>	Load	Run <u>6</u>	Load
Start Time <u>9:46</u>	Stop Time <u>9:58</u>	Start Time	Stop Time	Start Time <u>10:01</u>	Stop Time <u>10:34</u>	Start Time	Stop Time
Static Press. (in. H ₂ O) <u>-9.7</u>		Static Press. (in. H ₂ O) <u>-9.7</u>		Static Press. (in. H ₂ O) <u>-9.7</u>		Static Press. (in. H ₂ O) <u>-9.7</u>	
Post-Test Leak Check: Pass <input checked="" type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>	

Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes
1-1	303	0.43		4-1	303	0.35		1-1	302	0.44		4-1	302	0.33	
2	303	0.44		2	303	0.38		2	302	0.49		2	302	0.34	
3	303	0.43		3	303	0.39		3	302	0.47		3	302	0.34	
4	303	0.46		4	303	0.37		4	302	0.49		4	302	0.35	
5	303	0.47		5	303	0.37		5	302	0.55		5	302	0.34	
2-1	303	0.42		5-1	302	0.38		2-1	303	0.44		5-1	303	0.27	
2	303	0.44		2	302	0.38		2	303	0.42		2	303	0.33	
3	303	0.49		3	302	0.36		3	303	0.43		3	303	0.35	
4	303	0.48		4	303	0.36		4	303	0.47		4	303	0.34	
5	303	0.46		5	303	0.35		5	303	0.48		5	303	0.35	
3-1	303	0.30						3-1	303	0.25					
2	303	0.34						2	303	0.34					
3	303	0.36						3	303	0.35					
4	303	0.40						4	303	0.36					
5	303	0.37						5	303	0.36					
Total	<u>7570</u>	<u>7570</u>				<u>15.7425</u>				<u>755</u>					<u>15.4793</u>
Average	<u>302.9000</u>	<u>302.9000</u>				<u>0.62917</u>				<u>302.6000</u>					<u>0.612</u>

Sum of square roots.

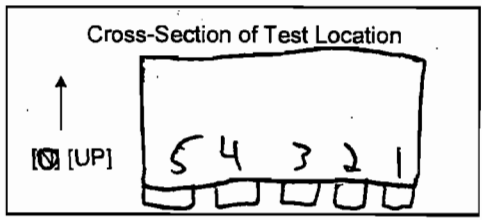
Circle correct bracketed units on data sheet.



TEST LOCATION: FF OUTLET
 UNIT: 2

**VELOCITY DETERMINATION
 FIELD DATA SHEET**

Client <u>WHEELABRATOR</u>	Project No. <u>10018</u>
Plant <u>N. SHAWANIS</u>	Date <u>3-22-13</u>
Meter Operator <u>SS</u>	
Probe Operator <u>DD</u>	
Source of Moisture and Molecular Weight Data	



Amb. Temp. (°F) <u>82</u>	Bar. Press. <u>30.10</u> (in. Hg) (mbar)
Pitot Cp <u>0.919</u>	Probe I.D. No. <u>67-8P-2</u>
Duct Diameters from Disturbance	
Downstream	Upstream
First point all the way (In) [Out]	Port Len. (in.) <u>10</u>
Gas Flow (In) [Out] of page	
Duct Dimensions (in.) <u>96x46</u>	

Run	Load	Run	Load	Run	Load	Run	Load								
7		7		8		8									
Start Time <u>1:00</u>	Stop Time <u>11:14</u>	Start Time	Stop Time	Start Time <u>1:35</u>	Stop Time <u>11:47</u>	Start Time	Stop Time								
Static Press. (in. H ₂ O) <u>-9.7</u>		Static Press. (in. H ₂ O) <u>-9.7</u>		Static Press. (in. H ₂ O) <u>-9.7</u>		Static Press. (in. H ₂ O) <u>-9.7</u>									
Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>									
Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes
1	302	0.46		4-1	301	0.33		1-1	302	0.42		4-1	303	0.39	
2	302	0.41		2	301	0.35		2	302	0.41		2	303	0.36	
3	302	0.38		3	302	0.37		3	302	0.43		3	303	0.36	
4	302	0.36		4	302	0.42		4	302	0.45		4	303	0.35	
5	302	0.45		5	302	0.42		5	302	0.47		5	303	0.32	
2-1	301	0.35		5-1	302	0.37		2-1	302	0.43		5-1	303	0.33	
2	301	0.36		2	302	0.36		2	302	0.42		2	303	0.37	
3	301	0.41		3	302	0.41		3	302	0.43		3	303	0.32	
4	301	0.45		4	302	0.45		4	302	0.47		4	303	0.31	
5	301	0.50		5	302	0.44		5	302	0.45		5	303	0.32	
3-1	302	0.36						3-1	302	0.37					
2	302	0.35						2	302	0.39					
3	302	0.37						3	302	0.37					
4	302	0.42						4	302	0.39					
5	302	0.43						5	302	0.39					
Total	<u>7543</u>				<u>8.6530</u>				<u>7560</u>				<u>15.5254</u>		
Average	<u>301.7200</u>				<u>0.6261</u>				<u>302.4000</u>				<u>0.6210</u>		

Sum of square roots. Circle correct bracketed units on data sheet.



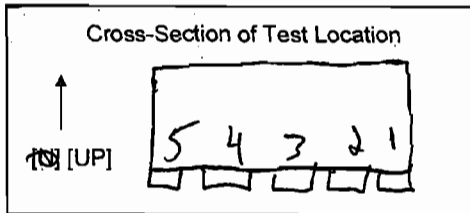
E - 18

TEST LOCATION: FF OUTLET
 UNIT: 2

**VELOCITY DETERMINATION
 FIELD DATA SHEET**

PAGE 1 OF 1

Client: <u>W. KEEBATOR</u>	Project No. <u>12218</u>
Plant: <u>N. BROWARD</u>	Date <u>3-22-13</u>
Meter Operator: <u>SJ</u>	
Probe Operator: <u>SJ</u>	
Source of Moisture and Molecular Weight Data	



Amb. Temp. (°F) <u>82</u>	Bar. Press. <u>30.0</u> (in. Hg) (mbar)
Pitot Cp <u>0.819</u>	Probe I.D. No. <u>67-8-12</u>
Duct Diameters from Disturbance	
Downstream	Upstream
First point all the way <input checked="" type="checkbox"/> [In] <input type="checkbox"/> [Out]	Port Len. (in.) <u>10</u>
Gas Flow <input checked="" type="checkbox"/> [In] <input type="checkbox"/> [Out] of page	
Duct Dimensions (in.) <u>96x96</u>	

Run <u>9</u>	Load	Run <u>9</u>	Load	Run <u>10</u>	Load	Run <u>10</u>	Load
Start Time <u>11:15</u>	Stop Time <u>11:28</u>	Start Time	Stop Time	Start Time <u>12:50</u>	Stop Time <u>13:03</u>	Start Time	Stop Time
Static Press. (in. H ₂ O) <u>-9.7</u>		Static Press. (in. H ₂ O)		Static Press. (in. H ₂ O) <u>-9.7</u>		Static Press. (in. H ₂ O)	
Post-Test Leak Check: Pass <input checked="" type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input checked="" type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>	

Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes
1-1	301	0.34		4-1	301	0.33		1-1	302	0.45		4-1	304	0.41	
2	301	0.33		2	301	0.32		2	302	0.37		2	304	0.37	
3	301	0.32		3	301	0.33		3	302	0.38		3	304	0.37	
4	301	0.35		4	301	0.37		4	302	0.42		4	304	0.34	
5	301	0.46		5	301	0.36		5	302	0.41		5	304	0.33	
2-1	301	0.32		5-1	301	0.33		2-1	302	0.45		5-1	303	0.34	
2	301	0.33		2	301	0.34		2	301	0.46		2	303	0.33	
3	301	0.37		3	301	0.35		3	303	0.46		3	303	0.36	
4	301	0.39		4	301	0.37		4	303	0.41		4	303	0.37	
5	301	0.43		5	301	0.40		5	303	0.38		5	303	0.33	
3-1	301	0.25						3-1	303	0.30					
2	301	0.29						2	303	0.34					
3	301	0.33						3	303	0.35					
4	301	0.35						4	303	0.35					
5	301	0.36						5	303	0.33					
Total															
Average	<u>301.0000</u>				<u>14.7391</u>				<u>7573</u>				<u>15.3112</u>		<u>0.6124</u>

Sum of square roots.

Circle correct bracketed units on data sheet.



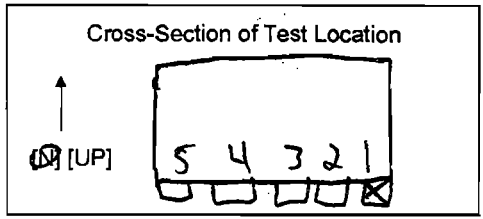
E - 19

TEST LOCATION: FF OUTLET
 UNIT: 2

**VELOCITY DETERMINATION
 FIELD DATA SHEET**

PAGE OF

Client: <u>WHEELABRATOR</u>	Project No. <u>1017</u>
Plant: <u>N. STOWARDS</u>	Date: <u>3-22-13</u>
Meter Operator: <u>ST</u>	
Probe Operator: <u>RL</u>	
Source of Moisture and Molecular Weight Data	



Amb. Temp. (°F) <u>80</u>	Bar. Press. <u>9.85</u> [in. Hg] [mbar]
Pitot Cp <u>0.19</u>	Probe I.D. No.
Duct Diameters from Disturbance	
Downstream	Upstream
First point all the way <u>in</u> [Out]	Port Len. (in.) <u>14</u>
Gas Flow <u>in</u> of page	
Duct Dimensions (in.) <u>96x96</u>	

Run	Load	Run	Load	Run	Load	Run	Load								
1		1		2		1									
Start Time <u>0:33</u>	Stop Time <u>13:47</u>	Start Time	Stop Time	Start Time <u>12:06</u>	Stop Time <u>14:20</u>	Start Time	Stop Time								
Static Press. (in. H ₂ O) <u>-9.7</u>		Static Press. (in. H ₂ O)		Static Press. (in. H ₂ O) <u>-9.7</u>		Static Press. (in. H ₂ O)									
Post-Test Leak Check: Pass <input checked="" type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>									
Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in.H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in.H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in.H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in.H ₂ O)	Notes
1-1	304	0.54		4-1	303	0.34		1-1	303	0.42		4-1	303	0.32	
2	304	0.47		2	303	0.35		2	303	0.42		2	303	0.33	
3	304	0.46		3	303	0.37		3	303	0.43		3	303	0.34	
4	304	0.51		4	304	0.38		4	303	0.44		4	303	0.34	
5	304	0.55		5	304	0.37		5	303	0.46		5	303	0.33	
2-1	303	0.45		5-1	303	0.37		2-1	304	0.39		5-1	303	0.38	
2	303	0.48		2	303	0.38		2	304	0.40		2	303	0.39	
3	304	0.50		3	303	0.40		3	304	0.42		3	303	0.37	
4	304	0.52		4	303	0.39		4	304	0.42		4	303	0.34	
5	304	0.54		5	303	0.40		5	304	0.43		5	303	0.33	
3-1	303	0.37						3-1	304	0.35					
2	303	0.41						2	304	0.34					
3	304	0.40						3	304	0.36					
4	304	0.42						4	304	0.36					
5	304	0.44						5	304	0.37					
Total	<u>7588</u>				<u>16.384</u>			Total	<u>7588</u>				<u>15.3648</u>		
Average	<u>303.500</u>				<u>0.6588</u>			Average	<u>303.4000</u>				<u>0.6146</u>		

Sum of square roots.

Circle correct bracketed units on data sheet.



E - 20

QA/QC ST
 Date 3-22-13

TEST LOCATION:

FF OUTLET

UNIT:

2

RUN:

1

MOISTURE DETERMINATION
FIELD DATA SHEET

PAGE 1 OF 1

Client	Wheelabrator	Project No.	12218
Plant	North Broward	Date	3-22-13
Meter Operator	H. Nauyen		
Probe Operator	Shawn JOINT		

Meter Box No.	66-22
Meter V_d	0.9972 0.9972 1.9840

Leak Rate Before	0.002 (cfm) @	12 (in. Hg)
Leak Rate After	0.002 (cfm) @	5 (in. Hg)

Cross-Section of Test Location

[N] [UP]

Duct Dimensions (in.) 96x96

Static Press. (in. H ₂ O)	Port Lens. (in.)	Gas Flow (In) (Out) of page	Point No. 1 all the way [In] [Out]
-9.7	10	(In) (Out)	

Amb. Temp. (°F)	70	Bar. Press.	29.80 (in. Hg) [mbar]
Liner Material	S.S.		

Balance ID	Ref. Weight ID
Ref. Weight Mass	Ref. Weight Reading

Reference Weight Mass must agree with Reference Weight Reading to within ±0.5 g.

H ₂ O	167 (ml) [gm]	Silica Gel (gm)	12
Total V _c	179		

Start Time:	07:13	Stop Time:	07:58
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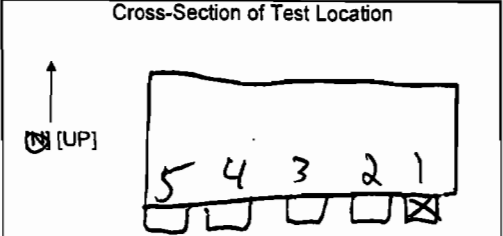
Traverse Point Number	Min/pt Elapsed Time	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume V _m		Stack Temp. T _s (°F)	Cond. Temp. T _c (°F)	DGM Inlet T _{m in} (°F)	DGM Outlet T _{m out} (°F)	Pump Vacuum (in. Hg)	Oxygen Indicator, approx (%dv)	Notes
			Init. Vol.	[ft ³] [L]							
	5	1.5	118.60	121.90	305	54	67	65	3	7.8	
	10	1.5		125.22	305	51	70	65	3	7.9	
	15	1.5		128.41	305	50	73	66	3	7.9	
	20	1.5		131.74	305	50	74	66	3	8.0	
	25	1.5		135.03	305	50	75	67	3	7.8	
	30	1.5		138.35	305	50	75	67	3	7.9	
	35	1.5		141.67	305	49	77	68	3	8.0	
	40	1.5		144.97	305	49	78	69	3	8.2	
	45	1.5		148.27	305	49	79	70	3	8.2	
	Total	13.5		29.67	2745		668	603			
	Average	1.5000			305.000		70.6111				

Circle correct bracketed units on data sheet.

TEST LOCATION: FF Outlet
 UNIT: 2 RUN: 3

MOISTURE DETERMINATION
 FIELD DATA SHEET

Client <u>Wheelabrator</u>	Project No. <u>12218</u>
Plant <u>N. Broward</u>	Date <u>3.22.13</u>
Meter Operator <u>Shawn JONES</u>	
Probe Operator <u>SS</u>	



Amb. Temp. (°F) <u>60</u>	Bar. Press. <u>29.80</u> (in. Hg) [mbar]
Liner Material <u>S.S.</u>	

Balance ID	Ref. Weight ID
Ref. Weight Mass	Ref. Weight Reading

Reference Weight Mass must agree with Reference Weight Reading to within ±0.5 g.

Meter Box No. 66-22
 Meter V_e 0.9972 1.8840

Duct Dimensions (in.) 96x96

H ₂ O <u>205</u> (gm)	Silica Gel (gm) <u>5.2</u>
Total V_e <u>210.2</u>	

Leak Rate Before <u>0.003</u> (cfm) @ <u>15</u> (in. Hg)
Leak Rate After <u>0.003</u> (cfm) @ <u>16</u> (in. Hg)

Static Press. (in. H ₂ O) <u>-9.7</u>	Port Lens. (in.) <u>10</u>	Gas Flow (In)(Out) of page <u>(In)(Out)</u>	Point No. 1 all the way [In][Out]
--	----------------------------	---	-----------------------------------

Start Time: <u>9:46</u>	Stop Time: <u>10:46</u>
-------------------------	-------------------------

Traverse Point Number	Min/vpt Elapsed Time	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume V _m		Stack Temp. Ts (°F)	Cond. Temp. T _c (°F)	DGM Inlet T _{m in} (°F)	DGM Outlet T _{m out} (°F)	Pump Vacuum (in. Hg)	Oxygen Indicator, approx (%.dv)	Notes
			Init. Vol.	(ft ³) [L]							
			<u>180.700</u>								
P1-1	<u>5</u>	<u>1.5</u>	<u>183.98</u>		<u>303</u>	<u>49</u>	<u>78</u>	<u>74</u>	<u>3</u>	<u>7.9</u>	
	<u>10</u>		<u>187.26</u>		<u>303</u>	<u>49</u>	<u>78</u>	<u>74</u>	<u>3</u>	<u>7.7</u>	
	<u>15</u>		<u>190.51</u>		<u>303</u>	<u>49</u>	<u>78</u>	<u>75</u>	<u>3</u>	<u>7.6</u>	
	<u>20</u>		<u>193.75</u>		<u>303</u>	<u>52</u>	<u>81</u>	<u>75</u>	<u>3</u>	<u>7.5</u>	
	<u>25</u>		<u>197.01</u>		<u>303</u>	<u>54</u>	<u>82</u>	<u>75</u>	<u>3</u>	<u>6.7</u>	
	<u>30</u>		<u>200.28</u>		<u>303</u>	<u>55</u>	<u>82</u>	<u>76</u>	<u>3</u>	<u>6.9</u>	
	<u>35</u>		<u>203.55</u>		<u>303</u>	<u>56</u>	<u>83</u>	<u>77</u>	<u>3</u>	<u>7.2</u>	
	<u>40</u>		<u>206.82</u>		<u>303</u>	<u>58</u>	<u>83</u>	<u>77</u>	<u>3</u>	<u>7.4</u>	
	<u>45</u>		<u>210.18</u>		<u>303</u>	<u>59</u>	<u>83</u>	<u>77</u>	<u>3</u>	<u>7.5</u>	
Total			<u>251.480</u>				<u>728</u>	<u>690</u>			
Average		<u>1.5000</u>	<u>303.0000</u>				<u>78.2222</u>				

Circle correct bracketed units on data sheet.

QA/QC SS
 Date 3-22-13



E - 23

TEST LOCATION:

FF OUTLET

UNIT:

2

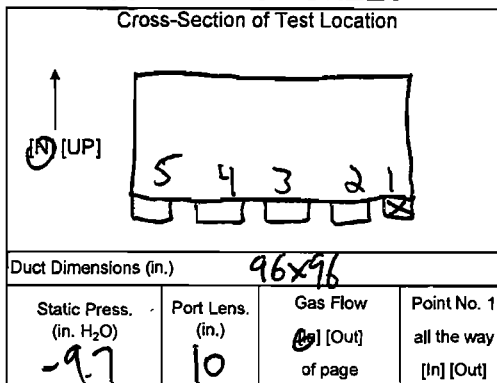
RUN:

4

MOISTURE DETERMINATION FIELD DATA SHEET

PAGE 1 OF 1

Client: WHEELABRATOR, Project No.: 12218, Plant: N. BROWARD, Date: 3-21-13, Meter Operator: SJ, Probe Operator: SJ



Amb. Temp. (°F), Bar. Press. (29.90), Liner Material (SS)

Balance ID, Ref. Weight ID, Ref. Weight Mass, Ref. Weight Reading

Meter Box No. (66-22), Meter Yd. (0.9972, 1.9840)

H2O (196 gm), Silica Gel (8.3 gm), Total Vc (204.3)

Leak Rate Before (0.002 cfm @ 15 in. Hg), Leak Rate After (0.002 cfm @ 15 in. Hg)

Start Time: 10:59, Stop Time: 12:44

Main data table with columns: Traverse Point Number, Min/pt Elapsed Time, Orifice Setting, Gas Sample Volume Vm, Stack Temp. Ts, Cond. Temp. Tc, DGM Inlet Tm in, DGM Outlet Tm out, Pump Vacuum, Oxygen Indicator, Notes.

Circle correct bracketed units on data sheet.

QA/QC Date: 3-22-13



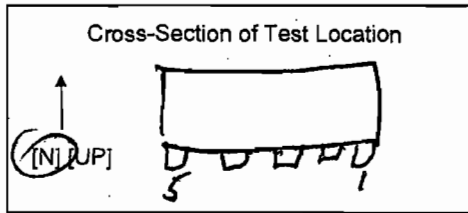
E-26

E-26

E-26

TEST LOCATION: FF OUTLOT VELOCITY DETERMINATION
 UNIT: 2 VOIDED FIELD DATA SHEET

Client <u>WATER BATTERY</u>	Project No. <u>12218</u>
Plant <u>NORTH BROWARD</u>	Date <u>3/21/13</u>
Meter Operator <u>WAYNE BERRY</u>	
Probe Operator <u>ANDY O.</u>	
Source of Moisture and Molecular Weight Data <u>WBT METHOD</u>	



Amb. Temp. (°F) <u>67</u>	Bar. Press. <u>29.75</u> (in. Hg) (mbar)
Pitot Cp <u>0.819</u>	Probe I.D. No. <u>67-8P-12</u>
Duct Diameters from Disturbance	
Downstream	Upstream
First point all the way <u>IN</u> [Out]	Port Len. (in.) <u>10</u>
Gas Flow <u>IN</u> [Out] of page	
Duct Dimensions (in.) <u>96x96</u>	

Run <u>1</u> Load <u>NORMAL</u>				Run <u>2</u> Load <u>NORMAL</u>				Run <u>2</u> Load <u>NORMAL</u>			
Start Time	Stop Time	Static Press. (in. H ₂ O)	Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Start Time	Stop Time	Static Press. (in. H ₂ O)	Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Start Time	Stop Time	Static Press. (in. H ₂ O)	Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>
Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes
5-1	307	0.38		2-1	306	0.42		5-1	306	0.39	
5-2	307	0.41		2-2	307	0.41		5-2	306	0.38	
5-3	308	0.46		2-3	307	0.44		5-3	307	0.38	
5-4	307	0.48		2-4	306	0.44		5-4	307	0.41	
5-5	307	0.49		2-5	306	0.54		5-5	307	0.35	
4-1	306	0.39		1-1	306	0.42		4-1	307	0.40	
4-2	307	0.40		1-2	305	0.44		4-2	307	0.39	
4-3	307	0.42		1-3	305	0.41		4-3	307	0.38	
4-4	307	0.44		1-4	306	0.40		4-4	307	0.40	
4-5	307	0.44		1-5	306	0.50		4-5	307	0.38	
3-1	306	0.42						3-1	308	0.45	
3-2	306	0.42						3-2	308	0.44	
3-3	307	0.43						3-3	308	0.49	
3-4	306	0.46						3-4	308	0.50	
3-5	306	0.56						3-5	308	0.55	
Total											
Average											

Sum of square roots.

Circle correct bracketed units on data sheet.

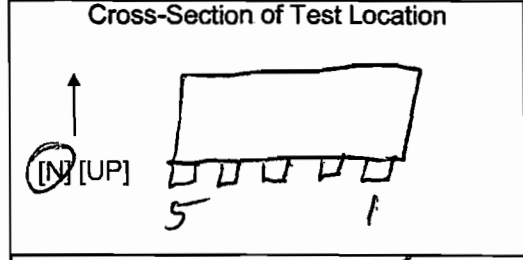


TEST LOCATION: FF OUTLET HCL TESTING METHOD: 26A PAGE 1 OF 1

UNIT: 2 RUN: 1

FIELD DATA SHEET

Client <u>WHEELABRATOR</u>	Project No. <u>12218</u>
Plant <u>NORTH BROWARD</u>	Date <u>3/21/13</u>
Meter Operator <u>WAYNE BERRY</u>	
Probe Operator	



Amb. Temp. (°F) <u>67</u>	Bar. Press. <u>29.75</u> (in. Hg) [mbar]
Probe I.D. No. <u>67-4-3</u>	
Liner Material <u>GLASS</u>	

Meter Box <u>E1-11</u>	Sample Box No. <u>B-24</u>
Meter Y _d <u>1.0050</u>	Meter ΔH _@ <u>1.6964</u>
K Factor	Pitot C _p

Filter No.	
Thimble No.	
Nozzle Diameter	Nozzle I.D.

Leak Rate Before <u>0.003</u> (cfm) [Lpm] @ <u>15</u> (in. Hg)
Leak Rate After <u>0.003</u> (cfm) [Lpm] @ <u>7</u> (in. Hg)
Pitot Leak Check Before: <input type="checkbox"/> After: <u>None</u> Bad <input type="checkbox"/>

Duct Dimensions (in.) <u>96 x 96</u>			
Static Pres (in. H ₂ O) <u>-9.8</u>	Port Len. (in.) <u>10</u>	Gas Flow (in. H ₂ O) <u>10</u>	First point all the way (In) [Out] <u>(In) [Out]</u>

Start Time: <u>0754</u>	Stop Time: <u>0854</u>
-------------------------	------------------------

Traverse Point Number	Min/pt Elapsed Time	Velocity Head ΔP (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume V _m Init. Vol. (ft ³) [L]	Stack Temp. T _s (°F)	Probe T _p (°F)	Filter T _f (°F)	Cond. Temp. T _c (°F)	DGM Inlet T _{m in} (°F)	DGM Outlet T _{m out} (°F)	Pump Vacuum (in. Hg)	Oxygen Indicator, approx (%dv)	Notes
						Set Points							
3-1	5	P/A	1.5	456.01	308	300	301	58	71	69	4	8.1	
	10		1.5	459.39	307	300	301	53	73	69	4	7.1	
	15		1.5	462.76	307	301	300	51	76	69	4	7.4	
	20		1.5	466.16	307	301	301	56	78	70	4	7.4	
	25		1.5	469.63	307	299	299	63	79	70	5	7.9	
	30		1.5	473.13	307	300	300	63	80	71	5	8.7	
	35		1.5	476.60	306	300	300	63	81	71	5	7.9	
	40		1.5	480.04	307	300	300	64	81	71	5	7.3	
	45		1.5	483.48	307	300	300	64	81	71	5	7.3	
	50		1.5	486.93	308	300	299	64	82	72	5	6.8	
	55		1.5	490.39	308	300	301	65	82	72	5	7.4	
	60		1.5	493.870	307	299	300	65	82	72	5	7.6	
	Total			41.3150	308.60				946.0	847.0			
	Average		<u>(1.5)</u>		<u>(307.1667)</u>				<u>(74.7083)</u>				

Sum of square roots.

Circle correct bracketed units on data sheet.



QA/QC WB
Date 3/21/13

E-27

Impinger Weight Sheet

Client Wheelabrator		Unit Name / Location Unit 2 FF Outlet	
Plant North Broward	Job No. 12218	Method Modified M26A	

Balance Calibration Check			
Balance ID	FL07-04	Reference Weight Mass	500.0g
Reference Weight ID	6050	Reference Weight Reading	499.3g

Check must be performed at least Once per Method per Job Reference Weight Mass must agree with Reference Weight Reading to within ±0.5 g.

Run No. 1	1 Filter Type Teflon Mat	Sample Box No. B24
Date 3-21-13	Lot No.	pH
Analyst HN/DL	Filter No. NA	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	50 mL 0.1N H2SO4	481.6	450.4	31.2	QA/QC JB Date 3/21
Impinger 2	100 mL 0.1N H2SO4	699.8	558.9	140.9	
Impinger 3	100 mL 0.1N H2SO4	597.7	544.3	53.4	
Impinger 4	Empty	462.5	442.0	20.5	
Impinger 5	Silica Gel	718.7	696.7	22.0	Total Weight (gm)
Impinger 6					246.0
Impinger 7					268.0

Run No. 2	2 Filter Type Teflon Mat	Sample Box No.
Date 3-21-13	Lot No.	pH
Analyst HN/DL	Filter No. NA	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	50 mL 0.1N H2SO4	482.4	454.0	28.4	QA/QC JB Date 3/21
Impinger 2	100 mL 0.1N H2SO4	607.4	548.0	139.4	
Impinger 3	100 mL 0.1N H2SO4	621.4	558.7	62.7	
Impinger 4	Empty	486.1	467.2	18.9	
Impinger 5	Silica Gel	705.1	686.9	18.2	Total Weight (gm)
Impinger 6					249.4
Impinger 7					267.6

Run No.	3 Filter Type Teflon Mat	Sample Box No.
Date 3/21/13	Lot No.	pH
Analyst PL	Filter No. NA	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	50 mL 0.1N H2SO4	480.2	450.6	29.6	QA/QC JB Date 3/21
Impinger 2	100 mL 0.1N H2SO4	709.6	567.2	142.4	
Impinger 3	100 mL 0.1N H2SO4	604.9	542.3	62.6	
Impinger 4	Empty	459.3	442.6	16.7	
Impinger 5	Silica Gel	736.4	718.7	17.7	Total Weight (gm)
Impinger 6					251.3
Impinger 7					269.0

QA/QC JB
Date 3/21

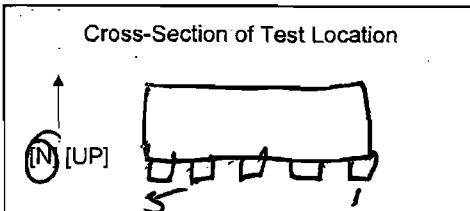


TEST LOCATION: FF OUTLOT VELOCITY DETERMINATION

UNIT: 3

FIELD DATA SHEET

Client: <u>WHEELABRATOR</u>	Project No. <u>12218</u>
Plant: <u>NORTH BROWARD</u>	Date <u>3/20/13</u>
Meter Operator: <u>WAYNE BONY</u>	
Probe Operator: <u>ANDY O.</u>	
Source of Moisture and Molecular Weight Data: <u>WET METHOD</u>	

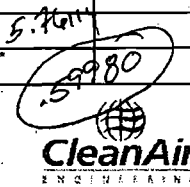


Amb. Temp. (°F) <u>71</u>	Bar. Press. <u>29.8</u> [in. Hg] [mbar]
Pitot Cp <u>0.819</u>	Probe I.D. No. <u>67-8P-12</u>
Duct Diameters from Disturbance	
Downstream	Upstream
First point all the way <u>(IN)</u> [Out]	Port Len. <u>(IN)</u> <u>10</u>
Gas Flow <u>(IN)</u> [Out] of page	
Duct Dimensions (in.) <u>5</u> x <u>1</u>	

Run <u>1</u> Load <u>Normal</u>				Run <u>2</u> Load <u>Normal</u>				Run <u>3</u> Load <u>Normal</u>			
Start Time	Stop Time	Static Press. (in. H ₂ O)	Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Start Time	Stop Time	Static Press. (in. H ₂ O)	Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Start Time	Stop Time	Static Press. (in. H ₂ O)	Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>
Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes
5-1	312	0.40		2-1	312	0.47		5-1	311	0.41	
5-2	312	0.41		2-2	312	0.45		5-2	310	0.43	
5-3	312	0.39		2-3	312	0.42		5-3	311	0.39	
5-4	312	0.36		2-4	311	0.38		5-4	310	0.38	
5-5	312	0.35		2-5	312	0.36		5-5	310	0.34	
4-1	312	0.46		1-1	312	0.37		4-1	310	0.43	
4-2	312	0.48		1-2	312	0.33		4-2	311	0.42	
4-3	312	0.42		1-3	312	0.27		4-3	311	0.38	
4-4	312	0.38		1-4	312	0.31		4-4	311	0.36	
4-5	312	0.33		1-5	312	0.35		4-5	311	0.32	
3-1	310	0.48						3-1	311	0.44	
3-2	312	0.45						3-2	311	0.39	
3-3	312	0.43						3-3	311	0.37	
3-4	312	0.38						3-4	311	0.34	
3-5	312	0.36						3-5	311	0.31	
Total											
Average	<u>9.5347</u>			<u>(31.010)</u>	<u>(6.0716)</u>	<u>(6.2425)</u>		<u>4661</u>	<u>9.2395</u>	<u>3160</u>	<u>5.7611</u>

Sum of square roots.

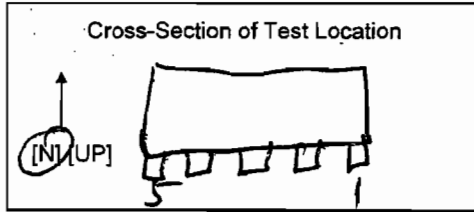
Circle correct bracketed units on data sheet.



E-29

TEST LOCATION: FF OUTLET VELOCITY DETERMINATION
 UNIT: 3 FIELD DATA SHEET

Client <u>HYDROLABATOR</u>	Project No. <u>12218</u>
Plant <u>NORTH BROWARD</u>	Date <u>3/20/13</u>
Meter Operator <u>WAYNE BERRY</u>	
Probe Operator <u>ANDY O.</u>	
Source of Moisture and Molecular Weight Data <u>WST METHOD</u>	



Amb. Temp. (°F) <u>75</u>	Bar. Press. <u>29.8</u> (in. Hg) [mbar]
Pitot Cp <u>0.819</u>	Probe I.D. No. <u>67-8P-12</u>
Duct Diameters from Disturbance	
Downstream	Upstream
First point all the way <input checked="" type="checkbox"/> [In] [Out]	Port Len. (in.) <u>10</u>
Gas Flow <input checked="" type="checkbox"/> [In] [Out] of page	
Duct Dimensions (in.)	

Run: <u>3</u> Load <u>NORMAL</u>				Run: <u>4</u> Load <u>NORMAL</u>				Run: <u>5</u> Load <u>NORMAL</u>							
Start Time <u>9:39</u>		Stop Time <u>9:50</u>		Start Time <u>40:16</u>		Stop Time <u>10:28</u>		Start Time		Stop Time					
Static Press. (in. H ₂ O) <u>-8.8</u>				Static Press. (in. H ₂ O) <u>-8.8</u>				Static Press. (in. H ₂ O)							
Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>				Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>				Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>							
Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes
5-1	313	0.48		2-1	314	0.48		5-1	311	0.41		2-1	310	0.50	
5-2	312	0.44		2-2	313	0.46		5-2	311	0.42		2-2	311	0.47	
5-3	312	0.42		2-3	314	0.47		5-3	312	0.44		2-3	312	0.42	
5-4	312	0.41		2-4	314	0.48		5-4	312	0.40		2-4	312	0.39	
5-5	312	0.32		2-5	313	0.48		5-5	312	0.37		2-5	312	0.36	
4-1	313	0.40		1-1	311	0.52		4-1	313	0.45		1-1	312	0.48	
4-2	313	0.38		1-2	313	0.51		4-2	313	0.43		1-2	312	0.36	
4-3	313	0.39		1-3	313	0.49		4-3	313	0.43		1-3	312	0.33	
4-4	313	0.40		1-4	314	0.44		4-4	313	0.40		1-4	312	0.35	
4-5	313	0.34		1-5	313	0.47		4-5	313	0.35		1-5	312	0.38	
3-1	311	0.48						3-1	312	0.53					
2-2	312	0.46						3-2	312	0.45					
3-3	313	0.46						3-3	312	0.42					
3-4	313	0.47						3-4	313	0.38					
3-5	313	0.47						3-5	312	0.36					
Total	4688	9.71958		3132	6.92410			4684	9.66210			3117	6.34057		
Average				(312.800)	(6.65029)							(312.0400)	(6.40109)		

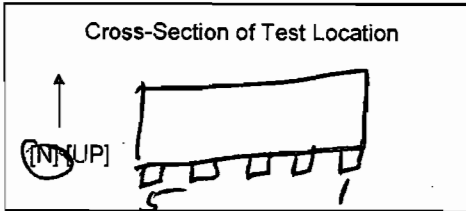
Sum of square roots. Circle correct bracketed units on data sheet.

312.0400
6.40109
Clean Air ENGINEERING

E - 30

TEST LOCATION: FF OUTLET VELOCITY DETERMINATION
 UNIT: 3 FIELD DATA SHEET

Client <u>WHEELABRATOR</u>	Project No. <u>12218</u>
Plant <u>NORTH BROWARD</u>	Date <u>3/20/13</u>
Meter Operator <u>WYNO BENNY</u>	
Probe Operator <u>ANDY O.</u>	
Source of Moisture and Molecular Weight Data <u>WET METHOD</u>	



Amb. Temp. (°F) <u>78</u>	Bar. Press <u>29.8</u> (in. Hg) (mbar)
Pitot Cp <u>0.819</u>	Probe I.D. No. <u>67-8P-12</u>
Duct Diameters from Disturbance	
Downstream	Upstream
First point all the way <input checked="" type="checkbox"/> [Out]	Port Len. (in.) <u>10</u>
Gas Flow <input checked="" type="checkbox"/> [Out] of page	
Duct Dimensions (in.) <u>96x96</u>	

Run	Load	Run	Load	Run	Load	Run	Load								
<u>5</u>	<u>NORMAL</u>			<u>6</u>	<u>NORMAL</u>										
Start Time	Stop Time	Start Time	Stop Time	Start Time	Stop Time	Start Time	Stop Time								
Static Press. (in. H ₂ O) <u>-9.1</u>		Static Press. (in. H ₂ O)		Static Press. (in. H ₂ O) <u>-9.1</u>		Static Press. (in. H ₂ O)									
Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>									
Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes
<u>5-1</u>	<u>312</u>	<u>0.32</u>		<u>2-1</u>	<u>312</u>	<u>0.49</u>		<u>5-1</u>	<u>313</u>	<u>0.49</u>		<u>2-1</u>	<u>313</u>	<u>0.53</u>	
<u>5-2</u>	<u>311</u>	<u>0.33</u>		<u>2-2</u>	<u>312</u>	<u>0.43</u>		<u>5-2</u>	<u>313</u>	<u>0.50</u>		<u>2-2</u>	<u>313</u>	<u>0.45</u>	
<u>5-3</u>	<u>312</u>	<u>0.32</u>		<u>2-3</u>	<u>312</u>	<u>0.39</u>		<u>5-3</u>	<u>313</u>	<u>0.48</u>		<u>2-3</u>	<u>314</u>	<u>0.46</u>	
<u>5-4</u>	<u>312</u>	<u>0.32</u>		<u>2-4</u>	<u>312</u>	<u>0.37</u>		<u>5-4</u>	<u>313</u>	<u>0.47</u>		<u>2-4</u>	<u>314</u>	<u>0.41</u>	
<u>5-5</u>	<u>312</u>	<u>0.37</u>		<u>2-5</u>	<u>312</u>	<u>0.34</u>		<u>5-5</u>	<u>314</u>	<u>0.39</u>		<u>2-5</u>	<u>314</u>	<u>0.39</u>	
<u>4-1</u>	<u>313</u>	<u>0.51</u>		<u>1-1</u>	<u>311</u>	<u>0.36</u>		<u>4-1</u>	<u>314</u>	<u>0.53</u>		<u>1-1</u>	<u>313</u>	<u>0.48</u>	
<u>4-2</u>	<u>312</u>	<u>0.47</u>		<u>1-2</u>	<u>311</u>	<u>0.31</u>		<u>4-2</u>	<u>314</u>	<u>0.52</u>		<u>1-2</u>	<u>313</u>	<u>0.35</u>	
<u>4-3</u>	<u>313</u>	<u>0.42</u>		<u>1-3</u>	<u>311</u>	<u>0.26</u>		<u>4-3</u>	<u>314</u>	<u>0.47</u>		<u>1-3</u>	<u>313</u>	<u>0.31</u>	
<u>4-4</u>	<u>313</u>	<u>0.37</u>		<u>1-4</u>	<u>312</u>	<u>0.28</u>		<u>4-4</u>	<u>314</u>	<u>0.45</u>		<u>1-4</u>	<u>313</u>	<u>0.35</u>	
<u>4-5</u>	<u>312</u>	<u>0.37</u>		<u>1-5</u>	<u>312</u>	<u>0.32</u>		<u>4-5</u>	<u>314</u>	<u>0.42</u>		<u>1-5</u>	<u>313</u>	<u>0.33</u>	
<u>3-1</u>	<u>313</u>	<u>0.46</u>						<u>3-1</u>	<u>314</u>	<u>0.52</u>					
<u>3-2</u>	<u>312</u>	<u>0.39</u>						<u>3-2</u>	<u>315</u>	<u>0.45</u>					
<u>3-3</u>	<u>312</u>	<u>0.38</u>						<u>3-3</u>	<u>314</u>	<u>0.44</u>					
<u>3-4</u>	<u>312</u>	<u>0.34</u>						<u>3-4</u>	<u>315</u>	<u>0.40</u>					
<u>3-5</u>	<u>313</u>	<u>0.34</u>						<u>3-5</u>	<u>315</u>	<u>0.38</u>					
Total:	<u>4684</u>	<u>9.22948</u>			<u>3117</u>	<u>5.9378</u>			<u>4709</u>	<u>10.1677</u>			<u>3133</u>	<u>6.3494</u>	
Average:	<u>312.040</u>	<u>0.60650</u>											<u>313.660</u>	<u>0.60650</u>	

Sum of square roots. Circle correct bracketed units on data sheet.



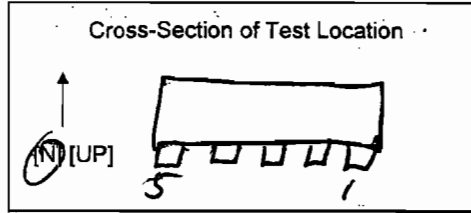
E-31

E-35

E-32

TEST LOCATION: FF OUTLET VELOCITY DETERMINATION
 UNIT: 3 FIELD DATA SHEET

Client <u>WILHELM LABORATOR</u>	Project No. <u>12218</u>
Plant <u>NORTH BROWNS</u>	Date <u>7/20/13</u>
Meter Operator	
Probe Operator	
Source of Moisture and Molecular Weight Data <u>NOT METHOD</u>	



Amb. Temp. (°F)	Bar. Press <u>29.8</u> (in. Hg) (mbar)
Pitot Cp <u>0.819</u>	Probe I.D. No. <u>67-8P-R</u>
Duct Diameters from Disturbance	
Downstream	Upstream
First point all the way (In) (Out)	Port Len. (in.) <u>10</u>
Gas Flow (In) (Out) of page	
Duct Dimensions (in.) <u>96 x 96</u>	

Run <u>7</u> Load <u>NORMAL</u>				Run <u>8</u> Load <u>NORMAL</u>				Run <u>9</u> Load <u>NORMAL</u>							
Start Time <u>12:36</u>		Stop Time <u>12:43</u>		Start Time <u>13:12</u>		Stop Time <u>13:27</u>		Start Time		Stop Time					
Static Press. (in. H ₂ O) <u>-9.1</u>				Static Press. (in. H ₂ O) <u>-9.1</u>				Static Press. (in. H ₂ O)							
Post-Test Leak Check: Pass <input checked="" type="checkbox"/> Fail <input type="checkbox"/>				Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>				Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>							
Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes
5-1	312	0.50		2-1	312	0.54		5-1	314	0.43		2-1	310	0.57	
5-2	313	0.51		2-2	313	0.44		5-2	314	0.48		2-2	310	0.50	
5-3	313	0.49		2-3	312	0.42		5-3	314	0.52		2-3	310	0.46	
5-4	312	0.48		2-4	312	0.38		5-4	314	0.49		2-4	310	0.38	
5-5	312	0.43		2-5	312	0.36		5-5	314	0.45		2-5	311	0.48	
4-1	311	0.54		1-1	300	0.22		4-1	309	0.52		1-1	310	0.53	
4-2	312	0.55		1-2	305	0.18		4-2	311	0.51		1-2	312	0.42	
4-3	312	0.48		1-3	310	0.28		4-3	312	0.49		1-3	313	0.32	
4-4	313	0.43		1-4	309	0.35		4-4	313	0.45		1-4	313	0.31	
4-5	313	0.42		1-5	307	0.45		4-5	313	0.42		1-5	313	0.42	
3-1	313	0.46						3-1	312	0.37					
3-2	313	0.45						3-2	312	0.46					
3-3	313	0.46						3-3	313	0.47					
3-4	312	0.44						3-4	313	0.47					
3-5	313	0.40						3-5	313	0.41					
Total															
Average															

Sum of square roots.

Circle correct bracketed units on data sheet.



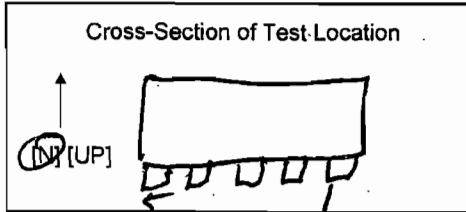
QA/QC 84
Date 7-20-13

312 1600 0.6706

TEST LOCATION: FF OUTLET
 UNIT: 3

VELOCITY DETERMINATION FIELD DATA SHEET

Client: <u>WHEELABRATOR</u>	Project No: <u>12218</u>
Plant: <u>NORTH BROADWAY</u>	Date: <u>3/20/13</u>
Meter Operator: <u>WAYNE BORN</u>	
Probe Operator: _____	
Source of Moisture and Molecular Weight Data <u>WOT METHOD</u>	



Amb. Temp. (°F)	Bar. Press. <u>29.8</u> (in. Hg) (mbar)
Pitot Cp <u>0.819</u>	Probe I.D. No. <u>67-8P-12</u>
Duct Diameters from Disturbance	
Downstream:	Upstream:
First point all the way <input checked="" type="checkbox"/> [Out]	Port Len. (in.) <u>10</u>
Gas Flow <input checked="" type="checkbox"/> [Out] of page	
Duct Dimensions (in.)	<u>96 x 96</u>

Run	Load	Run	Load	Run	Load	Run	Load								
9	NORMAL	10	NORMAL												
Start Time <u>13:55</u>	Stop Time <u>14:11</u>	Start Time	Stop Time	Start Time <u>14:26</u>	Stop Time <u>14:41</u>	Start Time	Stop Time								
Static Press. (in. H ₂ O) <u>-9.1</u>		Static Press. (in. H ₂ O)		Static Press. (in. H ₂ O) <u>-9.1</u>		Static Press. (in. H ₂ O)									
Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input checked="" type="checkbox"/> Fail <input type="checkbox"/>		Post-Test Leak Check: Pass <input type="checkbox"/> Fail <input type="checkbox"/>									
Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes	Traverse Point Number	Stack Temp. T _s (°F)	Velocity Head ΔP (in. H ₂ O)	Notes
5-1	311	0.45		2-1	311	0.53		5-1	0.52	311	Flip	2-1	312	0.46	
5-2	311	0.45		2-2	313	0.54		5-2	0.51	310	OP 9	2-2	312	0.44	
5-3	310	0.42		2-3	314	0.51		5-3	0.48	310	T	2-3	313	0.42	
5-4	311	0.40		2-4	314	0.49		5-4	0.40	310		2-4	313	0.41	
5-5	310	0.37		2-5	314	0.48		5-5	0.37	310		2-5	313	0.40	
4-1	313	0.33		1-1	314	0.56		4-1	312	0.50		1-1	313	0.42	
4-2	313	0.41		1-2	314	0.51		4-2	313	0.54		1-2	313	0.34	
4-3	313	0.40		1-3	313	0.46		4-3	313	0.50		1-3	313	0.30	
4-4	314	0.40		1-4	313	0.42		4-4	314	0.41		1-4	313	0.34	
4-5	314	0.36		1-5	313	0.52		4-5	314	0.40		1-5	313	0.32	
3-1	312	0.36						3-1	312	0.38					
3-2	313	0.45						3-2	313	0.48					
3-3	313	0.44						3-3	314	0.48					
3-4	314	0.43						3-4	314	0.44					
3-5	314	0.40						3-5	314	0.39					
Total:															
Average					<u>312.7600</u>	<u>0.6645</u>							<u>312.4800</u>	<u>0.6554</u>	

Sum of square roots.

Circle correct bracketed units on data sheet.

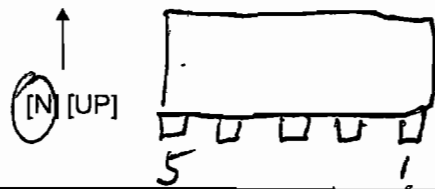


TEST LOCATION: PP OUTLET
 UNIT: 3 RUN: 1

HCL TESTING
FIELD DATA SHEET

METHOD: 26A PAGE 1 OF 1

Cross-Section of Test Location



Duct Dimensions (in.) <u>4.5 x 4.6</u>			
Static Pres (in. H ₂ O)	Port Len. (in.)	Gas Flow (in. H ₂ O) [IN] [OUT]	First point all the way (IN) [OUT]
<u>-8.0</u>	<u>10</u>		

Amb. Temp. (°F) <u>70</u>	Bar. Press. <u>29.80</u> (in. Hg) [mbar]
Probe I.D. No. <u>67-4-3</u>	
Liner Material <u>GLASS</u>	

Filter No. <u>—</u>	
Thimble No. <u>—</u>	
Nozzle Diameter <u>—</u>	Nozzle I.D. <u>—</u>

Start Time: 0813 Stop Time: 0913

Client <u>HOOLAB/ATON</u>	Project No. <u>12218</u>
Plant <u>PONAH BROWNY</u>	Date <u>3/20/13</u>
Meter Operator <u>WYANN BONA</u>	
Probe Operator <u>—</u>	

Meter Box <u>85-2</u>	Sample Box No. <u>B-01</u>
Meter Y _d <u>1.0039</u>	Meter ΔH ₀ <u>1.7413</u>
K Factor <u>—</u>	Pitot C _p <u>—</u>

Leak Rate Before <u>0.03</u> (in.) [Lpm] @ <u>15</u> (in. Hg)
Leak Rate After <u>0.01</u> (in.) [Lpm] @ <u>10</u> (in. Hg)
Pitot Leak Check Before <input type="checkbox"/> After: <u>Good</u> <input checked="" type="checkbox"/> Bad <input type="checkbox"/>

Traverse Point Number	Min/pt Elapsed Time	Velocity Head ΔP (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume V _m		Stack Temp. Ts (°F)	Probe T _p (°F)	Filter T _f (°F)	Cond. Temp. T _c (°F)	DGM Inlet T _{m in} (°F)	DGM Outlet T _{m out} (°F)	Pump Vacuum (in. Hg)	Oxygen Indicator, approx (%dv)	<input type="checkbox"/> Amb Filter <input type="checkbox"/> Dioxin Trap	Notes
				Init. Vol. [ft ³] [L]	Set Points										
3-1	5	N/A	1.5	409.60	312	288	297	53	76	75	4	6.4			
	10		1.5	412.95	311	289	298	45	77	75	4	7.5			
	15		1.5	416.29	312	291	299	41	82	76	4	7.6			
	20		1.5	419.66	312	292	298	42	85	77	4	7.8			
	25		1.5	422.05	312	293	298	48	88	78	4	6.5			
	30		1.5	425.80	311	294	299	53	89	79	4	6.5			
	35		1.5	429.95	312	295	300	62	91	80	4	7.5			
	40		1.5	433.45	312	296	299	63	92	81	4	7.4			
	45		1.5	436.88	311	297	300	64	92	82	4	6.8			
	50		1.5	440.29	311	293	300	64	91	82	4	7.0			
	55		1.5	443.73	311	298	300	65	91	83	4	7.0			
	60		1.5	447.230	311	299	300	59	91	83	4	6.5			
	Total			41,000	3738				954	951					
	Average		<u>1.5</u>			<u>311.5</u>				<u>79.375</u>	<u>SB</u>				

Sum of square roots.

Circle correct bracketed units on data sheet.

83.166 4/5/13

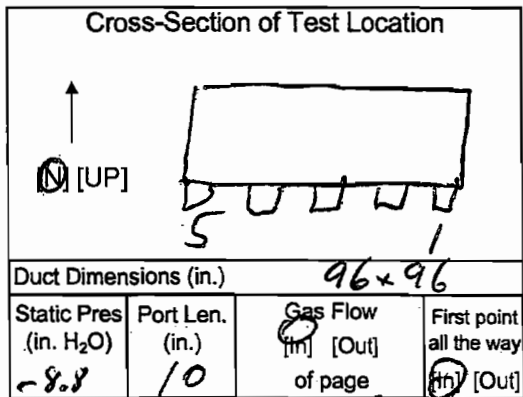


TEST LOCATION: FF OUTVOT HCI TESTING METHOD: 26A PAGE 1 OF 1
 UNIT: 3 RUN: 2 FIELD DATA SHEET

Client: WATERBURY Project No. 1218
 Plant: North BROAD Date: 3/20/13
 Meter Operator: WANDA BERRY
 Probe Operator: _____

Meter Box: 852 Sample Box No.: B-24
 Meter Yd: 1.0039 Meter ΔH@: 1.7413
 K Factor: _____ Pitot Cp: _____

Leak Rate Before: 0.002 [Lpm] @ 15 (in. Hg)
 Leak Rate After: 0.002 [Lpm] @ 10 (in. Hg)
 Pitot Leak Check Before: After: Bad



Amb. Temp. (°F): 75 Bar. Press. 29.80 (in. Hg) [mbar]
 Probe I.D. No.: 67-4-3
 Liner Material: GLASS

Filter No.: _____
 Thimble No.: _____
 Nozzle Diameter: _____ Nozzle I.D.: _____

Start Time: 0939 Stop Time: 1039

Traverse Point Number	Min/pt Elapsed Time	Velocity Head ΔP (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume V _m Init. Vol. (ft ³) [L]	Stack Temp. Ts (°F)	Probe T _p (°F)	Filter T _f (°F)	Cond. Temp. T _c (°F)	DGM Inlet T _{m in} (°F)	DGM Outlet T _{m out} (°F)	Pump Vacuum (in. Hg)	Oxygen Indicator, approx (%dv)	<input type="checkbox"/> Amb Filter <input type="checkbox"/> Dioxin Trap <input type="checkbox"/> _____	Notes
						Set Points								
3-1	5	N/A	1.5	451.20	312	293	297	64	84	83	4	8.8		
	10		1.5	454.66	312	291	297	64	86	83	4	8.5		
	15		1.5	458.04	314	291	298	63	89	83	4	8.9		
	20		1.5	461.48	313	292	298	65	90	84	4	8.1		
	25		1.5	465.02	313	292	298	65	92	84	4	8.0		
	30		1.5	468.55	313	294	299	62	93	85	4	7.8		
	35		1.5	472.10	313	295	299	63	93	85	4	8.6		
	40		1.5	475.64	313	296	300	63	93	86	4	8.0		
	45		1.5	479.15	312	297	299	65	95	86	4	7.4		
	50		1.5	482.66	312	298	299	62	93	86	4	7.9		
	55		1.5	486.17	313	298	300	61	92	86	4	8.1		
	60		1.5	489.685	313	299	299	60	92	86	4	7.6		
Total				41,925	3753				1092	1017				
Average				<u>1.5</u>	<u>312.75</u>				<u>87.875</u>					

Sum of square roots.

Circle correct bracketed units on data sheet.

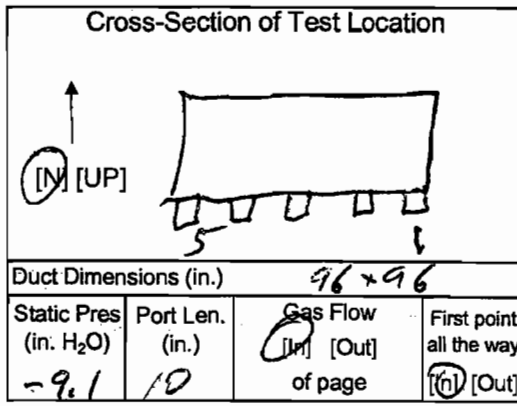


E-35

TEST LOCATION: F.F. OUTLOT HCL TESTING METHOD: 26A PAGE 1 OF 1
 UNIT: 3 RUN: 3 FIELD DATA SHEET

Client WHS LABORATOR Project No. 12218
 Plant NORTH BROWNS Date 3/20/13
 Meter Operator WAYNE BONNY
 Probe Operator _____

Meter Box 85-2 Sample Box No. B-01
 Meter Y₀ 1.0039 Meter ΔH₀ 1.743
 K Factor _____ Pitot C_p _____
 Leak Rate Before 0.002 (cfm) [Lpm] @ 15 (in. Hg)
 Leak Rate After 0.001 (cfm) [Lpm] @ 5 (in. Hg)
 Pitot Leak Check Before: OK After: Good OK Had



Amb. Temp. (°F) 78 Bar. Press. 29.90 (in. Hg) [mbar]
 Probe I.D. No. 67-4-3
 Liner Material GLASS

Filter No. _____
 Thimble No. _____
 Nozzle Diameter _____ Nozzle I.D. _____

Start Time: 1100 Stop Time: 1200

Traverse Point Number	Min/pt Elapsed Time	Velocity Head ΔP (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume V _m Init. Vol. [ft ³] [L]	Stack Temp. T _s (°F)	Probe T _p (°F)		Fond. Temp. T _c (°F)	DGM Inlet T _{m in} (°F)	DGM Outlet T _{m out} (°F)	Pump Vacuum (in. Hg)	Oxygen Indicator, approx (%dv)	<input type="checkbox"/> Amb Filter <input type="checkbox"/> Dioxin Trap	Notes
						300	300							
3-1	5	N/A	1.5	493.68	312	288	298	55	89	85	4	8.3		
	10		1.5	497.15	312	291	295	49	91	86	4	7.3		
	15		1.5	500.64	313	293	297	46	94	86	4	7.1		
	20		1.5	504.14	313	294	298	47	95	87	4	9.0		
	25		1.5	507.66	314	295	297	50	97	88	4	8.4		
	30		1.5	511.21	314	296	299	53	97	89	4	8.8		
	35		1.5	514.76	313	297	298	59	98	89	4	8.8		
	40		1.5	518.30	314	297	298	64	98	90	4	8.9		
	45		1.5	521.87	314	298	299	63	98	90	4	8.9		
	50		1.5	525.41	314	298	299	63	99	91	4	8.4		
	55		1.5	528.97	313	299	299	63	99	92	4	8.5		
	60		1.5	532.535	313	299	300	63	101	93	4	7.8		
	Total			42.365	31									
	Average		1.5		313.25				92.565					

Sum of square roots.

Circle correct bracketed units on data sheet.

92.565
92.583



E-36

Impinger Weight Sheet

Client Wheelabrator		Unit Name / Location Unit 3 FF Outlet	
Plant North Broward	Job No. 12218	Method	Modified M26A

Balance Calibration Check			
Balance ID		Reference Weight Mass	
Reference Weight ID		Reference Weight Reading	
Check must be performed at least Once per Method per Job		Reference Weight Mass must agree with Reference Weight Reading to within ±0.5 g.	

Run No. 1	Filter Type Teflon Mat	Sample Box No. B1
Date 3-20-13	Lot No.	pH
Analyst	Filter No. NA	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	50 mL 0.1N H2SO4	492.4	458.0	34.4	QA/QC SB Date 3/20
Impinger 2	100 mL 01.N H2SO4	683.3	546.5	136.8	
Impinger 3	100 mL 01.N H2SO4	593.2	536.3	56.9	
Impinger 4	Empty	494.1	468.6	25.5	
Impinger 5	Silica Gel	801.9	780.8	21.1	Total Weight (gm)
Impinger 6					253.6
Impinger 7					274.7

Run No. 2	Filter Type Teflon Mat	Sample Box No. B24
Date 3-20-13	Lot No.	pH
Analyst	Filter No. NA	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	50 mL 0.1N H2SO4	501.0	451.4	49.6	QA/QC SB Date 3/20
Impinger 2	100 mL 01.N H2SO4	698.0	562.3	135.7	
Impinger 3	100 mL 01.N H2SO4	593.5	541.1	52.4	
Impinger 4	Empty	454.9	443.0	11.9	
Impinger 5	Silica Gel	791.4	776.7	14.7	Total Weight (gm)
Impinger 6					249.6
Impinger 7					264.3

Run No. 3	Filter Type Teflon Mat	Sample Box No. B-1
Date 3-20-13	Lot No.	pH
Analyst	Filter No. NA	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	50 mL 0.1N H2SO4	489.2	457.1	32.1	QA/QC SB Date 3/20
Impinger 2	100 mL 01.N H2SO4	672.8	546.0	126.8	
Impinger 3	100 mL 01.N H2SO4	584.6	533.4	51.2	
Impinger 4	Empty	486.2	468.1	18.1	
Impinger 5	Silica Gel	816.9	802.0	14.9	Total Weight (gm)
Impinger 6					233.2
Impinger 7					248.1

QA/QC SB
Date 3/20



TEST LOCATION: FF OUTLET

FF OUTLET

METALS/PART TESTING
FIELD DATA SHEET

METHOD: S-29

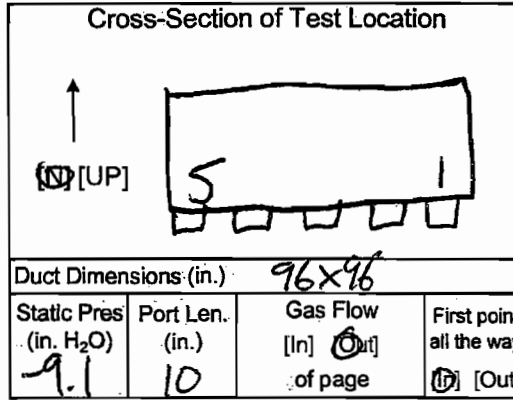
PAGE 1 OF 2

UNIT: 3

RUN: 1

Client <u>WEEVABRATOR</u>	Project No. <u>1200</u>
Plant <u>NORTH BLOWARK</u>	Date <u>3-20-13</u>
Meter Operator <u>ST</u>	
Probe Operator <u>WBS</u>	

Meter Box <u>66-11</u>	Sample Box No.
Meter Y _d <u>0.9106</u>	Meter ΔH _@ <u>1.8274</u>
K Factor <u>2.55</u>	Pitot C _p <u>0.924</u>
Leak Rate Before <u>0.0030</u> [cfm] [Lpm] @ <u>15</u> (in. Hg)	
Leak Rate After <u>0.003</u> [cfm] [Lpm] @ <u>16</u> (in. Hg)	
Pitot Leak Check Before: <input checked="" type="checkbox"/> After: Good <input checked="" type="checkbox"/> Bad <input type="checkbox"/>	



Amb. Temp. (°F) <u>88</u>	Bar. Press. <u>29.80</u> [in. Hg] [mbar]
Probe I.D. No. <u>67-8-16</u>	
Liner Material <u>GLASS</u>	

Filter No. <u>NA</u>	<u>E45-06</u>
Thimble No. <u>NA</u>	
Nozzle Diameter <u>.5125</u>	Nozzle I.D. <u>.205-1</u>

Start Time: <u>12:35</u>	Stop Time: <u>14:50</u>
--------------------------	-------------------------

Traverse Point Number	Min/pt 5 Elapsed Time	Velocity Head ΔP (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume V _m Init. Vol. <u>0</u> [L]	Stack Temp. T _s (°F)	Probe T _p (°F)		Filter T _f (°F)	Cond. Temp. T _c (°F)	DGM Inlet T _{m in} (°F)	DGM Outlet T _{m out} (°F)	Pump Vacuum (in. Hg)	Oxygen Indicator, approx (%dv)	<input type="checkbox"/> Amb Filter <input type="checkbox"/> Dioxin Trap	Notes
						Set Points	Set Points								
1-1	5	0.22	0.56	562.900	300	252	253	52	87	89	4	8.2			
2	10	0.18	0.46	567.28	305	251	254	52	88	89	4	8.4			
3	15	0.28	0.71	569.53	310	252	250	52	89	89	4	8.3			
4	20	0.35	0.99	571.85	309	250	251	50	90	89	4	7.7			
5	25	0.45	1.20	574.89	307	251	250	50	91	89	5	8.1		*K = 2.60	
2-1	30	0.57	1.50	578.47	310	252	251	52	92	89	5	8.2		AV = -.18	
2	35	0.50	1.30	581.62	310	251	250	52	94	89	5	8.1			
3	40	0.46	1.20	584.71	310	250	250	53	95	90	5	8.4			
4	45	0.38	0.99	587.61	311	252	251	54	96	91	5	9.0			
5	50	0.48	1.30	590.80	311	250	251	55	97	92	5	8.1		ΔV = .23	
3-1	55	0.31	0.81	593.38	310	252	250	55	98	95	5	7.9			
2	60	0.48	1.20	596.49	310	252	252	56	98	95	5	7.7			
Total		7.3841	12.1200	72.350	3103				115	1086					
Average		0.63711	1.0920		309.520				96.8200						

Sum of square roots.

Circle correct bracketed units on data sheet.



TEST LOCATION: FF Outlet
 UNIT: 3 RUN: 1

METALS/PART TESTING
FIELD DATA SHEET

METHOD: S-29 PAGE 2 OF 2

Client WHEELABRATOR Project No. 12218
 Plant North Blowers Date 3-20-13
 Meter Operator SJ
 Probe Operator WB

Meter Box _____ Sample Box No. _____
 Meter Y_d _____ Meter $\Delta H_{@}$ _____
 K Factor _____ Pitot C_p _____
 Leak Rate Before [cfm] [Lpm] @ (in. Hg) _____
 Leak Rate After [cfm] [Lpm] @ (in. Hg) _____
 Pitot Leak Check Before: After: Good Bad

Cross-Section of Test Location

↑
[N] [UP]

Duct Dimensions (in.) _____

Static Pres (in. H ₂ O)	Port Len. (in.)	Gas Flow [in] [Out]	First point all the way [in] [Out]
------------------------------------	-----------------	---------------------	------------------------------------

Amb. Temp. (°F) _____ Bar. Press. [in. Hg] [mbar] _____
 Probe I.D. No. _____
 Liner Material _____

Filter No. _____
 Thimble No. _____
 Nozzle Diameter 0.2725 Nozzle I.D. 0.2725-1

Start Time: _____ Stop Time: _____

Traverse Point Number	Min/pt Elapsed Time	Velocity Head ΔP (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume V_m Init. Vol. (L)	Stack Temp. T_s (°F)	Probe T_p (°F)		Filter T_f (°F)	Cond. Temp. T_c (°F)	DGM Inlet $T_{m in}$ (°F)	DGM Outlet $T_{m out}$ (°F)	Pump Vacuum (in. Hg)	Oxygen Indicator, approx (% dv)	<input type="checkbox"/> Amb Filter <input type="checkbox"/> Dioxin Trap <input type="checkbox"/> _____	Notes
						Set Points	Set Points								
P3-3	65	0.45	1.20	596.480	310	250	250	46	102	98	5	8.3			
4	70	0.43	1.10	602.52	310	251	250	44	103	99	5	8.2			
5	75	0.38	0.99	605.30	311	252	250	45	105	100	5	8.0		$\Delta U = -.23$	
P4-1	80	0.45	1.26	608.60	311	251	250	48	101	100	5	8.2			
2	85	0.45	1.20	611.65	311	250	251	49	101	100	5	8.1			
3	90	0.42	1.10	614.62	310	252	251	49	100	100	5	7.9			
4	95	0.40	1.00	617.50	311	250	252	50	100	100	5	7.8			
5	100	0.37	0.96	620.22	310	250	251	52	102	102	5	7.9			
P5-1	105	0.52	1.40	623.55	311	251	252	54	103	102	6	7.8		$*K = 2.65$	
2	110	0.51	1.40	626.96	310	252	251	56	104	101	6	7.6		$\Delta U = -.11$	
3	115	0.48	1.30	630.15	310	250	250	56	104	101	6	7.9			
4	120	0.40	1.10	633.34	310	252	251	58	105	101	6	7.9			
5	125	0.37	0.99	636.00	310	251	250	58	105	101	6	8.1			
Total		8.5423	14.9300		4035				1335	1305					
Average															

Sum of square roots.

Circle correct bracketed units on data sheet.



Impinger Weight Sheet

Client Wheelabrator	Unit Name / Location Unit 3 FF Outlet
Plant	Job No. 12218 Method 5/29

Balance Calibration Check			
Balance ID	TL07-04	Reference Weight Mass	500.0g
Reference Weight ID	60156	Reference Weight Reading	499.3g

Check must be performed at least Once per Method per Job Reference Weight Mass must agree with Reference Weight Reading to within ±0.5 g.

Run No. 1	Filter Type Quartz	Sample Box No. M3
Date	Lot No.	pH NA
Analyst	Filter No. e45-06	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	Empty	757.9	467.1	290.8	
Impinger 2	100 ml 5% HNO ₃ /10% H ₂ O ₂	650.4	545.5	104.9	QA/QC 5B Date 3/20
Impinger 3	100 ml 5% HNO ₃ /10% H ₂ O ₂	566.9	551.0	15.9	
Impinger 4	Empty	426.5	424.9	1.6	
Impinger 5	100 ml 4% KMnO ₄ /10% H ₂ SO ₄	647.0	644.5	2.5	Total Weight (gm) 416.8
Impinger 6	100 ml 4% KMnO ₄ /10% H ₂ SO ₄	550.4	549.3	1.1	
Impinger 7	≈ 250 g Silica Gel	792.7	781.6	11.1	427.9

Run No. 2	Filter Type Quartz	Sample Box No. M1
Date 3/21/13	Lot No.	pH NA
Analyst DL	Filter No. e45-07	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	Empty	666.3	443.3	223.0	
Impinger 2	100 ml 5% HNO ₃ /10% H ₂ O ₂	658.7	530.3	128.4	QA/QC 5B Date 3/21
Impinger 3	100 ml 5% HNO ₃ /10% H ₂ O ₂	581.7	538.5	43.2	
Impinger 4	Empty	452.6	444.1	8.5	
Impinger 5	100 ml 4% KMnO ₄ /10% H ₂ SO ₄	547.3	544.1	3.2	Total Weight (gm) 408.7
Impinger 6	100 ml 4% KMnO ₄ /10% H ₂ SO ₄	539.9	537.5	2.4	
Impinger 7	≈ 250 g Silica Gel	812.2	792.5	19.7	428.4

Run No. 3	Filter Type Quartz	Sample Box No. M3
Date 3/21/13	Lot No.	pH NA
Analyst DL	Filter No. e45-09	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	Empty	715.6	465.9	249.7	
Impinger 2	100 ml 5% HNO ₃ /10% H ₂ O ₂	660.3	545.9	114.4	QA/QC 5B Date 3/21
Impinger 3	100 ml 5% HNO ₃ /10% H ₂ O ₂	578.7	551.5	27.2	
Impinger 4	Empty	428.2	424.6	3.6	
Impinger 5	100 ml 4% KMnO ₄ /10% H ₂ SO ₄	645.6	645.1	0.5	Total Weight (gm) 396.0
Impinger 6	100 ml 4% KMnO ₄ /10% H ₂ SO ₄	550.5	549.9	0.6	
Impinger 7	≈ 250 g Silica Gel	808.1	791.9	16.2	412.2

QA/QC 5B
Date 3/21



FIELD DATA PRINTOUTS

F

I hereby certify that all pages contained within this Appendix have been reviewed and, to the best of my ability, verified as accurate.

