



**Wheelabrator South Broward Inc.**

A Waste Management Company

4400 South State Road 7  
Ft. Lauderdale, FL 33314

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MAY 13 2013

DIVISION OF AIR  
RESOURCE MANAGEMENT

May 8, 2013

UPS# 1Z2AW7390197438931

Mr. Joe Lurix  
Air Program Administrator  
Florida Department of Environmental Protection  
Southeast District  
400 North Congress Ave., Suite 200  
West Palm Beach, FL 33401

Re: Wheelabrator South Broward  
2013 Annual Compliance Stack Test and RATA Reports

Dear Mr. Lurix:

Please find enclosed a copy of the final compliance stack test report and the continuous emissions monitoring system certification RATA report for testing conducted on March 25-27 of this year by Clean Air Engineering, Inc.

I, the undersigned, am a responsible official, as defined in Rule 62-210.200, F.A.C., of the Title V source addressed in this submittal. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements and information in this document are true, accurate and complete.

If there are any questions, please contact this office at (954) 581-6606.

Sincerely,

Scott McIlvaine  
Plant Manager

cc: USEPA, Region IV, Pesticides and Toxics Management Division, Air & EPCRA Enforcement  
Branch, Air Enforcement Section (with) UPS#1Z2AW7390196354363

FDEP, Tallahassee, Bureau of Air Regulation, New Source Review Section,  
(with) UPS#1Z2AW7390196615143

Broward County Department of Planning and Environmental Protection, Air Quality Division  
(with) UPS#1Z2AW7390195194958

Nicole Turnbull (with)  
Ram Tewari – BCWRS (without)  
Tim Porter (without)  
Rob French – MPI (with)





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DIVISION OF AIR  
RESOURCE MANAGEMENT

Wheelabrator South Broward, Inc.  
4400 South State Road 7  
Ft. Lauderdale, FL 33314

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**REPORT ON A RELATIVE ACCURACY TEST AUDIT**

Performed for:  
**WHEELABRATOR SOUTH BROWARD, INC.**  
**UNITS 1, 2 AND 3 FF OUTLETS**  
**FT. LAUDERDALE, FL**

Client Reference No: Service Agreement  
CleanAir Project No: 12218-4  
Revision 0: May 8, 2013

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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.

Submitted by,

  
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**REVISION HISTORY**

**REPORT ON A RELATIVE ACCURACY TEST AUDIT**

***DRAFT REPORT REVISION HISTORY***

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**PROJECT OVERVIEW**

1-1

**INTRODUCTION**

Wheelabrator South Broward, Inc. contracted Clean Air Engineering (CleanAir) to perform the relative accuracy test audit (RATA) at the municipal waste combustor (MWC) facility, located in Ft. Lauderdale, 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 South Broward, Inc.
- D. Dreska – CleanAir

**Test Program Parameters**

The testing performed at the Units 1, 2 and 3 fabric filter (FF) baghouse outlets from March 25 through 27, 2013, included the following emissions measurements:

- sulfur dioxide (SO<sub>2</sub>)
- carbon monoxide (CO)
- nitrogen oxides (NO<sub>x</sub>)
- carbon dioxide (CO<sub>2</sub>)
- oxygen (O<sub>2</sub>)
- 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 <sub>2</sub> (ppmdv @ 7% O <sub>2</sub> )	278	0.8	0.6	0.2	0.109	1.1%	20%	S <sup>1</sup>
NO <sub>x</sub> (ppmdv @ 7% O <sub>2</sub> )	278	192.0	194.6	-2.6	0.175	1.3%	10%	S <sup>2</sup>
CO (ppmdv @ 7% O <sub>2</sub> )	278	8.5	9.9	-1.4	0.194	1.4	5 ppm	Mean Diff. <sup>3</sup>
CO <sub>2</sub> (lb/hr)	278	63,077	69,746	-6,669	892	12.0%	20%	RM <sup>4</sup>
<u>Unit 2 FF Outlet CEMS (units of RATA)</u>								
SO <sub>2</sub> (ppmdv @ 7% O <sub>2</sub> )	277	9.2	9.2	0.02	0.456	1.6%	20%	S <sup>1</sup>
NO <sub>x</sub> (ppmdv @ 7% O <sub>2</sub> )	277	170.4	167.0	3.4	0.621	2.0%	10%	S <sup>2</sup>
CO (ppmdv @ 7% O <sub>2</sub> )	277	16.1	15.8	0.3	0.261	0.3	5 ppm	Mean Diff. <sup>3</sup>
CO <sub>2</sub> (lb/hr)	277	62,611	70,324	-7,713	1,329	14.4%	20%	RM <sup>4</sup>
<u>Unit 3 FF Outlet CEMS (units of RATA)</u>								
SO <sub>2</sub> (ppmdv @ 7% O <sub>2</sub> )	279	19.1	18.1	1.0	0.535	5.3%	20%	S <sup>1</sup>
NO <sub>x</sub> (ppmdv @ 7% O <sub>2</sub> )	279	186.7	194.4	-7.8	0.599	4.1%	10%	S <sup>2</sup>
CO (ppmdv @ 7% O <sub>2</sub> )	279	19.3	20.9	-1.6	0.336	1.6	5 ppm	Mean Diff. <sup>3</sup>
CO <sub>2</sub> (lb/hr)	279	60,670	60,940	-270	1,522	3.0%	20%	RM <sup>4</sup>

<sup>1</sup> SO<sub>2</sub> FF Outlet Relative Accuracy calculated as a percentage of the 29 ppm standard as per Performance Specification 2, Section 13.2.

<sup>2</sup> NO<sub>x</sub> FF Outlet Relative Accuracy calculated as a percentage of the 205 ppm standard as per Performance Specification 2, Section 13.2.

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

<sup>4</sup> 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**

South Broward	Unit 1	Unit 2	Unit 3
GHG_SCFM	114,037	112,944	110,682
GHG_CO2 %	10.6	10.3	10.0
GHG_H2O %	23.8	21.2	20.1

**PROJECT OVERVIEW**

1-3

**Discussion of Test Program**

Each boiler was operated at greater than 50% (96,000 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<sub>x</sub>) analyzer converter check was performed after the final bias check each day and is presented in both Appendices D and 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 (CO<sub>2</sub>) continuous emission rate monitoring system (CO<sub>2</sub> CERMS) was also performed in conjunction with the usual sulfur dioxide (SO<sub>2</sub>), NO<sub>x</sub> and carbon monoxide (CO) RATAs. Each CO<sub>2</sub> CERMS consists of a new CO<sub>2</sub> channel configured in the Sick 100e analyzer and an optical-based stack gas flow rate monitor located in each FF outlet duct.

The CO<sub>2</sub> CERMS was installed on each unit to meet EPA Greenhouse Gas Monitoring and Reporting requirements in 40 CFR 98. The CO<sub>2</sub> 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 or Method 5/29 testing. The O<sub>2</sub> and CO<sub>2</sub> utilized for volumetric flow calculations are obtained from each respective RATA test run.

Oxygen (O<sub>2</sub>), flow and ppmdv of all measured constituents are presented in Section 2 of this report for comparison purposes only.

All RATA runs were 27 minutes in duration with 10 runs being performed on each unit.

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*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	8:00	Mar 25	8.94	9.20	-0.26	-2.91%
2	8:38	Mar 25	9.39	9.60	-0.21	-2.25%
3	9:22	Mar 25	9.03	9.30	-0.27	-3.01%
4	10:01	Mar 25	7.88	8.10	-0.22	-2.76%
5	10:53	Mar 25	8.01	8.20	-0.19	-2.39%
6	11:33	Mar 25	8.44	8.60	-0.16	-1.86%
7	12:26	Mar 25	8.32	8.60	-0.28	-3.31%
8	13:07	Mar 25	8.28	8.60	-0.32	-3.84% *
9	13:47	Mar 25	8.34	8.60	-0.26	-3.18%
10	14:26	Mar 25	9.25	9.50	-0.25	-2.70%
Average			8.62	8.86	-0.23	-2.70%

Standard Deviation 0.041  
 Confidence Coefficient (CC) 0.032  
 Avg. Absolute Difference (%dv) 0.2 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 (lb/hr)	Percent Difference
1	8:00	Mar 25	119,444.7	128,373.8	-8929.1	-7.48%
2	8:38	Mar 25	120,276.9	128,355.3	-8078.4	-6.72%
3	9:22	Mar 25	116,533.9	122,508.6	-5974.7	-5.13%
4	10:01	Mar 25	111,868.1	117,590.7	-5722.6	-5.12%
5	10:53	Mar 25	108,931.2	116,162.3	-7231.1	-6.64%
6	11:33	Mar 25	114,042.9	126,855.1	-12812.2	-11.23% *
7	12:26	Mar 25	106,763.8	116,730.0	-9966.2	-9.33%
8	13:07	Mar 25	113,292.7	118,602.9	-5310.2	-4.69%
9	13:47	Mar 25	113,622.6	118,902.8	-5280.2	-4.65%
10	14:26	Mar 25	115,595.7	119,652.9	-4057.2	-3.51%
Average			114,036.6	120,764.4	-6727.7	-5.90%

Standard Deviation 1943.76  
 Confidence Coefficient (CC) 1494.10  
 Relative Accuracy (as % of RM) 7.2% Limit NA

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

**RESULTS**

**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	8:00	Mar 25	64,531.4	71,840.7	-7309.3	-11.33%
2	8:38	Mar 25	63,009.9	69,890.3	-6880.4	-10.92%
3	9:22	Mar 25	61,117.6	67,795.9	-6678.3	-10.93%
4	10:01	Mar 25	64,223.5	71,835.2	-7611.7	-11.85%
5	10:53	Mar 25	63,684.8	70,554.8	-6870.0	-10.79%
6	11:33	Mar 25	63,969.0	74,686.5	-10717.5	-16.75% *
7	12:26	Mar 25	60,939.9	69,473.5	-8533.6	-14.00%
8	13:07	Mar 25	64,571.6	70,047.3	-5475.7	-8.48%
9	13:47	Mar 25	64,182.3	70,183.9	-6001.6	-9.35%
10	14:26	Mar 25	61,434.4	66,090.7	-4656.3	-7.58%
Average			63,077.3	69,745.8	-6668.5	-10.57%

Standard Deviation 1160.88  
 Confidence Coefficient (CC) 892.33  
 Relative Accuracy (as % of RM) 12.0% Limit 20.0%

\* 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	8:00	Mar 25	10.28	10.60	-0.32	-3.13%
2	8:38	Mar 25	9.97	10.30	-0.33	-3.34%
3	9:22	Mar 25	10.20	10.50	-0.30	-2.96%
4	10:01	Mar 25	11.16	11.60	-0.44	-3.91%
5	10:53	Mar 25	11.13	11.50	-0.37	-3.36%
6	11:33	Mar 25	10.68	11.10	-0.42	-3.98%
7	12:26	Mar 25	10.88	11.30	-0.42	-3.89%
8	13:07	Mar 25	10.86	11.20	-0.34	-3.12%
9	13:47	Mar 25	10.76	11.20	-0.44	-4.05% *
10	14:26	Mar 25	10.13	10.50	-0.37	-3.68%
Average			10.59	10.96	-0.37	-3.49%

Standard Deviation 0.049  
 Confidence Coefficient (CC) 0.038  
 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% O<sub>2</sub>)**

Run No.	Start Time	Date (2013)	RM Data (ppm@7%O <sub>2</sub> )	CEMS Data (ppm@7%O <sub>2</sub> )	Difference (ppm@7%O <sub>2</sub> )	Percent Difference
1	8:00	Mar 25	0.32	0.20	0.12	38.17%
2	8:38	Mar 25	0.26	0.20	0.06	23.74%
3	9:22	Mar 25	0.19	0.20	-0.01	-4.02%
4	10:01	Mar 25	0.93	0.60	0.33	35.63%
5	10:53	Mar 25	3.45	2.70	0.75	21.73% *
6	11:33	Mar 25	0.85	0.60	0.25	29.70%
7	12:26	Mar 25	2.38	2.00	0.38	15.92%
8	13:07	Mar 25	0.61	0.50	0.11	18.50%
9	13:47	Mar 25	0.40	0.20	0.20	50.52%
10	14:26	Mar 25	1.18	0.80	0.38	32.24%
Average			0.79	0.59	0.20	25.78%

Standard Deviation	0.142	
Confidence Coefficient (CC)	0.109	
Relative Accuracy (as % of RM)	39.5%	Limits 20.0%
Relative Accuracy (as % of Applicable Std.) Standard = 29 (ppm@7%O <sub>2</sub> )	1.1%	20.0%

\* 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	8:00	Mar 25	0.28	0.20	0.08	28.14%
2	8:38	Mar 25	0.22	0.10	0.12	53.96%
3	9:22	Mar 25	0.16	0.10	0.06	39.11%
4	10:01	Mar 25	0.87	0.50	0.37	42.72%
5	10:53	Mar 25	3.20	2.40	0.80	24.98% *
6	11:33	Mar 25	0.76	0.50	0.26	34.63%
7	12:26	Mar 25	2.15	1.70	0.45	21.01%
8	13:07	Mar 25	0.56	0.40	0.16	28.18%
9	13:47	Mar 25	0.37	0.20	0.17	45.27%
10	14:26	Mar 25	0.99	0.70	0.29	29.26%
Average			0.71	0.49	0.22	30.83%

Standard Deviation	0.135	
Confidence Coefficient (CC)	0.104	
Relative Accuracy (as % of RM)	45.5%	Limit NA

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

**RESULTS**

**Table 2-7:  
 Relative Accuracy, Unit 1 FF Outlet – Nitrogen Oxides (ppm @ 7% O<sub>2</sub>)**

Run No.	Start Time	Date (2013)	RM Data (ppm@7%O <sub>2</sub> )	CEMS Data (ppm@7%O <sub>2</sub> )	Difference (ppm@7%O <sub>2</sub> )	Percent Difference
1	8:00	Mar 25	188.96	191.40	-2.44	-1.29%
2	8:38	Mar 25	190.25	192.60	-2.35	-1.24%
3	9:22	Mar 25	184.02	186.60	-2.58	-1.40%
4	10:01	Mar 25	184.67	187.30	-2.63	-1.42%
5	10:53	Mar 25	193.17	196.00	-2.83	-1.46%
6	11:33	Mar 25	189.81	191.90	-2.09	-1.10%
7	12:26	Mar 25	196.16	198.80	-2.64	-1.34%
8	13:07	Mar 25	201.89	204.60	-2.71	-1.34%
9	13:47	Mar 25	199.17	201.90	-2.73	-1.37%
10	14:26	Mar 25	202.39	205.40	-3.01	-1.49%*
Average			192.01	194.57	-2.55	-1.33%

Standard Deviation 0.228

Confidence Coefficient (CC) 0.175

Relative Accuracy (as % of RM) 1.4% Limits 20.0%

Relative Accuracy (as % of Applicable Std.) 1.3% 10.0%  
 Standard = 205 (ppm@7%O<sub>2</sub>)

\* 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	8:00	Mar 25	162.59	161.40	1.19	0.73%
2	8:38	Mar 25	157.56	156.10	1.46	0.92%
3	9:22	Mar 25	157.17	156.70	0.47	0.30%
4	10:01	Mar 25	172.95	172.40	0.55	0.32%
5	10:53	Mar 25	179.16	178.40	0.76	0.42%
6	11:33	Mar 25	170.11	169.30	0.81	0.48%
7	12:26	Mar 25	177.47	176.20	1.27	0.71%
8	13:07	Mar 25	183.27	181.10	2.17	1.19%*
9	13:47	Mar 25	180.04	179.30	0.74	0.41%
10	14:26	Mar 25	169.62	168.30	1.32	0.78%
Average			169.63	168.68	0.95	0.56%

Standard Deviation 0.361

Confidence Coefficient (CC) 0.278

Relative Accuracy (as % of RM) 0.7% Limit NA

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

**RESULTS**

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**Table 2-9:  
Relative Accuracy, Unit 1 FF Outlet – Carbon Monoxide (ppm @ 7% O<sub>2</sub>)**

Run No.	Start Time	Date (2013)	RM Data (ppm@7%O <sub>2</sub> )	CEMS Data (ppm@7%O <sub>2</sub> )	Difference (ppm@7%O <sub>2</sub> )	Percent Difference
1	8:00	Mar 25	20.74	23.00	-2.26	-10.92% *
2	8:38	Mar 25	14.52	16.10	-1.58	-10.87%
3	9:22	Mar 25	9.23	10.90	-1.67	-18.12%
4	10:01	Mar 25	6.44	7.80	-1.36	-21.06%
5	10:53	Mar 25	5.24	6.30	-1.06	-20.28%
6	11:33	Mar 25	8.70	9.90	-1.20	-13.75%
7	12:26	Mar 25	6.79	8.00	-1.21	-17.81%
8	13:07	Mar 25	7.58	8.90	-1.32	-17.43%
9	13:47	Mar 25	8.24	9.40	-1.16	-14.07%
10	14:26	Mar 25	9.71	11.50	-1.79	-18.43%
Average			8.49	9.87	-1.37	-16.15%

Standard Deviation 0.252  
 Confidence Coefficient (CC) 0.194  
 Relative Accuracy (as % of RM) 18.4% Limits 10.0%  
 Avg. Absolute Difference (ppm@7%O<sub>2</sub>) 1.4 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	8:00	Mar 25	17.84	19.40	-1.56	-8.74% *
2	8:38	Mar 25	12.03	13.00	-0.97	-8.10%
3	9:22	Mar 25	7.88	8.80	-0.92	-11.66%
4	10:01	Mar 25	6.03	7.20	-1.17	-19.32%
5	10:53	Mar 25	4.86	5.70	-0.84	-17.33%
6	11:33	Mar 25	7.80	8.70	-0.90	-11.54%
7	12:26	Mar 25	6.14	7.10	-0.96	-15.57%
8	13:07	Mar 25	6.88	7.90	-1.02	-14.82%
9	13:47	Mar 25	7.45	8.30	-0.85	-11.42%
10	14:26	Mar 25	8.14	9.40	-1.26	-15.51%
Average			7.47	8.46	-0.99	-13.23%

Standard Deviation 0.142  
 Confidence Coefficient (CC) 0.109  
 Relative Accuracy (as % of RM) 14.7% 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	7:48	Mar 27	8.59	8.30	0.29	3.40%
2	8:27	Mar 27	8.34	8.00	0.34	4.04% *
3	9:08	Mar 27	8.85	8.60	0.25	2.79%
4	9:47	Mar 27	8.95	8.70	0.25	2.83%
5	10:27	Mar 27	9.38	9.10	0.28	3.02%
6	11:06	Mar 27	9.74	9.50	0.24	2.50%
7	12:07	Mar 27	9.11	8.80	0.31	3.40%
8	12:47	Mar 27	9.12	8.90	0.22	2.37%
9	13:26	Mar 27	9.31	9.00	0.31	3.33%
10	14:04	Mar 27	8.75	8.50	0.25	2.91%
Average			9.09	8.82	0.27	2.94%

Standard Deviation 0.032  
 Confidence Coefficient (CC) 0.025  
 Avg. Absolute Difference (%dv) 0.3 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 (lb/hr)	Percent Difference
1	7:48	Mar 27	109,005.2	114,789.2	-5784.0	-5.31%
2	8:27	Mar 27	105,274.3	117,478.7	-12204.4	-11.59%
3	9:08	Mar 27	109,989.3	116,587.9	-6598.6	-6.00%
4	9:47	Mar 27	109,417.4	122,264.6	-12847.2	-11.74%
5	10:27	Mar 27	124,090.6	131,500.0	-7409.4	-5.97%
6	11:06	Mar 27	122,606.2	134,051.7	-11445.5	-9.34%
7	12:07	Mar 27	111,548.1	126,410.1	-14862.0	-13.32% *
8	12:47	Mar 27	112,521.5	121,503.1	-8981.6	-7.98%
9	13:26	Mar 27	111,695.7	120,856.8	-9161.1	-8.20%
10	14:04	Mar 27	111,896.7	123,549.6	-11652.9	-10.41%
Average			112,944.1	122,509.1	-9565.0	-8.47%

Standard Deviation 2595.21  
 Confidence Coefficient (CC) 1994.85  
 Relative Accuracy (as % of RM) 10.2% 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	7:48	Mar 27	63,171.6	68,178.6	-5007.0	-7.93%
2	8:27	Mar 27	63,181.9	71,715.1	-8533.2	-13.51%
3	9:08	Mar 27	62,150.5	67,795.7	-5645.2	-9.08%
4	9:47	Mar 27	61,921.7	70,776.6	-8854.9	-14.30%
5	10:27	Mar 27	67,261.8	73,446.7	-6184.9	-9.20%
6	11:06	Mar 27	63,688.0	71,526.4	-7838.4	-12.31%
7	12:07	Mar 27	59,989.4	71,961.0	-11971.6	-19.96% *
8	12:47	Mar 27	60,309.9	68,853.3	-8543.4	-14.17%
9	13:26	Mar 27	59,135.6	67,643.4	-8507.8	-14.39%
10	14:04	Mar 27	62,681.9	72,980.3	-10298.4	-16.43%
Average			62,611.4	70,324.0	-7712.6	-12.32%

Standard Deviation 1729.57

Confidence Coefficient (CC) 1329.46

Relative Accuracy (as % of RM) 14.4% 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	7:48	Mar 27	10.60	11.20	-0.60	-5.70%
2	8:27	Mar 27	10.97	11.50	-0.53	-4.80%
3	9:08	Mar 27	10.38	11.00	-0.62	-6.00% *
4	9:47	Mar 27	10.39	10.90	-0.51	-4.88%
5	10:27	Mar 27	10.00	10.50	-0.50	-4.96%
6	11:06	Mar 27	9.59	10.10	-0.51	-5.36%
7	12:07	Mar 27	10.22	10.80	-0.58	-5.70%
8	12:47	Mar 27	10.18	10.70	-0.52	-5.07%
9	13:26	Mar 27	10.06	10.60	-0.54	-5.38%
10	14:04	Mar 27	10.64	11.20	-0.56	-5.23%
Average			10.29	10.83	-0.54	-5.23%

Standard Deviation 0.036

Confidence Coefficient (CC) 0.028

Avg. Absolute Difference (%dv) 0.5 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% O<sub>2</sub>)**

Run No.	Start Time	Date (2013)	RM Data (ppm@7%O <sub>2</sub> )	CEMS Data (ppm@7%O <sub>2</sub> )	Difference (ppm@7%O <sub>2</sub> )	Percent Difference
1	7:48	Mar 27	13.05	13.40	-0.35	-2.65%
2	8:27	Mar 27	11.62	12.10	-0.48	-4.10%
3	9:08	Mar 27	12.11	12.90	-0.79	-6.49%
4	9:47	Mar 27	15.52	16.00	-0.48	-3.12%
5	10:27	Mar 27	14.54	15.30	-0.76	-5.23%
6	11:06	Mar 27	4.47	4.00	0.47	10.43%
7	12:07	Mar 27	6.29	5.70	0.59	9.32%
8	12:47	Mar 27	5.74	5.20	0.54	9.35%
9	13:26	Mar 27	4.45	3.80	0.65	14.69%
10	14:04	Mar 27	4.18	3.40	0.78	18.73%
Average			9.20	9.18	0.02	0.19%

Standard Deviation 0.638

Confidence Coefficient (CC) 0.456

Relative Accuracy (as % of RM) 5.2% Limits 20.0%

Relative Accuracy (as % of Applicable Std.) 1.6% 20.0%

Standard = 29 (ppm@7%O<sub>2</sub>)

**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	7:48	Mar 27	11.56	12.30	-0.74	-6.41%
2	8:27	Mar 27	10.51	11.30	-0.79	-7.56%
3	9:08	Mar 27	10.50	11.40	-0.90	-8.52%
4	9:47	Mar 27	13.33	14.20	-0.87	-6.49%
5	10:27	Mar 27	12.05	13.10	-1.05	-8.74% *
6	11:06	Mar 27	3.58	3.20	0.38	10.72%
7	12:07	Mar 27	5.33	5.00	0.33	6.23%
8	12:47	Mar 27	4.86	4.50	0.36	7.47%
9	13:26	Mar 27	3.71	3.30	0.41	11.15%
10	14:04	Mar 27	3.66	3.00	0.66	17.93%
Average			7.45	7.58	-0.13	-1.71%

Standard Deviation 0.668

Confidence Coefficient (CC) 0.514

Relative Accuracy (as % of RM) 8.6% Limit NA

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



**RESULTS**

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**Table 2-17:  
Relative Accuracy, Unit 2 FF Outlet – Nitrogen Oxides (ppm @ 7% O<sub>2</sub>)**

Run No.	Start Time	Date (2013)	RM Data (ppm@7%O <sub>2</sub> )	CEMS Data (ppm@7%O <sub>2</sub> )	Difference (ppm@7%O <sub>2</sub> )	Percent Difference
1	7:48	Mar 27	176.14	174.00	2.14	1.22%
2	8:27	Mar 27	177.13	173.10	4.03	2.28%
3	9:08	Mar 27	166.57	163.90	2.67	1.61%
4	9:47	Mar 27	159.73	155.50	4.23	2.65%
5	10:27	Mar 27	172.31	170.00	2.31	1.34%
6	11:06	Mar 27	164.40	160.40	4.00	2.44%
7	12:07	Mar 27	171.69	168.10	3.59	2.09%
8	12:47	Mar 27	168.79	164.90	3.89	2.30%
9	13:26	Mar 27	159.67	154.90	4.77	2.99% *
10	14:04	Mar 27	176.76	172.90	3.86	2.18%
Average			170.39	166.98	3.41	2.00%

Standard Deviation 0.808

Confidence Coefficient (CC) 0.621

Relative Accuracy (as % of RM) 2.4% Limits 20.0%

Relative Accuracy (as % of Applicable Std.) 2.0% 10.0%

Standard = 205 (ppm@7%O<sub>2</sub>)

\* 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	7:48	Mar 27	155.97	157.50	-1.53	-0.98% *
2	8:27	Mar 27	160.10	160.70	-0.60	-0.37%
3	9:08	Mar 27	144.44	145.30	-0.86	-0.59%
4	9:47	Mar 27	137.28	136.40	0.88	0.64%
5	10:27	Mar 27	142.77	144.00	-1.23	-0.86%
6	11:06	Mar 27	131.95	131.70	0.25	0.19%
7	12:07	Mar 27	145.63	145.70	-0.07	-0.05%
8	12:47	Mar 27	143.10	142.80	0.30	0.21%
9	13:26	Mar 27	133.14	132.20	0.94	0.71%
10	14:04	Mar 27	154.44	153.70	0.74	0.48%
Average			143.65	143.61	0.04	0.03%

Standard Deviation 0.787

Confidence Coefficient (CC) 0.605

Relative Accuracy (as % of RM) 0.4% Limit NA

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

**RESULTS**

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**Table 2-19:  
 Relative Accuracy, Unit 2 FF Outlet – Carbon Monoxide (ppm @ 7% O<sub>2</sub>)**

Run No.	Start Time	Date (2013)	RM Data (ppm@7%O <sub>2</sub> )	CEMS Data (ppm@7%O <sub>2</sub> )	Difference (ppm@7%O <sub>2</sub> )	Percent Difference
1	7:48	Mar 27	12.09	11.70	0.39	3.19%
2	8:27	Mar 27	11.58	11.10	0.48	4.11%
3	9:08	Mar 27	10.40	10.40	0.00	0.05%
4	9:47	Mar 27	14.43	14.60	-0.17	-1.17%
5	10:27	Mar 27	27.41	26.40	1.01	3.70%
6	11:06	Mar 27	33.28	32.90	0.38	1.13%
7	12:07	Mar 27	13.08	12.70	0.38	2.87%
8	12:47	Mar 27	11.71	11.60	0.11	0.95%
9	13:26	Mar 27	17.21	18.30	-1.09	-6.30% *
10	14:04	Mar 27	10.87	10.70	0.17	1.53%
Average			16.09	15.79	0.30	1.89%

Standard Deviation 0.339

Confidence Coefficient (CC) 0.261

Relative Accuracy (as % of RM) 3.5% Limits 10.0%

Avg. Absolute Difference (ppm@7%O<sub>2</sub>) 0.3 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	7:48	Mar 27	10.70	10.60	0.10	0.94%
2	8:27	Mar 27	10.46	10.40	0.06	0.60%
3	9:08	Mar 27	9.02	9.20	-0.18	-1.97%
4	9:47	Mar 27	12.40	12.80	-0.40	-3.20%
5	10:27	Mar 27	22.71	22.50	0.21	0.94%
6	11:06	Mar 27	26.71	27.00	-0.29	-1.09%
7	12:07	Mar 27	11.09	11.00	0.09	0.82%
8	12:47	Mar 27	9.93	10.00	-0.07	-0.71%
9	13:26	Mar 27	14.35	15.60	-1.25	-8.68% *
10	14:04	Mar 27	9.49	9.50	-0.01	-0.06%
Average			13.61	13.67	-0.05	-0.39%

Standard Deviation 0.201

Confidence Coefficient (CC) 0.154

Relative Accuracy (as % of RM) 1.5% Limit 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 (%dv)	CEMS Data (%dv)	Difference (%dv)	Percent Difference
1	8:00	Mar 26	9.37	9.20	0.17	1.80%
2	8:40	Mar 26	9.32	9.20	0.12	1.24%
3	9:20	Mar 26	9.45	9.30	0.15	1.61%
4	10:00	Mar 26	9.31	9.10	0.21	2.22%
5	10:46	Mar 26	9.23	9.00	0.23	2.52% *
6	11:25	Mar 26	9.51	9.40	0.11	1.19%
7	12:11	Mar 26	9.09	9.00	0.09	0.99%
8	12:52	Mar 26	9.20	9.00	0.20	2.17%
9	13:32	Mar 26	9.29	9.10	0.19	2.00%
10	14:12	Mar 26	9.65	9.50	0.15	1.53%
Average			9.35	9.20	0.15	1.64%

Standard Deviation 0.041  
 Confidence Coefficient (CC) 0.032  
 Avg. Absolute Difference (%dv) 0.2 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 (lb/hr)	CEMS Data (lb/hr)	Difference (lb/hr)	Percent Difference
1	8:00	Mar 26	111,446.0	116,726.0	-5280.0	-4.74%
2	8:40	Mar 26	116,521.1	112,790.8	3730.3	3.20%
3	9:20	Mar 26	117,372.0	115,445.3	1926.7	1.64%
4	10:00	Mar 26	110,231.3	105,714.5	4516.8	4.10%
5	10:46	Mar 26	107,543.2	104,353.2	3190.0	2.97%
6	11:25	Mar 26	106,980.4	111,669.2	-4688.8	-4.38%
7	12:11	Mar 26	107,039.3	109,747.9	-2708.6	-2.53%
8	12:52	Mar 26	108,403.9	100,251.5	8152.4	7.52% *
9	13:32	Mar 26	108,162.0	109,043.2	-881.2	-0.81%
10	14:12	Mar 26	110,845.7	115,397.0	-4551.3	-4.11%
Average			110,682.3	111,209.7	-527.3	-0.48%

Standard Deviation 3943.26  
 Confidence Coefficient (CC) 3031.05  
 Relative Accuracy (as % of RM) 3.2% Limit NA

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

**RESULTS**

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**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	8:00	Mar 26	61,704.0	63,907.7	-2203.7	-3.57%
2	8:40	Mar 26	64,527.6	61,909.6	2618.0	4.06%
3	9:20	Mar 26	63,348.3	62,739.2	609.1	0.96%
4	10:00	Mar 26	60,476.1	58,510.2	1965.9	3.25%
5	10:46	Mar 26	59,723.7	58,240.8	1482.9	2.48%
6	11:25	Mar 26	57,613.4	59,920.8	-2307.4	-4.00%
7	12:11	Mar 26	59,768.2	61,332.2	-1564.0	-2.62%
8	12:52	Mar 26	59,972.6	55,684.2	4288.4	7.15% *
9	13:32	Mar 26	59,553.2	60,195.8	-642.6	-1.08%
10	14:12	Mar 26	59,312.6	61,700.8	-2388.2	-4.03%
Average			60,669.7	60,939.7	-270.0	-0.45%

Standard Deviation 1980.41

Confidence Coefficient (CC) 1522.27

Relative Accuracy (as % of RM) 3.0% 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	8:00	Mar 26	10.03	10.50	-0.47	-4.66%
2	8:40	Mar 26	10.03	10.50	-0.47	-4.63%
3	9:20	Mar 26	9.94	10.40	-0.46	-4.65%
4	10:00	Mar 26	10.10	10.60	-0.50	-4.93%
5	10:46	Mar 26	10.12	10.70	-0.58	-5.72% *
6	11:25	Mar 26	9.81	10.30	-0.49	-4.95%
7	12:11	Mar 26	10.21	10.70	-0.49	-4.84%
8	12:52	Mar 26	10.11	10.70	-0.59	-5.81%
9	13:32	Mar 26	10.06	10.60	-0.54	-5.33%
10	14:12	Mar 26	9.78	10.30	-0.52	-5.31%
Average			10.01	10.51	-0.50	-5.01%

Standard Deviation 0.041

Confidence Coefficient (CC) 0.031

Avg. Absolute Difference (%dv) 0.5 Limit NA

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

**RESULTS**

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**Table 2-25:  
Relative Accuracy, Unit 3 FF Outlet – Sulfur Dioxide (ppm @ 7% O<sub>2</sub>)**

Run No.	Start Time	Date (2013)	RM Data (ppm@7%O <sub>2</sub> )	CEMS Data (ppm@7%O <sub>2</sub> )	Difference (ppm@7%O <sub>2</sub> )	Percent Difference
1	8:00	Mar 26	21.67	21.30	0.37	1.70%
2	8:40	Mar 26	16.52	15.70	0.82	4.95%
3	9:20	Mar 26	17.28	16.00	1.28	7.39%
4	10:00	Mar 26	20.32	20.20	0.12	0.59%
5	10:46	Mar 26	25.09	25.10	-0.01	-0.05%
6	11:25	Mar 26	11.63	10.20	1.43	12.31%
7	12:11	Mar 26	12.17	10.00	2.17	17.84% *
8	12:52	Mar 26	15.90	14.50	1.40	8.82%
9	13:32	Mar 26	22.47	20.80	1.67	7.45%
10	14:12	Mar 26	20.68	18.80	1.88	9.07%
Average			19.06	18.07	1.00	5.22%

Standard Deviation 0.696

Confidence Coefficient (CC) 0.535

Relative Accuracy (as % of RM) 8.0% Limits 20.0%

Relative Accuracy (as % of Applicable Std.) 5.3% 20.0%

Standard = 29 (ppm@7%O<sub>2</sub>)

\* 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	8:00	Mar 26	17.98	17.80	0.18	0.98%
2	8:40	Mar 26	13.77	13.30	0.47	3.38%
3	9:20	Mar 26	14.23	13.20	1.03	7.24%
4	10:00	Mar 26	16.95	17.10	-0.15	-0.90%
5	10:46	Mar 26	21.06	21.30	-0.24	-1.15%
6	11:25	Mar 26	9.53	8.60	0.93	9.75%
7	12:11	Mar 26	10.34	8.60	1.74	16.84% *
8	12:52	Mar 26	13.39	12.20	1.19	8.86%
9	13:32	Mar 26	18.78	17.70	1.08	5.74%
10	14:12	Mar 26	16.74	15.50	1.24	7.40%
Average			15.82	15.19	0.63	4.01%

Standard Deviation 0.584

Confidence Coefficient (CC) 0.449

Relative Accuracy (as % of RM) 6.8% Limit NA

\* 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% O<sub>2</sub>)**

Run No.	Start Time	Date (2013)	RM Data (ppm@7%O <sub>2</sub> )	CEMS Data (ppm@7%O <sub>2</sub> )	Difference (ppm@7%O <sub>2</sub> )	Percent Difference
1	8:00	Mar 26	180.43	188.30	-7.87	-4.36%
2	8:40	Mar 26	180.87	189.90	-9.03	-4.99% *
3	9:20	Mar 26	195.28	203.90	-8.62	-4.41%
4	10:00	Mar 26	182.82	191.50	-8.68	-4.75%
5	10:46	Mar 26	180.97	188.90	-7.93	-4.38%
6	11:25	Mar 26	179.18	187.80	-8.62	-4.81%
7	12:11	Mar 26	190.27	197.50	-7.23	-3.80%
8	12:52	Mar 26	195.23	201.70	-6.47	-3.32%
9	13:32	Mar 26	188.60	195.90	-7.30	-3.87%
10	14:12	Mar 26	187.21	194.40	-7.19	-3.84%
Average			186.66	194.43	-7.77	-4.16%

Standard Deviation 0.779

Confidence Coefficient (CC) 0.599

Relative Accuracy (as % of RM) 4.5% Limits 20.0%

Relative Accuracy (as % of Applicable Std.) 4.1% 10.0%

Standard = 205 (ppm@7%O<sub>2</sub>)

\* 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	8:00	Mar 26	149.69	158.10	-8.41	-5.62%
2	8:40	Mar 26	150.74	160.00	-9.26	-6.14%
3	9:20	Mar 26	160.83	170.00	-9.17	-5.70%
4	10:00	Mar 26	152.47	161.80	-9.33	-6.12%
5	10:46	Mar 26	151.90	161.40	-9.50	-6.26% *
6	11:25	Mar 26	146.79	155.80	-9.01	-6.14%
7	12:11	Mar 26	161.67	169.50	-7.83	-4.85%
8	12:52	Mar 26	164.33	172.10	-7.77	-4.73%
9	13:32	Mar 26	157.58	165.90	-8.32	-5.28%
10	14:12	Mar 26	151.56	159.60	-8.04	-5.31%
Average			155.07	163.64	-8.57	-5.53%

Standard Deviation 0.628

Confidence Coefficient (CC) 0.483

Relative Accuracy (as % of RM) 5.8% Limit NA

\* 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% O<sub>2</sub>)**

Run No.	Start Time	Date (2013)	RM Data (ppm@7%O <sub>2</sub> )	CEMS Data (ppm@7%O <sub>2</sub> )	Difference (ppm@7%O <sub>2</sub> )	Percent Difference
1	8:00	Mar 26	19.92	21.50	-1.58	-7.92%
2	8:40	Mar 26	31.76	33.10	-1.34	-4.22%
3	9:20	Mar 26	21.81	23.70	-1.89	-8.65%
4	10:00	Mar 26	20.89	23.10	-2.21	-10.59%
5	10:46	Mar 26	23.23	24.70	-1.47	-6.31%
6	11:25	Mar 26	23.85	26.00	-2.15	-9.00%
7	12:11	Mar 26	9.90	11.00	-1.10	-11.10%
8	12:52	Mar 26	10.16	11.10	-0.94	-9.28%
9	13:32	Mar 26	9.00	10.50	-1.50	-16.65% *
10	14:12	Mar 26	12.51	14.00	-1.49	-11.93%
Average			19.34	20.91	-1.57	-8.14%

Standard Deviation 0.437

Confidence Coefficient (CC) 0.336

Relative Accuracy (as % of RM) 9.9% Limits 10.0%

Avg. Absolute Difference (ppm@7%O<sub>2</sub>) 1.6 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	8:00	Mar 26	16.53	18.00	-1.47	-8.90%
2	8:40	Mar 26	26.47	27.90	-1.43	-5.41%
3	9:20	Mar 26	17.96	19.70	-1.74	-9.66%
4	10:00	Mar 26	17.42	19.50	-2.08	-11.94% *
5	10:46	Mar 26	19.50	21.10	-1.60	-8.20%
6	11:25	Mar 26	19.54	21.60	-2.06	-10.53%
7	12:11	Mar 26	8.41	9.40	-0.99	-11.74%
8	12:52	Mar 26	8.55	9.40	-0.85	-9.94%
9	13:32	Mar 26	7.52	8.90	-1.38	-18.34%
10	14:12	Mar 26	10.13	11.50	-1.37	-13.57%
Average			14.96	16.39	-1.43	-9.57%

Standard Deviation 0.363

Confidence Coefficient (CC) 0.279

Relative Accuracy (as % of RM) 11.4% Limit NA

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

**DESCRIPTION OF INSTALLATION**

3-1

**PROCESS DESCRIPTION**

The South Broward Resource Recovery facility, located in Ft. Lauderdale, 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 O<sub>2</sub> analyzer, programmable logic controller (PLC) and heated probe and sample line. The FF outlet 100 /e systems monitor O<sub>2</sub>, CO<sub>2</sub>, CO, SO<sub>2</sub> and NO<sub>x</sub> 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<sub>x</sub> and CO, a single beam-dual wavelength for SO<sub>2</sub> and an integrated heated zirconium oxide (ZrO<sub>2</sub>) electrochemical cell for O<sub>2</sub>, 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 SO<sub>2</sub>, NO<sub>x</sub>, CO, CO<sub>2</sub> and O<sub>2</sub> 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

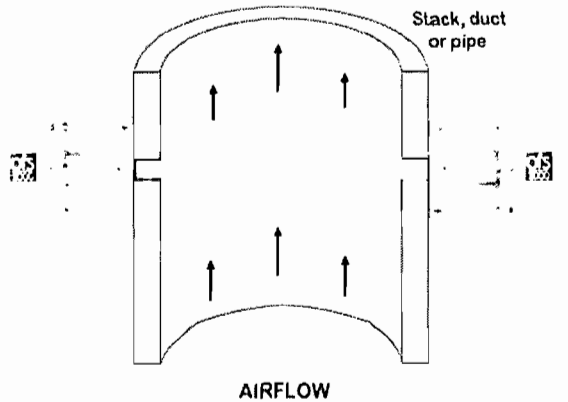
The outlet CEM systems are calibrated daily using the appropriate calibration gases. Calibration gases are injected at the probes to provide a complete assessment of CEM response. The MCS-100 /e performs an automatic zero adjustment to all measurement channels after the calibration is completed and the 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 CO<sub>2</sub> CERM. Stack flow, along with flue gas temperature and CO<sub>2</sub> and H<sub>2</sub>O data from the CEMS, is used to calculate and record mass CO<sub>2</sub> 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	10080543
		#2 FF Outlet		10080544
		#3 FF Outlet		10080542

**DESCRIPTION OF INSTALLATION**

3-4

**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.

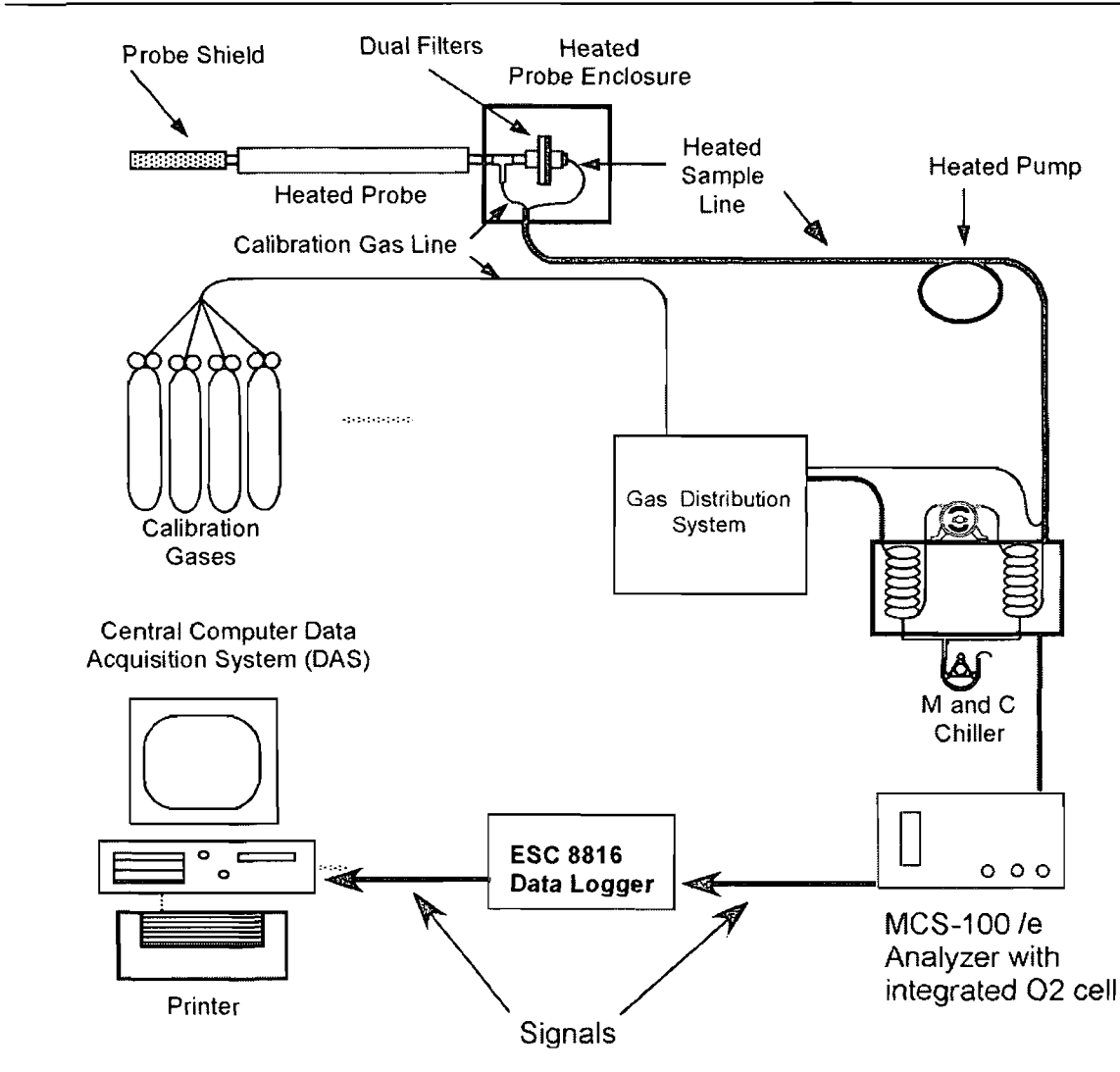


Figure 3-1: General CEMS Schematic

**DESCRIPTION OF INSTALLATION**

3-5

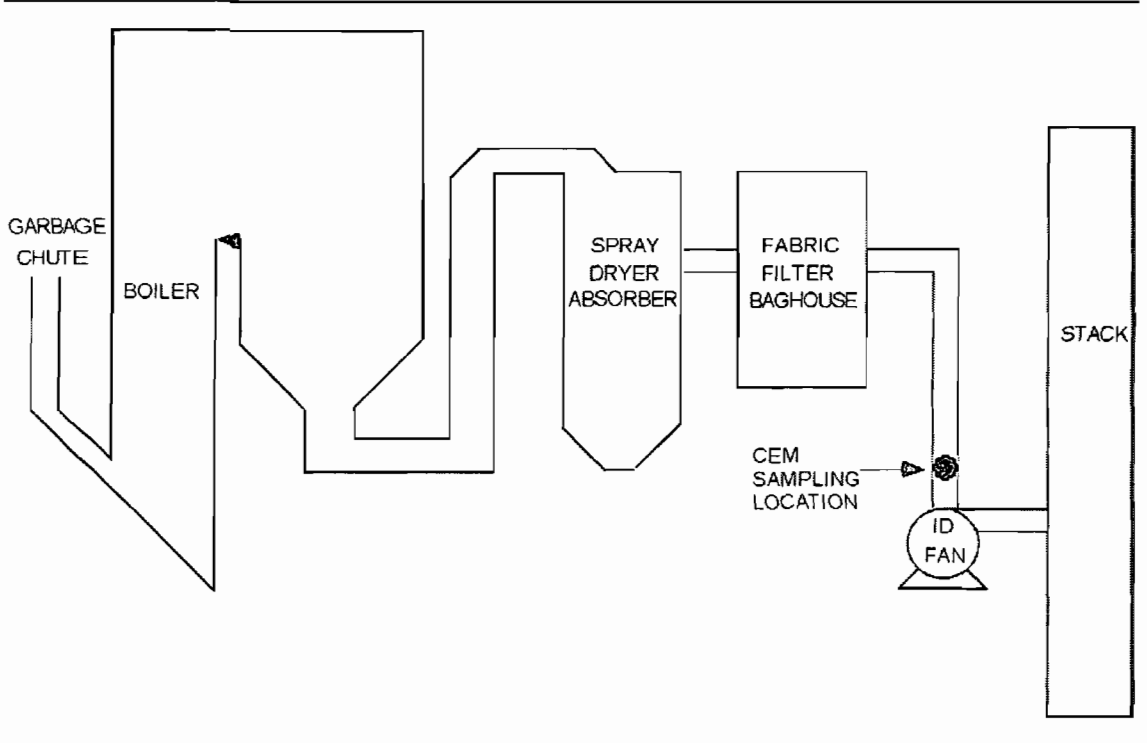


Figure 3-2: Process Flow Diagram and CEM Locations

**DESCRIPTION OF INSTALLATION**

3-6

**DESCRIPTION OF SAMPLING LOCATIONS**

Sampling point locations were determined according to EPA Method 1 and Performance Specification (PS) 2.

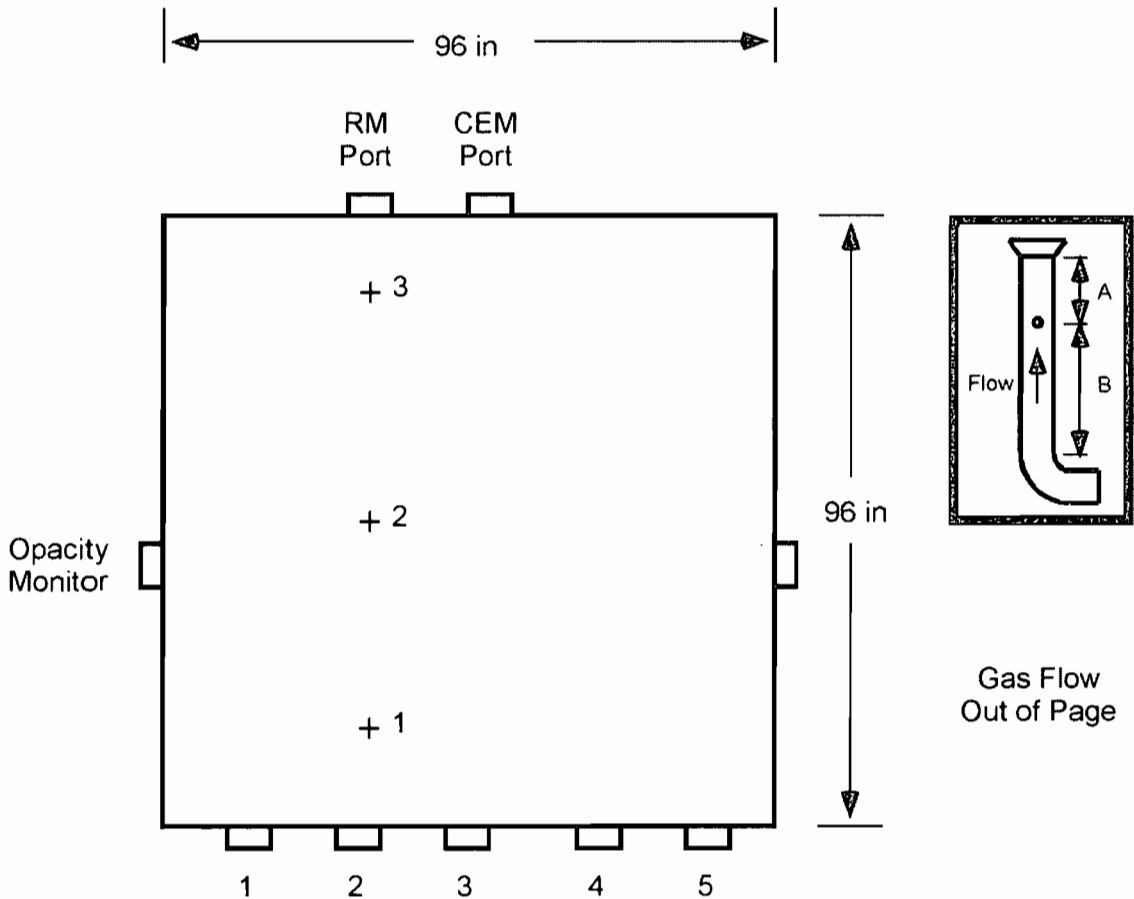
Table 3-2 outlines the sampling point configurations. Figures 3-3 and 3-4, on pages 3-7 and 3-8, illustrate the sampling points and orientation of sampling ports for each of the sources tested in the program.

**Table 3-2:  
 Sampling Points**

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

<sup>1</sup> Moistures were obtained from the concurrent Method 26 or Method 5/29 sample trains.

**DESCRIPTION OF INSTALLATION**



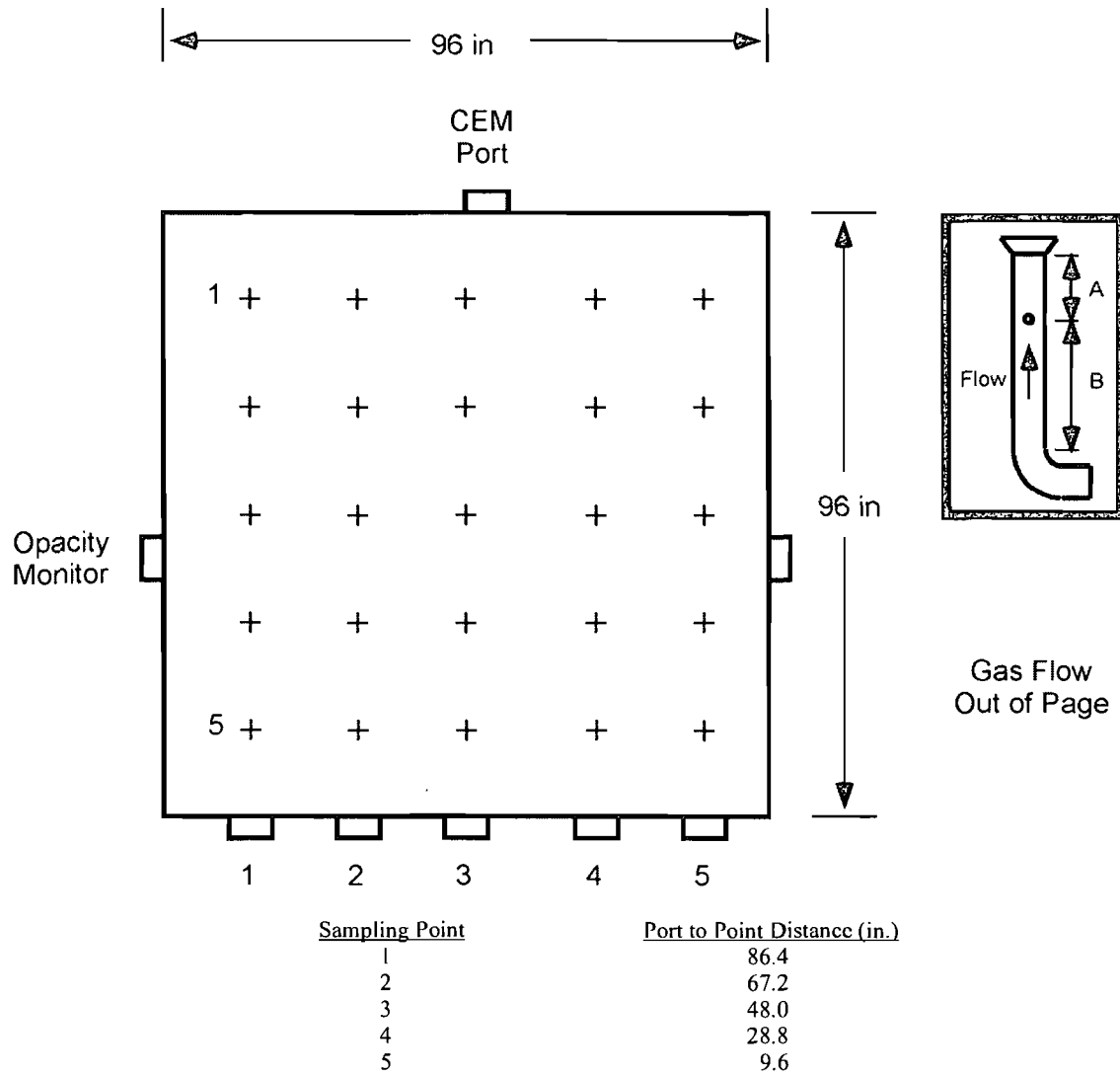
Sampling Point	Port to Point Distance (in.)
1	80
2	48
3	16

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**



Equivalent diameters to upstream disturbance: 2.0      Limit: 2.0  
 Equivalent diameters to downstream disturbance: 0.5      Limit: 0.5

**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)

PS2	"Specifications and Test Procedures for SO <sub>2</sub> and NO <sub>x</sub> Continuous Emission Monitoring Systems in Stationary Sources"
PS3	"Specifications and Test Procedures for O <sub>2</sub> and CO <sub>2</sub> 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 are located 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*



**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

**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: SL

Date: 5/7/13



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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 (SO<sub>2</sub>), Nitrogen Oxides (NO<sub>x</sub>) and Carbon Monoxide (CO)  
 Other Parameters to be Determined from Train O<sub>2</sub> and CO<sub>2</sub> (EPA Method 3A)

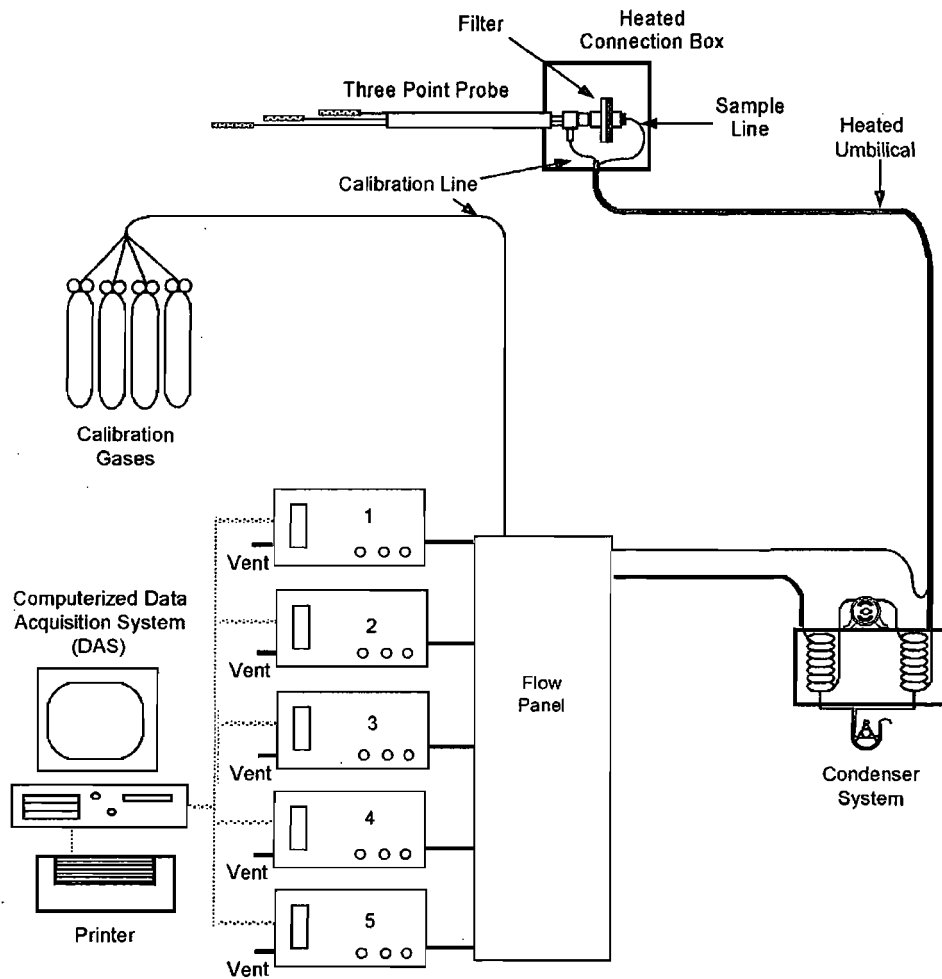
	<u>Standard Method Specification</u>	<u>Actual Specification Used</u>
<b>Pollutant Sampling Information</b>		
Duration of Run	N/A	24 to 27
No. of Sample Traverse Points	N/A	3
Sample Time per Point	N/A	8 to 9 minutes
Sampling Rate	Constant Rate	Constant Rate
<b>Sampling Probe</b>		
Nozzle Material	N/A	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
<b>Particulate Filter</b>		
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
<b>Sample Delivery System</b>		
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
<b>Analyzer Description</b>		
Oxygen (O <sub>2</sub> )	EPA Method 3A (Paramagnetic)	EPA Method 3A (Paramagnetic)
Carbon Dioxide (CO <sub>2</sub> )	EPA Method 3A (NDIR)	EPA Method 3A (NDIR)
Sulfur Dioxide (SO <sub>2</sub> )	EPA Method 6C (UV, NDIR or Fluorescence)	EPA Method 6C (UV Absorption)
Nitrogen Oxides (NO <sub>x</sub> )	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 <sub>3</sub> )	N/A	

## Specification Sheet for

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

	Standard Method Specification	Approximate Specification to be Used
<b>Instrument Span Range</b>		
Oxygen (O <sub>2</sub> )	≤ 1.33 x Expected Maximum	0-20%
Carbon Dioxide (CO <sub>2</sub> )	≤ 1.33 x Expected Maximum	0-20%
Sulfur Dioxide (SO <sub>2</sub> )	≤ 1.33 x Expected Maximum	0-100 ppm
Nitrogen Oxides (NO <sub>x</sub> )	≤ 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 <sub>3</sub> )	N/A	N/A
<b>Data Acquisition</b>		
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
<b>Calibration Gas Specifications</b>		
Oxygen (O <sub>2</sub> )	EPA Protocol 1	EPA Protocol 1
Carbon Dioxide (CO <sub>2</sub> )	EPA Protocol 1	EPA Protocol 1
Sulfur Dioxide (SO <sub>2</sub> )	EPA Protocol 1	EPA Protocol 1
Nitrogen Oxides (NO <sub>x</sub> )	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 <sub>3</sub> )	N/A	

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



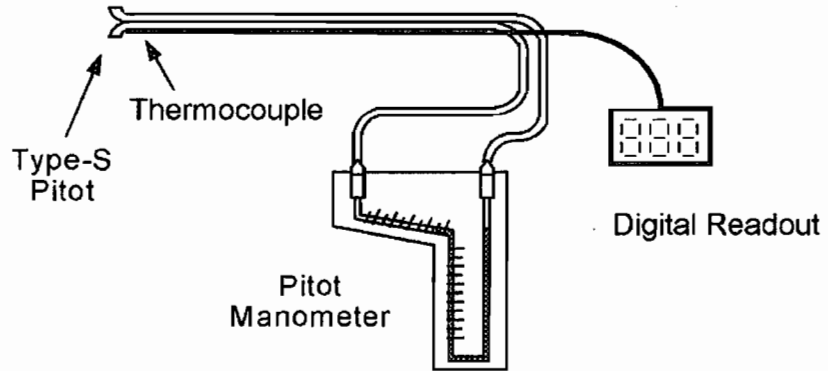
Number	Gas	Monitor	~Range	Calibration Gas Concentrations
1	O <sub>2</sub>	Servomex 1440C	0-18.1	0, 9.52, 18.1
2	CO <sub>2</sub>	Servomex 1440B	0-17.9	0, 9.53, 17.9
3	SO <sub>2</sub>	W.R. 921L	0-90.8	0, 45.2, 90.8
4	NO <sub>x</sub>	T.E.I. 42 iLS	0-448	0, 223.0, 448.0
5	CO	T.E.I. 48I	0-96.3	0, 47.3, 96.3

## 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

	Standard Method Specification	Actual Specification Used
<b>Pollutant Sampling Information</b>		
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
<b>Sampling Probe</b>		
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
<b>Velocity Measuring Equipment</b>		
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
<b>Metering System Console</b>		
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
<b>Filter Description</b>		
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
<b>Other Components</b>		
Description	N/A	N/A
Location	N/A	N/A
Operating Temperature	N/A	N/A

## EPA Method 2 Sampling Train Configuration





## Specification Sheet for

## EPA Method 26A (modified)

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

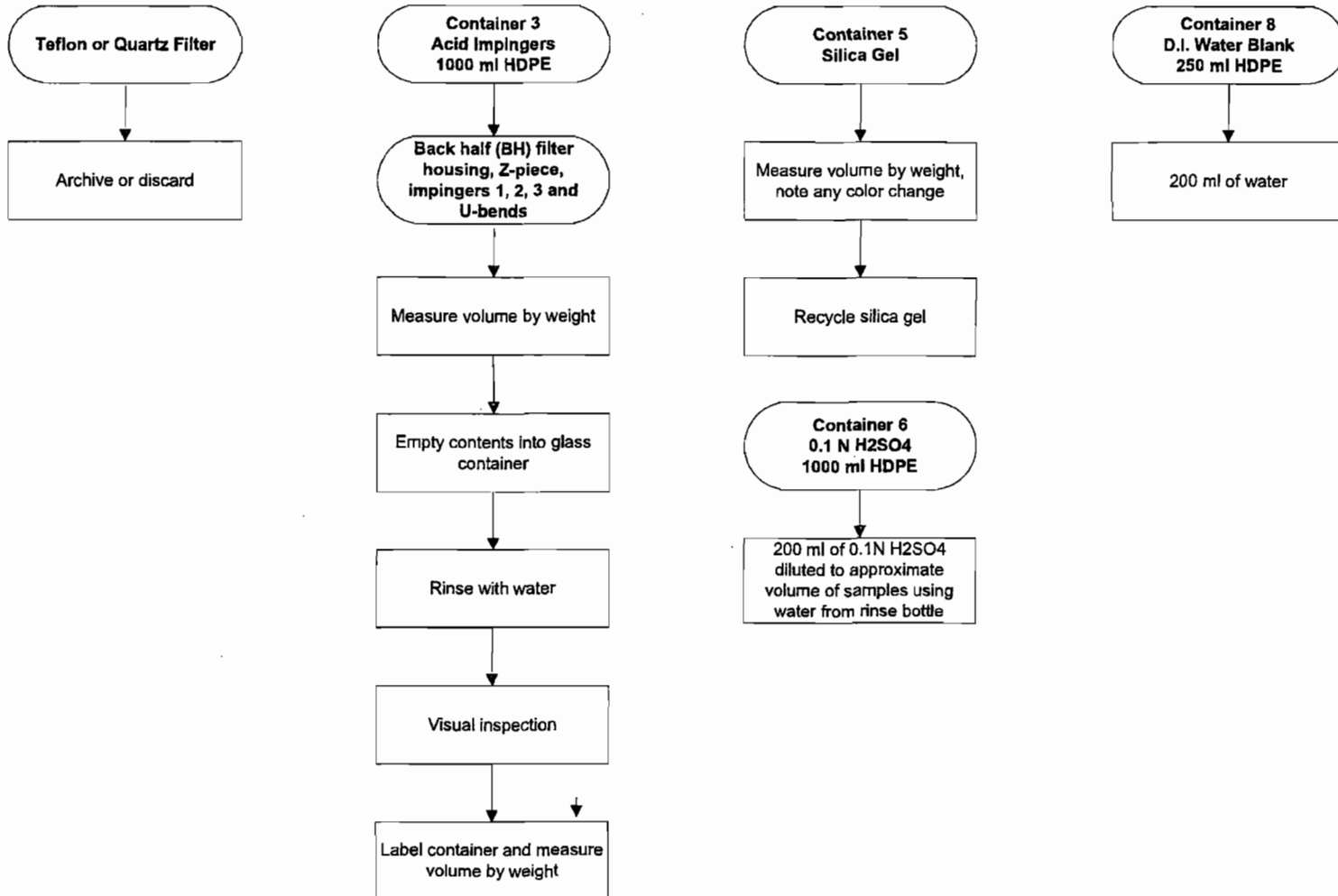
	Standard Method Specification	Actual Specification Used
<b>Pollutant Sampling Information</b>		
Duration of Run	N/A	60 minutes
No. of Sample Traverse Points	N/A	1
Sample Time per Point	N/A	60 minutes
Sampling Rate	Constant Rate (±10%)	Constant Rate (±10%)
<b>Sampling Probe</b>		
Nozzle Material	N/A	None
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
<b>Velocity Measuring Equipment</b>		
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
<b>Metering System Console</b>		
Meter Type	Dry Gas Meter or Critical Orifice	Dry Gas Meter
Meter Accuracy	±2%	±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
<b>Filter Description</b>		
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
<b>Other Components</b>		
Description	N/A	N/A
Location	N/A	N/A
Operating Temperature	N/A	N/A

## Specification Sheet for

## EPA Method 26A (modified)

	Standard Method Specification	Actual Specification Used
<b>Impinger Train Description</b>		
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		
<b>Gas Density Determination</b>		
Sample Collection	N/A	Single Point Integrated
Sample Collection Medium	N/A	Vinyl Bag
Sample Analysis	N/A	CEM
<b>Sample Recovery Information</b>		
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
<b>Analytical Information</b>		
Method 4 H <sub>2</sub> 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  
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

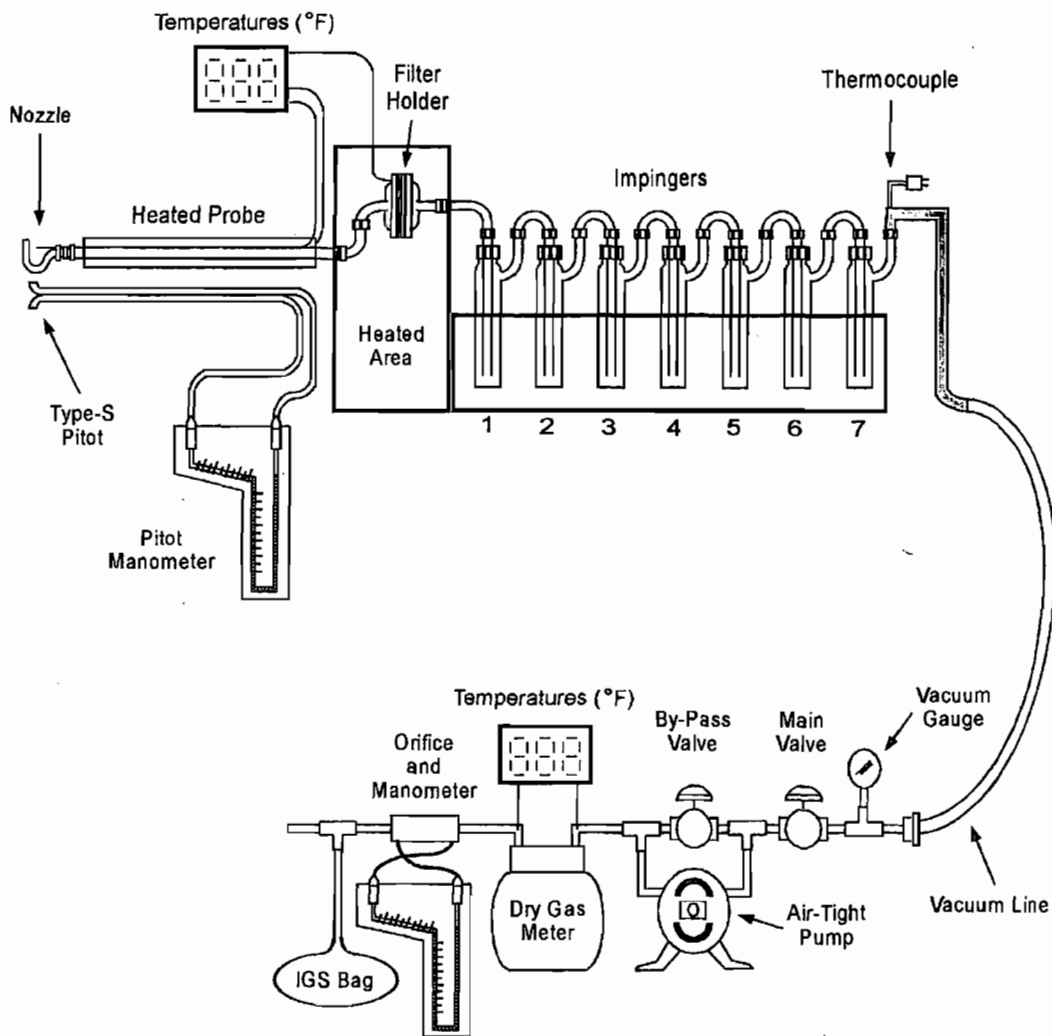
	Standard Method Specification	Actual Specification Used
<b>Pollutant Sampling Information</b>		
Duration of Run	N/A	125 minutes
No. of Sample Traverse Points	N/A	25
Sample Time per Point	N/A	5 minutes
Sampling Rate	Isokinetic (90-110%)	Isokinetic (90-110%)
<b>Sampling Probe</b>		
Nozzle Material	Borosilicate 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
<b>Velocity Measuring Equipment</b>		
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
<b>Metering System Console</b>		
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
<b>Filter Description</b>		
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
<b>Other Components</b>		
Description	N/A	N/A
Location	N/A	N/A
Operating Temperature	N/A	N/A

## Specification Sheet for

## EPA Method 5/29

	<u>Standard Method Specification</u>	<u>Actual Specification Used</u>
<b>Impinger Train Description</b>		
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
<b>Impinger Stem Types</b>		
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
<b>Gas Density Determination</b>		
Sample Collection	Multi-point integrated	Multi-Point Integrated
Sample Collection Medium	Flexible Gas Bag	Vinyl Bag
Sample Analysis	Orsat or Fyrite Analyzer	CEM
<b>Sample Recovery Information</b>		
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
<b>Analytical Information</b>		
Method 4 H <sub>2</sub> 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

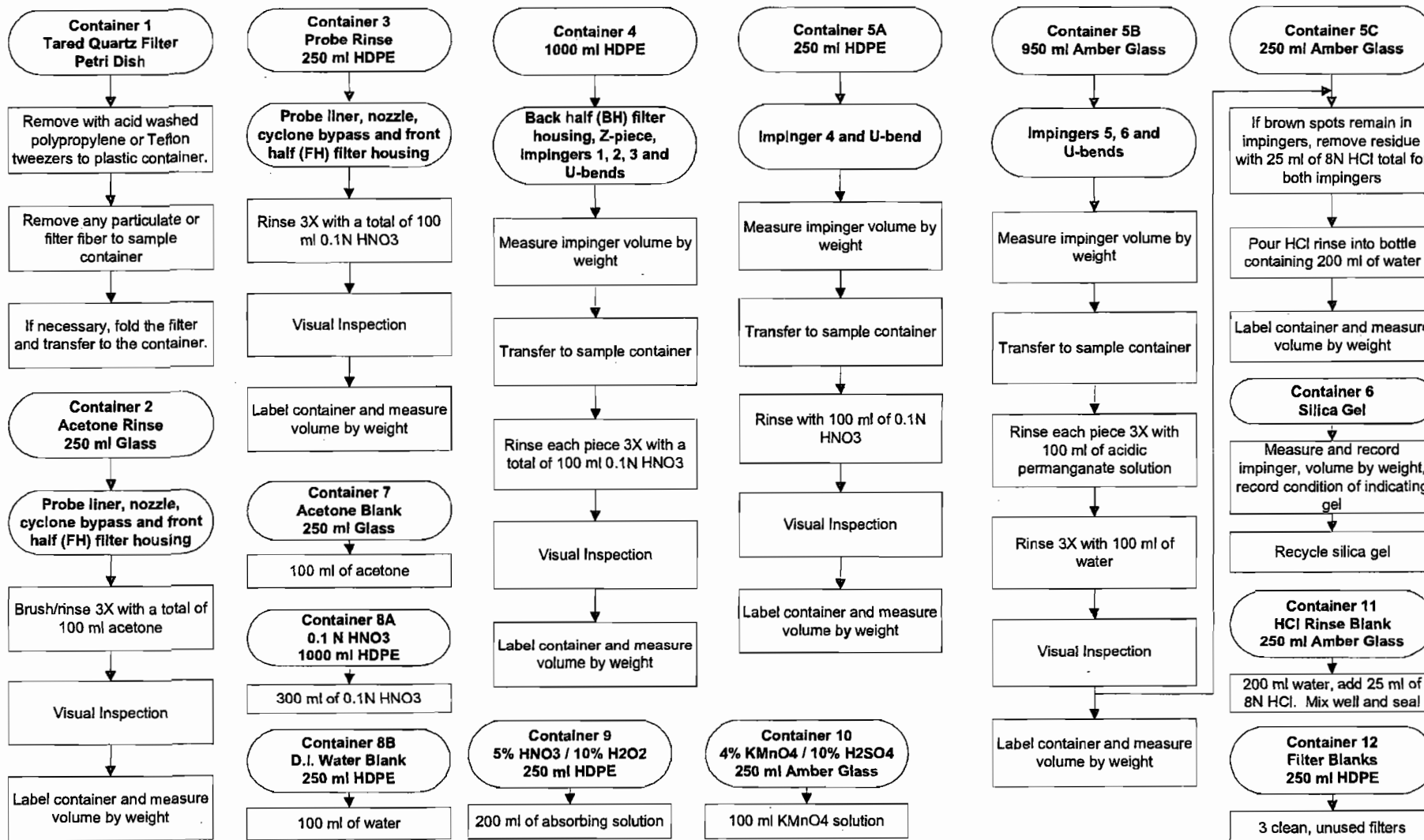


### Impinger Contents

Impinger 1	Empty
Impinger 2	100 ml 5% HNO <sub>3</sub> / 10% H <sub>2</sub> O <sub>2</sub>
Impinger 3	100 ml 5% HNO <sub>3</sub> / 10% H <sub>2</sub> O <sub>2</sub>
Impinger 4	Empty
Impinger 5	100 ml 4% KMnO <sub>4</sub> / 10% H <sub>2</sub> SO <sub>4</sub>
Impinger 6	100 ml 4% KMnO <sub>4</sub> / 10% H <sub>2</sub> SO <sub>4</sub>
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



WHEELABRATOR SOUTH BROWARD, INC.  
FT. LAUDERDALE, FL

Client Reference No: Service Agreement  
CleanAir Project No: 12218-4

**SAMPLE CALCULATIONS**

**B**

*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: SL

Date: 5/7/13





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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 = 223.652 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)**

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

Where:

$C_{mce}$  = average concentration of a calibration series = 223.652 ppmdv  
 In this case the low cal series for channel 1

$C_{ma}$  = concentration of actual calibration gas value = 223.000 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)**

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

Where:

$C_{mce}$  = average concentration of a calibration series = 223.652 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

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

$E$  = calibration error check value = 0.15% **Pass**

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

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

Where:

$C_{mce}$  = average concentration of a calibration series = 223.652 ppmdv  
 in this case the Low cal series for channel 1

$C_{mf}$  = calibration error response concentration for Cal01 = 220.781 ppmdv

Span = instrument span value = 448.000 ppmdv

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

$E_{bias}$  = calibration bias error check value = 0.64% **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)	=	220.781	ppmdv
$C_{mi}$	= calibration error response concentration for Cal00 (initial)	=	219.308	ppmdv
Span	= instrument span value	=	448.000	ppmdv
$I_{drift}$	= limit for system drift error	=	3.0%	
$E_{drift}$	= calibration drift error check value	=	0.33%	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	=	157.253	ppmdv
N	= total number of readings in Run 1	=	27	
C	= average NOX concentration for Run 1	=	160.458	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	=	160.458	ppmdv
$C_{mf}$	= calibration error response concentration for Cal01 (final)	=	220.781	ppmdv
$C_{mi}$	= calibration error response concentration for Cal00 (initial)	=	219.308	ppmdv
$C_{of}$	= calibration error response concentration for Cal01 (final) for zero gas	=	0.179	ppmdv
$C_{oi}$	= calibration error response concentration for Cal00 (initial) for zero gas	=	0.000	ppmdv
$C_{DC}$	= drift corrected average concentration for Run 1	=	162.588	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	=	162.588	ppmdv
$B_w$	= actual water vapor in gas (% v/v)	=	0.000	% 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)	=	162.588	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)	=	162.588	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)	=	1.941E-05	lb/dscf

3. NOX concentration (%dv)

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

Where:

$C$ (ppmdv)	= NOX concentration (ppmdv)	=	162.588	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)	=	0.0163%	%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)	=	1.941E-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 <sup>3</sup> /m <sup>3</sup>
C (mg/dscm)	= NOX concentration (mg/dscm)	=	310.877	mg/dscm

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

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

Where:

C (ppmdv)	= NOX concentration (ppmdv)	=	162.588	ppmdv
x	= oxygen content of corrected gas (%)	=	7.00	%
O <sub>2</sub>	= proportion of oxygen in the gas stream by volume (%)	=	8.940	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
C (ppmdv - O <sub>2</sub> )	= NOX concentration corrected to 7% O2 (ppmdv example)	=	188.965	ppmdv @ 7%O <sub>2</sub>

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

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

Where:

C (ppmdv)	= NOX concentration (ppmdv)	=	162.588	ppmdv
y	= carbon dioxide content of corrected gas (%)	=	12.00	%
CO <sub>2</sub>	= proportion of carbon dioxide in the gas stream by volume (%)	=	10.278	%
C (ppmdv - CO)	= NOX concentration corrected to 12% CO2 (ppmdv example)	=	189.820	ppmdv @ 12%CO <sub>2</sub>

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)	=	1.941E-05	lb/dscf
Q <sub>std</sub>	= volumetric flow rate at standard conditions, dry basis (dscfm)	=	91609.17069	dscfm
60	= conversion factor (min/hr)	=	60	min/hr
E <sub>lb/hr</sub>	= NOX emission rate (lb/hr)	=	106.706	lb/hr

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

Sample data taken from 

Run 1
Channel 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	=	191.400	ppm@7%O2
$C_R$	= NOX value from CleanAir RM Data	=	188.965	ppm@7%O2
D	= NOX value difference between 2 methods	=	-2.435	ppm@7%O2

2. Percent Value Difference (%)

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

Where:

$C_R$	= NOX value from CleanAir RM Data	=	188.965	ppm@7%O2
D	= NOX value difference between 2 methods	=	-2.435	ppm@7%O2
D%	= NOX value difference as a percentage of RM Data	=	-1.3%	

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	=	191.400	ppm@7%O2
N	= total number of runs included in the CEM data	=	9	
$C_{p,avg}$	= Average NOX value from Plant CEM Data	=	194.567	ppm@7%O2

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 South Broward  
 Unit 1 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:

$C_{R,i}$	= NOX value from CleanAir RM Data for ith run	=	188.965	ppm@7%O2
$C_{p,i}$	= NOX value from Plant CEM Data for ith run	=	191.400	ppm@7%O2
N	= total Number of RATA Runs	=	9	
STDEV	= standard deviation of plant CEM data and CleanAir RM data	=	0.228	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	=	0.228	ppm@7%O2
t	= confidence factor	=	2.306	
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	0.175	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	=	188.965	ppm@7%O2
$C_{p,i}$	= NOX value from Plant CEM Data for ith run	=	191.400	ppm@7%O2
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	0.175	ppm@7%O2
RA	= relative accuracy (as a percentage of the reference method)	=	1.421%	
	Limit =		20.000%	

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Unit 1 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	=	188.965	ppm@7%O2
$C_{P,i}$	= NOX value from Plant CEM Data for ith run	=	191.400	ppm@7%O2
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	0.175	
$C_{std}$	= NOX value of applicable standard	=	205.000	ppm@7%O2
RA	= relative accuracy (as percentage of the applicable standard)	=	1.331%	
	Limit =		10.000%	

8. Average Absolute Difference

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

Where:

$C_{R,i}$	= NOX value from CleanAir RM Data for ith run	=	188.965	ppm@7%O2
$C_{P,i}$	= NOX value from Plant CEM Data for ith run	=	191.400	ppm@7%O2
N	= total Number of RATA Runs	=	9	
AAD	= average absolute difference	=	2.554	ppm@7%O2
	Limit =		0.000	ppm@7%O2

9. Average Absolute Difference, including Confidence Coefficient

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

Where:

$C_{R,i}$	= NOX value from CleanAir RM Data for ith run	=	188.965	ppm@7%O2
$C_{P,i}$	= NOX value from Plant CEM Data for ith run	=	191.400	ppm@7%O2
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	0.175	ppm@7%O2
$AAD_{CC}$	= average absolute difference plus confidence coefficient	=	2.729	ppm@7%O2
	Limit =		0.000	ppm@7%O2



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Unit 1 FF Outlet

10. Bias Adjustment factor

$$BAF = 1 + \frac{D_{avg}}{C_{p,avg}} \quad \text{if} \quad CC < D_{avg}$$

Where:

$D_{avg}$	= average NOX value difference (RM data vs CEM data)	=	-2.554	ppm@7%O2	
CC	= confidence coefficient	=	0.175	ppm@7%O2	
$C_{p,avg}$	= Average NOX value from Plant CEM Data	=	194.567	ppm@7%O2	
			-2.554	≤	0.175
	if average difference is higher than confidence coefficient,				
bias test	= bias test fails and must use bias adjustment factor	=	No bias, no BAF needed		
BAF	= bias adjustment factor	=			

**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.

041713 085303

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 = 45.586 ppmdv  
 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 = 45.586 ppmdv  
 In this case the low cal series for channel 2  
 $C_{ma}$  = concentration of actual calibration gas value = 45.100 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 = 45.586 ppmdv  
 In this case the low cal series for channel 2  
 $C_{ma}$  = concentration of actual calibration gas value = 45.100 ppmdv  
 Span = instrument span value = 90.800 ppmdv  
 $l_{cal}$  = limit for calibration error for non-hydrocarbons = 2.0%  
 E = calibration error check value = 0.54% **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 = 45.586 ppmdv  
 in this case the Low cal series for channel 2  
 $C_{mf}$  = calibration error response concentration for Cal01 = 43.660 ppmdv  
 Span = instrument span value = 90.800 ppmdv  
 $l_{bias}$  = limit for system bias error = 5.0%  
 $E_{bias}$  = calibration bias error check value = 2.12% **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)	=	43.660	ppmdv
$C_{mi}$	= calibration error response concentration for Cal00 (initial)	=	44.003	ppmdv
Span	= instrument span value	=	90.800	ppmdv
$l_{drift}$	= limit for system drift error	=	3.0%	
$E_{drift}$	= calibration drift error check value	=	0.38%	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	=	0.421	ppmdv
N	= total number of readings in Run 1	=	27	
C	= average SO2 concentration for Run 1	=	0.195	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	=	0.195	ppmdv
$C_{mf}$	= calibration error response concentration for Cal01 (final)	=	43.660	ppmdv
$C_{mi}$	= calibration error response concentration for Cal00 (initial)	=	44.003	ppmdv
$C_{of}$	= calibration error response concentration for Cal01 (final) for zero gas	=	-0.056	ppmdv
$C_{oi}$	= calibration error response concentration for Cal00 (initial) for zero gas	=	-0.095	ppmdv
$C_{DC}$	= drift corrected average concentration for Run 1	=	0.278	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.

041713 085303

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	=	0.278	ppmdv
$B_w$	= actual water vapor in gas (% v/v)	=	0.000	% 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)	=	0.278	ppmdv

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)	=	0.278	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)	=	4.627E-08	lb/dscf

3. SO2 concentration (%dv)

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

Where:

$C$ (ppmdv)	= SO2 concentration (ppmdv)	=	0.278	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)	=	0.0000%	%dv

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)	=	4.627E-08	lb/dscf
k <sub>2</sub>	= conversion factor from lb to mg	=	453515	mg/lb
35.31	= conversion factor from dscf to dscm	=	35.31	ft <sup>3</sup> /m <sup>3</sup>
C (mg/dscm)	= SO2 concentration (mg/dscm)	=	0.741	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)	=	0.278	ppmdv
x	= oxygen content of corrected gas (%)	=	7.00	%
O <sub>2</sub>	= proportion of oxygen in the gas stream by volume (%)	=	8.940	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
C (ppmdv - O <sub>2</sub> )	= SO2 concentration corrected to 7% O2 (ppmdv example)	=	0.323	ppmdv @ 7%O <sub>2</sub>

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)	=	0.278	ppmdv
y	= carbon dioxide content of corrected gas (%)	=	12.00	%
CO <sub>2</sub>	= proportion of carbon dioxide in the gas stream by volume (%)	=	10.278	%
C (ppmdv - CO)	= SO2 concentration corrected to 12% CO2 (ppmdv example)	=	0.325	ppmdv @ 12%CO <sub>2</sub>

7. SO2 emission rate (lb/hr)

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

Where:

C (lb/dscf)	= SO2 concentration (lb/dscf)	=	4.627E-08	lb/dscf
Q <sub>std</sub>	= volumetric flow rate at standard conditions, dry basis (dscfm)	=	91609.17069	dscfm
60	= conversion factor (min/hr)	=	60	min/hr
E <sub>lb/hr</sub>	= SO2 emission rate (lb/hr)	=	0.254	lb/hr

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

Sample data taken from 

Run 1
Channel 2

  
 and 

Channel 2
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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.

041713 085334

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	=	0.200	ppm@7%O2
$C_R$	= SO2 value from CleanAir RM Data	=	0.323	ppm@7%O2
D	= SO2 value difference between 2 methods	=	0.123	ppm@7%O2

2. Percent Value Difference (%)

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

Where:

$C_R$	= SO2 value from CleanAir RM Data	=	0.323	ppm@7%O2
D	= SO2 value difference between 2 methods	=	0.123	ppm@7%O2
$D\%$	= SO2 value difference as a percentage of RM Data	=	38.2%	

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	=	i=1 0.200	ppm@7%O2
N	= total number of runs included in the CEM data	=	9	
$C_{p,avg}$	= Average SO2 value from Plant CEM Data	=	0.589	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	=	0.323	ppm@7%O2
$C_{p,i}$	= SO2 value from Plant CEM Data for ith run	=	0.200	ppm@7%O2
N	= total Number of RATA Runs	=	9	
STDEV	= standard deviation of plant CEM data and CleanAir RM data	=	0.142	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	=	0.142	ppm@7%O2
t	= confidence factor	=	2.306	
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	0.109	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	=	0.323	ppm@7%O2
$C_{p,i}$	= SO2 value from Plant CEM Data for ith run	=	0.200	ppm@7%O2
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	0.109	ppm@7%O2
RA	= relative accuracy (as a percentage of the reference method)	=	39.488%	
	Limit	=	20.000%	

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:

$C_{R,i}$	= SO2 value from CleanAir RM Data for ith run	=	0.323	ppm@7%O2
$C_{P,i}$	= SO2 value from Plant CEM Data for ith run	=	0.200	ppm@7%O2
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	0.109	
$C_{std}$	= SO2 value of applicable standard	=	29.000	ppm@7%O2
RA	= relative accuracy (as percentage of the applicable standard)	=	1.080%	
	Limit	=	20.000%	

8. Average Absolute Difference

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

Where:

$C_{R,i}$	= SO2 value from CleanAir RM Data for ith run	=	0.323	ppm@7%O2
$C_{P,i}$	= SO2 value from Plant CEM Data for ith run	=	0.200	ppm@7%O2
N	= total Number of RATA Runs	=	9	
AAD	= average absolute difference	=	0.206	ppm@7%O2
	Limit	=	0.000	ppm@7%O2

9. Average Absolute Difference, including Confidence Coefficient

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

Where:

$C_{R,i}$	= SO2 value from CleanAir RM Data for ith run	=	0.323	ppm@7%O2
$C_{P,i}$	= SO2 value from Plant CEM Data for ith run	=	0.200	ppm@7%O2
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	0.109	ppm@7%O2
$AAD_{CC}$	= average absolute difference plus confidence coefficient	=	0.315	ppm@7%O2
	Limit	=	0.000	ppm@7%O2



10. Bias Adjustment factor

$$BAF = 1 + \frac{D_{avg}}{C_{p,avg}} \quad \text{if} \quad CC < D_{avg}$$

Where:

$D_{avg}$	= average SO2 value difference (RM data vs CEM data)	=	0.205	ppm@7%O2
CC	= confidence coefficient	=	0.109	ppm@7%O2
$C_{p,avg}$	= Average SO2 value from Plant CEM Data	=	0.589	ppm@7%O2

			0.205	>	0.109
					RATA shows bias, use bias adjustment
bias test	= bias test fails and must use bias adjustment factor	=			factor
BAF	= bias adjustment factor	=	1.347		

**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.

041713 085348

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 = 48.033 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 = 48.033 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 = 48.033 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 = 0.76% **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 = 48.033 ppmdv  
 in this case the Low cal series for channel 3

$C_{mf}$  = calibration error response concentration for Cal01 = 47.879 ppmdv

Span = instrument span value = 96.300 ppmdv

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

$E_{Bias}$  = calibration bias error check value = 0.16% **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)	=	47.879	ppmdv
$C_{mi}$	= calibration error response concentration for Cal00 (Initial)	=	47.759	ppmdv
Span	= instrument span value	=	96.300	ppmdv
$I_{drift}$	= limit for system drift error	=	3.0%	
$E_{drift}$	= calibration drift error check value	=	0.12%	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	=	14.905	ppmdv
N	= total number of readings in Run 1	=	27	
C	= average CO concentration for Run 1	=	18.066	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	=	18.066	ppmdv
$C_{mf}$	= calibration error response concentration for Cal01 (final)	=	47.879	ppmdv
$C_{mi}$	= calibration error response concentration for Cal00 (initial)	=	47.759	ppmdv
$C_{of}$	= calibration error response concentration for Cal01 (final) for zero gas	=	0.061	ppmdv
$C_{oi}$	= calibration error response concentration for Cal00 (initial) for zero gas	=	0.033	ppmdv
$C_{DC}$	= drift corrected average concentration for Run 1	=	17.841	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.

041713 085348

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	=	17.841	ppmdv
$B_w$	= actual water vapor in gas (% v/v)	=	0.000	% v/v
100	= conversion factor to change percentage to decimal	=	100	
$k_1$	= ppm/% to ppm conversion factor for diluent gases	=	1	
$C$ (ppmdv)	= CO concentration (ppmdv)	=	17.841	ppmdv

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:

$C$ (ppmdv)	= CO concentration (ppmdv)	=	17.841	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
$C$ (lb/dscf)	= CO concentration (lb/dscf)	=	1.297E-06	lb/dscf

3. CO concentration (%dv)

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

Where:

$C$ (ppmdv)	= CO concentration (ppmdv)	=	17.841	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)	=	0.0018%	%dv

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)	=	1.297E-06	lb/dscf
k <sub>2</sub>	= conversion factor from lb to mg	=	453515	mg/lb
35.31	= conversion factor from dscf to dscm	=	35.31	ft <sup>3</sup> /m <sup>3</sup>
C (mg/dscm)	= CO concentration (mg/dscm)	=	20.770	mg/dscm

5. CO concentration corrected to 7% O<sub>2</sub> (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)	=	17.841	ppmdv
x	= oxygen content of corrected gas (%)	=	7.00	%
O <sub>2</sub>	= proportion of oxygen in the gas stream by volume (%)	=	8.940	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
C (ppmdv - O <sub>2</sub> )	= CO concentration corrected to 7% O <sub>2</sub> (ppmdv example)	=	20.735	ppmdv @ 7%O <sub>2</sub>

6. CO concentration corrected to 12% CO<sub>2</sub> (ppmdv example)

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

Where:

C (ppmdv)	= CO concentration (ppmdv)	=	17.841	ppmdv
y	= carbon dioxide content of corrected gas (%)	=	12.00	%
CO <sub>2</sub>	= proportion of carbon dioxide in the gas stream by volume (%)	=	10.278	%
C (ppmdv - CO)	= CO concentration corrected to 12% CO <sub>2</sub> (ppmdv example)	=	20.829	ppmdv @ 12%CO <sub>2</sub>

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)	=	1.297E-06	lb/dscf
Q <sub>std</sub>	= volumetric flow rate at standard conditions, dry basis (dscfm)	=	91609.17069	dscfm
60	= conversion factor (min/hr)	=	60	min/hr
E <sub>lb/hr</sub>	= CO emission rate (lb/hr)	=	7.129	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.

041713 085410

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	=	23.000	ppm@7%O2
$C_R$	= CO value from CleanAir RM Data	=	20.735	ppm@7%O2
D	= CO value difference between 2 methods	=	-2.265	ppm@7%O2

2. Percent Value Difference (%)

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

Where:

$C_R$	= CO value from CleanAir RM Data	=	20.735	ppm@7%O2
D	= CO value difference between 2 methods	=	-2.265	ppm@7%O2
$D\%$	= CO value difference as a percentage of RM Data	=	-10.9%	

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	=	23.000	ppm@7%O2
N	= total number of runs included in the CEM data	=	9	
$C_{p,avg}$	= Average CO value from Plant CEM Data	=	9.867	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:

$C_{R,i}$	= CO value from CleanAir RM Data for ith run	=	20.735	ppm@7%O2
$C_{P,i}$	= CO value from Plant CEM Data for ith run	=	23.000	ppm@7%O2
N	= total Number of RATA Runs	=	9	
STDEV	= standard deviation of plant CEM data and CleanAir RM data	=	0.252	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	=	0.252	ppm@7%O2
t	= confidence factor	=	2.306	
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	0.194	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	=	20.735	ppm@7%O2
$C_{P,i}$	= CO value from Plant CEM Data for ith run	=	23.000	ppm@7%O2
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	0.194	ppm@7%O2
RA	= relative accuracy (as a percentage of the reference method)	=	18.429%	
	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	=	20.735	ppm@7%O2
$C_{p,i}$	= CO value from Plant CEM Data for ith run	=	23.000	ppm@7%O2
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	0.194	
$C_{std}$	= CO value of applicable standard	=	0.000	ppm@7%O2
RA	= relative accuracy (as percentage of the applicable standard)	=	#DIV/0!	
	Limit =		5.000%	

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	=	20.735	ppm@7%O2
$C_{p,i}$	= CO value from Plant CEM Data for ith run	=	23.000	ppm@7%O2
N	= total Number of RATA Runs	=	9	
AAD	= average absolute difference	=	1.372	ppm@7%O2
	Limit =		5.000	ppm@7%O2

9. Average Absolute Difference, including Confidence Coefficient

$$AAD_{cc} = \frac{\sum_{i=1}^N abs|C_{R,i} - C_{p,i}|}{N} + CC$$

Where:

$C_{R,i}$	= CO value from CleanAir RM Data for ith run	=	20.735	ppm@7%O2
$C_{p,i}$	= CO value from Plant CEM Data for ith run	=	23.000	ppm@7%O2
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	0.194	ppm@7%O2
$AAD_{cc}$	= average absolute difference plus confidence coefficient	=	1.566	ppm@7%O2
	Limit =		0.000	ppm@7%O2



Wheelabrator  
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10. Bias Adjustment factor

$$BAF = 1 + \frac{D_{avg}}{C_{p,avg}} \quad \text{if} \quad CC < D_{avg}$$

Where:

$D_{avg}$	= average CO value difference (RM data vs CEM data)	=	-1.372	ppm@7%O2
CC	= confidence coefficient	=	0.194	ppm@7%O2
$C_{p,avg}$	= Average CO value from Plant CEM Data	=	9.867	ppm@7%O2

-1.372 ≤ 0.194

bias test	= if average difference is higher than confidence coefficient,	=	No bias, no BAF needed
BAF	= bias test fails and must use bias adjustment factor	=	
	= bias adjustment factor	=	

**CEM Field 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.

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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 = 9.514 %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 = 9.514 %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 = 9.514 %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 = 0.09% 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 = 9.514 %dv  
 in this case the Low cal series for channel 5  
 $C_{mf}$  = calibration error response concentration for Cal01 = 9.524 %dv  
 Span = instrument span value = 17.900 %dv  
 $l_{bias}$  = limit for system bias error = 5.0%  
 $E_{bias}$  = calibration bias error check value = 0.06% 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)	=	9.524	%dv
$C_{mi}$	= calibration error response concentration for Cal00 (initial)	=	9.468	%dv
Span	= instrument span value	=	17.900	%dv
$l_{drift}$	= limit for system drift error	=	3.0%	
$E_{drift}$	= calibration drift error check value	=	0.31%	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	=	10.101	%dv
N	= total number of readings in Run 1	=	27	
C	= average CO2 concentration for Run 1	=	10.245	%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	=	10.245	%dv
$C_{mf}$	= calibration error response concentration for Cal01 (final)	=	9.524	%dv
$C_{mi}$	= calibration error response concentration for Cal00 (Initial)	=	9.468	%dv
$C_{of}$	= calibration error response concentration for Cal01 (final) for zero gas	=	-0.022	%dv
$C_{oi}$	= calibration error response concentration for Cal00 (initial) for zero gas	=	-0.044	%dv
$C_{DC}$	= drift corrected average concentration for Run 1	=	10.278	%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.

