APPENDIX G
CLEAN AIR ENGINEERING
TESTING REPORTS

CONTENTS

Test Dates	Report Title	Report Date
March 28-29, 2007	"Report on Performance Testing Performed for CONSOL Energy Inc., Unit 4 SCR Outlet, SCR Inlet, Air Heater Outlet, and Baghouse Outlet at the AES Greenidge Station"	July 9, 2007
May 30 – June 1, 2007	"Report on Pollutant Emission Characterization Performed for CONSOL Energy Inc., Air Heater Inlet and Unit 4 SCR Inlet & Outlet, AES Greenidge Station, Dresden, New York"	November 16, 2007
June 20, 2007	Clean Air Engineering NO_x, CO, O_2, and CO_2 Sampling Results, SCR Inlet and Outlet Sampling Grids, June 20, 2007, 20:00-20:47	June 20, 2007 (raw data sheets)
May 21-22, 2008	"Report on Flue Gas Characterization Performed for CONSOL Energy Inc., Unit 4 – SCR Inlet & SCR Outlet, AES Greenidge Station"	September 29, 2008

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REPORT ON PERFORMANCE TESTING

Performed for:
CONSOL ENERGY INC.
UNIT 4 SCR OUTLET, SCR INLET, AIR HEATER OUTLET, AND BAGHOUSE OUTLET AT THE AES GREENIDGE STATION

Client Reference No: 4700140111
CleanAir Project No: 10192
Revision 0: May 18, 2007
Revision 1: July 9, 2007

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.

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REVISION HISTORY

REPORT ON PERFORMANCE TESTING

Revision History

Revision No:	Date	Pages	Comments
0	05/18/07	All	Original version of document.
1	7/9/07	All	Comments revision

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PROJECT OVERVIEW

1-1

Consol Energy Inc. (Consol) contracted Clean Air Engineering (CleanAir) to perform guarantee testing at the AES Greenidge Station in Dresden, NY. The testing was conducted in order to demonstrate a cost effective emission control technology.

All testing was performed in accordance with regulations set forth by the United States Environmental Protection Agency (USEPA).

The test included the following constituents:

SCR Inlet and Outlet
- nitrogen oxides (NO_x)
- flue gas composition (O_2, CO_2)

Air Heater Outlet and Baghouse Outlet
- sulfur dioxide (SO_2)
- flue gas composition (O_2, CO_2)

The testing took place on Greenidge Unit 4 on March 28 and 29, 2007. Coordinating the field testing were:

J. Locke – Consol Energy Inc.
D. Connell – Consol Energy Inc.
S. Lehmann - Clean Air Engineering
J. McKeever – Clean Air Engineering

Table 1-1 outlines the schedule adhered to during the test program. Tables 1-2 and 1-3 summarize the results of the test program. A more detailed presentation of the test conditions and results of analysis are shown on tables 2-1 through 2-10 and Figures 2-1 through 2-9.

PROJECT OVERVIEW

Table 1-1:
Unit 4 Schedule of Activities

Run Number	Location	Method	Analyte	Date	Start Time	End Time
1	Unit 4 SCR Inlet/Outlet	USEPA Method 3A, 7E	O_2, CO_2, NO_X	03/28/07	09:12	10:23
2	Unit 4 SCR Inlet/Outlet	USEPA Method 3A, 7E	O_2, CO_2, NO_X	03/28/07	11:12	12:23
3	Unit 4 SCR Inlet/Outlet	USEPA Method 3A, 7E	O_2, CO_2, NO_X	03/28/07	12:48	13:59
1	Unit 4 AH Outlet/ BH Outlet	USEPA Method 3A, 6C	O_2, CO_2, SO_2	03/29/07	09:59	11:00
2	Unit 4 AH Outlet/ BH Outlet	USEPA Method 3A, 6C	O_2, CO_2, SO_2	03/29/07	12:16	13:17
3	Unit 4 AH Outlet/ BH Outlet	USEPA Method 3A, 6C	O_2, CO_2, SO_2	03/29/07	15:13	16:13

Table 1-2:
Summary of Nitrogen Oxides Test Results

Source Constituent	Sampling Method	Average Emission
Unit 4 SCR Inlet		
NO_X (ppmdv @ 3% O_2)	EPA M7E	87.8
O_2 (%dv)	EPA M3A	4.7
CO_2 (%dv)	EPA M3A	14
Unit 4 SCR Outlet		
NO_X (ppmdv @ 3% O_2)	EPA M7E	51.8
O_2 (%dv)	EPA M3A	4.9
CO_2 (%dv)	EPA M3A	13.9
Unit 4 NO_X Reduction		
NO_X Reduction (% Efficiency)		41.0

Table 1-3:
Summary of Nitrogen Oxides Test Result in (lb/MMBtu)

Source Constituent	Run 1	Run 2	Run 3	Average Emission
Unit 4 SCR Outlet				
NO_X (ppmdv @ 3% O_2)	52.7	52.7	50.1	51.8
Fd Factor (dscf/MMBtu)	9737	9618	9535	
NO_x (lb/MMBtu @ 3% O_2)	0.0711	0.0709	0.0674	0.0698

Note: Fd factor was determined by short prox/ultimate analysis (provided by Consol Energy Inc.)

Table 1-4:
Summary of Sulfur Dioxide Test Results

Source Constituent	Sampling Method	Average Emission
Unit 4 Air Heater Outlet		
SO_2 (ppmdv @ 3% O_2)	EPA M6C	1840.8
O_2 (%dv)	EPA M3A	7.32
CO_2 (%dv)	EPA M3A	11.56
Unit 4 Baghouse Outlet		
SO_2 (ppmdv @ 3% O_2)	EPA M6C	108.9
O_2 (%dv)	EPA M3A	7.30
CO_2 (%dv)	EPA M3A	11.57
Unit 4 SO_2 Reduction		
SO_2 Reduction (% Efficiency)		94.1

DISCUSSION OF TEST PROGRAM

Testing on AES Greenidge Unit 4 consisted of several USEPA methods and conformed to Part 60 of the Code of Federal Regulations. The testing at all four locations was conducted using extractive methods. These tests were performed with the units running at full load.

The SO_2 testing was based on a modified Method 6C. USEPA Code of Federal Regulations part 60 was followed with the following exceptions. During the sampling a single test point was used during the first two runs, this point was chosen by selecting a point in the center of the duct. For the third SO_2 run a single port was traversed using 3 points across the duct.

To collect NO_x, CO_2, and O_2 emissions data, Clean Air used its Multipoint Automated Sampling Systems (MASS). Using the MASS, Clean Air was able to establish a sampling grid and develop a detailed NO_X, and O_2 profile for both the inlet and outlet ducts. This proprietary system allows a large number of sample points to be individually analyzed in a short amount of time giving a more complete view of the gas profile within the duct. Not only are overall concentrations in the duct discovered, but also spatial stratification or temporal variation.

This tool takes much of the wait out of boiler or SCR tuning and optimization by creating an efficient method of data collection. Decision making time is reduced and

enhanced with expedient, accurate, and reliable data. The expanded data capacity allows for increased analytical ability and a better "big picture" of unit operation.

Description of the MASS®

The Clean Air Engineering's MASS® (Multi-Point Automated Sampling System) uses a series of automated 8-point sample modules with integrated programmable logic controllers (PLC's) to sequentially and rapidly cycle through a multi-point test grid. For this program, a 24-point permanent outlet grid was tested using an 8 module system. Using a bank of two (2) O_2/CO_2 monitors and (2) NO_X monitors, the 24-point traverse was completed in 24 minutes. This is a considerable time savings over the typical 2 hour manual traverse.

The MASS® has been programmed to automatically cycle through and analyze each point on the grid. The key is the dynamic switching which allows for a vented "pre-purge" prior the actual analysis allowing for zero wasted analyzer time. This modular and expandable system is capable of analyzing 128 individual sample points in 32 minutes or less. A diagram of the system can be seen in Figure 1-1 below. This shows a general arrangement process flow diagram for a "typical" 64-point MASS® system arrangement.

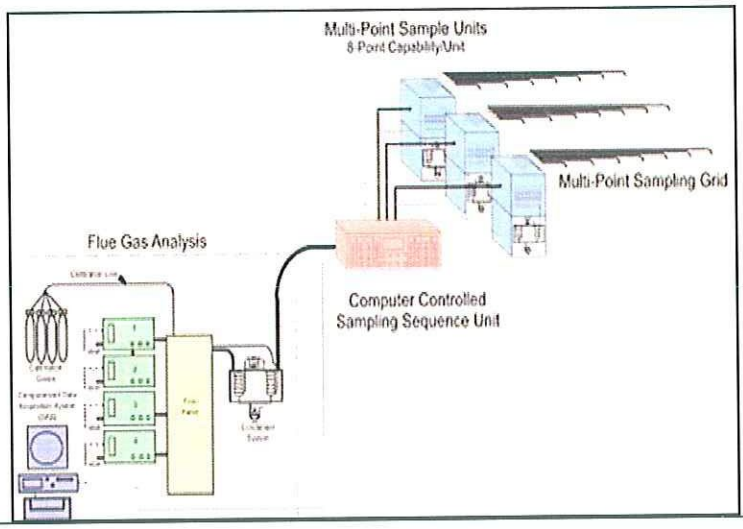


Figure 1-1: MASS® System

RESULTS

2-1

Table 2-1:
Run 1 SCR Inlet – MASS® NO_X, and O_2

Date: 3/28/2007
Start Time: 9:12
End Time: 10:23

Inlet - Nitrogen Oxides (ppmdv @ 3% O_2)

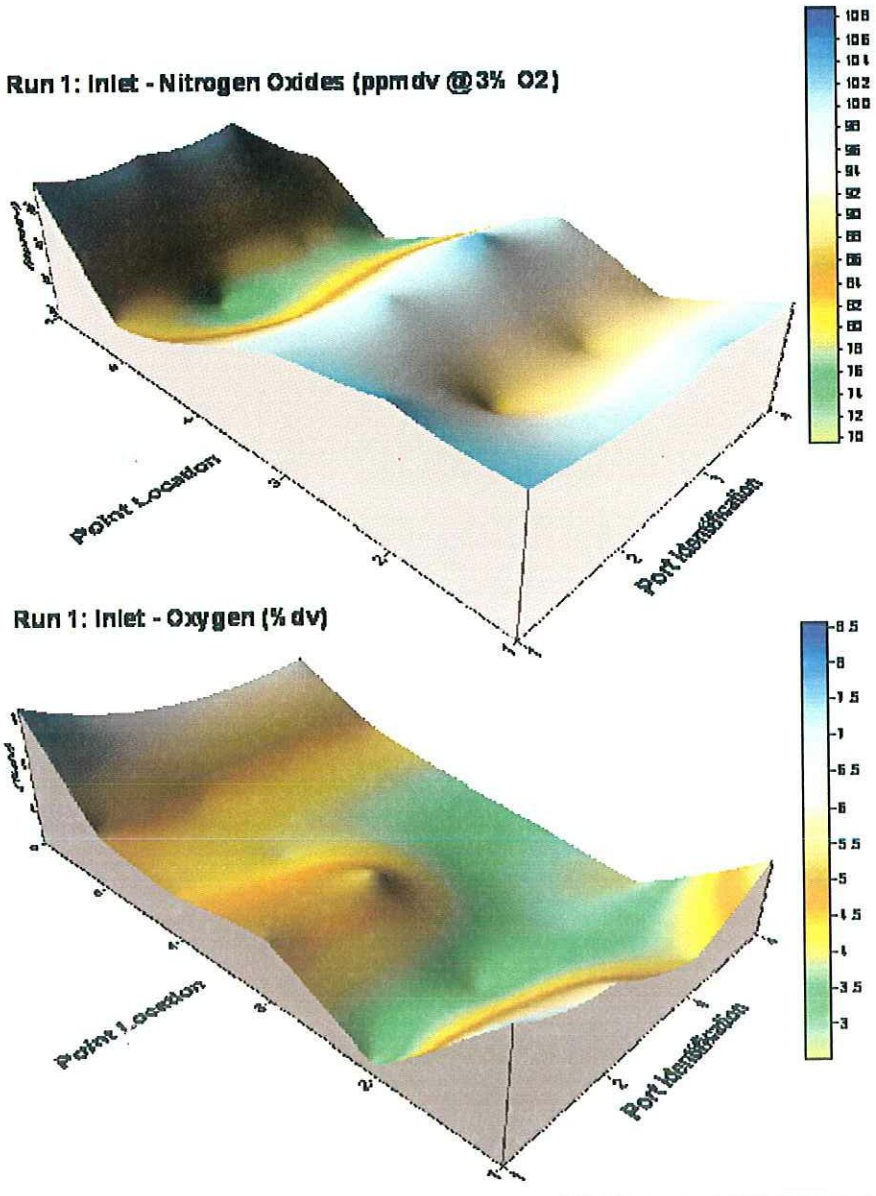
AVG	98.0	91.4	93.7	87.1	
6	108.9	107.0	107.7	87.7	102.8
5	80.4	72.8	77.5	69.5	75.1
4	89.0	82.4	84.7	82.2	84.6
3	100.5	100.5	104.2	97.8	100.8
2	105.5	85.9	86.9	87.4	91.5
1	103.8	99.7	101.4	98.2	100.8
	1	2	3	4	92.6

Inlet - Oxygen (%dv)

AVG	5.5	4.9	4.1	4.4	
6	8.6	6.8	6.3	6.6	7.1
5	4.8	4.5	4.5	4.5	4.6
4	4.4	3.9	3.7	3.7	3.9
3	5.0	5.3	3.3	3.2	4.2
2	2.9	3.0	2.9	2.5	2.8
1	7.5	6.0	4.0	5.7	5.8
	1	2	3	4	4.7

RESULTS

Figure 2-1:
Run 1 SCR Inlet – MASS® NO_X, and O_2



RESULTS

Table 2-2:
Run 1 SCR Outlet – MASS® NO_X, and O_2

Date: 3/28/2007
Start Time: 9:12
End Time: 10:23

Outlet - Nitrogen Oxides (ppmdv @ 3% O_2)

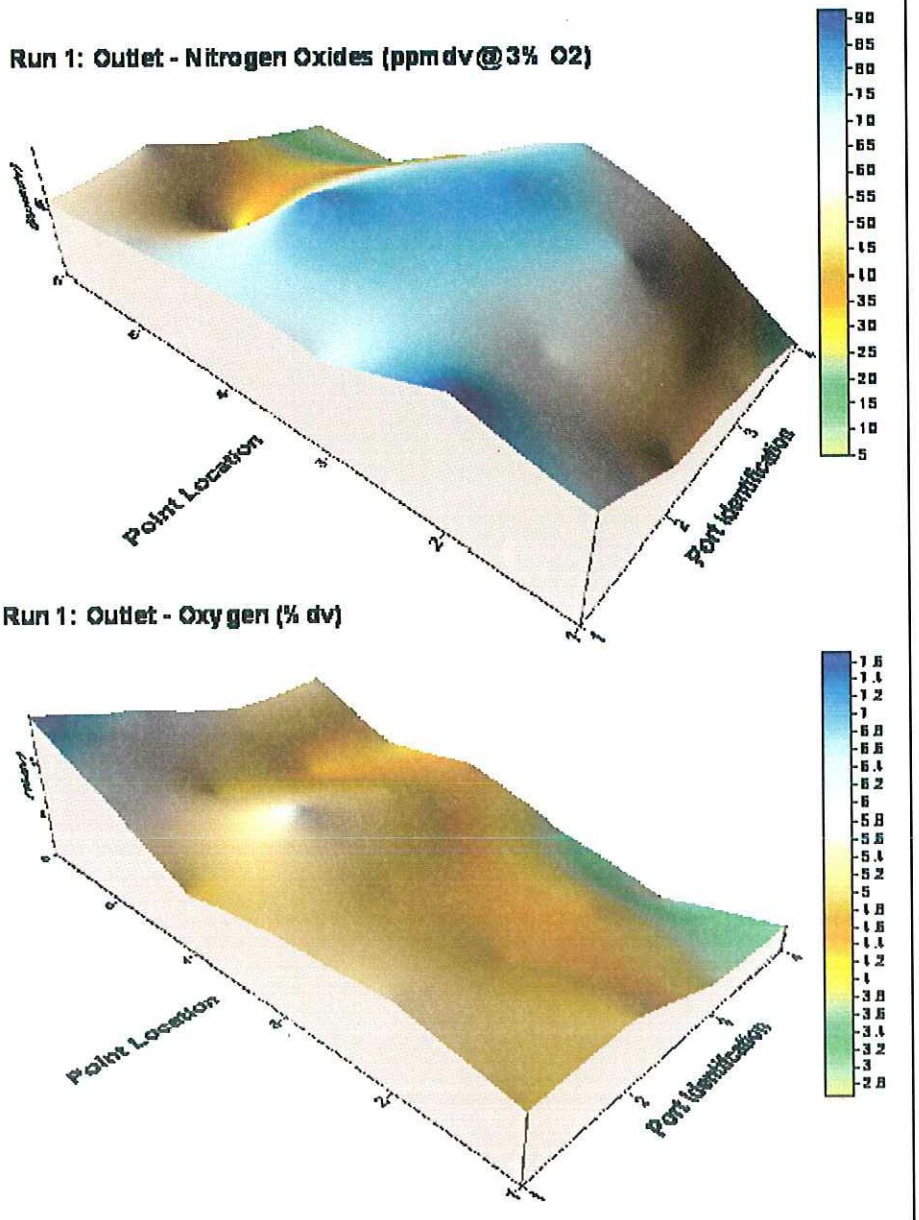
AVG	69.9	58.2	52.0	30.9	
6	55.9	59.0	28.1	6.2	37.3
5	61.7	27.3	32.8	4.8	31.7
4	68.8	85.8	67.2	39.4	65.3
3	65.2	77.2	85.0	75.3	75.7
2	91.8	62.3	73.4	51.8	69.8
1	75.9	37.4	25.4	7.8	36.6
	1	2	3	4	52.7

Outlet - Oxygen (%dv)

AVG	5.7	5.3	4.5	4.0	
6	7.7	6.7	5.5	5.6	6.4
5	6.3	4.9	4.3	4.0	4.9
4	4.7	5.9	4.9	4.5	5.0
3	5.3	4.7	4.4	3.5	4.5
2	5.6	4.6	4.3	2.7	4.3
1	4.9	5.0	3.7	3.5	4.3
	1	2	3	4	4.9

RESULTS

Figure 2-2:
Run 1 SCR Outlet – MASS® NO_X, and O_2



RESULTS

Table 2-3:
Run 1 MASS® – NO_X Removal Efficiency

Date: 3/28/2007
Start Time: 9:12
End Time: 10:23

Removal Efficiency (@ 3% O_2)

AVG	28.3%	36.1%	43.6%	65.6%	
6	48.7%	44.8%	73.9%	92.9%	65.1%
5	23.3%	62.5%	57.7%	93.1%	59.1%
4	22.8%	-4.1%	20.7%	52.0%	22.8%
3	35.1%	23.2%	18.4%	23.0%	24.9%
2	13.0%	27.5%	15.6%	40.8%	24.2%
1	26.8%	62.5%	75.0%	92.1%	64.1%
	1	2	3	4	43.4%

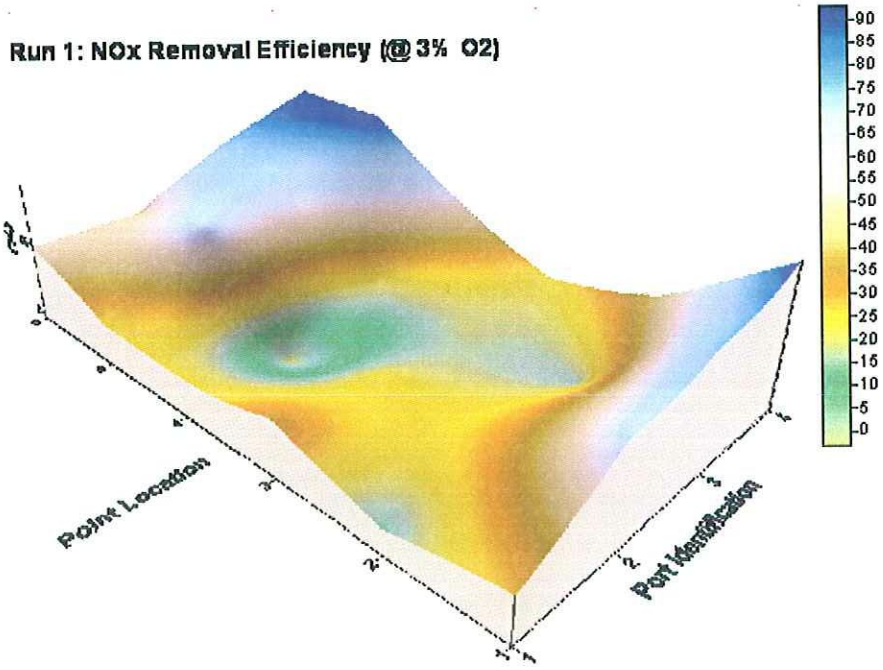


Figure 2-3:
Run 1 MASS® – NO_X Removal Efficiency

RESULTS

Table 2-4:
Run 2 SCR Inlet – MASS® NO_X, and O_2

Date: 3/28/2007
Start Time: 11:12
End Time: 12:23

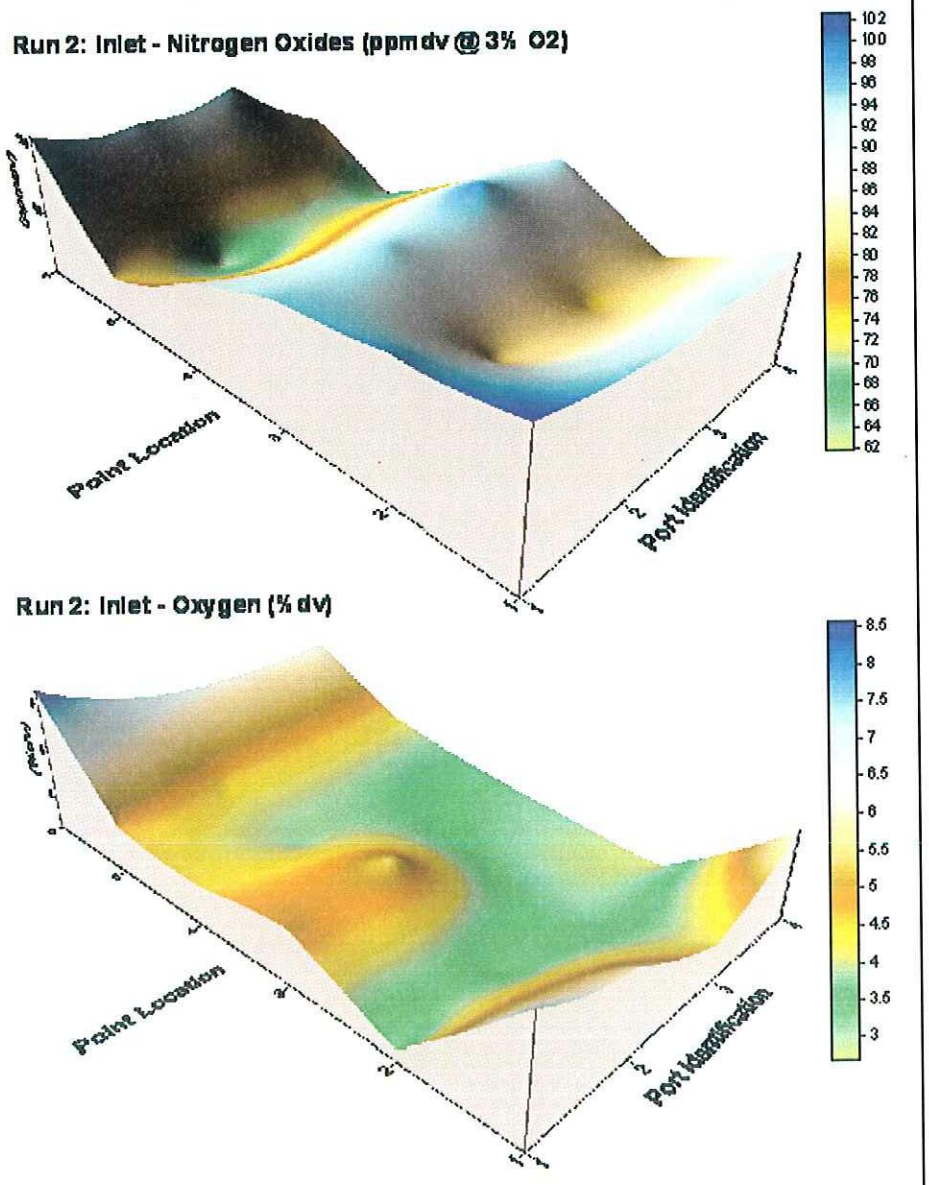
Inlet - Nitrogen Oxides (ppmdv @ 3% O_2)

AVG	93.4	84.7	86.7	80.3	
6	102.6	96.6	98.2	77.2	93.6
5	73.5	63.0	69.9	61.7	67.0
4	86.3	77.6	80.4	77.5	80.4
3	96.1	95.6	99.5	94.5	96.4
2	99.6	80.1	78.6	78.3	84.1
1	102.3	95.4	93.6	92.8	96.0
	1	2	3	4	86.3

Inlet - Oxygen (%dv)

AVG	5.5	4.9	4.1	4.4	
6	8.6	6.8	6.3	6.4	7.0
5	4.6	4.3	4.4	4.3	4.4
4	4.3	3.8	3.6	3.5	3.8
3	5.0	5.4	3.3	3.1	4.2
2	3.1	3.2	3.0	2.7	3.0
1	7.6	6.1	4.2	6.3	6.0
	1	2	3	4	4.7

Figure 2-4:
Run 2 SCR Inlet – MASS® NO_X, and O_2



RESULTS

Table 2-5:
Run 2 SCR Outlet – MASS® NO_X, and O_2

Date: 3/28/2007
Start Time: 11:12
End Time: 12:23

Outlet - Nitrogen Oxides (ppmdv @ 3% O_2)

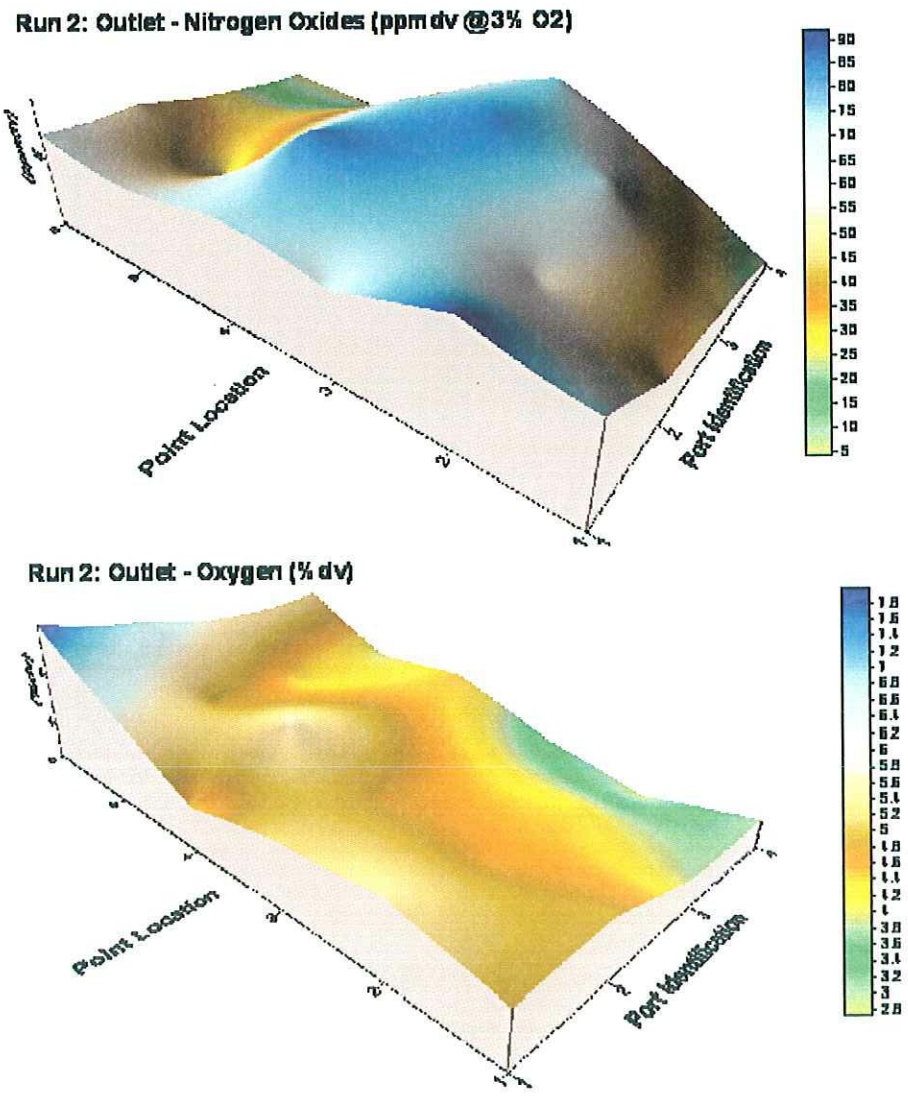
AVG	73.0	56.2	51.4	30.0	
6	67.3	52.8	24.9	5.1	37.5
5	60.4	24.7	31.7	4.2	30.3
4	74.0	87.3	69.9	42.5	68.4
3	66.5	78.9	86.2	76.5	77.0
2	92.1	58.5	72.6	45.1	67.1
1	78.0	35.3	23.2	6.8	35.8
	1	2	3	4	52.7

Outlet - Oxygen (%dv)

AVG	5.7	5.3	4.5	3.9	
6	8.0	6.7	5.7	5.4	6.5
5	6.1	4.8	4.2	3.9	4.7
4	4.4	5.8	4.8	4.4	4.8
3	5.2	4.8	4.3	3.3	4.4
2	5.7	4.6	4.3	2.7	4.3
1	4.8	5.0	3.8	3.8	4.3
	1	2	3	4	4.9

RESULTS

Figure 2-5:
Run 2 SCR Outlet – MASS® NO_X, and O_2



RESULTS

Table 2-6:
Run 2 MASS® - NO_X Removal Efficiency

Date: 3/28/2007
Start Time: 11:12
End Time: 12:23

Removal Efficiency (ppmdv @ 3% O_2)

AVG	21.4%	33.5%	39.8%	64.3%	
6	34.5%	45.3%	74.6%	93.4%	62.0%
5	17.8%	60.9%	54.7%	93.1%	56.6%
4	14.2%	-12.5%	13.1%	45.1%	15.0%
3	30.8%	17.5%	13.4%	19.0%	20.2%
2	7.5%	27.0%	7.6%	42.4%	21.1%
1	23.8%	63.0%	75.3%	92.7%	63.7%
	1	2	3	4	39.8%

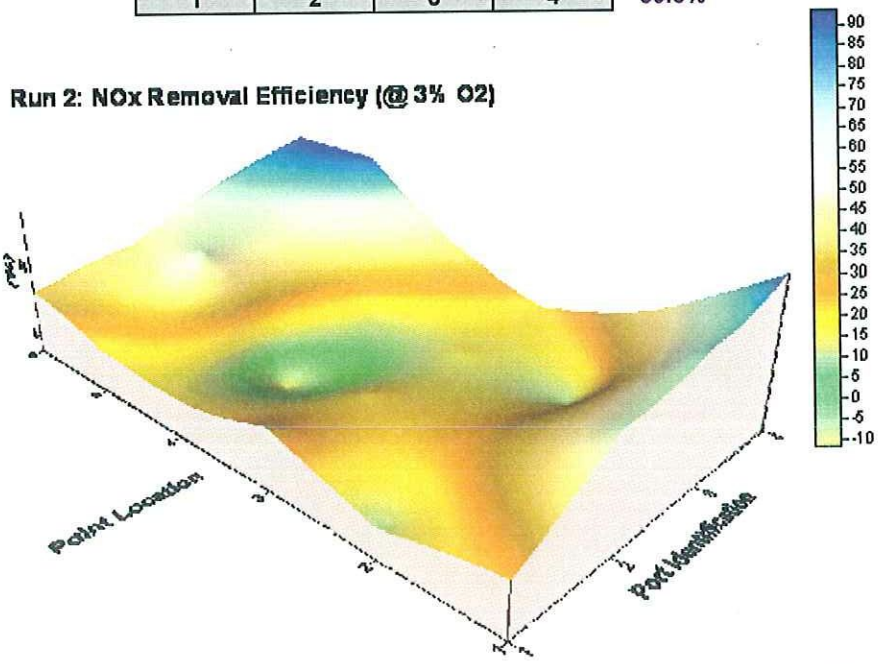


Figure 2-6:
Run 2: MASS® - NO_X Removal Efficiency

RESULTS

Table 2-7:
Run 3 SCR Inlet – MASS® NO_X, and O_2

Date: 3/28/2007
Start Time: 12:48
End Time: 13:59

Inlet - Nitrogen Oxides (ppmdv @ 3% O_2)

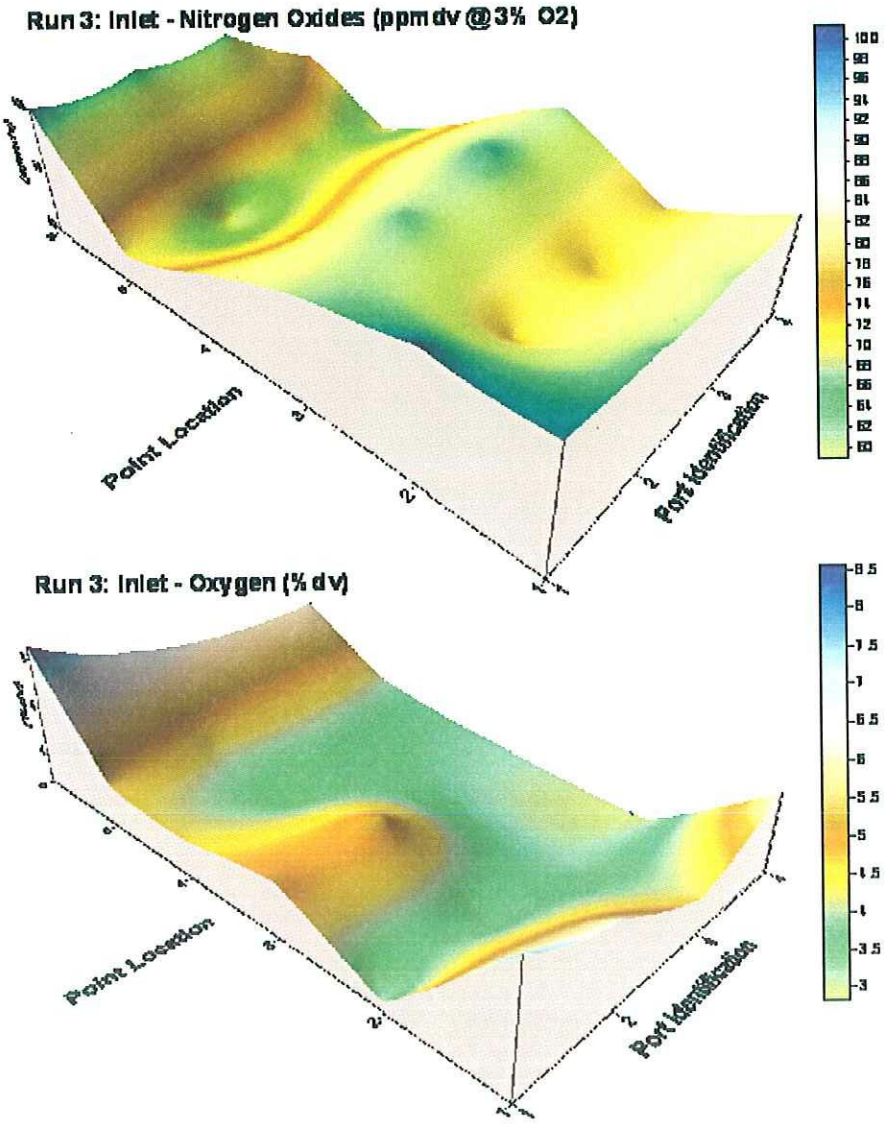
AVG	91.1	83.7	85.0	78.5	
6	100.5	97.8	96.0	74.8	92.3
5	68.8	59.5	66.6	58.8	63.4
4	81.5	74.1	78.7	75.4	77.4
3	94.1	96.1	98.3	94.4	95.7
2	101.6	77.9	76.4	76.5	83.1
1	100.1	96.5	93.8	91.1	95.4
	1	2	3	4	84.6

Inlet - Oxygen (%dv)

AVG	5.6	4.9	4.1	4.3	
6	8.6	6.9	6.3	6.3	7.0
5	4.5	4.2	4.3	4.1	4.2
4	4.3	3.6	3.5	3.4	3.7
3	5.0	5.2	3.3	3.1	4.2
2	3.2	3.3	3.2	2.8	3.1
1	7.8	6.2	4.3	6.1	6.1
	1	2	3	4	4.7

RESULTS

Figure 2-7:
Run 3 SCR Inlet – MASS® NO_X, and O_2



RESULTS

Table 2-8:
Run 3 SCR Outlet – MASS® NO_X, and O_2

Date: 3/28/2007
Start Time: 12:48
End Time: 13:59

Outlet - Nitrogen Oxides (ppmdv @ 3% O_2)