QA/QC Initials: SB

Date: 4/30



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Field Data Printout

Location: Unit 1 FF Outlet
 Test Run: 1
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: W. Berry 456
 Probe Operator: A. Obuchowski 567
 Test Date: 3/19/13
 Start Time: 08:25
 Stop Time: 08:40
 Leak Rate Before: N/A cfm
 Leak Rate After: N/A cfm

Test Method:
Analyte:

USEPA Method 2
Velocity & Flow Rate

Bar. Press. (in. Hg): 29.80
 Static P: -9.2
 O₂ (dry volume %): 8.39
 CO₂ (dry volume %): 10.83
 N₂+CO (dry volume %): 80.78

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm):
 H₂O (silica, g):
 Actual Moisture (%): 21.98

Meter Box ID. No: N/A
 Meter ΔH@: N/A
 Meter Y_d: N/A

Traverse Point	Run Time 5.0 min/read	Pitot	Sample	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
		ΔP _s (in. H ₂ O)	ΔH (in. H ₂ O)			T _{m-in} (°F)	T _{m-out} (°F)			
5-01	0.0	0.35			300			0.59		
5-02		0.36			301			0.60		
5-03		0.40			301			0.63		
5-04		0.45			301			0.67		
5-05		0.44			301			0.66		
4-01		0.40			299			0.63		
4-02		0.37			300			0.61		
4-03		0.40			300			0.63		
4-04		0.48			301			0.69		
4-05		0.49			301			0.70		
3-01		0.45			300			0.67		
3-02		0.40			299			0.63		
3-03		0.39			300			0.62		
3-04		0.45			300			0.67		
3-05		0.55			300			0.74		
2-01		0.47			300			0.69		
2-02		0.40			301			0.63		
2-03		0.39			301			0.62		
2-04		0.44			301			0.66		
2-05		0.53			301			0.73		
1-01		0.43			301			0.66		
1-02		0.38			301			0.62		
1-03		0.35			301			0.59		
1-04		0.37			300			0.61		
1-05		0.45			301			0.67		
Final	0.0				300.48000			0.64965		

25 points sampled
 QC-Check: Field Averages
 Sq.RLΔP: 0.6497
 300.48000

Avg. OK
 Avg. OK
 Avg. OK
 Avg. OK
 Avg. OK

040913 152600 ©

Field Data Printout

Location: Unit 1 FF Outlet
 Test Run: 2
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: W. Berry 456
 Probe Operator: A. Obuchowski 567
 Test Date: 3/19/13
 Start Time: 09:01
 Stop Time: 09:11
 Leak Rate Before: N/A cfm
 Leak Rate After: N/A cfm

Test Method:
Analyte:

USEPA Method 2
Velocity & Flow Rate

Bar. Press. (in. Hg): 29.80
 Static P: -9.2
 O₂ (dry volume %): 8.43
 CO₂ (dry volume %): 10.82
 N₂+CO (dry volume %): 80.76

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm):
 H₂O (silica, g):
 Actual Moisture (%): 21.98

Meter Box ID. No: N/A
 Meter ΔH@: N/A
 Meter Y_d: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
5-01	0.0	0.38			301			0.62		
5-02		0.38			301			0.62		
5-03		0.42			301			0.65		
5-04		0.46			301			0.68		
5-05		0.42			301			0.65		
4-01		0.43			300			0.66		
4-02		0.40			301			0.63		
4-03		0.41			302			0.64		
4-04		0.45			302			0.67		
4-05		0.44			302			0.66		
3-01		0.44			302			0.66		
3-02		0.36			302			0.60		
3-03		0.32			302			0.57		
3-04		0.41			302			0.64		
3-05		0.46			302			0.68		
2-01		0.47			299			0.69		
2-02		0.36			301			0.60		
2-03		0.31			301			0.56		
2-04		0.39			301			0.62		
2-05		0.45			301			0.67		
1-01		0.39			301			0.62		
1-02		0.37			301			0.61		
1-03		0.30			301			0.55		
1-04		0.34			300			0.58		
1-05		0.44			301			0.66		
Final	0.0				301.16000			0.63128		

25 points sampled
 QC-Check: Field Averages
 Sq.Rt.ΔP: 0.6313
 301.1600

Avg. OK
 Avg. OK
 Avg. OK
 Avg. OK
 Avg. OK

040913 152900 @

Field Data Printout

Location: Unit 1 FF Outlet
 Test Run: 3
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: W. Berry 456
 Probe Operator: A. Obuchowski 567
 Test Date: 3/19/13
 Start Time: 09:50
 Stop Time: 10:02
 Leak Rate Before: N/A cfm
 Leak Rate After: N/A cfm

Test Method:
Analyte:

USEPA Method 2
Velocity & Flow Rate

Bar. Press. (in. Hg): 29.80
 Static P: -9.9
 O₂ (dry volume %): 8.86
 CO₂ (dry volume %): 10.43
 N₂+CO (dry volume %): 80.71

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm):
 H₂O (silica, g):
 Actual Moisture (%): 21.95

Meter Box ID. No: N/A
 Meter ΔH@: N/A
 Meter Y_d: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
5-01	0.0	0.37			301			0.61		
5-02		0.40			301			0.63		
5-03		0.45			302			0.67		
5-04		0.50			302			0.71		
5-05		0.49			302			0.70		
4-01		0.39			302			0.62		
4-02		0.38			302			0.62		
4-03		0.42			302			0.65		
4-04		0.46			303			0.68		
4-05		0.41			303			0.64		
3-01		0.50			300			0.71		
3-02		0.42			301			0.65		
3-03		0.35			301			0.59		
3-04		0.44			301			0.66		
3-05		0.55			302			0.74		
2-01		0.47			302			0.69		
2-02		0.39			302			0.62		
2-03		0.33			302			0.57		
2-04		0.42			302			0.65		
2-05		0.53			302			0.73		
1-01		0.42			302			0.65		
1-02		0.40			302			0.63		
1-03		0.33			302			0.57		
1-04		0.36			302			0.60		
1-05		0.54			302			0.73		
Final	0.0				301.80000			0.65314		

25 points sampled
 QC-Check: Field Averages
 Sq.Rt.ΔP: 0.6531
 301.8000
 Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

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Field Data Printout

Location: Unit 1 FF Outlet
 Test Run: 4
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: W. Berry 456
 Probe Operator: A. Obuchowski 567
 Test Date: 3/19/13
 Start Time: 10:39
 Stop Time: 10:48
 Leak Rate Before: N/A cfm
 Leak Rate After: N/A cfm

Test Method:
 Analyte:

USEPA Method 2
Velocity & Flow Rate

Bar. Press. (in. Hg): 29.80
 Static P: -9.9
 O₂ (dry volume %): 9.10
 CO₂ (dry volume %): 10.29
 N₂+CO (dry volume %): 80.61

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm):
 H₂O (silica, g):
 Actual Moisture (%): 21.95

Meter Box ID. No: N/A
 Meter ΔH@: N/A
 Meter Y_d: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
5-01	0.0	0.35			300			0.59		
5-02		0.36			301			0.60		
5-03		0.41			301			0.64		
5-04		0.48			302			0.69		
5-05		0.50			302			0.71		
4-01		0.39			300			0.62		
4-02		0.39			301			0.62		
4-03		0.42			302			0.65		
4-04		0.48			302			0.69		
4-05		0.50			303			0.71		
3-01		0.43			302			0.66		
3-02		0.42			302			0.65		
3-03		0.44			302			0.66		
3-04		0.47			302			0.69		
3-05		0.52			302			0.72		
2-01		0.42			301			0.65		
2-02		0.37			301			0.61		
2-03		0.39			302			0.62		
2-04		0.40			302			0.63		
2-05		0.50			302			0.71		
1-01		0.46			302			0.68		
1-02		0.40			302			0.63		
1-03		0.36			301			0.60		
1-04		0.48			301			0.69		
1-05		0.51			302			0.71		
Final	0.0				301.60000			0.65763		

25 points sampled
 QC-Check: Field Averages Sq.Rt.ΔP 0.6576 301.6000

Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

040013 152000 @

Field Data Printout

Location: Unit 1 FF Outlet
 Test Run: 5
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: W. Berry 456
 Probe Operator: _____
 Test Date: 3/19/13
 Start Time: 11:25
 Stop Time: 11:39
 Leak Rate Before: N/A cfm
 Leak Rate After: N/A cfm

Test Method:
Analyte:

USEPA Method 2
Velocity & Flow Rate

Bar. Press. (in. Hg): 29.80
 Static P: -9.9
 O₂ (dry volume %): 8.95
 CO₂ (dry volume %): 10.43
 N₂+CO (dry volume %): 80.63

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm):
 H₂O (silica, g):
 Actual Moisture (%): 21.71

Meter Box ID. No: N/A
 Meter ΔH@: N/A
 Meter Y_s: N/A

Traverse Point	Run Time 5.0 min/read	Pitot	Sample	Metered (dcf)	Stack	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
		ΔP _s (in. H ₂ O)	ΔH (in. H ₂ O)		T _s (°F)	T _{m-in} (°F)	T _{m-out} (°F)			
5-01	0.0	0.36			302			0.60		
5-02		0.37			302			0.61		
5-03		0.46			302			0.68		
5-04		0.51			302			0.71		
5-05		0.50			302			0.71		
4-01		0.39			300			0.62		
4-02		0.39			302			0.62		
4-03		0.43			302			0.66		
4-04		0.52			302			0.72		
4-05		0.54			303			0.73		
3-01		0.47			303			0.69		
3-02		0.39			303			0.62		
3-03		0.34			303			0.58		
3-04		0.44			303			0.66		
3-05		0.55			303			0.74		
2-01		0.52			303			0.72		
2-02		0.39			303			0.62		
2-03		0.37			303			0.61		
2-04		0.47			303			0.69		
2-05		0.52			303			0.72		
1-01		0.44			300			0.66		
1-02		0.42			301			0.65		
1-03		0.31			301			0.56		
1-04		0.35			301			0.59		
1-05		0.52			301			0.72		
Final	0.0				302.12000			0.66032		

25 points sampled Sq.Rt. ΔP
 QC-Check: Field Averages 0.6603 302.1200

Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

040913 153044

Field Data Printout

Test Method:
Analyte:

**USEPA Method 2
Velocity & Flow Rate**

Location: Unit 1 FF Outlet
 Test Run: 6
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: W. Berry 456
 Probe Operator:
 Test Date: 3/19/13
 Start Time: 12:08
 Stop Time: 12:17
 Leak Rate Before: N/A cfm
 Leak Rate After: N/A cfm

Bar. Press. (in. Hg): 29.80
 Static P: -9.9
 O₂ (dry volume %): 8.73
 CO₂ (dry volume %): 10.59
 N₂+CO (dry volume %): 80.69

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm):
 H₂O (silica, g):
 Actual Moisture (%): 21.71

Meter Box ID. No: N/A
 Meter ΔH@: N/A
 Meter Y_d: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
5-01	0.0	0.32			301			0.57		
5-02		0.34			301			0.58		
5-03		0.38			302			0.62		
5-04		0.48			302			0.69		
5-05		0.44			302			0.66		
4-01		0.36			303			0.60		
4-02		0.38			302			0.62		
4-03		0.39			302			0.62		
4-04		0.48			302			0.69		
4-05		0.47			302			0.69		
3-01		0.46			303			0.68		
3-02		0.38			303			0.62		
3-03		0.40			302			0.63		
3-04		0.48			302			0.69		
3-05		0.52			302			0.72		
2-01		0.47			300			0.69		
2-02		0.40			301			0.63		
2-03		0.41			302			0.64		
2-04		0.45			302			0.67		
2-05		0.51			302			0.71		
1-01		0.43			301			0.66		
1-02		0.39			302			0.62		
1-03		0.34			302			0.58		
1-04		0.40			301			0.63		
1-05		0.50			302			0.71		
Final	0.0				301.84000			0.64912		

25 points sampled
 QC-Check: Field Averages

Sq.Rt.ΔP	0.6491	301.8400
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Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

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Field Data Printout

Test Method:

**USEPA Method 2
Velocity & Flow Rate**

Analyte:

Location: Unit 1 FF Outlet
 Test Run: 7
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: W. Berry 456
 Probe Operator: _____

Bar. Press. (in. Hg): 29.80
 Static P: -9.8
 O₂ (dry volume %): 8.64
 CO₂ (dry volume %): 10.40
 N₂+CO (dry volume %): 80.96

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

Test Date: 3/19/13
 Start Time: 13:06
 Stop Time: 13:20
 Leak Rate Before: N/A cfm
 Leak Rate After: N/A cfm

H₂O (condensate, ml or gm):
 H₂O (silica, g):
 Actual Moisture (%): 22.16

Meter Box ID. No: N/A
 Meter ΔH@: N/A
 Meter Y_d: N/A

Traverse Point	Run Time 5.0 min/read	Pitot	Sample	Metered (dcf)	Stack	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
		ΔP _s (in. H ₂ O)	ΔH (in. H ₂ O)		T _s (°F)	T _{m-in} (°F)	T _{m-out} (°F)			
5-01	0.0	0.28			301			0.53		
5-02		0.36			301			0.60		
5-03		0.43			301			0.66		
5-04		0.51			301			0.71		
5-05		0.48			301			0.69		
4-01		0.33			301			0.57		
4-02		0.37			302			0.61		
4-03		0.42			302			0.65		
4-04		0.51			302			0.71		
4-05		0.54			302			0.73		
3-01		0.39			302			0.62		
3-02		0.40			302			0.63		
3-03		0.44			302			0.66		
3-04		0.50			302			0.71		
3-05		0.53			302			0.73		
2-01		0.44			301			0.66		
2-02		0.40			301			0.63		
2-03		0.46			302			0.68		
2-04		0.51			302			0.71		
2-05		0.52			303			0.72		
1-01		0.48			306			0.69		
1-02		0.43			305			0.66		
1-03		0.33			302			0.57		
1-04		0.49			305			0.70		
1-05		0.61			305			0.78		
Final	0.0				302.24000			0.66561		

25 points sampled
 QC-Check: Field Averages
 Sq.Rt.ΔP: 0.6656
 Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK
 Total Metered: 302.2400

040913 153044

Field Data Printout

Location: Unit 1 FF Outlet
 Test Run: 8
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: W. Berry 456
 Probe Operator:
 Test Date: 3/19/13
 Start Time: 13:41
 Stop Time: 13:58
 Leak Rate Before: N/A cfm
 Leak Rate After: N/A cfm

Test Method:
Analyte:

USEPA Method 2
Velocity & Flow Rate

Bar. Press. (in. Hg): 29.80
 Static P: -9.5
 O₂ (dry volume %): 8.45
 CO₂ (dry volume %): 10.80
 N₂+CO (dry volume %): 80.74

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm):
 H₂O (silica, g):
 Actual Moisture (%): 22.16

Meter Box ID. No: N/A
 Meter ΔH@: N/A
 Meter Y_d: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
5-01	0.0	0.32			303			0.57		
5-02		0.38			303			0.62		
5-03		0.44			303			0.66		
5-04		0.51			303			0.71		
5-05		0.50			303			0.71		
4-01		0.36			301			0.60		
4-02		0.38			302			0.62		
4-03		0.43			302			0.66		
4-04		0.50			303			0.71		
4-05		0.48			303			0.69		
3-01		0.47			303			0.69		
3-02		0.38			303			0.62		
3-03		0.40			302			0.63		
3-04		0.50			303			0.71		
3-05		0.57			303			0.75		
2-01		0.48			305			0.69		
2-02		0.37			305			0.61		
2-03		0.35			304			0.59		
2-04		0.42			306			0.65		
2-05		0.50			305			0.71		
1-01		0.41			300			0.64		
1-02		0.40			301			0.63		
1-03		0.35			301			0.59		
1-04		0.41			301			0.64		
1-05		0.53			301			0.73		
Final	0.0				302.76000			0.65664		

25 points sampled
 QC-Check: Field Averages Sq.Rt.ΔP 0.6566 302.7600

Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

040913 153101

Field Data Printout

Test Method:
Analyte:

USEPA Method 2
Velocity & Flow Rate

Location: Unit 1 FF Outlet
 Test Run: 9
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: W. Berry 456
 Probe Operator: A. Obuchowski 567
 Test Date: 3/19/13
 Start Time: 14:22
 Stop Time: 14:39
 Leak Rate Before: N/A cfm
 Leak Rate After: N/A cfm

Bar. Press. (in. Hg): 29.80
 Static P: -9.6
 O₂ (dry volume %): 8.95
 CO₂ (dry volume %): 10.36
 N₂+CO (dry volume %): 80.69

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm):
 H₂O (silica, g):
 Actual Moisture (%): 22.16

Meter Box ID. No: N/A
 Meter ΔH(Δ): N/A
 Meter Y_d: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter T _{m-in} (°F)	T _{m-out} (°F)	√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
5-01	0.0	0.39			302			0.62		
5-02		0.40			303			0.63		
5-03		0.45			303			0.67		
5-04		0.51			303			0.71		
5-05		0.55			303			0.74		
4-01		0.35			303			0.59		
4-02		0.38			304			0.62		
4-03		0.44			305			0.66		
4-04		0.50			305			0.71		
4-05		0.54			304			0.73		
3-01		0.42			301			0.65		
3-02		0.43			302			0.66		
3-03		0.47			303			0.69		
3-04		0.55			303			0.74		
3-05		0.53			303			0.73		
2-01		0.48			302			0.69		
2-02		0.42			303			0.65		
2-03		0.43			302			0.66		
2-04		0.49			303			0.70		
2-05		0.53			303			0.73		
1-01		0.45			302			0.67		
1-02		0.37			302			0.61		
1-03		0.36			302			0.60		
1-04		0.43			302			0.66		
1-05		0.51			302			0.71		
Final	0.0				302.80000			0.67318		

25 points sampled
 QC-Check: Field Averages
 Sq.Rt.ΔP: 0.6732
 302.8000
 Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

040913 153101
 ©

Field Data Printout

Location: Unit 1 FF Outlet
 Test Run: 10
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: W. Berry 456
 Probe Operator: A. Obuchowski 567

Test Method:
 Analyte:

USEPA Method 2
 Velocity & Flow Rate

Bar. Press. (in. Hg): 29.80
 Static P: -9.6
 O₂ (dry volume %): 8.85
 CO₂ (dry volume %): 10.40
 N₂+CO (dry volume %): 80.75

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

Test Date: 3/19/13
 Start Time: 15:00
 Stop Time: 15:13
 Leak Rate Before: N/A cfm
 Leak Rate After: N/A cfm

H₂O (condensate, ml or gm):
 H₂O (silica, g):
 Actual Moisture (%): 22.16

Meter Box ID. No: N/A
 Meter ΔH@: N/A
 Meter Y_d: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
5-01	0.0	0.32			304			0.57		
5-02		0.43			304			0.66		
5-03		0.45			304			0.67		
5-04		0.49			304			0.70		
5-05		0.50			304			0.71		
4-01		0.37			302			0.61		
4-02		0.40			302			0.63		
4-03		0.46			303			0.68		
4-04		0.53			303			0.73		
4-05		0.56			303			0.75		
3-01		0.30			300			0.55		
3-02		0.34			301			0.58		
3-03		0.41			301			0.64		
3-04		0.48			302			0.69		
3-05		0.56			303			0.75		
2-01		0.42			303			0.65		
2-02		0.37			303			0.61		
2-03		0.36			303			0.60		
2-04		0.46			302			0.68		
2-05		0.53			303			0.73		
1-01		0.41			303			0.64		
1-02		0.42			303			0.65		
1-03		0.37			303			0.61		
1-04		0.40			303			0.63		
1-05		0.54			303			0.73		
Final	0.0				302.76000			0.65734		

25 points sampled
 QC-Check: Field Averages

Sq.Rt. ΔP	0.6573		302.7600
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Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

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Field Data Printout

Location: Unit 1 FF Outlet
 Test Run: 1
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: W. Berry 456
 Probe Operator:
 Test Date: 3/19/13
 Start Time: 08:15
 Stop Time: 09:15
 Leak Rate Before: 0.002 cfm @ 15 "Hg
 Leak Rate After: 0.001 cfm @ 10 "Hg

Test Method:
Analyte:

USEPA Method 26A
HCI

Bar. Press. (in. Hg): 29.80
 Static P: -9.2
 O₂ (dry volume %): 8.52
 CO₂ (dry volume %): 10.61
 N₂+CO (dry volume %): 80.87

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-4-3
 Pitot C_p: N/A
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm): 222.4
 H₂O (silica, g): 14.1
 Actual Moisture (%): 21.98

Meter Box ID. No: 66-14
 Meter ΔH@: 1.80150
 Meter Y_d: 0.98790

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
	0.0			279.615						
3-01	5.0		1.50	283.070	301	76	73		3.45	
3-01	10.0		1.50	286.440	301	77	73		3.37	
3-01	15.0		1.50	289.810	299	81	74		3.37	
3-01	20.0		1.50	293.200	300	81	74		3.39	
3-01	25.0		1.50	296.610	301	81	75		3.41	
3-01	30.0		1.50	300.020	300	81	75		3.41	
3-01	35.0		1.50	303.440	300	81	75		3.42	
3-01	40.0		1.50	306.830	300	82	75		3.39	
3-01	45.0		1.50	310.210	301	82	75		3.38	
3-01	50.0		1.50	313.590	301	84	75		3.38	
3-01	55.0		1.50	316.980	301	85	76		3.39	
3-01	60.0		1.50	320.400	302	86	76		3.42	
Final	60.0		1.50000	40.78500	300.58333	78.04167		0.00000	40.78500	

3 points sampled Sq.Rt.ΔP
QC-Check: Field Averages

	1.5000	40.7850	300.5833	78.0416
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Avg. OK
 Avg. OK
 Avg. OK
 Avg. OK
 Avg. OK

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Field Data Printout

Location: Unit 1 FF Outlet
 Test Run: 2
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: W. Berry 456
 Probe Operator:
 Test Date: 3/19/13
 Start Time: 09:48
 Stop Time: 10:48
 Leak Rate Before: 0.002 cfm @ 15 "Hg
 Leak Rate After: 0.001 cfm @ 10 "Hg

Test Method:
 Analyte:

USEPA Method 26A
 HCl

Bar. Press. (in. Hg): 29.80
 Static P: -9.9
 O₂ (dry volume %): 8.81
 CO₂ (dry volume %): 10.50
 N₂+CO (dry volume %): 80.69

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-4-3
 Pitot C_p: N/A
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm): 214.8
 H₂O (silica, g): 22.5
 Actual Moisture (%): 21.95

Meter Box ID No: 66-14
 Meter ΔH@: 1.80150
 Meter Y_d: 0.98790

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
	0.0			322.480						
3-01	5.0		1.50	326.850	302	75	74		4.37	
3-01	10.0		1.50	329.380	302	76	74		2.53	
3-01	15.0		1.50	332.740	301	79	74		3.36	
3-01	20.0		1.50	336.110	301	81	74		3.37	
3-01	25.0		1.50	339.220	303	81	74		3.11	
3-01	30.0		1.50	342.870	302	83	75		3.65	
3-01	35.0		1.50	346.260	302	83	75		3.39	
3-01	40.0		1.50	349.660	301	84	75		3.40	
3-01	45.0		1.50	353.130	301	83	76		3.47	
3-01	50.0		1.50	356.590	302	81	75		3.46	
3-01	55.0		1.50	360.010	303	81	75		3.42	
3-01	60.0		1.50	363.445	301	80	74		3.44	
Final	60.0		1.50000	40.96500	301.75000	77.58333		0.00000	40.96500	

3 points sampled
 QC-Check: Field Averages

Sq.Rt.ΔP				
	1.5000	40.9650	301.7500	77.5833
<input type="checkbox"/> Avg. OK	<input checked="" type="checkbox"/> Avg. OK	<input checked="" type="checkbox"/> Avg. OK	<input checked="" type="checkbox"/> Avg. OK	<input checked="" type="checkbox"/> Avg. OK

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Field Data Printout

Test Method:

USEPA Method 26A

Analyte:

HCl

Location: Unit 1 FF Outlet

Test Run: 3

Client: Wheelabrator North Broward, Inc.

Project No: 12218

Source Area (ft²): 64.00000

Meter Operator: W. Berry 456

Probe Operator:

Test Date: 3/19/13

Start Time: 11:19

Stop Time: 12:19

Leak Rate Before: 0.003 cfm @ 13 "Hg

Leak Rate After: 0.001 cfm @ 10 "Hg

Bar. Press. (in. Hg): 29.80

Static P: -9.9

O₂ (dry volume %): 9.06

CO₂ (dry volume %): 10.33

N₂+CO (dry volume %): 80.61

Nozzle ID No: N/A

Nozzle Diameter (D_n): N/A

Probe ID No: 67-4-3

Pitot C_p: N/A

Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm): 220.5

H₂O (silica, g): 12.6

Actual Moisture (%): 21.71

Meter Box ID. No: 66-14

Meter ΔH@: 1.80150

Meter Y_d: 0.98790

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
	0.0			364.830						
3-01	5.0		1.50	368.320	301	78	76		3.49	
3-01	10.0		1.50	371.700	302	80	77		3.38	
3-01	15.0		1.50	375.070	303	81	76		3.37	
3-01	20.0		1.50	378.460	302	81	76		3.39	
3-01	25.0		1.50	381.840	303	82	77		3.38	
3-01	30.0		1.50	385.260	303	82	77		3.42	
3-01	35.0		1.50	388.700	303	82	77		3.44	
3-01	40.0		1.50	392.100	302	83	77		3.40	
3-01	45.0		1.50	395.500	303	83	77		3.40	
3-01	50.0		1.50	398.950	302	84	78		3.45	
3-01	55.0		1.50	402.360	302	84	78		3.41	
3-01	60.0		1.50	405.770	302	84	79		3.41	
Final	60.0		1.50000	40.94000	302.33333	79.54167		0.00000	40.94000	

3 points sampled

Sq.Rt.ΔP

QC-Check: Field Averages

	1.5000	40.9400	302.3330	79.5416
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Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

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N

USEPA Method 4 Laboratory Data

Location: Unit 1 FF Outlet
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218

Test Method: USEPA Method 26A
 Analyte: HCl

Analyst: D. Luckhard
 Analyst Emp No: 568

Test Run: 1

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	50 ml 0.1N H2SO4	488.1	446.4	41.7
Impinger 2	100 ml 0.1N H2SO4	700.2	561.0	139.2
Impinger 3	100 ml 0.1N H2SO4	574.1	539.5	34.6
Impinger 4	Empty	446.8	439.9	6.9
Impinger 5	Silica Gel	764.9	750.8	14.1
Impinger 6				
Impinger 7				
Impinger 8				

222.4 Liquid (gm) *Field Data Check*

0.0 less rinse (gm)

222.4 Net Liquid (gm) 222.4

+ 14.1 Silica Gel (gm) 14.1

236.5 Total Vlc (gm) 236.5

QA/QC OK

QA/QC OK

QA/QC OK

Rinse: (ml or gm)

Test Run: 2

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	50 ml 0.1N H2SO4	497.1	454.0	43.1
Impinger 2	100 ml 0.1N H2SO4	650.7	544.2	106.5
Impinger 3	100 ml 0.1N H2SO4	582.2	535.2	47.0
Impinger 4	Empty	482.8	464.6	18.2
Impinger 5	Silica Gel	781.3	758.8	22.5
Impinger 6				
Impinger 7				
Impinger 8				

214.8 Liquid (gm) *Field Data Check*

0.0 less rinse (gm)

214.8 Net Liquid (gm) 214.8

+ 22.5 Silica Gel (gm) 22.5

237.3 Total Vlc (gm) 237.3

QA/QC OK

QA/QC OK

QA/QC OK

Rinse: (ml or gm)

Test Run: 3

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	50 ml 0.1N H2SO4	493.7	449.6	44.1
Impinger 2	100 ml 0.1N H2SO4	694.6	558.2	136.4
Impinger 3	100 ml 0.1N H2SO4	571.3	539.0	32.3
Impinger 4	Empty	449.3	441.6	7.7
Impinger 5	Silica Gel	777.1	764.5	12.6
Impinger 6				
Impinger 7				
Impinger 8				

220.5 Liquid (gm) *Field Data Check*

0.0 less rinse (gm)

220.5 Net Liquid (gm) 220.5

+ 12.6 Silica Gel (gm) 12.6

233.1 Total Vlc (gm) 233.1

QA/QC OK

QA/QC OK

QA/QC OK

Rinse: (ml or gm)

Test Run:

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1				
Impinger 2				
Impinger 3				
Impinger 4				
Impinger 5				
Impinger 6				
Impinger 7				
Impinger 8				

Liquid (gm) *Field Data Check*

less rinse (gm)

Net Liquid (gm)

Silica Gel (gm)

Total Vlc (gm)

QA/QC OK

QA/QC OK

QA/QC OK

Rinse: (ml or gm)

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SON@

Field Data Printout

Test Method:

USEPA Method 5/29

Analyte:

Particulate/Metals

Location: Unit 1 FF Outlet
 Test Run: 1
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000

Bar. Press. (in. Hg): 29.80
 Static P: -9.8
 O₂ (dry volume %): 8.67
 CO₂ (dry volume %): 10.65
 N₂+CO (dry volume %): 80.68

Nozzle ID No: 2760-1
 Nozzle Diameter (D_n): 0.276
 Probe ID No: 67-8-16
 Pitot C_p: 0.825
 Pitot Leak Check: Pass Fail

Meter Operator: S. Joint: 473
 Probe Operator: W. Berry: 456

Test Date: 3/19/13
 Start Time: 12:58
 Stop Time: 15:14
 Leak Rate Before: 0.003 cfm @ 15 "Hg
 Leak Rate After: 0.003 cfm @ 16 "Hg

H₂O (condensate, ml or gm): 436.3
 H₂O (silica, g): 17.4
 Actual Moisture (%): 22.16

Meter Box ID. No: 66-6
 Meter ΔH@: 1.82800
 Meter Y_d: 0.98540

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
	0.0			44.240						
1-01	5.0	0.48	1.40	47.610	306	83	78	0.69	3.37	104.1
1-02	10.0	0.43	1.20	50.770	305	86	79	0.66	3.16	102.6
1-03	15.0	0.33	0.94	53.470	302	88	79	0.57	2.70	99.7
1-04	20.0	0.49	1.40	56.760	305	90	80	0.70	3.29	99.7
1-05	25.0	0.61	1.70	60.470	305	91	81	0.78	3.71	100.6
LEAK CHECK	25.0			60.740						
2-01	30.0	0.48	1.40	64.080	305	92	83	0.69	3.34	101.8
2-02	35.0	0.37	1.10	67.080	305	93	83	0.61	3.00	104.0
2-03	40.0	0.35	1.00	69.960	304	93	84	0.59	2.88	102.4
2-04	45.0	0.42	1.20	73.000	306	94	85	0.65	3.04	98.7
2-05	50.0	0.50	1.40	76.390	305	94	85	0.71	3.39	100.8
LEAK CHECK	50.0			76.700						
3-01	55.0	0.44	1.30	79.900	304	95	86	0.66	3.20	101.2
3-02	60.0	0.37	1.10	82.670	304	96	87	0.61	2.97	102.2
3-03	65.0	0.42	1.20	85.900	304	97	87	0.65	3.03	97.8
3-04	70.0	0.48	1.40	89.310	305	98	88	0.69	3.41	102.9
3-05	75.0	0.54	1.50	92.710	304	98	88	0.73	3.40	96.7
LEAK CHECK	75.0			92.990						
4-01	80.0	0.35	1.00	95.800	303	94	88	0.59	2.81	99.4
4-02	85.0	0.38	1.10	98.860	304	95	87	0.62	3.06	104.0
4-03	90.0	0.44	1.30	101.980	305	97	88	0.66	3.12	98.4
4-04	95.0	0.50	1.40	105.370	305	97	88	0.71	3.39	100.3
4-05	100.0	0.54	1.50	108.820	304	99	89	0.73	3.45	97.9
LEAK CHECK	100.0			109.170						
5-01	105.0	0.32	0.92	111.770	304	96	89	0.57	2.60	96.0
5-02	110.0	0.43	1.20	114.800	304	98	90	0.66	3.03	96.3
5-03	115.0	0.45	1.30	118.040	304	99	90	0.67	3.24	100.6
5-04	120.0	0.49	1.40	121.480	304	99	90	0.70	3.44	102.4
5-05	125.0	0.50	1.40	124.840	304	99	90	0.71	3.36	99.0
Final	125.0		1.27040	79.39000	304.40000	90.06000		0.66448	79.39000	

25 points sampled
 QC-Check: Field Averages
 Sq.RI.ΔP: 0.6645 1.2704 79.3900 304.4000 90.0600
 Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

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USEPA Method 4 Laboratory Data

Location: Unit 1 FF Outlet
 Client: Wheelabrator North Broward, Inc.

Test Method: USEPA Method 5/29
Analyte: Particulate/Metals

Project No: 12218

Analyst: D. Luckhard

Analyst Emp No: 568

Test Run: **1**

Contents	Gross (gm)	Tare (gm)	Net (gm)	
Impinger 1 Empty	715.8	439.8	276.0	
Impinger 2 5%HNO3/10%H2O2	639.7	527.6	112.1	
Impinger 3 5%HNO3/10%H2O2	578.1	543.7	34.4	
Impinger 4 Empty	449.2	443.5	5.7	
Impinger 5 4%KMnO4/10%H2SO4	540.7	533.4	7.3	
Impinger 6 4%KMnO4/10%H2SO4	538.9	538.1	0.8	436.3 Liquid (gm)
Impinger 7 Silica Gel	758.8	741.4	17.4	0.0 less rinse (gm)
Impinger 8				436.3 Net Liquid (gm)
				+ 17.4 Silica Gel (gm)
				453.7 Total Vlc (gm)

Rinse:	(ml or gm)	
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436.3	Field Data Check	<input checked="" type="checkbox"/> QA/QC OK
17.4		<input checked="" type="checkbox"/> QA/QC OK
453.7		<input checked="" type="checkbox"/> QA/QC OK

Test Run: **2**

Contents	Gross (gm)	Tare (gm)	Net (gm)	
Impinger 1 Empty	720.7	457.8	262.9	
Impinger 2 5%HNO3/10%H2O2	698.4	556.8	141.6	
Impinger 3 5%HNO3/10%H2O2	592.7	545.6	47.1	
Impinger 4 Empty	449.2	437.7	11.5	
Impinger 5 4%KMnO4/10%H2SO4	553.1	544.8	8.3	
Impinger 6 4%KMnO4/10%H2SO4	553.9	549.5	4.4	475.8 Liquid (gm)
Impinger 7 Silica Gel	800.1	782.7	17.4	0.0 less rinse (gm)
Impinger 8				475.8 Net Liquid (gm)
				+ 17.4 Silica Gel (gm)
				493.2 Total Vlc (gm)

Rinse:	(ml or gm)	
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475.8	Field Data Check	<input checked="" type="checkbox"/> QA/QC OK
17.4		<input checked="" type="checkbox"/> QA/QC OK
493.2		<input checked="" type="checkbox"/> QA/QC OK

Test Run: **3**

Contents	Gross (gm)	Tare (gm)	Net (gm)	
Impinger 1 Empty	707.5	443.1	264.4	
Impinger 2 5%HNO3/10%H2O2	655.9	530.6	125.3	
Impinger 3 5%HNO3/10%H2O2	581.6	538.6	43.0	
Impinger 4 Empty	453.2	444.4	8.8	
Impinger 5 4%KMnO4/10%H2SO4	552.2	547.0	5.2	
Impinger 6 4%KMnO4/10%H2SO4	538.2	534.8	3.4	450.1 Liquid (gm)
Impinger 7 Silica Gel	776.1	758.6	17.5	0.0 less rinse (gm)
Impinger 8				450.1 Net Liquid (gm)
				+ 17.5 Silica Gel (gm)
				467.6 Total Vlc (gm)

Rinse:	(ml or gm)	
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450.1	Field Data Check	<input checked="" type="checkbox"/> QA/QC OK
17.5		<input checked="" type="checkbox"/> QA/QC OK
467.6		<input checked="" type="checkbox"/> QA/QC OK

Test Run: **4**

Contents	Gross (gm)	Tare (gm)	Net (gm)	
Impinger 1 Empty				
Impinger 2 5%HNO3/10%H2O2				
Impinger 3 5%HNO3/10%H2O2				
Impinger 4 Empty				
Impinger 5 4%KMnO4/10%H2SO4				
Impinger 6 4%KMnO4/10%H2SO4				
Impinger 7 Silica Gel				
Impinger 8				

Rinse:	(ml or gm)	
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	Liquid (gm)	Field Data Check	
	less rinse (gm)		
	Net Liquid (gm)		<input type="checkbox"/> QA/QC OK
	Silica Gel (gm)		<input type="checkbox"/> QA/QC OK
	Total Vlc (gm)		<input type="checkbox"/> QA/QC OK

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Field Data Printout

Test Method:

USEPA Methods 2 & 4

Analyte:

Velocity & Moisture

Location: Unit 2 FF Outlet
 Test Run: 1
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: H. Nguyen 429
 Probe Operator: S. Joint 473
 Test Date: 3/22/13
 Start Time: 07:20
 Stop Time: 07:33
 Leak Rate Before: 0.002 cfm @ 12 "Hg
 Leak Rate After: 0.002 cfm @ 5 "Hg

Bar. Press. (in. Hg): 29.80
 Static P: -9.7
 O₂ (dry volume %): 7.86
 CO₂ (dry volume %): 11.34
 N₂+CO (dry volume %): 80.80

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm): 167.0
 H₂O (silica, g): 12.0
 Actual Moisture (%): 22.26

Meter Box ID. No: 66-22
 Meter ΔH@: 1.88400
 Meter Y_d: 0.99720

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
	0.0			118.600						
5-01	5.0	0.35	1.50	121.900	305	67	65	0.59	3.30	
5-02	10.0	0.39	1.50	125.220	305	70	65	0.62	3.32	
5-03	15.0	0.40	1.50	128.410	305	73	66	0.63	3.19	
5-04	20.0	0.40	1.50	131.740	305	74	66	0.63	3.33	
5-05	25.0	0.37	1.50	135.030	305	75	67	0.61	3.29	
4-01	30.0	0.36	1.50	138.350	304	75	67	0.60	3.32	
4-02	35.0	0.35	1.50	141.670	305	77	68	0.59	3.32	
4-03	40.0	0.37	1.50	144.970	305	78	69	0.61	3.30	
4-04	45.0	0.37	1.50	148.270	305	79	70	0.61	3.30	
4-05		0.35			305			0.59		
3-01		0.36			305			0.60		
3-02		0.39			305			0.62		
3-03		0.40			304			0.63		
3-04		0.42			305			0.65		
3-05		0.40			305			0.63		
2-01		0.41			304			0.64		
2-02		0.43			304			0.66		
2-03		0.42			304			0.65		
2-04		0.45			304			0.67		
2-05		0.48			304			0.69		
1-01		0.43			305			0.66		
1-02		0.42			305			0.65		
1-03		0.43			305			0.66		
1-04		0.50			305			0.71		
1-05		0.49			305			0.70		
Final	45.0		1.50000	29.67000	304.72000	70.61111		0.63604	29.67000	

25 points sampled
 QC-Check: Field Averages

Sq.RI.ΔP	0.6360	1.5000	29.6700	304.7200	70.6111
	<input checked="" type="checkbox"/> Avg. OK	<input checked="" type="checkbox"/> Avg. OK	<input checked="" type="checkbox"/> Avg. OK	<input checked="" type="checkbox"/> Avg. OK	<input checked="" type="checkbox"/> Avg. OK

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Field Data Printout

Location: Unit 2 FF Outlet
 Test Run: 2
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: H. Nguyen 429
 Probe Operator: S. Joint 473
 Test Date: 3/22/13
 Start Time: 07:45
 Stop Time: 08:00
 Leak Rate Before: 0.002 cfm @ 12 "Hg
 Leak Rate After: 0.002 cfm @ 5 "Hg

Test Method:
Analyte:

USEPA Methods 2 & 4
Velocity & Moisture

Bar. Press. (in. Hg): 29.80
 Static P: -9.7
 O₂ (dry volume %): 7.08
 CO₂ (dry volume %): 12.03
 N₂+CO (dry volume %): 80.89

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm): 167.0
 H₂O (silica, g): 12.0
 Actual Moisture (%): 22.26

Meter Box ID. No: 66-22
 Meter ΔH@: 1.88400
 Meter Y_d: 0.99720

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
5-01	5.0	0.34	1.50	121.900	305	67	65	0.58	3.30	
5-02	10.0	0.37	1.50	125.220	305	70	65	0.61	3.32	
5-03	15.0	0.37	1.50	128.410	305	73	66	0.61	3.19	
5-04	20.0	0.39	1.50	131.740	305	74	66	0.62	3.33	
5-05	25.0	0.36	1.50	135.030	305	75	67	0.60	3.29	
4-01	30.0	0.44	1.50	138.350	304	75	67	0.66	3.32	
4-02	35.0	0.42	1.50	141.670	304	77	68	0.65	3.32	
4-03	40.0	0.40	1.50	144.970	304	78	69	0.63	3.30	
4-04	45.0	0.39	1.50	148.270	304	79	70	0.62	3.30	
4-05		0.38			304			0.62		
3-01		0.27			302			0.52		
3-02		0.31			303			0.56		
3-03		0.34			303			0.58		
3-04		0.37			303			0.61		
3-05		0.41			303			0.64		
2-01		0.42			301			0.65		
2-02		0.43			301			0.66		
2-03		0.43			301			0.66		
2-04		0.47			301			0.69		
2-05		0.46			301			0.68		
1-01		0.42			304			0.65		
1-02		0.42			304			0.65		
1-03		0.43			304			0.66		
1-04		0.46			304			0.68		
1-05		0.43			304			0.66		
Final	45.0		1.50000	29.67000	303.36000	70.61111		0.62905	29.67000	

25 points sampled
QC-Check: Field Averages
 Sq.Rt.ΔP: 0.6290 1.5000 29.6700 303.3600 70.6111
 Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

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Field Data Printout

Location: Unit 2 FF Outlet
 Test Run: 3
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: H. Nguyen 429
 Probe Operator: S. Joint 473
 Test Date: 3/22/13
 Start Time: 08:35
 Stop Time: 08:43
 Leak Rate Before: 0.003 cfm @ 12 "Hg
 Leak Rate After: 0.003 cfm @ 15 "Hg

Test Method:
 Analyte:

USEPA Methods 2 & 4
 Velocity & Moisture

Bar. Press. (in. Hg): 29.80
 Static P: -9.7
 O₂ (dry volume %): 7.05
 CO₂ (dry volume %): 12.01
 N₂+CO (dry volume %): 80.94

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 87-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm): 186.0
 H₂O (silica, g): 6.1
 Actual Moisture (%): 23.54

Meter Box ID. No: 66-22
 Meter ΔH@: 1.88400
 Meter Y_d: 0.99720

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
1-01	5.0	0.41	1.50	153.140	304	76	71	0.64	3.34	
1-02	10.0	0.43	1.50	156.490	304	77	71	0.66	3.35	
1-03	15.0	0.49	1.50	159.800	304	77	71	0.70	3.31	
1-04	20.0	0.50	1.50	163.120	304	78	72	0.71	3.32	
1-05	25.0	0.46	1.50	166.430	304	80	72	0.68	3.31	
2-01	30.0	0.45	1.50	169.750	304	81	73	0.67	3.32	
2-02	35.0	0.49	1.50	173.080	304	81	73	0.70	3.33	
2-03	40.0	0.49	1.50	176.400	304	82	73	0.70	3.32	
2-04	45.0	0.42	1.50	179.700	304	82	74	0.65	3.30	
2-05		0.45			304			0.67		
3-01		0.37			303			0.61		
3-02		0.39			303			0.62		
3-03		0.39			303			0.62		
3-04		0.36			303			0.60		
3-05		0.38			303			0.62		
4-01		0.37			304			0.61		
4-02		0.37			304			0.61		
4-03		0.35			304			0.59		
4-04		0.34			304			0.58		
4-05		0.33			304			0.57		
5-01		0.38			303			0.62		
5-02		0.39			303			0.62		
5-03		0.37			303			0.61		
5-04		0.36			303			0.60		
5-05		0.33			303			0.57		
Final	45.0		1.50000	29.90000	303.60000	75.77778		0.63337	29.90000	

25 points sampled
 QC-Check: Field Averages
 Sq RLΔP: 0.6334 1.5000 29.9000 303.6000 75.7770
 Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

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Field Data Printout

Test Method:
Analyte:

USEPA Methods 2 & 4
Velocity & Moisture

Location: Unit 2 FF Outlet
 Test Run: 4
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: H. Nguyen 429
 Probe Operator: S. Joint 473

Bar. Press. (in. Hg): 29.80
 Static P: -9.7
 O₂ (dry volume %): 7.01
 CO₂ (dry volume %): 12.09
 N₂+CO (dry volume %): 80.90

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

Test Date: 3/22/13
 Start Time: 09:12
 Stop Time: 09:27
 Leak Rate Before: 0.003 cfm @ 12 "Hg
 Leak Rate After: 0.003 cfm @ 15 "Hg

H₂O (condensate, ml or gm): 186.0
 H₂O (silica, g): 6.1
 Actual Moisture (%): 23.54

Meter Box ID. No: 66-22
 Meter ΔH@: 1.88400
 Meter Y_d: 0.99720

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
1-01	5.0	0.41	1.50	149.800	303	76	71	0.64	3.34	
1-02	10.0	0.44	1.50	156.490	303	77	71	0.66	3.35	
1-03	15.0	0.43	1.50	159.800	303	77	71	0.66	3.31	
1-04	20.0	0.41	1.50	163.120	303	78	72	0.64	3.32	
1-05	25.0	0.42	1.50	166.430	303	80	72	0.65	3.31	
2-01	30.0	0.52	1.50	169.750	303	81	73	0.72	3.32	
2-02	35.0	0.50	1.50	173.080	303	81	73	0.71	3.33	
2-03	40.0	0.48	1.50	176.400	303	82	73	0.69	3.32	
2-04	45.0	0.41	1.50	179.700	303	82	74	0.64	3.30	
2-05		0.38			304			0.62		
3-01		0.28			304			0.53		
3-02		0.38			304			0.62		
3-03		0.41			304			0.64		
3-04		0.39			304			0.62		
3-05		0.40			304			0.63		
4-01		0.42			303			0.65		
4-02		0.40			303			0.63		
4-03		0.33			304			0.57		
4-04		0.35			304			0.59		
4-05		0.33			304			0.57		
5-01		0.38			304			0.62		
5-02		0.37			304			0.61		
5-03		0.35			304			0.59		
5-04		0.34			304			0.58		
5-05		0.32			304			0.57		
Final	45.0		1.50000	29.90000	303.56000	75.77778		0.62618	29.90000	

25 points sampled
QC-Check: Field Averages
 Sq.Rt.ΔP: 0.6262 1.5000 29.9000 303.5600 75.7770

Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

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USEPA Method 4 Laboratory Data

Location: Unit 2 FF Outlet
 Client: Wheelabrator North Broward, Inc.

Test Method: **USEPA Methods 2 & 4**
 Analyte: **Velocity & Moisture**

Project No: 12218

Analyst:	S. Joint
Analyst Emp No:	473

Test Run: 1

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	DI Water	267.0	100.0	167.0
Impinger 2	DI Water	100.0	100.0	0.0
Impinger 3	Empty	0.0	0.0	0.0
Impinger 4	Silica Gel	312.0	300.0	12.0
Impinger 5				
Impinger 6				
Impinger 7				
Impinger 8				

167.0 Liquid (gm)		
0.0 less rinse (gm)		
167.0 Net Liquid (gm)	167.0	<input checked="" type="checkbox"/> QA/QC OK
+ 12.0 Silica Gel (gm)	12.0	<input checked="" type="checkbox"/> QA/QC OK
179.0 Total Vlc (gm)	179.0	<input checked="" type="checkbox"/> QA/QC OK

Rinse: (ml or gm)

Test Run: 2

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	DI Water	267.0	100.0	167.0
Impinger 2	DI Water	100.0	100.0	0.0
Impinger 3	Empty	0.0	0.0	0.0
Impinger 4	Silica Gel	312.0	300.0	12.0
Impinger 5				
Impinger 6				
Impinger 7				
Impinger 8				

167.0 Liquid (gm)		
0.0 less rinse (gm)		
167.0 Net Liquid (gm)	167.0	<input checked="" type="checkbox"/> QA/QC OK
+ 12.0 Silica Gel (gm)	12.0	<input checked="" type="checkbox"/> QA/QC OK
179.0 Total Vlc (gm)	179.0	<input checked="" type="checkbox"/> QA/QC OK

Rinse: (ml or gm)

Test Run: 3

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	DI Water	286.0	100.0	186.0
Impinger 2	DI Water	100.0	100.0	0.0
Impinger 3	Empty	0.0	0.0	0.0
Impinger 4	Silica Gel	306.1	300.0	6.1
Impinger 5				
Impinger 6				
Impinger 7				
Impinger 8				

186.0 Liquid (gm)		
0.0 less rinse (gm)		
186.0 Net Liquid (gm)	186.0	<input checked="" type="checkbox"/> QA/QC OK
+ 6.1 Silica Gel (gm)	6.1	<input checked="" type="checkbox"/> QA/QC OK
192.1 Total Vlc (gm)	192.1	<input checked="" type="checkbox"/> QA/QC OK

Rinse: (ml or gm)

Test Run: 4

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	DI Water	286.0	100.0	186.0
Impinger 2	DI Water	100.0	100.0	0.0
Impinger 3	Empty	0.0	0.0	0.0
Impinger 4	Silica Gel	306.1	300.0	6.1
Impinger 5				
Impinger 6				
Impinger 7				
Impinger 8				

186.0 Liquid (gm)		
0.0 less rinse (gm)		
186.0 Net Liquid (gm)	186.0	<input checked="" type="checkbox"/> QA/QC OK
+ 6.1 Silica Gel (gm)	6.1	<input checked="" type="checkbox"/> QA/QC OK
192.1 Total Vlc (gm)	192.1	<input checked="" type="checkbox"/> QA/QC OK

Rinse: (ml or gm)

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Field Data Printout

Test Method:
Analyte:

USEPA Methods 2 & 4
Velocity & Moisture

Location: Unit 2 FF Outlet
 Test Run: 5
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: S. Joint 473
 Probe Operator: D. Dreska 364

Bar. Press. (in. Hg): 29.80
 Static P: -9.7
 O₂ (dry volume %): 7.07
 CO₂ (dry volume %): 12.03
 N₂+CO (dry volume %): 80.90

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

Test Date: 3/22/13
 Start Time: 09:46
 Stop Time: 09:58
 Leak Rate Before: 0.003 cfm @ 15 "Hg
 Leak Rate After: 0.003 cfm @ 16 "Hg

H₂O (condensate, ml or gm): 205.0
 H₂O (silica, g): 5.2
 Actual Moisture (%): 25.55

Meter Box ID. No: 66-22
 Meter ΔH@: 1.88400
 Meter Y_d: 0.99720

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
1-01	0.0	0.43	1.50	180.700	303	78	74	0.66	3.28	
1-02	5.0	0.44	1.50	183.980	303	78	74	0.66	3.28	
1-03	10.0	0.43	1.50	187.260	303	78	75	0.66	3.25	
1-04	15.0	0.46	1.50	190.510	303	81	75	0.68	3.24	
1-05	20.0	0.47	1.50	193.750	303	82	75	0.69	3.26	
2-01	25.0	0.40	1.50	197.010	303	82	76	0.63	3.27	
2-02	30.0	0.44	1.50	200.280	303	83	77	0.66	3.27	
2-03	35.0	0.49	1.50	203.550	303	83	77	0.70	3.31	
2-04	40.0	0.48	1.50	206.860	303	83	77	0.69	3.32	
2-05	45.0	0.46		210.180	303			0.68		
3-01		0.30			303			0.55		
3-02		0.34			303			0.58		
3-03		0.36			303			0.60		
3-04		0.40			303			0.63		
3-05		0.37			303			0.61		
4-01		0.35			303			0.59		
4-02		0.38			303			0.62		
4-03		0.38			303			0.62		
4-04		0.37			303			0.61		
4-05		0.37			303			0.61		
5-01		0.38			302			0.62		
5-02		0.38			302			0.62		
5-03		0.36			302			0.60		
5-04		0.36			303			0.60		
5-05		0.35			303			0.59		
Final	45.0		1.50000	29.48000	302.88000	78.22222		0.62970	29.48000	
25 points sampled		Sq.Rt.ΔP								
QC-Check: Field Averages		0.6297	1.5000	29.4800	302.8800	78.2222				

Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

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Field Data Printout

Test Method:
Analyte:

USEPA Methods 2 & 4
Velocity & Moisture

Location: Unit 2 FF Outlet
 Test Run: 6
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: H. Nguyen 429
 Probe Operator: S. Joint 473
 Test Date: 3/22/13
 Start Time: 10:21
 Stop Time: 10:34
 Leak Rate Before: 0.003 cfm @ 15 "Hg
 Leak Rate After: 0.003 cfm @ 16 "Hg

Bar. Press. (in. Hg): 29.80
 Static P: -9.7
 O₂ (dry volume %): 7.27
 CO₂ (dry volume %): 11.78
 N₂+CO (dry volume %): 80.95

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm): 205.0
 H₂O (silica, g): 5.2
 Actual Moisture (%): 25.55

Meter Box ID. No: 66-22
 Meter ΔH@: 1.88400
 Meter Y_d: 0.99720

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
	0.0			180.700						
1-01	5.0	0.44	1.50	183.980	302	78	74	0.66	3.28	
1-02	10.0	0.48	1.50	187.260	302	78	74	0.69	3.28	
1-03	15.0	0.47	1.50	190.510	302	78	75	0.69	3.25	
1-04	20.0	0.49	1.50	193.750	302	81	75	0.70	3.24	
1-05	25.0	0.55	1.50	197.010	302	82	75	0.74	3.26	
2-01	30.0	0.44	1.50	200.280	303	82	76	0.66	3.27	
2-02	35.0	0.42	1.50	203.550	303	83	77	0.65	3.27	
2-03	40.0	0.43	1.50	206.860	303	83	77	0.66	3.31	
2-04	45.0	0.47	1.50	210.180	303	83	77	0.69	3.32	
2-05		0.48			303			0.69		
3-01		0.25			303			0.50		
3-02		0.34			303			0.58		
3-03		0.35			303			0.59		
3-04		0.36			303			0.60		
3-05		0.36			303			0.60		
4-01		0.33			302			0.57		
4-02		0.34			302			0.58		
4-03		0.34			302			0.58		
4-04		0.35			302			0.59		
4-05		0.34			302			0.58		
5-01		0.27			303			0.52		
5-02		0.33			303			0.57		
5-03		0.35			303			0.59		
5-04		0.34			303			0.58		
5-05		0.35			303			0.59		
Final	45.0		1.50000	29.48000	302.60000	78.22222		0.61917	29.48000	

25 points sampled
 Sq.Rt. ΔP
QC-Check: Field Averages

0.6192	1.5000	29.4800	302.6000	78.2222
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 Avg. OK
 Avg. OK
 Avg. OK
 Avg. OK
 Avg. OK

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Field Data Printout

Location: Unit 2 FF Outlet
 Test Run: 7
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: S. Joint 473
 Probe Operator: D. Dreska 364
 Test Date: 3/22/13
 Start Time: 11:00
 Stop Time: 11:14
 Leak Rate Before: 0.002 cfm @ 15 "Hg
 Leak Rate After: 0.002 cfm @ 15 "Hg

Test Method:
Analyte:

USEPA Methods 2 & 4
Velocity & Moisture

Bar. Press. (in. Hg): 29.80
 Static P: -9.7
 O₂ (dry volume %): 7.02
 CO₂ (dry volume %): 11.97
 N₂+CO (dry volume %): 81.01

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm): 196.0
 H₂O (silica, g): 8.3
 Actual Moisture (%): 24.71

Meter Box ID No: 66-22
 Meter ΔH@: 1.88400
 Meter Y_d: 0.99720

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
1-01	5.0	0.40	1.50	210.700	302	84	80	0.63	3.39	
1-02	10.0	0.41	1.50	217.470	302	84	80	0.64	3.38	
1-03	15.0	0.38	1.50	220.680	302	85	81	0.62	3.21	
1-04	20.0	0.36	1.50	223.980	302	86	81	0.60	3.30	
1-05	25.0	0.45	1.50	227.380	302	86	81	0.67	3.40	
2-01	30.0	0.35	1.50	230.770	301	87	81	0.59	3.39	
2-02	35.0	0.36	1.50	234.160	301	86	81	0.60	3.39	
2-03	40.0	0.41	1.50	237.550	301	87	81	0.64	3.39	
2-04	45.0	0.45	1.50	240.950	301	87	81	0.67	3.40	
2-05		0.50			301			0.71		
3-01		0.26			302			0.51		
3-02		0.35			302			0.59		
3-03		0.37			302			0.61		
3-04		0.42			302			0.65		
3-05		0.43			302			0.66		
4-01		0.33			301			0.57		
4-02		0.35			301			0.59		
4-03		0.38			302			0.62		
4-04		0.42			302			0.65		
4-05		0.42			302			0.65		
5-01		0.38			302			0.62		
5-02		0.36			302			0.60		
5-03		0.41			302			0.64		
5-04		0.45			302			0.67		
5-05		0.44			302			0.66		
Final	45.0		1.50000	30.25000	301.72000	83.27778		0.62612	30.25000	

25 points sampled
 QC-Check: Field Averages

Sq.Rt.ΔP	0.6261	1.5000	30.2500	301.7200	83.2778
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Avg. OK
 Avg. OK
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 Avg. OK

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Field Data Printout

Test Method:

USEPA Methods 2 & 4

Analyte:

Velocity & Moisture

Location: Unit 2 FF Outlet
 Test Run: 8
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: H. Nguyen 429
 Probe Operator: S. Joint 473

Bar. Press. (in. Hg): 29.80
 Static P: -9.7
 O₂ (dry volume %): 7.29
 CO₂ (dry volume %): 11.86
 N₂+CO (dry volume %): 80.85

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

Test Date: 3/22/13
 Start Time: 11:35
 Stop Time: 11:47
 Leak Rate Before: 0.002 cfm @ 15 "Hg
 Leak Rate After: 0.002 cfm @ 15 "Hg

H₂O (condensate, ml or gm): 196.0
 H₂O (silica, g): 8.3
 Actual Moisture (%): 24.71

Meter Box ID No: 66-22
 Meter ΔH@: 1.88400
 Meter Y_d: 0.99720

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
	0.0			210.700						
1-01	5.0	0.42	1.50	214.090	302	84	80	0.65	3.39	
1-02	10.0	0.41	1.50	217.470	302	84	80	0.64	3.38	
1-03	15.0	0.43	1.50	220.680	302	85	81	0.66	3.21	
1-04	20.0	0.45	1.50	223.980	302	86	81	0.67	3.30	
1-05	25.0	0.47	1.50	227.380	302	86	81	0.69	3.40	
2-01	30.0	0.43	1.50	230.770	302	87	81	0.66	3.39	
2-02	35.0	0.42	1.50	234.160	302	86	81	0.65	3.39	
2-03	40.0	0.43	1.50	237.550	302	87	81	0.66	3.39	
2-04	45.0	0.47	1.50	240.950	302	87	81	0.69	3.40	
2-05		0.45			302			0.67		
3-01		0.37			302			0.61		
3-02		0.39			302			0.62		
3-03		0.37			302			0.61		
3-04		0.39			302			0.62		
3-05		0.39			302			0.62		
4-01		0.39			303			0.62		
4-02		0.36			303			0.60		
4-03		0.36			303			0.60		
4-04		0.35			303			0.59		
4-05		0.32			303			0.57		
5-01		0.33			303			0.57		
5-02		0.33			303			0.57		
5-03		0.32			303			0.57		
5-04		0.31			303			0.56		
5-05		0.32			303			0.57		
Final	45.0		1.50000	30.25000	302.40000	83.27778		0.62101	30.25000	

25 points sampled Sq.RI.ΔP
QC-Check: Field Averages

0.6210	1.5000	30.2500	302.4000	83.2778
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 Avg. OK
 Avg. OK
 Avg. OK
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 Avg. OK

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USEPA Method 4 Laboratory Data

Location: Unit 2 FF Outlet
 Client: Wheelabrator North Broward, Inc.

Test Method: USEPA Methods 2 & 4
 Analyte: Velocity & Moisture

Project No: 12218

Analyst: S. Joint

Analyst Emp No: 473

Test Run: 5

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	DI Water	305.0	100.0	205.0
Impinger 2	DI Water	100.0	100.0	0.0
Impinger 3	Empty	0.0	0.0	0.0
Impinger 4	Silica Gel	305.2	300.0	5.2
Impinger 5				
Impinger 6				
Impinger 7				
Impinger 8				

205.0 Liquid (gm) *Field Data Check*

0.0 less rinse (gm)

205.0 Net Liquid (gm) 205.0

+ 5.2 Silica Gel (gm) 5.2

210.2 Total Vic (gm) 210.2

QA/QC OK

QA/QC OK

QA/QC OK

Rinse: (ml or gm)

Test Run: 6

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	DI Water	305.0	100.0	205.0
Impinger 2	DI Water	100.0	100.0	0.0
Impinger 3	Empty	0.0	0.0	0.0
Impinger 4	Silica Gel	305.2	300.0	5.2
Impinger 5				
Impinger 6				
Impinger 7				
Impinger 8				

205.0 Liquid (gm) *Field Data Check*

0.0 less rinse (gm)

205.0 Net Liquid (gm) 205.0

+ 5.2 Silica Gel (gm) 5.2

210.2 Total Vic (gm) 210.2

QA/QC OK

QA/QC OK

QA/QC OK

Rinse: (ml or gm)

Test Run: 7

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	DI Water	296.0	100.0	196.0
Impinger 2	DI Water	100.0	100.0	0.0
Impinger 3	Empty	0.0	0.0	0.0
Impinger 4	Silica Gel	308.3	300.0	8.3
Impinger 5				
Impinger 6				
Impinger 7				
Impinger 8				

196.0 Liquid (gm) *Field Data Check*

0.0 less rinse (gm)

196.0 Net Liquid (gm) 196.0

+ 8.3 Silica Gel (gm) 8.3

204.3 Total Vic (gm) 204.3

QA/QC OK

QA/QC OK

QA/QC OK

Rinse: (ml or gm)

Test Run: 8

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	DI Water	296.0	100.0	196.0
Impinger 2	DI Water	100.0	100.0	0.0
Impinger 3	Empty	0.0	0.0	0.0
Impinger 4	Silica Gel	308.3	300.0	8.3
Impinger 5				
Impinger 6				
Impinger 7				
Impinger 8				

196.0 Liquid (gm) *Field Data Check*

0.0 less rinse (gm)

196.0 Net Liquid (gm) 196.0

+ 8.3 Silica Gel (gm) 8.3

204.3 Total Vic (gm) 204.3

QA/QC OK

QA/QC OK

QA/QC OK

Rinse: (ml or gm)

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Field Data Printout

Test Method:
Analyte:

USEPA Methods 2 & 4
Velocity & Moisture

Location: Unit 2 FF Outlet
 Test Run: 9
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: S. Joint 473
 Probe Operator: S. Joint 473

Bar. Press. (in. Hg): 29.80
 Static P: -9.7
 O₂ (dry volume %): 7.40
 CO₂ (dry volume %): 11.74
 N₂+CO (dry volume %): 80.86

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

Test Date: 3/22/13
 Start Time: 12:15
 Stop Time: 12:28
 Leak Rate Before: 0.002 cfm @ 15 "Hg
 Leak Rate After: 0.002 cfm @ 15 "Hg

H₂O (condensate, ml or gm): 168.0
 H₂O (silica, g): 6.8
 Actual Moisture (%): 22.16

Meter Box ID. No: 66-22
 Meter ΔH@: 1.88400
 Meter Y_d: 0.99720

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
1-01	5.0	0.34	1.50	245.110	301	83	80	0.58	3.31	
1-02	10.0	0.33	1.50	248.380	301	84	81	0.57	3.27	
1-03	15.0	0.32	1.50	251.700	301	84	81	0.57	3.32	
1-04	20.0	0.35	1.50	255.020	301	85	82	0.59	3.32	
1-05	25.0	0.46	1.50	258.340	301	86	81	0.68	3.32	
2-01	30.0	0.32	1.50	261.650	301	86	81	0.57	3.31	
2-02	35.0	0.33	1.50	265.000	301	85	81	0.57	3.35	
2-03	40.0	0.37	1.50	268.280	301	85	81	0.61	3.28	
2-04	45.0	0.39	1.50	271.620	301	85	81	0.62	3.34	
2-05		0.43			301			0.66		
3-01		0.25			301			0.50		
3-02		0.29			301			0.54		
3-03		0.33			301			0.57		
3-04		0.35			301			0.59		
3-05		0.36			301			0.60		
4-01		0.33			301			0.57		
4-02		0.32			301			0.57		
4-03		0.33			301			0.57		
4-04		0.37			301			0.61		
4-05		0.36			301			0.60		
5-01		0.33			301			0.57		
5-02		0.34			301			0.58		
5-03		0.35			301			0.59		
5-04		0.37			301			0.61		
5-05		0.40			301			0.63		
Final	45.0		1.50000	29.82000	301.00000	82.88889		0.58956	29.82000	

25 points sampled

Sq.Rt.ΔP	0.5896	1.5000	29.8200	301.0000	82.8889
QC-Check: Field Averages	<input checked="" type="checkbox"/> Avg. OK	<input checked="" type="checkbox"/> Avg. OK	<input checked="" type="checkbox"/> Avg. OK	<input checked="" type="checkbox"/> Avg. OK	<input checked="" type="checkbox"/> Avg. OK

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Field Data Printout

Location: Unit 2 FF Outlet
 Test Run: 10
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: S. Joint 473
 Probe Operator: S. Joint 473

Test Method:
 Analyte:

USEPA Methods 2 & 4
 Velocity & Moisture

Bar. Press. (in. Hg): 29.80
 Static P: -9.7
 O₂ (dry volume %): 7.49
 CO₂ (dry volume %): 11.56
 N₂+CO (dry volume %): 80.95

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

Test Date: 3/22/13
 Start Time: 12:50
 Stop Time: 13:03
 Leak Rate Before: 0.002 cfm @ 15 "Hg
 Leak Rate After: 0.002 cfm @ 15 "Hg

H₂O (condensate, ml or gm): 168.0
 H₂O (silica, g): 6.8
 Actual Moisture (%): 22.16

Meter Box ID No: 66-22
 Meter ΔH@: 1.88400
 Meter Y_d: 0.99720

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
	0.0			241.800						
1-01	5.0	0.45	1.50	245.110	302	83	80	0.67	3.31	
1-02	10.0	0.37	1.50	248.380	302	84	81	0.61	3.27	
1-03	15.0	0.38	1.50	251.700	302	84	81	0.62	3.32	
1-04	20.0	0.42	1.50	255.020	302	85	82	0.65	3.32	
1-05	25.0	0.41	1.50	258.340	302	86	81	0.64	3.32	
2-01	30.0	0.45	1.50	261.650	302	86	81	0.67	3.31	
2-02	35.0	0.46	1.50	265.000	302	85	81	0.68	3.35	
2-03	40.0	0.46	1.50	268.280	303	85	81	0.68	3.28	
2-04	45.0	0.41	1.50	271.620	303	85	81	0.64	3.34	
2-05		0.38			303			0.62		
3-01		0.30			303			0.55		
3-02		0.34			303			0.58		
3-03		0.35			303			0.59		
3-04		0.35			303			0.59		
3-05		0.33			303			0.57		
4-01		0.41			304			0.64		
4-02		0.37			304			0.61		
4-03		0.37			304			0.61		
4-04		0.34			304			0.58		
4-05		0.33			304			0.57		
5-01		0.34			303			0.58		
5-02		0.33			303			0.57		
5-03		0.36			303			0.60		
5-04		0.37			303			0.61		
5-05		0.33			303			0.57		
Final	45.0		1.50000	29.82000	302.92000	82.88889		0.61245	29.82000	

25 points sampled
 QC-Check: Field Averages
 Sq.Rt.ΔP

0.6124	1.5000	29.8200	302.9200	82.8889
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 Avg. OK
 Avg. OK
 Avg. OK
 Avg. OK
 Avg. OK

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Field Data Printout

Location: Unit 2 FF Outlet
 Test Run: 11
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: S. Joint 473
 Probe Operator: D. Luckhard 568
 Test Date: 3/22/13
 Start Time: 13:33
 Stop Time: 13:47
 Leak Rate Before: 0.002 cfm @ 15 "Hg
 Leak Rate After: 0.002 cfm @ 15 "Hg

Test Method:
Analyte:

USEPA Methods 2 & 4
Velocity & Moisture

Bar. Press. (in. Hg): 29.80
 Static P: -9.7
 O₂ (dry volume %): 8.08
 CO₂ (dry volume %): 10.99
 N₂+CO (dry volume %): 80.93

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm): 168.0
 H₂O (silica, g): 6.8
 Actual Moisture (%): 22.16

Meter Box ID. No: 66-22
 Meter ΔH@: 1.88400
 Meter Y_g: 0.99720

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
1-01	5.0	0.54	1.50	245.110	304	83	80	0.73	3.31	
1-02	10.0	0.47	1.50	248.380	304	84	81	0.69	3.27	
1-03	15.0	0.46	1.50	251.700	304	84	81	0.68	3.32	
1-04	20.0	0.51	1.50	255.020	304	85	82	0.71	3.32	
1-05	25.0	0.55	1.50	258.340	304	86	81	0.74	3.32	
2-01	30.0	0.45	1.50	261.650	303	86	81	0.67	3.31	
2-02	35.0	0.48	1.50	265.000	303	85	81	0.69	3.35	
2-03	40.0	0.50	1.50	268.280	304	85	81	0.71	3.28	
2-04	45.0	0.52	1.50	271.620	304	85	81	0.72	3.34	
2-05		0.54			304			0.73		
3-01		0.37			303			0.61		
3-02		0.41			303			0.64		
3-03		0.40			304			0.63		
3-04		0.42			304			0.65		
3-05		0.44			304			0.66		
4-01		0.34			303			0.58		
4-02		0.35			303			0.59		
4-03		0.37			303			0.61		
4-04		0.38			304			0.62		
4-05		0.37			304			0.61		
5-01		0.37			302			0.61		
5-02		0.38			303			0.62		
5-03		0.40			303			0.63		
5-04		0.39			303			0.62		
5-05		0.40			303			0.63		
Final	45.0		1.50000	29.82000	303.48000	82.88889		0.65582	29.82000	

25 points sampled
 QC-Check: Field Averages

Sq.Rt.ΔP	0.6558	1.5000	29.8200	303.5200	82.8889
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Avg. OK
 Avg. OK
 Avg. OK
 Avg. OK
 Avg. OK

041813 081632

Field Data Printout

Test Method:
Analyte:

USEPA Methods 2 & 4
Velocity & Moisture

Location: Unit 2 FF Outlet
 Test Run: 12
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: S. Joint 473
 Probe Operator: D. Luckhard 568

Bar. Press. (in. Hg): 29.80
 Static P: -9.7
 O₂ (dry volume %): 7.24
 CO₂ (dry volume %): 11.75
 N₂+CO (dry volume %): 81.01

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

Test Date: 3/22/13
 Start Time: 14:06
 Stop Time: 14:20
 Leak Rate Before: 0.002 cfm @ 15 "Hg
 Leak Rate After: 0.002 cfm @ 15 "Hg

H₂O (condensate, ml or gm): 168.0
 H₂O (silica, g): 6.8
 Actual Moisture (%): 22.16

Meter Box ID. No: 66-22
 Meter ΔH@: 1.88400
 Meter Y_s: 0.99720

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
	0.0			241.800						
1-01	5.0	0.42	1.50	245.110	303	83	80	0.65	3.31	
1-02	10.0	0.42	1.50	248.380	303	84	81	0.65	3.27	
1-03	15.0	0.43	1.50	251.700	303	84	81	0.66	3.32	
1-04	20.0	0.44	1.50	255.020	303	85	82	0.66	3.32	
1-05	25.0	0.46	1.50	258.340	303	86	81	0.68	3.32	
2-01	30.0	0.38	1.50	261.650	304	86	81	0.62	3.31	
2-02	35.0	0.40	1.50	265.000	304	85	81	0.63	3.35	
2-03	40.0	0.42	1.50	268.280	304	85	81	0.65	3.28	
2-04	45.0	0.42	1.50	271.620	304	85	81	0.65	3.34	
2-05		0.43			304			0.66		
3-01		0.35			304			0.59		
3-02		0.34			304			0.58		
3-03		0.36			304			0.60		
3-04		0.36			304			0.60		
3-05		0.37			304			0.61		
4-01		0.32			303			0.57		
4-02		0.33			303			0.57		
4-03		0.34			303			0.58		
4-04		0.34			303			0.58		
4-05		0.33			303			0.57		
5-01		0.38			303			0.62		
5-02		0.39			303			0.62		
5-03		0.37			303			0.61		
5-04		0.34			303			0.58		
5-05		0.33			303			0.57		
Final	45.0		1.50000	29.82000	303.40000	82.88889		0.61459	29.82000	

25 points sampled

Sq.Rt.ΔP	0.6146	1.5000	29.8200	303.4000	82.8889
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QC-Check: Field Averages

Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

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USEPA Method 4 Laboratory Data

Location: Unit 2 FF Outlet
 Client: Wheelabrator North Broward, Inc.