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1. CO2 concentration (ppmdv)

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

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

Where:

$C_{DC}$	= drift corrected average concentration	=	10.278	%dv
$B_w$	= actual water vapor in gas (% v/v)	=	0.000	% v/v
100	= conversion factor to change percentage to decimal	=	100	
$k_1$	= ppm/% to ppm conversion factor for diluent gases	=	10000	

$C(ppmdv)$	= CO2 concentration (ppmdv)	=	102784.697	ppmdv
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2. CO2 concentration (lb/dscf)

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

Where:

$C(ppmdv)$	= CO2 concentration (ppmdv)	=	102784.697	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

$C(lb/dscf)$	= CO2 concentration (lb/dscf)	=	1.174E-02	lb/dscf
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3. CO2 concentration (%dv)

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

Where:

$C(ppmdv)$	= CO2 concentration (ppmdv)	=	102784.697	ppmdv
100	= conversion factor from decimal to percentage	=	1.00E+02	
$10^6$	= conversion factor from decimal to ppm	=	1.00E+06	

$C(%dv)$	= CO2 concentration (%dv)	=	10.2785%	%dv
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4. CO2 concentration (mg/dscm)

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

Where:

C (lb/dscf)	= CO2 concentration (lb/dscf)	=	1.174E-02	lb/dscf
k <sub>2</sub>	= conversion factor from lb to mg	=	453515	mg/lb
35.31	= conversion factor from dscf to dscm	=	35.31	ft <sup>3</sup> /m <sup>3</sup>
C (mg/dscm)	= CO2 concentration (mg/dscm)	=	188005.236	mg/dscm

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

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

Where:

C (ppmdv)	= CO2 concentration (ppmdv)	=	102784.697	ppmdv
x	= oxygen content of corrected gas (%)	=	7.00	%
O <sub>2</sub>	= proportion of oxygen in the gas stream by volume (%)	=	8.940	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
C (ppmdv - O <sub>2</sub> )	= CO2 concentration corrected to 7% O2 (ppmdv example)	=	119459.470	ppmdv @ 7%O <sub>2</sub>

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

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

Where:

C (ppmdv)	= CO2 concentration (ppmdv)	=	102784.697	ppmdv
y	= carbon dioxide content of corrected gas (%)	=	12.00	%
CO <sub>2</sub>	= proportion of carbon dioxide in the gas stream by volume (%)	=	10.278	%
C (ppmdv - CO)	= CO2 concentration corrected to 12% CO2 (ppmdv example)	=	120000.000	ppmdv @ 12%CO <sub>2</sub>

7. CO2 emission rate (lb/hr)

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

Where:

C (lb/dscf)	= CO2 concentration (lb/dscf)	=	1.174E-02	lb/dscf
Q <sub>std</sub>	= volumetric flow rate at standard conditions, dry basis (dscfm)	=	91609.17069	dscfm
60	= conversion factor (min/hr)	=	60	min/hr
E <sub>lb/hr</sub>	= CO2 emission rate (lb/hr)	=	64531.390	lb/hr

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

Sample data taken from 

Run 1
-------

  
 and 

Channel 5
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*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. 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	=	71840.700	lb/hr
$C_R$	= CO2 value from CleanAir RM Data	=	64531.390	lb/hr
$D$	= CO2 value difference between 2 methods	=	-7309.310	lb/hr

2. Percent Value Difference (%)

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

Where:

$C_R$	= CO2 value from CleanAir RM Data	=	64531.390	lb/hr
$D$	= CO2 value difference between 2 methods	=	-7309.310	lb/hr
$D\%$	= CO2 value difference as a percentage of RM Data	=	-11.3%	

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	=	71840.700	lb/hr
$N$	= total number of runs included in the CEM data	=	9	
$C_{p,avg}$	= Average CO2 value from Plant CEM Data	=	69745.811	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	=	64531.390	lb/hr
$C_{p,i}$	= CO2 value from Plant CEM Data for ith run	=	71840.700	lb/hr
N	= total Number of RATA Runs	=	9	
STDEV	= standard deviation of plant CEM data and CleanAir RM data	=	1160.884	lb/hr

5. Confidence Coefficient

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

Where:

STDEV	= standard deviation of plant CEM data and CleanAir RM data	=	1160.884	lb/hr
t	= confidence factor	=	2.306	
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	892.333	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	=	64531.390	lb/hr
$C_{p,i}$	= CO2 value from Plant CEM Data for ith run	=	71840.700	lb/hr
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	892.333	lb/hr
RA	= relative accuracy (as a percentage of the reference method)	=	11.987%	
	Limit =		20.000%	

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:

$C_{R,i}$	= CO2 value from CleanAir RM Data for ith run	=	64531.390	lb/hr
$C_{P,i}$	= CO2 value from Plant CEM Data for ith run	=	71840.700	lb/hr
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	892.333	
$C_{std}$	= CO2 value of applicable standard	=	0.000	lb/hr
RA	= relative accuracy (as percentage of the applicable standard)	=	#DIV/0!	
		Limit =	5.000%	

8. Average Absolute Difference

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

Where:

$C_{R,i}$	= CO2 value from CleanAir RM Data for ith run	=	64531.390	lb/hr
$C_{P,i}$	= CO2 value from Plant CEM Data for ith run	=	71840.700	lb/hr
N	= total Number of RATA Runs	=	9	
AAD	= average absolute difference	=	6668.539	lb/hr
		Limit =	0.000	lb/hr

9. Average Absolute Difference, including Confidence Coefficient

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

Where:

$C_{R,i}$	= CO2 value from CleanAir RM Data for ith run	=	64531.390	lb/hr
$C_{P,i}$	= CO2 value from Plant CEM Data for ith run	=	71840.700	lb/hr
N	= total Number of RATA Runs	=	9	
CC	= confidence coefficient	=	892.333	lb/hr
$AAD_{CC}$	= average absolute difference plus confidence coefficient	=	7560.871	lb/hr
		Limit =	0.000	lb/hr



Wheelabrator

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FF Outlet

10. Bias Adjustment factor

$$BAF = 1 + \frac{D_{avg}}{C_{p,avg}} \quad \text{if} \quad CC < D_{avg}$$

Where:

$D_{avg}$	= average CO2 value difference (RM data vs CEM data)	=	-6668.539	lb/hr	
CC	= confidence coefficient	=	892.333	lb/hr	
$C_{p,avg}$	= Average CO2 value from Plant CEM Data	=	69745.811	lb/hr	
			-6668.539	≤	892.333
	if average difference is higher than confidence coefficient,				
bias test	= bias test fails and must use bias adjustment factor	=	No bias, no BAF needed		
BAF	= bias adjustment factor	=			

**PARAMETERS**

C

*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: SL

Date: 5/7/13



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

**Continuous Emissions Monitoring Parameters**

Run Number	1				
Date (2013)	Mar 25				
Start Time	8:00				
End Time	8:27				
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)	162.59	0.28	17.84	8.94	10.28
Concentration (ppmdv)	162.59	0.28	17.84		102784.70
Concentration (%dv)	0.016	0.000	0.002	8.940	10.278
Concentration @7%O2 (ppm)	188.96	0.32	20.74		119459.47
Mass Rate (lb/hr)	106.71	0.25	7.13		64531.39

Run Number	2				
Date (2013)	Mar 25				
Start Time	8:38				
End Time	9:05				
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)	157.56	0.22	12.03	9.39	9.97
Concentration (ppmdv)	157.56	0.22	12.03		99666.92
Concentration (%dv)				9.389	9.967
Concentration @7%O2 (ppm)	190.25	0.26	14.52		120347.78
Mass Rate (lb/hr)	104.12	0.20	4.84		63009.92

Run Number	3				
Date (2013)	Mar 25				
Start Time	9:22				
End Time	9:49				
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)	157.17	0.16	7.88	9.03	10.20
Concentration (ppmdv)	157.17	0.16	7.88		101986.13
Concentration (%dv)				9.028	10.199
Concentration @7%O2 (ppm)	184.02	0.19	9.23		119410.02
Mass Rate (lb/hr)	98.46	0.14	3.01		61117.60

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

**Continuous Emissions Monitoring Parameters**

Run Number	4				
Date (2013)	Mar 25				
Start Time	10:01				
End Time	10:28				
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)	172.95	0.87	6.03	7.88	11.16
Concentration (ppmdv)	172.95	0.87	6.03		111638.61
Concentration (%dv)				7.883	11.164
Concentration @7%O2 (ppm)	184.67	0.93	6.44		119207.54
Mass Rate (lb/hr)	104.00	0.73	2.21		64223.46

Run Number	5				
Date (2013)	Mar 25				
Start Time	10:53				
End Time	11:20				
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)	179.16	3.20	4.86	8.01	11.13
Concentration (ppmdv)	179.16	3.20	4.86		111263.66
Concentration (%dv)				8.008	11.126
Concentration @7%O2 (ppm)	193.17	3.45	5.24		119965.81
Mass Rate (lb/hr)	107.20	2.67	1.77		63684.82

Run Number	6				
Date (2013)	Mar 25				
Start Time	11:33				
End Time	12:00				
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)	170.11	0.76	7.80	8.44	10.68
Concentration (ppmdv)	170.11	0.76	7.80		106750.79
Concentration (%dv)				8.443	10.675
Concentration @7%O2 (ppm)	189.81	0.85	8.70		119116.22
Mass Rate (lb/hr)	106.56	0.67	2.97		63968.97

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

**Continuous Emissions Monitoring Parameters**

Run Number	7				
Date (2013)	Mar 25				
Start Time	12:26				
End Time	12:53				
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)	177.47	2.15	6.14	8.32	10.88
Concentration (ppmdv)	177.47	2.15	6.14		108770.22
Concentration (%dv)				8.325	10.877
Concentration @7%O2 (ppm)	196.16	2.38	6.79		120229.17
Mass Rate (lb/hr)	103.94	1.76	2.19		60939.89

Run Number	8				
Date (2013)	Mar 25				
Start Time	13:07				
End Time	13:34				
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)	183.27	0.56	6.88	8.28	10.86
Concentration (ppmdv)	183.27	0.56	6.88		108610.43
Concentration (%dv)				8.282	10.861
Concentration @7%O2 (ppm)	201.89	0.61	7.58		119642.38
Mass Rate (lb/hr)	113.90	0.48	2.60		64571.59

**Wheelabrator  
Clean Air Project No. 12218  
South Broward  
FF Outlet**

**Continuous Emissions Monitoring Parameters**

Run Number	9				
Date (2013)	Mar 25				
Start Time	13:47				
End Time	14:14				
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)	180.04	0.37	7.45	8.34	10.76
Concentration (ppmdv)	180.04	0.37	7.45		107642.34
Concentration (%dv)				8.335	10.764
Concentration @7%O2 (ppm)	199.17	0.40	8.24		119079.23
Mass Rate (lb/hr)	112.22	0.32	2.83		64182.35

Run Number	10				
Date (2013)	Mar 25				
Start Time	14:26				
End Time	14:53				
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)	169.62	0.99	8.14	9.25	10.13
Concentration (ppmdv)	169.62	0.99	8.14		101275.00
Concentration (%dv)				9.251	10.128
Concentration @7%O2 (ppm)	202.39	1.18	9.71		120841.59
Mass Rate (lb/hr)	107.56	0.87	3.14		61434.44

Wheelabrator South 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 25	Mar 25	Mar 25	Mar 25	
Start Time (approx.)	08:11	08:36	09:55	00:00	
Stop Time (approx.)	08:20	08:48	10:12	00:00	
<b>Sampling Conditions</b>					
C <sub>p</sub> Pitot tube coefficient	0.8190	0.8190	0.8190	0.8190	
P <sub>g</sub> Static pressure (in. H <sub>2</sub> O)	-10.0000	-10.0000	-8.3000	-8.3000	
A <sub>s</sub> Sample location area (ft <sup>2</sup> )	64.0000	64.0000	64.0000	64.0000	
P <sub>bar</sub> Barometric pressure (in. Hg)	29.70	29.70	29.70	29.70	29.7000
O <sub>2</sub> Oxygen (dry volume %)	8.9402	9.3886	9.0282	7.8826	8.8099
CO <sub>2</sub> Carbon dioxide (dry volume %)	10.2785	9.9667	10.1986	11.1639	10.4019
N <sub>2</sub> +CO Nitrogen plus carbon monoxide (dry volume %)	80.7813	80.6447	80.7731	80.9536	80.7882
T <sub>s</sub> Sample temperature (°F)	302.0400	303.9200	305.6400	304.3200	303.9800
<b>Flow Results</b>					
P <sub>s</sub> Sample gas pressure, absolute (in. Hg)	28.9647	28.9647	29.0897	29.0897	29.0272
P <sub>v</sub> Vapor pressure, actual (in. Hg)	28.9647	28.9647	29.0897	29.0897	29.0272
B <sub>wo</sub> Moisture measured in sample (% by volume)	23.3041	23.3041	24.9640	24.9640	24.1341
B <sub>ws</sub> Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	100.0000	100.0000
B <sub>w</sub> Actual water vapor in gas (% by volume)	23.3041	23.3041	24.9640	24.9640	24.1341
√ΔP Velocity head (√in. H <sub>2</sub> O)	0.6735	0.6787	0.6547	0.6289	0.6590
M <sub>d</sub> MW of sample gas, dry (lb/lb-mole)	30.0022	29.9702	29.9929	30.1015	30.0167
M <sub>s</sub> MW of sample gas, wet (lb/lb-mole)	27.2052	27.1807	26.9990	27.0805	27.1163
V <sub>s</sub> Velocity of sample (ft/sec)	46.3737	46.8120	45.2620	43.3749	45.4557
Q <sub>a</sub> Volumetric flow rate, actual (acfm)	178,075	179,758	173,806	166,560	174,550
Q <sub>s</sub> Volumetric flow rate, standard (scfm)	119,445	120,277	116,534	111,868	117,031
Q <sub>std</sub> Volumetric flow rate, dry standard (dscfm)	91,609	92,247	87,442	83,941	88,810
Q <sub>std7</sub> Volumetric flow rate, dry std@7%O <sub>2</sub> (dscfm)	78,822	76,395	74,683	78,612	77,128
Q <sub>a</sub> Volumetric flow rate, actual (acf/hr)	10,684,508	10,785,492	10,428,367	9,993,579	10,472,987
Q <sub>s</sub> Volumetric flow rate, standard (scf/hr)	7,166,683	7,216,615	6,992,032	6,712,086	7,021,854
Q <sub>std</sub> Volumetric flow rate, dry standard (dscf/hr)	5,496,550	5,534,846	5,246,538	5,036,478	5,328,603
Q <sub>a</sub> Volumetric flow rate, actual (m <sup>3</sup> /hr)	302,592	305,451	295,338	283,024	296,601
Q <sub>s</sub> Volumetric flow rate, standard (m <sup>3</sup> /hr)	202,965	204,379	198,018	190,090	198,863
Q <sub>std</sub> Volumetric flow rate, dry standard (dry m <sup>3</sup> /hr)	155,666	156,750	148,585	142,636	150,909
Q <sub>std7</sub> Volumetric flow rate, dry std@7%O <sub>2</sub> (dry m <sup>3</sup> /hr)	133,937	129,814	126,904	133,580	131,059
Q <sub>s</sub> Volumetric flow rate, normal (Nm <sup>3</sup> /hr)	189,126	190,444	184,517	177,130	185,304
Q <sub>std</sub> Volumetric flow rate, dry normal (Nm <sup>3</sup> /hr)	145,052	146,063	138,454	132,911	140,620
Q <sub>std7</sub> Volumetric flow rate, dry normal @7%O <sub>2</sub> (Nm <sup>3</sup> /hr)	124,805	120,963	118,251	124,472	122,123

**Comments:**

Average includes 4 runs.

Moisture obtained from coinciding Method 26A sample train

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Wheelabrator South 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 25	Mar 25	Mar 25	
Start Time (approx.)		11:01	11:35	12:32	
Stop Time (approx.)		11:10	11:50	12:48	
<b>Sampling Conditions</b>					
C <sub>p</sub>	Pitot tube coefficient	0.8190	0.8190	0.8190	
P <sub>g</sub>	Static pressure (in. H <sub>2</sub> O)	-8.4000	-8.4000	-8.4000	
A <sub>s</sub>	Sample location area (ft <sup>2</sup> )	64.0000	64.0000	64.0000	
P <sub>bar</sub>	Barometric pressure (in. Hg)	29.70	29.70	29.70	29.7000
O <sub>2</sub>	Oxygen (dry volume %)	8.0083	8.4430	8.3248	8.2587
CO <sub>2</sub>	Carbon dioxide (dry volume %)	11.1264	10.6751	10.8770	10.8928
N <sub>2</sub> +CO	Nitrogen plus carbon monoxide (dry volume %)	80.8653	80.8820	80.7982	80.8485
T <sub>s</sub>	Sample temperature (°F)	308.9200	305.3600	305.5600	306.6133
<b>Flow Results</b>					
P <sub>s</sub>	Sample gas pressure, absolute (in. Hg)	29.0824	29.0824	29.0824	29.0824
P <sub>v</sub>	Vapor pressure, actual (in. Hg)	29.0824	29.0824	29.0824	29.0824
B <sub>wo</sub>	Moisture measured in sample (% by volume)	23.3298	23.3298	23.4290	23.3629
B <sub>ws</sub>	Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	100.0000
B <sub>w</sub>	Actual water vapor in gas (% by volume)	23.3298	23.3298	23.4290	23.3629
√ΔP	Velocity head (√in. H <sub>2</sub> O)	0.6166	0.6435	0.6026	0.6209
M <sub>d</sub>	MW of sample gas, dry (lb/lb-mole)	30.1006	30.0457	30.0733	30.0732
M <sub>s</sub>	MW of sample gas, wet (lb/lb-mole)	27.2775	27.2355	27.2447	27.2526
V <sub>s</sub>	Velocity of sample (ft/sec)	42.5011	44.2895	41.4734	42.7547
Q <sub>a</sub>	Volumetric flow rate, actual (acfm)	163,204	170,072	159,258	164,178
Q <sub>s</sub>	Volumetric flow rate, standard (scfm)	108,931	114,043	106,764	109,913
Q <sub>std</sub>	Volumetric flow rate, dry standard (dscfm)	83,518	87,437	81,750	84,235
Q <sub>std7</sub>	Volumetric flow rate, dry std@7%O <sub>2</sub> (dscfm)	77,460	78,360	73,959	76,593
Q <sub>a</sub>	Volumetric flow rate, actual (acf/hr)	9,792,261	10,204,301	9,555,479	9,850,680
Q <sub>s</sub>	Volumetric flow rate, standard (scf/hr)	6,535,874	6,842,572	6,405,825	6,594,757
Q <sub>std</sub>	Volumetric flow rate, dry standard (dscf/hr)	5,011,067	5,246,213	4,905,003	5,054,094
Q <sub>a</sub>	Volumetric flow rate, actual (m <sup>3</sup> /hr)	277,323	288,992	270,617	278,977
Q <sub>s</sub>	Volumetric flow rate, standard (m <sup>3</sup> /hr)	185,100	193,786	181,417	186,767
Q <sub>std</sub>	Volumetric flow rate, dry standard (dry m <sup>3</sup> /hr)	141,916	148,576	138,913	143,135
Q <sub>std7</sub>	Volumetric flow rate, dry std@7%O <sub>2</sub> (dry m <sup>3</sup> /hr)	131,622	133,152	125,673	130,149
Q <sub>s</sub>	Volumetric flow rate, normal (Nm <sup>3</sup> /hr)	172,479	180,573	169,047	174,033
Q <sub>std</sub>	Volumetric flow rate, dry normal (Nm <sup>3</sup> /hr)	132,240	138,446	129,441	133,376
Q <sub>std7</sub>	Volumetric flow rate, dry normal @7%O <sub>2</sub> (Nm <sup>3</sup> /hr)	122,648	124,074	117,104	121,275

**Comments:**

Average includes 3 runs.

Moisture obtained from coinciding Method 26A or Method 5/29 sample train.

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Wheelabrator South 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 25	Mar 25	Mar 25		
Start Time (approx.)	13:09	13:48	14:29		
Stop Time (approx.)	13:23	14:03	14:46		
<b>Sampling Conditions</b>					
C <sub>p</sub>	Pitot tube coefficient	0.8190	0.8190	0.8190	
P <sub>g</sub>	Static pressure (in. H <sub>2</sub> O)	-8.4000	-8.4000	-8.4000	
A <sub>s</sub>	Sample location area (ft <sup>2</sup> )	64.0000	64.0000	64.0000	
P <sub>bar</sub>	Barometric pressure (in. Hg)	29.70	29.70	29.70	<b>29.7000</b>
O <sub>2</sub>	Oxygen (dry volume %)	8.2817	8.3350	9.2507	<b>8.6225</b>
CO <sub>2</sub>	Carbon dioxide (dry volume %)	10.8610	10.7642	10.1275	<b>10.5843</b>
N <sub>2</sub> +CO	Nitrogen plus carbon monoxide (dry volume %)	80.8573	80.9007	80.6218	<b>80.7933</b>
T <sub>s</sub>	Sample temperature (°F)	307.8800	306.4000	313.0000	<b>309.0933</b>
<b>Flow Results</b>					
P <sub>s</sub>	Sample gas pressure, absolute (in. Hg)	29.0824	29.0824	29.0824	<b>29.0824</b>
P <sub>v</sub>	Vapor pressure, actual (in. Hg)	29.0824	29.0824	29.0824	<b>29.0824</b>
B <sub>wo</sub>	Moisture measured in sample (% by volume)	23.4290	23.4290	23.4290	<b>23.4290</b>
B <sub>ws</sub>	Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	<b>100.0000</b>
B <sub>w</sub>	Actual water vapor in gas (% by volume)	23.4290	23.4290	23.4290	<b>23.4290</b>
√ΔP	Velocity head (√in. H <sub>2</sub> O)	0.6404	0.6415	0.6549	<b>0.6456</b>
M <sub>d</sub>	MW of sample gas, dry (lb/lb-mole)	30.0690	30.0557	29.9904	<b>30.0384</b>
M <sub>s</sub>	MW of sample gas, wet (lb/lb-mole)	27.2414	27.2312	27.1812	<b>27.2179</b>
V <sub>s</sub>	Velocity of sample (ft/sec)	44.1431	44.1862	45.3407	<b>44.5567</b>
Q <sub>a</sub>	Volumetric flow rate, actual (acfm)	169,509	169,675	174,108	<b>171,098</b>
Q <sub>s</sub>	Volumetric flow rate, standard (scfm)	113,293	113,623	115,596	<b>114,170</b>
Q <sub>std</sub>	Volumetric flow rate, dry standard (dscfm)	86,749	87,002	88,513	<b>87,421</b>
Q <sub>std7</sub>	Volumetric flow rate, dry std@7%O <sub>2</sub> (dscfm)	78,750	78,646	74,181	<b>77,192</b>
Q <sub>a</sub>	Volumetric flow rate, actual (acf/hr)	10,170,559	10,180,509	10,446,496	<b>10,265,855</b>
Q <sub>s</sub>	Volumetric flow rate, standard (scf/hr)	6,797,565	6,817,354	6,935,744	<b>6,850,221</b>
Q <sub>std</sub>	Volumetric flow rate, dry standard (dscf/hr)	5,204,962	5,220,115	5,310,767	<b>5,245,281</b>
Q <sub>a</sub>	Volumetric flow rate, actual (m <sup>3</sup> /hr)	288,036	288,318	295,851	<b>290,735</b>
Q <sub>s</sub>	Volumetric flow rate, standard (m <sup>3</sup> /hr)	192,511	193,071	196,424	<b>194,002</b>
Q <sub>std</sub>	Volumetric flow rate, dry standard (dry m <sup>3</sup> /hr)	147,408	147,837	150,404	<b>148,549</b>
Q <sub>std7</sub>	Volumetric flow rate, dry std@7%O <sub>2</sub> (dry m <sup>3</sup> /hr)	133,815	133,638	126,051	<b>131,168</b>
Q <sub>s</sub>	Volumetric flow rate, normal (Nm <sup>3</sup> /hr)	179,385	179,908	183,032	<b>180,775</b>
Q <sub>std</sub>	Volumetric flow rate, dry normal (Nm <sup>3</sup> /hr)	137,357	137,757	140,149	<b>138,421</b>
Q <sub>std7</sub>	Volumetric flow rate, dry normal @7%O <sub>2</sub> (Nm <sup>3</sup> /hr)	124,692	124,526	117,456	<b>122,225</b>

**Comments:**

Average includes 3 runs.

Moisture obtained from coinciding Method 5/29 sample train.

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Wheelabrator South 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 25	Mar 25	Mar 25	
Start Time (approx.)		08:00	09:23	10:54	
Stop Time (approx.)		09:00	10:34	11:54	
<b>Sampling Conditions</b>					
Y <sub>d</sub>	Dry gas meter correction factor	0.9879	0.9879	0.9879	
P <sub>g</sub>	Static pressure (in. H <sub>2</sub> O)	-10.0000	-8.3000	-8.4000	
A <sub>s</sub>	Sample location area (ft <sup>2</sup> )	64.0000	64.0000	64.0000	
P <sub>bar</sub>	Barometric pressure (in. Hg)	29.70	29.70	29.70	<b>29.7000</b>
O <sub>2</sub>	Oxygen (dry volume %)	9.2100	7.7600	8.5300	<b>8.5000</b>
CO <sub>2</sub>	Carbon dioxide (dry volume %)	9.8600	11.2500	10.6400	<b>10.5833</b>
N <sub>2</sub> +CO	Nitrogen plus carbon monoxide (dry volume %)	80.9300	80.9900	80.8300	<b>80.9167</b>
V <sub>lc</sub>	Total Liquid collected (ml)	254.70	279.40	255.60	
V <sub>m</sub>	Volume metered, meter conditions (ft <sup>3</sup> )	40.9100	41.1800	41.5600	
T <sub>m</sub>	Dry gas meter temperature (°F)	78.7500	81.2917	86.1667	
T <sub>s</sub>	Sample temperature (°F)	302.0833	303.1667	305.7500	<b>303.6667</b>
ΔH	Meter box orifice pressure drop (in. H <sub>2</sub> O)	1.5000	1.5000	1.5000	
θ	Total sampling time (min)	60.0	60.0	60.0	
<b>Flow Results</b>					
V <sub>wstd</sub>	Volume of water collected (ft <sup>3</sup> )	11.9862	13.1486	12.0285	<b>12.3878</b>
V <sub>mstd</sub>	Volume metered, standard (dscf)	39.4475	39.5214	39.5301	<b>39.4997</b>
P <sub>s</sub>	Sample gas pressure, absolute (in. Hg)	28.9647	29.0897	29.0824	<b>29.0456</b>
P <sub>v</sub>	Vapor pressure, actual (in. Hg)	28.9647	29.0897	29.0824	<b>29.0456</b>
B <sub>wc</sub>	Moisture measured in sample (% by volume)	23.3041	24.9640	23.3298	<b>23.8660</b>
B <sub>ws</sub>	Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	<b>100.0000</b>
B <sub>w</sub>	Actual water vapor in gas (% by volume)	23.3041	24.9640	23.3298	<b>23.8660</b>
M <sub>d</sub>	MW of sample gas, dry (lb/lb-mole)	29.9460	30.1104	30.0436	<b>30.0333</b>
M <sub>s</sub>	MW of sample gas, wet (lb/lb-mole)	27.1621	27.0872	27.2339	<b>27.1610</b>

Comments:

Average includes 3 runs.

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Wheelabrator South 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 25	Mar 26	Mar 26	
Start Time (approx.)		12:26	07:51	10:25	
Stop Time (approx.)		14:40	10:03	12:36	
<b>Sampling Conditions</b>					
Y <sub>d</sub>	Dry gas meter correction factor	1.0039	1.0039	1.0039	
C <sub>p</sub>	Pitot tube coefficient	0.8130	0.8130	0.8130	
P <sub>g</sub>	Static pressure (in. H <sub>2</sub> O)	-8.4000	-7.8000	-7.5000	
A <sub>s</sub>	Sample location area (ft <sup>2</sup> )	64.0000	64.0000	64.0000	
P <sub>bar</sub>	Barometric pressure (in. Hg)	29.70	29.90	29.90	<b>29.8333</b>
D <sub>n</sub>	Nozzle diameter (in.)	0.2760	0.2725	0.2725	
O <sub>2</sub>	Oxygen (dry volume %)	8.2500	8.3200	7.7300	<b>8.1000</b>
CO <sub>2</sub>	Carbon dioxide (dry volume %)	10.9300	10.7300	11.1300	<b>10.9300</b>
N <sub>2</sub> +CO	Nitrogen plus carbon monoxide (dry volume %)	80.8200	80.9500	81.1400	<b>80.9700</b>
V <sub>lc</sub>	Total Liquid collected (ml)	500.10	395.60	410.10	
V <sub>m</sub>	Volume metered, meter conditions (ft <sup>3</sup> )	80.0900	67.2070	66.7200	
T <sub>m</sub>	Dry gas meter temperature (°F)	89.3400	66.0600	75.4600	
T <sub>s</sub>	Sample temperature (°F)	311.3600	301.9200	301.5600	<b>304.9467</b>
ΔH	Meter box orifice pressure drop (in. H <sub>2</sub> O)	1.2448	0.8956	0.8684	
θ	Total sampling time (min)	125.0	125.0	125.0	
<b>Flow Results</b>					
V <sub>wstd</sub>	Volume of water collected (ft <sup>3</sup> )	23.5347	18.6169	19.2993	<b>20.4836</b>
V <sub>mstd</sub>	Volume metered, standard (dscf)	76.9164	67.7946	66.1174	<b>70.2761</b>
P <sub>s</sub>	Sample gas pressure, absolute (in. Hg)	29.0824	29.3265	29.3485	<b>29.2525</b>
P <sub>v</sub>	Vapor pressure, actual (in. Hg)	29.0824	29.3265	29.3485	<b>29.2525</b>
B <sub>wc</sub>	Moisture measured in sample (% by volume)	23.4290	21.5445	22.5943	<b>22.5226</b>
B <sub>wb</sub>	Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	<b>100.0000</b>
B <sub>w</sub>	Actual water vapor in gas (% by volume)	23.4290	21.5445	22.5943	<b>22.5226</b>
√ΔP	Velocity head (√in. H <sub>2</sub> O)	0.6686	0.6148	0.5922	<b>0.6252</b>
M <sub>d</sub>	MW of sample gas, dry (lb/lb-mole)	30.0788	30.0496	30.0900	<b>30.0728</b>
M <sub>s</sub>	MW of sample gas, wet (lb/lb-mole)	27.2489	27.4536	27.3583	<b>27.3536</b>
V <sub>s</sub>	Velocity of sample (ft/sec)	45.8458	41.5664	40.0888	<b>42.5003</b>
%I	Isokinetic sampling (%)	105.7448	100.8184	103.2045	<b>103.2559</b>
Q <sub>a</sub>	Volumetric flow rate, actual (acfm)	176,048	159,615	153,941	<b>163,201</b>
Q <sub>s</sub>	Volumetric flow rate, standard (scfm)	117,132	108,417	104,691	<b>110,080</b>
Q <sub>std</sub>	Volumetric flow rate, dry standard (dscfm)	89,689	85,059	81,037	<b>85,262</b>
Q <sub>std7</sub>	Volumetric flow rate, dry std@7%O <sub>2</sub> (dscfm)	81,624	76,981	76,781	<b>78,462</b>
Q <sub>a</sub>	Volumetric flow rate, actual (acf/hr)	10,562,870	9,576,907	9,236,460	<b>9,792,079</b>
Q <sub>s</sub>	Volumetric flow rate, standard (scf/hr)	7,027,918	6,505,011	6,281,453	<b>6,604,794</b>
Q <sub>std</sub>	Volumetric flow rate, dry standard (dscf/hr)	5,381,346	5,103,538	4,862,203	<b>5,115,696</b>
Q <sub>a</sub>	Volumetric flow rate, actual (m <sup>3</sup> /hr)	299,147	271,224	261,582	<b>277,317</b>
Q <sub>s</sub>	Volumetric flow rate, standard (m <sup>3</sup> /hr)	199,035	184,226	177,894	<b>187,052</b>
Q <sub>std</sub>	Volumetric flow rate, dry standard (dry m <sup>3</sup> /hr)	152,403	144,535	137,700	<b>144,880</b>
Q <sub>std7</sub>	Volumetric flow rate, dry std@7%O <sub>2</sub> (dry m <sup>3</sup> /hr)	138,698	130,810	130,469	<b>133,325</b>
Q <sub>s</sub>	Volumetric flow rate, normal (Nm <sup>3</sup> /hr)	185,464	171,665	165,765	<b>174,298</b>
Q <sub>std</sub>	Volumetric flow rate, dry normal (Nm <sup>3</sup> /hr)	142,012	134,681	128,312	<b>135,001</b>
Q <sub>std7</sub>	Volumetric flow rate, dry normal @7%O <sub>2</sub> (Nm <sup>3</sup> /hr)	129,241	121,891	121,573	<b>124,235</b>

**Comments:**

Average includes 3 runs.

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

**Continuous Emissions Monitoring Parameters**

Run Number	1				
Date (2013)	Mar 27				
Start Time	7:48				
End Time	8:15				
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)	155.97	11.56	10.70	8.59	10.60
Concentration (ppmdv)	155.97	11.56	10.70		105958.23
Concentration (%dv)	0.016	0.001	0.001	8.592	10.596
Concentration @7%O2 (ppm)	176.14	13.05	12.09		119664.18
Mass Rate (lb/hr)	97.20	10.03	4.06		63171.63

Run Number	2				
Date (2013)	Mar 27				
Start Time	8:27				
End Time	8:54				
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)	160.10	10.51	10.46	8.34	10.97
Concentration (ppmdv)	160.10	10.51	10.46		109731.18
Concentration (%dv)				8.337	10.973
Concentration @7%O2 (ppm)	177.13	11.62	11.58		121405.66
Mass Rate (lb/hr)	96.36	8.81	3.83		63181.89

Run Number	3				
Date (2013)	Mar 27				
Start Time	9:08				
End Time	9:35				
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)	144.44	10.50	9.02	8.85	10.38
Concentration (ppmdv)	144.44	10.50	9.02		103768.97
Concentration (%dv)				8.847	10.377
Concentration @7%O2 (ppm)	166.57	12.11	10.40		119668.82
Mass Rate (lb/hr)	90.43	9.16	3.44		62150.48

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

**Continuous Emissions Monitoring Parameters**

Run Number	4				
Date (2013)	Mar 27				
Start Time	9:47				
End Time	10:14				
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)	137.28	13.33	12.40	8.95	10.39
Concentration (ppmdv)	137.28	13.33	12.40		103927.33
Concentration (%dv)				8.953	10.393
Concentration @7%O2 (ppm)	159.73	15.52	14.43		120920.81
Mass Rate (lb/hr)	85.50	11.57	4.70		61921.66

Run Number	5				
Date (2013)	Mar 27				
Start Time	10:27				
End Time	10:54				
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)	142.77	12.05	22.71	9.38	10.00
Concentration (ppmdv)	142.77	12.05	22.71		100034.44
Concentration (%dv)				9.383	10.003
Concentration @7%O2 (ppm)	172.31	14.54	27.41		120733.15
Mass Rate (lb/hr)	100.35	11.79	9.72		67261.77

Run Number	6				
Date (2013)	Mar 27				
Start Time	11:06				
End Time	11:33				
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)	131.95	3.58	26.71	9.74	9.59
Concentration (ppmdv)	131.95	3.58	26.71		95866.23
Concentration (%dv)				9.744	9.587
Concentration @7%O2 (ppm)	164.40	4.47	33.28		119442.46
Mass Rate (lb/hr)	91.64	3.47	11.29		63688.01

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

**Continuous Emissions Monitoring Parameters**

Run Number	7				
Date (2013)	Mar 27				
Start Time	12:07				
End Time	12:34				
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)	145.63	5.33	11.09	9.11	10.22
Concentration (ppmdv)	145.63	5.33	11.09		102176.72
Concentration (%dv)				9.110	10.218
Concentration @7%O2 (ppm)	171.69	6.29	13.08		120458.20
Mass Rate (lb/hr)	89.38	4.56	4.14		59989.39

Run Number	8				
Date (2013)	Mar 27				
Start Time	12:47				
End Time	13:14				
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)	143.10	4.86	9.93	9.12	10.18
Concentration (ppmdv)	143.10	4.86	9.93		101834.03
Concentration (%dv)				9.116	10.183
Concentration @7%O2 (ppm)	168.79	5.74	11.71		120116.39
Mass Rate (lb/hr)	88.59	4.19	3.74		60309.94

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

**Continuous Emissions Monitoring Parameters**

Run Number	9				
Date (2013)	Mar 27				
Start Time	13:26				
End Time	13:53				
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)	133.14	3.71	14.35	9.31	10.06
Concentration (ppmdv)	133.14	3.71	14.35		100589.38
Concentration (%dv)				9.310	10.059
Concentration @7%O2 (ppm)	159.67	4.45	17.21		120634.80
Mass Rate (lb/hr)	81.82	3.18	5.37		59135.59

Run Number	10				
Date (2013)	Mar 27				
Start Time	14:04				
End Time	14:31				
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)	154.44	3.66	9.49	8.75	10.64
Concentration (ppmdv)	154.44	3.66	9.49		106430.14
Concentration (%dv)				8.755	10.643
Concentration @7%O2 (ppm)	176.76	4.18	10.87		121807.72
Mass Rate (lb/hr)	95.08	3.13	3.56		62681.91



Wheelabrator South 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	2	3	4	Average	
Date (2013)	Mar 27	Mar 27	Mar 27	Mar 27		
Start Time (approx.)	07:51	08:28	09:10	09:45		
Stop Time (approx.)	07:59	08:36	09:20	09:55		
<b>Sampling Conditions</b>						
C <sub>p</sub>	Pitot tube coefficient	0.8190	0.8190	0.8190	0.8190	
P <sub>g</sub>	Static pressure (in. H <sub>2</sub> O)	-11.2000	-11.2000	-11.1000	-11.1000	
A <sub>s</sub>	Sample location area (ft <sup>2</sup> )	64.0000	64.0000	64.0000	64.0000	
P <sub>bar</sub>	Barometric pressure (in. Hg)	30.10	30.10	30.10	30.10	
O <sub>2</sub>	Oxygen (dry volume %)	8.5921	8.3366	8.8468	8.9534	<b>8.6822</b>
CO <sub>2</sub>	Carbon dioxide (dry volume %)	10.5958	10.9731	10.3769	10.3927	<b>10.5846</b>
N <sub>2</sub> +CO	Nitrogen plus carbon monoxide (dry volume %)	80.8121	80.6902	80.7763	80.6538	<b>80.7331</b>
T <sub>s</sub>	Sample temperature (°F)	298.4800	300.3200	297.2000	296.6000	<b>298.1500</b>
<b>Flow Results</b>						
P <sub>s</sub>	Sample gas pressure, absolute (in. Hg)	29.2765	29.2765	29.2838	29.2838	<b>29.2801</b>
P <sub>v</sub>	Vapor pressure, actual (in. Hg)	29.2765	29.2765	29.2838	29.2838	<b>29.2801</b>
B <sub>wo</sub>	Moisture measured in sample (% by volume)	20.1938	20.1938	20.5447	20.5447	<b>20.3692</b>
B <sub>ws</sub>	Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	100.0000	<b>100.0000</b>
B <sub>w</sub>	Actual water vapor in gas (% by volume)	20.1938	20.1938	20.5447	20.5447	<b>20.3692</b>
√ΔP	Velocity head (√in. H <sub>2</sub> O)	0.6144	0.5946	0.6187	0.6153	<b>0.6107</b>
M <sub>d</sub>	MW of sample gas, dry (lb/lb-mole)	30.0390	30.0892	30.0142	30.0210	<b>30.0408</b>
M <sub>s</sub>	MW of sample gas, wet (lb/lb-mole)	27.6079	27.6479	27.5459	27.5513	<b>27.5882</b>
V <sub>s</sub>	Velocity of sample (ft/sec)	41.6744	40.3456	41.9691	41.7178	<b>41.4267</b>
Q <sub>a</sub>	Volumetric flow rate, actual (acfm)	160,030	154,927	161,161	160,196	<b>159,079</b>
Q <sub>s</sub>	Volumetric flow rate, standard (scfm)	109,005	105,274	109,989	109,417	<b>108,422</b>
Q <sub>std</sub>	Volumetric flow rate, dry standard (dscfm)	86,993	84,015	87,392	86,938	<b>86,335</b>
Q <sub>std7</sub>	Volumetric flow rate, dry std@7%O <sub>2</sub> (dscfm)	77,029	75,936	75,781	74,720	<b>75,867</b>
Q <sub>a</sub>	Volumetric flow rate, actual (acf/hr)	9,601,771	9,295,629	9,669,683	9,611,779	<b>9,544,716</b>
Q <sub>s</sub>	Volumetric flow rate, standard (scf/hr)	6,540,309	6,316,456	6,599,359	6,565,043	<b>6,505,292</b>
Q <sub>std</sub>	Volumetric flow rate, dry standard (dscf/hr)	5,219,574	5,040,925	5,243,541	5,216,275	<b>5,180,079</b>
Q <sub>a</sub>	Volumetric flow rate, actual (m <sup>3</sup> /hr)	271,928	263,258	273,851	272,211	<b>270,312</b>
Q <sub>s</sub>	Volumetric flow rate, standard (m <sup>3</sup> /hr)	185,225	178,886	186,898	185,926	<b>184,234</b>
Q <sub>std</sub>	Volumetric flow rate, dry standard (dry m <sup>3</sup> /hr)	147,821	142,762	148,500	147,728	<b>146,703</b>
Q <sub>std7</sub>	Volumetric flow rate, dry std@7%O <sub>2</sub> (dry m <sup>3</sup> /hr)	130,890	129,034	128,770	126,967	<b>128,915</b>
Q <sub>s</sub>	Volumetric flow rate, normal (Nm <sup>3</sup> /hr)	172,596	166,689	174,155	173,249	<b>171,672</b>
Q <sub>std</sub>	Volumetric flow rate, dry normal (Nm <sup>3</sup> /hr)	137,743	133,028	138,375	137,656	<b>136,700</b>
Q <sub>std7</sub>	Volumetric flow rate, dry normal @7%O <sub>2</sub> (Nm <sup>3</sup> /hr)	121,966	120,236	119,990	118,310	<b>120,126</b>

**Comments:**

Average includes 4 runs.  
 Moisture obtained from coinciding Method 26A sample train

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

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

Run No.		5	6	7	Average
Date (2013)		Mar 27	Mar 27	Mar 27	
Start Time (approx.)		10:28	11:09	12:13	
Stop Time (approx.)		10:38	11:18	12:28	
<b>Sampling Conditions</b>					
C <sub>p</sub>	Pitot tube coefficient	0.8190	0.8190	0.8190	
P <sub>g</sub>	Static pressure (in. H <sub>2</sub> O)	-12.1000	-12.1000	-12.1000	
A <sub>s</sub>	Sample location area (ft <sup>2</sup> )	64.0000	64.0000	64.0000	
P <sub>bar</sub>	Barometric pressure (in. Hg)	30.10	30.10	30.10	30.1000
O <sub>2</sub>	Oxygen (dry volume %)	9.3830	9.7437	9.1095	9.4121
CO <sub>2</sub>	Carbon dioxide (dry volume %)	10.0034	9.5866	10.2177	9.9359
N <sub>2</sub> +CO	Nitrogen plus carbon monoxide (dry volume %)	80.6135	80.6697	80.6728	80.6520
T <sub>s</sub>	Sample temperature (°F)	299.2400	300.2400	296.9200	298.8000
<b>Flow Results</b>					
P <sub>s</sub>	Sample gas pressure, absolute (in. Hg)	29.2103	29.2103	29.2103	29.2103
P <sub>v</sub>	Vapor pressure, actual (in. Hg)	29.2103	29.2103	29.2103	29.2103
B <sub>wo</sub>	Moisture measured in sample (% by volume)	20.9365	20.9365	23.2008	21.6913
B <sub>ws</sub>	Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	100.0000
B <sub>w</sub>	Actual water vapor in gas (% by volume)	20.9365	20.9365	23.2008	21.6913
√ΔP	Velocity head (√in. H <sub>2</sub> O)	0.6988	0.6904	0.6243	0.6712
M <sub>d</sub>	MW of sample gas, dry (lb/lb-mole)	29.9759	29.9236	29.9992	29.9662
M <sub>s</sub>	MW of sample gas, wet (lb/lb-mole)	27.4685	27.4272	27.2153	27.3704
V <sub>s</sub>	Velocity of sample (ft/sec)	47.5969	47.0894	42.6553	45.7805
Q <sub>a</sub>	Volumetric flow rate, actual (acfm)	182,772	180,823	163,796	175,797
Q <sub>s</sub>	Volumetric flow rate, standard (scfm)	124,091	122,606	111,548	119,415
Q <sub>std</sub>	Volumetric flow rate, dry standard (dscfm)	98,110	96,937	85,668	93,572
Q <sub>std7</sub>	Volumetric flow rate, dry std@7%O <sub>2</sub> (dscfm)	81,290	77,803	72,667	77,253
Q <sub>a</sub>	Volumetric flow rate, actual (acf/hr)	10,966,323	10,849,406	9,827,774	10,547,834
Q <sub>s</sub>	Volumetric flow rate, standard (scf/hr)	7,445,437	7,356,369	6,692,886	7,164,898
Q <sub>std</sub>	Volumetric flow rate, dry standard (dscf/hr)	5,886,625	5,816,205	5,140,083	5,614,304
Q <sub>a</sub>	Volumetric flow rate, actual (m <sup>3</sup> /hr)	310,573	307,262	278,328	298,721
Q <sub>s</sub>	Volumetric flow rate, standard (m <sup>3</sup> /hr)	210,859	208,337	189,546	202,914
Q <sub>std</sub>	Volumetric flow rate, dry standard (dry m <sup>3</sup> /hr)	166,713	164,718	145,570	159,000
Q <sub>std7</sub>	Volumetric flow rate, dry std@7%O <sub>2</sub> (dry m <sup>3</sup> /hr)	138,131	132,205	123,478	131,271
Q <sub>s</sub>	Volumetric flow rate, normal (Nm <sup>3</sup> /hr)	196,482	194,132	176,623	189,079
Q <sub>std</sub>	Volumetric flow rate, dry normal (Nm <sup>3</sup> /hr)	155,346	153,488	135,645	148,159
Q <sub>std7</sub>	Volumetric flow rate, dry normal @7%O <sub>2</sub> (Nm <sup>3</sup> /hr)	128,713	123,191	115,059	122,321

**Comments:**

Average includes 3 runs.

Moisture obtained from coinciding Method 26A or Method 5/29 sample train.

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

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

Run No.	8	9	10	Average	
Date (2013)	Mar 27	Mar 27	Mar 27		
Start Time (approx.)	13:04	13:28	14:05		
Stop Time (approx.)	13:18	13:42	14:20		
<b>Sampling Conditions</b>					
C <sub>p</sub>	Pitot tube coefficient	0.8190	0.8190	0.8190	
P <sub>g</sub>	Static pressure (in. H <sub>2</sub> O)	-12.1000	-12.1000	-12.1000	
A <sub>s</sub>	Sample location area (ft <sup>2</sup> )	64.0000	64.0000	64.0000	
P <sub>bar</sub>	Barometric pressure (in. Hg)	30.10	30.10	30.10	30.1000
O <sub>2</sub>	Oxygen (dry volume %)	9.1157	9.3097	8.7548	9.0601
CO <sub>2</sub>	Carbon dioxide (dry volume %)	10.1834	10.0589	10.6430	10.2951
N <sub>2</sub> +CO	Nitrogen plus carbon monoxide (dry volume %)	80.7009	80.6314	80.6022	80.6448
T <sub>s</sub>	Sample temperature (°F)	297.7600	298.6400	297.7600	298.0533
<b>Flow Results</b>					
P <sub>s</sub>	Sample gas pressure, absolute (in. Hg)	29.2103	29.2103	29.2103	29.2103
P <sub>v</sub>	Vapor pressure, actual (in. Hg)	29.2103	29.2103	29.2103	29.2103
B <sub>wc</sub>	Moisture measured in sample (% by volume)	23.2008	23.2008	23.2008	23.2008
B <sub>ws</sub>	Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	100.0000
B <sub>w</sub>	Actual water vapor in gas (% by volume)	23.2008	23.2008	23.2008	23.2008
√ΔP	Velocity head (√in. H <sub>2</sub> O)	0.6301	0.6257	0.6271	0.6276
M <sub>d</sub>	MW of sample gas, dry (lb/lb-mole)	29.9940	29.9818	30.0531	30.0096
M <sub>s</sub>	MW of sample gas, wet (lb/lb-mole)	27.2113	27.2019	27.2567	27.2233
V <sub>s</sub>	Velocity of sample (ft/sec)	43.0753	42.8088	42.8361	42.9067
Q <sub>a</sub>	Volumetric flow rate, actual (acfm)	165,409	164,386	164,490	164,762
Q <sub>s</sub>	Volumetric flow rate, standard (scfm)	112,522	111,696	111,897	112,038
Q <sub>std</sub>	Volumetric flow rate, dry standard (dscfm)	86,416	85,781	85,936	86,044
Q <sub>std7</sub>	Volumetric flow rate, dry std@7%O <sub>2</sub> (dscfm)	73,263	71,527	75,087	73,292
Q <sub>a</sub>	Volumetric flow rate, actual (acf/hr)	9,924,539	9,863,142	9,869,427	9,885,702
Q <sub>s</sub>	Volumetric flow rate, standard (scf/hr)	6,751,292	6,701,743	6,713,802	6,722,279
Q <sub>std</sub>	Volumetric flow rate, dry standard (dscf/hr)	5,184,938	5,146,885	5,156,146	5,162,657
Q <sub>a</sub>	Volumetric flow rate, actual (m <sup>3</sup> /hr)	281,069	279,330	279,508	279,969
Q <sub>s</sub>	Volumetric flow rate, standard (m <sup>3</sup> /hr)	191,201	189,797	190,139	190,379
Q <sub>std</sub>	Volumetric flow rate, dry standard (dry m <sup>3</sup> /hr)	146,841	145,763	146,025	146,209
Q <sub>std7</sub>	Volumetric flow rate, dry std@7%O <sub>2</sub> (dry m <sup>3</sup> /hr)	124,491	121,542	127,590	124,541
Q <sub>s</sub>	Volumetric flow rate, normal (Nm <sup>3</sup> /hr)	178,164	176,857	177,175	177,399
Q <sub>std</sub>	Volumetric flow rate, dry normal (Nm <sup>3</sup> /hr)	136,829	135,824	136,069	136,241
Q <sub>std7</sub>	Volumetric flow rate, dry normal @7%O <sub>2</sub> (Nm <sup>3</sup> /hr)	116,003	113,255	118,891	116,049

**Comments:**

Average includes 3 runs.

Moisture obtained from coinciding Method 5/29 sample train.

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

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

Run No.	1	2	3	Average	
Date (2013)	Mar 27	Mar 27	Mar 27		
Start Time (approx.)	07:47	09:08	10:27		
Stop Time (approx.)	08:47	10:08	11:27		
<b>Sampling Conditions</b>					
$Y_d$	Dry gas meter correction factor	0.9906	0.9906	0.9906	
$P_g$	Static pressure (in. H <sub>2</sub> O)	-11.2000	-11.1000	-12.1000	
$A_s$	Sample location area (ft <sup>2</sup> )	64.0000	64.0000	64.0000	
$P_{bar}$	Barometric pressure (in. Hg)	30.10	30.10	30.10	<b>30.1000</b>
$O_2$	Oxygen (dry volume %)	8.7700	8.8700	9.7000	<b>9.1133</b>
$CO_2$	Carbon dioxide (dry volume %)	10.5100	10.4900	9.6700	<b>10.2233</b>
$N_2+CO$	Nitrogen plus carbon monoxide (dry volume %)	80.7200	80.6400	80.6300	<b>80.6633</b>
$V_{lc}$	Total Liquid collected (ml)	220.70	224.70	227.90	
$V_m$	Volume metered, meter conditions (ft <sup>3</sup> )	40.2700	40.7550	40.6400	
$T_m$	Dry gas meter temperature (°F)	57.9167	66.0833	69.7083	
$T_s$	Sample temperature (°F)	296.0833	294.0833	297.0000	<b>295.7222</b>
$\Delta H$	Meter box orifice pressure drop (in. H <sub>2</sub> O)	1.5000	1.5000	1.5000	
$\theta$	Total sampling time (min)	60.0	60.0	60.0	
<b>Flow Results</b>					
$V_{wstd}$	Volume of water collected (ft <sup>3</sup> )	10.3861	10.5744	10.7250	<b>10.5618</b>
$V_{mstd}$	Volume metered, standard (dscf)	41.0463	40.8958	40.5013	<b>40.8144</b>
$P_s$	Sample gas pressure, absolute (in. Hg)	29.2765	29.2838	29.2103	<b>29.2569</b>
$P_v$	Vapor pressure, actual (in. Hg)	29.2765	29.2838	29.2103	<b>29.2569</b>
$B_{wo}$	Moisture measured in sample (% by volume)	20.1938	20.5447	20.9365	<b>20.5583</b>
$B_{ws}$	Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	<b>100.0000</b>
$B_w$	Actual water vapor in gas (% by volume)	20.1938	20.5447	20.9365	<b>20.5583</b>
$M_d$	MW of sample gas, dry (lb/lb-mole)	30.0324	30.0332	29.9352	<b>30.0003</b>
$M_s$	MW of sample gas, wet (lb/lb-mole)	27.6026	27.5610	27.4364	<b>27.5333</b>

Comments:

Average includes 3 runs.

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

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

Run No.	1	2	3	Average
Date (2013)	Mar 25	Mar 25	Mar 25	
Start Time (approx.)	07:59	10:32	13:04	
Stop Time (approx.)	10:11	12:45	15:17	
<b>Sampling Conditions</b>				
Y <sub>d</sub> Dry gas meter correction factor	0.9906	0.9906	0.9906	
C <sub>p</sub> Pitot tube coefficient	0.8240	0.8240	0.8240	
P <sub>g</sub> Static pressure (in. H <sub>2</sub> O)	-12.2000	-11.6000	-11.7000	
A <sub>s</sub> Sample location area (ft <sup>2</sup> )	64.0000	64.0000	64.0000	
P <sub>bar</sub> Barometric pressure (in. Hg)	29.70	29.70	29.70	29.7000
D <sub>n</sub> Nozzle diameter (in.)	0.2725	0.2725	0.2725	
O <sub>2</sub> Oxygen (dry volume %)	8.5600	8.3600	8.5800	8.5000
CO <sub>2</sub> Carbon dioxide (dry volume %)	10.3500	10.7300	10.6600	10.5800
N <sub>2</sub> +CO Nitrogen plus carbon monoxide (dry volume %)	81.0900	80.9100	80.7600	80.9200
V <sub>lc</sub> Total Liquid collected (ml)	436.70	407.60	396.90	
V <sub>m</sub> Volume metered, meter conditions (ft <sup>3</sup> )	70.8450	69.8500	69.4350	
T <sub>m</sub> Dry gas meter temperature (°F)	81.8600	86.5400	84.1600	
T <sub>s</sub> Sample temperature (°F)	298.9600	299.1200	300.6400	299.5733
ΔH Meter box orifice pressure drop (in. H <sub>2</sub> O)	1.0368	1.0120	0.9948	
θ Total sampling time (min)	125.0	125.0	125.0	
<b>Flow Results</b>				
V <sub>wstd</sub> Volume of water collected (ft <sup>3</sup> )	20.5511	19.1817	18.6781	19.4703
V <sub>mstd</sub> Volume metered, standard (dscf)	68.0282	66.4943	66.3855	66.9693
P <sub>s</sub> Sample gas pressure, absolute (in. Hg)	28.8029	28.8471	28.8397	28.8299
P <sub>v</sub> Vapor pressure, actual (in. Hg)	28.8029	28.8471	28.8397	28.8299
B <sub>wo</sub> Moisture measured in sample (% by volume)	23.2008	22.3886	21.9578	22.5157
B <sub>ws</sub> Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	100.0000
B <sub>w</sub> Actual water vapor in gas (% by volume)	23.2008	22.3886	21.9578	22.5157
√ΔP Velocity head (√in. H <sub>2</sub> O)	0.6220	0.6161	0.6118	0.6166
M <sub>d</sub> MW of sample gas, dry (lb/lb-mole)	29.9984	30.0512	30.0488	30.0328
M <sub>s</sub> MW of sample gas, wet (lb/lb-mole)	27.2147	27.3531	27.4031	27.3236
V <sub>s</sub> Velocity of sample (ft/sec)	43.1163	42.5665	42.2817	42.6548
%I Isokinetic sampling (%)	101.0494	98.8692	99.0471	99.6552
Q <sub>a</sub> Volumetric flow rate, actual (acfm)	165,567	163,456	162,362	163,795
Q <sub>s</sub> Volumetric flow rate, standard (scfm)	110,883	109,613	108,634	109,710
Q <sub>std</sub> Volumetric flow rate, dry standard (dscfm)	85,157	85,072	84,781	85,003
Q <sub>std7</sub> Volumetric flow rate, dry std@7%O <sub>2</sub> (dscfm)	75,600	76,749	75,144	75,831
Q <sub>a</sub> Volumetric flow rate, actual (acf/hr)	9,934,004	9,807,332	9,741,696	9,827,677
Q <sub>s</sub> Volumetric flow rate, standard (scf/hr)	6,652,956	6,576,795	6,518,063	6,582,605
Q <sub>std</sub> Volumetric flow rate, dry standard (dscf/hr)	5,109,416	5,104,342	5,086,839	5,100,199
Q <sub>a</sub> Volumetric flow rate, actual (m <sup>3</sup> /hr)	281,337	277,749	275,891	278,326
Q <sub>s</sub> Volumetric flow rate, standard (m <sup>3</sup> /hr)	188,416	186,259	184,595	186,423
Q <sub>std</sub> Volumetric flow rate, dry standard (dry m <sup>3</sup> /hr)	144,702	144,558	144,062	144,441
Q <sub>std7</sub> Volumetric flow rate, dry std@7%O <sub>2</sub> (dry m <sup>3</sup> /hr)	128,462	130,414	127,687	128,854
Q <sub>s</sub> Volumetric flow rate, normal (Nm <sup>3</sup> /hr)	175,569	173,559	172,009	173,713
Q <sub>std</sub> Volumetric flow rate, dry normal (Nm <sup>3</sup> /hr)	134,836	134,702	134,240	134,592
Q <sub>std7</sub> Volumetric flow rate, dry normal @7%O <sub>2</sub> (Nm <sup>3</sup> /hr)	119,703	121,522	118,981	120,069

**Comments:**

Average includes 4 runs. \* indicates that the run is not included in the average.

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

**Continuous Emissions Monitoring Parameters**

Run Number	1				
Date (2013)	Mar 26				
Start Time	8:00				
End Time	8:27				
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)	149.69	17.98	16.53	9.37	10.03
Concentration (ppmdv)	149.69	17.98	16.53		100327.93
Concentration (%dv)	0.015	0.002	0.002	9.368	10.033
Concentration @7%O2 (ppm)	180.43	21.67	19.92		120934.05
Mass Rate (lb/hr)	96.24	16.09	6.47		61703.97

Run Number	2				
Date (2013)	Mar 26				
Start Time	8:40				
End Time	9:07				
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)	150.74	13.77	26.47	9.32	10.03
Concentration (ppmdv)	150.74	13.77	26.47		100349.25
Concentration (%dv)				9.316	10.035
Concentration @7%O2 (ppm)	180.87	16.52	31.76		120408.47
Mass Rate (lb/hr)	101.32	12.88	10.83		64527.63

Run Number	3				
Date (2013)	Mar 26				
Start Time	9:20				
End Time	9:47				
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)	160.83	14.23	17.96	9.45	9.94
Concentration (ppmdv)	160.83	14.23	17.96		99376.99
Concentration (%dv)				9.452	9.938
Concentration @7%O2 (ppm)	195.28	17.28	21.81		120663.53
Mass Rate (lb/hr)	107.17	13.20	7.29		63348.29

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

**Continuous Emissions Monitoring Parameters**

Run Number	4				
Date (2013)	Mar 26				
Start Time	10:00				
End Time	10:27				
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)	152.47	16.95	17.42	9.31	10.10
Concentration (ppmdv)	152.47	16.95	17.42		101017.04
Concentration (%dv)				9.307	10.102
Concentration @7%O2 (ppm)	182.82	20.32	20.89		121119.29
Mass Rate (lb/hr)	95.42	14.77	6.64		60476.15

Run Number	5				
Date (2013)	Mar 26				
Start Time	10:46				
End Time	11:13				
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)	151.90	21.06	19.50	9.23	10.12
Concentration (ppmdv)	151.90	21.06	19.50		101207.40
Concentration (%dv)				9.233	10.121
Concentration @7%O2 (ppm)	180.97	25.09	23.23		120576.88
Mass Rate (lb/hr)	93.70	18.09	7.32		59723.72

Run Number	6				
Date (2013)	Mar 26				
Start Time	11:25				
End Time	11:52				
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)	146.79	9.53	19.54	9.51	9.81
Concentration (ppmdv)	146.79	9.53	19.54		98144.95
Concentration (%dv)				9.513	9.814
Concentration @7%O2 (ppm)	179.18	11.63	23.85		119802.26
Mass Rate (lb/hr)	90.07	8.14	7.30		57613.45

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

**Continuous Emissions Monitoring Parameters**

Run Number	7				
Date (2013)	Mar 26				
Start Time	12:11				
End Time	12:38				
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)	161.67	10.34	8.41	9.09	10.21
Concentration (ppmdv)	161.67	10.34	8.41		102060.86
Concentration (%dv)				9.090	10.206
Concentration @7%O2 (ppm)	190.27	12.17	9.90		120121.77
Mass Rate (lb/hr)	98.97	8.82	3.14		59768.16

Run Number	8				
Date (2013)	Mar 26				
Start Time	12:52				
End Time	13:19				
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)	164.33	13.39	8.55	9.20	10.11
Concentration (ppmdv)	164.33	13.39	8.55		101120.85
Concentration (%dv)				9.200	10.112
Concentration @7%O2 (ppm)	195.23	15.90	10.16		120131.07
Mass Rate (lb/hr)	101.88	11.56	3.23		59972.62



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

**Continuous Emissions Monitoring Parameters**

Run Number	9				
Date (2013)	Mar 26				
Start Time	13:32				
End Time	13:59				
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)	157.58	18.78	7.52	9.29	10.06
Concentration (ppmdv)	157.58	18.78	7.52		100638.15
Concentration (%dv)				9.286	10.064
Concentration @7%O2 (ppm)	188.60	22.47	9.00		120447.18
Mass Rate (lb/hr)	97.48	16.18	2.83		59553.18
Run Number	10				
Date (2013)	Mar 26				
Start Time	14:12				
End Time	14:39				
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)	151.56	16.74	10.13	9.65	9.78
Concentration (ppmdv)	151.56	16.74	10.13		97804.91
Concentration (%dv)				9.647	9.780
Concentration @7%O2 (ppm)	187.21	20.68	12.51		120813.74
Mass Rate (lb/hr)	96.08	14.78	3.91		59312.59

Wheelabrator South 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 26	Mar 26	Mar 26	Mar 26	
Start Time (approx.)	08:09	00:00	09:29	10:04	
Stop Time (approx.)	08:21	00:00	09:35	10:10	
<b>Sampling Conditions</b>					
C <sub>p</sub> Pitot tube coefficient	0.8190	0.8190	0.8190	0.8190	
P <sub>g</sub> Static pressure (in. H <sub>2</sub> O)	-9.9000	-9.9000	-10.1000	-10.1000	
A <sub>s</sub> Sample location area (ft <sup>2</sup> )	64.0000	64.0000	64.0000	64.0000	
P <sub>bar</sub> Barometric pressure (in. Hg)	29.90	29.90	29.90	29.90	29.9000
O <sub>2</sub> Oxygen (dry volume %)	9.3684	9.3156	9.4521	9.3070	9.3608
CO <sub>2</sub> Carbon dioxide (dry volume %)	10.0328	10.0349	9.9377	10.1017	10.0268
N <sub>2</sub> +CO Nitrogen plus carbon monoxide (dry volume %)	80.5988	80.6494	80.6102	80.5913	80.6124
T <sub>s</sub> Sample temperature (°F)	298.3200	298.0000	302.8000	297.8000	299.2300
<b>Flow Results</b>					
P <sub>s</sub> Sample gas pressure, absolute (in. Hg)	29.1721	29.1721	29.1574	29.1574	29.1647
P <sub>v</sub> Vapor pressure, actual (in. Hg)	29.1721	29.1721	29.1574	29.1574	29.1647
B <sub>wo</sub> Moisture measured in sample (% by volume)	19.4764	19.4764	20.7534	20.7534	20.1149
B <sub>ws</sub> Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	100.0000	100.0000
B <sub>w</sub> Actual water vapor in gas (% by volume)	19.4764	19.4764	20.7534	20.7534	20.1149
√ΔP Velocity head (√in. H <sub>2</sub> O)	0.6297	0.6582	0.6633	0.6211	0.6431
M <sub>d</sub> MW of sample gas, dry (lb/lb-mole)	29.9800	29.9782	29.9681	29.9886	29.9787
M <sub>s</sub> MW of sample gas, wet (lb/lb-mole)	27.6467	27.6453	27.4843	27.5005	27.5692
V <sub>s</sub> Velocity of sample (ft/sec)	42.7510	44.6790	45.3131	42.2774	43.7551
Q <sub>a</sub> Volumetric flow rate, actual (acfm)	164,164	171,567	174,002	162,345	168,020
Q <sub>s</sub> Volumetric flow rate, standard (scfm)	111,446	116,521	117,372	110,231	113,893
Q <sub>std</sub> Volumetric flow rate, dry standard (dscfm)	89,740	93,827	93,013	87,355	90,984
Q <sub>std7</sub> Volumetric flow rate, dry std@7%O <sub>2</sub> (dscfm)	74,449	78,196	76,605	72,856	75,527
Q <sub>a</sub> Volumetric flow rate, actual (acf/hr)	9,849,829	10,294,037	10,440,136	9,740,708	10,081,178
Q <sub>s</sub> Volumetric flow rate, standard (scf/hr)	6,686,758	6,991,268	7,042,322	6,613,881	6,833,557
Q <sub>std</sub> Volumetric flow rate, dry standard (dscf/hr)	5,384,419	5,629,622	5,580,803	5,241,277	5,459,030
Q <sub>a</sub> Volumetric flow rate, actual (m <sup>3</sup> /hr)	278,953	291,533	295,671	275,863	285,505
Q <sub>s</sub> Volumetric flow rate, standard (m <sup>3</sup> /hr)	189,373	197,997	199,443	187,309	193,530
Q <sub>std</sub> Volumetric flow rate, dry standard (dry m <sup>3</sup> /hr)	152,490	159,434	158,052	148,436	154,603
Q <sub>std7</sub> Volumetric flow rate, dry std@7%O <sub>2</sub> (dry m <sup>3</sup> /hr)	126,507	132,874	130,169	123,800	128,337
Q <sub>s</sub> Volumetric flow rate, normal (Nm <sup>3</sup> /hr)	176,461	184,497	185,844	174,538	180,335
Q <sub>std</sub> Volumetric flow rate, dry normal (Nm <sup>3</sup> /hr)	142,093	148,564	147,275	138,315	144,062
Q <sub>std7</sub> Volumetric flow rate, dry normal @7%O <sub>2</sub> (Nm <sup>3</sup> /hr)	117,881	123,814	121,294	115,359	119,587

**Comments:**

Average includes 4 runs.  
 Moisture obtained from coinciding Method 26A sample train

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

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

Run No.		5	6	7	Average
Date (2013)		Mar 26	Mar 26	Mar 26	
Start Time (approx.)		10:49	11:28	12:13	
Stop Time (approx.)		10:57	11:35	12:28	
<b>Sampling Conditions</b>					
C <sub>p</sub>	Pitot tube coefficient	0.8190	0.8190	0.8190	
P <sub>g</sub>	Static pressure (in. H <sub>2</sub> O)	-9.1000	-9.1000	-9.8000	
A <sub>s</sub>	Sample location area (ft <sup>2</sup> )	64.0000	64.0000	64.0000	
P <sub>bar</sub>	Barometric pressure (in. Hg)	29.90	29.90	29.90	<b>29.9000</b>
O <sub>2</sub>	Oxygen (dry volume %)	9.2329	9.5128	9.0899	<b>9.2785</b>
CO <sub>2</sub>	Carbon dioxide (dry volume %)	10.1207	9.8145	10.2061	<b>10.0471</b>
N <sub>2</sub> +CO	Nitrogen plus carbon monoxide (dry volume %)	80.6464	80.6727	80.7040	<b>80.6744</b>
T <sub>s</sub>	Sample temperature (°F)	295.6400	297.5600	294.3600	<b>295.8533</b>
<b>Flow Results</b>					
P <sub>s</sub>	Sample gas pressure, absolute (in. Hg)	29.2309	29.2309	29.1794	<b>29.2137</b>
P <sub>v</sub>	Vapor pressure, actual (in. Hg)	29.2309	29.2309	29.1794	<b>29.2137</b>
B <sub>wo</sub>	Moisture measured in sample (% by volume)	19.9340	19.9340	20.1704	<b>20.0128</b>
B <sub>ws</sub>	Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	<b>100.0000</b>
B <sub>w</sub>	Actual water vapor in gas (% by volume)	19.9340	19.9340	20.1704	<b>20.0128</b>
√ΔP	Velocity head (√in. H <sub>2</sub> O)	0.6054	0.6027	0.6024	<b>0.6035</b>
M <sub>d</sub>	MW of sample gas, dry (lb/lb-mole)	29.9886	29.9508	29.9966	<b>29.9787</b>
M <sub>s</sub>	MW of sample gas, wet (lb/lb-mole)	27.5988	27.5686	27.5768	<b>27.5814</b>
V <sub>s</sub>	Velocity of sample (ft/sec)	41.0254	40.9144	40.8359	<b>40.9252</b>
Q <sub>a</sub>	Volumetric flow rate, actual (acfm)	157,537	157,111	156,810	<b>157,153</b>
Q <sub>s</sub>	Volumetric flow rate, standard (scfm)	107,543	106,980	107,039	<b>107,188</b>
Q <sub>std</sub>	Volumetric flow rate, dry standard (dscfm)	86,106	85,655	85,449	<b>85,736</b>
Q <sub>std7</sub>	Volumetric flow rate, dry std@7%O <sub>2</sub> (dscfm)	72,274	70,171	72,601	<b>71,682</b>
Q <sub>a</sub>	Volumetric flow rate, actual (acf/hr)	9,452,241	9,426,668	9,408,582	<b>9,429,164</b>
Q <sub>s</sub>	Volumetric flow rate, standard (scf/hr)	6,452,590	6,418,823	6,422,356	<b>6,431,257</b>
Q <sub>std</sub>	Volumetric flow rate, dry standard (dscf/hr)	5,166,331	5,139,295	5,126,941	<b>5,144,189</b>
Q <sub>a</sub>	Volumetric flow rate, actual (m <sup>3</sup> /hr)	267,693	266,969	266,457	<b>267,039</b>
Q <sub>s</sub>	Volumetric flow rate, standard (m <sup>3</sup> /hr)	182,741	181,785	181,885	<b>182,137</b>
Q <sub>std</sub>	Volumetric flow rate, dry standard (dry m <sup>3</sup> /hr)	146,314	145,548	145,198	<b>145,686</b>
Q <sub>std7</sub>	Volumetric flow rate, dry std@7%O <sub>2</sub> (dry m <sup>3</sup> /hr)	122,810	119,236	123,367	<b>121,804</b>
Q <sub>s</sub>	Volumetric flow rate, normal (Nm <sup>3</sup> /hr)	170,282	169,390	169,484	<b>169,719</b>
Q <sub>std</sub>	Volumetric flow rate, dry normal (Nm <sup>3</sup> /hr)	136,338	135,624	135,298	<b>135,753</b>
Q <sub>std7</sub>	Volumetric flow rate, dry normal @7%O <sub>2</sub> (Nm <sup>3</sup> /hr)	114,436	111,107	114,955	<b>113,499</b>

**Comments:**

Average includes 3 runs.

Moisture obtained from coinciding Method 26A or Method 5/29 sample train.

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Wheelabrator South 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 26	Mar 26	Mar 26	
Start Time (approx.)		12:54	13:33	14:13	
Stop Time (approx.)		13:00	13:48	14:28	
<b>Sampling Conditions</b>					
C <sub>p</sub>	Pitot tube coefficient	0.8190	0.8190	0.8190	
P <sub>g</sub>	Static pressure (in. H <sub>2</sub> O)	-9.8000	-9.8000	-9.8000	
A <sub>s</sub>	Sample location area (ft <sup>2</sup> )	64.0000	64.0000	64.0000	
P <sub>bar</sub>	Barometric pressure (in. Hg)	29.90	29.90	29.90	29.9000
O <sub>2</sub>	Oxygen (dry volume %)	9.1996	9.2860	9.6472	9.3776
CO <sub>2</sub>	Carbon dioxide (dry volume %)	10.1121	10.0638	9.7805	9.9855
N <sub>2</sub> +CO	Nitrogen plus carbon monoxide (dry volume %)	80.6883	80.6502	80.5723	80.6369
T <sub>s</sub>	Sample temperature (°F)	296.4800	295.4400	295.8400	295.9200
<b>Flow Results</b>					
P <sub>s</sub>	Sample gas pressure, absolute (in. Hg)	29.1794	29.1794	29.1794	29.1794
P <sub>v</sub>	Vapor pressure, actual (in. Hg)	29.1794	29.1794	29.1794	29.1794
B <sub>w0</sub>	Moisture measured in sample (% by volume)	20.1704	20.1704	20.1704	20.1704
B <sub>ws</sub>	Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	100.0000
B <sub>w</sub>	Actual water vapor in gas (% by volume)	20.1704	20.1704	20.1704	20.1704
√ΔP	Velocity head (√in. H <sub>2</sub> O)	0.6108	0.6090	0.6240	0.6146
M <sub>d</sub>	MW of sample gas, dry (lb/lb-mole)	29.9859	29.9817	29.9508	29.9728
M <sub>s</sub>	MW of sample gas, wet (lb/lb-mole)	27.5683	27.5649	27.5402	27.5578
V <sub>s</sub>	Velocity of sample (ft/sec)	41.4727	41.3233	42.3710	41.7223
Q <sub>a</sub>	Volumetric flow rate, actual (acfm)	159,255	158,681	162,705	160,214
Q <sub>s</sub>	Volumetric flow rate, standard (scfm)	108,404	108,162	110,846	109,137
Q <sub>std</sub>	Volumetric flow rate, dry standard (dscfm)	86,538	86,345	88,488	87,124
Q <sub>std7</sub>	Volumetric flow rate, dry std@7%O <sub>2</sub> (dscfm)	72,844	72,145	71,635	72,208
Q <sub>a</sub>	Volumetric flow rate, actual (acf/hr)	9,555,307	9,520,881	9,762,273	9,612,820
Q <sub>s</sub>	Volumetric flow rate, standard (scf/hr)	6,504,233	6,489,721	6,650,739	6,548,231
Q <sub>std</sub>	Volumetric flow rate, dry standard (dscf/hr)	5,192,303	5,180,718	5,309,258	5,227,426
Q <sub>a</sub>	Volumetric flow rate, actual (m <sup>3</sup> /hr)	270,612	269,637	276,473	272,241
Q <sub>s</sub>	Volumetric flow rate, standard (m <sup>3</sup> /hr)	184,204	183,793	188,353	185,450
Q <sub>std</sub>	Volumetric flow rate, dry standard (dry m <sup>3</sup> /hr)	147,049	146,721	150,361	148,044
Q <sub>std7</sub>	Volumetric flow rate, dry std@7%O <sub>2</sub> (dry m <sup>3</sup> /hr)	123,779	122,591	121,725	122,698
Q <sub>s</sub>	Volumetric flow rate, normal (Nm <sup>3</sup> /hr)	171,644	171,261	175,511	172,805
Q <sub>std</sub>	Volumetric flow rate, dry normal (Nm <sup>3</sup> /hr)	137,023	136,717	140,109	137,950
Q <sub>std7</sub>	Volumetric flow rate, dry normal @7%O <sub>2</sub> (Nm <sup>3</sup> /hr)	115,340	114,232	113,426	114,333

**Comments:**

Average includes 3 runs.

Moisture obtained from coinciding Method 5/29 sample train.

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

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

Run No.	1	2	3	Average
Date (2013)	Mar 26	Mar 26	Mar 26	
Start Time (approx.)	08:00	09:21	10:46	
Stop Time (approx.)	09:00	10:21	11:46	
<b>Sampling Conditions</b>				
Y <sub>d</sub> Dry gas meter correction factor	1.0008	1.0008	1.0008	
P <sub>g</sub> Static pressure (in. H <sub>2</sub> O)	-9.9000	-10.1000	-9.1000	
A <sub>s</sub> Sample location area (ft <sup>2</sup> )	64.0000	64.0000	64.0000	
P <sub>bar</sub> Barometric pressure (in. Hg)	29.90	29.90	29.90	<b>29.9000</b>
O <sub>2</sub> Oxygen (dry volume %)	9.8600	9.5600	9.5800	<b>9.6667</b>
CO <sub>2</sub> Carbon dioxide (dry volume %)	9.4700	9.7600	9.8100	<b>9.6800</b>
N <sub>2</sub> +CO Nitrogen plus carbon monoxide (dry volume %)	80.6700	80.6800	80.6100	<b>80.6533</b>
V <sub>lc</sub> Total Liquid collected (ml)	199.60	215.10	202.60	
V <sub>m</sub> Volume metered, meter conditions (ft <sup>3</sup> )	38.7000	38.7950	38.9900	
T <sub>m</sub> Dry gas meter temperature (°F)	67.9583	71.7500	79.4167	
T <sub>s</sub> Sample temperature (°F)	294.5833	296.5000	293.4167	<b>294.8333</b>
ΔH Meter box orifice pressure drop (in. H <sub>2</sub> O)	1.5000	1.5000	1.5000	
θ Total sampling time (min)	60.0	60.0	60.0	
<b>Flow Results</b>				
V <sub>wstd</sub> Volume of water collected (ft <sup>3</sup> )	9.3932	10.1226	9.5344	<b>9.6834</b>
V <sub>mstd</sub> Volume metered, standard (dscf)	38.8354	38.6531	38.2953	<b>38.5946</b>
P <sub>s</sub> Sample gas pressure, absolute (in. Hg)	29.1721	29.1574	29.2309	<b>29.1868</b>
P <sub>v</sub> Vapor pressure, actual (in. Hg)	29.1721	29.1574	29.2309	<b>29.1868</b>
B <sub>wD</sub> Moisture measured in sample (% by volume)	19.4764	20.7534	19.9340	<b>20.0546</b>
B <sub>wS</sub> Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	<b>100.0000</b>
B <sub>w</sub> Actual water vapor in gas (% by volume)	19.4764	20.7534	19.9340	<b>20.0546</b>
M <sub>d</sub> MW of sample gas, dry (lb/lb-mole)	29.9096	29.9440	29.9528	<b>29.9355</b>
M <sub>s</sub> MW of sample gas, wet (lb/lb-mole)	27.5900	27.4652	27.5701	<b>27.5418</b>

Comments:

Average includes 3 runs.

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Wheelabrator South 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 26	Mar 27	Mar 27	
Start Time (approx.)		12:11	07:28	09:59	
Stop Time (approx.)		14:24	09:41	12:11	
<b>Sampling Conditions</b>					
Y <sub>d</sub>	Dry gas meter correction factor	0.9854	0.9854	0.9854	
C <sub>p</sub>	Pitot tube coefficient	0.8240	0.8240	0.8240	
P <sub>g</sub>	Static pressure (in. H <sub>2</sub> O)	-9.8000	-9.8000	-10.7000	
A <sub>s</sub>	Sample location area (ft <sup>2</sup> )	64.0000	64.0000	64.0000	
P <sub>bar</sub>	Barometric pressure (in. Hg)	29.90	30.18	30.10	<b>30.0600</b>
D <sub>n</sub>	Nozzle diameter (in.)	0.2725	0.2725	0.2725	
O <sub>2</sub>	Oxygen (dry volume %)	9.8000	9.2300	9.7000	<b>9.5767</b>
CO <sub>2</sub>	Carbon dioxide (dry volume %)	9.4200	10.0700	9.6000	<b>9.6967</b>
N <sub>2</sub> +CO	Nitrogen plus carbon monoxide (dry volume %)	80.7800	80.7000	80.7000	<b>80.7267</b>
V <sub>lc</sub>	Total Liquid collected (ml)	352.50	351.70	331.70	
V <sub>m</sub>	Volume metered, meter conditions (ft <sup>3</sup> )	68.0900	68.2550	71.1200	
T <sub>m</sub>	Dry gas meter temperature (°F)	80.3000	60.8000	77.9400	
T <sub>s</sub>	Sample temperature (°F)	293.9600	326.1600	329.9200	<b>316.6800</b>
ΔH	Meter box orifice pressure drop (in. H <sub>2</sub> O)	0.9652	0.9700	1.0180	
θ	Total sampling time (min)	125.0	125.0	125.0	
<b>Flow Results</b>					
V <sub>wstd</sub>	Volume of water collected (ft <sup>3</sup> )	16.5887	16.5510	15.6098	<b>16.2498</b>
V <sub>mstd</sub>	Volume metered, standard (dscf)	65.6539	68.9158	69.3448	<b>67.9715</b>
P <sub>s</sub>	Sample gas pressure, absolute (in. Hg)	29.1794	29.4594	29.3132	<b>29.3174</b>
P <sub>v</sub>	Vapor pressure, actual (in. Hg)	29.1794	29.4594	29.3132	<b>29.3174</b>
B <sub>wo</sub>	Moisture measured in sample (% by volume)	20.1704	19.3654	18.3743	<b>19.3034</b>
B <sub>wa</sub>	Saturated moisture content (% by volume)	100.0000	100.0000	100.0000	<b>100.0000</b>
B <sub>w</sub>	Actual water vapor in gas (% by volume)	20.1704	19.3654	18.3743	<b>19.3034</b>
√ΔP	Velocity head (√in. H <sub>2</sub> O)	0.5862	0.6092	0.6247	<b>0.6067</b>
M <sub>d</sub>	MW of sample gas, dry (lb/lb-mole)	29.8992	29.9804	29.9240	<b>29.9345</b>
M <sub>s</sub>	MW of sample gas, wet (lb/lb-mole)	27.4991	27.6603	27.7331	<b>27.6308</b>
V <sub>s</sub>	Velocity of sample (ft/sec)	40.0285	42.1532	43.3775	<b>41.8530</b>
%I	Isokinetic sampling (%)	99.0970	100.9986	98.5153	<b>99.5370</b>
Q <sub>a</sub>	Volumetric flow rate, actual (acfm)	153.709	161.868	166.569	<b>160.716</b>
Q <sub>s</sub>	Volumetric flow rate, standard (scfm)	104.979	107.040	109.081	<b>107.033</b>
Q <sub>sstd</sub>	Volumetric flow rate, dry standard (dscfm)	83,804	86,312	89,038	<b>86,384</b>
Q <sub>sstd7</sub>	Volumetric flow rate, dry std@7%O <sub>2</sub> (dscfm)	66,923	72,464	71,743	<b>70,377</b>
Q <sub>a</sub>	Volumetric flow rate, actual (acf/hr)	9,222,561	9,712,098	9,994,166	<b>9,642,941</b>
Q <sub>s</sub>	Volumetric flow rate, standard (scf/hr)	6,298,717	6,422,417	6,544,847	<b>6,421,994</b>
Q <sub>sstd</sub>	Volumetric flow rate, dry standard (dscf/hr)	5,028,240	5,178,690	5,342,279	<b>5,183,070</b>
Q <sub>a</sub>	Volumetric flow rate, actual (m <sup>3</sup> /hr)	261,188	275,052	283,041	<b>273,094</b>
Q <sub>s</sub>	Volumetric flow rate, standard (m <sup>3</sup> /hr)	178,383	181,887	185,354	<b>181,875</b>
Q <sub>sstd</sub>	Volumetric flow rate, dry standard (dry m <sup>3</sup> /hr)	142,403	146,664	151,296	<b>146,788</b>
Q <sub>sstd7</sub>	Volumetric flow rate, dry std@7%O <sub>2</sub> (dry m <sup>3</sup> /hr)	113,717	123,134	121,908	<b>119,586</b>
Q <sub>s</sub>	Volumetric flow rate, normal (Nm <sup>3</sup> /hr)	166,221	169,485	172,716	<b>169,474</b>
Q <sub>sstd</sub>	Volumetric flow rate, dry normal (Nm <sup>3</sup> /hr)	132,693	136,664	140,981	<b>136,779</b>
Q <sub>sstd7</sub>	Volumetric flow rate, dry normal @7%O <sub>2</sub> (Nm <sup>3</sup> /hr)	105,964	114,739	113,596	<b>111,433</b>

Comments:

Average includes 3 runs.

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QA/QC DATA

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

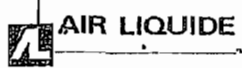
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Date: 5/7/13





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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

P.O. No.: 60126-71-65000

Customer

CLEAN AIR ENGINEERING

AIR LIQUIDE AMERICA SPECIALTY GASES LLC Document #: 48472837-001  
1290 COMBERMERE STREET  
TROY, MI 48083

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	17Aug2016	10002807	23.04 %	CARBON DIOXIDE

### INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
CAI/110P/V03018	26Nov2012	PARAMAGNETIC
PIR/2000/609015	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 + Cx<sup>2</sup> + Dx<sup>3</sup> + Ex<sup>4</sup>  
r = 0.999999  
Constants: A = -0.01175669  
B = 1.000226328 C = 0  
D = 0 E = 0

#### CARBON DIOXIDE

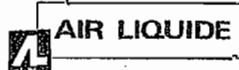
Date: 27Nov2012 Response Unit: MV  
Z1 = 0.00000 R1 = 97.90000 T1 = 57.50000  
R2 = 97.90000 Z2 = 0.00000 T2 = 57.50000  
Z3 = 0.00000 T3 = 57.50000 R3 = 97.90000  
Avg. Concentration: 9.527 %

Concentration = A + Bx + Cx<sup>2</sup> + Dx<sup>3</sup> + Ex<sup>4</sup>  
r = 0.999987  
Constants: A = -0.00466369  
B = 0.134173465 C = -7.139E-05  
D = 1.21594-05 E = 0

Special Notes: DELIVERY DOC# S 48472675

APPROVED BY: \_\_\_\_\_

JEFF CROTEAU



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 #: 44063920-002

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: ALM040668 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	17Aug2016	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 = -0.0004576  
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*

1290 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

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

P.O. No.: CAE  
Document #: 44720881-001

Customer  
ALA-CYL-ROMEUVILLE, IL (84131)

UNIT A FOR CAE  
TRANSFER ACCOUNT  
27 FORESTWOOD CT  
ROMEUVILLE 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 1685	01Oct2015	AAL071072	246.1 PPM	NITRIC OXIDE
NTRM 0260 2	20May2016	AAL073224	256.3 PPM	SULFUR DIOXIDE

**INSTRUMENTATION**

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR//0928621	08Jan2012	FTIR
FTIR//0928621	19Jan2012	FTIR
FTIR//0928621	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: 9.966 %

Concentration = A + Bx + Cx<sup>2</sup> + Dx<sup>3</sup> + Ex<sup>4</sup>  
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 = -0.80538 R1 = 246.2617 T1 = 220.3657  
R2 = 246.3208 Z2 = -0.67518 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 = 247.8069 Z2 = -0.08971 T2 = 224.7174  
Z3 = -0.04259 T3 = 226.2480 R3 = 247.9820  
Avg. Concentration: 223.6 PPM

Concentration = A + Bx + Cx<sup>2</sup> + Dx<sup>3</sup> + Ex<sup>4</sup>  
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 = 253.9382 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 = 0.04665 T2 = 44.73362  
Z3 = 0.18248 T3 = 44.81375 R3 = 253.8572  
Avg. Concentration: 44.95 PPM

Concentration = A + Bx + Cx<sup>2</sup> + Dx<sup>3</sup> + Ex<sup>4</sup>  
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



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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-ROMEIOVILLE, IL (84131)  
 UNIT A FOR CAE  
 TRANSFER ACCOUNT  
 27 FORESTWOOD CT  
 ROMEIOVILLE 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\*\*\*: 1958 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**

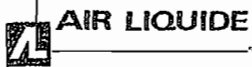
TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1800 C	01Mar2013	1D004854	17.87 %	CARBON DIOXIDE
NTRM 1685	01Oct2015	AAL071072	246.1 PPM	NITRIC OXIDE
NTRM 0260 2	20May2016	AAL073224	255.3 PPM	SULFUR DIOXIDE

**INSTRUMENTATION**

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR/0928621	06Jan2012	FTIR
FTIR/0928621	18Jan2012	FTIR
FTIR/0928621	20Jan2012	FTIR

**ANALYZER READINGS**

First Triad Analysis	(Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)	Calibration Curve
<b>CARBON DIOXIDE</b> Date: 17Jan2012 Response Unit: % Z1=-0.00072 R1=17.77378 T1=9.93180 R2=17.78153 Z2=0.00818 T2=8.93257 Z3=0.01745 T3=9.93373 R3=17.81853 Avg. Concentration: 9.973 %	<b>Second Triad Analysis</b> 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: 448.4 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
<b>NITRIC OXIDE</b> Date: 17Jan2012 Response Unit: PPM Z1=-0.60536 R1=246.2617 T1=450.1221 R2=248.3206 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=253.6589 T1=90.14060 R2=253.7981 Z2=0.04685 T2=90.32017	Concentration=A+Bx+Cx2+Dx3+Ex4 r=9.99998E-1 Constants: A=0.00000E+0 B=9.99897E-1 C=3.00000E-5 D=0.00000E+0 E=0.00000E+0
<b>SULFUR DIOXIDE *</b> Date: 17Jan2012 Response Unit: PPM Z1=-0.05065 R1=253.7164 T1=90.15717 R2=253.9392 Z2=0.03163 T2=90.34216	Date: 24Jan2012 Response Unit: PPM Z1=-0.00017 R1=253.6589 T1=90.14060 R2=253.7981 Z2=0.04685 T2=90.32017	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

P.O. No.: 59536-71-65000

Customer

CLEAN AIR ENGINEERING

AIR LIQUIDE AMERICA SPECIALTY GASES LLC Document #: 45255248-001  
1290 COMBERMERE STREET  
TROY, MI 48083

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: TRO0053628

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 = 48.38616 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 + Cx<sup>2</sup> + Dx<sup>3</sup> + Ex<sup>4</sup>  
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**

**Second Triad Analysis**

**Calibration Curve**

**CARBON MONOXIDE**

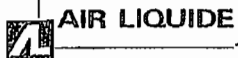
Date: 21Nov2011 Response Unit: PPM  
Z1 = -0.01152 R1 = 101.1684 T1 = 96.36357  
R2 = 101.2626 Z2 = 0.07064 T2 = 96.46207  
Z3 = 0.09866 T3 = 96.49303 R3 = 101.3349  
Avg. Concentration: 96.19 PPM

Date: 29Nov2011 Response Unit: PPM  
Z1 = -0.03962 R1 = 100.6843 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

Concentration = A + Bx + Cx<sup>2</sup> + Dx<sup>3</sup> + Ex<sup>4</sup>  
r = 9.99998E-1  
Constants: A = 0.00000E+0  
B = 6.94249E-1 C = 3.64000E-4  
D = 0.00000E+0 E = 0.00000E+0

APPROVED BY:

Rob McCrandall



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

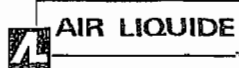
LOT # NITFILL051512

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.: 59680-70-65000

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

DATE:

5/31/12

Wheelabrator  
 Clean Air Project No: 12218  
 Unit 1 FF Outlet



**NO<sub>2</sub> - NO Conversion Efficiency**

Cylinder ID #	ALM22574		
NO <sub>2</sub>	50.4	ppmdv	Certified Test Gas Concentration

Date	3/25/2013
------	-----------

Time	NO <sub>x</sub>
15:07:22	46.520
15:07:37	46.642
15:07:52	46.723
15:08:07	46.764
15:08:22	46.845
<b>Average</b>	<b>46.67</b>

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

Where:

- C<sub>dir</sub>** = Measured Concentration of calibration GAS when introduced in direct calibration mode, (ppmv)
- C<sub>v</sub>** = Certified test gas concentration (ppmv)

**Eff<sub>NO2</sub>** = NO<sub>2</sub> - NO Conversion Efficiency (%)

= **92.6**

(Note: Eff<sub>NO2</sub> 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)

**NO<sub>2</sub> - NO Conversion Efficiency**

Cylinder ID #	ALM22574		
NO <sub>2</sub>	50.4	ppmdv	Certified Test Gas Concentration

Date	3/27/2013
------	-----------

Time	NO <sub>x</sub>
14:45:08	46.561
14:45:23	46.797
14:45:38	46.618
14:45:53	46.463
14:46:08	46.993
<b>Average</b>	<b>46.69</b>

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

Where:

- C<sub>dir</sub>** = Measured Concentration of calibration GAS when introduced in direct calibration mode, (ppmv)
- C<sub>v</sub>** = Certified test gas concentration (ppmv)

**Eff<sub>NO2</sub>** = NO<sub>2</sub> - NO Conversion Efficiency (%)

= **92.6**

(Note: Eff<sub>NO2</sub> 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)

**NO<sub>2</sub> - NO Conversion Efficiency**

Cylinder ID #	ALM22574		
NO <sub>2</sub>	50.4	ppmdv	Certified Test Gas Concentration

Date	3/26/2013
------	-----------

Time	NO <sub>x</sub>
14:54:16	46.911
14:54:31	46.480
14:54:46	46.797
14:55:01	46.691
14:55:16	46.691
<b>Average</b>	<b>46.71</b>

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

Where:

- C<sub>dir</sub> = Measured Concentration of calibration GAS when introduced in direct calibration mode, (ppmv)
- C<sub>v</sub> = Certified test gas concentration (ppmv)

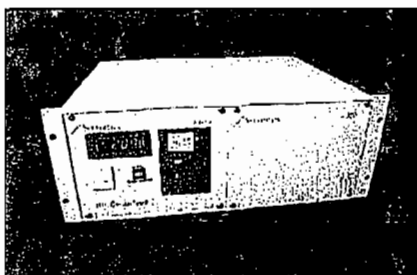
Eff<sub>NO<sub>2</sub></sub> = NO<sub>2</sub> - NO Conversion Efficiency (%)

= **92.7**

(Note: Eff<sub>NO<sub>2</sub></sub> 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:

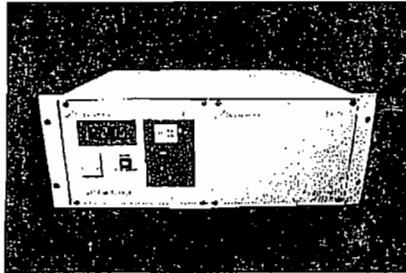
- Weight: 12 lbs.
- Dimensions: 9" x 5" x 7" (single unit)
- Range: 0-25 & 100% O<sub>2</sub>.
- Accuracy: +/- 0.1%
- Linearity: +/- 0.1% O<sub>2</sub>
- Repeatability: +/- 0.1% O<sub>2</sub>
- Response time (T<sub>90</sub>): 2.5 seconds at 200 ml/min;  
2.0 seconds at 250 ml/min
- Zero Drift: <+/- .002% O<sub>2</sub>/hour
- Span Drift: <+/- .002% O<sub>2</sub>/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% O<sub>2</sub>/C  
zero; <+/- 0.10% O<sub>2</sub>/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% CO<sub>2</sub>
- 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: 0-1V 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, NO<sub>2</sub>, NO<sub>x</sub> Analyzer



### Rental/Application Notes:

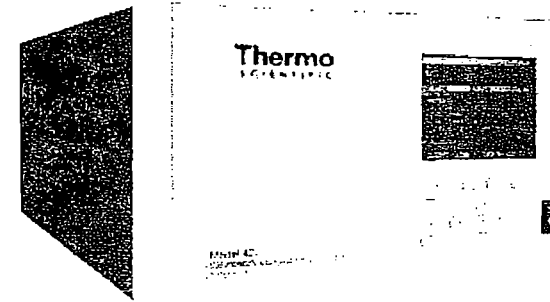
- User programmable software capabilities allow individual measurement range settings to be stored in memory for subsequent recall and NO, NO<sub>2</sub>, NO<sub>x</sub> hourly average storage for up to one month.
- Can be remotely controlled with bi-directional RS-232 Communication Port, or Ethernet 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/acces. (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 <sub>x</sub> mode



## Thermo Model 42iHL NO, NO<sub>2</sub>, NO<sub>x</sub> Analyzer

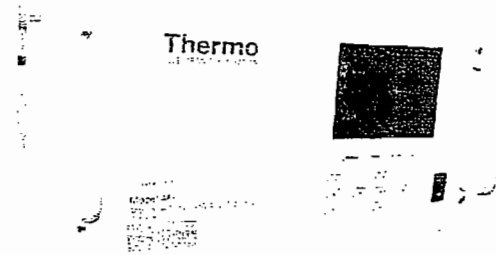


### Specifications:

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

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### **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 0-1 V 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 <sub>2</sub> O	15.00 ppm	0.00	0.00%
NH <sub>3</sub>	15.00 ppm	0.00	0.00%
NO <sub>2</sub>	15.00 ppm	0.08	0.39%
CH <sub>4</sub>	50.00 ppm	0.00	0.00%
H <sub>2</sub>	50.00 ppm	0.00	0.00%
HCL	40.00 ppm	0.05	0.24%
NO	300.00 ppm	0.03	0.15%
SO <sub>2</sub>	500.00 ppm	0.00	0.00%
CO	500.00 ppm	0.00	0.00%
CO <sub>2</sub>	15.00 %	-0.05	0.24%
H <sub>2</sub> O	1.00 %	0.00	0.00%

Interferent Gas Mixed With Pollutant (O2)

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

Cylinder	Conc	Cylinder	Cylinder	Conc	Cylinder
N <sub>2</sub> O	151 ppm	CC163990-1011	HCL	99.5 ppm	NXA1558-1011
NH <sub>3</sub>	111.2 ppm	ALM21715-1011	NO	2490 ppm	ALM55875-0110
NO <sub>2</sub>	200 ppm	150800-1011	SO <sub>2</sub>	4730 ppm	ALM57442-1111
CH <sub>4</sub>	451 ppm	ALM9169-0910	CO	3050 ppm	ALM6624-0711
H <sub>2</sub>	552 ppm	ALM48043-1011	CO <sub>2</sub>	99.99 %	A9753-0906
N <sub>2</sub>	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 <sub>2</sub> O	15.00 ppm	0.00	0.00%
NH <sub>3</sub>	15.00 ppm	0.00	0.00%
NO <sub>2</sub>	15.00 ppm	0.00	0.00%
CH <sub>4</sub>	50.00 ppm	0.00	0.00%
H <sub>2</sub>	50.00 ppm	0.00	0.00%
HCL	40.00 ppm	0.00	0.00%
NO	300.00 ppm	0.00	0.00%
SO <sub>2</sub>	500.00 ppm	0.00	0.00%
CO	500.00 ppm	0.00	0.00%
CO <sub>2</sub>	N/A	N/A	N/A
H <sub>2</sub> O	1.00 %	0.00	0.00%

Interferent Gas Mixed With Pollutant (CO2)

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

Cylinder	Conc	Cylinder	Cylinder	Conc	Cylinder
N <sub>2</sub> O	151 ppm	CC163990-1011	HCL	99.5 ppm	NXA1558-1011
NH <sub>3</sub>	111.2 ppm	ALM21715-1011	NO	2490 ppm	ALM55875-0110
NO <sub>2</sub>	200 ppm	150800-1011	SO <sub>2</sub>	4730 ppm	ALM57442-1111
CH <sub>4</sub>	451 ppm	ALM9169-0910	CO	3050 ppm	ALM6624-0711
H <sub>2</sub>	552 ppm	ALM48043-1011	CO <sub>2</sub>	99.99 %	A9753-0906
N <sub>2</sub>	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 <sub>2</sub> O	15.00 ppm	0.01	0.05%
NH <sub>3</sub>	15.00 ppm	0.00	0.00%
NO <sub>2</sub>	N/A	0.33	N/A
CH <sub>4</sub>	50.00 ppm	0.07	0.36%
H <sub>2</sub>	50.00 ppm	0.04	0.21%
HCL	40.00 ppm	0.82	4.23%
NO	N/A	N/A	N/A
SO <sub>2</sub>	500.00 ppm	0.09	0.46%
CO	500.00 ppm	0.04	0.21%
CO <sub>2</sub>	15.00 %	0.01	0.05%
H <sub>2</sub> O	1.00 %	0.02	0.10%

Interferent Gas Mixed With Pollutant (NOX)

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

Cylinder	Conc	Cylinder	Cylinder	Conc	Cylinder
N <sub>2</sub> O	151 ppm	CC163990-1011	HCL	99.5 ppm	NXA1558-1011
NH <sub>3</sub>	111.2 ppm	ALM21715-1011	NO	50.4 ppm	ALM38089-0811
NO <sub>2</sub>	200 ppm	150800-1011	SO <sub>2</sub>	4730 ppm	ALM57442-1111
CH <sub>4</sub>	451 ppm	ALM9169-0910	CO	3050 ppm	ALM6624-0711
H <sub>2</sub>	552 ppm	ALM48043-1011	CO <sub>2</sub>	99.99 %	A9753-0906
N <sub>2</sub>	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 <sub>2</sub> O	15.00 ppm	0.00	0.00%
NH <sub>3</sub>	15.00 ppm	0.00	0.00%
NO <sub>2</sub>	15.00 ppm	0.33	1.70%
CH <sub>4</sub>	50.00 ppm	0.02	0.10%
H <sub>2</sub>	50.00 ppm	0.01	0.05%
HCL	40.00 ppm	0.02	0.10%
NO	N/A	N/A	N/A
SO <sub>2</sub>	500.00 ppm	0.05	0.26%
CO	500.00 ppm	0.02	0.10%
CO <sub>2</sub>	15.00 %	0.00	0.00%
H <sub>2</sub> O	1.00 %	0.02	0.10%

Interferent Gas Mixed With Pollutant (NO)

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

Cylinder	Conc	Cylinder	Cylinder	Conc	Cylinder
N <sub>2</sub> O	151 ppm	CC163990-1011	HCL	99.5 ppm	NXA1558-1011
NH <sub>3</sub>	111.2 ppm	ALM21715-1011	NO	50.4 ppm	ALM38089-0811
NO <sub>2</sub>	200 ppm	150800-1011	SO <sub>2</sub>	4730 ppm	ALM57442-1111
CH <sub>4</sub>	451 ppm	ALM9169-0910	CO	3050 ppm	ALM6624-0711
H <sub>2</sub>	552 ppm	ALM48043-1011	CO <sub>2</sub>	99.99 %	A9753-0906
N <sub>2</sub>	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 <sub>2</sub> O	15.00 ppm	0.01	0.02%
NH <sub>3</sub>	15.00 ppm	0.00	0.00%
NO <sub>2</sub>	N/A	N/A	N/A
CH <sub>4</sub>	50.00 ppm	0.05	0.10%
H <sub>2</sub>	50.00 ppm	0.03	0.06%
HCL	40.00 ppm	0.79	1.56%
NO	N/A	N/A	N/A
SO <sub>2</sub>	500.00 ppm	0.04	0.08%
CO	500.00 ppm	0.02	0.04%
CO <sub>2</sub>	15.00 %	0.01	0.02%
H <sub>2</sub> O	1.00 %	0.000	0.00%

Interferent Gas Mixed With Pollutant (NO2)

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

Cylinder	Conc	Cylinder	Cylinder	Conc	Cylinder
N <sub>2</sub> O	151 ppm	CC163990-1011	HCL	99.5 ppm	NXA1558-1011
NH <sub>3</sub>	111.2 ppm	ALM21715-1011	NO	50.4 ppm	ALM38089-0811
NO <sub>2</sub>	200 ppm	150800-1011	SO <sub>2</sub>	4730 ppm	ALM57442-1111
CH <sub>4</sub>	451 ppm	ALM9169-0910	CO	3050 ppm	ALM6624-0711
H <sub>2</sub>	552 ppm	ALM48043-1011	CO <sub>2</sub>	99.99 %	A9753-0906
N <sub>2</sub>	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 <sub>2</sub> O	15.00 ppm	0.09	0.11%
NH <sub>3</sub>	15.00 ppm	0.00	0.00%
NO <sub>2</sub>	15.00 ppm	0.73	0.91%
CH <sub>4</sub>	50.00 ppm	0.00	0.00%
H <sub>2</sub>	50.00 ppm	-0.05	0.06%
HCL	40.00 ppm	0.06	0.07%
NO	300.00 ppm	0.00	0.00%
SO <sub>2</sub>	N/A	N/A	N/A
CO	500.00 ppm	0.00	0.00%
CO <sub>2</sub>	15.00 %	-0.11	0.14%
H <sub>2</sub> O	1.00 %	0.00	0.00%

Interferent Gas Mixed With Pollutant (SO2)

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

Cylinder	Conc	Cylinder	Cylinder	Conc	Cylinder
N <sub>2</sub> O	151 ppm	CC163990-1011	HCL	99.5 ppm	NXA1558-1011
NH <sub>3</sub>	111.2 ppm	ALM21715-1011	NO	2490 ppm	ALM55875-0110
NO <sub>2</sub>	200 ppm	150800-1011	SO <sub>2</sub>	4730 ppm	ALM57442-1111
CH <sub>4</sub>	451 ppm	ALM9169-0910	CO	3050 ppm	ALM6624-0711
H <sub>2</sub>	552 ppm	ALM48043-1011	CO <sub>2</sub>	99.99 %	A9753-0906
N <sub>2</sub>	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 <sub>2</sub> O	15.00 ppm	1.10	0.14%
NH <sub>3</sub>	15.00 ppm	0.30	0.04%
NO <sub>2</sub>	15.00 ppm	0.50	0.06%
CH <sub>4</sub>	50.00 ppm	0.70	0.09%
H <sub>2</sub>	50.00 ppm	0.10	0.01%
HCL	40.00 ppm	0.00	0.00%
NO	300.00 ppm	0.10	0.01%
SO <sub>2</sub>	500.00 ppm	0.10	0.01%
CO	N/A	N/A	N/A
CO <sub>2</sub>	15.00 %	-0.50	0.06%
H <sub>2</sub> O	1.00 %	0.00	0.00%

Interferent Gas Mixed With Pollutant (CO)

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

Cylinder	Conc	Cylinder	Cylinder	Conc	Cylinder
N <sub>2</sub> O	151 ppm	CC163990-1011	HCL	99.5 ppm	NXA1558-1011
NH <sub>3</sub>	111.2 ppm	ALM21715-1011	NO	2490 ppm	ALM55875-0110
NO <sub>2</sub>	200 ppm	150800-1011	SO <sub>2</sub>	4730 ppm	ALM57442-1111
CH <sub>4</sub>	451 ppm	ALM9169-0910	CO	3050 ppm	ALM9169-0910
H <sub>2</sub>	552 ppm	ALM48043-1011	CO <sub>2</sub>	99.99 %	A9743-0906
N <sub>2</sub>	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: 80512880 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 <sub>p(A)</sub> **	Specification Avg. C <sub>p</sub> Deviations ≤ 0.01
Trial No.	Reference ΔP	Probe ΔP	Probe C <sub>p(S)</sub> *		
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 <sub>p(A)</sub> =			0.8181	0.0007	

Pitot Side 'B':				Abs. Deviation from Avg. C <sub>p(B)</sub> **	Specification Avg. C <sub>p</sub> Deviations ≤ 0.01
Trial No.	Reference ΔP	Probe ΔP	Probe C <sub>p(S)</sub> *		
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 <sub>p(B)</sub> =			0.8205	0.0030	

'A' Average C <sub>p</sub> 0.818	-	'B' Average C <sub>p</sub> 0.821	=	Difference -0.003	Specification  Difference  ≤ 0.01
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Does assembly meet specifications? YES →

If "Yes", C<sub>p</sub> = Average of Side 'A' and 'B' Cp values. If "No", Pitot must be replaced.