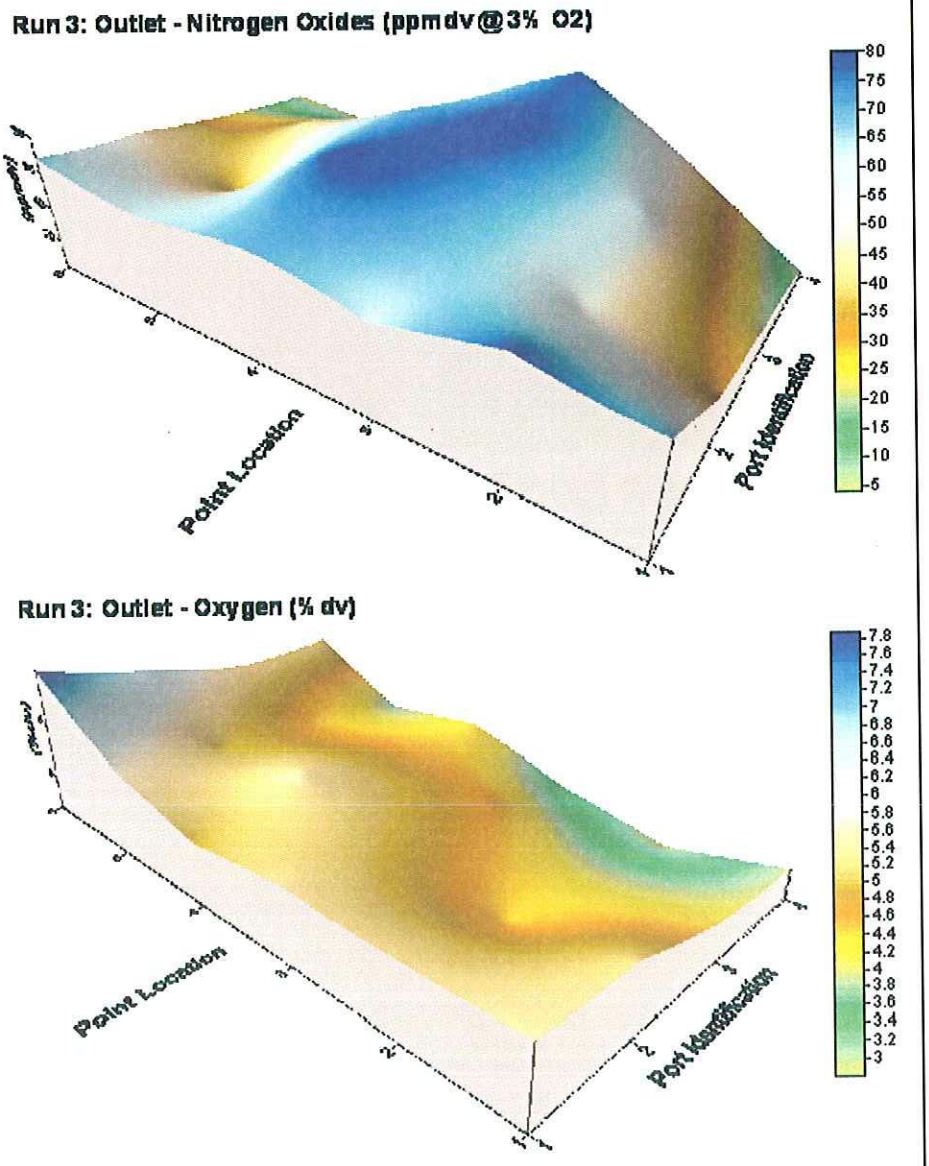
AVG	68.3	53.1	48.6	30.2	
6	68.5	48.2	24.6	4.8	36.5
5	60.3	34.8	42.3	3.7	35.3
4	70.3	80.4	69.1	42.0	65.5
3	60.8	71.3	79.6	78.5	72.6
2	78.7	51.5	57.1	45.7	58.3
1	71.3	32.5	18.9	6.4	32.3
	1	2	3	4	50.1

Outlet - Oxygen (%dv)

AVG	5.9	5.3	4.5	3.9	
6	7.9	6.6	5.4	5.3	6.3
5	5.8	5.0	4.4	3.7	4.7
4	4.9	5.7	4.7	4.3	4.9
3	5.4	5.0	4.6	3.4	4.6
2	5.4	4.3	3.9	2.8	4.1
1	5.6	5.3	4.2	3.9	4.8
	1	2	3	4	4.9

RESULTS

Figure 2-8:
Run 3 SCR Outlet – MASS® NO_X, and O_2



RESULTS

Table 2-9:
Run 3 MASS® – NO_X Removal Efficiency

Date: 3/28/2007
Start Time: 12:48
End Time: 13:59

Removal Efficiency (ppmdv @ 3% O_2)

AVG	24.1%	35.0%	41.2%	63.6%	
6	31.9%	50.8%	74.4%	93.6%	62.7%
5	12.4%	41.6%	36.4%	93.6%	46.0%
4	13.7%	-8.5%	12.2%	44.3%	15.4%
3	35.3%	25.8%	19.0%	16.8%	24.3%
2	22.5%	34.0%	25.2%	40.2%	30.5%
1	28.8%	66.3%	79.9%	92.9%	67.0%
	1	2	3	4	41.0%

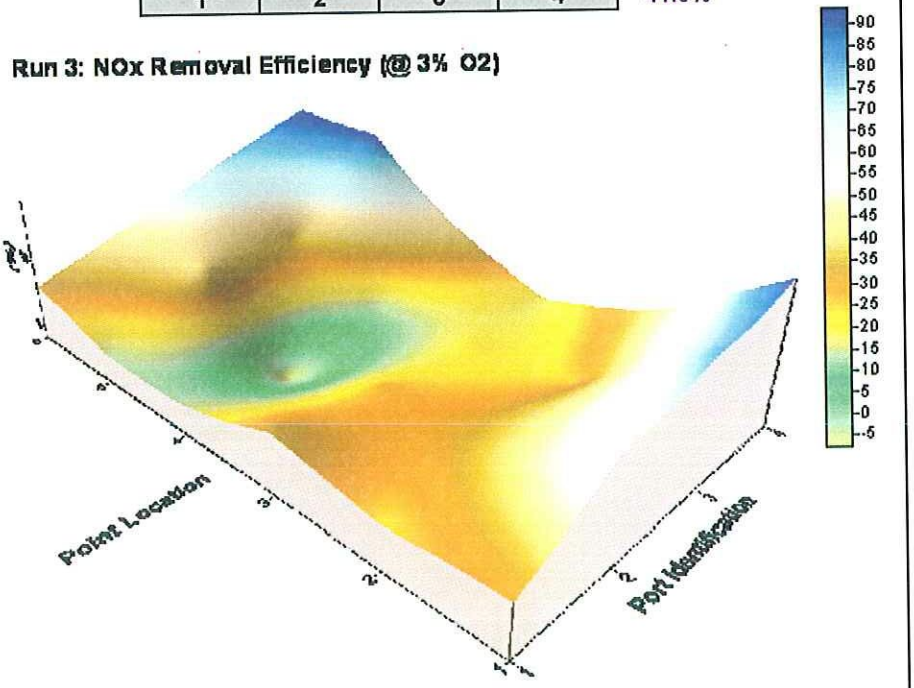


Figure 2-9:
Run 3 MASS® – Removal Effiency

RESULTS

Table 2-10:
Sulfur Dioxide Reduction Efficiency Results

Run	1	2	3	Average
Date (2007)	29-Mar	29-Mar	29-Mar	
Start Time	9:59	12:16	15:13	
Stop Time	11:00	13:17	16:13	
Air Heater Outlet				
SO_2 (ppmdv @ 3% O_2)	1854.76	1829.81	1837.92	1840.83
O_2 (%dv)	7.30	7.22	7.45	7.32
CO_2 (%dv)	11.54	11.61	11.52	11.56
Baghouse Outlet				
SO_2 (ppmdv @ 3% O_2)	103.89	90.83	132.12	108.95
O_2 (%dv)	7.21	7.16	7.51	7.30
CO_2 (%dv)	11.49	11.71	11.51	11.57
Reduction Efficiency				
SO_2 (%)	94.40	95.04	92.81	94.08

DESCRIPTION OF INSTALLATION

PROCESS DESCRIPTION

AES Greenidge Unit 4 is representative of 492 coal-fired electricity generating units in the United States with capacities of 50-300 MWe. AES Greenidge Unit 4 is a 104-MW coal-fired unit. The unit had an integrated multipollutant control system installed on it, which is going to reduce emissions in an economically viable way. This new technology utilizes a hybrid selective non-catalytic reduction / selective catalytic reduction system for NO_X reduction and a circulating fluidized-bed dry scrubber for SO_2 and Mercury Reduction.

The testing was performed at the SCR inlet and outlet for NO_x and O_2/CO_2. Testing was also conducted at the Air Heater Outlet and Baghouse Outlet for SO_2 and O_2/CO_2.

DESCRIPTION OF SAMPLING LOCATION(S)

Sampling points for the MASS system were located on a grid at both the SCR Inlet and SCR Outlet location. The grid consisted of four ports with six points per port from which NO_x, O_2, and CO_2 were measured.

Sampling points for the SO_2 testing were selected at a central location in the duct of the Air Heater Outlet and Baghouse Outlet for the first two runs. The third SO_2 run consisted of a three point traverse of that same port.

Table 3-1 outlines the sampling point configurations. Figure 3-1 through 3-2 illustrates the sampling points and orientation of sampling ports for each of the sources tested in the program.

Table 3-1:
Sampling Points

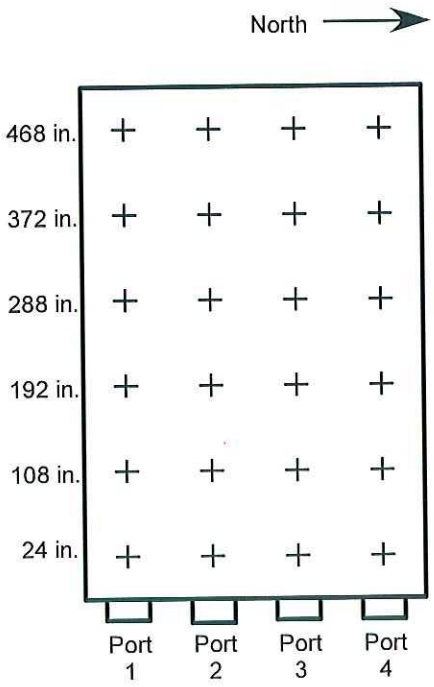
Location	Constituent	Method	Run No.	Ports	Points per Port	Minutes per Point	Total Minutes	Figure
SCR Inlet	NO_X, O_2, CO_2	3A, 7E	1-3	4	6	1	72[1]	3-1
SCR Outlet	NO_X, O_2, CO_2	3A, 7E	1-3	4	6	1	72[1]	3-2
Air Heater Outlet	SO_2, O_2, CO_2	3A,6C	1-2	1	1	60	60	N/A
Air Heater Outlet	SO_2, O_2, CO_2	3A,6C	3	1	3	20	60	N/A
Baghouse Outlet	SO_2, O_2, CO_2	3A,6C	1-2	1	1	60	60	N/A
Baghouse Outlet	SO_2, O_2, CO_2	3A,6C	3	1	3	20	60	N/A

[1] Each cycle of the MASS took 24 minutes, 3 cycles were combined for each run.

DESCRIPTION OF INSTALLATION

3-2

DESCRIPTION OF SAMPLING LOCATION (CONTINUED)



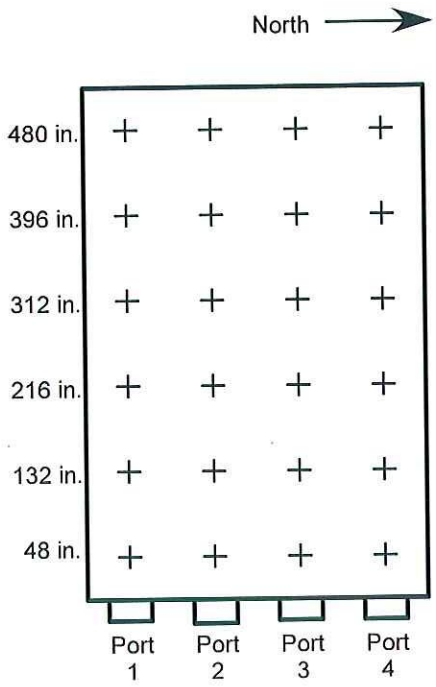
Sampling Point	Port to Point Distance (in.)
1	24
2	108
3	192
4	288
5	372
6	468

Figure 3-1: SCR Inlet - Sampling Point Determination (EPA Method 1)

DESCRIPTION OF INSTALLATION

3-3

DESCRIPTION OF SAMPLING LOCATION (CONTINUED)



Sampling Point	Port to Point Distance (in.)
1	48
2	132
3	216
4	312
5	396
6	480

Figure 3-2: SCR Outlet - Sampling Point Determination (EPA Method 1)

METHODOLOGY

Clean Air Engineering followed procedures as detailed in U.S. Environmental Protection Agency (EPA) Methods 3A, 6C, 7E, as well as Clean A Proprietary Method MASS®. 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 3A	"Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrumental Analyzer Procedure)"
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)"
CleanAir Proprietary Methods	
MASS®	"Multipoint Automated Sampling System for Stationary Grid Gas Analysis"

These methods appear in detail in Title 40 of the Code of Federal Regulations (CFR) and on the World Wide Web at http://www.cleanair.com.

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

Clean Air Engineering followed specific quality assurance and quality control (QA/QC) procedures as outlined in the individual methods and in USEPA "Quality Assurance Handbook for Air Pollution Measurement Systems: Volume III Stationary Source-Specific Methods", EPA/600/R-94/038C. Additional QA/QC methods as prescribed in Clean Air's internal Quality Manual were also followed. Results of all QA/QC activities performed by Clean Air Engineering are summarized in Appendix D.

APPENDIX

TEST METHOD SPECIFICATIONS ..... A
SAMPLE CALCULATIONS ..... B
PARAMETERS C
QA/QC DATA ..... D
FIELD DATA PRINTOUTS ..... E

TEST METHOD SPECIFICATIONS

A

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Specification Sheet for EPA Method 6C

Source Location Name(s)	Air Heater Outlet
Pollutant(s) to be Determined	Sulfur Dioxide (SO_2)
Other Parameters to be Determined from Train	O2 and CO2 (EPA Method 3A)

	Standard Method Specification	Actual Specification Used
Pollutant Sampling Information		
Duration of Run	N/A	60 minutes
No. of Sample Traverse Points	N/A	1
Sample Time per Point	N/A	60 minutes
Sampling Rate	Constant Rate	Constant Rate
Sampling Probe		
Nozzle Material	N/A	None
Nozzle Design	N/A	N/A
Probe Liner Material	Stainless Steel or Pyrex Glass	Stainless Steel
Effective Probe Length	Sufficient to Traverse Points	8 feet
Probe Temperature Set-Point	Prevent Condensation	248°F±25°F
Particulate Filter		
In-Stack Filter	Yes	Yes
In-Stack Filter Material	Non-reactive to gas	Fritted Stainless Steel
External Filter	Yes	Yes
External Filter Material	Borosilicate, Quartz Glass Wool or Fiber Mat	Borosilicate Glass Fiber Mat
External Filter Set-Point	Prevent Condensation	248°F±25°F
Sample Delivery System		
Heated Sample Line Material	Stainless Steel or Teflon	Teflon
Heated Sample Line Set-Point	Prevent Condensation	248°F±25°F
Heated Sample Line Connections	Probe Exit to Moisture Removal System	Probe to Moisture Removal System
Moisture Removal System	Refrigerator-type condenser or similar	Refrigerator-type condenser
Sample Pump Type	Leak-Free, minimal response time	Diaphragm
Sample Pump Material	Non-reactive to sample gases	Teflon
Sample Flow Control	Constant Rate	Constant Rate (±10%)
Non-Heated Sample Line Material	Stainless Steel or Teflon	Teflon
Non-Heated Sample Line Connections	Moisture Removal to Sample Gas Manifold	Moisture Removal to Sample Gas Manifold
Additional Filters	Optional	Yes
Additional Filter Type	N/A	Particulate Removal
Additional Filter Location	Optional	Entrance to Sample Manifold
Filter Material	Non-reactive to sample gases	Glass Fiber
Analyzer Description		
Oxygen (O_2)	EPA Method 3A (Paramagnetic)	EPA Method 3A (Paramagnetic)
Carbon Dioxide (CO_2)	EPA Method 3A (NDIR)	EPA Method 3A (NDIR)
Sulfur Dioxide (SO_2)	EPA Method 6C (UV, NDIR or Fluorescence)	EPA Method 6C (UV Absorption)
Nitrogen Oxides (NO_x)	N/A	
Carbon Monoxide (CO)	N/A	
Total Hydrocarbon (THC)	N/A	
Hydrogen Chloride (HCl)	N/A	
Ammonia (NH_3)	N/A	

Specification Sheet for EPA Method 6C

	Standard Method Specification	Actual Specification Used
Instrument Span Range		
Oxygen (O_2)	≤ 1.33 x Expected Maximum	0-15%
Carbon Dioxide (CO_2)	≤ 1.33 x Expected Maximum	0-15%
Sulfur Dioxide (SO_2)	≤ 1.33 x Expected Maximum	0-5,000 ppm
Nitrogen Oxides (NO_x)	N/A	N/A
Carbon Monoxide (CO)	N/A	N/A
Total Hydrocarbon (THC)	N/A	N/A
Hydrogen Chloride (HCl)	N/A	N/A
Ammonia (NH_3)	N/A	N/A
Data Acquisition		
Data Recorder	Strip chart, Analog Computer or Digital Recorder	Analog Computer
Recorder Resolution	0.5 Percent of Span	0.1 Percent of Span
Data Storage	Manually or Automatic	Manually
Measurement Freq. <60 min. Sample Time	1-min. intervals or 30 measurements (less restrictive)	One reading per second
Recording Freq. <60 min. Sample Time	1-min. intervals or 30 measurements (less restrictive)	One Minute Average (60, 1 second readings)
Measurement Freq. >60 min. Sample Time	2-min. intervals or 96 measurements (less restrictive)	N/A
Recording Freq. >60 min. Sample Time	2-min. intervals or 96 measurements (less restrictive)	N/A
Calibration Gas Specifications		
Oxygen (O_2)	EPA Protocol 1	EPA Protocol 1
Carbon Dioxide (CO_2)	EPA Protocol 1	EPA Protocol 1
Sulfur Dioxide (SO_2)	EPA Protocol 1	EPA Protocol 1
Nitrogen Oxides (NO_x)	N/A	
Carbon Monoxide (CO)	N/A	
Total Hydrocarbon (THC)	N/A	
Hydrogen Chloride (HCl)	N/A	
Ammonia (NH_3)	N/A	

Specification Sheet for EPA Method 6C

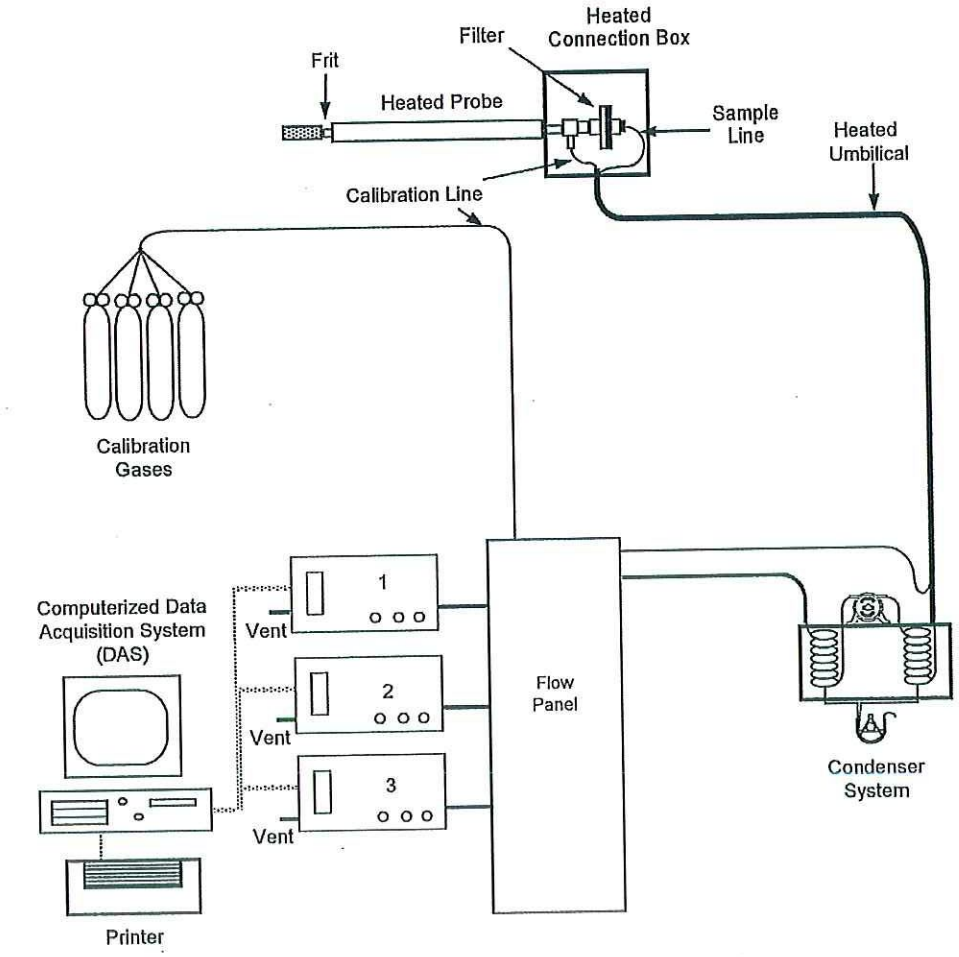
Source Location Name(s)	Baghouse Outlet
Pollutant(s) to be Determined	Sulfur Dioxide (SO_2)
Other Parameters to be Determined from Train	O2 and CO2 (EPA Method 3A)

	Standard Method Specification	Actual Specification Used
Pollutant Sampling Information		
Duration of Run	N/A	60 minutes
No. of Sample Traverse Points	N/A	1
Sample Time per Point	N/A	60 minutes
Sampling Rate	Constant Rate	Constant Rate
Sampling Probe		
Nozzle Material	N/A	None
Nozzle Design	N/A	N/A
Probe Liner Material	Stainless Steel or Pyrex Glass	Stainless Steel
Effective Probe Length	Sufficient to Traverse Points	8 feet
Probe Temperature Set-Point	Prevent Condensation	248°F±25°F
Particulate Filter		
In-Stack Filter	Yes	Yes
In-Stack Filter Material	Non-reactive to gas	Fritted Stainless Steel
External Filter	Yes	Yes
External Filter Material	Borosilicate, Quartz Glass Wool or Fiber Mat	Borosilicate Glass Fiber Mat
External Filter Set-Point	Prevent Condensation	248°F±25°F
Sample Delivery System		
Heated Sample Line Material	Stainless Steel or Teflon	Teflon
Heated Sample Line Set-Point	Prevent Condensation	248°F±25°F
Heated Sample Line Connections	Probe Exit to Moisture Removal System	Probe to Moisture Removal System
Moisture Removal System	Refrigerator-type condenser or similar	Refrigerator-type condenser
Sample Pump Type	Leak-Free, minimal response time	Diaphragm
Sample Pump Material	Non-reactive to sample gases	Teflon
Sample Flow Control	Constant Rate	Constant Rate (±10%)
Non-Heated Sample Line Material	Stainless Steel or Teflon	Teflon
Non-Heated Sample Line Connections	Moisture Removal to Sample Gas Manifold	Moisture Removal to Sample Gas Manifold
Additional Filters	Optional	Yes
Additional Filter Type	N/A	Particulate Removal
Additional Filter Location	Optional	Entrance to Sample Manifold
Filter Material	Non-reactive to sample gases	Glass Fiber
Analyzer Description		
Oxygen (O_2)	EPA Method 3A (Paramagnetic)	EPA Method 3A (Paramagnetic)
Carbon Dioxide (CO_2)	EPA Method 3A (NDIR)	EPA Method 3A (NDIR)
Sulfur Dioxide (SO_2)	EPA Method 6C (UV, NDIR or Fluorescence)	EPA Method 6C (UV Absorption)
Nitrogen Oxides (NO_x)	N/A	
Carbon Monoxide (CO)	N/A	
Total Hydrocarbon (THC)	N/A	
Hydrogen Chloride (HCl)	N/A	
Ammonia (NH_3)	N/A	

Specification Sheet for EPA Method 6C

	Standard Method Specification	Actual Specification Used
Instrument Span Range		
Oxygen (O_2)	≤ 1.33 x Expected Maximum	0-15%
Carbon Dioxide (CO_2)	≤ 1.33 x Expected Maximum	0-15%
Sulfur Dioxide (SO_2)	≤ 1.33 x Expected Maximum	0-150 ppm
Nitrogen Oxides (NO_x)	N/A	N/A
Carbon Monoxide (CO)	N/A	N/A
Total Hydrocarbon (THC)	N/A	N/A
Hydrogen Chloride (HCl)	N/A	N/A
Ammonia (NH_3)	N/A	N/A
Calibration Gas Specifications		
Oxygen (O_2)	EPA Protocol 1	EPA Protocol 1
Carbon Dioxide (CO_2)	EPA Protocol 1	EPA Protocol 1
Sulfur Dioxide (SO_2)	EPA Protocol 1	EPA Protocol 1

EPA Methods 3A, 6C
Sampling Train Configuration
Air Heater Outlet & Baghouse Outlet



Number	Gas	Monitor	Range Used	Calibration Gas Concentrations
1 Air Heater Outlet	O_2	Servomex 1420B Paramanetic	0-15%	6.04%, 14.1%
2 Air Heater Outlet	CO_2	Servomex 1415 NDIR	0-15%	6.02, 13.98%
3 Air Heater Outlet	SO_2	Western Research 921 UV	0-5000 ppm	121.6 ppm, 2479 ppm
1 Baghouse Outlet	O_2	Servomex 1420B Paramanetic	0-15%	6.04%, 14.1%
2 Baghouse Outlet	CO_2	Servomex 1415 NDIR	0-15%	6.02, 13.98%
3 Baghouse Outlet	SO_2	Western Research 921 UV	0-150 ppm	49.35 ppm, 121.6 ppm

Specification Sheet for EPA Method 3A and 7E with MASS

Source Location Name(s)	SCR Inlet/Outlet Test Grid
Pollutant(s) to be Determined	Determination of Nitrogen Oxides (NO_x) Emissions
Other Parameters to be Determined from Train	O2 (EPA Method 3A)

	Standard Method Specification	Actual Specification Used
Pollutant Sampling Information		
Duration of Run	N/A	72 minutes
No. of Sample Traverse Points	N/A	24 (3 cycles per run)
Sample Time per Point	N/A	1 minute
Sampling Rate	Constant Rate	Constant Rate
Sampling Probe		
Nozzle Material	N/A	None
Nozzle Design	N/A	N/A
Probe Liner Material	Stainless Steel or Pyrex Glass	Test Grid
Effective Probe Length	Sufficient to Traverse Points	See Report Section 3 for point locations
Probe Temperature Set-Point	Prevent Condensation	Stack Temp
Particulate Filter		
In-Stack Filter	Yes	No
In-Stack Filter Material	Non-reactive to gas	N/A
External Filter	Yes	Yes
External Filter Material	Borosilicate, Quartz Glass Wool or Fiber Mat	Borosilicate Glass Fiber Mat
External Filter Set-Point	Prevent Condensation	Ambient
Sample Delivery System		
Heated Sample Line Material	Stainless Steel or Teflon	Teflon
Heated Sample Line Set-Point	Prevent Condensation	Ambient
Heated Sample Line Connections	Probe Exit to Moisture Removal System	N/A
Moisture Removal System	Refrigerator-type condenser or similar	Coil - Condenser Type
Sample Pump Type	Leak-Free, minimal response time	Piston
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	Probe to Sample Gas Manifold
Additional Filters	Optional	Yes
Additional Filter Type	N/A	Particulate Removal
Additional Filter Location	Optional	Entrance to Sample Manifold
Filter Material	Non-reactive to sample gases	Glass Fiber
Analyzer Description		
Oxygen (O_2)	N/A	EPA Method 3A (Paramagnetic)
Carbon Dioxide (CO_2)	N/A	N/A
Sulfur Dioxide (SO_2)	N/A	N/A
Nitrogen Oxides (NO_x)	EPA Method 7E (Chemiluminescent)	EPA Method 7E (Chemiluminescent)
Carbon Monoxide (CO)	N/A	N/A
Total Hydrocarbon (THC)	N/A	N/A
Hydrogen Chloride (HCl)	N/A	N/A
Ammonia (NH_3)	N/A	N/A

Specification Sheet for EPA Method 3A and 7E with MASS

	Standard Method Specification	Actual Specification Used
Instrument Span Range		
Oxygen (O_2)	≤ 1.33 x Expected Maximum	0-15%
Carbon Dioxide (CO_2)	≤ 1.33 x Expected Maximum	0-15%
Sulfur Dioxide (SO_2)		N/A
Nitrogen Oxides (NO_x)	≤ 1.33 x Expected Maximum	0-250 ppm
Carbon Monoxide (CO)	≤ 1.33 x Expected Maximum	N/A
Total Hydrocarbon (THC)	N/A	N/A
Hydrogen Chloride (HCl)	N/A	N/A
Ammonia (NH_3)	N/A	N/A
Data Acquisition		
Data Recorder	Strip chart, Analog Computer or Digital Recorder	Analog Computer
Recorder Resolution	0.5 Percent of Span	0.1 Percent of Span
Data Storage	Manually or Automatic	Automatic
Measurement Freq. <60 min. Sample Time	1-min. intervals or 30 measurements (less restrictive)	One reading per second
Recording Freq. <60 min. Sample Time	1-min. intervals or 30 measurements (less restrictive)	One Minute Average (60, 1 second readings)
Measurement Freq. >60 min. Sample Time	2-min. intervals or 96 measurements (less restrictive)	N/A
Recording Freq. >60 min. Sample Time	2-min. intervals or 96 measurements (less restrictive)	N/A
Calibration Gas Specifications		
Oxygen (O_2)	EPA Protocol 1	EPA Protocol 1
Carbon Dioxide (CO_2)	N/A	EPA Protocol 1
Sulfur Dioxide (SO_2)	N/A	
Nitrogen Oxides (NO_x)	EPA Protocol 1	EPA Protocol 1
Carbon Monoxide (CO)	N/A	
Total Hydrocarbon (THC)	N/A	
Hydrogen Chloride (HCl)	N/A	
Ammonia (NH_3)	N/A	

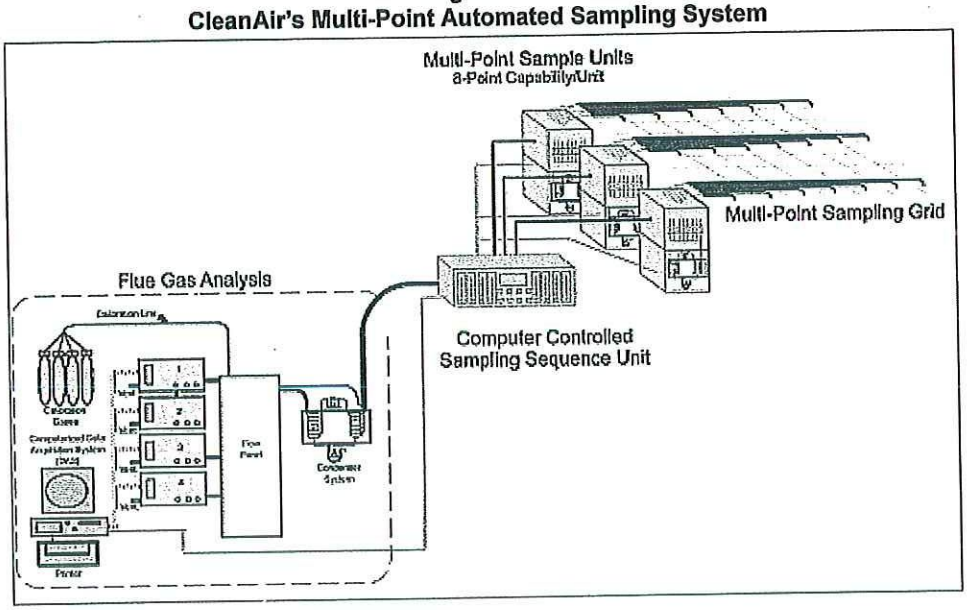
Multi-Point Automated Sampling System

The NOx and O_2 distributions at the SCR Inlet and Outlet were measured simultaneously using an extractive continuous emission monitoring (CEM) package contained in a mobile emission laboratory. The system is comprised of three basic subsystems, including; 1) a flue gas sample acquisition and conditioning system, 2) a calibration gas system, and 3) the electronic gas analyzers.

In order to assess local NOx reductions, CleanAir has developed a proprietary flue gas profiling system called the **Multi-Point Automated Sampling System (MASS)**. The MASS system allows duct emission profiles to be characterized in a matter of minutes, as opposed much longer sampling times for traditional duct emission traverses using "manual" traversing techniques.

Clean Air Engineering's MASS system uses a series of automated 8-point sample modules with integrated programmable logic controllers (PLC's) to sequentially and rapidly cycle through a multi-point sample grid. A diagram of the sampling system is provided in Figure 1.

Figure 1:
CleanAir's Multi-Point Automated Sampling System



Based on a 24 point grid system (Inlet and Outlet) for the reactor module, three (3) cycles were performed to obtain a test duration of 72 minutes. A total of three test runs were performed concurrently at both the SCR Inlet and Outlet test grid locations.

SAMPLE CALCULATIONS

B

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Consol Energy
CleanAir Project No. 10192
Dresden, New York
Stack, AH Outlet

CEM Field Sample Calculations for SO2 AH 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.

051507 140613

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 In this case the low cal series for channel 2	=	133.235	ppmdv

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

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

Where:

C_{mce}	= average concentration of a calibration series In this case the low cal series for channel 2	=	133.235	ppmdv
C_{ma}	= concentration of actual calibration gas value	=	121.600	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)

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

Where:

C_{mce}	= average concentration of a calibration series In this case the low cal series for channel 2	=	133.235	ppmdv
C_{ma}	= concentration of actual calibration gas value	=	121.600	ppmdv
Span	= instrument span value	=	2479.000	
l_{cal}	= limit for calibration error for non-hydrocarbons	=	2.0%	
E	= calibration error check value	=	0.47%	**Pass**

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

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

Where:

C_{mce}	= average concentration of a calibration series in this case the High cal series for channel 2	=	2482.035	ppmdv
C_{mf}	= calibration error response concentration for Cal01	=	2411.901	ppmdv
Span	= instrument span value	=	2479.000	ppmdv
l_{bias}	= limit for system bias error	=	5.0%	
E_{bias}	= calibration bias error check value	=	2.83%	**Pass**

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SS CEM Version 05-2004a

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Consol Energy
CleanAir Project No. 10192
Dresden, New York
Stack, AH Outlet

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

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

Where:				
C_{mf}	= calibration error response concentration for Cal01 (final)	=	2411.901	ppmdv
C_{mi}	= calibration error response concentration for Cal00 (initial)	=	2432.641	ppmdv
Span	= instrument span value	=	2479.000	ppmdv
l_{drift}	= limit for system drift error	=	3.0%	
E_{drift}	= calibration drift error check value	=	0.84%	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	=	1391.429	ppmdv
N	= total number of readings in Run 1	=	61	
C	= average SO2 concentration for Run 1	=	1384.546	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	=	2479.000	ppmdv
C	= average SO2 concentration for Run 1	=	1384.546	ppmdv
C_{mf}	= calibration error response concentration for Cal01 (final)	=	2411.901	ppmdv
C_{mi}	= calibration error response concentration for Cal00 (initial)	=	2432.641	ppmdv
C_{of}	= calibration error response concentration for Cal01 (final) for zero gas	=	13.789	ppmdv
C_{oi}	= calibration error response concentration for Cal00 (initial) for zero gas	=	19.829	ppmdv
C_{DC}	= drift corrected average concentration for Run 1	=	1409.550	ppmdv

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SS CEM Version 05-2004a

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Consol Energy
CleanAir Project No. 10192
Dresden, New York
Stack, AH Outlet

CEM Emissions Sample Calculations for SO2 AH 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.