Test Method: **USEPA Methods 2 & 4**
 Analyte: **Velocity & Moisture**

Project No: 12218

Analyst: S. Joint

Analyst Emp No: 473

Test Run: **9**

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	DI Water	268.0	100.0	168.0
Impinger 2	DI Water	100.0	100.0	0.0
Impinger 3	Empty	0.0	0.0	0.0
Impinger 4	Silica Gel	306.8	300.0	6.8
Impinger 5				
Impinger 6				
Impinger 7				
Impinger 8				

168.0 Liquid (gm)		
0.0 less rinse (gm)		
168.0 Net Liquid (gm)	168.0	<input checked="" type="checkbox"/> QA/QC OK
+ 6.8 Silica Gel (gm)	6.8	<input checked="" type="checkbox"/> QA/QC OK
174.8 Total Vlc (gm)	174.8	<input checked="" type="checkbox"/> QA/QC OK

Rinse: _____ (ml or gm)

Test Run: **10**

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	DI Water	268.0	100.0	168.0
Impinger 2	DI Water	100.0	100.0	0.0
Impinger 3	Empty	0.0	0.0	0.0
Impinger 4	Silica Gel	306.8	300.0	6.8
Impinger 5				
Impinger 6				
Impinger 7				
Impinger 8				

168.0 Liquid (gm)		
0.0 less rinse (gm)		
168.0 Net Liquid (gm)	168.0	<input checked="" type="checkbox"/> QA/QC OK
+ 6.8 Silica Gel (gm)	6.8	<input checked="" type="checkbox"/> QA/QC OK
174.8 Total Vlc (gm)	174.8	<input checked="" type="checkbox"/> QA/QC OK

Rinse: _____ (ml or gm)

Test Run: **11**

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	DI Water	268.0	100.0	168.0
Impinger 2	DI Water	100.0	100.0	0.0
Impinger 3	Empty	0.0	0.0	0.0
Impinger 4	Silica Gel	306.8	300.0	6.8
Impinger 5				
Impinger 6				
Impinger 7				
Impinger 8				

168.0 Liquid (gm)		
0.0 less rinse (gm)		
168.0 Net Liquid (gm)	168.0	<input checked="" type="checkbox"/> QA/QC OK
+ 6.8 Silica Gel (gm)	6.8	<input checked="" type="checkbox"/> QA/QC OK
174.8 Total Vlc (gm)	174.8	<input checked="" type="checkbox"/> QA/QC OK

Rinse: _____ (ml or gm)

Test Run: **12**

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	DI Water	268.0	100.0	168.0
Impinger 2	DI Water	100.0	100.0	0.0
Impinger 3	Empty	0.0	0.0	0.0
Impinger 4	Silica Gel	306.8	300.0	6.8
Impinger 5				
Impinger 6				
Impinger 7				
Impinger 8				

168.0 Liquid (gm)		
0.0 less rinse (gm)		
168.0 Net Liquid (gm)	168.0	<input checked="" type="checkbox"/> QA/QC OK
+ 6.8 Silica Gel (gm)	6.8	<input checked="" type="checkbox"/> QA/QC OK
174.8 Total Vlc (gm)	174.8	<input checked="" type="checkbox"/> QA/QC OK

Rinse: _____ (ml or gm)

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Field Data Printout

Location: Unit 3 FF Outlet
 Test Run: 1
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: W. Berry 456
 Probe Operator: A. Obuchowski 567
 Test Date: 3/20/13
 Start Time: 08:19
 Stop Time: 08:29
 Leak Rate Before: N/A cfm
 Leak Rate After: N/A cfm

Test Method:
 Analyte:

USEPA Method 2
 Velocity & Flow Rate

Bar. Press. (in. Hg): 29.80
 Static P: -8.0
 O₂ (dry volume %): 6.90
 CO₂ (dry volume %): 12.23
 N₂+CO (dry volume %): 80.87

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm):
 H₂O (silica, g):
 Actual Moisture (%): 24.43

Meter Box ID No: N/A
 Meter ΔH@: N/A
 Meter Y_d: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
5-01	0.0	0.40			312			0.63		
5-02		0.41			312			0.64		
5-03		0.39			312			0.62		
5-04		0.36			312			0.60		
5-05		0.35			312			0.59		
4-01		0.46			312			0.68		
4-02		0.48			312			0.69		
4-03		0.42			312			0.65		
4-04		0.38			312			0.62		
4-05		0.33			312			0.57		
3-01		0.48			311			0.69		
3-02		0.45			312			0.67		
3-03		0.43			312			0.66		
3-04		0.38			312			0.62		
3-05		0.36			312			0.60		
2-01		0.47			312			0.69		
2-02		0.45			312			0.67		
2-03		0.42			312			0.65		
2-04		0.38			311			0.62		
2-05		0.36			312			0.60		
1-01		0.37			312			0.61		
1-02		0.33			312			0.57		
1-03		0.27			312			0.52		
1-04		0.31			312			0.56		
1-05		0.35			312			0.59		
Final	0.0				311.92000			0.62425		
25 points sampled		Sq.RLAP								
QC-Check: Field Averages		0.6243			311.9200					

Avg. OK
 Avg. OK
 Avg. OK
 Avg. OK
 Avg. OK

040813 153814

Field Data Printout

Test Method:
Analyte:

USEPA Method 2
Velocity & Flow Rate

Location: Unit 3 FF Outlet
 Test Run: 2
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: W. Berry 456
 Probe Operator: A. Obuchowski 567
 Test Date: 3/20/13
 Start Time: 08:54
 Stop Time: 09:04
 Leak Rate Before: N/A cfm
 Leak Rate After: N/A cfm

Bar. Press. (in. Hg): 29.80
 Static P: -8.0
 O₂ (dry volume %): 6.94
 CO₂ (dry volume %): 12.10
 N₂+CO (dry volume %): 80.95

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm):
 H₂O (silica, g):
 Actual Moisture (%): 24.43

Meter Box ID. No: N/A
 Meter ΔH@: N/A
 Meter Y_d: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP ₀ (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter T _{m-in} (°F)	T _{m-out} (°F)	√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
5-01	0.0	0.41			311			0.64		
5-02		0.43			310			0.66		
5-03		0.38			311			0.62		
5-04		0.38			310			0.62		
5-05		0.34			310			0.58		
4-01		0.43			310			0.66		
4-02		0.42			311			0.65		
4-03		0.38			311			0.62		
4-04		0.36			311			0.60		
4-05		0.32			311			0.57		
3-01		0.44			311			0.66		
3-02		0.39			311			0.62		
3-03		0.37			311			0.61		
3-04		0.34			311			0.58		
3-05		0.31			311			0.56		
2-01		0.44			309			0.66		
2-02		0.40			310			0.63		
2-03		0.36			310			0.60		
2-04		0.34			310			0.58		
2-05		0.31			310			0.56		
1-01		0.35			311			0.59		
1-02		0.26			310			0.51		
1-03		0.28			310			0.53		
1-04		0.28			310			0.53		
1-05		0.32			310			0.57		
Final	0.0				310.44000			0.59980		

25 points sampled
 QC-Check: Field Averages
 Sq.Rt.ΔP: 0.5998
 Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

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Field Data Printout

Test Method:

**USEPA Method 2
Velocity & Flow Rate**

Analyte:

Location: Unit 3 FF Outlet

Test Run: 3

Client: Wheelabrator North Broward, Inc.

Project No: 12218

Source Area (ft²): 64.00000

Meter Operator: W. Berry 456

Probe Operator: A. Obuchowski 567

Test Date: 3/20/13

Start Time: 09:39

Stop Time: 09:50

Leak Rate Before: N/A cfm

Leak Rate After: N/A cfm

Bar. Press. (in. Hg): 29.80

Static P: -8.8

O₂ (dry volume %): 8.09

CO₂ (dry volume %): 11.05

N₂+CO (dry volume %): 80.86

Nozzle ID No: N/A

Nozzle Diameter (D_n): N/A

Probe ID No: 67-8P-12

Pitot C_p: 0.819

Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm):

H₂O (silica, g):

Actual Moisture (%): 23.48

Meter Box ID. No: N/A

Meter ΔH@: N/A

Meter Y_d: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
5-01	0.0	0.48			313			0.69		
5-02		0.44			312			0.66		
5-03		0.42			312			0.65		
5-04		0.41			312			0.64		
5-05		0.32			312			0.57		
4-01		0.40			313			0.63		
4-02		0.38			313			0.62		
4-03		0.39			313			0.62		
4-04		0.40			313			0.63		
4-05		0.34			313			0.58		
3-01		0.48			311			0.69		
3-02		0.46			312			0.68		
3-03		0.46			313			0.68		
3-04		0.47			313			0.69		
3-05		0.47			313			0.69		
2-01		0.48			314			0.69		
2-02		0.46			313			0.68		
2-03		0.47			314			0.69		
2-04		0.48			314			0.69		
2-05		0.48			313			0.69		
1-01		0.52			311			0.72		
1-02		0.51			313			0.71		
1-03		0.49			313			0.70		
1-04		0.44			314			0.66		
1-05		0.47			313			0.69		
Final	0.0				312.80000			0.66584		

25 points sampled
QC-Check: Field Averages

Sq.Rt.ΔP	312.8000
0.6658	

Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

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Field Data Printout

Location: Unit 3 FF Outlet
 Test Run: 4
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: W. Berry 456
 Probe Operator: A. Obuchowski 567
 Test Date: 3/20/13
 Start Time: 10:16
 Stop Time: 10:28
 Leak Rate Before: N/A cfm
 Leak Rate After: N/A cfm

Test Method:
 Analyte:

USEPA Method 2
Velocity & Flow Rate

Bar. Press. (in. Hg): 29.80
 Static P: -8.8
 O₂ (dry volume %): 7.67
 CO₂ (dry volume %): 11.40
 N₂+CO (dry volume %): 80.93

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm):
 H₂O (silica, g):
 Actual Moisture (%): 23.48

Meter Box ID. No: N/A
 Meter ΔH@: N/A
 Meter Y_d: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter T _{m-in} (°F)	T _{m-out} (°F)	√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
5-01	0.0	0.41			311			0.64		
5-02		0.42			311			0.65		
5-03		0.44			312			0.66		
5-04		0.40			312			0.63		
5-05		0.37			312			0.61		
4-01		0.45			313			0.67		
4-02		0.43			313			0.66		
4-03		0.43			313			0.66		
4-04		0.40			313			0.63		
4-05		0.35			313			0.59		
3-01		0.53			312			0.73		
3-02		0.45			312			0.67		
3-03		0.42			312			0.65		
3-04		0.38			313			0.62		
3-05		0.36			312			0.60		
2-01		0.50			310			0.71		
2-02		0.47			311			0.69		
2-03		0.42			312			0.65		
2-04		0.39			312			0.62		
2-05		0.36			312			0.60		
1-01		0.48			312			0.69		
1-02		0.36			312			0.60		
1-03		0.33			312			0.57		
1-04		0.35			312			0.59		
1-05		0.38			312			0.62		
Final	0.0				312.04000			0.64011		

25 points sampled
 QC-Check: Field Averages

Sq. Rt. ΔP	0.6401			312.0400
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Avg. OK
 Avg. OK
 Avg. OK
 Avg. OK
 Avg. OK

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Field Data Printout

Test Method:
Analyte:

USEPA Method 2
Velocity & Flow Rate

Location: Unit 3 FF Outlet

Test Run: 5

Client: Wheelabrator North Broward, Inc.

Project No: 12218

Source Area (ft²): 64.00000

Meter Operator: W. Berry 456

Probe Operator: A. Obuchowski 567

Test Date: 3/20/13

Start Time:

Stop Time:

Leak Rate Before: N/A cfm

Leak Rate After: N/A cfm

Bar. Press. (in. Hg): 29.80

Static P: -9.1

O₂ (dry volume %): 7.67

CO₂ (dry volume %): 11.19

N₂+CO (dry volume %): 81.14

Nozzle ID No: N/A

Nozzle Diameter (D_n): N/A

Probe ID No: 67-8P-12

Pitot Cp: 0.819

Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm):

H₂O (silica, g):

Actual Moisture (%): 22.33

Meter Box ID. No: N/A

Meter ΔH@: N/A

Meter Y_d: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
5-01	0.0	0.32			312			0.57		
5-02		0.33			311			0.57		
5-03		0.32			312			0.57		
5-04		0.32			312			0.57		
5-05		0.37			312			0.61		
4-01		0.51			313			0.71		
4-02		0.47			312			0.69		
4-03		0.42			313			0.65		
4-04		0.37			313			0.61		
4-05		0.37			312			0.61		
3-01		0.46			313			0.68		
3-02		0.39			312			0.62		
3-03		0.38			312			0.62		
3-04		0.34			312			0.58		
3-05		0.34			313			0.58		
2-01		0.49			312			0.70		
2-02		0.43			312			0.66		
2-03		0.39			312			0.62		
2-04		0.37			312			0.61		
2-05		0.34			312			0.58		
1-01		0.36			311			0.60		
1-02		0.31			311			0.56		
1-03		0.26			311			0.51		
1-04		0.28			312			0.53		
1-05		0.32			312			0.57		
Final	0.0				312.0400			0.60650		

25 points sampled

Sq.Rt.ΔP

QC-Check: Field Averages

0.6065 312.0400

Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

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Field Data Printout

Location: Unit 3 FF Outlet
 Test Run: 6
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000

Meter Operator: W. Berry 456
 Probe Operator: A. Obuchowski 567

Test Date: 3/20/13
 Start Time:
 Stop Time:
 Leak Rate Before: N/A cfm
 Leak Rate After: N/A cfm

Test Method:
 Analyte:

Bar. Press. (in. Hg): 29.80
 Static P: -9.1
 O₂ (dry volume %): 8.35
 CO₂ (dry volume %): 10.83
 N₂+CO (dry volume %): 80.81

USEPA Method 2
 Velocity & Flow Rate

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm):
 H₂O (silica, g):
 Actual Moisture (%): 22.33

Meter Box ID No: N/A
 Meter ΔH@: N/A
 Meter Y_d: N/A

Traverse Point	Run Time 5.0 min/read	Pitot	Sample	Metered (dcf)	Dry Gas Meter			√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
		ΔP _s (in. H ₂ O)	ΔH (in. H ₂ O)		T _s (°F)	T _{m-in} (°F)	T _{m-out} (°F)			
5-01	0.0	0.49			313			0.70		
5-02		0.50			313			0.71		
5-03		0.48			313			0.69		
5-04		0.47			313			0.69		
5-05		0.39			314			0.62		
4-01		0.53			314			0.73		
4-02		0.52			314			0.72		
4-03		0.47			314			0.69		
4-04		0.45			314			0.67		
4-05		0.42			314			0.65		
3-01		0.52			314			0.72		
3-02		0.45			315			0.67		
3-03		0.44			314			0.66		
3-04		0.40			315			0.63		
3-05		0.38			315			0.62		
2-01		0.53			313			0.73		
2-02		0.45			313			0.67		
2-03		0.46			314			0.68		
2-04		0.41			314			0.64		
2-05		0.39			314			0.62		
1-01		0.48			313			0.69		
1-02		0.35			313			0.59		
1-03		0.31			313			0.56		
1-04		0.35			313			0.59		
1-05		0.33			313			0.57		
Final	0.0				313.68000			0.66067		

25 points sampled
 QC-Check: Field Averages

	Sq.Rt.ΔP	0.6607		313.6800
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Avg. OK
 Avg. OK
 Avg. OK
 Avg. OK
 Avg. OK

040913 153844
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Field Data Printout

Location: Unit 3 FF Outlet
 Test Run: 7
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: W. Berry 456
 Probe Operator: A. Obuchowski 567

Test Method: USEPA Method 2
 Analyte: Velocity & Flow Rate
 Bar. Press. (in. Hg): 29.80
 Static P: -9.1
 O₂ (dry volume %): 8.47
 CO₂ (dry volume %): 10.81
 N₂+CO (dry volume %): 80.72

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

Test Date: 3/20/13
 Start Time: 12:36
 Stop Time: 12:43
 Leak Rate Before: N/A cfm
 Leak Rate After: N/A cfm

H₂O (condensate, ml or gm):
 H₂O (silica, g):
 Actual Moisture (%): 22.89

Meter Box ID. No: N/A
 Meter ΔH@: N/A
 Meter Y_d: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
5-01	0.0	0.50			312			0.71		
5-02		0.51			313			0.71		
5-03		0.48			313			0.69		
5-04		0.48			312			0.69		
5-05		0.43			312			0.66		
4-01		0.54			312			0.73		
4-02		0.55			312			0.74		
4-03		0.48			312			0.69		
4-04		0.43			313			0.66		
4-05		0.42			313			0.65		
3-01		0.46			313			0.68		
3-02		0.45			313			0.67		
3-03		0.46			313			0.68		
3-04		0.44			312			0.66		
3-05		0.40			313			0.63		
2-01		0.54			312			0.73		
2-02		0.44			313			0.66		
2-03		0.42			312			0.65		
2-04		0.38			312			0.62		
2-05		0.36			312			0.60		
1-01		0.22			300			0.47		
1-02		0.18			305			0.42		
1-03		0.28			310			0.53		
1-04		0.35			309			0.59		
1-05		0.45			307			0.67		
Final	0.0				311.20000			0.64826		

25 points sampled
 QC-Check: Field Averages
 Sq.Rt.ΔP: 0.6483 311.2000
 Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

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Field Data Printout

Test Method:
Analyte:

USEPA Method 2
Velocity & Flow Rate

Location: Unit 3 FF Outlet
 Test Run: 8
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: W. Berry 456
 Probe Operator: A. Obuchowski 567
 Test Date: 3/20/13
 Start Time: 13:12
 Stop Time: 13:28
 Leak Rate Before: N/A cfm
 Leak Rate After: N/A cfm

Bar. Press. (in. Hg): 29.80
 Static P: -9.1
 O₂ (dry volume %): 8.74
 CO₂ (dry volume %): 10.55
 N₂+CO (dry volume %): 80.70

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm):
 H₂O (silica, g):
 Actual Moisture (%): 22.89

Meter Box ID. No: N/A
 Meter ΔH@: N/A
 Meter Y_d: N/A

Traverse Point	Run Time 5.0 min/read	Pitot	Sample	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
		ΔP _s (in. H ₂ O)	ΔH (in. H ₂ O)			T _{m-in} (°F)	T _{m-out} (°F)			
5-01	0.0	0.43			314			0.66		
5-02		0.48			314			0.69		
5-03		0.52			314			0.72		
5-04		0.48			314			0.69		
5-05		0.42			314			0.65		
4-01		0.52			309			0.72		
4-02		0.51			311			0.71		
4-03		0.49			312			0.70		
4-04		0.45			313			0.67		
4-05		0.42			313			0.65		
3-01		0.37			312			0.61		
3-02		0.46			312			0.68		
3-03		0.48			313			0.69		
3-04		0.47			313			0.69		
3-05		0.41			313			0.64		
2-01		0.57			310			0.75		
2-02		0.50			310			0.71		
2-03		0.46			310			0.68		
2-04		0.38			311			0.62		
2-05		0.48			311			0.69		
1-01		0.53			310			0.73		
1-02		0.42			312			0.65		
1-03		0.32			313			0.57		
1-04		0.31			313			0.56		
1-05		0.42			313			0.65		
Final	0.0				312.16000			0.67065		

25 points sampled
 QC-Check: Field Averages
 Sq.Rt. ΔP: 0.6706
 Avg. OK
 Avg. OK
 Avg. OK
 Avg. OK
 Avg. OK

040913 153720
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Field Data Printout

Location: Unit 3 FF Outlet
 Test Run: 9
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: W. Berry 456
 Probe Operator:
 Test Date: 3/20/13
 Start Time: 13:55
 Stop Time: 14:11
 Leak Rate Before: N/A cfm
 Leak Rate After: N/A cfm

Test Method:
Analyte:

USEPA Method 2
Velocity & Flow Rate

Bar. Press. (in. Hg): 29.80
 Static P: -9.1
 O₂ (dry volume %): 8.63
 CO₂ (dry volume %): 10.61
 N₂+CO (dry volume %): 80.76

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm):
 H₂O (silica, g):
 Actual Moisture (%): 22.89

Meter Box ID. No: N/A
 Meter ΔH@: N/A
 Meter Y_d: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
5-01	0.0	0.45			311			0.67		
5-02		0.45			311			0.67		
5-03		0.42			310			0.65		
5-04		0.40			311			0.63		
5-05		0.37			310			0.61		
4-01		0.33			313			0.57		
4-02		0.41			313			0.64		
4-03		0.40			313			0.63		
4-04		0.40			314			0.63		
4-05		0.36			314			0.60		
3-01		0.36			312			0.60		
3-02		0.45			313			0.67		
3-03		0.44			313			0.66		
3-04		0.43			314			0.66		
3-05		0.40			314			0.63		
2-01		0.53			311			0.73		
2-02		0.54			313			0.73		
2-03		0.51			314			0.71		
2-04		0.49			314			0.70		
2-05		0.48			314			0.69		
1-01		0.56			314			0.75		
1-02		0.51			314			0.71		
1-03		0.46			313			0.68		
1-04		0.42			313			0.65		
1-05		0.52			313			0.72		
Final	0.0				312.76000			0.66449		

25 points sampled
 QC-Check: Field Averages Sq.Rt.ΔP 0.6645 312.7600

Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

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Field Data Printout

Location: Unit 3 FF Outlet
 Test Run: 10
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: W. Berry 456
 Probe Operator: _____
 Test Date: 3/20/13
 Start Time: 14:26
 Stop Time: 14:41
 Leak Rate Before: N/A cfm
 Leak Rate After: N/A cfm

Test Method:
Analyte:

USEPA Method 2
Velocity & Flow Rate

Bar. Press. (in. Hg): 29.80
 Static P: -9.1
 O₂ (dry volume %): 8.77
 CO₂ (dry volume %): 10.50
 N₂+CO (dry volume %): 80.73

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-8P-12
 Pitot C_p: 0.819
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm):
 H₂O (silica, g):
 Actual Moisture (%): 22.89

Meter Box ID. No: N/A
 Meter ΔH@: N/A
 Meter Y_d: N/A

Traverse Point	Run Time 5.0 min/read	Pitot	Sample	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
		ΔP _s (in. H ₂ O)	ΔH (in. H ₂ O)			T _{m-in} (°F)	T _{m-out} (°F)			
5-01	0.0	0.52			311			0.72		
5-02		0.51			310			0.71		
5-03		0.48			310			0.69		
5-04		0.40			310			0.63		
5-05		0.37			310			0.61		
4-01		0.50			312			0.71		
4-02		0.54			313			0.73		
4-03		0.50			313			0.71		
4-04		0.44			314			0.66		
4-05		0.40			314			0.63		
3-01		0.50			312			0.71		
3-02		0.48			313			0.69		
3-03		0.48			314			0.69		
3-04		0.44			314			0.66		
3-05		0.39			314			0.62		
2-01		0.46			312			0.68		
2-02		0.44			312			0.66		
2-03		0.42			313			0.65		
2-04		0.41			313			0.64		
2-05		0.40			313			0.63		
1-01		0.42			313			0.65		
1-02		0.34			313			0.58		
1-03		0.30			313			0.55		
1-04		0.34			313			0.58		
1-05		0.32			313			0.57		
Final	0.0				312.48000			0.65537		

25 points sampled
 QC-Check: Field Averages Sq.RLΔP 312.4800
0.6554

Avg. OK
 Avg. OK
 Avg. OK
 Avg. OK
 Avg. OK

040613 153720

Field Data Printout

Test Method:
Analyte:

USEPA Method 26A
HCl

Location: Unit 3 FF Outlet

Test Run: 1

Client: Wheelabrator North Broward, Inc.

Project No: 12218

Source Area (ft²): 64.00000

Meter Operator: W. Berry 456

Probe Operator: W. Berry 456

Test Date: 3/20/13

Start Time: 08:13

Stop Time: 09:13

Leak Rate Before: 0.003 cfm @ 15 "Hg

Leak Rate After: 0.001 cfm @ 10 "Hg

Bar. Press. (in. Hg): 29.80

Static P: -8.0

O₂ (dry volume %): 6.96

CO₂ (dry volume %): 12.11

N₂+CO (dry volume %): 80.93

H₂O (condensate, ml or gm): 253.6

H₂O (silica, g): 21.1

Actual Moisture (%): 24.43

Nozzle ID No: N/A

Nozzle Diameter (D_n): N/A

Probe ID No: 67-4-3

Pitot C_p: N/A

Pitot Leak Check: Pass Fail

Meter Box ID. No: 85-2

Meter ΔH@: 1.74130

Meter Y_d: 1.00390

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
3-01	5.0	1.50	1.50	409.600	312	76	75		3.37	
3-01	10.0	1.50	1.50	412.950	311	77	75		3.35	
3-01	15.0	1.50	1.50	416.290	312	82	76		3.34	
3-01	20.0	1.50	1.50	419.660	312	85	77		3.37	
3-01	25.0	1.50	1.50	423.050	312	88	78		3.39	
3-01	30.0	1.50	1.50	425.800	311	89	79		2.75	
3-01	35.0	1.50	1.50	429.950	312	91	80		4.15	
3-01	40.0	1.50	1.50	433.450	312	92	81		3.50	
3-01	45.0	1.50	1.50	436.880	311	92	82		3.43	
3-01	50.0	1.50	1.50	440.290	311	91	82		3.41	
3-01	55.0	1.50	1.50	443.730	311	91	83		3.44	
3-01	60.0	1.50	1.50	447.230	311	91	83		3.50	
Final	60.0		1.50000	41.00000	311.50000	83.16667			41.00000	

3 points sampled

QC-Check: Field Averages

Sq.Rt.ΔP	1.5000	41.0000	311.5000	83.1666
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Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

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M

Field Data Printout

Test Method:

USEPA Method 26A

Analyte:

HCl

Location: Unit 3 FF Outlet
 Test Run: 2
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: W. Berry 456
 Probe Operator: W. Berry 456
 Test Date: 3/20/13
 Start Time: 09:39
 Stop Time: 10:39
 Leak Rate Before: 0.002 cfm @ 15 "Hg
 Leak Rate After: 0.002 cfm @ 10 "Hg

Bar. Press. (in. Hg): 29.80
 Static P: -8.8
 O₂ (dry volume %): 7.84
 CO₂ (dry volume %): 11.26
 N₂+CO (dry volume %): 80.90

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-4-3
 Pitot C_p: N/A
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm): 249.6
 H₂O (silica, g): 14.7
 Actual Moisture (%): 23.48

Meter Box ID No: 85-2
 Meter ΔH@: 1.74130
 Meter Y₂: 1.00390

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcr)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
	0.0			447.760						
3-01	5.0		1.50	451.200	312	84	83		3.44	
3-01	10.0		1.50	454.660	312	86	83		3.46	
3-01	15.0		1.50	458.040	314	89	83		3.38	
3-01	20.0		1.50	461.480	313	90	84		3.44	
3-01	25.0		1.50	465.020	313	92	84		3.54	
3-01	30.0		1.50	468.550	313	93	85		3.53	
3-01	35.0		1.50	472.100	313	93	85		3.55	
3-01	40.0		1.50	475.640	313	93	86		3.54	
3-01	45.0		1.50	479.150	312	95	86		3.51	
3-01	50.0		1.50	482.660	312	93	86		3.51	
3-01	55.0		1.50	486.170	313	92	86		3.51	
3-01	60.0		1.50	489.685	313	92	86		3.51	
Final	60.0		1.50000	41.92500	312.75000	87.87500			41.92500	

3 points sampled
 QC-Check: Field Averages

Sq.Rt.ΔP	1.5000	41.9250	312.7500	87.8750
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Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

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Field Data Printout

Location: Unit 3 FF Outlet
 Test Run: 3
 Client: Wheelabrator North Broward, inc.
 Project No: 12218
 Source Area (ft²): 64.00000
 Meter Operator: W. Berry 456
 Probe Operator: W. Berry 456
 Test Date: 3/20/13
 Start Time: 11:00
 Stop Time: 12:00
 Leak Rate Before: 0.002 cfm @ 15 "Hg
 Leak Rate After: 0.001 cfm @ 5 "Hg

Test Method:
 Analyte:

USEPA Method 26A
 HCl

Bar. Press. (in. Hg): 29.80
 Static P: -9.1
 O₂ (dry volume %): 8.53
 CO₂ (dry volume %): 10.80
 N₂+CO (dry volume %): 80.67

Nozzle ID No: N/A
 Nozzle Diameter (D_n): N/A
 Probe ID No: 67-4-3
 Pitot C_p: N/A
 Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm): 233.2
 H₂O (silica, g): 14.9
 Actual Moisture (%): 22.33

Meter Box ID. No: 85-2
 Meter ΔH@: 1.74130
 Meter Y_d: 1.00390

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
3-01	0.0		1.50	490.170						
3-01	5.0		1.50	493.680	312	89	85		3.51	
3-01	10.0		1.50	497.150	312	91	86		3.47	
3-01	15.0		1.50	500.640	313	94	86		3.49	
3-01	20.0		1.50	504.140	313	95	87		3.50	
3-01	25.0		1.50	507.660	314	97	88		3.52	
3-01	30.0		1.50	511.210	314	97	89		3.55	
3-01	35.0		1.50	514.760	313	98	89		3.55	
3-01	40.0		1.50	518.300	314	98	90		3.54	
3-01	45.0		1.50	521.870	314	98	90		3.57	
3-01	50.0		1.50	525.410	314	99	91		3.54	
3-01	55.0		1.50	528.970	313	99	92		3.56	
3-01	60.0		1.50	532.535	313	101	93		3.56	
Final	60.0		1.50000	42.36500	313.25000	92.58333			42.36500	
3 points sampled		Sq.Rt.ΔP								
QC-Check: Field Averages			1.5000	42.3650	313.2500	92.5830				

Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

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USEPA Method 4 Laboratory Data

Location: Unit 3 FF Outlet
 Client: Wheelabrator North Broward, Inc.

Test Method: USEPA Method 26A
 Analyte: HCl

Project No: 12218

Analyst: D. Luckhard

Analyst Emp No: 568

Test Run: 1

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	50 ml 0.1N H2SO4	492.4	458.0	34.4
Impinger 2	100 ml 0.1N H2SO4	683.3	546.5	136.8
Impinger 3	100 ml 0.1N H2SO4	593.2	536.3	56.9
Impinger 4	Empty	494.1	468.6	25.5
Impinger 5	Silica Gel	801.9	780.8	21.1
Impinger 6				
Impinger 7				
Impinger 8				

253.6 Liquid (gm)	
0.0 less rinse (gm)	
253.6 Net Liquid (gm)	253.6
+ 21.1 Silica Gel (gm)	21.1
274.7 Total Vlc (gm)	274.7

Field Data Check

<input checked="" type="checkbox"/> QA/QC OK
<input checked="" type="checkbox"/> QA/QC OK
<input checked="" type="checkbox"/> QA/QC OK

Rinse: _____ (ml or gm)

Test Run: 2

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	50 ml 0.1N H2SO4	501.0	451.4	49.6
Impinger 2	100 ml 0.1N H2SO4	698.0	562.3	135.7
Impinger 3	100 ml 0.1N H2SO4	593.5	541.1	52.4
Impinger 4	Empty	454.9	443.0	11.9
Impinger 5	Silica Gel	791.4	776.7	14.7
Impinger 6				
Impinger 7				
Impinger 8				

249.6 Liquid (gm)	
0.0 less rinse (gm)	
249.6 Net Liquid (gm)	249.6
+ 14.7 Silica Gel (gm)	14.7
264.3 Total Vlc (gm)	264.3

Field Data Check

<input checked="" type="checkbox"/> QA/QC OK
<input checked="" type="checkbox"/> QA/QC OK
<input checked="" type="checkbox"/> QA/QC OK

Rinse: _____ (ml or gm)

Test Run: 3

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	50 ml 0.1N H2SO4	489.2	457.1	32.1
Impinger 2	100 ml 0.1N H2SO4	672.8	546.0	126.8
Impinger 3	100 ml 0.1N H2SO4	589.6	533.4	56.2
Impinger 4	Empty	486.2	468.1	18.1
Impinger 5	Silica Gel	816.9	802.0	14.9
Impinger 6				
Impinger 7				
Impinger 8				

233.2 Liquid (gm)	
0.0 less rinse (gm)	
233.2 Net Liquid (gm)	233.2
+ 14.9 Silica Gel (gm)	14.9
248.1 Total Vlc (gm)	248.1

Field Data Check

<input checked="" type="checkbox"/> QA/QC OK
<input checked="" type="checkbox"/> QA/QC OK
<input checked="" type="checkbox"/> QA/QC OK

Rinse: _____ (ml or gm)

Test Run: _____

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1				
Impinger 2				
Impinger 3				
Impinger 4				
Impinger 5				
Impinger 6				
Impinger 7				
Impinger 8				

Liquid (gm)	
less rinse (gm)	
Net Liquid (gm)	
Silica Gel (gm)	
Total Vlc (gm)	

Field Data Check

<input type="checkbox"/> QA/QC OK
<input type="checkbox"/> QA/QC OK
<input type="checkbox"/> QA/QC OK

Rinse: _____ (ml or gm)

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Field Data Printout

Test Method:
Analyte:

USEPA Method 5/29
Particulate/Metals

Location: Unit 3 FF Outlet

Test Run: 1

Client: Wheelabrator North Broward, Inc.

Project No: 12218

Source Area (ft²): 64,00000

Meter Operator: S. Joint 473

Probe Operator: W. Berry 456

Test Date: 3/20/13

Start Time: 12:35

Stop Time: 14:50

Leak Rate Before: 0.003 cfm @ 15 "Hg

Leak Rate After: 0.003 cfm @ 16 "Hg

Bar. Press. (in. Hg): 29.80

Static P: -9.1

O₂ (dry volume %): 8.74

CO₂ (dry volume %): 10.18

N₂+CO (dry volume %): 81.08

Nozzle ID No: 0.2725-1

Nozzle Diameter (D_n): 0.273

Probe ID No: 67-8-16

Pitot C_p: 0.824

Pitot Leak Check: Pass Fail

H₂O (condensate, ml or gm): 416.8

H₂O (silica, g): 11.1

Actual Moisture (%): 22.89

Meter Box ID. No: 66-11

Meter ΔH@: 1.82740

Meter Y_d: 0.99060

Traverse Point	Run Time 5.0 min/read	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (dcf)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
						T _{m-in} (°F)	T _{m-out} (°F)			
1-01	5.0	0.22	0.56	562.900	300	87	89	0.47	2.49	115.7*
1-02	10.0	0.18	0.46	567.280	305	88	89	0.42	1.89	97.3
1-03	15.0	0.28	0.71	569.530	310	89	89	0.53	2.25	93.1
1-04	20.0	0.35	0.89	571.850	309	90	89	0.59	2.32	85.8*
1-05	25.0	0.45	1.20	574.880	307	91	89	0.67	3.03	98.7
LEAK CHECK	25.0			575.060						
2-01	30.0	0.57	1.50	578.470	310	92	89	0.75	3.41	98.8
2-02	35.0	0.50	1.30	581.620	310	94	89	0.71	3.15	97.3
2-03	40.0	0.46	1.20	584.710	310	95	90	0.68	3.09	99.3
2-04	45.0	0.38	0.99	587.610	311	96	91	0.62	2.90	102.3
2-05	50.0	0.48	1.30	590.800	311	97	92	0.69	3.19	100.1
LEAK CHECK	50.0			591.030						
3-01	55.0	0.31	0.81	593.380	310	98	95	0.56	2.35	91.2
3-02	60.0	0.48	1.20	596.480	310	98	95	0.69	3.10	96.8
3-03	65.0	0.45	1.20	599.620	310	102	98	0.67	3.14	100.6
3-04	70.0	0.43	1.10	602.520	310	103	99	0.66	2.90	94.9
3-05	75.0	0.38	0.99	605.300	311	105	100	0.62	2.78	96.5
LEAK CHECK	75.0			605.530						
4-01	80.0	0.45	1.20	608.600	311	101	100	0.67	3.07	98.4
4-02	85.0	0.45	1.20	611.650	311	101	100	0.67	3.05	97.7
4-03	90.0	0.42	1.10	614.620	310	100	100	0.65	2.97	98.5
4-04	95.0	0.40	1.00	617.500	311	100	100	0.63	2.88	97.9
4-05	100.0	0.37	0.96	620.220	310	102	102	0.61	2.72	95.7
LEAK CHECK	100.0			620.330						
5-01	105.0	0.52	1.40	623.550	311	103	102	0.72	3.22	95.7
5-02	110.0	0.51	1.40	626.960	310	104	101	0.71	3.41	102.2
5-03	115.0	0.48	1.30	630.150	310	104	101	0.69	3.19	98.6
5-04	120.0	0.40	1.10	633.340	310	105	101	0.63	3.19	107.8
5-05	125.0	0.37	0.98	636.000	310	105	101	0.61	2.66	93.5
Final	125.0		1.08200	72.35000	309.52000	96.82000		0.63705	72.35000	

25 points sampled
QC-Check: Field Averages

Sq.Rt.ΔP	0.6371	1.0820	72.3500	309.5200	96.8200
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Avg. OK Avg. OK Avg. OK Avg. OK Avg. OK

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USEPA Method 4 Laboratory Data

Location: Unit 3 FF Outlet
 Client: Wheelabrator North Broward, Inc.
 Project No: 12218

Test Method: USEPA Method 5/29
Analyte: Particulate/Metals

Analyst: D. Luckhard
 Analyst Emp No: 568

Test Run: 1

Contents	Gross (gm)	Tare (gm)	Net (gm)	
Impinger 1	Empty	757.9	467.1	290.8
Impinger 2	5%HNO3/10%H2O2	650.4	545.5	104.9
Impinger 3	5%HNO3/10%H2O2	566.9	551.0	15.9
Impinger 4	Empty	426.5	424.9	1.6
Impinger 5	4%KMnO4/10%H2SO4	647.0	644.5	2.5
Impinger 6	4%KMnO4/10%H2SO4	550.4	549.3	1.1
Impinger 7	Silica Gel	792.7	781.6	11.1
Impinger 8				

	416.8 Liquid (gm)	<i>Field Data Check</i>
	0.0 less rinse (gm)	
	416.8 Net Liquid (gm)	416.8 <input checked="" type="checkbox"/> QA/QC OK
	+ 11.1 Silica Gel (gm)	11.1 <input checked="" type="checkbox"/> QA/QC OK
	427.9 Total Vlc (gm)	427.9 <input checked="" type="checkbox"/> QA/QC OK

Rinse: (ml or gm)

Test Run: 2

Contents	Gross (gm)	Tare (gm)	Net (gm)	
Impinger 1	Empty	666.3	443.3	223.0
Impinger 2	5%HNO3/10%H2O2	658.7	530.3	128.4
Impinger 3	5%HNO3/10%H2O2	581.7	538.5	43.2
Impinger 4	Empty	452.6	444.1	8.5
Impinger 5	4%KMnO4/10%H2SO4	547.3	544.1	3.2
Impinger 6	4%KMnO4/10%H2SO4	539.9	537.5	2.4
Impinger 7	Silica Gel	812.2	792.5	19.7
Impinger 8				

	408.7 Liquid (gm)	<i>Field Data Check</i>
	0.0 less rinse (gm)	
	408.7 Net Liquid (gm)	408.7 <input checked="" type="checkbox"/> QA/QC OK
	+ 19.7 Silica Gel (gm)	19.7 <input checked="" type="checkbox"/> QA/QC OK
	428.4 Total Vlc (gm)	428.4 <input checked="" type="checkbox"/> QA/QC OK

Rinse: (ml or gm)

Test Run: 3

Contents	Gross (gm)	Tare (gm)	Net (gm)	
Impinger 1	Empty	715.6	465.9	249.7
Impinger 2	5%HNO3/10%H2O2	660.3	545.9	114.4
Impinger 3	5%HNO3/10%H2O2	578.7	551.5	27.2
Impinger 4	Empty	428.2	424.6	3.6
Impinger 5	4%KMnO4/10%H2SO4	645.6	645.1	0.5
Impinger 6	4%KMnO4/10%H2SO4	550.5	549.9	0.6
Impinger 7	Silica Gel	808.1	791.9	16.2
Impinger 8				

	396.0 Liquid (gm)	<i>Field Data Check</i>
	0.0 less rinse (gm)	
	396.0 Net Liquid (gm)	396.0 <input checked="" type="checkbox"/> QA/QC OK
	+ 16.2 Silica Gel (gm)	16.2 <input checked="" type="checkbox"/> QA/QC OK
	412.2 Total Vlc (gm)	412.2 <input checked="" type="checkbox"/> QA/QC OK

Rinse: (ml or gm)

Test Run:

Contents	Gross (gm)	Tare (gm)	Net (gm)	
Impinger 1	Empty			
Impinger 2	5%HNO3/10%H2O2			
Impinger 3	5%HNO3/10%H2O2			
Impinger 4	Empty			
Impinger 5	4%KMnO4/10%H2SO4			
Impinger 6	4%KMnO4/10%H2SO4			
Impinger 7	Silica Gel			
Impinger 8				

	Liquid (gm)	<i>Field Data Check</i>
	less rinse (gm)	
	Net Liquid (gm)	 <input type="checkbox"/> QA/QC OK
	Silica Gel (gm)	 <input type="checkbox"/> QA/QC OK
	Total Vlc (gm)	 <input type="checkbox"/> QA/QC OK

Rinse: (ml or gm)

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WHEELABRATOR NORTH BROWARD, INC.
POMPANO BEACH, FL

Client Reference No: Service Agreement
CleanAir Project No: 12218-2

PLANT CEM DATA

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I herby certify that all pages contained within this Appendix have been reviewed and, to the best of my ability, verified as accurate.

QA/QC initials: SB

Date: 4/30



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Plant Name: NBWD
General Average Report

Reporting Period: 03/19/2013 to 03/19/2013

Site Name: UNIT1
Averaging Type: 1m

Time of Report: 03/19/13 08:59
Rolling Average Interval: 1

Date	Time	CO2_1 (PERCENTD)	STRFLOW1 (SCFM)	SO2ORPT1 (PPMDC)	NOXRPT_1 (PPMDC)	CO2LBHR1 (LB/HR)	CORPT_1 (PPMDC)	O2OUT_1 (PERCENTD)	SO2OUT_1 (PPMD)	NOXPPM_1 (PPMD)
03/19/13	08:16	11.6	124501.5	7.0	209.6	77097.4	9.3	8.3	6.3	190.0
	08:17	12.0	124277.1	8.5	204.4	79601.7	7.4	7.6	8.1	194.9
	08:18	11.0	124134.8	8.2	194.6	72992.9	8.4	8.6	7.3	172.8
	08:19	11.1	124345.0	6.6	211.4	74049.8	10.4	8.9	5.7	182.7
	08:20	11.6	124588.0	5.5	215.2	77332.0	9.2	8.2	5.0	196.4
	08:21	11.7	124522.5	5.1	214.2	78037.3	10.1	8.0	4.8	199.3
	08:22	11.5	124564.7	4.9	205.1	76896.7	10.0	8.1	4.5	188.3
	08:23	11.1	124632.8	4.7	192.3	73823.4	9.6	8.6	4.1	170.5
	08:24	10.7	124701.1	4.5	189.5	71343.9	13.1	9.2	3.8	159.5
	08:25	10.9	124428.8	4.3	190.3	72338.3	10.8	9.1	3.6	161.6
	08:26	10.8	124199.3	4.3	187.8	71917.0	10.0	9.1	3.7	160.0
	08:27	11.1	123832.9	4.3	198.3	73694.1	10.1	8.9	3.7	171.1
	08:28	11.5	123380.3	4.2	212.1	76065.4	9.0	8.2	3.8	193.7
	08:29	10.8	123057.6	4.0	189.9	71200.0	10.2	8.8	3.4	165.6
	08:30	10.6	122904.2	3.6	182.1	69537.8	11.4	9.4	3.0	151.3
	08:31	11.3	122863.8	3.2	199.5	74028.1	10.4	8.9	2.7	172.2
	08:32	11.7	122766.9	3.0	193.3	77077.2	9.8	8.0	2.8	179.8
	08:33	11.2	122654.1	3.6	176.4	73277.9	10.1	8.4	3.2	158.3
	08:34	11.0	122557.5	4.8	185.2	72105.8	8.7	8.8	4.1	160.6
	08:35	11.1	122477.2	6.1	174.9	72746.4	7.7	8.8	5.3	151.9
	08:36	11.5	122634.0	7.5	181.3	75638.2	9.5	8.5	6.7	162.2
	08:37	11.7	122759.0	8.2	190.1	77083.1	6.6	8.0	7.6	176.8
	08:38	11.4	122674.1	8.4	192.4	74984.9	6.7	8.4	7.5	172.9
	08:39	11.8	122584.9	8.9	195.6	77509.3	8.2	7.9	8.3	182.3
	08:40	11.1	122584.9	8.8	177.8	72537.2	8.1	8.4	7.9	160.1
	08:41	10.7	122718.3	8.9	170.3	70450.1	11.7	9.2	7.4	143.2
	08:42	10.8	122496.0	8.9	157.2	70999.5	12.0	9.1	7.6	133.7

Average =	11.2	123475.6	5.9	192.3	74235.8	9.6	8.6	5.3	170.8
Geometric Avg. =	11.2	123472.7	5.6	191.7	74189.3	9.5	8.6	4.9	170.0
Maximum =	12.0	124701.1	8.9	215.2	79601.7	13.1	9.4	8.3	199.3
Minimum =	10.6	122477.2	3.0	157.2	69537.8	6.6	7.6	2.7	133.7
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	303.5	3333841.5	159.6	5190.9	2004365.1	258.5	231.3	142.1	4611.7

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Site Name: UNIT1

Time of Report: 03/19/13 08:59

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	COPPM_1 (PPMD)	STMRT_1 (KLB/HR)
03/19/13	08:16	8.4	187.9
	08:17	7.1	183.8
	08:18	7.4	183.7
	08:19	9.0	184.8
	08:20	8.4	185.1
	08:21	9.4	186.7
	08:22	9.2	185.1
	08:23	8.5	183.8
	08:24	11.0	185.0
	08:25	9.2	183.7
	08:26	8.5	184.4
	08:27	8.7	186.5
	08:28	8.2	183.5
	08:29	8.9	181.5
	08:30	9.5	182.4
	08:31	9.0	185.2
	08:32	9.1	184.7
	08:33	9.1	183.2
	08:34	7.6	182.1
	08:35	6.7	183.8
	08:36	8.5	184.9
	08:37	6.2	185.0
	08:38	6.0	188.0
	08:39	7.6	184.7
	08:40	7.3	183.1
	08:41	9.9	182.9
	08:42	10.2	184.3

Average =	8.5	184.4
Geometric Avg. =	8.4	184.4
Maximum =	11.0	188.0
Minimum =	6.0	181.5
Possible Values =	27	27
Included Values =	27	27
Total =	228.5	4979.9

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: NBWD
General Average Report

Reporting Period: 03/19/2013 to 03/19/2013

Site Name: UNIT1
Averaging Type: 1m

Time of Report: 03/19/13 09:40
Rolling Average Interval: 1

Date	Time	CO2_1 (PERCENTD)	STKFLOW1 (SCFM)	SO2ORPT1 (PPMDC)	NOXRPT_1 (PPMDC)	CO2LBHR1 (LB/HR)	CORPT_1 (PPMDC)	O2OUT_1 (PERCENTD)	SO2OUT_1 (PPMD)	NOXPPM_1 (PPMD)
03/19/13	08:58	10.7	120815.6	17.1	183.1	69132.7	9.2	9.1	14.5	155.1
	08:59	10.7	121338.8	15.0	188.6	69606.2	9.5	9.3	12.6	157.9
	09:00	11.3	121322.8	14.1	198.7	73143.6	10.1	8.9	12.2	172.0
	09:01	11.7	120799.8	14.2	201.5	75564.3	9.4	8.1	13.0	185.5
	09:02	11.4	120593.8	13.2	195.3	73784.2	9.2	8.3	12.0	177.6
	09:03	10.9	120673.0	11.8	188.0	70334.5	9.2	8.8	10.3	164.2
	09:04	10.7	120850.6	10.2	193.5	69048.2	9.1	9.3	8.5	161.8
	09:05	10.6	120406.7	9.2	196.1	68562.8	9.5	9.3	7.6	163.1
	09:06	11.3	119725.3	8.9	212.7	72345.7	8.7	8.8	7.7	185.2
	09:07	11.5	119203.3	7.9	208.1	73194.8	8.5	8.3	7.2	188.8
	09:08	11.9	118937.2	7.6	219.5	75904.7	9.2	8.1	7.0	202.6
	09:09	11.9	118864.1	7.7	211.2	75493.6	6.7	7.6	7.3	201.6
	09:10	11.0	118751.4	7.3	200.9	70107.9	5.7	8.5	6.5	179.0
	09:11	10.9	118298.7	6.7	201.1	69060.2	6.5	9.1	5.7	171.1
	09:12	11.4	118054.0	6.7	206.0	72234.5	6.6	8.5	6.0	184.1
	09:13	11.7	118305.4	7.3	206.3	73731.9	6.8	8.2	6.7	188.7
	09:14	11.7	118256.4	8.4	204.6	74247.4	6.8	7.9	7.9	190.8
	09:15	11.4	118103.2	9.0	196.4	71775.3	8.0	8.4	8.1	177.1
	09:16	11.1	117877.0	8.9	194.2	69995.2	8.2	8.6	7.8	171.3
	09:17	11.0	117641.6	8.4	194.6	68925.2	8.8	9.0	7.2	167.2
	09:18	11.7	117718.9	9.1	203.5	73725.3	8.0	8.3	8.3	185.1
	09:19	11.4	117690.0	11.0	199.0	72017.0	7.1	8.1	10.1	183.1
	09:20	10.9	117723.0	12.4	195.6	68844.8	8.6	8.9	10.7	168.6
	09:21	11.1	117348.1	16.2	191.2	69961.5	8.4	8.7	14.2	167.5
	09:22	11.1	117033.8	18.0	187.9	69767.8	8.5	8.8	15.7	163.7
	09:23	11.2	116945.0	17.3	188.1	70267.4	7.2	8.6	15.3	166.4
	09:24	11.4	116840.9	14.7	193.3	71232.9	7.9	8.5	13.2	173.1

Average =		11.3	118893.3	11.0	198.5	71555.9	8.2	8.6	9.8	176.0
Geometric Avg. =		11.2	118884.7	10.5	198.3	71520.6	8.1	8.6	9.3	175.6
Maximum =		11.9	121338.8	18.0	219.5	75904.7	10.1	9.3	15.7	202.6
Minimum =		10.6	116840.9	6.7	183.1	68562.8	5.7	7.6	5.7	155.1
Possible Values =		27	27	27	27	27	27	27	27	27
Included Values =		27	27	27	27	27	27	27	27	27
Total =		303.9	3210118.2	298.2	5359.1	1932009.6	221.4	231.8	263.3	4752.2

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: NBWD
 General Average Report

Reporting Period: 03/19/2013 to 03/19/2013

Site Name: UNIT1
 Data Averaging Type: 1m

Time of Report: 03/19/13 09:40
 Rolling Average Interval: 1

Date	Time	COPPM_1 (PPMD)	STMRT_1 (KLB/HR)
03/19/13	08:58	7.8	181.4
	08:59	8.0	183.7
	09:00	8.7	185.9
	09:01	8.6	186.6
	09:02	8.4	184.8
	09:03	8.1	182.5
	09:04	7.6	181.3
	09:05	7.9	184.0
	09:06	7.5	184.2
	09:07	7.7	187.5
	09:08	8.5	188.3
	09:09	6.4	186.1
	09:10	5.1	184.0
	09:11	5.6	184.0
	09:12	5.9	185.3
	09:13	6.2	185.7
	09:14	6.3	185.9
	09:15	7.2	184.2
	09:16	7.2	183.5
	09:17	7.5	187.3
	09:18	7.2	185.7
	09:19	6.5	183.9
	09:20	7.4	184.0
	09:21	7.4	184.7
	09:22	7.4	184.7
	09:23	6.4	186.2
	09:24	7.1	184.8

Average =	7.3	184.8
Geometric Avg. =	7.2	184.8
Maximum =	8.7	188.3
Minimum =	5.1	181.3
Possible Values =	27	27
Included Values =	27	27
Total =	195.8	4990.4

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

General Average Report

Reporting Period: 03/19/2013 to 03/19/2013

Site Name: UNIT1

Time of Report: 03/19/13 10:37

Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	CO2_1 (PERCENTD)	STKFLOW1 (SCFM)	SO2ORPT1 (PPMDC)	NOXRPT_1 (PPMDC)	CO2LBR1 (LB/HR)	CORPT_1 (PPMDC)	O2OUT_1 (PERCENTD)	SO2OUT_1 (PPMD)	NOXPFM_1 (PPMD)
03/19/13	09:45	10.7	120527.2	5.9	204.2	69092.1	12.0	9.2	4.9	172.5
	09:46	11.1	120720.6	6.3	209.5	71950.6	13.0	8.9	5.4	180.4
	09:47	11.3	120407.3	7.1	205.0	72933.8	11.5	8.2	6.5	186.9
	09:48	10.8	119945.7	7.3	201.6	69553.4	12.2	8.9	6.3	174.1
	09:49	11.0	119878.5	6.5	207.2	70786.1	10.6	8.8	5.6	180.7
	09:50	10.7	120061.6	5.8	198.9	68700.2	11.6	9.1	4.9	168.4
	09:51	11.0	120172.0	5.3	199.3	70948.7	11.9	8.9	4.5	171.9
	09:52	11.1	120146.4	5.0	192.2	71105.0	11.1	8.7	4.3	168.6
	09:53	11.2	120153.3	4.9	188.3	72094.4	11.7	8.6	4.4	166.2
	09:54	11.0	120201.5	4.9	184.0	70441.1	11.4	8.7	4.3	161.2
	09:55	10.6	120144.4	4.5	180.0	67890.8	13.3	9.2	3.8	151.6
	09:56	10.5	120106.0	4.0	183.1	67751.3	12.9	9.4	3.3	152.1
	09:57	10.4	120216.4	3.8	176.9	66999.1	12.6	9.4	3.1	146.4
	09:58	11.0	120412.9	3.5	187.1	70640.1	12.4	9.1	3.0	158.7
	09:59	11.2	120302.2	3.5	193.6	72248.1	10.4	8.6	3.1	171.7
	10:00	11.3	120147.4	3.6	199.8	72897.8	10.9	8.5	3.2	177.7
	10:01	11.1	120334.4	3.6	193.3	71499.4	9.7	8.4	3.2	173.2
	10:02	10.9	120511.7	3.7	193.1	70148.0	9.9	9.0	3.1	164.9
	10:03	10.9	120483.1	3.6	191.2	69944.6	8.6	9.0	3.1	164.1
	10:04	11.1	120460.8	3.4	196.6	71221.2	12.0	8.9	2.9	169.6
	10:05	10.7	120419.5	3.4	186.2	68745.1	13.5	9.1	2.9	157.5
	10:06	10.6	120274.4	3.6	181.9	68453.1	14.9	9.4	3.0	150.9
	10:07	10.5	120252.6	3.5	177.2	67674.3	16.3	9.4	2.9	146.9
	10:08	10.6	119864.3	3.3	187.9	68042.4	16.8	9.4	2.7	155.6
	10:09	10.6	119216.4	3.0	193.6	67487.6	14.4	9.4	2.5	160.5
	10:10	10.7	118927.3	2.8	197.3	67782.9	12.5	9.3	2.4	163.9
	10:11	10.6	119286.7	2.9	189.0	67771.9	11.2	9.3	2.4	157.9

Average =	10.9	120132.4	4.4	192.5	69807.5	12.2	9.0	3.8	165.0
Geometric Avg. =	10.9	120131.7	4.2	192.3	69784.5	12.1	9.0	3.6	164.6
Maximum =	11.3	120720.6	7.3	209.5	72933.8	16.8	9.4	6.5	186.9
Minimum =	10.4	118927.3	2.8	176.9	66999.1	8.6	8.2	2.4	146.4
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	293.3	3243574.5	118.7	5198.0	1884803.2	329.3	242.9	102.1	4454.1

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Run #2

Plant Name: NBWD

Page: 2

General Average Report

Reporting Period: 03/19/2013 to 03/19/2013

Site Name: UNIT1

Time of Report: 03/19/13 10:37

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	COPPM_1 (PPMD)	STMRT_1 (KLB/HR)
03/19/13	09:45	10.1	184.1
	09:46	11.2	185.4
	09:47	10.5	184.2
	09:48	10.5	183.8
	09:49	9.3	182.5
	09:50	9.8	182.9
	09:51	10.3	182.7
	09:52	9.8	184.9
	09:53	10.4	185.8
	09:54	10.0	185.1
	09:55	11.2	184.1
	09:56	10.8	181.5
	09:57	10.4	182.8
	09:58	10.5	183.6
	09:59	9.2	185.1
	10:00	9.7	183.3
	10:01	8.7	183.4
	10:02	8.5	182.0
	10:03	7.4	183.2
	10:04	10.3	181.9
	10:05	11.4	181.8
	10:06	12.3	181.9
	10:07	13.5	182.6
	10:08	13.9	183.6
	10:09	11.9	182.5
	10:10	10.4	181.9
	10:11	9.3	181.8

Average =	10.4	183.3
Geometric Avg. =	10.3	183.3
Maximum =	13.9	185.8
Minimum =	7.4	181.5
Possible Values =	27	27
Included Values =	27	27
Total =	281.3	4948.5

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (FADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

EUNBY

Plant Name: NBWD

Page: 1

General Average Report

Reporting Period: 03/19/2013 to 03/19/2013

Site Name: UNIT1

Time of Report: 03/19/13 11:20

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	CO2_1 (PERCENTD)	STKFLOW1 (SCFM)	SO2ORPT1 (PPMDC)	NOXRPT_1 (PPMDC)	CO2LBHR1 (LB/HR)	CORPT_1 (PPMDC)	O2OUT_1 (PERCENTD)	SO2OUT_1 (PPMD)	NOXPPM_1 (PPMD)
03/19/13	10:34	11.1	118611.2	2.6	202.3	70583.4	9.8	8.8	2.2	176.2
	10:35	10.7	118872.3	2.6	200.4	68310.1	11.2	9.2	2.2	169.0
	10:36	10.8	119198.1	2.6	206.2	68637.5	9.8	9.2	2.2	173.4
	10:37	10.9	119365.0	2.5	211.6	69331.6	10.3	9.2	2.1	177.5
	10:38	11.8	118872.3	2.5	217.3	75278.4	9.2	8.2	2.3	198.4
	10:39	11.2	118872.3	2.6	210.5	71226.2	6.2	8.3	2.4	190.5
	10:40	10.3	119036.5	2.7	197.3	65358.9	8.6	9.5	2.2	162.0
	10:41	10.5	119268.5	2.6	193.8	66755.8	9.0	9.5	2.2	158.9
	10:42	11.0	119302.5	2.5	196.1	70246.1	10.1	9.0	2.2	167.8
	10:43	11.0	119401.7	2.6	179.3	70083.1	10.8	8.9	2.3	154.5
	10:44	11.1	119746.6	2.7	188.0	70851.3	11.0	8.9	2.4	162.4
	10:45	10.5	120140.5	2.9	180.6	67598.3	11.6	9.2	2.5	152.0
	10:46	10.8	120495.5	3.0	187.4	69399.6	11.9	9.3	2.5	156.1
	10:47	11.0	121205.6	3.1	192.2	71364.5	12.6	9.0	2.7	164.9
	10:48	11.1	121569.6	3.2	189.0	72044.8	12.2	8.8	2.8	164.5
	10:49	10.6	121827.0	3.1	179.7	68743.8	12.8	9.2	2.6	151.1
	10:50	10.4	121827.0	3.0	172.9	67538.4	15.0	9.4	2.5	142.6
	10:51	10.4	121827.0	2.9	173.8	67712.1	16.6	9.5	2.4	142.7
	10:52	10.3	121915.7	3.0	162.5	67468.0	20.9	9.5	2.5	133.1
	10:53	10.3	122085.8	3.0	155.4	67464.2	21.3	9.6	2.4	126.5
	10:54	10.2	122541.4	2.9	161.0	67115.2	18.5	9.7	2.4	130.2
	10:55	10.6	122702.9	2.9	183.2	69533.4	15.8	9.5	2.4	150.5
	10:56	10.7	123004.6	2.9	187.2	70647.4	13.6	9.3	2.4	156.7
	10:57	10.4	123181.6	2.9	176.7	68695.6	13.8	9.4	2.4	146.6
	10:58	10.4	123355.0	2.9	183.0	68858.3	13.8	9.4	2.4	151.0
	10:59	10.6	123593.6	2.9	186.1	69751.7	12.8	9.4	2.4	154.3
	11:00	10.6	123904.0	3.0	183.5	70530.2	11.2	9.2	2.5	154.2

Average =		10.7	120952.7	2.8	187.3	69301.0	12.6	9.2	2.4	158.1
Geometric Avg. =		10.7	120940.6	2.8	186.7	69273.4	12.2	9.2	2.4	157.2
Maximum =		11.8	123904.0	3.2	217.3	75278.4	21.3	9.7	2.8	198.4
Minimum =		10.2	118611.2	2.5	155.4	65358.9	6.2	8.2	2.1	126.5
Possible Values =		27	27	27	27	27	27	27	27	27
Included Values =		27	27	27	27	27	27	27	27	27
Total =		289.3	3265723.8	76.5	5056.9	1871127.9	340.7	248.1	64.4	4267.5

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: NBWD
General Average Report

Reporting Period: 03/19/2013 to 03/19/2013

Site Name: UNIT1
Data Averaging Type: 1m

Time of Report: 03/19/13 11:20
Rolling Average Interval: 1

Date	Time	COPPM_1 (PPMD)	STMRT_1 (KLB/HR)
03/19/13	10:34	8.5	182.9
	10:35	9.5	182.4
	10:36	8.3	182.7
	10:37	8.7	187.9
	10:38	8.4	185.8
	10:39	5.6	182.8
	10:40	7.1	181.3
	10:41	7.4	183.7
	10:42	8.6	184.1
	10:43	9.3	185.2
	10:44	9.5	182.8
	10:45	9.8	183.4
	10:46	9.9	183.4
	10:47	10.8	184.5
	10:48	10.6	183.0
	10:49	10.8	182.1
	10:50	12.4	181.7
	10:51	13.6	182.1
	10:52	17.1	182.6
	10:53	17.3	181.1
	10:54	15.0	181.9
	10:55	13.0	182.9
	10:56	11.4	182.1
	10:57	11.5	181.7
	10:58	11.4	182.0
	10:59	10.6	182.1
	11:00	9.4	182.6

Average =	10.6	183.0
Geometric Avg. =	10.2	183.0
Maximum =	17.3	187.9
Minimum =	5.6	181.1
Possible Values =	27	27
Included Values =	27	27
Total =	285.5	4940.7

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: NBWD

General Average Report

Reporting Period: 03/19/2013 to 03/19/2013

Site Name: UNIT1

Time of Report: 03/19/13 12:06

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	CO2_1 (PERCENTD)	STKFLOW1 (SCFM)	SO2ORPT1 (PPMDC)	NOXRPT_1 (PPMDC)	CO2LBHR1 (LB/HR)	CORPT_1 (PPMDC)	O2OUT_1 (PERCENTD)	SO2OUT_1 (PPMD)	NOXPPM_1 (PPMD)
03/19/13	11:18	11.1	125216.4	3.1	191.4	74429.2	10.9	8.8	2.7	167.2
	11:19	11.0	125109.5	3.1	183.1	73529.2	10.2	8.8	2.7	159.3
	11:20	10.9	124941.5	3.1	181.4	72604.0	12.5	9.2	2.6	153.3
	11:21	11.0	124541.3	3.0	187.1	73501.7	12.5	8.9	2.6	162.2
	11:22	10.6	124185.6	3.1	180.1	70572.9	15.1	9.3	2.6	150.9
	11:23	10.5	123874.4	3.2	176.2	69709.2	15.3	9.4	2.6	145.7
	11:24	10.4	123680.2	3.2	172.1	68590.0	19.6	9.6	2.6	140.2
	11:25	10.8	123566.4	3.3	185.5	71450.3	19.6	9.3	2.7	154.7
	11:26	10.6	123868.5	3.4	179.3	70026.1	16.6	9.4	2.9	148.9
	11:27	10.6	124375.5	3.5	182.5	70195.2	14.2	9.4	2.8	150.3
	11:28	10.6	124720.7	3.4	191.5	70834.7	14.2	9.5	2.8	157.6
	11:29	10.9	124970.1	3.3	196.7	72899.2	13.3	9.1	2.8	166.9
	11:30	10.8	125153.9	3.4	190.4	72284.4	12.9	9.2	2.8	160.5
	11:31	11.1	125152.3	3.2	197.8	74314.1	12.1	8.8	2.8	172.4
	11:32	10.4	125349.5	3.1	188.5	69934.8	12.3	9.4	2.6	156.5
	11:33	10.8	125315.1	2.9	203.2	72515.1	12.7	9.2	2.4	171.3
	11:34	10.9	125048.6	2.8	199.0	72846.9	13.2	9.0	2.4	170.8
	11:35	10.8	124898.9	2.7	192.3	72308.8	13.5	9.1	2.3	163.0
	11:36	11.0	124844.9	2.7	200.3	73674.2	11.3	8.9	2.3	173.4
	11:37	10.9	124685.9	2.7	193.5	73009.0	10.7	8.9	2.3	166.5
	11:38	11.0	124676.4	2.5	194.3	73118.0	10.8	8.9	2.2	168.0
	11:39	10.8	124648.4	2.4	198.2	71989.3	12.6	9.2	2.0	167.3
	11:40	11.4	124524.9	2.3	203.7	75611.1	13.5	8.8	2.0	177.9
	11:41	11.2	124524.9	2.3	196.8	74462.2	11.5	8.6	2.0	173.7
	11:42	11.0	124746.6	2.2	197.0	73330.4	12.8	9.0	1.9	168.4
	11:43	10.9	124790.9	2.2	205.3	72590.0	12.8	9.1	1.8	173.9
	11:44	11.3	124569.2	2.1	218.7	75462.5	11.4	8.8	1.8	191.0

Average =		10.9	124665.9	2.9	192.1	72436.8	13.3	9.1	2.5	163.4
Geometric Avg. =		10.9	124665.0	2.9	191.8	72415.4	13.1	9.1	2.4	163.0
Maximum =		11.4	125349.5	3.5	218.7	75611.1	19.6	9.6	2.9	191.0
Minimum =		10.4	123566.4	2.1	172.1	68590.0	10.2	8.6	1.8	140.2
Possible Values =		27	27	27	27	27	27	27	27	27
Included Values =		27	27	27	27	27	27	27	27	27
Total =		293.3	3365980.5	78.0	5186.2	1955792.5	358.0	245.2	66.2	4411.8

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- E - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Site Name: UNIT1

Time of Report: 03/19/13 12:06

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	COPPM_1 (PPMD)	STMRT_1 (KLB/HR)
03/19/13	11:18	9.6	185.0
	11:19	8.8	184.9
	11:20	10.6	186.4
	11:21	10.8	184.7
	11:22	12.6	183.7
	11:23	12.6	182.6
	11:24	15.9	183.7
	11:25	16.4	182.3
	11:26	13.8	182.2
	11:27	11.7	182.8
	11:28	11.7	184.7
	11:29	11.3	184.6
	11:30	10.9	186.0
	11:31	10.5	182.9
	11:32	10.2	183.9
	11:33	10.7	184.3
	11:34	11.3	183.5
	11:35	11.4	184.3
	11:36	9.8	184.7
	11:37	9.2	183.8
	11:38	9.3	182.7
	11:39	10.6	184.6
	11:40	11.7	184.4
	11:41	10.2	184.3
	11:42	11.0	182.8
	11:43	10.8	184.8
	11:44	9.9	186.3

Average =	11.2	184.1
Geometric Avg. =	11.1	184.1
Maximum =	16.4	186.4
Minimum =	8.8	182.2
Possible Values =	27	27
Included Values =	27	27
Total =	303.5	4970.8

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

General Average Report

Reporting Period: 03/19/2013 to 03/19/2013

Site Name: UNIT1

Time of Report: 03/19/13 13:10

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	CO2_1 (PERCENTD)	STKFLOW1 (SCFM)	SO2ORPT1 (PPMDC)	NOXRPT_1 (PPMDC)	CO2LBHR1 (LB/HR)	CORPT_1 (PPMDC)	O2OUT_1 (PERCENTD)	SO2OUT_1 (PPMD)	NOXPPM_1 (PPMD)
03/19/13	12:02	11.0	124123.0	1.5	207.6	73170.7	9.0	8.5	1.4	184.7
	12:03	10.7	124319.0	1.7	198.4	71036.6	11.5	9.3	1.4	165.9
	12:04	11.5	123963.3	1.5	217.1	76004.9	8.9	8.5	1.4	192.9
	12:05	11.4	123752.9	1.7	213.3	75136.8	10.2	8.5	1.5	189.7
	12:06	11.5	123691.0	1.8	214.2	76036.4	10.0	8.2	1.6	195.1
	12:07	10.5	123698.5	2.1	194.1	69524.2	10.1	9.1	1.8	165.4
	12:08	10.7	123557.8	2.1	200.7	70744.8	12.9	9.5	1.7	165.2
	12:09	10.8	123735.4	2.1	198.6	71398.0	12.6	9.2	1.8	167.3
	12:10	11.0	123912.9	2.1	202.0	72605.0	13.7	9.2	1.7	170.7
	12:11	11.1	123682.3	2.0	206.0	73219.6	10.0	8.8	1.7	179.6
	12:12	10.8	123593.6	2.1	197.5	71503.5	10.6	9.2	1.7	166.6
	12:13	10.8	123504.9	2.0	192.6	71309.0	10.5	9.1	1.7	163.2
	12:14	10.8	123238.8	1.9	201.6	71507.0	10.7	9.2	1.6	169.1
	12:15	11.6	123166.3	1.6	218.6	76492.5	8.9	8.5	1.5	195.4
	12:16	11.5	123646.6	1.6	221.2	75805.2	7.3	8.2	1.4	201.6
	12:17	11.1	123884.8	1.6	217.0	73728.2	6.9	8.7	1.4	190.9
	12:18	11.3	123982.5	1.5	218.0	75016.5	8.3	8.7	1.4	192.0
	12:19	10.8	123909.9	1.6	201.6	71825.7	6.3	8.7	1.4	177.4
	12:20	10.5	123874.4	1.7	198.2	69755.6	7.3	9.5	1.4	162.5
	12:21	11.2	123696.5	1.5	213.4	74100.3	7.6	8.9	1.3	184.4
	12:22	11.4	123575.1	1.5	206.6	75610.5	7.3	8.4	1.4	185.4
	12:23	11.4	123335.9	1.6	201.1	75436.7	8.0	8.4	1.5	180.2
	12:24	10.7	123247.2	1.8	184.0	70744.9	8.5	8.7	1.6	161.1
	12:25	10.3	123210.6	1.8	182.4	67983.6	9.9	9.6	1.5	148.8
	12:26	11.0	123380.3	1.6	197.5	72334.8	10.6	9.2	1.4	166.9
	12:27	10.9	123513.4	1.5	197.2	72140.9	10.5	8.9	1.3	169.5
	12:28	11.1	123521.1	1.6	204.2	73011.9	9.7	8.8	1.4	177.6

Average =		11.0	123656.2	1.8	203.9	72858.7	9.6	8.9	1.5	176.6
Geometric Avg. =		11.0	123655.9	1.7	203.6	72824.2	9.4	8.9	1.5	176.1
Maximum =		11.6	124319.0	2.1	221.2	76492.5	13.7	9.6	1.8	201.6
Minimum =		10.3	123166.3	1.5	182.4	67983.6	6.3	8.2	1.3	148.8
Possible Values =		27	27	27	27	27	27	27	27	27
Included Values =		27	27	27	27	27	27	27	27	27
Total =		297.4	3338717.8	47.3	5504.7	1967183.8	258.0	239.5	40.8	4768.8

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: NBWD
General Average Report
Reporting Period: 03/19/2013 to 03/19/2013

Site Name: UNIT1
Data Averaging Type: 1m

Time of Report: 03/19/13 13:10
Rolling Average Interval: 1

Date	Time	COPPM_1 (PPMD)	STMRPT_1 (KLB/HR)
03/19/13	12:02	8.0	183.6
	12:03	9.6	185.2
	12:04	7.9	185.8
	12:05	9.1	187.4
	12:06	9.1	183.3
	12:07	8.6	182.9
	12:08	10.6	183.0
	12:09	10.6	184.5
	12:10	11.6	185.0
	12:11	8.8	184.5
	12:12	9.0	183.5
	12:13	8.9	182.4
	12:14	9.0	186.1
	12:15	8.0	186.9
	12:16	6.7	186.7
	12:17	6.0	188.7
	12:18	7.3	185.0
	12:19	5.5	182.5
	12:20	6.0	183.4
	12:21	6.6	185.1
	12:22	6.6	187.4
	12:23	7.2	185.4
	12:24	7.4	182.0
	12:25	8.1	183.5
	12:26	9.0	183.9
	12:27	9.1	185.1
	12:28	8.4	182.8

Average =	8.2	184.7
Geometric Avg. =	8.1	184.6
Maximum =	11.6	188.7
Minimum =	5.5	182.0
Possible Values =	27	27
Included Values =	27	27
Total =	222.6	4985.6