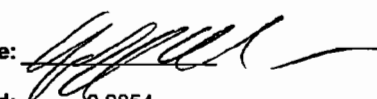
$$* C_{P(S)} = C_{P(STD)} \sqrt{\frac{\Delta P_{(STD)}}{\Delta P_{(S)}}}$$

$$** Deviation = |C_{P(S)} - \bar{C}_{P(A \text{ or } B)}|$$

All specifications are from EPA-600/9-76-005, 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: R. REDEL Calibration Signature: 

ID No: 66-6 Calibrated By: J. Ivens Meter Box Yd: 0.9854

Dept No: 66 Date of Calibration: 01/21/13 Meter Box ΔH@: 1.8280

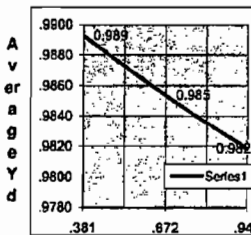
Meter Box Serial No: 66-6 Due Date of Calibration: 01/09/13 Barometer Serial No: W12637

Manufacturer Part No: 0028 Meter Box Vacuum: 1.0 in. H<sub>2</sub>O Barometric Pressure: 29.36 in. Hg

			Standard Meter Gas Volume (ft <sup>3</sup> )			Meter Box Gas Volume (ft <sup>3</sup> )			Std. Meter Temperature (°F)			Meter Box Temperature (°F)			Time (min.)	Calibration Results		
Q	ΔH	ΔP	Y <sub>ds</sub>	Initial	Final	V <sub>ds</sub> Net	Initial	Final	V <sub>d</sub> Net	T <sub>is</sub> In	T <sub>os</sub> Out	T <sub>ds</sub> Avg.	T <sub>i</sub> In	T <sub>o</sub> Out	T <sub>d</sub> Avg.	Θ	Y <sub>d</sub>	ΔH@
0.381	0.50	-1.20	1.0000	0.000	5.000	5.000	978.500	983.658	5.158	64.0	64.0	64.00	78.0	77.0	77.50	12.97	0.9901	1.8691
0.380	0.50	-1.20	1.0000	0.000	5.000	5.000	983.658	988.815	5.157	64.0	64.0	64.00	77.0	76.0	76.50	12.99	0.9885	1.8784
0.672	1.50	-1.50	1.0000	0.000	10.000	10.000	10.462	20.850	10.388	64.5	64.5	64.50	85.0	77.0	81.00	14.70	0.9855	1.8042
0.672	1.50	-1.50	1.0000	0.000	10.000	10.000	20.850	31.260	10.410	64.5	64.5	64.50	86.0	78.0	82.00	14.70	0.9852	1.8008
0.951	3.00	-1.80	1.0000	0.000	10.000	10.000	952.678	963.085	10.409	64.0	64.0	64.00	87.0	77.0	82.00	10.39	0.9819	1.7992
0.947	3.00	-1.80	1.0000	0.000	10.000	10.000	963.085	973.490	10.405	64.0	64.0	64.00	86.0	77.0	81.50	10.44	0.9813	1.8165
Averages																	0.98541	1.82803

Nomenclature	Equations
<p>P<sub>b</sub> Barometric Pressure (in. Hg)</p> <p>Q Flow Rate (cfm)</p> <p>ΔH Orifice Pressure differential (in. H<sub>2</sub>O)</p> <p>ΔP Inlet Pressure Differential (in. H<sub>2</sub>O)</p> <p>V<sub>d</sub> Gas Meter Volume - Dry (ft<sup>3</sup>)</p> <p>V<sub>ds</sub> Standard Meter Volume - Dry (ft<sup>3</sup>)</p> <p>T<sub>d</sub> Average Meter Box Temperature (°F)</p> <p>T<sub>o</sub> Outlet Meter Box Temperature (°F)</p> <p>T<sub>ds</sub> Average Standard Meter Temperature (°F)</p> <p>Y<sub>a</sub> Meter Correction Factor (unitless), Y<sub>a</sub> ≤ Y<sub>avg</sub> ± 0.02</p> <p>Y<sub>ds</sub> 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. H<sub>2</sub>O)</p> <p>ΔH@ ≤ ΔH@<sub>avg</sub> ± 0.2</p> <p>Θ Duration of Run (minutes)</p>	$Y_d = (Y_{ds}) \left[ \frac{V_{ds}}{V_d} \right] \left[ \frac{T_d + 460}{T_{ds} + 460} \right] \left[ \frac{P_b + \Delta P / 13.6}{P_b + \Delta H / 13.6} \right]$ $\Delta H@ = \frac{(0.0319)(\Delta H)}{P_b(T_o + 460)} \left[ \frac{(T_{ds} + 460)\Theta}{(V_{ds})(Y_{ds})} \right]^2$ $Q = \frac{17.64(V_{ds})(P_b)}{(T_{ds} + 460)(\Theta)}$

Average YD vs. Average CFM



Average CFM

Vacuum Gauge

Standard (in.Hg)	Gauge (in.Hg)
4.9	5.0
10.1	10.0
15.1	15.0
20.1	20.0
24.7	25.0

## Calibration Reference Information (Standard Meter)

Reference Used: Wet Test Meter Serial No. 11AG9

Calibrated By: Martin Vaquero Date Calibrated: 7/22/2012

Percent Error: 0.245% Calibration Due Date: 7/23/2013

## 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: 66-6 Office: n/a  
 Calibrated by: J. Ivens Client: n/a  
 Date: 1/21/13 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	49	50	50	50	50		
100	99	100	100	100	100		
150	149	150	150	150	150		
200	199	200	200	200	200		
250	249	250	250	250	250		
300	299	300	300	300	300		
350	349	350	350	350	350		
400	399	400	400	400	400		
450	449	450	450	450	450		
500	499	500	500	500	500		
550	549	550	550	550	550		
600	599	600	600	600	600		

*Tolerance = ±2°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>8/21/2013</u>

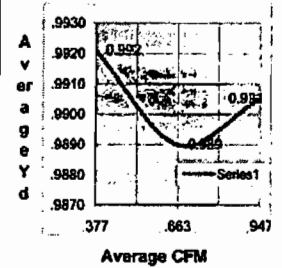
# Clean Air Engineering - Meter Box Full Test Calibration

Client: Source Reviewed By: M. Vaquero Calibration Signature: [Signature]  
 ID No: 66-11 Calibrated By: Jeff Ivens Meter Box Yd: 0.9906  
 Dept No: Source Date of Calibration: 07/11/12 Meter Box ΔH@: 1.8274  
 Meter Box Serial No: n/a Due Date of Calibration: 07/12/13 Barometer Serial No: W12637  
 Manufacturer Part No: 0028 Meter Box Vacuum: 1.0 in. H<sub>2</sub>O Barometric Pressure: 29.34 in. Hg

Standard Meter				Meter Box Gas			Std. Meter			Meter Box			Time	Calibration				
Gas Volume (ft <sup>3</sup> )				Volume (ft <sup>3</sup> )			Temperature (°F)			Temperature (°F)			(min.)	Results				
Q	ΔH	ΔP	Y <sub>ds</sub>	Initial	Final	V <sub>ds</sub> Net	Initial	Final	V <sub>d</sub> Net	T <sub>is</sub> In	T <sub>os</sub> Out	T <sub>as</sub> Avg.	T <sub>i</sub> In	T <sub>o</sub> Out	T <sub>d</sub> Avg.	Θ	Y <sub>d</sub>	ΔH@
0.377	0.50	-1.20	1.0000	0.000	5.000	5.000	984.600	989.693	5.093	78.5	78.5	78.50	88.0	85.0	86.50	12.73	0.9921	1.8750
0.377	0.50	-1.20	1.0000	0.000	5.000	5.000	989.693	994.781	5.088	78.5	78.5	78.50	87.0	85.0	86.00	12.75	0.9922	1.8809
0.664	1.50	-1.50	1.0000	0.000	10.000	10.000	19.911	30.137	10.226	79.0	79.0	79.00	93.0	86.0	89.50	14.47	0.9895	1.8170
0.663	1.50	-1.50	1.0000	0.000	10.000	10.000	30.137	40.373	10.238	79.0	79.0	79.00	93.0	86.0	89.50	14.48	0.9885	1.8195
0.950	3.00	-1.80	1.0000	0.000	10.000	10.000	957.401	967.589	10.188	78.5	78.5	78.50	95.0	85.0	90.00	10.12	0.9905	1.7774
0.945	3.00	-1.80	1.0000	0.000	10.000	10.000	967.589	977.782	10.193	78.5	78.5	78.50	96.0	85.0	90.50	10.17	0.9910	1.7950
Averages																	0.99082	1.82744

Nomenclature	Equations
<p>P<sub>b</sub> Barometric Pressure (in. Hg)</p> <p>Q Flow Rate (cfm)</p> <p>ΔH Orifice Pressure differential (in. H<sub>2</sub>O)</p> <p>ΔP Inlet Pressure Differential (in. H<sub>2</sub>O)</p> <p>V<sub>d</sub> Gas Meter Volume - Dry (ft<sup>3</sup>)</p> <p>V<sub>ds</sub> Standard Meter Volume - Dry (ft<sup>3</sup>)</p> <p>T<sub>d</sub> Average Meter Box Temperature (°F)</p> <p>T<sub>o</sub> Outlet Meter Box Temperature (°F)</p> <p>T<sub>as</sub> Average Standard Meter Temperature (°F)</p> <p>Y<sub>d</sub> Meter Correction Factor (unitless), Y<sub>i</sub> ≤ Y<sub>avg</sub> ± 0.02</p> <p>Y<sub>ds</sub> 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. H<sub>2</sub>O)</p> <p>ΔH@ ≤ ΔH@<sub>avg</sub> ± 0.2</p> <p>Θ Duration of Run (minutes)</p>	$Y_d = (Y_{ds}) \left[ \frac{V_{ds}}{V_d} \right] \left[ \frac{T_d + 460}{T_{as} + 460} \right] \left[ \frac{P_b + \Delta P / 13.6}{P_b + \Delta H / 13.6} \right]$ $\Delta H@ = \frac{(0.0319)(\Delta H)}{P_b (T_{as} + 460)} \left[ \frac{(T_{ds} + 460)\Theta}{(V_{ds})(Y_{ds})} \right]^2$ $Q = \frac{17.64(V_{ds})(P_b)}{(T_{as} + 460)(\Theta)}$

Average YD vs. Average CFM



Vacuum Gauge	
Standard (in.Hg)	Gauge (in.Hg)
4.7	5.0
9.8	10.0
14.9	15.0
20.3	20.0
25.6	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>10/28/2011</u>
Percent Error: <u>0.230%</u>	Calibration Due Date: <u>10/28/2012</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



# Meter Box - Pyrometer Calibration Sheet

Meter Box No: 66-11

Office: n/a

Calibrated by: Jeff Ivens

Client: Source

Date: 7/11/12

Job No: n/a

Temperature Scale Used: Fahrenheit

Type of Calibration: Full-Test

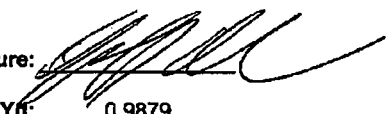
Calibration Reference Settings (°F)	Pyrometer Reading for each Channel (°F)						
	1 Stack	2 Probe	3 Filter	4 Imp Out	5 Aux	6	7
50	49	50	50	49	49		
100	99	100	100	99	99		
150	149	150	150	149	149		
200	199	200	200	199	199		
250	249	250	250	249	249		
300	299	300	300	299	299		
350	349	350	350	349	349		
400	399	400	400	399	399		
450	449	450	450	449	449		
500	499	500	500	499	499		
550	549	550	550	549	549		
600	599	600	600	599	599		

*Tolerance = ±2°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: 

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. H<sub>2</sub>O Barometric Pressure: 29.36 in. Hg

				Standard Meter Gas Volume (ft <sup>3</sup> )			Meter Box Gas Volume (ft <sup>3</sup> )			Std. Meter Temperature (°F)			Meter Box Temperature (°F)			Time (min.)	Calibration Results	
Q	ΔH	ΔP	Y <sub>ds</sub>	Initial	Final	V <sub>ds</sub> Net	Initial	Final	V <sub>d</sub> Net	T <sub>is</sub> In	T <sub>os</sub> Out	T <sub>ds</sub> Avg.	T <sub>i</sub> In	T <sub>o</sub> Out	T <sub>d</sub> Avg.	Θ	Y <sub>d</sub>	ΔH@
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	61.301	61.594	0.293	79.0	79.0	79.00	96.0	89.0	92.50	14.35	0.9884	1.7760
0.670	1.50	-1.50	1.0000	0.000	10.000	10.000	61.594	71.883	10.289	79.0	79.0	79.00	97.0	89.0	93.00	14.35	0.9897	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	1.8188
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

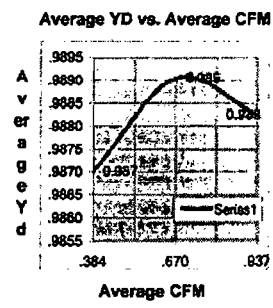
P<sub>b</sub> Barometric Pressure (in. Hg)  
 Q Flow Rate (cfm)  
 ΔH Orifice Pressure differential (in. H<sub>2</sub>O)  
 ΔP Inlet Pressure Differential (in. H<sub>2</sub>O)  
 V<sub>d</sub> Gas Meter Volume - Dry (ft<sup>3</sup>)  
 V<sub>ds</sub> Standard Meter Volume - Dry (ft<sup>3</sup>)  
 T<sub>d</sub> Average Meter Box Temperature (°F)  
 T<sub>o</sub> Outlet Meter Box Temperature (°F)  
 T<sub>ds</sub> Average Standard Meter Temperature (°F)  
 Y<sub>d</sub> Meter Correction Factor (unitless), Y<sub>d</sub> ≤ V<sub>avg</sub> ± 0.02  
 Y<sub>ds</sub> Standard Meter Correction Factor (unitless)  
 ΔH@ Orifice Pressure Differential giving 0.75 cfm of air at 68°F and 29.92 in. Hg (in. H<sub>2</sub>O)  
 ΔH@ ≤ ΔH@<sub>avg</sub> ± 0.2  
 Θ Duration of Run (minutes)

### Equations

$$Y_d = (Y_{ds}) \left[ \frac{V_{ds}}{V_d} \right] \left[ \frac{T_d + 460}{T_{ds} + 460} \right] \left[ \frac{P_b + \Delta P / 13.6}{P_b + \Delta H / 13.6} \right]$$

$$\Delta H@ = \frac{(0.0319)(\Delta H)}{P_b(T_o + 460)} \left[ \frac{(T_{ds} + 460)\Theta}{(V_{ds})(Y_{ds})} \right]^2$$

$$Q = \frac{17.64(V_{ds})(Y_{ds})}{(T_{ds} + 460)(\Theta)}$$



### Vacuum Gauge

Standard (in. Hg)	Gauge (in. Hg)
5.0	5.0
10.5	10.0
15.8	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



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# 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: 66-18

Calibrated By: O.Lavrov

Meter Box Yd: 1.0008

Job No: n/a

Date of Calibration: 10/31/12

Meter Box ΔH@: 1.9165

Meter Box Serial No: 4U-5139-63M

Due Date of Calibration: 11/01/13

Barometer Serial No: W12637

Manufacturer Part No: 0028

Meter Box Vacuum: 1.0 in. H<sub>2</sub>O

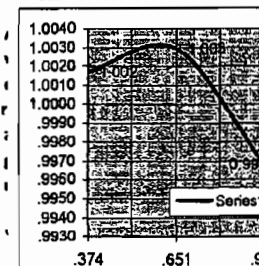
Barometric Pressure: 29.00 in. Hg

				Standard Meter Gas Volume (ft <sup>3</sup> )			Meter Box Gas Volume (ft <sup>3</sup> )			Std. Meter Temperature (°F)			Meter Box Temperature (°F)			Time (min.)	Calibration Results	
Q	ΔH	ΔP	Y <sub>ds</sub>	Initial	Final	V <sub>ds</sub> Net	Initial	Final	V <sub>d</sub> Net	T <sub>is</sub> In	T <sub>os</sub> Out	T <sub>ds</sub> Avg.	T <sub>i</sub> In	T <sub>o</sub> Out	T <sub>d</sub> Avg.	Θ	Y <sub>d</sub>	ΔH@
0.374	0.50	-1.00	1.0000	0.000	6.000	6.000	62.141	68.233	6.082	71.5	71.5	71.50	84.0	81.0	82.50	15.45	1.0015	1.9043
0.374	0.50	-1.00	1.0000	0.000	5.000	5.000	68.233	73.298	5.065	71.5	71.5	71.50	83.0	80.0	81.50	12.87	1.0019	1.9063
0.651	1.50	-1.30	1.0000	0.000	10.000	10.000	77.743	87.888	10.145	71.5	71.5	71.50	86.0	83.0	84.50	14.78	1.0027	1.8752
0.651	1.50	-1.30	1.0000	0.000	10.000	10.000	87.888	98.028	10.140	71.5	71.5	71.50	86.0	83.0	84.50	14.78	1.0032	1.8752
0.900	3.00	-1.70	1.0000	0.000	10.000	10.000	38.244	48.400	10.156	71.5	71.5	71.50	89.0	80.0	84.50	10.69	0.9968	1.9728
0.901	3.00	-1.70	1.0000	0.000	10.000	10.000	48.400	58.556	10.156	71.5	71.5	71.50	90.0	81.0	85.50	10.68	0.9986	1.9655
Averages																	1.00077	1.91653

D-34

Nomenclature	Equations
<p>P<sub>b</sub> Barometric Pressure (in. Hg)</p> <p>Q Flow Rate (cfm)</p> <p>ΔH Orifice Pressure differential (in. H<sub>2</sub>O)</p> <p>ΔP Inlet Pressure Differential (in. H<sub>2</sub>O)</p> <p>V<sub>d</sub> Gas Meter Volume - Dry (ft<sup>3</sup>)</p> <p>V<sub>ds</sub> Standard Meter Volume - Dry (ft<sup>3</sup>)</p> <p>T<sub>d</sub> Average Meter Box Temperature (°F)</p> <p>T<sub>o</sub> Outlet Meter Box Temperature (°F)</p> <p>T<sub>ds</sub> Average Standard Meter Temperature (°F)</p> <p>Y<sub>d</sub> Meter Correction Factor (unitless), Y<sub>i</sub> ≤ Y<sub>avg</sub> ± 0.02</p> <p>Y<sub>ds</sub> 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. H<sub>2</sub>O) ΔH@<sub>i</sub> ≤ ΔH@<sub>avg</sub> ± 0.2</p> <p>Θ Duration of Run (minutes)</p>	$Y_d = (Y_{ds}) \left[ \frac{V_{ds}}{V_d} \right] \left[ \frac{T_d + 460}{T_{ds} + 460} \right] \left[ \frac{P_b + \Delta P / 13.6}{P_b + \Delta H / 13.6} \right]$ $\Delta H@ = \frac{(0.0319)(\Delta H)}{P_b(T_o + 460)} \left[ \frac{(T_{ds} + 460)\Theta}{(V_{ds})(Y_{ds})} \right]^2$ $Q = \frac{17.64(V_{ds})(P_b)}{(T_{ds} + 460)(\Theta)}$

Average VD vs Average CFM



Vacuum Gauge

Standard (in.Hg)	Gauge (in.Hg)
4.6	5.0
9.7	10.0
15.1	15.0
20.1	20.0
25.1	25.0

**Calibration Reference Information (Standard Meter)**

Reference Used: Wet Test Meter

Serial No: 11AG9

Calibrated By: Martin Vaquero

Date Calibrated: 7/22/2012

Percent Error: 0.249%

Calibration Due Date: 7/22/2013

**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: 66-18 Office: Express  
 Calibrated by: O.Lavrov Client: SOURCE 66  
 Date: 10/31/12 Job No: n/a  
 Temperature Scale Used: Fahrenheit Type of Calibration: Full-Test

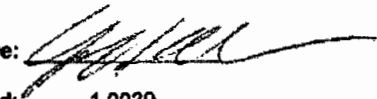
Calibration Reference Settings (°F)	Pyrometer Reading for each Channel (°F)					
	1 Stack	2 Probe	3 Filter	4 Imp Out	5 Aux	
50	51	48	50	51	51	
100	101	98	100	101	101	
150	151	148	150	151	151	
200	201	198	200	201	201	
250	251	248	250	251	251	
300	300	298	300	300	300	
350	350	348	350	350	350	
400	400	398	400	400	400	
450	450	448	450	450	450	
500	500	498	500	500	500	
550	550	548	550	550	550	
600	600	598	600	600	600	

*Tolerance = ±2°F difference from reference setting.*

### Calibration Reference Information

Reference Used: <u>Omega CL23A</u>	Serial No: <u>T-225950</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>

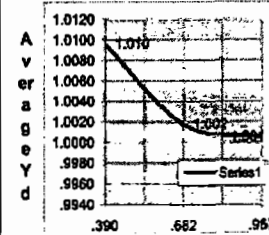
# Clean Air Engineering - Meter Box Full Test Calibration

**Client:** Source      **Reviewed By:** R. Redel      **Calibration 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. H<sub>2</sub>O      **Barometric Pressure:** 29.05 in. Hg

				Standard Meter Gas Volume (ft <sup>3</sup> )			Meter Box Gas Volume (ft <sup>3</sup> )			Std. Meter Temperature (°F)			Meter Box Temperature (°F)			Time (min.)	Calibration Results	
Q	ΔH	ΔP	Y <sub>ds</sub>	Initial	Final	V <sub>ds</sub> Net	Initial	Final	V <sub>d</sub> Net	T <sub>is</sub> In	T <sub>os</sub> Out	T <sub>ds</sub> Avg.	T <sub>i</sub> In	T <sub>o</sub> Out	T <sub>d</sub> Avg.	Θ	Y <sub>d</sub>	ΔH@
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	111.398	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
0.957	3.00	-1.80	1.0000	0.000	10.000	10.000	67.805	77.808	10.203	65.5	65.5	65.50	89.0	77.0	83.00	10.19	1.0005	1.7591
0.958	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
<b>Averages</b>																	1.00391	1.74128

Nomenclature	Equations
<p>P<sub>b</sub> Barometric Pressure (in. Hg)</p> <p>Q Flow Rate (cfm)</p> <p>ΔH Orifice Pressure differential (in. H<sub>2</sub>O)</p> <p>ΔP Inlet Pressure Differential (in. H<sub>2</sub>O)</p> <p>V<sub>d</sub> Gas Meter Volume - Dry (ft<sup>3</sup>)</p> <p>V<sub>ds</sub> Standard Meter Volume - Dry (ft<sup>3</sup>)</p> <p>T<sub>d</sub> Average Meter Box Temperature (°F)</p> <p>T<sub>o</sub> Outlet Meter Box Temperature (°F)</p> <p>T<sub>ds</sub> Average Standard Meter Temperature (°F)</p> <p>Y<sub>d</sub> Meter Correction Factor (unitless), Y<sub>1</sub> ≤ Y<sub>avg</sub> ± 0.02</p> <p>Y<sub>es</sub> 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. H<sub>2</sub>O)</p> <p>ΔH@ ± ΔH@<sub>avg</sub> ± 0.2</p> <p>Θ Duration of Run (minutes)</p>	$Y_d = (Y_{ds}) \left[ \frac{V_{ds}}{V_d} \right] \left[ \frac{T_d + 460}{T_{ds} + 460} \right] \left[ \frac{P_b + \Delta P / 13.6}{P_b + \Delta H / 13.6} \right]$ $\Delta H@ = \frac{(0.0319)(\Delta H)}{P_b(T_{ds} + 460)} \left[ \frac{(T_{ds} + 460)\Theta}{(V_{ds})(Y_{ds})} \right]^2$ $Q = \frac{17.64(V_{ds})(P_b)}{(T_{ds} + 460)(\Theta)}$

Average YD vs. Average CFM



Average CFM

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>Wei 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



# 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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WHEELABRATOR SOUTH BROWARD, INC.  
FT. LAUDERDALE, FL

Client Reference No: Service Agreement  
CleanAir Project No: 12218-4

**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: SL

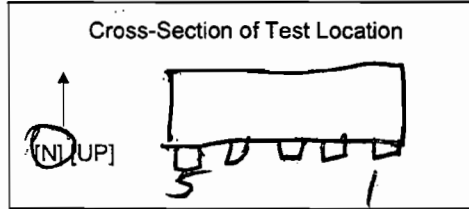
Date: 3/7/13



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TEST LOCATION: FF OUTLET VELOCITY DETERMINATION  
 UNIT: 1 **FIELD DATA SHEET**

Client: <u>WHOLE LABRATOR</u>	Project No. <u>12218</u>
Plant: <u>SOUTH BROWARD</u>	Date: _____
Meter Operator: <u>W A N O B E N N Y</u>	
Probe Operator: _____	
Source of Moisture and Molecular Weight Data <u>WBT METHOD</u>	



Amb. Temp. (°F) <u>75</u>	Bar. Press. <u>29.79</u> (in. Hg) (mbar)
Pitot 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 <u>1</u>	Load <u>NORMAL</u>	Run	Load	Run <u>2</u>	Load <u>NORMAL</u>	Run	Load
Start Time <u>0811</u>	Stop Time <u>0820</u>	Start Time	Stop Time	Start Time <u>0836</u>	Stop Time <u>0848</u>	Start Time	Stop Time
Static Press. (in. H <sub>2</sub> O) <u>-10.0</u>		Static Press. (in. H <sub>2</sub> O)		Static Press. (in. H <sub>2</sub> O) <u>-10.0</u>		Static Press. (in. H <sub>2</sub> 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 <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes
5-1	301	0.45		2-1	303	0.49		5-1	304	0.49		2-1	304	0.40	
5-2	301	0.46		2-2	302	0.40		5-2	304	0.44		2-2	305	0.39	
5-3	302	0.51		2-3	303	0.34		5-3	304	0.38		2-3	305	0.43	
5-4	302	0.57		2-4	303	0.39		5-4	304	0.39		2-4	305	0.51	
5-5	302	0.61		2-5	303	0.52		5-5	304	0.49		2-5	306	0.54	
4-1	300	0.43		1-1	301	0.46		4-1	301	0.48		1-1	305	0.42	
4-2	301	0.41		1-2	302	0.43		4-2	301	0.42		1-2	306	0.42	
4-3	301	0.44		1-3	304	0.32		4-3	302	0.42		1-3	306	0.45	
4-4	302	0.54		1-4	304	0.35		4-4	302	0.46		1-4	306	0.53	
4-5	302	0.58		1-5	304	0.54		4-5	302	0.61		1-5	307	0.55	
3-1	301	0.50						3-1	303	0.50					
3-2	301	0.41						3-2	303	0.41					
3-3	301	0.38						3-3	303	0.38					
3-4	302	0.39						3-4	303	0.47					
3-5	302	0.50						3-5	303	0.59					
	4521														6.79928
Total	<del>227</del>	10.350		3030	6.4822			4543	10.17003			3058	6.79928	0.212517	
Average				302.0409	0.67350			303.912							

Sum of square roots.

Circle correct bracketed units on data sheet.

3/17 304.000 (0.67875)



QA/QC 20  
Date 3/25

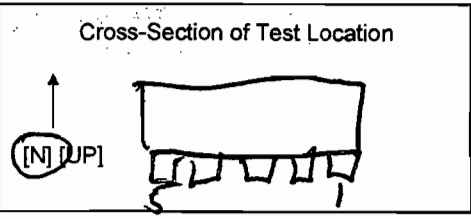


TEST LOCATION: FF OUTLOT

VELOCITY DETERMINATION  
FIELD DATA SHEET

UNIT: 1

Client <u>LABORATORY</u>	Project No. <u>12218</u>
Plant <u>SOUTH BROWARD</u>	Date <u>3/25/13</u>
Meter Operator <u>WAYNE BROWN</u>	
Probe Operator <u>ANDY D</u>	
Source of Moisture and Molecular Weight Data <u>WET METERED</u>	



Amb. Temp. (°F) <u>75</u>	Bar. Press. <u>29.70</u> (in. Hg) [mbar]
Pitot Cp <u>0.819</u>	Probe I.D. No. <u>67-8P-D</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	Load	Run	Load	Run	Load	Run	Load								
<u>3</u>	<u>NORMAL</u>			<u>4</u>	<u>NORMAL</u>										
Start Time <u>0935</u>	Stop Time <u>1012</u>	Start Time	Stop Time	Start Time	Stop Time	Start Time	Stop Time								
Static Press. (in. H <sub>2</sub> O) <u>-8.3</u>		Static Press. (in. H <sub>2</sub> O)		Static Press. (in. H <sub>2</sub> O) <u>-8.3</u>		Static Press. (in. H <sub>2</sub> 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 <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes
5-1	307	0.46		2-1	207	0.48		5-1	303	0.32		2-1	303	0.41	
5-2	307	0.41		2-2	307	0.38		5-2	304	0.33		2-2	303	0.35	
5-3	307	0.45		2-3	307	0.35		5-3	305	0.36		2-3	304	0.33	
5-4	307	0.49		2-4	302	0.41		5-4	306	0.45		2-4	304	0.39	
5-5	307	0.49		2-5	307	0.54		5-5	306	0.47		2-5	304	0.53	
4-1	303	0.42		1-1	304	0.45		4-1	304	0.44		1-1	305	0.42	
4-2	303	0.37		1-2	304	0.41		4-2	304	0.36		1-2	305	0.38	
4-3	304	0.38		1-3	304	0.35		4-3	304	0.37		1-3	305	0.32	
4-4	304	0.45		1-4	303	0.35		4-4	304	0.42		1-4	305	0.31	
4-5	304	0.50		1-5	303	0.42		4-5	305	0.48		1-5	305	0.50	
3-1	307	0.48						3-1	304	0.39					
3-2	307	0.39						3-2	304	0.36					
3-3	307	0.38						3-3	304	0.34					
3-4	307	0.42						3-4	304	0.40					
3-5	307	0.53						3-5	304	0.52					
Total	<u>1588</u>	<u>9.9499</u>			<u>3053</u>	<u>6.41945</u>			<u>4566</u>	<u>9.470</u>			<u>3043</u>	<u>6.2589</u>	
Average					<u>305</u>	<u>0.65475</u>							<u>304.3200</u>	<u>0.62892</u>	

Sum of square roots.

Circle correct bracketed units on data sheet.

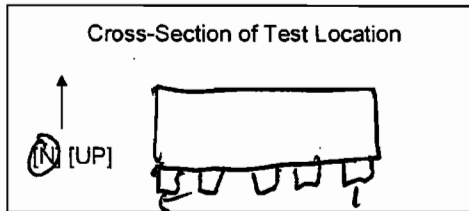


QA/QC SB  
Date 3/28

E-4

TEST LOCATION: FP OUTLET VELOCITY DETERMINATION  
 UNIT: 1 FIELD DATA SHEET

Client: <u>WHEELABRATOR</u>	Project No. <u>12218</u>
Plant: <u>SOUTH BROWARD</u>	Date: <u>3/25/13</u>
Meter Operator: <u>WAYNE BERRY</u>	
Probe Operator: <u>ANDY O.</u>	
Source of Moisture and Molecular Weight Data: <u>WET METHOD</u>	



Amb. Temp. (°F) <u>75</u>	Bar. Press. <u>29.70</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>96x96</u>

Run	Load	Run	Load	Run	Load	Run	Load								
5	NORMAL			6	NORMAL										
Start Time <u>1101</u>	Stop Time <u>1110</u>	Start Time	Stop Time	Start Time <u>1135</u>	Stop Time <u>1150</u>	Start Time	Stop Time								
Static Press. (in. H <sub>2</sub> O) <u>-8.4</u>		Static Press. (in. H <sub>2</sub> O)		Static Press. (in. H <sub>2</sub> O) <u>-8.4</u>		Static Press. (in. H <sub>2</sub> 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 <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes
5-1	309	0.39		2-1	310	0.41		5-1	303	0.41		2-1	304	0.45	
5-2	308	0.36		2-2	310	0.35		5-2	304	0.40		2-2	304	0.36	
5-3	309	0.40		2-3	310	0.31		5-3	305	0.38		2-3	304	0.30	
5-4	310	0.39		2-4	309	0.37		5-4	306	0.48		2-4	304	0.39	
5-5	310	0.46		2-5	309	0.50		5-5	306	0.53		2-5	304	0.36	0.56 WB
4-1	308	0.39		1-1	304	0.37		4-1	304	0.49		1-1	307	0.44	
4-2	309	0.35		1-2	304	0.34		4-2	304	0.40		1-2	307	0.37	
4-3	310	0.37		1-3	304	0.28		4-3	303	0.43		1-3	306	0.36	
4-4	310	0.43		1-4	304	0.21		4-4	304	0.49		1-4	306	0.32	
4-5	310	0.49		1-5	303	0.49		4-5	304	0.56		1-5	304	0.33	
3-1	313	0.39						3-1	308	0.44					
3-2	313	0.32						3-2	309	0.35					
3-3	313	0.31						3-3	309	0.29					
3-4	313	0.38						3-4	308	0.38					
3-5	311	0.53						3-5	307	0.53					
Total	<u>4656</u>				<u>3067</u>	<u>6.9829</u>			<u>4504</u>	<u>9.8017</u>			<u>3051</u>	<u>6.20317</u>	
Average		<u>9.43</u>			<u>306.900</u>	<u>0.9151</u>							<u>305.400</u>	<u>0.91351</u>	

Sum of square roots.

Circle correct bracketed units on data sheet.

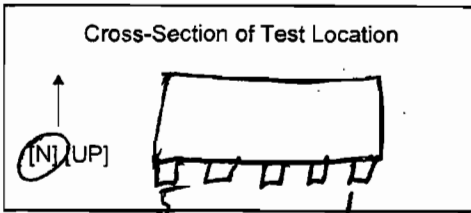
61656

59  
4/17

CleanAir ENGINEERING

TEST LOCATION: FF OUT LOT VELOCITY DETERMINATION  
 UNIT: 1 FIELD DATA SHEET

Client <u>WHODLARATOR</u>	Project No. <u>12218</u>
Plant <u>SOUTH BROWARD</u>	Date <u>3/25/13</u>
Meter Operator <u>SHAWN JOHNS</u>	
Probe Operator <u>WAYNE BERRY</u>	
Source of Moisture and Molecular Weight Data <u>WET METHOD</u>	



Amb. Temp. (°F)	Bar. Press. <u>29.7</u> 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>96 X 96</u>	

Run	Load	Run	Load	Run	Load	Run	Load								
7	NORMAL			8	NORMAL										
Start Time <u>12:32</u>	Stop Time <u>12:48</u>	Start Time	Stop Time	Start Time <u>13:09</u>	Stop Time <u>13:23</u>	Start Time	Stop Time								
Static Press. (in. H <sub>2</sub> O) <u>-8.4</u>		Static Press. (in. H <sub>2</sub> O)		Static Press. (in. H <sub>2</sub> O) <u>-8.4</u>		Static Press. (in. H <sub>2</sub> 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 <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes
5-1	304	0.32		2-1	305	0.41		5-1	309	0.29		2-1	321	0.56	
5-2	305	0.34		2-2	305	0.29		5-2	308	0.35		2-2	320	0.40	
5-3	305	0.39		2-3	306	0.26		5-3	309	0.46		2-3	309	0.37	
5-4	305	0.46		2-4	306	0.30		5-4	310	0.52		2-4	310	0.47	
5-5	305	0.49		2-5	306	0.42		5-5	309	0.51		2-5	310	0.58	
4-1	305	0.37		1-1	307	0.24		4-1	306	0.44		1-1	303	0.38	
4-2	304	0.34		1-2	307	0.22		4-2	307	0.38		1-2	303	0.35	
4-3	305	0.37		1-3	305	0.33		4-3	308	0.39		1-3	303	0.37	
4-4	305	0.42		1-4	308	0.35		4-4	309	0.47		1-4	303	0.31	
4-5	305	0.47		1-5	308	0.54		4-5	309	0.51		1-5	303	0.45	
3-1	305	0.38						3-1	306	0.27					
3-2	305	0.31						3-2	306	0.30					
3-3	306	0.34						3-3	305	0.36					
3-4	306	0.31						3-4	305	0.43					
3-5	306	0.44						3-5	305	0.48					
Total	<u>7639</u>				<u>150653</u>				<u>7697</u>					<u>16.0088</u>	
Average	<u>305.560</u>				<u>0.6026</u>				<u>307.9100</u>					<u>0.6404</u>	

Sum of square roots.

Circle correct bracketed units on data sheet.

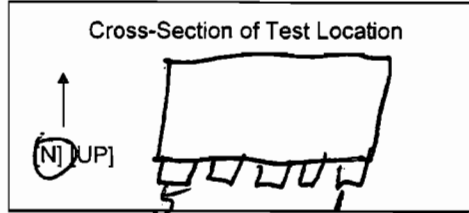


TEST LOCATION: KF OUTLET VELOCITY DETERMINATION

UNIT: 1

FIELD DATA SHEET

Client: <u>WHD LABORATORY</u>	Project No. <u>12218</u>
Plant: <u>SOUTH BROAD</u>	Date: <u>3/25/13</u>
Meter Operator: <u>SHAWN JOINT</u>	
Probe Operator: <u>WAYNE BOART</u>	
Source of Moisture and Molecular Weight Data <u>WFT METHOD</u>	



Amb. Temp. (°F)	Bar. Press. <u>29.20</u> (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								
<u>9</u>	<u>NORMAL</u>			<u>10</u>	<u>NORMAL</u>										
Start Time <u>13:48</u>	Stop Time <u>14:03</u>	Start Time	Stop Time	Start Time <u>14:24</u>	Stop Time <u>14:46</u>	Start Time	Stop Time								
Static Press. (in. H <sub>2</sub> O) <u>-8.4</u>		Static Press. (in. H <sub>2</sub> O)		Static Press. (in. H <sub>2</sub> O) <u>-8.4</u>		Static Press. (in. H <sub>2</sub> 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 <sub>s</sub> (°F)	Velocity Head ΔP (in.H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in.H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in.H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in.H <sub>2</sub> O)	Notes
5-1	306	0.40		2-1	303	0.42		5-1	311	0.41		2-1	313	0.42	
5-2	306	0.41		2-2	303	0.33		5-2	310	0.42		2-2	314	0.38	
5-3	307	0.46		2-3	304	0.32		5-3	312	0.44		2-3	315	0.36	
5-4	307	0.51		2-4	303	0.38		5-4	302	0.51		2-4	316	0.44	
5-5	307	0.36		2-5	303	0.50		5-5	316	0.38		2-5	316	0.53	
4-1	309	0.44		1-1	304	0.34		4-1	308	0.40		1-1	312	0.22	
4-2	309	0.40		1-2	304	0.37		4-2	308	0.38		1-2	313	0.40	
4-3	312	0.52		1-3	304	0.32		4-3	309	0.41		1-3	314	0.37	
4-4	312	0.56		1-4	304	0.32		4-4	309	0.44		1-4	314	0.36	
4-5	310	0.58		1-5	304	0.48		4-5	309	0.56		1-5	313	0.48	
3-1	308	0.30						3-1	315	0.38					
3-2	308	0.34						3-2	315	0.37					
3-3	308	0.34						3-3	315	0.40					
3-4	307	0.44						3-4	313	0.48					
3-5	308	0.44						3-5	313	0.51					
Total	<u>7660</u>								<u>7825</u>						
Average	<u>306.4000</u>				<u>16.0379</u>				<u>313.0000</u>				<u>16.3715</u>		<u>0.65417</u>

Sum of square roots.

Circle correct bracketed units on data sheet.



E-7

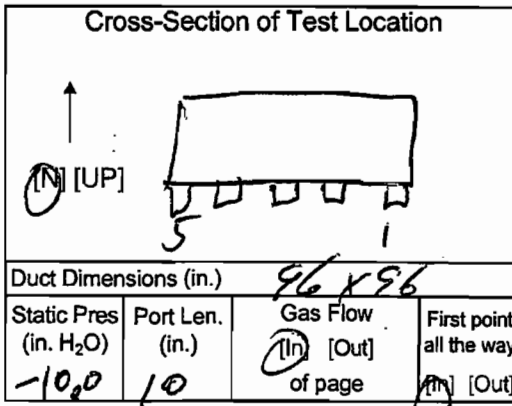
TEST LOCATION: FF OUTLOT  
 UNIT: 1 RUN: 1

HCL TESTING  
**FIELD DATA SHEET**

METHOD: 26A PAGE 1 OF 1

Client <u>WHEELABRATOR</u>	Project No. <u>12218</u>
Plant <u>SOUTH BIRDMARK</u>	Date <u>3/25/13</u>
Meter Operator <u>WALTER BEARY</u>	
Probe Operator	

Meter Box <u>66-14</u>	Sample Box No. <u>B-01</u>
Meter Yd <u>0.9879</u>	Meter ΔH@ <u>1.8015</u>
K Factor <u>-</u>	Pitot Cp <u>-</u>
Leak Rate Before <u>0.004</u> [Lpm] @ <u>15</u> (in. Hg)	
Leak Rate After <u>0.001</u> [Lpm] @ <u>10</u> (in. Hg)	
Pitot Leak Check Before: <input type="checkbox"/> After: <input checked="" type="checkbox"/> Bad <input type="checkbox"/>	



Amb. Temp. (°F) <u>75</u>	Bar. Press. <u>29.70</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: 0800 Stop Time: 0900

Traverse Point Number	Min/pt Elapsed Time	Velocity Head ΔP (in. H <sub>2</sub> O)	Orifice Setting ΔH (in. H <sub>2</sub> O)	Gas Sample Volume V <sub>m</sub> Init. Vol. [ft <sup>3</sup> ] [L]	Stack Temp. Ts (°F)	Probe T <sub>p</sub> (°F)		Cond. Temp. T <sub>c</sub> (°F)	DGM Inlet T <sub>min</sub> (°F)	DGM Outlet T <sub>min</sub> (°F)	Pump Vacuum (in. Hg)	Oxygen Indicator, approx (%dv)	<input type="checkbox"/> Amb Filter <input type="checkbox"/> Dioxin Trap <input type="checkbox"/> _____	Notes
						300	300							
3-1	5	MA	1.5	409.59	298	291	303	63	75	73	5	8.7		
	10		1.5	412.97	299	293	302	62	75	73	5	9.0		
	15		1.5	416.35	299	295	298	61	78	74	5.5	8.7		
	20		1.5	419.27	303	297	306	62	80	75	6	8.3		
	25		1.5	423.22	301	297	302	63	81	75	6	9.0		
	30		1.5	426.63	303	298	305	64	83	76	6	8.8		
	35		1.5	430.07	303	299	308	64	83	76	6	8.8		
	40		1.5	433.55	302	298	299	64	84	77	6	9.0		
	45		1.5	436.98	304	298	303	64	85	77	6	8.2		
	50		1.5	440.45	304	294	307	64	85	77	6	9.1		
55		1.5	443.86	304	300	306	65	86	78	6	9.7			
10		1.5	447.310	305	299	299	63	86	78	6	9.7			
Total				40.9100	3625.0				981.0	909.0				
Average					302.833				78.7500					

\* Sum of square roots.

Circle correct bracketed units on data sheet.



QA/QC W/B  
 Date 3/25/13

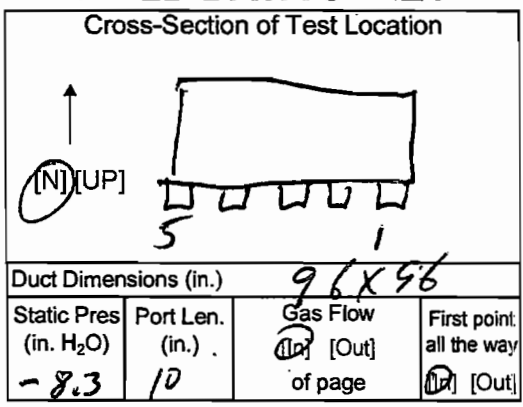
TEST LOCATION: FF OUTLET  
 UNIT: 1 RUN: 2

HCL TESTING  
**FIELD DATA SHEET**

METHOD: 26A PAGE 1 OF 1

Client: WHCBLA DATOR Project No. 12218  
 Plant: SOUTH 8 ROW AND Date: 3/25/13  
 Meter Operator: WAYNE BENNY  
 Probe Operator: \_\_\_\_\_

Meter Box: 66-14 Sample Box No.: 724  
 Meter Yd: 0.9879 Meter ΔH@: 1.8015  
 K Factor: \_\_\_\_\_ Pitot Co: \_\_\_\_\_  
 Leak Rate Before: 0.0030 [Lpm] @ 15 (in. Hg)  
 Leak Rate After: 0.0030 [Lpm] @ 10 (in. Hg)  
 Pitot Leak Check Before:  After: Good  Bad



Amb. Temp. (°F) 74 Bar. Press. 29.70 (in. Hg) (mbar)  
 Probe I.D. No. 67-4-3  
 Liner Material GRASS

Filter No. \_\_\_\_\_  
 Thimble No. \_\_\_\_\_  
 Nozzle Diameter \_\_\_\_\_ Nozzle I.D. \_\_\_\_\_

Start Time: 0923 Stop Time: 1034

Traverse Point Number	Min/pt Elapsed Time	Velocity Head ΔP (in. H <sub>2</sub> O)	Orifice Setting ΔH (in. H <sub>2</sub> O)	Gas Sample Volume V <sub>m</sub> Init. Vol. (ft <sup>3</sup> ) [L]	Stack Temp. T <sub>s</sub> (°F)	Probe T <sub>p</sub> (°F)	Filter T <sub>f</sub> (°F)	Cond. Temp. T <sub>c</sub> (°F)	DGM Inlet T <sub>m in</sub> (°F)	DGM Outlet T <sub>m out</sub> (°F)	Pump Vacuum (in. Hg)	Oxygen Indicator, approx (%dv)	<input type="checkbox"/> Amb Filter <input type="checkbox"/> Dioxin Trap	Notes
						Set Points								
3-1	5	N/A	1.5	447.730	306	291	300	59	78	77	5.5	10.9		PAUSE 0929
	10		1.5	454.59	302	292	296	54	79	78	5.5	8.8		0939 RESUME
	15		1.5	457.95	303	298	302	53	81	77	5.5	7.3		
	20		1.5	461.35	302	299	295	53	83	77	6	7.5		
	25		1.5	464.79	301	301	307	56	85	78	6	7.4		
	30		1.5	468.23	303	301	308	60	85	78	6	7.3		
	35		1.5	471.63	304	301	304	64	86	78	6	7.7		
	40		1.5	475.08	303	300	296	64	86	79	6	7.7		
	45		1.5	478.53	304	299	301	64	87	79	6	8.2		
	50		1.5	482.00	302	300	306	64	87	79	6	8.2		
	55		1.5	485.47	304	300	296	65	87	80	6	8.2		
	60		1.5	488.910	304	300	305	61	87	80	6	8.0		
	Total			41,1800	3638.0				101.0	940.0				
	Average		1.5		303.1667					81.2917				

\* Sum of square roots.

Circle correct bracketed units on data sheet.



QA/QC WJ  
 Date 3/25/13

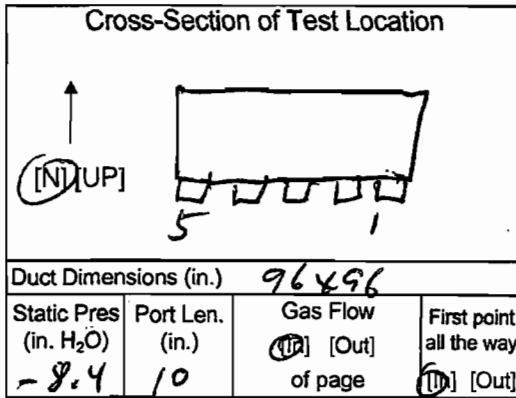
TEST LOCATION: FF OUTLOT  
 UNIT: 1 RUN: 3

HCL TESTING  
**FIELD DATA SHEET**

METHOD: 26A PAGE 1 OF 1

Client WHEELABRATOR Project No. 12218  
 Plant SOUTH BROWARD Date 3/25/13  
 Meter Operator WAYNE BERRY  
 Probe Operator                     

Meter Box 66-14 Sample Box No. 301  
 Meter Y<sub>d</sub> 0.9879 Meter ΔH<sub>@</sub> 1.8015  
 K Factor                      Pitot C<sub>p</sub>                       
 Leak Rate Before 0.007 [Lpm] @ 15 (in. Hg)  
 Leak Rate After 0.001 [Lpm] @ 10 (in. Hg)  
 Pitot Leak Check Before  After: Good



Amb. Temp. (°F) 74 Bar. Press. 29.70 (in. Hg) [mbar]  
 Probe I.D. No. 67-43  
 Liner Material GLASS

Filter No.                       
 Thimble No.                       
 Nozzle Diameter                      Nozzle I.D.                     

Start Time: 1054 Stop Time: 1154

Traverse Point Number	Min/pt Elapsed Time	Velocity Head ΔP (in. H <sub>2</sub> O)	Orifice Setting ΔH (in. H <sub>2</sub> O)	Gas Sample Volume V <sub>m</sub> Init. Vol. (L)	Stack Temp. T <sub>s</sub> (°F)	Probe T <sub>p</sub> (°F)	Filter T <sub>f</sub> (°F)	Cond. Temp. T <sub>c</sub> (°F)	DGM Inlet T <sub>m in</sub> (°F)	DGM Outlet T <sub>m out</sub> (°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	493.35	308	293	307	63	83	80	6	7.8		
	10		1.5	496.75	308	295	305	53	85	81	5.5	8.0		
	15		1.5	500.16	311	297	296	52	87	81	5.5	7.4		
	20		1.5	503.59	303	298	295	54	89	82	5.5	8.4		
	25		1.5	507.01	307	299	307	58	89	83	5.5	8.6		
	30		1.5	510.47	305	299	300	63	90	83	5.5	9.0		
	35		1.5	513.94	304	299	297	63	91	84	5.5	8.2		
	40		1.5	517.38	305	298	304	60	90	84	5.5	9.1		
	45		1.5	520.82	306	301	307	56	90	84	5.5	8.7		
	50		1.5	524.25	303	300	304	54	91	84	5.5	8.1		
	55		1.5	527.71	304	300	299	53	92	85	5.5	8.5		
	60		1.5	531.130	305	300	301	54	94	86	5.5	8.6		
	Total			41.5600	3669.0				1071.9997.0					
	Average		1.5		305.7500				86.1667					

\* Sum of square roots.

Circle correct bracketed units on data sheet.



# Impinger Weight Sheet

Client Wheelabrator		Unit Name / Location Unit 1 FF Outlet	
Plant South Broward	Job No. 12218	Method	Modified M26A

Balance Calibration Check			
Balance ID	TL07-4	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	Filter Type Teflon Mat	Sample Box No.	B1
Date	3/25/13	Lot No.	pH	
Analyst	DL	Filter No. NA	Rinse NA	

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	50 mL 0.1N H2SO4	485.7	458.9	26.8	
Impinger 2	100 mL 0.1N H2SO4	678.3	548.8	129.5	
Impinger 3	100 mL 0.1N H2SO4	592.0	530.9	61.1	
Impinger 4	Empty	486.1	468.3	17.8	
Impinger 5	Silica Gel	724.4	704.9	19.5	Total Weight (gm)
Impinger 6					23.5
Impinger 7					254.7

QA/QC SB  
 Date 3/25

Run No.	2	Filter Type Teflon Mat	Sample Box No.	B24
Date	3-25-13	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	480.1	450.8	37.3	
Impinger 2	100 mL 0.1N H2SO4	622.9	566.8	156.1	
Impinger 3	100 mL 0.1N H2SO4	599.0	543.2	55.8	
Impinger 4	Empty	454.6	442.1	12.5	
Impinger 5	Silica Gel	724.2	706.5	17.7	Total Weight (gm)
Impinger 6					261.7
Impinger 7					279.4

QA/QC SB  
 Date 3/25

Run No.	3	Filter Type Teflon Mat	Sample Box No.	B1
Date		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	457.9	34.5	
Impinger 2	100 mL 0.1N H2SO4	703.7	547.5	156.5	
Impinger 3	100 mL 0.1N H2SO4	592.9	539.4	53.5	
Impinger 4	Empty	468.9	468.6	0.3	
Impinger 5	Silica Gel	735.5	724.4	11.1	Total Weight (gm)
Impinger 6					244.5
Impinger 7					255.6

QA/QC  
 Date

QA/QC SB  
 Date 3/25





TEST LOCATION: FF OUT LET  
 UNIT: 1 RUN: 1

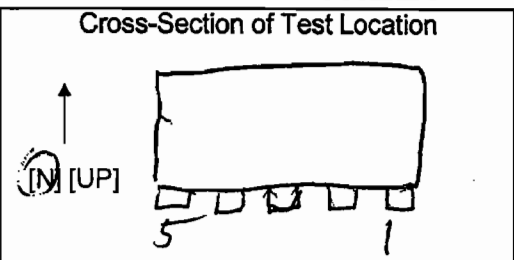
*particulate*  
MEALS

TESTING

METHOD: 5-29 PAGE 1 OF 2

**FIELD DATA SHEET**

Client <u>WHEELABRATOR</u>	Project No. <u>12218</u>
Plant <u>SOUTH BROWARD</u>	Date <u>3/25/03</u>
Meter Operator <u>SHAWN JOINT</u>	
Probe Operator <u>WAYNE BERRY</u>	



Amb. Temp. (°F) <u>86</u>	Bar. Press. <u>29.70</u> (in. Hg) [mbar]
Probe I.D. No. <u>67-8-21</u>	
Liner Material <u>GLASS</u>	

Meter Box <u>85-2</u>	Sample Box No. <u>M3</u>
Meter Yd <u>1.0039</u>	Meter ΔH <sub>0</sub> <u>1.7413</u>
K Factor <u>2.74</u>	Pitot C <sub>p</sub> <u>0.813</u>
Leak Rate Before <u>0.003</u> (cfm) [Lpm] @ <u>15</u> (in. Hg)	
Leak Rate After <u>0.003</u> (cfm) [Lpm] @ <u>15</u> (in. Hg)	
Pitot Leak Check Before: <input checked="" type="checkbox"/> After: Good <input checked="" type="checkbox"/> Bad <input type="checkbox"/>	

Duct Dimensions (in.) <u>96 x 96</u>	Static Pres (in. H <sub>2</sub> O) <u>-0.4</u>	Port Len. (in.) <u>10</u>	Gas Flow (in) [Out] of page <u>(in) [Out]</u>	First point all the way <u>(in) [Out]</u>
--------------------------------------	--	---------------------------	---	---

Filter No. <u>254-40</u>	
Thimble No. <u>NA</u>	
Nozzle Diameter <u>0.276</u>	Nozzle I.D. <u>0.276-1</u>

Start Time: 12:26 Stop Time: 14:40

Traverse Point Number	Min/pt Elapsed Time	Velocity Head ΔP (in. H <sub>2</sub> O)	Orifice Setting ΔH (in. H <sub>2</sub> O)	Gas Sample Volume V <sub>m</sub> Init. Vol. (L)	Stack Temp. Ts (°F)	Probe T <sub>p</sub> (°F)	Filter T <sub>f</sub> (°F)	Cond. Temp. T <sub>c</sub> (°F)	DGM Inlet T <sub>m in</sub> (°F)	DGM Outlet T <sub>m out</sub> (°F)	Pump Vacuum (in. Hg)	Oxygen Indicator, approx (% dv)	<input type="checkbox"/> Amb Filter <input type="checkbox"/> Dioxin Trap	Notes
						Set Points								
1-1	5	0.24	0.66	533.300	307	250	250	52	85	84	2	8.4	NA	
2	10	0.22	0.60	537.78	307	252	250	52	86	85	2	8.3		
3	15	0.33	0.90	540.47	305	251	252	53	88	84	3	8.5		
4	20	0.35	0.96	543.31	308	250	251	53	89	84	3	8.6		
5	25	0.54	1.50	546.90	308	252	250	53	89	85	3	8.4		ΔV = .32
2-1	30	0.56	1.50	550.64	321	251	252	54	91	86	4	8.6		
2	35	0.40	1.10	553.78	300	252	254	51	92	86	4	8.8		
3	40	0.37	1.00	556.70	309	251	252	50	92	87	3	8.8		
4	45	0.47	1.30	560.03	312	252	251	49	92	87	4	8.6		
5	50	0.58	1.60	563.67	310	252	252	51	93	87	4	8.5		ΔV = .22
3-1	55	0.53	1.50	567.38	311	251	252	51	93	87	4	8.8		
2	60	0.40	1.10	570.45	311	254	253	52	93	87	4	8.6		
Total		7.665	13.720		3249				1082	1024				
Average		0.666	1.244		311.3600				88.7400					

Sum of square roots.

Circle correct bracketed units on data sheet.



E-12

TEST LOCATION: FF Inlet

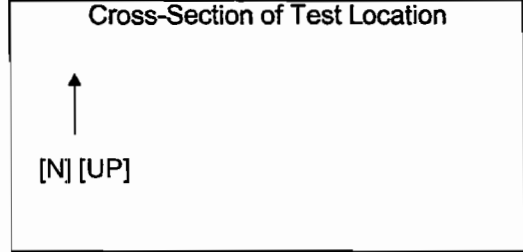
METALS TESTING

METHOD: 5-29 PAGE 2 OF 2

UNIT: 1 RUN: 1

**FIELD DATA SHEET**

Client <u>WHEELABATOR</u>	Project No. <u>2217</u>
Plant <u>S. BROWARDS</u>	Date <u>3-25-13</u>
Meter Operator <u>SJ</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 <sub>d</sub>	Meter ΔH <sub>@</sub>
K Factor	Pitot C <sub>p</sub>

Filter No.	
Thimble No.	
Nozzle Diameter	Nozzle I.D.

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"/>

Duct Dimensions (in.)			
Static Pres (in. H <sub>2</sub> O)	Port Len. (in.)	Gas Flow [In] [Out] of page	First point all the way [In] [Out]

Start Time:	Stop Time:
-------------	------------

Traverse Point Number	Min/pt Elapsed Time	Velocity Head ΔP (in. H <sub>2</sub> O)	Orifice Setting ΔH (in. H <sub>2</sub> O)	Gas Sample Volume V <sub>m</sub> Init. Vol. [ft <sup>3</sup> ] [L]	Stack Temp. T <sub>s</sub> (°F)	Probe T <sub>p</sub> (°F)	Filter T <sub>f</sub> (°F)	Cond. Temp. T <sub>c</sub> (°F)	DGM Inlet T <sub>min</sub> (°F)	DGM Outlet T <sub>min</sub> (°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								
				570.45		250	250							
P3-3	65	0.42	1.20	573.65	311	252	254	53	94	88	4	8.3		
4	70	0.50	1.40	577.08	311	252	254	56	94	88	4	8.0		
5	75	0.52	1.40	580.53	310	254	252	56	94	88	4	7.8		ΔV = -.30
P4-1	80	0.44	1.20	583.96	309	255	253	58	93	88	4	7.9		
2	85	0.40	1.10	587.24	309	255	254	58	92	88	4	8.0		
3	90	0.52	1.40	590.51	312	253	255	59	92	88	4	8.2		
4	95	0.56	1.50	594.06	312	252	254	59	93	88	4	8.5		
5	100	0.57	1.60	597.03	310	254	252	60	94	88	4	8.4		ΔV = .19
P5-1	105	0.41	1.10	600.88	311	253	254	60	93	88	4	8.2		
2	110	0.42	1.20	604.07	310	254	252	60	93	88	4	8.4		
3	115	0.44	1.20	607.08	312	255	254	60	92	88	4	8.4		
4	120	0.55	1.50	610.77	322	256	255	61	93	88	4	8.6		
5	125	0.57	1.60	614.42	316	252	254	62	93	88	4	8.5		
Total		9.0510	17.4000		4055				1210	1146				
Average														

Sum of square roots.

Circle correct bracketed units on data sheet.



QA/QC  
Date 3-25-13

E-13

# Impinger Weight Sheet

Client Wheelabrator		Unit Name / Location Unit 1 FF Outlet	
Plant	Job No. 12218	Method	5/29

Balance Calibration Check			
Balance ID	FL07-4	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 Quartz	Sample Box No. M3
Date 3.25.13		Lot No. e54-40	pH NA
Analyst		Filter No. e45-40	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	Empty	787.8	465.4	322.4	
Impinger 2	100 ml 5% HNO <sub>3</sub> /10% H <sub>2</sub> O <sub>2</sub>	674.0	545.3	128.7	QA/QC 58 Date 3/26
Impinger 3	100 ml 5% HNO <sub>3</sub> /10% H <sub>2</sub> O <sub>2</sub>	575.2	550.7	24.5	
Impinger 4	Empty	429.5	424.5	5.0	
Impinger 5	100 ml 4% KMnO <sub>4</sub> /10% H <sub>2</sub> SO <sub>4</sub>	645.7	643.7	2.0	Total Weight (gm)
Impinger 6	100 ml 4% KMnO <sub>4</sub> /10% H <sub>2</sub> SO <sub>4</sub>	545.9	546.3	-0.4	482.2
Impinger 7	≈ 250 g Silica Gel	747.3	729.4	17.9	500.1

Run No. 2	2	Filter Type Quartz	Sample Box No. M1
Date 3.26.13		Lot No.	pH NA
Analyst HAN		Filter No. e54-39	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	Empty	664.4	443.3	221.1	
Impinger 2	100 ml 5% HNO <sub>3</sub> /10% H <sub>2</sub> O <sub>2</sub>	646.9	530.6	116.3	QA/QC 58 Date 3/26
Impinger 3	100 ml 5% HNO <sub>3</sub> /10% H <sub>2</sub> O <sub>2</sub>	572.1	538.5	33.6	
Impinger 4	Empty	451.0	443.9	7.1	
Impinger 5	100 ml 4% KMnO <sub>4</sub> /10% H <sub>2</sub> SO <sub>4</sub>	545.4	541.0	4.4	Total Weight (gm)
Impinger 6	100 ml 4% KMnO <sub>4</sub> /10% H <sub>2</sub> SO <sub>4</sub>	530.3	529.7	0.6	383.1
Impinger 7	≈ 250 g Silica Gel	850.4	837.4	12.5	395.6

Run No. 3	3	Filter Type Quartz	Sample Box No. M3
Date 3.26.13		Lot No.	pH NA
Analyst HAN/DL		Filter No. e54-37	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	Empty	729.8	464.4	265.4	
Impinger 2	100 ml 5% HNO <sub>3</sub> /10% H <sub>2</sub> O <sub>2</sub>	648.3	545.1	103.0	QA/QC 23 Date 3/26
Impinger 3	100 ml 5% HNO <sub>3</sub> /10% H <sub>2</sub> O <sub>2</sub>	572.8	550.3	22.5	
Impinger 4	Empty	427.9	424.2	3.7	
Impinger 5	100 ml 4% KMnO <sub>4</sub> /10% H <sub>2</sub> SO <sub>4</sub>	646.6	644.6	2.0	Total Weight (gm)
Impinger 6	100 ml 4% KMnO <sub>4</sub> /10% H <sub>2</sub> SO <sub>4</sub>	543.8	543.8	0	396.6
Impinger 7	≈ 250 g Silica Gel	760.2	746.9	13.3	409.9

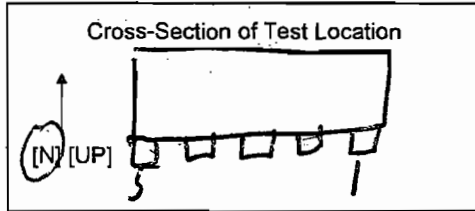
QA/QC 58  
Date 3/26



TEST LOCATION: FF OUTLET  
 UNIT: 2

## VELOCITY DETERMINATION FIELD DATA SHEET

Client <u>WHEELABRATOR</u>	Project No. <u>12218</u>
Plant <u>SOUTH BARDWAD</u>	Date <u>3/27/13</u>
Meter Operator <u>WAYNE BERRY</u>	
Probe Operator <u>ANDY OI</u>	
Source of Moisture and Molecular Weight Data <u>WET METHOD</u>	



Amb. Temp. (°F) <u>50</u>	Bar. Press. <u>30.10</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		Load	
Start Time <u>0751</u>		Stop Time <u>0759</u>		Start Time <u>0828</u>		Stop Time <u>0836</u>		Start Time		Stop Time	
Static Press. (in. H <sub>2</sub> O) <u>-11.2</u>				Static Press. (in. H <sub>2</sub> O)				Static Press. (in. H <sub>2</sub> O) <u>-11.2</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"/>			
Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes
5-1	297	0.35		2-1	298	0.34		5-1	298	0.32	
5-2	297	0.34		2-2	299	0.36		5-2	298	0.30	
5-3	297	0.34		2-3	299	0.44		5-3	298	0.28	
5-4	297	0.36		2-4	300	0.40		5-4	298	0.34	
5-5	297	0.35		2-5	300	0.45		5-5	299	0.32	
4-1	296	0.36		1-1	300	0.45		4-1	298	0.36	
4-2	297	0.36		1-2	302	0.40		4-2	300	0.37	
4-3	297	0.37		1-3	303	0.40		4-3	300	0.34	
4-4	297	0.38		1-4	303	0.44		4-4	301	0.33	
4-5	297	0.35		1-5	301	0.44		4-5	301	0.31	
3-1	297	0.37						3-1	301	0.35	
3-2	297	0.36						3-2	302	0.36	
3-3	298	0.35						3-3	303	0.37	
3-4	298	0.36						3-4	303	0.42	
3-5	298	0.34						3-5	303	0.42	
Total	4457	0.2467		3005	6.41207			4403	8.80997		
Average		0.9407		(298.480)	(.61443)			(296.324)	(.59495)		
								(300.32)			

Sum of square roots.

Circle correct bracketed units on data sheet.

300.32 <sup>33</sup>/<sub>117</sub>



E-15

TEST LOCATION: FF OUTLET

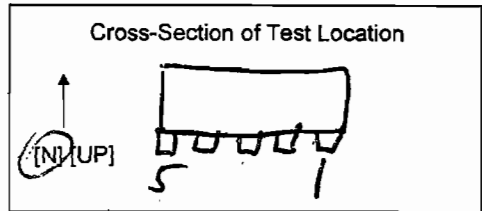
FF OUTLET

VELOCITY DETERMINATION

UNIT: 2

FIELD DATA SHEET

Client <u>WHOLABRATOR</u>	Project No. <u>12218</u>
Plant <u>SOUTH BROWARD</u>	Date <u>3/27/13</u>
Meter Operator <u>WAYNE BERRY</u>	
Probe Operator <u>ANDY O.</u>	
Source of Moisture and Molecular Weight Data <u>WET METHOD</u>	



Amb. Temp. (°F)	Bar. Press. <u>30.10</u> [in. Hg] [mbar]
Pitot Cp <u>0.819</u>	Probe I.D. No. <u>67-8P12</u>
Duct Diameters from Disturbance	
Downstream <u>2.0</u>	Upstream <u>0.5</u>
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	Load	Run	Load	Run	Load	Run	Load								
3	NORMAL	4	NORMAL	4	NORMAL										
Start Time <u>0910</u>	Stop Time <u>0920</u>	Start Time	Stop Time	Start Time <u>0945</u>	Stop Time <u>0955</u>	Start Time	Stop Time								
Static Press. (in. H <sub>2</sub> O) <u>-11.1</u>		Static Press. (in. H <sub>2</sub> O)		Static Press. (in. H <sub>2</sub> O) <u>-11.1</u>		Static Press. (in. H <sub>2</sub> 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 <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes
5-1	291	0.22		2-1	301	0.46		3-1	291	0.22		2-1	297	0.37	
5-2	293	0.28		2-2	301	0.44		3-2	292	0.28		2-2	298	0.40	
5-3	292	0.31		2-3	301	0.44		3-3	292	0.34		2-3	298	0.44	
5-4	292	0.29		2-4	301	0.45		3-4	291	0.35		2-4	298	0.48	
5-5	292	0.31		2-5	301	0.46		3-5	292	0.39		2-5	298	0.54	
4-1	297	0.38		1-1	297	0.50		4-1	298	0.34		1-1	299	0.42	
4-2	298	0.39		1-2	297	0.42		4-2	296	0.35		1-2	298	0.41	
4-3	298	0.39		1-3	297	0.43		4-3	296	0.38		1-3	300	0.40	
4-4	298	0.38		1-4	298	0.46		4-4	297	0.41		1-4	300	0.41	
4-5	298	0.34		1-5	298	0.46		4-5	297	0.40		1-5	300	0.49	
2-1	298	0.41						3-1	297	0.31					
3-2	298	0.38						3-2	297	0.30					
3-3	298	0.38						3-3	297	0.33					
3-4	298	0.35						3-4	298	0.38					
3-5	297	0.32						3-5	298	0.40					
Total	4438	8.7457		2992	6.7213			4429	8.7891			2986	6.59287		
Average	297.200	0.61868											296.6000	0.61528	

Sum of square roots.

Circle correct bracketed units on data sheet.

296.6000  
0.61528



QA/QC SB  
Date 3/27

E - 16

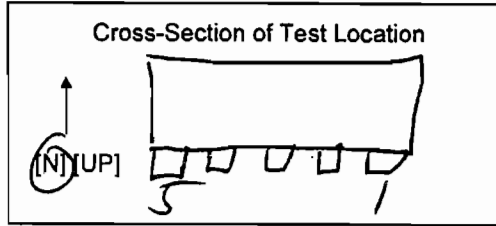
TEST LOCATION:

FF OUTLOT VELOCITY DETERMINATION  
FIELD DATA SHEET

PAGE 3 OF 5

UNIT: 2

Client	WHEELABRATION	Project No.	12219
Plant	SOUTH BOWARDS	Date	3/27/13
Meter Operator	WAYNE BENNY		
Probe Operator	ANDY O.		
Source of Moisture and Molecular Weight Data	WET METHOD		



Amb. Temp. (°F)	53	Bar. Press.	70.10 (in. Hg) (mbar)
Pitot Cp	0.819	Probe I.D. No.	67-8P-12
Duct Diameters from Disturbance			
Downstream		Upstream	
First point all the way [In] [Out]		Port Len. (in.)	10
Gas Flow [In] [Out] of page			
Duct Dimensions (in.)			
96x96			

Run 5				Run 6				Run 6				Run 6			
Load		Load		Load		Load		Load		Load		Load		Load	
NORMAL		NORMAL		NORMAL		NORMAL		NORMAL		NORMAL		NORMAL		NORMAL	
Start Time		Start Time		Start Time		Start Time		Start Time		Start Time		Start Time		Start Time	
1028		1038		1109		1118		1109		1118		1109		1118	
Stop Time		Stop Time		Stop Time		Stop Time		Stop Time		Stop Time		Stop Time		Stop Time	
1038		1038		1118		1118		1118		1118		1118		1118	
Static Press. (in. H <sub>2</sub> O)				Static Press. (in. H <sub>2</sub> O)				Static Press. (in. H <sub>2</sub> O)				Static Press. (in. H <sub>2</sub> O)			
-12.1				-12.1				-12.1				-12.1			
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 <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes
5-1	299	0.36		2-1	301	0.52		5-1	299	0.39		2-1	300	0.42	
5-2	300	0.36		2-2	300	0.50		5-2	299	0.39		2-2	302	0.43	
5-3	301	0.42		2-3	300	0.50		5-3	299	0.42		2-3	300	0.44	
5-4	301	0.50		2-4	301	0.59		5-4	300	0.45		2-4	304	0.55	
5-5	301	0.51		2-5	301	0.63		5-5	300	0.46		2-5	304	0.58	
4-1	291	0.40		1-1	302	0.52		4-1	299	0.40		1-1	300	0.60	
4-2	292	0.41		1-2	302	0.52		4-2	299	0.42		1-2	300	0.57	
4-3	293	0.44		1-3	301	0.53		4-3	299	0.45		1-3	301	0.55	
4-4	294	0.48		1-4	300	0.51		4-4	300	0.49		1-4	301	0.57	
4-5	300	0.51		1-5	300	0.61		4-5	300	0.52		1-5	301	0.65	
3-1	300	0.46						3-1	300	0.43					
3-2	300	0.45						3-2	299	0.44					
3-3	300	0.46						3-3	300	0.45					
3-4	300	0.50						3-4	300	0.46					
3-5	301	0.58						3-5	300	0.45					
Total	4473	10.1083		3008	7.3025			4493	9.4526			3013	7.3025		
Average				299.210	0.6980			300.2100	0.690409						

Sum of square roots.

Circle correct-bracketed units on data sheet.



QA/QC JB  
Date 3/27

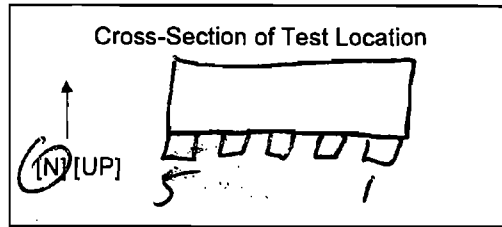
E-17

TEST LOCATION: FF OUTLET

# VELOCITY DETERMINATION FIELD DATA SHEET

UNIT: 2

Client <u>WHEELABRATOR</u>	Project No. <u>12218</u>
Plant <u>SOUTH BROWARD</u>	Date <u>3/27/13</u>
Meter Operator <u>SHAWN JOINT</u>	
Probe Operator <u>WAMP BERRY</u>	
Source of Moisture and Molecular Weight Data <u>WET METHOD</u>	



Amb. Temp. (°F)	Bar. Press. <u>30.10</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>96x96</u>	

Run <u>7</u>	Load <u>NORMAL</u>	Run <u>8</u>	Load <u>NORMAL</u>	Run <u>8</u>	Load <u>NORMAL</u>
Start Time <u>12:13</u>	Stop Time <u>12:27</u>	Start Time	Stop Time	Start Time <u>13:04</u>	Stop Time <u>13:18</u>
Static Press. (in. H <sub>2</sub> O) <u>-12.1</u>		Static Press. (in. H <sub>2</sub> O)		Static Press. (in. H <sub>2</sub> O) <u>-12.1</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 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 <sub>s</sub> (°F)	Velocity Head ΔP (in.H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in.H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in.H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in.H <sub>2</sub> O)	Notes
5-1	299	0.25		2-1	295	0.42		5-1	296	0.33		2-1	296	0.37	
5-2	299	0.26		2-2	295	0.45		5-2	296	0.34		2-2	296	0.46	
5-3	299	0.32		2-3	295	0.46		5-3	296	0.36		2-3	298	0.42	
5-4	299	0.34		2-4	295	0.51		5-4	298	0.40		2-4	298	0.44	
5-5	299	0.38		2-5	295	0.5		5-5	298	0.41		2-5	298	0.54	
4-1	297	0.32		1-1	297	0.42		4-1	296	0.36		1-1	297	0.43	
4-2	297	0.35		1-2	296	0.38		4-2	298	0.35		1-2	297	0.44	
4-3	298	0.37		1-3	295	0.39		4-3	298	0.37		1-3	298	0.43	
4-4	298	0.42		1-4	300	0.43		4-4	298	0.43		1-4	297	0.38	
4-5	298	0.41		1-5	299	0.45		4-5	298	0.39		1-5	297	0.49	
3-1	295	0.28						3-1	299	0.36					
3-2	295	0.37						3-2	300	0.33					
3-3	296	0.41						3-3	301	0.37					
3-4	296	0.43						3-4	300	0.40					
3-5	296	0.45						3-5	300	0.41					
Total	<u>7423</u>				<u>15.6096</u>				<u>7444</u>				<u>15.7523</u>		
Average	<u>296.800</u>				<u>0.6243</u>				<u>297.7600</u>				<u>0.6301</u>		

Sum of square roots.

Circle correct bracketed units on data sheet.

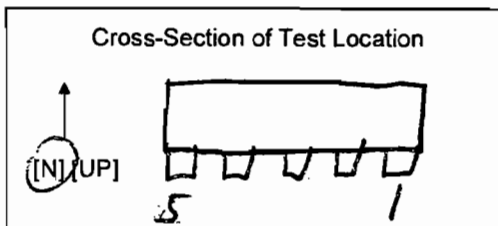


QA/QC SB  
Date 3/27

E-18

TEST LOCATION: FF OUTLET VELOCITY DETERMINATION  
 UNIT: 2 FIELD DATA SHEET

Client <u>WHEELABRATOR</u>	Project No. <u>12218</u>
Plant <u>SOUTH BLOW AND</u>	Date
Meter Operator <u>SHAWN JOINT</u>	
Probe Operator <u>WATNG BERRY</u>	
Source of Moisture and Molecular Weight Data <u>WET METHOD</u>	



Amb. Temp. (°F)	Bar. Press. <u>30.10</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>96 X 96</u>	

Run <u>9</u>	Load <u>NORMAL</u>	Run <u>10</u>	Load <u>NORMAL</u>	Run	Load
Start Time <u>13:37</u>	Stop Time <u>13:44</u>	Start Time <u>14:05</u>	Stop Time <u>14:20</u>	Start Time	Stop Time
Static Press. (in. H <sub>2</sub> O) <u>-0.1</u>		Static Press. (in. H <sub>2</sub> O) <u>-0.1</u>		Static Press. (in. H <sub>2</sub> O)	
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 type="checkbox"/> Fail <input type="checkbox"/>	

Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head $\frac{\Delta P}{\rho}$ (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head $\Delta P$ (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head $\Delta P$ (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head $\Delta P$ (in. H <sub>2</sub> O)	Notes
5-1	296	0.32		2-1	298	0.42		5-1	300	0.38		2-1	298	0.38	
5-2	296	0.33		2-2	298	0.43		5-2	300	0.39		2-2	298	0.39	
5-3	297	0.35		2-3	299	0.42		5-3	299	0.38		2-3	298	0.40	
5-4	298	0.38		2-4	299	0.46		5-4	299	0.42		2-4	299	0.43	
5-5	298	0.35		2-5	300	0.47		5-5	299	0.36		2-5	299	0.51	
4-1	299	0.36		1-1	299	0.47		4-1	296	0.36		1-1	298	0.44	
4-2	301	0.33		1-2	299	0.43		4-2	296	0.34		1-2	298	0.42	
4-3	295	0.35		1-3	299	0.42		4-3	297	0.36		1-3	298	0.41	
4-4	301	0.35		1-4	299	0.45		4-4	297	0.41		1-4	298	0.39	
4-5	300	0.36		1-5	299	0.50		4-5	297	0.43		1-5	298	0.48	
3-1	298	0.32						3-1	296	0.34					
3-2	298	0.36						3-2	296	0.37					
3-3	300	0.39						3-3	296	0.40					
3-4	300	0.40						3-4	297	0.45					
3-5	300	0.41						3-5	297	0.47					
Total	<u>7466</u>				<u>15.6431</u>				<u>7444</u>				<u>15.6779</u>		
Average	<u>298.6400</u>				<u>0.6257</u>				<u>297.7600</u>				<u>0.6271</u>		

Sum of square roots.

Circle correct bracketed units on data sheet.



QA/QC SA  
 Date 3-27-13

E - 19



TEST LOCATION: PF OUTLOT

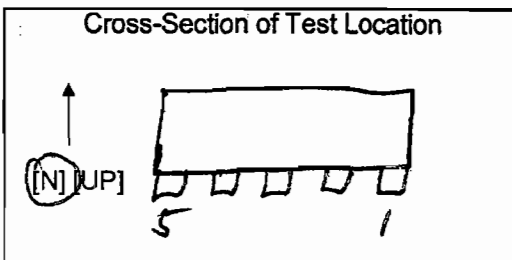
HCL TESTING

METHOD: 26A PAGE 1 OF 1

UNIT: 2 RUN: 1

**FIELD DATA SHEET**

Client <u>WHEELABRATOR</u>	Project No. <u>12218</u>
Plant <u>SOUTH BRAWARD</u>	Date <u>3/27/13</u>
Meter Operator <u>WAYNE BERRY</u>	
Probe Operator	



Amb. Temp. (°F) <u>50</u>	Bar. Press. <u>30.10</u> (in. Hg) [mbar]
Probe I.D. No. <u>67-4-3</u>	
Liner Material <u>GLASS</u>	

Meter Box <u>66-11</u>	Sample Box No. <u>B-1</u>
Meter Yd <u>0.9906</u>	Meter ΔH@ <u>1.8274</u>
K Factor	Pitot Cp
Leak Rate Before <u>0.003</u> (cfm) [Lpm] @ <u>15</u> (in. Hg)	
Leak Rate After <u>0.002</u> (cfm) [Lpm] @ <u>10</u> (in. Hg)	
Pitot Leak Check Before: <input type="checkbox"/> After: <input checked="" type="checkbox"/> Bad <input type="checkbox"/>	

Duct Dimensions (in.) <u>96 x 96</u>	
Static Pres (in. H <sub>2</sub> O) <u>-11.2</u>	Port Len. (in.) <u>10</u>
Gas Flow (in) [Out] of page <u>(In)</u>	First point all the way <u>(In)</u> [Out]

Filter No. <u>—</u>	
Thimble No. <u>—</u>	
Nozzle Diameter <u>—</u>	Nozzle I.D. <u>—</u>

Start Time: 0747 Stop Time: 0847

Traverse Point Number	Min/pt Elapsed Time	Velocity Head ΔP (in. H <sub>2</sub> O)	Orifice Setting ΔH (in. H <sub>2</sub> O)	Gas Sample Volume V <sub>m</sub> Init. Vol. (in) [L]	Stack Temp. Ts (°F)	Probe T <sub>p</sub> (°F)	Filter T <sub>f</sub> (°F)	Cond. Temp. T <sub>c</sub> (°F)	DGM Inlet T <sub>min</sub> (°F)	DGM Outlet T <sub>min</sub> (°F)	Pump Vacuum (in. Hg)	Oxygen Indicator, approx (%dv)	<input type="checkbox"/> Amb Filter <input type="checkbox"/> Dioxin Trap	Notes
						Set Points								
3-1	5	N/A	1.5	057.80	294	283	302	43	51	50	5.5	9.0		
	10		1.5	061.10	292	289	301	40	54	57	5.5	8.1		
	15		1.5	064.42	296	291	300	40	56	53	5.5	8.0		
	20		1.5	067.74	302	292	300	43	58	54	6	8.1		
	25		1.5	071.10	296	292	301	46	59	56	6	9.1		
	30		1.5	074.47	298	294	299	51	58	58	6	8.8		
	35		1.5	077.85	299	280	300	54	59	59	6	8.5		
	40		1.5	081.24	293	280	299	58	59	60	6	8.1		
	45		1.5	084.58	295	283	300	59	61	61	6.5	8.1		
	50		1.5	088.06	300	279	301	61	60	62	6.5	8.3		
	55		1.5	091.34	298	280	300	62	62	63	6.5	7.8		
	60		1.5	094.745	290	283	300	63	62	64	6.5	8.0		
	Total			40.2700	3553.0				689.00	691.0				
	Average		<u>1.5</u>		<u>296.083</u>				<u>57.916</u>	<u>58.117</u>				

\* Sum of square roots.

Circle correct bracketed units on data sheet

57.916



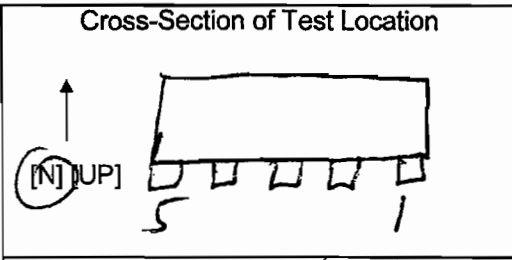
E-20

TEST LOCATION: FF OUT LOT HCL TESTING METHOD: 26A PAGE 1 OF 1

UNIT: 2 RUN: 2

**FIELD DATA SHEET**

Client <u>WHOELABORATORY</u>	Project No. <u>12218</u>
Plant <u>SOUTH BROWARD</u>	Date <u>3/27/13</u>
Meter Operator <u>WAYNE BERRY</u>	
Probe Operator <u>                    </u>	



Amb. Temp. (°F) <u>50</u>	Bar. Press. <u>30.10</u> (in. Hg) (mbar)
Probe I.D. No. <u>67-4-3</u>	
Liner Material <u>GLASS</u>	

Meter Box <u>66-11</u>	Sample Box No. <u>B-24</u>
Meter Yd <u>0.9906</u>	Meter ΔH <sub>0</sub> <u>1.8274</u>
K Factor <u>                    </u>	Pitot C <sub>p</sub> <u>                    </u>
Leak Rate Before <u>0.004</u> (cfm) (Lpm) @ <u>15</u> (in. Hg)	
Leak Rate After <u>0.022</u> (cfm) (Lpm) @ <u>10</u> (in. Hg)	
Pitot Leak Check Before <input type="checkbox"/>	After: Good <input type="checkbox"/> Bad <input type="checkbox"/>

Duct Dimensions (in.) <u>96x96</u>			
Static Pres (in. H <sub>2</sub> O) <u>-11.1</u>	Port Len. (in.) <u>10</u>	Gas Flow (In) (Out) of page <u>(In) [Out]</u>	First point all the way (In) (Out) <u>(In) [Out]</u>

Filter No. <u>                    </u>	
Thimble No. <u>                    </u>	
Nozzle Diameter <u>                    </u>	Nozzle I.D. <u>                    </u>

Start Time: <u>0908</u>	Stop Time: <u>1008</u>
-------------------------	------------------------

Traverse Point Number	Mir/rpt 60 Elapsed Time	Velocity Head ΔP (in. H <sub>2</sub> O)	Orifice Setting ΔH (in. H <sub>2</sub> O)	Gas Sample Volume V <sub>m</sub> Init. Vol. (ft <sup>3</sup> ) (L)	Stack Temp. Ts (°F)	Probe T <sub>p</sub>	Filter T <sub>r</sub>	Cond. Temp. T <sub>c</sub> (°F)	DGM Inlet T <sub>min</sub> (°F)	DGM Outlet T <sub>max</sub> (°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	098.74	294	277	307	54	61	67	6	9.2		
	10		1.5	102.11	294	275	303	52	62	68	6.5	9.2		
	15		1.5	105.48	293	276	301	51	63	68	6.5	8.9		
	20		1.5	108.88	294	269	301	53	62	67	7	8.7		
	25		1.5	112.27	294	274	301	53	64	67	7	8.9		
	30		1.5	115.67	296	271	300	53	65	68	7	8.4		
	35		1.5	119.09	292	277	301	55	65	68	7	8.8		
	40		1.5	122.50	295	278	301	58	64	68	7	8.4		
	45		1.5	125.91	293	272	298	61	65	68	7	7.9		
	50		1.5	129.31	295	272	300	63	65	68	7	8.2		
	55		1.5	132.80	292	275	302	64	67	69	7	8.9		
	60		1.5	136.135	297	281	301	64	68	69	7	7.7		
	Total			40.7550	3529.0				771.0	815.0				
	Average		1.5		294.0833				66.0833					

Sum of square roots.

Circle correct bracketed units on data sheet.



QA/QC WB  
Date 3/27/13

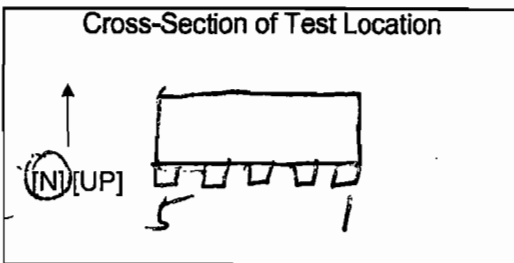
E-21

TEST LOCATION: FF OUTLOT  
 UNIT: 2 RUN: 3

HCL TESTING  
**FIELD DATA SHEET**

METHOD: 26A PAGE 1 OF 1

Client: WHEELABRATOR Project No. 12218  
 Plant: SOUTH BROWARD Date: 3/27/13  
 Meter Operator: SHAWN JOINT  
 Probe Operator: WAYNE BENAT



Amb. Temp. (°F) 53 Bar. Press. 30.10 (in) Hg [mbar]  
 Probe I.D. No. 67-4-3  
 Liner Material GLASS

Meter Box 66-11 Sample Box No. 8-01  
 Meter Yd 0.9906 Meter ΔH@ 1.8274  
 K Factor — Pitot Cp —

Duct Dimensions (in.) 96 x 96  
 Static Pres (in. H<sub>2</sub>O) -12.1 Port Len. (in.) 10 Gas Flow (in) [Out] of page 5 First point all the way (in) [Out] 1

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

Start Time: 1027 Stop Time: 1127

Traverse Point Number	Min/pt Elapsed Time	Velocity Head ΔP (in. H <sub>2</sub> O)	Orifice Setting ΔH (in. H <sub>2</sub> O)	Gas Sample Volume V <sub>m</sub> Init. Vol. (in) [L]	Stack Temp. Ts (°F)	Probe T <sub>p</sub> (°F)	Filter T <sub>f</sub> (°F)	Cond. Temp. T <sub>c</sub> (°F)	DGM Inlet T <sub>min</sub> (°F)	DGM Outlet T <sub>min</sub> (°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								
2-1	5	N/A	1.5	136.570	299	284	305	49	69	72	5.5	8.7		
	10		1.5	143.38	295	292	304	45	72	73	5.5	9.0		
	15		1.5	146.78	296	287	301	44	72	74	5.5	9.1		
	20		1.5	150.15	296	286	299	45	72	74	5.5	9.4		
	25		1.5	153.54	298	279	301	49	70	72	5.5	9.5		
	30		1.5	156.94	298	281	300	53	70	72	5.5	9.2		
	35		1.5	160.35	298	286	301	56	72	73	5.5	9.3		
	40		1.5	163.74	296	287	301	55	70	72	6	9.7		
	45		1.5	167.12	298	279	301	57	65	68	6	9.7		
	50		1.5	170.48	295	281	300	57	65	66	6	8.8		
	55		1.5	173.83	297	290	301	58	66	65	6	9.8		
60		1.5	177.210	298	283	300	54	65	64	6	9.7			
Total				40.6400	3564.0				828.0	845.0				
Average			1.5		297.00				69.7083					

\*Sum of square roots.

Circle correct bracketed units on data sheet.



# Impinger Weight Sheet

Client Wheelabrator		Unit Name / Location Unit 2 FF Outlet	
Plant South Broward	Job No. 12218	Method	Modified M26A

Balance Calibration Check			
Balance ID	9028101135	Reference Weight Mass	500g
Reference Weight ID	60150	Reference Weight Reading	499.9

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. 121
Date 3.27.13		Lot No.	pH
Analyst HU		Filter No. NA	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	50 mL 0.1N H2SO4	493.5	458.5	35.0	
Impinger 2	100 mL 01.N H2SO4	654.8	548.0	106.8	
Impinger 3	100 mL 01.N H2SO4	590.5	539.7	50.8	
Impinger 4	Empty	481.5	468.3	13.2	
Impinger 5	Silica Gel	702.8	687.9	14.9	Total Weight (gm)
Impinger 6					205.8
Impinger 7					220.7

QA/QC SB  
 Date 3/27

Run No. 2	2	Filter Type Teflon Mat	Sample Box No. 224
Date 3.27.13		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	481.2	437.5	43.7	
Impinger 2	100 mL 01.N H2SO4	660.0	547.6	112.4	
Impinger 3	100 mL 01.N H2SO4	573.0	527.9	45.9	
Impinger 4	Empty	450.2	440.8	9.4	
Impinger 5	Silica Gel	730.1	716.8	13.3	Total Weight (gm)
Impinger 6					211.4
Impinger 7					224.7

QA/QC SB  
 Date 3/27

Run No. 3	3	Filter Type Teflon Mat	Sample Box No. 31
Date 3.27.13		Lot No.	pH
Analyst HU		Filter No. NA	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	50 mL 0.1N H2SO4	494.4	452.0	42.4	
Impinger 2	100 mL 01.N H2SO4	661.3	545.8	115.5	
Impinger 3	100 mL 01.N H2SO4	595.6	550.0	45.6	
Impinger 4	Empty	476.9	468.0	8.9	
Impinger 5	Silica Gel	717.9	702.4	15.5	Total Weight (gm)
Impinger 6					212.4
Impinger 7					227.9

QA/QC SB  
 Date 3/27

QA/QC SB  
Date 3/27



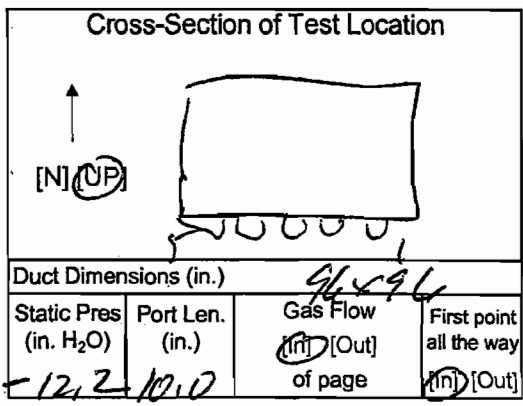
TEST LOCATION: FF Outlet  
 UNIT: 2 RUN: 1

Residual Metals TESTING  
**FIELD DATA SHEET**

METHOD: 5729 PAGE 1 OF 2

Client Wheelabrator Project No. 12218  
 Plant S. Broward Date 3/25/13  
 Meter Operator P. Bihun  
 Probe Operator P. Bihun

Meter Box MD 22 Sample Box No. M9  
 Meter Y 911319272 Meter ΔH@ 1.840  
 K-Factor 0.327826 Pitot C<sub>p</sub> 0.824  
 Leak Rate Before 0.007 [Lpm] @ 75 (in. Hg)  
 Leak Rate After 0.002 [Lpm] @ 10 (in. Hg)  
 Pitot Leak Check Before:  After: Good  Bad



Amb. Temp. (°F) 75 Bar. Press. 29.70 (in. Hg) [mbar]  
 Probe I.D. No. 67-8-47  
 Liner Material Glass

Filter No. 245-11  
 Thimble No. N/A  
 Nozzle Diameter 0.2725 Nozzle I.D. 2.725-1

Start Time: 7:59 Stop Time: 10:11

Traverse Point Number	Min/pt Elapsed Time	Velocity Head ΔP (in. H <sub>2</sub> O)	Orifice Setting ΔH (in. H <sub>2</sub> O)	Gas Sample Volume V <sub>m</sub> Init. Vol. (L)	Stack Temp. T <sub>s</sub> (°F)	Probe T <sub>p</sub> (°F)	Filter T <sub>f</sub> (°F)	Cond. Temp. T <sub>c</sub> (°F)	DGM Inlet T <sub>m in</sub> (°F)	DGM Outlet T <sub>m out</sub> (°F)	Pump Vacuum (in. Hg)	Oxygen Indicator, approx (% dv)	<input type="checkbox"/> Amb Filter <input type="checkbox"/> Dioxin Trap	Notes
						Set Points								
1	5	0.33	0.88	842.00	298	280	282	65	77	76	4.0	7.6	<input checked="" type="checkbox"/>	Nickel
2	10	0.31	0.82	847.11	299	285	289	65	79	76	3.5	7.2	<input checked="" type="checkbox"/>	6.0-11
3	15	0.32	0.85	849.62	298	283	283	65	80	77	3.5	7.9	<input checked="" type="checkbox"/>	ΔH = 1.8274
4	20	0.33	0.88	852.19	298	281	280	62	82	77	4.0	7.9	<input checked="" type="checkbox"/>	574.910
5	25	0.35	0.93	854.87	298	288	248	63	84	78	4.0	7.8	<input checked="" type="checkbox"/>	(-0.075)
6	30	0.32	0.85	857.50	298	288	247	65	83	79	4.0	8.1	<input checked="" type="checkbox"/>	
7	35	0.33	0.88	860.08	299	288	249	65	81	78	4.0	8.3	<input checked="" type="checkbox"/>	
8	40	0.37	0.98	862.82	299	280	252	65	81	78	4.0	8.5	<input checked="" type="checkbox"/>	
9	45	0.42	1.1	865.71	300	280	254	62	82	78	4.5	9.0	<input checked="" type="checkbox"/>	
10	50	0.38	1.0	868.54	300	280	250	60	84	78	4.5	8.2	<input checked="" type="checkbox"/>	868.625
11	55	0.27	0.72	870.97	303	249	247	61	82	78	3.5	9.2	<input checked="" type="checkbox"/>	(-0.075)
12	60	0.40	1.1	873.90	300	249	248	61	83	79	4.5	9.5	<input checked="" type="checkbox"/>	
Total				70.850										
Average		0.6220	1.0368	70.845	298.960				81.8600					

Sum of square roots.  
 10.99

Circle correct bracketed units on data sheet.  
 3590  
 38 4/17

1910



E - 24

TEST LOCATION: FF Outlet -

Lehigh Valley / Metrolab TESTING  
FIELD DATA SHEET

METHOD: 5729

PAGE 2 OF 2

UNIT: 2

RUN: 1

Client <u>Whelan/Lehigh</u>	Project No. <u>12218</u>
Plant <u>S. Broward</u>	Date <u>3/25/13</u>
Meter Operator <u>P. Bihun</u>	
Probe Operator <u>P. Bihun</u>	

Cross-Section of Test Location

↑  
[N] [UP]

Duct Dimensions (in.)

Static Pres (in. H <sub>2</sub> O)	Port Len. (in.)	Gas Flow [In] [Out] of page	First point all the way [In] [Out]
------------------------------------	-----------------	-----------------------------	------------------------------------

Amb. Temp. (°F)	Bar. Press. (in. Hg) [mbar]
Probe I.D. No.	
Liner Material	

Meter Box	Sample Box No.
Meter Y <sub>d</sub>	Meter ΔH <sub>@</sub>
K Factor	Pitot C <sub>p</sub>
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 <sub>2</sub> O)	Orifice Setting ΔH (in. H <sub>2</sub> O)	Gas Sample Volume V <sub>m</sub> Init. Vol. (L)	Stack Temp. T <sub>s</sub> (°F)	Probe T <sub>p</sub> (°F)	Filter T <sub>f</sub> (°F)	Cond. Temp. T <sub>c</sub> (°F)	DGM Inlet T <sub>m in</sub> (°F)	DGM Outlet T <sub>m out</sub> (°F)	Pump Vacuum (in. Hg)	Oxygen Indicator, approx (% dv)	<input type="checkbox"/> Amb Filter <input type="checkbox"/> Dioxin Trap	Notes
						Set Points								
3	65	0.44	1.2	877.01	297	251	251	59	85	79	5.0	8.3		
4	70	0.52	1.4	880.38	302	251	252	58	87	80	5.1	8.9		
5	75	0.60	1.3	883.60	300	250	247	59	88	80	5.0	9.3		883.60
1	80	0.45	1.2	886.76	300	249	246	62	86	81	5.0	9.0		(-0.09)
2	85	0.43	1.1	889.74	300	250	251	63	87	81	5.0	8.9		
3	90	0.48	1.3	892.98	298	251	254	63	87	81	5.5	10.1		
4	95	0.46	1.2	896.12	299	250	256	63	88	81	5.0	9.2		896.12
6	100	0.48	1.3	899.32	299	250	246	64	88	82	5.5	7.4		(0.08)
1	105	0.36	0.95	902.12	296	249	255	65	86	81	4.5	7.7		
2	110	0.36	0.95	904.80	298	250	248	64	86	82	4.5	7.8		
3	115	0.37	0.98	907.55	298	250	252	62	87	82	4.5	7.8		
4	120	0.36	0.95	910.23	298	251	250	63	87	82	4.5	8.2		
5	125	0.40	1.1	913.18	299	250	250	63	87	82	5.0	8.3		
Total														
Average														

\* Sum of square roots.

Circle correct bracketed units on data sheet.