051507 143419

1. SO2 concentration (ppmdv)

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

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

Where:

C_{DC}	= drift corrected average concentration	=	1409.550	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)	=	1409.550	ppmdv

2. SO2 concentration (ppmwv)

$$C(ppmwv) = k_1 \times C_{DC} \quad if \quad wet \quad gas$$

$$C(ppmwv) = k_1 \times C_{DC} \times \left(1 - B_W/100\right) \quad if \quad dry \quad gas$$

Where:

C_{DC}	= drift corrected average concentration	=	1409.550	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 (ppmwv)	= SO2 concentration (ppmwv)	=	1409.550	ppmwv

3. SO2 concentration (lb/dscf)

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

Where:

C (ppmdv)	= SO2 concentration (ppmdv)	=	1409.550	ppmdv
MW	= Molecular Weight of SO2 gas	=	64.0628	lb/lb-mole
10^6	= conversion factor from decimal to ppm	=	1.00E+06	
385.3	= molar volume	=	385.3	dscf/lb-mole
C (lb/dscf)	= SO2 concentration (lb/dscf)	=	2.344E-04	lb/dscf

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CleanAir Project No. 10192
Dresden, New York
Stack, AH Outlet

4. SO2 concentration (lb/scf)

$$C\,(lb\ /\ scf\ ) = C\,(lb\ /\ dscf\ ) \times \frac{Q_{std}}{Q_s}$$

Where:

C (lb/dscf)	= SO2 concentration (lb/dscf)	=	2.344E-04	lb/dscf
Q_{std}	= volumetric flow rate at standard conditions, dry basis (dscfm)	=	0	dscf/min
Q_s	= volumetric flow rate (standard cubic feet/min)	=	0	scf/min
C (lb/scf)	= SO2 concentration (lb/scf)	=	N/A	lb/scf

5. SO2 concentration (lb/acf)

$$C\,(lb\ /\ acf\ ) = C\,(lb\ /\ dscf\ ) \times \frac{Q_{std}}{Q_a}$$

Where:

C (lb/dscf)	= SO2 concentration (lb/dscf)	=	2.344E-04	lb/dscf
Q_{std}	= volumetric flow rate at standard conditions, dry basis (dscfm)	=	0	dscf/min
Q_a	= volumetric flow rate (actual cubic feet/min)	=	0	acf/min
C (lb/acf)	= SO2 concentration (lb/acf)	=	N/A	lb/acf

6. SO2 concentration (%dv)

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

Where:

C (ppmdv)	= SO2 concentration (ppmdv)	=	1409.550	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)	=	0.1410%	%dv

7. SO2 concentration (mg/dscm)

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

Where:

C (lb/dscf)	= SO2 concentration (lb/dscf)	=	2.344E-04	lb/dscf
k_2	= conversion factor from lb to mg	=	453515	mg/lb
35.31	= conversion factor from dscf to dscm	=	35.31	ft^3/m^3
C (mg/dscm)	= SO2 concentration (mg/dscm)	=	3752.982	mg/dscm

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Stack, AH Outlet

8. SO2 concentration (mg/Nm3 dry)

$$C\ \left(mg/Nm^3\ dry\right) = C\left(lb/dscf\right) \times k_2 \times 35.31 \times \left(\frac{68+460}{32+460}\right)$$

Where:

C (lb/dscf)	= SO2 concentration (lb/dscf)	=	2.344E-04	lb/dscf
k_2	= conversion factor from lb to mg	=	453515	mg/lb
35.31	= conversion factor from dscf to dscm	=	35.31	ft^3/m^3
68	= standard temperature (°F)	=	68	°F
32	= normal temperature (°F)	=	32	°F
460	= °F to °R conversion constant	=	460	
C (mg/Nm3 dr	= SO2 concentration (mg/Nm3 dry)	=	4027.591	mg/Nm^3 dry

9. SO2 concentration corrected to 3% O2 (ppmdv example)

$$C(ppmdv@x\%02) = C(ppmdv) \times \left(\frac{20.9-x}{20.9-O_2}\right)$$

Where:

C (ppmdv)	= SO2 concentration (ppmdv)	=	1409.550	ppmdv
x	= oxygen content of corrected gas (%)	=	3.00	%
O_2	= proportion of oxygen in the gas stream by volume (%)	=	7.201	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
C (ppmdv - O2	= SO2 concentration corrected to 3% O2 (ppmdv example)	=	1841.848	ppmdv @ 3%O2

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

$$C(ppmdv\ @\ y\%C0_2) = C(ppmdv) \times \left(\frac{y}{CO_2}\right)$$

Where:

C (ppmdv)	= SO2 concentration (ppmdv)	=	1409.550	ppmdv
y	= carbon dioxide content of corrected gas (%)	=	12.00	%
CO_2	= proportion of carbon dioxide in the gas stream by volume (%)	=	11.491	%
C (ppmdv -CO	= SO2 concentration corrected to 12% CO2 (ppmdv example)	=	1472.001	ppmdv @ 12%CO2

11. SO2 Removal Efficiency% (no data on this channel for example)

$$RE = \frac{(C_i - C_o)}{C_i}$$

Where:

RC	= Removal Channel Number	=	N/A	
UI	= Unit Index Number	=		
C_I	= Initial concentration	=	1.842E+03	
C_o	= Final concentration	=	1.046E+02	
RE	= Recovery Efficiency (%)	=	94.32%	

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SCR Inlet , SCR Outlet

CEM Emissions Sample Calculations for NOX 0

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.

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1. NOX concentration corrected to 3% O2 (ppmdv example)

$$C(ppmdv@x\%02) = C(ppmdv) \times \left(\frac{20.9 - x}{20.9 - O_2} \right)$$

Where:

C (ppmdv)	= NOX concentration (ppmdv)	=	46.900	ppmdv
x	= oxygen content of corrected gas (%)	=	3.00	%
O_2	= proportion of oxygen in the gas stream by volume (%)	=	4.900	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
C (ppmdv - O2	= NOX concentration corrected to 3% O2 (ppmdv example)	=	52.500	ppmdv @ 3%O2

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

$$C(ppmdv@y\%C0_2) = C(ppmdv) \times \left(\frac{y}{CO_2} \right)$$

Where:

C (ppmdv)	= NOX concentration (ppmdv)	=	46.900	ppmdv
y	= carbon dioxide content of corrected gas (%)	=	12.00	%
CO_2	= proportion of carbon dioxide in the gas stream by volume (%)	=	13.900	%
C (ppmdv -CO	= NOX concentration corrected to 12% CO2 (ppmdv example)	=	40.500	ppmdv @ 12%CO2

3. NOX Fd-based emission rate (lb/MMBtu)

$$E_{Fd} = C(lb/dscf) \times F_d \times \left(\frac{20.9}{20.9 - O_2} \right)$$

Where:

C (lb/dscf)	= NOX concentration (lb/dscf)	=	5.600E-06	lb/dscf
F_d	= ratio of gas volume to heat content of fuel (dscf/MMBtu)	=	9737	dscf/MMBtu
O_2	= proportion of oxygen in the gas stream by volume (%)	=	4.900	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
E_{Fd}	= NOX Fd-based emission rate (lb/MMBtu)	=	0.0711	lb/MMBtu

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Consol Energy
CleanAir Project No. 10192
Dresden, New York
SCR Inlet , SCR Outlet

CEM Field Sample Calculations for NOX 0

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.

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1. Average Concentration for an entire Run

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

Where:

			i=1	
C_i	= All concentration readings for the entirety of Run 1 for the monitor looking for NOX on channel 2	=	140.600	ppmdv
N	= total number of readings in Run 1	=	3	
C	= average NOX concentration for Run 1	=	46.900	ppmdv

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PARAMETERS	C

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TEST LOG

Client: Consol Energy Dresden, New York
CleanAir Project No. 10192

Run Number	Location	Method	Analyte	Date	Start Time	End Time	Notes
1	SCR Inlet	MASS: 3A, 7E	O_2/CO_2, NO_x	3/28/07	09:12	10:23	
2	SCR Inlet	MASS: 3A, 7E	O_2/CO_2, NO_x	3/28/07	11:12	12:23	
3	SCR Inlet	MASS: 3A, 7E	O_2/CO_2, NO_x	3/28/07	12:48	13:59	
1	SCR Outlet	MASS: 3A, 7E	O_2/CO_2, NO_x	3/28/07	09:12	10:23	
2	SCR Outlet	MASS: 3A, 7E	O_2/CO_2, NO_x	3/28/07	11:12	12:23	
3	SCR Outlet	MASS: 3A, 7E	O_2/CO_2, NO_x	3/28/07	12:48	13:59	

Notes:
None

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Clean Air Engineering Project #10192
Consol Energy
AES Dresden

Date: 3/28/2007 Run # (Cycle #) 1 (Avg)
Start Time: 9:12
End Time: 10:23

Inlet Point	Time Sampled	NOx ppmdv	PPM Dev from Avg.	O2 %dv	CO2 %dv	NOx @ 3% O2	PPM Dev from Avg.
1-1		77.6	-5.6	7.5	11.6	103.8	11.2
1-2		105.9	22.7	2.9	15.4	105.5	12.9
1-3		89.1	5.9	5.0	13.7	100.5	8.0
1-4		82.2	-1.0	4.4	14.3	89.0	-3.5
1-5		72.5	-10.7	4.8	13.9	80.4	-12.1
1-6		75.0	-8.2	8.6	10.7	108.9	16.3
2-1		83.3	0.1	6.0	12.9	99.7	7.1
2-2		86.2	3.0	3.0	15.5	85.9	-6.6
2-3		87.4	4.2	5.3	13.5	100.5	8.0
2-4		78.4	-4.8	3.9	14.7	82.4	-10.1
2-5		66.5	-16.7	4.5	14.1	72.8	-19.8
2-6		84.1	0.9	6.8	12.2	107.0	14.4
3-1		95.7	12.5	4.0	14.5	101.4	8.8
3-2		87.4	4.2	2.9	15.5	86.9	-5.6
3-3		102.4	19.2	3.3	15.1	104.2	11.7
3-4		81.5	-1.7	3.7	14.9	84.7	-7.9
3-5		70.9	-12.3	4.5	14.1	77.5	-15.1
3-6		87.7	4.5	6.3	12.6	107.7	15.1
4-1		83.4	0.2	5.7	13.1	98.2	5.6
4-2		89.7	6.5	2.5	15.8	87.4	-5.1
4-3		96.9	13.7	3.2	15.3	97.8	5.2
4-4		79.0	-4.2	3.7	14.8	82.2	-10.4
4-5		63.6	-19.6	4.5	14.2	69.5	-23.1
4-6		70.2	-13.0	6.6	12.4	87.7	-4.9
Inlet Averages		83.2		4.7	13.9	92.6	

Outlet Point	Time Sampled	NOx ppmdv	PPM Dev from Avg.	O2 %dv	CO2 %dv	NOx @ 3% O2	PPM Dev from Avg.	Removal Efficiency	Removal Eff W/ O2 correction
1-1		68.0	21.1	4.9	13.9	75.9	23.2	9.7	24.6
1-2		78.6	31.8	5.6	13.3	91.8	39.1	25.4	12.5
1-3		56.9	10.1	5.3	13.6	65.2	12.5	33.6	33.1
1-4		62.2	15.4	4.7	14.0	68.8	16.0	31.1	29.2
1-5		50.4	3.5	6.3	12.7	61.7	9.0	29.8	23.4
1-6		40.7	-6.2	7.7	10.3	55.9	3.1	66.8	70.0
2-1		33.3	-13.5	5.0	13.8	37.4	-15.3	60.0	62.4
2-2		56.7	9.8	4.6	14.1	62.3	9.6	31.9	25.1
2-3		69.7	22.8	4.7	14.0	77.2	24.5	18.2	21.3
2-4		71.9	25.0	5.9	13.0	85.8	33.1	5.6	-7.1
2-5		24.4	-22.4	4.9	13.9	27.3	-25.4	63.5	62.9
2-6		46.9	0.0	6.7	12.3	59.0	6.3	36.4	37.2
3-1		24.4	-22.5	3.7	14.9	25.4	-27.4	75.2	75.6
3-2		68.1	21.3	4.3	14.4	73.4	20.7	18.8	12.8
3-3		78.6	31.7	4.4	14.3	85.0	32.3	20.5	15.6
3-4		59.9	13.0	4.9	13.9	67.2	14.4	26.0	20.2
3-5		30.5	-16.4	4.3	14.4	32.8	-19.9	56.1	57.0
3-6		24.1	-22.7	5.5	13.4	28.1	-24.7	70.3	71.9
4-1		7.6	-39.3	3.5	15.1	7.8	-44.9	91.0	92.2
4-2		52.8	5.9	2.7	15.9	51.8	-0.9	38.5	38.1
4-3		73.3	26.5	3.5	15.2	75.3	22.6	24.0	22.6
4-4		36.1	-10.8	4.5	14.2	39.4	-13.3	53.6	50.9
4-5		4.5	-42.3	4.0	14.6	4.8	-47.9	92.7	92.9
4-6		5.3	-41.5	5.6	13.3	6.2	-46.5	91.7	92.2
Outlet Averages		46.9		4.9	13.9	52.7		44.9	43.4
		9737.0	Fd						
		0.0711	lb/Mbtu						

Clean Air Engineering Project #10192
Consol Energy
AES Dresden

Date: 3/28/2007 Run # (Cycle #) 2 (Avg)
Start Time: 11:12
End Time: 12:23

Inlet Point	Time Sampled	NOx ppmdv	PPM Dev from Avg.	O2 %dv	CO2 %dv	NOx @ 3% O2	PPM Dev from Avg.
1-1		76.3	-1.1	7.6	11.6	102.3	16.0
1-2		99.0	21.5	3.1	15.3	99.6	13.3
1-3		85.4	8.0	5.0	13.8	96.1	9.8
1-4		79.9	2.4	4.3	14.3	86.3	0.0
1-5		66.9	-10.5	4.6	14.1	73.5	-12.8
1-6		70.6	-6.8	8.6	10.7	102.6	16.4
2-1		79.1	1.7	6.1	12.8	95.4	9.1
2-2		79.2	1.8	3.2	15.3	80.1	-6.2
2-3		82.8	5.4	5.4	13.4	95.6	9.3
2-4		74.1	-3.3	3.8	14.7	77.6	-8.7
2-5		58.4	-19.1	4.3	14.3	63.0	-23.2
2-6		75.9	-1.5	6.8	12.2	96.6	10.3
3-1		87.5	10.0	4.2	14.4	93.6	7.3
3-2		78.4	1.0	3.0	15.4	78.6	-7.7
3-3		98.0	20.6	3.3	15.2	99.5	13.2
3-4		77.7	0.2	3.6	14.9	80.4	-5.8
3-5		64.4	-13.0	4.4	14.3	69.9	-16.4
3-6		79.8	2.4	6.3	12.6	98.2	11.9
4-1		75.7	-1.7	6.3	12.6	92.8	6.5
4-2		79.7	2.3	2.7	15.7	78.3	-8.0
4-3		94.2	16.7	3.1	15.4	94.5	8.2
4-4		75.5	-2.0	3.5	15.0	77.5	-8.8
4-5		57.3	-20.1	4.3	14.4	61.7	-24.5
4-6		62.5	-15.0	6.4	12.5	77.2	-9.0
Inlet Averages		77.4		4.7	14.0	86.3	

Outlet Point	Time Sampled	NOx ppmdv	PPM Dev from Avg.	O2 %dv	CO2 %dv	NOx @ 3% O2	PPM Dev from Avg.	Removal Efficiency	Removal Eff W/ O2 correction
1-1		69.9	23.1	4.8	13.9	78.0	25.3	9.7	24.6
1-2		78.4	31.5	5.7	13.3	92.1	39.4	25.4	12.5
1-3		58.2	11.3	5.2	13.6	66.5	13.8	33.6	33.1
1-4		68.4	21.6	4.4	14.4	74.0	21.4	31.1	29.2
1-5		49.8	3.0	6.1	12.8	60.4	7.7	29.8	23.4
1-6		48.5	1.7	8.0	11.1	67.3	14.6	66.8	70.0
2-1		31.4	-15.4	5.0	13.8	35.3	-17.4	60.0	62.4
2-2		53.1	6.3	4.6	14.1	58.5	5.8	31.9	25.1
2-3		71.1	24.3	4.8	14.0	78.9	26.2	18.2	21.3
2-4		73.4	26.6	5.8	13.1	87.3	34.6	5.6	-7.1
2-5		22.2	-24.6	4.8	14.0	24.7	-28.0	63.5	62.9
2-6		41.7	-5.1	6.7	12.2	52.8	0.1	36.4	37.2
3-1		22.1	-24.7	3.8	14.9	23.2	-29.5	75.2	75.6
3-2		67.2	20.4	4.3	14.4	72.6	19.9	18.8	12.8
3-3		79.7	32.9	4.3	14.4	86.2	33.5	20.5	15.6
3-4		63.1	16.3	4.8	14.0	69.9	17.2	26.0	20.2
3-5		29.6	-17.2	4.2	14.5	31.7	-21.0	56.1	57.0
3-6		21.2	-25.6	5.7	13.2	24.9	-27.7	70.3	71.9
4-1		6.5	-40.3	3.8	14.9	6.8	-45.9	91.0	92.2
4-2		45.7	-1.1	2.7	15.8	45.1	-7.6	38.5	38.1
4-3		75.0	28.2	3.3	15.3	76.5	23.8	24.0	22.6
4-4		39.1	-7.7	4.4	14.3	42.5	-10.2	53.6	50.9
4-5		4.0	-42.8	3.9	14.8	4.2	-48.4	92.7	92.9
4-6		4.4	-42.4	5.4	13.4	5.1	-47.6	91.7	92.2
Outlet Averages		46.8		4.9	13.9	52.7		41.2	39.7
		9737.0	Fd						
		0.0709	lb/Mbtu						

Clean Air Engineering Project #10192
Consol Energy
AES Dresden

Date: 3/28/2007 Run # (Cycle #) 3 (Avg)
Start Time: 12:48
End Time: 13:59

Inlet Point	Time Sampled	NOx ppmdv	PPM Dev from Avg.	O2 %dv	CO2 %dv	NOx @ 3% O2	PPM Dev from Avg.
1-1		73.3	-2.6	7.8	11.4	100.1	15.5
1-2		100.6	24.7	3.2	15.2	101.6	17.0
1-3		83.5	7.6	5.0	13.7	94.1	9.5
1-4		75.6	-0.3	4.3	14.3	81.5	-3.0
1-5		63.1	-12.8	4.5	14.2	68.8	-15.7
1-6		69.3	-6.6	8.6	10.7	100.5	16.0
2-1		79.3	3.4	6.2	12.7	96.5	11.9
2-2		76.5	0.6	3.3	15.2	77.9	-6.6
2-3		84.1	8.2	5.2	13.6	96.1	11.6
2-4		71.5	-4.4	3.6	14.9	74.1	-10.5
2-5		55.6	-20.3	4.2	14.5	59.5	-25.1
2-6		76.6	0.7	6.9	12.1	97.8	13.3
3-1		87.3	11.4	4.3	14.4	93.8	9.3
3-2		75.5	-0.4	3.2	15.3	76.4	-8.2
3-3		96.7	20.8	3.3	15.2	98.3	13.7
3-4		76.4	0.5	3.5	15.0	78.7	-5.9
3-5		61.9	-14.0	4.3	14.4	66.6	-18.0
3-6		78.6	2.7	6.3	12.7	96.0	11.5
4-1		75.5	-0.4	6.1	12.8	91.1	6.6
4-2		77.2	1.3	2.8	15.6	76.5	-8.1
4-3		94.1	18.2	3.1	15.4	94.4	9.9
4-4		73.8	-2.1	3.4	15.1	75.4	-9.2
4-5		55.3	-20.6	4.1	14.6	58.8	-25.7
4-6		60.9	-15.0	6.3	12.6	74.8	-9.8
Inlet Averages		75.9		4.7	14.0	84.6	

Outlet Point	Time Sampled	NOx ppmdv	PPM Dev from Avg.	O2 %dv	CO2 %dv	NOx @ 3% O2	PPM Dev from Avg.	Removal Efficiency	Removal Eff W/ O2 correction
1-1		61.3	17.0	5.6	13.2	71.3	21.2	9.7	24.6
1-2		67.6	23.2	5.4	13.5	78.7	28.7	25.4	12.5
1-3		52.3	8.0	5.4	13.5	60.8	10.8	33.6	33.1
1-4		62.9	18.6	4.9	13.9	70.3	20.3	31.1	29.2
1-5		50.8	6.4	5.8	13.1	60.3	10.3	29.8	23.4
1-6		49.8	5.5	7.9	11.2	68.5	18.4	66.8	70.0
2-1		28.2	-16.1	5.3	13.5	32.5	-17.6	60.0	62.4
2-2		47.4	3.0	4.3	14.4	51.5	1.4	31.9	25.1
2-3		63.5	19.1	5.0	13.8	71.3	21.2	18.2	21.3
2-4		68.4	24.1	5.7	13.2	80.4	30.3	5.6	-7.1
2-5		30.8	-13.6	5.0	13.8	34.8	-15.3	63.5	62.9
2-6		38.5	-5.8	6.6	12.4	48.2	-1.9	36.4	37.2
3-1		17.6	-26.7	4.2	14.5	18.9	-31.2	75.2	75.6
3-2		54.2	9.8	3.9	14.8	57.1	7.1	18.8	12.8
3-3		72.4	28.0	4.6	14.1	79.6	29.5	20.5	15.6
3-4		62.7	18.3	4.7	14.1	69.1	19.1	26.0	20.2
3-5		38.7	-5.6	4.4	14.3	42.3	-7.7	56.1	57.0
3-6		21.2	-23.2	5.4	13.4	24.6	-25.5	70.3	71.9
4-1		6.1	-38.2	3.9	14.8	6.4	-43.6	91.0	92.2
4-2		46.2	1.9	2.8	15.8	45.7	-4.3	38.5	38.1
4-3		77.0	32.6	3.4	15.3	78.5	28.5	24.0	22.6
4-4		38.9	-5.4	4.3	14.4	42.0	-8.0	53.6	50.9
4-5		3.6	-40.8	3.7	15.0	3.7	-46.3	92.7	92.9
4-6		4.1	-40.2	5.3	13.6	4.8	-45.3	91.7	92.2
Outlet Averages		44.4		4.9	13.9	50.1		42.6	41.0
		9737.0	Fd						
		0.0674	lb/Mbtu						

TEST LOG

Client: Consol Energy Dresden, New York
CleanAir Project No. 10192

Run Number	Location	Method	Analyte	Date	Start Time	End Time	Notes
1	AH Outlet	3A, 6C	O2 / CO2, SO2	3/29/07	09:59	11:00	
2	AH Outlet	3A, 6C	O2 / CO2, SO2	3/29/07	12:16	13:17	
3	AH Outlet	3A, 6C	O2 / CO2, SO2	3/29/07	15:13	16:13	
1	BH Outlet	3A, 6C	O2 / CO2, SO2	3/29/07	09:59	11:00	
2	BH Outlet	3A, 6C	O2 / CO2, SO2	3/29/07	12:16	13:17	
3	BH Outlet	3A, 6C	O2 / CO2, SO2	3/29/07	15:13	16:13	

Notes:
None

061407 143432

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SS CEM Version 06-2004a

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Consol Energy
CleanAir Project No. 10192
Dresden, New York
BH Outlet, AH Outlet

Continuous Emissions Monitoring Parameters

Run Number	1						
Date (2007)	Mar 29						
Start Time	9:59						
End Time	11:00						
Elapsed Time (hh:mm)	01:01						
Channel		2	4	5	7	8	9
Parameter		SO2	O2	CO2	SO2	O2	CO2
Location		AH Outlet	AH Outlet	AH Outlet	BH Outlet	BH Outlet	BH Outlet
Measurement Units		ppmdv	%dv	%dv	ppmdv	%dv	%dv
Measured Average (drift-corrected)		1409.55	7.30	11.54	79.50	7.20	11.49
Concentration (ppmdv)		1409.55			79.50		
Concentration (%dv)		0.141	7.297	11.538	0.008	7.201	11.491
Concentration @3%O2 (ppm)		1854.76			103.89		
Concentration @12%CO2 (ppm)		1466.04			83.03		
Concentration @3%O2 (lb/scf)		3.084E-04			1.727E-05		
Concentration @12%CO2 (lb/scf)		2.438E-04			1.380E-05		
Concentration @3%O2 (%v)		0.185			0.010		
Concentration @12%CO2 (%v)		0.147			0.008		
Concentration @3%O2 (mg/scm)		4938.36			276.60		
Concentration @12%CO2 (mg/scm)		3903.40			221.06		
Concentration @3%O2 (mg/Nm3)		5299.71			296.84		
Concentration @12%CO2 (mg/Nm3)		4189.01			237.24		
Removal Efficiency (%)					94.40%		

Consol Energy
Clean Air Project No. 10192
Dresden, New York
BH Outlet, AH Outlet

Continuous Emissions Monitoring Parameters

Run Number	2						
Date (2007)	Mar 29						
Start Time	12:16						
End Time	13:17						
Elapsed Time (hh:mm)	01:01						
Channel		2	4	5	7	8	9
Parameter		SO2	O2	CO2	SO2	O2	CO2
Location		AH Outlet	AH Outlet	AH Outlet	BH Outlet	BH Outlet	BH Outlet
Measurement Units		ppmdv	%dv	%dv	ppmdv	%dv	%dv
Measured Average (drift-corrected)		1398.11	7.22	11.61	69.70	7.16	11.71
Concentration (ppmdv)		1398.11			69.70		
Concentration (%dv)		0.140	7.223	11.610	0.007	7.164	11.711
Concentration @3%O2 (ppm)		1829.81			90.83		
Concentration @12%CO2 (ppm)		1445.01			71.42		
Concentration @3%O2 (lb/scf)		3.042E-04			1.510E-05		
Concentration @12%CO2 (lb/scf)		2.403E-04			1.187E-05		
Concentration @3%O2 (%v)		0.183			0.009		
Concentration @12%CO2 (%v)		0.145			0.007		
Concentration @3%O2 (mg/scm)		4871.95			241.83		
Concentration @12%CO2 (mg/scm)		3847.40			190.16		
Concentration @3%O2 (mg/Nm3)		5228.43			259.52		
Concentration @12%CO2 (mg/Nm3)		4128.92			204.07		
Removal Efficiency (%)					95.04%		

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SS CEM Version 06-2004a

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QA/QC JM
Date 6/14/07

Consol Energy
Clean Air Project No. 10192
Dresden, New York
BH Outlet, AH Outlet

Continuous Emissions Monitoring Parameters

Run Number	3						
Date (2007)	Mar 29						
Start Time	15:13						
End Time	16:13						
Elapsed Time (hh:mm)	01:00						
Channel		2	4	5	7	8	9
Parameter		SO2	O2	CO2	SO2	O2	CO2
Location		AH Outlet	AH Outlet	AH Outlet	BH Outlet	BH Outlet	BH Outlet
Measurement Units		ppmdv	%dv	%dv	ppmdv	%dv	%dv
Measured Average (drift-corrected)		1381.35	7.45	11.52	98.81	7.51	11.51
Concentration (ppmdv)		1381.35			98.81		
Concentration (%dv)		0.138	7.447	11.523	0.010	7.513	11.507
Concentration @3%O2 (ppm)		1837.92			132.12		
Concentration @12%CO2 (ppm)		1438.51			103.05		
Concentration @3%O2 (lb/scf)		3.056E-04			2.197E-05		
Concentration @12%CO2 (lb/scf)		2.392E-04			1.713E-05		
Concentration @3%O2 (%v)		0.184			0.013		
Concentration @12%CO2 (%v)		0.144			0.010		
Concentration @3%O2 (mg/scm)		4893.53			351.78		
Concentration @12%CO2 (mg/scm)		3830.09			274.37		
Concentration @3%O2 (mg/Nm3)		5251.59			377.52		
Concentration @12%CO2 (mg/Nm3)		4110.34			294.44		
Removal Efficiency (%)					92.81%		

Prepared by Clean Air Engineering Proprietary Software
SS CEM Version 05-2004a

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QA/QC JM
Date 6/14/07

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QA/QC DATA

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Search Subjects

PENNSYLVANIA Department of Environmental Protection

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Name like: Clean Air Engineering
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Pittsburgh , PA 15205-1409
Allegheny County
(412) 787-9130

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State of New Jersey
Department of Environmental Protection

Certifies That

Clean Air Engineering Inc

Laboratory Certification ID #: IL004

having duly met the requirements of the

Regulations Governing The Certification Of
Laboratories And Environmental Measurements N.J.A.C. 7:18 et. seq.

is hereby approved as a

State Certified Environmental Laboratory

to perform the analyses as indicated on the Annual Certified Parameter List which must accompany this certificate to be valid

Expiration Date June 30, 2008

THE GREAT SEAL OF THE STATE OF NEW JERSEY

Joseph F. Aiello, Chief
Office of Quality Assurance

THIS CERTIFICATE IS TO BE CONSPICUOUSLY DISPLAYED AT THE LABORATORY WITH THE ANNUAL CERTIFIED PARAMETER LIST IN A LOCATION ON THE PREMISES VISIBLE TO THE PUBLIC

New Jersey Department of Environmental Protection

Environmental Laboratory Certification Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 07/01/2007 until 06/30/2008

Laboratory Name: CLEAN AIR ENGINEERING INC Laboratory Number: IL004 Activity ID: SLC070001
500 WEST WOOD ST
PALATINE, IL 60067

Category: CAP01 – Atmos. Inorg. Parameters, Non-Metals

Status	Code	Matrix	Technique Description	Approved Method	Parameter Description
Dropped	CAP01.00005	AE	Thermal Conductivity	[EPA 3C]	Carbon Dioxide
Dropped	CAP01.00015	AE	Spectrophotometric	[EPA 10A]	Carbon monoxide
Dropped	CAP01.00020	AE	Gas Chromatography / FPD	[EPA 15]	Carbon disulfide
Dropped	CAP01.00025	AE	Gas Chromatography / FPD	[EPA 15]	Carbon oxysulfide (Carbonyl sulfide)
Dropped	CAP01.00035	AE	Specific Ion Electrode	[EPA 13B]	Fluoride
Dropped	CAP01.00040	AE	Primary Aluminum Plants	[EPA 14A]	Fluoride
Certified	CAP01.00045	AE	Ion Chromatography	[EPA 26] [EPA 26A]	Hydrogen chloride, Halides and Halogens
Dropped	CAP01.00050	AE	Gas Chromatography / FPD	[EPA 15]	Hydrogen sulfide
Applied	CAP01.00055	AE	Emission Sampling Train	[EPA 0051, Rev 0, 12/96]	Impinger HCl/Cl2
Dropped	CAP01.00060	AE	Gravimetric	[EPA 24A]	Inks and coatings
Certified	CAP01.00065	AE	Emission Sampling Train	[EPA 0050, Rev 0, 12/96]	Isokinetic HCl/Cl2
Applied	CAP01.00068	AE	Thermal Conductivity	[EPA 3C]	Methane
Applied	CAP01.00070	AE	Thermal Conductivity	[EPA 3C]	Nitrogen
Applied	CAP01.00100	AE	Thermal Conductivity	[EPA 3C]	Oxygen
Certified	CAP01.00105	AE	Gravimetric	[EPA 5] [EPA 17]	Particulate Matter
Certified	CAP01.00110	AE	Gravimetric	[EPA 5A]	Particulate Matter
Certified	CAP01.00115	AE	Gravimetric	[EPA 5B]	Particulate Matter
Certified	CAP01.00120	AE	Gravimetric	[EPA 5E]	Particulate Matter
Certified	CAP01.00125	AE	Gravimetric	[EPA 5F]	Particulate Matter
Certified	CAP01.00145	AE	Gravimetric	[EPA 201A]	Particulate Matter
Certified	CAP01.00150	AE	Gravimetric	[EPA 202]	Surface coatings
Dropped	CAP01.00180	AE	Standard Methods	[EPA 24]	Sulfur, Total Reduced
Dropped	CAP01.00185	AE	Barium-Thorin Titration	[EPA 15A]	Sulfur, Total Reduced
Dropped	CAP01.00190	AE	Barium-Thorin Titration	[EPA 16A]	Sulfur, Total Reduced
Dropped	CAP01.00195	AE	Gas Chromatography / FPD	[EPA 16B]	Sulfur Dioxide
Applied	CAP01.00200	AE	Barium-Thorin Titration	[EPA 6]	Sulfuric acid
Applied	CAP01.00210	AE	Barium-Thorin Titration	[EPA 8]	

Category: CAP03 – Atmospheric Organic Parameters

Status	Code	Matrix	Technique Description	Approved Method	Parameter Description
Dropped	CAP03.00025	AE	GC/FID	[EPA 308]	Methyl alcohol (Methanol)

KEY: AE = Air and Emissions, BT = Biological Tissues, DW = Drinking Water, NPW = Non-Potable Water, SCM = Solid and Chemical Materials

New Jersey Department of Environmental Protection

Environmental Laboratory Certification Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 07/01/2007 until 06/30/2008

Laboratory Name: CLEAN AIR ENGINEERING INC Laboratory Number: IL004 Activity ID: SLC070001
500 WEST WOOD ST
PALATINE, IL 60067

Category: CAP03 – Atmospheric Organic Parameters

Status	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	CAP03.00040	AE	GC	[EPA 18]	Volatile organics

Joseph F. Aiello, Chief

KEY: AE = Air and Emissions, BT = Biological Tissues, DW = Drinking Water, NPW = Non-Potable Water, SCM = Solid and Chemical Materials

New Jersey Department of Environmental Protection
Environmental Laboratory Certification Program

LABORATORY PERSONNEL LIST

Effective as of: 07/01/2007

Laboratory Name: CLEAN AIR ENGINEERING INC Laboratory Number: IL004 Activity ID: SLC070001
500 WEST WOOD ST
PALATINE, IL 60067

Position: Manager

Employee	Category/Instrument	Start Date	End Date	Documentation Status	Complete Date	Comments
DOUGLAS RHODES		7/1/2007		Complete/Qualified		
JAMES WRIGHT		4/27/2004	6/30/2007	Complete/Qualified		

Position: QA Officer

Employee	Category/Instrument	Start Date	End Date	Documentation Status	Complete Date	Comments
DOUGLAS RHODES		7/1/2007		Incomplete		
JAMES WRIGHT		4/27/2004	6/30/2007	Complete/Qualified		

Position: Supervisor/Tech Dir

Employee	Category/Instrument	Start Date	End Date	Documentation Status	Complete Date	Comments
DOUGLAS RHODES	SDW02, WPP02, CAP01 or CAP04	7/1/2007		Incomplete		
JAMES WRIGHT	SDW02, WPP02, CAP01 or CAP04	4/27/2004	6/30/2007	Complete/Qualified		
DOUGLAS RHODES	SDW04, WPP04, SHW04, 09, 10 or CAP02	7/1/2007		Incomplete		
JAMES WRIGHT	SDW04, WPP04, SHW04, 09, 10 or CAP02	4/27/2004	6/30/2007	Complete/Qualified		
DOUGLAS RHODES	SDW05, 06, WPP05-07, SHW05-12 or CAP03	7/1/2007		Incomplete		
JAMES WRIGHT	SDW05, 06, WPP05-07, SHW05-12 or CAP03	4/27/2004	6/30/2007	Complete/Qualified		

DEPARTMENT OF ENVIRONMENTAL QUALITY
KATHLEEN BABINEAUX BLANCO
GOVERNOR
MIKE D. McDANIEL, Ph.D.
SECRETARY

CERTIFIED MAIL #7007 0710 0005 6108 1458
Return Receipt Requested

June 30, 2007

AI #85668

LELAP Certificate #03099

Mr. Robert Doran
Clean Air Engineering
321 Century Plaza #130
Houston, TX 77073

RE: Accreditation Certificate

Dear Mr. Doran:

In accordance with Louisiana Administrative Code, Title 33, Part I, Subpart 3, Laboratory Accreditation, the State of Louisiana formally recognizes that this laboratory has successfully completed the accreditation process and is technically competent to perform the environmental analyses listed on the scope of accreditation detailed in the attachment. Accreditation does not constitute an endorsement of the suitability of the listed methods for any specific purpose. Parameters or analytes that the laboratory has applied for accreditation not included in the scope of accreditation attachment are not accredited.

NELAP accreditation is granted **only** for those methods/analytes for which "NELAP" is indicated as the type of accreditation. "STATE" is indicated as the type of accreditation for those methods/analytes for which NELAP accreditation is not available. Accreditation is dependent on the laboratory's successful ongoing compliance with regulations as outlined in the Louisiana Administrative Code, Title 33, Part I, Subpart 3, Laboratory Accreditation.

The enclosed accreditation certificate is property of the State of Louisiana. Should a change in accreditation status occur, the Department may recall the original accreditation certificate and attachments. The recalled certificate and attachments should be returned

ENVIRONMENTAL ASSESSMENT
LABORATORY SERVICES DIVISION
: PO BOX 4314, BATON ROUGE, LA 70821-4314
P:225-219-9800 F:225-219-9898
WWW.DEQ.LOUISIANA.GOV

to: Office of Environmental Assessment, Louisiana Environmental Laboratory Accreditation Program, P.O. Box 4314, Baton Rouge, LA 70821-4314, Attention: Dr. David L. Boucher.

LAC 33:I.5313.A requires that the laboratory report must include all relevant information. Therefore, the certificate number shall be placed in the upper right corner of all laboratory reports. If the test report includes results of any test for which the laboratory is not accredited, the unaccredited results must be clearly identified as such.

Please be advised that it is your responsibility to examine the scope of accreditation attachment for accuracy and completeness. If you find that an analyte for which you expected to be accredited is not listed, please examine your records to ensure that:

1. You have met the requirements for successful participation in proficiency test studies as outlined in LAC 33:I.4711 and in the NELAC Standard 2.7.2.

2. In the case of accreditation by recognition, the requested analyte must be listed for the requested method and matrix on both the certificate issued by the Primary AA ***and*** on the Louisiana application form.

If you have any questions, please contact the Louisiana Environmental Laboratory Accreditation Program at (225) 219-9800.