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

General Average Report

Reporting Period: 03/19/2013 to 03/19/2013

Site Name: UNIT1
Averaging Type: 1m

Time of Report: 03/19/13 14:21
Rolling Average Interval: 1

Date	Time	CO2_1 (PERCENTD)	STKFLOW1 (SCFM)	SO2ORPT1 (PPMDC)	NOXRPT_1 (PPMDC)	CO2LBHR1 (LB/HR)	CORPT 1 (PPMDC)	O2OUT_1 (PERCENTD)	SO2OUT_1 (PPMD)	NOXPPM_1 (PPMD)
03/19/13	12:55	10.7	124825.7	1.7	205.3	71178.1	10.6	9.2	1.4	173.0
	12:56	10.8	124613.5	1.7	211.3	72104.7	9.8	9.1	1.4	179.5
	12:57	11.2	124578.6	1.7	216.6	74885.2	9.8	8.6	1.5	191.1
	12:58	11.2	124606.6	1.9	209.2	74327.8	9.6	8.6	1.7	185.5
	12:59	11.0	124720.7	2.3	191.1	73355.2	13.4	8.8	2.0	166.7
	13:00	10.7	124960.5	2.5	190.5	71378.6	12.8	9.2	2.1	161.0
	13:01	10.7	124773.9	2.6	182.5	71151.9	13.5	9.3	2.1	152.6
	13:02	11.0	124683.3	2.4	189.8	73229.8	13.6	9.0	2.0	163.2
	13:03	10.7	125111.2	2.3	190.7	71629.8	11.6	9.0	2.0	162.6
	13:04	11.1	125199.9	2.2	205.0	74560.0	11.4	8.9	1.9	177.5
	13:05	11.4	125244.3	2.2	210.0	76663.1	10.2	8.3	2.0	190.6
	13:06	11.1	125094.7	2.2	209.0	74377.0	10.4	8.6	2.0	185.2
	13:07	11.0	124870.0	2.2	203.0	73379.5	9.8	8.7	1.9	177.7
	13:08	10.7	125101.4	2.1	191.6	71905.2	12.6	9.2	1.7	161.8
	13:09	11.4	125288.7	1.9	207.5	76116.2	11.9	8.6	1.7	183.1
	13:10	11.5	125411.8	1.8	212.5	77338.0	9.6	8.2	1.6	194.6
	13:11	11.3	125190.0	1.9	211.9	75864.3	9.3	8.3	1.8	191.4
	13:12	10.9	125012.7	2.0	199.6	72968.6	9.2	8.9	1.7	172.3
	13:13	10.7	124924.0	2.0	200.5	71500.3	13.8	9.4	1.6	166.2
	13:14	10.9	124835.3	2.0	203.2	73016.4	11.8	8.9	1.7	175.1
	13:15	11.1	124835.3	1.9	199.1	74155.5	12.7	8.8	1.6	173.9
	13:16	11.3	124702.2	1.8	190.5	75368.6	12.5	8.5	1.6	169.5
	13:17	11.2	124524.9	1.8	195.1	74417.8	11.5	8.5	1.6	173.7
	13:18	10.9	124436.2	1.8	197.9	72445.7	12.7	8.9	1.6	171.1
	13:19	10.7	124480.5	1.8	193.9	71006.8	13.4	9.3	1.5	162.4
	13:20	11.0	124996.3	1.8	197.7	73340.1	11.6	9.1	1.5	167.7
	13:21	11.8	125695.4	1.7	200.4	79352.7	9.0	8.2	1.6	183.4

Average =		11.0	124915.5	2.0	200.6	73741.4	11.4	8.8	1.7	174.5
Geometric Avg. =		11.0	124915.1	2.0	200.4	73713.0	11.3	8.8	1.7	174.2
Maximum =		11.8	125695.4	2.6	216.6	79352.7	13.8	9.4	2.1	194.6
Minimum =		10.7	124436.2	1.7	182.5	71006.8	9.0	8.2	1.4	152.6
Possible Values =		27	27	27	27	27	27	27	27	27
Included Values =		27	27	27	27	27	27	27	27	27
Total =		298.0	3372717.5	54.0	5415.4	1991016.9	308.2	237.9	46.9	4712.3

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: NBWD
General Average Report
Reporting Period: 03/19/2013 to 03/19/2013

Site Name: UNIT1
Data Averaging Type: 1m

Time of Report: 03/19/13 14:21
Rolling Average Interval: 1

Date	Time	COPPM_1 (PPMD)	STMRTPT_1 (KLB/HR)
03/19/13	12:55	8.9	181.5
	12:56	8.3	182.7
	12:57	8.7	184.0
	12:58	8.5	184.6
	12:59	11.7	184.2
	13:00	10.8	183.6
	13:01	11.3	184.6
	13:02	11.7	182.5
	13:03	9.9	183.8
	13:04	9.9	185.4
	13:05	9.3	185.0
	13:06	9.2	183.7
	13:07	8.6	182.2
	13:08	10.6	183.6
	13:09	10.5	184.8
	13:10	8.8	185.0
	13:11	8.4	184.0
	13:12	7.9	183.5
	13:13	11.4	183.2
	13:14	10.2	183.7
	13:15	11.1	184.7
	13:16	11.1	184.1
	13:17	10.2	183.1
	13:18	11.0	181.4
	13:19	11.2	181.7
	13:20	9.9	185.1
	13:21	8.2	186.0

Average =	9.9	183.8
Geometric Avg. =	9.8	183.8
Maximum =	11.7	186.0
Minimum =	7.9	181.4
Possible Values =	27	27
Included Values =	27	27
Total =	267.4	4961.9

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
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- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: NBWD
General Average Report

Reporting Period: 03/19/2013 to 03/19/2013

Site Name: UNIT1
Data Averaging Type: 1m

Time of Report: 03/19/13 14:23
Rolling Average Interval: 1

Date	Time	CO2_1 (PERCENTD)	STKFLOW1 (SCFM)	SO2ORPT1 (PPMDC)	NOXRPT_1 (PPMDC)	CO2LBHR1 (LB/HR)	CORPT_1 (PPMDC)	O2OUT_1 (PERCENTD)	SO2OUT_1 (PPMD)	NOXPPM_1 (PPMD)
03/19/13	13:38	11.4	127479.3	1.2	201.4	77395.9	12.2	8.7	1.1	176.1
	13:39	11.3	127379.0	1.3	202.4	77083.0	9.6	8.1	1.2	185.7
	13:40	10.5	127251.3	1.4	199.1	71660.6	9.3	9.1	1.2	168.7
	13:41	11.1	127379.7	1.3	217.8	75883.2	8.1	8.9	1.2	188.6
	13:42	11.4	127553.0	1.2	217.7	77557.8	7.6	8.4	1.1	195.1
	13:43	11.5	127653.7	1.2	221.3	78734.2	7.2	8.3	1.1	201.3
	13:44	11.6	127548.0	1.1	224.9	78823.6	6.4	8.0	1.0	208.2
	13:45	11.2	127447.4	1.1	214.6	76341.5	6.8	8.4	1.0	192.4
	13:46	11.4	127152.7	1.0	216.4	77464.0	6.8	8.4	0.9	194.4
	13:47	11.1	127080.6	1.0	210.3	75741.2	8.0	8.4	0.9	188.9
	13:48	11.2	127153.2	1.0	207.0	76160.8	9.3	8.6	0.9	182.5
	13:49	11.6	127031.2	0.9	207.8	78794.2	7.9	8.2	0.9	190.4
	13:50	11.2	126792.2	1.0	202.9	76231.7	8.8	8.4	0.9	182.8
	13:51	11.4	126559.0	1.0	209.3	76942.1	9.3	8.6	0.9	185.7
	13:52	11.3	126309.5	1.0	205.6	76427.8	7.8	8.3	0.9	186.3
	13:53	10.9	126192.9	1.1	197.1	73551.7	9.0	8.9	0.9	169.8
	13:54	11.2	126159.2	1.0	203.5	75378.7	9.5	8.7	0.9	178.3
	13:55	11.3	125937.1	1.0	208.1	76054.3	9.3	8.5	0.9	184.9
	13:56	11.5	125742.8	1.0	214.2	77105.0	9.4	8.3	0.9	193.9
	13:57	11.2	125323.1	1.0	207.0	75138.3	9.5	8.4	0.9	186.0
	13:58	11.1	125278.7	1.1	210.5	74327.8	10.2	8.7	1.0	184.7
	13:59	10.8	125482.7	1.1	199.1	72361.5	10.9	9.0	1.0	170.5
	14:00	10.9	125731.5	1.1	192.3	73388.5	11.5	9.0	0.9	164.4
	14:01	11.0	125903.1	1.0	194.9	74272.8	10.3	8.9	0.9	167.8
	14:02	11.0	125892.6	1.1	190.3	74188.1	9.6	8.7	1.0	166.9
	14:03	11.0	125810.9	1.2	187.1	73720.5	11.8	8.9	1.0	161.8
	14:04	11.1	125844.8	1.2	187.9	74462.8	12.1	8.8	1.0	163.3

Average =	11.2	126558.1	1.1	205.6	75747.8	9.2	8.6	1.0	182.2
Geometric Avg. =	11.2	126555.8	1.1	205.3	75724.6	9.1	8.6	1.0	181.8
Maximum =	11.6	127653.7	1.4	224.9	78823.6	12.2	9.1	1.2	208.2
Minimum =	10.5	125278.7	0.9	187.1	71660.6	6.4	8.0	0.9	161.8
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	302.1	3417069.5	30.0	5550.7	2045191.5	248.1	231.9	26.5	4919.3

- * - excluded values (missing, OOC, invalid, suspect)
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- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: NBWD
 General Average Report
 Reporting Period: 03/19/2013 to 03/19/2013

Site Name: UNIT1
 Data Averaging Type: 1m

Time of Report: 03/19/13 14:23
 Rolling Average Interval: 1

Date	Time	COPPM_1 (PPMD)	STMPT_1 (KLB/HR)
03/19/13	13:38	10.7	186.8
	13:39	8.8	183.6
	13:40	7.9	183.9
	13:41	7.0	185.0
	13:42	6.8	185.6
	13:43	6.5	186.6
	13:44	5.9	185.4
	13:45	6.1	186.5
	13:46	6.1	184.9
	13:47	7.2	184.2
	13:48	8.2	185.7
	13:49	7.2	184.8
	13:50	8.0	186.1
	13:51	8.3	186.1
	13:52	7.1	183.9
	13:53	7.7	184.4
	13:54	8.4	184.7
	13:55	8.2	186.0
	13:56	8.5	186.2
	13:57	8.5	186.0
	13:58	8.9	183.4
	13:59	9.3	182.7
	14:00	9.8	183.3
	14:01	8.8	183.1
	14:02	8.4	183.5
	14:03	10.2	184.1
	14:04	10.5	183.6

Average =	8.1	184.8
Geometric Avg. =	8.0	184.8
Maximum =	10.7	186.8
Minimum =	5.9	182.7
Possible Values =	27	27
Included Values =	27	27
Total =	219.1	4990.1

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- R - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

General Average Report

Reporting Period: 03/19/2013 to 03/19/2013

Site Name: UNIT1

Time of Report: 03/19/13 15:03

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	CO2_1 (PERCENTD)	STKFLOW1 (SCFM)	SO2ORPT1 (PPMDC)	NOXRPT_1 (PPMDC)	CO2LBHR1 (LB/HR)	CORPT_1 (PPMDC)	O2OUT_1 (PERCENTD)	SO2OUT_1 (PPMD)	NOXPPM_1 (PPMD)
03/19/13	14:19	10.8	124134.8	1.4	194.3	71613.0	8.6	8.7	1.2	170.9
	14:20	10.8	124001.6	1.4	207.8	71410.1	9.2	9.2	1.2	175.4
	14:21	10.6	124284.2	1.3	203.9	70775.2	9.2	9.2	1.1	172.2
	14:22	10.8	124560.0	1.3	203.3	71838.3	11.7	9.2	1.1	171.5
	14:23	10.9	124782.1	1.3	195.3	72678.3	10.7	9.0	1.1	167.4
	14:24	10.5	124915.3	1.4	195.1	70366.3	11.2	9.3	1.1	162.4
	14:25	10.4	124517.9	1.4	194.5	69523.0	11.4	9.4	1.2	160.7
	14:26	10.6	124030.9	1.5	197.3	70244.0	13.5	9.4	1.2	163.5
	14:27	11.1	123756.6	1.6	201.9	73197.4	13.9	8.9	1.4	174.7
	14:28	10.8	123623.9	1.8	197.1	71313.8	13.5	9.0	1.5	169.4
	14:29	10.6	123427.4	1.8	211.8	69756.9	11.8	9.3	1.5	176.8
	14:30	10.5	123125.7	1.8	215.4	69087.1	11.2	9.4	1.5	178.8
	14:31	10.5	122573.6	1.7	209.0	68739.0	11.2	9.5	1.4	171.6
	14:32	10.8	122093.2	1.5	207.1	70406.9	10.4	9.2	1.3	174.9
	14:33	11.0	121605.0	1.5	210.0	71718.9	10.5	8.9	1.3	181.8
	14:34	11.2	121553.6	1.4	222.0	72533.8	10.2	8.6	1.2	196.6
	14:35	10.8	121752.2	1.4	221.5	70080.0	11.1	8.9	1.2	190.5
	14:36	10.4	121213.8	1.4	210.6	67576.6	11.6	9.3	1.2	175.3
	14:37	10.3	120844.1	1.3	195.0	66573.4	12.1	9.5	1.0	159.3
	14:38	10.9	120755.4	1.2	200.9	70410.5	12.4	9.2	1.0	169.4
	14:39	11.7	120954.7	1.1	212.8	75745.3	10.5	8.1	1.0	195.4
	14:40	10.8	121397.8	1.2	183.2	69811.1	9.5	8.6	1.0	162.4
	14:41	10.3	121530.7	1.3	175.5	66832.4	12.3	9.5	1.0	143.3
	14:42	10.3	121642.3	1.2	172.4	66731.2	12.4	9.5	0.9	141.3
	14:43	10.6	121693.8	1.0	187.3	68842.3	14.1	9.4	0.9	155.2
	14:44	11.1	121871.3	0.9	202.1	72245.3	12.6	8.9	0.8	174.8
	14:45	11.8	121619.3	0.9	205.0	76809.6	9.8	7.9	0.8	192.1

Average =		10.8	122676.3	1.4	201.2	70624.4	11.3	9.1	1.2	171.4
Geometric Avg. =		10.8	122668.8	1.3	200.8	70584.5	11.3	9.1	1.1	170.9
Maximum =		11.8	124915.3	1.8	222.0	76809.6	14.1	9.5	1.5	196.6
Minimum =		10.3	120755.4	0.9	172.4	66573.4	8.6	7.9	0.8	141.3
Possible Values =		27	27	27	27	27	27	27	27	27
Included Values =		27	27	27	27	27	27	27	27	27
Total =		290.6	3312261.2	36.9	5432.2	1906859.5	306.4	244.8	31.3	4627.7

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

General Average Report

Reporting Period: 03/19/2013 to 03/19/2013

Site Name: UNIT1

Time of Report: 03/19/13 15:03

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	COPPM_1 (PPMD)	STMRT_1 (KLB/HR)
03/19/13	14:19	7.5	184.9
	14:20	7.8	182.2
	14:21	7.8	183.0
	14:22	9.9	182.9
	14:23	9.1	181.9
	14:24	9.3	180.9
	14:25	9.4	181.7
	14:26	11.1	184.7
	14:27	12.0	184.2
	14:28	11.6	184.3
	14:29	9.8	182.9
	14:30	9.3	182.2
	14:31	9.2	182.5
	14:32	8.7	183.5
	14:33	9.1	185.5
	14:34	9.0	184.5
	14:35	9.6	182.1
	14:36	9.6	180.4
	14:37	9.9	181.8
	14:38	10.4	187.0
	14:39	9.6	185.4
	14:40	8.4	184.5
	14:41	10.1	181.0
	14:42	10.1	181.6
	14:43	11.7	184.1
	14:44	10.9	189.7
	14:45	9.2	185.9

Average =	9.6	183.5
Geometric Avg. =	9.6	183.5
Maximum =	12.0	189.7
Minimum =	7.5	180.4
Possible Values =	27	27
Included Values =	27	27
Total =	260.4	4955.3

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: NBWD

General Average Report

Reporting Period: 03/19/2013 to 03/19/2013

Time of Report: 03/19/13 15:55

Site Name: UNIT1

Rolling Average Interval: 1

Averaging Type: 1m

Date	Time	CO2_1 (PERCENTD)	STKFLOW1 (SCFM)	SO2ORPT1 (PPMDC)	NOXRPT_1 (PPMDC)	CO2LBHR1 (LB/HR)	CORPT_1 (PPMDC)	O2OUT_1 (PERCENTD)	SO2OUT_1 (PPMD)	NOXPPM_1 (PPMD)
03/19/13	15:00	11.2	122936.5	1.1	191.3	73462.2	11.0	8.6	0.9	168.6
	15:01	11.2	123460.5	1.1	195.7	73953.4	10.7	8.6	0.9	173.7
	15:02	11.6	123771.0	1.0	209.6	76718.9	8.4	8.1	0.9	192.6
	15:03	10.6	124081.4	1.1	191.8	70608.8	6.5	8.6	1.0	169.3
	15:04	10.5	124391.8	1.1	193.1	70084.6	7.8	9.3	1.0	160.9
	15:05	11.0	124560.0	1.1	198.7	73446.1	7.2	8.8	0.9	172.9
	15:06	11.3	124160.2	1.0	197.6	75014.4	8.2	8.4	0.9	177.3
	15:07	11.4	124185.6	1.0	189.9	75556.7	7.7	8.2	1.0	173.2
	15:08	10.7	124407.9	1.1	184.5	71360.2	9.8	8.8	1.0	160.0
	15:09	10.6	124471.1	1.1	191.7	70311.3	10.6	9.3	0.9	159.8
	15:10	10.8	124134.8	1.1	195.5	71398.3	11.9	9.2	0.9	165.3
	15:11	11.0	123834.6	1.1	195.5	72857.2	12.5	8.8	1.0	169.5
	15:12	10.8	124180.0	1.1	184.5	72008.8	12.2	8.9	1.0	159.1
	15:13	10.9	124312.8	1.1	195.5	72679.8	10.4	8.9	0.9	168.6
	15:14	10.5	124445.6	1.2	176.3	69819.9	10.5	9.1	1.0	149.4
	15:15	10.6	124410.6	1.1	183.2	70331.4	11.5	9.3	0.9	152.5
	15:16	10.6	124524.9	1.0	180.5	70870.0	11.0	9.1	0.9	152.6
	15:17	10.4	124835.3	1.1	175.4	69405.3	12.4	9.4	0.9	145.6
	15:18	10.4	125421.8	1.0	179.3	69756.0	11.2	9.4	0.9	148.2
	15:19	10.8	125456.1	1.0	188.0	72215.3	10.5	9.2	0.8	158.2
	15:20	10.8	125286.7	1.0	179.6	72151.3	9.4	9.1	0.8	153.0
	15:21	10.5	125065.4	1.0	167.6	70131.9	12.1	9.3	0.9	139.9
	15:22	10.4	124986.5	1.1	161.1	69209.7	12.9	9.4	0.9	133.1
	15:23	10.7	125411.8	1.0	170.7	71883.5	13.1	9.2	0.8	143.6
	15:24	11.0	126114.7	0.9	180.9	73886.2	9.5	8.7	0.8	158.4
	15:25	10.6	126631.1	0.9	174.4	71828.3	11.6	9.2	0.8	146.5
	15:26	10.5	126808.9	0.9	169.6	71007.9	14.0	9.3	0.8	141.8

Average =		10.8	124677.3	1.0	185.2	71924.4	10.5	9.0	0.9	159.0
Geometric Avg. =		10.8	124674.2	1.0	184.9	71899.2	10.4	9.0	0.9	158.5
Maximum =		11.6	126808.9	1.2	209.6	76718.9	14.0	9.4	1.0	192.6
Minimum =		10.4	122936.5	0.9	161.1	69209.7	6.5	8.1	0.8	133.1
Possible Values =		27	27	27	27	27	27	27	27	27
Included Values =		27	27	27	27	27	27	27	27	27
Total =		291.2	3366287.5	28.3	5001.3	1941957.5	284.8	242.5	24.3	4293.7

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- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

General Average Report

Reporting Period: 03/19/2013 to 03/19/2013

Site Name: UNIT1

Time of Report: 03/19/13 15:55

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	COPPM_1 (PPMD)	STMRTPT_1 (XLB/HR)
03/19/13	15:00	9.7	185.8
	15:01	9.5	189.2
	15:02	7.7	185.9
	15:03	5.7	184.6
	15:04	6.5	184.0
	15:05	6.3	185.8
	15:06	7.4	186.9
	15:07	7.1	184.3
	15:08	8.5	182.0
	15:09	8.8	181.2
	15:10	10.0	182.9
	15:11	10.8	183.0
	15:12	10.5	184.0
	15:13	9.0	182.1
	15:14	8.9	182.6
	15:15	9.6	183.0
	15:16	9.3	181.9
	15:17	10.3	181.1
	15:18	9.3	182.8
	15:19	8.9	183.7
	15:20	8.0	183.5
	15:21	10.1	182.6
	15:22	10.7	184.3
	15:23	11.0	184.6
	15:24	8.3	184.0
	15:25	9.7	182.6
	15:26	11.7	182.6

Average =	9.0	183.7
Geometric Avg. =	8.9	183.7
Maximum =	11.7	189.2
Minimum =	5.7	181.1
Possible Values =	27	27
Included Values =	27	27
Total =	243.4	4961.1

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
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- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

General Average Report

Reporting Period: 03/22/2013 to 03/22/2013

Site Name: UNIT2
Averaging Type: 1m

Time of Report: 03/22/13 07:48
Rolling Average Interval: 1

Date	Time	STKFLOW2 (SCFM)	SO2ORPT2 (PPMDC)	NOXRPT_2 (PPMDC)	CO2_2 (PERCENTD)	CO2LBHR2 (LB/HR)	CORPT_2 (PPMDC)	O2OUT_2 (PERCENTD)	SO2OUT_2 (PPMD)	NOXPPM_2 (PPMD)
03/22/13	07:12	110542.4	1.7	184.2	9.5	55892.3	9.1	10.3	1.3	140.6
	07:13	113885.9	1.7	179.1	9.4	57054.9	8.5	10.3	1.3	136.3
	07:14	115967.6	2.0	175.0	9.1	56660.8	11.9	10.6	1.5	129.2
	07:15	116645.6	2.1	173.5	9.0	56076.9	12.2	10.8	1.5	126.5
	07:16	117221.4	2.3	173.5	8.8	55180.4	14.5	11.0	1.6	124.0
	07:17	120251.2	2.3	171.8	8.9	57039.7	16.0	10.9	1.6	123.5
	07:18	120625.9	2.2	174.9	9.0	57903.5	15.6	10.8	1.6	127.0
	07:19	120619.7	2.1	173.7	9.1	58590.8	15.4	10.7	1.6	127.7
	07:20	120673.1	2.0	173.8	9.2	59232.1	15.9	10.6	1.5	129.4
	07:21	121339.6	1.9	182.4	9.0	58179.0	13.2	10.7	1.4	133.4
	07:22	121867.7	1.9	190.3	8.7	56833.1	13.6	11.0	1.4	135.7
	07:23	121883.6	1.7	198.8	8.6	56298.4	15.2	11.1	1.2	140.3
	07:24	122063.4	1.9	202.7	8.5	55642.6	17.5	11.2	1.3	141.0
	07:25	121596.7	2.0	208.0	8.8	57509.9	18.1	10.9	1.4	149.4
	07:26	121283.2	2.0	209.8	9.0	58257.9	13.8	10.7	1.5	153.8
	07:27	121296.7	2.0	210.1	8.9	57653.5	14.9	10.9	1.4	151.7
	07:28	120862.2	1.9	216.3	9.3	59866.8	13.1	10.4	1.4	163.0
	07:29	120332.7	1.9	212.0	9.5	61391.6	10.4	10.0	1.5	165.5
	07:30	119727.8	1.9	207.9	9.5	60533.7	11.0	10.2	1.5	160.7
	07:31	119076.6	1.9	198.9	9.6	61117.6	10.9	10.0	1.5	155.6
	07:32	118371.2	1.5	187.2	9.9	62627.9	12.0	9.7	1.2	150.8
	07:33	117901.6	1.5	177.9	9.9	62209.2	11.8	9.7	1.2	143.5
	07:34	117773.4	1.6	179.6	9.5	60122.6	11.1	10.1	1.2	139.8
	07:35	117729.2	1.6	184.3	9.5	59561.7	10.8	10.1	1.3	142.5

Average =		119147.4	1.9	189.4	9.2	58393.2	13.2	10.5	1.4	141.3
Geometric Avg. =		119114.5	1.9	188.8	9.2	58356.0	13.0	10.5	1.4	140.8
Maximum =		122063.4	2.3	216.3	9.9	62627.9	18.1	11.2	1.6	165.5
Minimum =		110542.4	1.5	171.8	8.5	55180.4	8.5	9.7	1.2	123.5
Possible Values =		24	24	24	24	24	24	24	24	24
Included Values =		24	24	24	24	24	24	24	24	24
Total =		2859538.2	45.6	4545.7	220.0	1401437.1	316.7	252.7	33.9	3390.9

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
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- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Reporting Period: 03/22/2013 to 03/22/2013

Site Name: UNIT2
Data Averaging Type: 1m

Time of Report: 03/22/13 07:48
Rolling Average Interval: 1

Date	Time	COPPM_2 (PPMD)	STMRPT_2 (KLB/HR)
03/22/13	07:12	6.9	184.7
	07:13	6.5	184.2
	07:14	8.8	181.5
	07:15	8.9	179.7
	07:16	10.4	179.4
	07:17	11.5	179.5
	07:18	11.3	181.5
	07:19	11.3	182.9
	07:20	11.8	182.0
	07:21	9.7	180.6
	07:22	9.7	179.4
	07:23	10.8	177.7
	07:24	12.2	179.4
	07:25	13.0	177.9
	07:26	10.1	177.0
	07:27	10.8	178.0
	07:28	9.8	180.2
	07:29	8.1	179.4
	07:30	8.5	181.6
	07:31	8.6	184.0
	07:32	9.7	186.0
	07:33	9.5	183.6
	07:34	8.6	184.5
	07:35	8.4	185.7

Average =	9.8	181.3
Geometric Avg. =	9.7	181.3
Maximum =	13.0	186.0
Minimum =	6.5	177.0
Possible Values =	24	24
Included Values =	24	24
Total =	234.9	4350.5

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: NBWD
General Average Report

Reporting Period: 03/22/2013 to 03/22/2013

Site Name: UNIT2
Averaging Type: 1m

Time of Report: 03/22/13 08:37
Rolling Average Interval: 1

Date	Time	STKFLOW2 (SCFM)	SO2ORPT2 (PPMDC)	NOXRPT_2 (PPMDC)	CO2_2 (PERCENTD)	CO2LBHR2 (LB/HR)	CORPT_2 (PPMDC)	O2OUT_2 (PERCENTD)	SO2OUT_2 (PPMD)	NOXPPM_2 (PPMD)
03/22/13	07:48	111271.2	1.8	179.8	9.6	56844.0	6.7	10.1	1.4	139.4
	07:49	110698.7	1.9	176.2	9.6	57058.7	7.1	10.0	1.5	138.1
	07:50	110200.9	2.0	172.7	9.9	58623.4	8.7	9.7	1.6	139.2
	07:51	110246.8	1.9	174.8	9.9	58189.9	7.9	9.8	1.5	139.5
	07:52	110555.2	1.9	179.0	9.5	56442.7	8.9	10.1	1.5	138.6
	07:53	110892.4	1.9	182.7	9.5	56065.3	7.5	10.1	1.5	142.3
	07:54	111463.3	2.0	192.3	8.8	52665.6	8.1	10.9	1.4	139.0
	07:55	111801.7	2.0	190.4	8.9	53443.4	10.0	10.8	1.4	139.0
	07:56	112228.6	1.5	191.0	9.8	59083.8	11.4	9.9	1.2	151.4
	07:57	112449.2	1.3	183.4	10.4	62381.6	8.7	9.2	1.1	154.1
	07:58	111717.4	1.5	184.2	9.9	58894.4	6.8	9.8	1.2	147.1
	07:59	110735.8	1.6	191.2	9.5	55997.9	7.3	10.2	1.2	146.7
	08:00	110101.3	1.7	197.0	9.7	56979.7	5.7	10.0	1.4	155.0
	08:01	109626.7	1.8	194.6	9.7	56925.4	7.7	10.1	1.4	151.6
	08:02	108782.8	1.8	182.1	10.0	58192.9	6.3	9.6	1.5	147.9
	08:03	106130.2	2.0	183.4	9.7	55002.0	6.1	10.0	1.5	144.3
	08:04	105189.4	2.0	187.4	9.7	54579.1	6.6	10.0	1.5	147.4
	08:05	102319.8	1.9	190.9	9.8	53794.3	7.5	9.8	1.5	152.3
	08:06	101738.4	1.8	193.9	10.0	54677.6	4.7	9.5	1.5	158.8
	08:07	101221.5	1.7	185.1	10.2	55399.6	5.1	9.4	1.4	153.8
	08:08	100719.8	1.6	174.3	10.1	54396.8	5.4	9.4	1.3	144.1
	08:09	100403.2	1.7	173.8	9.8	52420.6	6.3	9.9	1.4	138.1
	08:10	100362.7	1.6	173.7	9.6	51665.8	6.2	10.0	1.2	136.8
	08:11	100413.8	1.8	174.0	9.4	50345.9	23.5	10.2	1.3	133.5

Average =		107553.0	1.8	183.7	9.7	55836.3	7.9	9.9	1.4	144.9
Geometric Avg. =		107457.0	1.8	183.5	9.7	55772.1	7.5	9.9	1.4	144.8
Maximum =		112449.2	2.0	197.0	10.4	62381.6	23.5	10.9	1.6	158.8
Minimum =		100362.7	1.3	172.7	8.8	50345.9	4.7	9.2	1.1	133.5
Possible Values =		24	24	24	24	24	24	24	24	24
Included Values =		24	24	24	24	24	24	24	24	24
Total =		2581270.8	42.6	4408.1	233.0	1340070.6	190.2	238.3	33.6	3478.0

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

General Average Report

Reporting Period: 03/22/2013 to 03/22/2013

Site Name: UNIT2

Time of Report: 03/22/13 08:37

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	COPPM_2 (PPMD)	STMRPT_2 (KLB/HR)
03/22/13	07:48	5.2	182.7
	07:49	5.5	185.8
	07:50	7.0	185.7
	07:51	6.3	186.5
	07:52	6.9	185.1
	07:53	5.8	180.3
	07:54	5.8	179.2
	07:55	7.3	184.0
	07:56	9.1	186.9
	07:57	7.3	185.4
	07:58	5.4	185.9
	07:59	5.6	184.7
	08:00	4.5	184.8
	08:01	6.0	184.5
	08:02	5.1	183.2
	08:03	4.8	183.5
	08:04	5.2	183.5
	08:05	6.0	184.3
	08:06	3.8	186.5
	08:07	4.2	185.9
	08:08	4.4	185.6
	08:09	5.0	185.0
	08:10	4.9	184.9
	08:11	18.1	184.0

Average =	6.2	184.5
Geometric Avg. =	5.9	184.5
Maximum =	18.1	186.9
Minimum =	3.8	179.2
Possible Values =	24	24
Included Values =	24	24
Total =	149.4	4427.7

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

General Average Report

Reporting Period: 03/22/2013 to 03/22/2013

Site Name: UNIT2
Data Averaging Type: 1m

Time of Report: 03/22/13 09:23
Rolling Average Interval: 1

Date	Time	STKFLOW2 (SCFM)	SO2ORPT2 (PPMDC)	NOXRPT_2 (PPMDC)	CO2_2 (PERCENTD)	CO2LBHR2 (LB/HR)	CORPT_2 (PPMDC)	O2OUT_2 (PERCENTD)	SO2OUT_2 (PPMDC)	NOXPPM_2 (PPMDC)
03/22/13	08:36	103571.8	1.5	193.8	9.5	52742.6	9.3	10.1	1.2	151.2
	08:37	103873.6	1.8	197.0	9.4	51960.2	9.0	10.3	1.4	150.5
	08:38	104138.3	1.8	196.7	9.4	52178.9	8.9	10.3	1.4	150.2
	08:39	104362.2	1.7	191.0	9.7	53993.6	7.5	10.0	1.3	150.2
	08:40	104256.6	1.8	186.6	10.0	56020.8	7.9	9.6	1.5	152.3
	08:41	104300.6	1.8	188.1	10.1	56498.1	7.0	9.5	1.4	153.8
	08:42	104666.7	1.7	189.1	10.2	57243.2	7.1	9.4	1.4	157.0
	08:43	104792.7	1.9	195.8	9.6	53607.2	7.5	10.0	1.5	152.9
	08:44	104748.6	1.6	202.6	9.5	53068.3	8.8	10.1	1.3	156.8
	08:45	104748.6	1.6	207.3	9.5	53051.4	7.8	10.1	1.3	161.0
	08:46	104748.6	1.9	206.9	9.4	52647.2	8.4	10.1	1.4	160.0
	08:47	104762.3	1.7	197.6	9.7	54398.6	7.8	9.9	1.3	157.1
	08:48	105153.2	1.8	195.2	9.8	55051.5	9.3	9.8	1.4	155.9
	08:49	105037.5	1.8	193.0	10.0	56075.2	8.9	9.6	1.4	156.7
	08:50	105013.1	1.7	195.9	10.1	56827.9	7.7	9.4	1.4	161.8
	08:51	105352.0	2.0	201.3	9.6	53998.6	8.0	10.0	1.6	157.4
	08:52	105533.9	1.9	193.1	9.6	54359.0	8.1	9.9	1.5	152.3
	08:53	105635.8	1.9	192.4	9.6	54123.3	8.5	10.1	1.5	150.2
	08:54	105850.7	1.6	189.4	9.7	54933.6	8.1	9.9	1.2	149.9
	08:55	105616.5	1.5	183.8	9.8	55576.5	8.3	9.7	1.2	147.4
	08:56	105313.7	1.5	173.4	10.0	56352.2	7.9	9.6	1.2	141.6
	08:57	105533.9	1.5	177.9	9.7	54804.9	7.8	9.8	1.2	141.9
	08:58	105723.9	1.7	189.5	9.4	53013.0	9.5	10.3	1.3	145.2
	08:59	105776.4	1.9	193.1	9.5	53608.8	8.3	10.2	1.4	149.3

Average =		104938.0	1.7	192.9	9.7	54422.3	8.2	9.9	1.4	152.6
Geometric Avg. =		104936.1	1.7	192.8	9.7	54401.8	8.2	9.9	1.4	152.5
Maximum =		105850.7	2.0	207.3	10.2	57243.2	9.5	10.3	1.6	161.8
Minimum =		103571.8	1.5	173.4	9.4	51960.2	7.0	9.4	1.2	141.6
Possible Values =	24	24	24	24	24	24	24	24	24	24
Included Values =	24	24	24	24	24	24	24	24	24	24
Total =		2518511.2	41.6	4630.8	232.7	1306134.5	197.4	237.6	32.9	3662.6

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: NBWD
General Average Report

Reporting Period: 03/22/2013 to 03/22/2013

Site Name: UNIT2
Data Averaging Type: 1m

Time of Report: 03/22/13 09:23
Rolling Average Interval: 1

Date	Time	COPPM_2 (PPMD)	STMRPT_2 (KLB/HR)
03/22/13	08:36	7.2	181.6
	08:37	6.9	181.0
	08:38	6.8	180.4
	08:39	5.9	183.6
	08:40	6.4	184.9
	08:41	5.7	186.9
	08:42	5.9	185.7
	08:43	5.8	185.9
	08:44	6.8	183.4
	08:45	6.0	182.5
	08:46	6.5	183.0
	08:47	6.2	183.3
	08:48	7.4	184.5
	08:49	7.2	185.9
	08:50	6.3	184.0
	08:51	6.3	183.4
	08:52	6.4	182.3
	08:53	6.7	182.3
	08:54	6.4	184.0
	08:55	6.7	186.6
	08:56	6.4	185.5
	08:57	6.3	184.3
	08:58	7.3	183.3
	08:59	6.4	183.3

Average =	6.5	183.8
Geometric Avg. =	6.5	183.8
Maximum =	7.4	186.9
Minimum =	5.7	180.4
Possible Values =	24	24
Included values =	24	24
Total =	156.0	4411.8

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Run 4

Reporting Period: 03/22/2013 to 03/22/2013

Site Name: UNIT2
 Data Averaging Type: 1m

Time of Report: 03/22/13 09:58
 Rolling Average Interval: 1

Date	Time	STKFLOW2 (SCFM)	SO2ORPT2 (PPMDC)	NOXRPT_2 (PPMDC)	CO2_2 (PERCENTD)	CO2LBHR2 (LB/HR)	CORPT_2 (PPMDC)	O2OUT_2 (PERCENTD)	SO2OUT_2 (PPMD)	NOXPPM_2 (PPMD)
03/22/13	09:11	106878.7	1.8	204.4	9.4	53987.4	11.4	10.2	1.4	157.7
	09:12	107022.7	2.1	201.2	9.4	54052.5	9.8	10.2	1.6	154.9
	09:13	106897.1	1.9	198.1	9.8	55777.7	9.8	9.9	1.5	156.6
	09:14	106660.7	1.8	195.2	10.2	58084.6	8.5	9.5	1.5	160.7
	09:15	106591.3	1.8	193.1	10.3	58692.5	7.3	9.2	1.5	162.0
	09:16	107010.2	1.9	197.2	9.6	54837.0	9.6	10.0	1.5	154.3
	09:17	107353.8	1.9	203.4	9.4	54090.6	10.4	10.2	1.5	156.8
	09:18	107614.2	2.0	206.2	9.4	53864.9	9.8	10.3	1.5	157.3
	09:19	107586.1	1.6	198.6	9.8	56428.8	9.9	9.9	1.3	157.5
	09:20	107211.9	1.6	186.4	10.3	58803.4	8.6	9.4	1.3	154.8
	09:21	107344.0	1.6	186.1	10.1	57763.9	8.8	9.6	1.3	151.2
	09:22	107476.0	1.8	189.3	10.3	59285.5	9.1	9.2	1.5	158.7
	09:23	107636.1	2.1	193.2	9.8	56612.3	8.3	9.7	1.7	155.8
	09:24	107848.7	2.2	191.7	9.4	54505.3	10.1	10.2	1.7	147.1
	09:25	107859.0	2.0	192.6	9.6	55266.2	9.5	10.0	1.5	151.0
	09:26	107768.8	2.0	193.6	9.4	54103.7	10.5	10.3	1.5	147.6
	09:27	107335.7	1.8	189.6	9.9	56565.3	9.4	9.8	1.4	150.8
	09:28	106899.4	1.9	186.6	10.1	57762.9	10.3	9.6	1.5	151.3
	09:29	106693.0	1.8	186.6	10.3	58513.1	8.7	9.4	1.5	155.0
	09:30	106556.1	1.7	198.9	9.6	54591.9	9.0	10.1	1.3	154.3
	09:31	106173.2	1.7	201.5	9.4	53456.9	9.8	10.2	1.3	154.6
	09:32	106405.1	1.6	202.9	9.4	53292.0	10.4	10.3	1.2	154.1
	09:33	107145.4	1.7	204.7	9.5	54476.5	10.3	10.2	1.3	158.0
	09:34	108048.1	1.7	206.5	9.6	55203.2	8.9	10.1	1.4	160.5

	Average =	107167.3	1.8	196.1	9.7	55834.1	9.5	9.9	1.4	155.1
	Geometric Avg. =	107166.2	1.8	196.0	9.7	55802.4	9.5	9.9	1.4	155.1
	Maximum =	108048.1	2.2	206.5	10.3	59285.5	11.4	10.3	1.7	162.0
	Minimum =	106173.2	1.6	186.1	9.4	53292.0	7.3	9.2	1.2	147.1
	Possible Values =	24	24	24	24	24	24	24	24	24
	Included Values =	24	24	24	24	24	24	24	24	24
	Total =	2572015.2	43.8	4707.5	233.8	1340018.0	228.1	237.6	34.7	3722.5

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Reporting Period: 03/22/2013 to 03/22/2013

Site Name: UNIT2

Time of Report: 03/22/13 09:58

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	COPPM_2 (PPMD)	STMRT_2 (KLB/HR)
03/22/13	09:11	8.8	180.8
	09:12	7.5	181.0
	09:13	7.7	184.8
	09:14	7.0	185.8
	09:15	6.1	185.1
	09:16	7.5	183.7
	09:17	8.0	181.6
	09:18	7.5	182.6
	09:19	7.8	185.0
	09:20	7.1	184.7
	09:21	7.2	187.0
	09:22	7.6	185.3
	09:23	6.7	184.5
	09:24	7.8	182.4
	09:25	7.4	180.1
	09:26	8.0	181.8
	09:27	7.4	184.5
	09:28	8.3	185.8
	09:29	7.3	183.8
	09:30	7.0	182.4
	09:31	7.5	180.6
	09:32	7.9	182.7
	09:33	7.9	183.2
	09:34	6.9	183.5

Average =	7.5	183.4
Geometric Avg. =	7.5	183.4
Maximum =	8.8	187.0
Minimum =	6.1	180.1
Possible Values =	24	24
Included Values =	24	24
Total =	180.1	4402.4

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Run 5

Reporting Period: 03/22/2013 to 03/22/2013

Site Name: UNIT2
 Averaging Type: 1m

Time of Report: 03/22/13 10:31
 Rolling Average Interval: 1

Date	Time	STKFLOW2 (SCFM)	SO2ORPT2 (PPMDC)	NOKRPT_2 (PPMDC)	CO2_2 (PERCENTD)	CO2LBHR2 (LB/HR)	CORPT_2 (PPMDC)	O2OUT_2 (PERCENTD)	SO2OUT_2 (PPMD)	NOXPPM_2 (PPMD)
03/22/13	09:46	112713.4	1.9	200.3	9.9	59895.7	8.6	9.6	1.6	162.4
	09:47	112801.5	1.9	200.6	9.8	59160.2	9.1	9.8	1.5	159.8
	09:48	113036.5	1.9	200.1	9.9	59664.3	7.6	9.7	1.6	161.3
	09:49	113257.2	2.2	208.7	9.1	54977.1	9.3	10.6	1.6	154.6
	09:50	113301.3	2.1	203.1	9.0	54695.5	9.6	10.6	1.6	150.4
	09:51	113374.7	1.8	194.2	9.5	57631.5	9.0	10.1	1.4	150.6
	09:52	113139.1	1.5	187.5	10.3	62092.7	7.6	9.3	1.3	156.2
	09:53	112860.1	1.5	184.9	10.3	61949.6	8.4	9.4	1.3	153.0
	09:54	112728.1	1.7	182.9	10.3	62251.0	7.5	9.2	1.4	153.8
	09:55	112948.6	1.7	196.1	9.5	57638.5	6.2	10.1	1.3	152.6
	09:56	113169.0	1.9	197.3	9.4	57194.1	6.8	10.2	1.5	152.2
	09:57	113565.8	2.2	195.7	9.5	57580.9	8.1	10.2	1.7	150.9
	09:58	113698.1	1.9	192.1	9.7	58696.0	9.0	10.0	1.5	150.9
	09:59	113624.7	1.9	199.6	9.9	60250.3	8.2	9.8	1.6	160.1
	10:00	113639.9	2.3	206.0	9.7	59157.9	7.8	10.0	1.8	161.7
	10:01	113742.1	2.0	201.5	10.0	60613.8	7.7	9.7	1.6	162.8
	10:02	113947.7	2.2	196.5	9.8	59457.7	7.3	9.9	1.7	155.2
	10:03	113990.7	2.1	187.2	9.8	59728.0	8.3	9.9	1.6	148.7
	10:04	114122.9	1.9	183.5	9.6	58893.9	8.8	10.0	1.5	143.8
	10:05	114137.8	1.9	181.2	9.7	59254.6	10.1	10.0	1.5	142.7
	10:06	114094.8	1.9	182.3	9.9	60127.4	10.0	9.8	1.5	145.9
	10:07	113727.3	2.2	182.1	9.6	58506.3	10.4	10.0	1.7	142.2
	10:08	113153.9	2.0	183.6	9.5	57625.2	11.4	10.2	1.5	141.2
	10:09	112948.4	2.0	184.7	9.6	58081.4	10.9	10.1	1.5	143.7

Average =		113405.1	1.9	193.0	9.7	58963.5	8.7	9.9	1.5	152.4
Geometric Avg. =		113404.2	1.9	192.8	9.7	58933.9	8.6	9.9	1.5	152.2
Maximum =		114137.8	2.3	208.7	10.3	62251.0	11.4	10.6	1.8	162.8
Minimum =		112713.4	1.5	181.2	9.0	54695.5	6.2	9.2	1.3	141.2
Possible Values =		24	24	24	24	24	24	24	24	24
Included Values =		24	24	24	24	24	24	24	24	24
Total =		2721723.5	46.7	4631.7	233.3	1415123.6	207.7	238.1	36.8	3656.7

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

General Average Report

Reporting Period: 03/22/2013 to 03/22/2013

Site Name: UNIT2

Time of Report: 03/22/13 10:31

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	COPPM_2 (PPMD)	STMRPT_2 (KLB/HR)
03/22/13	09:46	7.0	186.4
	09:47	7.2	186.4
	09:48	6.1	182.6
	09:49	6.9	178.2
	09:50	7.1	180.1
	09:51	7.0	183.4
	09:52	6.4	185.4
	09:53	7.0	187.3
	09:54	6.3	183.9
	09:55	4.9	183.0
	09:56	5.3	182.1
	09:57	6.3	183.4
	09:58	7.1	183.6
	09:59	6.6	183.1
	10:00	6.1	184.4
	10:01	6.2	183.6
	10:02	5.7	184.2
	10:03	6.6	184.2
	10:04	6.9	184.2
	10:05	8.0	185.0
	10:06	8.0	183.9
	10:07	8.1	182.2
	10:08	8.8	181.0
	10:09	8.4	181.1

Average =	6.8	183.5
Geometric Avg. =	6.8	183.4
Maximum =	8.8	187.3
Minimum =	4.9	178.2
Possible Values =	24	24
Included Values =	24	24
Total =	163.8	4402.9

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Run 6

Site Name: UNIT2
 Averaging Type: 1m

Time of Report: 03/22/13 11:10
 Rolling Average Interval: 1

Date	Time	STKFLOW2 (SCFM)	SO2ORPT2 (PPMDC)	NOXRPT_2 (PPMDC)	CO2_2 (PERCENTD)	CO2LBHR2 (LB/HR)	CORPT_2 (PPMDC)	O2OUT_2 (PERCENTD)	SO2OUT_2 (PPMD)	NOXPPM_2 (PPMD)
03/22/13	10:22	112331.6	2.1	202.6	9.5	57321.6	7.8	10.1	1.6	157.4
	10:23	112787.0	2.1	190.5	9.5	57121.7	7.0	10.1	1.6	147.4
	10:24	113096.0	2.2	187.4	9.4	57159.2	9.0	10.2	1.7	143.8
	10:25	112875.3	2.2	190.4	9.7	58355.8	9.1	10.0	1.8	149.6
	10:26	112493.0	2.2	195.6	9.7	58495.0	8.1	10.0	1.7	154.1
	10:27	112243.2	1.8	190.0	9.9	59541.8	9.4	9.7	1.5	153.0
	10:28	111934.6	1.8	188.7	9.8	58801.4	9.1	9.7	1.4	151.5
	10:29	111772.9	2.0	189.6	9.7	58126.5	11.7	9.9	1.6	150.1
	10:30	111992.8	2.0	195.7	9.6	57355.9	11.5	10.1	1.6	152.6
	10:31	112169.3	1.9	197.9	9.3	56073.6	12.0	10.3	1.5	151.2
	10:32	112213.4	2.0	195.0	9.4	56571.1	10.0	10.2	1.5	150.6
	10:33	111948.7	2.0	196.7	9.7	58267.9	8.2	9.8	1.6	157.0
	10:34	111904.6	2.1	198.4	9.7	57935.7	8.9	9.9	1.7	157.2
	10:35	111801.7	2.1	207.2	9.4	56273.9	9.5	10.2	1.6	159.4
	10:36	111758.3	2.2	212.8	9.2	54901.1	10.6	10.4	1.6	160.2
	10:37	111861.4	2.5	216.2	9.3	55739.5	10.2	10.3	1.9	164.6
	10:38	111745.1	2.4	214.0	9.6	57512.4	10.1	10.0	1.9	167.9
	10:39	111657.1	2.4	209.3	10.0	59559.3	10.8	9.6	2.0	170.7
	10:40	111583.6	2.2	213.7	9.9	58845.7	9.6	9.7	1.7	172.6
	10:41	111670.9	2.3	215.2	9.4	56299.6	11.2	10.2	1.8	166.4
	10:42	112507.7	2.2	210.5	9.4	56575.1	13.2	10.1	1.7	163.8
	10:43	113742.1	2.2	213.8	9.3	56325.8	13.5	10.3	1.7	162.3
	10:44	114579.8	2.3	220.1	9.4	57394.3	13.6	10.2	1.8	169.9
	10:45	115358.3	2.1	220.7	9.7	59945.4	12.1	9.8	1.7	175.8

	Average =	112417.8	2.1	203.0	9.6	57520.8	10.3	10.0	1.7	158.7
	Geometric Avg. =	112414.0	2.1	202.7	9.6	57506.7	10.1	10.0	1.7	158.5
	Maximum =	115358.3	2.5	220.7	10.0	59945.4	13.6	10.4	2.0	175.8
	Minimum =	111583.6	1.8	187.4	9.2	54901.1	7.0	9.6	1.4	143.8
	Possible Values =	24	24	24	24	24	24	24	24	24
	Included Values =	24	24	24	24	24	24	24	24	24
	Total =	2698028.2	51.3	4872.0	229.6	1380499.2	246.1	240.8	40.1	3808.6

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

General Average Report

Reporting Period: 03/22/2013 to 03/22/2013

Site Name: UNIT2

Time of Report: 03/22/13 11:10

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	COPPM_2 (PPMD)	STMRPT_2 (KLE/HR)
03/22/13	10:22	6.0	183.5
	10:23	5.4	182.5
	10:24	6.9	183.1
	10:25	7.1	182.4
	10:26	6.3	185.4
	10:27	7.6	184.2
	10:28	7.3	185.7
	10:29	9.2	184.0
	10:30	9.0	182.8
	10:31	9.2	182.7
	10:32	7.7	184.8
	10:33	6.5	184.2
	10:34	7.0	182.7
	10:35	7.3	181.0
	10:36	8.0	181.3
	10:37	7.7	183.4
	10:38	7.9	186.5
	10:39	8.8	186.4
	10:40	7.7	184.8
	10:41	8.6	182.8
	10:42	10.3	181.3
	10:43	10.2	181.0
	10:44	10.5	181.7
	10:45	9.7	183.9

Average =	8.0	183.4
Geometric Avg. =	7.9	183.4
Maximum =	10.5	186.5
Minimum =	5.4	181.0
Possible Values =	24	24
Included Values =	24	24
Total =	192.3	4402.1

* - excluded values (missing, OOC, invalid, suspect)
< - missing
T - out-of-control
I - invalid
S - suspect
H - exceedance
F - stack not operating
B - invalid (PADER)
U - missing data substituted
-999 - missing value
-888 - value could not be calculated

Run 7

Site Name: UNIT2
 Data Averaging Type: 1m

Time of Report: 03/22/13 11:45
 Rolling Average Interval: 1

Date	Time	STKFLOW2 (SCFM)	SO2ORPT2 (PPMDC)	NOXRPT_2 (PPMDC)	CO2_2 (PERCENTD)	CO2LBHR2 (LB/HR)	CORPT_2 (PPMDC)	O2OUT_2 (PERCENTD)	SO2OUT_2 (PPMD)	NOXPPM_2 (PPMD)
03/22/13	10:59	120018.0	2.2	192.9	9.5	61186.2	8.6	9.9	1.8	152.8
	11:00	120067.9	2.4	198.7	9.0	57493.9	10.2	10.6	1.8	146.7
	11:01	120433.6	2.6	202.6	9.1	58520.8	11.6	10.5	1.9	150.9
	11:02	120758.1	2.4	197.6	9.6	62129.7	10.8	10.1	1.9	154.1
	11:03	121251.6	2.3	197.9	10.0	64672.8	8.4	9.6	1.9	161.2
	11:04	121795.6	2.1	195.0	10.0	65282.2	9.3	9.6	1.7	158.9
	11:05	122095.2	2.2	189.6	9.8	63753.6	9.6	9.8	1.8	151.8
	11:06	122067.0	2.3	195.7	9.6	62772.7	10.4	10.0	1.8	152.8
	11:07	122294.9	2.5	201.7	9.8	64058.5	8.6	9.8	2.0	160.9
	11:08	122735.7	2.7	209.4	9.6	62805.8	8.2	10.0	2.1	164.4
	11:09	122823.9	2.6	208.6	9.6	62936.3	6.7	10.1	2.1	162.6
	11:10	123132.5	2.7	203.0	9.9	64934.1	5.6	9.6	2.2	164.9
	11:11	123308.8	3.0	201.9	9.8	64580.8	5.8	9.8	2.4	161.4
	11:12	123176.6	2.8	195.2	10.2	67313.7	6.0	9.3	2.4	162.5
	11:13	122823.9	2.9	197.4	9.8	64263.3	6.7	9.8	2.4	158.4
	11:14	122515.3	2.6	193.3	9.8	64497.2	7.2	9.6	2.1	156.6
	11:15	122399.0	3.0	184.2	9.5	62362.4	7.3	10.0	2.3	144.0
	11:16	122406.6	2.6	179.1	9.3	61091.2	10.2	10.3	2.0	137.1
	11:17	122567.1	2.6	181.2	9.3	60849.0	12.0	10.3	1.9	137.7
	11:18	122763.8	2.4	182.2	9.6	63169.2	14.3	10.0	1.9	143.0
	11:19	122872.0	2.2	179.0	10.1	66513.1	10.4	9.5	1.8	146.7
	11:20	122704.0	2.1	175.8	10.5	68649.1	8.7	9.0	1.8	150.9
	11:21	122411.8	2.6	193.0	9.7	63240.2	7.8	9.9	2.1	152.8
	11:22	121714.6	2.8	198.9	9.2	59739.0	7.0	10.4	2.1	150.2

	Average =	122130.7	2.5	193.9	9.7	63200.6	8.8	9.9	2.0	153.5
	Geometric Avg. =	122127.1	2.5	193.7	9.7	63149.0	8.6	9.9	2.0	153.3
	Maximum =	123308.8	3.0	209.4	10.5	68649.1	14.3	10.6	2.4	164.9
	Minimum =	120018.0	2.1	175.8	9.0	57493.9	5.6	9.0	1.7	137.1
	Possible Values =	24	24	24	24	24	24	24	24	24
	Included Values =	24	24	24	24	24	24	24	24	24
	Total =	2931137.5	60.8	4654.2	232.2	1516814.8	211.6	237.5	48.1	3683.3

- * - excluded values (missing, OOC, invalid, suspect)
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- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

General Average Report

Reporting Period: 03/22/2013 to 03/22/2013

Site Name: UNIT2

Time of Report: 03/22/13 11:45

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	COPPM_2 (PPMD)	STMRPT_2 (KLB/HR)
03/22/13	10:59	6.8	180.7
	11:00	7.6	178.8
	11:01	8.7	181.2
	11:02	8.5	182.6
	11:03	6.9	184.8
	11:04	7.6	183.5
	11:05	7.7	184.3
	11:06	8.1	183.9
	11:07	6.9	183.6
	11:08	6.5	183.6
	11:09	5.3	184.0
	11:10	4.5	183.7
	11:11	4.7	186.0
	11:12	5.0	184.4
	11:13	5.4	185.5
	11:14	5.9	182.8
	11:15	5.7	181.3
	11:16	7.8	179.6
	11:17	9.1	181.6
	11:18	11.2	185.7
	11:19	8.5	190.6
	11:20	7.5	187.2
	11:21	6.1	184.3
	11:22	5.3	183.8

Average =		7.0	183.6
Geometric Avg. =		6.8	183.6
Maximum =		11.2	190.6
Minimum =		4.5	178.8
Possible Values =		24	24
Included Values =		24	24
Total =		167.0	4407.5

* - excluded values (missing, OOC, invalid, suspect)
 < - missing
 T - out-of-control
 I - invalid
 S - suspect
 H - exceedance
 F - stack not operating
 B - invalid (PADER)
 U - missing data substituted
 -999 - missing value
 -888 - value could not be calculated

General Average Report

Reporting Period: 03/22/2013 to 03/22/2013

Rm 8

Site Name: UNIT2
 Averaging Type: 1m

Time of Report: 03/22/13 12:21
 Rolling Average Interval: 1

Date	Time	STKFLOW2 (SCFM)	SO2ORPT2 (PPMDC)	NOXRPT_2 (PPMDC)	CO2_2 (PERCENTD)	CO2LBR2 (LB/HR)	CORPT_2 (PPMDC)	O2OUT_2 (PERCENTD)	SO2OUT_2 (PPMD)	NOXPPM_2 (PPMD)
03/22/13	11:35	107041.1	2.2	185.6	9.7	55305.1	10.6	10.0	1.7	145.1
	11:36	107159.3	2.3	191.6	9.6	55098.8	10.0	10.0	1.8	149.9
	11:37	107295.8	2.1	196.8	9.4	53751.4	10.5	10.3	1.6	149.5
	11:38	107604.1	2.0	195.4	9.6	55183.6	9.5	10.1	1.6	152.1
	11:39	107838.4	2.3	200.6	9.4	54223.2	8.5	10.3	1.7	152.8
	11:40	107834.6	2.0	199.8	9.5	54530.8	8.8	10.2	1.6	153.3
	11:41	107834.6	1.9	194.9	9.7	56022.7	8.5	9.9	1.5	154.1
	11:42	107922.8	1.9	197.3	9.4	54517.7	7.5	10.2	1.5	151.2
	11:43	108099.1	1.9	196.4	9.6	55296.7	7.6	10.1	1.5	153.2
	11:44	108275.5	2.0	200.2	9.6	55637.9	6.4	10.1	1.6	156.0
	11:45	108319.6	1.9	195.8	9.7	56139.5	7.5	10.0	1.5	153.5
	11:46	108363.6	1.8	187.6	9.9	57340.8	8.5	9.7	1.4	151.2
	11:47	108451.8	1.7	190.8	9.6	55966.3	7.6	10.0	1.4	149.4
	11:48	108407.7	1.9	198.0	9.7	56098.2	7.2	10.0	1.5	155.8
	11:49	108584.1	2.1	196.9	9.5	55318.3	8.1	10.1	1.6	152.6
	11:50	108672.2	2.3	193.7	9.6	55915.4	7.6	10.1	1.8	150.5
	11:51	108804.5	2.2	186.9	10.0	58379.2	7.7	9.6	1.7	151.4
	11:52	109157.2	2.1	178.9	10.0	58334.9	7.0	9.7	1.7	144.1
	11:53	109407.4	1.8	170.7	10.3	60068.1	8.8	9.4	1.5	140.6
	11:54	109424.2	1.6	172.4	10.0	58263.0	8.2	9.6	1.3	139.6
	11:55	109524.2	1.9	181.6	9.2	54118.0	8.9	10.5	1.4	136.4
	11:56	109345.2	2.0	188.7	9.3	54419.4	8.2	10.4	1.5	142.6
	11:57	108933.9	1.8	186.2	9.7	56729.8	7.6	10.0	1.4	146.1
	11:58	108495.9	1.8	184.2	10.1	58387.7	7.4	9.6	1.5	149.2

Average =		108366.5	2.0	190.5	9.7	56043.6	8.3	10.0	1.5	149.2
Geometric Avg. =		108364.3	2.0	190.3	9.7	56020.7	8.2	10.0	1.5	149.1
Maximum =		109524.2	2.3	200.6	10.3	60068.1	10.6	10.5	1.8	156.0
Minimum =		107041.1	1.6	170.7	9.2	53751.4	6.4	9.4	1.3	136.4
Possible Values =		24	24	24	24	24	24	24	24	24
Included Values =		24	24	24	24	24	24	24	24	24
Total =		2600797.0	47.5	4571.0	232.0	1345046.5	198.1	240.2	37.2	3580.0

- * - excluded values (missing, OOC, invalid, suspect)
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- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

General Average Report

Reporting Period: 03/22/2013 to 03/22/2013

Site Name: UNIT2

Time of Report: 03/22/13 12:21

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	COPPM_2 (PPMD)	STMRPT_2 (KLB/HR)
03/22/13	11:35	8.3	184.1
	11:36	7.8	183.3
	11:37	8.0	183.4
	11:38	7.4	183.7
	11:39	6.5	183.6
	11:40	6.7	185.1
	11:41	6.7	182.4
	11:42	5.7	183.5
	11:43	6.0	183.7
	11:44	5.0	183.7
	11:45	5.9	185.3
	11:46	6.8	183.7
	11:47	6.0	183.9
	11:48	5.7	182.6
	11:49	6.3	182.8
	11:50	5.9	184.7
	11:51	6.2	184.3
	11:52	5.6	187.2
	11:53	7.2	186.6
	11:54	6.6	184.1
	11:55	6.7	181.3
	11:56	6.2	181.8
	11:57	5.9	183.4
	11:58	6.0	185.3

Average =	6.5	183.9
Geometric Avg. =	6.4	183.9
Maximum =	8.3	187.2
Minimum =	5.0	181.3
Possible Values =	24	24
Included Values =	24	24
Total =	155.1	4413.4

* - excluded values (missing, OOC, invalid, suspect)
 < - missing
 T - out-of-control
 I - invalid
 S - suspect
 H - exceedance
 F - stack not operating
 B - invalid (PADER)
 U - missing data substituted
 -999 - missing value
 -888 - value could not be calculated

Run 9

Site Name: UNIT2
 Data Averaging Type: 1m

Time of Report: 03/22/13 12:51
 Rolling Average Interval: 1

Date	Time	STKFLOW2 (SCFM)	SO2ORPT2 (PPMDC)	NOXRPT_2 (PPMDC)	CO2_2 (PERCENTD)	CO2LBHR2 (LB/HR)	CORPT_2 (PPMDC)	O2OUT_2 (PERCENTD)	SO2OUT_2 (PPMD)	NOXPPM_2 (PPMD)
03/22/13	12:12	115140.8	1.9	186.7	9.6	59428.5	2.8	9.9	1.5	147.1
	12:13	115216.1	2.1	180.9	9.9	60726.5	4.1	9.8	1.7	143.9
	12:14	115481.0	2.0	173.9	10.3	63585.9	3.1	9.3	1.6	145.2
	12:15	115642.6	2.1	181.1	9.8	60484.2	1.4	9.8	1.6	144.2
	12:16	115567.1	2.2	181.6	9.5	58735.7	1.2	10.2	1.7	139.9
	12:17	115405.6	1.8	173.7	9.9	61058.9	2.5	9.7	1.4	139.9
	12:18	115187.0	1.4	169.5	9.9	60930.9	2.1	9.7	1.1	136.4
	12:19	115144.8	1.5	168.7	9.7	59641.9	2.0	9.9	1.2	133.1
	12:20	115129.7	1.5	168.4	9.8	60066.2	3.2	9.8	1.2	134.1
	12:21	115068.5	1.8	166.8	9.8	60277.4	3.8	9.8	1.4	132.9
	12:22	114905.2	1.9	163.3	9.9	60788.0	4.7	9.7	1.5	131.3
	12:23	114728.6	1.9	168.7	9.6	58875.2	4.5	10.1	1.5	130.9
	12:24	114743.6	1.7	170.1	9.5	58085.0	4.8	10.2	1.3	130.9
	12:25	115083.6	2.2	174.7	9.3	57027.1	5.7	10.5	1.7	131.3
	12:26	115700.6	2.0	176.2	9.4	57867.1	7.0	10.4	1.5	133.3
	12:27	115869.6	2.0	172.4	9.6	59358.4	8.5	10.1	1.5	134.0
	12:28	116102.2	1.9	170.5	9.7	60202.0	10.1	10.0	1.5	133.3
	12:29	116381.5	1.8	166.7	9.6	59966.1	9.5	10.0	1.4	130.2
	12:30	116780.9	1.8	169.5	9.3	58337.6	12.1	10.4	1.4	128.4
	12:31	117313.1	1.6	176.4	9.3	58096.3	10.3	10.4	1.2	132.8
	12:32	117430.1	1.9	178.8	9.2	57921.8	11.0	10.5	1.4	133.6
	12:33	117470.4	1.8	173.8	9.5	59711.4	9.6	10.1	1.4	134.5
	12:34	117426.3	2.1	178.3	9.1	57419.6	10.5	10.6	1.6	132.0
	12:35	117265.4	2.0	176.6	9.3	58457.4	10.2	10.4	1.5	133.9

Average =		115841.0	1.9	173.6	9.6	59460.4	6.0	10.1	1.5	135.3
Geometric Avg. =		115837.4	1.9	173.6	9.6	59443.0	4.9	10.1	1.4	135.2
Maximum =		117470.4	2.2	186.7	10.3	63585.9	12.1	10.6	1.7	147.1
Minimum =		114728.6	1.4	163.3	9.1	57027.1	1.2	9.3	1.1	128.4
Possible Values =		24	24	24	24	24	24	24	24	24
Included Values =		24	24	24	24	24	24	24	24	24
Total =		2780184.2	44.9	4167.4	230.4	1427048.9	144.6	241.6	34.9	3247.1

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Reporting Period: 03/22/2013 to 03/22/2013

Site Name: UNIT2
Data Averaging Type: 1m

Time of Report: 03/22/13 12:51
Rolling Average Interval: 1

Date	Time	COPPM_2 (PPMD)	STMRPT_2 (KLB/HR)
03/22/13	12:12	2.2	186.0
	12:13	3.2	187.0
	12:14	2.6	185.9
	12:15	1.1	184.7
	12:16	0.9	185.9
	12:17	2.0	185.5
	12:18	1.7	184.6
	12:19	1.5	185.0
	12:20	2.5	185.4
	12:21	3.1	185.3
	12:22	3.8	184.8
	12:23	3.5	183.1
	12:24	3.7	180.8
	12:25	4.3	179.7
	12:26	5.3	181.9
	12:27	6.6	183.4
	12:28	7.9	183.4
	12:29	7.4	183.1
	12:30	9.1	181.9
	12:31	7.7	183.5
	12:32	8.2	184.0
	12:33	7.4	183.0
	12:34	7.8	183.1
	12:35	7.7	180.4

Average =	4.6	183.8
Geometric Avg. =	3.8	183.8
Maximum =	9.1	187.0
Minimum =	0.9	179.7
Possible Values =	24	24
Included Values =	24	24
Total =	111.5	4411.5

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Reporting Period: 03/22/2013 to 03/22/2013

Run 10

Site Name: UNIT2
 Averaging Type: 1m

Time of Report: 03/22/13 13:27
 Rolling Average Interval: 1

Date	Time	STKFLOW2 (SCFM)	SO2ORPT2 (PPMDC)	NOXRPT_2 (PPMDC)	CO2_2 (PERCENTD)	CO2LBHR2 (LB/HR)	CORPT_2 (PPMDC)	O2OUT_2 (PERCENTD)	SO2OUT_2 (PPMD)	NOXPPM_2 (PPMD)
03/22/13	12:49	105095.4	2.1	189.3	9.0	50496.2	6.2	10.7	1.6	139.6
	12:50	105087.6	2.0	186.4	9.5	53508.9	7.5	10.1	1.6	144.2
	12:51	104961.3	1.9	182.2	9.9	55652.8	6.2	9.7	1.5	147.3
	12:52	104842.9	1.9	176.5	10.0	55851.6	6.2	9.6	1.6	143.1
	12:53	104660.4	1.9	180.5	9.7	54280.4	5.8	9.9	1.5	143.0
	12:54	104440.0	1.8	186.3	9.3	52024.7	5.4	10.3	1.4	142.1
	12:55	104307.7	1.8	186.4	9.3	52042.5	4.8	10.3	1.4	142.4
	12:56	103985.6	1.9	189.7	9.2	51399.8	4.7	10.4	1.4	143.2
	12:57	103873.7	2.1	186.9	9.6	53400.1	5.8	10.0	1.6	146.6
	12:58	103866.9	2.2	190.5	9.5	52581.8	5.1	10.1	1.7	148.6
	12:59	103690.5	2.2	192.6	9.3	51559.0	7.2	10.3	1.7	146.7
	13:00	103602.4	2.1	194.1	9.4	51955.9	6.5	10.2	1.6	149.3
	13:01	103324.4	2.2	196.5	9.3	51570.3	6.7	10.3	1.7	150.2
	13:02	102935.2	2.3	196.3	9.5	52044.1	5.9	10.1	1.8	152.3
	13:03	103067.4	2.0	199.7	9.5	52250.6	7.4	10.1	1.5	154.9
	13:04	103199.5	1.9	191.4	9.7	53730.6	9.7	9.8	1.5	152.6
	13:05	103494.3	1.9	193.8	9.6	52948.6	6.4	10.0	1.5	152.6
	13:06	103735.0	1.8	191.6	9.7	53602.5	6.8	9.9	1.5	151.4
	13:07	103968.6	1.8	192.4	9.6	53182.0	6.1	10.0	1.4	150.4
	13:08	104256.6	1.9	197.5	9.4	52425.9	7.0	10.2	1.5	152.2
	13:09	104256.6	2.1	205.0	9.4	52247.5	6.3	10.2	1.6	157.4
	13:10	104256.6	2.2	196.4	9.5	53000.3	5.6	10.1	1.7	153.1
	13:11	104358.3	2.0	193.6	9.5	53033.4	5.7	10.2	1.5	149.6
	13:12	104395.9	1.9	189.5	9.6	53529.0	6.0	10.0	1.5	148.5

Average =	104069.3	2.0	191.0	9.5	52846.6	6.3	10.1	1.6	148.4
Geometric Avg. =	104067.5	2.0	190.9	9.5	52832.4	6.2	10.1	1.5	148.3
Maximum =	105095.4	2.3	205.0	10.0	55851.6	9.7	10.7	1.8	157.4
Minimum =	102935.2	1.8	176.5	9.0	50496.2	4.7	9.6	1.4	139.6
Possible Values =	24	24	24	24	24	24	24	24	24
Included Values =	24	24	24	24	24	24	24	24	24
Total =	2497662.8	48.0	4585.0	227.9	1268318.4	150.9	242.4	37.3	3561.6

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
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- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

General Average Report

Reporting Period: 03/22/2013 to 03/22/2013

Site Name: UNIT2

Time of Report: 03/22/13 13:27

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	COPPM_2 (PPMD)	STMRPT_2 (KLB/HR)
03/22/13	12:49	4.5	180.3
	12:50	5.8	182.5
	12:51	5.0	185.1
	12:52	5.0	184.3
	12:53	4.6	183.0
	12:54	4.1	181.7
	12:55	3.7	180.7
	12:56	3.6	183.9
	12:57	4.5	183.0
	12:58	4.0	183.2
	12:59	5.5	182.1
	13:00	5.0	182.0
	13:01	5.1	182.1
	13:02	4.6	181.9
	13:03	5.8	183.4
	13:04	7.7	182.1
	13:05	5.0	183.8
	13:06	5.4	183.0
	13:07	4.8	182.6
	13:08	5.4	182.7
	13:09	4.8	182.9
	13:10	4.3	183.0
	13:11	4.4	183.1
	13:12	4.7	183.7

	Average =	4.9	182.8
	Geometric Avg. =	4.8	182.8
	Maximum =	7.7	185.1
	Minimum =	3.6	180.3
	Possible Values =	24	24
	Included Values =	24	24
	Total =	117.3	4386.2

* - excluded values (missing, OOC, invalid, suspect)
 < - missing
 T - out-of-control
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 -888 - value could not be calculated