QA/QC PB  
Date 3/25/13

E-25

# Impinger Weight Sheet

Client Wheelabrator		Unit Name / Location Unit 2 FF Outlet	
Plant	Job No. 12218	Method	5/29

Balance Calibration Check			
Balance ID	TL 07-4	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 Quartz	Sample Box No.	M9
Date	3-25-13	Lot No.	pH	NA
Analyst	DL	Filter No. e45-11	Rinse	NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	Empty	703.8	456.6	247.2	
Impinger 2	100 ml 5% HNO <sub>3</sub> /10% H <sub>2</sub> O <sub>2</sub>	682.6	558.2	124.4	QA/QC 53 Date 3/25
Impinger 3	100 ml 5% HNO <sub>3</sub> /10% H <sub>2</sub> O <sub>2</sub>	586.1	554.6	31.5	
Impinger 4	Empty	445.5	437.6	7.9	
Impinger 5	100 ml 4% KMnO <sub>4</sub> /10% H <sub>2</sub> SO <sub>4</sub>	549.7	545.2	4.5	Total Weight (gm)
Impinger 6	100 ml 4% KMnO <sub>4</sub> /10% H <sub>2</sub> SO <sub>4</sub>	538 <sup>9.2</sup>	537.5	1.7	417.2
Impinger 7	≈ 250 g Silica Gel	735.3	715.8	19.5	436.7

Run No.	2	2 Filter Type Quartz	Sample Box No.	M1
Date	3-25-13	Lot No.	pH	NA
Analyst	DL	Filter No. e45-10	Rinse	NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	Empty	688.1	444.3	243.8	
Impinger 2	100 ml 5% HNO <sub>3</sub> /10% H <sub>2</sub> O <sub>2</sub>	639.9	531.7	108.2	QA/QC Date
Impinger 3	100 ml 5% HNO <sub>3</sub> /10% H <sub>2</sub> O <sub>2</sub>	566.9	538.8	28.1	
Impinger 4	Empty	451.3	444.7	6.6	
Impinger 5	100 ml 4% KMnO <sub>4</sub> /10% H <sub>2</sub> SO <sub>4</sub>	547.9	542.6	5.3	Total Weight (gm)
Impinger 6	100 ml 4% KMnO <sub>4</sub> /10% H <sub>2</sub> SO <sub>4</sub>	540.7	538.5	2.2	394.2
Impinger 7	≈ 250 g Silica Gel	837.9	824.5	13.4	407.6

Run No.	3	3 Filter Type Quartz	Sample Box No.	M9
Date	3/25/13	Lot No.	pH	NA
Analyst	DL	Filter No. e54-39	Rinse	NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	Empty	716.5	456.5	260.0	
Impinger 2	100 ml 5% HNO <sub>3</sub> /10% H <sub>2</sub> O <sub>2</sub>	652.5	556.6	95.9	QA/QC 53 Date 3/25
Impinger 3	100 ml 5% HNO <sub>3</sub> /10% H <sub>2</sub> O <sub>2</sub>	564.0	544.8	19.2	
Impinger 4	Empty	441.6	436.9	4.7	
Impinger 5	100 ml 4% KMnO <sub>4</sub> /10% H <sub>2</sub> SO <sub>4</sub>	548.7	546.0	2.7	Total Weight (gm)
Impinger 6	100 ml 4% KMnO <sub>4</sub> /10% H <sub>2</sub> SO <sub>4</sub>	540.8	540.6	0.2	382.7
Impinger 7	≈ 250 g Silica Gel	749.5	735.3	14.2	396.9

QA/QC 53  
Date 3/25

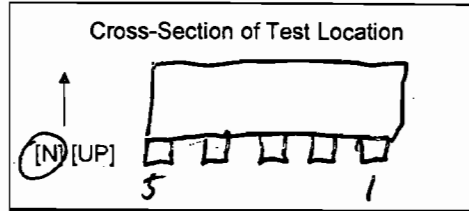


TEST LOCATION: FF OUTLOT  
 UNIT: 3

# VELOCITY DETERMINATION FIELD DATA SHEET

PAGE 1 OF 5

Client: <u>WATERBURY</u>	Project No. <u>12218</u>
Plant: <u>SOUTH BROWNS</u>	Date: <u>3/26/13</u>
Meter Operator: <u>WAYNE BONS</u>	
Probe Operator: <u>ANDY O.</u>	
Source of Moisture and Molecular Weight Data <u>WET METHOD</u>	



Amb. Temp. (°F) <u>55</u>	Bar. Press. <u>29.9</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								
<u>1</u>	<u>NORMAL</u>			<u>2</u>	<u>NORMAL</u>										
Start Time <u>0809</u>	Stop Time <u>0821</u>	Start Time	Stop Time	Start Time	Stop Time	Start Time	Stop Time								
Static Press. (in. H <sub>2</sub> O) <u>-9.9</u>		Static Press. (in. H <sub>2</sub> O)		Static Press. (in. H <sub>2</sub> O) <u>-9.9</u>		Static Press. (in. H <sub>2</sub> 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 <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes
<u>5-1</u>	<u>298</u>	<u>0.35</u>		<u>2-1</u>	<u>298</u>	<u>0.49</u>		<u>5-1</u>	<u>299</u>	<u>0.45</u>		<u>2-1</u>	<u>297</u>	<u>0.43</u>	
<u>5-2</u>	<u>298</u>	<u>0.36</u>		<u>2-2</u>	<u>298</u>	<u>0.45</u>		<u>5-2</u>	<u>300</u>	<u>0.42</u>		<u>2-2</u>	<u>297</u>	<u>0.46</u>	
<u>5-3</u>	<u>298</u>	<u>0.37</u>		<u>2-3</u>	<u>298</u>	<u>0.43</u>		<u>5-3</u>	<u>300</u>	<u>0.46</u>		<u>2-3</u>	<u>297</u>	<u>0.44</u>	
<u>5-4</u>	<u>298</u>	<u>0.38</u>		<u>2-4</u>	<u>298</u>	<u>0.38</u>		<u>5-4</u>	<u>300</u>	<u>0.45</u>		<u>2-4</u>	<u>297</u>	<u>0.42</u>	
<u>5-5</u>	<u>299</u>	<u>0.37</u>		<u>2-5</u>	<u>299</u>	<u>0.35</u>		<u>5-5</u>	<u>300</u>	<u>0.43</u>		<u>2-5</u>	<u>297</u>	<u>0.39</u>	
<u>4-1</u>	<u>298</u>	<u>0.36</u>		<u>1-1</u>	<u>298</u>	<u>0.47</u>		<u>4-1</u>	<u>298</u>	<u>0.48</u>		<u>1-1</u>	<u>297</u>	<u>0.51</u>	
<u>4-2</u>	<u>298</u>	<u>0.36</u>		<u>1-2</u>	<u>298</u>	<u>0.40</u>		<u>4-2</u>	<u>299</u>	<u>0.47</u>		<u>1-2</u>	<u>297</u>	<u>0.48</u>	
<u>4-3</u>	<u>299</u>	<u>0.37</u>		<u>1-3</u>	<u>298</u>	<u>0.32</u>		<u>4-3</u>	<u>299</u>	<u>0.44</u>		<u>1-3</u>	<u>297</u>	<u>0.39</u>	
<u>4-4</u>	<u>299</u>	<u>0.37</u>		<u>1-4</u>	<u>299</u>	<u>0.35</u>		<u>4-4</u>	<u>299</u>	<u>0.41</u>		<u>1-4</u>	<u>297</u>	<u>0.42</u>	
<u>4-5</u>	<u>299</u>	<u>0.35</u>		<u>1-5</u>	<u>300</u>	<u>0.42</u>		<u>4-5</u>	<u>299</u>	<u>0.35</u>		<u>1-5</u>	<u>297</u>	<u>0.44</u>	
<u>3-1</u>	<u>298</u>	<u>0.55</u>						<u>3-1</u>	<u>297</u>	<u>0.46</u>					
<u>3-2</u>	<u>298</u>	<u>0.50</u>						<u>3-2</u>	<u>297</u>	<u>0.45</u>					
<u>3-3</u>	<u>298</u>	<u>0.46</u>						<u>3-3</u>	<u>297</u>	<u>0.44</u>					
<u>3-4</u>	<u>298</u>	<u>0.39</u>						<u>3-4</u>	<u>298</u>	<u>0.39</u>					
<u>3-5</u>	<u>298</u>	<u>0.36</u>						<u>3-5</u>	<u>298</u>	<u>0.37</u>					
Total	<u>298.44</u>	<u>9.28</u>		<u>298.4</u>	<u>1.35800</u>			<u>4480</u>	<u>9.8424</u>			<u>2970</u>	<u>1.61273</u>		
Average	<u>298.3800</u>				<u>1.29188</u>			<u>298.0000</u>							

Sum of square roots.

Circle correct bracketed units on data sheet.



E-27

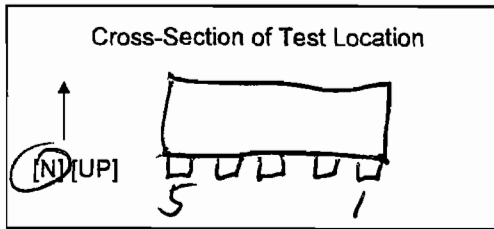


TEST LOCATION: FF OUTLET

# VELOCITY DETERMINATION FIELD DATA SHEET

UNIT: 3

Client <u>WAGNER</u>	Project No. <u>12218</u>
Plant <u>SOUTH BROWARD</u>	Date <u>3/22/13</u>
Meter Operator <u>WAGNER</u>	
Probe Operator <u>ANDY O.</u>	
Source of Moisture and Molecular Weight Data <u>WET METHOD</u>	



Amb. Temp. (°F) <u>55</u>	Bar. Press. <u>29.9</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>96x96</u>	

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>0929</u>	Stop Time <u>0935</u>	Start Time <u>1009</u>	Stop Time <u>1010</u>	Start Time	Stop Time										
Static Press. (in. H <sub>2</sub> O) <u>-10.1</u>	Static Press. (in. H <sub>2</sub> O)	Static Press. (in. H <sub>2</sub> O) <u>-10.1</u>	Static Press. (in. H <sub>2</sub> O)	Static Press. (in. H <sub>2</sub> O)	Static Press. (in. H <sub>2</sub> 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 <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes
5-1	308	0.37		2-1	297	0.55		5-1	297	0.31		2-1	299	0.46	
5-2	308	0.37		2-2	296	0.51		5-2	298	0.31		2-2	299	0.46	
5-3	308	0.38		2-3	297	0.49		5-3	298	0.32		2-3	299	0.43	
5-4	308	0.40		2-4	297	0.51		5-4	298	0.30		2-4	299	0.42	
5-5	308	0.40		2-5	298	0.49		5-5	298	0.29		2-5	299	0.38	
4-1	306	0.38		1-1	302	0.52		4-1	297	0.36		1-1	294	0.49	
4-2	305	0.37		1-2	302	0.50		4-2	297	0.38		1-2	295	0.41	
4-3	306	0.39		1-3	302	0.49		4-3	298	0.37		1-3	295	0.40	
4-4	306	0.38		1-4	302	0.46		4-4	298	0.35		1-4	296	0.38	
4-5	303	0.34		1-5	302	0.50		4-5	298	0.32		1-5	296	0.42	
3-1	302	0.45						3-1	299	0.49					
3-2	302	0.43						3-2	300	0.47					
3-3	302	0.43						3-3	300	0.42					
3-4	302	0.46						3-4	299	0.38					
3-5	301	0.48						3-5	299	0.38					
Total	4575	9.50000		2995	7.08346			4474	9.01401			2971	6.51400		
Average				302.800	0.66333										

Sum of square roots.

Circle correct bracketed units on data sheet.

297.800 0.62112  
**CleanAir**  
ENGINEERING

E - 28

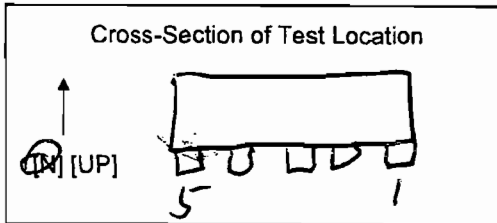
TEST LOCATION: FF OUTLET

# VELOCITY DETERMINATION FIELD DATA SHEET

PAGE 3 OF 5

UNIT: 3

Client <u>W. H. ...</u>	Project No. <u>12218</u>
Plant <u>SOUTH BROWARD</u>	Date <u>3/26/12</u>
Meter Operator <u>WAYNE BERRY</u>	
Probe Operator <u>ANDY O.</u>	
Source of Moisture and Molecular Weight Data <u>WET METHOD</u>	



Amb. Temp. (°F) <u>56</u>	Bar. Press. <u>29.90</u> [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								
<u>5</u>	<u>NORMAL</u>			<u>6</u>	<u>NORMAL</u>										
Start Time <u>1049</u>	Stop Time <u>1057</u>	Start Time	Stop Time	Start Time <u>1128</u>	Stop Time <u>1135</u>	Start Time	Stop Time								
Static Press. (in. H <sub>2</sub> O) <u>-9.1</u>		Static Press. (in. H <sub>2</sub> O)		Static Press. (in. H <sub>2</sub> O) <u>-9.1</u>		Static Press. (in. H <sub>2</sub> 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 <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes
<u>5-1</u>	<u>298</u>	<u>0.37</u>		<u>2-1</u>	<u>297</u>	<u>0.47</u>		<u>5-1</u>	<u>298</u>	<u>0.24</u>		<u>2-1</u>	<u>294</u>	<u>0.39</u>	
<u>5-2</u>	<u>297</u>	<u>0.37</u>		<u>2-2</u>	<u>297</u>	<u>0.42</u>		<u>5-2</u>	<u>299</u>	<u>0.28</u>		<u>2-2</u>	<u>295</u>	<u>0.36</u>	
<u>5-3</u>	<u>297</u>	<u>0.38</u>		<u>2-3</u>	<u>297</u>	<u>0.38</u>		<u>5-3</u>	<u>300</u>	<u>0.30</u>		<u>2-3</u>	<u>296</u>	<u>0.38</u>	
<u>5-4</u>	<u>297</u>	<u>0.34</u>		<u>2-4</u>	<u>297</u>	<u>0.33</u>		<u>5-4</u>	<u>301</u>	<u>0.32</u>		<u>2-4</u>	<u>297</u>	<u>0.42</u>	
<u>5-5</u>	<u>296</u>	<u>0.32</u>		<u>2-5</u>	<u>297</u>	<u>0.29</u>		<u>5-5</u>	<u>302</u>	<u>0.31</u>		<u>2-5</u>	<u>299</u>	<u>0.40</u>	
<u>4-1</u>	<u>292</u>	<u>0.40</u>		<u>1-1</u>	<u>297</u>	<u>0.43</u>		<u>4-1</u>	<u>297</u>	<u>0.32</u>		<u>1-1</u>	<u>294</u>	<u>0.43</u>	
<u>4-2</u>	<u>293</u>	<u>0.43</u>		<u>1-2</u>	<u>297</u>	<u>0.39</u>		<u>4-2</u>	<u>297</u>	<u>0.33</u>		<u>1-2</u>	<u>295</u>	<u>0.42</u>	
<u>4-3</u>	<u>293</u>	<u>0.40</u>		<u>1-3</u>	<u>296</u>	<u>0.32</u>		<u>4-3</u>	<u>298</u>	<u>0.33</u>		<u>1-3</u>	<u>295</u>	<u>0.43</u>	
<u>4-4</u>	<u>293</u>	<u>0.33</u>		<u>1-4</u>	<u>297</u>	<u>0.33</u>		<u>4-4</u>	<u>299</u>	<u>0.33</u>		<u>1-4</u>	<u>296</u>	<u>0.39</u>	
<u>4-5</u>	<u>292</u>	<u>0.27</u>		<u>1-5</u>	<u>297</u>	<u>0.34</u>		<u>4-5</u>	<u>300</u>	<u>0.32</u>		<u>1-5</u>	<u>296</u>	<u>0.42</u>	
<u>3-1</u>	<u>293</u>	<u>0.48</u>						<u>3-1</u>	<u>298</u>	<u>0.40</u>					
<u>3-2</u>	<u>294</u>	<u>0.41</u>						<u>3-2</u>	<u>298</u>	<u>0.38</u>					
<u>3-3</u>	<u>295</u>	<u>0.37</u>						<u>3-3</u>	<u>298</u>	<u>0.40</u>					
<u>3-4</u>	<u>296</u>	<u>0.33</u>						<u>3-4</u>	<u>299</u>	<u>0.41</u>					
<u>3-5</u>	<u>296</u>	<u>0.31</u>						<u>3-5</u>	<u>299</u>	<u>0.42</u>					
Total	<u>4422</u>	<u>9.0814</u>			<u>2969</u>	<u>6.0653</u>			<u>4483</u>	<u>8.7158</u>			<u>2966</u>	<u>6.3530</u>	
Average		<u>0.60542</u>			<u>295.440</u>					<u>0.60262</u>			<u>297.540</u>		

Sum of square roots.

Circle correct bracketed units on data sheet.

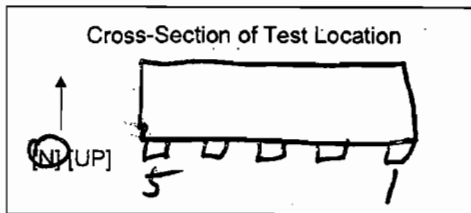


QA/QC SR  
Date 3/26

E - 29

TEST LOCATION: FF OUT LOT VELOCITY DETERMINATION  
 UNIT: 3 FIELD DATA SHEET

Client: <u>WILCOX LABORATORIES</u>	Project No: <u>2218</u>
Plant: <u>SOUTH BLOWNAD</u>	Date: <u>3/26/13</u>
Meter Operator: <u>SHAWN JOINT</u>	
Probe Operator: <u>WAYNE BONEY</u>	
Source of Moisture and Molecular Weight Data <u>WET METHOD</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 (in) (Out) of page	
Duct Dimensions (in.) <u>96 X 96</u>	

Run: <u>7</u>	Load: <u>NORMAL</u>	Run:	Load:	Run: <u>8</u>	Load: <u>NORMAL</u>	Run:	Load:
Start Time: <u>12:13</u>	Stop Time: <u>12:28</u>	Start Time:	Stop Time:	Start Time: <u>12:54</u>	Stop Time: <u>13:</u>	Start Time:	Stop Time:
Static Press. (in. H <sub>2</sub> O): <u>-9.8</u>		Static Press. (in. H <sub>2</sub> O):		Static Press. (in. H <sub>2</sub> O): <u>-9.8</u>		Static Press. (in. H <sub>2</sub> 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 <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. T <sub>s</sub> (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes
5-1	297	0.35		2-1	292	0.40		5-1	297	0.38		2-1	294	0.44	
5-2	297	0.36		2-2	292	0.41		5-2	297	0.36		2-2	294	0.44	
5-3	297	0.38		2-3	293	0.37		5-3	297	0.36		2-3	294	0.40	
5-4	297	0.40		2-4	294	0.34		5-4	297	0.35		2-4	294	0.38	
5-5	297	0.34		2-5	294	0.33		5-5	297	0.33		2-5	296	0.35	
4-1	296	0.42		1-1	292	0.32		4-1	296	0.40		1-1	294	0.38	
4-2	297	0.43		1-2	290	0.22		4-2	296	0.42		1-2	294	0.36	
4-3	297	0.39		1-3	293	0.25		4-3	297	0.38		1-3	295	0.35	
4-4	298	0.35		1-4	293	0.27		4-4	298	0.34		1-4	296	0.42	
4-5	298	0.33		1-5	292	0.33		4-5	298	0.32		1-5	296	0.46	
3-1	293	0.48						3-1	299	0.39					
3-2	293	0.45						3-2	299	0.38					
3-3	293	0.40						3-3	299	0.38					
3-4	292	0.40						3-4	299	0.32					
3-5	292	0.36						3-5	299	0.28					
Total:	7554			15083				7412					15262		
Average:	294.3600			0.6024				296.4800					0.6105		

Sum of square roots.

Circle correct bracketed units on data sheet.



E-30

QA/QC 24  
 Date 3-26-13

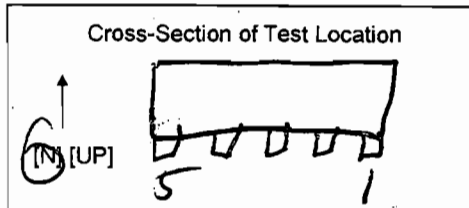
TEST LOCATION: FF OUTLET

# VELOCITY DETERMINATION FIELD DATA SHEET

PAGE 5 OF 5

UNIT: 3

Client <u>WHEELABRATOR</u>	Project No. <u>12218</u>
Plant <u>SOUTH BROWARD</u>	Date
Meter Operator <u>SHAWN JOINT</u>	
Probe Operator <u>WAYNE BERRY</u>	
Source of Moisture and Molecular Weight Data <u>WET METHOD</u>	



Amb. Temp. (°F)	Bar. Press <u>29.96</u> (in. Hg) (mbar)
Pitot Cp <u>0.819</u>	Probe I.D. No. <u>67-PP-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								
9	<u>NORMAL</u>			10	<u>NORMAL</u>										
Start Time <u>13:33</u>	Stop Time <u>13:48</u>	Start Time	Stop Time	Start Time <u>14:13</u>	Stop Time <u>14:28</u>	Start Time	Stop Time								
Static Press. (in. H <sub>2</sub> O) <u>-9.8</u>		Static Press. (in. H <sub>2</sub> O)		Static Press. (in. H <sub>2</sub> O) <u>-9.8</u>		Static Press. (in. H <sub>2</sub> 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. (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes	Traverse Point Number	Stack Temp. (°F)	Velocity Head ΔP (in. H <sub>2</sub> O)	Notes
5-1	294	0.31		2-1	294	0.43		5-1	294	0.30		<del>4-1</del>	295	0.42	
5-2	294	0.32		2-2	296	0.42		5-2	294	0.32		2-2	295	0.41	
5-3	295	0.33		2-3	296	0.42		5-3	295	0.43		2-3	296	0.40	
5-4	296	0.34		2-4	297	0.44		5-4	295	0.38		2-4	297	0.45	
5-5	296	0.32		2-5	297	0.42		5-5	295	0.36		2-5	297	0.46	
<del>4-1</del>	294	0.33		1-1	295	0.43		4-1	297	0.34		1-1	295	0.45	
4-2	294	0.33		1-2	295	0.42		4-2	297	0.35		1-2	295	0.46	
4-3	295	0.36		1-3	295	0.41		4-3	297	0.36		1-3	296	0.50	
4-4	295	0.34		1-4	295	0.40		4-4	298	0.37		1-4	296	0.44	
4-5	295	0.36		1-5	296	0.47		4-5	298	0.36		1-5	296	0.43	
3-1	296	0.31						3-1	294	0.30					
3-2	296	0.33						3-2	294	0.32					
3-3	296	0.34						3-3	296	0.37					
3-4	297	0.35						3-4	297	0.38					
3-5	297	0.34						3-5	297	0.43					
Total:	<u>7386</u>				<u>152249</u>			Total:	<u>7386</u>				<u>156076</u>		
Average:	<u>295.4400</u>				<u>0.6090</u>			Average:	<u>295.4400</u>				<u>0.6243</u>		

Sum of square roots.

Circle correct bracketed units on data sheet.

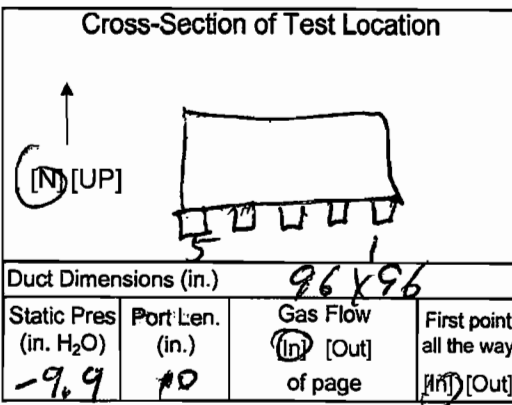


E-31

TEST LOCATION: FF OUTLET HCL TESTING METHOD: 26A PAGE 1 OF 1  
 UNIT: 3 RUN: 1 FIELD DATA SHEET

Client WHCC LABORATORY Project No. 12218  
 Plant SOUTH BROAD Date 3/26/13  
 Meter Operator WACNE BERRY  
 Probe Operator \_\_\_\_\_

Meter Box 66-18 Sample Box No. B24  
 Meter Yd 1.0008 Meter ΔH@ 1.9165  
 K Factor \_\_\_\_\_ Pitot Cp \_\_\_\_\_  
 Leak Rate Before 0.003 (cfm) [Lpm] @ 15 (in. Hg)  
 Leak Rate After 0.001 (cfm) [Lpm] @ 16 (in. Hg)  
 Pitot Leak Check Before:  After:  Bad



Amb. Temp. (°F) 53 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: 0800 Stop Time: 0900

Traverse Point Number	Min/pt Elapsed Time	Velocity Head ΔP (in. H <sub>2</sub> O)	Orifice Setting ΔH (in. H <sub>2</sub> O)	Gas Sample Volume V <sub>m</sub> Init. Vol. (ft <sup>3</sup> ) [L]	Stack Temp. T <sub>s</sub> (°F)	Probe T <sub>p</sub> Filter T <sub>f</sub> (°F)		Cond. Temp. T <sub>c</sub> (°F)	DGM Inlet T <sub>min</sub> (°F)	DGM Outlet T <sub>max</sub> (°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							
31	5	N/A	1.5	246.660	296	281	305	52	64	63	6	9.5		
	10		1.5	253.06	296	283	304	51	66	64	6	9.5		
	15		1.5	256.24	295	282	298	51	70	63	6	9.4		
	20		1.5	259.43	296	281	300	52	72	63	6	8.9		
	25		1.5	262.65	295	281	300	56	73	63	6	9.4		
	30		1.5	265.88	296	283	301	61	74	64	6	8.7		
	35		1.5	269.13	294	282	300	62	73	64	6	9.2		
	40		1.5	272.40	297	282	300	63	74	64	6	9.5		
	45		1.5	275.62	290	279	299	63	74	65	6	9.4		
	50		1.5	278.85	293	277	300	63	73	65	6	9.6		
	55		1.5	282.19	294	272	300	62	74	65	6	9.6		
	60		1.5	285.36	293	276	300	60	75	66	6.5	9.5		
	Total			38,700.0	3535.0				862.0	769.0				
	Average		1.5		294.5833				67.9583					

\* Sum of square roots.

Circle correct bracketed units on data sheet.



E-32

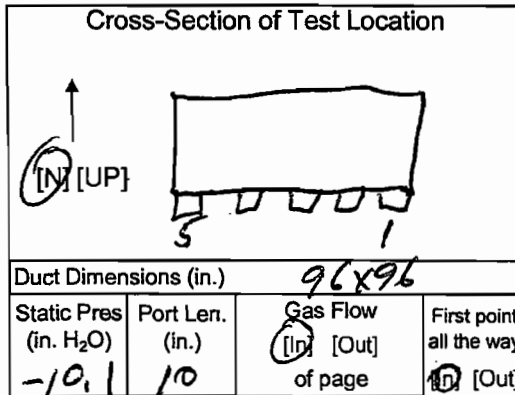
TEST LOCATION: FF OUTLET  
 UNIT: 3 RUN: 2

HCL TESTING  
**FIELD DATA SHEET**

METHOD: 26A PAGE 1 OF 1

Client WHEELABRATOR Project No. 12218  
 Plant SOUTH BROWARD Date 3/26/13  
 Meter Operator WAYNE BERRY  
 Probe Operator —

Meter Box 66-18 Sample Box No. —  
 Meter Y<sub>d</sub> 1.0008 Meter ΔH<sub>@</sub> 1.9165  
 K Factor — Pitot C<sub>p</sub> —  
 Leak Rate Before 0.004 [cfm] [Lpm] @ 15 (in. Hg)  
 Leak Rate After 0.002 [cfm] [Lpm] @ 10 (in. Hg)  
 Pitot Leak Check Before  After: Good  Bad



Amb. Temp. (°F) 55 Bar. Press. 29.90 (in. Hg) [mbar]  
 Probe I.D. No. 67-4-3  
 Liner Material BRASS

Filter No. —  
 Thimble No. —  
 Nozzle Diameter — Nozzle I.D. —

Start Time: 0921 Stop Time: 1021

Traverse Point Number	Min/pt Elapsed Time	Velocity Head ΔP (in. H <sub>2</sub> O)	Orifice Setting ΔH (in. H <sub>2</sub> O)	Gas Sample Volume V <sub>m</sub> Init. Vol. (ft <sup>3</sup> ) [L]	Stack Temp. T <sub>s</sub> (°F)	Probe T <sub>p</sub> (°F)	Filter T <sub>f</sub> (°F)	Cond. Temp. T <sub>c</sub> (°F)	DGM Inlet T <sub>min</sub> (°F)	DGM Outlet T <sub>min</sub> (°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	288.92	298	296	308	55	69	66	5.5	9.6		
	10		1.5	292.15	300	299	304	53	71	66	5.5	9.6		
	15		1.5	295.37	296	300	301	51	74	66	6	9.8		
	20		1.5	298.58	299	299	299	52	75	67	6	9.2		
	25		1.5	301.80	296	298	300	58	75	67	6	9.5		
	30		1.5	305.09	298	295	300	59	76	68	6.5	9.0		
	35		1.5	308.35	295	295	301	62	77	68	6.5	9.2		
	40		1.5	311.59	296	300	300	64	77	68	6.5	8.0		
	45		1.5	314.82	297	299	299	64	77	69	6.5	9.4		
	50		1.5	318.04	292	300	301	61	78	69	6.5	9.1		
	55		1.5	321.29	295	299	300	61	79	70	6.5	8.9		
	60		1.5	324.535	295	299	300	61	80	70	7.0	9.9		
	Total			38.7950	3558.0				908.0	814.0				
	Average		1.5		296.5000				71.7500					

\* Sum of square roots.

Circle correct bracketed units on data sheet.



QA/QC WB  
 Date 3/26/13

E-33

TEST LOCATION: FF OUTLET

ACL

TESTING

METHOD: 26A

PAGE 1 OF 1

UNIT: 3

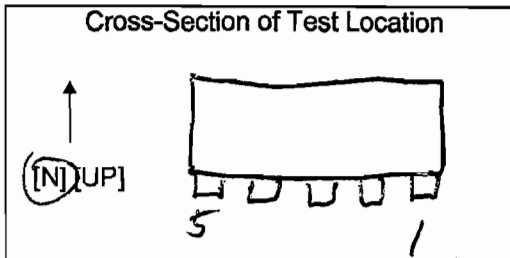
RUN: 3

FIELD DATA SHEET

Client <u>WHOLESALE</u>	Project No. <u>12218</u>
Plant <u>SOUTH BROWARD</u>	Date <u>3/26/13</u>
Meter Operator <u>WARNO BERRY</u>	
Probe Operator <u>---</u>	

Meter Box <u>66-18</u>	Sample Box No. <u>B-24</u>
Meter Yd <u>1.0008</u>	Meter ΔH@ <u>1.9165</u>
K Factor <u>---</u>	Pitot Cp <u>---</u>

Leak Rate Before <u>0.005</u> [cfm] [Lpm]	@ <u>15</u> (in. Hg)
Leak Rate After <u>0.002</u> [cfm] [Lpm]	@ <u>10</u> (in. Hg)
Pitot Leak Check Before: <input type="checkbox"/>	After: Good <input checked="" type="checkbox"/> Bad <input type="checkbox"/>



Duct Dimensions (in.) <u>96 x 96</u>			
Static Pres (in. H <sub>2</sub> O)	Port Len. (in.)	Gas Flow (in. [Out]) of page	First point all the way (in. [Out])
<u>-9.1</u>	<u>10</u>		<u>10</u>

Amb. Temp. (°F) <u>56</u>	Bar. Press. <u>29.90</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: <u>1046</u>	Stop Time: <u>1146</u>
-------------------------	------------------------

Traverse Point Number	Min/pt Elapsed Time	Velocity Head ΔP (in. H <sub>2</sub> O)	Orifice Setting ΔH (in. H <sub>2</sub> O)	Gas Sample Volume V <sub>m</sub> Init. Vol. (L)	Stack Temp. Ts (°F)	Probe T <sub>p</sub> (°F)		Cond. Temp. T <sub>c</sub> (°F)	DGM Inlet T <sub>min</sub> (°F)	DGM Outlet T <sub>min</sub> (°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	328.48	300	297	304	55	76	72	6	9.8		
	10		1.5	331.72	292	298	301	53	78	73	6	9.8		
	15		1.5	334.92	293	302	300	51	81	73	6	9.2		
	20		1.5	338.16	294	300	301	51	83	74	6	9.0		
	25		1.5	341.39	292	298	300	53	83	74	6.5	8.4		
	30		1.5	344.64	292	299	301	58	83	75	6.5	9.8		
	35		1.5	347.91	292	299	301	57	84	76	6.5	9.2		
	40		1.5	351.17	293	299	301	61	84	76	6.5	9.5		
	45		1.5	354.42	292	302	300	62	85	77	6.5	9.7		
	50		1.5	357.78	294	300	299	63	87	78	6.5	9.7		
	55		1.5	360.95	297	300	300	63	88	79	6.5	8.5		
	60		1.5	364.210	290	298	300	63	87	80	6.5	9.7		
Total				38.9900	3521.0				999.0	907.0				
Average			1.5		293.4167				79.4167					

\*Sum of square roots.

Circle correct bracketed units on data sheet.



# Impinger Weight Sheet

Client Wheelabrator		Unit Name / Location Unit 3 SDA Inlet	
Plant South Broward	Job No. 12218	Method	Modified 26A

Balance Calibration Check			
Balance ID	FL07-4	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 Quartz	Sample Box No. B14
Date 3-26-13		Lot No.	pH NA
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	471.1	454.0	17.1	
Impinger 2	100 mL 0.1N H2SO4	600.7	529.5	71.2	
Impinger 3	100 mL 0.1N H2SO4	565.2	540.5	24.7	
Impinger 4	Empty	429.9	422.0	7.9	
Impinger 5	Silica Gel	718.8	706.1	12.7	Total Weight (gm)
Impinger 6					120.9
Impinger 7					133.6

QA/QC 59  
 Date 3/26

Run No. 2	2	Filter Type Quartz	Sample Box No. 16
Date 3-26-13		Lot No.	pH NA
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	498.0	457.1	41.7	
Impinger 2	100 mL 0.1N H2SO4	630.4	552.8	77.6	
Impinger 3	100 mL 0.1N H2SO4	548.9	535.2	13.7	
Impinger 4	Empty	485.0	482.7	2.3	
Impinger 5	Silica Gel	717.2	707.6	9.6	Total Weight (gm)
Impinger 6					135.3
Impinger 7					144.9

QA/QC 58  
 Date 3/26

Run No. 3	3	Filter Type Quartz	Sample Box No. B14
Date 3-26-13		Lot No.	pH NA
Analyst DL		Filter No. NA	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	50 mL 0.1N H2SO4	524.6	461.2	63.4	
Impinger 2	100 mL 0.1N H2SO4	601.7	545.8	55.9	
Impinger 3	100 mL 0.1N H2SO4	570.3	500.2	10.1	
Impinger 4	Empty	423.3	421.2	2.1	
Impinger 5	Silica Gel	731.3	720.1	11.2	Total Weight (gm)
Impinger 6					
Impinger 7					

QA/QC 58  
 Date 3/26

QA/QC 58  
Date 3/26





TEST LOCATION: FF OUTLET METALS TESTING  
 UNIT: 3 RUN: 1

METHOD: 5/29 PAGE 1 OF 2

FIELD DATA SHEET

Cross-Section of Test Location



Amb. Temp. (°F)	<u>76</u>	Bar. Press.	<u>29.90</u> (in. Hg) [mbar]
Probe I.D. No.	<u>67-8-17</u>		
Liner Material	<u>GLASS</u>		

Filter No.	<u>E 54-36</u>	
Thimble No.	<u>NA</u>	
Nozzle Diameter	<u>0.2725</u>	Nozzle I.D. <u>0.2725-2</u>

Client	<u>WHEELABRATOR</u>	Project No.	<u>12218</u>
Plant	<u>SOUTH BROADWAY</u>	Date	<u>3/26/13</u>
Meter Operator	<u>STANW JOINT</u>		
Probe Operator	<u>WAYNE BENNY</u>		

Meter Box	<u>66-6</u>	Sample Box No.	<u>M-9</u>
Meter $Y_d$	<u>0.9854</u>	Meter $\Delta H_{@}$	<u>1.8280</u>
K Factor	<u>2.73</u>	Pitot $C_p$	<u>0.824</u>
Leak Rate Before	<u>0.002</u> [cfm] [Lpm]	@	<u>15</u> (in. Hg)
Leak Rate After	<u>0.002</u> [cfm] [Lpm]	@	<u>15</u> (in. Hg)
Pitot Leak Check Before:	<input checked="" type="checkbox"/>	After: Good	<input checked="" type="checkbox"/> Bad <input type="checkbox"/>

Duct Dimensions (in.)	<u>96 x 96</u>		
Static Pres (in. H <sub>2</sub> O)	Port Len. (in.)	Gas Flow (in) [Out]	First point all the way (in) [Out]
<u>-9.8</u>	<u>10</u>		

Start Time: 12:11 Stop Time: 14:24

Traverse Point Number	Min/pt Elapsed Time	Velocity Head $\Delta P$ (in. H <sub>2</sub> O)	Orifice Setting $\Delta H$ (in. H <sub>2</sub> 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 $T_{min}$ (°F)	DGM Outlet $T_{out}$ (°F)	Pump Vacuum (in. Hg)	Oxygen Indicator, approx (%dv)	<input type="checkbox"/> Amb Filter <input type="checkbox"/> Dioxin Trap	Notes
						Set	Points								
1-1	5	0.32	0.87	387.45	292	252	252	56	74	71	4	9.2	NA		
2	10	0.22	0.60	389.67	290	251	250	55	77	71	3	9.5			
3	15	0.25	0.70	391.98	293	252	252	54	78	72	3	9.1		*K=2.80	
4	20	0.31	0.87	394.48	293	251	250	55	80	73	4	9.2		AV=-.19	
5	25	0.33	0.92	397.24	292	252	250	56	81	73	4	9.3			
2-1	30	0.44	1.20	400.43	294	252	251	58	81	73	5	9.0			
2	35	0.47	1.38	403.60	294	252	251	49	82	73	5	9.2			
3	40	0.40	1.10	406.50	294	250	250	46	84	74	5	8.9			
4	45	0.33	0.92	409.20	294	251	252	46	84	74	5	9.1			
5	50	0.35	0.98	411.96	296	250	251	45	84	75	5	9.2		AV=-.22	
3-1	55	0.32	0.90	414.85	295	252	252	45	85	77	5	9.1			
2	60	0.38	1.10	417.71	295	251	250	4	86	77	5	9.3			
Total		6.9955	11.4600	(39.090)	352				976	883					
Average		1.3991	2.2920	(7.818)	(173.600)				(180.3000)						

Sum of square roots.

Circle correct bracketed units on data sheet.



QA/QC 89  
Date 3/26/13

TEST LOCATION: FF OUTLET

METALS TESTING

METHOD: 5-29

PAGE 2 OF 2

UNIT: 3 RUN: 1

**FIELD DATA SHEET**

Client <u>WHEELABRATOR</u>	Project No. <u>12217</u>
Plant <u>S. BROWNS</u>	Date <u>3-26-13</u>
Meter Operator <u>SS</u>	
Probe Operator <u>WIB</u>	

Cross-Section of Test Location

↑  
[N] [UP]

Duct Dimensions (in.)			
Static Pres (in. H <sub>2</sub> O)	Port Len. (in.)	Gas Flow [In] [Out] of page	First point all the way [In] [Out]

Amb. Temp. (°F) <u>76</u>	Bar. Press. <u>29.90</u>	(in. Hg) [mbar]
Probe I.D. No. <u>67-871</u>		
Liner Material <u>GLASS</u>		

Meter Box	Sample Box No.
Meter Y <sub>d</sub>	Meter ΔH <sub>@</sub>
K Factor	Pitot C <sub>p</sub>
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 <sub>2</sub> O)	Orifice Setting ΔH (in. H <sub>2</sub> O)	Gas Sample Volume V <sub>m</sub> Init. Vol. [ft <sup>3</sup> ] [L]	Stack Temp. T <sub>s</sub> (°F)	Probe T <sub>p</sub> (°F)	Filter T <sub>f</sub> (°F)	Cond. Temp. T <sub>c</sub> (°F)	DGM Inlet T <sub>m in</sub> (°F)	DGM Outlet T <sub>m out</sub> (°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								
3-3	65	0.36	1.00	417.910	294	250	250	45	87	78	4	9.4	NA	
4	70	0.32	0.90	423.9	294	254	253	46	88	78	4	9.3		
5	75	0.29	0.81	425.65	293	252	252	46	87	79	4	9.5		ΔV = -.11
4-1	80	0.33	0.92	428.47	294	251	252	48	86	79	4	9.3		
2	85	0.32	0.90	431.11	294	250	250	50	86	79	4	9.4		
3	90	0.36	1.00	433.87	295	251	250	51	86	79	4	9.2		
4	95	0.39	1.10	436.86	295	252	251	51	88	79	4	9.0		
5	100	0.36	1.00	439.73	295	252	250	51	88	79	4	9.1		ΔV = -.14
5-1	105	0.30	0.84	444.87	294	250	251	53	85	79	4	9.5		
2	110	0.32	0.90	447.50	294	250	252	56	85	78	4	9.0		
3	115	0.43	1.20	450.72	295	251	250	56	88	79	4	9.2		
4	120	0.38	1.10	452.15	295	252	252	56	88	79	4	9.3		
5	125	0.36	1.00	453.57	295	250	252	56	87	79	4	9.1		
Total		7.6544	12.6700		3827				1132	1024				
Average														

Sum of square roots.

Circle correct bracketed units on data sheet.



QA/QC SS  
Date 3-26-13

E-37

# Impinger Weight Sheet

Client Wheelabrator		Unit Name / Location Unit 3 FF Outlet	
Plant	Job No. 12218	Method	5/29

Balance Calibration Check			
Balance ID	7L07-4	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	Filter Type Quartz	Sample Box No. 119
Date 3-26-13	Lot No.	pH NA
Analyst	Filter No. e54-36	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	Empty	684.4	457.4	227.0	
Impinger 2	100 ml 5% HNO <sub>3</sub> /10% H <sub>2</sub> O <sub>2</sub>	645.4	556.0	89.4	QA/QC 5B Date 3/26
Impinger 3	100 ml 5% HNO <sub>3</sub> /10% H <sub>2</sub> O <sub>2</sub>	565.7	545.1	20.6	
Impinger 4	Empty	440.1	437.0	3.1	
Impinger 5	100 ml 4% KMnO <sub>4</sub> /10% H <sub>2</sub> SO <sub>4</sub>	549.5	547.7	1.8	Total Weight (gm)
Impinger 6	100 ml 4% KMnO <sub>4</sub> /10% H <sub>2</sub> SO <sub>4</sub>	541.2	541.5	-0.3	341.6
Impinger 7	≈ 250 g Silica Gel	760.4	749.5	10.9	352.5

Run No. 2	Filter Type Quartz	Sample Box No. M3
Date 3-27-13	Lot No.	pH NA
Analyst HW/DL	Filter No. e54-34	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	Empty	649.8	465.1	184.4	
Impinger 2	100 ml 5% HNO <sub>3</sub> /10% H <sub>2</sub> O <sub>2</sub>	655.2	545.4	109.8	QA/QC 5B Date 3/27
Impinger 3	100 ml 5% HNO <sub>3</sub> /10% H <sub>2</sub> O <sub>2</sub>	582.5	550.1	32.4	
Impinger 4	Empty	431.5	424.5	7.0	
Impinger 5	100 ml 4% KMnO <sub>4</sub> /10% H <sub>2</sub> SO <sub>4</sub>	646.5	643.6	2.9	Total Weight (gm)
Impinger 6	100 ml 4% KMnO <sub>4</sub> /10% H <sub>2</sub> SO <sub>4</sub>	544.5	544.4	0.1	336.6
Impinger 7	≈ 250 g Silica Gel	774.8	760.0	14.8	351.4

Run No. 3	Filter Type Quartz	Sample Box No. M9
Date 3-27-13	Lot No.	pH NA
Analyst HW	Filter No. e54-33	Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	Empty	626.4	457.2	199.2	
Impinger 2	100 ml 5% HNO <sub>3</sub> /10% H <sub>2</sub> O <sub>2</sub>	661.7	556.5	105.2	QA/QC 5B Date 3/27
Impinger 3	100 ml 5% HNO <sub>3</sub> /10% H <sub>2</sub> O <sub>2</sub>	575.5	545.6	29.9	
Impinger 4	Empty	444.6	436.9	7.7	
Impinger 5	100 ml 4% KMnO <sub>4</sub> /10% H <sub>2</sub> SO <sub>4</sub>	550.3	546.7	3.6	Total Weight (gm)
Impinger 6	100 ml 4% KMnO <sub>4</sub> /10% H <sub>2</sub> SO <sub>4</sub>	538.0	538.8	0.0	345.6
Impinger 7	≈ 250 g Silica Gel	766.5	750.4	16.1	361.7

QA/QC 5B  
Date 3/27

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End of Appendix



**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: SL

Date: 5/7/13



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### Field Data Printout

Location: Unit 1 FF Outlet  
 Test Run: 1  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: W. Berry 456  
 Probe Operator: A. Obuchowski 567  
 Test Date: 3/25/13  
 Start Time: 08:11  
 Stop Time: 08:20  
 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): 29.70  
 Static P: -10.0  
 O<sub>2</sub> (dry volume %): 8.94  
 CO<sub>2</sub> (dry volume %): 10.28  
 N<sub>2</sub>+CO (dry volume %): 80.78

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 23.30

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01	0.0	0.45			301			0.67		
5-02		0.46			301			0.68		
5-03		0.51			302			0.71		
5-04		0.57			302			0.75		
5-05		0.61			302			0.78		
4-01		0.43			300			0.66		
4-02		0.41			301			0.64		
4-03		0.44			301			0.66		
4-04		0.54			302			0.73		
4-05		0.58			302			0.76		
3-01		0.50			301			0.71		
3-02		0.41			301			0.64		
3-03		0.38			301			0.62		
3-04		0.39			302			0.62		
3-05		0.50			302			0.71		
2-01		0.49			303			0.70		
2-02		0.40			303			0.63		
2-03		0.34			303			0.58		
2-04		0.39			303			0.62		
2-05		0.52			303			0.72		
1-01		0.46			301			0.68		
1-02		0.43			302			0.66		
1-03		0.32			304			0.57		
1-04		0.35			304			0.59		
1-05		0.54			304			0.73		
Final	0.0				302.04000			0.67351		

25 points sampled  
 QC-Check: Field Averages Sq.Rt.ΔP 0.6735 302.0400

Avg. OK  
  Avg. OK  
  Avg. OK  
  Avg. OK  
  Avg. OK

041713 103450  
e

### Field Data Printout

Location: Unit 1 FF Outlet  
 Test Run: 2  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: W. Berry 456  
 Probe Operator: A. Obuchowski 567  
 Test Date: 3/25/13  
 Start Time: 08:36  
 Stop Time: 08:48  
 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): 29.70  
 Static P: -10.0  
 O<sub>2</sub> (dry volume %): 9.39  
 CO<sub>2</sub> (dry volume %): 9.97  
 N<sub>2</sub>+CO (dry volume %): 80.64

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 23.30

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01	0.0	0.49			304			0.70		
5-02		0.44			304			0.66		
5-03		0.38			304			0.62		
5-04		0.39			304			0.62		
5-05		0.49			304			0.70		
4-01		0.48			301			0.69		
4-02		0.42			301			0.65		
4-03		0.42			302			0.65		
4-04		0.46			302			0.68		
4-05		0.61			302			0.78		
3-01		0.50			303			0.71		
3-02		0.41			303			0.64		
3-03		0.38			303			0.62		
3-04		0.47			303			0.69		
3-05		0.59			303			0.77		
2-01		0.40			304			0.63		
2-02		0.39			305			0.62		
2-03		0.43			305			0.66		
2-04		0.51			305			0.71		
2-05		0.54			306			0.73		
1-01		0.42			305			0.65		
1-02		0.42			306			0.65		
1-03		0.45			306			0.67		
1-04		0.53			306			0.73		
1-05		0.55			307			0.74		
Final	0.0				303.92000			0.67873		

25 points sampled  
 QC-Check: Field Averages      Sq.Rt.ΔP      0.6787      303.9200

Avg. OK     Avg. OK     Avg. OK     Avg. OK     Avg. OK

041713 103450

### Field Data Printout

**Test Method:**

**USEPA Method 2  
Velocity & Flow Rate**

**Analyte:**

Location: Unit 1 FF Outlet  
 Test Run: 3  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: W. Berry 456  
 Probe Operator: A. Obuchowski 567

Bar. Press. (In. Hg): 29.70  
 Static P: -8.3  
 O<sub>2</sub> (dry volume %): 9.03  
 CO<sub>2</sub> (dry volume %): 10.20  
 N<sub>2</sub>+CO (dry volume %): 80.77

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

Test Date: 3/25/13  
 Start Time: 09:55  
 Stop Time: 10:12  
 Leak Rate Before: N/A cfm  
 Leak Rate After: N/A cfm

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 24.96

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01	0.0	0.46			307			0.68		
5-02		0.41			307			0.64		
5-03		0.45			307			0.67		
5-04		0.49			307			0.70		
5-05		0.49			307			0.70		
4-01		0.42			303			0.65		
4-02		0.37			303			0.61		
4-03		0.38			304			0.62		
4-04		0.45			304			0.67		
4-05		0.50			304			0.71		
3-01		0.48			307			0.69		
3-02		0.39			307			0.62		
3-03		0.38			307			0.62		
3-04		0.42			307			0.65		
3-05		0.53			307			0.73		
2-01		0.48			307			0.69		
2-02		0.38			307			0.62		
2-03		0.35			307			0.59		
2-04		0.41			307			0.64		
2-05		0.54			307			0.73		
1-01		0.45			304			0.67		
1-02		0.41			304			0.64		
1-03		0.35			304			0.59		
1-04		0.35			303			0.59		
1-05		0.42			303			0.65		
Final	0.0				305.64000			0.65474		

25 points sampled      Sq.Rt. ΔP  
**QC-Check: Field Averages**      0.6547      305.6400

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 1 FF Outlet

Test Run: 4

Client: Wheelabrator South Broward, Inc.

Project No: 12218

Source Area (ft<sup>2</sup>): 64.00000

Meter Operator: W. Berry 456

Probe Operator: A. Obuchowski 567

Test Date: 3/25/13

Start Time:

Stop Time:

Leak Rate Before: N/A cfm

Leak Rate After: N/A cfm

Bar. Press. (in. Hg): 29.70

Static P: -8.3

O<sub>2</sub> (dry volume %): 7.88

CO<sub>2</sub> (dry volume %): 11.16

N<sub>2</sub>+CO (dry volume %): 80.95

H<sub>2</sub>O (condensate, ml or gm):

H<sub>2</sub>O (silica, g):

Actual Moisture (%): 24.96

Nozzle ID No: N/A

Nozzle Diameter (D<sub>n</sub>): N/A

Probe ID No: 67-8P-12

Pitot C<sub>p</sub>: 0.819

Pitot Leak Check:  Pass  Fail

Meter Box ID No: N/A

Meter ΔH@: N/A

Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01	0.0	0.32			303			0.57		
5-02		0.33			304			0.57		
5-03		0.36			305			0.60		
5-04		0.45			306			0.67		
5-05		0.47			306			0.69		
4-01		0.44			304			0.66		
4-02		0.36			304			0.60		
4-03		0.37			304			0.61		
4-04		0.42			304			0.65		
4-05		0.48			305			0.69		
3-01		0.39			304			0.62		
3-02		0.36			304			0.60		
3-03		0.34			304			0.58		
3-04		0.40			304			0.63		
3-05		0.52			304			0.72		
2-01		0.41			303			0.64		
2-02		0.35			303			0.59		
2-03		0.33			304			0.57		
2-04		0.39			304			0.62		
2-05		0.53			304			0.73		
1-01		0.42			305			0.65		
1-02		0.38			305			0.62		
1-03		0.32			305			0.57		
1-04		0.31			305			0.56		
1-05		0.50			305			0.71		
Final	0.0				304.32000			0.62893		

25 points sampled  
QC-Check: Field Averages

Sq.RLΔP 0.6289 304.3200

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 1 FF Outlet  
 Test Run: 5  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: W. Berry 456  
 Probe Operator: A. Obuchowski 567  
 Test Date: 3/25/13  
 Start Time: 11:01  
 Stop Time: 11:10  
 Leak Rate Before: N/A cfm  
 Leak Rate After: N/A cfm

Bar. Press. (in. Hg): 29.70  
 Static P: -8.4  
 O<sub>2</sub> (dry volume %): 8.01  
 CO<sub>2</sub> (dry volume %): 11.13  
 N<sub>2</sub>+CO (dry volume %): 80.87

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 23.33

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot	Sample	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
		ΔP <sub>s</sub> (in. H <sub>2</sub> O)	ΔH (in. H <sub>2</sub> O)			T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01	0.0	0.39			309			0.62		
5-02		0.36			308			0.60		
5-03		0.40			309			0.63		
5-04		0.39			310			0.62		
5-05		0.46			310			0.68		
4-01		0.39			308			0.62		
4-02		0.35			309			0.59		
4-03		0.37			310			0.61		
4-04		0.43			310			0.66		
4-05		0.49			310			0.70		
3-01		0.39			313			0.62		
3-02		0.32			313			0.57		
3-03		0.31			313			0.56		
3-04		0.38			313			0.62		
3-05		0.53			311			0.73		
2-01		0.41			310			0.64		
2-02		0.35			310			0.59		
2-03		0.31			310			0.56		
2-04		0.37			309			0.61		
2-05		0.50			309			0.71		
1-01		0.37			304			0.61		
1-02		0.34			304			0.58		
1-03		0.28			304			0.53		
1-04		0.21			304			0.46		
1-05		0.49			303			0.70		
Final	0.0				308.92000			0.61656		

25 points sampled  
 QC-Check: Field Averages  
 Sq.Rt.ΔP: 0.6166  
 Avg. OK  Avg. OK  Avg. OK  Avg. OK  Avg. OK

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 2

### Field Data Printout

Location: Unit 1 FF Outlet  
 Test Run: 6  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: W. Berry 456  
 Probe Operator: A. Obuchowski 567  
 Test Date: 3/25/13  
 Start Time: 11:35  
 Stop Time: 11:50  
 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): 29.70  
 Static P: -8.4  
 O<sub>2</sub> (dry volume %): 8.44  
 CO<sub>2</sub> (dry volume %): 10.68  
 N<sub>2</sub>+CO (dry volume %): 80.88

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 23.33

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01	0.0	0.41			303			0.64		
5-02		0.40			304			0.63		
5-03		0.38			305			0.62		
5-04		0.48			306			0.69		
5-05		0.53			306			0.73		
4-01		0.49			304			0.70		
4-02		0.40			304			0.63		
4-03		0.43			303			0.66		
4-04		0.49			304			0.70		
4-05		0.56			304			0.75		
3-01		0.44			308			0.66		
3-02		0.35			309			0.59		
3-03		0.29			309			0.54		
3-04		0.38			308			0.62		
3-05		0.53			307			0.73		
2-01		0.45			304			0.67		
2-02		0.36			304			0.60		
2-03		0.30			304			0.55		
2-04		0.39			304			0.62		
2-05		0.56			304			0.75		
1-01		0.44			307			0.66		
1-02		0.37			307			0.61		
1-03		0.36			306			0.60		
1-04		0.32			306			0.57		
1-05		0.33			304			0.57		
Final	0.0				305.36000			0.64350		

25 points sampled  
 QC-Check: Field Averages Sq.Rt.ΔP 0.6435 305.3600

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 1 FF Outlet  
 Test Run: 7  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000

Meter Operator: S. Joint 473  
 Probe Operator: W. Berry 456

Test Date: 3/25/13  
 Start Time: 12:32  
 Stop Time: 12:48  
 Leak Rate Before: N/A cfm  
 Leak Rate After: N/A cfm

Bar. Press. (in. Hg): 29.70  
 Static P: -8.4  
 O<sub>2</sub> (dry volume %): 8.32  
 CO<sub>2</sub> (dry volume %): 10.88  
 N<sub>2</sub>+CO (dry volume %): 80.80

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 23.43

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)	√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
5-01	0.0	0.32			304			0.57		
5-02		0.34			305			0.58		
5-03		0.39			305			0.62		
5-04		0.46			305			0.68		
5-05		0.49			305			0.70		
4-01		0.37			305			0.61		
4-02		0.34			304			0.58		
4-03		0.37			305			0.61		
4-04		0.42			305			0.65		
4-05		0.47			305			0.69		
3-01		0.38			305			0.62		
3-02		0.31			305			0.56		
3-03		0.34			306			0.58		
3-04		0.38			306			0.62		
3-05		0.44			306			0.66		
2-01		0.41			305			0.64		
2-02		0.29			305			0.54		
2-03		0.26			306			0.51		
2-04		0.30			306			0.55		
2-05		0.42			306			0.65		
1-01		0.24			307			0.49		
1-02		0.22			307			0.47		
1-03		0.33			305			0.57		
1-04		0.35			308			0.59		
1-05		0.54			308			0.73		
Final	0.0				305.56000			0.60261		

25 points sampled  
 QC-Check: Field Averages

Sq.Rt. ΔP	0.6026	305.5600
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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: 8  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: S. Joint 473  
 Probe Operator: W. Berry 456  
 Test Date: 3/25/13  
 Start Time: 13:09  
 Stop Time: 13:23  
 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): 29.70  
 Static P: -8.4  
 O<sub>2</sub> (dry volume %): 8.28  
 CO<sub>2</sub> (dry volume %): 10.86  
 N<sub>2</sub>+CO (dry volume %): 80.86

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 23.43

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01	0.0	0.29			309			0.54		
5-02		0.35			308			0.59		
5-03		0.46			309			0.68		
5-04		0.52			310			0.72		
5-05		0.51			309			0.71		
4-01		0.44			306			0.66		
4-02		0.38			307			0.62		
4-03		0.39			308			0.62		
4-04		0.47			308			0.69		
4-05		0.51			309			0.71		
3-01		0.27			306			0.52		
3-02		0.30			306			0.55		
3-03		0.36			305			0.60		
3-04		0.43			305			0.66		
3-05		0.48			305			0.69		
2-01		0.56			321			0.75		
2-02		0.40			320			0.63		
2-03		0.37			309			0.61		
2-04		0.47			312			0.69		
2-05		0.58			310			0.76		
1-01		0.38			303			0.62		
1-02		0.35			303			0.59		
1-03		0.33			303			0.57		
1-04		0.31			303			0.56		
1-05		0.45			303			0.67		
Final	0.0				307.88000			0.64039		

25 points sampled  
 QC-Check: Field Averages  
 Sq.RI.AP: 0.6404      307.8780  
 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 1 FF Outlet  
 Test Run: 9  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000

Bar. Press. (in. Hg): 29.70  
 Static P: -8.4  
 O<sub>2</sub> (dry volume %): 8.34  
 CO<sub>2</sub> (dry volume %): 10.76  
 N<sub>2</sub>+CO (dry volume %): 80.90

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

Meter Operator: S. Joint 473  
 Probe Operator: W. Berry 456

Test Date: 3/25/13  
 Start Time: 13:48  
 Stop Time: 14:03  
 Leak Rate Before: N/A cfm  
 Leak Rate After: N/A cfm

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 23.43

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01	0.0	0.40			306			0.63		
5-02		0.41			306			0.64		
5-03		0.46			307			0.68		
5-04		0.51			307			0.71		
5-05		0.36			307			0.60		
4-01		0.44			309			0.66		
4-02		0.40			309			0.63		
4-03		0.52			312			0.72		
4-04		0.56			312			0.75		
4-05		0.58			310			0.76		
3-01		0.30			308			0.55		
3-02		0.34			308			0.58		
3-03		0.39			308			0.62		
3-04		0.44			307			0.66		
3-05		0.49			308			0.70		
2-01		0.42			303			0.65		
2-02		0.33			303			0.57		
2-03		0.32			304			0.57		
2-04		0.38			303			0.62		
2-05		0.50			303			0.71		
1-01		0.34			304			0.58		
1-02		0.37			304			0.61		
1-03		0.32			304			0.57		
1-04		0.32			304			0.57		
1-05		0.48			304			0.69		
Final	0.0				306.40000			0.64152		

25 points sampled  
 QC-Check: Field Averages

Sq.Rt.ΔP	0.6415		306.4000	
<input checked="" type="checkbox"/> Avg. OK	<input type="checkbox"/> Avg. OK	<input type="checkbox"/> Avg. OK	<input checked="" type="checkbox"/> Avg. OK	<input type="checkbox"/> Avg. OK

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**Field Data Printout**

**Test Method:**  
**Analyte:**

**USEPA Method 2**  
**Velocity & Flow Rate**

Location: Unit 1 FF Outlet  
 Test Run: 10  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: S. Joint 473  
 Probe Operator: W. Berry 456  
 Test Date: 3/25/13  
 Start Time: 14:29  
 Stop Time: 14:46  
 Leak Rate Before: N/A cfm  
 Leak Rate After: N/A cfm

Bar. Press. (in. Hg): 29.70  
 Static P: -8.4  
 O<sub>2</sub> (dry volume %): 9.25  
 CO<sub>2</sub> (dry volume %): 10.13  
 N<sub>2</sub>+CO (dry volume %): 80.62

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 23.43

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter γ<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read 0.0	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01		0.41			311			0.64		
5-02		0.42			310			0.65		
5-03		0.44			312			0.66		
5-04		0.55			322			0.74		
5-05		0.58			316			0.76		
4-01		0.42			308			0.65		
4-02		0.38			308			0.62		
4-03		0.41			309			0.64		
4-04		0.49			309			0.70		
4-05		0.56			309			0.75		
3-01		0.38			315			0.62		
3-02		0.37			315			0.61		
3-03		0.40			315			0.63		
3-04		0.48			313			0.69		
3-05		0.57			313			0.75		
2-01		0.42			313			0.65		
2-02		0.38			314			0.62		
2-03		0.36			315			0.60		
2-04		0.44			316			0.66		
2-05		0.53			316			0.73		
1-01		0.22			312			0.47		
1-02		0.40			313			0.63		
1-03		0.37			314			0.61		
1-04		0.36			314			0.60		
1-05		0.48			313			0.69		
Final	0.0				313.00000			0.65486		

25 points sampled  
 QC-Check: Field Averages  
 Sq.RLΔP: 0.6549  
 313.0000  
 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 South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: W. Berry 456  
 Probe Operator:   
 Test Date: 3/25/13  
 Start Time: 08:00  
 Stop Time: 09:00  
 Leak Rate Before: 0.004 cfm @ 15 "Hg  
 Leak Rate After: 0.001 cfm @ 10 "Hg

**Test Method:**  
**Analyte:**

**USEPA Method 26A**  
**HCl**

Bar. Press. (in. Hg): 29.70  
 Static P: -10.0  
 O<sub>2</sub> (dry volume %): 9.21  
 CO<sub>2</sub> (dry volume %): 9.86  
 N<sub>2</sub>+CO (dry volume %): 80.93

Nozzle ID No:	N/A
Nozzle Diameter (D <sub>n</sub> ):	N/A
Probe ID No:	67-4-3
Pitot C <sub>p</sub> :	N/A
Pitot Leak Check:	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail

H<sub>2</sub>O (condensate, ml or gm): 235.2  
 H<sub>2</sub>O (silica, g): 19.5  
 Actual Moisture (%): 23.30

Meter Box ID. No:	66-14
Meter ΔH@:	1.80150
Meter Y <sub>d</sub> :	0.98790

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stalk T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
3-01	5.0		1.50	406.400	298	75	73		3.19	
3-01	10.0		1.50	412.970	299	75	73		3.38	
3-01	15.0		1.50	416.350	299	78	74		3.38	
3-01	20.0		1.50	419.270	303	80	75		2.92	
3-01	25.0		1.50	423.220	301	81	75		3.95	
3-01	30.0		1.50	426.630	303	83	76		3.41	
3-01	35.0		1.50	430.070	303	83	76		3.44	
3-01	40.0		1.50	433.550	302	84	77		3.48	
3-01	45.0		1.50	436.980	304	85	77		3.43	
3-01	50.0		1.50	440.450	304	85	77		3.47	
3-01	55.0		1.50	443.860	304	86	78		3.41	
3-01	60.0		1.50	447.310	305	86	78		3.45	
Final	60.0		1.50000	40.91000	302.08333	78.75000		0.00000	40.91000	

3 points sampled

QC-Check: Field Averages	Sq.Rt.ΔP	1.5000	40.9100	302.0833	78.7500
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Avg. OK  
  Avg. OK  
  Avg. OK  
  Avg. OK  
  Avg. OK

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N



**Field Data Printout**

**Test Method:**  
**Analyte:**

**USEPA Method 26A**  
**HCl**

Location: Unit 1 FF Outlet  
 Test Run: 2  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: W. Berry 456  
 Probe Operator:  
 Test Date: 3/25/13  
 Start Time: 09:23  
 Stop Time: 10:34  
 Leak Rate Before: 0.003 cfm @ 15 "Hg  
 Leak Rate After: 0.003 cfm @ 10 "Hg

Bar. Press. (in. Hg): 29.70  
 Static P: -8.3  
 O<sub>2</sub> (dry volume %): 7.76  
 CO<sub>2</sub> (dry volume %): 11.25  
 N<sub>2</sub>+CO (dry volume %): 80.99

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-4-3  
 Pitot C<sub>p</sub>: N/A  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm): 261.7  
 H<sub>2</sub>O (silica, g): 17.7  
 Actual Moisture (%): 24.96

Meter Box ID. No: 66-14  
 Meter ΔH@: 1.80150  
 Meter Y<sub>d</sub>: 0.98790

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
	0.0			447.730						
3-01	5.0	1.50	1.50	451.230	306	78	77		3.50	
3-01	10.0	1.50	1.50	454.590	302	79	78		3.36	
3-01	15.0	1.50	1.50	457.950	303	81	77		3.36	
3-01	20.0	1.50	1.50	461.350	302	83	77		3.40	
3-01	25.0	1.50	1.50	464.790	301	85	78		3.44	
3-01	30.0	1.50	1.50	468.230	303	85	78		3.44	
3-01	35.0	1.50	1.50	471.630	304	86	78		3.40	
3-01	40.0	1.50	1.50	475.080	303	86	79		3.45	
3-01	45.0	1.50	1.50	478.530	304	87	79		3.45	
3-01	50.0	1.50	1.50	482.000	302	87	79		3.47	
3-01	55.0	1.50	1.50	485.470	304	87	80		3.47	
3-01	60.0	1.50	1.50	488.910	304	87	80		3.44	
Final	60.0		1.50000	41.18000	303.16667	81.29167		0.00000	41.18000	

3 points sampled  
 QC-Check: Field Averages

Sq.Rt.ΔP				
	1.5000	41.1800	303.1667	81.2917
<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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 Q

**Field Data Printout**

**Test Method:**  
**Analyte:**

**USEPA Method 26A**  
**HCl**

Location: Unit 1 FF Outlet  
 Test Run: 3  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: W. Berry 456  
 Probe Operator:  
 Test Date: 3/25/13  
 Start Time: 10:54  
 Stop Time: 11:54  
 Leak Rate Before: 0.003 cfm @ 15 "Hg  
 Leak Rate After: 0.001 cfm @ 10 "Hg

Bar. Press. (in. Hg): 29.70  
 Static P: -8.4  
 O<sub>2</sub> (dry volume %): 8.53  
 CO<sub>2</sub> (dry volume %): 10.64  
 N<sub>2</sub>+CO (dry volume %): 80.83

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-4-3  
 Pitot C<sub>p</sub>: N/A  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm): 244.5  
 H<sub>2</sub>O (silica, g): 11.1  
 Actual Moisture (%): 23.33

Meter Box ID. No: 66-14  
 Meter ΔH@: 1.80150  
 Meter Y<sub>d</sub>: 0.98790

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
	0.0			489.570						
3-01	5.0		1.50	493.350	308	83	80		3.78	
3-01	10.0		1.50	496.750	308	85	81		3.40	
3-01	15.0		1.50	500.160	311	87	81		3.41	
3-01	20.0		1.50	503.590	303	89	82		3.43	
3-01	25.0		1.50	507.010	307	89	83		3.42	
3-01	30.0		1.50	510.470	305	90	83		3.46	
3-01	35.0		1.50	513.940	304	91	84		3.47	
3-01	40.0		1.50	517.380	305	90	84		3.44	
3-01	45.0		1.50	520.820	306	90	84		3.44	
3-01	50.0		1.50	524.250	303	91	84		3.43	
3-01	55.0		1.50	527.710	304	92	85		3.46	
3-01	60.0		1.50	531.130	305	94	86		3.42	
Final	60.0		1.50000	41.56000	305.75000	86.16667		0.00000	41.56000	

3 points sampled  
 QC-Check: Field Averages

Sq.Rt.ΔP	1.5000	41.5800	305.7500	86.1667
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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 1 FF Outlet  
 Client: Wheelabrator South 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	485.7	458.9	26.8
Impinger 2	100 ml 0.1N H2SO4	678.3	548.8	129.5
Impinger 3	100 ml 0.1N H2SO4	592.0	530.9	61.1
Impinger 4	Empty	486.1	468.3	17.8
Impinger 5	Silica Gel	724.4	704.9	19.5
Impinger 6				
Impinger 7				
Impinger 8				

235.2 Liquid (gm)	<i>Field Data Check</i>	
0.0 less rinse (gm)		
235.2 Net Liquid (gm)	235.2	<input checked="" type="checkbox"/> QA/QC OK
+ 19.5 Silica Gel (gm)	19.5	<input checked="" type="checkbox"/> QA/QC OK
254.7 Total Vlc (gm)	254.7	<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	488.1	450.8	37.3
Impinger 2	100 ml 0.1N H2SO4	722.9	566.8	156.1
Impinger 3	100 ml 0.1N H2SO4	599.0	543.2	55.8
Impinger 4	Empty	454.6	442.1	12.5
Impinger 5	Silica Gel	724.2	706.5	17.7
Impinger 6				
Impinger 7				
Impinger 8				

261.7 Liquid (gm)	<i>Field Data Check</i>	
0.0 less rinse (gm)		
261.7 Net Liquid (gm)	261.7	<input checked="" type="checkbox"/> QA/QC OK
+ 17.7 Silica Gel (gm)	17.7	<input checked="" type="checkbox"/> QA/QC OK
279.4 Total Vlc (gm)	279.4	<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	492.4	457.9	34.5
Impinger 2	100 ml 0.1N H2SO4	703.7	547.5	156.2
Impinger 3	100 ml 0.1N H2SO4	592.9	539.4	53.5
Impinger 4	Empty	468.9	468.6	0.3
Impinger 5	Silica Gel	735.5	724.4	11.1
Impinger 6				
Impinger 7				
Impinger 8				

244.5 Liquid (gm)	<i>Field Data Check</i>	
0.0 less rinse (gm)		
244.5 Net Liquid (gm)	244.5	<input checked="" type="checkbox"/> QA/QC OK
+ 11.1 Silica Gel (gm)	11.1	<input checked="" type="checkbox"/> QA/QC OK
255.6 Total Vlc (gm)	255.6	<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)	<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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**Field Data Printout**

**Test Method:**  
**Analyte:**

**USEPA Method 5/29**  
**Particulate/Metals**

Location: Unit 1 FF Outlet

Test Run: 1

Client: Wheelabrator South Broward, Inc.

Project No: 12218

Source Area (ft<sup>2</sup>): 64.00000

Meter Operator: S. Joint 473  
Probe Operator: W. Berry 456

Test Date: 3/25/13

Start Time: 12:26

Stop Time: 14:40

Leak Rate Before: 0.003 cfm @ 15 "Hg

Leak Rate After: 0.003 cfm @ 16 "Hg

Bar. Press. (in. Hg): 29.70

Static P: -8.4

O<sub>2</sub> (dry volume %): 8.25

CO<sub>2</sub> (dry volume %): 10.93

N<sub>2</sub>+CO (dry volume %): 80.82

Nozzle ID No: 0.276-1

Nozzle Diameter (D<sub>n</sub>): 0.276

Probe ID No: 67-8-21

Pitot C<sub>p</sub>: 0.813

Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm): 482.2

H<sub>2</sub>O (silica, g): 17.9

Actual Moisture (%): 23.43

Meter Box ID. No: 85-2

Meter ΔH@: 1.74130

Meter Y<sub>d</sub>: 1.00390

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)	√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
	0.0			533.300						
1-01	5.0	0.24	0.66	535.600	307	85	84	0.49	2.30	104.1
1-02	10.0	0.22	0.60	537.780	307	86	85	0.47	2.18	102.8
1-03	15.0	0.33	0.90	540.470	305	88	84	0.57	2.69	103.5
1-04	20.0	0.35	0.96	543.310	308	88	84	0.59	2.84	106.3
1-05	25.0	0.54	1.50	546.800	308	89	85	0.73	3.49	105.1
LEAK CHECK	25.0			547.120						
2-01	30.0	0.56	1.50	550.640	321	91	86	0.75	3.52	104.7
2-02	35.0	0.40	1.10	553.780	320	92	86	0.63	3.14	110.2*
2-03	40.0	0.37	1.00	556.700	309	92	87	0.61	2.92	105.7
2-04	45.0	0.47	1.30	560.030	312	92	87	0.69	3.33	107.2
2-05	50.0	0.58	1.60	563.670	310	93	87	0.76	3.64	105.4
LEAK CHECK	50.0			563.890						
3-01	55.0	0.53	1.50	567.380	311	93	87	0.73	3.49	105.7
3-02	60.0	0.40	1.10	570.450	311	93	87	0.63	3.07	106.9
3-03	65.0	0.42	1.20	573.650	311	94	88	0.65	3.20	108.6
3-04	70.0	0.50	1.40	577.080	311	94	88	0.71	3.43	106.7
3-05	75.0	0.52	1.40	580.530	310	94	88	0.72	3.45	105.2
LEAK CHECK	75.0			580.830						
4-01	80.0	0.44	1.20	583.960	309	93	88	0.66	3.13	103.7
4-02	85.0	0.40	1.10	587.240	309	92	88	0.63	3.28	114.1*
4-03	90.0	0.52	1.40	590.510	312	92	88	0.72	3.27	100.0
4-04	95.0	0.56	1.50	594.060	312	93	88	0.75	3.55	104.6
4-05	100.0	0.58	1.60	598.030	310	94	88	0.76	3.97	114.7*
LEAK CHECK	100.0			598.220						
5-01	105.0	0.41	1.10	600.880	311	93	89	0.64	2.66	91.3
5-02	110.0	0.42	1.20	604.070	310	93	89	0.65	3.19	108.2
5-03	115.0	0.44	1.20	607.280	312	92	88	0.66	3.21	106.7
5-04	120.0	0.55	1.50	610.780	322	93	88	0.74	3.50	104.7
5-05	125.0	0.58	1.60	614.420	316	93	88	0.76	3.64	105.7
Final	125.0		1.24480	80.09000	311.36000	89.34000		0.66858	80.09000	

25 points sampled

Sq.Rt.ΔP

QC-Check: Field Averages

0.6686	1.2448	80.0900	311.3600	89.3400
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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 South Broward, Inc.  
 Project No: 12218  
 Test Run: 1

Test Method: **USEPA Method 5/29**  
 Analyte: **Particulate/Metals**

Analyst: H. Nguyen  
 Analyst Emp No: 429

Impinger	Contents	Gross (gm)	Tare (gm)	Net (gm)	
Impinger 1	Empty	787.8	465.4	322.4	
Impinger 2	5%HNO3/10%H2O2	674.0	545.3	128.7	
Impinger 3	5%HNO3/10%H2O2	575.2	550.7	24.5	
Impinger 4	Empty	429.5	424.5	5.0	
Impinger 5	4%KMnO4/10%H2SO4	645.7	643.7	2.0	
Impinger 6	4%KMnO4/10%H2SO4	545.9	546.3	-0.4	482.2 Liquid (gm)
Impinger 7	Silica Gel	747.3	729.4	17.9	0.0 less rinse (gm)
Impinger 8					482.2 Net Liquid (gm)
					+ 17.9 Silica Gel (gm)
					500.1 Total Vlc (gm)

Rinse:            (ml or gm)

482.2
17.9
500.1

Field Data Check

QA/QC OK

QA/QC OK

QA/QC OK

Test Run: 2

Impinger	Contents	Gross (gm)	Tare (gm)	Net (gm)	
Impinger 1	Empty	664.4	443.3	221.1	
Impinger 2	5%HNO3/10%H2O2	646.9	530.6	116.3	
Impinger 3	5%HNO3/10%H2O2	572.1	538.5	33.6	
Impinger 4	Empty	451.0	443.9	7.1	
Impinger 5	4%KMnO4/10%H2SO4	545.4	541.0	4.4	
Impinger 6	4%KMnO4/10%H2SO4	530.3	529.7	0.6	383.1 Liquid (gm)
Impinger 7	Silica Gel	850.4	837.9	12.5	0.0 less rinse (gm)
Impinger 8					383.1 Net Liquid (gm)
					+ 12.5 Silica Gel (gm)
					395.6 Total Vlc (gm)

Rinse:            (ml or gm)

383.1
12.5
395.6

Field Data Check

QA/QC OK

QA/QC OK

QA/QC OK

Test Run: 3

Impinger	Contents	Gross (gm)	Tare (gm)	Net (gm)	
Impinger 1	Empty	729.8	464.4	265.4	
Impinger 2	5%HNO3/10%H2O2	648.3	545.1	103.2	
Impinger 3	5%HNO3/10%H2O2	572.8	550.3	22.5	
Impinger 4	Empty	427.9	424.2	3.7	
Impinger 5	4%KMnO4/10%H2SO4	646.6	644.6	2.0	
Impinger 6	4%KMnO4/10%H2SO4	543.8	543.8	0.0	396.8 Liquid (gm)
Impinger 7	Silica Gel	760.2	746.9	13.3	0.0 less rinse (gm)
Impinger 8					396.8 Net Liquid (gm)
					+ 13.3 Silica Gel (gm)
					410.1 Total Vlc (gm)

Rinse:            (ml or gm)

396.8
13.3
410.1

Field Data Check

QA/QC OK

QA/QC OK

QA/QC OK

Test Run:           

Impinger	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)


Field Data Check

QA/QC OK

QA/QC OK

QA/QC OK

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 NIKL

**Field Data Printout**

**Test Method:**  
**Analyte:**

**USEPA Method 2**  
**Velocity & Flow Rate**

Location: Unit 2 FF Outlet  
 Test Run: 1  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000

Meter Operator: W. Berry 456  
 Probe Operator: A. Obuchowski 567

Test Date: 3/27/13

Start Time: 07:51

Stop Time: 07:59

Leak Rate Before: N/A cfm  
 Leak Rate After: N/A cfm

Bar. Press. (in. Hg): 30.10  
 Static P: -11.2

O<sub>2</sub> (dry volume %): 8.59  
 CO<sub>2</sub> (dry volume %): 10.60  
 N<sub>2</sub>+CO (dry volume %): 80.81

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):

Actual Moisture (%): 20.19

Meter Box ID No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter T <sub>m-in</sub> (°F) T <sub>m-out</sub> (°F)		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
	0.0									
5-01		0.35			297			0.59		
5-02		0.34			297			0.58		
5-03		0.34			297			0.58		
5-04		0.36			297			0.60		
5-05		0.35			297			0.59		
4-01		0.36			296			0.60		
4-02		0.36			297			0.60		
4-03		0.37			297			0.61		
4-04		0.38			297			0.62		
4-05		0.35			297			0.59		
3-01		0.37			297			0.61		
3-02		0.36			297			0.60		
3-03		0.35			298			0.59		
3-04		0.36			298			0.60		
3-05		0.34			298			0.58		
2-01		0.34			298			0.58		
2-02		0.36			299			0.60		
2-03		0.44			299			0.66		
2-04		0.40			300			0.63		
2-05		0.45			300			0.67		
1-01		0.45			300			0.67		
1-02		0.40			302			0.63		
1-03		0.40			303			0.63		
1-04		0.44			303			0.66		
1-05		0.44			301			0.66		
Final	0.0				298.48000			0.61443		

25 points sampled  
 QC-Check: Field Averages

Sq.Rt.ΔP  
 0.6144

Avg. OK  Avg. OK  Avg. OK  Avg. OK  Avg. OK

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 3

**Field Data Printout**

**Test Method:**  
**Analyte:**

**USEPA Method 2**  
**Velocity & Flow Rate**

Location: Unit 2 FF Outlet  
 Test Run: 2  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: W. Berry 456  
 Probe Operator: A. Obuchowski 567

Bar. Press. (in. Hg): 30.10  
 Static P: -11.2  
 O<sub>2</sub> (dry volume %): 8.34  
 CO<sub>2</sub> (dry volume %): 10.97  
 N<sub>2</sub>+CO (dry volume %): 80.69

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

Test Date: 3/27/13  
 Start Time: 08:28  
 Stop Time: 08:36  
 Leak Rate Before: N/A cfm  
 Leak Rate After: N/A cfm

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 20.19

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01	0.0	0.32			298			0.57		
5-02		0.30			298			0.55		
5-03		0.28			298			0.53		
5-04		0.34			298			0.58		
5-05		0.32			299			0.57		
4-01		0.36			298			0.60		
4-02		0.37			300			0.61		
4-03		0.34			300			0.58		
4-04		0.33			301			0.57		
4-05		0.31			301			0.56		
3-01		0.35			301			0.59		
3-02		0.36			302			0.60		
3-03		0.37			303			0.61		
3-04		0.42			303			0.65		
3-05		0.42			303			0.65		
2-01		0.38			305			0.62		
2-02		0.36			304			0.60		
2-03		0.38			304			0.62		
2-04		0.37			304			0.61		
2-05		0.46			304			0.68		
1-01		0.33			296			0.57		
1-02		0.38			292			0.62		
1-03		0.30			300			0.55		
1-04		0.30			298			0.55		
1-05		0.42			298			0.65		
Final	0.0				300.32000			0.59455		

25 points sampled  
 QC-Check: Field Averages  
 Sq.Rt.ΔP: 0.5945  
 300.3200

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 2 FF Outlet  
 Test Run: 3  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: W. Berry 456  
 Probe Operator: A. Obuchowski 567  
 Test Date: 3/27/13  
 Start Time: 09:10  
 Stop Time: 09:20  
 Leak Rate Before: N/A cfm  
 Leak Rate After: N/A cfm

Bar. Press. (in. Hg): 30.10  
 Static P: -11.1  
 O<sub>2</sub> (dry volume %): 8.85  
 CO<sub>2</sub> (dry volume %): 10.38  
 N<sub>2</sub>+CO (dry volume %): 80.78

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 20.54

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter T <sub>m-in</sub> (°F)    T <sub>m-out</sub> (°F)		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
5-01	0.0	0.22			291			0.47		
5-02		0.28			293			0.53		
5-03		0.31			292			0.56		
5-04		0.29			292			0.54		
5-05		0.31			292			0.56		
4-01		0.38			297			0.62		
4-02		0.39			298			0.62		
4-03		0.39			298			0.62		
4-04		0.38			298			0.62		
4-05		0.34			298			0.58		
3-01		0.41			298			0.64		
3-02		0.38			298			0.62		
3-03		0.38			298			0.62		
3-04		0.35			298			0.59		
3-05		0.32			297			0.57		
2-01		0.46			301			0.68		
2-02		0.44			301			0.66		
2-03		0.44			301			0.66		
2-04		0.45			301			0.67		
2-05		0.46			301			0.68		
1-01		0.50			297			0.71		
1-02		0.42			297			0.65		
1-03		0.43			297			0.66		
1-04		0.46			298			0.68		
1-05		0.46			298			0.68		
Final	0.0				297.20000			0.61868		

25 points sampled  
 QC-Check: Field Averages

Sq.Rt.ΔP 0.6186 297.2000

Avg. OK     Avg. OK     Avg. OK     Avg. OK     Avg. OK

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 ©



### Field Data Printout

Location: Unit 2 FF Outlet  
 Test Run: 4  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 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): 30.10  
 Static P: -11.1  
 O<sub>2</sub> (dry volume %): 8.95  
 CO<sub>2</sub> (dry volume %): 10.39  
 N<sub>2</sub>+CO (dry volume %): 80.65

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

Test Date: 3/27/13  
 Start Time: 09:45  
 Stop Time: 09:55  
 Leak Rate Before: N/A cfm  
 Leak Rate After: N/A cfm

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 20.54

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot	Sample	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
		ΔP <sub>s</sub> (in. H <sub>2</sub> O)	ΔH (in. H <sub>2</sub> O)			T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01	0.0	0.22			291			0.47		
5-02		0.28			292			0.53		
5-03		0.34			292			0.58		
5-04		0.35			291			0.59		
5-05		0.39			292			0.62		
4-01		0.34			298			0.58		
4-02		0.35			296			0.59		
4-03		0.38			296			0.62		
4-04		0.41			297			0.64		
4-05		0.40			297			0.63		
3-01		0.31			297			0.56		
3-02		0.30			297			0.55		
3-03		0.33			297			0.57		
3-04		0.38			298			0.62		
3-05		0.40			298			0.63		
2-01		0.37			297			0.61		
2-02		0.40			298			0.63		
2-03		0.44			298			0.66		
2-04		0.48			298			0.69		
2-05		0.54			298			0.73		
1-01		0.42			299			0.65		
1-02		0.41			298			0.64		
1-03		0.40			300			0.63		
1-04		0.41			300			0.64		
1-05		0.49			300			0.70		
Final	0.0				296.6000			0.61528		

25 points sampled  
 QC-Check: Field Averages

	Sq.RI.ΔP	<span style="border: 1px solid black; padding: 2px;">0.6152</span>	<span style="border: 1px solid black; padding: 2px;">296.6000</span>	
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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 2 FF Outlet  
 Test Run: 5  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: W. Berry 456  
 Probe Operator: A. Obuchowski 567

Bar. Press. (in. Hg): 30.10  
 Static P: -12.1  
 O<sub>2</sub> (dry volume %): 9.38  
 CO<sub>2</sub> (dry volume %): 10.00  
 N<sub>2</sub>+CO (dry volume %): 80.61

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

Test Date: 3/27/13  
 Start Time: 10:28  
 Stop Time: 10:38  
 Leak Rate Before: N/A cfm  
 Leak Rate After: N/A cfm

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 20.94

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot	Sample	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
		ΔP <sub>s</sub> (in. H <sub>2</sub> O)	ΔH (in. H <sub>2</sub> O)			T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
	0.0									
5-01		0.36			299			0.60		
5-02		0.36			300			0.60		
5-03		0.42			301			0.65		
5-04		0.50			301			0.71		
5-05		0.51			301			0.71		
4-01		0.40			291			0.63		
4-02		0.41			292			0.64		
4-03		0.44			293			0.66		
4-04		0.48			294			0.69		
4-05		0.51			300			0.71		
3-01		0.46			300			0.68		
3-02		0.45			300			0.67		
3-03		0.46			300			0.68		
3-04		0.50			300			0.71		
3-05		0.58			301			0.76		
2-01		0.52			301			0.72		
2-02		0.50			300			0.71		
2-03		0.50			300			0.71		
2-04		0.59			301			0.77		
2-05		0.63			301			0.79		
1-01		0.52			302			0.72		
1-02		0.52			302			0.72		
1-03		0.53			301			0.73		
1-04		0.51			300			0.71		
1-05		0.61			300			0.78		
Final	0.0				299.24000			0.69884		

25 points sampled      Sq.Rt.ΔP  
**QC-Check: Field Averages**      **0.6988**      **299.2400**  
 Avg. OK     Avg. OK     Avg. OK     Avg. OK     Avg. OK

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**Field Data Printout**

Location: Unit 2 FF Outlet  
 Test Run: 6  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 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): 30.10  
 Static P: -12.1  
 O<sub>2</sub> (dry volume %): 9.74  
 CO<sub>2</sub> (dry volume %): 9.59  
 N<sub>2</sub>+CO (dry volume %): 80.67

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

Test Date: 3/27/13  
 Start Time: 11:09  
 Stop Time: 11:18  
 Leak Rate Before: N/A cfm  
 Leak Rate After: N/A cfm

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 20.94

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01	0.0	0.39			299			0.62		
5-02		0.39			299			0.62		
5-03		0.42			299			0.65		
5-04		0.45			300			0.67		
5-05		0.46			300			0.68		
4-01		0.40			299			0.63		
4-02		0.42			299			0.65		
4-03		0.45			299			0.67		
4-04		0.49			300			0.70		
4-05		0.52			300			0.72		
3-01		0.43			300			0.66		
3-02		0.44			299			0.66		
3-03		0.45			300			0.67		
3-04		0.46			300			0.68		
3-05		0.45			300			0.67		
2-01		0.42			300			0.65		
2-02		0.43			302			0.66		
2-03		0.44			300			0.66		
2-04		0.55			304			0.74		
2-05		0.58			304			0.76		
1-01		0.60			300			0.77		
1-02		0.57			300			0.75		
1-03		0.55			301			0.74		
1-04		0.57			301			0.75		
1-05		0.65			301			0.81		
Final	0.0				300.24000			0.69041		

25 points sampled  
 QC-Check: Field Averages

Sq.Rt.ΔP	0.6904	300.2400
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Avg. OK  Avg. OK  Avg. OK  Avg. OK  Avg. OK

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 6

**Field Data Printout**

**Test Method:**  
**Analyte:**

**USEPA Method 2**  
**Velocity & Flow Rate**

Location: Unit 2 FF Outlet  
 Test Run: 7  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: S. Joint 473  
 Probe Operator: W. Berry 456  
 Test Date: 3/27/13  
 Start Time: 12:13  
 Stop Time: 12:28  
 Leak Rate Before: N/A cfm  
 Leak Rate After: N/A cfm

Bar. Press. (in. Hg): 30.10  
 Static P: -12.1  
 O<sub>2</sub> (dry volume %): 9.11  
 CO<sub>2</sub> (dry volume %): 10.22  
 N<sub>2</sub>+CO (dry volume %): 80.67

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 23.20

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot	Sample	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
		ΔP <sub>s</sub> (in. H <sub>2</sub> O)	ΔH (in. H <sub>2</sub> O)			T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01	0.0	0.25			299			0.50		
5-02		0.26			299			0.51		
5-03		0.32			299			0.57		
5-04		0.34			299			0.58		
5-05		0.38			299			0.62		
4-01		0.32			297			0.57		
4-02		0.35			297			0.59		
4-03		0.37			298			0.61		
4-04		0.42			298			0.65		
4-05		0.41			298			0.64		
3-01		0.28			295			0.53		
3-02		0.37			295			0.61		
3-03		0.41			296			0.64		
3-04		0.43			296			0.66		
3-05		0.45			296			0.67		
2-01		0.42			295			0.65		
2-02		0.45			295			0.67		
2-03		0.46			295			0.68		
2-04		0.51			295			0.71		
2-05		0.56			295			0.75		
1-01		0.42			297			0.65		
1-02		0.38			296			0.62		
1-03		0.39			295			0.62		
1-04		0.43			300			0.66		
1-05		0.45			299			0.67		
Final	0.0				296.92000			0.62434		

25 points sampled      Sq.Rt. ΔP  
 QC-Check: Field Averages      0.6243      296.9200  
 Avg. OK     Avg. OK     Avg. OK     Avg. OK     Avg. OK

041713 103544  
 ©

### Field Data Printout

Location: Unit 2 FF Outlet  
 Test Run: 8  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: S. Joint 473  
 Probe Operator: W. Berry 456  
 Test Date: 3/27/13  
 Start Time: 13:04  
 Stop Time: 13:18  
 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): 30.10  
 Static P: -12.1  
 O<sub>2</sub> (dry volume %): 9.12  
 CO<sub>2</sub> (dry volume %): 10.18  
 N<sub>2</sub>+CO (dry volume %): 80.70

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 23.20

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01		0.33			296			0.57		
5-02		0.34			296			0.58		
5-03		0.36			296			0.60		
5-04		0.40			298			0.63		
5-05		0.41			298			0.64		
4-01		0.36			296			0.60		
4-02		0.35			298			0.59		
4-03		0.38			298			0.62		
4-04		0.43			298			0.66		
4-05		0.39			298			0.62		
3-01		0.36			299			0.60		
3-02		0.33			300			0.57		
3-03		0.37			301			0.61		
3-04		0.40			300			0.63		
3-05		0.41			300			0.64		
2-01		0.37			296			0.61		
2-02		0.40			296			0.63		
2-03		0.42			298			0.65		
2-04		0.44			298			0.66		
2-05		0.54			298			0.73		
1-01		0.43			297			0.66		
1-02		0.44			297			0.66		
1-03		0.43			298			0.66		
1-04		0.38			297			0.62		
1-05		0.49			297			0.70		
Final	0.0				297.76000			0.63009		

25 points sampled  
 QC-Check: Field Averages      Sq.Rt.ΔP      0.6301      297.7600

Avg. OK     Avg. OK     Avg. OK     Avg. OK     Avg. OK

041713 103544

### Field Data Printout

Location: Unit 2 FF Outlet  
 Test Run: 9  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: S. Joint 473  
 Probe Operator: W. Berry 456  
 Test Date: 3/27/13  
 Start Time: 13:28  
 Stop Time: 13:42  
 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): 30.10  
 Static P: -12.1  
 O<sub>2</sub> (dry volume %): 9.31  
 CO<sub>2</sub> (dry volume %): 10.06  
 N<sub>2</sub>+CO (dry volume %): 80.63

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 23.20

Meter Box ID No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01	0.0	0.32			296			0.57		
5-02		0.33			296			0.57		
5-03		0.35			297			0.59		
5-04		0.38			298			0.62		
5-05		0.35			298			0.59		
4-01		0.36			299			0.60		
4-02		0.33			301			0.57		
4-03		0.35			295			0.59		
4-04		0.35			301			0.59		
4-05		0.36			300			0.60		
3-01		0.32			298			0.57		
3-02		0.36			298			0.60		
3-03		0.38			300			0.62		
3-04		0.40			300			0.63		
3-05		0.42			300			0.65		
2-01		0.42			298			0.65		
2-02		0.43			298			0.66		
2-03		0.42			299			0.65		
2-04		0.46			299			0.68		
2-05		0.47			300			0.69		
1-01		0.47			299			0.69		
1-02		0.43			299			0.66		
1-03		0.42			299			0.65		
1-04		0.45			299			0.67		
1-05		0.50			299			0.71		
Final	0.0				298.64000			0.62573		

25 points sampled

Sq.Rt.ΔP

QC-Check: Field Averages

0.6257

298.6400

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 2 FF Outlet  
 Test Run: 10  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000

Bar. Press. (in. Hg): 30.10  
 Static P: -12.1  
 O<sub>2</sub> (dry volume %): 8.75  
 CO<sub>2</sub> (dry volume %): 10.64  
 N<sub>2</sub>+CO (dry volume %): 80.60

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

Meter Operator: S. Joint 473  
 Probe Operator: W. Berry 456  
 Test Date: 3/27/13  
 Start Time: 14:05  
 Stop Time: 14:20  
 Leak Rate Before: N/A cfm  
 Leak Rate After: N/A cfm

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 23.20

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>o</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01	0.0	0.32			300			0.57		
5-02		0.28			300			0.53		
5-03		0.30			299			0.55		
5-04		0.42			299			0.65		
5-05		0.36			299			0.60		
4-01		0.36			296			0.60		
4-02		0.34			296			0.58		
4-03		0.36			297			0.60		
4-04		0.41			297			0.64		
4-05		0.43			297			0.66		
3-01		0.34			296			0.58		
3-02		0.37			296			0.61		
3-03		0.40			296			0.63		
3-04		0.45			297			0.67		
3-05		0.47			297			0.69		
2-01		0.38			298			0.62		
2-02		0.39			298			0.62		
2-03		0.42			298			0.65		
2-04		0.43			299			0.66		
2-05		0.51			299			0.71		
1-01		0.44			298			0.66		
1-02		0.42			298			0.65		
1-03		0.41			298			0.64		
1-04		0.39			298			0.62		
1-05		0.48			298			0.69		
Final	0.0				297.76000			0.62712		

25 points sampled  
 QC-Check: Field Averages  
 Sq.Rt.ΔP: 0.6271      297.7600

Avg. OK     Avg. OK     Avg. OK     Avg. OK     Avg. OK

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 ©

### Field Data Printout

Location: Unit 2 FF Outlet  
 Test Run: 1  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: W. Berry 456  
 Probe Operator: \_\_\_\_\_  
 Test Date: 3/27/13  
 Start Time: 07:47  
 Stop Time: 08:47  
 Leak Rate Before: 0.003 cfm @ 15 "Hg  
 Leak Rate After: 0.002 cfm @ 10 "Hg

**Test Method:**  
**Analyte:**

**USEPA Method 26A**  
**HCI**

Bar. Press. (in. Hg): 30.10  
 Static P: -11.2  
 O<sub>2</sub> (dry volume %): 8.77  
 CO<sub>2</sub> (dry volume %): 10.51  
 N<sub>2</sub>+CO (dry volume %): 80.72

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-4-3  
 Pitot C<sub>p</sub>: N/A  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm): 205.8  
 H<sub>2</sub>O (silica, g): 14.9  
 Actual Moisture (%): 20.19

Meter Box ID. No: 66-11  
 Meter ΔH@: 1.82740  
 Meter Y<sub>d</sub>: 0.99060

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
	0.0			54.475						
3-01	5.0		1.50	57.800	294	51	50		3.33	
3-01	10.0		1.50	61.100	292	54	51		3.30	
3-01	15.0		1.50	64.420	296	56	53		3.32	
3-01	20.0		1.50	67.740	302	58	54		3.32	
3-01	25.0		1.50	71.100	296	59	56		3.36	
3-01	30.0		1.50	74.470	298	58	58		3.37	
3-01	35.0		1.50	77.850	299	59	59		3.38	
3-01	40.0		1.50	81.240	293	59	60		3.39	
3-01	45.0		1.50	84.580	295	61	61		3.34	
3-01	50.0		1.50	88.060	300	60	62		3.48	
3-01	55.0		1.50	91.340	298	62	63		3.28	
3-01	60.0		1.50	94.745	290	62	64		3.41	
Final	60.0		1.50000	40.27000	296.08333	57.91667			40.27000	

3 points sampled  
 QC-Check: Field Averages

Sq.Rt.ΔP	1.5000	40.2700	296.0833	57.9166
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Avg. OK  
 Avg. OK  
 Avg. OK  
 Avg. OK  
 Avg. OK

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N



### Field Data Printout

Location: Unit 2 FF Outlet  
 Test Run: 2  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: W. Berry 456  
 Probe Operator: \_\_\_\_\_  
 Test Date: 3/27/13  
 Start Time: 09:08  
 Stop Time: 10:08  
 Leak Rate Before: 0.004 cfm @ 15 "Hg  
 Leak Rate After: 0.002 cfm @ 10 "Hg

**Test Method:**  
**Analyte:**

**USEPA Method 26A**  
**HCl**

Bar. Press. (in. Hg): 30.10  
 Static P: -11.1  
 O<sub>2</sub> (dry volume %): 8.87  
 CO<sub>2</sub> (dry volume %): 10.49  
 N<sub>2</sub>+CO (dry volume %): 80.64

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-4-3  
 Pitot C<sub>p</sub>: N/A  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm): 211.4  
 H<sub>2</sub>O (silica, g): 13.3  
 Actual Moisture (%): 20.54

Meter Box ID. No: 66-11  
 Meter ΔH@: 1.82740  
 Meter Y<sub>d</sub>: 0.99060

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
3-01	0.0			95.380						
3-01	5.0	1.50	1.50	98.740	294	61	67		3.36	
3-01	10.0	1.50	1.50	102.110	294	62	68		3.37	
3-01	15.0	1.50	1.50	105.480	293	63	68		3.37	
3-01	20.0	1.50	1.50	108.880	294	62	67		3.40	
3-01	25.0	1.50	1.50	112.270	294	64	67		3.39	
3-01	30.0	1.50	1.50	115.670	296	65	68		3.40	
3-01	35.0	1.50	1.50	119.090	292	65	68		3.42	
3-01	40.0	1.50	1.50	122.500	295	64	68		3.41	
3-01	45.0	1.50	1.50	125.910	293	65	68		3.41	
3-01	50.0	1.50	1.50	129.310	295	65	68		3.40	
3-01	55.0	1.50	1.50	132.800	292	67	69		3.49	
3-01	60.0	1.50	1.50	136.135	297	68	69		3.33	
Final	60.0		1.50000	40.75500	294.08333	66.08333			40.75500	

3 points sampled  
 QC-Check: Field Averages  
 Sq.Rt.ΔP: 1.5000    40.7550    294.0833    66.0833

Avg. OK     Avg. OK     Avg. OK     Avg. OK     Avg. OK

041713 103124  
N

### Field Data Printout

Location: Unit 2 FF Outlet  
 Test Run: 3  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: S. Joint 473  
 Probe Operator: W. Berry 456  
 Test Date: 3/27/13  
 Start Time: 10:27  
 Stop Time: 11:27  
 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): 30.10  
 Static P: -12.1  
 O<sub>2</sub> (dry volume %): 9.70  
 CO<sub>2</sub> (dry volume %): 9.67  
 N<sub>2</sub>+CO (dry volume %): 80.63

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-4-3  
 Pitot C<sub>p</sub>: N/A  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm): 212.4  
 H<sub>2</sub>O (silica, g): 15.5  
 Actual Moisture (%): 20.94

Meter Box ID. No: 66-11  
 Meter ΔH@: 1.82740  
 Meter Y<sub>d</sub>: 0.99060

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
	0.0			136.570						
2-01	5.0		1.50	139.990	299	69	72		3.42	
2-01	10.0		1.50	143.380	295	72	73		3.39	
2-01	15.0		1.50	146.780	296	72	74		3.40	
2-01	20.0		1.50	150.150	296	72	74		3.37	
2-01	25.0		1.50	153.540	298	70	72		3.39	
2-01	30.0		1.50	156.940	298	70	72		3.40	
2-01	35.0		1.50	160.350	298	72	73		3.41	
2-01	40.0		1.50	163.740	296	70	72		3.39	
2-01	45.0		1.50	167.120	298	65	68		3.38	
2-01	50.0		1.50	170.480	295	65	66		3.36	
2-01	55.0		1.50	173.830	297	66	65		3.35	
2-01	60.0		1.50	177.210	298	65	64		3.38	
Final	60.0		1.50000	40.64000	297.00000	69.70833			40.64000	

2 points sampled  
 QC-Check: Field Averages  
 Sq.Rt.ΔP: 1.5000 40.6400 297.0000 69.7083  
 Avg. OK  Avg. OK  Avg. OK  Avg. OK  Avg. OK

041713 103124

### USEPA Method 4 Laboratory Data

Location: Unit 2 FF Outlet  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218

Test Method: **USEPA Method 26A**  
 Analyte: **HCl**

Analyst: H. Nguyen  
 Analyst Emp No: 429

Test Run: 1

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	50 ml 0.1N H2SO4	493.5	458.5	35.0
Impinger 2	100 ml 0.1N H2SO4	654.8	548.0	106.8
Impinger 3	100 ml 0.1N H2SO4	590.5	539.7	50.8
Impinger 4	Empty	481.5	468.3	13.2
Impinger 5	Silica Gel	702.8	687.9	14.9
Impinger 6				
Impinger 7				
Impinger 8				

205.8 Liquid (gm)		
0.0 less rinse (gm)		
205.8 Net Liquid (gm)	<u>205.8</u>	<input checked="" type="checkbox"/> QA/QC OK
+ 14.9 Silica Gel (gm)	<u>14.9</u>	<input checked="" type="checkbox"/> QA/QC OK
220.7 Total Vlc (gm)	<u>220.7</u>	<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	481.2	437.5	43.7
Impinger 2	100 ml 0.1N H2SO4	660.0	547.6	112.4
Impinger 3	100 ml 0.1N H2SO4	573.8	527.9	45.9
Impinger 4	Empty	450.2	440.8	9.4
Impinger 5	Silica Gel	730.1	716.8	13.3
Impinger 6				
Impinger 7				
Impinger 8				

211.4 Liquid (gm)		
0.0 less rinse (gm)		
211.4 Net Liquid (gm)	<u>211.4</u>	<input checked="" type="checkbox"/> QA/QC OK
+ 13.3 Silica Gel (gm)	<u>13.3</u>	<input checked="" type="checkbox"/> QA/QC OK
224.7 Total Vlc (gm)	<u>224.7</u>	<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	494.4	452.0	42.4
Impinger 2	100 ml 0.1N H2SO4	661.3	545.8	115.5
Impinger 3	100 ml 0.1N H2SO4	595.6	550.0	45.6
Impinger 4	Empty	476.9	468.0	8.9
Impinger 5	Silica Gel	717.9	702.4	15.5
Impinger 6				
Impinger 7				
Impinger 8				

212.4 Liquid (gm)		
0.0 less rinse (gm)		
212.4 Net Liquid (gm)	<u>212.4</u>	<input checked="" type="checkbox"/> QA/QC OK
+ 15.5 Silica Gel (gm)	<u>15.5</u>	<input checked="" type="checkbox"/> QA/QC OK
227.9 Total Vlc (gm)	<u>227.9</u>	<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)		<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)

041713 103124  
 NNO

**Field Data Printout**

**Test Method:**  
**Analyte:**

**USEPA Method 5/29**  
**Particulate/Metals**

Location: Unit 2 FF Outlet  
 Test Run: 1  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: P. Bihun 505  
 Probe Operator: P. Bihun 505  
 Test Date: 3/25/13  
 Start Time: 07:59  
 Stop Time: 10:11  
 Leak Rate Before: 0.007 cfm @ 15 "Hg  
 Leak Rate After: 0.002 cfm @ 10 "Hg

Bar. Press. (in. Hg): 29.70  
 Static P: -12.2  
 O<sub>2</sub> (dry volume %): 8.56  
 CO<sub>2</sub> (dry volume %): 10.35  
 N<sub>2</sub>+CO (dry volume %): 81.09