Sincerely,

Dr. David L. Boucher, Acting Supervisor
Louisiana Environmental Laboratory Accreditation Program

db

Enclosure

DEQ LOUISIANA

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY

Louisiana Environmental Lab Accreditation Program — LELAP

Is hereby granting a Louisiana Environmental Laboratory Accreditation to:

Clean Air Engineering
321 Century Plaza #130
Houston, TX 77073

Agency Interest No. 85668

According to the Louisiana Administrative Code, Title 33, Part I, Subpart 3, LABORATORY ACCREDITATION, the State of Louisiana formally recognizes that this laboratory is technically competent to perform the environmental analyses listed on the scope of accreditation detailed in the attachment.

The laboratory agrees to perform all analyses listed on this scope of accreditation according to the Part I, Subpart 3 requirements and acknowledges that continued accreditation is dependent on successful ongoing compliance with the applicable requirements of Part I. Please contact the Department of Environmental Quality, Louisiana Environmental Laboratory Accreditation Program (LELAP) to verify the laboratory's scope of accreditation and accreditation status. Accreditation by the State of Louisiana is not an endorsement or a guarantee of validity of the data generated by the laboratory, and does not constitute an endorsement of the suitability of the listed methods for any specific application.

To be accredited initially and maintain accreditation, the laboratory agrees to participate in two single-blind, single-concentration PT studies, where available, per year for each field of testing for which it seeks accreditation or maintains accreditation as required in LAC 33:I.4711.

Melvin C. Mitchell Sr., Accreditation Officer
Louisiana Environmental Laboratory Accreditation Program

Certificate Number: 03099
Expiration Date: June 30, 2008
Issued On: July 1, 2007

Louisiana Environmental Laboratory
LELAP
Accreditation Program

Laboratory Scope of Accreditation

Organization

03099
(281) 443-6400
Clean Air Engineering
321 Century Plaza #130
Houston , TX 77073

Louisiana Stack Testing Program Certification

Method Code	Method Ref	Analyte	Status	Date Effective	Type	AA
895	NCASI DI/MEOH 94.03	Methanol	Accredited	7/1/2003	STATE	LA
1217	Method 1 40 CFR 60 App. A	Traverse Points	Accredited	7/1/2003	STATE	LA
1218	Method 10 40 CFR 60 App. A	Carbon monoxide (CO)	Accredited	7/1/2003	STATE	LA
1232	Method 10A 40 CFR 60 App. A	Carbon monoxide (CO)	Accredited	7/1/2003	STATE	LA
1233	Method 10B 40 CFR 60 App. A	Carbon monoxide (CO)	Accredited	7/1/2003	STATE	LA
1248	Method 1A 40 CFR 60 App. A	Traverse Points	Accredited	7/1/2003	STATE	LA
1249	Method 2 40 CFR 60 App. A	Stack gas velocity volume flow rate	Accredited	7/1/2003	STATE	LA
1250	Method 20 40 CFR 60 App. A	Nitrogen Oxides (NOx)	Accredited	7/1/2003	STATE	LA
1250	Method 20 40 CFR 60 App. A	Oxygen	Accredited	7/1/2003	STATE	LA
1250	Method 20 40 CFR 60 App. A	Sulfur dioxide	Accredited	7/1/2003	STATE	LA
1251	Method 201A 40 CFR 51 App. M	Particulates <10 um	Accredited	7/1/2003	STATE	LA
1252	Method 202 40 CFR 51 App. M	Particulate Matter <2.5 um	Accredited	7/1/2003	STATE	LA
1262	Method 22 40 CFR 60 App. A	Visible emissions from coke oven batteries	Accredited	7/1/2003	STATE	LA
1271	Method 2A 40 CFR 60 App. A	Stack gas velocity volume flow rate in small stacks/ducts	Accredited	7/1/2003	STATE	LA
1272	Method 2B 40 CFR 60 App. A	Stack gas velocity volume flow rate	Accredited	7/1/2003	STATE	LA
1273	Method 2C 40 CFR 60 App. A	Stack gas velocity volume flow rate in small stacks/ducts	Accredited	7/1/2003	STATE	LA
1274	Method 2D 40 CFR 60 App. A	Stack gas velocity volume flow rate in small stacks/ducts	Accredited	7/1/2003	STATE	LA
1275	Method 2E 40 CFR 60 App. A	Stack gas velocity volume flow rate	Accredited	7/1/2003	STATE	LA
1276	Method 2F 40 CFR 60 App. A	Stack gas velocity volume flow rate	Accredited	7/1/2003	STATE	LA
1277	Method 2G 40 CFR 60 App. A	Stack gas velocity volume flow rate	Accredited	7/1/2003	STATE	LA
1278	Method 2H 40 CFR 60 App. A	Stack gas velocity volume flow rate	Accredited	7/1/2003	STATE	LA
1279	Method 3 40 CFR 60 App. A	Carbon dioxide oxygen dry molecular weight	Accredited	7/1/2003	STATE	LA
1296	Method 3A 40 CFR 60 App. A	Carbon dioxide	Accredited	7/1/2003	STATE	LA
1296	Method 3A 40 CFR 60 App. A	Oxygen	Accredited	7/1/2003	STATE	LA
1297	Method 3B 40 CFR 60 App. A	Emission Rate Correction Factors	Accredited	7/1/2003	STATE	LA
1298	Method 3C 40 CFR 60 App. A	Carbon dioxide	Accredited	7/1/2003	STATE	LA
1302	Method 4 40 CFR 60 App. A	Moisture content	Accredited	7/1/2003	STATE	LA

Issue Date: July 1, 2007
Expiration Date: June 30, 2008

Print Date 6/8/2007 12:17:09 PM

Louisiana Environmental Laboratory
LELAP
Accreditation Program

Laboratory Scope of Accreditation

Organization

03099
Clean Air Engineering
321 Century Plaza #130
Houston , TX 77073

(281) 443-6400

Louisiana Stack Testing Program Certification

Method Code	Method Ref	Analyte	Status	Date Effective	Type	AA
1303	Method 5 40 CFR 60 App. A	Particulates	Accredited	7/1/2003	STATE	LA
1304	Method 5A 40 CFR 60 App. A	Particulates from asphalt processing	Accredited	7/1/2003	STATE	LA
1305	Method 5B 40 CFR 60 App. A	Particulates	Accredited	7/1/2003	STATE	LA
1306	Method 5D 40 CFR 60 App. A	Particulates from fabric filters	Accredited	7/1/2003	STATE	LA
1307	Method 5E 40 CFR 60 App. A	Particulates from wool fiberglass insulation	Accredited	7/1/2003	STATE	LA
1308	Method 5F 40 CFR 60 App. A	Particulates	Accredited	7/1/2003	STATE	LA
1315	Method 6C 40 CFR 60 App. A	Sulfur dioxide	Accredited	7/1/2003	STATE	LA
1321	Method 7E 40 CFR 60 App. A	Nitrogen Oxides (NOx)	Accredited	7/1/2003	STATE	LA
1761	Method 101A 40 CFR 61 App. B (Sample Only)	Mercury	Accredited	7/1/2003	STATE	LA
1789	Method 11 40 CFR 60 App. A (Sample Only)	Hydrogen sulfide	Accredited	7/1/2003	STATE	LA
1793	Method 12 40 CFR 60 App. A (Sample Only)	Lead	Accredited	7/1/2003	STATE	LA
1797	Method 13B 40 CFR 60 App. A (Sample Only)	Fluoride	Accredited	7/1/2003	STATE	LA
1799	Method 14 40 CFR 60 App. A (Sample Only)	Fluoride	Accredited	7/1/2003	STATE	LA
1801	Method 15 40 CFR 60 App. A (Sample Only)	Carbon disulfide	Accredited	7/1/2003	STATE	LA
1801	Method 15 40 CFR 60 App. A (Sample Only)	Carbonyl sulfide	Accredited	7/1/2003	STATE	LA
1801	Method 15 40 CFR 60 App. A (Sample Only)	Hydrogen sulfide	Accredited	7/1/2003	STATE	LA
1803	Method 15A 40 CFR 60 App. A (Sample Only)	Total reduced sulfur	Accredited	7/1/2003	STATE	LA
1805	Method 16 40 CFR 60 App. A (Sample Only)	Dimethyl Disulfide	Accredited	7/1/2003	STATE	LA
1805	Method 16 40 CFR 60 App. A (Sample Only)	Dimethyl Sulfide	Accredited	7/1/2003	STATE	LA
1805	Method 16 40 CFR 60 App. A (Sample Only)	Hydrogen sulfide	Accredited	7/1/2003	STATE	LA
1805	Method 16 40 CFR 60 App. A (Sample Only)	Methyl Mercaptan	Accredited	7/1/2003	STATE	LA
1807	Method 16A 40 CFR 60 App. A (Sample Only)	Total reduced sulfur	Accredited	7/1/2003	STATE	LA
1809	Method 16B 40 CFR 60 App. A (Sample Only)	Total reduced sulfur	Accredited	7/1/2003	STATE	LA
1811	Method 17 40 CFR 60 App. A (Sample Only)	Particulates	Accredited	7/1/2003	STATE	LA
1813	Method 18 40 CFR 60 App. A (Sample Only)	Gaseous Organic Compound Emissions	Accredited	7/1/2003	STATE	LA
1815	Method 19 40 CFR 60 App. A (Sample Only)	Nitrogen Oxides (NOx)	Accredited	7/1/2003	STATE	LA
1815	Method 19 40 CFR 60 App. A (Sample Only)	Particulates SO2 NOx sulfur removal efficiency	Accredited	7/1/2003	STATE	LA

Issue Date: July 1, 2007
Expiration Date: June 30, 2008

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Louisiana Environmental Laboratory
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Laboratory Scope of Accreditation

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Clean Air Engineering
321 Century Plaza #130
Houston , TX 77073

Louisiana Stack Testing Program Certification

Method Code	Method Ref	Analyte	Status	Date Effective	Type	AA
1815	Method 19 40 CFR 60 App. A (Sample Only)	Sulfur dioxide	Accredited	7/1/2003	STATE	LA
1847	Method 23 40 CFR 60 App. A (Sample Only)	Dioxins/Furans	Accredited	7/1/2003	STATE	LA
1849	Method 25 40 CFR 60 App. A (Sample Only)	Gaseous Nonmethane Organic Emissions	Accredited	7/1/2003	STATE	LA
1851	Method 25A 40 CFR 60 App. A (Sample Only)	Gaseous Organic Emissions	Accredited	7/1/2003	STATE	LA
1857	Method 26 40 CFR 60 App. A (Sample Only)	Bromine (Br2)	Accredited	7/1/2003	STATE	LA
1857	Method 26 40 CFR 60 App. A (Sample Only)	Chlorine	Accredited	7/1/2003	STATE	LA
1857	Method 26 40 CFR 60 App. A (Sample Only)	Hydrochloric acid (Hydrogen chloride (gas only))	Accredited	7/1/2003	STATE	LA
1857	Method 26 40 CFR 60 App. A (Sample Only)	Hydrogen Bromide (HBr)	Accredited	7/1/2003	STATE	LA
1857	Method 26 40 CFR 60 App. A (Sample Only)	Hydrogen fluoride (Hydrofluoric acid)	Accredited	7/1/2003	STATE	LA
1859	Method 26A 40 CFR 60 App. A (Sample Only)	Bromine (Br2)	Accredited	7/1/2003	STATE	LA
1859	Method 26A 40 CFR 60 App. A (Sample Only)	Chlorine	Accredited	7/1/2003	STATE	LA
1859	Method 26A 40 CFR 60 App. A (Sample Only)	Hydrochloric acid (Hydrogen chloride (gas only))	Accredited	7/1/2003	STATE	LA
1859	Method 26A 40 CFR 60 App. A (Sample Only)	Hydrogen Bromide (HBr)	Accredited	7/1/2003	STATE	LA
1859	Method 26A 40 CFR 60 App. A (Sample Only)	Hydrogen fluoride (Hydrofluoric acid)	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Antimony	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Arsenic	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Barium	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Beryllium	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Cadmium	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Chromium	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Cobalt	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Copper	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Lead	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Manganese	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Mercury	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Nickel	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Phosphorus total	Accredited	7/1/2003	STATE	LA

Issue Date: July 1, 2007
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Louisiana Stack Testing Program Certification

Method Code	Method Ref	Analyte	Status	Date Effective	Type	AA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Selenium	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Silver	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Thallium	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Zinc	Accredited	7/1/2003	STATE	LA
1885	Method 306 40 CFR 63 App. A (Sample Only)	Chromium	Accredited	7/1/2003	STATE	LA
1889	Method 308 40 CFR 63 App. A (Sample Only)	Methanol	Accredited	7/1/2003	STATE	LA
1911	Method 316 40 CFR 63 App. A (Sample Only)	Formaldehyde	Accredited	7/1/2003	STATE	LA
1945	Method 6 40 CFR 60 App. A (Sample Only)	Sulfur dioxide	Accredited	7/1/2003	STATE	LA
1953	Method 7 40 CFR 60 App. A (Sample Only)	Nitrogen Oxides (NOx)	Accredited	7/1/2003	STATE	LA
1955	Method 7A 40 CFR 60 App. A (Sample Only)	Nitrogen Oxides (NOx)	Accredited	7/1/2003	STATE	LA
1957	Method 7B 40 CFR 60 App. A (Sample Only)	Nitrogen Oxides (NOx)	Accredited	7/1/2003	STATE	LA
1959	Method 7C 40 CFR 60 App. A (Sample Only)	Nitrogen Oxides (NOx)	Accredited	7/1/2003	STATE	LA
1961	Method 7D 40 CFR 60 App. A (Sample Only)	Nitrogen Oxides (NOx)	Accredited	7/1/2003	STATE	LA
1965	Method 8 40 CFR 60 App. A (Sample Only)	Sulfuric Acid Mist	Accredited	7/1/2003	STATE	LA
1967	Method 9 40 CFR 60 App. A (Sample Only)	Opacity	Accredited	7/1/2003	STATE	LA
1977	SW-846 0010 (Sample Only)	Modified Method 5 Sample Train	Accredited	7/1/2003	STATE	LA
1979	SW-846 0011 (Sample Only)	Acetaldehyde	Accredited	7/1/2003	STATE	LA
1979	SW-846 0011 (Sample Only)	Acetophenone	Accredited	7/1/2003	STATE	LA
1979	SW-846 0011 (Sample Only)	Formaldehyde	Accredited	7/1/2003	STATE	LA
1979	SW-846 0011 (Sample Only)	Isophorone	Accredited	7/1/2003	STATE	LA
1979	SW-846 0011 (Sample Only)	Propionaldehyde	Accredited	7/1/2003	STATE	LA
1983	SW-846 0023A (Sample Only)	Dioxin & Furan Sampling System	Accredited	7/1/2003	STATE	LA
1985	SW-846 0030 (Sample Only)	Volatile Organic Sampling Train (VOST)	Accredited	7/1/2003	STATE	LA
1987	SW-846 0031 (Sample Only)	Sampling Method for VOCs (SMVOC)	Accredited	7/1/2003	STATE	LA
1991	SW-846 0050 (Sample Only)	Isokinetic HCl/Cl2 Sampling Train	Accredited	7/1/2003	STATE	LA
1994	SW-846 0051 (Analysis Only)	Midget Impinger HCl/Cl2 Sampling Train	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Antimony	Accredited	7/1/2003	STATE	LA

Issue Date: July 1, 2007
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Clean Air Engineering
321 Century Plaza #130
Houston , TX 77073

(281) 443-6400

Louisiana Stack Testing Program Certification

Method Code	Method Ref	Analyte	Status	Date Effective	Type	AA
1995	SW-846 0060 (Sample Only)	Arsenic	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Barium	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Beryllium	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Cadmium	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Cobalt	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Copper	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Lead	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Manganese	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Mercury	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Nickel	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Particulates	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Phosphorus total	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Selenium	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Silver	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Thallium	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Total chromium	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Zinc	Accredited	7/1/2003	STATE	LA
1997	SW-846 0061 (Sample Only)	Chromium VI	Accredited	7/1/2003	STATE	LA

Non-Potable Water Certification

Method Code	Method Ref	Analyte	Status	Date Effective	Type	AA
10053006	EPA 300.0	Chloride	Accredited	1/25/2006	STATE	LA
10053006	EPA 300.0	Fluoride	Accredited	1/25/2006	STATE	LA
10053006	EPA 300.0	Nitrite	Accredited	1/25/2006	STATE	LA
10053006	EPA 300.0	Sulfate	Accredited	1/25/2006	STATE	LA

Issue Date: July 1, 2007
Expiration Date: June 30, 2008

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Clean Air Engineering Project #10192
Consol Energy
AES Dresden

Cal Range	1	2	
High NOx	233.8	91.4	ppm
Low NOx	91.4	47.4	ppm
High O2	14.1	14.1	%
Low O2	6.04	6.04	%
High CO2	13.98	13.98	
Low CO2	6.02	6.02	

Date:	3/28/2007
Start Time:	7:50
End Time:	8:15

Cal Range	1	
HIGH		
Instrument	Response (1 min avg.)	Cal. Error (%)
Nox In	233.6	0.09
O2 In	14.1	0.00
CO2 In	14	0.14
LOW		
Instrument	Response (1 min avg.)	Cal. Error (%)
Nox In	92.3	0.38
O2 In	5.9	0.99
CO2 In	6.1	0.57
ZERO		
Instrument	Response (1 min avg.)	Cal. Error (%)
Nox In	2	0.86
O2 In	-0.1	0.71
CO2 In	0	0.00
BIAS	(uses low gas)	
Instrument	Response (1 min avg.)	Cal. Error (%)
Nox In	90.5	1.80
O2 In	5.8	1.00
O2_2	14	0.00
DRIFT	(end of day)	
Instrument	Response (1 min avg.)	Cal. Error (%)
NOx 1	85.6	4.90
NOx 2		0.00
O2_1	5.8	0.00
O2_2	14	0.00

Date:	3/28/2007
Start Time:	7:50
End Time:	8:15

Cal Range	2		
HIGH			
Instrument	Response (1 min avg.)	Cal. Error (%)	also
Nox Out	91.92	0.57	
O2 Out	14.1	0.00	
CO2 Out	14	0.14	
LOW			
Instrument	Response (1 min avg.)	Cal. Error (%)	
Nox Out	47.56	0.18	
O2 Out	6	0.28	
CO2 Out	6.2	1.29	
ZERO			
Instrument	Response (1 min avg.)	Cal. Error (%)	
Nox Out	0.9	0.98	
O2 Out	0	0.00	
CO2 Out	0	0.00	
BIAS	(uses low gas)		
Instrument	Response (1 min avg.)	Cal. Error (%)	
Nox Out	46.9	0.66	
O2 Out	5.9	1.00	
O2_2	14.1	1.00	
DRIFT	(end of day)		
Instrument	Response (1 min avg.)	Cal. Error (%)	
NOx 1	45.1	1.80	
NOx 2		0.00	
O2_1	6	1.00	
O2_2	14.1	0.00	

Consol Energy
CleanAir Project No. 10192
Dresden, New York
BH Outlet, AH Outlet

Date: March 29, 2007
Start Time 8:39
Stop Time 9:01

CALIBRATION ERROR

	Channel 2 SO2 AH Outlet ppmdv	Channel 4 O2 AH Outlet %dv	Channel 5 CO2 AH Outlet %dv	Channel 7 SO2 BH Outlet ppmdv	Channel 8 O2 BH Outlet %dv	Channel 9 CO2 BH Outlet %dv
Instrument Information						
Manufacturer:	Wstrn Rsrch	Servomex	Servomex	Wstrn Rsrch	Servomex	Servomex
Model:	921NMP	1420B	1415B	921NMP	1420B	1415B
Detection:	UV Photo.	Paramagn.	NDIR	UV Photo.	Paramagn.	NDIR
Asset or Serial No:	204589 68-B	68-B		204168	201170	203504
Calibration Span Value (CS)	2479.000	14.100	13.980	121.600	14.100	13.980
System Response Time (seconds)	60	60	60	60	60	60
Manufacturer Certified Cylinder Value (C_V)						
Zero	0.000	0.000	0.000	0.000	0.000	0.000
Low	121.600	6.040	6.020	49.350	6.040	6.020
Mid						
High	2479.000	14.100	13.980	121.600	14.100	13.980
Actual gas to be used for bias checks	2479.000	6.040	13.980	49.350	6.040	13.980
Cylinder ID						
Zero						
Low	CC30072	SG9134098BAL	XC012963B	CC13960	SG9134098BAL	XC012963B
Mid						
High	ALM012777	XC012963B	SG9134098BAL	CC30072	XC012963B	SG9134098BAL
Analyzer Calibration Response (C_{Dir})						
Zero	3.452	-0.010	0.148	-0.056	0.002	0.003
Low	133.235	6.061	6.041	48.630	6.050	5.940
Mid			0.209			
High	2482.035	14.189	14.059	121.848	14.140	13.966
Analyzer Calibration Error (ACE) (Limit = 2%, Method 25A limit = 5% of gas value)						
Zero	0.1%	-0.1%	1.1%	0.0%	0.0%	0.0%
Low	0.5%	0.2%	0.1%	-0.6%	0.1%	-0.6%
Mid	N/A	N/A	N/A	N/A	N/A	N/A
High	0.1%	0.6%	0.6%	0.2%	0.3%	-0.1%
Calibration Error Status						
Zero	OK	OK	OK	OK	OK	OK
Low	OK	OK	OK	OK	OK	OK
Mid	N/A	N/A	N/A	N/A	N/A	N/A
High	OK	OK	OK	OK	OK	OK

D51407 143432

08:39:43	4.542	14.178	6.048	0.928	14.141	-0.122
08:39:58	3.810	14.182	6.044	0.830	14.141	-0.122
08:40:13	3.858	14.185	6.044	0.801	14.141	-0.122
08:40:28	3.712	14.188	6.044	0.732	14.141	-0.122
08:40:43	3.761	14.188	6.044	0.156	14.139	0.685
08:40:58	3.858	14.191	6.046	0.020	14.140	3.858
08:41:13	4.103	14.192	6.041	-0.020	14.143	5.938
08:41:28	3.712	14.194	6.040	-0.049	14.140	5.940
08:41:43	3.810	14.192	6.041	-0.049	14.143	5.940
08:41:58	3.858	14.192	6.044	-0.049	14.142	5.940
08:42:13	3.858	14.193	6.040	-0.052	14.144	5.940

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QA/QC JM
Date 6/14/07

Consol Energy
CleanAir Project No. 10192
Dresden, New York
BH Outlet, AH Outlet

Date: March 29, 2007
Start Time 8:39
Stop Time 9:01

CALIBRATION ERROR

	Channel 2 SO2	Channel 4 O2	Channel 5 CO2	Channel 7 SO2	Channel 8 O2	Channel 9 CO2
	AH Outlet ppmdv	AH Outlet %dv	AH Outlet %dv	BH Outlet ppmdv	BH Outlet %dv	BH Outlet %dv
08:42:28	3.858	14.191	6.043	-0.078	14.145	5.940
08:42:43	3.321	13.657	5.869	-0.235	13.872	5.864
08:42:58	3.175	13.620	5.764	-0.156	13.912	5.862
08:43:13	11.673	9.785	9.526	0.088	8.958	10.066
08:43:28	7.570	6.261	13.762	0.059	6.163	13.902
08:43:43	4.396	6.071	14.059	-0.078	6.069	14.064
08:43:58	3.175	5.890	14.069	-0.219	5.930	14.033
08:44:13	1.807	5.874	14.047	-0.482	5.737	14.003
08:44:28	4.298	6.063	14.084	-0.153	6.064	14.077
08:44:43	4.249	6.061	14.086	-0.179	6.062	14.078
08:44:58	4.298	6.060	14.087	-0.225	6.062	14.080
08:45:13	4.396	6.062	14.088	-0.215	6.062	14.082
08:45:28	4.396	6.062	14.087	-0.212	6.061	14.083
08:45:43	81.954	5.765	13.924	-0.212	6.053	14.023
08:45:58	1661.587	0.866	2.886	-0.169	6.050	13.949
08:46:13	2388.718	0.017	0.307	-0.160	6.050	13.924
08:46:28	2469.011	-0.016	0.167	-0.098	6.050	13.904
08:46:43	2471.306	-0.019	0.152	-0.078	6.050	13.892
08:46:58	2473.407	-0.018	0.148	-0.049	6.050	13.887
08:47:13	2487.863	-0.021	0.143	-0.013	6.051	13.881
08:47:28	2492.161	-0.129	-3.269	0.124	6.008	13.703
08:47:43	2491.575	-2.002	-8.243	-0.238	5.808	13.832
08:47:58	2491.526	-0.099	-3.216	-0.006	5.975	13.804
08:48:13	2495.385	-0.040	-1.541	0.075	6.025	13.826
08:48:28	2494.066	-0.019	0.135	0.147	6.059	13.850
08:48:43	2487.277	-0.020	0.134	0.212	6.060	13.846
08:48:58	2483.956	-0.022	0.132	0.257	6.062	13.839
08:49:13	2482.637	-0.020	0.131	0.293	6.062	13.835
08:49:28	2484.688	-0.020	0.130	0.335	6.064	13.832
08:49:43	2484.542	-0.020	0.131	0.420	6.066	13.826
08:49:58	2485.079	-0.022	0.130	0.453	6.067	13.821
08:50:13	2485.568	-0.019	0.128	0.495	6.070	13.818
08:50:28	2479.512	-0.014	0.132	0.537	6.074	13.813
08:50:43	2481.026	-0.011	0.139	0.544	6.085	13.810
08:50:58	2481.661	-0.011	0.147	0.596	6.204	13.806
08:51:13	2480.977	-0.012	0.156	0.677	6.244	13.803
08:51:28	2481.026	-0.009	0.166	0.733	6.172	13.799
08:51:43	2478.730	-0.009	0.175	0.775	6.145	13.797
08:51:58	2478.388	-0.008	0.185	0.781	6.150	13.795
08:52:13	2478.535	-0.013	-1.486	0.853	6.167	13.736
08:52:28	2477.070	-0.003	0.206	0.872	6.662	13.790
08:52:43	2478.486	-0.006	0.216	0.964	6.598	13.785
08:52:58	2476.532	-0.003	0.227	0.990	6.572	13.782
08:53:13	2475.897	0.022	0.229	3.754	6.309	13.318
08:53:28	1136.264	0.106	0.208	94.382	0.766	1.783
08:53:43	181.294	-0.017	0.133	120.651	0.004	-0.098
08:53:58	134.554	-0.025	0.129	121.218	-0.006	-0.114
08:54:13	133.333	-0.034	0.128	121.696	-0.038	-0.121
08:54:28	133.089	-0.036	0.126	122.631	-0.054	-0.122
08:54:43	133.284	-0.024	0.130	122.348	-0.023	-0.121
08:54:58	133.138	-0.014	0.130	121.371	-0.001	-0.090
08:55:13	133.333	-0.015	0.134	121.100	0.002	-0.033
08:55:28	133.382	-0.002	0.138	121.035	0.005	0.007
08:55:43	200.977	1.428	1.554	120.984	0.013	0.035

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QA/QC JM
Date 6/14/07

Consol Energy
CleanAir Project No. 10192
Dresden, New York
BH Outlet, AH Outlet

Date: March 29, 2007
Start Time 8:39
Stop Time 9:01

CALIBRATION ERROR

	Channel 2 SO2 AH Outlet ppmdv	Channel 4 O2 AH Outlet %dv	Channel 5 CO2 AH Outlet %dv	Channel 7 SO2 BH Outlet ppmdv	Channel 8 O2 BH Outlet %dv	Channel 9 CO2 BH Outlet %dv
08:59:51	1353.553	7.373	11.410	115.034	0.105	0.247
09:00:06	1353.553	7.376	11.389	61.164	0.017	-0.097
09:00:21	1353.651	7.379	11.363	49.091	-0.002	-0.130
09:00:36	1353.651	7.371	11.338	48.420	-0.006	-0.129
09:00:51	1353.553	7.376	11.313	48.378	-0.004	-0.130
09:01:06	1353.553	7.379	11.286	48.449	-0.001	-0.131
09:01:21	1353.602	7.381	11.264	48.449	0.003	-0.128

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QA/QC JM
Date 6/14/07

Airgas

Certificate of Analysis: EPA Protocol Gas Mixture

Airgas Great Lakes, Inc.
2009 Bellaire Ave.
Royal Oak, MI 48067
Ph: (248) 399-9150
Fax: (248) 584-2540
http://www.airgas.com

Cylinder Number: SG9134098BAL
Cylinder Pressure: 2000.6 PSIG
Certification Date: 9/19/2006
Reference Number: 32-112503706-4
Expiration Date: 9/19/2009
Laboratory: MIC - Royal Oak - MI

Certified Concentrations

Component	Concentration	Accuracy	Analytical Principle	Procedure
OXYGEN	6.040 %	+/- 1%	Paramagnetic (Para)	G1
CARBON DIOXIDE	13.98 %	+/- 1%	Nondispersive Infrared (NDIR)	G1
NITROGEN	Balance			

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences.

Notes: CREIGHTON

Do not use cylinder below 150 psig.

Approval Signature Cathy D Stewart

Reference Standard Information

Type	Balance Gas	Component	Cyl.Number	Concentration
NTRM 82745	NITROGEN	CARBON DIOXIDE	SG9183197BAL	15.862 %
NTRM 82658x	NITROGEN	OXYGEN	SG9160230BAL	7.015 %

Analytical Results

1st Component — OXYGEN

1st Analysis Date: 09/19/2006

R 3.51	S 3.02	Z 0.00	Conc 6.040 %
S 3.02	Z 0.00	R 3.51	Conc 6.040 %
Z 0.00	R 3.51	S 3.02	Conc 6.040 %
			AVG: 6.040 %

2nd Component — CARBON DIOXIDE

1st Analysis Date: 09/19/2006

R 7.93	S 6.99	Z 0.00	Conc 13.98 %
S 6.99	Z 0.00	R 7.93	Conc 13.98 %
Z 0.00	R 7.93	S 6.99	Conc 13.98 %
			AVG: 13.98 %

Airgas

Certificate of Analysis: EPA Protocol Gas Mixture

Airgas Great Lakes, Inc.
2009 Bellaire Ave.
Royal Oak, MI 48067
Ph: (248) 399-9150
Fax: (248) 584-2540
http://www.airgas.com

Cylinder Number: XC012963B
Cylinder Pressure: 2000.6 PSIG
Certification Date: 9/19/2006
Reference Number: 32-112503706-3
Expiration Date: 9/19/2009
Laboratory: MIC - Royal Oak - MI

Certified Concentrations

Component	Concentration	Accuracy	Analytical Principle	Procedure
CARBON DIOXIDE	6.020 %	+/- 1%	Nondispersive Infrared (NDIR)	G1
OXYGEN	14.10 %	+/- 1%	Paramagnetic (Para)	G1
NITROGEN	Balance			

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences.

Notes: CREIGHTON

Do not use cylinder below 150 psig.

Approval Signature Cathy Stewart

Reference Standard Information

Type	Balance Gas	Component	Cyl.Number	Concentration
NTRM 81674	NITROGEN	CARBON DIOXIDE	XC018562B	6.89 %
NTRM 82659X	NITROGEN	OXYGEN	XC024399B	22.60 %

Analytical Results

1st Component — CARBON DIOXIDE

1st Analysis Date: 09/19/2006

R 6.89	S 6.02	Z 0.00	Conc 6.020 %
S 6.02	Z 0.00	R 6.89	Conc 6.020 %
Z 0.00	R 6.89	S 6.02	Conc 6.020 %
			AVG: 6.020 %

2nd Component — OXYGEN

1st Analysis Date: 09/19/2006

R 4.52	S 2.82	Z 0.00	Conc 14.10 %
S 2.82	Z 0.00	R 4.52	Conc 14.10 %
Z 0.00	R 4.52	S 2.82	Conc 14.10 %
			AVG: 14.10 %

Airgas

Certificate of Analysis: EPA Protocol Gas Mixture

Airgas Great Lakes, Inc.
2009 Bellaire Ave.
Royal Oak, MI 48067
Ph: (248) 399-9150
Fax: (248) 584-2540
http://www.airgas.com

Cylinder Number: CC13960
Cylinder Pressure: 2000.6 PSIG
Certification Date: 9/25/2006
Reference Number: 32-112503706-6
Expiration Date: 9/25/2008
Laboratory: MIC - Royal Oak - MI

Certified Concentrations

Component	Concentration	Accuracy	Analytical Principle	Procedure
SULFUR DIOXIDE	49.35 PPM	+/- 1%	Nondispersive Ultraviolet (NDUV)	G1
CARBON MONOXIDE	123.83 PPM	+/- 1%	Nondispersive Infrared (NDIR)	G1
NITRIC OXIDE	126.49 PPM	+/- 1%	Chemiluminescence (Chemi)	G1
NITROGEN	Balance			

Total oxides of nitrogen 126.9 PPM

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences.

Notes:CREIGHTON

Do not use cylinder below 150 psig.

Approval Signature

Reference Standard Information

Type	Balance Gas	Component	Cyl.Number	Concentration
NTRM 82636	NITROGEN	CARBON MONOXIDE	XC014180B	246.2 PPM
NTRM 81661X	NITROGEN	SULFUR DIOXIDE	XC006260B	246.1 PPM
NTRM 81694	NITROGEN	SULFUR DIOXIDE	XC019282B	98.0 PPM
NTRM 81685	NITROGEN	NITRIC OXIDE	XC024156B	244.6 PPM

Analytical Results

1st Component SULFUR DIOXIDE

1st Analysis Date: 09/18/2006

R 98.5	S 19.7	Z 0.0	Conc 49.2 PPM
S 19.7	Z 0.0	R 98.5	Conc 49.2 PPM
Z 0.0	R 98.5	S 19.7	Conc 49.2 PPM
			AVG: 49.2 PPM

2nd Analysis Date: 09/25/2006

R 97.541	S 49.227	Z -0.123	Conc 49.57 PPM
S 49.267	Z -0.123	R 97.757	Conc 49.45 PPM
Z -0.119	R 97.669	S 49.273	Conc 49.50 PPM
			AVG: 49.50 PPM

2nd Component CARBON MONOXIDE

1st Analysis Date: 09/18/2006

R 4.93	S 2.48	Z 0.0	Conc 123.8 PPM
S 2.48	Z 0.0	R 4.93	Conc 123.8 PPM
Z 0.0	R 4.93	S 2.48	Conc 123.8 PPM
			AVG: 123.8 PPM

2nd Analysis Date: 09/25/2006

R 248.08	S 124.52	Z -0.032	Conc 123.59 PPM
S 124.76	Z -0.124	R 247.98	Conc 123.92 PPM
Z -0.204	R 247.63	S 124.71	Conc 124.09 PPM
			AVG: 123.86 PPM

3rd Component NITRIC OXIDE

1st Analysis Date: 09/18/2006

R 4.89	S 2.52	Z 0.0	Conc 126.1 PPM
S 2.52	Z 0.0	R 4.89	Conc 126.1 PPM
Z 0.0	R 4.89	S 2.52	Conc 126.1 PPM
			AVG: 126.1 PPM

2nd Analysis Date: 09/25/2006

R 249.12	S 129.58	Z 0.443	Conc 127.02 PPM
S 129.62	Z 0.381	R 249.89	Conc 126.70 PPM
Z 0.468	R 249.28	S 129.58	Conc 126.93 PPM
			AVG: 126.88 PPM

Airgas

Airgas Great Lakes, Inc.
2009 Bellaire Ave.
Royal Oak, MI 48067
Ph: (248) 399-9150
Fax: (248) 584-2540
http://www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Customer:	CREIGHTON		
Part Number:	E02NI99E15A0914	Reference Number:	32-112534012-2
Cylinder Number:	CC30072	Cylinder Volume:	144 Cu.Ft.
Laboratory:	MIC - Royal Oak - MI	Cylinder Pressure:	2015 PSIG
Analysis Date:	Feb 19, 2007	Valve Outlet:	660

Expiration Date: Feb 19, 2009

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

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
SULFUR DIOXIDE	120.000 PPM	121.6 PPM	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	98061120	XC006250B	246.1PPM SULFUR DIOXIDE/NITROGEN	Jun 01, 2007

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
E/N 50, 1000ppmFS SO2, Bovar 721-M	Nondispersive Ultraviolet (NDUV)	Jan 29, 2007

Triad Data Available Upon Request

Notes:

AFM

QA Approval

RATA CLASS

Scott Specialty Gases

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

SCOTT SPECIALTY GASES
1290 COMBERMERE STREET
TROY,MI 48083

P.O. No.: 54830-71-65000
Project No.: 05-41817-014

Customer

CLEAN AIR INSTRUMENT RENTAL
GARY ZAPEL
500 WEST WOOD STREET
PALATINE IL 60067

ANALYTICAL INFORMATION

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

Cylinder Number: ALM012777 **Certification Date:** 04Apr2006 **Exp. Date:** 03Apr2009
Cylinder Pressure*:** 1884 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ANALYTICAL ACCURACY**	TRACEABILITY
SULFUR DIOXIDE *	2,479	PPM	+/- 1%	Direct NIST and NMi
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.