Run 11

Site Name: UNIT2
 Averaging Type: 1m

Time of Report: 03/22/13 14:25
 Rolling Average Interval: 1

Date	Time	STKFLOW2 (SCFM)	SO2ORPT2 (PPMDC)	NOXRPT_2 (PPMDC)	CO2_2 (PERCENTID)	CO2LBHR2 (LB/HR)	CORPT_2 (PPMDC)	O2OUT_2 (PERCENTID)	SO2OUT_2 (PPMD)	NOXPPM_2 (PPMD)
03/22/13	13:27	106718.5	2.0	179.7	9.1	51778.4	8.4	10.6	1.5	133.6
	13:28	106723.2	1.9	177.7	9.0	51442.0	8.5	10.6	1.4	131.5
	13:29	106987.4	1.8	181.0	9.0	51368.1	9.4	10.6	1.3	133.6
	13:30	108206.6	1.6	182.7	8.9	51243.0	11.1	10.8	1.1	133.2
	13:31	110336.7	1.8	184.3	8.9	52693.9	11.4	10.7	1.3	135.7
	13:32	110776.9	1.9	185.6	8.9	52825.1	11.3	10.7	1.4	136.8
	13:33	111040.9	2.0	188.9	8.7	51462.3	13.9	11.0	1.4	134.6
	13:34	111378.5	2.3	198.3	8.6	51116.4	12.9	11.1	1.6	140.0
	13:35	111584.8	2.1	192.5	8.8	52496.2	12.9	10.8	1.5	140.1
	13:36	111717.4	2.0	190.5	9.2	55116.0	11.1	10.3	1.5	145.0
	13:37	112054.1	1.9	191.4	9.3	55589.8	11.3	10.3	1.4	146.2
	13:38	115046.0	2.1	190.7	9.0	55425.0	11.8	10.6	1.6	141.6
	13:39	116058.2	2.3	195.2	8.7	53996.6	12.3	10.9	1.7	140.3
	13:40	116292.0	2.0	198.3	8.8	54536.6	11.9	10.8	1.4	144.2
	13:41	116110.6	1.9	202.6	9.2	57190.3	10.1	10.3	1.4	153.9
	13:42	116110.6	1.6	211.8	9.4	58523.4	7.5	10.1	1.2	164.2
	13:43	116228.7	1.6	211.0	9.5	59233.6	8.2	10.0	1.3	165.7
	13:44	116381.5	2.0	208.0	9.5	58892.3	6.5	10.1	1.5	161.7
	13:45	116149.0	1.9	208.1	9.3	57798.7	7.0	10.2	1.5	159.9
	13:46	116032.0	2.0	207.4	9.3	57581.8	6.6	10.3	1.5	158.6
	13:47	116255.1	1.8	205.1	9.4	58231.4	7.8	10.2	1.4	158.0

Average =	112770.9	1.9	194.8	9.1	54692.4	10.1	10.5	1.4	145.6
Geometric Avg. =	112716.5	1.9	194.5	9.1	54619.2	9.8	10.5	1.4	145.2
Maximum =	116381.5	2.3	211.8	9.5	59233.6	13.9	11.1	1.7	165.7
Minimum =	106718.5	1.6	177.7	8.6	51116.4	6.5	10.0	1.1	131.5
Possible Values =	21	21	21	21	21	21	21	21	21
Included Values =	21	21	21	21	21	21	21	21	21
Total =	2368188.5	40.4	4090.8	190.3	1148541.1	211.8	220.9	30.1	3058.4

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- 999 - missing value
- 888 - value could not be calculated

Reporting Period: 03/22/2013 to 03/22/2013

Site Name: UNIT2
Data Averaging Type: 1m

Time of Report: 03/22/13 14:25
Rolling Average Interval: 1

Date	Time	COPPM_2 (PPMD)	STMRPT_2 (KLB/HR)
03/22/13	13:27	6.2	180.9
	13:28	6.3	180.2
	13:29	6.9	179.9
	13:30	8.1	181.4
	13:31	8.4	181.4
	13:32	8.3	179.8
	13:33	9.9	178.4
	13:34	9.1	179.9
	13:35	9.4	181.3
	13:36	8.5	181.7
	13:37	8.6	180.1
	13:38	8.7	177.9
	13:39	8.8	178.3
	13:40	8.7	181.1
	13:41	7.6	182.4
	13:42	5.8	184.3
	13:43	6.4	184.4
	13:44	5.1	184.5
	13:45	5.4	183.0
	13:46	5.0	182.6
	13:47	6.0	183.0

Average =	7.5	181.3
Arithmetic Avg. =	7.3	181.3
Maximum =	9.9	184.5
Minimum =	5.0	177.9
Possible Values =	21	21
Included Values =	21	21
Total =	157.4	3806.7

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
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- S - suspect
- H - exceedance
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- 999 - missing value
- 888 - value could not be calculated

Rm 12

Site Name: UNIT2
 Data Averaging Type: 1m

Time of Report: 03/22/13 14:24
 Rolling Average Interval: 1

Date	Time	STKFLOW2 (SCFM)	SO2ORPT2 (PPMDC)	NOXRPT_2 (PPMDC)	CO2_2 (PERCENTD)	CO2LBHR2 (LB/HR)	CORPT_2 (PPMDC)	O2OUT_2 (PERCENTD)	SO2OUT_2 (PPMD)	NOXPPM_2 (PPMD)
03/22/13	14:03	108749.3	2.1	207.4	9.5	55497.5	10.2	10.0	1.6	162.1
	14:04	108529.1	1.9	210.6	9.6	55884.3	9.6	9.9	1.5	166.5
	14:05	108352.9	1.9	210.9	9.4	54335.1	9.1	10.2	1.4	161.6
	14:06	107970.5	1.8	201.0	9.4	54135.7	10.9	10.3	1.3	153.4
	14:07	106952.9	1.8	194.2	9.7	55377.8	10.6	9.9	1.4	153.2
	14:08	104307.7	2.0	193.5	9.6	53675.3	10.0	9.9	1.6	152.6
	14:09	104426.4	2.0	203.0	9.2	51418.4	9.1	10.5	1.5	152.6
	14:10	104829.2	2.0	206.2	9.4	52715.7	9.5	10.3	1.5	157.9
	14:11	105107.2	2.0	196.9	9.6	53805.6	10.1	10.0	1.6	154.8
	14:12	105365.8	2.3	191.1	9.5	53598.0	11.0	10.1	1.8	149.1
	14:13	105528.4	2.0	189.0	9.5	53618.6	10.2	10.1	1.5	147.2
	14:14	105401.8	1.8	182.2	9.6	54386.7	9.5	10.0	1.4	143.5
	14:15	105201.1	1.7	181.7	9.8	54883.8	9.1	9.8	1.4	144.7
	14:16	105093.5	1.7	185.5	9.8	55101.7	10.7	9.7	1.4	149.0
	14:17	105019.1	1.7	185.0	9.9	55764.8	8.6	9.6	1.4	151.0
	14:18	104969.0	1.8	187.7	9.6	54144.7	6.8	9.9	1.4	148.6
	14:19	104718.2	2.0	188.4	9.4	52493.7	7.8	10.2	1.5	145.0
	14:20	104491.3	1.6	194.4	9.4	52671.6	8.4	10.1	1.3	150.6
	14:21	104294.7	1.8	196.6	9.6	53669.5	10.2	10.0	1.4	154.9
	14:22	103961.8	2.0	195.8	10.0	55509.3	9.8	9.5	1.6	160.3
	14:23	103815.9	2.1	201.5	9.7	53603.6	9.6	9.9	1.6	158.8

Average =	105575.5	1.9	195.4	9.6	54109.1	9.6	10.0	1.5	153.2
Geometric Avg. =	105564.7	1.9	195.2	9.6	54096.6	9.5	10.0	1.5	153.1
Maximum =	108749.3	2.3	210.9	10.0	55884.3	11.0	10.5	1.8	166.5
Minimum =	103815.9	1.6	181.7	9.2	51418.4	6.8	9.5	1.3	143.5
Possible Values =	21	21	21	21	21	21	21	21	21
Included Values =	21	21	21	21	21	21	21	21	21
Total =	2217085.5	39.9	4102.8	201.2	1136291.4	200.8	209.9	31.3	3217.5

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- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Reporting Period: 03/22/2013 to 03/22/2013

Site Name: UNIT2
 Data Averaging Type: 1m

Time of Report: 03/22/13 14:24
 Rolling Average Interval: 1

Date	Time	COPPM_2 (PPMD)	STMREP_2 (KLB/HR)
03/22/13	14:03	8.0	184.4
	14:04	7.6	181.9
	14:05	7.0	182.9
	14:06	8.3	184.0
	14:07	8.3	184.7
	14:08	7.9	182.5
	14:09	6.8	183.2
	14:10	7.3	184.3
	14:11	8.0	184.4
	14:12	8.5	183.2
	14:13	8.0	184.2
	14:14	7.5	185.1
	14:15	7.3	185.9
	14:16	8.6	187.7
	14:17	7.0	186.2
	14:18	5.4	184.7
	14:19	6.0	182.8
	14:20	6.5	183.1
	14:21	8.0	184.9
	14:22	8.0	184.5
	14:23	7.6	185.0

Average =	7.5	184.3
Geometric Avg. =	7.5	184.3
Maximum =	8.6	187.7
Minimum =	5.4	181.9
Possible Values =	21	21
Included Values =	21	21
Total =	157.6	3869.5

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
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- S - suspect
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- 999 - missing value
- 888 - value could not be calculated

VOID

Plant Name: NBWD

Page: 1

General Average Report

Reporting Period: 03/21/2013 to 03/21/2013

Site Name: UNIT2

Time of Report: 03/21/13 08:34

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	STKFLOW2 (SCFM)	SO2ORPT2 (PPMDC)	NOXRPT_2 (PPMDC)	CO2_2 (PERCENTD)	CO2LBHR2 (LB/HR)	CORPT_2 (PPMDC)	O2OUT_2 (PERCENTD)	SO2OUT_2 (PPMD)	NOXPPM_2 (PPMD)
03/21/13	07:54	127889.0	2.3	205.3	9.3	63922.0	8.6	10.4	1.7	155.4
	07:55	128026.0	2.1	201.5	9.5	64715.2	8.5	10.2	1.6	154.9
	07:56	128317.9	2.1	198.1	9.4	64811.2	8.5	10.3	1.6	151.3
	07:57	128614.0	1.9	195.2	9.3	64228.2	8.1	10.3	1.5	148.9
	07:58	128983.1	1.9	198.5	9.3	64289.5	9.1	10.5	1.5	149.1
	07:59	129260.5	1.9	208.8	9.6	66248.3	9.3	10.1	1.4	162.3
	08:00	129409.6	1.9	206.8	9.0	62494.6	9.2	10.7	1.4	151.9
	08:01	129609.5	1.9	195.6	9.0	62304.8	9.5	10.7	1.4	143.3
	08:02	129701.3	1.9	196.7	9.5	65737.8	16.0	10.2	1.5	151.6
	08:03	129877.7	1.9	196.4	9.5	65986.9	11.9	10.2	1.5	151.2
	08:04	130230.4	2.1	194.7	9.2	64112.4	8.6	10.6	1.6	145.0
	08:05	130213.4	2.1	189.8	9.6	66656.6	9.2	10.1	1.6	147.1
	08:06	129952.3	1.8	190.1	9.7	67441.6	8.5	10.0	1.4	149.4
	08:07	130071.0	2.2	190.7	9.1	63193.4	8.0	10.6	1.6	141.0
	08:08	130437.6	2.2	191.3	9.1	63333.1	8.4	10.6	1.6	141.3
	08:09	130756.5	2.0	192.7	9.4	65890.2	8.0	10.3	1.5	146.9
	08:10	130671.2	1.9	195.9	9.6	66805.9	8.8	10.2	1.5	151.2
	08:11	130759.4	1.8	193.8	9.5	66612.1	10.5	10.2	1.4	148.9
	08:12	131156.2	1.8	188.4	9.2	64246.7	10.6	10.6	1.3	139.6
	08:13	131464.8	2.0	191.5	9.2	64753.0	9.4	10.5	1.5	143.2
	08:14	131570.1	1.9	189.2	9.0	63639.0	9.6	10.7	1.4	138.8
	08:15	130977.1	2.0	188.6	9.3	65092.1	10.2	10.5	1.5	141.7
	08:16	129596.2	2.0	179.1	9.9	68409.8	12.3	9.8	1.6	142.8
	08:17	128102.1	2.2	177.9	9.6	66056.6	10.4	10.1	1.7	138.2
	08:18	127045.2	2.3	184.0	8.9	60385.8	9.2	10.9	1.6	132.9
	08:19	124682.8	2.2	189.0	8.7	57873.6	9.5	11.2	1.5	132.3
	08:20	122128.6	2.0	182.4	9.3	60881.7	8.4	10.4	1.5	137.9

Average =	129240.9	2.0	193.0	9.3	64449.0	9.6	10.4	1.5	145.8
Geometric Avg. =	129224.6	2.0	192.9	9.3	64408.6	9.5	10.4	1.5	145.7
Maximum =	131570.1	2.3	208.8	9.9	68409.8	16.0	11.2	1.7	162.3
Minimum =	122128.6	1.8	177.9	8.7	57873.6	8.0	9.8	1.3	132.3
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	3489503.5	54.4	5212.0	251.7	1740122.1	258.5	280.7	41.1	3937.9

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
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- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
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General Average Report

Reporting Period: 03/21/2013 to 03/21/2013

Site Name: UNIT2

Time of Report: 03/21/13 08:34

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	COPPM_2 (PPMD)	STMRPT_2 (KLB/HR)
03/21/13	07:54	6.5	183.4
	07:55	6.5	184.3
	07:56	6.5	183.9
	07:57	6.2	183.9
	07:58	6.8	186.3
	07:59	7.2	183.0
	08:00	6.7	182.1
	08:01	7.0	183.3
	08:02	12.4	184.4
	08:03	9.2	183.9
	08:04	6.4	185.9
	08:05	7.1	186.7
	08:06	6.7	183.9
	08:07	5.9	182.7
	08:08	6.2	182.6
	08:09	6.1	184.6
	08:10	6.8	184.5
	08:11	8.1	184.7
	08:12	7.8	185.0
	08:13	7.0	183.8
	08:14	7.0	183.2
	08:15	7.7	187.3
	08:16	9.8	187.5
	08:17	8.1	185.1
	08:18	6.6	182.2
	08:19	6.7	181.2
	08:20	6.4	183.5

Average =	7.2	184.2
Geometric Avg. =	7.1	184.2
Maximum =	12.4	187.5
Minimum =	5.9	181.2
Possible Values =	27	27
Included Values =	27	27
Total =	195.5	4973.0

* - excluded values (missing, OOC, invalid, suspect)
 < - missing
 T - out-of-control
 I - invalid
 S - suspect
 H - exceedance
 F - stack not operating
 B - invalid (PADER)
 U - missing data substituted
 -999 - missing value
 -888 - value could not be calculated

Plant Name: NBWD
General Average Report

Reporting Period: 03/20/2013 to 03/20/2013

Site Name: UNIT3
Data Averaging Type: 1m

Time of Report: 03/20/13 08:56
Rolling Average Interval: 1

Date	Time	STKFLOW3 (SCFM)	SO2ORPT3 (PPMDC)	NOXRPT_3 (PPMDC)	CO2_3 (PERCENTD)	CO2LBHR3 (LB/HR)	CORPT_3 (PPMDC)	O2OUT_3 (PERCENTD)	SO2OUT_3 (PPMD)	NOXPPM_3 (PPMD)
03/20/13	08:14	97736.0	15.5	207.3	12.5	65578.7	13.9	7.1	15.4	205.2
	08:15	97682.5	16.8	198.6	13.0	67962.6	14.1	6.4	17.6	207.9
	08:16	97666.2	18.4	195.3	13.0	67865.1	14.4	6.2	19.5	206.6
	08:17	97714.3	18.9	195.3	12.5	65337.7	15.8	6.7	19.3	199.8
	08:18	97726.4	18.1	189.5	12.1	63298.5	16.0	7.2	17.9	186.7
	08:19	97933.0	17.9	191.3	12.3	64357.7	16.4	7.3	17.6	187.7
	08:20	98101.7	18.8	191.0	12.6	65902.8	14.2	6.8	19.1	193.9
	08:21	98106.6	18.7	190.3	12.3	64725.5	14.0	6.9	18.8	191.1
	08:22	98163.8	18.5	187.2	11.9	62671.8	16.2	7.4	18.0	182.1
	08:23	98242.5	17.8	187.5	12.1	63545.2	19.4	7.4	17.2	181.5
	08:24	98181.5	18.4	186.7	12.3	64433.5	18.4	7.2	18.2	184.4
	08:25	97974.8	19.1	191.4	12.5	65346.0	15.8	6.9	19.2	192.3
	08:26	97970.7	18.9	185.8	12.0	62967.7	13.2	7.2	18.6	182.8
	08:27	98444.6	17.7	193.3	11.7	61859.4	14.3	7.7	16.8	183.8
	08:28	98580.3	19.1	205.6	12.3	65002.8	15.2	7.3	18.7	200.5
	08:29	98596.5	22.8	202.9	13.0	68573.2	11.4	6.3	23.9	213.5
	08:30	98887.4	22.0	198.5	12.3	65270.7	11.4	6.8	22.3	201.9
	08:31	99258.5	18.2	197.7	11.9	63034.5	13.0	7.4	17.6	191.6
	08:32	99275.4	15.3	203.8	12.1	64354.9	15.0	7.5	14.7	196.0
	08:33	99197.3	15.7	202.5	13.0	68716.8	10.8	6.5	16.3	209.7
	08:34	99017.3	17.7	200.0	13.1	69148.3	8.0	6.2	18.7	211.5
	08:35	99140.8	18.9	192.1	12.8	67944.2	8.4	6.3	19.8	201.4
	08:36	99323.2	18.1	184.4	12.3	65342.2	9.2	6.9	18.2	186.1
	08:37	99421.0	17.2	185.8	12.2	64733.0	10.2	7.3	16.9	182.4
	08:38	99547.5	17.3	191.8	12.8	67965.6	10.3	6.7	17.6	195.6
	08:39	100037.2	20.8	190.6	12.6	67622.2	10.2	6.6	21.5	196.3
	08:40	100203.5	21.5	186.8	12.6	67618.4	11.0	6.7	21.9	190.5

Average =	98597.4	18.4	193.8	12.4	65599.2	13.3	6.9	18.6	194.9
Geometric Avg. =	98594.7	18.4	193.7	12.4	65567.3	13.0	6.9	18.5	194.7
Maximum =	100203.5	22.8	207.3	13.1	69148.3	19.4	7.7	23.9	213.5
Minimum =	97666.2	15.3	184.4	11.7	61859.4	8.0	6.2	14.7	181.5
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	2662130.5	498.1	5233.1	335.9	1771179.2	360.2	186.9	501.3	5262.9

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

General Average Report

Reporting Period: 03/20/2013 to 03/20/2013

Site Name: UNIT3

Time of Report: 03/20/13 08:56

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	COPPM_3 (PPMD)	STMRPT_3 (KLB/HR)
03/20/13	08:14	13.8	187.8
	08:15	14.8	188.3
	08:16	15.3	186.0
	08:17	16.1	184.3
	08:18	15.8	185.4
	08:19	16.1	185.7
	08:20	14.4	185.5
	08:21	14.0	184.5
	08:22	15.8	184.8
	08:23	18.8	185.2
	08:24	18.2	186.0
	08:25	15.9	183.2
	08:26	13.0	182.2
	08:27	13.6	184.7
	08:28	14.8	187.3
	08:29	12.0	186.7
	08:30	11.6	183.0
	08:31	12.6	183.9
	08:32	14.4	185.8
	08:33	11.2	187.5
	08:34	8.5	187.4
	08:35	8.8	185.1
	08:36	9.3	183.9
	08:37	10.0	185.0
	08:38	10.5	185.6
	08:39	10.5	187.6
	08:40	11.3	186.3

Average =	13.4	185.5
Geometric Avg. =	13.1	185.5
Maximum =	18.8	188.3
Minimum =	8.5	182.2
Possible Values =	27	27
Included Values =	27	27
Total =	360.9	5008.5

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Plant Name: NBWD
General Average Report

Reporting Period: 03/20/2013 to 03/20/2013

Site Name: UNIT3
Data Averaging Type: 1m

Time of Report: 03/20/13 09:39
Rolling Average Interval: 1

Date	Time	STKFLOW3 (SCFM)	SO2ORPT3 (PPMDC)	NOXRPT_3 (PPMDC)	CO2_3 (PERCENTD)	CO2LBHR3 (LB/HR)	CORPT_3 (PPMDC)	O2OUT_3 (PERCENTD)	SO2OUT_3 (PPMD)	NOXPPM_3 (PPMD)
03/20/13	08:54	100040.6	18.1	187.1	12.9	68766.0	8.7	6.4	18.9	195.1
	08:55	99989.6	21.1	191.5	13.0	69310.3	11.3	6.3	22.1	200.7
	08:56	99756.5	23.0	189.5	12.6	67076.7	8.9	6.6	23.6	194.7
	08:57	99908.0	21.7	191.4	12.4	66074.3	8.3	7.0	21.8	191.9
	08:58	99988.7	20.7	192.9	12.4	66475.3	8.0	7.0	20.8	193.3
	08:59	99789.5	20.6	196.0	12.6	67267.9	8.0	6.8	20.9	198.8
	09:00	99496.4	21.3	203.1	13.0	69351.9	8.5	6.4	22.2	211.3
	09:01	99118.3	23.2	202.7	13.5	71586.7	7.2	5.7	25.4	221.6
	09:02	98952.7	22.2	197.2	12.8	67612.4	6.2	6.2	23.6	209.0
	09:03	99095.6	17.9	192.7	11.8	62674.9	5.8	7.3	17.4	188.0
	09:04	98968.4	15.3	199.0	11.9	62762.0	7.2	7.8	14.4	187.8
	09:05	98890.6	16.9	204.4	12.9	68275.2	5.7	6.7	17.3	209.0
	09:06	98602.8	20.4	201.3	13.0	68498.4	4.2	6.2	21.6	213.0
	09:07	98378.2	21.7	202.1	12.5	65518.5	4.5	6.6	22.3	207.2
	09:08	98467.2	20.0	202.9	11.7	61856.1	5.0	7.5	19.3	196.0
	09:09	98696.8	17.9	201.0	11.6	61164.5	6.2	7.9	16.8	188.4
	09:10	99259.4	20.1	202.7	12.3	65087.8	7.5	7.4	19.6	197.1
	09:11	99568.8	24.5	196.1	12.5	66497.8	7.0	6.8	24.9	199.0
	09:12	99740.7	24.6	190.5	12.0	64114.2	6.8	7.2	24.2	187.3
	09:13	99948.8	22.3	194.2	12.0	64016.4	8.8	7.4	21.6	188.1
	09:14	100133.5	20.7	195.1	11.9	63625.9	7.7	7.5	20.0	188.2
	09:15	100299.8	19.2	194.4	11.9	63617.9	8.2	7.7	18.3	185.3
	09:16	100315.2	20.2	196.4	12.7	68140.9	7.3	6.8	20.6	199.5
	09:17	100281.2	21.3	191.7	12.1	65096.4	6.2	6.9	21.5	192.9
	09:18	100441.8	18.9	189.3	11.5	61663.9	6.2	7.9	17.7	177.5
	09:19	100550.3	17.2	196.2	11.5	62062.2	8.3	8.1	15.8	180.2
	09:20	100305.5	18.5	208.5	12.8	68805.0	8.6	6.9	18.6	209.6

Average =		99592.0	20.4	196.7	12.4	65814.8	7.3	7.0	20.4	196.7
Geometric Avg. =		99589.9	20.2	196.6	12.3	65756.5	7.1	7.0	20.2	196.4
Maximum =		100550.3	24.6	208.5	13.5	71586.7	11.3	8.1	25.4	221.6
Minimum =		98378.2	15.3	187.1	11.5	61164.5	4.2	5.7	14.4	177.5
Possible Values =		27	27	27	27	27	27	27	27	27
Included Values =		27	27	27	27	27	27	27	27	27
Total =		2688984.8	549.7	5309.6	333.6	1776999.4	196.1	189.0	551.0	5310.2

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- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

General Average Report

Reporting Period: 03/20/2013 to 03/20/2013

Site Name: UNIT3

Time of Report: 03/20/13 09:39

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	COPPM_3 (PPMD)	STMRT_3 (KLB/HR)
03/20/13	08:54	9.0	187.1
	08:55	11.8	186.0
	08:56	9.2	184.8
	08:57	8.3	184.3
	08:58	8.0	184.6
	08:59	8.1	187.3
	09:00	8.9	189.2
	09:01	7.9	186.8
	09:02	6.5	182.8
	09:03	5.6	181.0
	09:04	6.8	185.0
	09:05	5.8	186.9
	09:06	4.5	186.0
	09:07	4.6	183.5
	09:08	4.8	181.3
	09:09	5.8	184.5
	09:10	7.2	184.7
	09:11	7.1	183.9
	09:12	6.7	184.0
	09:13	8.5	183.8
	09:14	7.4	184.7
	09:15	7.8	186.9
	09:16	7.4	184.5
	09:17	6.3	182.5
	09:18	5.8	181.2
	09:19	7.6	186.5
	09:20	8.6	186.9

Average =	7.3	184.8
Geometric Avg. =	7.1	184.8
Maximum =	11.8	189.2
Minimum =	4.5	181.0
Possible Values =	27	27
Included Values =	27	27
Total =	196.2	4990.6

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General Average Report

Reporting Period: 03/20/2013 to 03/20/2013

Site Name: UNIT3
Data Averaging Type: 1m

Time of Report: 03/20/13 10:19
Rolling Average Interval: 1

Date	Time	STFLOW3 (SCFM)	SO2ORPT3 (PPMDC)	NOXRPT_3 (PPMDC)	CO2_3 (PERCENTD)	CO2LBHR3 (LB/HR)	CORPT_3 (PPMDC)	O2OUT_3 (PERCENTD)	SO2OUT_3 (PPMD)	NOXPPM_3 (PPMD)
03/20/13	09:38	100603.2	14.8	201.9	11.3	60579.2	10.8	8.2	13.6	184.7
	09:39	100381.1	15.1	201.0	11.2	60382.8	12.5	8.4	13.6	181.0
	09:40	100395.1	16.8	206.8	11.4	61339.9	11.2	8.2	15.3	188.5
	09:41	100446.9	17.7	198.8	11.3	60592.5	9.7	8.2	16.2	182.0
	09:42	100877.8	17.3	201.9	11.2	60384.9	11.3	8.5	15.4	179.5
	09:43	101893.0	16.9	201.6	11.5	62936.3	9.3	8.0	15.7	187.2
	09:44	106225.5	16.9	198.4	11.1	63093.6	10.2	8.4	15.2	178.6
	09:45	110468.5	16.9	206.1	11.3	66567.6	8.7	8.4	15.2	185.7
	09:46	113840.5	16.9	208.2	11.3	68854.6	8.3	8.3	15.3	188.5
	09:47	114616.4	16.3	203.8	11.2	68925.4	9.1	8.3	14.8	185.3
	09:48	116769.5	15.5	199.4	11.0	68867.0	11.6	8.6	13.8	177.1
	09:49	118556.0	14.3	194.7	10.8	68420.0	11.9	8.8	12.4	169.3
	09:50	118799.8	13.1	200.0	11.3	71695.4	13.4	8.6	11.6	177.2
	09:51	118858.7	13.1	192.9	11.6	73595.7	11.1	7.9	12.2	179.7
	09:52	119200.0	13.6	188.4	11.3	72138.8	10.1	8.2	12.4	171.6
	09:53	119686.9	13.8	191.7	11.7	74780.7	8.7	7.9	12.9	179.4
	09:54	120154.3	13.8	192.0	11.4	73380.4	7.9	8.0	12.7	177.9
	09:55	120281.0	13.5	199.4	11.7	75377.0	9.4	7.9	12.7	187.0
	09:56	120332.4	13.6	191.0	11.5	74143.4	8.8	7.8	12.9	180.2
	09:57	120273.7	13.6	192.0	11.4	73324.6	10.2	8.2	12.4	175.4
	09:58	120321.8	13.9	198.0	11.8	75874.5	7.3	7.6	13.2	189.0
	09:59	120389.1	14.6	189.7	11.4	73191.1	6.9	8.0	13.6	176.4
	10:00	120109.4	15.0	197.5	11.8	75530.1	8.6	8.0	13.9	183.7
	10:01	119985.1	15.7	197.5	11.8	75918.9	6.7	7.4	15.2	191.4
	10:02	120076.4	15.0	183.3	11.1	71149.2	7.3	8.2	13.7	167.0
	10:03	119840.6	13.6	199.5	11.5	73658.8	9.4	8.2	12.4	181.9
	10:04	119595.5	13.1	197.7	11.6	74179.8	8.8	7.8	12.4	186.6

Average =	114184.4	15.0	197.5	11.4	69588.2	9.6	8.1	13.7	181.2
Geometric Avg. =	113900.5	14.9	197.4	11.4	69367.0	9.5	8.1	13.7	181.1
Maximum =	120389.1	17.7	208.2	11.8	75918.9	13.4	8.8	16.2	191.4
Minimum =	100381.1	13.1	183.3	10.8	60382.8	6.7	7.4	11.6	167.0
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	3082978.2	404.3	5333.1	307.5	1878882.4	259.3	220.0	370.7	4891.8

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- U - missing data substituted
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- 888 - value could not be calculated

General Average Report

Reporting Period: 03/20/2013 to 03/20/2013

Site Name: UNIT3

Time of Report: 03/20/13 10:19

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	COPPM_3 (PPMD)	STMRT_3 (KLB/HR)
03/20/13	09:38	9.9	180.2
	09:39	11.2	182.1
	09:40	10.2	180.9
	09:41	8.9	180.6
	09:42	10.1	181.5
	09:43	8.6	180.9
	09:44	9.2	180.7
	09:45	7.9	181.2
	09:46	7.5	180.6
	09:47	8.3	180.2
	09:48	10.3	178.2
	09:49	10.3	179.9
	09:50	11.9	181.5
	09:51	10.4	181.5
	09:52	9.2	183.0
	09:53	8.2	182.1
	09:54	7.3	183.7
	09:55	8.8	182.4
	09:56	8.4	182.2
	09:57	9.3	182.7
	09:58	7.0	181.5
	09:59	6.4	183.5
	10:00	8.0	183.6
	10:01	6.5	180.9
	10:02	6.6	181.8
	10:03	8.5	181.9
	10:04	8.3	182.8

Average =	8.8	181.6
Geometric Avg. =	8.7	181.6
Maximum =	11.9	183.7
Minimum =	6.4	178.2
Possible Values =	27	27
Included Values =	27	27
Total =	237.2	4902.3

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
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- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: NBWD
General Average Report

Reporting Period: 03/20/2013 to 03/20/2013

Site Name: UNIT3
Data Averaging Type: 1m

Time of Report: 03/20/13 11:01
Rolling Average Interval: 1

Date	Time	STKFLOW3 (SCFM)	SO2ORPT3 (PPMDC)	NOXRPT_3 (PPMDC)	CO2_3 (PERCENTD)	CO2LBHR3 (LB/HR)	CORPT_3 (PPMDC)	O2OUT_3 (PERCENTD)	SO2OUT_3 (PPMD)	NOXPPM_3 (PPMD)
03/20/13	10:17	111969.5	13.7	205.0	12.0	71655.6	7.1	7.3	13.4	200.5
	10:18	111904.1	12.9	203.4	11.5	69040.1	7.3	7.7	12.2	192.7
	10:19	111631.1	12.4	210.2	11.6	69379.1	8.5	7.9	11.6	196.1
	10:20	111398.0	12.5	202.8	11.8	70535.2	7.1	7.5	12.1	194.9
	10:21	111204.2	12.6	198.0	11.7	69678.9	7.4	7.7	11.9	188.0
	10:22	111104.4	12.8	199.1	11.9	70547.4	6.8	7.5	12.3	191.9
	10:23	110804.5	13.1	194.8	11.6	68835.8	8.3	7.8	12.3	183.6
	10:24	110511.6	12.7	197.9	11.6	68703.1	8.5	7.8	12.0	186.3
	10:25	110512.7	12.6	195.7	11.6	68526.5	9.0	7.9	11.8	183.6
	10:26	110565.6	12.8	192.4	11.5	67859.5	8.8	8.1	11.9	177.8
	10:27	110585.4	12.8	201.2	11.7	69291.2	7.4	7.8	12.1	190.3
	10:28	110145.1	12.9	200.3	11.5	67994.1	8.3	7.9	12.0	187.2
	10:29	109842.8	12.5	203.3	11.5	67592.1	8.1	8.0	11.7	189.1
	10:30	109750.4	12.6	210.5	11.9	70043.0	7.3	7.7	11.9	199.5
	10:31	110886.0	12.9	202.4	11.9	70794.2	6.2	7.4	12.5	197.3
	10:32	112336.4	13.0	192.7	11.4	68525.7	7.4	8.0	12.1	179.3
	10:33	113160.0	13.2	198.5	11.5	69320.7	7.3	8.1	12.2	182.3
	10:34	113345.5	13.7	207.4	12.1	73122.2	6.3	7.6	13.1	199.0
	10:35	113186.9	14.0	202.9	12.0	72878.7	4.6	7.2	13.8	199.2
	10:36	113247.1	13.0	198.4	11.5	69656.7	5.0	7.8	12.2	186.4
	10:37	113417.4	11.9	203.8	11.5	70004.1	6.7	8.0	11.1	188.9
	10:38	113901.2	11.9	204.5	11.6	70932.2	6.6	7.9	11.1	191.2
	10:39	114121.2	12.3	202.3	12.0	72951.2	6.7	7.7	11.7	192.7
	10:40	113846.1	13.6	203.6	12.6	76540.5	6.1	6.9	13.7	205.3
	10:41	113462.7	14.1	194.4	12.0	72621.3	5.1	7.1	14.0	192.6
	10:42	113511.8	13.5	187.9	11.5	69728.4	5.6	7.9	12.6	175.2
	10:43	113815.4	12.2	188.8	11.5	70219.3	6.3	8.0	11.3	175.0

Average =	112006.2	12.9	200.1	11.7	70258.4	7.0	7.7	12.2	189.9
Geometric Avg. =	111997.3	12.9	200.0	11.7	70231.6	6.9	7.7	12.2	189.7
Maximum =	114121.2	14.1	210.5	12.6	76540.5	9.0	8.1	14.0	205.3
Minimum =	109750.4	11.9	187.9	11.4	67592.1	4.6	6.9	11.1	175.0
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	3024166.8	348.2	5402.4	316.6	1896976.5	189.6	208.3	330.5	5126.0

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
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- S - suspect
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- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: NBWD
General Average Report
Reporting Period: 03/20/2013 to 03/20/2013

Site Name: UNIT3
Data Averaging Type: 1m

Time of Report: 03/20/13 11:01
Rolling Average Interval: 1

Date	Time	COPPM_3 (PPMD)	STMRT_3 (KLB/HR)
03/20/13	10:17	6.9	183.1
	10:18	6.9	184.0
	10:19	7.9	184.4
	10:20	6.8	183.8
	10:21	7.1	183.7
	10:22	6.5	184.3
	10:23	7.8	183.6
	10:24	8.0	183.1
	10:25	8.4	182.7
	10:26	8.1	182.7
	10:27	7.0	182.9
	10:28	7.8	182.0
	10:29	7.5	184.1
	10:30	6.9	183.7
	10:31	6.0	182.2
	10:32	6.9	182.3
	10:33	6.7	185.3
	10:34	6.1	185.3
	10:35	4.5	183.0
	10:36	4.7	183.1
	10:37	6.2	183.2
	10:38	6.2	185.2
	10:39	6.4	187.4
	10:40	6.2	186.5
	10:41	5.0	184.4
	10:42	5.2	182.7
	10:43	5.8	183.5

Average =	6.6	183.8
Geometric Avg. =	6.6	183.8
Maximum =	8.4	187.4
Minimum =	4.5	182.0
Possible Values =	27	27
Included Values =	27	27
Total =	179.5	4962.3

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Plant Name: NBWD
General Average Report

Reporting Period: 03/20/2013 to 03/20/2013

Site Name: UNIT3
Data Averaging Type: 1m

Time of Report: 03/20/13 12:37
Rolling Average Interval: 1

Date	Time	STKFLOW3 (SCFM)	SO2ORPT3 (PPMDC)	NOXRPT_3 (PPMDC)	CO2_3 (PERCENTD)	CO2LBHR3 (LB/HR)	CORPT_3 (PPMDC)	O2OUT_3 (PERCENTD)	SO2OUT_3 (PPMD)	NOXPPM_3 (PPMD)
03/20/13	11:01	112234.4	17.9	202.0	12.2	73145.8	5.5	7.0	17.9	201.8
	11:02	112075.7	16.0	201.4	11.5	69215.9	6.3	7.8	15.0	189.6
	11:03	112102.8	14.5	204.1	11.7	70381.9	8.8	9.1	13.4	188.1
	11:04	112094.7	15.4	211.0	12.6	75842.7	7.2	6.9	15.5	211.9
	11:05	111761.7	17.5	195.5	12.1	72319.7	5.7	7.1	17.4	194.3
	11:06	111499.2	17.6	188.7	11.6	69237.6	6.7	7.8	16.6	177.8
	11:07	111394.8	17.0	185.9	11.3	67405.2	7.4	8.2	15.5	169.5
	11:08	110929.3	18.1	184.3	11.3	66866.4	8.6	8.4	16.3	165.9
	11:09	108958.0	18.3	201.7	12.3	71671.0	8.8	7.5	17.6	193.9
	11:10	105614.9	19.1	195.9	12.2	69001.1	6.7	7.0	19.0	195.3
	11:11	103376.1	17.5	181.3	11.6	63972.2	7.4	7.8	16.5	171.0
	11:12	102517.0	15.6	167.3	11.1	60744.6	11.4	8.4	14.0	150.1
	11:13	102501.0	15.7	176.0	11.6	63631.7	14.2	8.3	14.3	160.1
	11:14	102564.4	17.5	179.1	11.6	63360.2	10.6	7.9	16.4	168.1
	11:15	103277.2	17.5	174.6	11.0	60808.3	10.6	8.6	15.6	155.0
	11:16	103377.2	17.4	191.4	11.6	64359.9	9.5	8.1	16.0	175.8
	11:17	103437.3	16.9	178.2	11.2	62202.8	8.9	8.2	15.5	163.1
	11:18	103450.4	15.7	171.7	11.1	61583.6	12.4	8.5	13.9	152.6
	11:19	103284.0	15.3	169.5	11.1	61383.3	13.0	8.6	13.6	150.5
	11:20	103087.5	14.9	172.3	11.1	61091.9	12.2	8.5	13.2	153.4
	11:21	102847.7	14.6	173.1	10.9	59748.8	14.1	8.8	12.7	150.5
	11:22	102413.4	15.0	178.7	11.1	60592.0	13.8	8.7	13.2	157.0
	11:23	102313.0	16.1	181.6	11.2	61180.1	12.7	8.5	14.3	161.7
	11:24	102731.8	16.5	187.0	11.3	62062.4	10.0	8.3	15.0	170.1
	11:25	103342.5	17.5	186.7	10.9	60137.5	10.7	8.7	15.4	164.5
	11:26	103730.8	17.5	188.0	11.0	61214.2	10.0	8.6	15.5	166.1
	11:27	104054.0	16.5	184.3	10.8	60199.1	11.3	8.8	14.3	160.3

Average =		105961.9	16.6	185.6	11.4	64939.3	9.8	8.1	15.3	171.0
Geometric Avg. =		105888.8	16.6	185.3	11.4	64775.6	9.4	8.1	15.2	170.2
Maximum =		112234.4	19.1	211.0	12.6	75842.7	14.2	8.8	19.0	211.9
Minimum =		102313.0	14.5	167.3	10.8	59748.8	5.5	6.9	12.7	150.1
Possible Values =		27	27	27	27	27	27	27	27	27
Included Values =		27	27	27	27	27	27	27	27	27
Total =		2860971.0	449.0	5011.3	309.1	1753360.0	264.5	219.1	413.6	4618.0

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- B - invalid (PADER)
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- 888 - value could not be calculated

Reporting Period: 03/20/2013 to 03/20/2013

Site Name: UNIT3
Data Averaging Type: 1m

Time of Report: 03/20/13 12:37
Rolling Average Interval: 1

Date	Time	COPPM_3 (PPMD)	STMRPT_3 (KLB/HR)
03/20/13	11:01	5.5	183.2
	11:02	6.0	182.9
	11:03	8.1	186.2
	11:04	7.3	185.0
	11:05	5.7	184.1
	11:06	6.3	183.9
	11:07	6.8	182.1
	11:08	7.7	185.5
	11:09	8.5	185.6
	11:10	6.7	183.8
	11:11	7.0	181.7
	11:12	10.2	183.3
	11:13	12.9	182.7
	11:14	9.9	180.4
	11:15	9.4	182.3
	11:16	8.7	180.9
	11:17	8.1	181.2
	11:18	11.1	181.6
	11:19	11.5	181.4
	11:20	10.8	180.6
	11:21	12.3	181.2
	11:22	12.1	181.4
	11:23	11.3	182.0
	11:24	9.1	181.9
	11:25	9.5	181.9
	11:26	8.9	181.1
	11:27	9.8	182.6

Average =	8.9	182.6
Geometric Avg. =	8.7	182.6
Maximum =	12.9	186.2
Minimum =	5.5	180.4
Possible Values =	27	27
Included Values =	27	27
Total =	241.0	4930.4

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Plant Name: NEWD

General Average Report

Reporting Period: 03/20/2013 to 03/20/2013

Site Name: UNIT3

Time of Report: 03/20/13 12:39

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	STKFLOW3 (SCFM)	SO2ORPT3 (PPMDC)	NOXRPT_3 (PPMDC)	CO2_3 (PERCENTD)	CO2LBHR3 (LB/HR)	CORPT_3 (PPMDC)	O2OUT_3 (PERCENTD)	SO2OUT_3 (PPMD)	NOXPPM_3 (PPMD)
03/20/13	11:41	115381.1	11.5	213.1	10.8	66875.7	13.5	8.8	10.0	185.7
	11:42	114984.5	11.7	218.8	10.8	66440.8	14.0	8.8	10.1	189.8
	11:43	113721.7	12.2	216.9	11.1	67373.6	12.5	8.6	10.8	192.3
	11:44	111829.9	12.9	210.5	11.2	67150.1	11.9	8.4	11.6	189.4
	11:45	109748.9	13.1	208.2	10.9	64223.8	9.4	8.4	11.8	186.5
	11:46	106723.0	12.5	208.8	10.8	61714.7	9.8	8.9	10.8	180.4
	11:47	103871.7	11.5	207.6	11.2	62306.7	8.3	8.4	10.3	186.6
	11:48	102795.6	12.0	208.7	11.6	63768.8	8.9	8.1	11.1	192.7
	11:49	102257.2	13.2	196.8	11.5	63124.8	9.3	7.9	12.4	184.7
	11:50	102178.1	14.0	183.0	11.1	60534.7	10.4	8.4	12.6	165.1
	11:51	102297.6	14.4	180.9	11.2	61025.0	13.1	8.6	12.8	160.7
	11:52	102384.3	14.8	175.6	11.1	60958.1	11.9	8.4	13.4	158.3
	11:53	102438.6	15.1	182.0	11.1	60862.6	11.5	8.5	13.5	162.5
	11:54	102100.6	15.8	188.8	11.1	60716.4	11.2	8.5	14.1	168.3
	11:55	101585.1	16.4	192.4	11.5	62438.2	11.9	8.1	15.1	176.8
	11:56	101369.0	17.0	187.7	10.9	59305.4	11.9	8.4	15.3	168.9
	11:57	101119.7	16.4	203.0	11.1	60304.3	13.2	8.6	14.5	179.9
	11:58	100995.9	16.4	199.2	11.3	60815.7	11.0	8.2	14.9	181.5
	11:59	101316.5	17.1	192.0	10.8	58678.6	13.0	8.7	14.9	168.0
	12:00	101691.8	17.1	198.9	11.5	62290.3	12.6	8.3	15.6	180.9
	12:01	101767.0	17.1	196.8	11.2	60808.3	10.7	8.3	15.5	178.9
	12:02	101636.6	16.3	211.4	11.5	62415.5	10.3	8.2	14.8	192.5
	12:03	101482.5	17.0	209.0	11.6	62827.5	8.4	7.9	15.9	196.0
	12:04	101110.1	17.2	201.6	11.2	60794.3	8.0	8.2	15.8	184.9
	12:05	101242.4	16.4	191.8	10.9	59086.9	9.1	8.7	14.4	168.8
	12:06	101414.8	15.6	195.8	11.4	61709.8	9.1	8.3	14.1	176.9
	12:07	101608.5	16.1	191.8	11.3	61229.9	9.4	8.2	14.8	175.4

Average =	104113.1	14.8	198.9	11.2	62214.1	10.9	8.4	13.4	179.0
Geometric Avg. =	104018.8	14.7	198.6	11.2	62170.4	10.8	8.4	13.2	178.7
Maximum =	115381.1	17.2	218.8	11.6	67373.6	14.0	8.9	15.9	196.0
Minimum =	100995.9	11.5	175.6	10.8	58678.6	8.0	7.9	10.0	158.3
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	2811052.8	400.8	5371.0	301.8	1679780.5	294.3	226.6	361.0	4832.3

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- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: NBWD
General Average Report
Reporting Period: 03/20/2013 to 03/20/2013

Site Name: UNIT3
Data Averaging Type: 1m

Time of Report: 03/20/13 12:39
Rolling Average Interval: 1

Date	Time	COPPM_3 (PPMD)	STMRT_3 (KLB/HR)
03/20/13	11:41	11.7	181.1
	11:42	12.1	181.9
	11:43	11.1	183.0
	11:44	10.7	182.5
	11:45	8.4	182.1
	11:46	8.5	181.7
	11:47	7.5	183.7
	11:48	8.2	183.9
	11:49	8.7	183.0
	11:50	9.4	183.8
	11:51	11.6	182.8
	11:52	10.7	183.6
	11:53	10.2	183.3
	11:54	9.9	184.7
	11:55	11.0	182.7
	11:56	10.7	182.5
	11:57	11.7	183.1
	11:58	10.1	182.4
	11:59	11.4	183.8
	12:00	11.4	181.9
	12:01	9.8	183.3
	12:02	9.4	184.9
	12:03	7.9	184.7
	12:04	7.4	183.5
	12:05	8.0	183.7
	12:06	8.2	183.4
	12:07	8.6	182.8

Average =	9.8	183.1
Geometric Avg. =	9.7	183.1
Maximum =	12.1	184.9
Minimum =	7.4	181.1
Possible Values =	27	27
Included Values =	27	27
Total =	264.4	4943.8

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Plant Name: NBWD
General Average Report
Reporting Period: 03/20/2013 to 03/20/2013

Site Name: UNIT3
Data Averaging Type: 1m

Time of Report: 03/20/13 13:55
Rolling Average Interval: 1

Date	Time	STKFLOW3 (SCFM)	SO2ORPT3 (PPMDC)	NOXRPT_3 (PPMDC)	CO2_3 (PERCENTD)	CO2LBHR3 (LB/HR)	CORPT_3 (PPMDC)	O2OUT_3 (PERCENTD)	SO2OUT_3 (PPMD)	NOXPPM_3 (PPMD)
03/20/13	12:31	105156.2	22.9	199.9	11.4	64277.0	9.4	8.0	21.3	185.9
	12:32	107200.9	21.6	198.4	11.1	63835.4	12.0	8.6	19.2	175.9
	12:33	108581.2	21.7	198.4	11.2	65054.2	11.6	8.4	19.5	178.2
	12:34	110794.7	21.6	188.6	11.1	65689.0	14.3	8.7	19.0	165.6
	12:35	111129.1	23.1	188.7	11.3	67383.1	11.3	8.4	20.8	170.3
	12:36	111445.1	24.8	180.9	11.0	65548.1	10.8	8.6	22.0	160.0
	12:37	111058.4	25.9	185.6	11.1	65766.1	11.8	8.6	22.8	163.6
	12:38	110552.7	25.8	189.6	11.1	65821.4	11.9	8.6	22.8	167.7
	12:39	109677.7	24.2	191.1	11.1	65280.9	11.8	8.5	21.6	170.4
	12:40	108990.8	22.4	197.0	11.2	65581.3	13.1	8.6	19.9	174.8
	12:41	108643.5	21.2	197.0	11.4	66505.4	10.2	8.1	19.5	181.7
	12:42	108233.7	20.7	188.2	10.9	62848.8	11.2	8.7	18.2	165.2
	12:43	107824.6	20.3	195.5	11.3	65110.3	11.4	8.6	18.1	173.6
	12:44	108056.0	20.4	192.3	11.1	64142.3	9.1	8.4	18.3	172.7
	12:45	108534.3	21.4	192.4	10.8	62813.4	10.5	8.8	18.6	167.0
	12:46	107993.0	26.4	201.7	11.1	63950.8	12.0	8.7	23.1	176.6
	12:47	107243.7	40.6	198.2	10.9	62771.1	11.5	8.7	35.6	173.5
	12:48	106840.4	92.2	193.7	11.1	63458.8	11.2	8.6	81.8	171.9
	12:49	106790.4	104.2	187.9	11.0	62572.3	9.9	8.7	91.7	165.2
	12:50	106561.3	46.6	184.7	11.3	64518.4	9.6	8.4	42.0	166.3
	12:51	106859.4	25.2	180.5	11.2	64003.6	8.7	8.3	22.8	163.2
	12:52	107628.0	16.0	181.4	11.6	66680.2	10.7	8.2	14.7	166.1
	12:53	108667.6	12.0	182.9	11.7	67818.3	9.9	7.7	11.4	173.4
	12:54	109702.3	10.1	176.0	10.8	63105.0	10.0	8.6	9.0	155.7
	12:55	109887.1	9.4	182.6	10.9	64014.6	11.3	8.9	8.1	157.1
	12:56	109615.1	11.1	186.2	11.2	65546.6	10.9	8.6	9.9	165.4
	12:57	109282.1	15.0	186.4	11.2	65668.9	10.3	8.3	13.6	168.9

Average =		108627.8	27.7	189.8	11.2	64806.1	11.0	8.5	24.6	169.5
Geometric Avg. =		108616.4	23.2	189.7	11.2	64791.0	10.9	8.5	20.7	169.3
Maximum =		111445.1	104.2	201.7	11.7	67818.3	14.3	8.9	91.7	185.9
Minimum =		105156.2	9.4	176.0	10.8	62572.3	8.7	7.7	8.1	155.7
Possible Values =		27	27	27	27	27	27	27	27	27
Included Values =		27	27	27	27	27	27	27	27	27
Total =		2932949.2	747.3	5125.8	301.2	1749765.1	296.5	229.3	665.2	4576.0

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
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- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

General Average Report

Reporting Period: 03/20/2013 to 03/20/2013

Site Name: UNIT3

Time of Report: 03/20/13 13:55

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	COPPM_3 (PPMD)	STMRT_3 (KLB/HR)
03/20/13	12:31	8.8	183.9
	12:32	10.7	183.3
	12:33	10.4	182.6
	12:34	12.5	183.4
	12:35	10.2	182.6
	12:36	9.6	182.8
	12:37	10.4	182.5
	12:38	10.6	181.9
	12:39	10.5	183.8
	12:40	11.6	184.6
	12:41	9.4	182.4
	12:42	9.8	184.2
	12:43	10.2	183.8
	12:44	8.1	182.7
	12:45	9.1	183.2
	12:46	10.5	183.0
	12:47	10.1	183.9
	12:48	9.9	182.8
	12:49	8.7	184.1
	12:50	8.6	182.8
	12:51	7.9	186.1
	12:52	9.8	186.6
	12:53	9.4	182.4
	12:54	8.8	181.9
	12:55	9.7	183.0
	12:56	9.7	183.3
	12:57	9.4	183.1

Average =	9.8	183.4
Geometric Avg. =	9.7	183.4
Maximum =	12.5	186.6
Minimum =	7.9	181.9
Possible Values =	27	27
Included Values =	27	27
Total =	264.4	4950.7

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: NBWD
General Average Report
Reporting Period: 03/20/2013 to 03/20/2013

Site Name: UNIT3
Data Averaging Type: 1m

Time of Report: 03/20/13 13:57
Rolling Average Interval: 1

Date	Time	STKFLOW3 (SCFM)	SO2ORPT3 (PPMDC)	NOKRPT_3 (PPMDC)	CO2_3 (PERCENTD)	CO2LBHR3 (LB/HR)	CORPT_3 (PPMDC)	O2OUT_3 (PERCENTD)	SO2OUT_3 (PPMD)	NOKPPM_3 (PPMD)
03/20/13	13:11	115315.9	16.0	193.9	10.5	64545.5	11.5	9.1	13.6	164.6
	13:12	115288.9	14.4	191.0	10.7	66061.7	12.6	9.1	12.3	162.8
	13:13	114583.2	14.3	192.9	11.0	67669.6	12.1	8.7	12.5	169.7
	13:14	112882.0	15.5	188.6	11.0	66443.5	11.7	8.6	13.8	167.4
	13:15	111501.6	16.1	180.8	10.6	63003.4	12.4	8.9	13.9	155.6
	13:16	110887.1	15.8	180.4	10.5	62037.0	14.3	9.2	13.2	151.3
	13:17	110602.9	15.7	180.2	10.5	61838.5	16.3	9.3	13.1	150.1
	13:18	110470.1	16.4	186.2	10.7	63418.7	16.0	9.1	14.0	158.6
	13:19	110376.9	16.9	192.0	10.9	64644.3	13.6	8.8	14.7	167.6
	13:20	111499.5	16.9	191.6	10.7	64089.2	12.3	8.9	14.7	166.0
	13:21	113420.4	16.5	191.8	10.7	65203.4	14.8	9.0	14.1	164.3
	13:22	117771.3	16.1	185.8	10.6	67064.2	13.8	9.0	13.8	158.7
	13:23	124094.5	15.5	198.8	10.3	68673.7	14.1	9.6	12.6	162.1
	13:24	127264.0	16.0	206.2	11.1	75703.0	13.3	8.8	14.0	179.9
	13:25	127563.6	15.3	199.0	11.4	77496.0	10.7	8.2	14.0	182.5
	13:26	127828.6	13.6	200.1	10.7	73064.8	11.3	8.7	11.9	175.3
	13:27	128050.3	12.9	202.1	10.8	73705.2	13.2	8.9	11.1	174.2
	13:28	128293.4	13.7	201.7	10.8	74291.1	13.9	8.8	11.9	175.2
	13:29	128200.4	15.8	199.5	11.0	75277.2	13.7	8.6	13.9	176.3
	13:30	127942.2	16.9	193.8	11.1	75633.4	12.3	8.6	14.9	171.5
	13:31	127449.1	15.2	190.3	10.9	74256.7	10.6	8.6	13.5	168.3
	13:32	126741.4	13.8	190.8	10.9	74228.5	12.2	8.7	12.1	167.7
	13:33	126429.2	13.2	187.7	10.8	72975.0	11.5	8.7	11.5	164.2
	13:34	126040.9	12.7	188.6	11.1	74908.1	12.3	8.6	11.3	167.5
	13:35	126026.3	13.0	183.3	11.0	74113.0	12.5	8.5	11.5	163.2
	13:36	125289.6	14.0	190.7	11.5	76941.0	12.3	8.1	12.9	175.4
	13:37	124339.7	15.5	182.9	11.1	73642.1	10.1	8.2	14.1	167.1

Average =		120598.3	15.1	191.5	10.9	70034.4	12.8	8.8	13.1	166.9
Geometric Avg. =		120384.2	15.0	191.4	10.8	69841.8	12.7	8.8	13.1	166.7
Maximum =		128293.4	16.9	206.2	11.5	77496.0	16.3	9.6	14.9	182.5
Minimum =		110376.9	12.7	180.2	10.3	61838.5	10.1	8.1	11.1	150.1
Possible Values =		27	27	27	27	27	27	27	27	27
Included Values =		27	27	27	27	27	27	27	27	27
Total =		3256153.2	407.6	5170.8	293.0	1890927.6	345.4	237.2	355.0	4507.1

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

General Average Report

Reporting Period: 03/20/2013 to 03/20/2013

Site Name: UNIT3

Time of Report: 03/20/13 13:57

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	COPPM_3 (PPMD)	STMREP_3 (KLB/HR)
03/20/13	13:11	9.8	180.8
	13:12	10.8	182.2
	13:13	10.6	183.7
	13:14	10.4	182.1
	13:15	10.7	181.2
	13:16	12.0	179.8
	13:17	13.6	180.7
	13:18	13.6	182.0
	13:19	11.9	181.9
	13:20	10.7	181.9
	13:21	12.7	181.3
	13:22	11.8	181.2
	13:23	11.5	183.1
	13:24	11.6	184.8
	13:25	9.8	183.1
	13:26	9.9	182.4
	13:27	11.3	182.3
	13:28	12.1	183.3
	13:29	12.1	184.8
	13:30	10.9	183.5
	13:31	9.4	183.9
	13:32	10.7	183.4
	13:33	10.0	184.4
	13:34	11.0	183.9
	13:35	11.1	186.7
	13:36	11.3	185.0
	13:37	9.2	183.9

Average =	11.1	182.9
Geometric Avg. =	11.1	182.9
Maximum =	13.6	186.7
Minimum =	9.2	179.8
Possible Values =	27	27
Included Values =	27	27
Total =	300.4	4937.4

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
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- F - stack not operating
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- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: NBWD
General Average Report
Reporting Period: 03/20/2013 to 03/20/2013

Site Name: UNIT3
Data Averaging Type: 1m

Time of Report: 03/20/13 14:32
Rolling Average Interval: 1

Date	Time	STKFLOW3 (SCFM)	SO2ORPT3 (PPMDC)	NOXRPT_3 (PPMDC)	CO2_3 (PERCENTD)	CO2LBHR3 (LB/HR)	CORPT_3 (PPMDC)	O2OUT_3 (PERCENTD)	SO2OUT_3 (PPMD)	NOXPPM_3 (PPMD)
03/20/13	13:51	101438.3	14.0	215.1	10.8	58758.2	16.8	8.9	12.2	186.3
	13:52	102214.6	13.2	203.6	10.8	59308.1	18.6	8.8	11.5	176.8
	13:53	103202.6	12.1	196.9	11.0	60865.7	17.6	8.6	10.7	174.2
	13:54	105288.1	10.8	200.5	10.9	61110.2	16.8	8.8	9.5	175.0
	13:55	110743.0	9.8	204.4	10.7	63506.2	15.6	8.9	8.5	177.2
	13:56	115321.5	9.5	199.7	10.6	65587.0	15.1	9.0	8.1	170.7
	13:57	117253.8	9.5	191.9	10.6	66738.2	16.0	9.1	8.1	162.9
	13:58	117761.4	9.4	185.8	10.8	68108.4	14.9	8.8	8.2	161.3
	13:59	119501.6	9.5	195.1	10.9	69679.4	15.3	8.8	8.3	170.4
	14:00	121157.6	9.8	202.6	10.9	70658.7	13.0	8.7	8.6	177.7
	14:01	121389.8	9.8	199.8	10.8	70131.1	12.1	8.8	8.5	173.9
	14:02	121994.0	9.5	191.0	11.0	71578.5	11.7	8.7	8.3	168.1
	14:03	122532.8	9.5	184.4	10.8	70933.5	13.9	8.8	8.3	160.7
	14:04	123486.3	9.1	191.5	10.8	71562.5	14.5	8.7	7.9	167.5
	14:05	126332.2	9.0	197.5	10.9	73470.8	13.4	8.8	7.8	172.0
	14:06	126181.4	9.0	198.4	11.0	74462.9	12.7	8.6	7.9	175.5
	14:07	125753.8	9.0	196.9	10.9	73582.8	11.9	8.5	8.0	175.0
	14:08	125353.9	9.1	203.3	10.9	72801.3	11.9	8.8	8.0	177.3
	14:09	125434.6	9.1	209.2	10.7	71562.2	11.2	8.9	7.9	180.9
	14:10	125701.7	9.0	217.5	10.8	72835.1	12.2	8.9	7.8	187.2
	14:11	125775.1	9.1	202.9	11.4	76364.6	11.8	8.3	8.2	183.2
	14:12	126094.6	9.3	186.5	11.2	75659.4	9.4	8.2	8.5	170.4
	14:13	127134.8	9.1	201.0	11.3	76521.5	9.1	8.3	8.3	182.1
	14:14	127535.3	8.6	203.2	11.1	75796.2	9.6	8.3	7.8	184.4
	14:15	126827.0	8.3	194.3	11.1	74956.9	12.3	8.5	7.4	173.5
	14:16	126191.8	7.6	182.6	10.8	73186.6	11.7	8.6	6.8	161.6
	14:17	125452.5	6.9	190.1	11.1	74368.2	13.3	8.6	6.1	167.8

Average =		120113.1	9.6	198.0	10.9	70151.6	13.4	8.7	8.4	173.8
Geometric Avg. =		119818.0	9.5	197.8	10.9	69943.6	13.2	8.7	8.3	173.7
Maximum =		127535.3	14.0	217.5	11.4	76521.5	18.6	9.1	12.2	187.2
Minimum =		101438.3	6.9	182.6	10.6	58758.2	9.1	8.2	6.1	160.7
Possible Values =		27	27	27	27	27	27	27	27	27
Included Values =		27	27	27	27	27	27	27	27	27
Total =		3243054.0	258.7	5345.7	294.7	1894094.1	362.2	234.7	227.0	4693.6

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

General Average Report

Reporting Period: 03/20/2013 to 03/20/2013

Site Name: UNIT3

Time of Report: 03/20/13 14:32

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	COPPM_3 (PPMD)	STMRTPT_3 (KLB/HR)
03/20/13	13:51	14.5	182.5
	13:52	16.2	183.8
	13:53	15.6	182.7
	13:54	14.6	182.6
	13:55	13.5	183.2
	13:56	12.9	181.9
	13:57	13.6	182.1
	13:58	12.9	182.6
	13:59	13.3	183.8
	14:00	11.4	182.8
	14:01	10.5	183.3
	14:02	10.3	183.2
	14:03	12.1	182.6
	14:04	12.7	182.9
	14:05	11.7	183.3
	14:06	11.2	183.7
	14:07	10.6	183.5
	14:08	10.4	181.6
	14:09	9.7	181.2
	14:10	10.5	183.1
	14:11	10.6	184.0
	14:12	8.6	184.3
	14:13	8.3	184.5
	14:14	8.7	185.4
	14:15	11.0	183.4
	14:16	10.3	183.6
	14:17	11.8	183.7

Average =	11.8	183.2
Geometric Avg. =	11.6	183.2
Maximum =	16.2	185.4
Minimum =	8.3	181.2
Possible Values =	27	27
Included Values =	27	27
Total =	317.4	4945.2

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: NBWD
General Average Report

Reporting Period: 03/20/2013 to 03/20/2013

Site Name: UNIT3
Data Averaging Type: 1m

Time of Report: 03/20/13 15:19
Rolling Average Interval: 1

Date	Time	STKFLOW3 (SCFM)	SO2ORPT3 (PPMDC)	NOXRPT_3 (PPMDC)	CO2_3 (PERCENTD)	CO2LBHR3 (LB/HR)	CORPT_3 (PPMDC)	O2OUT_3 (PERCENTD)	SO2OUT_3 (PPMD)	NOXPPM_3 (PPMD)
03/20/13	14:31	104526.2	8.8	186.8	11.2	62634.0	12.2	8.4	7.9	168.2
	14:32	103381.2	9.6	188.5	11.4	63146.0	11.0	8.1	8.8	173.6
	14:33	101045.2	10.3	184.9	10.9	59161.0	11.1	8.5	9.2	165.0
	14:34	100868.5	11.2	188.5	11.2	60316.4	12.2	8.5	10.0	168.4
	14:35	100913.8	12.7	183.8	11.0	59542.8	11.4	8.5	11.4	164.3
	14:36	101222.4	12.7	186.5	11.1	60221.2	12.0	8.5	11.3	165.9
	14:37	101374.7	13.5	187.8	11.3	61170.3	11.3	8.3	12.2	169.8
	14:38	101615.3	14.4	189.9	11.3	61487.6	10.5	8.2	13.2	174.1
	14:39	101679.8	14.9	180.9	10.7	58245.4	11.7	8.7	13.0	158.4
	14:40	101790.1	14.8	179.9	10.4	56865.9	13.5	9.1	12.5	152.4
	14:41	102225.9	15.0	185.0	10.6	57692.6	14.6	9.2	12.6	155.1
	14:42	103419.4	16.1	183.4	10.7	58937.7	13.2	8.9	13.8	158.1
	14:43	108279.8	18.5	178.8	10.3	59921.9	15.2	9.3	15.5	149.5
	14:44	115460.4	20.0	180.1	10.3	63658.9	13.2	9.3	16.6	150.1
	14:45	120446.6	19.6	188.3	10.5	67348.0	13.2	9.2	16.5	158.2
	14:46	123839.5	17.9	195.0	10.5	69316.4	13.1	9.1	15.2	165.7
	14:47	124271.2	16.1	200.6	10.4	69115.0	13.3	9.3	13.5	167.8
	14:48	123124.4	15.3	202.4	10.6	69794.2	11.9	9.1	13.1	172.4
	14:49	120965.0	16.4	206.0	10.7	69109.3	12.1	9.0	14.0	176.7
	14:50	118365.4	16.9	207.6	10.8	68098.9	11.0	8.9	14.6	179.6
	14:51	115340.0	16.4	202.4	10.7	66142.4	11.6	8.8	14.2	175.8
	14:52	114753.4	15.5	200.0	10.5	64353.4	13.8	9.1	13.1	169.5
	14:53	114405.4	14.0	205.5	10.8	65779.8	12.3	9.0	12.0	175.9
	14:54	114310.6	13.3	205.6	10.8	65908.8	10.8	8.8	11.6	179.4
	14:55	114390.7	13.6	207.2	10.7	65169.8	10.5	9.0	11.7	177.9
	14:56	114548.1	13.4	212.4	10.8	66107.0	8.5	8.9	11.6	184.0
	14:57	114780.1	14.6	212.5	10.7	65555.3	8.4	8.9	12.6	183.7

Average =	110420.1	14.6	193.7	10.8	63511.1	12.0	8.8	12.7	168.1
Geometric Avg. =	110115.6	14.4	193.4	10.8	63391.4	11.9	8.8	12.5	167.9
Maximum =	124271.2	20.0	212.5	11.4	69794.2	15.2	9.3	16.6	184.0
Minimum =	100868.5	8.8	178.8	10.3	56865.9	8.4	8.1	7.9	149.5
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	2981343.0	395.4	5229.9	290.7	1714800.0	323.5	238.5	341.9	4539.7

- * - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

General Average Report

Reporting Period: 03/20/2013 to 03/20/2013

Site Name: UNIT3

Time of Report: 03/20/13 15:19

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	COPPM_3 (PPMD)	STMRPT_3 (KLB/HR)
03/20/13	14:31	11.0	185.5
	14:32	10.1	183.7
	14:33	9.9	185.0
	14:34	10.9	183.5
	14:35	10.2	183.3
	14:36	10.7	184.2
	14:37	10.3	185.5
	14:38	9.6	183.2
	14:39	10.3	181.2
	14:40	11.5	180.9
	14:41	12.3	182.6
	14:42	11.4	183.1
	14:43	12.7	183.8
	14:44	11.0	183.6
	14:45	11.1	183.3
	14:46	11.2	181.5
	14:47	11.1	181.3
	14:48	10.2	182.2
	14:49	10.3	182.5
	14:50	9.5	183.3
	14:51	10.1	182.0
	14:52	11.7	182.9
	14:53	10.5	183.5
	14:54	9.4	182.7
	14:55	9.0	184.3
	14:56	7.4	183.9
	14:57	7.3	184.6

Average =	10.4	183.2
Geometric Avg. =	10.3	183.2
Maximum =	12.7	185.5
Minimum =	7.3	180.9
Possible Values =	27	27
Included Values =	27	27
Total =	280.3	4947.2

* - excluded values (missing, OOC, invalid, suspect)
 < - missing
 T - out-of-control
 I - invalid
 S - suspect
 H - exceedance
 F - stack not operating
 B - invalid (PADER)
 U - missing data substituted
 -999 - missing value
 -888 - value could not be calculated

REFERENCE METHOD DATA

H

I hereby certify that all pages contained within this Appendix have been reviewed and, to the best of my ability, verified as accurate.