Nozzle ID No: 0.2725-1  
 Nozzle Diameter (D<sub>n</sub>): 0.273  
 Probe ID No: 67-8-17  
 Pitot C<sub>p</sub>: 0.824  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm): 417.2  
 H<sub>2</sub>O (silica, g): 19.5  
 Actual Moisture (%): 23.20

Meter Box ID. No: 66-11  
 Meter ΔH@: 1.82740  
 Meter Y<sub>d</sub>: 0.99060

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter T <sub>m-in</sub> T <sub>m-out</sub> (°F) (°F)		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
	0.0			842.000						
1-01	5.0	0.33	0.88	844.620	298	77	76	0.57	2.62	102.1
1-02	10.0	0.31	0.82	847.110	299	79	76	0.56	2.49	99.9
1-03	15.0	0.32	0.85	849.620	298	80	77	0.57	2.51	98.9
1-04	20.0	0.33	0.88	852.190	298	82	77	0.57	2.57	99.6
1-05	25.0	0.35	0.93	854.875	298	84	78	0.59	2.68	100.7
LEAK CHECK	25.0			854.950						
2-01	30.0	0.32	0.85	857.500	298	83	79	0.57	2.55	100.0
2-02	35.0	0.33	0.88	860.080	299	81	78	0.57	2.58	100.0
2-03	40.0	0.37	0.98	862.820	299	81	78	0.61	2.74	100.3
2-04	45.0	0.42	1.10	865.750	300	82	78	0.65	2.93	100.7
2-05	50.0	0.38	1.00	868.540	300	84	78	0.62	2.79	100.6
LEAK CHECK	50.0			868.625						
3-01	55.0	0.27	0.72	870.970	303	82	78	0.52	2.35	100.6
3-02	60.0	0.40	1.10	873.900	300	83	79	0.63	2.93	103.0
3-03	65.0	0.44	1.20	877.010	297	85	79	0.66	3.11	103.9
3-04	70.0	0.52	1.40	880.380	302	87	80	0.72	3.37	103.6
3-05	75.0	0.50	1.30	883.600	300	88	80	0.71	3.22	100.7
LEAK CHECK	75.0			883.690						
4-01	80.0	0.45	1.20	886.760	300	86	81	0.67	3.07	101.3
4-02	85.0	0.43	1.10	889.740	300	87	81	0.66	2.98	100.5
4-03	90.0	0.48	1.30	892.980	298	87	81	0.69	3.24	103.3
4-04	95.0	0.46	1.20	896.120	299	88	81	0.68	3.14	102.2
4-05	100.0	0.48	1.30	899.325	299	88	82	0.69	3.21	102.1
LEAK CHECK	100.0			899.410						
5-01	105.0	0.36	0.95	902.120	296	86	81	0.60	2.71	99.7
5-02	110.0	0.36	0.95	904.800	298	86	82	0.60	2.68	98.6
5-03	115.0	0.37	0.98	907.550	298	87	82	0.61	2.75	99.7
5-04	120.0	0.36	0.95	910.230	298	87	82	0.60	2.68	98.5
5-05	125.0	0.40	1.10	913.180	299	87	82	0.63	2.95	103.0
Final	125.0		1.03680	70.84500	298.96000	81.86000		0.62203	70.84500	

25 points sampled  
 QC-Check: Field Averages  
 Sq.Rt.ΔP  

0.6220	1.0368	70.8450	298.9600	81.8600
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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 2 FF Outlet  
 Client: Wheelabrator South 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	703.8	456.6	247.2
Impinger 2	5%HNO3/10%H2O2	682.6	558.2	124.4
Impinger 3	5%HNO3/10%H2O2	586.1	554.6	31.5
Impinger 4	Empty	445.5	437.6	7.9
Impinger 5	4%KMnO4/10%H2SO4	549.7	545.2	4.5
Impinger 6	4%KMnO4/10%H2SO4	539.2	537.5	1.7
Impinger 7	Silica Gel	735.3	715.8	19.5
Impinger 8				

	417.2 Liquid (gm)		<i>Field Data Check</i>	
	0.0 less rinse (gm)			
	417.2 Net Liquid (gm)	417.2		<input checked="" type="checkbox"/> QA/QC OK
	+ 19.5 Silica Gel (gm)	19.5		<input checked="" type="checkbox"/> QA/QC OK
	436.7 Total Vlc (gm)	436.7		<input checked="" type="checkbox"/> QA/QC OK

Rinse:            (ml or gm)

Test Run: 2

Contents	Gross (gm)	Tare (gm)	Net (gm)	
Impinger 1	Empty	688.1	444.3	243.8
Impinger 2	5%HNO3/10%H2O2	639.9	531.7	108.2
Impinger 3	5%HNO3/10%H2O2	566.9	538.8	28.1
Impinger 4	Empty	451.3	444.7	6.6
Impinger 5	4%KMnO4/10%H2SO4	547.9	542.6	5.3
Impinger 6	4%KMnO4/10%H2SO4	540.7	538.5	2.2
Impinger 7	Silica Gel	837.9	824.5	13.4
Impinger 8				

	394.2 Liquid (gm)		<i>Field Data Check</i>	
	0.0 less rinse (gm)			
	394.2 Net Liquid (gm)	394.2		<input checked="" type="checkbox"/> QA/QC OK
	+ 13.4 Silica Gel (gm)	13.4		<input checked="" type="checkbox"/> QA/QC OK
	407.6 Total Vlc (gm)	407.6		<input checked="" type="checkbox"/> QA/QC OK

Rinse:            (ml or gm)

Test Run: 3

Contents	Gross (gm)	Tare (gm)	Net (gm)	
Impinger 1	Empty	716.5	456.5	260.0
Impinger 2	5%HNO3/10%H2O2	652.5	556.6	95.9
Impinger 3	5%HNO3/10%H2O2	564.0	544.8	19.2
Impinger 4	Empty	441.6	436.9	4.7
Impinger 5	4%KMnO4/10%H2SO4	548.7	546.0	2.7
Impinger 6	4%KMnO4/10%H2SO4	540.8	540.6	0.2
Impinger 7	Silica Gel	749.5	735.3	14.2
Impinger 8				

	382.7 Liquid (gm)		<i>Field Data Check</i>	
	0.0 less rinse (gm)			
	382.7 Net Liquid (gm)	382.7		<input checked="" type="checkbox"/> QA/QC OK
	+ 14.2 Silica Gel (gm)	14.2		<input checked="" type="checkbox"/> QA/QC OK
	396.9 Total Vlc (gm)	396.9		<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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### Field Data Printout

Location: Unit 3 FF Outlet  
 Test Run: 1  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 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): 29.90  
 Static P: -9.9  
 O<sub>2</sub> (dry volume %): 9.37  
 CO<sub>2</sub> (dry volume %): 10.03  
 N<sub>2</sub>+CO (dry volume %): 80.60

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

Test Date: 3/26/13  
 Start Time: 08:09  
 Stop Time: 08:21  
 Leak Rate Before: N/A cfm  
 Leak Rate After: N/A cfm

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 19.48  
 Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01	0.0	0.35			298			0.59		
5-02		0.36			298			0.60		
5-03		0.37			298			0.61		
5-04		0.38			298			0.62		
5-05		0.37			299			0.61		
4-01		0.36			298			0.60		
4-02		0.36			298			0.60		
4-03		0.37			299			0.61		
4-04		0.37			299			0.61		
4-05		0.35			299			0.59		
3-01		0.55			298			0.74		
3-02		0.50			298			0.71		
3-03		0.46			298			0.68		
3-04		0.39			298			0.62		
3-05		0.36			298			0.60		
2-01		0.49			298			0.70		
2-02		0.45			298			0.67		
2-03		0.43			298			0.66		
2-04		0.38			298			0.62		
2-05		0.35			299			0.59		
1-01		0.47			298			0.69		
1-02		0.40			298			0.63		
1-03		0.32			298			0.57		
1-04		0.35			299			0.59		
1-05		0.42			300			0.65		
Final	0.0				298.32000			0.62969		

25 points sampled      Sq.RLΔP  
 QC-Check: Field Averages      0.6296      298.3200  
 Avg. OK     Avg. OK     Avg. OK     Avg. OK     Avg. OK

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 ©

### Field Data Printout

Location: Unit 3 FF Outlet  
 Test Run: 2  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000

Meter Operator: W. Berry 456  
 Probe Operator: A. Obuchowski 567

Test Date: 3/26/13  
 Start Time: \_\_\_\_\_  
 Stop Time: \_\_\_\_\_  
 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): 29.90  
 Static P: -9.9  
 O<sub>2</sub> (dry volume %): 9.32  
 CO<sub>2</sub> (dry volume %): 10.03  
 N<sub>2</sub>+CO (dry volume %): 80.65

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm): \_\_\_\_\_  
 H<sub>2</sub>O (silica, g): \_\_\_\_\_  
 Actual Moisture (%): 19.48

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01	0.0	0.45			299			0.67		
5-02		0.42			300			0.65		
5-03		0.46			300			0.68		
5-04		0.45			300			0.67		
5-05		0.43			300			0.66		
4-01		0.48			298			0.69		
4-02		0.47			299			0.69		
4-03		0.44			299			0.66		
4-04		0.41			299			0.64		
4-05		0.35			299			0.59		
3-01		0.46			297			0.68		
3-02		0.45			297			0.67		
3-03		0.44			297			0.66		
3-04		0.39			298			0.62		
3-05		0.37			298			0.61		
2-01		0.43			297			0.66		
2-02		0.46			297			0.68		
2-03		0.44			297			0.66		
2-04		0.42			297			0.65		
2-05		0.39			297			0.62		
1-01		0.51			297			0.71		
1-02		0.48			297			0.69		
1-03		0.39			297			0.62		
1-04		0.42			297			0.65		
1-05		0.44			297			0.66		
Final	0.0				298.00000			0.65821		
25 points sampled		Sq. RLΔP								
QC-Check: Field Averages		0.6582			298.0000					

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 South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: W. Berry 456  
 Probe Operator: A. Obuchowski 567  
 Test Date: 3/26/13  
 Start Time: 09:29  
 Stop Time: 09:35  
 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): 29.90  
 Static P: -10.1  
 O<sub>2</sub> (dry volume %): 9.45  
 CO<sub>2</sub> (dry volume %): 9.94  
 N<sub>2</sub>+CO (dry volume %): 80.61

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 20.75

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01	0.0	0.37			308			0.61		
5-02		0.37			308			0.61		
5-03		0.38			308			0.62		
5-04		0.40			308			0.63		
5-05		0.40			308			0.63		
4-01		0.38			306			0.62		
4-02		0.37			305			0.61		
4-03		0.39			306			0.62		
4-04		0.38			306			0.62		
4-05		0.34			303			0.58		
3-01		0.45			302			0.67		
3-02		0.43			302			0.66		
3-03		0.43			302			0.66		
3-04		0.46			302			0.68		
3-05		0.48			301			0.69		
2-01		0.55			297			0.74		
2-02		0.51			296			0.71		
2-03		0.49			297			0.70		
2-04		0.51			297			0.71		
2-05		0.49			298			0.70		
1-01		0.52			302			0.72		
1-02		0.50			302			0.71		
1-03		0.49			302			0.70		
1-04		0.46			302			0.68		
1-05		0.50			302			0.71		
Final	0.0				302.80000			0.66334		

25 points sampled      Sq.RLΔP  
 QC-Check: Field Averages      0.6633      302.8000

Avg. OK     Avg. OK     Avg. OK     Avg. OK     Avg. OK

041713 103621



### Field Data Printout

Location: Unit 3 FF Outlet  
 Test Run: 4  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: W. Berry 456  
 Probe Operator: A. Obuchowski 567  
 Test Date: 3/26/13  
 Start Time: 10:04  
 Stop Time: 10:10  
 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): 29.90  
 Static P: -10.1  
 O<sub>2</sub> (dry volume %): 9.31  
 CO<sub>2</sub> (dry volume %): 10.10  
 N<sub>2</sub>+CO (dry volume %): 80.59

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 20.75

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01	0.0	0.31			297			0.56		
5-02		0.31			298			0.56		
5-03		0.32			298			0.57		
5-04		0.30			298			0.55		
5-05		0.29			298			0.54		
4-01		0.36			297			0.60		
4-02		0.38			297			0.62		
4-03		0.37			298			0.61		
4-04		0.35			298			0.59		
4-05		0.32			298			0.57		
3-01		0.49			299			0.70		
3-02		0.47			300			0.69		
3-03		0.42			300			0.65		
3-04		0.38			299			0.62		
3-05		0.38			299			0.62		
2-01		0.46			299			0.68		
2-02		0.46			299			0.68		
2-03		0.43			299			0.66		
2-04		0.42			299			0.65		
2-05		0.38			299			0.62		
1-01		0.49			294			0.70		
1-02		0.41			295			0.64		
1-03		0.40			295			0.63		
1-04		0.38			296			0.62		
1-05		0.42			296			0.65		
Final	0.0				297.80000			0.62112		

25 points sampled  
 QC-Check: Field Averages  
 Sq.Rt.ΔP: 0.6211  
 Avg. OK:  Avg. OK:  Avg. OK:  Avg. OK:  Avg. OK:

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### Field Data Printout

Location: Unit 3 FF Outlet  
 Test Run: 5  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: W. Berry 456  
 Probe Operator: A. Obuchowski 567  
 Test Date: 3/26/13  
 Start Time: 10:49  
 Stop Time: 10:57  
 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): 29.90  
 Static P: -9.1  
 O<sub>2</sub> (dry volume %): 9.23  
 CO<sub>2</sub> (dry volume %): 10.12  
 N<sub>2</sub>+CO (dry volume %): 80.65

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 19.93

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01	0.0	0.37			298			0.61		
5-02		0.37			297			0.61		
5-03		0.38			297			0.62		
5-04		0.34			297			0.58		
5-05		0.32			296			0.57		
4-01		0.40			292			0.63		
4-02		0.43			293			0.66		
4-03		0.40			293			0.63		
4-04		0.33			293			0.57		
4-05		0.27			292			0.52		
3-01		0.48			293			0.69		
3-02		0.41			294			0.64		
3-03		0.37			295			0.61		
3-04		0.33			296			0.57		
3-05		0.31			296			0.56		
2-01		0.47			297			0.69		
2-02		0.42			297			0.65		
2-03		0.38			297			0.62		
2-04		0.33			297			0.57		
2-05		0.29			297			0.54		
1-01		0.43			297			0.66		
1-02		0.39			297			0.62		
1-03		0.32			296			0.57		
1-04		0.33			297			0.57		
1-05		0.34			297			0.58		
Final	0.0				295.64000			0.60543		

25 points sampled  
 QC-Check: Field Averages  
 Sq.Rt.ΔP: 0.6054  
 295.6400  
 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 South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000

Meter Operator: W. Berry 456  
 Probe Operator: A. Obuchowski 567

Test Date: 3/26/13  
 Start Time: 11:28  
 Stop Time: 11:35  
 Leak Rate Before: N/A cfm  
 Leak Rate After: N/A cfm

**Test Method:**  
**Analyte:**

Bar. Press. (in. Hg): 29.90  
 Static P: -9.1  
 O<sub>2</sub> (dry volume %): 9.51  
 CO<sub>2</sub> (dry volume %): 9.81  
 N<sub>2</sub>+CO (dry volume %): 80.67

**USEPA Method 2**  
**Velocity & Flow Rate**

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 19.93

Meter Box ID No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01	0.0	0.24			298			0.49		
5-02		0.28			299			0.53		
5-03		0.30			300			0.55		
5-04		0.32			301			0.57		
5-05		0.31			302			0.56		
4-01		0.32			297			0.57		
4-02		0.33			297			0.57		
4-03		0.33			298			0.57		
4-04		0.33			299			0.57		
4-05		0.32			300			0.57		
3-01		0.40			298			0.63		
3-02		0.38			298			0.62		
3-03		0.40			298			0.63		
3-04		0.41			299			0.64		
3-05		0.42			299			0.65		
2-01		0.39			294			0.62		
2-02		0.36			295			0.60		
2-03		0.38			296			0.62		
2-04		0.42			297			0.65		
2-05		0.40			298			0.63		
1-01		0.43			294			0.66		
1-02		0.42			295			0.65		
1-03		0.43			295			0.66		
1-04		0.39			296			0.62		
1-05		0.42			296			0.65		
Final	0.0				297.56000			0.60269		

25 points sampled  
 QC-Check: Field Averages 0.6026 297.5600

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: 7  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: S. Joint 473  
 Probe Operator: W. Berry 456

Bar. Press. (in. Hg): 29.90  
 Static P: -9.8  
 O<sub>2</sub> (dry volume %): 9.09  
 CO<sub>2</sub> (dry volume %): 10.21  
 N<sub>2</sub>+CO (dry volume %): 80.70

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

Test Date: 3/26/13  
 Start Time: 12:13  
 Stop Time: 12:28  
 Leak Rate Before: N/A cfm  
 Leak Rate After: N/A cfm

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 20.17

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01	0.0	0.35			297			0.59		
5-02		0.36			297			0.60		
5-03		0.38			297			0.62		
5-04		0.40			297			0.63		
5-05		0.34			297			0.58		
4-01		0.42			296			0.65		
4-02		0.43			297			0.66		
4-03		0.39			297			0.62		
4-04		0.35			298			0.59		
4-05		0.33			298			0.57		
3-01		0.48			293			0.69		
3-02		0.45			293			0.67		
3-03		0.40			293			0.63		
3-04		0.40			292			0.63		
3-05		0.36			292			0.60		
2-01		0.40			292			0.63		
2-02		0.41			292			0.64		
2-03		0.38			293			0.62		
2-04		0.34			294			0.58		
2-05		0.33			294			0.57		
1-01		0.32			292			0.57		
1-02		0.22			290			0.47		
1-03		0.25			293			0.50		
1-04		0.31			293			0.56		
1-05		0.33			292			0.57		
Final	0.0				294.36000			0.60237		

25 points sampled  
 QC-Check: Field Averages  
 Sq.Rt.ΔP: 0.6024  
 Avg. OK  Avg. OK  Avg. OK  Avg. OK  Avg. OK

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### Field Data Printout

Location: Unit 3 FF Outlet  
 Test Run: 8  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: S. Joint 473  
 Probe Operator: W. Berry 456  
 Test Date: 3/26/13  
 Start Time: 12:54  
 Stop Time: 13:00  
 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): 29.90  
 Static P: -9.8  
 O<sub>2</sub> (dry volume %): 9.20  
 CO<sub>2</sub> (dry volume %): 10.11  
 N<sub>2</sub>+CO (dry volume %): 80.69

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 20.17

Meter Box ID No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Slack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01	0.0	0.38			297			0.62		
5-02		0.36			297			0.60		
5-03		0.36			297			0.60		
5-04		0.35			297			0.59		
5-05		0.33			297			0.57		
4-01		0.40			296			0.63		
4-02		0.42			296			0.65		
4-03		0.38			297			0.62		
4-04		0.34			298			0.58		
4-05		0.32			298			0.57		
3-01		0.39			299			0.62		
3-02		0.38			299			0.62		
3-03		0.38			299			0.62		
3-04		0.32			299			0.57		
3-05		0.28			299			0.53		
2-01		0.44			294			0.66		
2-02		0.47			294			0.69		
2-03		0.40			294			0.63		
2-04		0.33			294			0.57		
2-05		0.35			296			0.59		
1-01		0.39			294			0.62		
1-02		0.36			294			0.60		
1-03		0.35			295			0.59		
1-04		0.42			296			0.65		
1-05		0.46			296			0.68		
Final	0.0				296.48000			0.61081		

25 points sampled  
 QC-Check: Field Averages

Sq.Rt.ΔP	0.6105		296.4800
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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: 9  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: S. Joint 473  
 Probe Operator: W. Berry 456  
 Test Date: 3/26/13  
 Start Time: 13:33  
 Stop Time: 13:48  
 Leak Rate Before: N/A cfm  
 Leak Rate After: N/A cfm

Bar. Press. (in. Hg): 29.90  
 Static P: -9.8  
 O<sub>2</sub> (dry volume %): 9.29  
 CO<sub>2</sub> (dry volume %): 10.06  
 N<sub>2</sub>+CO (dry volume %): 80.65

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 20.17

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01		0.31			294			0.56		
5-02		0.32			294			0.57		
5-03		0.33			295			0.57		
5-04		0.34			296			0.58		
5-05		0.32			296			0.57		
4-01		0.33			294			0.57		
4-02		0.32			294			0.57		
4-03		0.36			295			0.60		
4-04		0.39			295			0.62		
4-05		0.36			295			0.60		
3-01		0.31			296			0.56		
3-02		0.33			296			0.57		
3-03		0.34			296			0.58		
3-04		0.35			297			0.59		
3-05		0.34			297			0.58		
2-01		0.43			294			0.66		
2-02		0.42			296			0.65		
2-03		0.42			296			0.65		
2-04		0.44			297			0.66		
2-05		0.42			297			0.65		
1-01		0.43			295			0.66		
1-02		0.42			295			0.65		
1-03		0.41			295			0.64		
1-04		0.40			295			0.63		
1-05		0.47			296			0.69		
Final	0.0				295.44000			0.60899		

25 points sampled  
 QC-Check: Field Averages  
 Sq.Rt.ΔP: 0.6090  
 295.4400  
 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 South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: S. Joint 473  
 Probe Operator: W. Berry 466

Test Method:  
 Analyte:

USEPA Method 2  
 Velocity & Flow Rate

Bar. Press. (in. Hg): 29.90  
 Static P: -9.8  
 O<sub>2</sub> (dry volume %): 9.65  
 CO<sub>2</sub> (dry volume %): 9.78  
 N<sub>2</sub>+CO (dry volume %): 80.57

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-8P-12  
 Pitot C<sub>p</sub>: 0.819  
 Pitot Leak Check:  Pass  Fail

Test Date: 3/26/13  
 Start Time: 14:13  
 Stop Time: 14:28  
 Leak Rate Before: N/A cfm  
 Leak Rate After: N/A cfm

H<sub>2</sub>O (condensate, ml or gm):  
 H<sub>2</sub>O (silica, g):  
 Actual Moisture (%): 20.17

Meter Box ID. No: N/A  
 Meter ΔH@: N/A  
 Meter Y<sub>d</sub>: N/A

Traverse Point	Run Time 5.0 min/read 0.0	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
5-01		0.30			294			0.55		
5-02		0.32			294			0.57		
5-03		0.43			295			0.66		
5-04		0.38			295			0.62		
5-05		0.36			295			0.60		
4-01		0.34			297			0.58		
4-02		0.35			297			0.59		
4-03		0.36			297			0.60		
4-04		0.37			298			0.61		
4-05		0.36			298			0.60		
3-01		0.30			294			0.55		
3-02		0.32			294			0.57		
3-03		0.37			296			0.61		
3-04		0.38			297			0.62		
3-05		0.43			297			0.66		
2-01		0.42			295			0.65		
2-02		0.40			295			0.63		
2-03		0.40			296			0.63		
2-04		0.45			297			0.67		
2-05		0.46			297			0.68		
1-01		0.45			295			0.67		
1-02		0.46			295			0.68		
1-03		0.50			296			0.71		
1-04		0.44			296			0.66		
1-05		0.43			296			0.66		
Final	0.0				295.84000			0.62399		

25 points sampled  
 QC-Check: Field Averages  
 Sq.Rt.ΔP: 0.6243  
 295.8400

Avg. OK  Avg. OK  Avg. OK  Avg. OK  Avg. OK

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### Field Data Printout

Location: Unit 3 FF Outlet  
 Test Run: 1  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000  
 Meter Operator: W. Berry 456  
 Probe Operator:  
 Test Date: 3/26/13  
 Start Time: 08:00  
 Stop Time: 09:00  
 Leak Rate Before: 0.003 cfm @ 15 "Hg  
 Leak Rate After: 0.001 cfm @ 10 "Hg

**Test Method:**  
**Analyte:**

**USEPA Method 26A**  
**HCl**

Bar. Press. (In. Hg): 29.90  
 Static P: -9.9  
 O<sub>2</sub> (dry volume %): 9.86  
 CO<sub>2</sub> (dry volume %): 9.47  
 N<sub>2</sub>+CO (dry volume %): 80.67

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-4-3  
 Pitot C<sub>p</sub>: N/A  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm): 186.7  
 H<sub>2</sub>O (silica, g): 12.9  
 Actual Moisture (%): 19.48

Meter Box ID. No: 66-18  
 Meter ΔH@: 1.91650  
 Meter Y<sub>d</sub>: 1.00080

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
	0.0			246.660						
3-01	5.0		1.50	249.980	296	64	63		3.32	
3-01	10.0		1.50	253.060	296	66	64		3.08	
3-01	15.0		1.50	256.240	295	70	63		3.18	
3-01	20.0		1.50	259.430	296	72	63		3.19	
3-01	25.0		1.50	262.650	295	73	63		3.22	
3-01	30.0		1.50	265.880	296	74	64		3.23	
3-01	35.0		1.50	269.130	294	73	64		3.25	
3-01	40.0		1.50	272.400	297	74	64		3.27	
3-01	45.0		1.50	275.620	290	74	65		3.22	
3-01	50.0		1.50	278.850	293	73	65		3.23	
3-01	55.0		1.50	282.190	294	74	65		3.34	
3-01	60.0		1.50	285.360	293	75	66		3.17	
Final	60.0		1.50000	38.70000	294.58333	67.95833		0.00000	38.70000	

3 points sampled  
 QC-Check: Field Averages

Sq.Rt.ΔP	1.5000	38.7000	294.5833	67.9583
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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 26A**  
**HCl**

Location: Unit 3 FF Outlet  
 Test Run: 2  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000

Meter Operator: **W. Berry** 456  
 Probe Operator:

Test Date: **3/26/13**  
 Start Time: **09:21**  
 Stop Time: **10:21**

Leak Rate Before: **0.004** cfm @ 15 "Hg  
 Leak Rate After: **0.002** cfm @ 10 "Hg

Bar. Press. (in. Hg): **29.90**  
 Static P: **-10.1**  
 O<sub>2</sub> (dry volume %): **9.56**  
 CO<sub>2</sub> (dry volume %): **9.76**  
 N<sub>2</sub>+CO (dry volume %): **80.68**

Nozzle ID No: **N/A**  
 Nozzle Diameter (D<sub>n</sub>): **N/A**  
 Probe ID No: **67-4-3**  
 Pitot C<sub>p</sub>: **N/A**  
 Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm): **197.7**  
 H<sub>2</sub>O (silica, g): **17.4**  
 Actual Moisture (%): **20.75**

Meter Box ID. No: **66-18**  
 Meter ΔH@: **1.91650**  
 Meter Y<sub>d</sub>: **1.00080**

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
3-01	0.0		1.50	285.740	298	69	66		3.18	
3-01	5.0		1.50	288.920	300	71	66		3.23	
3-01	10.0		1.50	292.150	296	74	66		3.22	
3-01	15.0		1.50	295.370	299	75	67		3.21	
3-01	20.0		1.50	298.580	296	75	67		3.22	
3-01	25.0		1.50	301.800	298	76	68		3.29	
3-01	30.0		1.50	305.090	295	77	68		3.26	
3-01	35.0		1.50	308.350	296	77	68		3.24	
3-01	40.0		1.50	311.590	297	77	69		3.23	
3-01	45.0		1.50	314.820	293	78	69		3.22	
3-01	50.0		1.50	318.040	295	79	70		3.25	
3-01	55.0		1.50	321.290	295	80	70		3.25	
3-01	60.0		1.50	324.535						
Final	60.0		1.50000	38.79500	296.50000	71.75000		0.00000	38.79500	

3 points sampled  
 QC-Check: Field Averages

Sq.Rt.ΔP	1.5000	38.7950	296.5000	71.7500
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Avg. OK  Avg. OK  Avg. OK  Avg. OK  Avg. OK

041713 103504  
N

### Field Data Printout

**Test Method:**

**USEPA Method 26A**

**Analyte:**

**HCl**

Location: Unit 3 FF Outlet  
 Test Run: 3  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Source Area (ft<sup>2</sup>): 64.00000

Bar. Press. (in. Hg): 29.90  
 Static P: -9.1  
 O<sub>2</sub> (dry volume %): 9.58  
 CO<sub>2</sub> (dry volume %): 9.81  
 N<sub>2</sub>+CO (dry volume %): 80.61

Nozzle ID No: N/A  
 Nozzle Diameter (D<sub>n</sub>): N/A  
 Probe ID No: 67-4-3  
 Pitot C<sub>p</sub>: N/A  
 Pitot Leak Check:  Pass  Fail

Meter Operator: W. Berry 456  
 Probe Operator:

Test Date: 3/26/13  
 Start Time: 10:46  
 Stop Time: 11:46  
 Leak Rate Before: 0.005 cfm @ 15 "Hg  
 Leak Rate After: 0.002 cfm @ 10 "Hg

H<sub>2</sub>O (condensate, ml or gm): 186.9  
 H<sub>2</sub>O (silica, g): 15.7  
 Actual Moisture (%): 19.93

Meter Box ID. No: 66-18  
 Meter ΔH@: 1.91650  
 Meter Y<sub>d</sub>: 1.00080

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
	0.0			325.220						
2-01	5.0		1.50	328.480	300	76	72		3.26	
2-01	10.0		1.50	331.720	292	78	73		3.24	
2-01	15.0		1.50	334.920	293	81	73		3.20	
2-01	20.0		1.50	338.160	294	83	74		3.24	
2-01	25.0		1.50	341.390	292	83	74		3.23	
2-01	30.0		1.50	344.640	292	83	75		3.25	
2-01	35.0		1.50	347.910	292	84	76		3.27	
2-01	40.0		1.50	351.170	293	84	76		3.26	
2-01	45.0		1.50	354.420	292	85	77		3.25	
2-01	50.0		1.50	357.780	294	87	78		3.36	
2-01	55.0		1.50	360.950	297	88	79		3.17	
2-01	60.0		1.50	364.210	290	87	80		3.26	
Final	60.0		1.50000	38.99000	293.41667	79.41667		0.00000	38.99000	

2 points sampled. Sq. Rt. ΔP

QC-Check: Field Averages	1.5000	38.9900	293.4167	79.4167
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Avg. OK  Avg. OK  Avg. OK  Avg. OK  Avg. OK

041713 103304

### USEPA Method 4 Laboratory Data

Location: Unit 3 FF Outlet  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218  
 Test Run: 1

Test Method: **USEPA Method 26A**  
 Analyte: **HCl**  
 Analyst: D. Luckhard  
 Analyst Emp No: 568

Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	484.1	449.5	34.6
Impinger 2	666.4	565.7	100.7
Impinger 3	584.7	542.7	42.0
Impinger 4	451.1	441.7	9.4
Impinger 5	737.0	724.1	12.9
Impinger 6			
Impinger 7			
Impinger 8			

186.7 Liquid (gm)		<i>Field Data Check</i>
0.0 less rinse (gm)		
186.7 Net Liquid (gm)	186.7	<input checked="" type="checkbox"/> QA/QC OK
+ 12.9 Silica Gel (gm)	12.9	<input checked="" type="checkbox"/> QA/QC OK
<b>199.6 Total Vlc (gm)</b>	<b>199.6</b>	<input checked="" type="checkbox"/> QA/QC OK

Rinse:            (ml or gm)

Test Run: 2

Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	478.1	446.5	31.6
Impinger 2	639.0	534.6	104.4
Impinger 3	566.8	519.8	47.0
Impinger 4	481.0	466.3	14.7
Impinger 5	688.5	671.1	17.4
Impinger 6			
Impinger 7			
Impinger 8			

197.7 Liquid (gm)		<i>Field Data Check</i>
0.0 less rinse (gm)		
197.7 Net Liquid (gm)	197.7	<input checked="" type="checkbox"/> QA/QC OK
+ 17.4 Silica Gel (gm)	17.4	<input checked="" type="checkbox"/> QA/QC OK
<b>215.1 Total Vlc (gm)</b>	<b>215.1</b>	<input checked="" type="checkbox"/> QA/QC OK

Rinse:            (ml or gm)

Test Run: 3

Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	474.5	440.8	33.7
Impinger 2	662.8	557.1	105.7
Impinger 3	576.8	539.0	37.8
Impinger 4	451.1	441.4	9.7
Impinger 5	717.1	701.4	15.7
Impinger 6			
Impinger 7			
Impinger 8			

186.9 Liquid (gm)		<i>Field Data Check</i>
0.0 less rinse (gm)		
186.9 Net Liquid (gm)	186.9	<input checked="" type="checkbox"/> QA/QC OK
+ 15.7 Silica Gel (gm)	15.7	<input checked="" type="checkbox"/> QA/QC OK
<b>202.6 Total Vlc (gm)</b>	<b>202.6</b>	<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)		<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
<b>Total Vlc (gm)</b>		<input type="checkbox"/> QA/QC OK

Rinse:            (ml or gm)

### Field Data Printout

**Test Method:**  
**Analyte:**

**USEPA Method 5/29**  
**Particulate/Metals**

Location: Unit 3 FF Outlet

Test Run: 1

Client: Wheelabrator South Broward, Inc.

Project No: 12218

Source Area (ft<sup>2</sup>): 64.00000

Meter Operator:	S. Joint	473
Probe Operator:	W. Berry	456

Test Date: 3/26/13

Start Time: 12:11

Stop Time: 14:24

Leak Rate Before: 0.002 cfm @ 15 "Hg

Leak Rate After: 0.002 cfm @ 12 "Hg

Bar. Press. (in. Hg): 29.90

Static P: -9.8

O<sub>2</sub> (dry volume %): 9.80

CO<sub>2</sub> (dry volume %): 9.42

N<sub>2</sub>+CO (dry volume %): 80.78

Nozzle ID No: 0.2725-2

Nozzle Diameter (D<sub>n</sub>): 0.273

Probe ID No: 67-8-17

Pitot C<sub>p</sub>: 0.824

Pitot Leak Check:  Pass  Fail

H<sub>2</sub>O (condensate, ml or gm): 341.6

H<sub>2</sub>O (silica, g): 10.9

Actual Moisture (%): 20.17

Meter Box ID. No: 66-6

Meter ΔH@: 1.82800

Meter Y<sub>d</sub>: 0.98540

Traverse Point	Run Time 5.0 min/read	Pitot ΔP <sub>s</sub> (in. H <sub>2</sub> O)	Sample ΔH (in. H <sub>2</sub> O)	Metered (dcf)	Stack T <sub>s</sub> (°F)	Dry Gas Meter		√ΔP <sub>s</sub> (calculated) (√in. H <sub>2</sub> O)	Volume (calculated) (ft <sup>3</sup> )	Isokinetics (calculated) (%)
						T <sub>m-in</sub> (°F)	T <sub>m-out</sub> (°F)			
	0.0			384.820						
1-01	5.0	0.32	0.87	387.450	292	74	71	0.57	2.63	100.5
1-02	10.0	0.22	0.60	389.670	290	77	71	0.47	2.22	101.8
1-03	15.0	0.25	0.70	391.880	293	78	72	0.50	2.21	95.1
1-04	20.0	0.31	0.87	394.480	293	80	73	0.56	2.60	100.2
1-05	25.0	0.33	0.92	397.240	292	81	73	0.57	2.76	103.0
LEAK CHECK	25.0			397.430						
2-01	30.0	0.44	1.20	400.430	294	81	73	0.66	3.00	97.1
2-02	35.0	0.47	1.30	403.600	294	82	73	0.69	3.17	99.2
2-03	40.0	0.40	1.10	406.500	294	84	74	0.63	2.90	98.1
2-04	45.0	0.33	0.92	409.200	294	84	74	0.57	2.70	100.5
2-05	50.0	0.35	0.98	411.960	296	84	75	0.59	2.76	99.8
LEAK CHECK	50.0			412.180						
3-01	55.0	0.32	0.90	414.850	295	85	77	0.57	2.67	100.6
3-02	60.0	0.38	1.10	417.810	295	86	77	0.62	2.96	102.3
3-03	65.0	0.36	1.00	420.520	294	88	78	0.60	2.71	95.9
3-04	70.0	0.32	0.90	423.190	294	88	78	0.57	2.67	100.2
3-05	75.0	0.29	0.81	425.650	293	88	79	0.54	2.46	96.8
LEAK CHECK	75.0			425.760						
4-01	80.0	0.34	0.92	428.470	294	86	79	0.58	2.71	99.3
4-02	85.0	0.32	0.90	431.110	294	86	79	0.57	2.64	99.1
4-03	90.0	0.36	1.00	433.870	295	86	79	0.60	2.76	97.8
4-04	95.0	0.39	1.10	436.860	295	88	79	0.62	2.99	101.6
4-05	100.0	0.36	1.00	439.730	295	88	79	0.60	2.87	101.5
LEAK CHECK	100.0			439.870						
5-01	105.0	0.30	0.84	444.870	294	85	79	0.55	5.00	194.0*
5-02	110.0	0.32	0.90	447.500	294	85	78	0.57	2.63	98.9
5-03	115.0	0.43	1.20	450.720	295	88	79	0.66	3.22	104.2
5-04	120.0	0.38	1.10	452.150	295	88	79	0.62	1.43	49.2*
5-05	125.0	0.36	1.00	453.570	295	88	79	0.60	1.42	50.2*
Final	125.0		0.96520	68.09000	293.96000	80.30000		0.58621	68.09000	

25 points sampled

Sq. Rt. ΔP

QC-Check: Field Averages

0.5860	0.9652	68.0900	293.9600	80.3000
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Avg. OK    Avg. OK    Avg. OK    Avg. OK    Avg. OK

041713 103321  
N

**USEPA Method 4 Laboratory Data**

Location: Unit 3 FF Outlet  
 Client: Wheelabrator South Broward, Inc.  
 Project No: 12218

**Test Method:** USEPA Method 5/29  
**Analyte:** Particulate/Metals  
 Analyst: H. Nguyen  
 Analyst Emp No: 429

Test Run: 1

Contents	Gross (gm)	Tare (gm)	Net (gm)		
Impinger 1 Empty	684.4	457.4	227.0		
Impinger 2 5%HNO3/10%H2O2	645.4	556.0	89.4		
Impinger 3 5%HNO3/10%H2O2	565.7	545.1	20.6		
Impinger 4 Empty	440.1	437.0	3.1		
Impinger 5 4%KMnO4/10%H2SO4	549.5	547.7	1.8		
Impinger 6 4%KMnO4/10%H2SO4	541.2	541.5	-0.3	341.6 Liquid (gm)	<i>Field Data Check</i>
Impinger 7 Silica Gel	760.4	749.5	10.9	0.0 less rinse (gm)	
Impinger 8				341.6 Net Liquid (gm)	<input checked="" type="checkbox"/> QA/QC OK
				+ 10.9 Silica Gel (gm)	<input checked="" type="checkbox"/> QA/QC OK
				352.5 Total Vlc (gm)	<input checked="" type="checkbox"/> QA/QC OK

Rinse:            (ml or gm)

Test Run: 2

Contents	Gross (gm)	Tare (gm)	Net (gm)		
Impinger 1 Empty	649.8	465.1	184.7		
Impinger 2 5%HNO3/10%H2O2	655.2	545.4	109.8		
Impinger 3 5%HNO3/10%H2O2	582.5	550.1	32.4		
Impinger 4 Empty	431.5	424.5	7.0		
Impinger 5 4%KMnO4/10%H2SO4	646.5	643.6	2.9		
Impinger 6 4%KMnO4/10%H2SO4	544.5	544.4	0.1	336.9 Liquid (gm)	<i>Field Data Check</i>
Impinger 7 Silica Gel	774.8	760.0	14.8	0.0 less rinse (gm)	
Impinger 8				336.9 Net Liquid (gm)	<input type="checkbox"/> QA/QC OK
				+ 14.8 Silica Gel (gm)	<input checked="" type="checkbox"/> QA/QC OK
				351.7 Total Vlc (gm)	<input type="checkbox"/> QA/QC OK

Rinse:            (ml or gm)

Test Run: 3

Contents	Gross (gm)	Tare (gm)	Net (gm)		
Impinger 1 Empty	626.4	457.2	169.2		
Impinger 2 5%HNO3/10%H2O2	661.7	556.5	105.2		
Impinger 3 5%HNO3/10%H2O2	575.5	545.6	29.9		
Impinger 4 Empty	444.6	436.9	7.7		
Impinger 5 4%KMnO4/10%H2SO4	550.3	546.7	3.6		
Impinger 6 4%KMnO4/10%H2SO4	538.8	538.8	0.0	315.6 Liquid (gm)	<i>Field Data Check</i>
Impinger 7 Silica Gel	766.5	750.4	16.1	0.0 less rinse (gm)	
Impinger 8				315.6 Net Liquid (gm)	<input type="checkbox"/> QA/QC OK
				+ 16.1 Silica Gel (gm)	<input checked="" type="checkbox"/> QA/QC OK
				331.7 Total Vlc (gm)	<input 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					

Rinse:            (ml or gm)

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

041713 103321  
 N N M Q

WHEELABRATOR SOUTH BROWARD, INC.  
FT. LAUDERDALE, FL

Client Reference No: Service Agreement  
CleanAir Project No: 12218-4

**PLANT CEM DATA**

**G**

*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: SL

Date: 5/21/13



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Plant Name: SBWD  
 General Average Report  
 Reporting Period: 03/25/2013 to 03/25/2013

Site Name: UNIT1  
 Data Averaging Type: 1m

Time of Report: 03/25/13 09:28  
 Rolling Average Interval: 1

Date	Time	CO2LBHR1 (Lb/Hr )	STKFLOW1 (SCFM )	SO2ORPT1 (PPMDC )	NOXRPT_1 (PPMDC )	CORPT_1 (PPMDC )	O2OUT_1 (PERCENTD)	SO2OUT_1 (PPMD )	NOXPPM_1 (PPMD )	COPPM_1 (PPMD )
03/25/13	08:01	71873.4	128986.4	0.3	190.3	20.6	9.2	0.3	160.5	17.3
	08:02	72532.6	128744.3	0.2	194.8	21.8	9.0	0.2	166.1	18.6
	08:03	71392.3	127743.1	0.2	195.0	19.7	9.2	0.1	164.3	16.6
	08:04	71034.4	127868.9	0.2	195.1	19.2	9.2	0.2	164.8	16.2
	08:05	70742.0	128364.5	0.4	194.9	20.9	9.4	0.3	161.2	17.3
	08:06	70833.3	128108.3	0.3	190.5	22.8	9.3	0.3	158.9	19.0
	08:07	73982.3	128185.8	0.2	188.3	21.3	8.7	0.2	165.4	18.7
	08:08	73830.6	128373.8	0.2	196.8	19.1	8.7	0.1	172.1	16.7
	08:09	70321.8	128609.7	0.1	192.6	20.0	9.4	0.1	158.9	16.5
	08:10	73262.5	128643.6	0.2	196.8	19.3	9.0	0.2	168.8	16.6
	08:11	74210.4	128014.3	0.2	195.7	20.3	8.7	0.1	172.5	17.9
	08:12	71454.0	127132.0	0.2	195.4	22.2	9.1	0.1	165.9	18.8
	08:13	69597.8	126320.7	0.3	194.4	23.1	9.4	0.2	160.6	19.1
	08:14	70500.2	126226.6	0.2	192.0	21.5	9.3	0.2	160.1	17.9
	08:15	73711.9	126675.6	0.1	185.6	21.1	8.7	0.1	163.2	18.5
	08:16	71381.3	127176.1	0.2	193.1	23.6	9.2	0.1	162.4	19.8
	08:17	70913.6	128021.0	0.1	193.3	22.7	9.3	0.1	161.5	19.0
	08:18	70406.5	128441.8	0.1	191.1	24.9	9.5	0.1	156.9	20.4
	08:19	72494.3	128569.6	0.1	189.7	23.8	9.1	0.1	161.0	20.2
	08:20	71196.7	128769.7	0.2	192.1	28.6	9.4	0.2	159.4	23.7
	08:21	71745.1	129148.2	0.3	191.5	28.6	9.3	0.2	159.5	23.9
	08:22	72635.7	129202.1	0.1	188.7	26.8	9.1	0.1	159.6	22.6
	08:23	71758.4	129243.9	0.1	186.4	27.3	9.4	0.1	154.6	22.7
	08:24	71259.9	129438.9	0.3	186.8	23.6	9.4	0.3	154.9	19.5
	08:25	71479.8	129794.7	0.2	185.8	26.9	9.4	0.2	154.4	22.3
	08:26	72742.3	130068.5	0.2	185.3	25.9	9.3	0.1	155.2	21.7
	08:27	72405.4	130219.1	0.1	185.0	25.7	9.3	0.1	154.1	21.4

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Average =	71840.7	128373.8	0.2	191.4	23.0	9.2	0.2	161.4	19.4
Geometric Avg. =	71830.7	128369.7	0.2	191.3	22.8	9.2	0.1	161.3	19.2
Maximum =	74210.4	130219.1	0.4	196.8	28.6	9.5	0.3	172.5	23.9
Minimum =	69597.8	126226.6	0.1	185.0	19.1	8.7	0.1	154.1	16.2
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1939698.5	3466091.2	5.2	5167.2	621.1	247.9	4.4	4356.9	523.0

- \* - 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



Site Name: UNIT1  
Data Averaging Type: 1m

Time of Report: 03/25/13 09:28  
Rolling Average Interval: 1

Date	Time	STMRPT_1 (KLB/HR )	CO2_1 (PERCENTD)
03/25/13	08:01	186.6	10.5
	08:02	186.6	10.7
	08:03	186.6	10.6
	08:04	185.6	10.5
	08:05	184.7	10.4
	08:06	187.7	10.5
	08:07	189.5	10.9
	08:08	185.5	10.9
	08:09	185.9	10.3
	08:10	187.8	10.8
	08:11	187.4	11.0
	08:12	185.2	10.6
	08:13	184.8	10.4
	08:14	187.5	10.6
	08:15	187.3	11.0
	08:16	186.2	10.6
	08:17	184.5	10.5
	08:18	186.1	10.4
	08:19	185.5	10.7
	08:20	185.2	10.5
	08:21	185.8	10.5
	08:22	185.4	10.6
	08:23	184.7	10.5
	08:24	183.9	10.4
	08:25	184.7	10.4
	08:26	185.2	10.6
	08:27	185.8	10.5

---

Average =	186.0	10.6
Geometric Avg. =	186.0	10.6
Maximum =	189.5	11.0
Minimum =	183.9	10.3
Possible Values =	27	27
Included Values =	27	27
Total =	5021.6	285.8

- \* - 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: SBWD  
General Average Report  
Reporting Period: 03/25/2013 to 03/25/2013

Site Name: UNIT1  
Data Averaging Type: 1m

Time of Report: 03/25/13 09:29  
Rolling Average Interval: 1

Date	Time	CO2LBHR1 (Lb/Hr )	STKFLOW1 (SCFM )	SO2ORPT1 (PPMDC )	NOXRPT_1 (PPMDC )	CORPT_1 (PPMDC )	O2OUT_1 (PERCENTD)	SO2OUT_1 (PPMD )	NOXPPM_1 (PPMD )	COPPM_1 (PPMD )
03/25/13	08:39	73067.5	129921.3	0.2	199.3	16.6	9.4	0.1	165.1	13.7
	08:40	76950.2	129623.5	0.0	199.0	15.3	8.6	0.0	176.7	13.6
	08:41	75714.9	129437.1	0.0	200.3	13.4	8.8	0.0	174.9	11.7
	08:42	72518.8	129200.8	0.3	194.8	15.5	9.3	0.2	162.6	13.0
	08:43	72189.1	128714.3	0.2	195.9	13.9	9.5	0.2	161.3	11.4
	08:44	71300.2	127735.5	0.1	192.5	13.8	9.4	0.1	159.6	11.5
	08:45	68523.9	127005.0	0.1	191.6	20.6	9.8	0.1	153.0	16.4
	08:46	67434.7	126497.4	0.1	185.3	22.7	9.9	0.1	146.9	18.0
	08:47	65950.5	126536.9	0.2	185.4	26.1	10.2	0.1	142.9	20.1
	08:48	66596.4	126620.1	0.2	181.5	29.0	10.1	0.2	141.1	22.6
	08:49	67670.2	126708.9	0.1	185.4	29.0	9.9	0.1	147.3	23.0
	08:50	66547.7	127081.0	0.2	187.4	24.0	10.1	0.2	146.1	18.7
	08:51	66309.3	127376.0	0.3	193.9	19.5	10.1	0.2	150.0	15.1
	08:52	65926.1	127873.7	0.3	192.6	13.7	10.2	0.2	147.8	10.5
	08:53	65906.4	128472.1	0.3	185.4	16.3	10.4	0.2	139.5	12.3
	08:54	69313.3	128492.3	0.0	188.7	13.9	9.8	0.0	150.2	11.1
	08:55	71675.4	128261.9	0.0	194.4	10.9	9.3	0.0	161.7	9.0
	08:56	72402.2	128248.1	0.1	200.3	11.1	9.2	0.1	169.0	9.3
	08:57	69667.7	128373.3	0.3	198.6	10.8	9.6	0.2	161.3	8.7
	08:58	70351.7	128589.8	0.3	194.9	11.6	9.5	0.2	159.5	9.5
	08:59	69660.9	128862.9	0.1	190.5	12.7	9.7	0.1	152.9	10.2
	09:00	70846.1	129115.6	0.1	192.8	13.8	9.5	0.0	158.7	11.3
	09:01	69605.3	129198.2	0.2	194.9	12.4	9.7	0.2	157.3	10.0
	09:02	68314.9	129363.1	0.2	192.4	14.1	9.9	0.2	151.7	11.1
	09:03	69353.0	129394.4	0.1	188.1	13.9	9.8	0.0	150.6	11.1
	09:04	70251.6	129449.3	0.0	195.8	11.1	9.7	0.0	158.3	8.9
	09:05	72990.6	129439.8	0.1	198.7	10.4	9.2	0.1	168.0	8.8

---

Average =	69890.3	128355.3	0.2	192.6	16.1	9.6	0.1	156.1	13.0
Geometric Avg. =	69831.0	128351.0	0.1	192.5	15.4	9.6	0.1	155.8	12.4
Maximum =	76950.2	129921.3	0.3	200.3	29.0	10.4	0.2	176.7	23.0
Minimum =	65906.4	126497.4	0.0	181.5	10.4	8.6	0.0	139.5	8.7
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1887038.6	3465592.2	4.1	5200.5	435.9	260.4	3.3	4214.1	350.7

- \* - excluded values (missing, OOC, invalid, suspect)
- < - missing
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- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

PUN#d

Plant Name: SBWD

Page: 2

General Average Report

Reporting Period: 03/25/2013 to 03/25/2013

Site Name: UNIT1

Time of Report: 03/25/13 09:29

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	STMRPT_1 (KLB/HR )	CO2_1 (PERCENTD)
03/25/13	08:39	190.1	10.6
	08:40	191.0	11.2
	08:41	189.0	11.1
	08:42	186.6	10.6
	08:43	187.2	10.6
	08:44	185.8	10.6
	08:45	185.4	10.2
	08:46	182.9	10.1
	08:47	181.7	9.9
	08:48	182.5	9.9
	08:49	183.0	10.1
	08:50	183.2	9.9
	08:51	182.5	9.8
	08:52	180.2	9.8
	08:53	181.9	9.7
	08:54	185.5	10.2
	08:55	189.9	10.6
	08:56	188.9	10.7
	08:57	187.3	10.3
	08:58	185.0	10.3
	08:59	185.5	10.2
	09:00	184.5	10.4
	09:01	182.9	10.2
	09:02	183.0	10.0
	09:03	183.9	10.1
	09:04	186.2	10.3
	09:05	187.6	10.7

---

Average =	185.3	10.3
Geometric Avg. =	185.3	10.3
Maximum =	191.0	11.2
Minimum =	180.2	9.7
Possible Values =	27	27
Included Values =	27	27
Total =	5003.4	278.0

- \* - 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: 03/25/2013 to 03/25/2013

Site Name: UNIT1  
Data Averaging Type: 1m

Time of Report: 03/25/13 10:04  
Rolling Average Interval: 1

Date	Time	CO2LBHR1 (Lb/Hr )	STRFLOW1 (SCFM )	SO2ORPT1 (PPMDC )	NOXRPT_1 (PPMDC )	CORPT_1 (PPMDC )	O2OUT_1 (PERCENTD)	SO2OUT_1 (PPMD )	NOXPPM_1 (PPMD )	COPPM_1 (PPMD )
03/25/13	09:23	66062.1	131010.2	0.3	193.5	14.9	10.4	0.2	146.6	11.3
	09:24	62867.1	130830.7	0.1	193.0	15.5	11.0	0.1	137.7	11.1
	09:25	61572.5	130872.3	0.2	188.6	16.5	11.2	0.1	132.0	11.5
	09:26	61359.7	130964.6	0.2	178.9	14.5	11.2	0.2	125.4	10.2
	09:27	59240.1	130919.3	0.3	167.4	14.9	11.5	0.2	113.1	10.1
	09:28	59363.9	130879.4	0.4	157.8	16.5	11.5	0.2	106.7	11.2
	09:29	60943.6	130446.9	0.2	162.4	12.0	11.2	0.1	113.3	8.4
	09:30	60748.6	126257.3	0.1	174.2	14.5	10.9	0.1	125.6	10.4
	09:31	60700.6	122531.5	0.2	187.5	12.1	10.6	0.2	138.6	9.0
	09:32	58668.9	118138.3	0.2	189.5	11.1	10.6	0.2	140.7	8.2
	09:33	59759.0	117011.5	0.2	186.0	12.1	10.3	0.2	141.7	9.2
	09:34	61489.8	117185.9	0.2	184.0	10.9	9.9	0.2	144.9	8.6
	09:35	61368.9	117925.8	0.2	187.9	13.8	10.0	0.2	146.7	10.8
	09:36	62942.5	118540.9	0.3	189.9	12.3	9.9	0.2	150.7	9.8
	09:37	65757.9	118231.8	0.2	195.9	11.4	9.4	0.1	162.7	9.5
	09:38	68677.9	118165.3	0.0	193.4	10.2	8.8	0.0	168.2	8.9
	09:39	74490.3	118185.7	0.0	191.0	7.8	7.6	0.0	182.1	7.5
	09:40	79727.6	118774.1	0.1	185.7	10.0	6.7	0.1	189.6	10.2
	09:41	80022.6	119323.2	0.1	190.1	8.4	6.7	0.1	194.9	8.6
	09:42	75081.3	119911.4	0.2	206.3	7.6	7.6	0.2	197.5	7.2
	09:43	74225.7	120529.4	0.2	203.5	8.1	7.9	0.2	189.8	7.5
	09:44	76376.3	120823.3	0.1	200.0	8.0	7.6	0.1	192.1	7.7
	09:45	74970.3	120833.4	0.1	195.3	7.1	7.8	0.1	184.0	6.7
	09:46	72963.3	120698.6	0.1	189.5	9.0	8.3	0.1	171.8	8.1
	09:47	77995.6	120332.3	0.1	173.7	6.0	7.1	0.1	171.9	6.0
	09:48	78400.8	119606.2	0.1	181.7	4.7	7.0	0.1	181.3	4.7
	09:49	74711.1	118803.5	0.2	192.0	5.6	7.7	0.2	182.6	5.3

---

Average =	67795.9	122508.6	0.2	186.6	10.9	9.3	0.1	156.7	8.8
Geometric Avg. =	67392.1	122398.9	0.1	186.3	10.4	9.1	0.1	154.3	8.6
Maximum =	80022.6	131010.2	0.4	206.3	16.5	11.5	0.2	197.5	11.5
Minimum =	58668.9	117011.5	0.0	157.8	4.7	6.7	0.0	106.7	4.7
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1830488.0	3307732.8	4.5	5038.7	295.6	250.4	3.6	4232.2	237.6

- \* - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
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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

RUN#3

Plant Name: SBWD

Page: 2

General Average Report

Reporting Period: 03/25/2013 to 03/25/2013

Site Name: UNIT1

Time of Report: 03/25/13 10:04

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	STMRPT_1 (KLB/HR )	CO2_1 (PERCENTD)
03/25/13	09:23	176.9	9.5
	09:24	173.3	9.1
	09:25	170.0	8.9
	09:26	164.0	8.9
	09:27	157.3	8.6
	09:28	153.9	8.6
	09:29	151.9	8.8
	09:30	150.7	9.1
	09:31	149.1	9.4
	09:32	150.4	9.4
	09:33	152.6	9.7
	09:34	153.8	9.9
	09:35	154.0	9.8
	09:36	157.3	10.0
	09:37	161.6	10.5
	09:38	169.6	11.0
	09:39	182.4	11.9
	09:40	192.5	12.7
	09:41	195.0	12.7
	09:42	193.4	11.8
	09:43	194.6	11.6
	09:44	195.5	12.0
	09:45	193.2	11.7
	09:46	197.0	11.4
	09:47	198.9	12.3
	09:48	196.3	12.4
	09:49	193.8	11.9

---

Average =	173.3	10.5
Geometric Avg. =	172.3	10.4
Maximum =	198.9	12.7
Minimum =	149.1	8.6
Possible Values =	27	27
Included Values =	27	27
Total =	4679.1	283.7

- \* - 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: 03/25/2013 to 03/25/2013

Site Name: UNIT1

Time of Report: 03/25/13 10:42

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	CO2LBHR1 (Lb/Hr )	STKFLOW1 (SCFM )	SO2ORPT1 (PPMDC )	NOXRPT_1 (PPMDC )	CORPT_1 (PPMDC )	O2OUT_1 (PERCENTD)	SO2OUT_1 (PPMD )	NOXPPM_1 (PPMD )	COPPM_1 (PPMD )
03/25/13	10:02	72463.4	117432.6	1.1	178.3	7.8	8.1	1.0	164.6	7.2
	10:03	72185.6	117541.3	1.2	183.8	6.5	8.1	1.1	169.5	6.0
	10:04	71471.8	117667.0	1.1	185.4	7.3	8.2	1.0	170.0	6.7
	10:05	74282.7	117811.9	1.0	191.2	7.8	7.6	1.0	182.8	7.4
	10:06	74759.7	117933.9	0.9	195.1	7.5	7.5	0.9	187.5	7.2
	10:07	71824.3	118158.2	0.8	203.1	5.4	8.1	0.7	186.5	4.9
	10:08	72640.0	118106.7	0.5	192.1	6.9	7.9	0.5	179.0	6.4
	10:09	73352.3	117836.5	0.5	178.1	6.0	7.8	0.5	168.2	5.7
	10:10	69984.2	117805.3	0.6	176.6	8.1	8.5	0.5	156.9	7.2
	10:11	72858.8	117552.9	0.5	180.1	8.4	7.9	0.5	168.1	7.8
	10:12	73584.8	117667.0	0.6	192.0	6.2	7.8	0.6	181.2	5.8
	10:13	70162.7	117742.5	0.6	197.1	7.6	8.5	0.5	175.7	6.8
	10:14	72137.1	117361.2	0.4	193.6	7.9	8.0	0.4	180.0	7.4
	10:15	73012.5	117025.5	0.5	199.0	7.2	7.8	0.4	187.4	6.8
	10:16	73182.4	117059.9	0.4	190.1	6.9	7.7	0.4	180.1	6.6
	10:17	73131.0	117070.1	0.3	186.8	6.7	7.8	0.3	176.4	6.3
	10:18	72538.4	117149.2	0.4	194.8	5.7	8.0	0.4	180.9	5.3
	10:19	69841.7	117506.2	0.3	198.7	6.4	8.5	0.3	177.1	5.7
	10:20	72343.0	117516.0	0.4	200.1	7.9	8.1	0.3	184.0	7.3
	10:21	72561.2	117169.4	0.4	194.7	6.9	8.0	0.3	180.9	6.4
	10:22	69829.5	117114.2	0.6	185.8	8.6	8.4	0.5	166.8	7.8
	10:23	71870.4	117319.1	0.6	177.8	8.3	8.0	0.5	165.1	7.7
	10:24	70543.7	117762.0	0.6	179.9	7.6	8.4	0.5	162.0	6.9
	10:25	68592.0	118254.1	0.4	177.1	9.4	8.8	0.4	153.8	8.2
	10:26	69423.1	118164.8	0.4	173.1	9.2	8.6	0.3	153.5	8.1
	10:27	69276.5	117700.0	0.5	175.7	13.2	8.6	0.5	155.2	11.7
	10:28	71696.4	117522.0	0.5	176.9	13.2	8.1	0.5	163.0	12.2

Average =	71835.2	117590.7	0.6	187.3	7.8	8.1	0.5	172.4	7.2
Geometric Avg. =	71817.7	117590.2	0.6	187.1	7.6	8.1	0.5	172.1	7.0
Maximum =	74759.7	118254.1	1.2	203.1	13.2	8.8	1.1	187.5	12.2
Minimum =	68592.0	117025.5	0.3	173.1	5.4	7.5	0.3	153.5	4.9
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1939549.2	3174949.2	16.1	5057.2	210.8	218.9	14.8	4656.0	193.5

- \* - 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

RUN#4

Plant Name: SBWD  
General Average Report

Reporting Period: 03/25/2013 to 03/25/2013

Site Name: UNIT1  
Data Averaging Type: 1m

Time of Report: 03/25/13 10:42  
Rolling Average Interval: 1

Date	Time	STMRPT_1 (KLB/HR )	CO2_1 (PERCENTD)
03/25/13	10:02	187.7	11.7
	10:03	186.7	11.6
	10:04	188.4	11.5
	10:05	191.5	11.9
	10:06	189.2	12.0
	10:07	188.7	11.5
	10:08	189.5	11.6
	10:09	186.9	11.8
	10:10	187.4	11.2
	10:11	189.5	11.7
	10:12	186.6	11.8
	10:13	186.5	11.3
	10:14	187.9	11.6
	10:15	188.6	11.8
	10:16	190.1	11.8
	10:17	190.9	11.8
	10:18	187.6	11.7
	10:19	187.4	11.2
	10:20	188.1	11.6
	10:21	187.4	11.7
	10:22	187.8	11.3
	10:23	187.7	11.6
	10:24	184.8	11.3
	10:25	184.3	11.0
	10:26	183.3	11.1
	10:27	186.6	11.1
	10:28	188.6	11.5

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Average =	187.8	11.6
Geometric Avg. =	187.8	11.6
Maximum =	191.5	12.0
Minimum =	183.3	11.0
Possible Values =	27	27
Included Values =	27	27
Total =	5069.8	312.0

- \* - 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: SBWD  
General Average Report  
Reporting Period: 03/25/2013 to 03/25/2013

Site Name: UNIT1  
Data Averaging Type: 1m

Time of Report: 03/25/13 11:40  
Rolling Average Interval: 1

Date	Time	CO2LBHR1 (Lb/Hr )	STKFLOW1 (SCFM )	SO2ORPT1 (PPMDC )	NOXRPT_1 (PPMDC )	CORPT_1 (PPMDC )	O2OUT_1 (PERCENTD)	SO2OUT_1 (PPMD )	NOXPPM_1 (PPMD )	COPPM_1 (PPMD )
03/25/13	10:54	73654.2	118079.1	1.4	197.8	4.7	7.8	1.4	186.2	4.4
	10:55	72799.4	117625.9	1.8	197.1	4.9	7.9	1.7	183.9	4.6
	10:56	73843.9	116805.9	2.5	197.1	5.6	7.6	2.4	188.2	5.3
	10:57	73238.3	116486.0	2.9	204.9	4.6	7.7	2.8	193.9	4.3
	10:58	70582.3	116165.5	2.4	206.1	4.9	8.2	2.2	188.8	4.5
	10:59	72794.7	115704.2	2.5	195.5	4.5	7.7	2.4	185.4	4.3
	11:00	70727.8	115516.9	2.4	195.2	5.0	8.2	2.2	178.6	4.5
	11:01	72424.0	115116.6	2.9	189.5	4.7	7.7	2.8	180.2	4.5
	11:02	68571.3	114580.5	3.6	195.2	5.1	8.5	3.2	174.3	4.5
	11:03	68678.8	113986.5	4.8	196.5	8.6	8.4	4.3	177.0	7.8
	11:04	70795.6	113719.7	6.2	195.4	7.5	7.8	5.9	184.5	7.1
	11:05	67476.8	114551.4	4.6	198.0	5.9	8.7	4.0	173.9	5.2
	11:06	68858.4	115546.8	2.0	190.0	7.8	8.5	1.8	168.9	6.9
	11:07	72858.5	116739.3	1.4	185.4	5.2	7.9	1.3	173.7	4.8
	11:08	69264.9	117777.1	1.0	195.0	7.2	8.9	0.9	168.9	6.3
	11:09	73401.6	118637.8	0.8	192.5	6.8	8.0	0.7	178.9	6.3
	11:10	73708.2	118645.0	0.7	194.4	4.9	7.9	0.7	181.5	4.6
	11:11	69529.5	117466.8	0.8	194.4	5.9	8.6	0.7	172.5	5.2
	11:12	70189.9	115679.1	2.2	189.6	7.8	8.2	2.0	173.5	7.2
	11:13	72226.2	115030.9	4.2	188.9	6.8	7.9	4.0	177.0	6.4
	11:14	66573.2	115246.4	2.5	203.9	6.7	9.0	2.2	175.1	5.8
	11:15	70820.1	115747.4	2.3	193.6	7.0	8.1	2.1	178.9	6.5
	11:16	69328.3	115961.7	2.5	199.8	6.3	8.5	2.3	177.6	5.6
	11:17	66849.3	115989.7	3.1	200.4	9.0	9.0	2.6	172.1	7.7
	11:18	69615.3	116072.2	4.0	197.4	7.1	8.4	3.6	178.1	6.4
	11:19	66152.7	116650.1	3.3	201.7	8.1	9.3	2.7	168.9	6.8
	11:20	70015.4	116852.5	3.7	196.1	8.1	8.4	3.3	177.0	7.3

---

Average =	70554.8	116162.3	2.7	196.0	6.3	8.2	2.4	178.4	5.7
Geometric Avg. =	70517.4	116155.2	2.4	195.9	6.2	8.2	2.1	178.3	5.6
Maximum =	73843.9	118645.0	6.2	206.1	9.0	9.3	5.9	193.9	7.8
Minimum =	66152.7	113719.7	0.7	185.4	4.5	7.6	0.7	168.9	4.3
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1904978.6	3136381.2	72.7	5291.1	170.8	222.5	66.1	4817.5	154.9

- \* - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- 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: SBWD  
General Average Report  
Reporting Period: 03/25/2013 to 03/25/2013

Site Name: UNIT1  
Data Averaging Type: 1m

Time of Report: 03/25/13 11:40  
Rolling Average Interval: 1

Date	Time	STMRPT_1 (KLB/HR )	CO2_1 (PERCENTD)
03/25/13	10:54	189.9	11.8
	10:55	191.1	11.7
	10:56	191.7	12.0
	10:57	188.5	11.9
	10:58	190.1	11.5
	10:59	188.0	11.9
	11:00	189.7	11.6
	11:01	187.7	11.9
	11:02	187.1	11.3
	11:03	190.0	11.4
	11:04	186.8	11.8
	11:05	185.8	11.1
	11:06	189.2	11.3
	11:07	185.1	11.8
	11:08	186.8	11.1
	11:09	188.4	11.7
	11:10	187.0	11.8
	11:11	187.3	11.2
	11:12	189.2	11.5
	11:13	184.5	11.9
	11:14	186.1	10.9
	11:15	185.2	11.6
	11:16	183.5	11.3
	11:17	186.4	10.9
	11:18	183.1	11.3
	11:19	184.3	10.7
	11:20	186.5	11.3

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Average =	187.4	11.5
Geometric Avg. =	187.3	11.5
Maximum =	191.7	12.0
Minimum =	183.1	10.7
Possible Values =	27	27
Included Values =	27	27
Total =	5058.8	310.2

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Plant Name: SBWD  
General Average Report  
Reporting Period: 03/25/2013 to 03/25/2013

Site Name: UNIT1  
Data Averaging Type: 1m

Time of Report: 03/25/13 13:19  
Rolling Average Interval: 1

Date	Time	CO2LBHR1 (Lb/Hr )	STKFLOW1 (SCPM )	SO2ORPT1 (PPMDC )	NOXRPT_1 (PPMDC )	CORPT_1 (PPMDC )	O2OUT_1 (PERCENTD)	SO2OUT_1 (PPMD )	NOXPPM_1 (PPMD )	COPPM_1 (PPMD )
03/25/13	11:34	70310.5	122912.3	1.5	196.9	11.4	9.1	1.3	167.5	9.7
	11:35	73348.8	124391.5	1.4	195.9	13.9	8.7	1.2	172.6	12.2
	11:36	74048.1	125017.0	1.0	190.4	12.1	8.5	0.9	169.2	10.7
	11:37	72948.5	125971.5	0.7	191.0	10.9	8.8	0.6	165.8	9.4
	11:38	73607.5	126781.7	0.6	188.5	10.0	8.8	0.5	164.1	8.7
	11:39	75909.0	129917.5	0.6	191.0	9.1	8.7	0.6	167.5	8.0
	11:40	78230.8	129705.3	0.5	186.3	11.2	8.4	0.4	167.9	10.1
	11:41	76131.7	128592.2	0.7	184.2	9.6	8.6	0.7	163.1	8.5
	11:42	72018.4	128369.6	1.5	191.9	10.6	9.3	1.2	160.3	8.9
	11:43	74908.1	128884.9	1.0	190.1	9.2	8.8	0.9	165.4	8.0
	11:44	73541.5	129297.4	0.6	194.6	10.5	9.1	0.5	164.9	8.9
	11:45	74944.4	128769.9	0.6	190.2	10.1	8.7	0.5	166.3	8.8
	11:46	73272.4	127633.9	0.5	186.7	11.8	9.0	0.4	159.8	10.1
	11:47	73687.0	126947.5	0.5	185.3	10.4	8.8	0.4	161.2	9.0
	11:48	71445.2	127036.6	0.6	197.1	10.9	9.3	0.5	164.3	9.1
	11:49	73067.4	126914.6	0.5	199.3	11.1	8.9	0.4	172.7	9.6
	11:50	72269.5	126797.8	0.5	206.3	11.1	9.1	0.4	175.7	9.4
	11:51	73939.1	126942.3	0.5	197.7	9.1	8.7	0.4	172.9	7.9
	11:52	74654.8	127159.4	0.5	196.0	8.3	8.7	0.5	172.1	7.3
	11:53	75097.1	127405.9	0.4	196.4	10.2	8.6	0.3	173.8	9.0
	11:54	78197.2	127531.3	0.2	190.0	7.0	8.1	0.2	175.2	6.4
	11:55	76736.0	127134.2	0.3	185.6	7.0	8.3	0.3	168.1	6.4
	11:56	77957.8	126295.1	0.3	181.8	7.4	7.9	0.3	170.3	7.0
	11:57	76764.5	125485.0	0.3	184.6	8.6	8.1	0.3	170.0	7.9
	11:58	76873.0	124917.4	0.4	190.2	7.8	8.0	0.3	176.9	7.3
	11:59	75456.3	124351.4	0.2	198.7	8.8	8.2	0.2	181.2	8.0
	12:00	77171.4	123924.8	0.4	194.6	8.2	7.8	0.3	183.3	7.8

Average =	74686.5	126855.1	0.6	191.9	9.9	8.6	0.5	169.3	8.7
Geometric Avg. =	74657.7	126842.7	0.5	191.8	9.7	8.6	0.5	169.2	8.6
Maximum =	78230.8	129917.5	1.5	206.3	13.9	9.3	1.3	183.3	12.2
Minimum =	70310.5	122912.3	0.2	181.8	7.0	7.8	0.2	159.8	6.4
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	2016535.9	3425088.2	16.8	5181.3	266.0	233.0	14.6	4572.3	234.0

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- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: SBWD  
General Average Report  
Reporting Period: 03/25/2013 to 03/25/2013

Site Name: UNIT1  
Data Averaging Type: 1m

Time of Report: 03/25/13 13:19  
Rolling Average Interval: 1

Date	Time	STMRT_1 (KLB/HR )	CO2_1 (PERCENTD)
03/25/13	11:34	182.9	10.8
	11:35	185.4	11.2
	11:36	184.6	11.2
	11:37	184.3	11.0
	11:38	184.7	11.0
	11:39	186.9	11.1
	11:40	188.2	11.4
	11:41	184.2	11.2
	11:42	184.8	10.6
	11:43	184.8	11.0
	11:44	186.0	10.8
	11:45	185.5	11.0
	11:46	185.7	10.9
	11:47	183.6	11.0
	11:48	184.7	10.6
	11:49	184.5	10.9
	11:50	184.9	10.8
	11:51	187.8	11.0
	11:52	187.9	11.1
	11:53	189.0	11.1
	11:54	189.4	11.6
	11:55	191.3	11.4
	11:56	190.8	11.7
	11:57	191.3	11.6
	11:58	189.7	11.6
	11:59	192.0	11.5
	12:00	191.6	11.8

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Average =	186.9	11.1
Geometric Avg. =	186.9	11.1
Maximum =	192.0	11.8
Minimum =	182.9	10.6
Possible Values =	27	27
Included Values =	27	27
Total =	5046.5	300.7

- \* - excluded values (missing, OOC, invalid, suspect)
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- U - missing data substituted
- 999 - missing value
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Plant Name: SBWD  
General Average Report  
Reporting Period: 03/25/2013 to 03/25/2013

Site Name: UNIT1  
Data Averaging Type: 1m

Time of Report: 03/25/13 13:19  
Rolling Average Interval: 1

Date	Time	CO2LBHR1 (Lb/Hr )	STKFLOW1 (SCFM )	SO2ORPT1 (PPMDC )	NOXRPT_1 (PPMDC )	CORPT_1 (PPMDC )	O2OUT_1 (PERCENTD)	SO2OUT_1 (PPMD )	NOXPPM_1 (PPMD )	COPPM_1 (PPMD )
03/25/13	12:27	72653.2	116955.1	1.8	186.1	6.7	8.0	1.6	172.9	6.2
	12:28	68678.1	117195.6	0.9	195.9	7.7	8.8	0.8	169.9	6.7
	12:29	70848.6	117318.5	0.7	209.4	8.3	8.4	0.7	189.0	7.4
	12:30	71360.5	117473.6	0.7	208.4	8.1	8.4	0.7	188.0	7.3
	12:31	70141.7	117686.5	0.7	197.1	5.7	8.5	0.6	175.9	5.1
	12:32	68315.9	117756.6	0.7	188.8	7.9	9.0	0.6	162.1	6.8
	12:33	72217.5	117487.0	0.7	182.3	9.1	8.2	0.7	166.9	8.4
	12:34	71952.0	117324.0	0.9	191.8	7.5	8.0	0.9	177.5	7.0
	12:35	67959.7	117178.3	1.0	202.9	8.5	9.0	0.9	174.1	7.3
	12:36	72636.9	116813.0	1.0	196.9	6.7	8.0	0.9	182.3	6.2
	12:37	72142.1	116645.4	1.2	195.9	6.3	8.0	1.2	182.1	5.8
	12:38	69640.3	116689.9	1.2	202.2	8.5	8.6	1.0	178.4	7.5
	12:39	74053.9	116645.4	1.1	191.6	8.5	7.6	1.0	183.7	8.2
	12:40	69737.2	116835.0	1.2	202.1	6.6	8.5	1.1	180.1	5.9
	12:41	68807.7	117005.0	0.9	203.0	7.8	8.7	0.8	177.9	6.8
	12:42	73987.5	116670.3	0.8	191.3	6.8	7.7	0.8	181.9	6.5
	12:43	69666.7	116493.4	0.9	198.3	6.2	8.5	0.8	177.0	5.5
	12:44	68162.5	116448.7	0.8	200.5	9.2	8.9	0.7	173.7	8.0
	12:45	70993.3	116069.5	0.9	195.2	7.6	8.2	0.8	178.4	6.9
	12:46	66653.6	115932.0	1.1	203.3	8.3	9.1	0.9	173.3	7.0
	12:47	68050.2	115822.8	1.5	194.5	10.1	8.7	1.3	170.8	8.9
	12:48	67799.9	115603.0	2.9	193.1	7.5	8.8	2.5	168.2	6.6
	12:49	66012.7	115716.4	5.3	200.1	9.4	9.1	4.5	169.3	8.0
	12:50	65995.8	115964.5	7.2	208.1	8.3	9.1	6.1	176.0	7.0
	12:51	64782.7	116391.8	6.8	212.1	10.2	9.4	5.6	174.9	8.4
	12:52	65882.7	116570.6	6.0	209.7	8.8	9.2	5.1	176.4	7.4
	12:53	66651.8	117017.5	5.2	207.4	10.2	9.1	4.4	175.8	8.6

---

Average =	69473.5	116730.0	2.0	198.8	8.0	8.6	1.7	176.2	7.1
Geometric Avg. =	69426.4	116728.5	1.4	198.7	7.9	8.6	1.3	176.1	7.0
Maximum =	74053.9	117756.6	7.2	212.1	10.2	9.4	6.1	189.0	8.9
Minimum =	64782.7	115603.0	0.7	182.3	5.7	7.6	0.6	162.1	5.1
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1875784.5	3151709.2	54.3	5368.2	216.5	231.5	46.9	4756.7	191.4

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- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: SBWD  
General Average Report  
Reporting Period: 03/25/2013 to 03/25/2013

Site Name: UNIT1  
Data Averaging Type: 1m

Time of Report: 03/25/13 13:19  
Rolling Average Interval: 1

Date	Time	STMRPT_1 (KLB/HR )	CO2_1 (PERCENTD)
03/25/13	12:27	187.0	11.8
	12:28	188.3	11.1
	12:29	187.7	11.4
	12:30	187.4	11.5
	12:31	184.4	11.3
	12:32	186.1	11.0
	12:33	189.1	11.6
	12:34	185.2	11.6
	12:35	187.8	11.0
	12:36	188.5	11.8
	12:37	186.2	11.7
	12:38	190.9	11.3
	12:39	188.0	12.0
	12:40	185.8	11.3
	12:41	189.4	11.1
	12:42	188.0	12.0
	12:43	185.8	11.3
	12:44	187.0	11.1
	12:45	184.0	11.6
	12:46	183.6	10.9
	12:47	184.0	11.1
	12:48	182.1	11.1
	12:49	182.9	10.8
	12:50	181.4	10.8
	12:51	181.6	10.5
	12:52	181.0	10.7
	12:53	183.7	10.8

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Average =	185.8	11.3
Geometric Avg. =	185.8	11.2
Maximum =	190.9	12.0
Minimum =	181.0	10.5
Possible Values =	27	27
Included Values =	27	27
Total =	5017.0	303.9

- \* - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- 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: SBWD

General Average Report

Reporting Period: 03/25/2013 to 03/25/2013

Site Name: UNIT1  
Data Averaging Type: 1m

Time of Report: 03/25/13 14:31  
Rolling Average Interval: 1

Date	Time	CO2LBHR1 (Lb/Hr )	STKFLOW1 (SCFM )	SO2ORPT1 (PPMDC )	NOXRPT_1 (PPMDC )	CORPT_1 (PPMDC )	O2OUT_1 (PERCENTD)	SO2OUT_1 (PPMD )	NOXPPM_1 (PPMD )	COPPM_1 (PPMD )
03/25/13	13:08	70513.4	119433.0	0.5	214.6	12.5	8.6	0.4	189.5	11.0
	13:09	69134.7	119200.7	0.4	213.9	9.9	8.9	0.4	185.1	8.6
	13:10	70605.7	119420.0	0.4	207.6	9.7	8.6	0.4	184.2	8.6
	13:11	70710.9	119681.9	0.4	204.6	8.9	8.5	0.4	182.9	8.0
	13:12	67286.4	119651.2	0.4	207.6	8.9	9.0	0.4	178.0	7.6
	13:13	69308.1	119787.2	0.3	208.5	8.3	8.7	0.3	182.2	7.2
	13:14	74397.9	119852.1	0.1	204.8	6.9	7.8	0.1	192.4	6.5
	13:15	73792.7	119659.4	0.3	204.9	5.1	8.0	0.3	189.9	4.7
	13:16	71608.6	119318.6	0.3	206.2	6.7	8.4	0.3	185.2	6.0
	13:17	72353.2	118602.1	0.4	211.9	6.2	8.2	0.3	193.7	5.7
	13:18	71030.2	117987.6	0.4	212.2	9.6	8.5	0.4	189.9	8.6
	13:19	71347.6	117807.8	0.5	209.5	8.2	8.3	0.4	189.9	7.5
	13:20	68785.0	118056.1	0.5	204.1	8.8	8.9	0.4	176.0	7.6
	13:21	70375.8	118107.1	0.5	202.5	9.8	8.5	0.4	181.1	8.7
	13:22	69844.7	118247.5	0.5	205.7	10.3	8.7	0.4	180.7	9.0
	13:23	70787.4	118381.3	0.5	203.8	8.6	8.5	0.5	182.3	7.7
	13:24	69292.3	118289.8	0.5	201.7	9.7	8.8	0.5	176.3	8.5
	13:25	68478.9	118091.5	0.4	201.8	8.5	8.8	0.4	175.1	7.4
	13:26	67151.4	118187.2	0.3	202.4	10.6	9.1	0.3	171.4	9.0
	13:27	68757.8	118091.5	0.4	204.5	9.9	8.8	0.3	177.7	8.6
	13:28	71473.2	118018.6	0.3	197.6	8.9	8.3	0.3	179.4	8.1
	13:29	68976.8	118521.5	0.4	201.3	9.1	8.8	0.3	175.1	7.9
	13:30	69239.2	118751.6	0.3	200.8	9.0	8.7	0.3	175.8	7.9
	13:31	69258.1	118641.9	0.5	195.9	10.2	8.7	0.4	171.5	8.9
	13:32	70148.2	118292.0	0.7	199.1	8.9	8.5	0.6	177.2	7.9
	13:33	69607.7	117502.7	1.0	200.3	9.6	8.5	0.9	178.6	8.6
	13:34	67011.0	116695.0	0.9	196.4	8.2	8.9	0.7	169.4	7.0

---

Average =	70047.3	118602.9	0.5	204.6	8.9	8.6	0.4	181.1	7.9
Geometric Avg. =	70025.6	118600.3	0.4	204.5	8.8	8.6	0.4	181.0	7.8
Maximum =	74397.9	119852.1	1.0	214.6	12.5	9.1	0.9	193.7	11.0
Minimum =	67011.0	116695.0	0.1	195.9	5.1	7.8	0.1	169.4	4.7
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1891277.1	3202277.0	12.2	5524.2	241.0	232.1	10.7	4890.7	212.8

- \* - 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: SBWD  
General Average Report

Reporting Period: 03/25/2013 to 03/25/2013

Site Name: UNIT1  
Data Averaging Type: 1m

Time of Report: 03/25/13 14:31  
Rolling Average Interval: 1

Date	Time	STMRT_1 (KLB/HR )	CO2_1 (PERCENTD)
03/25/13	13:08	185.5	11.2
	13:09	185.2	11.0
	13:10	187.8	11.2
	13:11	192.2	11.2
	13:12	189.7	10.6
	13:13	190.0	10.9
	13:14	191.3	11.7
	13:15	189.5	11.7
	13:16	189.6	11.4
	13:17	188.7	11.5
	13:18	188.8	11.4
	13:19	185.5	11.5
	13:20	186.5	11.0
	13:21	186.4	11.3
	13:22	187.0	11.2
	13:23	186.2	11.3
	13:24	185.5	11.1
	13:25	183.9	11.0
	13:26	184.3	10.7
	13:27	187.1	11.0
	13:28	187.0	11.5
	13:29	186.9	11.0
	13:30	186.7	11.0
	13:31	186.9	11.0
	13:32	187.8	11.2
	13:33	187.8	11.2
	13:34	184.4	10.9

---

Average =	187.3	11.2
Geometric Avg. =	187.3	11.2
Maximum =	192.2	11.7
Minimum =	183.9	10.6
Possible Values =	27	27
Included Values =	27	27
Total =	5057.9	301.6

- \* - excluded values (missing, OOC, invalid, suspect)
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Plant Name: SBWD  
General Average Report  
Reporting Period: 03/25/2013 to 03/25/2013

Site Name: UNIT1  
Data Averaging Type: 1m

Time of Report: 03/25/13 14:31  
Rolling Average Interval: 1

Date	Time	CO2LBHR1 (Lb/Hr )	STKFLOW1 (SCFM )	SO2ORPT1 (PPMDC )	NOXRPT_1 (PPMDC )	CORPT_1 (PPMDC )	O2OUT_1 (PERCENTD)	SO2OUT_1 (PPMD )	NOXPPM_1 (PPMD )	COPPM_1 (PPMD )
03/25/13	13:48	69642.3	117386.5	0.1	182.8	10.0	8.5	0.1	163.7	9.0
	13:49	70210.5	117768.8	0.3	185.4	8.4	8.4	0.2	166.6	7.6
	13:50	70240.6	118424.9	0.3	190.0	9.2	8.5	0.3	170.1	8.2
	13:51	71115.7	118599.9	0.2	195.3	8.5	8.4	0.2	176.3	7.7
	13:52	68696.7	118450.8	0.1	198.9	10.4	8.9	0.1	172.2	9.0
	13:53	67760.6	117987.6	0.2	194.2	10.0	8.9	0.1	167.1	8.6
	13:54	66450.9	118021.4	0.1	197.9	9.5	9.3	0.1	165.8	8.0
	13:55	66737.7	118347.4	0.2	202.3	10.6	9.2	0.2	170.9	9.0
	13:56	65694.1	118840.2	0.2	203.1	11.7	9.5	0.2	166.7	9.6
	13:57	65892.4	119292.0	0.2	204.1	12.7	9.4	0.2	168.5	10.5
	13:58	66540.2	119592.9	0.3	209.4	13.9	9.3	0.2	174.1	11.6
	13:59	69633.4	119756.8	0.2	207.2	12.7	8.7	0.2	181.8	11.2
	14:00	70778.9	119232.1	0.2	212.1	9.5	8.5	0.2	189.0	8.5
	14:01	68751.6	118671.7	0.3	215.1	9.8	8.8	0.2	187.1	8.6
	14:02	69235.4	118476.0	0.1	209.8	9.4	8.7	0.1	184.5	8.2
	14:03	69770.7	118665.6	0.2	200.6	9.7	8.5	0.2	179.0	8.6
	14:04	68428.4	118778.7	0.4	197.7	10.3	8.8	0.3	171.5	9.0
	14:05	71576.9	119008.9	0.2	202.7	9.2	8.3	0.2	184.3	8.3
	14:06	72611.8	119151.5	0.3	214.0	7.7	8.1	0.3	197.6	7.1
	14:07	70190.9	119705.0	0.3	213.1	9.3	8.6	0.2	188.1	8.2
	14:08	71340.8	120133.4	0.3	211.4	8.4	8.5	0.2	188.1	7.5
	14:09	74514.9	120420.1	0.2	206.4	9.6	7.9	0.2	192.7	9.0
	14:10	76381.5	120015.2	0.1	204.0	7.0	7.5	0.1	196.1	6.7
	14:11	71753.4	119814.9	0.2	206.6	6.8	8.4	0.2	185.9	6.2
	14:12	74848.6	119192.5	0.2	195.5	6.5	7.6	0.2	186.7	6.2
	14:13	74748.2	118485.6	0.2	194.8	5.6	7.6	0.2	186.3	5.4
	14:14	71417.9	118154.2	0.4	197.7	6.2	8.3	0.3	179.7	5.7

---

Average =	70183.9	118902.8	0.2	201.9	9.4	8.6	0.2	179.3	8.3
Geometric Avg. =	70129.8	118900.4	0.2	201.8	9.2	8.5	0.2	179.0	8.1
Maximum =	76381.5	120420.1	0.4	215.1	13.9	9.5	0.3	197.6	11.6
Minimum =	65694.1	117386.5	0.1	182.8	5.6	7.5	0.1	163.7	5.4
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1894964.9	3210374.8	5.9	5452.0	252.8	231.0	5.2	4840.4	222.9

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- 999 - missing value
- 888 - value could not be calculated



Plant Name: SBWD  
General Average Report  
Reporting Period: 03/25/2013 to 03/25/2013

Site Name: UNIT1  
Data Averaging Type: 1m

Time of Report: 03/25/13 14:31  
Rolling Average Interval: 1

Date	Time	STMRTPT_1 (KLB/HR )	CO2_1 (PERCENTD)
03/25/13	13:48	188.3	11.2
	13:49	188.2	11.3
	13:50	188.9	11.2
	13:51	187.8	11.3
	13:52	186.0	11.0
	13:53	184.2	10.9
	13:54	184.4	10.6
	13:55	182.9	10.7
	13:56	182.7	10.5
	13:57	182.3	10.4
	13:58	184.0	10.5
	13:59	187.9	11.0
	14:00	187.3	11.2
	14:01	187.1	11.0
	14:02	187.6	11.1
	14:03	186.0	11.1
	14:04	188.0	10.9
	14:05	191.3	11.4
	14:06	190.1	11.5
	14:07	187.7	11.1
	14:08	189.0	11.2
	14:09	192.8	11.7
	14:10	191.3	12.0
	14:11	192.8	11.3
	14:12	193.6	11.9
	14:13	191.1	11.9
	14:14	193.0	11.4

---

Average =	188.0	11.2
Geometric Avg. =	188.0	11.2
Maximum =	193.6	12.0
Minimum =	182.3	10.4
Possible Values =	27	27
Included Values =	27	27
Total =	5076.2	301.4

- \* - excluded values (missing, OOC, invalid, suspect)
- < - missing
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## General Average Report

Reporting Period: 03/25/2013 to 03/25/2013

Site Name: UNIT1

Time of Report: 03/25/13 15:14

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	CO2LBHR1 (Lb/Hr )	STKFLOW1 (SCFM )	SO2ORPT1 (PPMDC )	NOXRPT_1 (PPMDC )	CORPT_1 (PPMDC )	O2OUT_1 (PERCENTD)	SO2OUT_1 (PPMD )	NOXPPM_1 (PPMD )	COPPM_1 (PPMD )
03/25/13	14:27	64489.9	114172.2	1.2	198.0	8.0	9.2	1.0	167.1	6.7
	14:28	65918.3	113758.7	1.5	197.2	7.7	8.8	1.3	171.5	6.7
	14:29	66262.8	113261.3	2.0	194.5	8.2	8.8	1.8	170.0	7.1
	14:30	64901.8	112712.0	2.2	196.2	5.4	9.0	1.9	168.7	4.6
	14:31	61992.8	112424.0	2.0	202.8	6.4	9.5	1.6	165.7	5.2
	14:32	62187.4	112741.0	2.0	201.5	8.2	9.6	1.7	164.3	6.7
	14:33	63312.0	114214.2	1.6	197.8	8.4	9.5	1.3	162.5	6.9
	14:34	62240.9	115835.6	1.4	204.2	8.0	9.8	1.1	163.2	6.4
	14:35	61953.7	117243.0	1.0	204.9	10.5	10.0	0.8	160.5	8.2
	14:36	63825.6	118068.4	0.7	206.6	12.5	9.8	0.6	165.0	10.0
	14:37	64022.5	119073.1	0.6	214.9	13.0	9.8	0.5	171.1	10.3
	14:38	63657.8	120287.3	0.5	217.9	13.3	10.1	0.4	170.1	10.4
	14:39	65762.8	121830.8	0.4	222.8	13.8	9.9	0.3	177.1	10.9
	14:40	70091.0	124581.9	0.4	224.7	11.7	9.3	0.3	187.1	9.7
	14:41	70094.0	124861.0	0.3	217.7	13.9	9.3	0.3	182.0	11.6
	14:42	69435.8	124726.2	0.3	213.2	15.0	9.4	0.2	176.7	12.5
	14:43	69639.1	123856.3	0.3	210.0	12.5	9.3	0.2	175.8	10.4
	14:44	69350.6	122403.2	0.5	205.3	12.0	9.2	0.4	173.2	10.1
	14:45	66528.6	121899.7	0.5	212.8	14.9	9.7	0.4	171.2	12.0
	14:46	66883.2	122027.9	0.3	207.9	12.6	9.6	0.3	168.7	10.2
	14:47	67491.5	122140.3	0.4	205.6	14.3	9.5	0.3	169.0	11.8
	14:48	66635.4	122275.7	0.3	205.8	13.4	9.7	0.3	165.8	10.8
	14:49	66600.2	122697.1	0.3	200.6	13.5	9.8	0.2	160.9	10.9
	14:50	66951.8	123075.1	0.4	195.9	13.5	9.7	0.3	158.0	10.9
	14:51	67605.8	123531.0	0.2	193.3	13.5	9.6	0.1	156.7	10.9
	14:52	68252.4	123655.4	0.2	193.7	14.5	9.6	0.2	158.1	11.8
	14:53	68361.2	123275.9	0.3	199.6	13.2	9.5	0.3	164.3	10.9

Average =	66090.7	119652.9	0.8	205.4	11.5	9.5	0.7	168.3	9.4
Geometric Avg. =	66041.8	119574.0	0.6	205.2	11.1	9.5	0.5	168.2	9.1
Maximum =	70094.0	124861.0	2.2	224.7	15.0	10.1	1.9	187.1	12.5
Minimum =	61953.7	112424.0	0.2	193.3	5.4	8.8	0.1	156.7	4.6
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1784448.9	3230628.5	21.8	5545.4	311.8	256.6	18.0	4544.5	254.8

\* - excluded values (missing, OOC, invalid, suspect)  
 < - missing  
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 S - suspect  
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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: 03/25/2013 to 03/25/2013

Site Name: UNIT1

Time of Report: 03/25/13 15:14

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	STMRPT_1 (KLB/HR )	CO2_1 (PERCENTD)
03/25/13	14:27	183.8	10.7
	14:28	184.7	11.0
	14:29	185.8	11.1
	14:30	182.5	10.9
	14:31	180.9	10.4
	14:32	181.3	10.4
	14:33	181.3	10.5
	14:34	180.6	10.2
	14:35	180.7	10.0
	14:36	181.8	10.2
	14:37	180.6	10.2
	14:38	180.7	10.0
	14:39	183.4	10.2
	14:40	183.9	10.6
	14:41	183.9	10.6
	14:42	184.1	10.5
	14:43	185.5	10.6
	14:44	184.0	10.7
	14:45	182.8	10.3
	14:46	184.0	10.4
	14:47	183.6	10.5
	14:48	182.9	10.3
	14:49	183.0	10.3
	14:50	183.0	10.3
	14:51	182.6	10.4
	14:52	184.5	10.4
	14:53	183.7	10.5

---

Average =	182.9	10.5
Geometric Avg. =	182.9	10.4
Maximum =	185.8	11.1
Minimum =	180.6	10.0
Possible Values =	27	27
Included Values =	27	27
Total =	4939.5	282.2

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 S - suspect  
 E - exceedance  
 F - stack not operating  
 B - invalid (PADER)  
 U - missing data substituted  
 -999 - missing value  
 -888 - value could not be calculated

Plant Name: SBWD  
General Average Report  
Reporting Period: 03/27/2013 to 03/27/2013

Site Name: UNIT2  
Data Averaging Type: 1m

Time of Report: 03/27/13 08:29  
Rolling Average Interval: 1

Date	Time	CO2LBHR2 (Lb/Hr )	STKFLOW2 (SCFM )	SO2ORPT2 (PPMDC )	NOXRPT_2 (PPMDC )	CORPT_2 (PPMDC )	O2OUT_2 (PERCENTD)	SO2OUT_2 (PPMD )	NOXPPM_2 (PPMD )	COPPM_2 (PPMD )
03/27/13	07:49	75315.7	121091.0	15.3	153.0	17.5	7.7	14.6	145.5	16.6
	07:50	70776.3	120590.5	12.4	174.1	10.1	8.5	11.1	155.7	9.0
	07:51	69711.3	119842.4	10.0	176.1	8.3	8.6	8.8	156.4	7.4
	07:52	69802.1	119231.7	9.2	176.3	9.7	8.5	8.3	157.4	8.7
	07:53	71091.1	118952.5	10.4	174.2	10.6	8.3	9.5	158.4	9.7
	07:54	69982.0	115821.2	11.9	169.0	9.9	8.1	11.0	155.9	9.1
	07:55	67643.6	115010.9	11.3	177.9	12.3	8.4	10.2	159.6	11.0
	07:56	68662.9	114618.8	10.9	180.4	9.6	8.2	10.0	165.0	8.7
	07:57	69419.0	113763.1	16.8	170.9	8.2	7.9	15.7	159.5	7.6
	07:58	68368.3	112522.9	32.7	166.9	8.7	8.0	30.4	155.3	8.1
	07:59	67734.5	111739.3	29.6	170.4	11.9	8.0	27.5	158.0	11.1
	08:00	66578.7	111025.9	32.7	171.1	11.0	8.2	29.9	156.6	10.1
	08:01	66036.0	109813.3	47.8	162.6	13.2	8.1	44.0	149.7	12.2
	08:02	65621.5	109486.9	40.0	163.5	15.7	8.2	36.6	149.7	14.4
	08:03	66391.6	110323.6	16.0	171.4	11.8	8.1	14.7	158.1	10.9
	08:04	65189.6	111001.6	9.8	187.7	9.4	8.4	8.8	168.3	8.4
	08:05	65468.2	111936.8	7.0	186.1	11.4	8.5	6.2	165.5	10.1
	08:06	68937.2	113202.8	5.2	167.1	12.0	8.0	4.9	155.5	11.2
	08:07	66867.5	114602.5	4.4	175.7	14.6	8.6	3.9	154.9	12.9
	08:08	68525.9	115647.2	3.5	172.8	30.2	8.3	3.2	156.8	27.4
	08:09	70132.1	116426.6	2.8	169.2	9.9	8.2	2.5	155.0	9.0
	08:10	66915.8	117198.2	2.3	183.0	10.5	8.8	2.0	158.7	9.1
	08:11	68872.4	117367.8	1.9	179.9	9.1	8.4	1.7	161.3	8.1
	08:12	67381.9	116474.0	2.3	183.2	12.7	8.7	2.0	160.4	11.1
	08:13	68278.0	114958.3	4.5	172.0	9.5	8.3	4.1	156.2	8.6
	08:14	64563.0	113766.7	6.1	185.9	9.1	8.9	5.2	160.1	7.9
	08:15	66556.6	112890.7	5.7	177.8	9.4	8.4	5.2	160.2	8.5

---

Average =	68178.6	114789.2	13.4	174.0	11.7	8.3	12.3	157.5	10.6
Geometric Avg. =	68142.8	114742.9	9.2	173.8	11.2	8.3	8.3	157.5	10.2
Maximum =	75315.7	121091.0	47.8	187.7	30.2	8.9	44.0	168.3	27.4
Minimum =	64563.0	109486.9	1.9	153.0	8.2	7.7	1.7	145.5	7.4
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1840822.6	3099307.2	362.6	4698.3	316.3	224.2	331.9	4253.7	287.0

- \* - excluded values (missing, OOC, invalid, suspect)
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- 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 #1

Plant Name: SBWD

Page: 2

General Average Report

Reporting Period: 03/27/2013 to 03/27/2013

Site Name: UNIT2

Time of Report: 03/27/13 08:29

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	STMRPT_2 (KLB/HR )	CO2_2 (PERCENTD)
03/27/13	07:49	188.4	11.7
	07:50	188.6	11.1
	07:51	187.7	11.0
	07:52	188.8	11.1
	07:53	188.5	11.3
	07:54	188.2	11.4
	07:55	189.3	11.1
	07:56	190.8	11.3
	07:57	190.8	11.5
	07:58	190.8	11.5
	07:59	190.3	11.5
	08:00	191.3	11.3
	08:01	191.7	11.4
	08:02	190.9	11.3
	08:03	189.1	11.4
	08:04	186.3	11.1
	08:05	188.7	11.0
	08:06	187.0	11.5
	08:07	188.4	11.0
	08:08	188.2	11.2
	08:09	186.8	11.4
	08:10	186.0	10.8
	08:11	185.8	11.1
	08:12	188.0	10.9
	08:13	185.0	11.2
	08:14	186.3	10.7
	08:15	186.4	11.1

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Average =	188.4	11.2
Geometric Avg. =	188.4	11.2
Maximum =	191.7	11.7
Minimum =	185.0	10.7
Possible Values =	27	27
Included Values =	27	27
Total =	5088.1	303.0

- \* - 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

RUN 22

Plant Name: SBWD

Page: 1

General Average Report

Reporting Period: 03/27/2013 to 03/27/2013

Site Name: UNIT2

Time of Report: 03/27/13 09:13

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	CO2LBHR2 (Lb/Hr )	STKFLOW2 (SCFM )	SO2ORPT2 (PPMDC )	NOXRPT_2 (PPMDC )	CORPT_2 (PPMDC )	O2OUT_2 (PERCENTD)	SO2OUT_2 (PPMD )	NOXPPM_2 (PPMD )	COPPM_2 (PPMD )
03/27/13	08:28	71253.6	115702.3	15.3	174.3	18.8	7.9	14.3	163.2	17.6
	08:29	70076.4	115344.1	21.1	183.7	18.6	8.1	19.5	169.3	17.1
	08:30	71374.5	113890.2	37.3	177.3	17.5	7.7	35.5	168.7	16.7
	08:31	69451.4	112013.6	56.4	168.8	15.8	7.7	53.4	160.0	14.9
	08:32	66750.6	111210.3	59.0	172.4	16.9	8.2	54.0	157.6	15.4
	08:33	66699.9	111230.6	42.6	173.1	13.9	8.2	38.8	157.7	12.6
	08:34	67421.4	112150.0	17.1	174.8	12.3	8.2	15.7	159.7	11.2
	08:35	70705.6	113407.0	10.4	164.8	12.3	7.7	9.9	156.7	11.7
	08:36	72637.2	114810.6	7.6	168.5	10.1	7.5	7.4	162.5	9.7
	08:37	70152.4	116742.4	5.9	181.4	13.2	8.3	5.3	164.5	12.0
	08:38	73049.5	118310.0	4.5	172.9	13.5	7.8	4.2	162.9	12.7
	08:39	72683.2	119964.1	3.6	175.1	12.1	8.1	3.4	161.7	11.2
	08:40	74692.1	121185.1	2.8	167.7	13.8	8.0	2.6	155.7	12.8
	08:41	79364.6	122310.6	2.1	151.0	8.7	7.1	2.1	150.0	8.6
	08:42	74383.4	122901.0	1.6	175.5	7.9	8.1	1.4	161.6	7.3
	08:43	71203.9	122042.0	1.6	183.5	8.8	8.6	1.4	162.4	7.8
	08:44	73447.2	120249.8	1.9	172.2	7.2	7.9	1.7	160.8	6.7
	08:45	71205.9	118761.2	2.5	182.0	6.0	8.2	2.2	166.1	5.5
	08:46	73026.4	117939.0	2.8	173.5	13.2	7.9	2.6	162.6	12.4
	08:47	75976.0	117566.3	3.1	158.3	6.7	7.1	3.0	157.0	6.6
	08:48	71306.6	118189.4	2.6	179.5	5.6	8.1	2.4	165.3	5.2
	08:49	70105.9	119236.8	2.0	184.3	9.7	8.5	1.8	164.4	8.7
	08:50	74670.4	120152.4	2.0	166.1	8.0	7.6	1.9	158.5	7.6
	08:51	71994.0	120559.4	2.8	170.8	7.0	8.2	2.6	156.1	6.4
	08:52	69946.2	119969.7	5.0	177.5	9.6	8.6	4.5	157.2	8.5
	08:53	72920.3	118558.2	6.8	168.7	6.1	7.8	6.4	158.7	5.7
	08:54	69810.3	117527.8	7.1	174.9	7.6	8.3	6.4	159.0	6.9