* This Protocol has been certified using corrected NIST SO2 standard values, per EPA guidance dated 7/24/96 and will not correlate with uncorrected Fic

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1664	19Apr2007	ALM043727	2402. PPM	SULFUR DIOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR//0928621	16Mar2006	FTIR

ANALYZER READINGS

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

SULFUR DIOXIDE *

First Triad Analysis

Date: 28Mar2006 Response Unit:PPM
Z1=0.47230 R1=2400.719 T1=2477.829
R2=2401.982 Z2=1.43331 T2=2477.837
Z3=1.48831 T3=2481.002 R3=2402.695
Avg. Concentration: 2479. PPM

Second Triad Analysis

Date: 04Apr2006 Response Unit: PPM
Z1=0.25354 R1=2400.160 T1=2476.662
R2=2401.880 Z2=1.29722 T2=2477.193
Z3=1.74668 T3=2480.275 R3=2402.152
Avg. Concentration: 2479. PPM

Calibration Curve

Concentration=A+Bx+Cx2+Dx3+Ex4
r=9.99984E-1
Constants: A=0.00000E+0
B=1.03923E+0 C=4.00000E-6
D=0.00000E+0 E=0.00000E+0

APPROVED BY: JEFF CROTEAU

Airgas

Airgas Great Lakes, Inc.
2009 Bellaire Ave.
Royal Oak, MI 48067
Ph: (248) 399-9150
Fax: (248) 584-2540
http://www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Customer:	AIRGAS CREIGHTION		
Part Number:	E04NI99E15A70B4	Reference Number:	32-112534012-5
Cylinder Number:	CC96201	Cylinder Volume:	144 Cu.Ft.
Laboratory:	MIC - Royal Oak - MI	Cylinder Pressure:	2015 PSIG
Analysis Date:	Feb 19, 2007	Valve Outlet:	660

Expiration Date: Feb 19, 2009

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

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
SULFUR DIOXIDE	95.000 PPM	96.396 PPM	G1	+/- 1% NIST Traceable
CARBON MONOXIDE	225.000 PPM	230.92 PPM	G1	+/- 1% NIST Traceable
NITRIC OXIDE	225.000 PPM	233.79 PPM	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

Total oxides of nitrogen 233.800 PPM For Reference Only

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	06060237	CC208194	257.0PPM NITRIC OXIDE/NITROGEN	Jan 01, 2010
NTRM	98060116	XC013406B	246.2PPM CARBON MONOXIDE/NITROGEN	Jul 05, 2010
NTRM	04060308	XC017404	98.0PPM SULFUR DIOXIDE/NITROGEN	Apr 02, 2008
SRM	46-E-18	FF20605	1487PPM NITRIC OXIDE/NITROGEN	May 01, 2010

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
E/N 54, 250ppmFS CO, Nicolet 6700	Fourier Transform Infrared (FTIR)	Feb 19, 2007
E/N 54, 250ppmFS NO, Nicolet 6700	Fourier Transform Infrared (FTIR)	Jan 26, 2007
E/N 54, 100ppmFS SO2, Nicolet 6700	Fourier Transform Infrared (FTIR)	Feb 06, 2007

Triad Data Available Upon Request

Notes:NOX: 233.8
ORDER# 108610

Rachelle Ruddell

QA Approval

Page 1 of 32-112534012-5

Airgas

Airgas Great Lakes, Inc.
2009 Bellaire Ave.
Royal Oak, MI 48067
Ph: (248) 399-9150
Fax: (248) 584-2540
http://www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Customer:	CREIGHTON		
Part Number:	E02NI99E15A03D9	Reference Number:	32-112531795-4
Cylinder Number:	XC023749B	Cylinder Volume:	144 Cu.Ft.
Laboratory:	MIC - Royal Oak - MI	Cylinder Pressure:	2015 PSIG
Analysis Date:	Feb 05, 2007	Valve Outlet:	660

Expiration Date: Feb 05, 2009

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

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
NITRIC OXIDE	90.000 PPM	91.0 PPM	G1	+/- 1% NIST Traceable
NITROGEN	Balance			
Total oxides of nitrogen		91.400 PPM		For Reference Only

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	06060407	CC208042	93.2PPM NITRIC OXIDE/NITROGEN	Jan 01, 2010

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
E/N 160, 100ppmFS NO, Beckman 951A	Chemiluminescence (Chemi)	Jan 19, 2007

Triad Data Available Upon Request

Notes:

APM

QA Approval

Airgas

Certificate of Analysis: EPA Protocol Gas Mixture

Airgas Great Lakes, Inc.
2009 Bellaire Ave.
Royal Oak, MI 48067
Ph: (248) 399-9150
Fax: (248) 584-2540
http://www.airgas.com

Cylinder Number: SG9165466BAL
Cylinder Pressure: 2000.6 PSIG
Certification Date: 12/5/2005
Reference Number: 32-112441658-2
Expiration Date: 12/5/2007
Laboratory: MIC - Royal Oak - MI

Certified Concentrations

Component	Concentration	Accuracy	Analytical Principle	Procedure
NITRIC OXIDE	47.4 PPM	+/- 1%	Chemiluminescence (Chemi)	G1
NITROGEN	Balance			
Total oxides of nitrogen	47.8 PPM			

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences.

Notes: CLEVELAND

Do not use cylinder below 150 psig.

Approval Signature A. F. Muhammad

Reference Standard Information

Type	Balance Gas	Component	Cyl.Number	Concentration
GMIS 1684B	NITROGEN	NITRIC OXIDE	XN000401B	99.4 PPM

Analytical Results

1st Component NITRIC OXIDE

1st Analysis Date:	11/28/2005		
R 4.97	S 2.37	Z 0.00	Conc 47.4 PPM
S 2.37	Z 0.00	R 4.97	Conc 47.4 PPM
Z 0.00	R 4.97	S 2.37	Conc 47.4 PPM
			AVG: 47.4 PPM
2nd Analysis Date:	12/05/2005		
R 4.97	S 2.37	Z 0.0	Conc 47.4 PPM
S 2.37	Z 0.0	R 4.97	Conc 47.4 PPM
Z 0.0	R 4.97	S 2.37	Conc 47.4 PPM
			AVG: 47.4 PPM

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FIELD DATA PRINTOUTS

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Consol Energy
CleanAir Project No. 10192
Dresden, New York
BH Outlet, AH Outlet

March 29, 2007

Start Time 9:06
Stop Time 9:43

CALIBRATION BIAS 00

	Channel 2 SO2 AH Outlet ppmdv	Channel 4 O2 AH Outlet %dv	Channel 5 CO2 AH Outlet %dv	Channel 7 SO2 BH Outlet ppmdv	Channel 8 O2 BH Outlet %dv	Channel 9 CO2 BH Outlet %dv
System Response to Calibration Gasses (C_S)						
C_{of} Zero gas	19.829	-0.021	0.178	1.423	0.013	0.280
C_{uf} Upscale gas	2432.641	6.006	13.997	45.648	6.049	13.991
Analyzer Calibration Error Reponses (C_{Dir})						
C_{oce} Zero gas	3.452	-0.010	0.148	-0.056	0.002	0.003
C_{mce} Upscale gas	2482.035	6.061	14.059	48.630	6.050	13.966
Actual Upscale Gas Value (C_{MA})						
C_{ma} Upscale gas	2479.000	6.040	13.980	49.350	6.040	13.980
Calibration Span Value (CS)	2479.000	14.100	13.980	121.600	14.100	13.980
System Bias as Percent of Calibration Span Value (SB) (5%)						
Zero gas	0.7%	-0.1%	0.2%	1.2%	0.1%	2.0%
Upscale gas	-2.0%	-0.4%	-0.4%	-2.5%	0.0%	0.2%
System Bias Status						
Zero gas	OK	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK	OK
Previous System Response to Calibration Gases (C_S)						
C_{oi} Zero gas	N/A	N/A	N/A	N/A	N/A	N/A
C_{ui} Upscale gas	N/A	N/A	N/A	N/A	N/A	N/A
Drift Assessment as Percent of Calibration Span Value (D) (3%)						
Zero gas	N/A	N/A	N/A	N/A	N/A	N/A
Upscale gas	N/A	N/A	N/A	N/A	N/A	N/A
Drift Assessment Status						
Zero gas	N/A	N/A	N/A	N/A	N/A	N/A
Upscale gas	N/A	N/A	N/A	N/A	N/A	N/A

061407 143432

09:06:57	1330.012	8.243	11.180	48.840	0.013	0.234
09:07:12	725.568	10.421	8.557	48.840	0.017	0.260
09:07:27	224.664	6.309	13.388	48.840	0.015	0.281
09:07:42	102.662	6.020	13.939	48.840	0.016	0.299
09:07:57	64.176	6.004	13.982	48.840	0.018	0.311
09:08:12	46.154	6.008	13.999	48.840	0.023	0.325
09:08:27	35.751	6.006	14.010	48.840	0.022	0.336
09:08:42	29.206	6.004	13.998	48.850	0.019	0.344
09:08:57	24.762	6.007	14.012	48.879	0.026	0.351
09:09:12	21.929	6.010	14.019	48.889	0.029	0.359
09:09:27	19.927	5.999	14.023	48.856	0.031	0.366
09:09:42	17.631	6.001	14.029	48.889	0.032	0.369
09:09:57	96.899	5.129	12.948	48.886	0.032	0.369
09:10:12	1457.436	0.515	2.165	48.886	0.036	0.370
09:10:27	2197.069	-0.008	0.374	48.889	0.041	0.372
09:10:42	2336.752	-0.026	0.267	48.889	0.037	0.373
09:10:57	2381.538	-0.030	0.235	48.889	0.041	0.373
09:11:12	2401.612	-0.035	0.217	48.889	0.042	0.370
09:11:27	2412.210	-0.035	0.204	48.889	0.047	0.369

Prepared by Clean Air Engineering Proprietary Software
SS CEM Version 06-2004a

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QA/QC JM
Date 6/14/07

Consol Energy
CleanAir Project No. 10192
Dresden, New York
BH Outlet, AH Outlet

March 29, 2007

Start Time 9:06
Stop Time 9:43

CALIBRATION BIAS 00

	Channel 2 SO2	Channel 4 O2	Channel 5 CO2	Channel 7 SO2	Channel 8 O2	Channel 9 CO2
	AH Outlet ppmdv	AH Outlet %dv	AH Outlet %dv	BH Outlet ppmdv	BH Outlet %dv	BH Outlet %dv
09:11:42	2422.418	-0.037	0.194	48.892	0.052	0.369
09:11:57	2425.299	-0.038	0.188	48.909	0.053	0.368
09:12:12	2426.667	-0.039	0.182	48.931	0.055	0.369
09:12:27	2430.183	-0.039	0.178	48.964	0.057	0.368
09:12:42	2441.074	-0.039	0.174	48.967	0.057	0.364
09:35:03	1403.468	7.234	11.643	93.428	7.268	11.705
09:35:18	1404.884	7.253	11.639	80.248	12.165	7.800
09:35:33	1402.637	7.192	11.683	48.104	6.954	12.344
09:35:48	1409.035	7.177	11.707	24.840	6.100	13.877
09:36:03	1402.637	7.308	11.600	14.291	6.062	13.973
09:36:18	1393.016	7.357	11.558	9.296	6.057	13.996
09:36:33	1394.432	7.270	11.607	6.535	6.055	14.004
09:36:48	1403.468	7.245	11.674	4.884	6.053	14.007
09:37:03	1393.065	7.264	11.617	3.897	6.053	14.014
09:37:18	1400.147	7.206	11.684	3.184	6.054	14.017
09:37:33	1406.300	7.145	11.718	2.716	6.053	14.020
09:37:48	1413.236	7.182	11.722	2.354	6.053	14.024
09:38:03	1403.175	7.332	11.573	2.067	6.050	14.027
09:38:18	1404.054	7.241	11.646	1.872	6.049	14.028
09:38:33	1405.910	7.264	11.634	1.693	6.048	14.029
09:38:48	1407.863	7.243	11.650	1.563	6.051	14.031
09:39:03	1402.979	7.396	11.516	1.455	6.049	14.038
09:39:18	1397.265	7.317	11.571	1.250	4.972	12.747
09:39:33	1395.458	7.282	11.589	3.487	0.539	2.009
09:39:48	1402.393	7.183	11.677	19.878	0.052	0.193
09:40:03	1411.478	7.133	11.717	30.974	0.028	0.043
09:40:18	1414.799	7.076	11.768	36.317	0.026	0.004
09:40:33	1408.547	7.246	11.646	39.108	0.022	-0.018
09:40:48	1401.319	7.211	11.664	40.759	0.019	-0.036
09:41:03	1396.532	7.323	11.579	41.833	0.019	-0.047
09:41:18	1389.109	7.330	11.570	42.335	0.018	-0.057
09:41:33	1388.913	7.277	11.612	43.054	0.015	-0.063
09:41:48	1396.777	7.208	11.647	43.858	0.016	-0.070
09:42:03	1403.272	7.314	11.606	44.444	0.014	-0.076
09:42:18	1396.581	7.299	11.593	44.848	0.014	-0.081
09:42:33	1404.347	7.309	11.590	45.180	0.014	-0.085
09:42:48	1401.612	7.227	11.654	45.372	0.013	-0.087
09:43:03	1402.247	7.272	11.615	45.509	0.014	-0.089
09:43:18	1408.645	7.170	11.695	45.623	0.014	-0.094
09:43:33	1404.738	7.297	11.615	45.812	0.013	-0.094
09:43:48	1397.021	7.294	11.615	54.268	2.266	2.149

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Date 6/14/07

Consol Energy
CleanAir Project No. 10192
Dresden, New York
BH Outlet, AH Outlet

March 29, 2007

Start Time 9:59
Stop time 11:00

REFERENCE METHOD RUN 1

		Channel 2 SO2 AH Outlet ppmdv	Channel 4 O2 AH Outlet %dv	Channel 5 CO2 AH Outlet %dv	Channel 7 SO2 BH Outlet ppmdv	Channel 8 O2 BH Outlet %dv	Channel 9 CO2 BH Outlet %dv
Calibration Checks							
C_{oi}	Initial zero	19.829	-0.021	0.178	1.423	0.013	0.280
C_{ui}	Initial upscale	2432.641	6.006	13.997	45.648	6.049	13.991
C_{of}	Final zero	13.789	-0.017	0.154	2.554	0.009	-0.001
C_{uf}	Final upscale	2411.901	6.124	14.012	47.500	6.071	14.004
C_{ma}	Actual gas value	2479.000	6.040	13.980	49.350	6.040	13.980
Analyzer Averages (concentrations)							
C_{Avg}	Average conc.	1384.546	7.331	11.587	73.817	7.223	11.530
C_{Gas}	**Bias adjusted**	**1409.550**	**7.297**	**11.538**	**79.504**	**7.201**	**11.491**

Clock Time (at end of sample period) 061407 143432						
10:00	1391.429	7.367	11.624	66.563	7.106	11.401
10:01	1377.215	7.422	11.564	66.471	7.108	11.471
10:02	1398.721	7.309	11.659	69.493	7.111	11.440
10:03	1402.620	7.263	11.683	73.522	7.228	11.406
10:04	1380.741	7.432	11.547	78.525	7.125	11.472
10:05	1379.182	7.422	11.557	76.575	7.134	11.437
10:06	1387.856	7.426	11.564	83.615	7.142	11.403
10:07	1390.873	7.353	11.613	80.667	7.244	11.475
10:08	1390.811	7.455	11.550	88.696	7.149	11.451
10:09	1383.920	7.439	11.551	75.716	7.154	11.434
10:10	1385.460	7.393	11.581	78.717	7.160	11.420
10:11	1375.788	7.424	11.555	79.718	7.165	11.404
10:12	1380.505	7.376	11.601	72.760	7.273	11.486
10:13	1379.351	7.379	11.595	58.791	7.177	11.470
10:14	1378.950	7.356	11.603	66.823	7.185	11.454
10:15	1389.145	7.320	11.644	66.820	7.240	11.439
10:16	1381.995	7.357	11.606	56.824	7.249	11.424
10:17	1392.550	7.323	11.635	75.852	7.371	11.407
10:18	1387.186	7.302	11.651	81.904	7.238	11.583
10:19	1380.305	7.443	11.532	84.917	7.229	11.560
10:20	1389.632	7.320	11.638	80.953	7.222	11.647
10:21	1384.920	7.361	11.604	77.992	7.224	11.530
10:22	1382.989	7.310	11.552	81.052	7.183	11.598
10:23	1384.261	7.390	11.580	78.070	7.227	11.591
10:24	1383.113	7.297	11.629	67.110	7.245	11.569
10:25	1387.360	7.266	11.471	80.202	7.249	11.513
10:26	1379.611	7.366	11.595	84.211	7.248	11.408
10:27	1393.407	7.192	11.624	67.269	7.247	11.441
10:28	1395.238	7.253	11.700	67.246	7.246	11.472
10:29	1380.147	7.422	11.554	67.251	7.247	11.476
10:30	1381.319	7.263	11.576	73.443	7.241	11.414
10:31	1382.308	7.227	11.429	56.036	7.288	11.443
10:32	1387.074	7.327	11.626	59.403	7.254	11.585

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QA/QC JM
Date 6/19/07

Consol Energy
CleanAir Project No. 10192
Dresden, New York
BH Outlet, AH Outlet

March 29, 2007

Start Time 9:59
Stop time 11:00

REFERENCE METHOD RUN 1

	Channel 2 SO2	Channel 4 O2	Channel 5 CO2	Channel 7 SO2	Channel 8 O2	Channel 9 CO2
	AH Outlet ppmdv	AH Outlet %dv	AH Outlet %dv	BH Outlet ppmdv	BH Outlet %dv	BH Outlet %dv
10:33	1388.787	7.305	11.643	58.366	7.246	11.465
10:34	1390.598	7.336	11.630	58.382	7.128	11.441
10:35	1387.900	7.212	11.503	62.291	7.241	11.430
10:36	1381.966	7.351	11.576	68.523	7.149	11.495
10:37	1377.717	7.428	11.547	73.514	7.294	11.540
10:38	1380.195	7.406	11.562	73.552	7.224	11.536
10:39	1388.010	7.269	11.667	69.655	7.201	11.571
10:40	1392.002	7.141	11.622	73.757	7.234	11.592
10:41	1381.795	7.407	11.567	75.923	7.273	11.630
10:42	1380.147	7.348	11.611	77.497	7.091	11.683
10:43	1390.794	7.259	11.692	82.058	7.180	11.644
10:44	1384.392	7.349	11.614	82.354	7.208	11.563
10:45	1380.916	7.346	11.613	78.069	7.215	11.671
10:46	1389.930	7.056	11.592	34.178	7.281	11.769
10:47	1371.441	7.327	11.462	81.915	7.252	11.555
10:48	1389.292	7.320	11.650	86.468	7.266	11.661
10:49	1390.708	7.302	11.653	89.452	7.284	11.655
10:50	1384.032	7.340	11.616	74.138	7.321	11.625
10:51	1375.141	7.384	11.571	96.678	7.267	11.593
10:52	1384.777	7.361	11.610	92.073	7.295	11.660
10:53	1372.308	7.459	11.530	84.916	7.273	11.590
10:54	1378.928	7.303	11.644	76.514	7.284	11.564
10:55	1386.602	7.297	11.639	64.884	7.256	11.673
10:56	1375.299	7.409	11.555	91.870	7.285	11.600
10:57	1387.881	7.303	11.644	77.200	7.269	11.620
10:58	1387.509	7.208	11.560	83.634	7.277	11.671
10:59	1381.758	6.949	11.179	58.589	7.186	11.550
11:00	1370.473	7.432	11.553	53.180	7.237	11.568

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Date 6/14/07

Consol Energy
CleanAir Project No. 10192
Dresden, New York
BH Outlet, AH Outlet

March 29, 2007

Start Time 11:10
Stop Time 11:22

CALIBRATION BIAS 01

	Channel 2 SO2	Channel 4 O2	Channel 5 CO2	Channel 7 SO2	Channel 8 O2	Channel 9 CO2
	AH Outlet ppmdv	AH Outlet %dv	AH Outlet %dv	BH Outlet ppmdv	BH Outlet %dv	BH Outlet %dv
System Response to Calibration Gasses (C_S)						
C_{of} Zero gas	13.789	-0.017	0.154	2.554	0.009	-0.001
C_{uf} Upscale gas	2411.901	6.124	14.012	47.500	6.071	14.004
Analyzer Calibration Error Reponses (C_{Dir})						
C_{oce} Zero gas	3.452	-0.010	0.148	-0.056	0.002	0.003
C_{mce} Upscale gas	2482.035	6.061	14.059	48.630	6.050	13.966
Actual Upscale Gas Value (C_{MA})						
C_{ma} Upscale gas	2479.000	6.040	13.980	49.350	6.040	13.980
Calibration Span Value (CS)						
	2479.000	14.100	13.980	121.600	14.100	13.980
System Bias as Percent of Calibration Span Value (SB) (5%)						
Zero gas	0.4%	-0.1%	0.0%	2.1%	0.0%	0.0%
Upscale gas	-2.8%	0.4%	-0.3%	-0.9%	0.2%	0.3%
System Bias Status						
Zero gas	OK	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK	OK
Previous System Response to Calibration Gases (C_S)						
C_{of} Zero gas	19.829	-0.021	0.178	1.423	0.013	0.280
C_{uf} Upscale gas	2432.641	6.006	13.997	45.648	6.049	13.991
Drift Assessment as Percent of Calibration Span Value (D) (3%)						
Zero gas	-0.2%	0.0%	-0.2%	0.9%	0.0%	-2.0%
Upscale gas	-0.8%	0.8%	0.1%	1.5%	0.2%	0.1%
Drift Assessment Status						
Zero gas	OK	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK	OK

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11:10:53	1316.923	9.283	10.790	42.188	8.295	11.460
11:11:08	630.965	12.004	7.344	38.235	11.212	8.182
11:11:23	195.897	6.328	13.493	23.043	6.359	13.514
11:11:38	90.501	6.031	13.983	14.323	6.101	13.974
11:11:53	57.240	6.012	14.021	10.123	6.087	14.013
11:12:08	42.002	6.007	14.032	7.645	6.079	14.026
11:12:23	33.602	6.005	14.040	6.128	6.078	14.034
11:12:38	28.425	6.000	14.044	5.105	6.076	14.042
11:12:53	25.055	5.994	14.043	4.389	6.072	14.047
11:13:08	21.831	5.993	14.045	3.881	6.072	14.050
11:13:23	20.318	5.986	14.045	3.533	6.071	14.054
11:13:38	19.585	5.979	14.037	3.259	6.071	14.054
11:13:53	18.462	5.977	14.031	3.064	6.073	14.054
11:14:08	16.606	5.978	14.039	2.933	6.070	14.054
11:14:23	15.873	5.981	14.042	2.787	6.074	14.056
11:14:38	14.896	5.982	14.051	2.706	6.078	14.056
11:14:53	13.919	5.987	14.052	2.631	6.080	14.057
11:15:08	13.577	5.945	13.770	2.354	6.004	13.996
11:15:23	13.870	5.783	13.797	2.677	6.058	14.066

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Date 6/14/07

Consol Energy
CleanAir Project No. 10192
Dresden, New York
BH Outlet, AH Outlet

March 29, 2007

Start Time 11:10
Stop Time 11:22

CALIBRATION BIAS 01

	Channel 2 SO2 AH Outlet ppmdv	Channel 4 O2 AH Outlet %dv	Channel 5 CO2 AH Outlet %dv	Channel 7 SO2 BH Outlet ppmdv	Channel 8 O2 BH Outlet %dv	Channel 9 CO2 BH Outlet %dv
11:15:38	75.995	5.453	13.180	2.497	6.698	13.258
11:15:53	1329.280	0.689	2.596	13.183	4.069	9.421
11:16:08	2145.446	0.001	0.409	23.010	0.232	0.854
11:16:23	2299.292	-0.024	0.282	33.472	0.030	0.107
11:16:38	2347.008	-0.029	0.247	38.128	0.016	0.024
11:16:53	2363.907	-0.031	0.227	40.573	0.015	-0.005
11:17:08	2375.385	-0.032	0.214	42.028	0.011	-0.023
11:17:23	2381.099	-0.036	0.202	43.116	0.017	-0.039
11:17:38	2384.664	-0.037	0.195	43.910	0.025	-0.051
11:17:53	2391.600	-0.037	0.191	44.523	0.030	-0.059
11:18:08	2395.653	-0.037	0.187	44.975	0.032	-0.065
11:18:23	2397.411	-0.037	0.181	45.395	0.028	-0.070
11:18:38	2403.419	-0.038	0.177	45.740	0.025	-0.075
11:18:53	2404.493	-0.039	0.174	46.027	0.019	-0.082
11:19:08	2403.419	-0.041	0.171	46.252	0.015	-0.083
11:19:23	2403.370	-0.037	0.168	46.411	0.017	-0.086
11:19:38	2402.930	-0.040	0.165	46.567	0.012	-0.091
11:19:53	2405.372	-0.041	0.165	46.694	0.010	-0.093
11:20:08	2404.542	-0.042	0.163	46.831	0.010	-0.095
11:20:23	2406.349	-0.041	0.160	46.912	0.010	-0.096
11:20:38	2406.984	-0.043	0.159	47.010	0.010	-0.098
11:20:53	2407.619	-0.041	0.159	47.134	0.022	-0.099
11:21:08	2410.598	-0.041	0.158	47.231	0.019	-0.104
11:21:23	2410.012	-0.042	0.156	47.297	0.015	-0.107
11:21:38	2408.449	-0.040	0.153	47.375	0.012	-0.106
11:21:53	2406.789	-0.038	0.154	47.375	0.012	-0.107
11:22:08	2401.612	-0.041	0.153	47.424	0.006	-0.108
11:22:23	2405.323	-0.042	0.154	47.476	0.008	-0.111
11:22:38	2428.767	-0.040	0.155	47.599	0.012	-0.112
11:22:53	2319.023	3.659	4.580	75.477	5.393	5.709

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Consol Energy
CleanAir Project No. 10192
Dresden, New York
BH Outlet, AH Outlet

March 29, 2007
Start Time 12:16
Stop time 13:17

REFERENCE METHOD RUN 2

		Channel 2 SO2 AH Outlet ppmdv	Channel 4 O2 AH Outlet %dv	Channel 5 CO2 AH Outlet %dv	Channel 7 SO2 BH Outlet ppmdv	Channel 8 O2 BH Outlet %dv	Channel 9 CO2 BH Outlet %dv
Calibration Checks							
C_{oi}	Initial zero	13.789	-0.017	0.154	2.554	0.009	-0.001
C_{ui}	Initial upscale	2411.901	6.124	14.012	47.500	6.071	14.004
C_{of}	Final zero	11.005	0.028	0.146	2.847	0.000	-0.002
C_{uf}	Final upscale	2389.955	5.990	13.997	47.711	6.036	13.987
C_{ma}	Actual gas value	2479.000	6.040	13.980	49.350	6.040	13.980
Analyzer Averages (concentrations)							
C_{Avg}	Average conc.	1359.480	7.242	11.656	66.122	7.180	11.724
C_{Gas}	**Bias adjusted**	**1398.106**	**7.223**	**11.610**	**69.699**	**7.164**	**11.711**

Clock Time (at end of sample period)

061407 143432

12:17	1364.664	7.254	11.675	55.117	7.121	11.779
12:18	1361.966	7.292	11.648	72.509	7.142	11.757
12:19	1373.822	7.220	11.697	64.044	7.084	11.808
12:20	1364.005	7.268	11.651	61.744	7.091	11.811
12:21	1353.663	7.337	11.591	62.497	7.201	11.710
12:22	1367.155	7.219	11.692	59.941	7.138	11.755
12:23	1369.695	7.204	11.705	53.649	7.088	11.803
12:24	1357.607	7.319	11.606	53.478	7.182	11.733
12:25	1358.327	7.297	11.625	49.334	7.193	11.702
12:26	1364.188	7.269	11.646	45.573	7.173	11.724
12:27	1370.610	7.188	11.707	57.184	7.093	11.797
12:28	1364.237	7.244	11.662	59.284	7.139	11.760
12:29	1361.685	7.256	11.642	56.007	7.167	11.730
12:30	1360.965	7.224	11.668	56.487	7.186	11.710
12:31	1397.778	7.096	11.795	45.052	7.103	11.796
12:32	1374.896	7.207	11.698	57.928	7.226	11.673
12:33	1376.606	7.176	11.717	66.098	7.229	11.666
12:34	1381.062	7.148	11.735	64.527	7.208	11.686
12:35	1367.644	7.266	11.639	51.045	7.184	11.715
12:36	1355.568	7.310	11.600	56.625	7.207	11.700
12:37	1340.012	7.397	11.519	71.093	7.270	11.644
12:38	1352.808	7.296	11.601	58.999	7.354	11.658
12:39	1363.761	7.184	11.693	67.587	7.210	11.692
12:40	1357.631	7.249	11.648	65.478	7.153	11.767
12:41	1354.908	7.256	11.641	70.853	7.201	11.719
12:42	1357.412	7.216	11.676	73.363	7.202	11.705
12:43	1358.095	7.262	11.645	70.869	7.173	11.745
12:44	1353.041	7.289	11.621	70.698	7.233	11.684
12:45	1363.199	7.218	11.669	75.281	7.205	11.704
12:46	1368.315	7.210	11.685	61.355	7.141	11.768
12:47	1364.860	7.212	11.682	67.165	7.166	11.750
12:48	1360.513	7.257	11.644	50.511	7.147	11.768
12:49	1361.539	7.206	11.682	63.435	7.189	11.729
12:50	1355.226	7.267	11.634	64.125	7.185	11.726

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Date 6/14/07

Consol Energy
CleanAir Project No. 10192
Dresden, New York
BH Outlet, AH Outlet

March 29, 2007

Start Time 12:16
Stop time 13:17

REFERENCE METHOD RUN 2

	Channel 2 SO2 AH Outlet ppmdv	Channel 4 O2 AH Outlet %dv	Channel 5 CO2 AH Outlet %dv	Channel 7 SO2 BH Outlet ppmdv	Channel 8 O2 BH Outlet %dv	Channel 9 CO2 BH Outlet %dv
12:51	1355.739	7.297	11.613	67.337	7.188	11.725
12:52	1360.379	7.224	11.676	67.175	7.173	11.725
12:53	1361.673	7.194	11.694	62.870	7.131	11.778
12:54	1351.514	7.299	11.595	63.604	7.182	11.737
12:55	1351.966	7.235	11.645	79.328	7.168	11.751
12:56	1351.612	7.235	11.653	83.057	7.167	11.742
12:57	1357.436	7.180	11.704	68.204	7.150	11.750
12:58	1357.070	7.262	11.645	47.138	7.148	11.765
12:59	1348.010	7.309	11.592	69.689	7.242	11.674
13:00	1353.712	7.253	11.646	71.374	7.173	11.736
13:01	1357.741	7.215	11.680	64.848	7.150	11.760
13:02	1355.385	7.225	11.666	60.493	7.190	11.718
13:03	1350.550	7.295	11.620	67.607	7.178	11.737
13:04	1341.478	7.356	11.561	85.670	7.260	11.655
13:05	1351.148	7.243	11.654	79.551	7.204	11.696
13:06	1355.556	7.221	11.670	72.598	7.156	11.755
13:07	1353.443	7.210	11.667	71.383	7.190	11.721
13:08	1344.957	7.276	11.602	71.493	7.243	11.659
13:09	1342.003	7.331	11.565	72.107	7.229	11.683
13:10	1349.255	7.221	11.655	89.273	7.222	11.675
13:11	1350.391	7.253	11.639	73.191	7.170	11.708
13:12	1354.591	7.233	11.652	61.389	7.141	11.736
13:13	1338.999	7.318	11.583	84.348	7.266	11.611
13:14	1341.258	7.295	11.603	77.016	7.237	11.626
13:15	1351.990	7.225	11.652	85.978	7.198	11.657
13:16	1390.806	6.985	11.863	82.170	7.111	11.737
13:17	1392.161	7.067	11.806	85.589	7.104	11.764

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Date 6/14/07

Consol Energy
CleanAir Project No. 10192
Dresden, New York
BH Outlet, AH Outlet

March 29, 2007
Start Time 13:18
Stop Time 13:34

CALIBRATION BIAS 02

	Channel 2 SO2 AH Outlet ppmdv	Channel 4 O2 AH Outlet %dv	Channel 5 CO2 AH Outlet %dv	Channel 7 SO2 BH Outlet ppmdv	Channel 8 O2 BH Outlet %dv	Channel 9 CO2 BH Outlet %dv
System Response to Calibration Gasses (C_S)						
C_{of} Zero gas	11.005	0.028	0.146	2.847	0.000	-0.002
C_{uf} Upscale gas	2389.955	5.990	13.997	47.711	6.036	13.987
Analyzer Calibration Error Reponses (C_{Dir})						
C_{oce} Zero gas	3.452	-0.010	0.148	-0.056	0.002	0.003
C_{mce} Upscale gas	2482.035	6.061	14.059	48.630	6.050	13.966
Actual Upscale Gas Value (C_{MA})						
C_{ma} Upscale gas	2479.000	6.040	13.980	49.350	6.040	13.980
Calibration Span Value (CS)	2479.000	14.100	13.980	121.600	14.100	13.980
System Bias as Percent of Calibration Span Value (SB) (5%)						
Zero gas	0.3%	0.3%	0.0%	2.4%	0.0%	0.0%
Upscale gas	-3.7%	-0.5%	-0.4%	-0.8%	-0.1%	0.2%
System Bias Status						
Zero gas	OK	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK	OK
Previous System Response to Calibration Gases (C_S)						
C_{of} Zero gas	13.789	-0.017	0.154	2.554	0.009	-0.001
C_{uf} Upscale gas	2411.901	6.124	14.012	47.500	6.071	14.004
Drift Assessment as Percent of Calibration Span Value (D) (3%)						
Zero gas	-0.1%	0.3%	-0.1%	0.2%	-0.1%	0.0%
Upscale gas	-0.9%	-1.0%	-0.1%	0.2%	-0.2%	-0.1%
Drift Assessment Status						
Zero gas	OK	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK	OK

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13:18:30	1257.192	10.274	10.061	95.463	9.337	10.387
13:18:45	572.454	10.707	8.329	79.375	9.902	8.389
13:19:00	195.409	6.196	13.617	48.537	6.179	13.590
13:19:15	97.729	6.001	13.951	30.375	6.023	13.920
13:19:30	62.173	5.986	13.986	20.653	6.012	13.958
13:19:45	45.617	5.982	13.997	14.795	6.007	13.973
13:20:00	35.018	5.981	14.008	11.168	6.005	13.981
13:20:15	28.913	5.982	14.013	8.863	6.002	13.989
13:20:30	24.420	5.979	14.017	7.274	6.003	13.992
13:20:45	22.173	5.975	14.021	6.131	6.016	13.994
13:21:00	19.927	5.969	14.020	5.369	6.039	13.998
13:21:15	18.608	5.969	14.020	4.806	6.191	14.000
13:21:30	16.948	5.966	14.019	4.418	6.098	14.000
13:21:45	16.459	5.969	14.021	4.155	6.056	13.998
13:22:00	15.336	5.970	14.022	3.904	6.039	13.998
13:22:15	14.652	5.967	14.025	3.686	6.032	14.001
13:22:30	14.163	5.970	14.025	3.549	6.038	14.003
13:22:45	13.724	5.970	14.027	3.419	6.056	14.004
13:23:00	12.503	5.971	14.030	3.328	6.266	14.002

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Consol Energy
CleanAir Project No. 10192
Dresden, New York
BH Outlet, AH Outlet

March 29, 2007

Start Time 13:18
Stop Time 13:34

CALIBRATION BIAS 02

	Channel 2 SO2	Channel 4 O2	Channel 5 CO2	Channel 7 SO2	Channel 8 O2	Channel 9 CO2
	AH Outlet ppmdv	AH Outlet %dv	AH Outlet %dv	BH Outlet ppmdv	BH Outlet %dv	BH Outlet %dv
13:23:15	12.308	5.976	14.030	3.223	6.416	14.003
13:23:30	11.917	5.976	14.035	3.159	6.020	14.005
13:23:45	11.966	5.974	14.034	3.110	6.009	14.005
13:24:00	11.184	5.975	14.033	3.051	6.006	14.007
13:24:15	10.842	5.976	14.039	2.986	6.005	14.008
13:24:30	10.989	5.979	14.041	2.930	6.003	14.009
13:24:45	271.941	3.319	9.172	2.624	2.437	7.480
13:25:00	1552.088	0.133	0.883	9.846	0.102	0.520
13:25:15	2093.578	-0.019	0.332	24.404	0.012	0.091
13:25:30	2228.767	-0.030	0.269	32.869	0.004	0.023
13:25:45	2300.269	-0.034	0.240	37.682	0.002	-0.006
13:26:00	2326.496	-0.037	0.224	40.668	0.000	-0.024
13:26:15	2342.076	-0.037	0.212	42.471	0.000	-0.041
13:26:30	2351.062	-0.036	0.201	43.604	0.000	-0.050
13:26:45	2354.969	-0.037	0.195	44.405	0.000	-0.058
13:27:00	2358.730	-0.041	0.190	45.017	-0.001	-0.064
13:27:15	2364.005	-0.039	0.185	45.438	0.000	-0.071
13:27:30	2370.891	-0.042	0.182	45.766	-0.002	-0.077
13:27:45	2366.593	-0.040	0.179	46.001	0.000	-0.081
13:28:00	2367.619	-0.041	0.176	46.304	0.000	-0.086
13:28:15	2370.208	-0.040	0.171	46.480	0.000	-0.089
13:28:30	2375.922	-0.039	0.169	46.606	0.000	-0.091
13:28:45	2371.477	-0.040	0.167	46.707	-0.001	-0.095
13:29:00	2371.477	-0.040	0.165	46.786	0.000	-0.098
13:29:15	2371.624	-0.042	0.164	46.902	0.000	-0.101
13:29:30	2377.729	-0.041	0.161	46.997	-0.001	-0.101
13:29:45	2377.143	-0.045	0.160	47.105	-0.001	-0.104
13:30:00	2373.968	-0.043	0.159	47.153	0.000	-0.106
13:30:15	2377.778	-0.043	0.158	47.179	-0.001	-0.107
13:30:30	2374.017	-0.044	0.156	47.179	-0.002	-0.107
13:30:45	2371.917	-0.047	0.154	47.225	-0.005	-0.107
13:31:00	2371.282	-0.043	0.153	47.310	-0.002	-0.111
13:31:15	2375.385	-0.045	0.153	47.401	-0.002	-0.112
13:31:30	2376.215	-0.043	0.151	47.424	0.000	-0.113
13:31:45	2374.896	-0.041	0.151	47.424	-0.001	-0.113
13:32:00	2374.750	-0.043	0.148	47.434	-0.003	-0.113
13:32:15	2375.824	-0.043	0.149	47.483	-0.004	-0.117
13:32:30	2374.554	-0.042	0.149	47.521	-0.004	-0.118
13:32:45	2376.215	-0.041	0.147	47.473	-0.005	-0.119
13:33:00	2379.390	-0.042	0.147	47.473	-0.008	-0.119
13:33:15	2382.076	-0.043	0.146	47.528	-0.005	-0.118
13:33:30	2377.778	-0.046	0.146	47.570	-0.008	-0.120
13:33:45	2376.215	-0.040	0.147	47.612	-0.004	-0.120
13:34:00	2379.438	-0.043	0.146	47.730	-0.008	-0.119
13:34:15	2414.212	-0.006	0.151	47.792	0.142	-0.106
13:34:30	2165.812	4.877	5.991	70.838	5.452	7.428