QA/QC Initials: JSB

Date: 4/30



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Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

Date: **March 19, 2013**
 Start Time 7:22
 Stop Time 7:40

CALIBRATION ERROR

	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
	NOX	SO2	CO	O2	CO2
	FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
	ppmdv	ppmdv	ppmdv	%dv	%dv
Instrument Information					
Manufacturer:	T.E.I. Wstrn Rsrch		T.E.I.	Servomex	Servomex
Model:	42i-HL	921NMP	48i	1420C	1415C
Detection:	Chemilumi.	UV Photo.	GFC/NDIR	Paramagn.	NDIR
Asset or Serial No:	207983	205878	204764	204621	205831

Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900

System Response Time (seconds)					
	50	50	50	50	50

Manufacturer Certified Cylinder Value (C_v)					
Zero	0.000	0.000	0.000	0.000	0.000
Low	223.000	45.100	47.300	9.520	9.530
Mid					
High	448.000	90.800	96.300	18.100	17.900

Actual gas to be used for bias checks					
	223.000	45.100	47.300	9.520	9.530

Cylinder ID					
Zero					
Low	ALM019186	ALM019186	AL0340	CC196768	CC196768
Mid					
High	ALM012619	ALM012619	CC181272	ALM040668	ALM040668

Analyzer Calibration Response (C_{Dir})					
Zero	-0.022	-0.040	-0.035	-0.008	-0.006
Low	221.788	44.044	48.177	9.511	9.472
Mid					
High	448.433	90.164	96.552	18.120	17.924

Analyzer Calibration Error (ACE) (Limit = 2%, Method 25A limit = 5% of gas value)					
Zero	0.0%	0.0%	0.0%	0.0%	0.0%
Low	-0.3%	-1.2%	0.9%	0.0%	-0.3%
Mid	N/A	N/A	N/A	N/A	N/A
High	0.1%	-0.7%	0.3%	0.1%	0.1%

Calibration Error Status					
Zero	OK	OK	OK	OK	OK
Low	OK	OK	OK	OK	OK
Mid	N/A	N/A	N/A	N/A	N/A
High	OK	OK	OK	OK	OK

Time	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
07:22:01	-0.033	-0.177	-0.764	18.068	17.890
07:22:16	-0.033	-0.166	-0.785	18.067	17.898
07:22:31	-0.033	-0.171	-0.716	18.111	17.905
07:22:46	-0.008	-0.181	-0.676	18.120	17.908

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

Date: **March 19, 2013**
 Start Time 7:22
 Stop Time 7:40

CALIBRATION ERROR

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
07:23:01	-0.016	-0.195	-0.700	18.117	17.914
07:23:16	-0.008	-0.026	-0.767	18.118	17.917
07:23:31	-0.041	-0.006	-0.759	18.117	17.916
07:23:46	-0.033	-0.039	-0.443	18.120	17.919
07:24:01	-0.024	-0.036	-0.088	18.118	17.925
07:24:16	-0.016	-0.034	-0.042	18.121	17.923
07:24:31	-0.024	-0.033	-0.058	18.119	17.924
07:24:46	0.000	-0.028	-0.026	14.261	14.542
07:25:01	0.195	-0.015	-0.031	9.891	9.781
07:25:16	0.171	-0.059	0.187	9.532	9.420
07:25:31	-0.057	-0.073	0.309	9.515	9.410
07:25:46	-0.146	-0.094	0.345	9.450	9.386
07:26:01	-0.024	-0.088	0.369	9.512	9.455
07:26:16	-0.041	-0.034	0.355	9.511	9.467
07:26:31	-0.024	-0.049	0.358	9.511	9.475
07:26:46	-0.057	-0.037	0.383	9.510	9.474
07:27:01	-0.033	12.957	0.383	6.152	9.414
07:27:16	69.149	66.156	0.325	0.451	9.846
07:27:31	303.451	85.760	0.122	0.005	9.922
07:27:46	412.934	89.910	-0.070	-0.019	9.923
07:28:01	443.134	90.833	-0.083	0.000	9.925
07:28:16	445.551	91.307	-0.085	-0.001	9.928
07:28:31	446.081	91.481	-0.093	-0.002	9.931
07:28:46	446.919	91.837	-0.065	-0.004	9.931
07:29:01	444.689	92.314	-0.047	-0.005	9.934
07:29:16	446.813	91.438	-0.062	-0.004	9.931
07:29:31	447.513	90.463	-0.065	-0.005	9.931
07:29:46	447.668	90.885	-0.049	-0.004	9.934
07:30:01	447.855	91.240	-0.049	-0.006	9.934
07:30:16	448.189	91.482	-0.065	-0.009	9.933
07:30:31	448.279	91.168	-0.096	-0.008	9.936
07:30:46	448.271	89.823	-0.077	-0.008	9.935
07:31:01	448.287	89.903	-0.049	-0.008	9.937
07:31:16	448.352	90.030	-0.085	-0.010	9.941
07:31:31	448.466	90.183	-0.080	-0.008	9.941
07:31:46	448.482	90.277	-0.059	-0.010	9.939
07:32:01	448.507	86.610	-0.088	0.274	9.607
07:32:16	408.677	37.166	-0.106	0.382	7.785
07:32:31	273.366	30.992	-0.042	0.005	9.720
07:32:46	209.727	39.979	-0.013	-0.016	9.919
07:33:01	203.598	42.424	-0.041	-0.020	9.933
07:33:16	219.512	43.302	-0.049	-0.020	9.934
07:33:31	220.936	43.684	-0.049	-0.021	9.937
07:33:46	221.514	43.863	-0.024	-0.021	9.941
07:34:01	221.832	44.093	-0.041	-0.023	9.941
07:34:16	222.019	44.178	-0.041	0.067	9.933

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

Date: **March 19, 2013**
 Start Time 7:22
 Stop Time 7:40

CALIBRATION ERROR

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
07:34:31	217.875	22.675	2.857	0.476	3.554
07:34:46	131.363	3.326	37.019	0.031	0.226
07:35:01	57.094	0.690	70.701	0.002	0.031
07:35:16	3.321	0.186	92.516	-0.002	0.001
07:35:31	1.115	0.003	97.042	-0.007	-0.007
07:35:46	0.285	-0.073	97.937	-0.007	-0.003
07:36:01	0.097	-0.018	98.069	-0.006	-0.017
07:36:16	0.000	-0.021	97.366	-0.002	0.000
07:36:31	0.171	-0.018	96.169	-0.004	0.000
07:36:46	-0.318	-0.019	96.637	-0.008	-0.006
07:37:01	0.016	-0.010	96.492	-0.008	-0.006
07:37:16	-0.407	-0.006	96.596	-0.003	-0.006
07:37:31	-0.301	-0.008	96.554	-0.005	-0.006
07:37:46	-0.212	-0.032	96.508	0.038	-0.006
07:38:01	-0.423	0.334	94.979	0.308	0.120
07:38:16	-0.008	0.817	77.558	0.002	-0.002
07:38:31	0.211	1.161	60.340	-0.002	-0.006
07:38:46	0.179	1.327	49.792	-0.003	-0.006
07:39:01	-0.285	1.386	48.401	-0.004	-0.006
07:39:16	-0.106	1.392	48.156	-0.006	-0.006
07:39:31	-0.317	1.397	48.181	-0.012	-0.010
07:39:46	-0.317	1.426	48.153	-0.004	-0.012
07:40:01	-0.106	1.426	48.197	-0.007	-0.011
07:40:16	-0.106	1.330	46.778	11.350	-0.002

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 7:41
 Stop Time 7:49

CALIBRATION BIAS 00

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gasses (C_s)					
C _{of} Zero gas	-0.106	-0.028	0.071	0.002	0.037
C _{uf} Upscale gas	219.156	41.951	45.115	9.459	9.465
Analyzer Calibration Error Reponses (C_{dir})					
C _{oce} Zero gas	-0.022	-0.040	-0.035	-0.008	-0.006
C _{mce} Upscale gas	221.788	44.044	48.177	9.511	9.472
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.0%	0.0%	0.1%	0.1%	0.2%
Upscale gas	-0.6%	-2.3%	-3.2%	-0.3%	0.0%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gasses (C_s)					
C _{oi} Zero gas	N/A	N/A	N/A	N/A	N/A
C _{ui} Upscale gas	N/A	N/A	N/A	N/A	N/A
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	N/A	N/A	N/A	N/A	N/A
Upscale gas	N/A	N/A	N/A	N/A	N/A
Drift Assessment Status					
Zero gas	N/A	N/A	N/A	N/A	N/A
Upscale gas	N/A	N/A	N/A	N/A	N/A

040913 133558					
07:41:33	0.081	0.213	10.068	9.960	7.852
07:41:48	2.084	0.139	10.388	9.523	9.189
07:42:03	1.025	0.111	4.628	9.485	9.301
07:42:18	-0.244	0.148	1.195	9.477	9.330
07:42:33	-0.195	0.124	0.612	9.473	9.344
07:42:48	-0.260	0.034	0.544	9.470	9.415
07:43:03	-0.423	0.020	0.523	9.467	9.427
07:43:18	-0.317	0.029	0.537	9.462	9.438
07:43:33	-0.212	-0.059	0.519	9.461	9.449
07:43:48	0.000	-0.057	0.516	9.458	9.452
07:44:03	-0.106	0.000	0.496	9.459	9.455
07:44:18	-0.212	-0.028	0.515	7.959	9.489
07:44:33	14.546	7.427	0.477	1.263	9.810
07:44:48	112.072	26.561	0.288	0.127	9.913
07:45:03	182.051	34.359	0.143	0.044	9.923
07:45:18	214.611	37.336	0.090	0.017	9.923
07:45:33	217.118	38.755	0.073	0.028	9.926
07:45:48	217.884	39.730	0.078	0.028	9.928
07:46:03	218.201	40.332	0.034	0.004	9.929
07:46:18	218.437	40.757	0.031	-0.005	9.931

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 1

March 19, 2013
 Start Time 7:41
 Stop Time 7:49

CALIBRATION BIAS 00

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
07:46:33	218.714	41.190	0.077	0.004	9.933
07:46:48	218.665	41.486	0.088	-0.004	9.938
07:47:03	218.885	41.810	0.051	0.005	9.939
07:47:18	218.950	42.012	0.073	-0.001	9.941
07:47:33	219.243	42.030	-0.028	0.036	9.796
07:47:48	219.276	25.377	4.008	0.048	2.802
07:48:03	121.433	9.346	23.200	0.395	0.314
07:48:18	26.813	5.986	42.019	1.243	0.144
07:48:33	4.843	5.376	45.488	1.334	0.106
07:48:48	1.506	4.658	45.234	1.358	0.059
07:49:03	0.798	3.883	45.112	1.327	0.039
07:49:18	0.505	3.331	45.112	1.322	0.044
07:49:33	0.562	3.000	45.122	1.240	0.035
07:49:48	-0.008	2.702	45.050	1.137	0.033

CO bias came out low due to low cylinder
 pressure as evidence by the elevated O2 level

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 8:15
 Stop time 8:42

REFERENCE METHOD RUN 1

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	-0.106	-0.028	0.071	0.002	0.037
C _{ui} Initial upscale	219.156	41.951	45.115	9.459	9.465
C _{of} Final zero	-0.152	0.053	-0.025	0.027	0.048
C _{uf} Final upscale	218.310	41.971	48.064	9.421	9.473
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{AVG} Average conc.	162.809	5.579	7.972	8.326	10.752
C _{Gas} Bias adjusted	166.019	5.985	8.075	8.395	10.827

Clock Time (at end of sample period)

040913 133558					
08:16	181.382	5.619	7.877	8.174	10.805
08:17	176.834	6.403	8.127	7.504	11.430
08:18	189.465	8.930	7.376	7.772	11.276
08:19	161.528	5.766	6.332	9.047	10.143
08:20	169.524	4.759	8.426	8.048	10.791
08:21	185.570	4.457	7.364	7.695	11.155
08:22	189.223	4.650	8.743	7.908	11.122
08:23	179.479	4.755	9.460	8.056	10.996
08:24	161.844	4.166	7.969	8.805	10.383
08:25	148.948	3.795	10.033	8.993	10.203
08:26	152.293	4.071	9.405	8.775	10.391
08:27	148.150	3.938	7.783	8.798	10.352
08:28	158.846	4.316	8.497	8.111	10.908
08:29	186.864	4.437	8.240	8.177	10.905
08:30	158.036	3.264	8.452	9.173	10.030
08:31	138.950	2.734	9.394	8.999	10.184
08:32	162.798	2.769	7.711	7.692	11.272
08:33	171.443	3.085	8.371	7.980	11.078
08:34	145.265	4.263	8.773	8.621	10.506
08:35	153.392	5.474	7.640	8.664	10.477
08:36	139.656	7.325	6.243	8.433	10.652
08:37	149.422	8.831	7.962	7.672	11.363
08:38	169.384	8.580	6.190	8.099	10.986
08:39	158.686	8.436	5.300	7.922	11.107
08:40	174.715	9.615	7.541	7.817	11.255
08:41	149.906	8.116	6.979	9.127	10.129
08:42	134.239	8.075	9.059	8.733	10.401

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 8:45
 Stop Time 8:54

CALIBRATION BIAS 01

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gasses (C_s)					
C _{of} Zero gas	-0.152	0.053	-0.025	0.027	0.048
C _{uf} Upscale gas	218.310	41.971	48.064	9.421	9.473
Analyzer Calibration Error Responses (C_{Dir})					
C _{oce} Zero gas	-0.022	-0.040	-0.035	-0.008	-0.006
C _{mce} Upscale gas	221.788	44.044	48.177	9.511	9.472
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.0%	0.1%	0.0%	0.2%	0.3%
Upscale gas	-0.8%	-2.3%	-0.1%	-0.5%	0.0%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gasses (C_s)					
C _{oi} Zero gas	-0.106	-0.028	0.071	0.002	0.037
C _{ui} Upscale gas	219.156	41.951	45.115	9.459	9.465
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	0.0%	0.1%	-0.1%	0.1%	0.1%
Upscale gas	-0.2%	0.0%	3.1%	-0.2%	0.0%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	FAIL	OK	OK

040913 151608					
08:45:08	76.272	5.662	27.624	0.134	0.302
08:45:23	28.563	3.459	39.803	0.002	0.123
08:45:38	3.818	2.336	46.424	0.015	0.089
08:45:53	1.286	1.745	47.803	0.019	0.048
08:46:08	0.342	1.496	48.051	0.010	0.031
08:46:23	0.733	1.460	48.098	0.028	0.059
08:46:38	0.391	1.394	48.047	0.030	0.057
08:46:53	0.594	1.350	48.052	0.024	0.066
08:47:08	0.106	1.350	48.127	0.044	0.066
08:47:23	0.350	1.369	48.085	0.039	0.083
08:47:38	0.399	1.351	48.046	0.016	0.039
08:47:53	0.236	1.355	48.062	0.069	0.023
08:48:08	0.195	1.314	46.341	5.893	4.622
08:48:23	-0.073	1.180	33.379	9.184	9.003
08:48:38	-0.244	0.879	13.395	9.371	9.362
08:48:53	-0.090	0.659	4.259	9.393	9.411
08:49:08	-0.407	0.487	0.991	9.412	9.428
08:49:23	-0.301	0.361	0.570	9.419	9.457
08:49:38	-0.090	0.270	0.537	9.422	9.469

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013

Start Time 8:45

Stop Time 8:54

CALIBRATION BIAS 01

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
08:49:53	-0.195	0.115	0.534	9.428	9.473
08:50:08	-0.049	0.126	0.498	9.423	9.470
08:50:23	-0.212	0.085	0.511	9.420	9.472
08:50:38	-0.529	0.047	0.498	9.419	9.477
08:50:53	-0.586	0.026	0.469	9.124	9.449
08:51:08	-1.408	2.265	0.449	2.348	9.651
08:51:23	87.334	21.247	0.226	0.099	9.914
08:51:38	177.354	33.210	0.062	-0.016	9.913
08:51:53	211.437	37.034	0.026	0.008	9.913
08:52:08	216.402	38.802	0.049	-0.003	9.924
08:52:23	217.289	39.793	0.049	-0.011	9.933
08:52:38	217.517	40.536	0.016	-0.009	9.936
08:52:53	217.819	41.115	-0.029	-0.001	9.939
08:53:08	218.014	41.420	-0.010	-0.014	9.941
08:53:23	218.095	41.758	-0.038	-0.007	9.942
08:53:38	218.193	41.983	0.011	-0.004	9.940
08:53:53	218.299	42.173	0.054	-0.007	9.941
08:54:08	218.315	42.323	0.007	-0.001	9.943
08:54:23	218.315	42.517	-0.015	-0.012	9.943

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 1

March 19, 2013
 Start Time 8:57
 Stop time 9:24

REFERENCE METHOD RUN 2

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	-0.152	0.053	-0.025	0.027	0.048
C _{ui} Initial upscale	218.310	41.971	48.064	9.421	9.473
C _{of} Final zero	-0.179	0.060	0.488	-0.003	0.181
C _{uf} Final upscale	218.136	42.667	47.794	9.414	9.498
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	165.152	9.993	6.836	8.338	10.751
C _{Gas} Bias adjusted	168.809	10.603	6.550	8.428	10.817

Clock Time (at end of sample period)

040913 133558	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
08:58	167.715	16.175	7.464	8.440	10.690
08:59	143.146	12.823	6.875	8.979	10.214
09:00	148.252	11.396	7.646	8.973	10.231
09:01	152.202	11.668	7.725	8.099	10.920
09:02	176.899	12.998	8.445	7.792	11.247
09:03	166.736	11.136	8.200	8.173	10.897
09:04	159.682	9.600	7.907	8.937	10.280
09:05	149.213	7.529	7.477	8.936	10.263
09:06	150.401	7.317	7.168	9.059	10.153
09:07	169.591	8.361	7.660	8.024	10.992
09:08	179.035	7.225	6.590	8.176	10.881
09:09	183.576	7.197	8.015	7.233	11.713
09:10	197.751	7.800	6.680	7.846	11.200
09:11	173.553	6.388	5.134	8.672	10.453
09:12	153.922	5.725	4.690	8.633	10.455
09:13	174.593	6.669	5.204	8.029	10.976
09:14	173.488	7.793	5.557	7.733	11.263
09:15	185.144	9.229	6.395	7.884	11.182
09:16	166.270	8.899	6.520	8.189	10.837
09:17	163.397	8.162	6.884	8.678	10.458
09:18	152.121	7.569	6.702	8.657	10.443
09:19	170.305	9.655	6.870	7.546	11.437
09:20	178.492	11.532	6.312	8.373	10.756
09:21	156.366	10.943	6.420	8.690	10.436
09:22	161.329	15.982	7.203	8.524	10.599
09:23	149.383	15.658	6.856	8.379	10.689
09:24	156.549	14.373	5.971	8.466	10.624

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013

Start Time 9:25

Stop Time 9:35

CALIBRATION BIAS 02

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gases (C_s)					
C _{of} Zero gas	-0.179	0.060	0.488	-0.003	0.181
C _{uf} Upscale gas	218.136	42.667	47.794	9.414	9.498
Analyzer Calibration Error Responses (C_{dir})					
C _{oce} Zero gas	-0.022	-0.040	-0.035	-0.008	-0.006
C _{mce} Upscale gas	221.788	44.044	48.177	9.511	9.472
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.0%	0.1%	0.5%	0.0%	1.0%
Upscale gas	-0.8%	-1.5%	-0.4%	-0.5%	0.1%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gases (C_s)					
C _{oi} Zero gas	-0.152	0.053	-0.025	0.027	0.048
C _{ui} Upscale gas	218.310	41.971	48.064	9.421	9.473
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	0.0%	0.0%	0.5%	-0.2%	0.7%
Upscale gas	0.0%	0.8%	-0.3%	0.0%	0.1%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

040913 133558	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
09:25:25	122.051	8.700	3.569	9.273	9.491
09:25:40	68.742	3.800	1.220	9.402	9.498
09:25:55	4.005	2.077	0.564	9.421	9.500
09:26:10	1.750	1.327	0.500	9.408	9.498
09:26:25	0.920	0.912	0.472	9.427	9.499
09:26:40	0.790	0.685	0.491	9.413	9.500
09:26:55	0.684	0.549	0.488	9.425	9.501
09:27:10	0.285	0.436	0.488	9.423	9.498
09:27:25	0.285	0.342	0.474	9.409	9.500
09:27:40	0.179	0.239	0.483	9.409	9.496
09:27:55	0.154	0.176	0.488	9.414	9.499
09:28:10	0.260	0.090	0.488	9.419	9.499
09:28:25	0.032	0.043	0.488	9.429	9.499
09:28:40	0.049	0.065	0.501	9.422	9.501
09:28:55	0.244	0.073	0.695	7.134	8.133
09:29:10	-0.073	0.111	7.847	0.743	1.239
09:29:25	-0.065	0.056	30.411	0.095	0.240
09:29:40	-0.391	0.404	44.518	0.046	0.148
09:29:55	0.138	0.668	47.865	0.102	0.159
09:30:10	-0.285	0.842	47.943	0.157	0.193

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 9:25
 Stop Time 9:35

CALIBRATION BIAS 02

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
09:30:25	-0.073	0.887	47.640	0.157	0.210
09:30:40	0.480	1.104	47.608	0.153	0.198
09:30:55	1.938	1.364	47.619	0.135	0.204
09:31:10	2.434	1.418	47.673	0.109	0.187
09:31:25	2.076	1.423	47.818	0.115	0.180
09:31:40	1.840	1.436	47.891	0.079	0.176
09:31:55	10.118	7.777	44.695	-0.008	6.190
09:32:10	42.369	27.888	26.378	-0.004	9.637
09:32:25	158.698	35.963	7.523	-0.018	9.860
09:32:40	214.196	38.605	1.159	-0.007	9.896
09:32:55	217.297	39.836	0.171	-0.008	9.911
09:33:10	217.517	40.648	0.059	-0.007	9.924
09:33:25	217.860	41.241	0.075	-0.013	9.933
09:33:40	217.941	41.551	0.047	-0.004	9.937
09:33:55	217.982	41.908	0.080	-0.015	9.939
09:34:10	218.055	42.125	0.109	-0.004	9.939
09:34:25	217.933	42.333	0.029	-0.003	9.935
09:34:40	218.030	42.509	0.021	-0.003	9.933
09:34:55	218.144	42.683	0.025	-0.016	9.935
09:35:10	218.071	42.808	0.036	0.001	9.936
09:35:25	218.193	44.052	-0.019	1.354	9.986

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 9:44
 Stop time 10:11

REFERENCE METHOD RUN 3

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	-0.179	0.060	0.488	-0.003	0.181
C _{ui} Initial upscale	218.136	42.667	47.794	9.414	9.498
C _{of} Final zero	-0.062	-0.063	-0.023	-0.011	0.056
C _{uf} Final upscale	217.664	42.672	48.169	9.420	9.495
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{AvG} Average conc.	154.590	4.173	10.171	8.764	10.385
C _{Gas} Bias adjusted	158.244	4.412	9.845	8.860	10.433

Clock Time (at end of sample period)

040913 133558					
09:45	159.803	4.895	10.673	8.829	10.308
09:46	160.635	5.428	9.989	8.702	10.386
09:47	178.466	7.626	11.419	7.882	11.095
09:48	169.837	7.159	9.588	8.919	10.217
09:49	167.636	6.326	10.745	8.293	10.698
09:50	163.490	5.300	8.996	9.010	10.154
09:51	157.086	4.718	9.961	8.611	10.444
09:52	162.837	4.714	9.430	8.466	10.586
09:53	155.320	4.798	9.700	8.340	10.677
09:54	154.695	4.882	10.260	8.549	10.538
09:55	148.445	4.258	10.508	9.044	10.192
09:56	137.519	3.425	11.024	9.054	10.152
09:57	141.217	3.166	9.857	9.383	9.914
09:58	136.087	3.063	10.807	8.853	10.296
09:59	156.978	3.538	10.037	8.191	10.811
10:00	159.621	3.839	8.174	8.390	10.648
10:01	171.831	3.943	9.197	8.185	10.896
10:02	153.586	3.623	8.147	8.898	10.251
10:03	158.661	3.601	8.208	8.745	10.418
10:04	150.773	3.151	7.678	8.553	10.551
10:05	158.156	3.325	9.819	9.017	10.243
10:06	142.320	3.331	11.024	9.124	10.163
10:07	139.721	3.492	11.908	9.203	10.115
10:08	136.345	3.154	13.764	9.151	10.136
10:09	147.454	2.854	12.628	9.129	10.149
10:10	151.819	2.551	11.352	9.107	10.137
10:11	153.588	2.516	9.727	8.996	10.231

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 10:13
 Stop Time 10:23

CALIBRATION BIAS 03

Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
NOX	SO2	CO	O2	CO2
FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv

System Response to Calibration Gasses (C_s)

C _{of} Zero gas	-0.062	-0.063	0.023	-0.011	0.056
C _{uf} Upscale gas	217.664	42.672	48.169	9.420	9.495

Analyzer Calibration Error Responses (C_{Dir})

C _{oce} Zero gas	-0.022	-0.040	-0.035	-0.008	-0.006
C _{mce} Upscale gas	221.788	44.044	48.177	9.511	9.472

Actual Upscale Gas Value (C_{MA})

C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
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Calibration Span Value (CS)

	448.000	90.800	96.300	18.100	17.900
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System Bias as Percent of Calibration Span Value (SB) (5%)

Zero gas	0.0%	0.0%	0.0%	0.0%	0.3%
Upscale gas	-0.9%	-1.5%	0.0%	-0.5%	0.1%

System Bias Status

Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Previous System Response to Calibration Gasses (C_s)

C _{ol} Zero gas	-0.179	0.060	0.488	-0.003	0.181
C _{ul} Upscale gas	218.136	42.667	47.794	9.414	9.498

Drift Assessment as Percent of Calibration Span Value (D) (3%)

Zero gas	0.0%	-0.1%	-0.5%	0.0%	-0.7%
Upscale gas	-0.1%	0.0%	0.4%	0.0%	0.0%

Drift Assessment Status

Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

040913 133558

10:13:25	8.816	1.685	0.599	9.409	9.493
10:13:40	2.052	1.006	0.488	9.397	9.493
10:13:55	1.148	0.690	0.486	9.419	9.492
10:14:10	0.765	0.441	0.472	9.409	9.496
10:14:25	0.489	0.300	0.477	9.427	9.496
10:14:40	0.367	0.164	0.498	9.417	9.499
10:14:55	-0.147	0.067	0.472	9.417	9.499
10:15:10	0.171	-0.002	0.474	9.423	9.499
10:15:25	-0.269	0.016	0.464	9.413	9.499
10:15:40	0.342	-0.101	0.475	9.416	9.499
10:15:55	-0.130	-0.068	0.475	9.374	9.493
10:16:10	-0.423	-0.129	0.449	9.325	9.448
10:16:25	-0.073	-0.177	0.449	9.365	9.484
10:16:40	-0.497	-0.085	0.469	9.412	9.499
10:16:55	-0.220	-0.047	0.472	9.417	9.496
10:17:10	0.016	-0.065	0.459	9.416	9.493
10:17:25	0.016	-0.078	0.462	9.428	9.495
10:17:40	-0.407	1.266	0.472	5.027	9.614
10:17:55	31.193	19.549	0.304	0.339	9.915
10:18:10	157.330	33.271	0.057	0.042	9.952

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 10:13
 Stop Time 10:23

CALIBRATION BIAS 03

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
10:18:25	206.195	37.493	-0.010	0.005	9.957
10:18:40	215.173	39.272	-0.016	0.004	9.957
10:18:55	216.573	40.228	0.002	-0.008	9.957
10:19:10	216.671	40.858	-0.028	0.004	9.955
10:19:25	217.053	41.355	0.008	0.000	9.951
10:19:40	217.192	41.693	-0.049	-0.001	9.951
10:19:55	217.338	41.918	-0.028	0.003	9.950
10:20:10	217.484	42.105	0.059	-0.002	9.948
10:20:25	217.517	42.318	0.000	0.002	9.951
10:20:40	217.493	42.569	-0.067	0.000	9.947
10:20:55	217.697	42.670	-0.015	-0.016	9.945
10:21:10	217.607	42.777	-0.029	-0.016	9.946
10:21:25	217.689	35.795	1.620	0.092	5.838
10:21:40	162.263	14.499	15.454	0.020	0.590
10:21:55	42.833	7.105	38.237	0.011	0.196
10:22:10	11.209	4.895	46.593	0.016	0.136
10:22:25	1.954	3.840	48.070	0.006	0.109
10:22:40	1.026	3.222	48.140	-0.006	0.092
10:22:55	0.936	2.813	48.161	-0.007	0.075
10:23:10	0.301	2.488	48.171	0.015	0.067
10:23:25	0.301	2.240	48.176	0.009	0.055
10:23:40	-0.041	2.180	48.181	0.014	0.046

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 10:33
 Stop time 11:00

REFERENCE METHOD RUN 4

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	-0.062	-0.063	-0.023	-0.011	0.056
C _{ui} Initial upscale	217.664	42.672	48.169	9.420	9.495
C _{of} Final zero	-0.082	-0.057	-0.008	-0.010	0.230
C _{uf} Final upscale	217.484	42.621	47.564	9.433	9.511
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	147.491	2.747	10.123	9.010	10.254
C _{Gas} Bias adjusted	151.193	2.964	10.015	9.100	10.294

Clock Time (at end of sample period)

040913: 133558	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
10:34	165.032	2.585	8.643	8.473	10.704
10:35	158.087	2.469	7.580	9.142	10.161
10:36	163.012	2.448	9.436	8.945	10.340
10:37	158.883	2.436	7.687	8.985	10.273
10:38	178.726	2.902	9.062	7.551	11.492
10:39	192.467	2.922	6.411	8.428	10.797
10:40	158.136	2.401	5.803	9.604	9.778
10:41	147.202	2.352	6.410	9.361	9.963
10:42	153.840	2.409	7.406	8.590	10.575
10:43	152.041	2.605	8.364	8.764	10.463
10:44	142.975	2.742	8.869	8.524	10.623
10:45	149.325	2.987	8.448	9.323	10.039
10:46	136.862	3.004	9.525	8.958	10.265
10:47	152.648	3.319	9.384	8.709	10.477
10:48	154.695	3.496	11.332	8.486	10.650
10:49	148.521	3.073	9.176	9.222	10.090
10:50	133.474	2.739	11.468	9.394	9.931
10:51	130.383	2.609	11.808	9.365	9.951
10:52	130.969	2.825	14.734	9.439	9.933
10:53	114.569	2.685	18.316	9.414	9.929
10:54	119.355	2.576	15.336	9.697	9.725
10:55	131.693	2.695	14.062	9.098	10.161
10:56	144.636	2.879	11.660	8.955	10.292
10:57	140.321	2.932	10.772	9.407	9.939
10:58	135.737	2.608	11.518	9.249	10.031
10:59	141.618	2.597	10.411	9.189	10.049
11:00	147.049	2.875	9.711	8.998	10.213

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 11:03
 Stop Time 11:15

CALIBRATION BIAS 04

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gasses (C_s)					
C _{of} Zero gas	-0.082	-0.057	-0.008	-0.010	0.230
C _{uf} Upscale gas	217.484	42.621	47.564	9.433	9.511
Analyzer Calibration Error Responses (C_{Dir})					
C _{oce} Zero gas	-0.022	-0.040	-0.035	-0.008	-0.006
C _{mca} Upscale gas	221.788	44.044	48.177	9.511	9.472
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.0%	0.0%	0.0%	0.0%	1.3%
Upscale gas	-1.0%	-1.6%	-0.6%	-0.4%	0.2%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gasses (C_s)					
C _{oi} Zero gas	-0.062	-0.063	-0.023	-0.011	0.056
C _{ui} Upscale gas	217.664	42.672	48.169	9.420	9.495
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	0.0%	0.0%	0.0%	0.0%	1.0%
Upscale gas	0.0%	-0.1%	-0.6%	0.1%	0.1%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

040913 151608					
11:03:25	148.466	3.088	9.661	8.242	10.837
11:03:40	152.291	3.235	10.075	8.292	10.836
11:03:55	160.358	3.442	9.971	8.565	10.636
11:04:10	163.126	3.466	9.387	8.864	10.388
11:04:25	158.966	3.276	8.532	9.126	10.188
11:04:40	153.097	3.158	7.994	9.357	10.008
11:04:55	144.477	3.056	7.544	9.484	9.895
11:05:10	137.989	2.927	7.686	9.265	10.034
11:05:25	137.745	2.618	7.807	9.339	9.541
11:05:40	97.639	1.773	4.988	9.412	9.491
11:05:55	12.878	1.013	1.649	9.433	9.506
11:06:10	3.866	0.617	0.583	9.425	9.506
11:06:25	0.855	0.361	0.482	9.429	9.508
11:06:40	0.481	0.208	0.488	9.373	9.508
11:06:55	0.358	0.104	0.472	9.412	9.510
11:07:10	0.390	0.015	0.475	9.410	9.513

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 1

March 19, 2013
 Start Time 11:03
 Stop Time 11:15

CALIBRATION BIAS 04

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
11:07:25	0.236	-0.083	0.459	9.428	9.512
11:07:40	-0.049	-0.024	0.464	9.425	9.511
11:07:55	0.114	-0.073	0.483	9.434	9.510
11:08:10	-0.073	-0.073	0.451	9.438	9.513
11:08:25	-0.285	0.371	0.472	6.102	9.587
11:08:40	42.320	16.703	0.329	0.552	9.913
11:08:55	141.164	32.371	0.088	0.064	9.955
11:09:10	198.388	37.167	-0.008	0.022	9.957
11:09:25	214.791	39.118	-0.020	0.007	9.957
11:09:40	216.044	40.119	0.029	0.007	9.953
11:09:55	216.475	40.762	-0.051	0.008	9.959
11:10:10	216.785	41.304	0.062	-0.001	9.959
11:10:25	217.029	41.669	0.016	-0.009	9.959
11:10:40	217.037	41.975	0.018	-0.009	9.959
11:10:55	217.061	42.172	0.003	-0.012	9.961
11:11:10	217.102	42.338	0.041	-0.003	9.960
11:11:25	217.159	42.511	-0.008	-0.008	9.959
11:11:40	217.354	42.613	0.016	-0.014	9.957
11:11:55	217.541	42.738	-0.023	0.002	9.958
11:12:10	217.558	41.958	-0.016	0.063	8.982
11:12:25	216.199	23.075	7.215	0.034	1.664
11:12:40	147.464	9.506	28.768	0.002	0.306
11:12:55	10.468	5.858	43.938	0.016	0.235
11:13:10	4.762	4.402	47.289	0.013	0.223
11:13:25	3.671	4.788	47.492	0.124	0.238
11:13:40	3.663	5.589	47.477	0.150	0.235
11:13:55	3.411	4.921	47.543	0.171	0.253
11:14:10	3.419	3.968	47.584	0.145	0.214
11:14:25	3.093	3.329	47.541	0.148	0.226
11:14:40	2.930	2.886	47.565	0.171	0.250
11:14:55	3.134	2.856	46.732	3.852	3.160
11:15:10	3.655	4.407	37.089	8.619	9.453

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 11:17
 Stop time 11:44

REFERENCE METHOD RUN 5

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	-0.082	-0.057	-0.008	-0.010	0.230
C _{ui} Initial upscale	217.484	42.621	47.564	9.433	9.511
C _{of} Final zero	-0.168	-0.078	-0.039	-0.013	0.234
C _{uf} Final upscale	217.381	43.030	47.468	9.441	9.512
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	151.878	2.776	10.807	8.869	10.385
C _{Gas} Bias adjusted	155.805	2.989	10.776	8.948	10.427

Clock Time (at end of sample period)

040913 133558						
11:18	158.801	3.093	8.499	8.587	10.563	
11:19	151.172	3.030	9.398	8.706	10.505	
11:20	139.532	2.790	8.658	8.873	10.359	
11:21	152.581	3.138	10.786	8.655	10.564	
11:22	142.772	2.971	10.994	9.263	10.075	
11:23	137.759	3.047	12.829	9.243	10.130	
11:24	127.780	2.876	13.019	9.503	9.900	
11:25	139.153	3.268	17.248	8.874	10.407	
11:26	141.294	3.368	13.202	9.418	9.985	
11:27	140.794	3.270	12.820	9.243	10.152	
11:28	138.006	3.122	11.064	9.133	10.182	
11:29	157.711	3.276	10.694	8.782	10.461	
11:30	147.247	3.196	10.115	8.993	10.256	
11:31	162.469	3.305	11.104	8.460	10.712	
11:32	146.537	2.779	9.015	9.541	9.829	
11:33	156.125	2.611	10.967	8.699	10.462	
11:34	162.971	2.597	10.471	8.706	10.452	
11:35	148.349	2.548	10.916	8.893	10.310	
11:36	162.560	2.670	10.836	8.594	10.565	
11:37	154.915	2.462	9.418	8.764	10.424	
11:38	158.966	2.409	8.908	8.710	10.481	
11:39	153.158	2.227	9.087	8.965	10.310	
11:40	162.939	2.216	10.919	8.197	10.974	
11:41	168.333	2.300	10.770	8.688	10.608	
11:42	152.820	2.125	10.281	8.690	10.553	
11:43	159.426	2.052	9.541	9.021	10.277	
11:44	176.526	2.200	10.233	8.272	10.901	

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 11:47
 Stop Time 11:58

CALIBRATION BIAS 05

Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
NOX	SO2	CO	O2	CO2
FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
ppmdv	ppmdv	ppmdv	%dv	%dv

System Response to Calibration Gasses (C_S)

C _{of} Zero gas	-0.168	-0.078	-0.039	-0.013	0.234
C _{uf} Upscale gas	217.381	43.030	47.468	9.441	9.512

Analyzer Calibration Error Responses (C_{Dir})

C _{ocb} Zero gas	-0.022	-0.040	-0.035	-0.008	-0.006
C _{mce} Upscale gas	221.788	44.044	48.177	9.511	9.472

Actual Upscale Gas Value (C_{MA})

C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
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Calibration Span Value (CS)

	448.000	90.800	96.300	18.100	17.900
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System Bias as Percent of Calibration Span Value (SB) (5%)

Zero gas	0.0%	0.0%	0.0%	0.0%	1.3%
Upscale gas	-1.0%	-1.1%	-0.7%	-0.4%	0.2%

System Bias Status

Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Previous System Response to Calibration Gasses (C_S)

C _{ol} Zero gas	-0.082	-0.057	-0.008	-0.010	0.230
C _{ul} Upscale gas	217.484	42.621	47.564	9.433	9.511

Drift Assessment as Percent of Calibration Span Value (D) (3%)

Zero gas	0.0%	0.0%	0.0%	0.0%	0.0%
Upscale gas	0.0%	0.5%	-0.1%	0.0%	0.0%

Drift Assessment Status

Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
11:47:30	0.432	0.070	0.488	9.436	9.512
11:47:45	0.228	0.050	0.488	9.438	9.513
11:48:00	0.130	-0.049	0.488	9.429	9.512
11:48:15	0.146	-0.054	0.472	9.442	9.512
11:48:30	0.268	-0.023	0.475	9.438	9.513
11:48:45	-0.163	-0.039	0.464	9.430	9.512
11:49:00	0.179	-0.076	0.464	9.436	9.512
11:49:15	0.138	-0.067	0.485	9.436	9.512
11:49:30	0.138	-0.088	0.475	9.445	9.512
11:49:45	-0.114	-0.080	0.454	9.443	9.512
11:50:00	-0.301	-0.100	0.444	9.441	9.512
11:50:15	-0.090	0.234	0.480	7.262	9.548
11:50:30	0.130	15.855	0.339	0.908	9.889
11:50:45	130.118	32.127	0.115	0.066	9.962
11:51:00	201.872	37.170	-0.031	0.021	9.965
11:51:15	215.018	39.129	-0.013	0.017	9.956
11:51:30	215.914	40.174	-0.090	0.009	9.959
11:51:45	216.435	40.955	0.003	-0.002	9.962
11:52:00	216.695	41.470	-0.033	0.014	9.975
11:52:15	217.021	41.851	-0.010	-0.010	9.973

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 11:47
 Stop Time 11:58

CALIBRATION BIAS 05

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
11:52:30	217.037	42.125	0.065	-0.022	9.968
11:52:45	217.273	42.326	0.008	0.005	9.966
11:53:00	217.354	42.561	0.024	-0.007	9.969
11:53:15	217.395	42.703	-0.025	-0.002	9.957
11:53:30	217.362	42.846	0.003	-0.010	9.968
11:53:45	217.395	42.945	-0.061	-0.014	9.970
11:54:00	217.387	43.053	-0.061	-0.006	9.978
11:54:15	217.615	43.091	0.018	-0.018	9.963
11:54:30	217.688	32.526	1.721	0.032	4.968
11:54:45	127.904	12.682	19.173	0.015	0.568
11:55:00	57.110	6.851	39.186	0.001	0.306
11:55:15	5.177	4.988	46.514	0.023	0.275
11:55:30	4.510	5.788	47.432	0.138	0.269
11:55:45	3.321	6.271	47.523	0.169	0.259
11:56:00	3.427	5.048	47.466	0.192	0.287
11:56:15	3.354	4.068	47.328	0.180	0.264
11:56:30	3.622	3.424	47.406	0.174	0.238
11:56:45	3.386	2.968	47.463	0.182	0.263
11:57:00	3.500	2.642	47.519	0.166	0.251
11:57:15	3.785	2.395	47.494	0.169	0.229
11:57:30	3.525	2.276	47.491	0.163	0.230
11:57:45	3.297	2.162	47.419	0.281	0.243
11:58:00	3.565	2.554	45.447	5.460	5.907
11:58:15	31.982	3.590	30.955	7.837	10.525

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 12:01
 Stop time 12:28

REFERENCE METHOD RUN 6

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	-0.168	-0.078	-0.039	-0.013	0.234
C _{ui} Initial upscale	217.381	43.030	47.468	9.441	9.512
C _{of} Final zero	0.304	-0.035	-0.026	0.023	0.138
C _{uf} Final upscale	217.070	42.400	47.656	9.448	9.508
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	165.684	1.780	7.850	8.659	10.544
C _{Gas} Bias adjusted	170.072	1.936	7.833	8.728	10.586

Clock Time (at end of sample period)

040913 133558						
12:02	181.451	1.761	7.993	8.028	11.063	
12:03	181.544	1.801	8.046	8.797	10.481	
12:04	147.837	1.544	8.077	9.036	10.183	
12:05	183.993	1.695	8.309	8.087	11.031	
12:06	175.403	1.910	7.362	8.353	10.799	
12:07	187.395	2.566	9.331	8.095	11.106	
12:08	159.105	2.200	7.783	9.569	9.851	
12:09	150.692	2.006	10.165	8.926	10.333	
12:10	157.570	2.046	10.395	9.031	10.278	
12:11	152.921	2.055	10.795	8.698	10.515	
12:12	173.331	2.172	9.913	8.688	10.551	
12:13	153.315	1.900	8.376	8.878	10.366	
12:14	154.066	1.767	8.554	9.051	10.257	
12:15	151.329	1.515	8.011	8.843	10.384	
12:16	175.635	1.709	7.973	7.758	11.342	
12:17	192.259	1.710	6.356	8.300	10.843	
12:18	183.651	1.599	5.875	8.598	10.574	
12:19	175.529	1.676	6.605	8.065	11.008	
12:20	177.426	1.782	5.964	9.128	10.181	
12:21	144.943	1.554	5.161	9.175	10.065	
12:22	169.739	1.568	5.894	8.363	10.729	
12:23	176.412	1.657	6.552	8.210	10.885	
12:24	168.533	1.730	6.663	8.064	10.978	
12:25	157.839	1.643	7.175	9.195	10.112	
12:26	134.400	1.482	7.674	9.407	9.891	
12:27	151.284	1.488	8.691	8.629	10.515	
12:28	155.877	1.514	8.249	8.831	10.360	

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 12:28
 Stop Time 12:42

CALIBRATION BIAS 06

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gasses (C_s)					
C _{of} Zero gas	0.304	-0.035	-0.026	0.023	0.138
C _{uf} Upscale gas	217.070	42.400	47.656	9.448	9.508
Analyzer Calibration Error Responses (C_{Dir})					
C _{oce} Zero gas	-0.022	-0.040	-0.035	-0.008	-0.006
C _{mce} Upscale gas	221.788	44.044	48.177	9.511	9.472
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.1%	0.0%	0.0%	0.2%	0.8%
Upscale gas	-1.1%	-1.8%	-0.5%	-0.3%	0.2%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gases (C_s)					
C _{oi} Zero gas	-0.168	-0.078	-0.039	-0.013	0.234
C _{ui} Upscale gas	217.381	43.030	47.468	9.441	9.512
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	0.1%	0.0%	0.0%	0.2%	-0.5%
Upscale gas	-0.1%	-0.7%	0.2%	0.0%	0.0%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
12:32:22	81.457	1.775	13.675	9.291	9.256
12:32:37	9.597	0.998	4.611	9.414	9.473
12:32:52	2.019	0.617	1.188	9.435	9.495
12:33:07	0.879	0.249	0.478	9.437	9.504
12:33:22	0.277	0.065	0.480	9.447	9.507
12:33:37	0.204	0.057	0.480	9.445	9.504
12:33:52	0.431	0.024	0.461	9.449	9.506
12:34:07	0.342	-0.041	0.456	9.449	9.509
12:34:22	-0.155	-0.042	0.456	9.445	9.510
12:34:37	0.097	-0.021	0.453	9.446	9.510
12:34:52	2.784	2.318	0.461	5.333	9.618
12:35:07	28.181	22.536	0.317	0.502	9.914
12:35:22	118.112	34.582	0.070	0.046	9.958
12:35:37	210.444	38.307	0.032	0.021	9.964
12:35:52	214.261	39.849	-0.015	0.010	9.968
12:36:07	215.564	40.650	-0.010	0.014	9.958
12:36:22	215.930	41.257	-0.052	0.012	9.954
12:36:37	216.361	41.652	-0.015	0.006	9.956

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 1

March 19, 2013
 Start Time 12:28
 Stop Time 12:42

CALIBRATION BIAS 06

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
12:36:52	216.712	41.980	0.038	-0.003	9.956
12:37:07	216.744	42.188	-0.021	0.003	9.956
12:37:22	216.899	42.424	0.008	-0.007	9.954
12:37:37	217.183	42.587	-0.031	0.004	9.954
12:37:52	217.127	40.454	0.007	0.077	8.776
12:38:07	216.215	19.621	9.255	0.046	1.752
12:38:22	122.157	8.471	29.747	0.009	0.414
12:38:37	12.535	5.537	44.762	0.013	0.224
12:38:52	5.356	5.418	47.134	0.109	0.171
12:39:07	3.598	5.896	47.466	0.152	0.134
12:39:22	3.452	4.882	47.502	0.160	0.135
12:39:37	3.053	3.906	47.585	0.158	0.144
12:39:52	3.134	3.232	47.499	0.148	0.134
12:40:07	3.053	2.838	47.582	0.144	0.114
12:40:22	2.955	2.496	47.604	0.150	0.098
12:40:37	2.816	2.312	47.660	0.141	0.083
12:40:52	2.588	2.157	47.673	0.139	0.098
12:41:07	2.564	2.071	47.635	0.069	0.049
12:41:22	1.962	1.924	47.713	0.007	-0.057
12:41:37	1.579	2.198	46.619	5.112	4.783
12:41:52	12.585	3.238	35.140	8.384	9.803
12:42:07	119.341	3.215	16.552	8.513	10.174

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 12:54
 Stop time 13:21

REFERENCE METHOD RUN 7

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	0.304	-0.035	-0.026	0.023	0.138
C _{ui} Initial upscale	217.070	42.400	47.656	9.448	9.508
C _{of} Final zero	-0.035	-0.079	-0.047	-0.012	-0.043
C _{uf} Final upscale	216.693	42.879	48.233	9.399	9.330
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{AVG} Average conc.	162.639	1.987	9.611	8.553	10.279
C _{Gas} Bias adjusted	167.193	2.159	9.511	8.641	10.404

Clock Time (at end of sample period)

Clock Time	NOX	SO2	CO	O2	CO2
12:55	166.536	1.654	7.760	8.861	10.035
12:56	159.913	1.604	8.829	8.954	9.941
12:57	168.252	1.687	8.065	8.605	10.220
12:58	181.351	1.978	8.624	8.167	10.604
12:59	171.870	2.352	7.572	8.532	10.314
13:00	153.305	2.796	10.922	8.800	10.126
13:01	148.779	2.594	9.939	8.986	9.951
13:02	139.585	2.271	10.277	8.922	9.975
13:03	154.984	2.279	11.764	8.499	10.343
13:04	145.672	2.068	9.300	8.997	9.912
13:05	169.239	2.268	9.158	7.967	10.678
13:06	177.727	2.460	9.007	8.300	10.482
13:07	170.700	2.301	8.546	8.368	10.400
13:08	164.961	2.046	8.089	8.930	10.001
13:09	149.038	1.711	9.799	8.607	10.219
13:10	172.792	1.924	9.710	7.898	10.773
13:11	184.143	2.024	8.984	8.100	10.613
13:12	176.066	2.104	9.460	8.427	10.388
13:13	169.947	2.015	9.972	8.615	10.249
13:14	161.886	1.888	11.247	8.539	10.299
13:15	161.374	1.697	9.770	8.672	10.179
13:16	162.072	1.637	10.920	8.414	10.390
13:17	155.397	1.664	10.841	8.107	10.620
13:18	163.315	1.775	9.582	8.600	10.260
13:19	160.193	1.723	11.078	8.945	9.998
13:20	149.180	1.573	10.627	8.943	9.996
13:21	152.987	1.550	9.656	8.188	10.560

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 13:23
 Stop Time 13:34

CALIBRATION BIAS 07

Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv

System Response to Calibration Gasses (C_S)

C _{of} Zero gas	-0.035	-0.079	-0.047	-0.012	-0.043
C _{uf} Upscale gas	216.693	42.879	48.233	9.399	9.330

Analyzer Calibration Error Responses (C_{Dir})

C _{oce} Zero gas	-0.022	-0.040	-0.035	-0.008	-0.006
C _{mce} Upscale gas	221.788	44.044	48.177	9.511	9.472

Actual Upscale Gas Value (C_{MA})

C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
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Calibration Span Value (CS)

	448.000	90.800	96.300	18.100	17.900
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System Bias as Percent of Calibration Span Value (SB) (5%)

Zero gas	0.0%	0.0%	0.0%	0.0%	-0.2%
Upscale gas	-1.1%	-1.3%	0.1%	-0.6%	-0.8%

System Bias Status

Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Previous System Response to Calibration Gasses (C_S)

C _{oi} Zero gas	0.304	-0.035	-0.026	0.023	0.138
C _{ui} Upscale gas	217.070	42.400	47.656	9.448	9.508

Drift Assessment as Percent of Calibration Span Value (D) (3%)

Zero gas	-0.1%	0.0%	0.0%	-0.2%	-1.0%
Upscale gas	-0.1%	0.5%	0.6%	-0.3%	-1.0%

Drift Assessment Status

Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
13:23:34	2.166	0.309	0.541	9.395	9.255
13:23:49	0.830	0.223	0.464	9.395	9.258
13:24:04	0.700	0.054	0.467	9.395	9.260
13:24:19	0.424	-0.028	0.488	9.395	9.262
13:24:34	0.317	-0.020	0.469	9.378	9.263
13:24:49	0.179	-0.052	0.464	9.400	9.262
13:25:04	-0.049	-0.046	0.457	9.399	9.261
13:25:19	-0.057	-0.060	0.438	9.396	9.261
13:25:34	0.041	-0.085	0.464	9.401	9.314
13:25:49	-0.073	-0.117	0.464	9.400	9.338
13:26:04	-0.073	-0.104	0.425	9.399	9.337
13:26:19	-0.301	-0.016	0.241	7.024	9.300
13:26:34	23.004	14.380	0.384	0.820	9.714
13:26:49	137.566	31.331	0.085	0.039	9.767
13:27:04	196.533	36.969	-0.018	-0.003	9.770
13:27:19	213.651	39.145	-0.023	-0.004	9.791
13:27:34	214.693	40.215	-0.070	-0.010	9.785
13:27:49	215.165	40.910	-0.043	-0.014	9.785
13:28:04	215.539	41.394	-0.054	-0.019	9.787
13:28:19	215.442	41.745	-0.018	-0.020	9.904

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013

Start Time 13:23

Stop Time 13:34

CALIBRATION BIAS 07

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
13:28:34	216.011	42.066	0.006	-0.021	9.911
13:28:49	215.865	42.222	-0.088	-0.023	9.913
13:29:04	216.280	42.470	-0.054	-0.025	9.910
13:29:19	216.369	42.629	-0.082	-0.027	9.905
13:29:34	216.549	42.724	-0.077	-0.028	9.914
13:29:49	216.630	42.789	-0.003	-0.026	9.913
13:30:04	216.671	42.883	-0.039	-0.029	9.915
13:30:19	216.647	42.966	-0.061	-0.029	9.913
13:30:34	216.679	43.054	-0.042	-0.029	9.913
13:30:49	216.752	36.918	0.894	0.048	6.379
13:31:04	160.716	15.503	14.572	-0.007	0.627
13:31:19	87.937	7.647	37.118	-0.010	0.103
13:31:34	8.539	5.146	46.398	-0.010	0.019
13:31:49	2.328	4.059	48.121	-0.010	-0.003
13:32:04	1.180	3.336	48.179	-0.011	-0.015
13:32:19	0.684	2.965	48.165	-0.010	-0.024
13:32:34	0.065	2.598	48.244	-0.012	-0.035
13:32:49	0.529	2.396	48.231	-0.012	-0.044
13:33:04	0.456	2.255	48.226	-0.012	-0.051
13:33:19	0.350	2.136	48.243	0.068	-0.057
13:33:34	5.633	6.398	46.283	5.448	5.515
13:33:49	32.121	8.073	31.744	8.550	9.912
13:34:04	106.349	5.392	16.638	9.202	9.867

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 13:37
 Stop time 14:04

REFERENCE METHOD RUN 8

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	-0.035	-0.079	-0.047	-0.012	-0.043
C _{ui} Initial upscale	216.693	42.879	48.233	9.399	9.330
C _{of} Final zero	0.027	-0.155	-0.018	-0.010	-0.040
C _{uf} Final upscale	215.797	42.759	48.219	9.400	9.415
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{AVG} Average conc.	169.771	1.093	7.688	8.344	10.632
C _{Gas} Bias adjusted	175.075	1.272	7.568	8.452	10.805

Clock Time (at end of sample period)

040913-133558						
13:38	151.400	1.239	9.108	8.876	10.199	
13:39	153.852	1.286	10.039	7.834	11.047	
13:40	179.921	1.518	8.953	8.266	10.720	
13:41	154.481	1.332	7.404	9.254	9.880	
13:42	171.982	1.166	7.288	8.159	10.742	
13:43	180.680	1.294	6.724	8.100	10.816	
13:44	185.397	1.241	6.161	7.904	10.953	
13:45	197.355	1.265	5.924	7.924	10.950	
13:46	181.783	1.090	5.965	8.362	10.582	
13:47	179.229	1.016	5.394	7.919	10.900	
13:48	180.877	0.988	5.959	8.496	10.491	
13:49	168.032	0.925	7.536	8.263	10.672	
13:50	180.049	0.955	7.211	7.804	11.080	
13:51	172.662	0.993	6.884	8.386	10.640	
13:52	168.574	1.013	7.852	8.030	10.904	
13:53	181.764	1.144	6.961	8.456	10.599	
13:54	154.467	0.966	6.826	8.687	10.362	
13:55	164.723	1.000	8.401	8.311	10.677	
13:56	168.950	0.955	8.148	8.198	10.738	
13:57	180.702	1.079	8.051	7.982	10.903	
13:58	178.331	1.143	8.659	8.481	10.542	
13:59	170.973	1.009	8.814	8.343	10.633	
14:00	162.574	0.917	7.667	9.000	10.113	
14:01	155.588	0.863	10.164	8.657	10.445	
14:02	151.038	0.892	8.393	8.338	10.627	
14:03	158.179	1.051	7.476	8.722	10.346	
14:04	150.246	1.185	9.625	8.542	10.490	

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 14:05
 Stop Time 14:15

CALIBRATION BIAS 08

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gasses (C_s)					
C _{of} Zero gas	0.027	-0.155	-0.018	-0.010	-0.040
C _{uf} Upscale gas	215.797	42.759	48.219	9.400	9.415
Analyzer Calibration Error Responses (C_{Dir})					
C _{oce} Zero gas	-0.022	-0.040	-0.035	-0.008	-0.006
C _{mce} Upscale gas	221.788	44.044	48.177	9.511	9.472
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.0%	-0.1%	0.0%	0.0%	-0.2%
Upscale gas	-1.3%	-1.4%	0.0%	-0.6%	-0.3%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gasses (C_s)					
C _{oi} Zero gas	-0.035	-0.079	-0.047	-0.012	-0.043
C _{ui} Upscale gas	216.693	42.879	48.233	9.399	9.330
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	0.0%	-0.1%	0.0%	0.0%	0.0%
Upscale gas	-0.2%	-0.1%	0.0%	0.0%	0.5%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
14:06:57	0.489	-0.033	0.456	9.393	9.412
14:07:12	0.204	-0.062	0.456	9.399	9.418
14:07:27	-0.057	-0.083	0.456	9.390	9.409
14:07:42	-0.179	-0.106	0.472	9.381	9.414
14:07:57	0.032	-0.150	0.464	9.395	9.418
14:08:12	-0.073	-0.147	0.480	9.406	9.414
14:08:27	0.032	-0.169	0.440	9.400	9.410
14:08:42	0.122	-0.148	0.440	9.395	9.423
14:08:57	-0.261	1.371	0.347	5.212	9.498
14:09:12	12.886	20.720	0.196	0.323	9.734
14:09:27	145.095	34.002	0.080	0.011	9.896
14:09:42	205.112	37.864	-0.010	-0.009	9.900
14:09:57	213.724	39.489	0.034	-0.008	9.902
14:10:12	214.465	40.454	-0.031	-0.012	9.901
14:10:27	214.928	41.073	-0.082	-0.016	9.901
14:10:42	214.831	41.507	-0.018	-0.018	9.904
14:10:57	215.157	41.867	-0.018	-0.022	9.904
14:11:12	215.393	42.111	-0.018	-0.022	9.904
14:11:27	215.450	42.229	0.000	-0.025	9.907
14:11:42	215.393	42.519	-0.010	-0.026	9.904

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 14:05
 Stop Time 14:15

CALIBRATION BIAS 08

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
14:11:57	215.612	42.654	-0.018	-0.027	9.906
14:12:12	215.604	42.755	-0.039	-0.028	9.906
14:12:27	215.840	42.870	-0.024	-0.030	9.906
14:12:42	215.946	42.670	-0.031	0.014	9.613
14:12:57	199.023	26.317	5.267	0.024	2.616
14:13:12	141.563	10.437	24.755	-0.008	0.282
14:13:27	42.678	6.087	43.673	-0.009	0.052
14:13:42	3.785	4.345	47.621	-0.017	0.011
14:13:57	1.017	3.526	48.124	-0.011	-0.010
14:14:12	0.790	3.010	48.217	-0.010	-0.016
14:14:27	0.464	2.632	48.147	-0.010	-0.027
14:14:42	0.839	2.374	48.112	-0.010	-0.035
14:14:57	0.725	2.256	48.251	-0.012	-0.041
14:15:12	0.480	2.133	48.138	-0.013	-0.045
14:15:27	0.106	1.989	48.267	-0.002	-0.053
14:15:42	0.187	4.962	47.544	4.598	4.087
14:15:57	32.918	7.565	32.576	8.368	9.703

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 14:18
 Stop time 14:45

REFERENCE METHOD RUN 9

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	0.027	-0.155	-0.018	-0.010	-0.040
C _{ui} Initial upscale	215.797	42.759	48.219	9.400	9.415
C _{of} Final zero	-0.087	-0.154	-0.059	-0.013	-0.039
C _{uf} Final upscale	215.244	42.466	48.183	9.383	9.412
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	158.733	1.307	9.144	8.832	10.234
C _{Gss} Bias adjusted	164.250	1.541	9.004	8.953	10.356

Clock Time (at end of sample period)

040913 133558					
14:19	174.776	1.635	8.316	7.724	11.185
14:20	161.353	1.454	6.686	9.127	9.962
14:21	158.232	1.460	7.858	8.631	10.409
14:22	164.235	1.334	6.961	9.216	9.943
14:23	158.614	1.310	8.985	8.691	10.360
14:24	158.453	1.325	9.132	8.810	10.306
14:25	147.249	1.317	8.610	9.159	9.992
14:26	150.967	1.417	8.356	9.331	9.857
14:27	151.282	1.484	9.737	8.988	10.125
14:28	163.696	1.791	12.476	8.344	10.639
14:29	156.158	1.847	10.469	8.926	10.161
14:30	161.917	1.856	10.681	9.088	10.030
14:31	169.278	1.674	8.501	9.156	10.000
14:32	155.981	1.460	8.923	9.092	10.008
14:33	163.329	1.443	7.710	8.855	10.215
14:34	165.657	1.415	9.197	8.408	10.555
14:35	183.352	1.461	8.686	8.287	10.664
14:36	177.460	1.352	8.978	8.906	10.178
14:37	169.129	1.213	9.278	9.366	9.829
14:38	144.841	0.941	9.428	9.311	9.838
14:39	151.154	0.888	9.640	8.519	10.421
14:40	183.126	1.040	9.867	7.518	11.332
14:41	159.723	1.016	7.721	9.207	9.947
14:42	127.304	0.844	10.462	9.227	9.888
14:43	131.673	0.785	9.094	9.485	9.678
14:44	139.577	0.752	11.068	8.828	10.196
14:45	157.271	0.767	10.073	8.262	10.592

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 14:46
 Stop Time 14:56

CALIBRATION BIAS 09

Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
NOX	SO2	CO	O2	CO2
FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
ppmdv	ppmdv	ppmdv	%dv	%dv

System Response to Calibration Gasses (C_s)

C _{of} Zero gas	-0.087	-0.154	-0.059	-0.013	-0.039
C _{uf} Upscale gas	215.244	42.466	48.183	9.383	9.412

Analyzer Calibration Error Responses (C_{Dir})

C _{ocb} Zero gas	-0.022	-0.040	-0.035	-0.008	-0.006
C _{mcb} Upscale gas	221.788	44.044	48.177	9.511	9.472

Actual Upscale Gas Value (C_{MA})

C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
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Calibration Span Value (CS)

	448.000	90.800	96.300	18.100	17.900
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System Bias as Percent of Calibration Span Value (SB) (5%)

Zero gas	0.0%	-0.1%	0.0%	0.0%	-0.2%
Upscale gas	-1.5%	-1.7%	0.0%	-0.7%	-0.3%

System Bias Status

Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Previous System Response to Calibration Gasses (C_s)

C _{oi} Zero gas	0.027	-0.155	-0.018	-0.010	-0.040
C _{ui} Upscale gas	215.797	42.759	48.219	9.400	9.415

Drift Assessment as Percent of Calibration Span Value (D) (3%)

Zero gas	0.0%	0.0%	0.0%	0.0%	0.0%
Upscale gas	-0.1%	-0.3%	0.0%	-0.1%	0.0%

Drift Assessment Status

Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

040913 151608

14:48:20	0.261	-0.026	0.464	9.377	9.418
14:48:35	0.195	-0.095	0.450	9.379	9.407
14:48:50	0.334	-0.085	0.464	9.376	9.395
14:49:05	-0.090	-0.303	0.458	9.291	9.412
14:49:20	0.154	-0.155	0.450	9.381	9.415
14:49:35	0.138	-0.166	0.454	9.377	9.411
14:49:50	0.032	-0.138	0.440	9.373	9.411
14:50:05	-0.073	-0.156	0.440	9.392	9.415
14:50:20	-0.073	-0.168	0.440	9.384	9.416
14:50:35	-0.114	0.915	0.454	5.761	9.520
14:50:50	0.244	19.523	0.254	0.520	9.816
14:51:05	133.374	33.519	0.083	0.015	9.886
14:51:20	204.102	37.713	-0.018	-0.008	9.890
14:51:35	213.382	39.481	-0.082	-0.006	9.892
14:51:50	214.074	40.441	-0.023	-0.012	9.894
14:52:05	214.571	41.091	0.013	-0.014	9.894

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 1

March 19, 2013
 Start Time 14:46
 Stop Time 14:56

CALIBRATION BIAS 09

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
14:52:20	214.636	41.442	-0.060	-0.030	9.892
14:52:35	214.448	41.872	-0.104	-0.021	9.893
14:52:50	214.774	42.110	-0.012	-0.022	9.895
14:53:05	214.937	42.257	-0.062	-0.025	9.895
14:53:20	215.182	42.494	0.003	-0.025	9.898
14:53:35	215.230	42.647	-0.025	-0.027	9.897
14:53:50	215.320	35.906	1.122	0.057	6.006
14:54:05	152.991	14.741	18.095	-0.006	0.623
14:54:20	83.264	7.145	38.385	-0.009	0.112
14:54:35	4.526	4.755	46.716	-0.011	0.025
14:54:50	1.945	3.684	48.038	-0.010	0.004
14:55:05	0.920	3.087	48.002	-0.009	-0.010
14:55:20	0.676	2.610	48.128	-0.012	-0.024
14:55:35	0.586	2.284	48.085	-0.012	-0.035
14:55:50	0.025	2.190	48.156	-0.012	-0.039
14:56:05	0.276	2.030	48.239	-0.013	-0.043
14:56:20	0.171	2.212	48.155	0.885	0.341
14:56:35	16.076	6.619	43.129	6.903	7.695
14:56:50	80.301	6.408	26.221	8.508	10.057

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 14:59
 Stop time 15:26

REFERENCE METHOD RUN 10

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	-0.087	-0.154	-0.059	-0.013	-0.039
C _{ui} Initial upscale	215.244	42.466	48.183	9.383	9.412
C _{of} Final zero	0.154	-0.035	-0.010	-0.015	-0.031
C _{uf} Final upscale	214.931	42.493	48.163	9.381	9.409
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{AVG} Average conc.	147.007	0.799	8.582	8.722	10.273
C _{GAS} Bias adjusted	152.404	0.946	8.454	8.851	10.400

Clock Time (at end of sample period)

0409.13 133558:	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
15:00	137.825	1.193	8.984	8.621	10.320
15:01	155.515	1.153	8.891	8.210	10.667
15:02	156.246	0.998	9.291	8.223	10.592
15:03	181.852	1.222	7.793	7.655	11.137
15:04	163.576	0.975	5.503	9.173	9.911
15:05	142.725	0.817	6.024	8.806	10.126
15:06	159.369	0.858	5.330	8.319	10.532
15:07	166.272	0.924	6.710	8.038	10.777
15:08	161.943	1.003	6.869	8.046	10.796
15:09	150.281	0.987	8.138	8.968	10.071
15:10	144.373	0.923	8.382	8.944	10.085
15:11	153.195	0.916	9.447	8.792	10.220
15:12	159.017	0.965	11.120	8.434	10.532
15:13	146.304	0.943	10.528	8.808	10.232
15:14	155.963	0.755	9.492	8.538	10.451
15:15	139.593	0.639	8.240	9.354	9.789
15:16	138.547	0.679	9.356	8.826	10.192
15:17	142.996	0.631	9.022	8.968	10.109
15:18	132.949	0.586	9.443	9.224	9.902
15:19	133.909	0.569	9.238	9.242	9.877
15:20	144.856	0.585	8.685	8.683	10.327
15:21	143.286	0.621	7.129	8.866	10.178
15:22	128.465	0.603	9.408	9.275	9.871
15:23	121.312	0.519	10.272	9.270	9.864
15:24	126.040	0.491	11.110	8.541	10.391
15:25	149.500	0.507	8.277	8.780	10.279
15:26	133.289	0.503	9.033	8.891	10.139

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 1

March 19, 2013
 Start Time 15:27
 Stop Time 15:43

CALIBRATION BIAS 10

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gases (C_s)					
C _{of} Zero gas	0.154	-0.035	-0.010	-0.015	-0.031
C _{uf} Upscale gas	214.931	42.493	48.163	9.381	9.409
Analyzer Calibration Error Responses (C_{dir})					
C _{ocb} Zero gas	-0.022	-0.040	-0.035	-0.008	-0.006
C _{mce} Upscale gas	221.788	44.044	48.177	9.511	9.472
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.0%	0.0%	0.0%	0.0%	-0.1%
Upscale gas	-1.5%	-1.7%	0.0%	-0.7%	-0.4%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gases (C_s)					
C _{oi} Zero gas	-0.087	-0.154	-0.059	-0.013	-0.039
C _{ui} Upscale gas	215.244	42.466	48.183	9.383	9.412
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	0.1%	0.1%	0.1%	0.0%	0.0%
Upscale gas	-0.1%	0.0%	0.0%	0.0%	0.0%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

040913 133558

15:29:14	103.582	2.362	8.448	9.387	9.416
15:29:29	28.840	1.211	2.460	9.367	9.406
15:29:44	3.337	0.638	0.653	9.369	9.406
15:29:59	0.464	0.350	0.464	9.381	9.407
15:30:14	0.831	-0.024	0.441	9.384	9.416
15:30:29	0.366	-0.049	0.451	9.380	9.410
15:30:44	0.057	-0.005	0.433	9.364	9.400
15:30:59	0.244	-0.050	0.418	9.370	9.403
15:31:14	0.000	-0.111	0.462	9.286	9.409
15:31:29	0.220	4.913	0.431	3.453	9.623
15:31:44	91.478	26.134	0.230	0.256	9.861
15:31:59	169.695	35.512	-0.003	0.003	9.885
15:32:14	209.402	38.582	-0.018	-0.013	9.890
15:32:29	213.032	39.922	0.003	-0.011	9.891
15:32:44	213.813	40.682	-0.021	-0.015	9.892
15:32:59	214.099	41.250	-0.031	-0.020	9.892
15:33:14	214.384	41.553	-0.041	-0.022	9.894
15:33:29	214.473	41.864	0.042	-0.022	9.890
15:33:44	214.676	42.069	-0.034	-0.027	9.895
15:33:59	214.847	42.196	-0.018	-0.028	9.896

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 1

March 19, 2013
 Start Time 15:27
 Stop Time 15:43

CALIBRATION BIAS 10

NOX Converter
 Efficiency Check

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
15:34:14	214.603	42.367	-0.039	-0.030	9.893
15:34:29	214.847	42.512	-0.082	-0.029	9.894
15:34:44	214.888	42.600	-0.055	-0.031	9.892
15:34:59	215.059	42.423	-0.051	0.000	9.755
15:35:14	198.551	26.829	4.334	0.015	3.160
15:35:29	115.580	10.322	25.524	-0.011	0.339
15:35:44	38.535	5.771	42.352	-0.013	0.061
15:35:59	3.288	4.174	47.658	-0.014	-0.015
15:36:14	1.270	3.280	48.076	-0.015	-0.010
15:36:29	0.464	2.854	48.078	-0.015	-0.012
15:36:44	0.383	2.408	48.150	-0.016	-0.022
15:36:59	0.293	2.273	48.261	-0.015	-0.033
15:37:14	0.073	2.128	48.024	-0.016	-0.036
15:37:29	-0.114	1.975	47.438	0.682	-0.023
15:37:44	0.855	1.327	44.215	1.604	-0.052
15:37:59	7.440	0.625	31.875	1.071	-0.090
15:38:14	21.611	0.433	17.773	0.978	-0.094
15:38:29	29.149	0.427	6.594	0.975	-0.098
15:38:44	32.788	0.424	1.867	0.971	-0.108
15:38:59	34.693	0.454	0.477	0.969	-0.098
15:39:14	35.669	0.490	0.217	0.969	-0.098
15:39:29	36.231	0.521	0.163	0.969	-0.098
15:39:44	37.721	0.510	0.101	0.968	-0.103
15:39:59	38.632	0.516	0.059	0.968	-0.103
15:40:14	40.261	0.560	0.109	0.964	-0.126
15:40:29	42.841	0.590	0.185	0.963	-0.126
15:40:44	44.404	0.619	0.151	0.962	-0.121
15:40:59	44.844	0.632	0.111	0.961	-0.121
15:41:14	45.193	0.641	0.083	0.962	-0.125
15:41:29	45.445	0.666	-0.001	0.963	-0.159
15:41:44	45.706	0.658	0.062	0.963	-0.133
15:41:59	45.829	0.667	0.135	0.963	-0.138
15:42:14	46.032	0.679	0.057	0.962	-0.123
15:42:29	46.260	0.657	0.083	0.961	-0.127
15:42:44	46.130	0.671	0.125	0.962	-0.132
15:42:59	45.592	0.671	0.070	0.961	-0.122
15:43:14	44.176	0.687	0.078	4.109	2.305
15:43:29	41.140	0.869	2.141	8.979	9.602

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

Date: **March 22, 2013**

Start Time 6:37

Stop Time 6:52

CALIBRATION ERROR

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Instrument Information					
Manufacturer:	T.E.I. Wstrn Rsrch		T.E.I.	Servomex	Servomex
Model:	42i-HL	921NMP	48i	1420C	1415C
Detection:	Chemilumi.	UV Photo.	GFC/NDIR	Paramagn.	NDIR
Asset or Serial No:	207983	205878	204764	204621	205831
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Response Time (seconds)					
	50	50	50	50	50
Manufacturer Certified Cylinder Value (C_v)					
Zero	0.000	0.000	0.000	0.000	0.000
Low	223.000	45.100	47.300	9.520	9.530
Mid					
High	448.000	90.800	96.300	18.100	17.900
Actual gas to be used for bias checks					
	223.000	45.100	47.300	9.520	9.530
Cylinder ID					
Zero					
Low	ALM019186	ALM019186	AL0340	CC196768	CC196768
Mid					
High	ALM012619	ALM012619	CC181272	ALM040668	ALM040668
Analyzer Calibration Response (C_{dir})					
Zero	-0.073	-0.003	-0.060	-0.058	-0.077
Low	223.951	44.292	47.768	9.536	9.440
Mid					
High	448.235	90.565	96.518	18.161	18.047
Analyzer Calibration Error (ACE) (Limit = 2%, Method 25A limit = 5% of gas value)					
Zero	0.0%	0.0%	-0.1%	-0.3%	-0.4%
Low	0.2%	-0.9%	0.5%	0.1%	-0.5%
Mid	N/A	N/A	N/A	N/A	N/A
High	0.1%	-0.3%	0.2%	0.3%	0.8%
Calibration Error Status					
Zero	OK	OK	OK	OK	OK
Low	OK	OK	OK	OK	OK
Mid	N/A	N/A	N/A	N/A	N/A
High	OK	OK	OK	OK	OK

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06:37:04	1.009	-0.166	1.784	18.158	16.543
06:37:19	1.547	-0.329	1.543	18.160	18.228
06:37:34	-0.130	-0.391	0.777	18.160	18.230

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

Date: **March 22, 2013**

Start Time 6:37

Stop Time 6:52

CALIBRATION ERROR

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
06:37:49	-0.163	-0.490	0.133	18.163	18.034
06:38:04	-0.098	-0.383	-0.059	18.157	18.048
06:38:19	-0.098	-0.031	-0.085	18.162	18.058
06:38:34	-0.089	-0.031	-0.014	16.945	17.261
06:38:49	-0.081	0.062	0.052	10.704	10.764
06:39:04	-0.073	-0.062	0.156	9.603	9.549
06:39:19	-0.073	-0.072	0.288	9.538	9.455
06:39:34	-0.073	-0.016	0.366	9.537	9.441
06:39:49	-0.049	0.003	0.319	9.534	9.443
06:40:04	-0.041	0.003	0.296	9.536	9.436
06:40:19	-0.049	-0.051	0.358	9.533	9.492
06:40:34	0.578	18.973	0.296	5.089	9.126
06:40:49	3.338	74.304	0.279	0.250	9.854
06:41:04	256.589	87.284	0.047	-0.033	9.962
06:41:19	430.444	89.333	-0.073	-0.048	9.958
06:41:34	442.686	89.820	-0.073	-0.051	9.946
06:41:49	444.412	89.989	-0.088	-0.051	9.958
06:42:04	445.031	90.133	-0.114	-0.054	9.959
06:42:19	445.478	90.250	-0.075	-0.057	9.954
06:42:34	445.666	90.274	-0.073	-0.057	9.958
06:42:49	446.300	90.356	-0.088	-0.058	9.966
06:43:04	447.074	90.434	-0.111	-0.058	9.963
06:43:19	447.765	90.486	-0.102	-0.059	9.969
06:43:34	448.279	90.536	-0.099	-0.059	9.965
06:43:49	448.271	90.578	-0.073	-0.058	9.974
06:44:04	448.279	90.580	-0.102	-0.058	9.969
06:44:19	448.222	90.569	-0.073	-0.058	9.957
06:44:34	448.205	90.549	-0.075	-0.058	9.966
06:44:49	448.181	74.390	-0.106	0.483	8.747
06:45:04	389.174	41.714	-0.034	0.041	9.495
06:45:19	307.871	43.012	-0.106	-0.063	9.942
06:45:34	227.920	43.902	-0.054	-0.070	9.966
06:45:49	224.127	44.127	-0.073	-0.071	9.970
06:46:04	224.062	44.259	-0.057	-0.071	9.965
06:46:19	223.981	44.292	-0.049	-0.069	9.970
06:46:34	223.810	44.326	-0.067	-0.069	9.959
06:46:49	223.566	34.689	0.796	0.416	6.896
06:47:04	193.602	5.776	17.838	0.026	0.479
06:47:19	119.243	0.939	64.629	-0.043	-0.015
06:47:34	10.566	0.244	88.098	-0.045	-0.044
06:47:49	1.726	0.096	95.827	-0.046	-0.057
06:48:04	0.383	0.041	96.290	-0.046	-0.061
06:48:19	0.513	0.029	96.399	-0.048	-0.061
06:48:34	0.276	0.013	96.580	-0.047	-0.063
06:48:49	0.260	-0.023	96.560	-0.047	-0.066
06:49:04	0.057	0.026	96.414	-0.049	-0.071