---

Average =	71715.1	117478.7	12.1	173.1	11.1	8.0	11.3	160.7	10.4
Geometric Avg. =	71663.7	117429.0	6.0	172.9	10.4	8.0	5.6	160.7	9.7
Maximum =	79364.6	122901.0	59.0	184.3	18.8	8.6	54.0	169.3	17.6
Minimum =	66699.9	111210.3	1.6	151.0	5.6	7.1	1.4	150.0	5.2
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1936308.6	3171924.0	327.6	4672.6	300.9	215.4	304.6	4339.7	279.8

- \* - 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: SBWD  
General Average Report  
Reporting Period: 03/27/2013 to 03/27/2013

Site Name: UNIT2  
Data Averaging Type: 1m

Time of Report: 03/27/13 09:13  
Rolling Average Interval: 1

Date	Time	STMRPT_2 (KLB/HR )	CO2_2 (PERCENTD)
03/27/13	08:28	188.4	11.6
	08:29	188.3	11.5
	08:30	189.0	11.8
	08:31	189.6	11.7
	08:32	188.6	11.3
	08:33	186.6	11.3
	08:34	189.4	11.4
	08:35	191.4	11.8
	08:36	187.9	12.0
	08:37	189.5	11.4
	08:38	187.5	11.7
	08:39	189.2	11.4
	08:40	192.2	11.6
	08:41	189.5	12.3
	08:42	187.3	11.4
	08:43	188.5	11.0
	08:44	187.1	11.5
	08:45	189.4	11.3
	08:46	192.5	11.7
	08:47	189.2	12.2
	08:48	187.8	11.4
	08:49	190.2	11.1
	08:50	188.2	11.7
	08:51	186.8	11.3
	08:52	187.7	11.0
	08:53	187.7	11.6
	08:54	186.4	11.2

---

Average =	188.7	11.5
Geometric Avg. =	188.7	11.5
Maximum =	192.5	12.3
Minimum =	186.4	11.0
Possible Values =	27	27
Included Values =	27	27
Total =	5096.2	311.4

- \* - excluded values (missing, OOC, invalid, suspect)
- < - missing
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Plant Name: SBWD  
General Average Report  
Reporting Period: 03/27/2013 to 03/27/2013

Site Name: UNIT2  
Data Averaging Type: 1m

Time of Report: 03/27/13 09:50  
Rolling Average Interval: 1

Date	Time	CO2LBHR2 (Lb/Hr )	STKFLOW2 (SCFM )	SO2ORPT2 (PPMDC )	NOXRPT_2 (PPMDC )	CORPT_2 (PPMDC )	O2OUT_2 (PERCENTD)	SO2OUT_2 (PPMD )	NOXPPM_2 (PPMD )	COPPM_2 (PPMD )
03/27/13	09:09	66525.8	116626.9	10.0	170.2	10.6	8.8	8.7	148.2	9.2
	09:10	65826.9	117078.5	9.9	172.7	12.0	9.0	8.5	148.0	10.3
	09:11	66133.8	117583.9	11.0	167.7	11.4	9.0	9.5	143.8	9.8
	09:12	65905.7	118347.8	14.2	175.2	12.0	9.1	12.0	148.7	10.2
	09:13	66471.0	118477.0	18.1	178.6	11.3	9.0	15.4	152.5	9.7
	09:14	66257.2	117703.5	19.7	168.9	12.0	8.9	17.0	145.4	10.4
	09:15	66370.6	116595.9	16.4	162.9	10.3	8.7	14.3	142.5	9.0
	09:16	66595.8	116214.0	12.1	164.6	13.2	8.7	10.6	144.3	11.6
	09:17	66375.7	116493.5	9.1	164.0	9.7	8.8	7.9	142.5	8.5
	09:18	67161.4	116895.1	7.6	163.7	10.7	8.6	6.7	144.5	9.4
	09:19	67990.8	117204.7	7.0	164.8	8.7	8.6	6.2	146.2	7.7
	09:20	69973.6	117027.4	7.4	167.5	9.0	8.1	6.8	153.7	8.2
	09:21	68389.4	116527.2	9.1	171.6	8.9	8.4	8.2	154.5	8.0
	09:22	68958.4	115997.1	10.5	168.9	8.7	8.2	9.6	153.8	8.0
	09:23	67699.9	115560.9	9.8	169.7	7.2	8.4	8.8	152.3	6.5
	09:24	66584.6	115324.4	8.3	167.6	10.7	8.7	7.3	147.3	9.4
	09:25	68678.6	115252.6	9.0	157.6	8.6	8.2	8.2	143.7	7.8
	09:26	68134.1	115071.6	17.7	156.3	10.6	8.4	16.0	140.7	9.6
	09:27	69590.3	114995.0	17.9	155.0	8.2	8.1	16.5	143.3	7.6
	09:28	66676.6	115202.0	17.9	161.9	9.3	8.7	15.7	142.0	8.2
	09:29	66676.9	115572.6	18.4	154.9	8.7	8.7	16.2	135.8	7.6
	09:30	67067.7	115834.2	18.1	158.4	9.1	8.7	15.9	138.7	8.0
	09:31	68848.5	116276.4	18.3	158.1	9.1	8.4	16.5	142.2	8.2
	09:32	70041.5	116852.9	15.8	157.8	21.4	8.3	14.3	143.5	19.5
	09:33	72263.7	117554.8	12.4	150.5	11.5	7.9	11.6	140.9	10.8
	09:34	70755.1	117674.5	11.4	152.3	9.2	8.1	10.5	139.8	8.4
	09:35	68530.5	117928.8	9.8	163.1	8.2	8.6	8.7	144.5	7.3
-----										
Average =		67795.7	116587.9	12.9	163.9	10.4	8.6	11.4	145.3	9.2
Geometric Avg. =		67776.2	116583.6	12.2	163.7	10.1	8.6	10.8	145.2	9.0
Maximum =		72263.7	118477.0	19.7	178.6	21.4	9.1	17.0	154.5	19.5
Minimum =		65826.9	114995.0	7.0	150.5	7.2	7.9	6.2	135.8	6.5
Possible Values =		27	27	27	27	27	27	27	27	27
Included Values =		27	27	27	27	27	27	27	27	27
Total =		1830483.9	3147873.0	347.1	4424.5	280.6	231.3	307.6	3923.3	248.8

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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: SBWD  
General Average Report  
Reporting Period: 03/27/2013 to 03/27/2013

Site Name: UNIT2  
Data Averaging Type: 1m

Time of Report: 03/27/13 09:50  
Rolling Average Interval: 1

Date	Time	STMRPT_2 (KLB/HR )	CO2_2 (PERCENTD)
03/27/13	09:09	182.0	10.8
	09:10	181.8	10.6
	09:11	180.0	10.6
	09:12	179.9	10.5
	09:13	180.8	10.6
	09:14	181.9	10.6
	09:15	182.1	10.8
	09:16	182.3	10.8
	09:17	184.2	10.8
	09:18	182.8	10.9
	09:19	185.7	11.0
	09:20	185.2	11.3
	09:21	187.3	11.1
	09:22	185.7	11.2
	09:23	184.5	11.1
	09:24	184.7	10.9
	09:25	185.2	11.3
	09:26	185.9	11.2
	09:27	183.7	11.4
	09:28	183.6	10.9
	09:29	182.8	10.9
	09:30	183.8	10.9
	09:31	185.1	11.2
	09:32	187.8	11.3
	09:33	189.0	11.6
	09:34	186.9	11.4
	09:35	185.7	11.0

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Average =	184.1	11.0
Geometric Avg. =	184.1	11.0
Maximum =	189.0	11.6
Minimum =	179.9	10.5
Possible Values =	27	27
Included Values =	27	27
Total =	4970.4	296.6

- \* - excluded values (missing, OOC, invalid, suspect)
- < - missing
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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: SBWD  
General Average Report  
Reporting Period: 03/27/2013 to 03/27/2013

Site Name: UNIT2  
Data Averaging Type: 1m

Time of Report: 03/27/13 10:39  
Rolling Average Interval: 1

Date	Time	CO2LBHR2 (Lb/Hr )	STKFLOW2 (SCFM )	SO2ORPT2 (PPMDC )	NOXRPT_2 (PPMDC )	CORPT_2 (PPMDC )	O2OUT_2 (PERCENTD)	SO2OUT_2 (PPMD )	NOXPPM_2 (PPMD )	COPPM_2 (PPMD )
03/27/13	09:48	73544.4	119548.9	18.4	147.0	31.4	7.9	17.2	137.2	29.3
	09:49	72535.6	120293.4	26.0	154.2	9.1	8.2	23.7	140.7	8.3
	09:50	72487.6	120605.5	30.7	160.7	9.7	8.3	27.9	146.2	8.8
	09:51	73058.2	120500.7	35.4	159.9	7.7	8.1	32.6	147.0	7.1
	09:52	70583.1	120203.6	33.4	162.2	11.5	8.6	29.6	143.6	10.2
	09:53	72575.9	119788.7	28.3	150.9	9.9	8.1	26.0	138.8	9.1
	09:54	70957.8	119395.8	21.3	152.4	9.4	8.4	19.2	137.4	8.5
	09:55	70283.6	119320.5	14.3	153.9	10.5	8.5	12.8	137.5	9.4
	09:56	67680.1	119885.6	10.9	160.1	10.1	9.0	9.3	136.6	8.6
	09:57	67917.7	120899.8	8.1	162.9	12.6	9.1	6.9	138.4	10.7
	09:58	69261.2	121433.7	7.4	160.4	16.3	8.9	6.4	138.2	14.1
	09:59	71647.0	121770.1	7.9	149.2	24.0	8.5	7.0	133.3	21.4
	10:00	68659.7	122140.3	9.4	155.7	12.3	9.0	8.0	132.9	10.5
	10:01	66014.4	122003.1	12.7	164.9	12.8	9.5	10.4	135.6	10.5
	10:02	70098.9	124046.0	16.5	157.5	23.8	9.0	14.1	134.8	20.4
	10:03	77900.7	124727.0	21.5	137.9	14.8	7.7	20.4	131.3	14.1
	10:04	75796.8	124283.3	20.3	143.8	11.3	8.1	18.8	132.9	10.5
	10:05	72367.2	123998.4	13.5	153.3	12.9	8.6	11.9	135.5	11.4
	10:06	72445.3	124098.4	9.2	153.3	12.2	8.6	8.2	135.9	10.8
	10:07	71647.7	124558.2	7.0	155.6	13.7	8.8	6.1	135.3	11.9
	10:08	72694.5	124868.8	5.9	150.4	10.5	8.6	5.2	133.4	9.4
	10:09	69102.9	124876.6	6.2	161.0	12.4	9.3	5.2	134.3	10.4
	10:10	68877.2	124433.0	10.4	159.2	12.6	9.2	8.8	134.0	10.6
	10:11	68114.1	123614.0	16.1	160.7	16.6	9.3	13.4	134.7	13.9
	10:12	66986.6	123101.3	15.7	162.6	22.2	9.5	12.9	133.9	18.3
	10:13	67428.6	123012.0	14.2	158.1	21.8	9.3	11.9	131.8	18.1
	10:14	70301.8	123736.7	12.3	150.5	22.6	8.8	10.7	131.1	19.7

Average =	70776.6	122264.6	16.0	155.5	14.6	8.7	14.2	136.4	12.8
Geometric Avg. =	70725.9	122249.2	14.0	155.4	13.7	8.7	12.3	136.3	12.0
Maximum =	77900.7	124876.6	35.4	164.9	31.4	9.5	32.6	147.0	29.3
Minimum =	66014.4	119320.5	5.9	137.9	7.7	7.7	5.2	131.1	7.1
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1910969.0	3301143.2	432.8	4198.5	394.8	234.7	384.5	3682.5	345.9

- \* - 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: SBWD  
General Average Report  
Reporting Period: 03/27/2013 to 03/27/2013

Site Name: UNIT2  
Data Averaging Type: 1m

Time of Report: 03/27/13 10:39  
Rolling Average Interval: 1

Date	Time	STMRPT_2 (KLB/HR )	CO2_2 (PERCENTD)
03/27/13	09:48	186.5	11.6
	09:49	186.9	11.4
	09:50	186.1	11.4
	09:51	184.7	11.5
	09:52	187.0	11.1
	09:53	187.2	11.4
	09:54	186.8	11.2
	09:55	184.0	11.1
	09:56	182.6	10.7
	09:57	183.6	10.6
	09:58	186.3	10.8
	09:59	185.2	11.1
	10:00	182.7	10.6
	10:01	181.7	10.2
	10:02	187.6	10.7
	10:03	189.8	11.8
	10:04	189.7	11.5
	10:05	188.5	11.0
	10:06	187.7	11.0
	10:07	187.7	10.9
	10:08	185.2	11.0
	10:09	183.6	10.5
	10:10	182.4	10.5
	10:11	181.8	10.4
	10:12	182.1	10.3
	10:13	185.2	10.4
	10:14	184.5	10.7

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Average =	185.4	10.9
Geometric Avg. =	185.4	10.9
Maximum =	189.8	11.8
Minimum =	181.7	10.2
Possible Values =	27	27
Included Values =	27	27
Total =	5007.0	295.3

- \* - 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: SEWD  
General Average Report  
Reporting Period: 03/27/2013 to 03/27/2013

Site Name: UNIT2  
Data Averaging Type: 1m

Time of Report: 03/27/13 11:09  
Rolling Average Interval: 1

Date	Time	CO2LBHR2 (Lb/Hr )	STKFLOW2 (SCFM )	SO2ORPT2 (PPMDC )	NOXRPT_2 (PPMDC )	CORPT_2 (PPMDC )	O2OUT_2 (PERCENTD)	SO2OUT_2 (PPMD )	NOXPPM_2 (PPMD )	COPPM_2 (PPMD )
03/27/13	10:28	66679.6	126614.1	8.7	158.2	47.5	9.8	7.0	126.3	37.9
	10:29	71865.8	127371.6	9.7	149.0	51.3	8.9	8.3	128.3	44.2
	10:30	72021.9	130740.2	10.4	160.5	22.3	9.3	8.7	134.4	18.7
	10:31	69958.6	131195.6	10.2	166.5	26.4	9.6	8.3	135.3	21.5
	10:32	71548.8	130878.2	10.3	163.0	27.8	9.3	8.6	135.6	23.2
	10:33	71174.1	129753.1	10.6	167.1	23.5	9.3	8.8	138.9	19.6
	10:34	71369.9	129663.9	11.5	166.9	33.3	9.3	9.6	139.2	27.8
	10:35	72348.2	130346.3	14.9	163.0	29.2	9.1	12.7	138.3	24.8
	10:36	71080.2	131215.5	17.6	177.8	25.1	9.5	14.5	146.0	20.6
	10:37	74176.1	132318.6	19.1	175.7	23.2	9.0	16.4	150.6	19.9
	10:38	74389.1	133109.2	18.5	177.8	28.3	9.1	15.8	151.5	24.1
	10:39	76197.1	133367.2	20.0	179.1	60.6	8.9	17.2	154.0	52.1
	10:40	84836.7	132991.6	25.5	155.8	52.1	7.3	24.8	152.0	50.8
	10:41	78878.5	132676.1	20.8	172.7	19.8	8.3	19.0	157.2	18.0
	10:42	72191.4	132877.3	13.4	186.5	21.1	9.4	11.0	154.0	17.4
	10:43	70853.7	133152.6	16.0	175.8	21.3	9.8	12.8	140.8	17.1
	10:44	76361.2	133448.4	19.8	163.7	18.0	8.8	17.3	142.4	15.7
	10:45	76468.5	133753.5	21.4	167.3	20.1	8.9	18.5	144.5	17.3
	10:46	74924.1	133114.6	21.1	179.8	18.5	9.1	18.0	153.1	15.8
	10:47	71113.2	132310.8	18.1	189.7	18.7	9.6	14.6	153.8	15.1
	10:48	72541.0	131941.7	14.9	167.5	20.7	9.3	12.4	139.5	17.2
	10:49	75656.2	131862.5	14.8	159.4	21.9	8.8	13.0	139.3	19.1
	10:50	74135.1	131820.3	15.3	169.6	16.4	9.1	13.0	143.9	13.9
	10:51	72223.7	131307.6	15.8	170.6	16.3	9.3	13.2	142.7	13.6
	10:52	72636.9	131091.6	14.4	176.6	14.5	9.2	12.1	148.2	12.2
	10:53	73193.3	131041.9	10.9	172.0	19.6	9.1	9.3	145.5	16.6
	10:54	74237.3	130535.8	10.2	178.4	16.5	8.9	8.8	153.5	14.2

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Average =	73446.7	131500.0	15.3	170.0	26.4	9.1	13.1	144.0	22.5
Geometric Avg. =	73375.3	131488.8	14.7	169.7	24.4	9.1	12.5	143.8	20.7
Maximum =	84836.7	133753.5	25.5	189.7	60.6	9.8	24.8	157.2	52.1
Minimum =	66679.6	126614.1	8.7	149.0	14.5	7.3	7.0	126.3	12.2
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1983060.2	3550499.8	414.0	4589.9	714.0	246.1	353.5	3889.0	608.3

- \* - 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: SBWD  
General Average Report  
Reporting Period: 03/27/2013 to 03/27/2013

Site Name: UNIT2  
Data Averaging Type: 1m

Time of Report: 03/27/13 11:09  
Rolling Average Interval: 1

Date	Time	STMRPT_2 (KLB/HR )	CO2_2 (PERCENTD)
03/27/13	10:28	185.2	9.9
	10:29	185.6	10.7
	10:30	184.3	10.4
	10:31	184.5	10.1
	10:32	183.7	10.3
	10:33	183.8	10.4
	10:34	187.2	10.4
	10:35	186.3	10.5
	10:36	186.6	10.2
	10:37	188.0	10.6
	10:38	188.5	10.6
	10:39	194.9	10.8
	10:40	193.0	12.1
	10:41	188.9	11.2
	10:42	185.6	10.3
	10:43	187.5	10.1
	10:44	188.5	10.8
	10:45	189.9	10.8
	10:46	187.3	10.6
	10:47	186.7	10.2
	10:48	189.1	10.4
	10:49	189.0	10.8
	10:50	189.4	10.6
	10:51	187.2	10.4
	10:52	189.1	10.5
	10:53	190.7	10.6
	10:54	191.6	10.7

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Average =	187.9	10.5
Geometric Avg. =	187.8	10.5
Maximum =	194.9	12.1
Minimum =	183.7	9.9
Possible Values =	27	27
Included Values =	27	27
Total =	5072.2	284.8

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Plant Name: SBWD  
 General Average Report  
 Reporting Period: 03/27/2013 to 03/27/2013

Site Name: UNIT2  
 Data Averaging Type: 1m

Time of Report: 03/27/13 12:03  
 Rolling Average Interval: 1

Date	Time	CO2LBR2 (Lb/Hr )	STKFLOW2 (SCFM )	SO2ORPT2 (PPMDC )	NOXRPT_2 (PPMDC )	CORPT_2 (PPMDC )	O2OUT_2 (PERCENTD)	SO2OUT_2 (PPMD )	NOXPPM_2 (PPMD )	COPPM_2 (PPMD )
03/27/13	11:07	71167.0	131607.2	5.5	156.3	27.7	9.3	4.5	130.0	23.0
	11:08	71479.3	132184.8	5.1	159.4	28.0	9.4	4.2	132.3	23.2
	11:09	69947.8	132354.2	5.3	162.3	32.4	9.7	4.3	131.2	26.2
	11:10	70976.4	131619.9	5.2	161.4	27.7	9.4	4.3	133.5	22.9
	11:11	71272.3	130672.0	4.8	155.1	51.8	9.3	4.0	129.9	43.4
	11:12	74132.5	130633.2	5.1	152.2	33.2	8.7	4.5	133.4	29.1
	11:13	69178.0	131160.4	5.0	165.9	29.8	9.7	4.1	134.2	24.1
	11:14	71629.9	131968.0	4.3	158.3	28.7	9.2	3.6	133.2	24.1
	11:15	69155.3	132692.3	4.1	162.3	30.9	9.7	3.3	130.3	24.8
	11:16	68191.5	133129.4	3.9	160.0	35.1	9.9	3.1	126.3	27.7
	11:17	71137.5	133035.2	4.0	155.5	34.3	9.5	3.3	128.0	28.2
	11:18	71308.9	132930.3	4.5	154.2	30.7	9.4	3.7	127.1	25.3
	11:19	69493.4	133321.7	4.5	156.6	37.4	9.8	3.6	125.5	29.9
	11:20	66520.3	133846.0	4.3	156.2	39.3	10.3	3.3	118.7	29.8
	11:21	68366.9	134795.3	4.1	154.4	32.3	10.0	3.2	120.5	25.2
	11:22	72927.6	138068.6	3.6	152.7	35.4	9.6	2.9	123.9	28.7
	11:23	74460.0	138086.8	3.2	149.3	31.8	9.3	2.7	124.6	26.5
	11:24	69001.2	137246.8	3.3	161.1	33.2	10.2	2.5	124.0	25.5
	11:25	70100.3	136173.4	3.5	163.7	32.3	9.9	2.8	130.0	25.6
	11:26	72278.5	135830.2	3.1	163.5	31.4	9.5	2.6	134.0	25.8
	11:27	73270.3	135645.2	2.9	167.2	30.3	9.3	2.4	139.1	25.2
	11:28	74022.3	135468.5	3.5	166.9	33.8	9.2	2.9	140.3	28.4
	11:29	75293.1	135565.8	3.5	169.5	26.8	9.0	3.0	144.9	22.9
	11:30	73204.7	135841.0	3.0	173.6	32.3	9.4	2.5	143.7	26.7
	11:31	73236.5	135664.5	2.6	162.9	35.4	9.3	2.2	135.9	29.6
	11:32	73304.8	135168.0	2.4	163.6	35.5	9.3	2.0	136.6	29.7
	11:33	76157.7	134687.6	2.2	167.1	31.9	8.8	1.9	145.4	27.8

Average =	71526.4	134051.7	4.0	160.4	32.9	9.5	3.2	131.7	27.0
Geometric Avg. =	71488.9	134034.5	3.8	160.3	32.6	9.5	3.2	131.5	26.8
Maximum =	76157.7	138086.8	5.5	173.6	51.8	10.3	4.5	145.4	43.4
Minimum =	66520.3	130633.2	2.2	149.3	26.8	8.7	1.9	118.7	22.9
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1931214.1	3619396.2	106.8	4331.5	889.3	256.2	87.6	3556.6	729.5

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- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: SBWD  
General Average Report  
Reporting Period: 03/27/2013 to 03/27/2013

Site Name: UNIT2  
Data Averaging Type: 1m

Time of Report: 03/27/13 12:03  
Rolling Average Interval: 1

Date	Time	STMRPT_2 (KLB/HR )	CO2_2 (PERCENTD)
03/27/13	11:07	188.0	10.2
	11:08	187.5	10.2
	11:09	186.3	10.0
	11:10	186.4	10.2
	11:11	190.5	10.3
	11:12	188.1	10.7
	11:13	188.5	10.0
	11:14	186.4	10.3
	11:15	185.6	9.8
	11:16	186.4	9.7
	11:17	186.6	10.1
	11:18	186.5	10.1
	11:19	184.7	9.8
	11:20	184.7	9.4
	11:21	186.1	9.6
	11:22	189.0	10.0
	11:23	186.9	10.2
	11:24	185.8	9.5
	11:25	186.1	9.7
	11:26	187.2	10.1
	11:27	188.5	10.2
	11:28	189.9	10.3
	11:29	188.4	10.5
	11:30	188.7	10.2
	11:31	189.3	10.2
	11:32	191.2	10.2
	11:33	191.3	10.7

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Average =	187.6	10.1
Geometric Avg. =	187.6	10.1
Maximum =	191.3	10.7
Minimum =	184.7	9.4
Possible Values =	27	27
Included Values =	27	27
Total =	5064.7	272.2

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- < - missing
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Plant Name: SBWD  
General Average Report  
Reporting Period: 03/27/2013 to 03/27/2013

Site Name: UNIT2  
Data Averaging Type: 1m

Time of Report: 03/27/13 13:28  
Rolling Average Interval: 1

Date	Time	CO2LBHR2 (Lb/Hr )	STKFLOW2 (SCFM )	SO2ORPT2 (PPMDC )	NOXRPT_2 (PPMDC )	CORPT_2 (PPMDC )	O2OUT_2 (PERCENTD)	SO2OUT_2 (PPMD )	NOXPPM_2 (PPMD )	COPPM_2 (PPMD )
03/27/13	12:08	75908.9	128547.2	1.4	155.0	15.9	8.3	1.3	140.5	14.4
	12:09	74332.9	129099.6	1.1	165.2	10.2	8.7	0.9	145.4	9.0
	12:10	75230.4	129428.7	1.2	162.9	9.8	8.5	1.1	145.1	8.7
	12:11	72340.2	128735.7	2.8	169.7	9.9	9.0	2.4	145.8	8.5
	12:12	73745.7	126932.1	7.7	162.1	21.3	8.5	6.8	144.1	19.0
	12:13	72603.7	125404.5	8.1	162.6	6.8	8.6	7.2	144.2	6.0
	12:14	70330.1	124552.4	6.5	164.3	18.6	8.9	5.6	141.7	16.0
	12:15	70329.6	124603.6	5.2	164.2	11.7	8.9	4.5	142.1	10.1
	12:16	67951.9	125293.7	3.4	175.0	11.6	9.4	2.8	144.4	9.6
	12:17	71755.0	126110.3	2.8	164.5	10.6	8.8	2.4	143.2	9.2
	12:18	71471.5	126781.8	3.0	163.0	12.6	9.0	2.6	139.9	10.8
	12:19	70720.9	127428.7	4.2	164.1	11.8	9.2	3.5	138.7	10.0
	12:20	70046.1	127330.2	6.9	165.1	12.5	9.3	5.8	138.2	10.5
	12:21	73739.5	126987.1	10.6	164.8	9.8	8.6	9.4	145.8	8.7
	12:22	73705.9	126443.2	11.5	168.9	14.2	8.6	10.2	149.4	12.6
	12:23	72186.4	125786.0	9.3	167.0	11.8	8.7	8.1	146.1	10.3
	12:24	68861.9	125546.1	6.8	175.2	11.4	9.3	5.7	145.9	9.5
	12:25	70430.3	125930.2	5.3	171.4	10.3	9.2	4.5	144.8	8.7
	12:26	72814.4	126485.5	4.6	166.9	10.2	8.7	4.0	146.3	8.9
	12:27	74445.2	126815.0	4.7	167.7	19.9	8.5	4.2	149.2	17.7
	12:28	73405.4	126507.7	5.4	169.5	8.6	8.6	4.8	149.7	7.6
	12:29	67383.0	126038.9	5.0	182.5	10.0	9.6	4.0	147.8	8.1
	12:30	69213.3	125932.9	4.5	187.0	9.7	9.3	3.7	155.8	8.1
	12:31	73020.8	125928.5	6.2	178.5	11.0	8.6	5.5	157.9	9.7
	12:32	73504.7	125814.2	8.6	171.0	12.6	8.5	7.7	152.2	11.2
	12:33	72891.3	125057.0	9.2	164.8	27.7	8.6	8.1	146.2	24.5
	12:34	70578.2	123551.6	8.5	166.1	11.6	8.9	7.4	143.6	10.0

---

Average =	71961.0	126410.1	5.7	168.1	12.7	8.8	5.0	145.7	11.0
Geometric Avg. =	71928.7	126402.7	4.9	168.0	12.1	8.8	4.2	145.6	10.5
Maximum =	75908.9	129428.7	11.5	187.0	27.7	9.6	10.2	157.9	24.5
Minimum =	67383.0	123551.6	1.1	155.0	6.8	8.3	0.9	138.2	6.0
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1942947.2	3413072.5	154.3	4539.2	342.2	238.8	134.1	3933.9	297.5

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- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated



Plant Name: SBWD  
General Average Report  
Reporting Period: 03/27/2013 to 03/27/2013

Site Name: UNIT2  
Data Averaging Type: 1m

Time of Report: 03/27/13 13:28  
Rolling Average Interval: 1

Date	Time	STMRT_2 (KLB/HR )	CO2_2 (PERCENTD)
03/27/13	12:08	188.8	11.2
	12:09	189.5	10.9
	12:10	186.9	11.0
	12:11	189.7	10.6
	12:12	189.1	11.0
	12:13	187.5	10.9
	12:14	187.2	10.7
	12:15	184.7	10.7
	12:16	184.5	10.2
	12:17	184.3	10.7
	12:18	184.2	10.6
	12:19	183.3	10.5
	12:20	185.2	10.4
	12:21	185.9	11.0
	12:22	186.0	11.0
	12:23	183.2	10.8
	12:24	181.8	10.4
	12:25	182.9	10.6
	12:26	186.4	10.9
	12:27	188.3	11.1
	12:28	185.0	11.0
	12:29	182.2	10.1
	12:30	183.9	10.4
	12:31	186.8	11.0
	12:32	190.0	11.0
	12:33	189.2	11.0
	12:34	188.0	10.8

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Average =	186.1	10.8
Geometric Avg. =	186.1	10.7
Maximum =	190.0	11.2
Minimum =	181.8	10.1
Possible Values =	27	27
Included Values =	27	27
Total =	5024.6	290.3

- \* - 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
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General Average Report

Reporting Period: 03/27/2013 to 03/27/2013

Site Name: UNIT2  
Data Averaging Type: 1m

Time of Report: 03/27/13 13:28  
Rolling Average Interval: 1

Date	Time	CO2LBHR2 (Lb/Hr )	STKFLOW2 (SCFM )	SO2ORPT2 (PPMDC )	NOXRPT_2 (PPMDC )	CORPT_2 (PPMDC )	O2OUT_2 (PERCENTD)	SO2OUT_2 (PPMD )	NOXPPM_2 (PPMD )	COPPM_2 (PPMD )
03/27/13	12:48	65245.6	116656.1	4.3	171.8	10.3	9.0	3.7	147.3	8.8
	12:49	62578.2	117057.3	4.0	181.2	12.8	9.6	3.3	146.7	10.4
	12:50	64100.6	118042.7	3.4	171.3	14.5	9.4	2.8	142.2	12.1
	12:51	68105.5	119178.7	3.1	160.4	19.9	8.8	2.7	140.1	17.4
	12:52	69757.8	119926.0	4.0	157.5	14.7	8.5	3.5	140.0	13.1
	12:53	65280.0	120563.3	5.0	169.9	13.0	9.4	4.2	140.7	10.8
	12:54	67538.3	120266.0	6.3	166.2	11.7	8.9	5.4	143.8	10.1
	12:55	66861.9	119674.4	8.8	166.7	12.0	9.0	7.5	142.4	10.3
	12:56	66389.7	119005.8	9.6	163.6	14.0	9.0	8.2	140.2	12.0
	12:57	66485.7	119110.2	8.6	167.9	12.9	9.1	7.4	143.0	11.0
	12:58	69102.9	120082.5	6.5	166.2	11.3	8.6	5.8	147.0	10.0
	12:59	69345.4	121053.2	5.2	165.9	11.0	8.8	4.5	144.9	9.6
	13:00	69529.1	121274.9	4.2	163.2	10.6	8.7	3.7	143.3	9.3
	13:01	68533.7	120864.8	3.6	166.7	10.3	8.9	3.1	144.2	8.9
	13:02	70459.1	120887.8	2.9	161.6	9.6	8.5	2.6	144.4	8.6
	13:03	68996.6	121548.8	3.0	165.4	9.7	8.9	2.6	142.9	8.4
	13:04	70506.7	122110.1	3.6	164.7	10.8	8.7	3.1	145.0	9.5
	13:05	69905.8	122397.3	4.9	166.1	9.1	8.8	4.2	144.7	8.0
	13:06	70023.2	122391.0	5.6	163.7	10.0	8.8	4.9	142.8	8.7
	13:07	70757.8	122443.8	6.2	164.5	9.2	8.6	5.5	145.3	8.2
	13:08	69437.8	122516.5	5.7	167.6	12.6	8.9	4.9	144.4	10.9
	13:09	70633.8	123114.7	5.6	162.2	9.4	8.7	5.0	142.6	8.3
	13:10	67598.6	124294.5	4.9	168.1	11.1	9.4	4.1	139.2	9.2
	13:11	69411.0	126949.4	4.5	162.8	10.9	9.3	3.7	136.2	9.1
	13:12	72189.4	127317.9	5.1	157.9	15.0	8.9	4.4	136.8	13.0
	13:13	75871.4	126307.7	5.8	154.0	9.4	8.1	5.4	142.3	8.6
	13:14	74392.3	125547.4	5.5	155.8	7.8	8.2	5.0	142.8	7.1

---

Average =	68853.3	121503.1	5.2	164.9	11.6	8.9	4.5	142.8	10.0
Geometric Avg. =	68795.5	121472.6	4.9	164.8	11.4	8.9	4.3	142.8	9.9
Maximum =	75871.4	127317.9	9.6	181.2	19.9	9.6	8.2	147.3	17.4
Minimum =	62578.2	116656.1	2.9	154.0	7.8	8.1	2.6	136.2	7.1
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1859037.9	3280582.8	139.9	4453.0	313.7	239.1	121.2	3855.1	271.2

- \* - 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: SBWD  
General Average Report

Reporting Period: 03/27/2013 to 03/27/2013

Site Name: UNIT2  
Data Averaging Type: 1m

Time of Report: 03/27/13 13:28  
Rolling Average Interval: 1

Date	Time	STMRTPT_2 (KLB/HR )	CO2_2 (PERCENTD)
03/27/13	12:48	184.4	10.6
	12:49	183.6	10.1
	12:50	185.2	10.3
	12:51	188.5	10.8
	12:52	186.5	11.0
	12:53	185.5	10.2
	12:54	185.7	10.6
	12:55	186.4	10.6
	12:56	185.4	10.5
	12:57	186.0	10.5
	12:58	186.6	10.9
	12:59	187.3	10.8
	13:00	186.2	10.8
	13:01	187.9	10.7
	13:02	187.2	11.0
	13:03	187.8	10.7
	13:04	187.4	10.9
	13:05	188.3	10.8
	13:06	188.3	10.8
	13:07	187.7	10.9
	13:08	188.0	10.7
	13:09	184.6	10.8
	13:10	184.0	10.3
	13:11	186.4	10.3
	13:12	189.2	10.7
	13:13	191.5	11.3
	13:14	190.2	11.2

---

Average =	186.9	10.7
Geometric Avg. =	186.9	10.7
Maximum =	191.5	11.3
Minimum =	183.6	10.1
Possible Values =	27	27
Included Values =	27	27
Total =	5045.7	289.0

- \* - excluded values (missing, OOC, invalid, suspect)
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- S - suspect
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- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: SBWD

General Average Report

Reporting Period: 03/27/2013 to 03/27/2013

Time of Report: 03/27/13 14:06

Site Name: UNIT2

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	CO2LBHR2 (Lb/Hr )	STKFLOW2 (SCFM )	SO2ORPT2 (PPMDC )	NOXRPT_2 (PPMDC )	CORPT_2 (PPMDC )	O2OUT_2 (PERCENTD)	SO2OUT_2 (PPMD )	NOXPPM_2 (PPMD )	COPPM_2 (PPMD )
03/27/13	13:27	73553.2	125828.9	5.4	147.9	7.6	8.4	4.9	133.5	6.8
	13:28	69720.9	125604.9	5.2	157.4	8.5	9.1	4.5	134.0	7.3
	13:29	70011.1	124841.8	5.3	159.1	10.8	8.9	4.5	136.8	9.3
	13:30	69274.8	124163.9	6.2	161.3	9.2	9.0	5.3	137.7	7.9
	13:31	69605.6	123506.7	6.8	157.1	16.2	8.9	5.9	135.6	14.0
	13:32	71378.3	122730.7	10.2	150.3	9.3	8.5	9.1	133.7	8.3
	13:33	68764.6	122263.2	9.6	159.0	11.0	9.0	8.3	136.2	9.4
	13:34	68326.6	122082.1	6.9	159.7	8.4	9.0	5.9	136.5	7.2
	13:35	66515.3	121649.4	6.8	164.4	31.8	9.3	5.6	136.9	26.5
	13:36	69515.8	121509.8	7.3	146.9	23.3	8.7	6.3	128.5	20.4
	13:37	67257.0	122350.3	4.9	162.9	9.5	9.3	4.0	136.0	7.9
	13:38	70038.6	123655.6	3.2	154.5	8.9	8.8	2.7	133.9	7.7
	13:39	70917.1	124825.4	2.3	149.9	20.0	8.9	2.0	129.4	17.2
	13:40	71848.3	125718.6	1.7	149.8	13.1	8.8	1.5	130.4	11.4
	13:41	68060.9	125455.9	1.4	160.1	9.3	9.5	1.1	131.3	7.6
	13:42	67776.9	123520.3	1.6	153.4	10.6	9.2	1.3	128.6	8.9
	13:43	67134.3	120065.2	2.4	144.8	17.6	9.1	2.0	123.0	15.0
	13:44	64829.8	115920.1	2.8	146.9	30.7	9.0	2.4	125.5	26.2
	13:45	62347.2	115149.0	2.5	163.4	13.5	9.5	2.1	133.9	11.1
	13:46	62465.3	115068.5	1.8	166.6	35.1	9.3	1.5	138.6	29.2
	13:47	64371.2	115680.3	1.5	160.6	17.2	9.2	1.3	135.6	14.5
	13:48	64998.7	116508.7	1.1	154.2	37.2	9.1	0.9	131.4	31.7
	13:49	64287.4	117292.7	1.0	154.1	16.5	9.3	0.8	128.2	13.8
	13:50	64802.4	117694.4	0.8	155.2	23.2	9.1	0.7	131.2	19.6
	13:51	66418.3	117353.3	0.8	148.4	30.8	8.9	0.7	128.1	26.6
	13:52	65807.5	116732.7	1.1	148.4	45.8	9.0	0.9	127.4	39.3
	13:53	66344.5	115961.2	1.7	147.0	18.3	8.8	1.5	128.4	16.0

---

Average =	67643.4	120856.8	3.8	154.9	18.3	9.0	3.3	132.2	15.6
Geometric Avg. =	67585.0	120798.3	2.8	154.8	15.8	9.0	2.4	132.2	13.5
Maximum =	73553.2	125828.9	10.2	166.6	45.8	9.5	9.1	138.6	39.3
Minimum =	62347.2	115068.5	0.8	144.8	7.6	8.4	0.7	123.0	6.8
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1826371.8	3263133.5	102.2	4183.1	493.6	243.8	87.8	3570.3	420.9

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- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: SBWD  
General Average Report  
Reporting Period: 03/27/2013 to 03/27/2013

Site Name: UNIT2  
Data Averaging Type: 1m

Time of Report: 03/27/13 14:06  
Rolling Average Interval: 1

Date	Time	STMRPT_2 (KLB/HR )	CO2_2 (PERCENTD)
03/27/13	13:27	187.3	11.0
	13:28	186.6	10.5
	13:29	185.8	10.6
	13:30	185.7	10.5
	13:31	186.4	10.6
	13:32	185.2	11.0
	13:33	186.2	10.6
	13:34	185.1	10.6
	13:35	186.8	10.3
	13:36	185.4	10.8
	13:37	186.0	10.4
	13:38	185.2	10.7
	13:39	185.8	10.7
	13:40	183.6	10.8
	13:41	184.0	10.2
	13:42	186.0	10.4
	13:43	187.7	10.6
	13:44	185.3	10.6
	13:45	185.1	10.2
	13:46	185.2	10.3
	13:47	185.6	10.5
	13:48	184.3	10.5
	13:49	184.9	10.4
	13:50	185.9	10.4
	13:51	185.4	10.7
	13:52	186.3	10.6
	13:53	186.0	10.8

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Average =	185.7	10.6
Geometric Avg. =	185.7	10.6
Maximum =	187.7	11.0
Minimum =	183.6	10.2
Possible Values =	27	27
Included Values =	27	27
Total =	5012.7	285.4

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General Average Report

Reporting Period: 03/27/2013 to 03/27/2013

Site Name: UNIT2

Time of Report: 03/27/13 14:50

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	CO2LBHR2 (Lb/Hr )	STKFLOW2 (SCFM )	SO2ORPT2 (PPMDC )	NOXRPT_2 (PPMDC )	CORPT_2 (PPMDC )	O2OUT_2 (PERCENTD)	SO2OUT_2 (PPMD )	NOXPPM_2 (PPMD )	COPPM_2 (PPMD )
03/27/13	14:05	68293.6	117369.7	2.3	179.1	11.0	8.7	2.0	157.0	9.6
	14:06	69460.6	117465.9	1.9	178.7	9.3	8.5	1.7	159.9	8.4
	14:07	67601.8	118505.9	1.8	181.2	9.7	9.0	1.5	155.7	8.3
	14:08	70472.2	119470.7	1.5	176.4	9.9	8.5	1.4	157.3	8.8
	14:09	70332.5	120442.7	1.5	181.7	9.0	8.7	1.3	159.3	7.9
	14:10	72654.2	121169.0	1.5	173.8	10.4	8.3	1.4	157.4	9.5
	14:11	72415.8	121979.3	1.8	174.1	9.1	8.4	1.6	156.0	8.2
	14:12	73395.5	125006.2	2.1	173.7	13.6	8.6	1.8	153.3	12.0
	14:13	74752.2	125556.6	2.7	176.5	11.0	8.4	2.5	158.4	9.8
	14:14	73562.7	125938.2	4.1	182.0	13.7	8.7	3.6	159.4	12.0
	14:15	74217.1	125401.2	6.0	172.4	11.9	8.4	5.4	154.4	10.6
	14:16	72084.8	124938.5	5.0	175.0	14.7	8.9	4.3	151.0	12.6
	14:17	77842.4	124816.9	4.0	158.8	11.2	7.8	3.7	149.6	10.6
	14:18	74650.8	124953.1	3.8	167.5	13.3	8.5	3.4	149.7	11.9
	14:19	78532.8	125050.0	4.0	156.3	12.4	7.7	3.8	148.6	11.8
	14:20	75310.9	125251.5	4.0	172.0	7.5	8.2	3.6	156.7	6.8
	14:21	70888.2	125693.9	3.1	181.8	11.4	9.1	2.6	154.0	9.7
	14:22	74431.4	125804.5	2.4	167.1	8.7	8.5	2.2	149.5	7.8
	14:23	74839.3	125479.8	2.6	170.5	13.3	8.5	2.3	152.2	11.9
	14:24	79796.5	124501.5	4.4	162.0	9.2	7.4	4.2	157.3	8.9
	14:25	69718.5	124312.3	5.9	191.4	8.6	9.2	5.0	161.2	7.2
	14:26	71393.3	124203.4	6.1	177.6	9.0	8.8	5.3	154.5	7.8
	14:27	74206.2	124846.9	5.6	172.2	10.5	8.5	5.0	153.9	9.4
	14:28	74708.9	125006.0	4.8	169.4	9.5	8.3	4.3	153.0	8.5
	14:29	71917.6	124648.8	3.5	171.8	10.4	8.8	3.0	149.1	9.0
	14:30	71784.2	124035.9	2.5	162.0	10.2	8.7	2.2	141.9	9.0
	14:31	71204.9	123991.8	2.0	162.9	10.9	8.9	1.7	141.0	9.4

Average =	72980.3	123549.6	3.4	172.9	10.7	8.5	3.0	153.7	9.5
Geometric Avg. =	72923.6	123521.9	3.1	172.7	10.6	8.5	2.7	153.7	9.4
Maximum =	79796.5	125938.2	6.1	191.4	14.7	9.2	5.4	161.2	12.6
Minimum =	67601.8	117369.7	1.5	156.3	7.5	7.4	1.3	141.0	6.8
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1970468.8	3335840.2	90.9	4667.8	289.3	230.2	81.0	4151.2	257.5

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- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: SBWD  
 General Average Report

Reporting Period: 03/27/2013 to 03/27/2013

Site Name: UNIT2  
 Data Averaging Type: 1m

Time of Report: 03/27/13 14:50  
 Rolling Average Interval: 1

Date	Time	STMRPT_2 (KLB/HR )	CO2_2 (PERCENTD)
03/27/13	14:05	187.2	11.0
	14:06	185.9	11.2
	14:07	187.9	10.8
	14:08	186.5	11.1
	14:09	188.5	11.0
	14:10	188.4	11.3
	14:11	188.6	11.2
	14:12	188.5	11.1
	14:13	187.3	11.2
	14:14	188.4	11.0
	14:15	186.1	11.2
	14:16	189.6	10.9
	14:17	188.4	11.8
	14:18	193.3	11.3
	14:19	190.6	11.9
	14:20	186.6	11.4
	14:21	186.6	10.7
	14:22	186.8	11.2
	14:23	191.8	11.3
	14:24	186.7	12.1
	14:25	186.2	10.6
	14:26	185.1	10.9
	14:27	186.6	11.2
	14:28	185.5	11.3
	14:29	186.9	10.9
	14:30	186.2	10.9
	14:31	186.6	10.8

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Average =	187.7	11.2
Geometric Avg. =	187.6	11.2
Maximum =	193.3	12.1
Minimum =	185.1	10.6
Possible Values =	27	27
Included Values =	27	27
Total =	5066.6	301.2

- \* - excluded values (missing, OOC, invalid, suspect)
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- U - missing data substituted
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- 888 - value could not be calculated

Plant Name: SEWD  
General Average Report  
Reporting Period: 03/26/2013 to 03/26/2013

Site Name: UNIT3  
Data Averaging Type: 1m

Time of Report: 03/26/13 08:42  
Rolling Average Interval: 1

Date	Time	CO2LBHR3 (Lb/Hr )	STKFLOW3 (SCFM )	SO2ORPT3 (PPMDC )	NOXRPT_3 (PPMDC )	CORPT_3 (PPMDC )	O2OUT_3 (PERCENTD)	SO2OUT_3 (PPMD )	NOXPPM_3 (PPMD )	COPPM_3 (PPMD )
03/26/13	08:01	62003.6	115473.5	10.2	196.7	24.4	9.5	8.4	162.0	20.1
	08:02	64073.8	115426.6	14.1	191.5	20.4	9.0	12.1	164.3	17.5
	08:03	62230.1	115783.0	16.9	194.7	20.9	9.4	14.0	161.4	17.3
	08:04	63061.8	116185.1	19.8	191.6	23.3	9.2	16.6	160.7	19.5
	08:05	62868.2	116499.5	21.3	194.1	25.2	9.3	17.7	161.4	21.0
	08:06	62832.0	116695.3	23.2	194.3	28.1	9.4	19.2	160.6	23.2
	08:07	63738.4	116592.0	25.1	184.8	24.3	9.2	21.2	156.0	20.5
	08:08	62259.0	116457.8	26.7	187.9	23.8	9.5	22.0	154.6	19.6
	08:09	63996.3	116453.3	29.6	184.8	23.6	9.1	25.1	156.6	20.0
	08:10	62746.4	116705.9	30.3	192.8	25.7	9.4	25.0	159.0	21.2
	08:11	61719.1	116910.5	30.8	196.3	26.1	9.6	25.0	159.1	21.2
	08:12	64211.6	117308.6	30.2	191.1	25.8	9.2	25.4	160.4	21.7
	08:13	65734.6	117572.3	27.9	187.4	23.9	9.0	23.9	160.4	20.5
	08:14	65974.5	117454.1	24.1	185.6	20.9	8.9	20.8	160.2	18.0
	08:15	62701.0	117525.7	17.4	193.5	24.6	9.5	14.2	158.2	20.1
	08:16	64091.2	117455.7	12.8	194.5	25.0	9.2	10.7	163.2	21.0
	08:17	65265.9	117504.3	10.2	193.9	21.9	9.1	8.6	164.5	18.6
	08:18	65139.9	117732.2	11.0	192.7	22.9	9.1	9.3	163.5	19.4
	08:19	64191.5	118151.0	13.1	192.8	23.2	9.3	10.9	160.6	19.3
	08:20	64183.4	117896.7	21.9	182.8	26.2	9.3	18.2	152.2	21.8
	08:21	63314.9	117134.9	34.1	183.5	18.8	9.4	28.3	152.3	15.6
	08:22	63105.0	116769.1	37.3	182.7	17.0	9.4	30.8	150.9	14.1
	08:23	64841.6	116890.3	29.1	177.0	12.3	9.1	24.7	150.4	10.4
	08:24	65217.5	116462.8	21.3	179.1	15.0	9.1	18.1	152.3	12.8
	08:25	66291.1	115857.0	15.5	177.7	10.5	8.7	13.6	155.6	9.2
	08:26	63469.3	115519.8	11.3	183.8	14.6	9.3	9.4	153.2	12.2
	08:27	66247.6	115184.8	9.2	176.2	12.5	8.6	8.1	155.5	11.0

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Average =	63907.7	116726.0	21.3	188.3	21.5	9.2	17.8	158.1	18.0
Geometric Avg. =	63894.5	116723.2	19.6	188.2	20.9	9.2	16.5	158.0	17.5
Maximum =	66291.1	118151.0	37.3	196.7	28.1	9.6	30.8	164.5	23.2
Minimum =	61719.1	115184.8	9.2	176.2	10.5	8.6	8.1	150.4	9.2
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1725509.2	3151601.8	574.4	5083.9	581.0	249.0	481.3	4268.8	486.7

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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: SBWD  
General Average Report  
Reporting Period: 03/26/2013 to 03/26/2013

Site Name: UNIT3  
Data Averaging Type: 1m

Time of Report: 03/26/13 08:42  
Rolling Average Interval: 1

Date	Time	STMRPT_3 (KLB/HR )	CO2_3 (PERCENTD)
03/26/13	08:01	187.2	10.3
	08:02	185.9	10.7
	08:03	187.4	10.3
	08:04	186.8	10.4
	08:05	186.1	10.4
	08:06	186.9	10.3
	08:07	186.4	10.5
	08:08	188.2	10.3
	08:09	185.9	10.5
	08:10	184.0	10.3
	08:11	185.5	10.1
	08:12	188.2	10.5
	08:13	188.8	10.7
	08:14	186.4	10.8
	08:15	185.4	10.2
	08:16	185.8	10.5
	08:17	186.9	10.7
	08:18	185.5	10.6
	08:19	186.6	10.4
	08:20	186.0	10.4
	08:21	185.6	10.4
	08:22	185.9	10.4
	08:23	186.7	10.6
	08:24	188.2	10.7
	08:25	187.1	11.0
	08:26	189.4	10.5
	08:27	187.7	11.0

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Average =	186.7	10.5
Geometric Avg. =	186.7	10.5
Maximum =	189.4	11.0
Minimum =	184.0	10.1
Possible Values =	27	27
Included Values =	27	27
Total =	5040.7	283.7

- \* - 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: 03/26/2013 to 03/26/2013

Site Name: UNIT3  
Data Averaging Type: 1m

Time of Report: 03/26/13 09:23  
Rolling Average Interval: 1

Date	Time	CO2LBHR3 (Lb/Hr )	STKFLOW3 (SCFM )	SO2ORPT3 (PPMDC )	NOXRPT_3 (PPMDC )	CORPT_3 (PPMDC )	O2OUT_3 (PERCENTD)	SO2OUT_3 (PPMD )	NOXPPM_3 (PPMD )	COPPM_3 (PPMD )
03/26/13	08:41	60250.7	109378.1	3.5	182.0	30.5	9.2	2.9	153.5	25.7
	08:42	59558.7	109457.7	4.4	188.5	32.9	9.3	3.6	156.8	27.4
	08:43	60948.4	110028.7	5.0	188.9	29.8	9.1	4.3	160.3	25.3
	08:44	59903.2	110512.5	5.6	189.7	33.3	9.3	4.7	157.8	27.7
	08:45	60039.5	111671.8	6.3	193.2	28.6	9.4	5.2	159.5	23.6
	08:46	59567.0	113042.1	7.3	195.8	29.9	9.7	5.8	157.2	24.0
	08:47	64533.4	116345.6	9.2	182.3	88.5	9.1	7.8	154.4	75.0
	08:48	65811.3	116688.9	11.2	178.8	47.1	8.9	9.7	154.8	40.8
	08:49	62922.1	117011.9	10.4	192.6	26.1	9.4	8.6	159.1	21.6
	08:50	62735.5	116986.1	10.3	195.5	24.5	9.4	8.6	161.8	20.3
	08:51	62932.1	116740.1	12.7	187.9	26.6	9.4	10.6	156.1	22.1
	08:52	63700.9	116896.7	17.1	184.7	26.1	9.3	14.3	154.2	21.8
	08:53	64785.8	117149.2	21.4	182.5	29.1	9.1	18.2	155.6	24.8
	08:54	64498.6	117599.6	20.1	186.1	72.1	9.2	17.0	156.7	60.7
	08:55	62972.2	116774.9	24.3	187.9	37.7	9.3	20.3	156.9	31.5
	08:56	61933.0	115469.0	31.3	196.4	36.2	9.5	25.8	161.7	29.8
	08:57	63320.9	114473.4	27.4	192.2	37.1	9.1	23.3	163.2	31.5
	08:58	60627.7	113637.2	19.6	193.0	35.4	9.6	16.0	157.3	28.8
	08:59	62186.3	112877.7	16.6	187.4	31.0	9.1	14.0	158.6	26.2
	09:00	62469.0	111748.2	14.5	189.0	26.2	9.0	12.4	162.2	22.5
	09:01	63138.2	109212.7	14.4	187.5	27.2	8.5	12.8	166.6	24.2
	09:02	61540.4	108950.1	15.0	193.0	25.9	8.8	13.1	167.8	22.5
	09:03	60735.5	109081.7	17.0	194.6	28.5	9.1	14.5	165.4	24.2
	09:04	61943.2	108742.0	22.8	187.4	23.5	8.7	20.1	165.2	20.7
	09:05	59205.4	108460.4	22.5	199.6	21.5	9.3	18.8	166.9	18.0
	09:06	59863.0	108257.8	25.3	195.1	21.2	9.1	21.5	165.8	18.0
	09:07	59436.6	108157.6	28.7	195.9	18.2	9.1	24.3	165.7	15.4

---

Average =	61909.6	112790.8	15.7	189.9	33.1	9.2	13.3	160.0	27.9
Geometric Avg. =	61882.4	112738.1	13.4	189.8	31.0	9.2	11.3	160.0	26.1
Maximum =	65811.3	117599.6	31.3	199.6	88.5	9.7	25.8	167.8	75.0
Minimum =	59205.4	108157.6	3.5	178.8	18.2	8.5	2.9	153.5	15.4
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1671558.5	3045351.5	423.9	5127.5	894.6	248.0	358.0	4321.0	754.0

- \* - excluded values (missing, OOC, invalid, suspect)
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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: 03/26/2013 to 03/26/2013

Site Name: UNIT3

Time of Report: 03/26/13 09:23

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	STMRPT_3 (KLB/HR )	CO2_3 (PERCENTD)
03/26/13	08:41	185.8	10.6
	08:42	186.7	10.4
	08:43	186.4	10.6
	08:44	186.4	10.4
	08:45	185.4	10.3
	08:46	187.9	10.1
	08:47	189.5	10.6
	08:48	188.0	10.8
	08:49	186.2	10.3
	08:50	186.4	10.3
	08:51	186.3	10.3
	08:52	187.4	10.5
	08:53	186.8	10.6
	08:54	186.6	10.5
	08:55	186.1	10.3
	08:56	187.1	10.3
	08:57	185.5	10.6
	08:58	186.6	10.2
	08:59	187.2	10.6
	09:00	190.1	10.7
	09:01	188.7	11.1
	09:02	189.1	10.8
	09:03	189.8	10.7
	09:04	187.0	10.9
	09:05	187.5	10.5
	09:06	186.2	10.6
	09:07	186.8	10.5

---

Average =	187.2	10.5
Geometric Avg. =	187.2	10.5
Maximum =	190.1	11.1
Minimum =	185.4	10.1
Possible Values =	27	27
Included Values =	27	27
Total =	5053.8	284.4

- \* - excluded values (missing, OOC, invalid, suspect)
- < - missing
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Plant Name: SBWD  
General Average Report  
Reporting Period: 03/26/2013 to 03/26/2013

Site Name: UNIT3  
Data Averaging Type: 1m

Time of Report: 03/26/13 10:19  
Rolling Average Interval: 1

Date	Time	CO2LBHR3 (Lb/Hr )	STKFLOW3 (SCFM )	SO2ORPT3 (PPMDC )	NOXRPT_3 (PPMDC )	CORPT_3 (PPMDC )	O2OUT_3 (PERCENTD)	SO2OUT_3 (PPMD )	NOXPPM_3 (PPMD )	COPPM_3 (PPMD )
03/26/13	09:21	53638.5	105730.1	50.8	204.3	23.1	10.2	39.3	158.0	17.8
	09:22	52817.9	104913.8	58.2	211.1	26.2	10.1	45.0	163.4	20.3
	09:23	55039.9	104461.3	52.8	204.8	28.6	9.6	42.8	165.9	23.2
	09:24	59329.0	104011.4	39.5	195.8	23.6	8.7	34.8	172.2	20.8
	09:25	59210.3	104158.7	33.6	190.9	17.9	8.8	29.4	166.6	15.6
	09:26	56973.2	105906.2	22.6	203.3	21.2	9.4	18.7	168.5	17.6
	09:27	61223.0	110208.3	11.5	203.4	19.7	8.9	9.9	174.9	16.9
	09:28	63733.1	113197.5	7.8	203.2	18.3	8.8	6.7	176.2	15.9
	09:29	65295.0	118319.0	5.6	209.4	19.9	9.1	4.7	177.2	16.9
	09:30	64686.1	120377.5	4.2	207.0	18.6	9.4	3.5	170.6	15.3
	09:31	63280.6	121367.9	3.3	207.4	22.8	9.8	2.6	165.7	18.2
	09:32	64297.7	121077.8	2.7	204.8	31.4	9.6	2.2	167.1	25.6
	09:33	65274.0	119657.6	2.5	200.4	31.1	9.2	2.1	168.2	26.1
	09:34	66380.0	118735.8	3.0	201.3	23.1	9.0	2.6	172.0	19.8
	09:35	64607.9	118464.9	3.8	202.0	19.5	9.3	3.2	169.1	16.3
	09:36	64556.0	118658.9	4.4	205.6	17.3	9.3	3.7	170.9	14.4
	09:37	65949.5	118898.6	5.2	197.7	24.3	9.0	4.5	169.4	20.8
	09:38	67895.4	119152.8	6.1	189.9	20.1	8.8	5.3	165.7	17.6
	09:39	65607.6	119360.8	6.0	198.3	20.0	9.2	5.1	166.8	16.8
	09:40	64886.7	119323.9	6.4	202.7	21.6	9.2	5.4	170.3	18.2
	09:41	62960.8	119115.5	7.3	212.0	24.5	9.6	6.0	171.7	19.8
	09:42	61291.7	118910.2	8.9	213.6	24.6	9.9	7.1	169.5	19.5
	09:43	61648.3	118696.1	12.3	214.6	34.2	9.8	9.8	171.5	27.3
	09:44	63971.1	118663.7	15.8	213.2	33.9	9.4	13.1	175.9	28.0
	09:45	66216.5	118821.2	20.6	202.3	29.4	9.0	17.6	173.5	25.2
	09:46	66238.9	118773.2	20.1	205.7	25.1	9.1	17.1	175.1	21.4
	09:47	66948.5	118059.8	17.7	201.3	19.6	8.8	15.4	175.0	17.0

---

Average =	62739.2	115445.3	16.0	203.9	23.7	9.3	13.2	170.0	19.7
Geometric Avg. =	62603.0	115280.8	10.1	203.8	23.2	9.3	8.4	170.0	19.4
Maximum =	67895.4	121367.9	58.2	214.6	34.2	10.2	45.0	177.2	28.0
Minimum =	52817.9	104011.4	2.5	189.9	17.3	8.7	2.1	158.0	14.4
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1693957.1	3117022.5	432.8	5506.0	639.5	251.1	357.4	4590.8	532.1

- \* - excluded values (missing, OOC, invalid, suspect)
- < - missing
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- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Reporting Period: 03/26/2013 to 03/26/2013

Site Name: UNIT3  
 Data Averaging Type: 1m

Time of Report: 03/26/13 10:19  
 Rolling Average Interval: 1

Date	Time	STMRTPT_3 (KLB/HR )	CO2_3 (PERCENTD)
03/26/13	09:21	180.2	9.7
	09:22	182.4	9.7
	09:23	187.7	10.1
	09:24	189.9	10.9
	09:25	188.7	10.9
	09:26	189.1	10.3
	09:27	189.9	10.7
	09:28	189.7	10.8
	09:29	188.1	10.6
	09:30	185.4	10.3
	09:31	184.5	10.0
	09:32	186.1	10.2
	09:33	187.7	10.5
	09:34	187.0	10.7
	09:35	185.8	10.5
	09:36	187.8	10.4
	09:37	189.4	10.6
	09:38	188.2	10.9
	09:39	188.3	10.5
	09:40	185.8	10.4
	09:41	184.2	10.1
	09:42	183.8	9.9
	09:43	184.7	10.0
	09:44	187.0	10.3
	09:45	187.7	10.7
	09:46	189.0	10.7
	09:47	187.7	10.9

---

Average =	186.9	10.4
Geometric Avg. =	186.9	10.4
Maximum =	189.9	10.9
Minimum =	180.2	9.7
Possible Values =	27	27
Included Values =	27	27
Total =	5046.0	281.5

- \* - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
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- H - exceedance
- F - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: SBWD

General Average Report

Reporting Period: 03/26/2013 to 03/26/2013

Site Name: UNIT3

Time of Report: 03/26/13 12:13

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	CO2LBHR3 (Lb/Hr )	STKFLOW3 (SCFM )	SO2ORPT3 (PPMDC )	NOXRPT_3 (PPMDC )	CORPT_3 (PPMDC )	O2OUT_3 (PERCENTD)	SO2OUT_3 (PPMD )	NOXPPM_3 (PPMD )	COPPM_3 (PPMD )
03/26/13	10:01	56958.1	103360.0	23.2	184.5	21.7	9.2	19.5	155.0	18.2
	10:02	60046.0	104541.0	10.1	178.2	22.7	8.7	8.9	156.7	19.9
	10:03	59208.0	105050.2	6.2	179.8	22.7	8.9	5.4	154.9	19.6
	10:04	56421.2	104090.4	4.8	188.8	28.7	9.4	4.0	155.5	23.6
	10:05	59228.7	103009.1	5.4	184.6	25.3	8.7	4.8	162.6	22.3
	10:06	56150.7	102432.4	9.6	194.6	23.9	9.3	8.0	163.1	20.0
	10:07	55803.5	102332.6	17.7	194.7	27.0	9.4	14.7	161.7	22.4
	10:08	59028.9	102485.0	23.1	189.5	20.7	8.7	20.3	166.2	18.1
	10:09	56889.7	102893.7	23.8	192.6	20.6	9.1	20.1	162.9	17.5
	10:10	59162.9	103181.3	27.2	182.3	32.9	8.8	23.7	159.3	28.8
	10:11	62036.7	103183.7	31.5	170.4	17.7	8.1	28.9	156.4	16.2
	10:12	57365.7	102962.1	28.1	185.3	17.1	9.1	23.9	157.9	14.6
	10:13	55064.9	102674.0	25.8	190.9	22.3	9.6	21.0	155.9	18.2
	10:14	55690.6	102394.6	25.3	189.9	20.3	9.3	21.0	158.0	16.9
	10:15	54040.7	102451.4	21.2	192.0	23.5	9.7	17.1	154.6	18.9
	10:16	57226.6	102562.2	21.1	191.9	22.7	9.0	18.0	164.3	19.5
	10:17	56898.2	102783.1	18.8	200.1	21.1	9.2	15.7	167.7	17.7
	10:18	55961.4	103232.2	16.2	199.1	22.6	9.4	13.4	164.5	18.6
	10:19	57747.1	104009.8	21.2	196.2	20.5	9.1	17.9	165.9	17.4
	10:20	58021.8	106892.6	25.6	201.2	26.7	9.4	21.1	166.4	22.1
	10:21	61711.9	109712.5	27.1	195.8	23.7	8.9	23.4	169.6	20.5
	10:22	62864.9	112446.5	24.8	196.4	20.4	9.0	21.2	167.7	17.4
	10:23	59632.0	112938.4	19.1	199.7	24.0	9.6	15.5	161.7	19.5
	10:24	60934.7	112938.4	18.0	196.7	23.6	9.4	14.9	163.1	19.6
	10:25	60004.4	112923.0	20.0	201.5	24.7	9.6	16.2	163.2	20.0
	10:26	61095.1	113101.0	24.5	197.2	26.4	9.4	20.3	163.2	21.9
	10:27	64581.0	113710.6	26.2	195.8	21.0	8.8	22.8	170.6	18.3

---

Average =	58510.2	105714.5	20.2	191.5	23.1	9.1	17.1	161.8	19.5
Geometric Avg. =	58455.9	105633.5	18.3	191.3	22.9	9.1	15.5	161.7	19.4
Maximum =	64581.0	113710.6	31.5	201.5	32.9	9.7	28.9	170.6	28.8
Minimum =	54040.7	102332.6	4.8	170.4	17.1	8.1	4.0	154.6	14.6
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1579775.4	2854292.0	545.6	5169.6	624.7	246.9	462.0	4368.6	527.7

- \* - 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: SBWD  
General Average Report  
Reporting Period: 03/26/2013 to 03/26/2013

Site Name: UNIT3  
Data Averaging Type: 1m

Time of Report: 03/26/13 12:13  
Rolling Average Interval: 1

Date	Time	STMRPT_3 (KLB/HR )	CO2_3 (PERCENTD)
03/26/13	10:01	187.3	10.6
	10:02	185.5	11.0
	10:03	184.6	10.8
	10:04	187.0	10.4
	10:05	184.8	11.0
	10:06	184.9	10.5
	10:07	185.7	10.5
	10:08	186.1	11.1
	10:09	188.7	10.6
	10:10	191.0	11.0
	10:11	187.5	11.5
	10:12	186.3	10.7
	10:13	185.3	10.3
	10:14	184.1	10.4
	10:15	186.7	10.1
	10:16	185.8	10.7
	10:17	185.2	10.6
	10:18	185.4	10.4
	10:19	185.6	10.7
	10:20	188.7	10.4
	10:21	188.8	10.8
	10:22	186.3	10.7
	10:23	186.8	10.1
	10:24	185.4	10.4
	10:25	186.5	10.2
	10:26	188.2	10.4
	10:27	188.3	10.9

---

Average =	186.5	10.6
Geometric Avg. =	186.5	10.6
Maximum =	191.0	11.5
Minimum =	184.1	10.1
Possible Values =	27	27
Included Values =	27	27
Total =	5036.6	286.8

- \* - 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: 03/26/2013 to 03/26/2013

Site Name: UNIT3

Time of Report: 03/26/13 11:27

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	CO2LBHR3 (Lb/Hr )	STKFLOW3 (SCFM )	SO2ORPT3 (PPMDC )	NOXRPT_3 (PPMDC )	CORPT_3 (PPMDC )	O2OUT_3 (PERCENTD)	SO2OUT_3 (PPMD )	NOXPPM_3 (PPMD )	COPPM_3 (PPMD )
03/26/13	10:47	60064.8	111694.7	48.7	194.0	21.5	9.4	40.3	160.6	17.8
	10:48	61199.3	113449.0	26.3	195.1	24.3	9.4	21.8	161.7	20.1
	10:49	64633.6	115950.7	12.4	189.3	27.8	9.0	10.6	162.3	23.9
	10:50	66431.3	117289.6	7.1	196.6	21.4	8.8	6.2	170.5	18.5
	10:51	64087.0	117027.0	4.7	203.2	22.4	9.2	3.9	170.3	18.8
	10:52	66569.1	115195.9	4.0	189.7	22.6	8.5	3.6	169.1	20.1
	10:53	64769.8	112310.0	6.6	189.7	23.4	8.6	5.8	167.9	20.8
	10:54	60575.9	107721.2	9.7	192.7	23.8	8.9	8.4	166.8	20.6
	10:55	58281.1	104950.2	9.8	194.3	27.8	9.1	8.4	165.5	23.7
	10:56	57626.2	102992.8	11.6	193.0	29.5	9.0	9.9	165.3	25.3
	10:57	58121.0	101639.8	16.2	185.1	27.2	8.7	14.3	163.2	24.0
	10:58	55746.0	99733.2	18.7	188.9	25.3	9.0	16.0	161.9	21.7
	10:59	54160.9	99648.8	21.9	187.4	29.1	9.3	18.3	156.0	24.3
	11:00	55793.6	99566.9	26.1	187.2	26.7	9.0	22.4	160.3	22.9
	11:01	58391.4	99390.9	26.2	186.4	21.8	8.3	23.6	168.4	19.7
	11:02	58406.5	99385.6	22.2	187.2	22.3	8.3	20.1	169.3	20.2
	11:03	55666.3	99733.2	18.5	191.3	22.7	9.0	15.9	164.2	19.5
	11:04	54923.5	99777.9	26.6	187.2	28.1	9.2	22.3	157.3	23.6
	11:05	58187.7	99654.0	37.5	176.5	23.8	8.5	33.6	157.9	21.3
	11:06	55825.6	99519.8	40.8	178.8	23.3	8.9	35.1	153.8	20.0
	11:07	53844.8	99440.8	41.9	185.0	24.7	9.4	34.6	152.7	20.4
	11:08	55792.4	99582.4	42.9	177.9	23.9	9.0	36.8	152.3	20.4
	11:09	55353.1	99590.4	39.9	182.3	22.4	9.1	33.8	154.3	18.9
	11:10	52805.4	99692.9	37.4	189.4	25.4	9.7	30.1	152.4	20.4
	11:11	53695.9	100131.1	40.0	189.1	25.4	9.5	32.7	154.7	20.8
	11:12	53878.8	100966.1	40.6	194.6	26.7	9.7	32.8	157.1	21.5
	11:13	57671.2	101500.8	40.1	187.1	23.2	8.8	35.0	163.3	20.2

---

Average =	58240.8	104353.2	25.1	188.9	24.7	9.0	21.3	161.4	21.1
Geometric Avg. =	58108.9	104159.6	20.3	188.8	24.6	9.0	17.4	161.3	21.0
Maximum =	66569.1	117289.6	48.7	203.2	29.5	9.7	40.3	170.5	25.3
Minimum =	52805.4	99385.6	4.0	176.5	21.4	8.3	3.6	152.3	17.8
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1572502.1	2817535.8	678.4	5099.0	666.4	243.4	576.1	4359.1	569.3

- \* - 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: SBWD  
General Average Report  
Reporting Period: 03/26/2013 to 03/26/2013

Site Name: UNIT3  
Data Averaging Type: 1m

Time of Report: 03/26/13 11:27  
Rolling Average Interval: 1

Date	Time	STMPT_3 (KLB/HR )	CO2_3 (PERCENTD)
03/26/13	10:47	184.6	10.3
	10:48	187.7	10.4
	10:49	189.0	10.7
	10:50	187.5	10.9
	10:51	191.3	10.5
	10:52	191.0	11.1
	10:53	190.0	11.1
	10:54	189.1	10.8
	10:55	188.3	10.7
	10:56	189.4	10.7
	10:57	187.4	11.0
	10:58	186.3	10.7
	10:59	186.1	10.4
	11:00	189.2	10.8
	11:01	189.8	11.3
	11:02	187.2	11.3
	11:03	185.7	10.7
	11:04	187.7	10.6
	11:05	186.4	11.2
	11:06	184.2	10.8
	11:07	185.6	10.4
	11:08	184.5	10.8
	11:09	183.1	10.7
	11:10	182.5	10.2
	11:11	182.8	10.3
	11:12	188.0	10.2
	11:13	189.0	10.9

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Average =	187.2	10.7
Geometric Avg. =	187.2	10.7
Maximum =	191.3	11.3
Minimum =	182.5	10.2
Possible Values =	27	27
Included Values =	27	27
Total =	5053.6	289.2

- \* - 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: SBWD  
General Average Report  
Reporting Period: 03/26/2013 to 03/26/2013

Site Name: UNIT3  
Data Averaging Type: 1m

Time of Report: 03/26/13 12:13  
Rolling Average Interval: 1

Date	Time	CO2LBHR3 (Lb/Hr )	STKFLOW3 (SCFM )	SO2ORPT3 (PPMDC )	NOXRPT_3 (PPMDC )	CORPT_3 (PPMDC )	O2OUT_3 (PERCENTD)	SO2OUT_3 (PPMD )	NOXPPM_3 (PPMD )	COPPM_3 (PPMD )
03/26/13	11:26	59086.3	112534.3	4.8	191.3	31.0	9.6	3.9	155.2	25.2
	11:27	62093.5	112730.6	3.9	184.1	27.6	9.1	3.3	156.7	23.5
	11:28	59336.0	111727.3	3.7	186.4	37.0	9.5	3.0	152.8	30.3
	11:29	61561.3	110664.9	4.2	175.4	36.1	8.8	3.7	152.8	31.5
	11:30	61302.1	109788.5	6.9	180.9	34.2	9.0	5.9	154.8	29.2
	11:31	57385.9	109643.5	9.7	189.5	35.8	9.7	7.9	153.3	29.0
	11:32	58977.3	109649.4	16.7	188.1	29.2	9.3	14.0	157.7	24.5
	11:33	58852.0	109397.0	25.5	190.1	24.7	9.4	21.2	157.9	20.6
	11:34	58833.8	108834.3	37.4	191.3	26.1	9.3	31.2	159.5	21.7
	11:35	63516.7	110117.2	38.7	180.3	20.5	8.5	34.6	161.4	18.3
	11:36	63020.8	111637.9	17.3	184.7	16.3	8.7	15.2	162.0	14.3
	11:37	58942.1	112354.5	7.1	192.3	21.2	9.6	5.7	156.0	17.2
	11:38	61207.1	113153.6	4.6	186.1	24.4	9.2	3.9	156.2	20.5
	11:39	60592.6	114207.2	3.8	188.2	17.6	9.4	3.1	155.9	14.6
	11:40	59474.8	114386.9	3.1	188.5	21.4	9.7	2.5	151.6	17.2
	11:41	61787.6	112729.9	2.5	183.1	18.8	9.0	2.2	156.5	16.1
	11:42	58655.2	111613.6	2.7	188.6	18.4	9.6	2.2	153.8	15.0
	11:43	57595.4	111097.0	3.2	190.0	22.5	9.8	2.5	151.5	17.9
	11:44	59592.3	111287.0	3.4	187.6	23.3	9.3	2.8	155.9	19.4
	11:45	58072.8	111850.5	3.7	189.5	24.0	9.8	2.9	151.7	19.2
	11:46	59367.4	112252.7	4.5	186.6	26.6	9.5	3.7	152.8	21.8
	11:47	59789.0	112550.7	6.1	189.7	25.2	9.6	5.0	154.9	20.6
	11:48	60560.4	112476.4	8.1	188.4	31.9	9.4	6.7	155.6	26.3
	11:49	60957.9	112416.7	10.5	184.8	27.0	9.3	8.7	154.0	22.5
	11:50	58208.7	112312.0	11.7	192.3	28.3	9.9	9.3	152.9	22.5
	11:51	60037.2	112028.8	14.1	195.8	25.2	9.4	11.7	161.9	20.8
	11:52	59056.0	111627.1	17.2	197.7	28.0	9.6	14.0	160.7	22.7

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Average =	59920.8	111669.2	10.2	187.8	26.0	9.4	8.6	155.8	21.6
Geometric Avg. =	59900.8	111660.7	7.2	187.8	25.4	9.4	6.0	155.7	21.1
Maximum =	63516.7	114386.9	38.7	197.7	37.0	9.9	34.6	162.0	31.5
Minimum =	57385.9	108834.3	2.5	175.4	16.3	8.5	2.2	151.5	14.3
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1617862.0	3015069.5	275.5	5071.4	702.1	252.9	231.1	4205.8	582.3

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- < - missing
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- I - invalid
- 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: SBWD  
 General Average Report  
 Reporting Period: 03/26/2013 to 03/26/2013

Site Name: UNIT3  
 Data Averaging Type: 1m

Time of Report: 03/26/13 12:13  
 Rolling Average Interval: 1

Date	Time	STMRPT_3 (KLB/HR )	CO2_3 (PERCENTD)
03/26/13	11:26	185.8	10.1
	11:27	186.0	10.6
	11:28	189.6	10.2
	11:29	188.5	10.7
	11:30	186.1	10.7
	11:31	186.6	10.0
	11:32	185.7	10.3
	11:33	186.5	10.3
	11:34	190.4	10.4
	11:35	190.9	11.1
	11:36	187.0	10.8
	11:37	188.0	10.1
	11:38	186.9	10.4
	11:39	185.1	10.2
	11:40	188.2	10.0
	11:41	187.0	10.5
	11:42	185.2	10.1
	11:43	185.5	9.9
	11:44	183.7	10.3
	11:45	184.3	10.0
	11:46	184.7	10.1
	11:47	186.6	10.2
	11:48	186.3	10.3
	11:49	185.1	10.4
	11:50	185.5	9.9
	11:51	184.9	10.3
	11:52	186.6	10.2

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Average =	186.5	10.3
Geometric Avg. =	186.5	10.3
Maximum =	190.9	11.1
Minimum =	183.7	9.9
Possible Values =	27	27
Included Values =	27	27
Total =	5036.8	278.0

- \* - 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: 03/26/2013 to 03/26/2013

Site Name: UNIT3  
Data Averaging Type: 1m

Time of Report: 03/26/13 12:56  
Rolling Average Interval: 1

Date	Time	CO2LBHR3 (Lb/Hr )	STRFLOW3 (SCFM )	SO2ORPT3 (PPMDC )	NOXRPT_3 (PPMDC )	CORPT_3 (PPMDC )	O2OUT_3 (PERCENTD)	SO2OUT_3 (PPMD )	NOXPPM_3 (PPMD )	COPPM_3 (PPMD )
03/26/13	12:12	64029.3	110950.8	20.8	197.5	10.4	8.6	18.4	174.8	9.2
	12:13	64332.6	111765.7	20.7	203.5	10.1	8.6	18.3	179.5	8.9
	12:14	63054.2	112209.9	18.0	209.9	7.7	8.9	15.4	180.5	6.6
	12:15	63375.0	112031.9	16.8	207.1	7.2	8.8	14.7	180.8	6.3
	12:16	65180.2	112237.2	19.1	197.1	5.7	8.5	17.1	176.2	5.1
	12:17	63737.5	113473.1	12.5	203.3	7.4	9.0	10.7	174.5	6.4
	12:18	62470.9	113675.6	5.4	206.8	9.3	9.1	4.6	175.4	7.8
	12:19	62635.1	112730.8	3.4	206.6	10.1	9.1	2.9	175.4	8.6
	12:20	61848.2	111265.8	2.8	204.8	9.4	9.0	2.4	174.7	8.0
	12:21	62260.8	110427.6	2.9	197.7	10.9	8.8	2.5	172.0	9.5
	12:22	64056.5	109714.9	3.1	191.9	9.5	8.4	2.8	172.4	8.6
	12:23	61112.5	109511.1	3.1	204.0	9.9	9.0	2.7	174.7	8.5
	12:24	61739.2	109223.0	3.1	196.8	9.7	8.7	2.7	172.7	8.5
	12:25	60820.8	108896.8	4.0	197.3	7.6	9.0	3.4	169.3	6.5
	12:26	59597.1	108649.1	5.3	196.5	8.9	9.2	4.5	166.0	7.6
	12:27	60562.8	108441.7	5.9	189.9	8.2	8.9	5.1	163.7	7.1
	12:28	60054.7	108315.1	5.6	187.8	8.6	9.1	4.8	160.1	7.4
	12:29	60527.1	108100.4	5.3	185.8	13.6	8.9	4.6	160.0	11.7
	12:30	58954.6	107865.9	5.9	199.2	15.2	9.3	4.9	166.1	12.7
	12:31	59750.4	107650.0	7.1	197.3	13.9	9.0	6.1	168.4	11.9
	12:32	57933.7	107639.7	9.1	198.7	16.3	9.4	7.5	164.2	13.5
	12:33	58379.0	107863.0	11.0	196.2	16.7	9.4	9.1	162.5	13.8
	12:34	60054.3	107956.0	13.8	191.5	14.8	9.0	11.8	163.8	12.6
	12:35	58344.4	107993.2	16.3	195.2	14.6	9.4	13.5	161.5	12.1
	12:36	59009.7	108093.3	16.4	195.1	16.9	9.3	13.6	162.3	14.1
	12:37	61971.6	108107.6	15.0	186.7	12.3	8.6	13.3	164.7	10.8
	12:38	60177.7	108402.9	16.5	188.2	11.2	9.0	14.1	160.7	9.5

---

Average =	61332.2	109747.9	10.0	197.5	11.0	9.0	8.6	169.5	9.4
Geometric Avg. =	61299.6	109730.7	7.9	197.4	10.5	9.0	6.8	169.4	9.1
Maximum =	65180.2	113675.6	20.8	209.9	16.9	9.4	18.4	180.8	14.1
Minimum =	57933.7	107639.7	2.8	185.8	5.7	8.4	2.4	160.0	5.1
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1655969.9	2963192.0	268.8	5332.4	296.5	242.2	231.3	4576.8	253.5

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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: SBWD  
General Average Report  
Reporting Period: 03/26/2013 to 03/26/2013

Site Name: UNIT3  
Data Averaging Type: 1m

Time of Report: 03/26/13 12:56  
Rolling Average Interval: 1

Date	Time	STMRPT_3 (KLB/HR )	CO2_3 (PERCENTD)
03/26/13	12:12	190.2	11.1
	12:13	190.3	11.0
	12:14	189.8	10.8
	12:15	190.9	10.9
	12:16	189.6	11.1
	12:17	188.5	10.8
	12:18	188.0	10.5
	12:19	187.0	10.7
	12:20	188.4	10.7
	12:21	189.9	10.8
	12:22	187.2	11.2
	12:23	189.0	10.7
	12:24	188.3	10.8
	12:25	187.3	10.7
	12:26	188.2	10.5
	12:27	187.9	10.7
	12:28	187.9	10.6
	12:29	185.9	10.7
	12:30	186.0	10.5
	12:31	184.7	10.7
	12:32	184.1	10.3
	12:33	185.5	10.4
	12:34	185.8	10.7
	12:35	186.1	10.4
	12:36	188.6	10.5
	12:37	188.9	11.0
	12:38	187.1	10.7

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Average =	187.8	10.7
Geometric Avg. =	187.8	10.7
Maximum =	190.9	11.2
Minimum =	184.1	10.3
Possible Values =	27	27
Included Values =	27	27
Total =	5071.4	289.5

- \* - excluded values (missing, OOC, invalid, suspect)
- < - missing
- T - out-of-control
- I - invalid
- S - suspect
- H - exceedance
- P - stack not operating
- B - invalid (PADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: SBWD  
General Average Report  
Reporting Period: 03/26/2013 to 03/26/2013

Site Name: UNIT3  
Data Averaging Type: 1m

Time of Report: 03/26/13 13:34  
Rolling Average Interval: 1

Date	Time	CO2LBHR3 (Lb/Hr )	STKFLOW3 (SCFM )	SO2ORPT3 (PPMDC )	NOXRPT_3 (PPMDC )	CORPT_3 (PPMDC )	O2OUT_3 (PERCENTD)	SO2OUT_3 (PPMD )	NOXPPM_3 (PPMD )	COPPM_3 (PPMD )
03/26/13	12:53	52489.4	98487.5	18.3	207.0	14.8	9.5	15.0	170.1	12.1
	12:54	52225.8	98184.9	21.5	204.6	11.2	9.5	17.6	167.6	9.1
	12:55	51913.5	98239.3	26.1	209.2	15.3	9.6	21.2	170.0	12.4
	12:56	55635.0	98528.5	27.8	202.8	13.5	8.8	24.1	176.0	11.7
	12:57	54266.7	98826.5	28.7	206.7	11.9	9.2	24.2	174.3	10.0
	12:58	53499.3	98915.3	33.5	204.2	12.6	9.4	27.8	169.7	10.5
	12:59	54629.5	98567.4	46.1	191.1	11.7	9.0	39.3	163.1	10.0
	13:00	53440.9	99498.9	51.7	195.8	11.8	9.5	42.4	160.7	9.7
	13:01	51874.7	100370.0	25.8	208.8	14.8	9.9	20.5	166.0	11.8
	13:02	54940.7	100883.8	8.5	211.0	15.6	9.2	7.1	177.8	13.2
	13:03	55593.0	100709.7	5.7	212.0	13.9	9.1	4.9	179.6	11.8
	13:04	55010.0	100715.4	4.6	212.5	12.4	9.3	3.8	177.8	10.4
	13:05	55504.7	101263.6	3.8	205.5	10.6	9.2	3.2	173.2	8.9
	13:06	55770.4	101803.2	3.2	206.5	12.4	9.3	2.7	173.0	10.4
	13:07	57468.7	101604.2	3.2	200.8	10.2	8.8	2.8	174.7	8.9
	13:08	57171.1	101295.8	3.7	197.9	9.9	8.8	3.2	171.8	8.6
	13:09	56852.9	101064.8	4.2	194.7	9.7	8.8	3.6	168.9	8.4
	13:10	59782.7	101117.6	5.5	189.4	9.4	8.3	5.0	172.3	8.5
	13:11	59129.0	101237.6	6.0	195.5	8.0	8.5	5.4	174.9	7.2
	13:12	55736.1	101290.9	5.5	199.2	7.2	9.2	4.6	167.6	6.0
	13:13	55094.8	101031.3	5.3	198.8	11.1	9.2	4.4	167.0	9.3
	13:14	59075.3	100857.6	7.2	192.8	9.9	8.3	6.5	174.8	9.0
	13:15	58957.6	100723.6	8.5	198.8	8.8	8.4	7.7	178.8	7.9
	13:16	57614.5	100615.1	9.5	200.2	9.0	8.7	8.3	176.3	7.9
	13:17	55890.3	100494.2	9.2	200.3	8.1	9.0	7.9	171.2	6.9
	13:18	56049.6	100293.4	9.1	202.5	10.0	9.0	7.8	173.7	8.6
	13:19	57856.8	100169.1	9.3	198.1	6.8	8.6	8.3	175.9	6.1

---

Average =	55684.2	100251.5	14.5	201.7	11.1	9.0	12.2	172.1	9.4
Geometric Avg. =	55640.4	100245.2	10.0	201.6	10.9	9.0	8.5	172.0	9.3
Maximum =	59782.7	101803.2	51.7	212.5	15.6	9.9	42.4	179.6	13.2
Minimum =	51874.7	98184.9	3.2	189.4	6.8	8.3	2.7	160.7	6.0
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1503473.0	2706789.2	391.3	5446.8	300.3	243.9	329.4	4646.8	255.1

- \* - 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

Plant Name: SBWD  
General Average Report  
Reporting Period: 03/26/2013 to 03/26/2013

Site Name: UNIT3  
Data Averaging Type: 1m

Time of Report: 03/26/13 13:34  
Rolling Average Interval: 1

Date	Time	STMRTPT_3 (KLB/HR )	CO2_3 (PERCENTD)
03/26/13	12:53	184.3	10.2
	12:54	184.9	10.2
	12:55	187.5	10.1
	12:56	188.1	10.8
	12:57	187.9	10.5
	12:58	189.3	10.4
	12:59	187.3	10.6
	13:00	184.0	10.3
	13:01	184.6	9.9
	13:02	185.6	10.4
	13:03	186.1	10.6
	13:04	186.5	10.5
	13:05	186.4	10.5
	13:06	187.5	10.5
	13:07	188.0	10.9
	13:08	188.0	10.8
	13:09	191.4	10.8
	13:10	191.5	11.3
	13:11	188.6	11.2
	13:12	186.5	10.6
	13:13	188.4	10.5
	13:14	188.7	11.2
	13:15	188.1	11.2
	13:16	187.6	11.0
	13:17	188.3	10.7
	13:18	188.2	10.7
	13:19	187.9	11.1

---

Average =	187.5	10.7
Geometric Avg. =	187.4	10.7
Maximum =	191.5	11.3
Minimum =	184.0	9.9
Possible Values =	27	27
Included Values =	27	27
Total =	5061.3	287.7

- \* - excluded values (missing, OOC, invalid, suspect)
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- F - stack not operating
- B - invalid (FADER)
- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: SBWD  
General Average Report  
Reporting Period: 03/26/2013 to 03/26/2013

Site Name: UNIT3  
Data Averaging Type: 1m

Time of Report: 03/26/13 14:14  
Rolling Average Interval: 1

Date	Time	CO2LBHR3 (Lb/Hr )	STRFLOW3 (SCFM )	SO2ORPT3 (PPMDC )	NOXRPT_3 (PPMDC )	CORPT_3 (PPMDC )	O2OUT_3 (PERCENTD)	SO2OUT_3 (PPMD )	NOXPPM_3 (PPMD )	COPPM_3 (PPMD )
03/26/13	13:33	55259.5	102732.3	10.7	207.2	9.8	9.4	8.8	170.8	8.1
	13:34	57308.0	103710.5	10.3	203.4	11.9	9.1	8.7	172.3	10.1
	13:35	59767.0	105862.5	12.3	201.3	10.2	8.8	10.6	174.6	8.8
	13:36	59654.3	106389.7	12.5	197.7	9.7	9.0	10.8	169.9	8.4
	13:37	59798.4	106935.0	11.7	194.2	10.6	9.0	10.0	166.5	9.1
	13:38	58733.0	107507.8	11.0	193.9	10.8	9.3	9.2	162.3	9.1
	13:39	59536.9	107745.9	12.4	191.2	12.0	9.1	10.6	162.6	10.2
	13:40	58346.6	109659.7	17.4	199.5	12.0	9.6	14.2	162.8	9.8
	13:41	60313.2	110854.9	25.4	195.5	12.4	9.3	21.2	162.9	10.4
	13:42	61750.6	111125.1	24.9	190.3	11.3	9.1	21.2	162.0	9.6
	13:43	59354.9	111349.4	18.2	197.1	13.3	9.5	14.9	161.5	10.9
	13:44	63414.5	113827.6	19.3	192.4	11.2	9.0	16.5	164.9	9.6
	13:45	62569.5	115538.5	15.9	199.5	9.7	9.4	13.2	165.5	8.1
	13:46	62325.9	115718.1	17.6	202.7	12.0	9.5	14.4	166.5	9.8
	13:47	62772.8	114990.1	20.4	198.7	8.9	9.2	17.1	166.7	7.4
	13:48	60864.1	113904.1	12.2	197.9	13.4	9.5	9.9	161.8	11.0
	13:49	63782.1	112818.2	12.4	186.2	12.0	8.8	10.8	161.9	10.4
	13:50	61694.8	111929.1	16.1	193.0	9.6	9.2	13.6	163.1	8.1
	13:51	61271.2	110620.1	29.9	196.2	9.7	9.1	25.4	166.5	8.3
	13:52	62314.6	108785.2	43.4	195.0	8.2	8.7	38.2	171.5	7.2
	13:53	59300.9	105166.5	55.0	193.0	8.4	8.9	47.3	166.1	7.2
	13:54	57820.4	104128.8	64.8	196.6	9.1	9.1	55.0	166.9	7.7
	13:55	58596.7	104383.9	53.0	194.9	7.8	8.9	45.7	168.0	6.7
	13:56	59146.7	105347.4	18.1	195.6	10.4	8.9	15.6	168.9	9.0
	13:57	59175.7	106287.0	7.7	193.8	8.5	9.0	6.6	165.3	7.2
	13:58	59664.6	107601.5	5.0	191.9	10.6	9.0	4.3	163.9	9.1
	13:59	60748.5	109248.2	3.7	190.0	10.0	9.0	3.1	162.7	8.5

---

Average =	60195.8	109043.2	20.8	195.9	10.5	9.1	17.7	165.9	8.9
Geometric Avg. =	60164.0	108978.0	16.6	195.8	10.4	9.1	14.1	165.8	8.8
Maximum =	63782.1	115718.1	64.8	207.2	13.4	9.6	55.0	174.6	11.0
Minimum =	55259.5	102732.3	3.7	186.2	7.8	8.7	3.1	161.5	6.7
Possible Values =	27	27	27	27	27	27	27	27	27
Included Values =	27	27	27	27	27	27	27	27	27
Total =	1625285.5	2944167.0	561.1	5288.5	283.5	246.4	477.0	4478.7	239.8

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- < - missing
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- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated



Plant Name: SBWD  
General Average Report  
Reporting Period: 03/26/2013 to 03/26/2013

Site Name: UNIT3  
Data Averaging Type: 1m

Time of Report: 03/26/13 14:14  
Rolling Average Interval: 1

Date	Time	STMRPT_3 (KLB/HR )	CO2_3 (PERCENTD)
03/26/13	13:33	186.3	10.3
	13:34	186.6	10.6
	13:35	187.1	10.8
	13:36	188.3	10.8
	13:37	186.8	10.7
	13:38	186.2	10.5
	13:39	184.1	10.6
	13:40	184.3	10.2
	13:41	184.8	10.4
	13:42	184.2	10.7
	13:43	186.2	10.2
	13:44	185.2	10.7
	13:45	185.6	10.4
	13:46	186.0	10.3
	13:47	185.1	10.5
	13:48	187.3	10.3
	13:49	187.3	10.8
	13:50	188.0	10.6
	13:51	188.9	10.6
	13:52	188.0	11.0
	13:53	188.0	10.8
	13:54	188.3	10.7
	13:55	188.3	10.8
	13:56	187.1	10.8
	13:57	187.0	10.7
	13:58	186.6	10.6
	13:59	186.6	10.7

---

Average =	186.6	10.6
Geometric Avg. =	186.6	10.6
Maximum =	188.9	11.0
Minimum =	184.1	10.2
Possible Values =	27	27
Included Values =	27	27
Total =	5038.1	286.1

- \* - excluded values (missing, OOC, invalid, suspect)
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- U - missing data substituted
- 999 - missing value
- 888 - value could not be calculated

Plant Name: SBWD  
General Average Report

Reporting Period: 03/26/2013 to 03/26/2013

Site Name: UNIT3  
Data Averaging Type: 1m

Time of Report: 03/26/13 15:01  
Rolling Average Interval: 1

Date	Time	CO2LBHR3 (Lb/Hr )	STKFLOW3 (SCFM )	SO2ORPT3 (PPMDC )	NOXRPT_3 (PPMDC )	CORPT_3 (PPMDC )	O2OUT_3 (PERCENTD)	SO2OUT_3 (PPMD )	NOXPPM_3 (PPMD )	COPPM_3 (PPMD )
03/26/13	14:13	59199.1	108354.1	3.7	198.0	10.8	9.2	3.1	166.8	9.1
	14:14	60151.0	109514.8	4.1	198.5	8.4	9.2	3.4	167.7	7.1
	14:15	62082.0	113130.7	4.8	195.0	11.5	9.2	4.0	164.0	9.7
	14:16	64134.5	114987.3	5.7	187.8	10.6	8.9	4.9	161.5	9.1
	14:17	63299.8	118017.3	5.4	193.5	10.5	9.5	4.4	158.1	8.6
	14:18	64440.8	118464.1	4.8	191.5	15.7	9.3	4.1	160.4	13.1
	14:19	65081.7	118508.8	5.5	188.6	10.5	9.3	4.6	158.1	8.8
	14:20	61086.2	118781.8	5.2	185.6	13.0	9.9	4.1	146.4	10.3
	14:21	63107.0	118808.4	4.9	182.9	13.5	9.5	4.0	150.4	11.1
	14:22	61808.0	118955.7	4.8	192.0	14.2	9.9	3.8	152.3	11.3
	14:23	62133.0	119153.0	6.7	189.8	18.6	9.8	5.3	152.2	14.9
	14:24	63310.5	119418.0	11.9	191.2	18.4	9.6	9.7	154.8	14.9
	14:25	62894.2	119848.1	14.6	187.8	18.8	9.7	11.7	150.9	15.1
	14:26	65092.5	119826.6	16.0	188.6	14.0	9.3	13.4	157.3	11.7
	14:27	61942.4	119662.4	16.5	197.2	17.0	9.9	13.0	155.4	13.4
	14:28	61980.1	118674.0	26.3	196.3	17.0	9.7	21.2	157.9	13.7
	14:29	60257.8	116328.1	39.5	202.2	17.5	9.8	31.4	160.9	13.9
	14:30	62605.5	114287.0	49.3	199.9	13.9	9.2	41.5	168.3	11.7
	14:31	62060.2	112668.4	57.1	195.2	15.6	9.1	48.4	165.2	13.2
	14:32	61340.7	111164.0	61.8	189.3	12.8	9.1	52.4	160.4	10.8
	14:33	58556.3	109638.7	64.8	186.1	13.9	9.5	53.2	152.8	11.4
	14:34	57508.5	109078.1	47.7	189.3	13.4	9.6	38.7	153.3	10.9
	14:35	58843.2	110445.3	22.3	196.8	14.4	9.6	18.2	160.3	11.8
	14:36	59378.4	111722.9	10.1	203.4	13.1	9.5	8.3	166.5	10.7
	14:37	60044.6	113365.6	6.6	208.8	13.3	9.5	5.4	170.6	10.9
	14:38	60937.6	115468.1	4.8	207.4	13.3	9.6	3.9	168.7	10.8
	14:39	62645.4	117447.8	3.5	205.4	13.7	9.5	2.8	168.3	11.2
-----										
Average =		61700.8	115397.0	18.8	194.4	14.0	9.5	15.5	159.6	11.5
Geometric Avg. =		61669.8	115332.7	11.4	194.3	13.7	9.5	9.3	159.5	11.3
Maximum =		65092.5	119848.1	64.8	208.8	18.8	9.9	53.2	170.6	15.1
Minimum =		57508.5	108354.1	3.5	182.9	8.4	8.9	2.8	146.4	7.1
Possible Values =		27	27	27	27	27	27	27	27	27
Included Values =		27	27	27	27	27	27	27	27	27
Total =		1665921.0	3115719.5	508.7	5248.4	377.7	256.1	419.0	4309.4	309.3

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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: SBWD  
General Average Report  
Reporting Period: 03/26/2013 to 03/26/2013

Site Name: UNIT3  
Data Averaging Type: 1m

Time of Report: 03/26/13 15:01  
Rolling Average Interval: 1

Date	Time	STMRPT_3 (KLB/HR )	CO2_3 (PERCENTD)
03/26/13	14:13	185.3	10.5
	14:14	185.8	10.5
	14:15	187.9	10.5
	14:16	185.7	10.7
	14:17	186.7	10.3
	14:18	186.9	10.4
	14:19	185.4	10.5
	14:20	186.6	9.9
	14:21	184.9	10.2
	14:22	185.6	10.0
	14:23	185.8	10.0
	14:24	185.4	10.2
	14:25	186.6	10.1
	14:26	184.9	10.4
	14:27	184.4	9.9
	14:28	182.9	10.0
	14:29	184.7	9.9
	14:30	186.5	10.5
	14:31	187.2	10.6
	14:32	186.9	10.6
	14:33	186.4	10.2
	14:34	186.5	10.1
	14:35	186.2	10.2
	14:36	186.6	10.2
	14:37	185.5	10.2
	14:38	184.9	10.1
	14:39	186.2	10.2

---

Average =	185.9	10.3
Geometric Avg. =	185.9	10.3
Maximum =	187.9	10.7
Minimum =	182.9	9.9
Possible Values =	27	27
Included Values =	27	27
Total =	5018.4	277.1

- \* - excluded values (missing, OOC, invalid, suspect)
- < - missing
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WHEELABRATOR SOUTH BROWARD, INC.  
FT. LAUDERDALE, FL

Client Reference No: Service Agreement  
CleanAir Project No: 12218-4

**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: SL

Date: 5/7/13



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Wheelabrator  
CleanAir Project No. 12218  
South Broward  
Unit 1

Date: **March 25, 2013**

Start Time 7:20  
Stop Time 7:42

**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
<b>Instrument Information</b>					
Manufacturer:	T.E.I. Wstrn Rsrch		T.E.I.	Servomex	Servomex
Model:	42C	921NMP	48CHL	1420B	1415B
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 (Cv)**

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	CC198768
Mid					
High	ALM012619	ALM012619	CC181272	ALM040668	ALM040668

**Analyzer Calibration Response (C<sub>Dr</sub>)**

Zero	-0.122	-0.055	-0.024	0.004	-0.097
Low	223.652	45.586	48.033	9.471	9.514
Mid					
High	448.875	90.969	96.661	18.120	17.952

**Analyzer Calibration Error (ACE) (Limit = 2%, Method 25A limit = 5% of gas value)**

Zero	0.0%	-0.1%	0.0%	0.0%	-0.5%
Low	0.1%	0.5%	0.8%	-0.3%	-0.1%
Mid	N/A	N/A	N/A	N/A	N/A
High	0.2%	0.2%	0.4%	0.1%	0.3%

**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	NOX	SO2	CO	O2	CO2
07:20:31	-0.122	-1.709	-0.095	17.980	18.121
07:20:46	-0.122	-1.726	-0.163	18.083	18.079
07:21:01	-0.122	-1.761	-0.147	18.115	17.927
07:21:16	-0.122	-1.805	-0.121	18.117	17.939
07:21:31	-0.122	-0.254	-0.013	18.119	17.948
07:21:46	-0.122	-0.051	0.003	18.122	17.951
07:22:01	-0.122	-0.024	-0.008	18.124	17.957
07:22:16	-0.122	-0.007	-0.015	15.093	15.062
07:22:31	-0.122	0.026	0.098	9.816	9.711
07:22:46	-0.122	-0.023	0.192	9.478	9.391
07:23:01	-0.122	-0.041	0.391	9.456	9.369
07:23:16	-0.122	-0.055	0.371	9.453	9.383
07:23:31	-0.122	-0.044	0.366	9.456	9.485
07:23:46	-0.122	-0.029	0.369	9.470	9.515
07:24:01	-0.122	-0.058	0.394	9.472	9.513
07:24:16	-0.122	-0.065	0.347	9.471	9.514

Wheellabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 1

Date: **March 25, 2013**  
 Start Time 7:20  
 Stop Time 7:42

CALIBRATION ERROR

	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
07:24:31	-0.122	-0.042	0.285	9.555	9.512
07:24:46	-0.122	26.349	0.383	3.595	9.317
07:25:01	101.547	68.964	0.263	0.027	9.942
07:25:16	361.783	80.571	-0.056	-0.145	9.966
07:25:31	426.056	82.940	-0.062	-0.148	9.966
07:25:46	440.692	83.193	-0.054	-0.017	9.969
07:26:01	441.652	83.071	-0.049	-0.006	9.967
07:26:16	446.008	82.921	-0.070	0.015	9.962
07:26:31	451.022	82.971	-0.049	-0.018	9.972
07:26:46	448.115	83.144	-0.068	-0.014	9.961
07:27:01	448.620	83.482	-0.064	-0.027	9.971
07:27:16	449.027	83.709	-0.054	0.004	9.984
07:27:31	446.553	89.441	-0.049	0.004	9.974
07:27:46	447.693	91.128	-0.049	0.004	9.979
07:28:01	448.816	91.373	-0.060	-0.020	9.979
07:28:16	448.677	24.368	-0.050	-0.014	9.978
07:28:31	449.092	0.109	-0.036	0.003	9.962
07:28:46	448.856	0.145	-0.049	0.845	9.967
07:29:01	444.184	-100.024	-0.026	13.570	10.511
07:29:16	392.747	-100.024	-0.002	17.893	17.440
07:29:31	124.469	-100.024	0.013	18.267	18.149
07:29:46	15.914	-60.032	-0.003	18.307	18.191
07:30:01	2.231	-0.156	-0.024	18.310	18.211
07:30:16	0.863	-0.257	-0.026	18.312	18.218
07:30:31	0.147	-0.076	0.000	18.317	18.222
07:30:46	0.374	-0.047	-0.037	18.318	18.224
07:31:01	0.154	10.649	-0.032	10.504	15.473
07:31:16	39.088	57.398	-0.008	0.582	10.339
07:31:31	299.894	85.787	-0.036	0.042	10.016
07:31:46	418.755	90.981	-0.046	0.008	9.968
07:32:01	443.313	91.985	-0.059	0.003	9.990
07:32:16	445.372	92.531	-0.088	0.007	9.978
07:32:31	447.131	90.963	-0.049	-0.006	9.979
07:32:46	448.498	91.064	-0.056	-0.018	9.988
07:33:01	448.897	91.013	-0.103	-0.002	9.976
07:33:16	449.182	90.797	-0.090	-0.008	9.980
07:33:31	449.117	90.951	-0.049	0.002	9.962
07:33:46	449.198	91.158	-0.049	0.001	9.984
07:34:01	449.280	91.323	-0.049	0.003	9.978
07:34:16	449.589	84.943	-0.042	0.720	9.629
07:34:31	449.296	45.678	-0.085	0.175	9.840
07:34:46	330.842	42.382	0.041	0.008	9.957
07:35:01	226.227	44.347	-0.053	-0.013	9.966
07:35:16	224.453	45.040	-0.024	-0.010	9.982
07:35:31	224.062	45.317	-0.024	-0.005	9.973
07:35:46	223.655	45.496	-0.024	-0.006	9.969
07:36:01	223.663	45.576	-0.024	-0.011	9.978
07:36:16	223.639	45.686	-0.024	-0.001	9.969
07:36:31	223.411	45.721	-0.036	0.122	9.980
07:36:46	223.134	25.750	2.618	1.095	4.210
07:37:01	171.803	3.471	29.908	0.099	0.217
07:37:16	39.365	0.531	68.745	-0.022	-0.041
07:37:31	8.344	0.088	90.937	0.005	-0.065
07:37:46	0.830	-0.114	95.919	0.003	-0.072
07:38:01	0.334	-0.008	96.573	0.003	-0.074
07:38:16	0.171	-0.032	96.550	0.002	-0.078
07:38:31	-0.016	-0.067	96.698	-0.002	-0.085
07:38:46	-0.082	-0.086	96.651	-0.033	-0.095
07:39:01	-0.138	-0.122	96.635	-0.008	-0.085

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 1

Date: **March 25, 2013**

Start Time 7:20

Stop Time 7:42

**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
07:39:16	-0.301	-0.130	96.518	0.367	-0.045
07:39:31	-0.090	0.388	92.674	0.586	0.089
07:39:46	0.350	0.848	73.835	0.038	-0.078
07:40:01	0.676	1.192	54.530	-0.006	-0.085
07:40:16	0.187	1.286	48.749	0.004	-0.085
07:40:31	-0.090	1.314	48.231	0.002	-0.085
07:40:46	-0.008	1.386	48.142	0.011	-0.086
07:41:01	0.000	1.397	48.155	0.005	-0.091
07:41:16	-0.228	1.369	48.068	0.002	-0.100
07:41:31	-0.106	1.379	47.968	-0.005	-0.099
07:41:46	-0.106	1.371	48.064	0.003	-0.091
07:42:01	-0.212	1.224	46.497	12.461	-0.067
07:42:16	0.024	0.534	24.204	20.777	-0.043



Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 1

March 25, 2013  
 Start Time 7:43  
 Stop Time 7:54

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
<b>System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>of</sub> Zero gas	0.000	-0.095	0.033	0.047	-0.044
C <sub>uf</sub> Upscale gas	219.308	44.003	47.759	9.560	9.468
<b>Analyzer Calibration Error Responses (C<sub>Di</sub>)</b>					
C <sub>oco</sub> Zero gas	-0.122	-0.055	-0.024	0.004	-0.097
C <sub>mca</sub> Upscale gas	223.652	45.586	48.033	9.471	9.514
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>mb</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.0%	0.0%	0.1%	0.2%	0.3%
Upscale gas	-1.0%	-1.7%	-0.3%	0.5%	-0.3%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>oi</sub> Zero gas	N/A	N/A	N/A	N/A	N/A
C <sub>ui</sub> Upscale gas	N/A	N/A	N/A	N/A	N/A
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	N/A	N/A	N/A	N/A	N/A
Upscale gas	N/A	N/A	N/A	N/A	N/A
<b>Drift Assessment Status</b>					
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
07:43:03	-0.195	0.025	12.151	13.828	5.584
07:43:18	-0.114	-0.028	2.341	13.809	5.695
07:43:33	-0.171	-0.032	0.596	13.818	5.678
07:43:48	-0.212	-0.015	0.531	13.816	5.713
07:44:03	0.000	-0.024	0.527	13.282	6.007
07:44:18	0.000	-0.021	0.515	10.511	8.372
07:44:33	-0.106	-0.041	0.484	9.928	9.062
07:44:48	-0.317	-0.060	0.419	9.907	9.111
07:45:03	0.000	-0.060	0.464	9.919	9.106
07:45:18	0.000	-0.075	0.495	9.809	9.171
07:45:33	0.000	-0.041	0.498	9.585	9.350
07:45:48	0.000	-0.052	0.490	9.560	9.455
07:46:03	-0.106	-0.076	0.503	9.560	9.474
07:46:18	-0.212	-0.102	0.490	9.560	9.475
07:46:33	-0.163	-0.107	0.412	9.378	9.364
07:46:48	-0.081	-0.121	0.435	9.399	9.405
07:47:03	-0.317	-0.104	0.474	9.251	9.487
07:47:18	5.462	1.415	0.474	2.406	9.748
07:47:33	28.897	20.983	0.343	0.201	9.939
07:47:48	150.533	34.789	0.124	0.068	9.954
07:48:03	211.437	39.051	0.044	0.062	9.960
07:48:18	217.525	40.863	0.023	0.037	9.958
07:48:33	218.348	41.916	-0.031	0.037	9.958
07:48:48	218.885	42.497	0.052	0.027	9.955
07:49:03	218.885	42.882	0.028	0.024	9.955
07:49:18	218.869	43.207	0.018	0.029	9.958
07:49:33	218.942	43.531	0.021	0.024	9.954
07:49:48	219.251	43.707	0.033	0.023	9.959
07:50:03	219.341	43.827	0.034	0.016	9.950
07:50:18	219.332	44.034	0.033	0.013	9.960
07:50:33	219.414	44.148	0.029	0.008	9.951
07:50:48	219.829	40.228	0.915	0.109	5.769
07:51:03	170.492	16.853	11.121	0.031	0.492

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 1

March 25, 2013  
 Start Time 7:43  
 Stop Time 7:54

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
07:51:18	59.674	7.108	32.545	0.041	0.054
07:51:33	15.132	4.546	43.844	0.047	0.005
07:51:48	2.482	3.517	47.363	0.032	-0.009
07:52:03	1.083	3.043	47.757	0.048	-0.013
07:52:18	0.700	2.714	47.795	0.047	-0.024
07:52:33	0.366	2.435	47.805	0.045	-0.037
07:52:48	0.302	2.251	47.687	0.049	-0.044
07:53:03	0.317	2.128	47.785	0.028	-0.049
07:53:18	-0.041	2.107	47.821	1.093	0.386
07:53:33	0.301	7.632	45.241	7.993	7.612
07:53:48	77.900	7.346	32.625	9.132	9.781
07:54:03	129.101	4.031	22.335	9.103	10.016

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 1

March 25, 2013  
 Start Time 8:00  
 Stop time 8:27

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	0.000	-0.095	0.033	0.047	-0.044
C <sub>ui</sub> Initial upscale	219.308	44.003	47.759	9.560	9.468
C <sub>of</sub> Final zero	0.179	-0.056	0.061	0.025	-0.022
C <sub>uf</sub> Final upscale	220.781	43.660	47.879	9.546	9.524
C <sub>ma</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>Avg</sub> Average conc.	160.458	0.195	18.066	8.973	10.245
C <sub>Gas</sub> Bias adjusted	<b>162.588</b>	<b>0.278</b>	<b>17.841</b>	<b>8.940</b>	<b>10.278</b>

Clock Time (at end of sample period)

04/17/13 09:20:8	08:01	157.253	0.421	14.905	9.079	10.101
	08:02	159.141	0.303	16.459	8.998	10.189
	08:03	164.400	0.317	17.053	8.629	10.465
	08:04	165.458	0.329	16.685	9.288	9.960
	08:05	162.324	0.357	15.895	8.684	10.435
	08:06	157.629	0.277	15.819	9.352	9.915
	08:07	157.963	0.215	17.183	9.023	10.190
	08:08	164.339	0.249	17.553	8.100	10.878
	08:09	173.112	0.251	16.457	9.134	10.112
	08:10	156.376	0.215	14.972	8.977	10.188
	08:11	165.926	0.206	15.164	8.668	10.475
	08:12	172.908	0.211	16.592	8.459	10.666
	08:13	165.745	0.164	16.906	9.159	10.111
	08:14	159.815	0.178	18.144	9.166	10.110
	08:15	158.812	0.151	17.738	8.965	10.257
	08:16	163.756	0.187	17.870	8.390	10.751
	08:17	161.394	0.139	17.757	9.311	9.994
	08:18	161.858	0.183	18.801	9.166	10.131
	08:19	155.063	0.159	19.247	9.014	10.211
	08:20	161.058	0.090	19.090	9.078	10.201
	08:21	157.973	0.102	21.312	9.153	10.127
	08:22	157.926	0.090	22.621	9.123	10.159
	08:23	158.891	0.098	21.931	8.802	10.413
	08:24	153.315	0.123	21.538	9.270	10.042
	08:25	154.145	0.081	20.427	9.357	9.977
	08:26	152.385	0.119	19.879	8.925	10.306
	08:27	153.388	0.063	19.794	9.006	10.242

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
<b>System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>oi</sub> Zero gas	0.179	-0.056	0.061	0.025	-0.022
C <sub>ui</sub> Upscale gas	220.781	43.660	47.879	9.546	9.524
<b>Analyzer Calibration Error Responses (C<sub>dir</sub>)</b>					
C <sub>oco</sub> Zero gas	-0.122	-0.055	-0.024	0.004	-0.097
C <sub>mco</sub> Upscale gas	223.652	45.586	48.033	9.471	9.514
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.1%	0.0%	0.1%	0.1%	0.4%
Upscale gas	-0.6%	-2.1%	-0.2%	0.4%	0.1%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>oi</sub> Zero gas	0.000	-0.095	0.033	0.047	-0.044
C <sub>ui</sub> Upscale gas	219.308	44.003	47.759	9.560	9.468
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	0.0%	0.0%	0.0%	-0.1%	0.1%
Upscale gas	0.3%	-0.4%	0.1%	-0.1%	0.3%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

04/17/13_09:12:08	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
08:28:39	124.664	-0.008	20.894	9.158	8.863
08:28:54	44.444	-0.031	12.834	9.536	9.453
08:29:09	10.679	-0.068	3.754	9.548	9.503
08:29:24	2.222	-0.021	0.962	9.547	9.514
08:29:39	0.952	0.002	0.542	9.548	9.518
08:29:54	0.773	-0.070	0.515	9.546	9.518
08:30:09	0.513	-0.021	0.527	9.545	9.518
08:30:24	0.424	-0.036	0.495	9.546	9.520
08:30:39	0.302	-0.029	0.498	9.546	9.524
08:30:54	0.415	-0.088	0.513	9.544	9.526
08:31:09	0.065	-0.050	0.498	9.406	9.524
08:31:24	0.057	0.305	0.490	2.889	9.711
08:31:39	38.494	15.904	0.282	0.223	9.963
08:31:54	166.789	33.049	0.135	0.055	9.979
08:32:09	209.719	38.292	0.091	0.055	9.980
08:32:24	218.120	40.319	0.056	0.024	9.972
08:32:39	218.828	41.421	-0.008	0.018	9.987
08:32:54	219.316	42.107	0.049	0.032	9.993
08:33:09	219.739	42.602	0.039	0.024	9.991
08:33:24	220.187	42.922	0.060	0.022	9.980
08:33:39	220.358	43.280	0.044	0.028	9.991
08:33:54	220.570	43.521	0.037	0.019	10.000
08:34:09	220.806	43.702	0.070	0.006	9.985
08:34:24	220.968	43.758	0.077	0.055	9.611
08:34:39	208.539	32.563	4.221	0.083	2.256
08:34:54	162.092	13.276	21.122	0.022	0.236
08:35:09	47.969	6.940	39.904	0.024	0.071
08:35:24	5.177	4.589	46.305	0.046	0.014
08:35:39	1.669	3.622	47.793	0.047	-0.008
08:35:54	1.034	3.064	47.783	0.035	-0.004
08:36:09	0.830	2.652	47.877	0.047	-0.008
08:36:24	0.611	2.403	47.847	0.029	-0.015
08:36:39	0.472	2.252	47.951	0.022	-0.022

Wheelabrator  
CleanAir Project No. 12218  
South Broward  
Unit 1

March 25, 2013  
Start Time 8:28  
Stop Time 8:36

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
08:36:54	0.440	2.120	47.839	0.004	-0.030

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 1

March 25, 2013  
 Start Time 8:38  
 Stop time 9:05

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	0.179	-0.056	0.061	0.025	-0.022
C <sub>ui</sub> Initial upscale	220.781	43.660	47.879	9.546	9.524
C <sub>of</sub> Final zero	0.258	-0.111	0.014	0.020	-0.027
C <sub>uf</sub> Final upscale	220.361	43.558	47.945	9.556	9.542
C <sub>ms</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>avg</sub> Average conc.	155.905	0.127	12.210	9.419	9.971
C <sub>gas</sub> Bias adjusted	157.557	0.217	12.026	9.389	9.967

Clock Time (at end of sample period)

Clock Time	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
08:39	164.284	0.636	14.344	8.952	10.269
08:40	164.792	0.394	13.087	8.417	10.729
08:41	183.189	0.226	11.716	8.384	10.892
08:42	164.890	0.216	9.861	9.174	10.190
08:43	164.050	0.179	10.952	9.198	10.226
08:44	158.004	0.146	11.373	9.124	10.250
08:45	158.180	0.108	11.583	9.613	9.882
08:46	151.361	0.074	15.803	9.592	9.888
08:47	146.239	0.085	17.861	9.958	9.533
08:48	142.035	0.064	19.748	9.875	9.405
08:49	142.363	0.128	20.712	9.585	9.900
08:50	147.080	0.137	19.887	9.809	9.701
08:51	145.757	0.111	18.639	9.939	9.559
08:52	149.972	0.093	13.826	10.028	9.473
08:53	143.685	0.061	9.987	10.313	9.246
08:54	142.438	0.069	10.768	9.599	9.832
08:55	156.947	0.061	9.972	9.147	10.190
08:56	165.407	0.111	8.855	8.943	10.351
08:57	167.568	0.058	8.574	9.358	10.027
08:58	156.713	0.101	8.498	9.351	9.986
08:59	157.226	0.089	8.128	9.556	9.857
09:00	152.135	0.032	8.917	9.220	10.121
09:01	158.783	0.040	9.742	9.391	9.994
09:02	153.114	0.069	9.166	9.788	9.653
09:03	153.913	0.057	9.817	9.573	9.844
09:04	155.615	-0.002	9.749	9.474	9.921
09:05	163.691	0.084	8.100	8.960	10.300

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
<b>System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>of</sub> Zero gas	0.258	-0.111	0.014	0.020	-0.027
C <sub>uf</sub> Upscale gas	220.361	43.558	47.945	9.556	9.542
<b>Analyzer Calibration Error Responses (C<sub>Dr</sub>)</b>					
C <sub>ocb</sub> Zero gas	-0.122	-0.055	-0.024	0.004	-0.097
C <sub>moa</sub> Upscale gas	223.652	45.586	48.033	9.471	9.514
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.1%	-0.1%	0.0%	0.1%	0.4%
Upscale gas	-0.7%	-2.2%	-0.1%	0.5%	0.2%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>oi</sub> Zero gas	0.179	-0.056	0.061	0.025	-0.022
C <sub>ui</sub> Upscale gas	220.781	43.660	47.879	9.546	9.524
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	0.0%	-0.1%	0.0%	0.0%	0.0%
Upscale gas	-0.1%	-0.1%	0.1%	0.1%	0.1%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
09:08:03	117.940	-0.023	12.254	9.430	9.294
09:08:18	19.650	-0.044	6.592	9.547	9.504
09:08:33	5.812	-0.011	2.084	9.550	9.524
09:08:48	1.653	-0.044	0.687	9.550	9.527
09:09:03	1.034	-0.022	0.524	9.551	9.533
09:09:18	0.708	-0.037	0.515	9.552	9.537
09:09:33	0.717	-0.054	0.513	9.552	9.540
09:09:48	0.407	-0.106	0.515	9.553	9.542
09:10:03	0.407	-0.101	0.516	9.554	9.542
09:10:18	-0.041	-0.111	0.496	9.555	9.542
09:10:33	0.171	-0.109	0.513	9.556	9.544
09:10:48	0.236	-0.114	0.508	9.557	9.546
09:11:03	-0.057	-0.120	0.488	9.556	9.544
09:11:18	-0.269	-0.129	0.513	9.338	9.544
09:11:33	0.049	1.887	0.484	2.636	9.770
09:11:48	80.814	22.406	0.319	0.204	9.980
09:12:03	152.210	35.331	0.155	0.065	9.991
09:12:18	215.523	39.298	0.016	0.042	9.991
09:12:33	218.193	40.946	0.013	0.035	10.004
09:12:48	219.129	41.797	0.012	0.018	10.000
09:13:03	219.544	42.370	0.068	0.022	9.991
09:13:18	219.503	42.818	0.023	0.023	10.006
09:13:33	219.992	43.155	-0.033	0.017	10.002
09:13:48	220.155	43.368	0.052	-0.003	10.010
09:14:03	220.122	43.574	0.056	0.019	9.992
09:14:18	220.367	43.731	0.042	0.048	9.947
09:14:33	220.594	34.061	1.947	0.086	3.332
09:14:48	124.916	13.260	18.766	0.041	0.314
09:15:03	53.049	6.497	36.568	0.030	0.070
09:15:18	3.810	4.397	45.949	0.041	0.036
09:15:33	2.198	3.401	47.735	0.029	-0.003
09:15:48	1.042	2.872	47.938	0.040	-0.010

Wheelabrator  
CleanAir Project No. 12218  
South Broward  
Unit 1

March 25, 2013  
Start Time 9:08  
Stop Time 9:17

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
09:16:03	1.026	2.483	47.919	0.041	-0.005
09:16:18	0.814	2.289	47.938	0.030	-0.017
09:16:33	0.513	2.107	47.945	0.028	-0.023
09:16:48	0.302	1.952	47.951	0.018	-0.027
09:17:03	0.619	1.815	47.855	0.017	-0.031
09:17:18	0.382	1.776	47.909	0.573	0.122



Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 1

March 25, 2013  
 Start Time 9:22  
 Stop time 9:49

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
<b>Calibration Checks</b>					
C <sub>0i</sub> Initial zero	0.258	-0.111	0.014	0.020	-0.027
C <sub>0i</sub> Initial upscale	220.361	43.558	47.945	9.556	9.542
C <sub>0f</sub> Final zero	0.383	-0.068	0.040	0.026	-0.018
C <sub>0f</sub> Final upscale	220.605	43.549	47.895	9.558	9.552
C <sub>ma</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>Avg</sub> Average conc.	155.488	0.069	8.007	9.064	10.218
C <sub>Gas</sub> Bias adjusted	157.167	0.164	7.881	9.028	10.199

Clock Time (at end of sample period)

04/17/13 09:42:08	09:23	148.506	0.195	10.381	10.100	9.345
	09:24	143.356	0.112	10.294	10.775	8.811
	09:25	135.743	0.138	10.248	10.967	8.629
	09:26	127.267	0.074	10.425	10.922	8.670
	09:27	121.345	0.041	9.056	11.262	8.360
	09:28	108.150	0.001	9.217	11.286	8.295
	09:29	111.115	-0.027	9.492	11.036	8.535
	09:30	121.394	0.006	7.758	10.683	8.825
	09:31	132.442	0.031	8.743	10.397	9.107
	09:32	141.488	0.026	7.630	10.377	9.125
	09:33	141.400	0.024	7.207	10.134	9.314
	09:34	145.083	-0.010	8.707	9.656	9.663
	09:35	143.655	-0.007	8.187	9.855	9.567
	09:36	145.670	0.016	9.776	9.660	9.737
	09:37	156.701	0.027	8.957	9.121	10.153
	09:38	166.099	0.039	8.256	8.654	10.514
	09:39	174.241	0.030	7.804	7.402	11.576
	09:40	184.092	0.031	6.942	6.487	12.415
	09:41	188.309	0.112	9.282	6.422	12.557
	09:42	196.168	0.189	7.520	7.451	11.594
	09:43	186.909	0.182	6.232	7.758	11.238
	09:44	188.362	0.098	6.030	7.337	11.658
	09:45	187.542	0.087	6.258	7.563	11.470
	09:46	177.719	0.099	5.549	8.178	10.932
	09:47	168.384	0.125	6.342	6.993	11.978
	09:48	175.154	0.087	5.413	6.786	12.232
	09:49	181.870	0.140	4.486	7.476	11.598

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 1

March 25, 2013  
 Start Time 9:51  
 Stop Time 9:59

**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
<b>System Response to Calibration Gases (C<sub>s</sub>)</b>					
C <sub>oi</sub> Zero gas	0.383	-0.068	0.040	0.026	-0.018
C <sub>ui</sub> Upscale gas	220.605	43.549	47.895	9.558	9.552
<b>Analyzer Calibration Error Responses (C<sub>dir</sub>)</b>					
C <sub>oco</sub> Zero gas	-0.122	-0.055	-0.024	0.004	-0.097
C <sub>mco</sub> Upscale gas	223.652	45.586	48.033	9.471	9.514
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.1%	0.0%	0.1%	0.1%	0.4%
Upscale gas	-0.7%	-2.2%	-0.1%	0.5%	0.2%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gases (C<sub>s</sub>)</b>					
C <sub>oi</sub> Zero gas	0.258	-0.111	0.014	0.020	-0.027
C <sub>ui</sub> Upscale gas	220.361	43.558	47.945	9.556	9.542
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	0.0%	0.0%	0.0%	0.0%	0.0%
Upscale gas	0.1%	0.0%	-0.1%	0.0%	0.1%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
09:51:50	2.515	0.037	0.792	9.550	9.545
09:52:05	1.229	0.016	0.555	9.551	9.548
09:52:20	1.050	-0.006	0.521	9.552	9.549
09:52:35	0.708	-0.045	0.495	9.556	9.550
09:52:50	0.318	-0.047	0.501	9.556	9.552
09:53:05	0.326	-0.040	0.496	9.558	9.552
09:53:20	0.505	-0.070	0.518	9.559	9.552
09:53:35	0.301	-0.093	0.495	9.558	9.554
09:53:50	0.276	-0.043	0.478	6.617	9.605
09:54:05	19.968	11.360	0.435	0.649	9.954
09:54:20	81.392	31.118	0.166	0.085	10.003
09:54:35	193.903	37.734	0.073	0.041	10.013
09:54:50	215.719	40.091	0.070	0.031	10.006
09:55:05	218.087	41.381	0.023	0.031	10.021
09:55:20	218.811	42.159	0.054	-0.013	10.028
09:55:35	219.365	42.725	0.003	0.023	10.028
09:55:50	219.593	43.028	0.077	0.027	10.024
09:56:05	220.220	43.315	0.010	0.003	10.022
09:56:20	220.334	43.578	0.033	0.011	10.025
09:56:35	220.781	43.754	0.056	0.005	10.021
09:56:50	220.700	39.443	0.778	0.101	6.333
09:57:05	169.239	17.180	11.102	0.049	0.619
09:57:20	86.016	7.586	32.755	0.029	0.120
09:57:35	15.947	4.902	43.936	0.035	0.047
09:57:50	2.751	3.722	47.561	0.029	0.026
09:58:05	0.684	3.109	47.857	0.033	0.005
09:58:20	0.822	2.649	47.917	0.022	-0.002
09:58:35	0.692	2.372	47.942	0.022	-0.012
09:58:50	0.651	2.260	47.821	0.032	-0.019
09:59:05	0.220	2.120	47.923	0.026	-0.024
09:59:20	0.188	2.048	47.787	0.322	0.062

Wheelaerator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 1

March 25, 2013  
 Start Time 10:01  
 Stop time 10:28

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	0.383	-0.068	0.040	0.026	-0.018
C <sub>ui</sub> Initial upscale	220.605	43.549	47.895	9.558	9.552
C <sub>of</sub> Final zero	0.342	-0.023	-0.037	0.019	-0.016
C <sub>uf</sub> Final upscale	219.655	43.682	47.855	9.558	9.556
C <sub>ma</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>Avg</sub> Average conc.	170.803	0.800	6.109	7.918	11.195
C <sub>Gas</sub> Bias adjusted	172.947	0.873	6.034	7.883	11.164

Clock Time (at end of sample period)

Clock Time	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
10:02	160.171	2.093	7.408	7.842	11.112
10:03	163.063	1.473	6.611	7.669	11.050
10:04	167.554	1.475	6.127	8.021	11.108
10:05	167.285	1.330	5.803	7.798	11.274
10:06	179.141	1.357	6.757	7.296	11.740
10:07	183.368	1.238	6.006	7.438	11.599
10:08	184.037	0.891	5.116	8.188	10.924
10:09	176.750	0.668	5.177	7.422	11.605
10:10	168.791	0.697	5.298	7.835	11.264
10:11	156.752	0.691	5.261	8.565	10.661
10:12	165.531	0.712	6.967	7.227	11.827
10:13	181.567	0.876	5.521	7.918	11.219
10:14	174.009	0.731	4.949	8.313	10.858
10:15	178.018	0.651	7.140	7.600	11.518
10:16	185.270	0.579	5.794	7.541	11.555
10:17	177.804	0.509	5.956	7.662	11.451
10:18	174.206	0.439	5.653	7.450	11.639
10:19	179.575	0.528	5.503	8.138	11.023
10:20	175.881	0.501	4.508	8.314	10.855
10:21	179.617	0.447	5.237	7.654	11.452
10:22	179.450	0.531	6.091	8.049	11.146
10:23	165.018	0.608	5.619	8.161	10.985
10:24	164.215	0.662	6.831	7.786	11.341
10:25	160.672	0.635	6.278	8.398	10.828
10:26	154.951	0.508	6.817	8.713	10.565
10:27	154.082	0.383	7.859	8.364	10.855
10:28	154.921	0.374	8.650	8.416	10.809

**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
<b>System Response to Calibration Gasses (Cs)</b>					
C <sub>of</sub> Zero gas	0.342	-0.023	-0.037	0.019	-0.016
C <sub>uf</sub> Upscale gas	219.655	43.682	47.855	9.558	9.556
<b>Analyzer Calibration Error Responses (C<sub>Di</sub>)</b>					
C <sub>oae</sub> Zero gas	-0.122	-0.055	-0.024	0.004	-0.097
C <sub>moe</sub> Upscale gas	223.652	45.586	48.033	9.471	9.514
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.1%	0.0%	0.0%	0.1%	0.5%
Upscale gas	-0.9%	-2.1%	-0.2%	0.5%	0.2%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gases (Cs)</b>					
C <sub>oi</sub> Zero gas	0.383	-0.068	0.040	0.026	-0.018
C <sub>ui</sub> Upscale gas	220.605	43.549	47.895	9.558	9.552
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	0.0%	0.1%	-0.1%	0.0%	0.0%
Upscale gas	-0.2%	0.1%	0.0%	0.0%	0.0%
<b>Drift Assessment Status</b>					
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
10:29:43	122.287	0.694	14.003	9.414	9.344
10:29:58	21.506	0.503	7.062	9.545	9.527
10:30:13	6.349	0.339	2.154	9.554	9.544
10:30:28	1.669	0.186	0.669	9.558	9.549
10:30:43	0.578	0.049	0.508	9.559	9.554
10:30:58	0.578	0.039	0.505	9.551	9.552
10:31:13	0.147	-0.119	0.491	9.557	9.553
10:31:28	0.481	-0.031	0.488	9.561	9.555
10:31:43	0.293	-0.016	0.474	9.557	9.556
10:31:58	0.253	-0.026	0.480	9.561	9.556
10:32:13	0.057	-0.026	0.472	7.442	9.591
10:32:28	0.488	8.762	0.399	0.883	9.928
10:32:43	67.489	29.859	0.246	0.088	10.003
10:32:58	202.442	37.390	0.036	0.044	10.005
10:33:13	214.009	40.013	0.054	0.039	10.011
10:33:28	217.884	41.324	0.065	0.021	10.023
10:33:43	218.543	42.048	0.039	0.034	10.026
10:33:58	219.048	42.597	0.077	0.026	10.016
10:34:13	219.219	42.911	-0.054	0.006	10.028
10:34:28	219.340	43.230	-0.052	0.028	10.033
10:34:43	219.593	43.536	-0.005	0.018	10.030
10:34:58	219.666	43.707	0.003	-0.016	10.012
10:35:13	219.454	43.803	0.052	0.041	9.794
10:35:28	219.845	31.191	3.513	0.070	2.649
10:35:43	155.685	11.987	19.621	0.042	0.267
10:35:58	23.215	6.463	38.846	0.029	0.082
10:36:13	7.041	4.518	46.028	0.029	0.034
10:36:28	2.076	3.637	47.626	0.024	-0.001
10:36:43	1.278	3.095	47.728	0.017	-0.011
10:36:58	0.952	2.676	47.888	0.018	-0.004
10:37:13	0.985	2.331	47.854	0.032	-0.011
10:37:28	0.651	2.253	47.819	0.020	-0.015

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

March 25, 2013  
 Start Time 10:29  
 Stop Time 10:37

**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
10:37:43	0.318	2.154	47.891	0.038	-0.021
10:37:58	0.163	3.372	47.541	3.257	2.432

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 1

March 25, 2013  
 Start Time 10:53  
 Stop time 11:20

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	0.342	-0.023	-0.037	0.019	-0.016
C <sub>ui</sub> Initial upscale	219.655	43.682	47.855	9.558	9.556
C <sub>of</sub> Final zero	0.310	-0.008	0.063	0.026	-0.013
C <sub>uf</sub> Final upscale	219.557	43.764	47.828	9.562	9.562
C <sub>ms</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>Avg</sub> Average conc.	176.498	3.088	4.925	8.046	11.162
C <sub>Gas</sub> Bias adjusted	179.160	3.199	4.858	8.008	11.126

Clock Time (at end of sample period)

04/17/13 10:59:42 AM	NOX	SO2	CO	O2	CO2
10:54	184.050	1.760	4.171	7.584	11.495
10:55	183.968	2.216	3.693	7.749	11.400
10:56	181.087	2.727	3.790	7.386	11.705
10:57	191.308	3.841	4.128	7.576	11.580
10:58	186.447	2.781	3.376	8.060	11.073
10:59	184.172	3.164	3.570	7.462	11.674
11:00	177.593	2.959	3.291	8.033	11.101
11:01	178.820	3.432	4.160	7.411	11.729
11:02	175.244	3.914	4.037	8.409	10.837
11:03	170.313	4.538	4.671	8.138	11.012
11:04	180.549	7.296	6.548	7.510	11.627
11:05	179.086	5.692	5.611	8.569	10.705
11:06	164.984	2.475	4.908	8.320	10.891
11:07	172.112	1.670	6.078	7.638	11.558
11:08	168.909	1.181	5.086	8.791	10.571
11:09	171.276	0.812	5.503	7.682	11.469
11:10	183.891	0.753	5.468	7.765	11.421
11:11	172.635	0.721	4.302	8.414	10.833
11:12	168.620	1.874	4.750	7.970	11.207
11:13	174.957	5.571	6.188	7.683	11.548
11:14	174.919	3.071	4.750	8.865	10.502
11:15	174.336	2.612	6.095	7.716	11.449
11:16	179.916	3.251	6.000	8.474	10.830
11:17	168.067	2.886	4.757	8.809	10.513
11:18	176.233	4.828	6.360	8.068	11.157
11:19	173.517	3.632	5.532	9.165	10.288
11:20	168.433	3.706	6.153	7.990	11.207

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 1

March 25, 2013  
 Start Time 11:22  
 Stop Time 11:30

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
<b>System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>of</sub> Zero gas	0.310	-0.008	0.063	0.026	-0.013
C <sub>uf</sub> Upscale gas	219.557	43.764	47.828	9.562	9.562
<b>Analyzer Calibration Error Responses (C<sub>Di</sub>)</b>					
C <sub>oob</sub> Zero gas	-0.122	-0.055	-0.024	0.004	-0.097
C <sub>mcb</sub> Upscale gas	223.652	45.586	48.033	9.471	9.514
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.1%	0.1%	0.1%	0.1%	0.5%
Upscale gas	-0.9%	-2.0%	-0.2%	0.5%	0.3%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>oi</sub> Zero gas	0.342	-0.023	-0.037	0.019	-0.016
C <sub>ui</sub> Upscale gas	219.655	43.682	47.855	9.558	9.556
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	0.0%	0.0%	0.1%	0.0%	0.0%
Upscale gas	0.0%	0.1%	0.0%	0.0%	0.0%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
11:22:02	175.800	4.103	5.514	8.139	10.374
11:22:17	164.835	3.616	7.831	6.769	6.579
11:22:32	118.616	2.619	11.739	9.347	9.200
11:22:47	46.642	1.591	7.487	9.544	9.523
11:23:02	5.820	0.933	2.514	9.552	9.546
11:23:17	1.702	0.586	0.795	9.555	9.554
11:23:32	1.026	0.361	0.536	9.557	9.557
11:23:47	0.830	0.166	0.518	9.559	9.560
11:24:02	0.570	0.081	0.527	9.562	9.561
11:24:17	0.326	0.075	0.496	9.562	9.562
11:24:32	0.342	-0.028	0.500	9.563	9.562
11:24:47	0.261	-0.070	0.485	8.615	9.566
11:25:02	5.022	4.000	0.468	1.515	9.880
11:25:17	41.449	25.918	0.218	0.145	10.022
11:25:32	168.360	36.275	0.005	0.058	10.034
11:25:47	212.503	39.456	0.068	0.044	10.035
11:26:02	217.224	40.995	0.036	0.026	10.035
11:26:17	218.291	41.934	0.067	0.034	10.037
11:26:32	218.575	42.533	0.077	0.024	10.037
11:26:47	218.697	42.914	0.098	0.016	10.037
11:27:02	219.105	43.261	0.034	0.007	10.037
11:27:17	219.414	43.500	0.077	0.028	10.037
11:27:32	219.349	43.702	0.034	0.011	10.039
11:27:47	219.642	43.827	0.077	0.010	10.039
11:28:02	219.682	43.764	0.005	0.071	8.980
11:28:17	200.041	27.785	5.719	0.041	1.555
11:28:32	101.791	10.904	24.493	0.041	0.201
11:28:47	31.616	6.116	40.933	0.029	0.064
11:29:02	3.769	4.340	46.847	0.040	0.011
11:29:17	1.636	3.486	47.715	0.027	0.001
11:29:32	1.441	2.961	47.836	0.037	-0.010
11:29:47	0.627	2.610	47.783	0.015	-0.002

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

March 25, 2013  
 Start Time 11:22  
 Stop Time 11:30

**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
11:30:02	0.562	2.406	47.865	0.026	-0.008
11:30:17	0.448	2.212	47.901	0.009	-0.013
11:30:32	0.627	2.048	47.889	0.025	-0.018



Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 1

March 25, 2013  
 Start Time 11:33  
 Stop time 12:00

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	0.310	-0.008	0.063	0.026	-0.013
C <sub>ui</sub> Initial upscale	219.557	43.764	47.828	9.562	9.562
C <sub>of</sub> Final zero	0.489	-0.083	0.027	0.030	-0.013
C <sub>uf</sub> Final upscale	218.735	43.863	47.862	9.525	9.622
C <sub>ma</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>Avg</sub> Average conc.	167.264	0.699	7.927	8.467	10.746
C <sub>Gas</sub> Bias adjusted	170.109	0.765	7.800	8.443	10.675

Clock Time (at end of sample period)

04/17/13 09:42:09	NOX	SO2	CO	O2	CO2
11:34	157.328	2.022	7.341	8.850	10.114
11:35	162.959	1.562	8.061	8.799	10.499
11:36	171.891	1.302	9.634	8.388	10.804
11:37	169.821	1.027	10.479	8.319	10.845
11:38	167.039	0.787	9.589	8.770	10.511
11:39	160.749	0.645	8.470	8.474	10.719
11:40	165.008	0.534	7.716	8.591	10.658
11:41	166.673	0.480	8.508	8.001	11.132
11:42	163.341	0.684	8.879	8.623	10.678
11:43	157.322	1.484	7.522	9.041	10.302
11:44	162.916	1.103	8.422	8.572	10.700
11:45	166.028	0.696	7.963	8.932	10.394
11:46	164.927	0.518	8.446	8.485	10.756
11:47	161.030	0.421	7.789	8.864	10.447
11:48	161.125	0.452	8.992	8.556	10.716
11:49	162.328	0.532	7.393	9.191	10.187
11:50	169.705	0.587	7.943	8.528	10.704
11:51	174.210	0.575	7.681	8.949	10.391
11:52	170.769	0.515	7.844	8.439	10.777
11:53	171.703	0.490	7.123	8.538	10.718
11:54	171.026	0.433	7.227	8.265	10.895
11:55	176.744	0.400	7.777	7.923	11.181
11:56	169.410	0.273	6.205	8.144	10.976
11:57	171.046	0.242	6.656	7.592	11.485
11:58	168.448	0.309	6.552	7.919	11.172
11:59	175.000	0.364	7.021	7.837	11.291
12:00	177.580	0.424	6.797	8.026	11.089

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
<b>System Response to Calibration Gasses (Cs)</b>					
C <sub>oi</sub> Zero gas	0.489	-0.083	0.027	0.030	-0.013
C <sub>ui</sub> Upscale gas	218.735	43.863	47.862	9.525	9.622
<b>Analyzer Calibration Error Responses (C<sub>Di</sub>)</b>					
C <sub>oc</sub> Zero gas	-0.122	-0.055	-0.024	0.004	-0.097
C <sub>mo</sub> Upscale gas	223.652	45.586	48.033	9.471	9.514
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.1%	0.0%	0.1%	0.1%	0.5%
Upscale gas	-1.1%	-1.9%	-0.2%	0.3%	0.6%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gases (Cs)</b>					
C <sub>oi</sub> Zero gas	0.310	-0.008	0.063	0.026	-0.013
C <sub>ui</sub> Upscale gas	219.557	43.764	47.828	9.562	9.562
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	0.0%	-0.1%	0.0%	0.0%	0.0%
Upscale gas	-0.2%	0.1%	0.0%	-0.2%	0.3%
<b>Drift Assessment Status</b>					
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
12:01:01	181.669	0.577	7.739	5.746	8.058
12:01:16	166.732	0.554	12.081	8.588	8.591
12:01:31	76.874	0.527	10.921	9.459	9.543
12:01:46	26.455	0.470	4.996	9.519	9.572
12:02:01	7.912	0.355	1.276	9.441	9.452
12:02:16	7.611	0.163	0.821	9.536	9.575
12:02:31	6.813	0.126	0.724	9.535	9.588
12:02:46	6.341	-0.007	0.726	9.509	9.625
12:03:01	6.984	-0.023	0.754	9.517	9.622
12:03:16	8.710	-0.052	0.780	9.533	9.619
12:03:31	7.432	0.006	0.752	9.508	9.644
12:03:46	7.855	-0.003	0.759	9.526	9.614
12:04:01	8.360	-0.024	0.752	9.535	9.607
12:04:16	6.919	-0.070	0.760	9.515	9.636
12:04:31	7.025	-0.088	0.731	9.507	9.647
12:04:46	7.237	-0.091	0.757	7.661	9.640
12:05:01	22.035	5.685	0.672	0.986	9.937
12:05:16	73.301	27.453	0.327	0.102	10.030
12:05:31	175.694	36.669	0.077	0.050	10.036
12:05:46	213.822	39.694	0.054	0.031	10.039
12:06:01	217.208	41.153	0.056	0.030	10.042
12:06:16	217.949	41.985	0.057	0.037	10.041
12:06:31	218.583	42.595	-0.003	0.022	10.042
12:06:46	218.697	42.978	0.077	0.019	10.042
12:07:01	218.665	43.333	0.025	0.002	10.043
12:07:16	218.608	43.567	-0.007	0.016	10.044
12:07:31	218.934	43.708	0.064	0.010	10.044
12:07:46	218.860	43.871	0.024	0.010	10.043
12:08:01	219.479	44.008	0.098	0.041	9.960
12:08:16	211.209	35.280	2.364	0.078	3.262
12:08:31	157.436	15.017	18.206	0.038	0.314
12:08:46	68.433	7.505	36.617	0.036	0.092
12:09:01	5.511	4.947	45.978	0.035	0.034

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 1

March 25, 2013  
 Start Time 12:01  
 Stop Time 12:11

**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
12:09:16	2.231	3.806	47.634	0.023	0.009
12:09:31	1.172	3.160	47.823	0.029	-0.023
12:09:46	0.985	2.725	47.904	0.043	-0.013
12:10:01	0.838	2.392	47.782	0.020	-0.009
12:10:16	0.765	2.286	47.885	0.025	-0.011
12:10:31	0.521	2.133	47.841	0.036	-0.020
12:10:46	0.179	2.064	47.862	0.944	0.462
12:11:01	7.440	6.448	44.269	6.495	8.767
12:11:16	40.220	7.814	29.411	6.913	11.805

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 1

March 25, 2013  
 Start Time 12:26  
 Stop time 12:53

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	0.489	-0.083	0.027	0.030	-0.013
C <sub>ui</sub> Initial upscale	218.735	43.863	47.862	9.525	9.622
C <sub>of</sub> Final zero	0.182	0.124	0.034	0.012	-0.025
C <sub>uf</sub> Final upscale	219.322	44.026	48.082	9.530	9.580
C <sub>ma</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>AVG</sub> Average conc.	174.375	2.116	6.258	8.334	10.961
C <sub>GAS</sub> Bias adjusted	177.467	2.152	6.144	8.325	10.877

Clock Time (at end of sample period)

Clock Time	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
12:27	182.831	2.532	8.379	7.118	12.044
12:28	175.283	2.377	6.845	8.156	11.128
12:29	164.973	1.211	5.292	8.716	10.626
12:30	180.405	0.905	5.995	7.979	11.249
12:31	184.970	0.958	5.742	8.182	11.040
12:32	177.662	0.972	5.343	8.495	10.820
12:33	162.576	0.820	4.672	8.730	10.603
12:34	165.092	0.868	6.454	7.685	11.498
12:35	173.722	1.169	6.911	8.051	11.205
12:36	170.576	1.050	5.189	8.873	10.477
12:37	176.479	1.230	6.169	7.432	11.735
12:38	177.875	1.609	5.431	8.101	11.145
12:39	173.655	1.471	5.237	8.343	10.894
12:40	181.020	1.510	7.439	7.234	11.980
12:41	180.777	1.428	5.578	8.734	10.610
12:42	172.503	0.966	5.043	8.111	11.084
12:43	182.371	1.125	6.793	7.624	11.598
12:44	177.906	1.201	5.511	8.533	10.784
12:45	170.411	0.998	5.122	8.502	10.785
12:46	177.562	1.225	7.216	8.021	11.237
12:47	173.160	1.251	6.079	9.070	10.361
12:48	168.753	1.549	7.818	8.258	10.995
12:49	167.869	3.138	7.557	8.801	10.600
12:50	167.387	5.565	6.890	8.853	10.519
12:51	175.108	7.132	6.907	9.122	10.344
12:52	170.419	6.547	6.581	9.108	10.298
12:53	176.777	6.336	6.761	9.187	10.281

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 1

March 25, 2013  
 Start Time 12:54  
 Stop Time 13:05

**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
<b>System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>of</sub> Zero gas	0.182	0.124	0.034	0.012	-0.025
C <sub>uf</sub> Upscale gas	219.322	44.026	48.082	9.530	9.580
<b>Analyzer Calibration Error Responses (C<sub>dir</sub>)</b>					
C <sub>ood</sub> Zero gas	-0.122	-0.055	-0.024	0.004	-0.097
C <sub>mca</sub> Upscale gas	223.652	45.586	48.033	9.471	9.514
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (C<sub>S</sub>)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.1%	0.2%	0.1%	0.0%	0.4%
Upscale gas	-1.0%	-1.7%	0.1%	0.3%	0.4%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>oi</sub> Zero gas	0.489	-0.083	0.027	0.030	-0.013
C <sub>ui</sub> Upscale gas	218.735	43.863	47.862	9.525	9.622
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	-0.1%	0.2%	0.0%	-0.1%	-0.1%
Upscale gas	0.1%	0.2%	0.2%	0.0%	-0.2%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
12:54:19	185.413	5.260	8.259	8.442	10.858
12:54:34	189.320	4.873	7.937	8.589	10.714
12:54:49	189.084	4.559	8.401	6.221	7.237
12:55:04	142.588	3.598	12.547	8.868	8.714
12:55:19	72.193	2.403	10.135	9.500	9.521
12:55:34	22.458	1.552	4.396	9.532	9.564
12:55:49	7.522	1.001	1.166	9.534	9.566
12:56:04	5.128	0.705	0.676	9.530	9.581
12:56:19	4.721	0.545	0.687	9.530	9.576
12:56:34	4.924	0.436	0.684	9.530	9.579
12:56:49	4.591	0.309	0.700	9.532	9.585
12:57:04	4.925	0.179	0.682	9.539	9.574
12:57:19	5.218	0.156	0.667	9.554	9.566
12:57:34	6.024	0.117	0.686	9.563	9.564
12:57:49	5.438	0.134	0.659	9.566	9.569
12:58:04	4.949	0.121	0.679	8.569	9.561
12:58:19	18.551	3.941	0.602	1.517	9.878
12:58:34	66.553	25.263	0.246	0.139	10.011
12:58:49	171.176	35.844	0.065	0.041	10.027
12:59:04	213.642	39.228	0.077	0.029	10.035
12:59:19	216.972	40.749	0.049	0.020	10.037
12:59:34	217.721	41.755	0.028	0.005	10.039
12:59:49	218.282	42.400	0.026	0.035	10.038
13:00:04	218.535	42.825	0.082	0.025	10.037
13:00:19	218.771	43.132	0.077	0.017	10.038
13:00:34	218.901	43.515	0.077	0.011	10.041
13:00:49	219.080	43.676	0.054	0.025	10.040
13:01:04	219.479	43.845	0.056	0.012	10.039
13:01:19	219.186	44.041	0.023	0.002	10.040
13:01:34	219.316	44.192	-0.023	0.017	10.041
13:01:49	219.463	43.984	0.103	0.097	8.794
13:02:04	208.115	28.116	6.842	0.063	1.459

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 1

March 25, 2013  
 Start Time 12:54  
 Stop Time 13:05

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
13:02:19	154.513	11.557	29.457	0.017	0.196
13:02:34	26.341	6.618	43.318	0.013	0.060
13:02:49	4.192	4.760	47.676	0.041	0.034
13:03:04	1.774	3.816	47.937	0.034	0.009
13:03:19	1.066	3.178	47.950	0.007	-0.012
13:03:34	0.806	2.891	48.021	0.024	-0.004
13:03:49	0.358	2.566	48.143	0.007	-0.008
13:04:04	0.676	2.382	48.082	0.034	-0.014
13:04:19	0.155	2.251	48.047	0.019	-0.017
13:04:34	0.114	2.110	47.990	-0.010	-0.029
13:04:49	0.261	1.957	48.093	0.000	-0.029
13:05:04	0.171	3.489	47.417	4.715	4.166

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 1

March 25, 2013  
 Start Time 13:07  
 Stop time 13:34

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	0.182	0.124	0.034	0.012	-0.025
C <sub>ui</sub> Initial upscale	219.322	44.026	48.082	9.530	9.580
C <sub>of</sub> Final zero	0.649	-0.038	0.047	0.024	-0.009
C <sub>uf</sub> Final upscale	218.839	44.082	48.038	9.534	9.581
C <sub>ms</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>Avg</sub> Average conc.	180.125	0.586	7.025	8.294	10.921
C <sub>Gas</sub> Bias adjusted	<b>183.272</b>	<b>0.557</b>	<b>6.880</b>	<b>8.282</b>	<b>10.861</b>

Clock Time (at end of sample period)

Clock Time	NOX	SO2	CO	O2	CO2
13:08	180.600	0.668	9.105	8.534	10.611
13:09	185.527	0.644	9.601	8.277	10.937
13:10	182.306	0.584	7.685	8.774	10.529
13:11	182.674	0.550	8.154	8.259	10.942
13:12	187.025	0.516	6.861	7.066	12.000
13:13	194.583	0.528	7.146	7.766	11.448
13:14	183.077	0.499	6.258	8.274	10.904
13:15	191.711	0.452	5.765	7.420	11.696
13:16	188.394	0.401	4.793	8.145	11.049
13:17	182.973	0.388	5.102	8.092	11.059
13:18	190.700	0.468	5.012	8.109	11.090
13:19	184.855	0.536	6.324	8.180	11.018
13:20	188.637	0.652	6.927	8.338	10.922
13:21	171.551	0.591	5.794	8.635	10.644
13:22	178.362	0.574	7.313	8.287	10.936
13:23	177.542	0.579	7.499	8.370	10.852
13:24	180.090	0.583	7.282	8.426	10.848
13:25	173.227	0.559	6.683	8.496	10.774
13:26	174.253	0.550	6.684	8.875	10.484
13:27	170.859	0.526	7.326	8.863	10.477
13:28	174.052	0.512	7.649	8.291	10.896
13:29	178.830	0.538	8.256	8.199	11.003
13:30	171.388	0.530	6.970	8.700	10.565
13:31	172.914	0.477	7.514	8.504	10.726
13:32	167.377	0.654	7.243	8.423	10.759
13:33	174.013	0.921	7.354	8.320	10.844
13:34	175.847	1.348	7.390	8.323	10.846

Wheelabrator  
CleanAir Project No. 12218  
South Broward  
Unit 1

March 25, 2013  
Start Time 13:35  
Stop Time 13:44

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
<b>System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>of</sub> Zero gas	0.649	-0.038	0.047	0.024	-0.009
C <sub>uf</sub> Upscale gas	218.839	44.082	48.038	9.534	9.581
<b>Analyzer Calibration Error Responses (C<sub>Dr</sub>)</b>					
C <sub>oc</sub> Zero gas	-0.122	-0.055	-0.024	0.004	-0.097
C <sub>mcc</sub> Upscale gas	223.652	45.586	48.033	9.471	9.514
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.2%	0.0%	0.1%	0.1%	0.5%
Upscale gas	-1.1%	-1.7%	0.0%	0.3%	0.4%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>oi</sub> Zero gas	0.182	0.124	0.034	0.012	-0.025
C <sub>ui</sub> Upscale gas	219.322	44.026	48.082	9.530	9.580
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	0.1%	-0.2%	0.0%	0.1%	0.1%
Upscale gas	-0.1%	0.1%	0.0%	0.0%	0.0%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
13:35:09	166.659	0.897	6.950	8.751	10.155
13:35:24	164.933	0.803	8.238	6.503	6.505
13:35:39	136.874	0.760	13.073	9.221	9.120
13:35:54	48.474	0.707	8.334	9.522	9.531
13:36:09	16.337	0.516	2.115	9.534	9.564
13:36:24	9.540	0.339	0.900	9.534	9.574
13:36:39	8.913	0.127	0.744	9.532	9.565
13:36:54	6.553	0.108	0.647	9.527	9.593
13:37:09	6.447	0.010	0.715	9.508	9.603
13:37:24	7.171	-0.036	0.742	9.519	9.589
13:37:39	7.570	-0.007	0.721	9.532	9.592
13:37:54	7.643	-0.072	0.700	9.532	9.590
13:38:09	7.741	-0.024	0.717	9.537	9.560
13:38:24	7.318	-0.019	0.669	8.390	9.579
13:38:39	21.294	4.096	0.586	1.368	9.897
13:38:54	74.293	25.796	0.300	0.136	9.995
13:39:09	171.844	36.143	0.046	0.051	10.002
13:39:24	213.309	39.419	0.056	0.037	10.011
13:39:39	216.500	40.869	-0.010	0.014	10.003
13:39:54	217.460	41.916	0.033	0.015	10.016
13:40:09	217.803	42.444	0.026	0.012	10.021
13:40:24	217.916	42.873	-0.091	0.021	10.024
13:40:39	218.234	43.132	0.064	0.012	10.024
13:40:54	218.413	43.474	0.024	0.010	10.030
13:41:09	218.608	43.611	0.052	0.010	10.015
13:41:24	218.681	43.731	-0.011	0.010	10.031
13:41:39	218.730	43.938	0.073	0.015	10.026
13:41:54	218.649	44.096	0.034	0.007	10.033
13:42:09	218.877	44.212	0.003	0.020	10.017
13:42:24	218.991	38.242	1.193	0.092	4.187
13:42:39	179.487	16.702	19.528	0.046	0.381
13:42:54	46.154	7.971	37.955	0.037	0.107
13:43:09	8.156	5.281	46.960	0.036	0.036



Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 1

March 25, 2013  
 Start Time 13:35  
 Stop Time 13:44

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
13:43:24	2.312	4.080	47.725	0.035	-0.013
13:43:39	1.310	3.307	48.003	0.018	-0.016
13:43:54	0.822	2.962	47.939	0.035	-0.010
13:44:09	0.871	2.593	48.036	0.018	-0.003
13:44:24	0.635	2.403	48.018	0.035	-0.013
13:44:39	0.440	2.269	48.059	0.005	-0.022

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

March 25, 2013  
 Start Time 13:47  
 Stop time 14:14

**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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	0.649	-0.038	0.047	0.024	-0.009
C <sub>ui</sub> Initial upscale	218.839	44.082	48.038	9.534	9.581
C <sub>of</sub> Final zero	0.306	-0.008	0.023	0.022	-0.006
C <sub>uf</sub> Final upscale	218.380	43.684	48.015	9.551	9.559
C <sub>me</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>Avg</sub> Average conc.	176.591	0.333	7.593	8.357	10.810
C <sub>Oas</sub> Bias adjusted	180.044	0.365	7.449	8.335	10.764

**Clock Time (at end of sample period)**

Clock Time	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
13:48	170.240	0.670	7.127	8.477	10.636
13:49	162.479	0.498	8.279	7.990	11.066
13:50	166.074	0.370	6.525	8.459	10.708
13:51	167.731	0.266	7.691	7.971	11.101
13:52	174.522	0.211	7.420	8.407	10.781
13:53	168.584	0.200	7.487	8.696	10.553
13:54	165.863	0.259	7.654	8.892	10.425
13:55	164.648	0.218	7.578	9.002	10.328
13:56	169.178	0.275	8.409	9.074	10.275
13:57	164.831	0.239	8.667	9.270	10.095
13:58	167.279	0.233	9.707	9.263	10.105
13:59	171.736	0.249	10.663	9.098	10.228
14:00	181.081	0.236	10.225	7.989	11.075
14:01	186.642	0.206	7.909	8.761	10.488
14:02	185.037	0.234	8.089	8.334	10.795
14:03	180.806	0.313	7.104	8.621	10.564
14:04	176.838	0.455	7.881	8.251	10.860
14:05	167.552	0.480	7.111	8.629	10.535
14:06	182.055	0.499	8.391	7.641	11.361
14:07	194.528	0.482	7.505	8.321	10.851
14:08	183.690	0.391	6.893	8.260	10.861
14:09	185.354	0.266	6.312	8.431	10.741
14:10	188.020	0.284	7.685	7.044	11.968
14:11	193.459	0.316	6.657	7.836	11.277
14:12	181.404	0.362	5.418	8.108	10.967
14:13	184.695	0.360	6.030	7.105	11.900
14:14	183.636	0.407	4.593	7.717	11.328

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 1

March 25, 2013  
 Start Time 14:15  
 Stop Time 14:23

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
<b>System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>0f</sub> Zero gas	0.306	-0.008	0.023	0.022	-0.008
C <sub>0f</sub> Upscale gas	218.380	43.684	48.015	9.551	9.559
<b>Analyzer Calibration Error Responses (C<sub>Dr</sub>)</b>					
C <sub>0co</sub> Zero gas	-0.122	-0.055	-0.024	0.004	-0.097
C <sub>0co</sub> Upscale gas	223.652	45.586	48.033	9.471	9.514
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.1%	0.1%	0.0%	0.1%	0.5%
Upscale gas	-1.2%	-2.1%	0.0%	0.4%	0.2%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>0i</sub> Zero gas	0.649	-0.038	0.047	0.024	-0.009
C <sub>0i</sub> Upscale gas	218.839	44.082	48.038	9.534	9.581
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	-0.1%	0.0%	0.0%	0.0%	0.0%
Upscale gas	-0.1%	-0.4%	0.0%	0.1%	-0.1%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
14:15:27	172.902	0.490	8.368	6.904	7.232
14:15:42	130.167	0.508	11.809	9.270	9.457
14:15:57	32.471	0.485	5.928	9.526	9.540
14:16:12	10.110	0.366	1.455	9.541	9.543
14:16:27	2.743	0.225	0.550	9.545	9.550
14:16:42	1.319	0.142	0.488	9.546	9.554
14:16:57	0.716	0.060	0.498	9.546	9.555
14:17:12	0.741	-0.042	0.531	9.548	9.555
14:17:27	0.757	0.005	0.527	9.548	9.555
14:17:42	0.188	-0.018	0.490	9.549	9.559
14:17:57	0.285	-0.008	0.485	9.551	9.559
14:18:12	0.390	0.000	0.488	9.552	9.558
14:18:27	0.268	-0.016	0.488	9.551	9.558
14:18:42	0.260	0.323	0.475	4.832	9.698
14:18:57	25.592	16.260	0.350	0.387	9.977
14:19:12	151.396	33.162	0.060	0.074	9.999
14:19:27	204.534	38.445	0.038	0.047	10.019
14:19:42	215.157	40.513	-0.026	0.032	10.020
14:19:57	216.606	41.630	0.046	0.031	10.007
14:20:12	216.996	42.305	-0.068	0.018	10.012
14:20:27	217.607	42.831	0.028	0.019	10.012
14:20:42	217.925	43.137	0.056	0.007	10.018
14:20:57	217.973	43.489	0.047	0.028	10.013
14:21:12	218.136	43.699	-0.023	0.004	10.013
14:21:27	218.445	43.863	0.046	0.021	10.002
14:21:42	218.559	39.710	0.905	0.104	5.676
14:21:57	192.316	17.775	15.350	0.039	0.534
14:22:12	61.083	8.080	36.368	0.022	0.122
14:22:27	9.426	5.263	46.173	0.026	0.039
14:22:42	2.369	4.099	47.821	0.018	0.009
14:22:57	1.245	3.373	48.010	0.030	-0.006
14:23:12	1.156	2.979	48.017	0.029	-0.008

Wheelabrator  
CleanAir Project No. 12218  
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Unit 1

March 25, 2013  
Start Time 14:15  
Stop Time 14:23

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
14:23:27	0.610	2.683	48.020	0.018	-0.004

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 1

March 25, 2013  
 Start Time 14:26  
 Stop time 14:53

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	0.306	-0.008	0.023	0.022	-0.006
C <sub>ui</sub> Initial upscale	218.380	43.684	48.015	9.551	9.559
C <sub>of</sub> Final zero	0.290	-0.009	-0.005	0.014	-0.017
C <sub>uf</sub> Final upscale	217.903	44.172	48.032	9.549	9.553
C <sub>ms</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>Avg</sub> Average conc.	165.994	0.956	8.270	9.280	10.156
C <sub>Gas</sub> Bias adjusted	<b>169.618</b>	<b>0.990</b>	<b>8.138</b>	<b>9.251</b>	<b>10.128</b>

Clock Time (at end of sample period)

Clock Time	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
14:27	172.581	1.609	4.361	8.764	10.535
14:28	164.764	1.685	4.704	8.689	10.438
14:29	169.516	2.025	5.834	8.717	10.582
14:30	169.416	2.615	6.345	8.336	10.885
14:31	166.652	2.637	4.465	9.233	10.201
14:32	162.190	2.285	4.499	9.239	10.180
14:33	162.637	2.343	5.036	9.358	10.085
14:34	160.201	1.753	5.724	9.357	10.109
14:35	161.486	1.343	5.953	9.720	9.803
14:36	158.280	0.932	7.010	9.774	9.743
14:37	161.504	0.736	8.151	9.570	9.937
14:38	169.967	0.666	9.137	9.678	9.858
14:39	167.996	0.576	8.844	9.850	9.706
14:40	171.711	0.503	9.824	9.314	10.123
14:41	181.866	0.460	9.524	9.208	10.222
14:42	178.232	0.418	10.112	9.041	10.370
14:43	170.726	0.310	11.353	9.133	10.281
14:44	172.761	0.258	10.939	9.091	10.314
14:45	169.764	0.316	10.570	9.109	10.346
14:46	165.834	0.365	9.640	9.490	9.997
14:47	166.848	0.391	10.013	9.417	10.057
14:48	165.574	0.273	10.230	9.331	10.158
14:49	163.085	0.314	9.985	9.444	10.028
14:50	160.161	0.300	10.280	9.806	9.906
14:51	155.690	0.232	10.116	9.470	10.036
14:52	155.991	0.227	9.969	9.425	10.073
14:53	156.400	0.231	10.678	9.202	10.239

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 1

March 25, 2013  
 Start Time 14:54  
 Stop Time 15:09

**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
<b>System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>off</sub> Zero gas	0.290	-0.009	-0.005	0.014	-0.017
C <sub>off</sub> Upscale gas	217.903	44.172	48.032	9.549	9.553
<b>Analyzer Calibration Error Responses (C<sub>off</sub>)</b>					
C <sub>off</sub> Zero gas	-0.122	-0.055	-0.024	0.004	-0.097
C <sub>off</sub> Upscale gas	223.652	45.586	48.033	9.471	9.514
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.1%	0.1%	0.0%	0.1%	0.4%
Upscale gas	-1.3%	-1.6%	0.0%	0.4%	0.2%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>off</sub> Zero gas	0.306	-0.008	0.023	0.022	-0.006
C <sub>off</sub> Upscale gas	218.380	43.684	48.015	9.551	9.559
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	0.0%	0.0%	0.0%	0.0%	-0.1%
Upscale gas	-0.1%	0.5%	0.0%	0.0%	0.0%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

041713:094208

14:54:22	160.798	0.407	9.933	6.865	7.761
14:54:37	139.544	0.280	14.671	8.501	7.980
14:54:52	55.295	0.273	11.814	9.497	9.437
14:55:07	13.268	0.179	3.865	9.541	9.532
14:55:22	2.239	0.202	0.920	9.546	9.542
14:55:37	0.814	0.135	0.532	9.547	9.545
14:55:52	0.570	0.044	0.509	9.548	9.549
14:56:07	0.570	-0.018	0.483	9.549	9.552
14:56:22	0.122	0.006	0.478	9.549	9.553
14:56:37	0.570	-0.014	0.488	9.549	9.554
14:56:52	0.171	-0.052	0.474	9.538	9.556
14:57:07	0.130	0.438	0.458	4.109	9.729
14:57:22	54.221	16.808	0.350	0.304	9.978
14:57:37	170.192	33.208	0.113	0.057	10.010
14:57:52	204.843	38.408	0.000	0.036	10.007
14:58:07	215.067	40.308	-0.062	0.038	10.003
14:58:22	215.995	41.540	0.005	0.022	10.020
14:58:37	216.744	42.322	0.029	0.001	10.019
14:58:52	217.013	42.896	0.042	0.009	10.026
14:59:07	217.305	43.284	0.027	0.014	10.022
14:59:22	217.395	43.619	0.029	0.012	10.025
14:59:37	217.509	43.831	0.031	-0.008	10.020
14:59:52	217.770	44.034	-0.062	0.017	10.017
15:00:07	217.933	44.203	0.018	0.011	10.021
15:00:22	218.006	44.277	0.042	0.013	10.017
15:00:37	216.996	38.742	1.239	0.131	5.590
15:00:52	210.704	16.324	15.532	0.039	0.490
15:01:07	76.996	7.732	38.061	0.031	0.118
15:01:22	8.058	5.228	46.395	0.013	0.049
15:01:37	2.019	4.090	47.796	0.025	0.027
15:01:52	1.351	3.460	47.950	0.029	0.001
15:02:07	0.724	3.079	47.989	0.040	-0.007

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 1

March 25, 2013  
 Start Time 14:54  
 Stop Time 15:09

CALIBRATION BIAS 10

Nox conv

	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
15:02:22	0.668	2.777	48.012	0.035	-0.002
15:02:37	0.782	2.449	48.036	0.023	-0.011
15:02:52	0.326	2.279	48.049	0.016	-0.017
15:03:07	0.407	2.053	47.331	0.858	-0.023
15:03:22	5.088	1.050	38.183	1.094	-0.066
15:03:37	17.786	0.744	15.441	1.022	-0.073
15:03:52	31.640	0.759	3.535	1.023	-0.075
15:04:07	40.041	0.778	0.532	1.015	-0.079
15:04:22	42.776	0.749	0.215	1.000	-0.077
15:04:37	43.443	0.718	0.176	1.022	-0.076
15:04:52	43.671	0.770	0.147	1.004	-0.076
15:05:07	44.510	0.783	0.230	1.022	-0.079
15:05:22	44.957	0.832	0.184	1.009	-0.079
15:05:37	45.340	0.788	0.177	1.007	-0.079
15:05:52	45.502	0.816	0.163	1.014	-0.078
15:06:07	45.877	0.820	0.138	1.002	-0.079
15:06:22	46.097	0.739	0.181	1.013	-0.079
15:06:37	46.276	0.760	0.228	1.002	-0.080
15:06:52	46.357	0.850	0.181	1.013	-0.082
15:07:07	46.431	0.838	0.137	1.008	-0.079
15:07:22	46.520	0.803	0.125	1.013	-0.079
15:07:37	46.642	0.879	0.187	1.018	-0.079
15:07:52	46.723	0.765	0.187	0.997	-0.083
15:08:07	46.764	0.831	0.184	1.008	-0.083
15:08:22	46.845	0.832	0.186	1.002	-0.079
15:08:37	47.985	0.803	0.423	5.525	3.716
15:08:52	52.348	0.544	2.378	9.789	9.133
15:09:07	120.415	0.353	5.297	10.101	9.430

Wheelabrator  
CleanAir Project No. 12218  
South Broward  
Unit 2

Date: **March 27, 2013**

Start Time 7:15  
Stop Time 7:32

**CALIBRATION ERROR**

	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
<b>Instrument Information</b>					
Manufacturer:	T.E.I. Wstrn Rsrch	T.E.I.	Servomex	Servomex	Servomex
Model:	42C 921NMP	48CHL	1420B	1415B	1415B
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 (Cv)					
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	CC196768	CC196768
Mid					
High	ALM012619	ALM012619	CC181272	ALM040668	ALM040668

Analyzer Calibration Response (C <sub>Dir</sub> )					
Zero	-0.122	-0.050	-0.004	-0.005	-0.067
Low	223.071	45.317	48.174	9.508	9.478
Mid					
High	447.749	90.886	96.968	18.169	17.963

Analyzer Calibration Error (ACE) (Limit = 2%, Method 25A limit = 5% of gas value)					
Zero	0.0%	-0.1%	0.0%	0.0%	-0.4%
Low	0.0%	0.2%	0.9%	-0.1%	-0.3%
Mid	N/A	N/A	N/A	N/A	N/A
High	-0.1%	0.1%	0.7%	0.4%	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

Time	NOX	SO2	CO	O2	CO2
07:15:23	0.578	-0.534	0.552	18.670	17.730
07:15:38	1.653	-0.648	0.334	18.671	18.536
07:15:53	0.293	-0.611	-0.065	18.638	18.578
07:16:08	-0.041	-0.788	-0.261	18.225	18.608
07:16:23	-0.122	-0.697	-0.304	18.127	18.152
07:16:38	-0.122	-0.736	-0.314	18.127	17.971
07:16:53	-0.122	-0.776	-0.304	18.254	17.974
07:17:08	-0.122	-0.729	-0.298	18.144	17.966
07:17:23	-0.122	-0.790	-0.334	18.073	17.961
07:17:38	-0.122	-0.801	-0.293	18.112	17.964
07:17:53	-0.122	-0.763	-0.293	18.107	17.962
07:18:08	-0.122	-0.772	-0.309	18.114	17.963
07:18:23	-0.122	-0.817	-0.306	15.309	15.900
07:18:38	-0.211	-0.747	-0.306	9.833	9.867
07:18:53	-0.252	-0.760	-0.181	9.426	9.375
07:19:08	-0.187	-0.796	-0.130	9.462	9.360



Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

Date: **March 27, 2013**

Start Time 7:15  
 Stop Time 7:32

**CALIBRATION ERROR**

	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
07:19:23	-0.122	-0.825	-0.002	9.512	9.395
07:19:38	-0.122	-0.040	-0.031	9.508	9.473
07:19:53	-0.122	-0.040	-0.010	9.509	9.483
07:20:08	-0.122	-0.068	0.007	9.508	9.478
07:20:23	-0.122	-0.073	-0.026	9.510	9.481
07:20:38	-0.122	-0.013	0.007	6.747	9.150
07:20:53	-0.146	20.098	-0.020	0.522	9.735
07:21:08	255.100	67.993	-0.103	0.025	9.929
07:21:23	408.018	83.741	-0.262	-0.048	9.923
07:21:38	457.664	88.156	-0.337	-0.030	9.924
07:21:53	456.980	90.247	-0.350	-0.019	9.933
07:22:08	454.546	91.445	-0.368	-0.013	9.935
07:22:23	446.479	92.272	-0.334	-0.009	9.933
07:22:38	446.211	92.850	-0.348	-0.009	9.933
07:22:53	446.911	92.417	-0.368	0.002	9.933
07:23:08	447.708	90.901	-0.363	-0.004	9.935
07:23:23	447.692	91.230	-0.386	-0.005	9.933
07:23:38	447.700	91.064	-0.355	-0.005	9.935
07:23:53	447.700	90.605	-0.348	-0.005	9.935
07:24:08	447.774	90.751	-0.374	-0.006	9.934
07:24:23	447.774	90.904	-0.373	0.001	9.935
07:24:38	447.611	91.004	-0.381	-0.005	9.935
07:24:53	447.708	77.758	-0.353	0.434	8.941
07:25:08	421.083	41.893	-0.309	0.041	9.674
07:25:23	347.627	43.386	-0.282	-0.009	9.929
07:25:38	226.879	44.672	-0.327	-0.008	9.933
07:25:53	224.827	45.019	-0.371	-0.009	9.936
07:26:08	223.859	45.187	-0.355	-0.008	9.936
07:26:23	223.337	45.294	-0.347	-0.031	9.932
07:26:38	223.288	45.301	-0.415	-0.112	9.903
07:26:53	223.093	45.354	-0.361	-0.016	9.935
07:27:08	223.150	45.377	-0.410	-0.053	9.928
07:27:23	222.971	33.250	0.840	0.474	5.011
07:27:38	189.101	6.097	26.468	-6.628	0.204
07:27:53	59.181	0.943	66.312	-3.463	-0.100
07:28:08	10.289	0.282	89.892	-0.032	-0.059
07:28:23	1.490	0.074	96.101	-0.032	-0.059
07:28:38	0.464	0.039	96.804	-0.010	-0.061
07:28:53	0.195	0.002	96.903	-0.019	-0.061
07:29:08	0.114	-0.060	97.081	0.003	-0.063
07:29:23	-0.285	0.002	96.921	-0.004	-0.064
07:29:38	-0.098	-0.062	96.861	0.004	-0.065
07:29:53	0.016	0.208	95.398	0.411	0.136
07:30:08	1.164	1.001	79.749	0.011	-0.050
07:30:23	0.619	1.408	59.822	-0.008	-0.067
07:30:38	-0.204	1.503	50.035	-0.015	-0.067
07:30:53	-0.407	1.524	48.347	-0.004	-0.067
07:31:08	-0.244	1.522	48.217	0.002	-0.067
07:31:23	-0.212	1.514	48.177	-0.015	-0.068
07:31:38	0.000	1.503	48.163	0.000	-0.071
07:31:53	0.000	1.522	48.229	0.000	-0.068
07:32:08	-0.106	1.516	48.143	-0.012	-0.067
07:32:23	-0.317	1.517	48.150	-0.026	-0.068
07:32:38	-0.106	1.532	48.094	-0.006	-0.072

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
<b>System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>of</sub> Zero gas	0.380	-0.009	-0.279	0.100	0.019
C <sub>ul</sub> Upscale gas	218.304	44.399	47.656	9.407	9.399
<b>Analyzer Calibration Error Responses (C<sub>Dr</sub>)</b>					
C <sub>osa</sub> Zero gas	-0.122	-0.050	-0.004	-0.005	-0.067
C <sub>mca</sub> Upscale gas	223.071	45.317	48.174	9.508	9.478
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.1%	0.0%	-0.3%	0.6%	0.5%
Upscale gas	-1.1%	-1.0%	-0.5%	-0.6%	-0.4%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>of</sub> Zero gas	N/A	N/A	N/A	N/A	N/A
C <sub>ul</sub> Upscale gas	N/A	N/A	N/A	N/A	N/A
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	N/A	N/A	N/A	N/A	N/A
Upscale gas	N/A	N/A	N/A	N/A	N/A
<b>Drift Assessment Status</b>					
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
07:34:18	5.381	1.001	1.397	9.406	9.398
07:34:33	3.484	0.615	0.174	9.404	9.390
07:34:48	2.792	0.436	0.107	9.389	9.388
07:35:03	2.434	0.246	0.036	9.391	9.407
07:35:18	2.035	0.156	0.093	9.407	9.415
07:35:33	1.449	0.121	0.047	9.403	9.398
07:35:48	0.977	0.100	0.074	9.398	9.403
07:36:03	0.928	0.069	0.030	9.410	9.412
07:36:18	0.651	0.016	0.125	9.401	9.413
07:36:33	1.140	0.006	0.078	9.402	9.405
07:36:48	0.472	0.031	0.011	9.399	9.386
07:37:03	0.375	-0.011	0.057	9.420	9.405
07:37:18	0.293	-0.046	0.041	6.974	9.464
07:37:33	0.082	6.217	0.047	0.755	9.806
07:37:48	127.847	26.830	-0.144	0.097	9.872
07:38:03	200.350	36.703	-0.246	0.046	9.876
07:38:18	218.095	40.298	-0.285	0.044	9.877
07:38:33	218.673	42.188	-0.280	0.044	9.879
07:38:48	218.983	43.108	-0.272	0.033	9.880
07:39:03	219.153	43.459	-0.266	0.147	9.879
07:39:18	218.812	43.525	-0.233	0.193	9.879
07:39:33	216.736	44.114	-0.207	0.185	9.885
07:39:48	217.615	44.970	-0.148	0.184	9.886
07:40:03	218.299	44.871	-0.083	0.190	9.892
07:40:18	218.388	44.529	-0.081	0.217	9.899
07:40:33	218.226	44.357	-0.054	0.210	9.900
07:40:48	218.022	44.313	-0.022	0.206	9.658
07:41:03	215.824	37.724	2.965	0.090	2.476
07:41:18	178.104	16.842	20.150	0.020	0.240
07:41:33	45.194	7.539	37.996	0.035	0.072
07:41:48	5.169	4.555	45.968	0.073	0.105
07:42:03	1.913	3.435	47.707	0.104	0.106
07:42:18	1.954	2.994	47.674	0.100	0.050

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013  
 Start Time 7:34  
 Stop Time 7:43

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
07:42:33	1.873	2.601	47.562	0.101	0.045
07:42:48	1.481	2.388	47.642	0.095	0.012
07:43:03	1.286	2.281	47.652	0.102	0.034
07:43:18	1.351	2.157	47.669	0.102	0.011
07:43:33	1.237	2.064	47.647	0.070	-0.024
07:43:48	0.961	1.984	47.733	0.030	-0.055

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

March 27, 2013  
 Start Time 7:48  
 Stop time 8:15

**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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	0.380	-0.009	-0.279	0.100	0.019
C <sub>uf</sub> Initial upscale	218.304	44.399	47.656	9.407	9.399
C <sub>of</sub> Final zero	0.464	0.044	-0.255	0.008	-0.044
C <sub>uf</sub> Final upscale	218.953	44.142	48.020	9.450	9.371
C <sub>ma</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>Avg</sub> Average conc.	153.036	11.360	10.616	8.515	10.436
C <sub>Gas</sub> Bias adjusted	155.966	11.559	10.701	8.592	10.596

**Clock Time (at end of sample period)**

Clock Time	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
07:49	146.176	13.876	9.911	8.355	10.533
07:50	141.520	12.524	18.660	7.851	11.034
07:51	150.071	9.548	12.133	8.942	10.104
07:52	152.184	7.441	8.268	8.663	10.288
07:53	153.616	6.784	7.114	8.716	10.219
07:54	154.123	7.827	9.023	8.292	10.573
07:55	152.916	9.404	8.892	8.411	10.511
07:56	151.420	8.985	9.696	8.719	10.270
07:57	160.157	8.617	10.045	8.276	10.574
07:58	157.939	12.865	7.160	8.044	10.757
07:59	151.072	28.466	7.096	8.218	10.652
08:00	153.958	25.368	10.705	8.192	10.674
08:01	154.312	24.424	9.201	8.427	10.489
08:02	146.410	40.548	10.930	8.314	10.573
08:03	145.761	36.410	12.542	8.376	10.508
08:04	151.174	13.191	13.672	8.332	10.572
08:05	163.000	7.766	9.252	8.675	10.302
08:06	162.772	5.486	7.409	8.738	10.244
08:07	153.594	4.226	11.691	8.031	10.876
08:08	150.138	3.417	9.162	9.099	10.039
08:09	153.852	2.747	22.561	8.216	10.694
08:10	150.727	2.402	18.197	8.566	10.438
08:11	153.384	2.014	7.867	9.119	9.972
08:12	157.151	1.741	8.803	8.606	10.406
08:13	156.591	1.839	7.843	8.950	10.097
08:14	152.635	3.504	11.710	8.440	10.541
08:15	155.318	5.288	7.086	9.334	9.831

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013

Start Time 8:16

Stop Time 8:25

**CALIBRATION BIAS 01**

	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
<b>System Response to Calibration Gases (C<sub>s</sub>)</b>					
C <sub>of</sub> Zero gas	0.464	0.044	-0.255	0.008	-0.044
C <sub>uf</sub> Upscale gas	218.953	44.142	48.020	9.450	9.371
<b>Analyzer Calibration Error Responses (C<sub>dl</sub>)</b>					
C <sub>ooo</sub> Zero gas	-0.122	-0.050	-0.004	-0.005	-0.067
C <sub>mca</sub> Upscale gas	223.071	45.317	48.174	9.508	9.478
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.1%	0.1%	-0.3%	0.1%	0.1%
Upscale gas	-0.9%	-1.3%	-0.2%	-0.3%	-0.6%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gases (C<sub>s</sub>)</b>					
C <sub>ol</sub> Zero gas	0.380	-0.009	-0.279	0.100	0.019
C <sub>ul</sub> Upscale gas	218.304	44.399	47.656	9.407	9.399
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	0.0%	0.1%	0.0%	-0.5%	-0.4%
Upscale gas	0.1%	-0.3%	0.4%	0.2%	-0.2%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
08:16:06	153.870	5.420	10.994	6.616	6.736
08:16:21	123.378	4.661	12.855	9.236	9.122
08:16:36	43.004	3.048	7.800	9.420	9.342
08:16:51	12.259	1.731	2.053	9.443	9.358
08:17:06	3.516	0.983	0.439	9.439	9.359
08:17:21	2.678	0.633	0.062	9.435	9.364
08:17:36	2.222	0.441	0.083	9.450	9.367
08:17:51	1.709	0.317	0.126	9.443	9.367
08:18:06	1.465	0.216	0.103	9.431	9.369
08:18:21	1.172	0.176	0.078	9.440	9.367
08:18:36	0.871	0.091	0.075	9.442	9.371
08:18:51	0.879	0.056	0.036	9.455	9.367
08:19:06	0.521	0.033	0.033	9.453	9.375
08:19:21	0.415	0.070	0.090	9.463	9.371
08:19:36	0.456	0.028	0.123	5.723	9.456
08:19:51	1.506	6.155	0.018	0.490	9.776
08:20:06	110.126	27.725	-0.135	0.076	9.826
08:20:21	207.953	37.968	-0.236	0.030	9.824
08:20:36	216.614	41.101	-0.266	0.019	9.815
08:20:51	218.079	42.356	-0.267	0.029	9.818
08:21:06	218.575	42.992	-0.238	-0.002	9.820
08:21:21	218.396	43.407	-0.264	0.005	9.826
08:21:36	218.640	43.663	-0.251	0.009	9.834
08:21:51	218.787	43.743	-0.266	0.008	9.831
08:22:06	218.543	43.793	-0.285	0.016	9.836
08:22:21	218.877	44.062	-0.264	0.010	9.812
08:22:36	218.991	44.148	-0.267	-0.007	9.829
08:22:51	218.991	44.217	-0.234	0.069	8.865
08:23:06	216.459	37.548	4.766	0.046	1.519
08:23:21	160.342	17.576	24.671	0.023	0.147
08:23:36	24.412	8.314	40.129	0.028	0.028
08:23:51	4.282	4.977	46.881	0.011	0.002
08:24:06	1.327	3.632	47.795	0.010	-0.007

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013  
 Start Time 8:16  
 Stop Time 8:25

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
08:24:21	0.887	2.987	47.906	0.015	-0.020
08:24:36	0.415	2.435	47.850	0.021	-0.032
08:24:51	0.293	2.303	47.968	0.004	-0.041
08:25:06	0.187	2.156	48.073	0.008	-0.043
08:25:21	0.000	2.051	48.019	0.018	-0.049
08:25:36	-0.057	2.015	47.985	0.301	0.008

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013  
 Start Time 8:27  
 Stop time 8:54

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	0.464	0.044	-0.255	0.008	-0.044
C <sub>ui</sub> Initial upscale	218.953	44.142	48.020	9.450	9.371
C <sub>of</sub> Final zero	0.280	0.040	-0.248	0.006	-0.046
C <sub>uf</sub> Final upscale	218.095	44.165	47.927	9.371	9.408
C <sub>ms</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>Avg</sub> Average conc.	156.993	10.318	10.416	8.242	10.818
C <sub>Gas</sub> Bias adjusted	160.101	10.506	10.463	8.337	10.973

Clock Time (at end of sample period)

Clock Time	NOX	SO2	CO	O2	CO2
08:28	154.811	11.374	15.327	7.768	10.955
08:29	160.879	13.062	17.530	8.385	10.553
08:30	165.853	21.278	17.187	7.901	10.977
08:31	161.846	41.840	16.816	8.149	11.182
08:32	153.504	48.779	14.941	8.600	10.555
08:33	152.839	47.956	15.422	8.416	10.707
08:34	155.950	20.081	12.585	8.826	10.642
08:35	156.964	9.869	10.652	8.090	10.893
08:36	153.873	7.270	12.105	7.516	11.501
08:37	162.731	5.445	9.187	8.463	10.705
08:38	159.308	3.981	11.029	8.119	10.835
08:39	159.050	3.350	12.486	8.103	10.825
08:40	156.317	2.682	11.014	8.484	10.487
08:41	151.138	2.210	12.629	7.060	11.763
08:42	148.799	1.860	9.225	7.997	10.932
08:43	159.536	1.532	6.620	8.765	10.261
08:44	156.984	1.606	7.423	8.111	10.777
08:45	159.642	2.229	6.316	8.245	10.667
08:46	162.609	2.611	5.268	8.393	10.516
08:47	154.471	3.191	11.540	6.955	11.883
08:48	157.406	3.346	6.664	8.422	10.825
08:49	161.530	2.493	4.776	9.198	10.226
08:50	158.681	2.176	7.536	7.917	11.042
08:51	153.230	2.487	7.534	8.578	10.718
08:52	153.592	3.504	6.090	9.474	10.211
08:53	152.774	5.456	7.183	8.308	10.787
08:54	154.683	6.910	6.140	8.286	10.675

Start Time 8:55  
Stop Time 9:05

	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
<b>System Response to Calibration Gases (C<sub>s</sub>)</b>					
C <sub>of</sub> Zero gas	0.280	0.040	-0.248	0.006	-0.046
C <sub>uf</sub> Upscale gas	218.095	44.165	47.927	9.371	9.408
<b>Analyzer Calibration Error Responses (C<sub>dir</sub>)</b>					
C <sub>oca</sub> Zero gas	-0.122	-0.050	-0.004	-0.005	-0.067
C <sub>moe</sub> Upscale gas	223.071	45.317	48.174	9.508	9.478
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.1%	0.1%	-0.3%	0.1%	0.1%
Upscale gas	-1.1%	-1.3%	-0.3%	-0.8%	-0.4%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gases (C<sub>s</sub>)</b>					
C <sub>oi</sub> Zero gas	0.464	0.044	-0.255	0.008	-0.044
C <sub>ui</sub> Upscale gas	218.953	44.142	48.020	9.450	9.371
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	0.0%	0.0%	0.0%	0.0%	0.0%
Upscale gas	-0.2%	0.0%	-0.1%	-0.4%	0.2%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

08:55:38	139.796	5.812	9.542	7.720	6.901
08:55:53	85.397	4.482	11.057	9.869	9.180
08:56:08	27.863	2.525	5.781	10.031	9.344
08:56:23	4.721	1.346	1.420	9.961	9.354
08:56:38	2.849	0.785	0.260	10.359	9.367
08:56:53	2.418	0.540	0.083	9.758	9.367
08:57:08	1.758	0.298	0.124	9.937	9.367
08:57:23	1.514	0.108	0.112	9.361	9.369
08:57:38	0.847	0.161	0.073	9.365	9.395
08:57:53	0.798	0.106	0.113	9.376	9.399
08:58:08	0.757	0.072	0.026	9.364	9.400
08:58:23	0.326	0.015	0.085	9.373	9.399
08:58:38	0.269	0.049	0.088	9.376	9.411
08:58:53	0.399	0.056	0.101	9.365	9.415
08:59:08	0.171	0.090	0.080	9.362	9.403
08:59:23	-0.041	0.049	0.028	5.505	9.522
08:59:38	30.102	7.528	-0.013	0.443	9.839
08:59:53	149.695	29.621	-0.153	0.062	9.882
09:00:08	203.207	38.546	-0.242	0.040	9.882
09:00:23	215.295	41.263	-0.298	0.014	9.884
09:00:38	217.070	42.439	-0.249	0.014	9.886
09:00:53	217.542	43.010	-0.247	0.000	9.887
09:01:08	217.713	43.404	-0.246	0.007	9.888
09:01:23	217.884	43.785	-0.251	0.006	9.884
09:01:38	218.055	43.945	-0.260	0.006	9.884
09:01:53	218.071	44.072	-0.291	-0.004	9.890
09:02:08	218.071	44.184	-0.251	0.002	9.888
09:02:23	218.144	44.239	-0.259	0.037	9.797
09:02:38	207.774	40.772	2.634	0.058	2.988
09:02:53	165.975	20.622	18.753	0.018	0.259
09:03:08	56.451	8.978	37.582	0.006	0.026
09:03:23	4.819	5.236	45.913	0.018	-0.005



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

March 27, 2013  
 Start Time 8:55  
 Stop Time 9:05

**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
09:03:38	1.278	3.902	47.604	0.028	-0.008
09:03:53	0.724	3.119	47.777	0.018	-0.022
09:04:08	0.513	2.659	47.902	0.017	-0.033
09:04:23	0.228	2.388	47.881	0.011	-0.040
09:04:38	0.464	2.219	47.972	0.022	-0.047
09:04:53	0.065	2.089	47.927	0.011	-0.050
09:05:08	0.260	1.976	47.173	3.658	3.032
09:05:23	28.612	3.803	38.821	8.431	9.466

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

March 27, 2013  
 Start Time 9:08  
 Stop time 9:35

**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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	0.280	0.040	-0.248	0.006	-0.046
C <sub>ui</sub> Initial upscale	218.095	44.165	47.927	9.371	9.408
C <sub>of</sub> Final zero	0.443	-0.040	-0.267	-0.004	-0.035
C <sub>uf</sub> Final upscale	217.094	44.149	47.712	9.404	9.457
C <sub>ma</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>Avg</sub> Average conc.	141.068	10.285	8.913	8.724	10.275
C <sub>Gas</sub> Bias adjusted	144.442	10.505	9.022	8.847	10.377

**Clock Time (at end of sample period)**

Clock Time	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
09:09	140.366	7.861	7.820	9.103	9.944
09:10	143.626	7.929	9.957	9.006	10.072
09:11	144.221	7.698	9.011	9.045	10.004
09:12	140.104	8.503	9.841	9.189	9.902
09:13	143.586	10.481	9.807	9.101	9.976
09:14	149.552	13.904	9.565	9.240	9.859
09:15	140.818	15.249	9.051	8.976	10.031
09:16	138.759	13.548	8.763	8.963	10.059
09:17	140.741	9.608	10.000	8.675	10.254
09:18	138.006	7.204	9.290	9.231	9.856
09:19	141.254	5.992	9.819	8.533	10.373
09:20	141.113	5.513	7.426	8.814	10.154
09:21	147.690	5.893	8.246	8.130	10.704
09:22	149.483	7.172	6.939	8.776	10.205
09:23	147.450	8.353	8.480	8.193	10.653
09:24	148.633	8.124	6.532	8.884	10.150
09:25	142.216	6.489	7.505	8.623	10.315
09:26	141.087	6.976	8.407	8.472	10.497
09:27	136.587	15.383	8.177	8.342	10.577
09:28	138.447	15.128	8.922	8.382	10.610
09:29	138.816	14.241	7.055	8.932	10.148
09:30	132.981	15.004	8.225	8.918	10.177
09:31	134.385	14.297	7.064	8.660	10.366
09:32	137.116	14.967	7.848	8.580	10.441
09:33	139.540	12.756	9.568	8.299	10.646
09:34	136.760	10.306	19.188	8.031	10.873
09:35	135.494	9.116	8.153	8.444	10.569

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013  
 Start Time 9:35  
 Stop Time 9:45

**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<sub>s</sub>)**

C <sub>0f</sub> Zero gas	0.443	-0.040	-0.267	-0.004	-0.035
C <sub>u1</sub> Upscale gas	217.094	44.149	47.712	9.404	9.457

**Analyzer Calibration Error Responses (C<sub>Dir</sub>)**

C <sub>000</sub> Zero gas	-0.122	-0.050	-0.004	-0.005	-0.067
C <sub>mca</sub> Upscale gas	223.071	45.317	48.174	9.508	9.478

**Actual Upscale Gas Value (C<sub>MA</sub>)**

C <sub>ma</sub> 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	0.1%	0.0%	-0.3%	0.0%	0.2%
Upscale gas	-1.3%	-1.3%	-0.5%	-0.6%	-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<sub>s</sub>)**

C <sub>0i</sub> Zero gas	0.280	0.040	-0.248	0.006	-0.046
C <sub>u1</sub> Upscale gas	218.095	44.165	47.927	9.371	9.408

**Drift Assessment as Percent of Calibration Span Value (D) (3%)**

Zero gas	0.0%	-0.1%	0.0%	-0.1%	0.1%
Upscale gas	-0.2%	0.0%	-0.2%	0.2%	0.3%

**Drift Assessment Status**

Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

011713E0042C89

09:35:54	140.171	7.394	6.486	8.257	10.233
09:36:09	141.148	6.532	8.172	6.776	6.714
09:36:24	94.692	4.694	10.917	9.174	9.153
09:36:39	20.513	2.559	6.536	9.349	9.409
09:36:54	6.244	1.397	2.038	9.361	9.435
09:37:09	2.515	0.781	0.351	9.363	9.451
09:37:24	1.881	0.483	0.060	9.376	9.452
09:37:39	1.310	0.239	0.083	9.401	9.455
09:37:54	0.798	0.135	0.111	9.408	9.456
09:38:09	1.058	0.082	0.065	9.389	9.456
09:38:24	0.749	0.101	0.147	9.407	9.458
09:38:39	0.643	-0.018	0.105	9.403	9.457
09:38:54	0.440	-0.075	0.069	9.405	9.456
09:39:09	0.244	-0.026	0.101	9.403	9.458
09:39:24	-0.041	0.024	0.037	7.789	9.476
09:39:39	20.716	4.710	0.062	1.071	9.828
09:39:54	91.942	25.620	-0.080	0.103	9.910
09:40:09	178.128	36.926	-0.222	0.024	9.915
09:40:24	212.690	40.707	-0.247	0.015	9.915
09:40:39	214.921	42.382	-0.228	-0.025	9.916
09:40:54	215.743	43.066	-0.277	0.015	9.919
09:41:09	216.288	43.385	-0.274	0.005	9.919
09:41:24	216.443	43.626	-0.249	-0.003	9.917
09:41:39	216.647	43.686	-0.288	-0.024	9.907
09:41:54	216.736	43.771	-0.236	-0.010	9.921
09:42:09	216.899	43.993	-0.263	-0.002	9.921
09:42:24	216.882	44.166	-0.299	-0.008	9.922
09:42:39	217.094	44.135	-0.251	-0.002	9.921
09:42:54	217.094	44.145	-0.251	0.013	9.864
09:43:09	217.094	39.277	2.213	0.068	3.264
09:43:24	145.283	19.129	16.897	0.019	0.275
09:43:39	30.281	8.718	37.050	0.004	0.049
09:43:54	7.554	5.314	45.442	0.009	-0.002

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013  
 Start Time 9:35  
 Stop Time 9:45

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
09:44:09	1.815	3.888	47.523	0.014	-0.006
09:44:24	0.814	3.184	47.725	0.013	-0.018
09:44:39	0.440	2.725	47.713	0.002	-0.027
09:44:54	0.114	2.440	47.699	-0.005	-0.036
09:45:09	0.456	2.286	47.857	-0.010	-0.043
09:45:24	-0.261	2.159	47.776	-0.015	-0.051

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013  
 Start Time 9:47  
 Stop time 10:14

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	0.443	-0.040	-0.267	-0.004	-0.035
C <sub>ui</sub> Initial upscale	217.094	44.149	47.712	9.404	9.457
C <sub>of</sub> Final zero	-0.014	-0.010	-0.243	0.004	-0.044
C <sub>uf</sub> Final upscale	214.744	43.724	47.444	9.389	9.448
C <sub>ma</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>Avg</sub> Average conc.	133.004	12.973	12.288	8.837	10.312
C <sub>Gas</sub> Bias adjusted	137.281	13.335	12.403	8.953	10.393

Clock Time (at end of sample period)

04/17/13 09:42:08	09:48	136.506	12.122	7.231	8.188	10.642
	09:49	131.797	19.082	31.512	7.996	11.081
	09:50	138.706	22.615	10.870	8.580	10.539
	09:51	142.646	27.993	8.172	8.031	11.010
	09:52	143.891	29.557	7.211	8.661	10.508
	09:53	138.474	25.222	8.971	8.395	10.694
	09:54	133.435	21.296	10.251	8.428	10.669
	09:55	133.950	13.993	8.201	8.627	10.490
	09:56	133.714	10.086	9.494	8.926	10.290
	09:57	132.662	7.085	8.342	9.428	9.849
	09:58	135.824	5.654	9.768	9.025	10.182
	09:59	133.274	5.319	10.620	8.882	10.238
	10:00	127.739	6.587	24.178	8.730	10.385
	10:01	132.827	7.563	10.356	9.718	9.584
	10:02	132.924	10.811	10.686	9.435	9.824
	10:03	131.646	15.004	18.489	7.915	11.085
	10:04	128.124	20.011	16.694	7.944	11.096
	10:05	129.913	14.624	10.964	8.869	10.276
	10:06	132.100	9.346	10.909	8.652	10.440
	10:07	132.750	6.408	10.512	8.989	10.181
	10:08	130.039	4.976	10.995	8.640	10.438
	10:09	130.979	4.577	10.268	9.358	9.902
	10:10	129.605	5.149	9.776	9.462	9.782
	10:11	130.356	9.839	10.424	9.541	9.724
	10:12	130.676	13.171	12.659	9.447	9.819
	10:13	129.892	11.423	16.301	9.544	9.719
	10:14	126.665	10.763	17.931	9.190	9.966

Wheelabrator  
CleanAir Project No. 12218  
South Broward  
Unit 2

March 27, 2013  
Start Time 10:15  
Stop Time 10:25

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
<b>System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>of</sub> Zero gas	-0.014	-0.010	-0.243	-0.004	-0.044
C <sub>uf</sub> Upscale gas	214.744	43.724	47.444	9.389	9.448
<b>Analyzer Calibration Error Responses (C<sub>Dr</sub>)</b>					
C <sub>oc</sub> Zero gas	-0.122	-0.050	-0.004	-0.005	-0.067
C <sub>mco</sub> Upscale gas	223.071	45.317	48.174	9.508	9.478
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.0%	0.0%	-0.2%	0.0%	0.1%
Upscale gas	-1.9%	-1.8%	-0.8%	-0.7%	-0.2%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>oi</sub> Zero gas	0.443	-0.040	-0.267	-0.004	-0.035
C <sub>ui</sub> Upscale gas	217.094	44.149	47.712	9.404	9.457
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	-0.1%	0.0%	0.0%	0.0%	0.0%
Upscale gas	-0.5%	-0.5%	-0.3%	-0.1%	-0.1%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
10:15:47	60.521	4.483	15.243	9.282	9.240
10:16:02	16.712	2.292	7.567	9.379	9.408
10:16:17	2.361	1.265	2.125	9.377	9.430
10:16:32	1.319	0.775	0.344	9.379	9.430
10:16:47	0.724	0.510	0.121	9.376	9.432
10:17:02	0.529	0.296	0.080	9.387	9.433
10:17:17	0.521	0.147	0.057	9.391	9.439
10:17:32	0.090	0.060	0.078	9.387	9.437
10:17:47	-0.350	0.021	0.101	9.395	9.449
10:18:02	0.276	0.057	0.059	9.394	9.446
10:18:17	-0.057	0.019	0.021	9.378	9.452
10:18:32	0.049	-0.024	0.127	9.376	9.450
10:18:47	-0.057	-0.026	0.037	9.373	9.441
10:19:02	-0.033	0.019	0.054	6.868	9.501
10:19:17	26.821	8.630	-0.034	0.762	9.847
10:19:32	133.537	29.692	-0.085	0.076	9.900
10:19:47	192.324	38.079	-0.190	0.027	9.905
10:20:02	211.730	40.563	-0.244	0.027	9.904
10:20:17	213.569	41.599	-0.247	0.009	9.899
10:20:32	213.838	42.284	-0.233	0.000	9.899
10:20:47	214.034	42.691	-0.220	0.002	9.900
10:21:02	214.164	42.904	-0.233	-0.004	9.896
10:21:17	214.302	43.219	-0.238	0.004	9.896
10:21:32	214.335	43.397	-0.220	-0.013	9.896
10:21:47	214.367	43.471	-0.223	-0.008	9.900
10:22:02	214.603	43.608	-0.234	-0.004	9.898
10:22:17	214.774	43.684	-0.228	0.000	9.900
10:22:32	214.774	43.732	-0.269	-0.016	9.902
10:22:47	214.684	43.757	-0.231	-0.027	9.901
10:23:02	214.815	43.995	-0.220	0.020	9.843

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013  
 Start Time 10:15  
 Stop Time 10:25

**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
10:23:17	203.826	38.414	1.867	0.065	3.340
10:23:32	159.569	17.890	16.539	0.004	0.306
10:23:47	63.964	8.418	34.416	0.005	0.030
10:24:02	5.511	5.109	44.425	0.002	0.002
10:24:17	1.148	3.751	47.038	0.008	-0.011
10:24:32	0.627	3.074	47.438	0.012	-0.024
10:24:47	0.660	2.681	47.461	0.012	-0.039
10:25:02	0.041	2.348	47.432	0.011	-0.044
10:25:17	0.041	2.183	47.562	-0.002	-0.049

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013  
 Start Time 10:27  
 Stop time 10:54

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	-0.014	-0.010	-0.243	0.004	-0.044
C <sub>ui</sub> Initial upscale	214.744	43.724	47.444	9.389	9.448
C <sub>of</sub> Final zero	0.138	-0.004	-0.267	-0.013	-0.037
C <sub>uf</sub> Final upscale	214.028	43.799	47.406	9.366	9.425
C <sub>ma</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>Avg</sub> Average conc.	137.278	11.684	22.642	9.243	9.907
C <sub>Gas</sub> Bias adjusted	142.770	12.047	22.714	9.383	10.003

Clock Time (at end of sample period)

Clock Time	NOX	SO2	CO	O2	CO2
10:28	126.691	5.282	22.540	10.056	9.190
10:29	121.644	6.587	25.415	9.679	9.497
10:30	123.315	7.773	53.663	8.817	10.230
10:31	129.819	7.922	20.397	9.681	9.512
10:32	129.795	7.772	20.011	9.798	9.411
10:33	130.959	8.272	24.097	9.321	9.832
10:34	133.223	8.241	19.529	9.357	9.784
10:35	133.710	9.272	21.430	9.252	9.856
10:36	133.537	12.903	31.697	9.530	9.662
10:37	140.684	13.978	19.548	9.060	10.012
10:38	144.597	14.930	19.333	9.197	9.922
10:39	144.210	13.930	22.442	9.202	9.932
10:40	146.888	16.724	31.455	8.189	10.741
10:41	143.964	23.293	72.754	7.588	11.365
10:42	150.877	12.580	19.706	9.400	9.810
10:43	147.251	9.375	17.823	9.650	9.608
10:44	134.123	12.331	15.409	9.425	9.729
10:45	138.327	16.521	16.453	8.784	10.320
10:46	138.447	16.333	15.584	8.976	10.158
10:47	146.152	15.746	17.092	9.610	9.664
10:48	146.066	11.967	14.527	9.702	9.538
10:49	132.619	10.800	16.202	9.220	9.921
10:50	133.128	11.737	18.394	8.797	10.299
10:51	137.739	11.325	14.298	9.558	9.667
10:52	137.131	12.598	14.623	9.280	9.906
10:53	143.685	9.673	11.508	9.415	9.804
10:54	137.914	7.611	15.404	9.005	10.117



Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013  
 Start Time 10:55  
 Stop Time 11:04

**CALIBRATION BIAS 05**

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<sub>s</sub>)**

C <sub>of</sub> Zero gas	0.138	-0.004	-0.267	-0.013	-0.037
C <sub>ul</sub> Upscale gas	214.028	43.799	47.406	9.366	9.425

**Analyzer Calibration Error Responses (C<sub>di</sub>)**

C <sub>oc</sub> Zero gas	-0.122	-0.050	-0.004	-0.005	-0.067
C <sub>mce</sub> Upscale gas	223.071	45.317	48.174	9.508	9.478

**Actual Upscale Gas Value (C<sub>MA</sub>)**

C <sub>ma</sub> 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	0.1%	0.1%	-0.3%	0.0%	0.2%
Upscale gas	-2.0%	-1.7%	-0.8%	-0.8%	-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<sub>s</sub>)**

C <sub>ol</sub> Zero gas	-0.014	-0.010	-0.243	0.004	-0.044
C <sub>ul</sub> Upscale gas	214.744	43.724	47.444	9.389	9.448