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Consol Energy
CleanAir Project No. 10192
Dresden, New York
BH Outlet, AH Outlet

March 29, 2007
Start Time 15:13
Stop time 16:13

REFERENCE METHOD RUN 3

		Channel 2 SO2 AH Outlet ppmdv	Channel 4 O2 AH Outlet %dv	Channel 5 CO2 AH Outlet %dv	Channel 7 SO2 BH Outlet ppmdv	Channel 8 O2 BH Outlet %dv	Channel 9 CO2 BH Outlet %dv
Calibration Checks							
C_{oi}	Initial zero	11.005	0.028	0.146	2.847	0.000	-0.002
C_{ui}	Initial upscale	2389.955	5.990	13.997	47.711	6.036	13.987
C_{of}	Final zero	12.177	-0.019	0.150	3.055	-0.006	-0.012
C_{uf}	Final upscale	2359.526	6.032	14.042	47.506	6.041	13.981
C_{ma}	Actual gas value	2479.000	6.040	13.980	49.350	6.040	13.980
Analyzer Averages (concentrations)							
C_{Avg}	Average conc.	1328.389	7.410	11.582	92.367	7.512	11.509
C_{Gas}	**Bias adjusted**	**1381.352**	**7.447**	**11.523**	**98.811**	**7.513**	**11.507**

Clock Time (at end of sample period)

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15:14	1341.746	7.394	11.607	85.943	7.699	11.548
15:15	1329.561	7.383	11.544	101.783	7.758	11.488
15:16	1335.543	7.301	11.619	99.989	7.729	11.492
15:17	1338.706	7.300	11.633	95.828	7.517	11.577
15:18	1336.288	7.289	11.643	86.194	7.215	11.569
15:19	1334.982	7.311	11.625	72.071	7.205	11.589
15:20	1325.031	7.409	11.543	71.788	7.280	11.523
15:21	1325.324	7.384	11.565	71.992	7.422	11.454
15:22	1344.359	7.265	11.681	70.107	7.435	11.555
15:23	1338.706	7.340	11.674	96.813	7.329	11.480
15:24	1352.051	7.387	12.114	92.204	7.230	11.513
15:25	1349.109	7.337	11.762	90.066	7.275	11.534
15:26	1347.265	7.324	11.888	98.562	7.323	11.490
15:27	1342.943	7.276	12.118	103.508	7.294	11.523
15:28	1336.142	7.344	11.747	107.680	7.346	11.471
15:29	1334.042	7.368	11.705	91.079	7.331	11.455
15:30	1338.376	7.598	11.671	100.676	7.881	11.553
15:31	1333.968	7.392	11.764	86.242	7.790	11.505
15:32	1322.283	7.379	11.629	84.263	7.785	11.494
15:33	1316.178	7.454	11.534	113.180	7.871	11.420
15:34	1325.702	7.401	11.566	105.572	7.756	11.513
15:35	1327.558	7.393	11.574	89.464	7.757	11.523
15:36	1325.714	7.418	11.555	83.420	7.763	11.517
15:37	1323.346	7.463	11.510	96.301	7.759	11.492
15:38	1327.631	7.390	11.556	97.468	7.750	11.502
15:39	1340.452	7.351	11.606	78.756	7.494	11.540
15:40	1340.086	7.386	11.575	78.554	7.480	11.490
15:41	1326.642	7.449	11.527	106.330	7.405	11.425
15:42	1339.084	7.341	11.612	103.406	7.336	11.447
15:43	1332.992	7.448	11.532	85.951	7.244	11.514
15:44	1328.230	7.441	11.529	93.355	7.194	11.584

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Consol Energy
CleanAir Project No. 10192
Dresden, New York
BH Outlet, AH Outlet

March 29, 2007
Start Time 15:13
Stop time 16:13

REFERENCE METHOD RUN 3

	Channel 2 SO2	Channel 4 O2	Channel 5 CO2	Channel 7 SO2	Channel 8 O2	Channel 9 CO2
	AH Outlet ppmdv	AH Outlet %dv	AH Outlet %dv	BH Outlet ppmdv	BH Outlet %dv	BH Outlet %dv
15:45	1319.475	7.460	11.510	106.243	7.320	11.449
15:46	1325.837	7.424	11.534	84.945	7.268	11.501
15:47	1342.332	7.250	11.670	96.186	7.202	11.549
15:48	1344.286	7.280	11.654	79.721	7.203	11.561
15:49	1345.458	7.296	11.646	72.390	7.187	11.581
15:50	1341.062	7.362	11.586	83.234	7.634	11.515
15:51	1327.094	7.505	11.459	75.178	7.523	11.407
15:52	1333.040	7.424	11.527	95.417	7.672	11.421
15:53	1328.926	7.337	11.288	100.889	7.554	11.466
15:54	1326.178	7.466	11.496	106.206	7.422	11.501
15:55	1324.811	7.423	11.542	91.772	7.375	11.544
15:56	1326.655	7.435	11.535	89.937	7.388	11.572
15:57	1315.727	7.536	11.448	83.850	7.504	11.514
15:58	1322.247	7.448	11.514	99.317	7.650	11.514
15:59	1315.836	7.449	11.509	91.258	7.737	11.520
16:00	1318.742	7.474	11.501	94.484	7.752	11.540
16:01	1316.471	7.460	11.508	101.659	7.497	11.510
16:02	1328.266	7.392	11.570	89.159	7.546	11.572
16:03	1317.460	7.581	11.420	111.626	7.637	11.522
16:04	1296.349	7.670	11.318	87.416	7.526	11.484
16:05	1311.074	7.487	11.472	99.113	7.566	11.458
16:06	1314.701	7.467	11.491	85.098	7.762	11.477
16:07	1312.466	7.498	11.471	90.090	7.864	11.469
16:08	1318.352	7.431	11.469	97.488	7.524	11.479
16:09	1313.126	7.517	11.459	105.937	7.609	11.456
16:10	1312.527	7.439	11.524	105.612	7.600	11.513
16:11	1311.514	7.449	11.522	94.792	7.782	11.545
16:12	1315.482	7.434	11.537	96.286	7.418	11.537
16:13	1317.802	7.461	11.517	88.195	7.352	11.570

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Date 6/14/07

Consol Energy
CleanAir Project No. 10192
Dresden, New York
BH Outlet, AH Outlet

March 29, 2007
Start Time 16:16
Stop Time 16:30

CALIBRATION BIAS 03

	Channel 2 SO2 AH Outlet ppmdv	Channel 4 O2 AH Outlet %dv	Channel 5 CO2 AH Outlet %dv	Channel 7 SO2 BH Outlet ppmdv	Channel 8 O2 BH Outlet %dv	Channel 9 CO2 BH Outlet %dv
System Response to Calibration Gasses (C_S)						
C_{of} Zero gas	12.177	-0.019	0.150	3.055	-0.006	-0.012
C_{uf} Upscale gas	2359.526	6.032	14.042	47.506	6.041	13.981
Analyzer Calibration Error Reponses (C_{Dir})						
C_{oce} Zero gas	3.452	-0.010	0.148	-0.056	0.002	0.003
C_{mce} Upscale gas	2482.035	6.061	14.059	48.630	6.050	13.966
Actual Upscale Gas Value (C_{MA})						
C_{ma} Upscale gas	2479.000	6.040	13.980	49.350	6.040	13.980
Calibration Span Value (CS)	2479.000	14.100	13.980	121.600	14.100	13.980
System Bias as Percent of Calibration Span Value (SB) (5%)						
Zero gas	0.4%	-0.1%	0.0%	2.6%	-0.1%	-0.1%
Upscale gas	-4.9%	-0.2%	-0.1%	-0.9%	-0.1%	0.1%
System Bias Status						
Zero gas	OK	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK	OK
Previous System Response to Calibration Gases (C_S)						
C_{oi} Zero gas	11.005	0.028	0.146	2.847	0.000	-0.002
C_{ui} Upscale gas	2389.955	5.990	13.997	47.711	6.036	13.987
Drift Assessment as Percent of Calibration Span Value (D) (3%)						
Zero gas	0.0%	-0.3%	0.0%	0.2%	0.0%	-0.1%
Upscale gas	-1.2%	0.3%	0.3%	-0.2%	0.0%	0.0%
Drift Assessment Status						
Zero gas	OK	OK	OK	OK	OK	OK
Upscale gas	OK	OK	OK	OK	OK	OK

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16:16:01	23.785	6.023	14.038	7.938	6.062	13.973
16:16:16	21.831	6.018	14.041	6.701	6.052	13.976
16:16:31	20.513	6.020	14.045	5.893	6.053	13.978
16:16:46	19.829	6.019	14.051	5.324	6.063	13.981
16:17:01	18.706	6.019	14.054	4.835	6.065	13.983
16:17:16	17.094	6.023	14.055	4.497	6.061	13.982
16:17:31	16.019	6.024	14.055	4.216	6.055	13.982
16:17:46	15.385	6.026	14.059	3.979	6.044	13.985
16:18:01	13.919	6.026	14.064	3.816	6.037	13.987
16:18:16	13.919	6.028	14.063	3.634	6.041	13.988
16:18:31	13.919	6.026	14.066	3.481	6.034	13.989
16:18:46	12.454	6.028	14.064	3.350	6.029	13.990
16:19:01	12.454	6.031	14.068	3.252	6.042	13.994
16:19:16	12.356	6.031	14.068	3.175	6.030	13.994
16:19:31	11.722	6.033	14.070	3.133	6.039	13.996
16:19:46	167.424	3.919	10.416	2.859	3.970	10.754
16:20:01	1375.971	0.208	1.119	4.005	0.238	1.068
16:20:16	2048.010	-0.009	0.350	14.659	0.011	0.145
16:20:31	2209.231	-0.022	0.275	25.680	0.000	0.044

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Consol Energy
CleanAir Project No. 10192
Dresden, New York
BH Outlet, AH Outlet

March 29, 2007

Start Time 16:16
Stop Time 16:30

CALIBRATION BIAS 03

	Channel 2 SO2	Channel 4 O2	Channel 5 CO2	Channel 7 SO2	Channel 8 O2	Channel 9 CO2
	AH Outlet ppmdv	AH Outlet %dv	AH Outlet %dv	BH Outlet ppmdv	BH Outlet %dv	BH Outlet %dv
16:20:46	2265.641	-0.025	0.247	32.847	-0.003	0.007
16:21:01	2288.596	-0.029	0.229	37.327	-0.003	-0.013
16:21:16	2304.762	-0.028	0.215	40.111	-0.005	-0.030
16:21:31	2310.965	-0.030	0.205	41.885	-0.011	-0.041
16:21:46	2321.123	-0.027	0.197	43.048	-0.010	-0.049
16:22:01	2323.370	-0.027	0.193	43.842	-0.011	-0.058
16:22:16	2326.838	-0.027	0.189	44.438	-0.010	-0.064
16:22:31	2330.842	-0.025	0.183	44.894	-0.011	-0.070
16:22:46	2334.603	-0.031	0.181	45.242	-0.014	-0.073
16:23:01	2335.141	-0.029	0.177	45.522	-0.013	-0.076
16:23:16	2336.166	-0.034	0.174	45.743	-0.014	-0.081
16:23:31	2332.943	-0.034	0.170	45.900	-0.016	-0.086
16:23:46	2334.017	-0.034	0.167	46.046	-0.015	-0.088
16:24:01	2340.513	-0.034	0.166	46.138	-0.013	-0.091
16:24:16	2340.317	-0.031	0.164	46.242	-0.013	-0.092
16:24:31	2355.507	-0.026	0.165	46.329	-0.012	-0.095
16:24:46	2349.109	-0.031	0.165	46.378	-0.014	-0.097
16:25:01	2343.394	-0.031	0.162	46.401	-0.014	-0.097
16:25:16	2346.862	-0.039	0.161	46.496	-0.014	-0.100
16:25:31	2342.125	-0.037	0.160	46.606	-0.013	-0.101
16:25:46	2340.610	-0.040	0.157	46.733	-0.015	-0.101
16:26:01	2342.320	-0.039	0.156	46.825	-0.016	-0.104
16:26:16	2341.783	-0.039	0.156	46.893	-0.017	-0.104
16:26:31	2343.590	-0.037	0.156	46.932	-0.015	-0.106
16:26:46	2343.785	-0.037	0.154	46.984	-0.016	-0.107
16:27:01	2344.078	-0.037	0.153	46.984	-0.014	-0.108
16:27:16	2343.834	-0.037	0.153	47.004	-0.016	-0.111
16:27:31	2344.957	-0.039	0.153	47.033	-0.015	-0.110
16:27:46	2347.644	-0.028	0.152	47.066	-0.012	-0.113
16:28:01	2346.667	-0.041	0.151	47.092	-0.014	-0.113
16:28:16	2335.824	-0.037	0.150	47.176	-0.013	-0.114
16:28:31	2339.048	-0.037	0.149	47.355	-0.012	-0.116
16:28:46	2347.399	-0.037	0.151	47.987	1.545	1.116
16:29:01	2354.041	-0.036	0.151	68.142	6.632	9.983
16:29:16	2358.974	-0.036	0.149	83.386	7.038	11.492
16:29:31	2358.265	-0.035	0.151	79.873	7.151	11.537
16:29:46	2357.093	-0.036	0.150	85.333	7.147	11.561
16:30:01	2357.018	-0.035	0.150	99.087	7.178	11.529
16:30:16	2347.839	-0.044	0.144	102.004	7.204	11.522
16:30:31	2339.292	-0.112	-0.110	90.273	7.072	11.514
16:30:46	2359.563	-6.703	-6.561	83.930	7.118	11.483
16:29:01	2360.041	-0.036	0.151	68.142	6.632	9.983
16:29:16	2358.974	-0.036	0.149	83.386	7.038	11.492
16:29:31	2357.265	-0.035	0.151	79.873	7.151	11.537
16:29:46	2356.093	-0.036	0.150	85.333	7.147	11.561
16:30:01	2355.018	-0.035	0.150	99.087	7.178	11.529
16:30:16	2347.839	-0.044	0.144	102.004	7.204	11.522
16:30:31	2339.292	-0.112	-0.110	90.273	7.072	11.514
16:30:46	2361.563	-6.703	-6.561	83.930	7.118	11.483

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SS:CEM Version 06-2004a

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QA/QC JM
Date 6/14/07

Clean Air Engineering Project #10192
Consol Energy
AES Dresden

Date: 3/28/2007
Start Time: 9:12
End Time: 9:35

Run # (Cycle #) 1 (1)

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.
1-1	9:12	79.9		-5.6	7.5		11.6		106.3	11.2
1-2	9:16	108.9		23.4	3.0		15.4		108.7	13.6
1-3	9:20	91.3	86.0	5.8	5.0	5.5	13.7	13.3	102.7	7.6
1-4	9:24	83.2		-2.3	4.4		14.2		90.3	-4.8
1-5	9:28	75.1		-10.4	4.8		13.9		83.7	-11.5
1-6	9:32	77.8		-7.7	8.6		10.7		112.9	17.7
2-1	9:13	86.9		1.4	5.9		12.9		103.7	8.5
2-2	9:17	90.6		5.1	3.0		15.4		90.8	-4.4
2-3	9:21	90.3	83.8	4.8	5.3	4.9	13.5	13.8	103.7	8.6
2-4	9:25	80.7		-4.8	3.9		14.7		84.9	-10.3
2-5	9:29	69.6		-15.9	4.5		14.1		76.1	-19.1
2-6	9:33	84.6		-0.9	6.7		12.2		106.9	11.8
3-1	9:14	98.5		13.0	4.0		14.5		104.5	9.3
3-2	9:18	90.3		4.8	2.9		15.5		89.7	-5.4
3-3	9:22	104.9	89.9	19.4	3.3	4.1	15.2	14.4	106.4	11.3
3-4	9:26	83.3		-2.2	3.7		14.8		86.8	-8.3
3-5	9:30	73.3		-12.2	4.6		14.1		80.4	-14.7
3-6	9:34	88.9		3.4	6.4		12.5		109.4	14.2
4-1	9:15	85.8		0.3	5.7		13.1		100.8	5.7
4-2	9:19	92.1		6.6	2.5		15.8		89.8	-5.4
4-3	9:23	98.0	82.3	12.5	3.3	4.4	15.2	14.2	99.4	4.3
4-4	9:27	79.5		-6.0	3.8		14.7		83.4	-11.8
4-5	9:31	66.3		-19.2	4.6		14.1		72.6	-22.6
4-6	9:35	72.3		-13.2	6.5		12.4		89.8	-5.4
Inlet Averages		85.5			4.7		13.9		95.2	

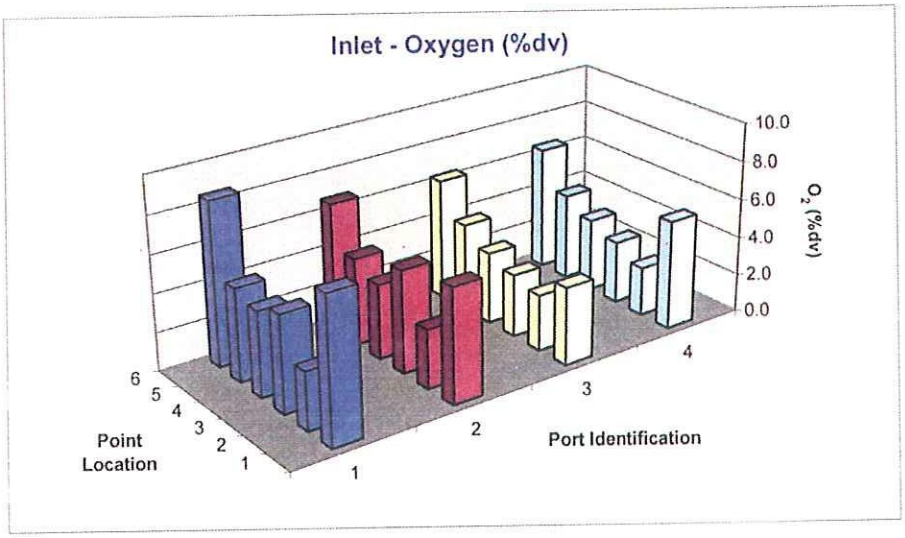
Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	Removal Efficiency	Removal Eff W/ O2 correction
1-1	9:12	68.8		21.5	4.8		14.0		76.3	22.9	13.9	28.3
1-2	9:16	78.7		31.4	5.6		13.3		92.3	38.9	27.7	15.1
1-3	9:20	56.5	61.5	9.2	5.3	5.8	13.5	13.1	64.9	11.5	38.1	36.8
1-4	9:24	64.7		17.4	4.7		14.0		71.5	18.2	22.2	20.8
1-5	9:28	50.8		3.5	6.4		12.6		62.8	9.4	32.4	25.0
1-6	9:32	49.4		2.1	8.0		11.1		68.8	15.4	36.5	39.1
2-1	9:13	33.3		-14.0	4.9		13.9		37.2	-16.2	61.7	64.1
2-2	9:17	56.8		9.5	4.8		14.0		63.0	9.6	37.3	30.6
2-3	9:21	70.8	50.5	23.5	4.7	5.3	14.1	13.5	78.3	24.9	21.6	24.5
2-4	9:25	72.9		25.6	5.9		13.0		86.9	33.6	9.7	-2.4
2-5	9:29	25.8		-21.5	4.9		13.9		28.8	-24.6	62.9	62.1
2-6	9:33	43.4		-3.9	6.6		12.4		54.4	1.1	48.7	49.1
3-1	9:14	25.1		-22.2	3.6		15.0		26.0	-27.4	74.5	75.2
3-2	9:18	66.1		18.8	4.4		14.3		71.7	18.3	26.8	20.1
3-3	9:22	76.8	47.3	29.5	4.4	4.5	14.3	14.2	83.1	29.7	26.8	22.0
3-4	9:26	61.1		13.8	4.9		13.9		68.5	15.1	26.7	21.1
3-5	9:30	31.3		-16.0	4.3		14.4		33.8	-19.6	57.3	58.0
3-6	9:34	23.4		-23.9	5.4		13.5		27.0	-26.4	73.7	75.3
4-1	9:15	7.7		-39.6	3.4		15.2		7.9	-45.5	91.0	92.2
4-2	9:19	53.4		6.1	2.7		15.9		52.4	-0.9	42.0	41.6
4-3	9:23	73.7	30.0	26.4	3.5	4.0	15.1	14.7	75.9	22.6	24.8	23.6
4-4	9:27	35.2		-12.1	4.6		14.2		38.7	-14.7	55.7	53.6
4-5	9:31	4.8		-42.5	4.1		14.5		5.1	-48.3	92.8	92.9
4-6	9:35	5.3		-42.0	5.5		13.4		5.1	-47.2	92.7	93.2
Outlet Averages		47.3			4.9		13.9		53.4		45.7	44.3

Run 1: Inlet - Set 1

Date: 3/28/2007
Start Time: 9:12
End Time: 9:35

Inlet - Oxygen (%dv)

AVG	5.5	4.9	4.1	4.4	
6	8.6	6.7	6.4	6.5	7.0
5	4.8	4.5	4.6	4.6	4.6
4	4.4	3.9	3.7	3.8	4.0
3	5.0	5.3	3.3	3.3	4.2
2	3.0	3.0	2.9	2.5	2.9
1	7.5	5.9	4.0	5.7	5.8
	1	2	3	4	4.7

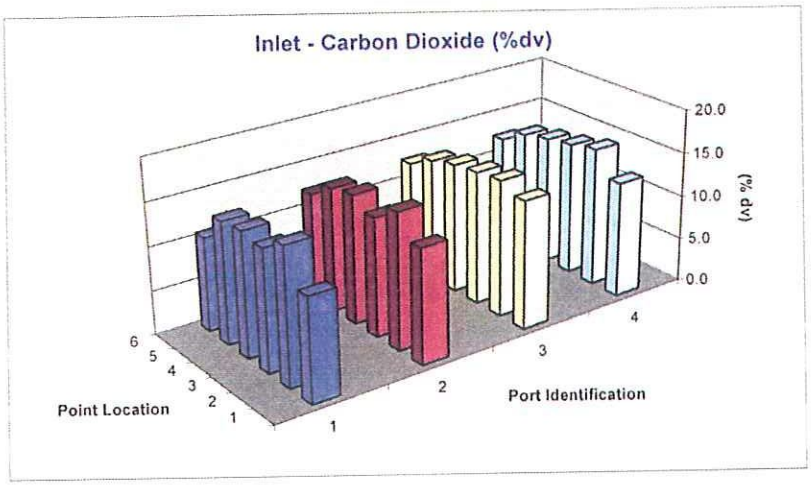


Run 1: Inlet - Set 1

Date: 3/28/2007
Start Time: 9:12
End Time: 9:35

Inlet - Carbon Dioxide (%dv)

AVG	13.3	13.8	14.4	14.2	
6	10.7	12.2	12.5	12.4	12.0
5	13.9	14.1	14.1	14.1	14.0
4	14.2	14.7	14.8	14.7	14.6
3	13.7	13.5	15.2	15.2	14.4
2	15.4	15.4	15.5	15.8	15.5
1	11.6	12.9	14.5	13.1	13.0
	1	2	3	4	13.9

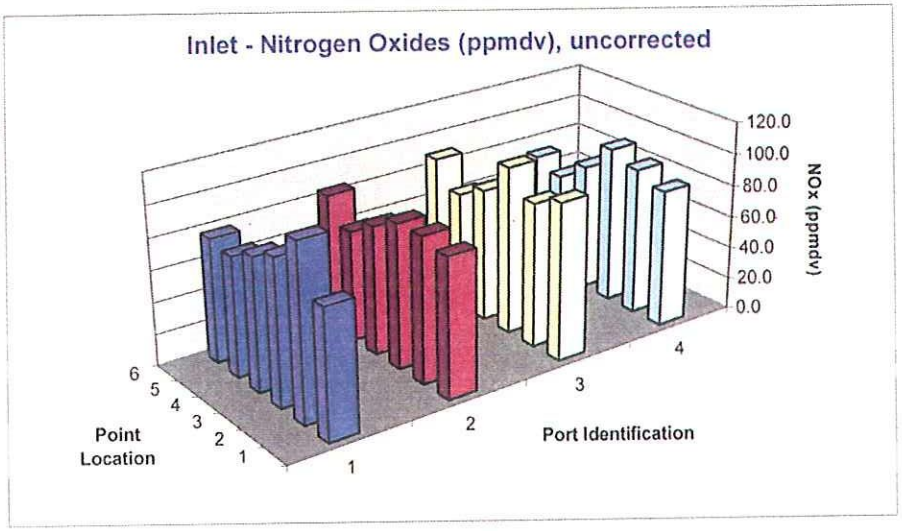


Run 1: Inlet - Set 1

Date: 3/28/2007
Start Time: 9:12
End Time: 9:35

Inlet - Nitrogen Oxides (ppmdv), uncorrected

AVG	86.0	83.8	89.9	82.3	
6	77.8	84.6	88.9	72.3	80.9
5	75.1	69.6	73.3	66.3	71.1
4	83.2	80.7	83.3	79.5	81.7
3	91.3	90.3	104.9	98.0	96.1
2	108.9	90.6	90.3	92.1	95.5
1	79.9	86.9	98.5	85.8	87.8
	1	2	3	4	85.5

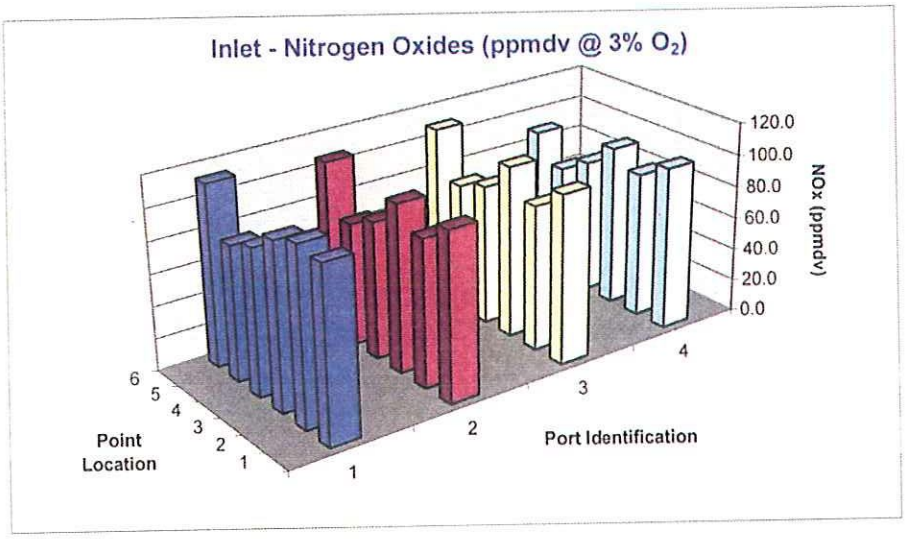


Run 1: Inlet - Set 1

Date: 3/28/2007
Start Time: 9:12
End Time: 9:35

Inlet - Nitrogen Oxides (ppmdv @ 3% O_2)

AVG	100.8	94.4	96.2	89.3	
6	112.9	106.9	109.4	89.8	104.7
5	83.7	76.1	80.4	72.6	78.2
4	90.3	84.9	86.8	83.4	86.3
3	102.7	103.7	106.4	99.4	103.1
2	108.7	90.8	89.7	89.8	94.8
1	106.3	103.7	104.5	100.8	103.8
	1	2	3	4	95.2

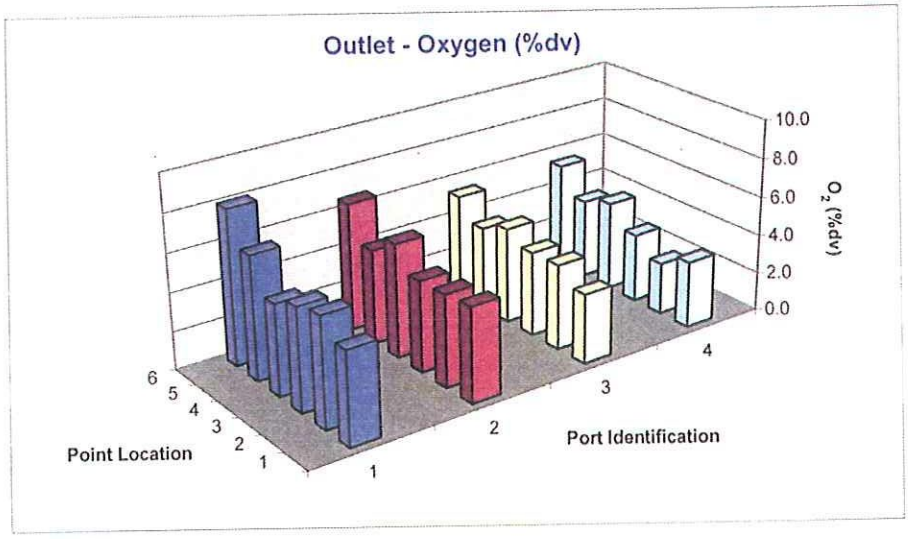


Run 1: Outlet - Set 1

Date: 3/28/2007
Start Time: 9:12
End Time: 9:35

Outlet - Oxygen (%dv)

AVG	5.8	5.3	4.5	4.0	
6	8.0	6.6	5.4	5.5	6.4
5	6.4	4.9	4.3	4.1	4.9
4	4.7	5.9	4.9	4.6	5.0
3	5.3	4.7	4.4	3.5	4.5
2	5.6	4.8	4.4	2.7	4.4
1	4.8	4.9	3.6	3.4	4.2
	1	2	3	4	4.9

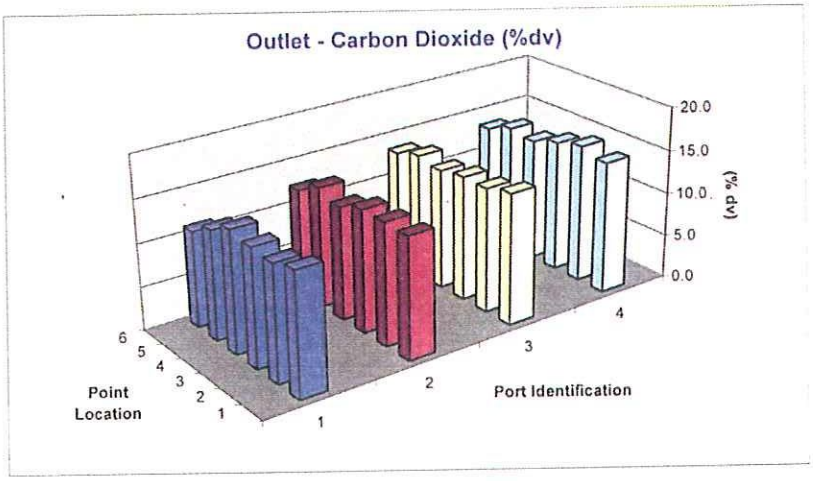


Run 1: Outlet - Set 1

Date: 3/28/2007
Start Time: 9:12
End Time: 9:35

Outlet - Carbon Dioxide (%dv)

AVG	13.1	13.5	14.2	14.7	
6	11.1	12.4	13.5	13.4	12.6
5	12.6	13.9	14.4	14.5	13.8
4	14.0	13.0	13.9	14.2	13.8
3	13.5	14.1	14.3	15.1	14.3
2	13.3	14.0	14.3	15.9	14.4
1	14.0	13.9	15.0	15.2	14.5
	1	2	3	4	13.9

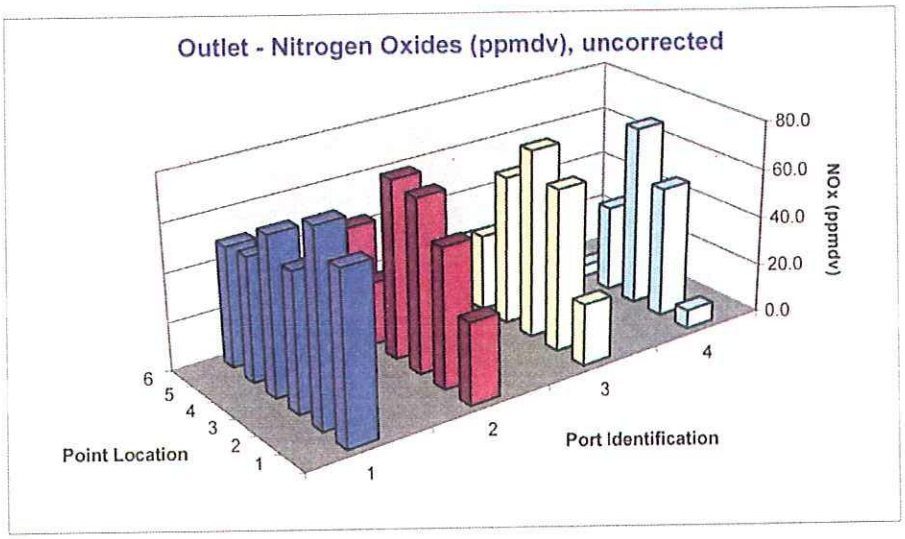


Run 1: Outlet - Set 1

Date: 3/28/2007
Start Time: 9:12
End Time: 9:35

Outlet - Nitrogen Oxides (ppmdv), uncorrected

AVG	61.5	50.5	47.3	30.0	
6	49.4	43.4	23.4	5.3	30.4
5	50.8	25.8	31.3	4.8	28.2
4	64.7	72.9	61.1	35.2	58.5
3	56.5	70.8	76.8	73.7	69.5
2	78.7	56.8	66.1	53.4	63.8
1	68.8	33.3	25.1	7.7	33.7
	1	2	3	4	47.3

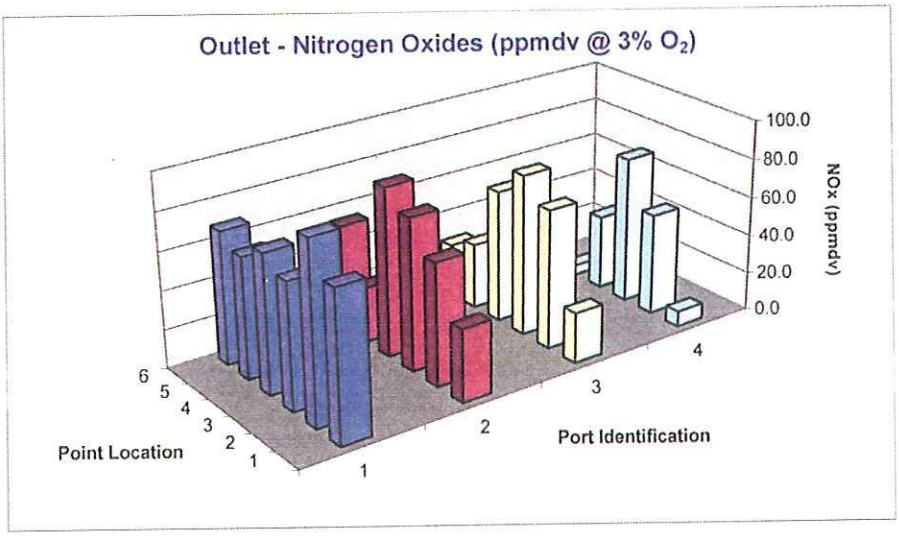


Run 1: Outlet - Set 1

Date: 3/28/2007
Start Time: 9:12
End Time: 9:35

Outlet - Nitrogen Oxides (ppmdv @ 3% O_2)

AVG	72.7	58.1	51.7	31.0	
6	68.8	54.4	27.0	6.1	39.1
5	62.8	28.8	33.8	5.1	32.6
4	71.5	86.9	68.5	38.7	66.4
3	64.9	78.3	83.1	75.9	75.5
2	92.3	63.0	71.7	52.4	69.8
1	76.3	37.2	26.0	7.9	36.8
	1	2	3	4	53.4