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

Date: **March 22, 2013**

Start Time 6:37

Stop Time 6:52

CALIBRATION ERROR

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
06:49:19	-0.391	-0.021	96.532	-0.047	-0.073
06:49:34	-0.399	0.045	96.663	0.108	-0.034
06:49:49	0.122	0.676	92.873	0.205	0.109
06:50:04	1.001	1.291	77.146	-0.033	-0.056
06:50:19	0.985	1.421	57.084	-0.045	-0.070
06:50:34	-0.049	1.499	49.643	-0.047	-0.086
06:50:49	-0.301	1.524	48.036	-0.047	-0.073
06:51:04	0.122	1.500	47.896	-0.047	-0.073
06:51:19	-0.407	1.496	47.798	-0.049	-0.073
06:51:34	-0.195	1.490	47.731	-0.050	-0.075
06:51:49	-0.049	1.488	47.774	-0.050	-0.079
06:52:04	-0.317	1.490	47.827	2.435	-0.076

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 6:54
 Stop Time 7:01
CALIBRATION BIAS 00

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gases (C_s)					
C _{of} Zero gas	-0.212	0.023	-0.014	-0.017	-0.028
C _{uf} Upscale gas	219.555	42.134	47.829	9.483	9.492
Analyzer Calibration Error Responses (C_{Dir})					
C _{oee} Zero gas	-0.073	-0.003	-0.060	-0.058	-0.077
C _{moe} Upscale gas	223.951	44.292	47.768	9.536	9.440
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.0%	0.0%	0.0%	0.2%	0.3%
Upscale gas	-1.0%	-2.4%	0.1%	-0.3%	0.3%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gases (C_s)					
C _{oi} Zero gas	N/A	N/A	N/A	N/A	N/A
C _{ui} Upscale gas	N/A	N/A	N/A	N/A	N/A
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	N/A	N/A	N/A	N/A	N/A
Upscale gas	N/A	N/A	N/A	N/A	N/A
Drift Assessment Status					
Zero gas	N/A	N/A	N/A	N/A	N/A
Upscale gas	N/A	N/A	N/A	N/A	N/A

Time	NOX	SO2	CO	O2	CO2
06:54:10	-0.163	-0.039	0.501	9.500	9.459
06:54:25	-0.529	0.058	0.453	9.492	9.470
06:54:40	-0.212	0.029	0.440	9.488	9.476
06:54:55	-0.529	0.024	0.412	9.489	9.484
06:55:10	-0.106	0.032	0.474	9.483	9.489
06:55:25	-0.212	0.031	0.470	9.481	9.492
06:55:40	-0.317	0.007	0.420	9.483	9.495
06:55:55	-0.529	0.049	0.440	9.477	9.498
06:56:10	0.000	0.319	0.440	5.317	9.633
06:56:25	42.727	15.863	0.273	0.408	9.930
06:56:40	113.847	32.353	0.076	-0.007	9.960
06:56:55	209.011	37.228	-0.008	-0.004	9.955
06:57:10	216.891	39.118	-0.039	-0.012	9.964
06:57:25	218.388	40.117	-0.078	-0.018	9.954
06:57:40	218.584	40.747	-0.052	-0.021	9.963
06:57:55	218.674	41.280	-0.038	-0.024	9.973
06:58:10	218.836	41.674	0.000	-0.028	9.965
06:58:25	219.341	41.949	-0.004	-0.028	9.955
06:58:40	219.349	42.159	-0.039	-0.030	9.967
06:58:55	219.650	42.294	-0.041	-0.033	9.966
06:59:10	219.666	40.637	0.632	0.013	7.033

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 6:54
 Stop Time 7:01
 CALIBRATION BIAS 00

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
06:59:25	181.970	20.373	10.751	-0.013	0.761
06:59:40	112.006	8.342	32.625	-0.015	0.112
06:59:55	10.736	5.104	43.878	-0.017	0.029
07:00:10	2.295	3.964	47.477	-0.017	0.006
07:00:25	0.944	3.225	47.723	-0.017	-0.006
07:00:40	0.749	2.927	47.712	-0.020	-0.012
07:00:55	0.326	2.595	47.731	-0.020	-0.022
07:01:10	0.081	2.411	47.823	-0.020	-0.031
07:01:25	0.187	2.273	47.826	-0.020	-0.030
07:01:40	0.049	2.172	47.839	-0.018	-0.037

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 7:11
 Stop time 7:35

REFERENCE METHOD RUN 1

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	-0.212	0.023	-0.014	-0.017	-0.028
C _{ui} Initial upscale	219.555	42.134	47.829	9.483	9.492
C _{of} Final zero	0.062	-0.016	-0.086	-0.027	-0.002
C _{uf} Final upscale	218.689	42.383	47.684	9.455	9.536
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	166.530	0.264	11.483	7.813	11.322
C _{Gas} Bias adjusted	169.495	0.278	11.411	7.859	11.338

Clock Time (at end of sample period)

040913 150948					
07:12	167.591	0.434	8.675	7.368	11.738
07:13	164.817	0.379	7.979	7.551	11.611
07:14	152.782	0.317	8.641	7.971	11.178
07:15	149.506	0.288	9.947	8.214	11.027
07:16	143.984	0.242	11.044	8.406	10.816
07:17	143.262	0.239	12.134	8.342	10.855
07:18	145.045	0.257	13.157	8.233	10.965
07:19	147.922	0.237	12.998	8.010	11.145
07:20	147.680	0.244	13.920	7.801	11.345
07:21	154.274	0.197	12.176	8.265	10.949
07:22	157.762	0.257	11.584	8.516	10.738
07:23	163.824	0.290	11.454	8.602	10.657
07:24	165.324	0.286	13.144	8.879	10.450
07:25	170.733	0.290	14.895	8.274	10.897
07:26	183.745	0.249	14.294	8.121	11.063
07:27	179.033	0.267	11.883	8.224	10.882
07:28	190.765	0.328	13.188	7.566	11.491
07:29	198.506	0.244	10.973	7.068	11.960
07:30	193.759	0.269	9.386	7.286	11.732
07:31	187.766	0.235	10.482	7.034	11.957
07:32	183.913	0.221	11.803	6.613	12.416
07:33	172.489	0.205	11.520	6.612	12.388
07:34	168.759	0.165	9.974	7.387	11.672
07:35	163.474	0.200	10.333	7.177	11.782

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 7:37
 Stop Time 7:45

CALIBRATION BIAS 01

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gases (C_s)					
C _{of} Zero gas	0.062	-0.016	-0.086	-0.027	-0.002
C _{uf} Upscale gas	218.689	42.383	47.684	9.455	9.536
Analyzer Calibration Error Responses (C_{Dir})					
C _{ocb} Zero gas	-0.073	-0.003	-0.060	-0.058	-0.077
C _{mce} Upscale gas	223.951	44.292	47.768	9.536	9.440
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.0%	0.0%	0.0%	0.2%	0.4%
Upscale gas	-1.2%	-2.1%	-0.1%	-0.4%	0.5%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gases (C_s)					
C _{oi} Zero gas	-0.212	0.023	-0.014	-0.017	-0.028
C _{ui} Upscale gas	219.555	42.134	47.829	9.483	9.492
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	0.1%	0.0%	-0.1%	-0.1%	0.1%
Upscale gas	-0.2%	0.3%	-0.2%	-0.2%	0.2%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
07:37:19	69.809	0.186	8.909	9.392	9.459
07:37:34	8.799	0.182	3.306	9.429	9.527
07:37:49	3.541	0.119	0.755	9.446	9.534
07:38:04	2.312	0.051	0.483	9.449	9.534
07:38:19	1.587	-0.023	0.464	9.452	9.532
07:38:34	0.985	0.044	0.462	9.453	9.534
07:38:49	0.847	0.036	0.442	9.450	9.536
07:39:04	0.717	0.086	0.443	9.454	9.536
07:39:19	0.285	-0.052	0.440	9.456	9.536
07:39:34	-0.147	-0.081	0.440	9.455	9.537
07:39:49	0.049	0.159	0.425	5.017	9.640
07:40:04	49.337	14.250	0.273	0.364	9.952
07:40:19	121.066	32.303	0.112	-0.009	9.989
07:40:34	208.758	37.429	-0.099	-0.014	9.995
07:40:49	216.272	39.248	-0.038	-0.022	9.991
07:41:04	217.631	40.230	-0.021	-0.029	9.988
07:41:19	217.973	40.791	-0.005	-0.031	9.983
07:41:34	218.217	41.265	-0.038	-0.035	9.992
07:41:49	218.315	41.496	-0.047	-0.037	9.992
07:42:04	218.348	41.770	-0.046	-0.039	9.993

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 2

March 22, 2013
 Start Time 7:37
 Stop Time 7:45

CALIBRATION BIAS 01

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
07:42:19	218.437	41.954	-0.117	-0.040	9.995
07:42:34	218.470	42.107	-0.103	-0.043	9.999
07:42:49	218.632	42.240	-0.039	-0.042	9.996
07:43:04	218.681	42.414	0.001	-0.045	9.985
07:43:19	218.754	42.496	-0.054	-0.022	9.932
07:43:34	206.333	36.228	2.660	0.011	3.522
07:43:49	144.485	15.087	20.736	-0.023	0.320
07:44:04	53.838	6.948	38.004	-0.027	0.092
07:44:19	4.062	4.503	46.359	-0.027	0.046
07:44:34	1.432	3.600	47.556	-0.027	0.009
07:44:49	1.197	3.067	47.702	-0.026	-0.007
07:45:04	0.594	2.719	47.653	-0.027	-0.008
07:45:19	0.668	2.396	47.645	-0.028	-0.003
07:45:34	0.244	2.307	47.736	-0.027	-0.010
07:45:49	0.537	2.164	47.671	-0.028	-0.017

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 7:47
 Stop time 8:11

REFERENCE METHOD RUN 2

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	0.062	-0.016	-0.086	-0.027	-0.002
C _{ui} Initial upscale	218.689	42.383	47.684	9.455	9.536
C _{of} Final zero	-0.407	-0.011	-0.050	-0.027	-0.006
C _{uf} Final upscale	217.767	42.083	47.653	9.444	9.535
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{AVG} Average conc.	170.368	0.288	6.438	7.021	12.040
C _{Gas} Bias adjusted	174.132	0.322	6.447	7.080	12.032

Clock Time (at end of sample period)

040913 150948						
07:48	163.561	0.814	5.667	7.311	11.728	
07:49	160.946	0.522	6.522	7.056	12.002	
07:50	160.676	0.410	6.505	6.870	12.166	
07:51	163.999	0.259	7.711	6.539	12.539	
07:52	161.131	0.301	6.911	7.470	11.641	
07:53	163.781	0.228	7.416	6.964	12.100	
07:54	165.859	0.235	5.902	8.223	10.965	
07:55	159.701	0.211	7.497	8.249	10.889	
07:56	167.802	0.247	8.623	7.288	11.767	
07:57	185.692	0.239	10.731	5.803	13.230	
07:58	181.475	0.225	7.342	6.539	12.572	
07:59	170.085	0.224	5.781	7.654	11.445	
08:00	176.475	0.231	5.988	6.932	12.139	
08:01	182.263	0.217	4.782	7.384	11.680	
08:02	178.026	0.218	7.333	6.481	12.540	
08:03	171.453	0.146	6.059	7.011	12.053	
08:04	167.017	0.248	5.555	7.222	11.840	
08:05	174.365	0.461	6.533	6.996	12.058	
08:06	181.679	0.496	6.516	6.453	12.531	
08:07	189.799	0.307	4.888	6.350	12.639	
08:08	178.814	0.205	5.060	6.160	12.837	
08:09	164.996	0.157	4.832	7.024	12.022	
08:10	162.387	0.155	5.575	6.987	12.044	
08:11	156.850	0.166	4.789	7.528	11.542	

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 8:14
 Stop Time 8:23

CALIBRATION BIAS 02

	Channel 1 NOX FF Outlet ppmdv	Channel 2 SO2 FF Outlet ppmdv	Channel 3 CO FF Outlet ppmdv	Channel 4 O2 FF Outlet %dv	Channel 5 CO2 FF Outlet %dv
System Response to Calibration Gases (C_s)					
C _{of} Zero gas	-0.407	-0.011	-0.050	-0.027	-0.006
C _{uf} Upscale gas	217.767	42.083	47.653	9.444	9.535
Analyzer Calibration Error Responses (C_{Dir})					
C _{oce} Zero gas	-0.073	-0.003	-0.060	-0.058	-0.077
C _{mce} Upscale gas	223.951	44.292	47.768	9.536	9.440
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	-0.1%	0.0%	0.0%	0.2%	0.4%
Upscale gas	-1.4%	-2.4%	-0.1%	-0.5%	0.5%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gases (C_s)					
C _{oi} Zero gas	0.062	-0.016	-0.086	-0.027	-0.002
C _{ui} Upscale gas	218.689	42.383	47.684	9.455	9.536
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	-0.1%	0.0%	0.0%	0.0%	0.0%
Upscale gas	-0.2%	-0.3%	0.0%	-0.1%	0.0%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
08:14:37	2.515	0.112	0.741	9.421	9.525
08:14:52	1.799	0.142	0.493	9.431	9.528
08:15:07	1.017	0.005	0.453	9.428	9.531
08:15:22	0.749	-0.029	0.464	9.439	9.533
08:15:37	0.399	-0.078	0.451	9.442	9.532
08:15:52	0.114	-0.060	0.444	9.440	9.531
08:16:07	0.155	-0.033	0.454	9.442	9.534
08:16:22	-0.049	-0.002	0.456	9.440	9.534
08:16:37	0.211	-0.010	0.450	9.440	9.536
08:16:52	0.032	-0.018	0.446	9.445	9.534
08:17:07	-0.073	-0.005	0.462	9.442	9.532
08:17:22	0.016	0.003	0.461	9.437	9.535
08:17:37	-0.724	0.000	0.454	9.448	9.533
08:17:52	-0.090	-0.018	0.415	9.447	9.536
08:18:07	-0.407	0.125	0.420	5.427	9.640
08:18:22	51.420	13.180	0.277	0.414	9.945
08:18:37	133.822	31.404	0.106	0.007	9.964
08:18:52	202.491	37.206	-0.099	-0.012	9.982
08:19:07	215.165	39.126	0.006	-0.022	9.979
08:19:22	216.361	40.041	-0.039	-0.028	9.982

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 8:14
 Stop Time 8:23
CALIBRATION BIAS 02

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
08:19:37	216.793	40.656	-0.046	-0.033	9.982
08:19:52	217.086	41.109	-0.042	-0.035	9.970
08:20:07	217.379	41.415	-0.062	-0.039	9.983
08:20:22	217.566	41.672	0.003	-0.039	9.978
08:20:37	217.697	41.944	-0.018	-0.041	9.989
08:20:52	217.786	42.094	-0.017	-0.044	9.984
08:21:07	217.697	42.212	-0.081	-0.045	9.987
08:21:22	217.819	41.253	0.249	0.002	7.307
08:21:37	177.835	23.140	11.850	-0.013	0.868
08:21:52	60.187	9.338	31.406	-0.024	0.148
08:22:07	14.359	5.431	44.306	-0.025	0.031
08:22:22	2.247	3.925	47.261	-0.027	0.019
08:22:37	0.725	3.215	47.629	-0.027	0.001
08:22:52	0.212	2.847	47.665	-0.027	0.002
08:23:07	0.733	2.510	47.668	-0.027	-0.011
08:23:22	0.472	2.322	47.627	-0.026	-0.010

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 2

March 22, 2013
 Start Time 8:35
 Stop time 8:59

REFERENCE METHOD RUN 3

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	-0.407	-0.011	-0.050	-0.027	-0.006
C _{ui} Initial upscale	217.767	42.083	47.653	9.444	9.535
C _{of} Final zero	0.271	-0.010	-0.060	-0.027	0.000
C _{uf} Final upscale	216.747	41.975	47.610	9.431	9.535
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	180.211	0.234	7.544	6.984	12.013
C _{Gas} Bias adjusted	184.986	0.262	7.538	7.052	12.006

Clock Time (at end of sample period)

040913_150948						
08:36	178.773	0.166	8.772	7.202	11.757	
08:37	176.632	0.220	8.486	7.412	11.648	
08:38	177.183	0.224	7.938	7.624	11.410	
08:39	175.218	0.245	7.089	7.112	11.918	
08:40	178.158	0.244	6.935	6.545	12.410	
08:41	180.497	0.292	7.243	6.508	12.491	
08:42	183.329	0.279	6.887	6.077	12.880	
08:43	184.727	0.285	6.441	7.114	11.957	
08:44	181.199	0.316	6.755	7.418	11.584	
08:45	188.197	0.298	7.039	7.153	11.856	
08:46	190.527	0.279	6.533	7.454	11.520	
08:47	187.633	0.285	7.343	6.898	12.076	
08:48	186.652	0.241	7.860	6.872	12.126	
08:49	183.600	0.198	8.251	6.674	12.316	
08:50	189.440	0.230	8.219	6.227	12.720	
08:51	191.099	0.224	6.680	7.135	11.897	
08:52	181.022	0.206	7.648	7.030	11.954	
08:53	180.199	0.277	7.345	7.267	11.741	
08:54	177.411	0.213	7.806	6.928	12.083	
08:55	175.271	0.167	7.537	6.848	12.131	
08:56	169.970	0.169	7.885	6.537	12.397	
08:57	165.873	0.177	7.886	6.701	12.291	
08:58	166.526	0.186	8.167	7.532	11.479	
08:59	175.924	0.202	8.320	7.348	11.671	

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 9:00
 Stop Time 9:08
CALIBRATION BIAS 03

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gases (C_s)					
C _{of} Zero gas	0.271	-0.010	-0.060	-0.027	0.000
C _{uf} Upscale gas	216.747	41.975	47.610	9.431	9.535
Analyzer Calibration Error Responses (C_{Dir})					
C _{oce} Zero gas	-0.073	-0.003	-0.060	-0.058	-0.077
C _{mce} Upscale gas	223.951	44.292	47.768	9.536	9.440
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (C_S)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.1%	0.0%	0.0%	0.2%	0.4%
Upscale gas	-1.6%	-2.6%	-0.2%	-0.6%	0.5%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gases (C_s)					
C _{oi} Zero gas	-0.407	-0.011	-0.050	-0.027	-0.006
C _{ui} Upscale gas	217.767	42.083	47.653	9.444	9.535
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	0.2%	0.0%	0.0%	0.0%	0.0%
Upscale gas	-0.2%	-0.1%	0.0%	-0.1%	0.0%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

040913_150948	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
09:00:17	170.679	0.158	7.435	7.153	11.838
09:00:32	168.815	0.072	7.673	5.764	10.271
09:00:47	173.447	0.067	11.875	7.710	7.527
09:01:02	101.017	0.095	11.697	9.315	9.381
09:01:17	12.438	0.138	4.884	9.406	9.517
09:01:32	4.241	0.135	1.272	9.417	9.530
09:01:47	2.165	0.029	0.540	9.419	9.530
09:02:02	1.066	-0.121	0.464	9.408	9.532
09:02:17	0.708	0.020	0.464	9.432	9.530
09:02:32	0.220	-0.008	0.450	9.433	9.532
09:02:47	0.440	-0.012	0.449	9.427	9.533
09:03:02	0.155	-0.005	0.444	9.433	9.533
09:03:17	-0.187	-0.013	0.442	8.448	9.539
09:03:32	10.386	3.500	0.425	1.517	9.850
09:03:47	113.911	24.309	0.181	0.060	9.976
09:04:02	181.897	34.948	-0.041	-0.006	9.983
09:04:17	213.488	38.066	-0.005	-0.019	9.992
09:04:32	214.945	39.412	0.034	-0.026	9.995
09:04:47	215.645	40.151	0.011	-0.030	9.996
09:05:02	215.938	40.659	-0.038	-0.034	9.987

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 2

March 22, 2013
 Start Time 9:00
 Stop Time 9:08
CALIBRATION BIAS 03

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
09:05:17	216.361	41.061	-0.068	-0.036	9.991
09:05:32	216.476	41.325	-0.033	-0.039	9.983
09:05:47	216.663	41.537	0.019	-0.039	9.985
09:06:02	216.728	41.727	0.011	-0.041	9.984
09:06:18	216.728	41.863	-0.028	-0.041	9.990
09:06:32	216.728	42.004	-0.098	-0.044	9.987
09:06:47	216.785	42.058	-0.054	-0.026	9.965
09:07:02	216.948	35.810	2.220	0.012	3.772
09:07:17	170.623	15.699	19.877	-0.020	0.365
09:07:32	37.550	7.328	37.565	-0.033	0.108
09:07:47	6.756	4.865	46.028	-0.026	0.052
09:08:02	1.897	3.739	47.385	-0.027	-0.010
09:08:17	0.611	3.181	47.599	-0.026	0.010
09:08:32	0.684	2.746	47.632	-0.027	0.002
09:08:47	0.578	2.444	47.599	-0.028	-0.016

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 9:10
 Stop time 9:34

REFERENCE METHOD RUN 4

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	0.271	-0.010	-0.060	-0.027	0.000
C _{ul} Initial upscale	216.747	41.975	47.610	9.431	9.535
C _{of} Final zero	0.497	-0.027	-0.014	-0.027	-0.004
C _{uf} Final upscale	217.078	41.676	47.656	9.427	9.538
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	182.289	0.311	8.800	6.936	12.102
C _{Gas} Bias adjusted	187.342	0.355	8.768	7.011	12.094

Clock Time (at end of sample period)

040913 150948		Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
09:11	182.444	1.029	10.357	7.218	11.782	
09:12	182.562	0.677	9.431	7.496	11.518	
09:13	183.694	0.511	9.042	6.957	12.058	
09:14	186.964	0.421	8.796	6.475	12.507	
09:15	193.445	0.405	9.170	5.804	13.174	
09:16	188.254	0.385	7.691	7.012	12.074	
09:17	182.163	0.339	8.713	7.378	11.660	
09:18	187.424	0.261	8.092	7.530	11.539	
09:19	183.427	0.253	8.335	6.977	12.016	
09:20	186.590	0.248	9.063	6.111	12.830	
09:21	182.505	0.227	8.350	6.499	12.530	
09:22	176.685	0.191	9.164	6.032	12.896	
09:23	191.561	0.243	8.595	6.458	12.587	
09:24	173.995	0.200	7.819	7.599	11.472	
09:25	170.905	0.198	9.241	6.915	12.145	
09:26	174.796	0.217	7.772	7.677	11.410	
09:27	173.197	0.214	9.027	6.890	12.149	
09:28	178.018	0.184	8.481	6.712	12.350	
09:29	178.024	0.166	9.941	5.991	13.020	
09:30	184.880	0.188	8.342	7.169	11.957	
09:31	178.702	0.205	8.316	7.516	11.539	
09:32	183.309	0.220	8.837	7.512	11.617	
09:33	181.677	0.233	9.053	7.430	11.661	
09:34	189.717	0.249	9.562	7.117	11.966	

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 9:35
 Stop Time 9:43

CALIBRATION BIAS 04

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gasses (C_s)					
C _{of} Zero gas	0.497	-0.027	-0.014	-0.027	-0.004
C _{uf} Upscale gas	217.078	41.676	47.656	9.427	9.538
Analyzer Calibration Error Responses (C_{Dir})					
C _{ocb} Zero gas	-0.073	-0.003	-0.060	-0.058	-0.077
C _{mcb} Upscale gas	223.951	44.292	47.768	9.536	9.440
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.1%	0.0%	0.0%	0.2%	0.4%
Upscale gas	-1.5%	-2.9%	-0.1%	-0.6%	0.5%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gases (C_s)					
C _{oi} Zero gas	0.271	-0.010	-0.060	-0.027	0.000
C _{ui} Upscale gas	216.747	41.975	47.610	9.431	9.535
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	0.1%	0.0%	0.0%	0.0%	0.0%
Upscale gas	0.1%	-0.3%	0.0%	0.0%	0.0%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

04/09/13 15:09:48	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
09:35:18	186.081	0.218	7.435	7.578	11.369
09:35:33	179.218	0.227	8.841	5.736	7.337
09:35:48	134.538	0.164	12.767	8.977	8.958
09:36:03	65.804	0.187	8.635	9.388	9.490
09:36:18	5.788	0.168	2.551	9.412	9.527
09:36:33	2.719	0.026	0.750	9.416	9.531
09:36:48	1.384	-0.002	0.521	9.421	9.535
09:37:03	1.009	0.099	0.464	9.434	9.535
09:37:18	0.578	-0.031	0.490	9.426	9.537
09:37:33	0.367	-0.054	0.464	9.420	9.538
09:37:48	0.546	0.003	0.462	8.557	9.539
09:38:03	1.091	6.268	0.410	1.603	9.851
09:38:18	48.922	27.196	0.184	0.055	9.978
09:38:33	183.118	35.416	0.023	-0.005	9.983
09:38:48	211.404	38.115	-0.046	-0.019	9.998
09:39:03	215.450	39.386	0.010	-0.027	9.994
09:39:18	216.296	40.120	0.040	-0.032	9.984
09:39:33	216.492	40.648	-0.059	-0.035	10.008

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 2

March 22, 2013
 Start Time 9:35
 Stop Time 9:43
CALIBRATION BIAS 04

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
09:39:48	216.842	41.014	-0.013	-0.037	9.998
09:40:03	216.996	41.299	-0.059	-0.039	9.982
09:40:18	216.980	41.481	0.029	-0.041	9.999
09:40:33	217.118	41.701	-0.062	-0.042	10.004
09:40:48	217.135	41.844	-0.036	-0.021	9.812
09:41:03	216.939	30.961	3.179	-0.001	2.856
09:41:18	169.711	11.880	22.089	-0.022	0.300
09:41:33	34.294	6.296	38.992	-0.025	0.089
09:41:48	5.836	4.361	46.434	-0.026	0.025
09:42:03	1.791	3.500	47.590	-0.026	0.020
09:42:18	1.115	2.971	47.634	-0.027	0.009
09:42:33	0.757	2.507	47.625	-0.028	0.002
09:42:48	0.399	2.286	47.666	-0.027	-0.004
09:43:03	0.399	2.162	47.677	-0.027	-0.009
09:43:18	0.171	3.116	47.235	2.120	2.181

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 9:45
 Stop time 10:09

REFERENCE METHOD RUN 5

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	0.497	-0.027	-0.014	-0.027	-0.004
C _{ui} Initial upscale	217.078	41.676	47.656	9.427	9.538
C _{of} Final zero	-0.149	-0.023	-0.044	-0.027	-0.006
C _{uf} Final upscale	216.280	42.024	47.628	9.423	9.539
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	179.190	0.277	7.652	6.989	12.042
C _{Gas} Bias adjusted	184.386	0.325	7.622	7.067	12.031

Clock Time (at end of sample period)

040913 150948						
09:46	193.343	0.641	7.284	6.649	12.297	
09:47	190.521	0.455	7.854	6.867	12.119	
09:48	187.255	0.384	8.270	6.543	12.427	
09:49	190.784	0.328	7.779	7.273	11.799	
09:50	177.187	0.289	7.097	8.262	10.838	
09:51	175.863	0.235	7.735	7.828	11.201	
09:52	175.327	0.221	7.853	6.536	12.410	
09:53	187.428	0.197	7.050	6.217	12.795	
09:54	178.468	0.187	7.126	6.009	12.939	
09:55	182.505	0.218	6.483	6.478	12.572	
09:56	179.206	0.314	5.830	7.679	11.372	
09:57	179.174	0.289	6.825	7.203	11.853	
09:58	175.191	0.215	6.927	7.396	11.650	
09:59	174.801	0.220	7.911	6.875	12.165	
10:00	189.898	0.258	7.296	6.756	12.307	
10:01	187.873	0.287	6.927	7.015	12.021	
10:02	191.858	0.249	7.488	6.612	12.450	
10:03	180.865	0.258	6.607	7.141	11.907	
10:04	173.917	0.208	7.638	6.850	12.199	
10:05	167.584	0.229	7.494	7.187	11.861	
10:06	165.643	0.247	9.287	6.842	12.207	
10:07	168.742	0.237	9.313	6.776	12.272	
10:08	164.255	0.189	9.530	7.374	11.685	
10:09	162.861	0.296	10.048	7.376	11.672	

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 10:10
 Stop Time 10:19
CALIBRATION BIAS 05

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gasses (C_s)					
C _{af} Zero gas	-0.149	-0.023	-0.044	-0.027	-0.006
C _{uf} Upscale gas	216.280	42.024	47.628	9.423	9.539
Analyzer Calibration Error Responses (C_{dir})					
C _{ocb} Zero gas	-0.073	-0.003	-0.060	-0.058	-0.077
C _{mce} Upscale gas	223.951	44.292	47.768	9.536	9.440
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.0%	0.0%	0.0%	0.2%	0.4%
Upscale gas	-1.7%	-2.5%	-0.1%	-0.6%	0.6%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gasses (C_s)					
C _{oi} Zero gas	0.497	-0.027	-0.014	-0.027	-0.004
C _{ui} Upscale gas	217.078	41.676	47.656	9.427	9.538
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	-0.1%	0.0%	0.0%	0.0%	0.0%
Upscale gas	-0.2%	0.4%	0.0%	0.0%	0.0%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

040913 150948	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
10:10:24	166.911	0.356	11.435	6.469	6.960
10:10:39	125.210	0.244	13.143	9.202	9.244
10:10:54	23.581	0.171	7.326	9.395	9.512
10:11:09	5.226	0.127	1.691	9.421	9.532
10:11:24	1.693	0.112	0.633	9.416	9.534
10:11:39	0.700	0.031	0.474	9.428	9.537
10:11:54	0.521	-0.088	0.456	9.428	9.538
10:12:09	0.342	-0.043	0.464	9.415	9.540
10:12:24	0.489	-0.028	0.448	9.422	9.538
10:12:39	0.155	-0.016	0.456	9.425	9.538
10:12:54	0.057	-0.027	0.440	9.422	9.539
10:13:09	-0.025	-0.026	0.464	9.305	9.539
10:13:24	-0.480	1.791	0.464	3.055	9.764
10:13:39	50.378	21.804	0.226	0.175	9.975
10:13:54	177.745	34.344	0.078	-0.009	9.972
10:14:09	207.497	37.857	-0.007	-0.017	9.985
10:14:24	214.131	39.336	-0.028	-0.025	9.995
10:14:39	214.863	40.150	-0.051	-0.030	9.995
10:14:54	215.133	40.653	-0.008	-0.033	9.977
10:15:09	215.344	41.044	-0.057	-0.036	10.004

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 2

March 22, 2013
 Start Time 10:10
 Stop Time 10:19

CALIBRATION BIAS 05

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
10:15:24	215.523	41.333	-0.073	-0.040	9.986
10:15:39	215.710	41.468	-0.008	-0.041	9.995
10:15:54	215.848	41.677	-0.033	-0.040	9.995
10:16:09	215.873	41.851	-0.072	-0.043	9.996
10:16:24	216.247	41.968	-0.028	-0.045	9.995
10:16:39	216.296	42.015	0.005	-0.045	9.982
10:16:54	216.239	42.087	0.001	-0.031	9.987
10:17:09	216.304	34.366	2.346	0.006	4.261
10:17:24	131.681	13.988	16.609	-0.023	0.388
10:17:39	43.484	6.960	37.889	-0.026	0.091
10:17:54	7.261	4.708	45.444	-0.027	0.052
10:18:09	1.717	3.757	47.504	-0.026	0.021
10:18:24	1.083	3.118	47.617	-0.026	0.012
10:18:39	0.806	2.719	47.635	-0.028	-0.008
10:18:54	0.749	2.410	47.630	-0.028	-0.002
10:19:09	0.668	2.284	47.588	-0.028	-0.009

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 10:21
 Stop time 10:45

REFERENCE METHOD RUN 6

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	-0.149	-0.023	-0.044	-0.027	-0.006
C _{ui} Initial upscale	216.280	42.024	47.628	9.423	9.539
C _{of} Final zero	-0.044	-0.056	-0.032	-0.029	-0.004
C _{uf} Final upscale	216.383	42.297	47.629	9.422	9.548
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	184.812	0.465	8.943	7.193	11.796
C _{Gas} Bias adjusted	190.524	0.539	8.912	7.274	11.778

Clock Time (at end of sample period)

040913 150948						
10:22	191.944	0.779	6.121	7.277	11.751	
10:23	180.378	0.598	6.815	7.199	11.820	
10:24	168.223	0.468	6.664	7.600	11.439	
10:25	166.634	0.433	8.139	7.138	11.899	
10:26	173.061	0.414	7.848	7.019	12.010	
10:27	181.722	0.343	7.489	6.953	12.051	
10:28	179.465	0.337	8.659	6.602	12.413	
10:29	177.031	0.347	8.179	7.113	11.892	
10:30	175.965	0.343	10.064	6.958	12.053	
10:31	177.218	0.388	10.058	7.637	11.403	
10:32	178.193	0.356	10.595	7.451	11.571	
10:33	174.770	0.371	7.774	7.059	11.895	
10:34	186.982	0.397	7.186	6.782	12.196	
10:35	179.225	0.407	7.511	7.349	11.665	
10:36	187.039	0.457	8.401	7.816	11.221	
10:37	187.365	0.461	9.529	7.699	11.329	
10:38	193.946	0.469	9.174	7.205	11.772	
10:39	196.799	0.498	8.870	6.713	12.222	
10:40	201.695	0.554	9.944	6.504	12.438	
10:41	201.964	0.578	9.386	7.113	11.845	
10:42	193.287	0.468	10.004	7.264	11.636	
10:43	192.242	0.488	11.326	7.570	11.384	
10:44	189.190	0.572	12.795	7.503	11.413	
10:45	201.156	0.634	12.098	7.111	11.774	

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 10:46
 Stop Time 10:56

CALIBRATION BIAS 06

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gasses (C_S)					
C _{of} Zero gas	-0.044	-0.056	-0.032	-0.029	-0.004
C _{uf} Upscale gas	216.383	42.297	47.629	9.422	9.548
Analyzer Calibration Error Responses (C_{Dir})					
C _{oce} Zero gas	-0.073	-0.003	-0.060	-0.058	-0.077
C _{mce} Upscale gas	223.951	44.292	47.768	9.536	9.440
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.0%	-0.1%	0.0%	0.2%	0.4%
Upscale gas	-1.7%	-2.2%	-0.1%	-0.6%	0.6%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gasses (C_S)					
C _{oi} Zero gas	-0.149	-0.023	-0.044	-0.027	-0.006
C _{ui} Upscale gas	216.280	42.024	47.628	9.423	9.539
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	0.0%	0.0%	0.0%	0.0%	0.0%
Upscale gas	0.0%	0.3%	0.0%	0.0%	0.1%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
10:46:33	203.280	0.710	10.946	5.435	7.551
10:46:48	150.256	0.654	13.688	8.968	9.003
10:47:03	65.559	0.539	8.900	9.386	9.504
10:47:18	6.015	0.350	2.590	9.411	9.538
10:47:33	2.125	0.153	0.782	9.413	9.541
10:47:48	0.936	0.077	0.474	9.402	9.544
10:48:03	0.610	-0.013	0.464	9.417	9.544
10:48:18	0.603	-0.051	0.458	9.415	9.546
10:48:33	0.586	0.014	0.454	9.424	9.548
10:48:48	0.407	0.000	0.464	9.426	9.546
10:49:03	0.448	-0.026	0.464	9.416	9.547
10:49:18	0.163	-0.049	0.464	9.425	9.549
10:49:33	-0.049	-0.051	0.464	9.432	9.549
10:49:48	0.203	-0.069	0.464	9.266	9.548
10:50:03	-0.285	2.445	0.450	2.871	9.778
10:50:18	51.201	23.013	0.254	0.156	9.985
10:50:33	180.928	34.579	0.058	0.001	10.002
10:50:48	208.547	38.017	0.003	-0.017	9.999
10:51:03	214.270	39.492	-0.041	-0.025	9.995
10:51:18	214.701	40.231	-0.075	-0.030	10.010

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 2

March 22, 2013
 Start Time 10:46
 Stop Time 10:56
CALIBRATION BIAS 06

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
10:51:33	215.051	40.744	-0.015	-0.035	9.983
10:51:48	215.246	41.122	-0.034	-0.038	9.991
10:52:03	215.832	41.381	0.026	-0.039	10.009
10:52:18	215.767	41.485	-0.047	-0.040	10.010
10:52:33	215.938	41.781	-0.034	-0.042	10.002
10:52:48	215.930	41.897	-0.082	-0.045	10.007
10:53:03	215.767	42.001	-0.036	-0.045	9.997
10:53:18	216.011	42.072	-0.042	-0.045	10.001
10:53:33	216.263	42.143	-0.005	-0.046	10.015
10:53:48	216.361	42.224	-0.047	-0.046	9.986
10:54:03	216.361	42.305	-0.023	-0.047	9.999
10:54:18	216.427	42.361	0.029	-0.031	9.975
10:54:33	207.155	33.625	1.724	0.008	4.045
10:54:48	144.965	13.016	18.548	-0.025	0.374
10:55:03	60.676	6.558	36.785	-0.027	0.113
10:55:18	4.697	4.537	45.937	-0.029	0.036
10:55:33	1.856	3.546	47.433	-0.028	0.009
10:55:48	0.887	2.966	47.577	-0.029	-0.002
10:56:03	0.635	2.595	47.613	-0.029	-0.001
10:56:18	0.342	2.385	47.658	-0.030	-0.004
10:56:33	0.578	2.214	47.617	-0.031	-0.008

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 2

March 22, 2013
 Start Time 10:58
 Stop time 11:22

REFERENCE METHOD RUN 7

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	-0.044	-0.056	-0.032	-0.029	-0.004
C _{ui} Initial upscale	216.383	42.297	47.629	9.422	9.548
C _{of} Final zero	0.157	-0.067	-0.047	-0.028	-0.011
C _{uf} Final upscale	215.623	41.960	47.645	9.427	9.552
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	179.578	0.844	7.964	6.944	11.994
C _{Gas} Bias adjusted	185.385	0.968	7.941	7.022	11.966

Clock Time (at end of sample period)

040913 150948	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
10:59	182.165	1.244	7.375	6.610	12.215
11:00	177.594	0.873	7.799	7.805	11.185
11:01	167.552	0.720	8.466	7.966	10.979
11:02	175.612	0.628	8.366	7.613	11.312
11:03	181.331	0.616	9.498	6.481	12.419
11:04	189.219	0.629	7.818	6.689	12.277
11:05	184.896	0.653	9.534	6.370	12.599
11:06	177.047	0.744	8.429	7.390	11.639
11:07	179.727	0.900	8.795	6.758	12.210
11:08	189.802	0.959	7.571	7.048	11.931
11:09	194.514	0.903	6.649	7.316	11.674
11:10	189.778	0.906	5.395	6.626	12.273
11:11	195.633	0.910	5.193	6.844	12.106
11:12	188.588	0.955	5.290	6.290	12.554
11:13	192.051	1.109	5.572	6.393	12.523
11:14	183.345	0.982	6.266	6.886	12.034
11:15	183.854	1.134	6.730	6.692	12.263
11:16	163.775	0.967	6.504	7.573	11.397
11:17	157.076	0.813	9.063	7.498	11.494
11:18	156.738	0.551	10.169	7.417	11.457
11:19	167.564	0.734	14.059	6.684	12.254
11:20	173.726	0.751	10.058	5.707	13.107
11:21	180.287	0.808	9.204	6.265	12.689
11:22	177.987	0.769	7.341	7.730	11.260

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 11:23
 Stop Time 11:32

CALIBRATION BIAS 07

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gasses (C_s)					
C _{of} Zero gas	0.157	-0.067	-0.047	-0.028	-0.011
C _{uf} Upscale gas	215.623	41.960	47.645	9.427	9.552
Analyzer Calibration Error Responses (C_{Dir})					
C _{ocb} Zero gas	-0.073	-0.003	-0.060	-0.058	-0.077
C _{mce} Upscale gas	223.951	44.292	47.768	9.536	9.440
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.1%	-0.1%	0.0%	0.2%	0.4%
Upscale gas	-1.9%	-2.6%	-0.1%	-0.6%	0.6%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gasses (C_s)					
C _{oi} Zero gas	-0.044	-0.056	-0.032	-0.029	-0.004
C _{ui} Upscale gas	216.383	42.297	47.629	9.422	9.548
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	0.0%	0.0%	0.0%	0.0%	0.0%
Upscale gas	-0.2%	-0.4%	0.0%	0.0%	0.0%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

040913 150948					
11:23:50	100.871	0.487	11.427	9.231	9.282
11:24:05	34.896	0.422	6.400	9.396	9.524
11:24:20	3.345	0.248	1.588	9.403	9.539
11:24:35	1.148	0.096	0.614	9.417	9.544
11:24:50	0.733	0.028	0.478	9.415	9.547
11:25:05	0.375	-0.038	0.464	9.428	9.550
11:25:20	0.489	0.024	0.474	9.425	9.552
11:25:35	0.049	-0.008	0.472	9.423	9.551
11:25:50	0.269	-0.036	0.464	9.427	9.550
11:26:05	0.106	-0.069	0.480	9.431	9.551
11:26:20	0.097	-0.098	0.464	9.425	9.555
11:26:35	1.465	0.915	0.441	4.355	9.713
11:26:50	9.279	19.777	0.280	0.279	9.981
11:27:05	127.302	34.131	0.119	0.007	10.003
11:27:20	207.164	38.027	-0.039	-0.016	10.002
11:27:35	213.855	39.461	0.010	-0.025	10.008
11:27:50	214.400	40.288	-0.008	-0.032	10.001
11:28:05	215.189	40.840	-0.038	-0.035	10.003
11:28:20	215.141	41.210	0.008	-0.038	9.994

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 2

March 22, 2013
 Start Time 11:23
 Stop Time 11:32

CALIBRATION BIAS 07

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
11:28:35	215.385	41.460	-0.038	-0.040	10.002
11:28:50	215.507	41.666	-0.072	-0.042	10.016
11:29:05	215.710	41.827	-0.033	-0.043	10.003
11:29:20	215.425	41.958	-0.017	-0.045	9.998
11:29:35	215.775	42.095	0.011	-0.046	9.998
11:29:50	215.669	41.740	-0.003	0.030	9.074
11:30:05	214.448	24.711	5.576	-0.007	1.706
11:30:20	153.537	9.641	26.442	-0.026	0.222
11:30:35	18.722	5.560	41.089	-0.027	0.079
11:30:50	4.388	3.995	46.857	-0.027	0.033
11:31:05	1.669	3.227	47.569	-0.028	-0.006
11:31:20	0.977	2.750	47.627	-0.027	0.004
11:31:35	0.725	2.403	47.658	-0.030	-0.011
11:31:50	0.513	2.219	47.624	-0.028	-0.017
11:32:05	0.505	2.063	47.652	-0.029	-0.006
11:32:20	0.318	1.965	47.658	0.380	0.106

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 11:34
 Stop time 11:58

REFERENCE METHOD RUN 8

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	0.157	-0.067	-0.047	-0.028	-0.011
C _{uf} Initial upscale	215.623	41.960	47.645	9.427	9.552
C _{of} Final zero	0.097	-0.083	0.440	-0.045	-0.006
C _{uf} Final upscale	216.369	42.012	47.643	9.429	9.559
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	173.366	0.310	7.630	7.210	11.894
C _{Gas} Bias adjusted	178.962	0.413	7.410	7.289	11.860

Clock Time (at end of sample period)

040913 150948						
11:35	168.403	0.773	9.129	7.254	11.811	
11:36	166.457	0.565	10.338	7.073	11.994	
11:37	173.814	0.513	8.900	7.581	11.542	
11:38	171.388	0.473	8.853	7.467	11.615	
11:39	177.285	0.442	8.723	7.455	11.685	
11:40	176.768	0.417	7.659	7.635	11.463	
11:41	179.100	0.398	7.866	7.282	11.780	
11:42	180.724	0.360	8.623	7.156	11.961	
11:43	177.837	0.355	6.768	7.675	11.412	
11:44	181.872	0.341	7.742	7.102	12.015	
11:45	180.877	0.263	6.053	7.350	11.753	
11:46	179.121	0.206	6.413	6.904	12.161	
11:47	175.960	0.221	6.847	6.988	12.152	
11:48	173.934	0.241	6.548	7.281	11.819	
11:49	183.838	0.239	7.061	7.172	11.963	
11:50	178.410	0.220	7.319	7.450	11.688	
11:51	175.305	0.158	7.559	7.065	12.044	
11:52	175.755	0.236	7.555	6.533	12.594	
11:53	166.597	0.195	6.661	6.832	12.266	
11:54	163.222	0.116	8.573	6.114	12.961	
11:55	162.633	0.159	6.892	7.463	11.710	
11:56	156.872	0.168	6.510	7.980	11.134	
11:57	165.307	0.205	7.434	7.440	11.654	
11:58	169.316	0.181	7.082	6.791	12.284	

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 11:59
 Stop Time 12:10

CALIBRATION BIAS 08

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gasses (C_S)					
C _{of} Zero gas	0.097	-0.083	0.440	-0.045	-0.006
C _{uf} Upscale gas	216.369	42.012	47.643	9.429	9.559
Analyzer Calibration Error Responses (C_{Dir})					
C _{ocb} Zero gas	-0.073	-0.003	-0.060	-0.058	-0.077
C _{mce} Upscale gas	223.951	44.292	47.768	9.536	9.440
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.0%	-0.1%	0.5%	0.1%	0.4%
Upscale gas	-1.7%	-2.5%	-0.1%	-0.6%	0.7%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gasses (C_S)					
C _{oi} Zero gas	0.157	-0.067	-0.047	-0.028	-0.011
C _{ul} Upscale gas	215.623	41.960	47.645	9.427	9.552
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	0.0%	0.0%	0.5%	-0.1%	0.0%
Upscale gas	0.2%	0.1%	0.0%	0.0%	0.0%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

040913 150948						
11:59:18	135.026	0.077	12.272	8.792	8.823	
11:59:33	35.539	0.077	8.990	9.386	9.493	
11:59:48	8.506	0.111	2.541	9.415	9.544	
12:00:03	1.734	0.005	0.798	9.420	9.551	
12:00:18	0.464	-0.083	0.491	9.436	9.554	
12:00:33	0.839	0.000	0.458	9.438	9.555	
12:00:48	0.261	-0.026	0.448	9.430	9.556	
12:01:03	0.163	-0.052	0.448	9.440	9.558	
12:01:18	0.171	-0.075	0.456	9.427	9.557	
12:01:33	-0.033	-0.093	0.440	9.428	9.560	
12:01:48	0.211	-0.093	0.445	9.433	9.560	
12:02:03	0.049	-0.062	0.448	9.423	9.561	
12:02:18	0.032	-0.095	0.464	9.235	9.559	
12:02:33	8.156	3.241	0.430	2.783	9.793	
12:02:48	62.369	24.775	0.127	0.141	9.997	
12:03:03	149.581	35.062	0.008	-0.006	10.005	
12:03:18	210.680	38.110	-0.018	-0.017	9.996	
12:03:33	214.091	39.447	-0.044	-0.026	10.013	
12:03:48	214.782	40.225	-0.044	-0.032	10.007	
12:04:03	215.181	40.684	-0.109	-0.035	10.008	

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 11:59
 Stop Time 12:10
CALIBRATION BIAS 08

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
12:04:18	215.442	41.008	-0.038	-0.039	10.005
12:04:33	215.401	41.389	0.003	-0.041	10.021
12:04:48	215.995	41.718	-0.063	-0.043	10.004
12:05:03	216.239	41.913	-0.016	-0.044	10.018
12:05:18	216.304	42.028	-0.029	-0.045	10.021
12:05:33	216.443	42.094	-0.054	-0.045	10.019
12:05:48	216.361	37.003	-0.010	4.423	9.869
12:06:03	164.786	14.540	0.097	9.009	9.587
12:06:18	89.271	6.082	0.272	9.371	9.569
12:06:33	12.853	3.639	0.436	9.389	9.567
12:06:48	2.548	2.580	0.440	9.409	9.567
12:07:03	0.871	1.947	0.440	9.424	9.567
12:07:18	0.692	1.527	0.440	9.420	9.567
12:07:33	0.391	1.228	0.440	9.428	9.566
12:07:48	0.318	0.902	0.586	7.356	8.351
12:08:03	0.497	0.956	6.696	0.851	1.403
12:08:18	0.155	1.128	28.812	0.040	0.188
12:08:33	0.106	1.355	41.734	0.001	0.087
12:08:48	0.203	1.455	47.069	-0.008	0.046
12:09:03	0.301	1.498	47.551	-0.013	0.019
12:09:18	0.236	1.524	47.624	-0.016	0.005
12:09:33	0.154	1.540	47.652	-0.019	-0.015
12:09:48	0.154	1.520	47.653	-0.021	0.000
12:10:03	0.057	1.514	47.624	-0.022	-0.002

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 2

March 22, 2013
 Start Time 12:11
 Stop time 12:35

REFERENCE METHOD RUN 9

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	0.097	-0.083	0.440	-0.045	-0.006
C _{ui} Initial upscale	216.369	42.012	47.643	9.429	9.559
C _{of} Final zero	0.301	-0.094	-0.017	-0.027	-0.005
C _{uf} Final upscale	217.026	42.156	47.653	9.455	9.563
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	155.039	-0.168	5.353	7.331	11.778
C _{Gas} Bias adjusted	159.490	-0.085	5.127	7.399	11.739

Clock Time (at end of sample period)

040913 150948	12:12	170.372	0.270	2.582	7.159	11.859
	12:13	165.904	0.436	2.700	6.775	12.233
	12:14	167.747	0.291	3.275	6.259	12.789
	12:15	166.982	0.307	2.118	7.106	11.998
	12:16	160.399	0.242	1.991	7.569	11.522
	12:17	162.647	0.169	2.436	6.585	12.421
	12:18	160.782	0.155	2.376	6.914	12.139
	12:19	153.333	0.135	2.048	7.243	11.810
	12:20	153.584	0.137	2.943	6.948	12.101
	12:21	152.408	0.128	3.058	6.978	12.070
	12:22	150.908	0.136	4.464	6.915	12.203
	12:23	148.268	0.150	4.118	7.475	11.656
	12:24	147.462	0.173	4.554	7.617	11.565
	12:25	147.249	0.171	4.971	7.889	11.283
	12:26	151.807	-4.840	5.602	7.750	11.364
	12:27	151.543	-3.265	7.780	7.245	11.864
	12:28	153.075	0.138	8.570	7.254	11.894
	12:29	149.923	0.121	9.185	7.422	11.770
	12:30	145.830	0.125	9.777	7.741	11.412
	12:31	150.257	0.151	10.317	7.938	11.257
	12:32	152.234	0.147	9.153	7.817	11.320
	12:33	154.048	0.155	8.992	7.513	11.653
	12:34	152.560	0.201	6.929	8.178	10.984
	12:35	151.620	0.139	8.535	7.647	11.516

unknown interference, possibly from radio

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 12:37
 Stop Time 12:46
CALIBRATION BIAS 09

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gasses (C_s)					
C _{of} Zero gas	0.301	-0.094	-0.017	-0.027	-0.005
C _{uf} Upscale gas	217.026	42.156	47.653	9.455	9.563
Analyzer Calibration Error Reponses (C_{dir})					
C _{oce} Zero gas	-0.073	-0.003	-0.060	-0.058	-0.077
C _{mce} Upscale gas	223.951	44.292	47.768	9.536	9.440
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.1%	-0.1%	0.0%	0.2%	0.4%
Upscale gas	-1.5%	-2.4%	-0.1%	-0.4%	0.7%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gasses (C_s)					
C _{oi} Zero gas	0.097	-0.083	0.440	-0.045	-0.006
C _{ui} Upscale gas	216.369	42.012	47.643	9.429	9.559
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	0.0%	0.0%	-0.5%	0.1%	0.0%
Upscale gas	0.1%	0.2%	0.0%	0.1%	0.0%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

040913;150948	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
12:37:08	83.500	0.103	11.743	9.230	9.247
12:37:23	31.070	0.127	6.743	9.429	9.526
12:37:38	2.768	0.013	1.698	9.440	9.550
12:37:53	0.961	0.016	0.601	9.436	9.557
12:38:08	0.692	-0.013	0.466	9.447	9.560
12:38:23	0.285	-0.031	0.464	9.445	9.563
12:38:38	0.155	-0.059	0.464	9.455	9.563
12:38:53	0.350	-0.099	0.450	9.454	9.563
12:39:08	0.399	-0.096	0.431	9.455	9.563
12:39:23	0.065	-0.085	0.450	8.468	9.567
12:39:38	14.449	9.420	0.423	1.517	9.889
12:39:53	65.674	30.274	0.173	0.078	10.002
12:40:08	170.037	36.611	0.003	-0.013	10.001
12:40:23	211.673	38.672	-0.029	-0.019	10.019
12:40:38	214.904	39.782	-0.046	-0.026	10.025
12:40:53	215.369	40.519	-0.039	-0.033	10.021
12:41:08	216.076	41.045	-0.026	-0.038	10.029
12:41:23	216.255	41.381	-0.031	-0.039	10.028
12:41:38	216.475	41.721	0.018	-0.041	10.033
12:41:53	216.712	41.903	-0.057	-0.040	10.033

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 12:37
 Stop Time 12:46
CALIBRATION BIAS 09

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
12:42:08	216.752	42.069	-0.132	-0.043	10.035
12:42:23	216.842	42.165	-0.042	-0.045	10.025
12:42:38	216.972	42.235	-0.003	-0.044	10.033
12:42:53	217.021	41.581	-0.005	0.006	8.755
12:43:08	217.086	23.544	7.482	-0.028	1.475
12:43:23	124.257	9.301	26.943	-0.023	0.205
12:43:38	14.872	5.416	42.670	-0.023	0.076
12:43:53	3.989	4.045	46.945	-0.028	0.028
12:44:08	1.514	3.217	47.588	-0.025	0.013
12:44:23	0.765	2.782	47.648	-0.026	-0.012
12:44:38	0.749	2.436	47.663	-0.027	-0.004
12:44:53	0.521	2.255	47.637	-0.027	0.000
12:45:08	0.041	2.048	47.669	-0.026	-0.004
12:45:23	0.407	1.851	47.652	-0.027	-0.012
12:45:38	0.147	3.972	50.903	2.634	3.702
12:45:53	9.882	8.550	91.088	5.435	11.950
12:46:08	108.335	5.423	115.971	5.311	13.360

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 12:48
 Stop time 13:12

REFERENCE METHOD RUN 10

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	0.301	-0.094	-0.017	-0.027	-0.005
C _{ul} Initial upscale	217.026	42.156	47.653	9.455	9.563
C _{of} Final zero	-0.076	-0.168	-0.038	-0.027	0.002
C _{uf} Final upscale	215.762	41.979	47.553	9.453	9.560
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	171.066	0.310	5.498	7.433	11.595
C _{Gas} Bias adjusted	176.264	0.471	5.487	7.491	11.556

Clock Time (at end of sample period)

040913 150948						
12:49	166.862	0.523	4.447	8.180	10.869	
12:50	162.796	0.347	4.696	8.220	10.856	
12:51	163.934	0.237	6.003	7.116	11.876	
12:52	171.264	0.197	5.567	6.884	12.155	
12:53	164.829	0.225	6.224	6.693	12.345	
12:54	164.369	0.269	5.613	7.421	11.689	
12:55	164.329	0.332	4.767	7.785	11.290	
12:56	162.263	0.359	4.678	7.658	11.404	
12:57	164.807	0.376	4.322	7.963	11.054	
12:58	164.603	0.337	5.506	6.938	12.046	
12:59	171.829	0.414	5.014	7.682	11.397	
13:00	167.827	0.391	5.804	7.604	11.415	
13:01	169.963	0.420	5.935	7.683	11.381	
13:02	172.731	0.405	5.927	7.546	11.474	
13:03	176.561	0.361	5.741	7.453	11.578	
13:04	179.756	0.356	5.404	7.386	11.630	
13:05	178.454	0.326	8.010	6.746	12.223	
13:06	178.966	0.245	5.913	7.452	11.569	
13:07	175.861	0.250	5.658	6.916	12.054	
13:08	175.403	0.241	5.379	7.481	11.529	
13:09	175.216	0.222	5.648	7.461	11.544	
13:10	183.938	0.236	5.409	7.499	11.494	
13:11	177.477	0.181	5.224	7.354	11.680	
13:12	171.559	0.199	5.060	7.276	11.718	

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 2

March 22, 2013
Start Time 13:13
Stop Time 13:21

CALIBRATION BIAS 10

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gases (C_s)					
C _{of} Zero gas	-0.076	-0.168	-0.038	-0.027	0.002
C _{uf} Upscale gas	215.762	41.979	47.553	9.453	9.560
Analyzer Calibration Error Responses (C_{dir})					
C _{ocb} Zero gas	-0.073	-0.003	-0.060	-0.058	-0.077
C _{mcb} Upscale gas	223.951	44.292	47.768	9.536	9.440
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.0%	-0.2%	0.0%	0.2%	0.4%
Upscale gas	-1.8%	-2.5%	-0.2%	-0.5%	0.7%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gases (C_s)					
C _{of} Zero gas	0.301	-0.094	-0.017	-0.027	-0.005
C _{uf} Upscale gas	217.026	42.156	47.653	9.455	9.563
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	-0.1%	-0.1%	0.0%	0.0%	0.0%
Upscale gas	-0.3%	-0.2%	-0.1%	0.0%	0.0%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

040913 150948					
13:13:07	168.807	0.127	9.566	7.842	7.622
13:13:22	104.534	0.174	10.252	9.332	9.416
13:13:37	9.776	0.122	4.565	9.426	9.546
13:13:52	3.093	0.052	1.097	9.445	9.558
13:14:07	0.977	-0.006	0.514	9.450	9.558
13:14:22	0.513	-0.044	0.464	9.450	9.560
13:14:37	0.448	-0.109	0.443	9.449	9.561
13:14:52	0.261	-0.122	0.440	9.454	9.560
13:15:07	0.195	-0.125	0.440	9.457	9.561
13:15:22	0.219	-0.125	0.453	9.454	9.561
13:15:37	0.187	-0.166	0.438	9.452	9.560
13:15:52	-0.147	-0.202	0.428	9.455	9.560
13:16:07	-0.065	-0.163	0.428	9.453	9.560
13:16:22	-0.073	-0.145	0.440	9.449	9.560
13:16:37	-0.073	-0.169	0.423	9.459	9.561
13:16:52	-0.082	-0.189	0.440	8.186	9.575
13:17:07	-0.407	7.466	0.363	1.293	9.910
13:17:22	77.558	28.643	0.116	0.059	10.000
13:17:37	197.396	36.558	0.031	-0.008	10.010
13:17:52	210.582	39.000	0.000	-0.020	10.022

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 13:13
 Stop Time 13:21
CALIBRATION BIAS 10

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
13:18:07	214.318	40.088	-0.081	-0.027	10.015
13:18:22	214.709	40.708	-0.063	-0.034	10.026
13:18:37	215.067	41.184	-0.032	-0.035	10.017
13:18:52	215.360	41.447	-0.024	-0.038	10.026
13:19:07	215.515	41.721	-0.057	-0.041	10.030
13:19:22	215.678	41.918	-0.028	-0.043	10.028
13:19:37	215.775	42.095	-0.014	-0.044	10.031
13:19:52	215.832	41.923	-0.042	-0.007	9.277
13:20:07	216.166	26.494	5.939	-0.004	1.876
13:20:22	137.607	9.978	25.355	-0.023	0.227
13:20:37	16.329	5.457	41.501	-0.027	0.085
13:20:52	4.656	3.886	46.812	-0.027	0.049
13:21:07	1.473	3.108	47.505	-0.027	0.018
13:21:22	0.944	2.636	47.484	-0.026	0.008
13:21:37	0.814	2.391	47.565	-0.028	-0.004
13:21:52	0.505	2.185	47.611	-0.027	0.000

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 2

March 22, 2013
 Start Time 13:26
 Stop time 13:47

REFERENCE METHOD RUN 11

	Channel 4 O2	Channel 5 CO2
	FF Outlet %dv	FF Outlet %dv
Calibration Checks		
C _{ol} Initial zero	-0.027	0.002
C _{ul} Initial upscale	9.453	9.560
C _{of} Final zero	-0.018	-0.006
C _{uf} Final upscale	9.445	9.554
C _{ma} Actual gas value	9.520	9.530
Analyzer Averages (concentrations)		
C _{AVg} Average conc.	8.019	11.018
C _{GAs} Bias adjusted	8.083	10.987

Clock Time (at end of sample period)

Clock Time	Channel 4 O2	Channel 5 CO2
040913 150948		
13:27	7.992	11.046
13:28	8.271	10.818
13:29	8.096	10.945
13:30	8.333	10.683
13:31	8.461	10.670
13:32	8.100	10.953
13:33	8.599	10.588
13:34	8.790	10.436
13:35	8.727	10.459
13:36	7.894	11.101
13:37	7.627	11.366
13:38	7.807	11.202
13:39	8.387	10.721
13:40	8.631	10.512
13:41	7.971	11.014
13:42	7.366	11.598
13:43	7.450	11.506
13:44	7.118	11.835
13:45	7.607	11.216
13:46	7.397	11.544
13:47	7.782	11.170

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 13:48
 Stop Time 13:54

CALIBRATION BIAS 11

Channel 4 Channel 5
 O2 CO2
 FF Outlet FF Outlet
 %dv %dv

System Response to Calibration Gasses (C_S)

C _{of} Zero gas				0.018	-0.006
C _{uf} Upscale gas				9.445	9.554

Analyzer Calibration Error Responses (C_{Dir})

C _{oce} Zero gas	-0.058	-0.077
C _{mce} Upscale gas	9.536	9.440

Actual Upscale Gas Value (C_{MA})

C _{ma} Upscale gas	9.520	9.530
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Calibration Span Value (CS)

18.100 17.900

System Bias as Percent of Calibration Span Value (SB) (5%)

Zero gas	0.2%	0.4%
Upscale gas	-0.5%	0.6%

System Bias Status

Zero gas	OK	OK
Upscale gas	OK	OK

Previous System Response to Calibration Gases (C_S)

C _{oi} Zero gas	-0.027	0.002
C _{ui} Upscale gas	9.453	9.560

Drift Assessment as Percent of Calibration Span Value (D) (3%)

Zero gas	0.0%	0.0%
Upscale gas	0.0%	0.0%

Drift Assessment Status

Zero gas	OK	OK
Upscale gas	OK	OK

0:10913 150948

13:48:04	7.288	11.651
13:48:19	5.560	7.853
13:48:34	8.806	8.780
13:48:49	9.396	9.491
13:49:04	9.429	9.539
13:49:19	9.431	9.548
13:49:34	9.440	9.551
13:49:49	9.431	9.551
13:50:04	9.440	9.554
13:50:19	9.447	9.553
13:50:34	9.447	9.554
13:50:49	8.707	9.330
13:51:04	1.701	2.588
13:51:19	0.097	0.272
13:51:34	-0.011	0.095
13:51:49	-0.001	0.044
13:52:04	-0.008	0.016

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 2

March 22, 2013
Start Time 13:48
Stop Time 13:54
CALIBRATION BIAS 11

	Channel 4 O2	Channel 5 CO2
	FF Outlet %dv	FF Outlet %dv
13:52:19	-0.013	0.007
13:52:34	-0.015	-0.012
13:52:49	-0.020	0.000
13:53:04	-0.020	-0.004
13:53:19	-0.021	-0.009
13:53:34	4.002	4.556
13:53:49	7.421	10.612
13:54:04	7.926	10.940
13:54:19	8.087	10.859

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 14:02
 Stop time 14:23

REFERENCE METHOD RUN 12

	Channel 4 O2	Channel 5 CO2
	FF Outlet %dv	FF Outlet %dv
Calibration Checks		
C _{oi} Initial zero	-0.018	-0.006
C _{ui} Initial upscale	9.445	9.554
C _{of} Final zero	-0.017	-0.006
C _{uf} Final upscale	9.435	9.543
C _{ma} Actual gas value	9.520	9.530
Analyzer Averages (concentrations)		
C _{Avg} Average conc.	7.170	11.777
C _{Gas} Bias adjusted	7.235	11.753

Clock Time (at end of sample period)

040913 150948			
	14:03	6.892	11.731
	14:04	7.348	11.584
	14:05	7.185	11.810
	14:06	7.718	11.284
	14:07	7.290	11.680
	14:08	7.131	11.851
	14:09	7.391	11.652
	14:10	7.899	11.110
	14:11	7.217	11.744
	14:12	7.180	11.794
	14:13	7.258	11.704
	14:14	7.418	11.543
	14:15	6.723	12.071
	14:16	6.892	12.024
	14:17	6.658	12.259
	14:18	6.621	12.312
	14:19	7.471	11.499
	14:20	7.390	11.590
	14:21	7.408	11.586
	14:22	6.772	12.178
	14:23	6.707	12.308

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 22, 2013
 Start Time 14:23
 Stop Time 14:29

CALIBRATION BIAS 12

Channel 4 Channel 5
 O2 CO2
 FF Outlet FF Outlet
 %dv %dv

System Response to Calibration Gases (C_s)

C _{of} Zero gas				-0.017	-0.006
C _{uf} Upscale gas				9.435	9.543

Analyzer Calibration Error Responses (C_{Dir})

C _{oce} Zero gas	-0.058	-0.077
C _{mce} Upscale gas	9.536	9.440

Actual Upscale Gas Value (C_{MA})

C _{ma} Upscale gas	9.520	9.530
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Calibration Span Value (CS)

18.100	17.900
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System Bias as Percent of Calibration Span Value (SB) (5%)

Zero gas	0.2%	0.4%
Upscale gas	-0.6%	0.6%

System Bias Status

Zero gas	OK	OK
Upscale gas	OK	OK

Previous System Response to Calibration Gases (C_s)

C _{oi} Zero gas	-0.018	-0.006
C _{ui} Upscale gas	9.445	9.554

Drift Assessment as Percent of Calibration Span Value (D) (3%)

Zero gas	0.0%	0.0%
Upscale gas	-0.1%	-0.1%

Drift Assessment Status

Zero gas	OK	OK
Upscale gas	OK	OK

040913-150948		
14:23:55	7.631	11.394
14:24:10	6.046	9.900
14:24:25	7.583	7.375
14:24:40	9.292	9.348
14:24:55	9.419	9.517
14:25:10	9.422	9.532
14:25:25	9.429	9.535
14:25:40	9.434	9.540
14:25:55	9.426	9.538
14:26:10	9.436	9.540
14:26:25	9.435	9.541
14:26:40	9.435	9.544
14:26:55	9.435	9.543
14:27:10	9.434	9.542
14:27:25	4.940	6.210
14:27:40	0.395	0.713
14:27:55	0.017	0.149
14:28:10	-0.009	0.062
14:28:25	-0.008	0.025
14:28:40	-0.011	-0.001

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 2

March 22, 2013

Start Time 14:23

Stop Time 14:29

CALIBRATION BIAS 12

	Channel 4 O2	Channel 5 CO2
	FF Outlet %dv	FF Outlet %dv
14:28:55	-0.013	-0.023
14:29:10	-0.018	-0.015
14:29:25	-0.021	0.000
14:29:40	-0.013	-0.005

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 2

March 22, 2013
 Start Time 14:34
 Stop Time 14:39
Converter Efficiency Check

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
040913 150948					
14:34:07	15.271	0.493	32.244	0.994	0.190
14:34:22	22.686	0.384	28.459	0.974	0.194
14:34:37	24.705	0.244	28.503	0.988	0.221
14:34:52	22.849	0.249	28.464	0.987	0.226
14:35:07	22.043	0.235	28.420	0.988	0.247
14:35:22	21.628	0.262	28.382	0.988	0.257
14:35:37	21.245	0.204	28.436	0.954	0.291
14:35:52	20.936	0.205	28.472	0.982	0.307
14:36:07	20.675	0.222	28.371	0.992	0.323
14:36:22	20.651	0.256	28.431	0.974	0.326
14:36:37	21.962	0.261	24.947	0.967	0.054
14:36:52	26.569	0.544	12.702	0.954	-0.055
14:37:07	39.487	0.646	3.917	0.956	-0.067
14:37:22	45.584	0.685	0.840	0.942	-0.067
14:37:37	46.634	0.708	0.204	0.954	-0.071
14:37:52	46.870	0.735	0.127	0.951	-0.073
14:38:07	47.082	0.749	0.142	0.951	-0.073
14:38:22	47.163	0.755	0.105	0.954	-0.072
14:38:37	47.212	0.743	0.096	0.952	-0.070
14:38:52	47.049	0.757	0.093	0.957	-0.075
14:39:07	47.538	0.751	0.124	0.959	-0.073
14:39:22	47.537	0.747	0.087	0.962	-0.073
14:39:37	47.692	0.736	0.112	0.961	-0.073

NOX Converter
 Efficiency Check

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 2

March 21, 2013
 Start Time 7:53
 Stop time 8:20

REFERENCE METHOD RUN 1

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	Unit 2 ppmdv	Unit 2 ppmdv	Unit 2 ppmdv	Unit 2 %dv	Unit 2 %dv
Calibration Checks					
C _{oi} Initial zero	-0.103	0.023	0.012	-0.023	-0.031
C _{ui} Initial upscale	218.550	42.134	47.890	9.465	9.499
C _{of} Final zero	-0.006	-0.016	0.023	-0.026	0.001
C _{uf} Final upscale	218.980	42.383	47.940	9.474	9.458
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	175.666	0.637	8.044	7.455	11.605
C _{Gas} Bias adjusted	179.078	0.676	7.926	7.500	11.664
C _{corr} ppm % 7% O2	185.760	0.701	8.222		

Clock Time (at end of sample period)

040313 105407					
07:54	185.692	0.745	7.996	7.311	11.688
07:55	187.542	0.808	7.241	7.235	11.789
07:56	183.665	0.762	7.172	7.258	11.762
07:57	183.496	0.756	7.061	7.416	11.646
07:58	175.902	0.744	7.326	7.416	11.606
07:59	196.972	0.740	7.385	7.003	12.045
08:00	190.454	0.675	7.510	8.047	11.068
08:01	169.241	0.596	7.416	7.720	11.322
08:02	184.705	0.590	9.663	7.087	11.931
08:03	184.766	0.592	15.577	7.221	11.826
08:04	174.770	0.556	6.784	7.719	11.333
08:05	172.959	0.570	7.310	6.821	12.114
08:06	183.972	0.700	7.145	6.932	12.134
08:07	170.637	0.632	6.087	7.943	11.139
08:08	165.855	0.600	6.896	7.703	11.344
08:09	177.574	0.619	7.918	7.304	11.768
08:10	180.737	0.629	7.102	7.036	11.991
08:11	183.993	0.639	8.555	7.314	11.809
08:12	166.671	0.606	8.482	7.817	11.258
08:13	174.273	0.614	8.500	7.587	11.508
08:14	165.798	0.623	7.747	7.876	11.187
08:15	170.069	0.568	7.369	7.533	11.515
08:16	171.172	0.532	10.348	6.499	12.532
08:17	167.479	0.632	9.638	7.260	11.833
08:18	157.430	0.614	7.814	8.396	10.793
08:19	154.538	0.533	7.566	8.492	10.672
08:20	162.633	0.518	7.578	7.338	11.713

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

Date: **March 20, 2013**

Start Time 7:13

Stop Time 7:30

CALIBRATION ERROR

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Instrument Information					
Manufacturer:	T.E.I. Wstrn Rsrch		T.E.I.	Servomex	Servomex
Model:	42i-HL	921NMP	48i	1420C	1415C
Detection:	Chemilumi.	UV Photo.	GFC/NDIR	Paramagn.	NDIR
Asset or Serial No:	207983	205878	204764	204621	205831