**Drift Assessment as Percent of Calibration Span Value (D) (3%)**

Zero gas	0.0%	0.0%	0.0%	-0.1%	0.0%
Upscale gas	-0.2%	0.1%	0.0%	-0.1%	-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
10:55:22	133.333	6.947	15.471	8.275	7.826
10:55:37	78.632	3.622	12.350	9.295	9.295
10:55:52	19.926	1.696	5.563	9.359	9.379
10:56:07	2.808	0.882	1.369	9.361	9.409
10:56:22	1.083	0.627	0.272	9.363	9.403
10:56:37	0.578	0.459	0.108	9.362	9.417
10:56:52	0.562	0.342	0.105	9.363	9.417
10:57:07	0.293	0.233	0.031	9.365	9.422
10:57:22	0.212	0.138	0.047	9.367	9.409
10:57:37	0.342	0.112	0.059	9.366	9.426
10:57:52	0.049	0.094	0.096	9.366	9.422
10:58:07	0.008	0.085	0.077	9.364	9.426
10:58:22	0.138	-0.006	0.062	9.364	9.411
10:58:37	0.138	-0.010	0.101	9.367	9.429
10:58:52	0.138	0.005	0.033	9.271	9.416
10:59:07	0.098	2.517	0.083	3.138	9.647
10:59:22	57.403	24.082	0.007	0.236	9.875
10:59:37	179.015	36.386	-0.173	0.033	9.888
10:59:52	203.581	40.158	-0.244	0.029	9.891
11:00:07	211.534	41.641	-0.230	-0.012	9.896
11:00:22	212.543	42.263	-0.244	-0.011	9.896
11:00:37	212.878	42.730	-0.270	-0.022	9.898
11:00:52	213.146	43.041	-0.233	-0.001	9.897
11:01:07	213.358	43.284	-0.241	-0.003	9.898
11:01:22	213.529	43.437	-0.234	-0.016	9.899
11:01:37	213.756	43.598	-0.288	-0.017	9.902
11:01:52	213.895	43.681	-0.269	-0.007	9.902
11:02:07	214.025	43.769	-0.244	-0.019	9.903
11:02:22	214.164	43.946	-0.231	0.053	9.062
11:02:37	192.023	29.709	5.151	0.020	1.716
11:02:52	103.541	11.482	22.510	0.008	0.166
11:03:07	30.134	6.217	38.863	-0.006	0.024

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013  
 Start Time 10:55  
 Stop Time 11:04

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
11:03:22	3.623	4.329	45.740	-0.001	-0.003
11:03:37	1.188	3.373	47.196	0.004	-0.019
11:03:52	0.594	2.930	47.428	0.014	-0.030
11:04:07	0.603	2.554	47.438	0.002	-0.039
11:04:22	0.416	2.286	47.352	0.008	-0.043
11:04:37	0.382	2.194	47.435	0.008	-0.049

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013  
 Start Time 11:06  
 Stop time 11:33

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
<b>Calibration Checks</b>					
C <sub>0i</sub> Initial zero	0.138	-0.004	-0.267	-0.013	-0.037
C <sub>0i</sub> Initial upscale	214.028	43.799	47.406	9.366	9.425
C <sub>0f</sub> Final zero	-0.372	0.044	-0.266	-0.006	-0.045
C <sub>0f</sub> Final upscale	214.053	43.702	47.419	9.370	9.429
C <sub>ma</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>Avg</sub> Average conc.	126.604	3.496	26.657	9.588	9.483
C <sub>Gas</sub> Bias adjusted	131.953	3.584	26.709	9.744	9.587

Clock Time (at end of sample period)

03/17/13 10:22:08	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
11:07	122.916	4.251	19.700	9.641	9.370
11:08	127.442	4.016	22.700	9.261	9.717
11:09	126.532	3.944	22.865	9.811	9.350
11:10	127.523	4.161	26.197	9.458	9.612
11:11	127.979	4.208	22.958	9.501	9.525
11:12	125.175	4.228	37.489	8.690	10.186
11:13	131.272	4.477	32.008	9.532	9.576
11:14	128.641	3.843	23.170	9.434	9.581
11:15	129.823	3.913	26.872	9.484	9.592
11:16	124.856	3.386	23.440	10.060	9.099
11:17	122.017	3.300	27.953	9.961	9.164
11:18	124.542	3.726	28.057	9.027	9.838
11:19	121.060	3.870	24.532	10.089	9.088
11:20	121.504	3.924	30.614	10.083	9.151
11:21	112.080	3.356	29.349	10.289	8.895
11:22	119.557	3.343	26.189	9.924	9.219
11:23	121.121	3.135	27.384	9.152	9.868
11:24	120.517	2.958	27.470	10.304	8.911
11:25	120.199	2.875	25.609	10.068	9.060
11:26	124.837	3.087	25.594	9.848	9.259
11:27	129.966	2.856	26.556	9.401	9.657
11:28	133.769	3.083	25.187	9.529	9.550
11:29	137.047	3.571	28.330	8.972	10.016
11:30	138.563	3.291	23.098	9.427	9.652
11:31	137.163	2.720	26.614	9.410	9.630
11:32	128.873	2.500	28.942	9.513	9.535
11:33	133.329	2.358	30.851	9.018	9.936

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
<b>System Response to Calibration Gases (C<sub>s</sub>)</b>					
C <sub>of</sub> Zero gas	-0.372	0.044	-0.266	-0.006	-0.045
C <sub>uf</sub> Upscale gas	214.053	43.702	47.419	9.370	9.429
<b>Analyzer Calibration Error Responses (C<sub>dir</sub>)</b>					
C <sub>occ</sub> Zero gas	-0.122	-0.050	-0.004	-0.005	-0.067
C <sub>mce</sub> Upscale gas	223.071	45.317	48.174	9.508	9.478
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	-0.1%	0.1%	-0.3%	0.0%	0.1%
Upscale gas	-2.0%	-1.8%	-0.8%	-0.8%	-0.3%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gases (C<sub>s</sub>)</b>					
C <sub>ol</sub> Zero gas	0.138	-0.004	-0.267	-0.013	-0.037
C <sub>ui</sub> Upscale gas	214.028	43.799	47.406	9.366	9.425
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	-0.1%	0.1%	0.0%	0.0%	0.0%
Upscale gas	0.0%	-0.1%	0.0%	0.0%	0.0%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
11:34:30	140.448	2.325	29.387	6.779	6.955
11:34:45	100.358	2.068	27.599	8.900	8.699
11:35:00	42.239	1.393	14.601	9.333	9.364
11:35:15	8.327	0.798	5.169	9.359	9.388
11:35:30	1.750	0.487	0.786	9.360	9.402
11:35:45	0.578	0.278	0.246	9.364	9.416
11:36:00	0.464	0.138	0.117	9.364	9.421
11:36:15	0.089	0.109	0.076	9.365	9.404
11:36:30	0.114	0.072	0.109	9.366	9.419
11:36:45	-0.163	0.103	0.046	9.366	9.424
11:37:00	-0.008	0.091	0.075	9.367	9.424
11:37:15	0.138	-0.044	0.016	9.369	9.435
11:37:30	0.032	0.014	-0.005	9.369	9.421
11:37:45	-0.334	-0.007	0.101	9.370	9.432
11:38:00	-0.301	0.099	0.051	9.371	9.432
11:38:15	-0.407	0.039	0.126	9.336	9.423
11:38:30	-0.407	2.227	0.060	3.653	9.625
11:38:45	67.651	24.728	-0.019	0.271	9.877
11:39:00	159.447	37.132	-0.194	0.043	9.889
11:39:15	202.955	40.371	-0.265	0.014	9.884
11:39:30	211.746	41.721	-0.293	0.009	9.902
11:39:45	213.032	42.411	-0.260	-0.002	9.904
11:40:00	213.431	42.800	-0.244	-0.005	9.902
11:40:15	213.667	43.079	-0.278	0.002	9.898
11:40:30	213.789	43.406	-0.306	-0.015	9.904
11:40:45	213.993	43.534	-0.259	-0.006	9.903
11:41:00	214.164	43.637	-0.244	-0.011	9.900
11:41:15	214.009	43.708	-0.277	-0.007	9.900
11:41:30	214.033	43.759	-0.277	-0.007	9.902
11:41:45	214.115	42.328	-0.211	0.104	7.360
11:42:00	178.038	21.871	9.060	-0.007	0.856
11:42:15	70.843	8.710	26.903	-0.003	0.092
11:42:30	18.478	5.293	42.100	0.000	-0.001

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013

Start Time 11:34

Stop Time 11:44

**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
11:42:45	2.637	3.943	46.388	0.014	-0.003
11:43:00	0.773	3.236	47.381	0.015	-0.018
11:43:15	0.562	2.864	47.472	-0.008	-0.032
11:43:30	0.464	2.473	47.365	-0.019	-0.040
11:43:45	0.089	2.312	47.419	0.009	-0.047
11:44:00	0.171	2.170	47.472	0.007	-0.049
11:44:15	1.595	2.365	47.007	5.037	3.844
11:44:30	15.898	3.966	35.829	9.218	8.983

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013  
 Start Time 12:07  
 Stop time 12:34

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
<b>Calibration Checks</b>					
C <sub>01</sub> Initial zero	-0.372	0.044	-0.266	-0.006	-0.045
C <sub>01</sub> Initial upscale	214.053	43.702	47.419	9.370	9.429
C <sub>01</sub> Final zero	0.003	0.156	-0.300	-0.010	-0.048
C <sub>01</sub> Final upscale	214.096	43.714	47.342	9.367	9.449
C <sub>01a</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>AVG</sub> Average conc.	139.738	5.256	10.893	8.964	10.123
C <sub>GAS</sub> Bias adjusted	145.631	5.332	11.091	9.110	10.218

Clock Time (at end of sample period)

Clock Time	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
12:08	134.872	1.971	17.708	8.347	10.577
12:09	138.364	1.641	11.639	8.894	10.156
12:10	139.518	1.560	9.164	8.539	10.430
12:11	140.091	2.594	7.482	9.164	9.949
12:12	140.448	6.888	11.763	8.492	10.459
12:13	138.586	8.033	15.157	8.793	10.263
12:14	138.203	5.994	5.965	9.020	10.029
12:15	134.532	5.115	19.237	9.011	10.076
12:16	137.554	3.512	8.339	9.637	9.521
12:17	138.262	2.898	9.192	8.830	10.209
12:18	134.099	2.888	8.622	9.090	9.998
12:19	133.647	3.745	10.023	9.325	9.851
12:20	133.026	5.805	9.527	9.251	9.875
12:21	138.030	9.607	9.780	8.540	10.469
12:22	144.984	10.764	8.343	8.720	10.331
12:23	140.267	8.430	11.902	8.928	10.175
12:24	139.137	6.029	9.328	9.545	9.684
12:25	138.287	4.633	8.661	9.321	9.862
12:26	139.345	4.047	8.303	8.800	10.281
12:27	142.074	4.203	10.311	8.587	10.446
12:28	142.515	5.104	15.743	8.869	10.264
12:29	140.438	4.274	6.229	9.861	9.383
12:30	145.877	3.925	7.788	9.407	9.822
12:31	151.732	5.271	8.568	8.514	10.488
12:32	148.653	7.670	9.145	8.685	10.382
12:33	141.799	7.962	14.313	8.646	10.378
12:34	138.579	7.344	21.909	9.212	9.972

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013  
 Start Time 12:36  
 Stop Time 12:45

**CALIBRATION BIAS 07**

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<sub>s</sub>)**

C <sub>of</sub> Zero gas	0.003	0.156	-0.300	-0.010	-0.048
C <sub>uf</sub> Upscale gas	214.096	43.714	47.342	9.367	9.449

**Analyzer Calibration Error Responses (C<sub>dlr</sub>)**

C <sub>oca</sub> Zero gas	-0.122	-0.050	-0.004	-0.005	-0.067
C <sub>mca</sub> Upscale gas	223.071	45.317	48.174	9.508	9.478

**Actual Upscale Gas Value (C<sub>MA</sub>)**

C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
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**Calibration Span Value (C<sub>S</sub>)**

	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%	0.2%	-0.3%	0.0%	0.1%
Upscale gas	-2.0%	-1.8%	-0.9%	-0.8%	-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<sub>s</sub>)**

C <sub>ol</sub> Zero gas	-0.372	0.044	-0.266	-0.006	-0.045
C <sub>ul</sub> Upscale gas	214.053	43.702	47.419	9.370	9.429

**Drift Assessment as Percent of Calibration Span Value (D) (3%)**

Zero gas	0.1%	0.1%	0.0%	0.0%	0.0%
Upscale gas	0.0%	0.0%	-0.1%	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
12:36:07	136.451	6.032	12.568	7.108	6.904
12:36:22	96.988	3.863	13.193	9.210	9.166
12:36:37	15.287	1.947	7.165	9.370	9.400
12:36:52	4.494	1.122	2.033	9.368	9.432
12:37:07	0.692	0.700	0.420	9.371	9.429
12:37:22	0.318	0.523	0.015	9.370	9.441
12:37:37	0.155	0.376	0.065	9.372	9.442
12:37:52	0.276	0.259	0.113	9.371	9.445
12:38:07	-0.057	0.238	-0.003	9.362	9.447
12:38:22	-0.057	0.127	0.013	9.367	9.450
12:38:37	0.032	0.105	0.056	9.383	9.450
12:38:52	0.032	0.230	-0.008	6.667	9.503
12:39:07	4.982	16.539	-0.015	0.710	9.845
12:39:22	71.754	35.075	-0.114	0.061	9.904
12:39:37	202.206	39.963	-0.282	0.015	9.909
12:39:52	210.085	41.452	-0.303	-0.001	9.909
12:40:07	212.772	42.289	-0.293	0.015	9.908
12:40:22	213.228	42.831	-0.293	-0.005	9.910
12:40:37	213.618	43.108	-0.288	-0.019	9.912
12:40:52	213.732	43.354	-0.317	0.000	9.911
12:41:07	213.887	43.520	-0.278	-0.013	9.914
12:41:22	213.993	43.608	-0.269	-0.001	9.910
12:41:37	214.025	43.679	-0.314	-0.020	9.913
12:41:52	214.115	43.854	-0.317	-0.008	9.912
12:42:07	214.148	38.144	0.961	0.095	5.383
12:42:22	160.252	15.466	12.690	0.001	0.480
12:42:37	44.469	6.841	32.308	0.022	0.068
12:42:52	11.730	4.420	43.464	0.016	-0.010
12:43:07	2.043	3.344	46.823	0.010	-0.008
12:43:22	0.852	2.820	47.230	0.014	-0.022
12:43:37	0.749	2.473	47.398	0.007	-0.032

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

March 27, 2013  
 Start Time 12:36  
 Stop Time 12:45

**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
12:43:52	0.464	2.268	47.350	0.001	-0.043
12:44:07	0.366	2.143	47.290	0.018	-0.049
12:44:22	0.382	2.084	47.347	-0.005	-0.053
12:44:37	0.260	2.004	47.389	0.610	0.117
12:44:52	0.049	3.368	44.588	7.200	7.041
12:45:07	68.270	4.568	31.783	9.119	9.608
12:45:22	113.944	3.839	19.279	9.197	9.808
12:45:37	137.412	3.367	12.776	9.125	9.918



Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013  
 Start Time 12:47  
 Stop time 13:14

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	0.003	0.156	-0.300	-0.010	-0.048
C <sub>ui</sub> Initial upscale	214.096	43.714	47.342	9.367	9.449
C <sub>of</sub> Final zero	-0.239	0.047	-0.296	-0.014	-0.055
C <sub>uf</sub> Final upscale	213.035	43.717	47.341	9.369	9.420
C <sub>ma</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>Avg</sub> Average conc.	136.999	4.805	9.702	8.969	10.085
C <sub>Gas</sub> Bias adjusted	143.096	4.863	9.929	9.116	10.183

Clock Time (at end of sample period)

Clock Time	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
12:48	140.468	3.926	8.432	9.099	9.977
12:49	142.994	3.838	8.320	9.688	9.550
12:50	139.233	3.196	9.803	9.652	9.548
12:51	134.662	3.024	11.570	9.115	9.971
12:52	133.453	3.409	16.442	8.379	10.553
12:53	133.527	4.162	13.676	9.535	9.630
12:54	136.121	4.814	10.614	9.052	9.974
12:55	139.308	7.112	9.594	9.082	9.994
12:56	134.961	8.294	9.817	9.197	9.894
12:57	133.993	8.390	11.886	9.158	9.950
12:58	138.407	6.430	10.813	8.868	10.166
12:59	141.628	5.218	9.804	8.760	10.267
13:00	136.451	4.206	9.027	8.901	10.144
13:01	137.399	3.647	9.229	8.939	10.138
13:02	139.147	3.058	8.154	8.663	10.321
13:03	138.081	3.101	7.873	8.834	10.226
13:04	136.168	3.294	8.113	8.929	10.120
13:05	140.348	4.379	9.162	8.616	10.406
13:06	138.079	4.987	7.504	9.087	9.974
13:07	138.319	5.991	8.589	8.501	10.484
13:08	140.476	5.559	7.353	9.147	9.977
13:09	138.189	5.622	10.183	8.491	10.508
13:10	137.466	4.888	8.019	9.550	9.636
13:11	132.485	4.116	9.007	9.320	9.812
13:12	129.754	4.291	8.596	9.213	9.773
13:13	131.667	5.317	12.321	8.178	10.680
13:14	136.201	5.461	8.061	8.216	10.617

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013  
 Start Time 13:15  
 Stop Time 13:24

**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
<b>System Response to Calibration Gases (C<sub>s</sub>)</b>					
C <sub>of</sub> Zero gas	0.239	0.047	-0.296	-0.014	-0.055
C <sub>ul</sub> Upscale gas	213.035	43.717	47.341	9.369	9.420
<b>Analyzer Calibration Error Responses (C<sub>dir</sub>)</b>					
C <sub>oco</sub> Zero gas	-0.122	-0.050	-0.004	-0.005	-0.067
C <sub>mco</sub> Upscale gas	223.071	45.317	48.174	9.508	9.478
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.0%	0.1%	-0.3%	-0.1%	0.1%
Upscale gas	-2.2%	-1.8%	-0.9%	-0.8%	-0.3%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gases (C<sub>s</sub>)</b>					
C <sub>oi</sub> Zero gas	0.003	0.156	-0.300	-0.010	-0.048
C <sub>ul</sub> Upscale gas	214.096	43.714	47.342	9.367	9.449
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	-0.1%	-0.1%	0.0%	0.0%	0.0%
Upscale gas	-0.2%	0.0%	0.0%	0.0%	-0.2%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
13:15:17	135.938	4.791	6.815	7.745	9.406
13:15:32	137.468	4.212	8.441	7.572	7.049
13:15:47	69.711	2.665	9.595	9.253	9.230
13:16:02	17.729	1.455	5.535	9.363	9.380
13:16:17	2.556	0.840	1.675	9.369	9.403
13:16:32	0.602	0.565	0.292	9.370	9.413
13:16:47	0.269	0.382	0.103	9.369	9.422
13:17:02	-0.041	0.202	0.051	9.374	9.409
13:17:17	0.268	0.140	0.072	9.371	9.429
13:17:32	0.049	0.171	0.077	9.360	9.416
13:17:47	0.041	0.055	0.070	9.373	9.425
13:18:02	-0.285	0.060	0.033	9.373	9.418
13:18:17	-0.073	0.026	-0.011	8.623	9.436
13:18:32	-0.358	8.811	0.019	1.744	9.743
13:18:47	99.202	31.570	-0.054	0.134	9.880
13:19:02	178.405	39.224	-0.207	0.011	9.893
13:19:17	208.100	41.317	-0.298	0.007	9.892
13:19:32	211.063	42.225	-0.306	0.018	9.892
13:19:47	211.787	42.833	-0.309	-0.009	9.896
13:20:02	212.381	43.044	-0.293	-0.006	9.896
13:20:17	212.723	43.375	-0.295	-0.031	9.896
13:20:32	212.495	43.510	-0.306	0.000	9.896
13:20:47	212.845	43.547	-0.288	-0.023	9.895
13:21:02	212.992	43.701	-0.291	-0.012	9.894
13:21:17	212.976	43.718	-0.309	-0.009	9.896
13:21:32	213.065	43.733	-0.304	-0.001	9.895
13:21:47	213.065	35.473	1.003	0.066	4.635
13:22:02	160.822	13.328	14.092	-0.002	0.402
13:22:17	39.862	6.270	32.744	-0.007	0.048
13:22:32	10.281	4.226	43.907	0.008	0.003
13:22:47	1.929	3.292	46.823	0.007	-0.011
13:23:02	0.692	2.873	47.197	0.013	-0.028
13:23:17	0.684	2.488	47.328	0.013	-0.040

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013  
 Start Time 13:15  
 Stop Time 13:24

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
13:23:32	0.472	2.305	47.320	0.013	-0.047
13:23:47	0.179	2.203	47.344	0.007	-0.050
13:24:02	0.276	2.048	47.360	-0.003	-0.055
13:24:17	-0.155	1.955	47.262	0.004	-0.061

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013  
 Start Time 13:26  
 Stop time 13:53

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	-0.239	0.047	-0.296	-0.014	-0.055
C <sub>ui</sub> Initial upscale	213.035	43.717	47.341	9.369	9.420
C <sub>of</sub> Final zero	-0.109	0.061	-0.317	0.003	-0.051
C <sub>uf</sub> Final upscale	212.823	43.584	47.315	9.361	9.417
C <sub>ma</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>avg</sub> Average conc.	127.058	3.645	14.149	9.158	9.944
C <sub>gas</sub> Bias adjusted	133.140	3.714	14.354	9.310	10.059

Clock Time (at end of sample period)

Clock Time	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
13:27	124.711	4.257	7.284	8.735	10.109
13:28	129.149	4.846	7.867	8.492	10.405
13:29	129.503	4.426	5.454	9.470	9.633
13:30	131.260	4.597	8.330	8.789	10.199
13:31	132.304	5.265	7.451	9.391	9.748
13:32	129.931	6.181	9.899	8.715	10.249
13:33	126.752	9.648	11.507	8.931	10.143
13:34	129.042	7.615	7.425	9.071	10.007
13:35	131.415	5.710	8.079	9.342	9.814
13:36	132.204	5.835	8.412	9.243	9.838
13:37	123.930	6.347	36.582	8.968	10.133
13:38	130.720	3.860	8.751	9.443	9.720
13:39	128.008	2.875	7.774	8.834	10.221
13:40	125.065	2.298	8.179	8.993	10.085
13:41	123.921	1.950	18.939	9.022	10.124
13:42	126.247	1.650	7.255	9.813	9.464
13:43	123.661	1.949	7.894	9.232	9.922
13:44	117.792	2.579	11.210	9.236	9.896
13:45	120.454	2.825	22.176	9.139	9.981
13:46	127.668	2.594	17.571	9.893	9.377
13:47	133.187	2.096	18.473	9.212	9.918
13:48	130.702	1.755	19.432	9.339	9.826
13:49	127.415	1.550	23.697	9.143	9.977
13:50	121.921	1.416	24.054	9.708	9.531
13:51	126.884	1.321	13.204	9.023	10.042
13:52	123.516	1.376	28.114	9.215	9.938
13:53	123.197	1.584	27.019	8.863	10.183

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013  
 Start Time 13:53  
 Stop Time 14:02

**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
<b>System Response to Calibration Gasses (C<sub>S</sub>)</b>					
C <sub>of</sub> Zero gas	-0.109	0.061	-0.317	0.003	-0.051
C <sub>uf</sub> Upscale gas	212.823	43.584	47.315	9.361	9.417
<b>Analyzer Calibration Error Responses (C<sub>Dr</sub>)</b>					
C <sub>ocb</sub> Zero gas	-0.122	-0.050	-0.004	-0.005	-0.067
C <sub>mca</sub> Upscale gas	223.071	45.317	48.174	9.508	9.478
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.0%	0.1%	-0.3%	0.0%	0.1%
Upscale gas	-2.3%	-1.9%	-0.9%	-0.8%	-0.3%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gasses (C<sub>S</sub>)</b>					
C <sub>oi</sub> Zero gas	-0.239	0.047	-0.296	-0.014	-0.055
C <sub>ui</sub> Upscale gas	213.035	43.717	47.341	9.369	9.420
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	0.0%	0.0%	0.0%	0.1%	0.0%
Upscale gas	0.0%	-0.1%	0.0%	0.0%	0.0%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
13:53:42	122.483	2.286	40.090	9.105	10.026
13:53:57	125.047	2.331	24.174	6.860	7.271
13:54:12	125.144	2.256	17.340	8.851	8.639
13:54:27	47.855	1.488	10.180	9.345	9.358
13:54:42	6.064	0.804	3.687	9.362	9.397
13:54:57	0.562	0.563	0.754	9.375	9.415
13:55:12	0.660	0.299	0.148	9.375	9.405
13:55:27	0.065	0.187	0.088	9.369	9.417
13:55:42	0.195	0.156	0.056	9.375	9.424
13:55:57	0.049	0.081	0.114	9.378	9.407
13:56:12	0.073	0.093	0.030	9.371	9.436
13:56:27	-0.440	0.025	-0.011	9.332	9.407
13:56:42	0.032	0.065	0.055	9.362	9.426
13:56:57	0.081	2.074	0.015	4.708	9.577
13:57:12	2.076	24.777	-0.015	0.375	9.866
13:57:27	132.349	37.713	-0.187	0.035	9.893
13:57:42	201.498	40.887	-0.272	0.022	9.895
13:57:57	210.501	42.046	-0.309	0.009	9.892
13:58:12	211.152	42.683	-0.293	0.016	9.893
13:58:27	211.600	43.035	-0.314	-0.022	9.894
13:58:42	212.015	43.324	-0.317	0.003	9.896
13:58:57	212.438	43.510	-0.317	-0.005	9.894
13:59:12	212.609	43.573	-0.317	0.003	9.892
13:59:27	212.829	43.669	-0.298	-0.025	9.894
13:59:42	213.032	43.596	-0.259	0.043	9.439
13:59:57	195.018	28.476	4.070	0.037	2.138
14:00:12	122.825	10.037	20.980	0.016	0.202
14:00:27	38.364	5.237	38.035	0.003	0.020
14:00:42	3.964	3.604	45.392	0.014	0.001
14:00:57	0.814	2.950	47.082	-0.020	-0.016
14:01:12	0.798	2.442	47.238	0.014	-0.028
14:01:27	0.171	2.323	47.298	0.013	-0.036

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

March 27, 2013  
 Start Time 13:53  
 Stop Time 14:02

**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
14:01:42	0.334	2.174	47.295	0.002	-0.045
14:01:57	-0.147	2.058	47.357	0.007	-0.051
14:02:12	0.301	1.955	47.293	0.001	-0.055
14:02:27	-0.057	1.814	47.408	-0.005	-0.060

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013  
 Start Time 14:04  
 Stop time 14:31

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	-0.109	0.061	-0.317	0.003	-0.051
C <sub>ui</sub> Initial upscale	212.823	43.584	47.315	9.361	9.417
C <sub>of</sub> Final zero	-0.212	-0.003	-0.324	-0.006	-0.062
C <sub>uf</sub> Final upscale	212.524	43.708	47.241	9.378	9.418
C <sub>ma</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>Avg</sub> Average conc.	147.241	3.564	9.234	8.616	10.524
C <sub>Gas</sub> Bias adjusted	154.441	3.655	9.494	8.755	10.643

Clock Time (at end of sample period)

03/27/13 09:22:08	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
14:05	147.053	2.925	10.301	8.673	10.308
14:06	150.295	2.534	8.649	8.682	10.426
14:07	152.643	2.356	8.440	8.746	10.398
14:08	148.657	2.151	7.251	8.987	10.173
14:09	152.304	2.158	9.080	8.412	10.708
14:10	152.422	2.012	6.975	8.879	10.258
14:11	150.165	2.223	9.795	8.064	10.999
14:12	147.670	2.333	7.789	9.010	10.182
14:13	147.279	2.882	11.214	8.235	10.827
14:14	153.803	3.368	9.744	8.908	10.289
14:15	151.954	5.338	10.843	8.334	10.746
14:16	146.836	5.452	10.761	9.226	10.062
14:17	143.622	4.527	11.549	8.069	10.987
14:18	142.495	4.139	10.603	8.290	10.835
14:19	143.582	3.745	9.490	8.321	10.757
14:20	141.777	4.522	14.398	7.756	11.334
14:21	152.666	3.481	6.963	9.359	9.925
14:22	145.189	2.782	8.691	8.482	10.596
14:23	143.199	2.707	8.224	9.021	10.200
14:24	145.220	3.383	9.938	7.432	11.623
14:25	149.831	5.521	10.041	8.728	10.542
14:26	152.438	5.510	6.504	9.431	9.803
14:27	146.756	5.838	8.199	8.401	10.694
14:28	147.794	5.166	8.313	8.321	10.753
14:29	145.134	3.872	8.720	8.869	10.339
14:30	139.721	2.901	8.404	8.961	10.224
14:31	134.994	2.409	8.429	9.035	10.162

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013  
 Start Time 14:33  
 Stop Time 14:46

**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
<b>System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>off</sub> Zero gas	-0.212	-0.003	-0.324	-0.006	-0.062
C <sub>off</sub> Upscale gas	212.524	43.708	47.241	9.378	9.418
<b>Analyzer Calibration Error Responses (C<sub>DR</sub>)</b>					
C <sub>o,oo</sub> Zero gas	-0.122	-0.050	-0.004	-0.005	-0.067
C <sub>m,oo</sub> Upscale gas	223.071	45.317	48.174	9.508	9.478
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.0%	0.1%	-0.3%	0.0%	0.0%
Upscale gas	-2.4%	-1.8%	-1.0%	-0.7%	-0.3%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>off</sub> Zero gas	-0.109	0.061	-0.317	0.003	-0.051
C <sub>off</sub> Upscale gas	212.823	43.584	47.315	9.381	9.417
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	0.0%	-0.1%	0.0%	0.0%	-0.1%
Upscale gas	-0.1%	0.1%	-0.1%	0.1%	0.0%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
14:33:23	0.814	0.295	0.355	9.374	9.420
14:33:38	0.399	0.217	0.039	9.368	9.411
14:33:53	0.000	0.085	0.039	9.363	9.422
14:34:08	0.154	0.116	0.023	9.380	9.409
14:34:23	-0.163	0.023	0.070	9.370	9.411
14:34:38	0.032	0.077	-0.043	9.366	9.414
14:34:53	0.032	-0.005	0.003	9.376	9.419
14:35:08	-0.073	-0.012	-0.080	9.379	9.417
14:35:23	-0.155	0.008	-0.036	9.378	9.419
14:35:38	-0.407	0.257	0.029	6.779	9.481
14:35:53	-0.195	17.094	-0.015	0.744	9.828
14:36:08	123.557	35.759	-0.173	0.076	9.886
14:36:23	193.171	40.440	-0.273	0.004	9.889
14:36:38	209.630	41.849	-0.314	0.006	9.891
14:36:53	210.623	42.551	-0.330	-0.012	9.893
14:37:08	211.249	42.937	-0.320	0.001	9.895
14:37:23	211.584	43.149	-0.317	-0.009	9.894
14:37:38	211.632	43.385	-0.298	0.002	9.893
14:37:53	212.047	43.551	-0.317	-0.021	9.895
14:38:08	211.990	43.635	-0.317	-0.012	9.896
14:38:23	212.308	43.722	-0.330	-0.013	9.896
14:38:38	212.625	43.767	-0.325	-0.017	9.897
14:38:53	212.641	37.662	0.609	0.095	5.355
14:39:08	155.930	14.421	13.162	0.007	0.480
14:39:23	86.919	6.073	31.850	0.006	0.075
14:39:38	5.519	3.951	43.272	0.005	-0.019
14:39:53	2.019	3.083	46.584	0.003	-0.011
14:40:08	0.798	2.631	46.991	-0.015	-0.024
14:40:23	0.252	2.335	47.137	-1.680	-0.111



Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 2

March 27, 2013

Start Time 14:33

Stop Time 14:46

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	
	14:40:38	0.114	2.190	47.220	-0.012	-0.071
	14:40:53	0.203	2.071	47.256	-0.007	-0.051
	14:41:08	0.130	2.002	47.258	-0.006	-0.054
	14:41:23	0.049	1.900	47.160	-0.004	-0.058
	14:41:38	-0.163	1.794	47.279	0.012	-0.062
	14:41:53	0.154	1.760	47.285	0.001	-0.067
	14:42:08	-0.073	1.618	46.268	0.841	-0.088
	14:42:23	10.501	1.133	32.948	0.980	-0.104
	14:42:38	32.967	1.066	10.349	0.974	-0.106
	14:42:53	41.628	1.021	1.131	0.983	-0.145
	14:43:08	45.177	0.974	-0.075	0.977	-0.133
	14:43:23	45.885	1.034	-0.135	0.989	-0.121
	14:43:38	46.178	1.034	-0.160	0.973	-0.124
	14:43:53	46.317	0.985	-0.181	0.961	-0.148
	14:44:08	46.561	0.972	-0.171	0.977	-0.133
	14:44:23	46.536	1.048	-0.163	0.956	-0.162
	14:44:38	46.626	1.044	-0.163	0.943	-0.139
Nox conv	14:44:53	46.764	1.018	-0.171	0.987	-0.121
	14:45:08	46.561	0.961	-0.171	0.964	-0.120
	14:45:23	46.797	0.988	-0.171	0.971	-0.125
	14:45:38	46.618	0.954	-0.176	0.952	-0.134
	14:45:53	46.463	0.998	-0.171	0.963	-0.135
	14:46:08	46.993	1.968	-0.039	4.302	3.095

Wheelabrator  
CleanAir Project No. 12218  
South Broward  
Unit 3

Date: **March 26, 2013**  
Start Time 7:17  
Stop Time 7:34

**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:	42C 921NMP	48CHL	1420B	1415B
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<sub>v</sub>)**

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	CC196768	CC196768
Mid					
High	ALM012619	ALM012619	CC181272	ALM040668	ALM040668

**Analyzer Calibration Response (C<sub>dir</sub>)**

Zero	-0.117	-0.050	-0.368	-0.004	-0.077
Low	223.044	45.903	47.835	9.543	9.528
Mid					
High	447.774	90.906	96.473	18.131	17.969

**Analyzer Calibration Error (ACE) (Limit = 2%, Method 25A limit = 5% of gas value)**

Zero	0.0%	-0.1%	-0.4%	0.0%	-0.4%
Low	0.0%	0.9%	0.6%	0.1%	0.0%
Mid	N/A	N/A	N/A	N/A	N/A
High	-0.1%	0.1%	0.2%	0.2%	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

Time	NOX	SO2	CO	O2	CO2
07:17:07	-0.277	-0.363	0.960	18.443	18.444
07:17:22	-0.016	-0.510	0.514	18.186	18.548
07:17:37	-0.220	-0.561	0.093	18.122	18.206
07:17:52	-0.122	-0.562	-0.039	18.126	17.967
07:18:07	-0.122	-0.586	-0.044	18.132	17.961
07:18:22	-0.122	-0.436	-0.011	18.134	17.972
07:18:37	-0.122	-0.032	-0.056	18.132	17.975
07:18:52	-0.114	-0.045	-0.018	12.820	13.491
07:19:07	-0.106	-0.080	0.012	9.717	9.657
07:19:22	-0.114	-0.046	0.266	9.550	9.389
07:19:37	-0.114	-0.055	0.345	9.545	9.403
07:19:52	-0.122	-0.050	0.391	9.545	9.529
07:20:07	-0.130	-0.076	0.072	9.537	9.526
07:20:22	-0.122	-0.090	0.002	9.546	9.528
07:20:37	-0.122	-0.070	-0.034	8.849	9.369
07:20:52	-0.122	11.031	-0.023	1.463	9.462

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

Date: **March 26, 2013**

Start Time 7:17

Stop Time 7:34

**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
07:21:07	108.881	54.696	-0.103	0.040	9.930
07:21:22	257.322	73.698	-0.161	0.007	9.953
07:21:37	428.400	80.116	-0.322	-0.001	9.967
07:21:52	447.701	82.743	-0.360	-0.003	9.963
07:22:07	449.931	84.093	-0.412	-0.028	9.975
07:22:22	449.019	85.136	-0.415	-0.022	9.970
07:22:37	448.832	86.058	-0.387	-0.008	9.973
07:22:52	449.280	86.663	-0.389	-0.008	9.981
07:23:07	449.475	91.243	-0.374	-0.021	9.975
07:23:22	448.514	92.174	-0.397	-0.010	9.973
07:23:37	449.605	93.053	-0.394	-0.021	9.979
07:23:52	450.142	91.323	-0.430	-0.004	9.979
07:24:07	450.094	91.666	-0.412	-0.004	9.964
07:24:22	448.270	92.072	-0.427	-0.005	9.970
07:24:37	447.432	92.443	-0.415	-0.005	9.977
07:24:52	447.521	92.629	-0.413	-0.010	9.967
07:25:07	447.245	92.770	-0.417	0.001	9.971
07:25:22	447.237	90.766	-0.449	-0.006	9.982
07:25:37	447.464	90.816	-0.420	-0.004	9.973
07:25:52	447.790	90.829	-0.427	0.000	9.978
07:26:07	447.814	90.929	-0.415	-0.005	9.984
07:26:22	447.717	90.960	-0.415	0.101	9.975
07:26:37	430.004	54.618	-0.364	0.414	8.713
07:26:52	341.384	38.759	-0.286	0.009	9.868
07:27:07	257.948	43.783	-0.296	-0.006	9.967
07:27:22	221.026	45.075	-0.368	-0.008	9.975
07:27:37	223.069	45.506	-0.373	-0.008	9.968
07:27:52	223.215	45.729	-0.357	-0.009	9.969
07:28:07	223.101	45.825	-0.363	-0.009	9.984
07:28:22	223.004	45.911	-0.358	-0.010	9.977
07:28:37	223.028	45.973	-0.384	0.080	9.973
07:28:52	223.207	25.897	3.171	0.485	3.713
07:29:07	127.106	3.616	36.628	0.035	0.160
07:29:22	44.322	0.682	74.704	0.014	-0.039
07:29:37	4.428	0.150	91.088	0.000	-0.059
07:29:52	0.806	0.033	93.986	-0.007	-0.066
07:30:07	0.342	-0.012	94.217	-0.013	-0.067
07:30:22	0.049	-0.023	94.274	-0.013	-0.070
07:30:37	0.041	-0.006	95.422	-0.023	-0.073
07:30:52	0.032	-0.021	96.498	-0.007	-0.079
07:31:07	-0.081	-0.029	96.461	-0.019	-0.077
07:31:22	0.122	-0.016	96.459	-0.002	-0.077
07:31:37	-0.195	-0.019	96.244	-0.008	-0.077
07:31:52	-0.301	0.018	96.531	0.264	0.042
07:32:07	-0.090	0.638	88.456	0.125	-0.001
07:32:22	-0.334	1.105	66.917	0.004	-0.074
07:32:37	0.114	1.395	51.316	-0.013	-0.077
07:32:52	-0.358	1.475	48.051	-0.013	-0.077
07:33:07	0.008	1.482	47.837	0.002	-0.076
07:33:22	-0.106	1.483	47.857	0.002	-0.085
07:33:37	-0.212	1.506	47.829	-0.008	-0.083
07:33:52	0.000	1.492	47.819	-0.003	-0.079
07:34:07	-0.317	1.501	47.934	-0.008	-0.079

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

March 26, 2013  
 Start Time 7:36  
 Stop Time 7:44

**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
<b>System Response to Calibration Gases (C<sub>s</sub>)</b>					
C <sub>of</sub> Zero gas	-0.117	-0.019	-0.328	0.028	-0.024
C <sub>uf</sub> Upscale gas	219.406	43.852	47.761	9.463	9.550
<b>Analyzer Calibration Error Responses (C<sub>dir</sub>)</b>					
C <sub>oce</sub> Zero gas	-0.117	-0.050	-0.368	-0.004	-0.077
C <sub>mca</sub> Upscale gas	223.044	45.903	47.835	9.543	9.528
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.0%	0.0%	0.0%	0.2%	0.3%
Upscale gas	-0.8%	-2.3%	-0.1%	-0.4%	0.1%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gases (C<sub>s</sub>)</b>					
C <sub>oi</sub> Zero gas	N/A	N/A	N/A	N/A	N/A
C <sub>ui</sub> Upscale gas	N/A	N/A	N/A	N/A	N/A
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	N/A	N/A	N/A	N/A	N/A
Upscale gas	N/A	N/A	N/A	N/A	N/A
<b>Drift Assessment Status</b>					
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
07:36:15	0.000	0.003	0.107	9.515	9.383
07:36:30	-0.106	-0.008	0.073	9.505	9.500
07:36:45	-0.016	-0.010	0.046	9.500	9.522
07:37:00	-0.122	-0.018	0.020	9.496	9.527
07:37:15	-0.122	-0.044	0.059	9.432	9.509
07:37:30	-0.130	-0.018	-0.008	9.460	9.527
07:37:45	-0.122	-0.006	0.080	9.480	9.540
07:38:00	-0.114	-0.003	0.025	9.474	9.543
07:38:15	-0.122	-0.021	0.054	9.434	9.523
07:38:30	-0.106	-0.018	0.059	9.491	9.550
07:38:45	-0.122	-0.019	0.037	9.485	9.550
07:39:00	-0.114	-0.022	0.021	9.481	9.551
07:39:15	1.994	0.265	0.021	4.352	9.724
07:39:30	22.670	17.656	-0.091	0.318	9.982
07:39:45	114.660	35.026	-0.171	0.083	10.021
07:40:00	211.404	39.631	-0.285	0.049	10.019
07:40:15	216.940	41.335	-0.293	0.040	10.015
07:40:30	218.543	42.265	-0.301	0.033	10.021
07:40:45	218.608	42.857	-0.309	0.024	10.007
07:41:00	218.942	43.284	-0.283	0.017	10.010
07:41:15	219.357	43.619	-0.282	0.003	10.024
07:41:30	219.422	43.844	-0.314	0.010	10.014
07:41:45	219.479	44.094	-0.309	0.023	10.026
07:42:00	219.316	43.984	-0.361	-3.316	9.876
07:42:15	217.078	40.925	-0.006	0.143	5.709
07:42:30	191.746	18.219	15.022	0.042	0.507
07:42:45	100.383	7.388	35.167	0.027	0.094
07:43:00	6.130	4.578	46.309	0.038	0.025
07:43:15	1.644	3.517	47.530	0.009	-0.005
07:43:30	0.521	2.965	47.681	0.023	-0.002
07:43:45	0.480	2.619	47.761	0.022	-0.015
07:44:00	0.236	2.432	47.765	0.035	-0.025

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

March 26, 2013  
 Start Time 7:36  
 Stop Time 7:44

**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
07:44:15	0.179	2.277	47.744	0.028	-0.031
07:44:30	-0.057	2.154	47.772	0.017	-0.036

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

March 26, 2013  
 Start Time 8:00  
 Stop time 8:27

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	-0.117	-0.019	-0.328	0.028	-0.024
C <sub>ui</sub> Initial upscale	219.406	43.852	47.761	9.463	9.550
C <sub>of</sub> Final zero	0.130	-0.021	-0.291	0.004	-0.003
C <sub>uf</sub> Final upscale	219.311	44.753	47.486	9.475	9.567
C <sub>mb</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>AVG</sub> Average conc.	147.246	17.646	16.440	9.318	10.064
C <sub>GAS</sub> Bias adjusted	149.688	17.977	16.528	9.368	10.033

Clock Time (at end of sample period)

Clock Time	NOX	SO2	CO	O2	CO2
08:01	150.570	8.891	15.456	9.637	9.766
08:02	152.475	12.246	17.417	8.960	10.308
08:03	153.862	14.309	16.096	9.471	9.920
08:04	149.566	15.857	16.151	9.296	10.043
08:05	151.711	17.136	18.269	9.370	10.017
08:06	150.328	17.460	19.560	9.583	9.826
08:07	147.556	19.870	20.603	9.146	10.175
08:08	142.790	19.732	17.744	9.617	9.803
08:09	144.322	22.780	17.965	9.217	10.113
08:10	146.255	24.468	17.914	9.446	9.963
08:11	147.487	22.954	19.125	9.829	9.644
08:12	149.990	24.444	19.561	9.324	10.075
08:13	149.050	22.801	18.643	9.127	10.215
08:14	150.563	21.183	18.647	8.872	10.447
08:15	147.121	16.197	16.797	9.658	9.823
08:16	149.634	12.855	18.159	9.372	10.018
08:17	155.382	11.059	18.280	9.153	10.203
08:18	152.741	10.481	17.147	9.156	10.206
08:19	152.552	12.332	17.309	9.413	10.016
08:20	147.112	15.136	17.241	9.454	9.971
08:21	140.065	23.145	20.558	9.459	9.983
08:22	141.811	30.773	14.274	9.615	9.832
08:23	138.970	25.511	12.401	9.173	10.197
08:24	139.811	18.277	8.990	9.311	10.073
08:25	141.935	15.101	10.671	8.727	10.564
08:26	141.856	11.781	8.231	9.528	9.937
08:27	140.118	9.678	10.670	8.682	10.581

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

March 26, 2013  
 Start Time 8:29  
 Stop Time 8:38

**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
<b>System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>of</sub> Zero gas	0.130	-0.021	-0.291	0.004	-0.003
C <sub>uf</sub> Upscale gas	219.311	44.753	47.486	9.475	9.567
<b>Analyzer Calibration Error Responses (C<sub>Dr</sub>)</b>					
C <sub>oc</sub> Zero gas	-0.117	-0.050	-0.368	-0.004	-0.077
C <sub>mo</sub> Upscale gas	223.044	45.903	47.835	9.543	9.528
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.1%	0.0%	0.1%	0.0%	0.4%
Upscale gas	-0.8%	-1.3%	-0.4%	-0.4%	0.2%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>oi</sub> Zero gas	-0.117	-0.019	-0.328	0.028	-0.024
C <sub>ui</sub> Upscale gas	219.406	43.852	47.761	9.463	9.550
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	0.1%	0.0%	0.0%	-0.1%	0.1%
Upscale gas	0.0%	1.0%	-0.3%	0.1%	0.1%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

04/17/13 09:42:06	NOX	SO2	CO	O2	CO2
08:29:00	121.246	9.011	12.423	8.362	7.783
08:29:15	54.750	5.345	11.852	9.412	9.449
08:29:30	15.328	2.644	4.562	9.463	9.555
08:29:45	2.369	1.389	1.075	9.473	9.571
08:30:00	1.050	0.737	0.134	9.471	9.566
08:30:15	0.741	0.547	0.056	9.474	9.567
08:30:30	0.399	0.391	0.044	9.474	9.560
08:30:45	0.521	0.203	0.019	9.456	9.567
08:31:00	0.276	0.174	0.036	9.422	9.539
08:31:15	0.073	0.099	0.054	9.473	9.576
08:31:30	0.154	-0.023	0.013	9.475	9.568
08:31:45	0.163	-0.037	0.054	9.475	9.566
08:32:00	-0.073	-0.010	0.033	9.475	9.568
08:32:15	0.138	-0.017	0.033	9.477	9.576
08:32:30	-0.025	0.002	-0.041	5.920	9.651
08:32:45	33.887	9.058	0.014	0.498	9.983
08:33:00	105.926	31.640	-0.179	0.066	10.044
08:33:15	199.308	39.543	-0.296	0.047	10.048
08:33:30	216.264	41.897	-0.293	0.030	10.051
08:33:45	218.120	42.973	-0.309	0.030	10.053
08:34:00	218.494	43.469	-0.315	0.015	10.051
08:34:15	218.673	43.735	-0.314	0.027	10.051
08:34:30	218.518	44.023	-0.275	0.017	10.049
08:34:45	218.861	44.280	-0.394	-0.022	10.031
08:35:00	219.202	44.457	-0.290	0.003	10.052
08:35:15	219.129	44.558	-0.290	0.011	10.055
08:35:30	219.105	44.692	-0.293	-0.012	10.055
08:35:45	219.292	44.733	-0.307	0.012	10.054
08:36:00	219.536	44.833	-0.315	0.038	10.023
08:36:15	211.982	39.834	1.094	0.111	3.691
08:36:30	138.852	18.134	18.517	0.036	0.328
08:36:45	60.822	7.930	36.121	0.028	0.091

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

March 26, 2013  
 Start Time 8:29  
 Stop Time 8:38

**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
08:37:00	4.160	4.728	45.935	0.017	0.022
08:37:15	1.343	3.565	47.287	0.028	0.008
08:37:30	0.936	2.901	47.523	0.033	0.007
08:37:45	0.716	2.589	47.446	0.021	-0.007
08:38:00	0.375	2.326	47.487	0.020	-0.010
08:38:15	0.179	2.235	47.557	0.025	-0.018



Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

March 26, 2013  
 Start Time 8:40  
 Stop time 9:07

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	0.130	-0.021	-0.291	0.004	-0.003
C <sub>ui</sub> Initial upscale	219.311	44.753	47.486	9.475	9.567
C <sub>of</sub> Final zero	-0.006	0.082	-0.323	-0.003	-0.013
C <sub>uf</sub> Final upscale	218.972	44.804	47.543	9.475	9.571
C <sub>ma</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>Avg</sub> Average conc.	148.150	13.688	26.453	9.272	10.077
C <sub>Gas</sub> Bias adjusted	150.738	13.765	26.469	9.316	10.035

Clock Time (at end of sample period)

04/17/13 09:12:08	08:41	134.217	3.508	24.416	9.162	9.936
	08:42	142.591	4.423	25.678	9.430	10.017
	08:43	144.740	5.367	24.935	9.294	10.096
	08:44	149.453	6.220	25.503	9.291	10.128
	08:45	146.290	6.574	23.999	9.507	9.930
	08:46	148.555	7.392	22.870	9.680	9.793
	08:47	145.053	8.527	20.395	9.748	9.711
	08:48	144.096	10.653	51.064	8.811	10.455
	08:49	142.153	11.924	60.709	9.094	9.985
	08:50	146.490	10.744	22.290	9.582	9.838
	08:51	150.592	10.907	17.890	9.518	9.919
	08:52	144.731	13.034	18.751	9.377	10.029
	08:53	143.675	15.857	20.230	9.287	10.070
	08:54	147.129	18.360	20.573	9.082	10.240
	08:55	146.009	17.044	45.089	9.380	9.991
	08:56	145.782	21.803	39.330	9.527	9.889
	08:57	150.118	25.495	26.700	9.380	9.980
	08:58	151.433	21.595	30.221	9.292	10.086
	08:59	146.040	15.428	27.998	9.720	9.699
	09:00	148.643	15.200	26.371	8.996	10.293
	09:01	151.571	13.409	20.295	9.022	10.264
	09:02	155.745	14.882	23.197	8.452	10.752
	09:03	156.982	14.435	20.199	9.288	10.082
	09:04	154.263	16.425	21.832	8.832	10.402
	09:05	154.860	19.998	20.498	9.146	10.215
	09:06	154.858	18.062	16.959	9.525	9.885
	09:07	153.979	22.315	16.247	8.917	10.381

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

March 26, 2013  
 Start Time 9:08  
 Stop Time 9:17

**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
<b>System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>of</sub> Zero gas	-0.006	0.082	-0.323	-0.003	-0.013
C <sub>ul</sub> Upscale gas	218.972	44.804	47.543	9.475	9.571
<b>Analyzer Calibration Error Responses (C<sub>dlr</sub>)</b>					
C <sub>ccc</sub> Zero gas	-0.117	-0.050	-0.368	-0.004	-0.077
C <sub>mce</sub> Upscale gas	223.044	45.903	47.835	9.543	9.528
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.0%	0.1%	0.0%	0.0%	0.4%
Upscale gas	-0.9%	-1.2%	-0.3%	-0.4%	0.2%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gases (C<sub>s</sub>)</b>					
C <sub>of</sub> Zero gas	0.130	-0.021	-0.291	0.004	-0.003
C <sub>ul</sub> Upscale gas	219.311	44.753	47.486	9.475	9.567
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	0.0%	0.1%	0.0%	0.0%	-0.1%
Upscale gas	-0.1%	0.1%	0.1%	0.0%	0.0%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

04:17:13: 09:208	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
09:08:22	152.218	22.742	14.281	7.092	7.385
09:08:37	135.898	16.205	16.991	8.576	8.151
09:08:52	51.917	7.002	12.570	9.412	9.479
09:09:07	12.373	3.111	4.614	9.467	9.569
09:09:22	2.312	1.734	0.811	9.467	9.573
09:09:37	0.977	1.018	0.144	9.471	9.562
09:09:52	0.765	0.684	0.054	9.471	9.577
09:10:07	0.415	0.490	0.087	9.473	9.574
09:10:22	0.293	0.280	0.075	9.474	9.563
09:10:37	0.285	0.220	0.106	9.472	9.581
09:10:52	0.097	0.179	0.013	9.475	9.564
09:11:07	-0.057	0.100	0.081	9.477	9.579
09:11:22	-0.057	0.082	0.091	9.474	9.569
09:11:37	0.146	0.064	-0.016	7.415	9.615
09:11:52	0.032	6.830	0.010	0.872	9.970
09:12:07	116.288	29.631	-0.127	0.097	10.053
09:12:22	200.350	39.104	-0.265	0.040	10.059
09:12:37	216.085	41.939	-0.317	0.029	10.061
09:12:52	217.558	43.070	-0.317	0.035	10.060
09:13:07	218.413	43.660	-0.298	0.018	10.062
09:13:22	218.730	44.075	-0.304	0.006	10.062
09:13:37	218.600	44.362	-0.317	0.003	10.063
09:13:52	218.673	44.521	-0.329	0.002	10.065
09:14:07	218.731	44.609	-0.304	0.006	10.064
09:14:22	219.072	44.765	-0.317	-0.001	10.065
09:14:37	219.007	44.837	-0.334	-0.002	10.065
09:14:52	218.853	44.811	-0.317	-0.008	10.065
09:15:07	219.056	44.554	0.020	0.085	8.004
09:15:22	185.128	28.860	7.694	0.052	1.025
09:15:37	96.052	11.300	27.902	0.022	0.143
09:15:52	25.088	5.902	42.838	0.033	0.043
09:16:07	2.931	4.013	46.856	0.014	0.023
09:16:22	0.749	3.084	47.386	0.024	0.003

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

March 26, 2013  
 Start Time 9:08  
 Stop Time 9:17

**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
09:16:37	0.839	2.637	47.399	0.023	-0.015
09:16:52	0.293	2.431	47.384	0.028	-0.008
09:17:07	0.432	2.227	47.580	0.006	-0.017
09:17:22	0.122	2.092	47.596	0.011	-0.025
09:17:37	0.285	1.903	47.451	-3.329	-1.794

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

March 26, 2013  
 Start Time 9:20  
 Stop time 9:47

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	-0.006	0.082	-0.323	-0.003	-0.013
C <sub>ul</sub> Initial upscale	218.972	44.804	47.543	9.475	9.571
C <sub>of</sub> Final zero	0.211	0.043	-0.308	0.027	-0.017
C <sub>uf</sub> Final upscale	219.143	44.667	47.635	9.473	9.576
C <sub>me</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>Av</sub> Average conc.	158.016	14.157	17.879	9.407	9.984
C <sub>G</sub> Bias adjusted	160.831	14.230	17.965	9.452	9.938

Clock Time (at end of sample period)

Clock Time	NOX	SO2	CO	O2	CO2
09:21	146.585	36.017	15.684	10.310	9.236
09:22	148.767	42.357	16.136	10.300	9.260
09:23	150.942	42.812	19.920	9.816	9.653
09:24	158.728	32.971	20.519	8.671	10.558
09:25	156.616	28.558	17.867	8.827	10.476
09:26	155.549	18.374	14.427	9.574	9.845
09:27	160.975	11.425	15.886	8.980	10.290
09:28	165.804	8.497	14.614	8.895	10.396
09:29	164.766	6.360	14.769	9.210	10.148
09:30	161.555	4.912	16.662	9.538	9.903
09:31	155.942	3.716	14.491	9.939	9.525
09:32	155.509	2.958	18.425	9.645	9.796
09:33	156.402	2.852	24.135	9.353	10.019
09:34	158.608	3.949	21.415	9.065	10.300
09:35	156.966	4.948	15.939	9.389	10.014
09:36	158.590	5.890	14.327	9.455	9.975
09:37	159.401	6.569	14.259	9.090	10.203
09:38	155.928	8.048	18.885	8.829	10.466
09:39	154.953	7.580	15.213	9.347	10.053
09:40	158.295	7.742	14.967	9.281	10.076
09:41	159.900	8.360	16.174	9.823	9.657
09:42	157.560	9.512	17.585	10.025	9.480
09:43	157.717	11.429	18.672	9.924	9.543
09:44	163.301	14.688	25.873	9.567	9.849
09:45	162.283	17.176	24.845	9.022	10.300
09:46	161.931	17.916	21.877	9.230	10.126
09:47	162.859	16.633	19.164	8.880	10.418

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

March 26, 2013  
 Start Time 9:49  
 Stop Time 9:58

**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
<b>System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>of</sub> Zero gas	0.211	0.043	-0.308	0.027	-0.017
C <sub>ul</sub> Upscale gas	219.143	44.667	47.635	9.473	9.576
<b>Analyzer Calibration Error Responses (C<sub>dir</sub>)</b>					
C <sub>oae</sub> Zero gas	-0.117	-0.050	-0.368	-0.004	-0.077
C <sub>mce</sub> Upscale gas	223.044	45.903	47.835	9.543	9.528
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (%)</b>					
Zero gas	0.1%	0.1%	0.1%	0.2%	0.3%
Upscale gas	-0.9%	-1.4%	-0.2%	-0.4%	0.3%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>ol</sub> Zero gas	-0.006	0.082	-0.323	-0.003	-0.013
C <sub>ul</sub> Upscale gas	218.972	44.804	47.543	9.475	9.571
<b>Drift Assessment as Percent of Calibration Span Value (D) (%)</b>					
Zero gas	0.0%	0.0%	0.0%	0.2%	0.0%
Upscale gas	0.0%	-0.2%	0.1%	0.0%	0.0%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
09:49:17	58.926	5.107	14.081	9.404	9.473
09:49:32	16.565	2.372	5.021	9.462	9.570
09:49:47	2.996	1.198	1.013	9.469	9.565
09:50:02	1.563	0.707	0.199	9.470	9.571
09:50:17	0.838	0.488	0.069	9.468	9.576
09:50:32	0.383	0.293	0.080	9.471	9.579
09:50:47	0.489	0.161	0.135	9.471	9.580
09:51:02	0.220	0.140	0.077	9.474	9.585
09:51:17	0.382	0.158	-0.029	9.474	9.567
09:51:32	-0.114	0.062	-0.029	9.473	9.577
09:51:47	0.366	0.083	0.054	9.472	9.586
09:52:02	-0.375	-0.016	0.059	8.367	9.590
09:52:17	14.041	3.539	0.016	1.380	9.933
09:52:32	99.186	25.906	-0.093	0.125	10.053
09:52:47	180.187	37.988	-0.270	0.040	10.066
09:53:02	215.002	41.477	-0.304	0.027	10.066
09:53:17	217.802	42.833	-0.312	0.025	10.067
09:53:32	218.112	43.552	-0.317	0.016	10.067
09:53:47	218.470	43.909	-0.314	0.012	10.067
09:54:02	218.681	44.174	-0.293	-0.001	10.068
09:54:17	218.730	44.446	-0.311	0.008	10.068
09:54:32	218.828	44.567	-0.304	-0.004	10.068
09:54:47	219.023	44.650	-0.309	0.010	10.069
09:55:02	219.202	44.786	-0.290	-0.011	10.071
09:55:17	219.202	44.379	0.147	0.126	7.420
09:55:32	218.885	28.396	9.197	0.035	0.860
09:55:47	97.737	11.136	29.754	0.023	0.129
09:56:02	12.438	5.869	43.420	0.028	0.045
09:56:17	2.605	4.130	47.010	0.022	0.015
09:56:32	1.449	3.295	47.613	0.034	0.014
09:56:47	0.733	2.820	47.629	0.024	-0.019
09:57:02	0.472	2.401	47.630	0.024	-0.004

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

March 26, 2013  
 Start Time 9:49  
 Stop Time 9:58

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
09:57:17	0.489	2.282	47.656	0.029	-0.027
09:57:32	0.188	2.139	47.617	0.022	-0.020
09:57:47	0.073	2.423	47.192	3.973	2.928
09:58:02	28.978	17.846	39.857	9.126	9.129

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

March 26, 2013  
 Start Time 10:00  
 Stop time 10:27

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	0.211	0.043	-0.308	0.027	-0.017
C <sub>ui</sub> Initial upscale	219.143	44.667	47.635	9.473	9.576
C <sub>of</sub> Final zero	-0.019	0.074	-0.284	0.031	-0.020
C <sub>uf</sub> Final upscale	219.205	44.869	47.675	9.459	9.577
C <sub>ma</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>avg</sub> Average conc.	149.888	16.860	17.364	9.255	10.152
C <sub>gas</sub> Bias adjusted	152.473	16.948	17.421	9.307	10.102

Clock Time (at end of sample period)

03/17/13 09:42:08					
10:01	142.273	37.225	15.466	8.947	10.370
10:02	142.607	17.269	14.912	9.413	9.994
10:03	143.590	9.349	18.385	8.576	10.654
10:04	143.641	6.484	17.626	9.285	10.150
10:05	141.612	4.731	18.419	9.563	9.887
10:06	152.635	5.794	22.758	8.643	10.665
10:07	152.037	9.315	20.013	9.569	9.948
10:08	149.192	13.932	18.623	9.335	10.077
10:09	155.199	18.989	19.430	8.821	10.532
10:10	152.782	18.331	15.756	9.382	10.088
10:11	151.775	21.040	19.415	8.551	10.707
10:12	145.342	27.923	22.649	8.370	10.906
10:13	148.844	22.018	13.575	9.438	10.032
10:14	141.581	18.667	13.328	9.658	9.814
10:15	145.307	19.755	15.903	9.531	9.971
10:16	141.850	16.181	15.799	9.886	9.645
10:17	149.912	16.991	19.446	8.979	10.389
10:18	158.323	15.732	16.330	9.492	9.997
10:19	153.993	13.510	15.644	9.510	9.926
10:20	155.224	16.148	15.538	9.251	10.180
10:21	153.962	18.829	15.743	9.545	9.928
10:22	158.228	21.634	19.171	8.735	10.531
10:23	160.338	19.917	16.420	9.169	10.205
10:24	152.839	15.420	15.257	9.804	9.678
10:25	150.452	15.217	17.527	9.321	10.053
10:26	152.361	16.143	16.998	9.761	9.739
10:27	151.074	18.680	18.707	9.351	10.045

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

March 26, 2013  
 Start Time 10:28  
 Stop Time 10:37

**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
<b>System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>oi</sub> Zero gas	-0.019	0.074	-0.284	0.031	-0.020
C <sub>ui</sub> Upscale gas	219.205	44.869	47.675	9.459	9.577
<b>Analyzer Calibration Error Responses (C<sub>dir</sub>)</b>					
C <sub>oco</sub> Zero gas	-0.117	-0.050	-0.368	-0.004	-0.077
C <sub>moe</sub> Upscale gas	223.044	45.903	47.835	9.543	9.528
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.0%	0.1%	0.1%	0.2%	0.3%
Upscale gas	-0.9%	-1.1%	-0.2%	-0.5%	0.3%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>oi</sub> Zero gas	0.211	0.043	-0.308	0.027	-0.017
C <sub>ui</sub> Upscale gas	219.143	44.667	47.635	9.473	9.576
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	-0.1%	0.0%	0.0%	0.0%	0.0%
Upscale gas	0.0%	0.2%	0.0%	-0.1%	0.0%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
10:28:40	22.654	3.502	8.098	9.435	9.555
10:28:55	5.820	1.757	2.085	9.457	9.567
10:29:10	1.994	0.969	0.243	9.456	9.572
10:29:25	1.245	0.674	0.098	9.459	9.568
10:29:40	0.651	0.467	0.062	9.459	9.582
10:29:55	0.138	0.387	0.101	9.459	9.574
10:30:10	0.130	0.356	-0.044	9.459	9.569
10:30:25	0.276	0.254	0.037	9.459	9.580
10:30:40	0.008	0.220	-0.047	9.461	9.585
10:30:55	-0.269	0.093	0.064	9.461	9.561
10:31:10	0.203	0.092	0.037	9.459	9.587
10:31:25	0.032	0.039	0.016	7.665	9.600
10:31:40	22.653	9.384	-0.023	0.905	9.934
10:31:55	95.401	32.196	-0.098	0.104	10.054
10:32:10	182.271	40.024	-0.274	0.051	10.058
10:32:25	215.010	42.315	-0.324	0.007	10.041
10:32:40	217.835	43.360	-0.285	0.032	10.062
10:32:55	218.291	43.894	-0.301	0.028	10.064
10:33:10	218.673	44.156	-0.293	0.014	10.065
10:33:25	218.755	44.391	-0.244	0.000	10.066
10:33:40	218.804	44.503	-0.283	-0.018	10.056
10:33:55	218.559	44.383	-0.998	-6.650	9.898
10:34:10	219.284	44.806	-0.293	0.006	10.065
10:34:25	219.080	44.879	-0.267	0.011	10.066
10:34:40	219.251	44.921	-0.293	0.002	10.067
10:34:55	217.257	42.546	-0.129	0.162	5.971
10:35:10	197.599	20.902	12.948	0.031	0.550
10:35:25	105.535	8.256	31.920	0.018	0.118
10:35:40	7.676	4.729	44.845	0.022	0.038
10:35:55	2.573	3.482	47.215	0.005	0.017
10:36:10	1.074	2.916	47.544	0.014	0.000
10:36:25	0.537	2.540	47.590	0.039	-0.011
10:36:40	0.505	2.284	47.559	0.028	-0.010



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

March 26, 2013  
 Start Time 10:28  
 Stop Time 10:37

**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
10:36:55	0.529	2.160	47.601	0.025	-0.015
10:37:10	0.505	2.058	47.717	0.015	-0.021
10:37:25	0.301	2.022	47.708	0.021	-0.024
10:37:40	0.171	2.097	47.474	2.687	1.879

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

March 26, 2013  
 Start Time 10:46  
 Stop time 11:13

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	-0.019	0.074	-0.284	0.031	-0.020
C <sub>ui</sub> Initial upscale	219.205	44.869	47.675	9.459	9.577
C <sub>of</sub> Final zero	0.133	0.196	-0.295	0.024	-0.021
C <sub>uf</sub> Final upscale	216.777	44.731	47.452	9.444	9.579
C <sub>ma</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>avg</sub> Average conc.	148.504	20.990	19.440	9.168	10.173
C <sub>gas</sub> Bias adjusted	151.897	21.058	19.501	9.233	10.121

Clock Time (at end of sample period)

Clock Time	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
10:47	149.031	48.299	15.671	9.871	9.622
10:48	146.758	40.888	16.630	9.335	10.026
10:49	151.488	20.215	14.860	9.486	9.916
10:50	150.326	11.285	19.454	8.833	10.427
10:51	155.788	7.777	20.061	9.075	10.277
10:52	156.593	5.103	16.973	9.411	9.960
10:53	155.798	4.272	18.565	8.492	10.678
10:54	155.999	6.938	17.719	8.771	10.473
10:55	154.797	10.049	20.741	9.055	10.253
10:56	152.084	9.859	20.437	9.136	10.176
10:57	153.600	10.958	20.874	9.149	10.181
10:58	151.319	14.231	25.787	8.698	10.527
10:59	151.062	15.717	20.310	9.206	10.149
11:00	142.674	16.400	20.311	9.478	9.908
11:01	145.682	20.442	24.252	9.066	10.240
11:02	153.944	22.053	21.701	8.265	10.849
11:03	157.556	18.792	18.885	8.505	10.679
11:04	153.248	14.865	18.990	9.263	10.105
11:05	145.708	19.473	18.795	9.316	10.011
11:06	144.225	31.374	21.154	8.440	10.751
11:07	141.510	33.129	19.116	9.245	10.156
11:08	138.152	31.713	19.548	9.608	9.842
11:09	140.260	34.015	20.724	8.978	10.339
11:10	139.864	31.362	17.961	9.404	10.048
11:11	137.794	26.895	16.757	9.919	9.602
11:12	141.763	30.433	19.980	9.622	9.868
11:13	142.576	30.192	18.621	9.900	9.615

Wheelaerator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

March 26, 2013

Start Time 11:14  
 Stop Time 11:23

**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
<b>System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>of</sub> Zero gas	0.133	0.196	-0.295	0.024	-0.021
C <sub>ul</sub> Upscale gas	216.777	44.731	47.452	9.444	9.579
<b>Analyzer Calibration Error Reponses (C<sub>pit</sub>)</b>					
C <sub>oca</sub> Zero gas	-0.117	-0.050	-0.368	-0.004	-0.077
C <sub>mca</sub> Upscale gas	223.044	45.903	47.835	9.543	9.528
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (C<sub>S</sub>)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.1%	0.3%	0.1%	0.2%	0.3%
Upscale gas	-1.4%	-1.3%	-0.4%	-0.5%	0.3%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>oi</sub> Zero gas	-0.019	0.074	-0.284	0.031	-0.020
C <sub>ul</sub> Upscale gas	219.205	44.869	47.675	9.459	9.577
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	0.0%	0.1%	0.0%	0.0%	0.0%
Upscale gas	-0.5%	-0.2%	-0.2%	-0.1%	0.0%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
11:14:59	2.890	1.691	1.064	9.439	9.570
11:15:14	1.555	1.076	0.208	9.448	9.572
11:15:29	0.928	0.806	0.101	9.448	9.562
11:15:44	0.407	0.656	0.052	9.450	9.572
11:15:59	0.188	0.522	0.039	9.448	9.570
11:16:14	0.220	0.422	0.059	9.450	9.576
11:16:29	-0.082	0.309	0.016	9.442	9.567
11:16:44	0.260	0.285	0.065	9.448	9.568
11:16:59	0.154	0.229	0.064	9.443	9.574
11:17:14	-0.033	0.194	0.026	9.452	9.579
11:17:29	-0.073	0.166	0.073	8.509	9.585
11:17:44	2.279	6.256	0.036	1.521	9.910
11:17:59	38.999	30.400	-0.096	0.138	10.042
11:18:14	169.573	39.751	-0.249	0.060	10.050
11:18:29	210.249	42.247	-0.290	0.024	10.049
11:18:44	214.522	43.240	-0.293	0.011	10.051
11:18:59	215.515	43.780	-0.307	0.028	10.055
11:19:14	215.401	44.125	-0.293	0.025	10.055
11:19:29	215.856	44.313	-0.293	0.012	10.056
11:19:44	216.435	44.524	-0.291	0.005	10.057
11:19:59	216.647	44.594	-0.299	0.014	10.057
11:20:14	216.817	44.755	-0.317	0.021	10.060
11:20:29	216.866	44.843	-0.272	0.063	9.742
11:20:44	215.368	35.373	3.077	0.064	2.420
11:20:59	179.210	13.262	22.593	0.036	0.247
11:21:14	47.196	6.076	39.466	0.024	0.065
11:21:29	5.657	3.985	46.372	0.017	0.031
11:21:44	1.864	3.194	47.331	0.022	0.000
11:21:59	0.838	2.787	47.367	0.022	-0.009
11:22:14	0.562	2.383	47.445	0.014	-0.009
11:22:29	0.228	2.321	47.473	0.026	-0.017
11:22:44	0.456	2.121	47.417	0.024	-0.023

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

March 26, 2013  
 Start Time 11:14  
 Stop Time 11:23

**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
11:22:59	0.480	2.014	47.468	0.024	-0.024
11:23:14	0.171	1.828	47.406	1.001	0.339

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

March 26, 2013  
 Start Time 11:25  
 Stop time 11:52

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	0.133	0.196	-0.295	0.024	-0.021
C <sub>ui</sub> Initial upscale	216.777	44.731	47.452	9.444	9.579
C <sub>of</sub> Final zero	0.076	0.019	-0.306	0.022	-0.024
C <sub>uf</sub> Final upscale	216.598	44.449	47.391	9.452	9.569
C <sub>ma</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>Avg</sub> Average conc.	142.666	9.506	19.416	9.441	9.861
C <sub>Gas</sub> Bias adjusted	146.785	9.529	19.542	9.513	9.814

Clock Time (at end of sample period)

04/17/13 09:20:08	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
11:26	143.478	6.186	16.270	9.737	9.608
11:27	142.814	4.982	21.026	9.553	9.760
11:28	144.835	4.404	23.162	9.194	10.106
11:29	140.244	4.002	23.194	9.612	9.719
11:30	138.645	5.402	28.971	8.548	10.553
11:31	143.059	8.318	27.772	9.301	9.981
11:32	141.190	9.972	26.584	9.817	9.525
11:33	144.888	15.105	26.772	9.146	10.066
11:34	145.517	20.221	19.776	9.536	9.771
11:35	144.483	30.598	18.564	9.186	10.049
11:36	146.669	33.676	19.114	8.294	10.764
11:37	149.432	13.300	14.761	9.042	10.185
11:38	142.184	7.085	13.140	9.850	9.463
11:39	142.391	5.483	18.228	9.028	10.162
11:40	143.266	4.569	15.083	9.664	9.667
11:41	137.190	3.548	12.372	9.738	9.563
11:42	144.111	3.204	15.657	8.983	10.242
11:43	141.614	3.500	13.677	9.907	9.478
11:44	137.397	3.972	13.567	9.746	9.574
11:45	142.818	4.792	18.579	9.441	9.891
11:46	139.247	4.891	16.225	9.993	9.421
11:47	139.223	5.958	19.076	9.430	9.904
11:48	143.753	7.768	19.646	9.751	9.668
11:49	143.924	9.466	20.058	9.259	10.050
11:50	142.251	11.141	22.646	9.685	9.737
11:51	138.091	11.401	19.390	9.951	9.461
11:52	149.265	13.728	20.908	9.526	9.872

Wheelabrator  
CleanAir Project No. 12218  
South Broward  
Unit 3

March 26, 2013  
Start Time 11:53  
Stop Time 12:02

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
<b>System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>01</sub> Zero gas	0.076	0.019	-0.306	0.022	-0.024
C <sub>04</sub> Upscale gas	216.598	44.449	47.391	9.452	9.569
<b>Analyzer Calibration Error Responses (C<sub>DR</sub>)</b>					
C <sub>000</sub> Zero gas	-0.117	-0.050	-0.368	-0.004	-0.077
C <sub>000</sub> Upscale gas	223.044	45.903	47.835	9.543	9.528
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.0%	0.1%	0.1%	0.1%	0.3%
Upscale gas	-1.4%	-1.6%	-0.5%	-0.5%	0.2%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>01</sub> Zero gas	0.133	0.196	-0.295	0.024	-0.021
C <sub>04</sub> Upscale gas	216.777	44.731	47.452	9.444	9.579
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	0.0%	-0.2%	0.0%	0.0%	0.0%
Upscale gas	0.0%	-0.3%	-0.1%	0.0%	-0.1%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
11:53:05	145.739	15.723	19.723	6.856	7.101
11:53:20	119.056	10.473	21.960	8.796	8.590
11:53:35	42.295	3.998	14.156	9.409	9.509
11:53:50	10.948	1.706	3.573	9.443	9.565
11:54:05	2.051	0.886	0.713	9.447	9.576
11:54:20	0.936	0.518	0.166	9.452	9.562
11:54:35	0.700	0.249	0.077	9.452	9.568
11:54:50	0.578	0.072	0.080	9.447	9.564
11:55:05	-0.016	0.130	0.122	9.453	9.574
11:55:20	0.065	0.098	0.075	9.456	9.577
11:55:35	0.179	0.020	0.139	9.450	9.557
11:55:50	0.260	0.010	0.101	9.451	9.584
11:56:05	-0.155	0.027	0.020	8.446	9.595
11:56:20	13.260	6.318	0.021	1.468	9.929
11:56:35	61.465	30.587	-0.093	0.125	10.049
11:56:50	168.270	39.736	-0.238	0.034	10.053
11:57:05	211.591	42.048	-0.247	0.027	10.059
11:57:20	215.279	42.957	-0.273	0.029	10.060
11:57:35	215.670	43.591	-0.275	0.028	10.061
11:57:50	215.848	43.956	-0.316	0.004	10.055
11:58:05	216.435	44.171	-0.299	0.005	10.060
11:58:20	216.606	44.321	-0.309	0.006	10.063
11:58:35	216.582	44.475	-0.309	0.022	10.059
11:58:50	216.606	44.552	-0.301	0.024	10.035
11:59:05	216.712	39.114	0.949	0.097	3.868
11:59:20	171.958	16.334	18.608	0.038	0.348
11:59:35	42.100	6.724	36.374	0.026	0.084
11:59:50	8.547	4.142	45.915	0.014	0.022
12:00:05	2.060	3.180	47.160	0.025	0.007
12:00:20	0.944	2.694	47.189	0.025	-0.015
12:00:35	0.904	2.379	47.306	0.019	-0.001
12:00:50	0.529	2.229	47.461	0.024	-0.012
12:01:05	0.122	2.068	47.362	0.028	-0.020

Wheelabrator  
CleanAir Project No. 12218  
South Broward  
Unit 3

March 26, 2013  
Start Time 11:53  
Stop Time 12:02

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
12:01:20	0.350	1.965	47.424	0.017	-0.027
12:01:35	0.382	1.849	47.386	0.028	-0.026
12:01:50	0.219	2.221	46.859	4.092	2.787
12:02:05	28.002	8.482	40.561	9.446	8.709

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

March 26, 2013  
 Start Time 12:11  
 Stop time 12:38

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	0.076	0.019	-0.306	0.022	-0.024
C <sub>ui</sub> Initial upscale	216.598	44.449	47.391	9.452	9.569
C <sub>of</sub> Final zero	0.146	0.032	-0.311	0.028	-0.029
C <sub>uf</sub> Final upscale	217.471	44.921	47.417	9.458	9.574
C <sub>ma</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>AVG</sub> Average conc.	157.371	10.266	8.177	9.029	10.253
C <sub>OAS</sub> Bias adjusted	161.666	10.341	8.413	9.090	10.206

Clock Time (at end of sample period)

Clock Time	NOX	SO2	CO	O2	CO2
12:12	160.511	17.728	8.267	8.676	10.502
12:13	165.470	18.399	7.716	8.605	10.580
12:14	167.208	17.169	7.817	8.873	10.383
12:15	168.476	14.649	6.481	8.990	10.247
12:16	168.319	15.768	6.026	8.537	10.606
12:17	163.297	16.038	4.834	8.756	10.476
12:18	162.033	8.191	4.935	9.313	10.009
12:19	161.844	4.987	6.482	9.123	10.157
12:20	164.121	3.858	8.188	9.077	10.199
12:21	161.288	3.806	7.513	9.125	10.159
12:22	158.692	4.462	8.833	8.327	10.774
12:23	161.453	4.731	8.089	8.978	10.289
12:24	160.464	4.391	6.689	8.881	10.331
12:25	160.092	4.958	6.644	8.867	10.382
12:26	157.163	6.346	5.785	9.392	9.959
12:27	152.566	7.593	5.717	8.924	10.320
12:28	150.726	7.733	5.447	9.060	10.218
12:29	145.022	7.296	6.629	9.061	10.208
12:30	149.149	7.383	10.126	9.286	10.070
12:31	152.493	8.118	10.479	9.155	10.162
12:32	156.520	10.039	10.888	9.412	9.995
12:33	149.817	10.854	10.930	9.570	9.855
12:34	150.605	12.648	12.216	9.144	10.184
12:35	150.026	14.718	11.710	9.361	10.067
12:36	147.635	15.899	10.556	9.653	9.798
12:37	151.195	14.246	12.654	8.753	10.480
12:38	152.845	15.171	9.129	8.897	10.408



Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

March 26, 2013  
 Start Time 12:39  
 Stop Time 12:49

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
<b>System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>oi</sub> Zero gas	0.146	0.032	-0.311	0.028	-0.029
C <sub>ui</sub> Upscale gas	217.471	44.921	47.417	9.458	9.574
<b>Analyzer Calibration Error Responses (C<sub>Di</sub>)</b>					
C <sub>oDi</sub> Zero gas	-0.117	-0.050	-0.368	-0.004	-0.077
C <sub>uDi</sub> Upscale gas	223.044	45.903	47.835	9.543	9.528
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>MA</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.1%	0.1%	0.1%	0.2%	0.3%
Upscale gas	-1.2%	-1.1%	-0.4%	-0.5%	0.3%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>oi</sub> Zero gas	0.076	0.019	-0.306	0.022	-0.024
C <sub>ui</sub> Upscale gas	216.598	44.449	47.391	9.452	9.569
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	0.0%	0.0%	0.0%	0.0%	0.0%
Upscale gas	0.2%	0.5%	0.0%	0.0%	0.0%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
12:39:27	148.848	16.241	8.276	9.329	9.662
12:39:42	147.758	14.486	10.190	6.965	6.549
12:39:57	127.033	6.740	11.985	9.215	9.191
12:40:12	37.786	2.584	7.451	9.424	9.546
12:40:27	5.299	1.206	2.413	9.449	9.557
12:40:42	1.343	0.687	0.396	9.454	9.573
12:40:57	0.936	0.466	0.129	9.455	9.568
12:41:12	0.472	0.296	0.103	9.460	9.575
12:41:27	0.586	0.251	0.033	9.459	9.575
12:41:42	-0.033	0.207	0.068	9.458	9.586
12:41:57	0.179	0.127	0.064	9.458	9.561
12:42:12	0.154	0.042	0.024	9.459	9.581
12:42:27	0.024	0.049	0.002	9.461	9.582
12:42:42	-0.391	0.007	0.015	9.461	9.586
12:42:57	0.383	1.620	0.002	4.795	9.731
12:43:12	5.373	23.727	-0.041	0.394	10.022
12:43:27	110.949	38.136	-0.185	0.060	10.059
12:43:42	205.413	41.825	-0.267	0.032	10.062
12:43:57	214.082	43.106	-0.312	0.034	10.063
12:44:12	215.922	43.788	-0.317	0.024	10.063
12:44:27	216.622	44.191	-0.317	0.025	10.066
12:44:42	216.850	44.448	-0.306	0.006	10.065
12:44:57	216.874	44.560	-0.327	0.014	10.066
12:45:12	216.972	44.668	-0.317	0.012	10.064
12:45:27	217.281	44.840	-0.330	0.010	10.065
12:45:42	217.444	44.876	-0.291	0.009	10.066
12:45:57	217.289	44.926	-0.312	0.002	10.067
12:46:12	217.468	44.960	-0.306	0.013	10.058
12:46:27	217.656	41.876	0.420	0.099	6.538
12:46:42	171.233	19.303	10.673	0.031	0.687
12:46:57	60.407	7.409	29.945	0.022	0.126
12:47:12	16.069	4.368	42.831	0.031	0.042
12:48:20	0.212	2.063	47.342	0.002	-0.009

Wheelabrator  
CleanAir Project No. 12218  
South Broward  
Unit 3

March 26, 2013  
Start Time 12:39  
Stop Time 12:49

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
12:48:35	0.424	1.947	47.328	0.029	-0.016
12:48:50	0.342	1.765	47.326	0.023	-0.024
12:49:05	0.065	1.703	47.399	0.028	-0.031
12:49:20	0.325	1.680	47.420	0.014	-0.033
12:49:35	0.049	1.656	47.432	0.019	-0.037

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

March 26, 2013  
 Start Time 12:52  
 Stop time 13:19

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	0.146	0.032	-0.311	0.028	-0.029
C <sub>ui</sub> Initial upscale	217.471	44.921	47.417	9.458	9.574
C <sub>of</sub> Final zero	-0.120	-0.001	-0.317	0.013	-0.020
C <sub>uf</sub> Final upscale	217.297	44.892	47.377	9.460	9.582
C <sub>ma</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>Avg</sub> Average conc.	160.197	13.339	8.310	9.141	10.165
C <sub>Gas</sub> Bias adjusted	164.332	13.386	8.550	9.200	10.112

Clock Time (at end of sample period)

041713-094208	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
12:53	158.602	14.733	8.500	9.690	9.626
12:54	159.155	16.563	9.889	9.401	9.981
12:55	154.772	17.879	8.697	9.966	9.493
12:56	159.676	22.416	11.133	8.937	10.324
12:57	163.295	23.062	10.746	9.183	10.173
12:58	162.226	23.613	8.240	9.447	9.933
12:59	155.818	31.134	8.370	9.288	10.023
13:00	150.505	44.433	9.792	9.252	10.103
13:01	148.020	30.486	8.638	9.993	9.474
13:02	155.977	10.807	10.066	9.559	9.784
13:03	168.195	6.897	11.421	9.077	10.215
13:04	166.754	5.538	9.799	9.472	9.909
13:05	164.465	4.806	9.484	9.163	10.150
13:06	160.324	4.189	7.871	9.435	9.935
13:07	164.528	3.947	9.265	9.099	10.210
13:08	164.357	4.600	7.709	8.829	10.434
13:09	158.191	5.221	6.427	9.022	10.269
13:10	156.831	6.246	6.598	8.658	10.540
13:11	162.820	8.354	7.240	8.179	10.945
13:12	161.789	7.654	6.746	9.056	10.243
13:13	154.748	6.733	6.190	9.512	9.874
13:14	156.516	7.645	7.294	8.709	10.474
13:15	164.872	10.337	7.719	8.335	10.803
13:16	166.964	10.743	7.061	8.618	10.596
13:17	163.805	11.066	6.345	9.001	10.308
13:18	160.026	10.546	5.729	9.239	10.106
13:19	162.100	10.516	7.405	8.698	10.518

Wheelabrator  
CleanAir Project No. 12218  
South Broward  
Unit 3

March 26, 2013

Start Time 13:20  
Stop Time 13:30

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
<b>System Response to Calibration Gases (C<sub>s</sub>)</b>					
C <sub>of</sub> Zero gas	-0.120	-0.001	-0.317	0.013	-0.020
C <sub>uf</sub> Upscale gas	217.297	44.892	47.377	9.460	9.582
<b>Analyzer Calibration Error Responses (C<sub>Dr</sub>)</b>					
C <sub>oca</sub> Zero gas	-0.117	-0.050	-0.368	-0.004	-0.077
C <sub>mce</sub> Upscale gas	223.044	45.903	47.835	9.543	9.528
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (C<sub>S</sub>)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.0%	0.1%	0.1%	0.1%	0.3%
Upscale gas	-1.3%	-1.1%	-0.5%	-0.5%	0.3%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gases (C<sub>s</sub>)</b>					
C <sub>oi</sub> Zero gas	0.146	0.032	-0.311	0.028	-0.029
C <sub>ui</sub> Upscale gas	217.471	44.921	47.417	9.458	9.574
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	-0.1%	0.0%	0.0%	-0.1%	0.1%
Upscale gas	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
13:20:54	32.805	1.941	6.649	9.428	9.552
13:21:09	5.462	0.944	1.717	9.446	9.566
13:21:24	1.457	0.510	0.334	9.459	9.558
13:21:39	0.700	0.301	0.008	9.455	9.569
13:21:54	0.578	0.174	0.057	9.457	9.589
13:22:09	0.082	0.100	0.085	9.457	9.565
13:22:24	0.415	0.011	0.085	9.459	9.591
13:22:39	0.122	-0.007	0.068	9.459	9.578
13:22:54	0.049	-0.016	-0.015	9.461	9.560
13:23:09	0.049	0.010	0.068	9.457	9.575
13:23:24	0.065	-0.003	0.067	9.462	9.579
13:23:39	0.138	-0.002	0.098	9.459	9.579
13:23:54	-0.285	0.003	0.015	9.459	9.588
13:24:09	-0.212	-0.060	-0.011	8.959	9.585
13:24:24	0.236	7.435	-0.015	2.133	9.880
13:24:39	39.219	31.358	-0.098	0.179	10.045
13:24:54	170.533	40.075	-0.236	0.052	10.058
13:25:09	208.710	42.370	-0.273	0.024	10.061
13:25:24	214.652	43.264	-0.317	0.016	10.062
13:25:39	215.808	43.845	-0.317	0.030	10.063
13:25:54	216.182	44.210	-0.317	0.020	10.063
13:26:09	216.582	44.443	-0.301	0.011	10.062
13:26:24	216.826	44.615	-0.317	0.020	10.064
13:26:39	217.021	44.786	-0.309	0.012	10.063
13:26:54	217.110	44.925	-0.307	0.010	10.065
13:27:09	217.305	44.965	-0.317	-0.006	10.062
13:27:24	217.476	41.812	-0.122	0.093	6.690
13:27:39	183.517	19.370	11.512	0.020	0.723
13:27:54	68.213	7.342	29.426	0.010	0.130
13:28:09	16.703	4.348	43.290	0.026	0.049
13:28:24	2.906	3.256	46.658	0.038	0.007
13:28:39	0.847	2.652	47.295	0.027	0.004
13:28:54	0.700	2.356	47.253	0.032	-0.019

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

March 26, 2013

Start Time 13:20

Stop Time 13:30

**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
13:29:09	0.521	2.255	47.323	0.008	-0.008
13:29:24	0.415	2.131	47.350	0.024	-0.013
13:29:39	0.293	2.037	47.435	0.012	-0.020
13:29:54	0.415	1.864	47.346	0.002	-0.026
13:30:09	-0.147	2.245	46.950	2.812	1.841

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

March 26, 2013  
 Start Time 13:32  
 Stop time 13:59

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	-0.120	-0.001	-0.317	0.013	-0.020
C <sub>ui</sub> Initial upscale	217.297	44.892	47.377	9.460	9.582
C <sub>of</sub> Final zero	0.103	-0.027	-0.331	0.001	-0.032
C <sub>uf</sub> Final upscale	216.536	44.977	47.245	9.465	9.587
C <sub>md</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>AVG</sub> Average conc.	153.283	18.701	7.250	9.230	10.123
C <sub>GAS</sub> Bias adjusted	157.584	18.778	7.521	9.286	10.064

Clock Time (at end of sample period)

Clock Time	Channel 1 NOX	Channel 2 SO2	Channel 3 CO	Channel 4 O2	Channel 5 CO2
13:33	163.537	12.116	6.404	9.227	9.995
13:34	158.539	10.754	6.988	9.618	9.796
13:35	157.989	10.967	7.616	9.016	10.261
13:36	162.049	12.522	7.987	8.953	10.333
13:37	158.526	12.803	7.479	9.041	10.276
13:38	155.026	12.247	6.698	9.037	10.274
13:39	150.442	11.561	6.410	9.453	9.943
13:40	149.351	12.859	8.458	9.128	10.231
13:41	149.697	15.233	8.746	9.778	9.695
13:42	149.298	20.882	8.146	9.244	10.098
13:43	151.559	20.740	7.983	9.270	10.135
13:44	148.468	15.249	8.121	9.632	9.810
13:45	151.602	17.184	9.647	8.924	10.393
13:46	152.446	14.613	6.929	9.643	9.814
13:47	152.403	14.939	7.110	9.439	9.941
13:48	154.119	17.614	7.709	9.477	9.953
13:49	149.269	11.272	5.934	9.660	9.741
13:50	148.734	12.945	8.684	8.813	10.474
13:51	149.288	14.280	7.328	9.371	10.026
13:52	151.652	24.791	7.007	9.096	10.229
13:53	156.359	37.134	6.427	8.743	10.525
13:54	153.700	46.279	6.003	9.171	10.194
13:55	151.473	54.280	5.600	9.160	10.188
13:56	153.840	42.987	6.470	9.002	10.321
13:57	154.811	14.388	6.158	8.985	10.325
13:58	154.988	8.436	6.704	9.280	10.103
13:59	149.477	6.051	7.011	9.058	10.243

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

March 26, 2013  
 Start Time 14:00  
 Stop Time 14:10

**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
<b>System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>off</sub> Zero gas	0.103	-0.027	-0.331	0.001	-0.032
C <sub>off</sub> Upscale gas	216.536	44.977	47.245	9.465	9.587
<b>Analyzer Calibration Error Responses (C<sub>Dir</sub>)</b>					
C <sub>ocb</sub> Zero gas	-0.117	-0.050	-0.368	-0.004	-0.077
C <sub>mod</sub> Upscale gas	223.044	45.903	47.835	9.543	9.528
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.0%	0.0%	0.0%	0.0%	0.2%
Upscale gas	-1.5%	-1.0%	-0.6%	-0.4%	0.3%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gasses (C<sub>s</sub>)</b>					
C <sub>oi</sub> Zero gas	-0.120	-0.001	-0.317	0.013	-0.020
C <sub>oi</sub> Upscale gas	217.297	44.892	47.377	9.460	9.582
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	0.0%	0.0%	0.0%	-0.1%	-0.1%
Upscale gas	-0.2%	0.1%	-0.1%	0.0%	0.0%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
14:00:12	147.326	3.171	10.774	8.788	8.592
14:00:27	65.568	1.605	8.803	9.407	9.498
14:00:42	8.596	0.728	3.562	9.448	9.563
14:00:57	1.823	0.319	0.685	9.457	9.577
14:01:12	0.554	0.169	0.093	9.464	9.568
14:01:27	0.676	0.057	0.059	9.465	9.578
14:01:42	0.122	-0.041	0.012	9.464	9.565
14:01:57	0.171	0.063	0.001	9.462	9.586
14:02:12	-0.008	0.018	-0.033	9.460	9.562
14:02:27	0.154	-0.057	0.029	9.466	9.582
14:02:42	0.187	0.023	0.013	9.467	9.591
14:02:57	0.032	-0.031	-0.018	9.463	9.587
14:03:12	0.244	-0.024	0.031	9.467	9.588
14:03:27	0.032	-0.028	0.073	9.470	9.577
14:03:42	0.032	1.076	0.065	6.073	9.678
14:03:57	22.816	22.776	-0.026	0.586	9.997
14:04:12	137.314	38.193	-0.153	0.087	10.055
14:04:27	195.824	41.962	-0.301	0.042	10.058
14:04:42	212.951	43.201	-0.317	0.004	10.061
14:04:57	214.644	43.790	-0.317	0.021	10.059
14:05:12	215.222	44.140	-0.330	-0.006	10.059
14:05:27	215.312	44.420	-0.337	0.001	10.062
14:05:42	215.759	44.536	-0.317	0.004	10.065
14:05:57	216.125	44.605	-0.306	0.004	10.062
14:06:12	216.304	44.726	-0.329	-0.004	10.062
14:06:27	216.378	44.843	-0.334	0.001	10.061
14:06:42	216.484	44.956	-0.330	0.007	10.064
14:06:57	216.517	45.133	-0.316	-0.001	10.065
14:07:12	216.606	44.438	-0.285	0.093	8.622
14:07:27	214.099	23.984	6.584	0.047	1.362
14:07:42	153.260	8.088	24.897	0.035	0.184
14:07:57	20.196	4.322	40.316	0.007	0.043

Wheelabrator  
CleanAir Project No. 12218  
South Broward  
Unit 3

March 26, 2013  
Start Time 14:00  
Stop Time 14:10

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
14:08:12	4.892	3.186	46.011	0.035	0.027
14:08:27	1.506	2.556	47.026	0.012	-0.004
14:08:42	0.806	2.331	47.331	0.028	-0.006
14:08:57	0.839	2.116	47.225	0.016	-0.008
14:09:12	0.594	2.024	47.213	0.022	-0.016
14:09:27	0.546	1.921	47.220	0.027	-0.020
14:09:42	0.440	1.752	47.308	0.017	-0.025
14:09:57	0.065	1.721	47.204	0.004	-0.033
14:10:12	0.309	1.722	47.245	0.024	-0.039
14:10:27	0.260	1.620	47.287	0.150	-0.030



Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

March 26, 2013  
 Start Time 14:12  
 Stop time 14:39

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
<b>Calibration Checks</b>					
C <sub>oi</sub> Initial zero	0.103	-0.027	-0.331	0.001	-0.032
C <sub>ui</sub> Initial upscale	216.536	44.977	47.245	9.465	9.587
C <sub>of</sub> Final zero	0.073	-0.055	-0.333	-0.004	-0.019
C <sub>uf</sub> Final upscale	215.520	44.930	47.194	9.454	9.572
C <sub>me</sub> Actual gas value	223.000	45.100	47.300	9.520	9.530
<b>Analyzer Averages (concentrations)</b>					
C <sub>AVG</sub> Average conc.	146.845	16.658	9.847	9.586	9.832
C <sub>Gas</sub> Bias adjusted	151.555	16.738	10.126	9.647	9.780

Clock Time (at end of sample period)

001713 09:1208	14:13	14:14	14:15	14:16	14:17	14:18	14:19	14:20	14:21	14:22	14:23	14:24	14:25	14:26	14:27	14:28	14:29	14:30	14:31	14:32	14:33	14:34	14:35	14:36	14:37	14:38	14:39
	154.210	155.130	154.880	150.987	150.733	143.974	149.992	141.785	133.649	141.703	139.247	142.684	142.354	139.465	145.336	140.464	147.682	147.829	154.292	150.224	146.435	138.923	139.870	148.917	154.245	155.983	153.822
	4.725	5.251	5.679	7.133	7.400	6.401	7.064	7.132	6.405	6.783	6.568	10.976	13.231	15.267	14.377	18.666	24.597	34.885	43.812	49.381	52.999	46.724	24.887	12.475	8.260	6.091	4.596
	8.265	7.601	5.955	8.073	7.873	7.795	11.482	8.205	8.000	11.183	9.060	12.985	12.255	12.960	11.178	10.986	11.598	11.694	9.903	10.895	9.599	10.042	9.362	10.486	8.761	9.821	9.868
	9.322	9.167	9.299	9.001	9.438	9.653	8.961	9.943	9.692	9.725	10.089	9.570	9.986	9.279	9.886	9.855	10.106	9.453	9.351	9.159	9.542	9.775	9.802	9.625	9.732	9.605	9.810
	9.909	10.166	10.062	10.293	9.996	9.777	10.368	9.552	9.716	9.736	9.401	9.864	9.508	10.078	9.611	9.618	9.423	9.932	10.041	10.204	9.895	9.687	9.652	9.819	9.707	9.822	9.627

**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
<b>System Response to Calibration Gases (C<sub>s</sub>)</b>					
C <sub>of</sub> Zero gas	0.073	-0.055	-0.333	-0.004	-0.019
C <sub>uf</sub> Upscale gas	215.520	44.930	47.194	9.454	9.572
<b>Analyzer Calibration Error Responses (C<sub>Dir</sub>)</b>					
C <sub>ooo</sub> Zero gas	-0.117	-0.050	-0.368	-0.004	-0.077
C <sub>mo0</sub> Upscale gas	223.044	45.903	47.835	9.543	9.528
<b>Actual Upscale Gas Value (C<sub>MA</sub>)</b>					
C <sub>ma</sub> Upscale gas	223.000	45.100	47.300	9.520	9.530
<b>Calibration Span Value (CS)</b>					
	448.000	90.800	96.300	18.100	17.900
<b>System Bias as Percent of Calibration Span Value (SB) (5%)</b>					
Zero gas	0.0%	0.0%	0.0%	0.0%	0.3%
Upscale gas	-1.7%	-1.1%	-0.7%	-0.5%	0.2%
<b>System Bias Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK
<b>Previous System Response to Calibration Gases (C<sub>s</sub>)</b>					
C <sub>ol</sub> Zero gas	0.103	-0.027	-0.331	0.001	-0.032
C <sub>ul</sub> Upscale gas	216.536	44.977	47.245	9.465	9.587
<b>Drift Assessment as Percent of Calibration Span Value (D) (3%)</b>					
Zero gas	0.0%	0.0%	0.0%	0.0%	0.1%
Upscale gas	-0.2%	-0.1%	-0.1%	-0.1%	-0.1%
<b>Drift Assessment Status</b>					
Zero gas	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK

Time	NOX	SO2	CO	O2	CO2
14:40:31	151.624	3.246	9.363	6.852	7.164
14:40:46	119.813	2.527	12.264	8.779	8.583
14:41:01	69.247	1.325	9.595	9.389	9.496
14:41:16	10.793	0.604	4.117	9.437	9.564
14:41:31	2.206	0.230	0.661	9.438	9.566
14:41:46	0.838	0.060	0.126	9.449	9.551
14:42:01	0.440	0.034	0.070	9.451	9.572
14:42:16	0.285	0.016	0.039	9.450	9.579
14:42:31	0.488	-0.041	0.086	9.448	9.562
14:42:46	0.040	-0.045	-0.042	9.443	9.570
14:43:01	0.154	-0.050	0.006	9.454	9.572
14:43:16	0.024	-0.040	0.047	9.454	9.575
14:43:31	-0.179	-0.052	-0.017	9.454	9.568
14:43:46	0.244	-0.057	-0.042	9.452	9.576
14:44:01	0.032	-0.055	0.083	8.523	9.593
14:44:16	12.633	10.486	-0.059	1.628	9.915
14:44:31	96.687	33.392	-0.117	0.146	10.045
14:44:46	170.737	40.591	-0.241	0.040	10.054
14:45:01	210.940	42.582	-0.311	0.026	10.056
14:45:16	213.936	43.388	-0.324	0.018	10.056
14:45:31	214.603	43.823	-0.317	0.012	10.059
14:45:46	214.790	44.197	-0.317	-0.001	10.058
14:46:01	215.010	44.484	-0.319	-0.022	10.050
14:46:16	215.149	44.664	-0.335	0.011	10.059
14:46:31	215.409	44.651	-0.332	0.004	10.060
14:46:46	215.238	44.882	-0.335	0.002	10.057
14:47:01	215.393	44.938	-0.332	-0.006	10.061
14:47:16	215.661	44.969	-0.319	0.005	10.061
14:47:31	215.507	44.640	-0.321	0.071	9.069
14:47:46	213.016	27.238	4.366	0.048	1.686
14:48:01	158.413	9.426	23.316	0.021	0.210
14:48:16	26.740	4.746	38.645	0.019	0.063

Wheelabrator  
 CleanAir Project No. 12218  
 South Broward  
 Unit 3

March 26, 2013  
 Start Time 14:40  
 Stop Time 14:55

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
14:48:31	5.071	3.298	45.815	0.012	0.016
14:48:46	1.693	2.719	46.927	0.023	0.012
14:49:01	0.586	2.309	47.147	0.022	-0.025
14:49:16	0.163	2.133	47.202	0.006	-0.005
14:49:31	0.538	1.994	47.199	0.026	-0.014
14:49:46	0.326	1.836	47.209	0.023	-0.018
14:50:01	0.228	1.719	47.175	0.010	-0.025
14:50:16	0.700	1.851	46.142	0.651	0.198
14:50:31	5.397	0.974	30.351	0.997	-0.059
14:50:46	20.122	0.771	10.720	0.994	-0.083
14:51:01	34.595	0.736	1.044	0.988	-0.080
14:51:16	42.670	0.692	-0.069	0.984	-0.080
14:51:31	44.420	0.763	-0.145	1.004	-0.083
14:51:46	45.193	0.776	-0.166	0.982	-0.085
14:52:01	45.608	0.807	-0.176	0.999	-0.085
14:52:16	45.999	0.739	-0.181	0.994	-0.084
14:52:31	46.211	0.814	-0.161	0.983	-0.091
14:52:46	46.382	0.804	-0.165	0.976	-0.084
14:53:01	46.463	0.726	-0.171	0.988	-0.092
14:53:16	46.626	0.778	-0.189	0.992	-0.087
14:53:31	46.642	0.811	-0.185	0.994	-0.086
14:53:46	46.748	0.827	-0.155	0.980	-0.085
14:54:01	46.829	0.884	-0.171	0.993	-0.085
14:54:16	46.911	0.857	-0.173	0.977	-0.085
14:54:31	46.480	0.855	-0.185	0.999	-0.088
14:54:46	46.797	0.845	-0.157	0.981	-0.089
14:55:01	46.691	0.821	-0.185	1.002	-0.085
14:55:16	46.691	0.840	-0.171	0.972	-0.085
14:55:31	47.090	0.847	-0.181	1.142	-0.082

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