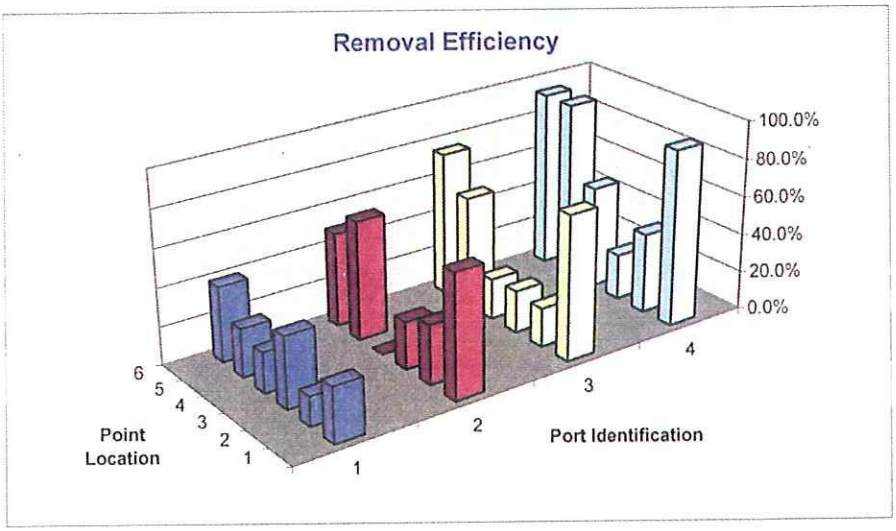


Run 1: Outlet - Set 1

Date: 3/28/2007
Start Time: 9:12
End Time: 9:35

Removal Efficiency (ppmdv @ 3% O_2)

AVG	27.5%	38.0%	45.3%	66.2%	
6	39.1%	49.1%	75.3%	93.2%	64.2%
5	25.0%	62.1%	58.0%	92.9%	59.5%
4	20.8%	-2.4%	21.1%	53.6%	23.3%
3	36.8%	24.5%	22.0%	23.6%	26.7%
2	15.1%	30.6%	20.1%	41.6%	26.9%
1	28.3%	64.1%	75.2%	92.2%	64.9%
	1	2	3	4	44.3%



Clean Air Engineering Project #10192
Consol Energy
AES Dresden

Date: 3/26/2007
Start Time: 9:36
End Time: 9:59

Run # (Cycle #) 1 (2)

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.
1-1	9:36	77.9		-5.5	7.6		11.5		104.5	11.6
1-2	9:40	105.1		21.7	2.9		15.5		104.5	11.7
1-3	9:44	89.7	84.3	5.3	5.1	5.5	13.7	13.3	101.4	8.5
1-4	9:48	83.2		-0.2	4.4		14.3		90.0	-2.8
1-5	9:52	73.9		-9.5	4.8		14.0		81.9	-10.9
1-6	9:56	76.0		-7.4	8.7		10.6		111.1	18.3
2-1	9:37	83.1		-0.3	6.0		12.8		99.8	6.9
2-2	9:41	85.4		2.0	2.9		15.5		85.1	-7.8
2-3	9:45	88.0	80.8	4.6	5.3	4.9	13.5	13.8	100.8	8.0
2-4	9:49	79.0		-4.4	3.9		14.7		83.1	-9.8
2-5	9:53	66.7		-16.7	4.5		14.1		72.9	-19.9
2-6	9:57	82.3		-1.1	6.9		12.1		104.9	12.0
3-1	9:38	96.2		12.8	4.0		14.5		101.9	9.0
3-2	9:42	87.4		4.0	2.9		15.5		87.0	-5.8
3-3	9:46	102.8	87.5	19.4	3.3	4.1	15.1	14.5	104.6	11.8
3-4	9:50	81.3		-2.1	3.6		14.9		84.1	-8.7
3-5	9:54	70.9		-12.5	4.5		14.2		77.1	-15.7
3-6	9:58	86.4		3.0	6.3		12.6		105.6	12.7
4-1	9:39	83.1		-0.3	5.7		13.1		97.7	4.9
4-2	9:43	90.6		7.2	2.6		15.8		88.6	-4.2
4-3	9:47	97.4	81.2	14.0	3.2	4.4	15.2	14.2	98.4	5.6
4-4	9:51	79.3		-4.1	3.7		14.8		82.6	-10.3
4-5	9:55	65.5		-17.9	4.6		14.1		71.7	-21.1
4-6	9:59	71.2		-12.2	6.6		12.4		89.1	-3.7
Inlet Averages		83.4			4.7		13.9		92.9	

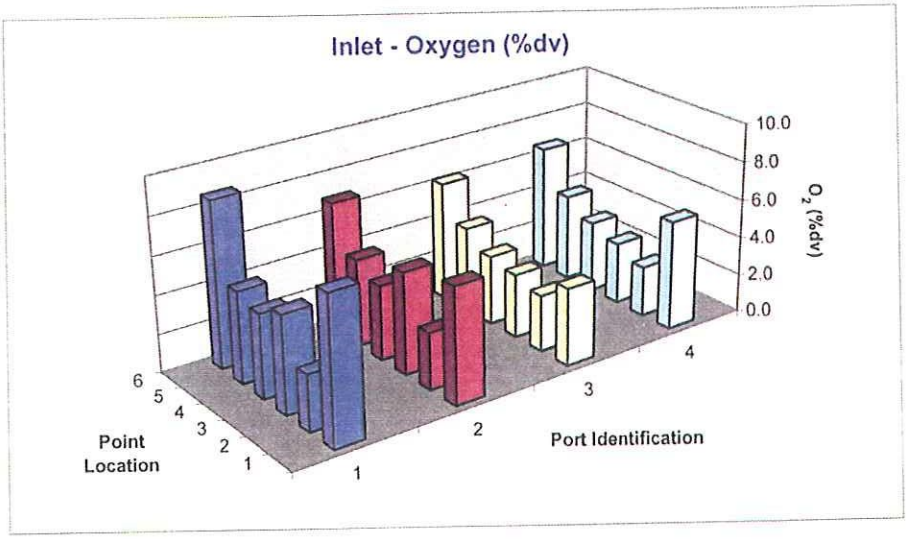
Outlet Point	Midpoint	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	Removal Efficiency	Removal Eff W/ O2 correction
1-1		9:36	67.6		20.1	4.9		13.8		75.8	22.3	13.2	27.4
1-2		9:40	79.9		32.4	5.5		13.4		92.9	39.3	24.0	11.1
1-3		9:44	57.0	62.1	9.5	5.4	5.8	13.5	13.1	65.6	12.1	36.5	35.3
1-4		9:48	66.8		19.3	4.6		14.2		73.4	19.8	19.7	18.5
1-5		9:52	52.2		4.7	6.4		12.6		64.3	10.8	29.4	21.5
1-6		9:56	49.0		1.5	8.0		11.1		68.2	14.6	35.5	38.7
2-1		9:37	34.8		-12.7	5.0		13.8		39.1	-14.4	58.1	60.8
2-2		9:41	57.0		9.5	4.6		14.2		62.6	9.0	33.3	26.4
2-3		9:45	69.6	50.0	22.1	4.7	5.3	14.1	13.5	76.9	23.4	20.9	23.7
2-4		9:49	71.5		24.0	6.0		13.0		85.6	32.1	9.5	-3.0
2-5		9:53	24.4		-23.1	4.9		13.9		27.3	-26.2	63.4	62.5
2-6		9:57	42.9		-4.6	6.7		12.3		54.0	0.5	47.9	48.5
3-1		9:38	25.1		-22.4	3.7		14.8		26.2	-27.4	73.9	74.3
3-2		9:42	69.8		22.3	4.3		14.4		75.2	21.7	20.1	13.6
3-3		9:46	79.9	47.9	32.4	4.3	4.5	14.4	14.2	86.2	32.6	22.3	17.6
3-4		9:50	59.4		11.9	5.0		13.8		66.7	13.2	26.9	20.7
3-5		9:54	30.1		-17.4	4.3		14.4		32.4	-21.2	57.5	58.0
3-6		9:58	22.9		-24.6	5.6		13.3		26.8	-26.7	73.5	74.6
4-1		9:39	7.7		-39.8	3.6		15.0		8.0	-45.6	90.7	91.8
4-2		9:43	51.8		4.3	2.7		15.8		51.1	-2.5	42.8	42.4
4-3		9:47	73.8	29.9	26.3	3.6	4.0	15.1	14.7	76.1	22.6	24.2	22.7
4-4		9:51	36.7		-10.8	4.5		14.2		40.1	-13.4	53.7	51.4
4-5		9:55	4.5		-43.0	4.1		14.6		4.8	-48.8	93.1	93.3
4-6		9:59	5.1		-42.4	5.6		13.3		6.0	-47.5	92.8	93.3
Outlet Averages			47.5			4.9		13.9		53.6		44.3	42.7

Run 1: Inlet – Set 2

Date: 3/28/2007
Start Time: 9:36
End Time: 9:59

Inlet - Oxygen (%dv)

AVG	5.5	4.9	4.1	4.4	
6	8.7	6.9	6.3	6.6	7.1
5	4.8	4.5	4.5	4.6	4.6
4	4.4	3.9	3.6	3.7	3.9
3	5.1	5.3	3.3	3.2	4.2
2	2.9	2.9	2.9	2.6	2.8
1	7.6	6.0	4.0	5.7	5.8
	1	2	3	4	4.7

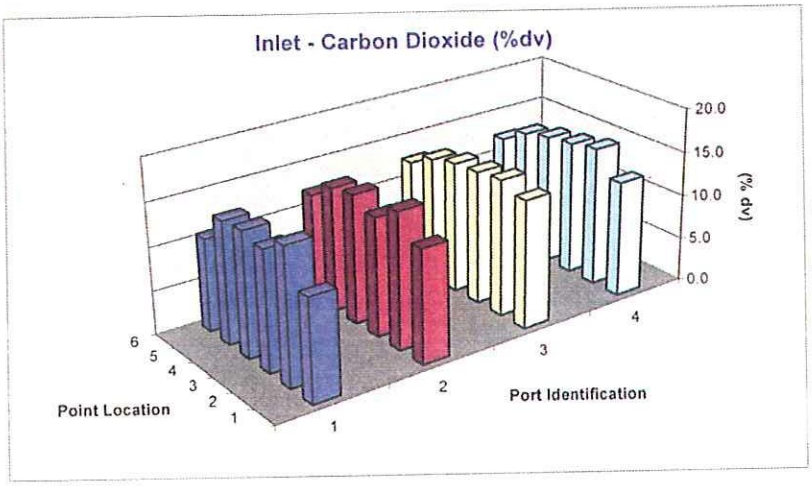


Run 1: Inlet – Set 2

Date: 3/28/2007
Start Time: 9:36
End Time: 9:59

Inlet - Carbon Dioxide (%dv)

AVG	13.3	13.8	14.5	14.2	
6	10.6	12.1	12.6	12.4	11.9
5	14.0	14.1	14.2	14.1	14.1
4	14.3	14.7	14.9	14.8	14.7
3	13.7	13.5	15.1	15.2	14.4
2	15.5	15.5	15.5	15.8	15.5
1	11.5	12.8	14.5	13.1	13.0
	1	2	3	4	13.9

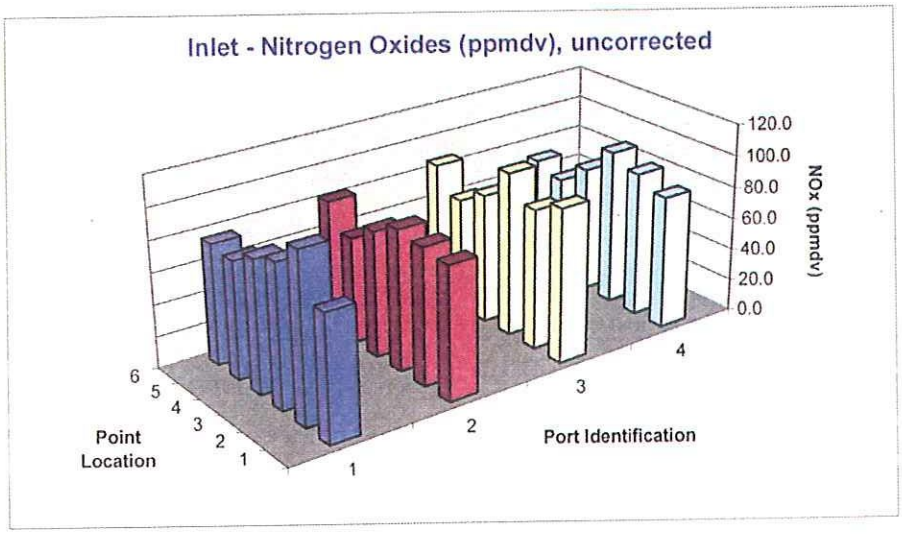


Run 1: Inlet – Set 2

Date: 3/28/2007
Start Time: 9:36
End Time: 9:59

Inlet - Nitrogen Oxides (ppmdv), uncorrected

AVG	84.3	80.8	87.5	81.2	
6	76.0	82.3	86.4	71.2	79.0
5	73.9	66.7	70.9	65.5	69.3
4	83.2	79.0	81.3	79.3	80.7
3	89.7	88.0	102.8	97.4	94.5
2	105.1	85.4	87.4	90.6	92.1
1	77.9	83.1	96.2	83.1	85.1
	1	2	3	4	83.4

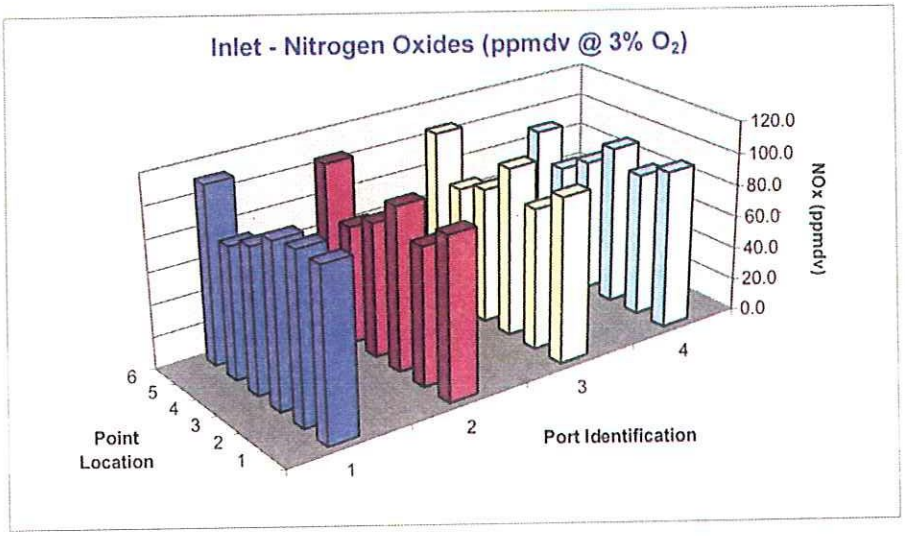


Run 1: Inlet – Set 2

Date: 3/28/2007
Start Time: 9:36
End Time: 9:59

Inlet - Nitrogen Oxides (ppmdv @ 3% O_2)

AVG	98.9	91.1	93.4	88.0	
6	111.1	104.9	105.6	89.1	102.7
5	81.9	72.9	77.1	71.7	75.9
4	90.0	83.1	84.1	82.6	85.0
3	101.4	100.8	104.6	98.4	101.3
2	104.5	85.1	87.0	88.6	91.3
1	104.5	99.8	101.9	97.7	101.0
	1	2	3	4	92.9

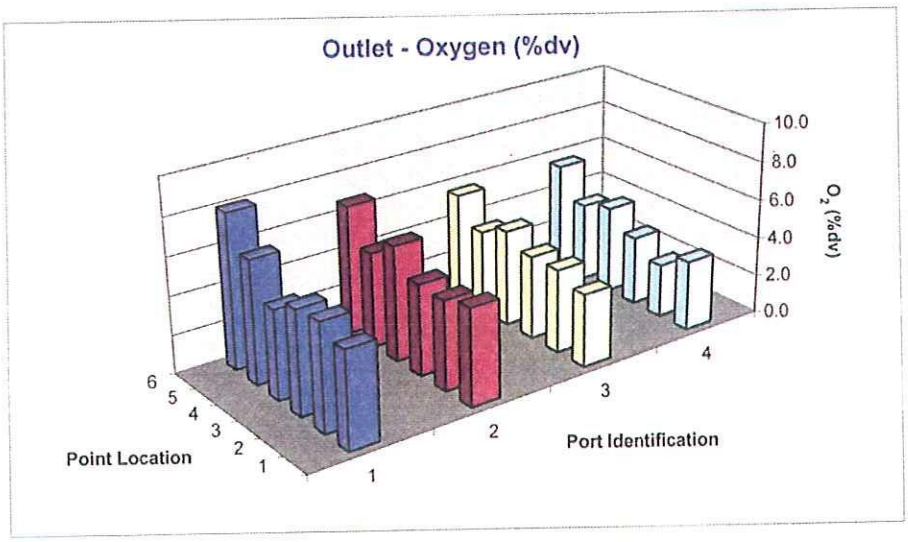


Run 1: Outlet – Set 2

Date: 3/28/2007
Start Time: 9:36
End Time: 9:59

Outlet - Oxygen (%dv)

AVG	5.8	5.3	4.5	4.0	
6	8.0	6.7	5.6	5.6	6.5
5	6.4	4.9	4.3	4.1	4.9
4	4.6	6.0	5.0	4.5	5.0
3	5.4	4.7	4.3	3.6	4.5
2	5.5	4.6	4.3	2.7	4.3
1	4.9	5.0	3.7	3.6	4.3
	1	2	3	4	4.9

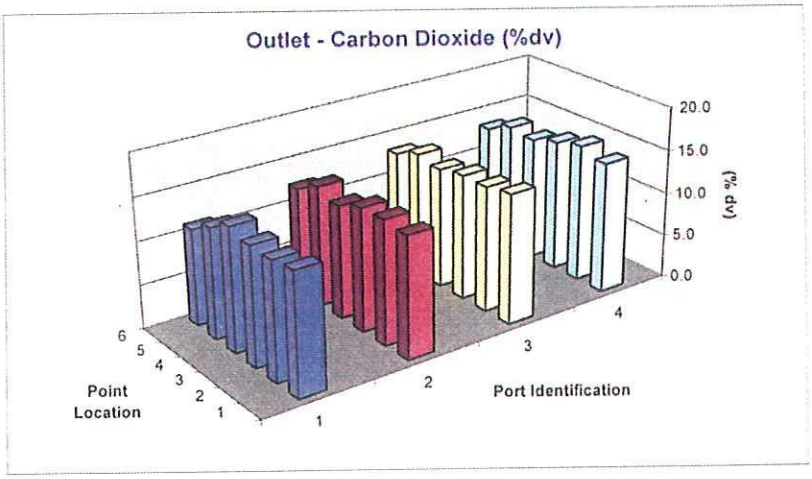


Run 1: Outlet – Set 2

Date: 3/28/2007
Start Time: 9:36
End Time: 9:59

Outlet - Carbon Dioxide (%dv)

AVG	13.1	13.5	14.2	14.7	
6	11.1	12.3	13.3	13.3	12.5
5	12.6	13.9	14.4	14.6	13.9
4	14.2	13.0	13.8	14.2	13.8
3	13.5	14.1	14.4	15.1	14.3
2	13.4	14.2	14.4	15.8	14.4
1	13.8	13.8	14.8	15.0	14.4
	1	2	3	4	13.9

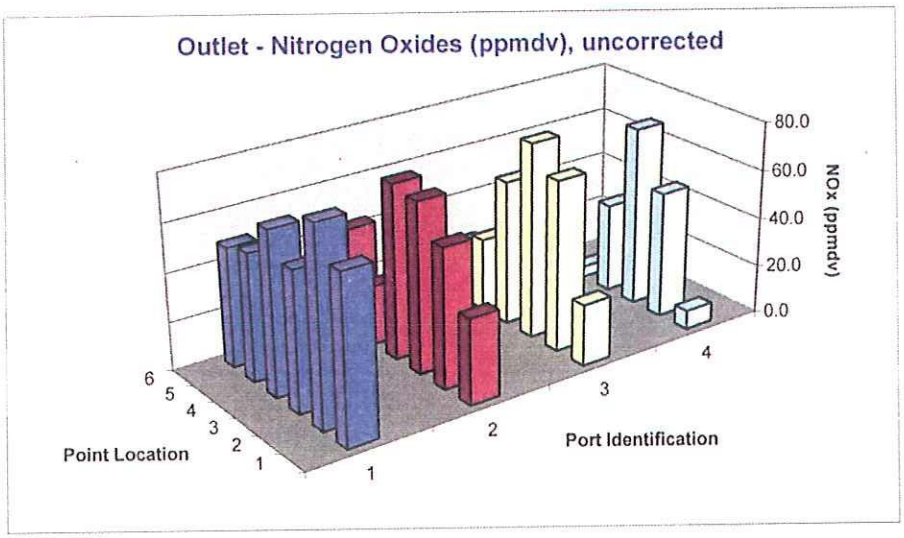


Run 1: Outlet – Set 2

Date: 3/28/2007
Start Time: 9:36
End Time: 9:59

Outlet - Nitrogen Oxides (ppmdv), uncorrected

AVG	62.1	50.0	47.9	29.9	
6	49.0	42.9	22.9	5.1	30.0
5	52.2	24.4	30.1	4.5	27.8
4	66.8	71.5	59.4	36.7	58.6
3	57.0	69.6	79.9	73.8	70.1
2	79.9	57.0	69.8	51.8	64.6
1	67.6	34.8	25.1	7.7	33.8
	1	2	3	4	47.5

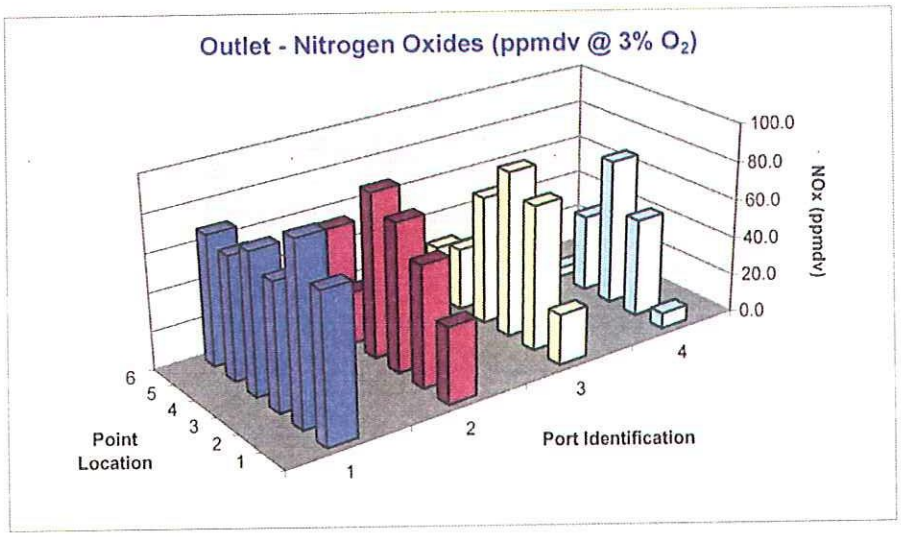


Run 1: Outlet – Set 2

Date: 3/28/2007
Start Time: 9:36
End Time: 9:59

Outlet - Nitrogen Oxides (ppmdv @ 3% O_2)

AVG	73.4	57.6	52.2	31.0	
6	68.2	54.0	26.8	6.0	38.8
5	64.3	27.3	32.4	4.8	32.2
4	73.4	85.6	66.7	40.1	66.4
3	65.6	76.9	86.2	76.1	76.2
2	92.9	62.6	75.2	51.1	70.4
1	75.8	39.1	26.2	8.0	37.3
	1	2	3	4	53.6

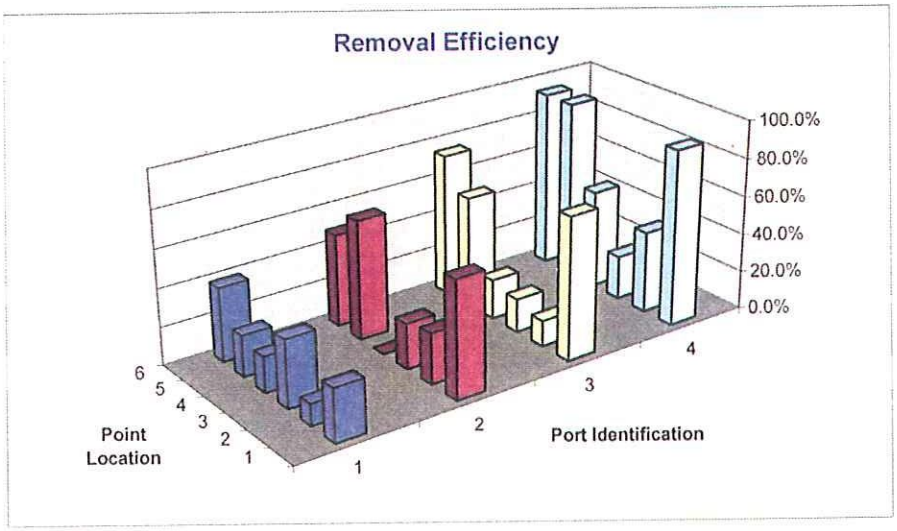


Run 1: Outlet – Set 2

Date: 3/28/2007
Start Time: 9:36
End Time: 9:59

Removal Efficiency (ppmdv @ 3% O_2)

AVG	25.4%	36.5%	43.1%	65.8%	
6	38.7%	48.5%	74.6%	93.3%	63.8%
5	21.5%	62.5%	58.0%	93.3%	58.8%
4	18.5%	-3.0%	20.7%	51.4%	21.9%
3	35.3%	23.7%	17.6%	22.7%	24.8%
2	11.1%	26.4%	13.6%	42.4%	23.4%
1	27.4%	60.8%	74.3%	91.8%	63.6%
	1	2	3	4	42.7%



Clean Air Engineering Project #10192
Consol Energy
AES Dresden

Date: 3/28/2007
Start Time: 10:00
End Time: 10:23

Run # (Cycle #) 1 (3)

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.
1-1	10:00	74.9		-5.7	7.6		11.5		100.5	10.8
1-2	10:04	103.6		23.0	2.9		15.5		103.3	13.6
1-3	10:08	86.3	80.8	5.7	5.1	5.5	13.7	13.3	97.5	7.8
1-4	10:12	80.1		-0.5	4.4		14.3		86.7	-3.0
1-5	10:16	68.5		-12.1	4.7		14.0		75.7	-14.0
1-6	10:20	71.3		-9.3	8.5		10.8		102.6	12.9
2-1	10:01	79.8		-0.8	6.0		12.9		95.6	5.9
2-2	10:05	82.5		1.9	2.9		15.5		82.0	-7.7
2-3	10:09	84.0	78.4	3.4	5.4	4.9	13.4	13.8	97.0	7.3
2-4	10:13	75.5		-5.1	3.9		14.7		79.3	-10.4
2-5	10:17	63.3		-17.3	4.6		14.1		69.4	-20.3
2-6	10:21	85.4		4.8	6.9		12.1		109.3	19.6
3-1	10:02	92.3		11.7	4.0		14.5		97.9	8.2
3-2	10:05	84.4		3.8	2.9		15.5		84.1	-5.6
3-3	10:10	99.4	85.4	18.8	3.4	4.1	15.1	14.4	101.6	11.9
3-4	10:14	80.0		-0.6	3.7		14.9		83.1	-6.6
3-5	10:18	68.4		-12.2	4.6		14.1		74.9	-14.8
3-6	10:22	87.9		7.3	6.3		12.6		108.1	18.4
4-1	10:03	81.3		0.7	5.7		13.1		96.0	6.3
4-2	10:07	86.5		5.9	2.4		15.9		83.9	-5.8
4-3	10:11	95.4	77.9	14.8	3.0	4.3	15.4	14.3	95.6	5.9
4-4	10:15	78.2		-2.4	3.5		15.0		80.6	-9.1
4-5	10:19	59.0		-21.6	4.5		14.2		64.2	-25.5
4-6	10:23	67.2		-13.4	6.6		12.4		84.1	-5.6
Inlet Averages		80.6			4.7		14.0		89.7	

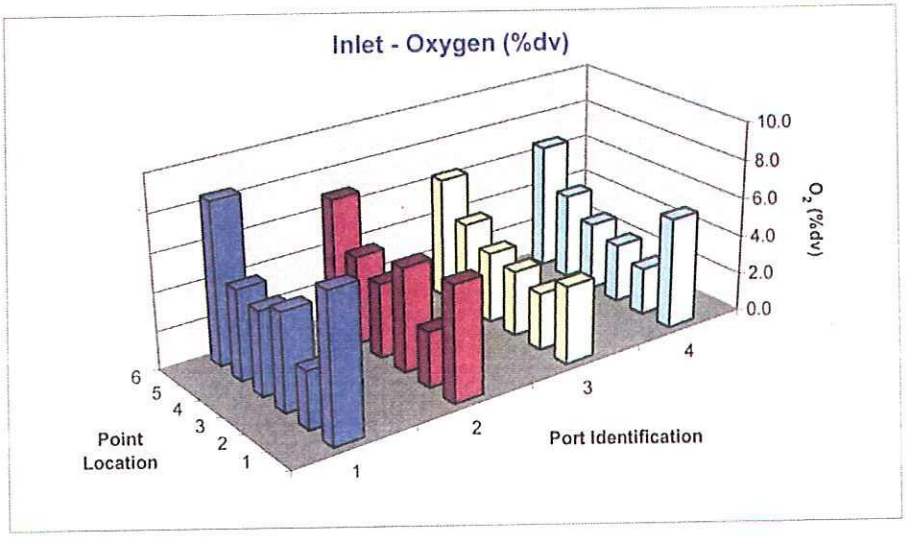
Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	Removal Efficiency	Removal Eff W/ O2 correction
1-1	10:00	67.6		21.8	4.9		13.8		75.8	24.5	9.7	24.6
1-2	10:04	77.3		31.5	5.6		13.3		90.4	39.1	25.4	12.5
1-3	10:08	57.3	54.9	11.5	5.2	5.6	13.6	12.7	65.2	13.9	33.6	33.1
1-4	10:12	55.2		9.4	4.8		13.9		61.4	10.1	31.1	29.2
1-5	10:16	48.1		2.3	6.1		12.9		58.0	6.7	29.8	23.4
1-6	10:20	23.7		-22.1	7.1		8.8		30.7	-20.5	66.8	70.0
2-1	10:01	31.9		-13.9	5.0		13.8		35.9	-15.3	60.0	62.4
2-2	10:05	56.2		10.4	4.5		14.3		61.4	10.1	31.9	25.1
2-3	10:09	68.7	50.9	22.9	4.8	5.3	14.0	13.6	76.4	25.1	18.2	21.3
2-4	10:13	71.3		25.5	5.9		13.1		85.0	33.7	5.6	-7.1
2-5	10:17	23.1		-22.7	4.9		14.0		25.8	-25.5	63.5	62.9
2-6	10:21	54.3		8.5	6.7		12.3		68.6	17.4	36.4	37.2
3-1	10:02	22.9		-22.9	3.8		14.9		23.9	-27.3	75.2	75.6
3-2	10:06	68.5		22.7	4.2		14.5		73.3	22.1	18.8	12.8
3-3	10:10	79.0	47.6	33.2	4.4	4.5	14.3	14.2	85.8	34.5	20.5	15.6
3-4	10:14	59.2		13.4	4.9		13.9		66.3	15.0	26.0	20.2
3-5	10:18	30.0		-15.8	4.2		14.4		32.2	-19.1	56.1	57.0
3-6	10:22	26.1		-19.7	5.5		13.4		30.3	-20.9	70.3	71.9
4-1	10:03	7.3		-38.5	3.5		15.1		7.5	-43.7	91.0	92.2
4-2	10:07	53.2		7.4	2.6		16.0		51.9	0.6	38.5	38.1
4-3	10:11	72.5	29.9	26.7	3.4	3.9	15.3	14.8	73.9	22.7	24.0	22.6
4-4	10:15	36.3		-9.5	4.5		14.3		39.6	-11.7	53.6	50.9
4-5	10:19	4.3		-41.5	3.9		14.8		4.5	-46.7	92.7	92.9
4-6	10:23	5.6		-40.2	5.6		13.3		6.6	-44.7	91.7	92.2
Outlet Averages		45.8			4.8		13.8		51.3		44.6	43.2

Run 1: Inlet – Set 3

Date: 3/28/2007
Start Time: 10:00
End Time: 10:23

Inlet - Oxygen (%dv)

AVG	5.5	4.9	4.1	4.3	
6	8.5	6.9	6.3	6.6	7.1
5	4.7	4.6	4.6	4.5	4.6
4	4.4	3.9	3.7	3.5	3.9
3	5.1	5.4	3.4	3.0	4.2
2	2.9	2.9	2.9	2.4	2.8
1	7.6	6.0	4.0	5.7	5.8
	1	2	3	4	4.7

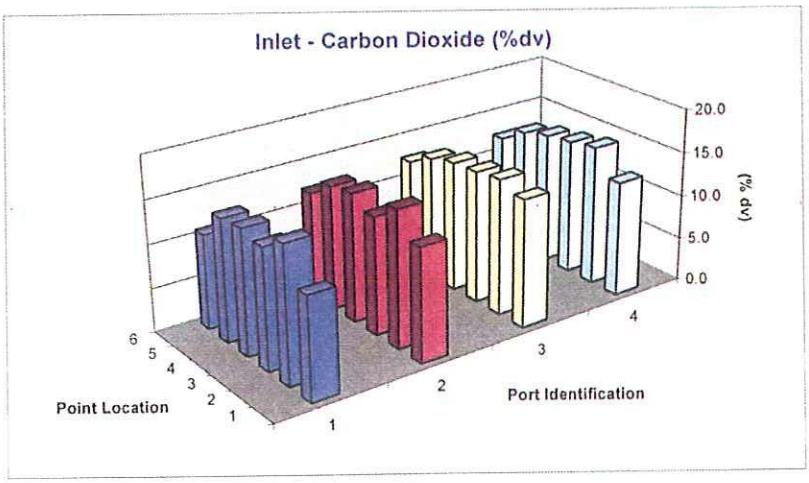


Run 1: Inlet – Set 3

Date: 3/28/2007
Start Time: 10:00
End Time: 10:23

Inlet - Carbon Dioxide (%dv)

AVG	13.3	13.8	14.4	14.3	
6	10.8	12.1	12.6	12.4	12.0
5	14.0	14.1	14.1	14.2	14.1
4	14.3	14.7	14.9	15.0	14.7
3	13.7	13.4	15.1	15.4	14.4
2	15.5	15.5	15.5	15.9	15.6
1	11.5	12.9	14.5	13.1	13.0
	1	2	3	4	14.0

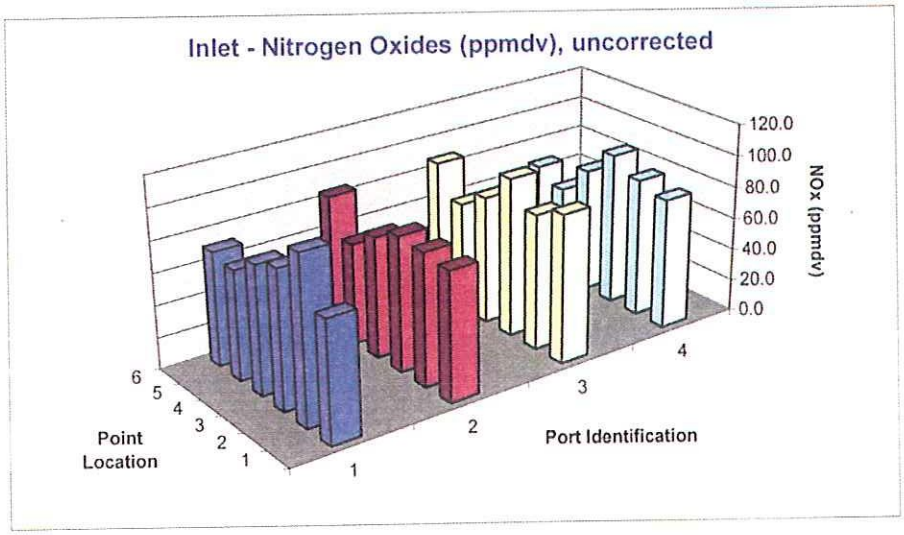


Run 1: Inlet – Set 3

Date: 3/28/2007
Start Time: 10:00
End Time: 10:23

Inlet - Nitrogen Oxides (ppmdv), uncorrected

AVG	80.8	78.4	85.4	77.9	
6	71.3	85.4	87.9	67.2	78.0
5	68.5	63.3	68.4	59.0	64.8
4	80.1	75.5	80.0	78.2	78.5
3	86.3	84.0	99.4	95.4	91.3
2	103.6	82.5	84.4	86.5	89.3
1	74.9	79.8	92.3	81.3	82.1
	1	2	3	4	80.6