Calibration Span Value (CS)

448.000	90.800	96.300	18.100	17.900
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System Response Time (seconds)

50	50	50	50	50
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Manufacturer Certified Cylinder Value (C_v)

Zero	0.000	0.000	0.000	0.000	0.000
Low	223.000	45.100	47.300	9.520	9.530
Mid					
High	448.000	90.800	96.300	18.100	17.900

Actual gas to be used for bias checks

223.000	45.100	47.300	9.520	9.530
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Cylinder ID

Zero					
Low	ALM019186	ALM019186	AL0340	CC198768	CC196768
Mid					
High	ALM012619	ALM012619	CC181272	ALM040668	ALM040668

Analyzer Calibration Response (C_{Dir})

Zero	-0.057	-0.008	-0.049	-0.044	-0.103
Low	223.823	44.441	47.903	9.490	9.493
Mid					
High	448.829	90.808	96.422	18.112	17.964

Analyzer Calibration Error (ACE) (Limit = 2%, Method 25A limit = 5% of gas value)

Zero	0.0%	0.0%	-0.1%	-0.2%	-0.6%
Low	0.2%	-0.7%	0.6%	-0.2%	-0.2%
Mid	N/A	N/A	N/A	N/A	N/A
High	0.2%	0.0%	0.1%	0.1%	0.4%

Calibration Error Status

Zero	OK	OK	OK	OK	OK
Low	OK	OK	OK	OK	OK
Mid	N/A	N/A	N/A	N/A	N/A
High	OK	OK	OK	OK	OK

040913 151522

07:13:52	-0.065	-0.625	-0.051	18.071	18.059
07:14:07	-0.073	-0.591	-0.169	18.109	17.949

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

Date: **March 20, 2013**
 Start Time 7:13
 Stop Time 7:30

CALIBRATION ERROR

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
07:14:22	-0.073	-0.598	-0.156	18.110	17.961
07:14:37	-0.041	-0.046	-0.054	18.112	17.965
07:14:52	-0.024	-0.055	-0.031	18.114	17.966
07:15:07	-0.073	-0.024	-0.057	16.030	16.606
07:15:22	-0.041	0.008	0.190	10.091	10.147
07:15:37	-0.057	-0.078	0.497	9.524	9.409
07:15:52	-0.057	-0.080	0.474	9.498	9.364
07:16:07	-0.041	-0.024	0.405	9.493	9.498
07:16:22	-0.065	-0.007	0.366	9.491	9.501
07:16:37	-0.065	0.000	0.368	9.489	9.497
07:16:52	-0.041	-0.003	0.394	9.490	9.493
07:17:07	-0.073	-0.021	0.285	9.434	9.488
07:17:22	-0.122	8.752	0.338	2.878	9.117
07:17:37	72.829	61.014	0.122	0.055	9.877
07:17:52	320.382	82.759	-0.010	-0.044	9.958
07:18:07	414.440	86.932	-0.095	-0.044	9.954
07:18:22	435.173	88.098	-0.104	-0.045	9.949
07:18:37	437.412	88.571	-0.065	-0.048	9.955
07:18:52	437.949	88.791	-0.091	-0.047	9.962
07:19:07	441.425	89.159	-0.062	-0.049	9.956
07:19:22	446.439	89.473	-0.062	-0.050	9.955
07:19:37	447.538	89.745	-0.085	-0.051	9.964
07:19:52	448.157	89.880	-0.067	-0.050	9.962
07:20:07	448.222	90.103	-0.081	-0.052	9.961
07:20:22	448.474	90.323	-0.067	-0.053	9.957
07:20:37	448.799	89.796	-0.049	-0.051	9.964
07:20:52	448.799	89.836	-0.075	-0.051	9.954
07:21:07	448.970	90.022	-0.077	-0.052	9.940
07:21:22	448.946	90.597	-0.093	-0.051	9.955
07:21:37	448.783	90.658	-0.078	-0.053	9.960
07:21:52	448.889	90.733	-0.049	-0.052	9.966
07:22:07	448.742	90.792	-0.083	-0.053	9.949
07:22:22	448.856	90.898	-0.083	-0.055	9.965
07:22:37	449.035	79.520	-0.085	0.277	8.987
07:22:52	441.099	34.587	-0.057	0.041	9.330
07:23:07	287.188	40.127	-0.005	-0.055	9.929
07:23:22	220.423	43.280	-0.052	-0.062	9.951
07:23:37	224.298	43.954	-0.070	-0.063	9.955
07:23:52	224.314	44.238	-0.049	-0.064	9.958
07:24:07	224.095	44.381	-0.049	-0.065	9.972
07:24:22	224.030	44.477	-0.049	-0.063	9.951
07:24:37	223.997	44.466	-0.049	-0.063	9.964
07:24:52	223.574	43.648	-0.034	0.059	9.484
07:25:07	223.899	16.488	9.809	0.028	1.685
07:25:22	143.883	2.266	47.868	-0.038	0.031
07:25:37	18.950	0.555	84.990	-0.042	-0.063

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

Date: **March 20, 2013**

Start Time 7:13

Stop Time 7:30

CALIBRATION ERROR

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
07:25:52	4.371	0.169	95.645	-0.042	-0.079
07:26:07	0.676	-0.039	97.000	-0.043	-0.087
07:26:22	0.456	-0.078	97.384	-0.044	-0.092
07:26:37	0.154	-0.052	96.775	-0.045	-0.092
07:26:52	0.179	-0.021	96.407	-0.044	-0.092
07:27:07	-0.073	0.049	96.534	-0.045	-0.092
07:27:22	-0.057	-0.055	96.438	-0.046	-0.098
07:27:37	-0.301	-0.020	96.397	-0.047	-0.094
07:27:52	-0.090	-0.002	96.430	0.006	-0.041
07:28:07	-0.456	0.531	91.894	0.010	0.052
07:28:22	-0.114	1.200	73.843	-0.043	-0.087
07:28:37	0.554	1.384	54.351	-0.045	-0.097
07:28:52	-0.342	1.472	48.780	-0.045	-0.100
07:29:07	-0.350	1.488	47.901	-0.045	-0.099
07:29:22	-0.529	1.493	47.785	-0.045	-0.098
07:29:37	-0.529	1.498	47.759	-0.046	-0.098
07:29:52	-0.106	1.500	47.956	-0.045	-0.102
07:30:07	-0.106	1.503	47.951	-0.045	-0.104
07:30:22	-0.212	1.468	47.803	-0.045	-0.103
07:30:37	-0.529	1.377	47.490	8.171	-0.086

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013
 Start Time 7:31
 Stop Time 7:42

CALIBRATION BIAS 00

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gasses (C_S)					
C _{of} Zero gas	-0.247	-0.036	0.025	-0.055	-0.092
C _{uf} Upscale gas	219.463	42.817	48.099	9.438	9.480
Analyzer Calibration Error Responses (C_{Dir})					
C _{oc} Zero gas	-0.057	-0.008	-0.049	-0.044	-0.103
C _{mce} Upscale gas	223.823	44.441	47.903	9.490	9.493
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.0%	0.0%	0.1%	-0.1%	0.1%
Upscale gas	-1.0%	-1.8%	0.2%	-0.3%	-0.1%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gases (C_S)					
C _{oi} Zero gas	N/A	N/A	N/A	N/A	N/A
C _{ul} Upscale gas	N/A	N/A	N/A	N/A	N/A
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	N/A	N/A	N/A	N/A	N/A
Upscale gas	N/A	N/A	N/A	N/A	N/A
Drift Assessment Status					
Zero gas	N/A	N/A	N/A	N/A	N/A
Upscale gas	N/A	N/A	N/A	N/A	N/A

040913 151337

07:31:51	1.367	0.105	15.005	9.503	9.114
07:32:06	0.147	-0.012	4.332	9.464	9.315
07:32:21	-0.277	0.016	0.724	9.453	9.348
07:32:36	-0.423	0.026	0.518	9.440	9.365
07:32:51	-0.529	-0.046	0.503	9.428	9.416
07:33:06	-0.106	-0.114	0.493	9.453	9.464
07:33:21	-0.212	-0.052	0.516	9.448	9.469
07:33:36	-0.423	-0.044	0.491	9.437	9.477
07:33:51	-0.317	-0.031	0.488	9.441	9.480
07:34:06	-0.317	-0.008	0.472	9.436	9.483
07:34:21	-0.106	-0.070	0.488	6.486	9.572
07:34:36	28.254	8.741	0.347	0.395	9.920
07:34:51	142.613	30.496	0.111	0.017	9.957
07:35:06	201.530	37.084	0.018	-0.007	9.957
07:35:21	217.371	39.249	0.029	-0.008	9.967
07:35:36	218.551	40.352	0.023	-0.008	9.948
07:35:51	218.641	41.091	0.093	-0.012	9.949
07:36:06	218.926	41.669	0.038	-0.016	9.958
07:36:21	219.170	42.116	-0.028	-0.017	9.950
07:36:36	218.966	42.310	-0.063	-0.021	9.965

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 3

March 20, 2013
 Start Time 7:31
 Stop Time 7:42

CALIBRATION BIAS 00

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
07:36:51	219.129	42.522	0.028	-0.022	9.960
07:37:06	219.235	42.657	-0.014	-0.022	9.960
07:37:21	219.690	42.789	0.051	-0.025	9.965
07:37:36	219.837	42.895	0.021	-0.027	9.952
07:37:51	219.747	42.768	0.003	0.252	8.599
07:38:06	218.804	27.160	9.198	1.366	1.011
07:38:21	150.094	11.095	32.915	1.542	0.092
07:38:36	9.996	7.181	43.536	1.519	-0.006
07:38:51	3.427	5.289	44.624	1.657	-0.013
07:39:06	0.879	4.262	44.451	1.558	-0.027
07:39:21	0.668	3.557	44.565	1.691	-0.041
07:39:36	0.578	3.100	44.570	1.656	-0.050
07:39:51	0.220	2.706	44.471	1.643	-0.055
07:40:06	0.065	2.449	44.459	1.611	-0.061
07:40:21	0.057	2.331	44.158	1.591	-0.064
07:40:36	-0.244	2.085	44.260	0.755	-0.087
07:40:51	-0.098	1.910	45.403	-0.015	-0.099
07:41:06	-0.106	1.901	47.131	-0.054	-0.125
07:41:21	-0.261	1.705	47.907	-0.017	-0.083
07:41:36	-0.195	1.742	48.132	-0.010	-0.061
07:41:51	-0.090	1.586	48.145	-0.010	-0.062
07:42:06	-0.236	1.527	48.062	-0.087	-0.104
07:42:21	-0.024	1.568	48.091	-0.037	-0.089
07:42:36	-0.122	1.525	48.228	-0.040	-0.083

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013
 Start Time 8:13
 Stop time 8:40

REFERENCE METHOD RUN 1

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	-0.247	-0.036	0.025	-0.055	-0.092
C _{ui} Initial upscale	219.463	42.817	48.099	9.438	9.480
C _{of} Final zero	-0.261	0.124	0.027	-0.015	-0.010
C _{uf} Final upscale	218.947	42.438	47.715	9.417	9.567
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	184.807	16.886	13.344	6.823	12.233
C _{Gas} Bias adjusted	188.047	17.837	13.156	6.900	12.227

Clock Time (at end of sample period)

040913 151337					
08:14	172.182	12.195	10.418	7.639	11.357
08:15	193.633	15.517	13.661	6.392	12.615
08:16	198.728	17.786	14.576	6.063	12.949
08:17	195.452	18.426	15.590	6.203	12.851
08:18	192.735	16.662	15.855	6.956	12.148
08:19	178.533	15.768	15.750	7.332	11.777
08:20	175.185	17.236	16.810	6.714	12.308
08:21	183.577	18.373	14.711	6.725	12.339
08:22	183.622	16.801	14.034	7.023	12.075
08:23	173.392	15.277	14.989	7.498	11.602
08:24	170.586	15.487	19.024	7.059	12.017
08:25	172.599	16.883	18.238	7.015	12.062
08:26	184.214	18.412	17.192	6.741	12.347
08:27	173.252	15.810	12.636	7.480	11.623
08:28	173.706	15.181	13.518	7.656	11.438
08:29	185.438	20.057	14.663	6.416	12.573
08:30	205.307	24.722	12.828	6.236	12.824
08:31	194.998	17.790	11.671	7.127	11.972
08:32	183.227	13.228	12.172	7.587	11.520
08:33	181.606	12.525	14.047	6.806	12.196
08:34	200.476	16.262	12.087	6.133	12.884
08:35	201.404	18.478	8.921	6.018	12.980
08:36	195.124	18.322	8.174	6.442	12.609
08:37	177.670	15.345	8.792	7.125	11.954
08:38	171.427	14.037	9.513	7.007	12.021
08:39	185.877	18.171	10.505	6.186	12.849
08:40	185.842	21.169	9.908	6.655	12.404

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013
 Start Time 8:41
 Stop Time 8:51

CALIBRATION BIAS 01

Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
NOX	SO2	CO	O2	CO2
FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
ppmdv	ppmdv	ppmdv	%dv	%dv

System Response to Calibration Gasses (C_S)

C _{of} Zero gas	-0.261	0.124	0.027	-0.015	-0.010
C _{uf} Upscale gas	218.947	42.438	47.715	9.417	9.567

Analyzer Calibration Error Responses (C_{Dir})

C _{oce} Zero gas	-0.057	-0.008	-0.049	-0.044	-0.103
C _{mce} Upscale gas	223.823	44.441	47.903	9.490	9.493

Actual Upscale Gas Value (C_{MA})

C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
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Calibration Span Value (CS)

	448.000	90.800	96.300	18.100	17.900
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System Bias as Percent of Calibration Span Value (SB) (5%)

Zero gas	0.0%	0.1%	0.1%	0.2%	0.5%
Upscale gas	-1.1%	-2.2%	-0.2%	-0.4%	0.4%

System Bias Status

Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Previous System Response to Calibration Gasses (C_S)

C _{oi} Zero gas	-0.247	-0.036	0.025	-0.055	-0.092
C _{uf} Upscale gas	219.463	42.817	48.099	9.438	9.480

Drift Assessment as Percent of Calibration Span Value (D) (3%)

Zero gas	0.0%	0.2%	0.0%	0.2%	0.5%
Upscale gas	-0.1%	-0.4%	-0.4%	-0.1%	0.5%

Drift Assessment Status

Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
08:41:07	180.781	19.961	11.385	5.991	11.368
08:41:22	170.175	17.127	14.084	7.107	7.032
08:41:37	126.683	9.693	13.932	9.242	9.315
08:41:52	29.817	4.793	6.859	9.391	9.539
08:42:07	5.511	2.701	1.591	9.399	9.556
08:42:22	2.816	1.735	0.605	9.401	9.557
08:42:37	1.905	1.265	0.498	9.411	9.560
08:42:52	1.213	0.917	0.498	9.409	9.562
08:43:07	0.782	0.736	0.466	9.414	9.562
08:43:22	0.651	0.588	0.478	9.411	9.566
08:43:37	0.481	0.477	0.488	9.411	9.564
08:43:52	0.464	0.339	0.503	9.413	9.564
08:44:07	-0.082	0.247	0.474	9.419	9.567
08:44:22	0.049	0.199	0.488	9.417	9.566
08:44:37	-0.318	0.223	0.482	9.429	9.568
08:44:52	-0.285	0.138	0.478	9.413	9.568
08:45:07	-0.179	0.094	0.482	9.408	9.568
08:45:22	0.032	0.115	0.478	9.422	9.567
08:45:37	-0.440	0.163	0.482	9.421	9.567
08:45:52	-0.301	0.061	0.464	8.952	9.564

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013
 Start Time 8:41
 Stop Time 8:51

CALIBRATION BIAS 01

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
08:46:07	-0.090	1.299	0.425	2.221	9.810
08:46:22	74.603	18.134	0.280	0.138	10.012
08:46:37	192.161	32.695	0.031	0.007	10.021
08:46:52	212.405	37.532	0.020	-0.003	10.024
08:47:07	217.469	39.463	0.052	-0.010	10.033
08:47:22	218.038	40.480	-0.047	-0.016	10.034
08:47:37	218.364	41.097	0.026	-0.020	10.031
08:47:52	218.543	41.473	0.039	-0.022	10.031
08:48:07	218.771	41.859	0.047	-0.027	10.035
08:48:22	218.706	42.115	0.049	-0.027	10.037
08:48:37	218.698	42.243	0.020	-0.028	10.037
08:48:52	218.934	42.489	0.026	-0.030	10.037
08:49:07	219.211	42.580	0.034	-0.009	9.904
08:49:22	218.543	36.676	2.812	0.023	3.183
08:49:37	177.094	17.053	21.581	-0.012	0.337
08:49:52	40.944	8.075	38.947	-0.014	0.106
08:50:07	5.365	5.076	46.535	-0.014	0.046
08:50:22	1.473	3.819	47.612	-0.016	0.003
08:50:37	0.944	3.214	47.757	-0.016	0.001
08:50:52	0.773	2.852	47.717	-0.016	-0.004
08:51:07	0.464	2.429	47.805	-0.017	-0.004
08:51:22	0.611	2.307	47.704	-0.016	-0.010
08:51:37	0.464	2.209	47.710	-0.017	-0.018
08:51:52	0.203	2.136	47.730	0.908	0.642

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013
 Start Time 8:53
 Stop time 9:20

REFERENCE METHOD RUN 2

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	-0.261	0.124	0.027	-0.015	-0.010
C _{ui} Initial upscale	218.947	42.438	47.715	9.417	9.567
C _{of} Final zero	-0.076	0.076	0.029	-0.017	-0.012
C _{uf} Final upscale	218.893	42.930	47.747	9.414	9.572
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{AVG} Average conc.	185.453	18.251	7.143	6.865	12.157
C _{GAS} Bias adjusted	188.935	19.224	7.055	6.945	12.103

Clock Time (at end of sample period)

040913 151337					
08:54	184.900	16.308	7.682	6.145	12.705
08:55	184.550	18.809	9.491	6.107	12.870
08:56	190.116	21.777	11.351	6.526	12.539
08:57	182.820	19.082	8.790	6.866	12.177
08:58	180.712	17.972	8.032	6.846	12.198
08:59	184.701	18.432	8.148	6.640	12.391
09:00	188.744	19.379	7.799	6.411	12.592
09:01	205.004	23.711	8.592	5.384	13.540
09:02	207.505	20.873	7.570	6.032	12.998
09:03	190.781	14.728	6.425	7.308	11.767
09:04	173.346	11.442	5.650	7.859	11.192
09:05	183.335	15.110	6.499	6.301	12.650
09:06	202.578	20.381	4.895	6.032	12.943
09:07	201.905	20.481	4.514	6.501	12.537
09:08	192.588	17.210	4.636	7.410	11.655
09:09	182.698	14.416	4.810	7.744	11.303
09:10	175.478	16.218	6.034	7.316	11.680
09:11	193.158	24.803	7.723	6.552	12.489
09:12	186.571	23.035	7.072	7.155	11.904
09:13	175.665	19.328	7.049	7.302	11.742
09:14	178.974	18.134	8.404	7.351	11.703
09:15	176.394	16.081	7.011	7.632	11.416
09:16	177.198	18.126	7.692	6.506	12.456
09:17	191.453	20.779	6.799	6.803	12.263
09:18	176.087	15.548	5.982	7.796	11.285
09:19	164.143	13.414	5.868	8.115	10.971
09:20	175.822	17.206	8.341	6.704	12.260

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013
 Start Time 9:23
 Stop Time 9:32

CALIBRATION BIAS 02

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gases (C_s)					
C _{of} Zero gas	-0.076	0.076	0.029	-0.017	-0.012
C _{uf} Upscale gas	218.893	42.930	47.747	9.414	9.572
Analyzer Calibration Error Responses (C_{Dir})					
C _{oce} Zero gas	-0.057	-0.008	-0.049	-0.044	-0.103
C _{mce} Upscale gas	223.823	44.441	47.903	9.490	9.493
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.0%	0.1%	0.1%	0.1%	0.5%
Upscale gas	-1.1%	-1.7%	-0.2%	-0.4%	0.4%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gases (C_s)					
C _{oi} Zero gas	-0.261	0.124	0.027	-0.015	-0.010
C _{ui} Upscale gas	218.947	42.438	47.715	9.417	9.567
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	0.0%	-0.1%	0.0%	0.0%	0.0%
Upscale gas	0.0%	0.5%	0.0%	0.0%	0.0%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

040913 151337

09:23:10	2.247	0.954	0.490	9.417	9.569
09:23:25	1.294	0.760	0.490	9.423	9.569
09:23:40	1.042	0.684	0.477	9.413	9.566
09:23:55	0.733	0.557	0.467	9.421	9.564
09:24:10	0.293	0.504	0.490	9.411	9.563
09:24:25	0.423	0.420	0.485	9.413	9.568
09:24:40	0.390	0.293	0.464	9.413	9.567
09:24:55	-0.008	0.269	0.503	9.409	9.572
09:25:10	0.163	0.216	0.492	9.401	9.571
09:25:25	-0.171	0.254	0.495	9.424	9.572
09:25:40	-0.138	0.127	0.477	9.407	9.573
09:25:55	0.032	0.151	0.480	9.418	9.564
09:26:10	-0.073	0.038	0.464	9.419	9.573
09:26:25	-0.187	0.038	0.464	8.703	9.567
09:26:40	6.300	3.994	0.432	1.871	9.877
09:26:55	45.714	23.839	0.195	0.096	10.016
09:27:10	171.192	34.761	0.033	-0.005	10.039
09:27:25	213.577	38.372	-0.002	-0.004	10.042
09:27:40	217.102	39.951	0.006	-0.012	10.041
09:27:55	217.688	40.861	0.037	-0.018	10.043

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 3

March 20, 2013
 Start Time 9:23
 Stop Time 9:32

CALIBRATION BIAS 02

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
09:28:10	217.892	41.428	-0.007	-0.021	10.045
09:28:25	218.209	41.851	0.010	-0.025	10.043
09:28:40	218.388	42.154	0.011	-0.028	10.043
09:28:55	218.502	42.388	-0.078	-0.029	10.044
09:29:10	218.510	42.592	0.010	-0.030	10.044
09:29:25	218.462	42.750	0.002	-0.032	10.044
09:29:40	218.812	42.862	0.077	-0.033	10.044
09:29:55	218.975	42.945	-0.042	-0.033	10.044
09:30:10	218.804	42.983	0.007	-0.033	10.043
09:30:25	218.901	41.542	0.739	0.009	7.010
09:30:40	171.762	23.009	11.844	-0.007	0.842
09:30:55	59.894	10.090	32.277	-0.016	0.162
09:31:10	15.612	6.157	44.689	-0.016	0.050
09:31:25	2.320	4.529	47.313	-0.015	0.023
09:31:40	1.091	3.653	47.671	-0.016	0.002
09:31:55	0.961	3.152	47.766	-0.016	-0.006
09:32:10	0.554	2.823	47.702	-0.018	-0.011
09:32:25	0.546	2.473	47.767	-0.019	-0.008
09:32:40	0.326	2.273	47.771	-0.021	-0.017
09:32:55	0.146	2.128	47.693	0.393	0.078

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013
 Start Time 9:37
 Stop time 10:04

REFERENCE METHOD RUN 3

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	-0.076	0.076	0.029	-0.017	-0.012
C _{ul} Initial upscale	218.893	42.930	47.747	9.414	9.572
C _{of} Final zero	-0.252	0.150	-0.053	-0.017	-0.012
C _{uf} Final upscale	218.109	42.463	47.653	9.417	9.565
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	171.003	12.490	8.784	7.998	11.095
C _{Gas} Bias adjusted	174.560	13.108	8.720	8.089	11.049

Clock Time (at end of sample period)

040913 151337					
09:38	182.137	12.064	9.810	8.189	10.961
09:39	170.234	12.116	10.456	8.208	10.914
09:40	172.025	14.547	10.707	8.034	11.077
09:41	180.735	15.248	9.109	8.054	11.075
09:42	164.117	13.453	8.442	8.455	10.719
09:43	177.528	15.118	9.621	7.693	11.406
09:44	171.280	13.734	8.104	8.444	10.766
09:45	170.893	13.933	9.538	8.117	10.994
09:46	175.322	13.657	7.346	8.220	10.915
09:47	180.639	13.541	7.753	8.136	11.008
09:48	168.736	12.112	9.905	8.413	10.768
09:49	163.169	10.553	9.415	8.785	10.498
09:50	158.081	10.103	11.049	8.337	10.819
09:51	172.686	11.289	12.211	7.666	11.432
09:52	163.222	11.118	9.247	8.276	10.858
09:53	165.822	11.811	9.221	7.515	11.532
09:54	169.475	11.502	6.859	8.008	11.047
09:55	169.640	11.324	8.099	7.612	11.381
09:56	179.819	11.884	8.666	7.646	11.371
09:57	159.475	11.040	8.945	8.106	10.919
09:58	175.692	12.890	9.274	7.305	11.697
09:59	173.873	12.521	6.393	7.949	11.078
10:00	161.758	12.332	6.661	7.735	11.257
10:01	183.850	14.720	7.909	7.192	11.832
10:02	169.465	12.202	6.040	8.338	10.769
10:03	157.629	10.950	7.824	7.862	11.132
10:04	179.770	11.469	8.563	7.655	11.349

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013
 Start Time 10:05
 Stop Time 10:14

CALIBRATION BIAS 03

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gasses (C_S)					
C _{of} Zero gas	-0.252	0.150	-0.053	-0.017	-0.012
C _{uf} Upscale gas	218.109	42.463	47.653	9.417	9.565
Analyzer Calibration Error Responses (C_{Dir})					
C _{ocb} Zero gas	-0.057	-0.008	-0.049	-0.044	-0.103
C _{mce} Upscale gas	223.823	44.441	47.903	9.490	9.493
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.0%	0.2%	0.0%	0.2%	0.5%
Upscale gas	-1.3%	-2.2%	-0.3%	-0.4%	0.4%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gases (C_S)					
C _{ol} Zero gas	-0.076	0.076	0.029	-0.017	-0.012
C _{ui} Upscale gas	218.893	42.930	47.747	9.414	9.572
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	0.0%	0.1%	-0.1%	0.0%	0.0%
Upscale gas	-0.2%	-0.5%	-0.1%	0.0%	0.0%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

040913 151337

10:05:55	167.513	10.885	10.699	5.792	7.363
10:06:10	149.947	7.420	14.015	8.896	8.872
10:06:25	55.442	3.621	8.877	9.374	9.514
10:06:40	8.222	1.936	2.766	9.401	9.558
10:06:55	3.329	1.266	0.778	9.405	9.564
10:07:10	2.523	0.853	0.500	9.420	9.563
10:07:25	1.750	0.650	0.488	9.418	9.569
10:07:40	0.765	0.498	0.501	9.417	9.567
10:07:55	0.716	0.384	0.491	9.421	9.555
10:08:10	0.766	0.278	0.488	9.423	9.550
10:08:25	0.432	0.196	0.472	9.408	9.553
10:08:40	0.220	0.187	0.488	9.417	9.564
10:08:55	-0.057	0.193	0.469	9.426	9.565
10:09:10	-0.375	0.070	0.464	9.412	9.565
10:09:26	-0.323	0.124	0.469	8.082	9.583
10:09:40	12.332	6.206	0.296	1.372	9.913
10:09:55	65.397	26.911	0.145	0.090	10.028
10:10:10	180.977	36.622	-0.023	-0.002	10.046
10:10:25	214.221	39.429	0.016	-0.010	10.046
10:10:40	216.728	40.677	-0.049	-0.014	10.045

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013

Start Time 10:05

Stop Time 10:14

CALIBRATION BIAS 03

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
10:10:55	217.338	41.312	0.031	-0.021	10.045
10:11:10	217.533	41.717	-0.013	-0.023	10.045
10:11:25	217.721	42.038	-0.036	-0.026	10.044
10:11:40	217.908	42.248	-0.111	-0.028	10.043
10:11:55	217.990	42.501	0.055	-0.032	10.043
10:12:10	218.152	42.641	0.033	-0.033	10.043
10:12:25	218.185	41.830	0.653	0.011	7.850
10:12:40	174.791	24.057	9.317	-0.006	1.160
10:12:55	74.888	9.726	28.996	-0.013	0.195
10:13:10	18.421	4.282	41.667	-0.178	-0.157
10:13:25	2.377	4.075	46.661	-0.013	0.019
10:13:40	0.961	3.315	47.443	-0.014	0.017
10:13:55	0.944	2.948	47.569	-0.018	-0.007
10:14:10	0.326	2.577	47.547	-0.018	-0.010
10:14:26	0.463	2.365	47.650	-0.021	-0.006
10:14:40	0.130	2.256	47.651	-0.018	-0.013
10:14:55	0.089	2.159	47.658	-0.017	-0.016

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013
 Start Time 10:16
 Stop time 10:43

REFERENCE METHOD RUN 4

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{ol} Initial zero	-0.252	0.150	-0.053	-0.017	-0.012
C _{ul} Initial upscale	218.109	42.463	47.653	9.417	9.565
C _{of} Final zero	-0.144	0.040	-0.007	-0.016	-0.010
C _{uf} Final upscale	218.198	42.680	47.653	9.404	9.567
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	179.699	11.421	6.521	7.577	11.444
C _{Gas} Bias adjusted	183.726	12.025	6.498	7.668	11.399

Clock Time (at end of sample period)

040913 151337						
10:17	191.791	11.599	6.880	7.210	11.696	
10:18	182.251	10.590	6.592	7.762	11.203	
10:19	181.333	10.453	7.212	7.671	11.271	
10:20	189.082	11.175	8.226	7.380	11.591	
10:21	175.560	10.710	6.682	7.569	11.381	
10:22	182.969	11.947	7.082	7.333	11.673	
10:23	174.463	11.281	6.746	7.731	11.264	
10:24	175.920	11.311	8.144	7.711	11.308	
10:25	174.870	11.197	7.952	7.655	11.375	
10:26	165.928	11.271	7.699	7.973	11.066	
10:27	176.760	11.891	7.319	7.490	11.552	
10:28	176.712	11.316	7.009	7.829	11.190	
10:29	178.201	11.043	7.727	7.884	11.159	
10:30	184.589	11.760	7.031	7.246	11.732	
10:31	191.656	11.992	6.098	7.314	11.733	
10:32	173.995	11.282	6.245	8.095	10.994	
10:33	169.220	11.872	7.080	7.941	11.105	
10:34	181.856	12.939	6.292	7.077	11.918	
10:35	192.133	12.703	4.862	7.240	11.827	
10:36	179.727	10.115	4.395	7.931	11.138	
10:37	175.761	10.011	5.403	7.808	11.244	
10:38	180.849	10.734	5.686	7.705	11.338	
10:39	179.762	11.576	5.359	7.369	11.663	
10:40	193.726	14.120	6.726	6.486	12.533	
10:41	190.429	12.734	5.353	7.355	11.719	
10:42	168.148	10.554	4.816	7.994	11.072	
10:43	164.172	10.180	5.450	7.810	11.252	

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013
 Start Time 10:45
 Stop Time 10:55

CALIBRATION BIAS 04

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gases (C_s)					
C _{of} Zero gas	-0.144	0.040	-0.007	-0.016	-0.010
C _{uf} Upscale gas	218.198	42.680	47.653	9.404	9.567
Analyzer Calibration Error Responses (C_{Dir})					
C _{oce} Zero gas	-0.057	-0.008	-0.049	-0.044	-0.103
C _{mce} Upscale gas	223.823	44.441	47.903	9.490	9.493
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.0%	0.1%	0.0%	0.2%	0.5%
Upscale gas	-1.3%	-1.9%	-0.3%	-0.5%	0.4%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gases (C_s)					
C _{oi} Zero gas	-0.252	0.150	-0.053	-0.017	-0.012
C _{ui} Upscale gas	218.109	42.463	47.653	9.417	9.565
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	0.0%	-0.1%	0.0%	0.0%	0.0%
Upscale gas	0.0%	0.2%	0.0%	-0.1%	0.0%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

040913 151337

10:45:25	63.492	3.385	8.666	9.353	9.497
10:45:40	7.847	1.844	3.430	9.393	9.552
10:45:55	3.159	1.182	1.005	9.403	9.558
10:46:10	2.133	0.796	0.541	9.404	9.561
10:46:25	1.083	0.656	0.510	9.392	9.561
10:46:40	0.847	0.513	0.488	9.402	9.563
10:46:55	0.236	0.420	0.488	9.390	9.565
10:47:10	0.228	0.288	0.500	9.412	9.564
10:47:25	0.358	0.234	0.500	9.416	9.565
10:47:40	0.065	0.257	0.503	9.400	9.565
10:47:55	0.407	0.222	0.472	9.403	9.567
10:48:10	0.203	0.158	0.488	9.402	9.567
10:48:25	-0.073	0.148	0.469	9.405	9.567
10:48:40	-0.179	0.147	0.475	9.401	9.568
10:48:55	-0.179	0.078	0.472	9.408	9.565
10:49:10	0.065	-0.001	0.477	9.404	9.568
10:49:25	-0.301	0.044	0.467	9.365	9.568
10:49:40	0.016	1.065	0.466	3.908	9.743
10:49:55	29.109	18.439	0.339	0.289	9.980
10:50:10	157.981	33.291	0.085	0.009	10.028

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013
 Start Time 10:45
 Stop Time 10:55

CALIBRATION BIAS 04

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
10:50:25	208.262	37.923	-0.016	-0.006	10.023
10:50:40	216.207	39.752	0.031	-0.012	10.032
10:50:55	216.874	40.703	-0.052	-0.018	10.035
10:51:10	217.354	41.327	-0.013	-0.022	10.033
10:51:25	217.599	41.778	-0.010	-0.024	10.036
10:51:40	217.770	42.107	-0.026	-0.027	10.035
10:51:55	217.973	42.317	0.005	-0.029	10.031
10:52:10	218.071	42.532	-0.007	-0.033	10.037
10:52:25	218.217	42.701	-0.002	-0.032	10.035
10:52:40	218.307	42.808	-0.013	-0.035	10.037
10:52:55	218.071	42.043	0.537	0.009	7.343
10:53:10	217.265	25.005	9.784	-0.007	0.987
10:53:25	96.093	10.436	28.776	-0.014	0.175
10:53:40	11.363	6.059	42.344	-0.015	0.067
10:53:55	2.507	4.410	46.761	-0.016	0.033
10:54:10	1.302	3.609	47.583	-0.016	0.007
10:54:25	0.619	3.118	47.600	-0.016	-0.011
10:54:40	0.098	2.779	47.590	-0.017	-0.006
10:54:55	0.440	2.429	47.655	-0.019	-0.007
10:55:10	0.350	2.310	47.681	-0.020	-0.015
10:55:25	0.171	2.198	47.622	0.117	-0.007

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013
 Start Time 11:00
 Stop time 11:27

REFERENCE METHOD RUN 5

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	-0.144	0.040	-0.007	-0.016	-0.010
C _{ui} Initial upscale	218.198	42.680	47.653	9.404	9.567
C _{of} Final zero	0.100	0.059	-0.005	-0.017	-0.007
C _{uf} Final upscale	217.792	42.679	47.646	9.401	9.563
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	163.066	14.133	8.670	7.925	11.232
C _{Gas} Bias adjusted	166.815	14.900	8.611	8.027	11.189

Clock Time (at end of sample period)

040913 151337						
11:01	198.779	17.802	6.343	6.553	12.543	
11:02	192.344	14.581	5.709	7.316	11.811	
11:03	180.185	11.874	5.359	7.983	11.137	
11:04	172.106	11.863	7.009	7.461	11.595	
11:05	202.165	17.111	7.628	6.415	12.707	
11:06	187.377	15.980	5.780	7.426	11.729	
11:07	168.494	14.920	5.992	7.905	11.236	
11:08	160.146	13.484	6.199	8.207	10.949	
11:09	154.591	12.172	6.944	8.205	10.937	
11:10	180.621	17.211	8.743	6.613	12.453	
11:11	187.297	17.061	6.623	7.281	11.865	
11:12	163.858	13.525	6.371	8.052	11.104	
11:13	141.899	11.663	8.589	8.530	10.699	
11:14	146.355	14.441	13.007	7.504	11.599	
11:15	162.086	15.617	10.683	8.118	11.071	
11:16	143.470	13.831	9.142	8.572	10.636	
11:17	165.649	15.750	9.621	7.557	11.565	
11:18	157.922	13.435	7.336	8.483	10.746	
11:19	143.158	12.565	10.275	8.300	10.877	
11:20	139.369	12.567	11.694	8.375	10.807	
11:21	145.340	12.039	10.991	8.545	10.698	
11:22	140.804	11.865	11.840	8.717	10.542	
11:23	145.969	12.978	12.857	8.315	10.842	
11:24	148.614	13.705	11.823	8.262	10.883	
11:25	161.547	14.157	9.451	8.123	11.000	
11:26	153.262	14.574	8.485	8.717	10.495	
11:27	159.361	14.834	9.587	8.448	10.739	

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013
 Start Time 11:28
 Stop Time 11:38

CALIBRATION BIAS 05

Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
NOX	SO2	CO	O2	CO2
FF Outlet	FF Outlet	FF Outlet	FF Outlet	FF Outlet
ppmdv	ppmdv	ppmdv	%dv	%dv

System Response to Calibration Gasses (C_s)

C _{of} Zero gas	0.100	0.059	-0.005	-0.017	-0.007
C _{uf} Upscale gas	217.792	42.679	47.646	9.401	9.563

Analyzer Calibration Error Responses (C_{Dir})

C _{oce} Zero gas	-0.057	-0.008	-0.049	-0.044	-0.103
C _{mca} Upscale gas	223.823	44.441	47.903	9.490	9.493

Actual Upscale Gas Value (C_{MA})

C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
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Calibration Span Value (CS)

	448.000	90.800	96.300	18.100	17.900
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System Bias as Percent of Calibration Span Value (SB) (5%)

Zero gas	0.0%	0.1%	0.0%	0.1%	0.5%
Upscale gas	-1.3%	-1.9%	-0.3%	-0.5%	0.4%

System Bias Status

Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Previous System Response to Calibration Gases (C_s)

C _{oi} Zero gas	-0.144	0.040	-0.007	-0.016	-0.010
C _{uf} Upscale gas	218.198	42.680	47.653	9.404	9.567

Drift Assessment as Percent of Calibration Span Value (D) (3%)

Zero gas	0.1%	0.0%	0.0%	0.0%	0.0%
Upscale gas	-0.1%	0.0%	0.0%	0.0%	0.0%

Drift Assessment Status

Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

040913 151337

11:28:38	102.320	5.724	12.882	9.284	9.364
11:28:53	21.343	2.833	6.839	9.383	9.532
11:29:08	4.673	1.646	1.677	9.397	9.549
11:29:23	2.483	1.008	0.653	9.409	9.554
11:29:38	1.604	0.741	0.513	9.396	9.554
11:29:53	0.985	0.567	0.496	9.410	9.559
11:30:08	0.692	0.472	0.490	9.397	9.559
11:30:23	0.505	0.345	0.472	9.394	9.559
11:30:38	0.179	0.243	0.472	9.407	9.558
11:30:53	0.293	0.189	0.472	9.402	9.557
11:31:08	0.049	0.091	0.488	9.394	9.561
11:31:23	0.146	0.114	0.435	9.364	9.550
11:31:38	0.024	0.038	0.470	9.388	9.553
11:31:53	0.138	0.090	0.488	9.401	9.562
11:32:08	0.138	0.033	0.480	9.403	9.562
11:32:23	-0.179	0.054	0.464	9.401	9.565
11:32:38	-0.090	0.072	0.488	7.321	9.598
11:32:53	11.933	8.256	0.425	1.020	9.924
11:33:08	131.135	28.413	0.191	0.072	10.005
11:33:23	195.108	36.589	0.091	0.002	10.017

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013

Start Time 11:28

Stop Time 11:38

CALIBRATION BIAS 05

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
11:33:38	214.644	39.318	0.028	-0.009	10.021
11:33:53	216.280	40.475	0.000	-0.017	10.011
11:34:08	217.021	41.227	-0.036	-0.020	10.021
11:34:23	217.249	41.711	-0.015	-0.025	10.017
11:34:38	217.322	42.100	0.028	-0.027	10.016
11:34:53	217.517	42.310	-0.015	-0.029	10.021
11:35:08	217.672	42.541	0.042	-0.030	10.018
11:35:23	217.778	42.716	0.026	-0.033	10.026
11:35:38	217.884	42.781	-0.085	-0.034	10.017
11:35:53	217.713	42.439	0.098	0.021	7.987
11:36:08	215.149	27.196	8.814	-0.010	1.228
11:36:23	113.846	11.183	26.323	-0.015	0.203
11:36:38	10.411	6.242	41.914	-0.016	0.071
11:36:53	2.629	4.453	46.557	-0.016	0.035
11:37:08	1.066	3.505	47.559	-0.017	0.019
11:37:23	0.521	3.083	47.539	-0.018	-0.008
11:37:38	0.660	2.743	47.627	-0.017	-0.009
11:37:53	0.367	2.431	47.634	-0.020	-0.002
11:38:08	0.285	2.310	47.676	-0.020	-0.010

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013
 Start Time 11:40
 Stop time 12:07

REFERENCE METHOD RUN 6

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	0.100	0.059	-0.005	-0.017	-0.007
C _{ui} Initial upscale	217.792	42.679	47.646	9.401	9.563
C _{of} Final zero	-0.109	0.030	-0.009	-0.015	-0.009
C _{uf} Final upscale	217.314	42.760	47.590	9.396	9.557
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{AVG} Average conc.	168.525	12.612	9.793	8.245	10.867
C _{GAS} Bias adjusted	172.746	13.282	9.733	8.354	10.832

Clock Time (at end of sample period)

040913: 151337					
11:41	171.235	9.266	10.475	8.654	10.500
11:42	176.127	9.195	11.465	8.655	10.523
11:43	178.401	9.994	12.220	8.577	10.567
11:44	182.269	10.911	11.208	8.347	10.766
11:45	179.406	11.440	11.255	8.020	11.046
11:46	175.944	10.427	8.290	8.886	10.373
11:47	169.090	9.457	8.207	8.284	10.797
11:48	175.037	9.628	7.230	8.196	10.877
11:49	182.721	11.566	8.350	7.530	11.503
11:50	173.822	12.259	8.573	8.029	11.043
11:51	153.706	12.187	9.011	8.600	10.590
11:52	150.307	13.094	11.819	8.053	11.019
11:53	146.575	12.882	10.712	8.425	10.728
11:54	153.112	13.631	10.644	8.318	10.804
11:55	156.870	13.785	10.085	8.183	10.884
11:56	167.817	15.481	10.864	7.863	11.197
11:57	155.641	13.614	9.778	8.706	10.487
11:58	169.992	14.427	11.816	7.937	11.104
11:59	170.785	14.639	9.788	8.439	10.713
12:00	154.060	14.247	10.837	8.478	10.644
12:01	172.267	15.714	12.346	7.827	11.248
12:02	166.720	12.924	9.116	8.388	10.737
12:03	183.276	15.143	9.719	7.610	11.439
12:04	185.027	15.101	7.852	7.862	11.192
12:05	174.906	13.367	7.141	8.382	10.781
12:06	156.329	12.443	7.372	8.505	10.648
12:07	168.736	13.702	8.244	7.870	11.207

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013
 Start Time 12:08
 Stop Time 12:18

CALIBRATION BIAS 06

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gases (C_s)					
C _{of} Zero gas	-0.109	0.030	-0.009	-0.015	-0.009
C _{uf} Upscale gas	217.314	42.760	47.590	9.396	9.557
Analyzer Calibration Error Responses (C_{Dir})					
C _{ocb} Zero gas	-0.057	-0.008	-0.049	-0.044	-0.103
C _{mcb} Upscale gas	223.823	44.441	47.903	9.490	9.493
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.0%	0.0%	0.0%	0.2%	0.5%
Upscale gas	-1.5%	-1.9%	-0.3%	-0.5%	0.4%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gases (C_s)					
C _{oi} Zero gas	0.100	0.059	-0.005	-0.017	-0.007
C _{ui} Upscale gas	217.792	42.679	47.646	9.401	9.563
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	0.0%	0.0%	0.0%	0.0%	0.0%
Upscale gas	-0.1%	0.1%	-0.1%	0.0%	0.0%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

040913 151337

12:08:54	21.408	2.636	6.873	9.383	9.520
12:09:09	5.307	1.436	1.931	9.385	9.545
12:09:24	2.670	0.928	0.669	9.394	9.550
12:09:39	1.945	0.664	0.503	9.392	9.552
12:09:54	1.140	0.506	0.488	9.401	9.554
12:10:09	0.863	0.407	0.488	9.400	9.557
12:10:24	0.603	0.230	0.472	9.397	9.555
12:10:39	0.171	0.150	0.478	9.399	9.556
12:10:54	0.309	0.073	0.466	9.383	9.557
12:11:09	0.057	0.062	0.488	9.404	9.558
12:11:24	0.138	0.083	0.470	9.397	9.557
12:11:39	-0.285	0.015	0.464	9.386	9.557
12:11:54	-0.179	-0.010	0.445	9.377	9.555
12:12:09	0.032	1.289	0.478	4.330	9.721
12:12:24	70.419	19.966	0.365	0.353	9.967
12:12:39	153.024	34.387	0.080	0.004	10.008
12:12:54	207.090	38.690	-0.005	-0.007	10.005
12:13:09	214.978	40.290	0.013	-0.011	10.011
12:13:24	215.987	41.131	0.007	-0.016	10.011
12:13:39	216.524	41.635	-0.021	-0.020	9.991

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 3

March 20, 2013
 Start Time 12:08
 Stop Time 12:18

CALIBRATION BIAS 06

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
12:13:54	216.858	42.024	-0.003	-0.022	10.010
12:14:09	216.923	42.279	-0.002	-0.025	10.016
12:14:24	217.118	42.491	-0.021	-0.027	10.013
12:14:39	217.362	42.647	-0.003	-0.028	9.999
12:14:54	217.257	42.772	-0.098	-0.032	10.001
12:15:09	217.338	42.860	0.028	-0.033	9.997
12:15:24	217.346	42.336	0.270	0.021	8.296
12:15:39	180.163	25.740	8.345	-0.005	1.386
12:15:54	79.992	10.022	26.335	-0.012	0.217
12:16:09	21.661	5.586	41.418	-0.015	0.074
12:16:24	2.857	3.977	46.278	-0.015	0.026
12:16:39	1.237	3.323	47.459	-0.014	0.014
12:16:54	0.765	2.870	47.471	-0.015	0.003
12:17:09	0.570	2.536	47.546	-0.015	-0.010
12:17:24	0.578	2.325	47.520	-0.020	-0.004
12:17:39	0.481	2.217	47.619	-0.016	-0.008
12:17:54	0.383	2.087	47.587	-0.016	-0.015
12:18:09	0.016	2.015	47.564	0.141	-0.004

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013
 Start Time 12:30
 Stop time 12:57

REFERENCE METHOD RUN 7

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	-0.109	0.030	-0.009	-0.015	-0.009
C _{ui} Initial upscale	217.314	42.760	47.590	9.396	9.557
C _{of} Final zero	-0.087	-0.014	0.007	-0.018	-0.007
C _{uf} Final upscale	216.397	42.432	47.560	9.384	9.543
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	158.674	21.743	9.727	8.349	10.838
C _{Gas} Bias adjusted	163.197	23.017	9.671	8.467	10.814

Clock Time (at end of sample period)

040913 151337					
12:31	179.552	18.869	8.918	8.186	11.029
12:32	161.276	17.267	9.685	8.410	10.806
12:33	170.999	18.409	10.779	8.364	10.900
12:34	154.021	17.726	10.800	8.472	10.761
12:35	161.392	21.107	11.717	8.156	11.018
12:36	151.457	20.787	9.067	8.655	10.616
12:37	152.413	22.626	10.509	8.376	10.850
12:38	155.261	21.084	10.338	8.406	10.807
12:39	160.090	20.004	10.698	8.425	10.801
12:40	157.151	17.384	10.652	8.204	10.966
12:41	174.204	18.410	10.965	7.962	11.198
12:42	157.279	15.639	8.637	8.941	10.373
12:43	158.555	17.663	11.032	8.009	11.089
12:44	163.850	17.033	8.239	8.484	10.736
12:45	155.611	17.641	7.978	8.831	10.454
12:46	162.169	26.082	11.012	8.367	10.815
12:47	163.525	39.677	9.530	8.688	10.549
12:48	160.083	87.558	10.386	8.230	10.877
12:49	154.434	62.263	8.334	8.671	10.520
12:50	154.746	23.308	9.483	7.955	11.091
12:51	153.508	11.547	7.602	8.307	10.825
12:52	152.088	8.439	9.024	7.646	11.379
12:53	163.984	7.374	9.920	7.725	11.390
12:54	151.046	5.782	8.654	8.949	10.357
12:55	142.448	6.670	9.579	8.503	10.676
12:56	153.134	11.059	9.011	8.306	10.829
12:57	159.908	15.656	10.070	8.208	10.917

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013
 Start Time 12:59
 Stop Time 13:08

CALIBRATION BIAS 07

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gasses (C_S)					
C _{of} Zero gas	-0.087	-0.014	0.007	-0.018	-0.007
C _{uf} Upscale gas	216.397	42.432	47.560	9.384	9.543
Analyzer Calibration Error Responses (C_{Dir})					
C _{oce} Zero gas	-0.057	-0.008	-0.049	-0.044	-0.103
C _{mce} Upscale gas	223.823	44.441	47.903	9.490	9.493
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.0%	0.0%	0.1%	0.1%	0.5%
Upscale gas	-1.7%	-2.2%	-0.4%	-0.6%	0.3%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gasses (C_S)					
C _{ol} Zero gas	-0.109	0.030	-0.009	-0.015	-0.009
C _{ui} Upscale gas	217.314	42.760	47.590	9.396	9.557
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	0.0%	0.0%	0.0%	0.0%	0.0%
Upscale gas	-0.2%	-0.4%	0.0%	-0.1%	-0.1%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

040913 151337	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
12:59:48	16.923	2.227	5.686	9.383	9.519
13:00:03	3.639	1.275	1.823	9.385	9.533
13:00:18	1.905	0.816	0.589	9.335	9.518
13:00:33	0.961	0.471	0.475	9.346	9.518
13:00:48	0.863	0.449	0.474	9.384	9.539
13:01:03	0.717	0.317	0.470	9.385	9.530
13:01:18	0.350	0.272	0.464	9.379	9.542
13:01:33	0.187	0.254	0.480	9.390	9.542
13:01:48	-0.342	0.128	0.480	9.379	9.542
13:02:03	-0.049	0.145	0.480	9.387	9.542
13:02:18	0.138	0.090	0.448	9.387	9.543
13:02:33	0.032	0.073	0.464	9.394	9.542
13:02:48	-0.073	-0.023	0.464	9.390	9.542
13:03:03	0.008	-0.093	0.464	9.392	9.542
13:03:18	-0.195	0.282	0.464	6.172	9.611
13:03:33	18.689	15.613	0.399	0.661	9.940
13:03:48	144.143	32.731	0.182	0.042	9.992
13:04:03	201.718	37.965	0.060	0.000	9.992
13:04:18	213.903	39.757	0.038	-0.011	9.997
13:04:33	214.831	40.720	0.036	-0.016	9.980

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 3

March 20, 2013
 Start Time 12:59
 Stop Time 13:08

CALIBRATION BIAS 07

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
13:04:48	215.328	41.397	0.033	-0.021	9.994
13:05:03	215.539	41.789	-0.049	-0.027	9.999
13:05:18	216.003	42.053	-0.033	-0.029	9.995
13:05:33	216.272	42.264	0.039	-0.028	9.998
13:05:48	216.272	42.460	-0.015	-0.032	9.989
13:06:03	216.435	42.572	-0.005	-0.034	9.986
13:06:18	216.484	40.472	0.865	0.005	6.800
13:06:33	196.874	20.334	9.648	-0.005	0.866
13:06:48	66.138	8.104	30.873	-0.014	0.157
13:07:03	10.973	4.851	42.737	-0.015	0.040
13:07:18	2.117	3.718	46.927	-0.014	0.012
13:07:33	1.050	3.090	47.425	-0.016	0.015
13:07:48	0.749	2.763	47.549	-0.018	-0.008
13:08:03	0.830	2.439	47.549	-0.018	-0.002
13:08:18	0.440	2.307	47.559	-0.019	-0.010
13:08:33	0.456	2.160	47.574	-0.018	-0.014
13:08:48	0.464	2.050	47.533	-0.020	-0.018

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013
 Start Time 13:10
 Stop time 13:37

REFERENCE METHOD RUN 8

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	-0.087	-0.014	0.007	-0.018	-0.007
C _{ui} Initial upscale	216.397	42.432	47.560	9.384	9.543
C _{of} Final zero	0.040	0.067	0.006	-0.020	-0.009
C _{uf} Final upscale	215.574	42.792	47.478	9.362	9.523
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	156.640	12.048	11.026	8.608	10.557
C _{Gas} Bias adjusted	161.734	12.731	10.971	8.744	10.552

Clock Time (at end of sample period)

040913 151337	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
13:11	158.787	11.175	8.775	9.199	10.075
13:12	151.134	10.670	11.091	8.767	10.439
13:13	154.978	11.866	10.656	8.323	10.774
13:14	158.887	13.681	10.206	8.437	10.711
13:15	151.321	13.148	10.587	8.994	10.283
13:16	141.622	12.340	11.706	9.031	10.239
13:17	137.723	12.271	12.044	9.166	10.132
13:18	145.104	13.071	13.918	8.769	10.454
13:19	151.787	14.381	13.191	8.495	10.671
13:20	158.053	13.368	10.396	8.832	10.426
13:21	155.407	12.410	11.866	8.808	10.455
13:22	149.176	11.791	11.519	9.218	10.098
13:23	156.768	10.867	12.487	8.891	10.346
13:24	165.708	11.267	11.507	8.301	10.788
13:25	174.005	11.766	11.194	7.951	11.110
13:26	166.013	10.519	8.742	8.931	10.292
13:27	162.912	10.043	10.965	8.580	10.551
13:28	162.672	10.851	11.064	8.664	10.484
13:29	166.463	13.326	12.600	8.406	10.699
13:30	160.993	14.223	11.939	8.357	10.728
13:31	159.534	12.186	9.466	8.569	10.581
13:32	154.565	11.140	10.469	8.390	10.684
13:33	156.793	10.725	9.308	8.779	10.419
13:34	154.107	10.690	10.590	8.148	10.870
13:35	153.671	10.831	9.914	8.529	10.581
13:36	158.154	12.926	12.147	7.601	11.345
13:37	162.943	13.770	9.362	8.272	10.792

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013
 Start Time 13:38
 Stop Time 13:48

CALIBRATION BIAS 08

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gasses (C_s)					
C _{of} Zero gas	0.040	0.067	0.006	-0.020	-0.009
C _{uf} Upscale gas	215.574	42.792	47.478	9.362	9.523
Analyzer Calibration Error Reponses (C_{Dir})					
C _{oce} Zero gas	-0.057	-0.008	-0.049	-0.044	-0.103
C _{mce} Upscale gas	223.823	44.441	47.903	9.490	9.493
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.0%	0.1%	0.1%	0.1%	0.5%
Upscale gas	-1.8%	-1.8%	-0.4%	-0.7%	0.2%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gases (C_s)					
C _{oi} Zero gas	-0.087	-0.014	0.007	-0.018	-0.007
C _{ui} Upscale gas	216.397	42.432	47.560	9.384	9.543
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	0.0%	0.1%	0.0%	0.0%	0.0%
Upscale gas	-0.2%	0.4%	-0.1%	-0.1%	-0.1%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

040913 15:1337	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
13:38:44	144.616	11.617	10.126	8.486	10.541
13:38:59	145.926	12.068	12.539	7.869	11.041
13:39:14	152.047	12.459	14.048	6.068	8.788
13:39:29	156.491	8.990	16.708	8.197	8.084
13:39:44	80.244	4.044	12.785	9.288	9.384
13:39:59	9.857	1.858	5.226	9.372	9.501
13:40:14	3.345	1.022	-1.579	9.360	9.513
13:40:29	1.587	0.668	0.589	9.371	9.516
13:40:44	1.213	0.454	0.483	9.363	9.519
13:40:59	0.806	0.257	0.488	9.371	9.520
13:41:14	0.375	0.163	0.490	9.372	9.520
13:41:29	0.505	0.093	0.464	9.377	9.522
13:41:44	0.374	0.105	0.464	9.364	9.525
13:41:59	0.049	0.005	0.464	9.364	9.522
13:42:14	0.024	-0.008	0.464	9.357	9.523
13:42:29	0.049	1.506	0.454	4.421	9.684
13:42:44	68.783	20.827	0.321	0.362	9.950
13:42:59	150.427	34.802	0.168	0.025	9.982
13:43:14	205.600	38.688	-0.073	-0.089	9.970
13:43:29	212.373	39.814	-0.308	-0.150	9.822

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 3

March 20, 2013
 Start Time 13:38
 Stop Time 13:48

CALIBRATION BIAS 08

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
13:43:44	214.457	40.959	0.011	-0.054	9.965
13:43:59	214.505	41.397	-0.057	-0.088	9.947
13:44:14	214.937	41.771	-0.034	-0.024	9.971
13:44:29	215.336	42.059	0.003	-0.024	9.971
13:44:44	215.352	42.266	-0.034	-0.027	9.980
13:44:59	215.564	42.414	0.018	-0.031	9.989
13:45:14	215.328	42.563	0.044	-0.032	9.966
13:45:29	215.588	42.678	-0.024	-0.033	9.984
13:45:44	215.547	42.756	-0.002	-0.033	9.976
13:45:59	215.482	42.802	-0.083	-0.034	9.971
13:46:14	215.694	42.819	-0.010	-0.035	9.975
13:46:29	215.832	41.146	0.565	0.017	7.438
13:46:44	174.318	22.323	9.399	-0.014	1.046
13:46:59	102.792	8.969	29.597	-0.018	0.188
13:47:14	14.774	5.236	41.649	-0.020	0.067
13:47:29	2.744	3.821	46.655	-0.020	0.023
13:47:44	1.221	3.139	47.305	-0.019	0.015
13:47:59	0.814	2.748	47.447	-0.020	0.003
13:48:14	0.627	2.369	47.422	-0.020	-0.011
13:48:29	0.611	2.263	47.507	-0.020	-0.004
13:48:44	0.163	2.128	47.432	-0.020	-0.013
13:48:59	0.375	2.015	47.495	-0.021	-0.020

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013
 Start Time 13:50
 Stop time 14:17

REFERENCE METHOD RUN 9

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	0.040	0.067	0.006	-0.020	-0.009
C _{ui} Initial upscale	215.574	42.792	47.478	9.362	9.523
C _{of} Final zero	-0.038	-0.039	0.033	-0.021	-0.012
C _{uf} Final upscale	214.717	42.283	47.505	9.369	9.527
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	162.541	7.946	11.764	8.488	10.602
C _{Gas} Bias adjusted	168.475	8.413	11.702	8.630	10.607

Clock Time (at end of sample period)

040913.151337					
13:51	173.222	11.328	14.380	8.582	10.529
13:52	171.771	9.896	14.217	8.689	10.459
13:53	162.782	9.860	17.063	8.267	10.764
13:54	162.914	8.464	13.824	8.653	10.466
13:55	166.150	7.761	14.573	8.681	10.499
13:56	163.852	7.747	12.989	8.795	10.384
13:57	152.705	7.780	12.932	8.968	10.224
13:58	151.976	8.113	13.249	8.629	10.521
13:59	152.532	8.363	14.173	8.469	10.625
14:00	161.302	8.393	12.406	8.529	10.563
14:01	167.765	8.051	10.550	8.759	10.403
14:02	160.391	8.308	10.785	8.310	10.753
14:03	152.255	7.839	10.030	8.682	10.452
14:04	152.332	7.754	13.520	8.560	10.571
14:05	157.680	7.666	12.094	8.558	10.554
14:06	162.841	7.285	10.718	8.342	10.721
14:07	165.360	7.410	11.344	8.375	10.706
14:08	161.026	7.448	10.072	8.569	10.532
14:09	169.911	7.468	9.839	8.820	10.375
14:10	170.126	7.456	10.233	8.670	10.456
14:11	175.792	7.823	10.719	7.902	11.057
14:12	163.864	8.147	9.978	8.123	10.904
14:13	159.959	7.786	8.622	8.031	10.924
14:14	177.257	7.436	8.157	8.122	10.859
14:15	165.975	6.928	9.465	8.242	10.729
14:16	156.943	6.366	10.745	8.535	10.544
14:17	149.927	5.677	10.957	8.304	10.688

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013
 Start Time 14:19
 Stop Time 14:28

CALIBRATION BIAS 09

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gasses (C_s)					
C _{of} Zero gas	-0.038	-0.039	0.033	-0.021	-0.012
C _{uf} Upscale gas	214.717	42.283	47.505	9.369	9.527
Analyzer Calibration Error Responses (C_{dir})					
C _{oce} Zero gas	-0.057	-0.008	-0.049	-0.044	-0.103
C _{mce} Upscale gas	223.823	44.441	47.903	9.490	9.493
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.0%	0.0%	0.1%	0.1%	0.5%
Upscale gas	-2.0%	-2.4%	-0.4%	-0.7%	0.2%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gasses (C_s)					
C _{oi} Zero gas	0.040	0.067	0.006	-0.020	-0.009
C _{ui} Upscale gas	215.574	42.792	47.478	9.362	9.523
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	0.0%	-0.1%	0.0%	0.0%	0.0%
Upscale gas	-0.2%	-0.6%	0.0%	0.0%	0.0%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

040913 151337

14:19:47	3.207	0.736	1.512	9.363	9.501
14:20:02	1.701	0.454	0.635	9.365	9.501
14:20:17	1.131	0.246	0.482	9.365	9.505
14:20:32	0.659	0.072	0.461	9.367	9.510
14:20:47	0.456	0.010	0.490	9.368	9.515
14:21:02	0.366	-0.039	0.477	9.320	9.492
14:21:17	0.268	-0.156	0.459	9.234	9.461
14:21:32	0.049	-0.002	0.456	9.357	9.507
14:21:47	0.268	-0.007	0.459	9.369	9.515
14:22:02	-0.041	-0.037	0.458	9.369	9.517
14:22:17	-0.179	-0.021	0.464	9.369	9.532
14:22:32	0.032	-0.059	0.464	9.371	9.531
14:22:47	0.032	0.003	0.464	7.706	9.556
14:23:02	13.203	10.229	0.404	1.224	9.881
14:23:17	67.017	30.152	0.161	0.081	9.970
14:23:32	188.303	37.013	0.029	-0.006	9.958
14:23:47	210.614	39.269	0.010	-0.013	9.965
14:24:02	213.333	40.316	0.031	-0.019	9.968
14:24:17	213.960	40.925	0.052	-0.025	9.970
14:24:32	214.188	41.358	0.010	-0.029	9.981

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013

Start Time 14:19

Stop Time 14:28

CALIBRATION BIAS 09

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
14:24:47	214.473	41.713	0.031	-0.032	9.981
14:25:02	214.644	41.934	0.031	-0.035	9.963
14:25:17	214.774	42.144	0.039	-0.035	9.959
14:25:32	214.619	42.307	0.013	-0.039	9.981
14:25:47	214.758	42.398	-0.021	-0.029	9.973
14:26:02	215.132	36.598	1.383	0.018	4.818
14:26:17	176.280	15.953	16.028	-0.015	0.531
14:26:32	46.797	7.127	33.545	-0.020	0.112
14:26:47	8.091	4.554	44.163	-0.021	0.047
14:27:02	2.051	3.492	46.912	-0.020	0.009
14:27:17	0.838	2.947	47.345	-0.020	0.003
14:27:32	0.700	2.585	47.323	-0.021	0.002
14:27:47	0.244	2.331	47.389	-0.021	-0.006
14:28:02	0.635	2.204	47.460	-0.022	-0.013
14:28:17	0.212	2.063	47.525	-0.023	-0.018
14:28:32	0.578	1.978	47.531	-0.022	-0.022

Wheelabrator
 CleanAir Project No. 12218
 North Broward
 Unit 3

March 20, 2013
 Start Time 14:30
 Stop time 14:57

REFERENCE METHOD RUN 10

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
Calibration Checks					
C _{oi} Initial zero	-0.038	-0.039	0.033	-0.021	-0.012
C _{ui} Initial upscale	214.717	42.283	47.505	9.369	9.527
C _{of} Final zero	-0.054	0.016	-0.043	-0.036	-0.012
C _{uf} Final upscale	214.709	42.801	47.360	9.361	9.496
C _{ma} Actual gas value	223.000	45.100	47.300	9.520	9.530
Analyzer Averages (concentrations)					
C _{Avg} Average conc.	156.306	12.333	10.388	8.625	10.479
C _{Gas} Bias adjusted	162.352	13.084	10.363	8.769	10.498

Clock Time (at end of sample period)

040913:151337	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
14:31	166.312	7.884	8.621	8.235	10.771
14:32	156.300	8.842	11.027	7.804	11.146
14:33	162.116	9.212	9.896	8.224	10.831
14:34	149.874	9.300	10.026	8.362	10.688
14:35	158.997	11.535	11.214	8.205	10.862
14:36	150.914	10.724	10.203	8.374	10.692
14:37	154.595	12.103	10.508	8.145	10.889
14:38	159.772	12.904	9.861	7.852	11.110
14:39	161.697	13.297	9.638	8.503	10.609
14:40	143.549	12.114	10.807	8.846	10.316
14:41	139.078	11.973	11.335	9.211	10.004
14:42	148.408	14.026	12.422	8.597	10.521
14:43	145.025	15.726	11.558	9.176	10.075
14:44	137.611	16.824	12.928	9.053	10.120
14:45	139.383	16.000	10.550	9.078	10.049
14:46	149.033	14.722	11.127	8.813	10.284
14:47	156.180	12.647	10.719	9.128	10.055
14:48	155.718	12.024	10.863	8.822	10.301
14:49	161.011	13.448	10.114	8.827	10.311
14:50	166.640	14.278	10.333	8.684	10.429
14:51	167.145	13.726	9.442	8.519	10.557
14:52	161.294	12.641	9.816	8.932	10.239
14:53	156.962	11.331	11.942	8.850	10.271
14:54	166.610	11.011	10.080	8.493	10.575
14:55	166.724	10.836	9.060	8.815	10.329
14:56	166.522	10.774	8.888	8.647	10.450
14:57	172.798	13.100	7.506	8.668	10.440

CALIBRATION BIAS 10

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
System Response to Calibration Gases (C_s)					
C _{of} Zero gas	-0.054	0.016	-0.043	-0.036	-0.012
C _{uf} Upscale gas	214.709	42.801	47.360	9.361	9.496
Analyzer Calibration Error Responses (C_{dir})					
C _{ocb} Zero gas	-0.057	-0.008	-0.049	-0.044	-0.103
C _{mce} Upscale gas	223.823	44.441	47.903	9.490	9.493
Actual Upscale Gas Value (C_{MA})					
C _{ma} Upscale gas	223.000	45.100	47.300	9.520	9.530
Calibration Span Value (CS)					
	448.000	90.800	96.300	18.100	17.900
System Bias as Percent of Calibration Span Value (SB) (5%)					
Zero gas	0.0%	0.0%	0.0%	0.0%	0.5%
Upscale gas	-2.0%	-1.8%	-0.6%	-0.7%	0.0%
System Bias Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
Previous System Response to Calibration Gases (C_s)					
C _{di} Zero gas	-0.038	-0.039	0.033	-0.021	-0.012
C _{ui} Upscale gas	214.717	42.283	47.505	9.369	9.527
Drift Assessment as Percent of Calibration Span Value (D) (3%)					
Zero gas	0.0%	0.1%	-0.1%	-0.1%	0.0%
Upscale gas	0.0%	0.6%	-0.2%	0.0%	-0.2%
Drift Assessment Status					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

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14:58:29	172.723	8.809	8.804	6.140	7.961
14:58:44	133.049	5.490	12.361	8.492	8.376
14:58:59	75.490	2.518	9.796	9.296	9.378
14:59:14	9.320	1.285	4.303	9.352	9.474
14:59:29	2.735	0.801	1.145	9.357	9.487
14:59:44	1.563	0.490	0.540	9.359	9.487
14:59:59	0.863	0.319	0.464	9.359	9.491
15:00:14	0.839	0.168	0.461	9.360	9.491
15:00:29	0.554	0.106	0.451	9.361	9.493
15:00:44	0.464	0.085	0.445	9.361	9.495
15:00:59	0.269	0.077	0.440	9.362	9.497
15:01:14	-0.098	0.122	0.440	9.360	9.496
15:01:29	0.089	-0.010	0.440	9.360	9.496
15:01:44	-0.155	0.019	0.459	9.361	9.497
15:01:59	0.171	0.037	0.453	9.360	9.495
15:02:14	1.310	1.237	0.435	5.176	9.617
15:02:29	7.912	20.439	0.311	0.466	9.910
15:02:44	124.860	34.541	0.059	-0.014	9.932
15:02:59	204.868	38.639	0.055	-0.005	9.959
15:03:14	211.689	40.119	-0.013	-0.015	9.959

Wheelabrator
CleanAir Project No. 12218
North Broward
Unit 3

March 20, 2013
 Start Time 14:58
 Stop Time 15:14

CALIBRATION BIAS 10

	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet ppmdv	FF Outlet %dv	FF Outlet %dv
15:03:29	212.943	40.863	-0.049	-0.022	9.959
15:03:44	213.464	41.346	0.032	-0.026	9.958
15:03:59	213.764	41.635	0.010	-0.042	9.948
15:04:14	214.083	41.937	0.024	-0.035	9.955
15:04:29	214.066	42.081	0.039	-0.039	9.960
15:04:44	214.278	42.194	0.000	-0.037	9.957
15:04:59	214.400	42.406	0.018	-0.036	9.956
15:05:14	214.424	42.672	-0.090	-0.036	9.957
15:05:29	214.530	42.725	-0.023	-0.039	9.958
15:05:44	214.522	42.759	-0.018	-0.038	9.957
15:05:59	214.587	42.774	0.036	-0.040	9.964
15:06:14	214.644	42.785	-0.075	-0.039	9.963
15:06:29	214.652	42.844	0.020	-0.040	9.959
15:06:44	214.831	42.924	-0.028	-0.040	9.955
15:06:59	214.692	42.970	-0.026	-0.040	9.961
15:07:14	214.912	41.488	0.254	0.937	8.719
15:07:29	214.384	22.229	6.998	0.285	1.657
15:07:44	96.280	8.785	25.194	-0.006	0.241
15:07:59	12.926	5.065	40.400	-0.020	0.065
15:08:14	2.808	3.774	45.929	-0.020	0.034
15:08:29	1.351	3.079	47.198	-0.021	0.014
15:08:44	0.977	2.779	47.302	-0.022	0.000
15:08:59	0.912	2.486	47.334	-0.024	-0.002
15:09:14	0.749	2.304	47.367	-0.023	-0.011
15:09:29	0.554	2.186	47.380	0.128	-0.023
15:09:44	0.424	1.705	44.960	1.093	-0.054
15:09:59	11.062	0.921	32.423	0.978	-0.073
15:10:14	35.499	0.726	16.550	0.956	-0.076
15:10:29	41.408	0.697	4.975	0.955	-0.079
15:10:44	43.468	0.733	1.128	0.954	-0.079
15:10:59	44.037	0.715	0.275	0.956	-0.079
15:11:14	44.819	0.725	0.168	0.955	-0.079
15:11:29	45.079	0.735	0.126	0.955	-0.079
15:11:44	45.380	0.765	0.114	0.954	-0.081
15:11:59	45.559	0.794	0.116	0.953	-0.084
15:12:14	45.804	0.776	0.067	0.955	-0.084
15:12:29	45.894	0.788	0.111	0.955	-0.081
15:12:44	46.056	0.781	0.113	0.953	-0.083
15:12:59	46.227	0.755	0.114	0.952	-0.085
15:13:14	46.390	0.775	0.073	0.952	-0.085
15:13:29	46.398	0.799	0.153	0.953	-0.085
15:13:44	45.804	0.749	0.075	0.953	-0.085
15:13:59	45.169	0.785	0.047	0.952	-0.085
15:14:14	45.006	0.744	0.113	0.952	-0.085
15:14:29	45.462	0.969	0.127	1.756	0.283
15:14:44	52.771	6.629	1.592	6.687	8.391

NOX Converter
 Efficiency Check

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