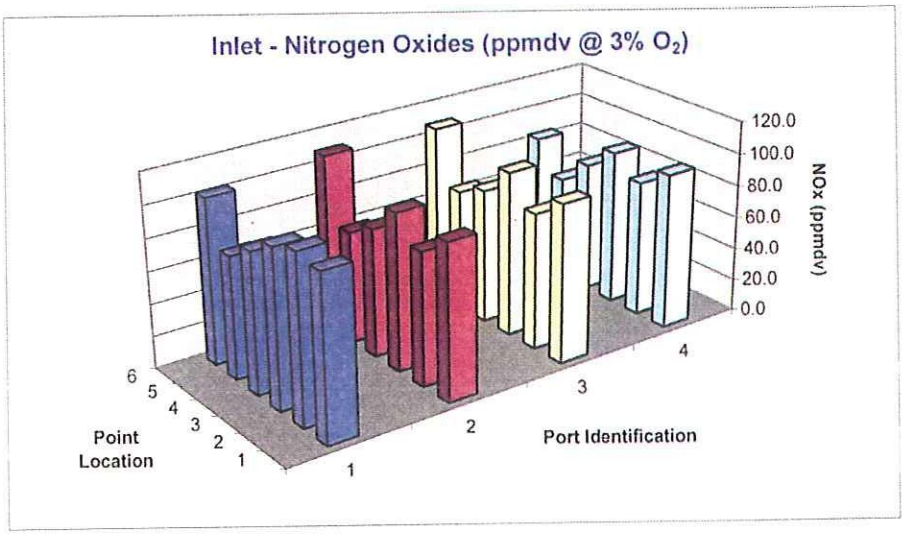


Run 1: Inlet – Set 3

Date: 3/28/2007
Start Time: 10:00
End Time: 10:23

Inlet - Nitrogen Oxides (ppmdv @ 3% O_2)

AVG	94.4	88.8	91.6	84.1	
6	102.6	109.3	108.1	84.1	101.0
5	75.7	69.4	74.9	64.2	71.1
4	86.7	79.3	83.1	80.6	82.4
3	97.5	97.0	101.6	95.6	97.9
2	103.3	82.0	84.1	83.9	88.3
1	100.5	95.6	97.9	96.0	97.5
	1	2	3	4	89.7

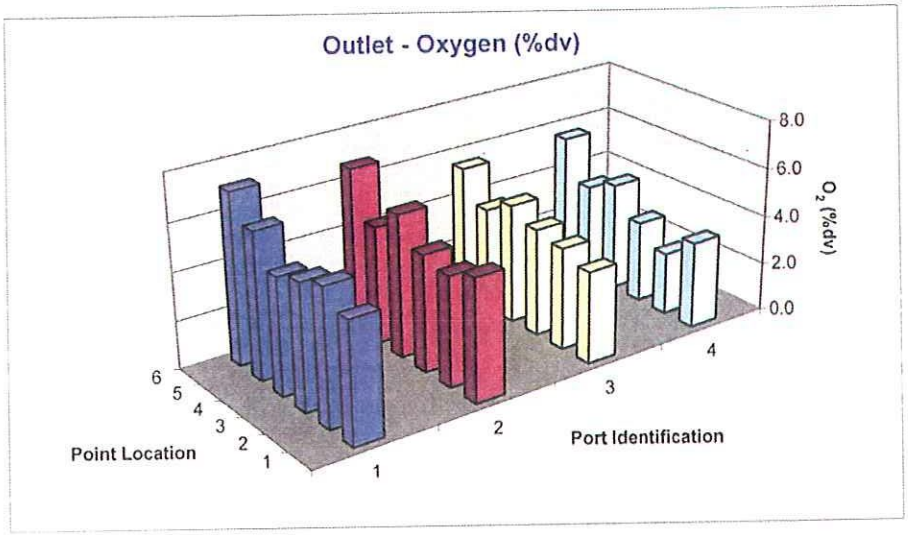


Run 1: Outlet – Set 3

Date: 3/28/2007
Start Time: 10:00
End Time: 10:23

Outlet - Oxygen (%dv)

AVG	5.6	5.3	4.5	3.9	
6	7.1	6.7	5.5	5.6	6.2
5	6.1	4.9	4.2	3.9	4.8
4	4.8	5.9	4.9	4.5	5.0
3	5.2	4.8	4.4	3.4	4.4
2	5.6	4.5	4.2	2.6	4.2
1	4.9	5.0	3.8	3.5	4.3
	1	2	3	4	4.8

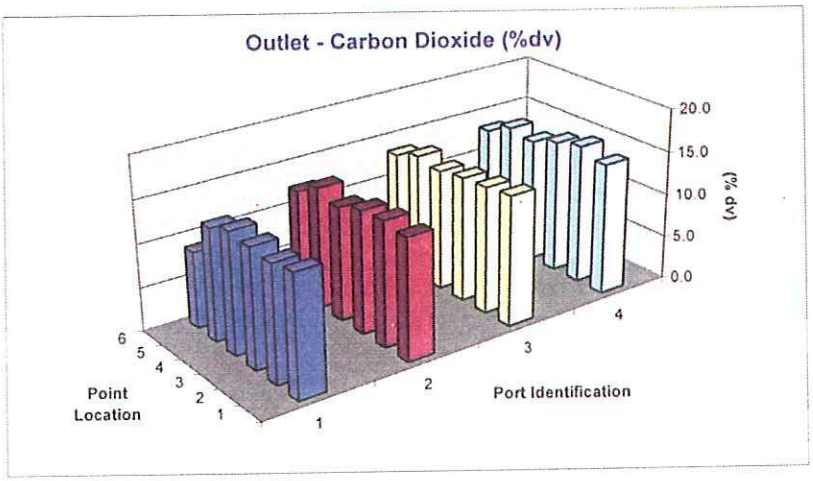


Run 1: Outlet – Set 3

Date: 3/28/2007
Start Time: 10:00
End Time: 10:23

Outlet - Carbon Dioxide (%dv)

AVG	12.7	13.6	14.2	14.8	
6	8.8	12.3	13.4	13.3	11.9
5	12.9	14.0	14.4	14.8	14.0
4	13.9	13.1	13.9	14.3	13.8
3	13.6	14.0	14.3	15.3	14.3
2	13.3	14.3	14.5	16.0	14.5
1	13.8	13.8	14.9	15.1	14.4
	1	2	3	4	13.8

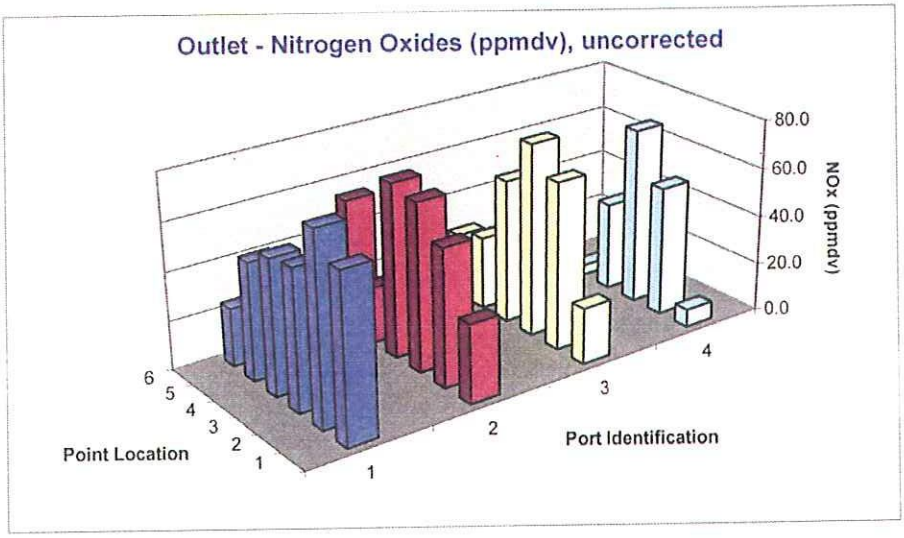


Run 1: Outlet – Set 3

Date: 3/28/2007
Start Time: 10:00
End Time: 10:23

Outlet - Nitrogen Oxides (ppmdv), uncorrected

AVG	54.9	50.9	47.6	29.9	
6	23.7	54.3	26.1	5.6	27.4
5	48.1	23.1	30.0	4.3	26.4
4	55.2	71.3	59.2	36.3	55.5
3	57.3	68.7	79.0	72.5	69.4
2	77.3	56.2	68.5	53.2	63.8
1	67.6	31.9	22.9	7.3	32.4
	1	2	3	4	45.8

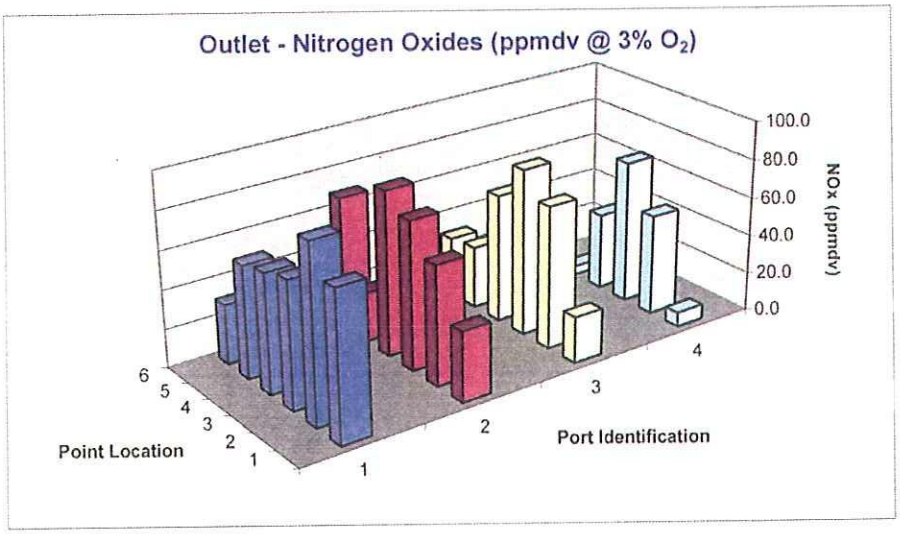


Run 1: Outlet – Set 3

Date: 3/28/2007
Start Time: 10:00
End Time: 10:23

Outlet - Nitrogen Oxides (ppmdv @ 3% O_2)

AVG	63.6	58.8	52.0	30.7	
6	30.7	68.6	30.3	6.6	34.1
5	58.0	25.8	32.2	4.5	30.1
4	61.4	85.0	66.3	39.6	63.0
3	65.2	76.4	85.8	73.9	75.3
2	90.4	61.4	73.3	51.9	69.2
1	75.8	35.9	23.9	7.5	35.8
	1	2	3	4	51.3

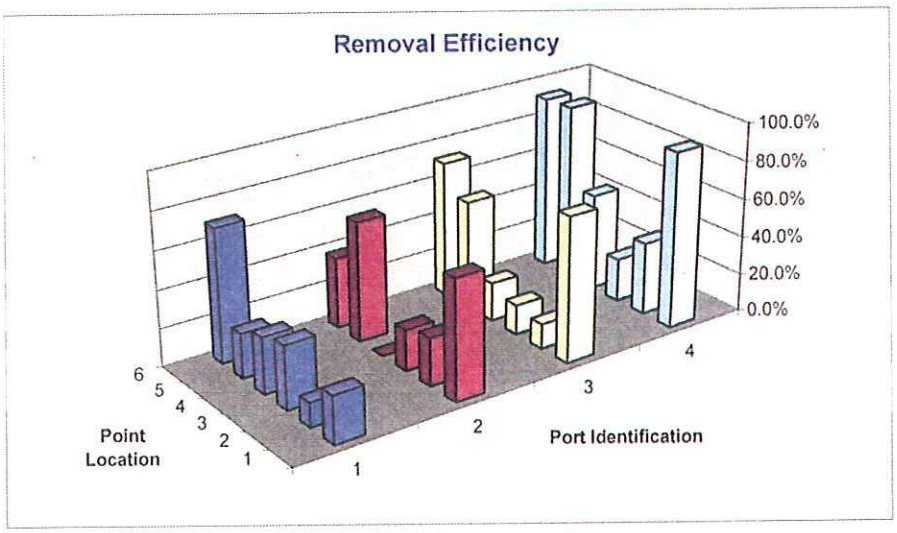


Run 1: Outlet – Set 3

Date: 3/28/2007
Start Time: 10:00
End Time: 10:23

Removal Efficiency (ppmdv @ 3% O_2)

AVG	32.1%	33.6%	42.2%	64.8%	
6	70.0%	37.2%	71.9%	92.2%	67.8%
5	23.4%	62.9%	57.0%	92.9%	59.0%
4	29.2%	-7.1%	20.2%	50.9%	23.3%
3	33.1%	21.3%	15.6%	22.6%	23.1%
2	12.5%	25.1%	12.8%	38.1%	22.1%
1	24.6%	62.4%	75.6%	92.2%	63.7%
	1	2	3	4	43.2%



Clean Air Engineering Project #10192
Consol Energy
AES Dresden

Date: 3/28/2007
Start Time: 11:12
End Time: 11:35

Run # (Cycle #) 2 (1)

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.
1-1	11:12	78.6		-0.3	7.3		11.8		103.1	15.5
1-2	11:16	102.0		23.1	2.9		15.5		101.2	13.5
1-3	11:20	84.5	81.4	5.6	5.0	5.4	13.8	13.4	95.0	7.3
1-4	11:24	80.9		2.0	4.4		14.3		87.7	0.0
1-5	11:28	69.6		-9.3	4.6		14.1		76.4	-11.3
1-6	11:32	72.9		-6.0	8.6		10.7		106.3	18.6
2-1	11:13	82.3		3.4	5.9		12.9		98.4	10.7
2-2	11:17	79.9		1.0	3.1		15.3		80.3	-7.4
2-3	11:21	84.1	76.5	5.2	5.2	4.9	13.6	13.8	96.0	8.3
2-4	11:25	75.4		-3.5	3.9		14.7		79.3	-8.4
2-5	11:29	59.4		-19.5	4.3		14.4		64.0	-23.7
2-6	11:33	77.9		-1.0	6.8		12.2		99.0	11.4
3-1	11:14	87.4		8.5	4.0		14.5		92.7	5.0
3-2	11:18	79.0		0.1	2.8		15.6		78.3	-9.4
3-3	11:22	98.7	82.0	19.8	3.2	4.1	15.3	14.5	99.6	11.9
3-4	11:26	79.4		0.5	3.7		14.9		82.5	-5.1
3-5	11:30	66.3		-12.6	4.5		14.2		72.4	-15.3
3-6	11:34	81.0		2.1	6.3		12.6		99.4	11.8
4-1	11:15	77.8		-1.1	5.9		13.0		93.0	5.3
4-2	11:19	81.6		2.7	2.6		15.8		79.6	-8.1
4-3	11:23	95.0	75.9	16.1	3.1	4.4	15.4	14.3	95.4	7.7
4-4	11:27	76.9		-2.0	3.5		15.0		79.3	-8.4
4-5	11:31	60.1		-18.8	4.6		14.1		65.9	-21.8
4-6	11:35	63.7		-15.2	6.6		12.4		79.5	-8.2
Inlet Averages		78.9			4.7		14.0		87.7	

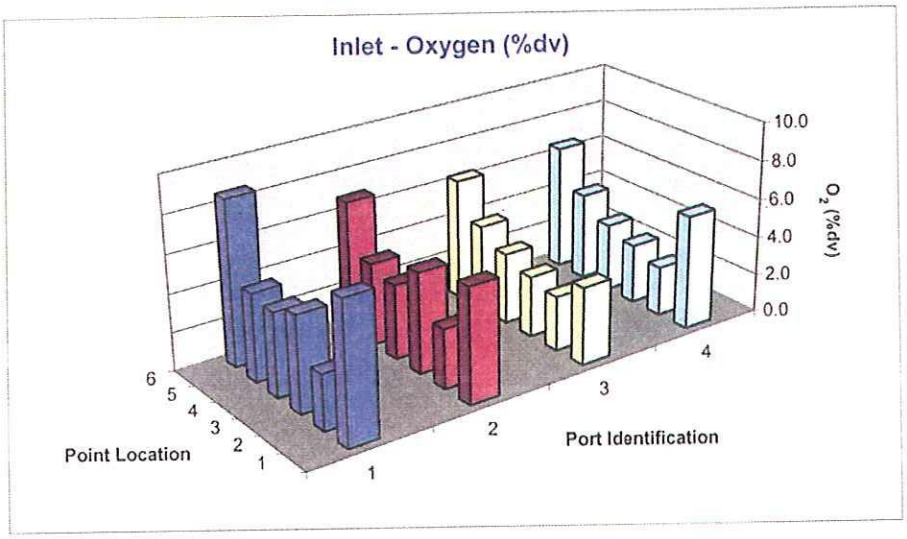
Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	Removal Efficiency	Removal Eff W/ O2 correction
1-1	11:12	71.2		25.2	4.6		14.2		78.1	26.7	9.4	24.3
1-2	11:16	76.7		30.7	5.4		13.5		88.7	37.3	24.8	12.3
1-3	11:20	58.1	61.4	12.1	5.3	5.6	13.6	13.3	66.6	15.2	31.2	29.9
1-4	11:24	65.9		19.9	4.5		14.2		72.1	20.6	18.5	17.8
1-5	11:28	47.1		1.1	5.8		13.2		55.6	4.2	32.3	27.1
1-6	11:32	49.1		3.1	7.9		11.2		67.5	16.0	32.6	36.5
2-1	11:13	33.3		-12.7	4.8		14.0		36.9	-14.5	59.5	62.5
2-2	11:17	51.4		5.4	4.5		14.3		56.0	4.6	35.7	30.2
2-3	11:21	69.4	48.3	23.4	4.7	5.2	14.1	13.6	76.5	25.1	17.5	20.3
2-4	11:25	72.6		26.6	5.9		13.1		86.5	35.0	3.7	-9.1
2-5	11:29	22.7		-23.3	4.7		14.1		25.1	-26.4	61.8	60.8
2-6	11:33	40.6		-5.4	6.7		12.3		51.1	-0.3	47.9	48.4
3-1	11:14	24.2		-21.8	3.6		15.0		25.0	-26.4	72.3	73.0
3-2	11:18	58.3		12.3	4.0		14.6		61.8	10.4	26.2	21.0
3-3	11:22	73.2	45.7	27.2	4.3	4.4	14.4	14.3	78.7	27.3	25.8	21.0
3-4	11:26	67.4		21.4	4.6		14.1		74.2	22.8	15.1	10.1
3-5	11:30	30.5		-15.5	4.1		14.5		32.5	-18.9	54.0	55.1
3-6	11:34	20.7		-25.3	5.6		13.3		24.2	-27.3	74.4	75.7
4-1	11:15	6.8		-39.2	3.6		15.0		7.0	-44.4	91.3	92.4
4-2	11:19	44.8		-1.2	2.5		16.0		43.7	-7.7	45.1	45.1
4-3	11:23	73.1	28.7	27.1	3.3	3.9	15.3	14.8	74.3	22.9	23.1	22.1
4-4	11:27	39.1		-6.9	4.5		14.3		42.6	-8.8	49.2	46.3
4-5	11:31	4.1		-41.9	4.1		14.6		4.4	-47.1	93.2	93.4
4-6	11:35	4.4		-41.6	5.6		13.3		5.1	-45.3	93.1	93.5
Outlet Averages		46.0			4.8		14.0		51.4		43.2	42.1

Run 2: Inlet – Set 1

Date: 3/28/2007
Start Time: 11:12
End Time: 11:35

Inlet - Oxygen (%dv)

AVG	5.4	4.9	4.1	4.4	
6	8.6	6.8	6.3	6.6	7.1
5	4.6	4.3	4.5	4.6	4.5
4	4.4	3.9	3.7	3.5	3.9
3	5.0	5.2	3.2	3.1	4.1
2	2.9	3.1	2.8	2.6	2.8
1	7.3	5.9	4.0	5.9	5.8
	1	2	3	4	4.7

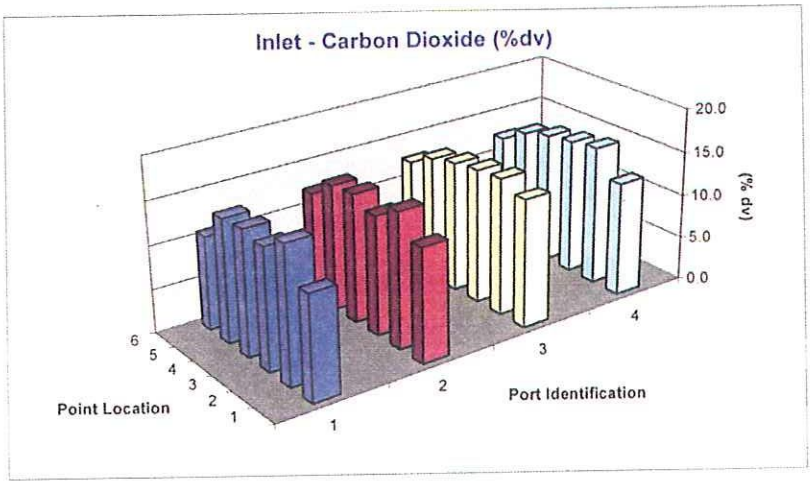


Run 2: Inlet – Set 1

Date: 3/28/2007
Start Time: 11:12
End Time: 11:35

Inlet - Carbon Dioxide (%dv)

AVG	13.4	13.8	14.5	14.3	
6	10.7	12.2	12.6	12.4	12.0
5	14.1	14.4	14.2	14.1	14.2
4	14.3	14.7	14.9	15.0	14.7
3	13.8	13.6	15.3	15.4	14.5
2	15.5	15.3	15.6	15.8	15.6
1	11.8	12.9	14.5	13.0	13.0
	1	2	3	4	14.0

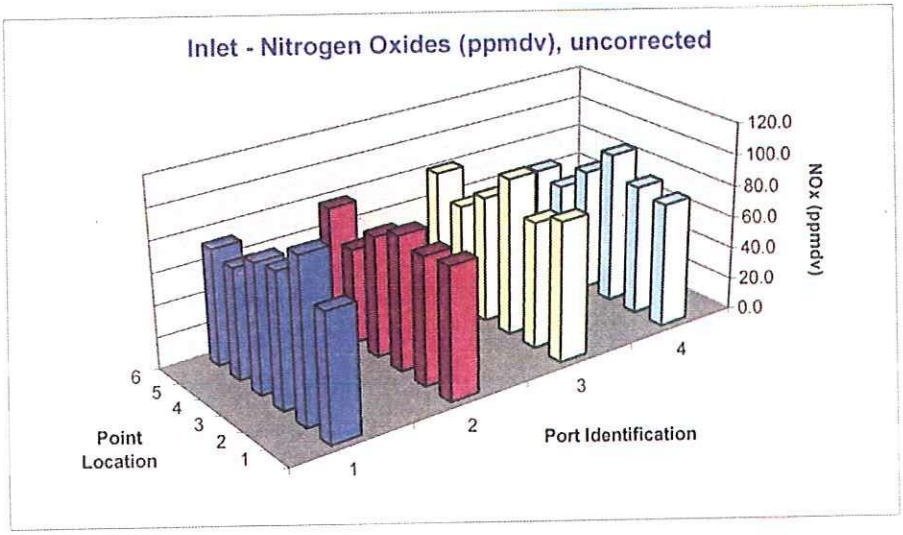


Run 2: Inlet – Set 1

Date: 3/28/2007
Start Time: 11:12
End Time: 11:35

Inlet - Nitrogen Oxides (ppmdv), uncorrected

AVG	81.4	76.5	82.0	75.9	
6	72.9	77.9	81.0	63.7	73.9
5	69.6	59.4	66.3	60.1	63.9
4	80.9	75.4	79.4	76.9	78.2
3	84.5	84.1	98.7	95.0	90.6
2	102.0	79.9	79.0	81.6	85.6
1	78.6	82.3	87.4	77.8	81.5
	1	2	3	4	78.9

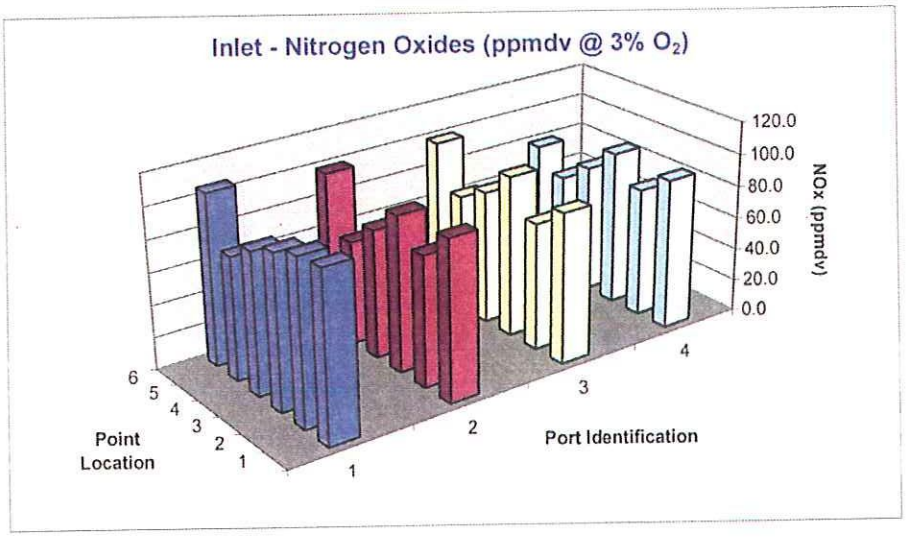


Run 2: Inlet – Set 1

Date: 3/28/2007
Start Time: 11:12
End Time: 11:35

Inlet - Nitrogen Oxides (ppmdv @ 3% O_2)

AVG	94.9	86.2	87.5	82.1	
6	106.3	99.0	99.4	79.5	96.1
5	76.4	64.0	72.4	65.9	69.7
4	87.7	79.3	82.5	79.3	82.2
3	95.0	96.0	99.6	95.4	96.5
2	101.2	80.3	78.3	79.6	84.8
1	103.1	98.4	92.7	93.0	96.8
	1	2	3	4	87.7

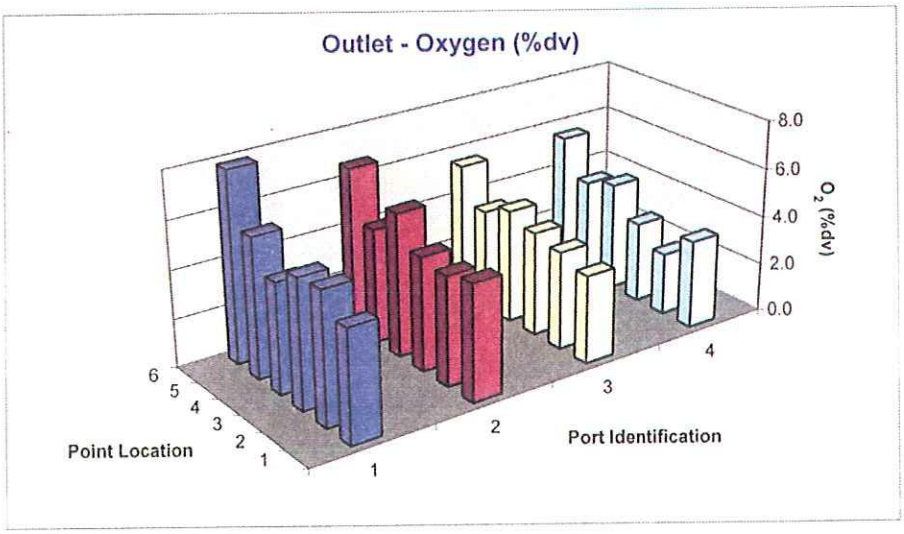


Run 2: Outlet – Set 1

Date: 3/28/2007
Start Time: 11:12
End Time: 11:35

Outlet - Oxygen (%dv)

AVG	5.6	5.2	4.4	3.9	
6	7.9	6.7	5.6	5.6	6.4
5	5.8	4.7	4.1	4.1	4.7
4	4.5	5.9	4.6	4.5	4.9
3	5.3	4.7	4.3	3.3	4.4
2	5.4	4.5	4.0	2.5	4.1
1	4.6	4.8	3.6	3.6	4.1
	1	2	3	4	4.8

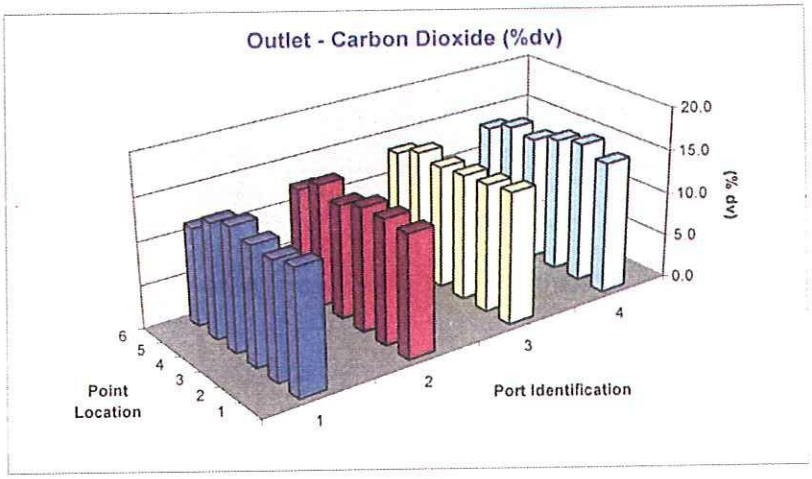


Run 2: Outlet – Set 1

Date: 3/28/2007
Start Time: 11:12
End Time: 11:35

Outlet - Carbon Dioxide (%dv)

AVG	13.3	13.6	14.3	14.8	
6	11.2	12.3	13.3	13.3	12.5
5	13.2	14.1	14.5	14.6	14.1
4	14.2	13.1	14.1	14.3	13.9
3	13.6	14.1	14.4	15.3	14.4
2	13.5	14.3	14.6	16.0	14.6
1	14.2	14.0	15.0	15.0	14.6
	1	2	3	4	14.0

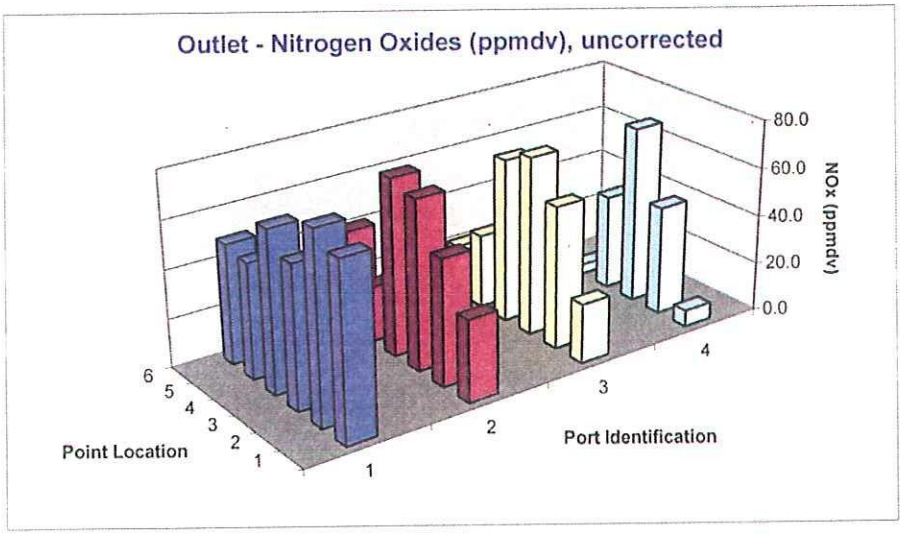


Run 2: Outlet – Set 1

Date: 3/28/2007
Start Time: 11:12
End Time: 11:35

Outlet - Nitrogen Oxides (ppmdv), uncorrected

AVG	61.4	48.3	45.7	28.7	
6	49.1	40.6	20.7	4.4	28.7
5	47.1	22.7	30.5	4.1	26.1
4	65.9	72.6	67.4	39.1	61.3
3	58.1	69.4	73.2	73.1	68.5
2	76.7	51.4	58.3	44.8	57.8
1	71.2	33.3	24.2	6.8	33.9
	1	2	3	4	46.0

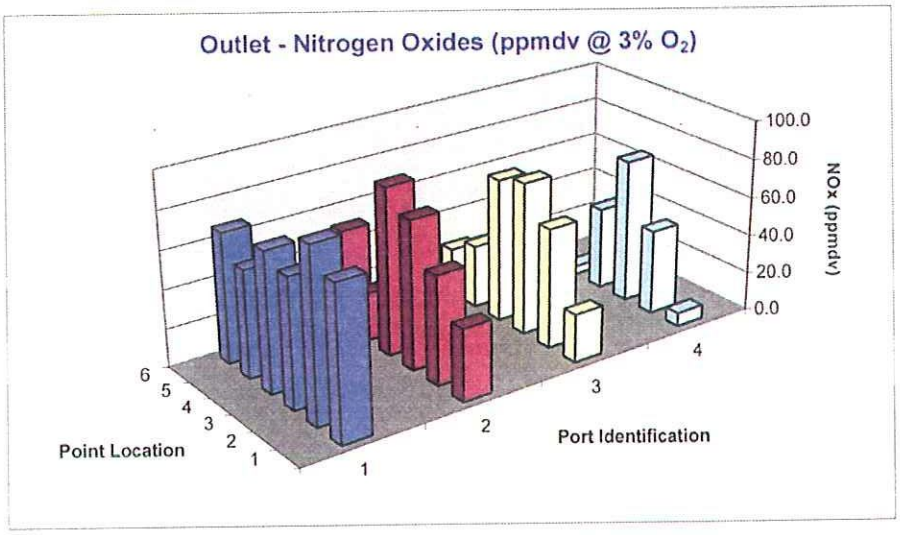


Run 2: Outlet – Set 1

Date: 3/28/2007
Start Time: 11:12
End Time: 11:35

Outlet - Nitrogen Oxides (ppmdv @ 3% O_2)

AVG	71.4	55.4	49.4	29.5	
6	67.5	51.1	24.2	5.1	37.0
5	55.6	25.1	32.5	4.4	29.4
4	72.1	86.5	74.2	42.6	68.8
3	66.6	76.5	78.7	74.3	74.0
2	88.7	56.0	61.8	43.7	62.5
1	78.1	36.9	25.0	7.0	36.8
	1	2	3	4	51.4

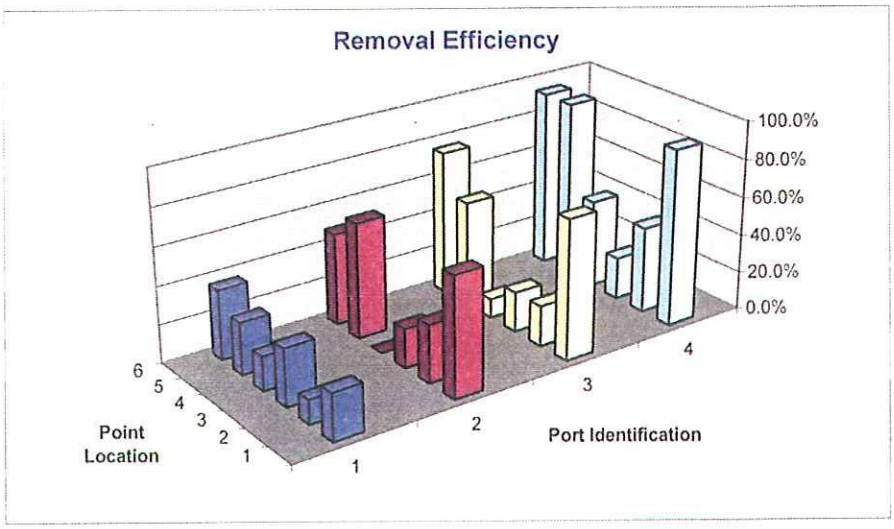


Run 2: Outlet – Set 1

Date: 3/28/2007
Start Time: 11:12
End Time: 11:35

Removal Efficiency (ppmdv @ 3% O_2)

AVG	24.7%	35.5%	42.7%	65.5%	
6	36.5%	48.4%	75.7%	93.5%	63.5%
5	27.1%	60.8%	55.1%	93.4%	59.1%
4	17.8%	-9.1%	10.1%	46.3%	16.3%
3	29.9%	20.3%	21.0%	22.1%	23.3%
2	12.3%	30.2%	21.0%	45.1%	27.2%
1	24.3%	62.5%	73.0%	92.4%	63.0%
	1	2	3	4	42.1%



Clean Air Engineering Project #10192
Consol Energy
AES Dresden

Date: 3/28/2007
Start Time: 11:36
End Time: 11:59

Run # (Cycle #) 2 (2)

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.
1-1	11:36	75.8		-1.0	7.7		11.5		102.4	16.8
1-2	11:40	96.4		19.6	3.1		15.3		97.2	11.6
1-3	11:44	86.3	78.9	9.5	5.0	5.6	13.8	13.3	97.0	11.4
1-4	11:48	79.0		2.2	4.3		14.3		85.1	-0.5
1-5	11:52	65.8		-11.0	4.7		14.1		72.5	-13.1
1-6	11:56	70.1		-6.7	8.6		10.6		102.3	16.8
2-1	11:37	77.8		1.0	6.1		12.8		94.2	8.6
2-2	11:41	79.9		3.1	3.2		15.3		80.8	-4.8
2-3	11:45	82.4	73.8	5.6	5.5	5.0	13.3	13.8	96.0	10.4
2-4	11:49	73.2		-3.6	3.8		14.8		76.4	-9.1
2-5	11:53	56.5		-20.3	4.4		14.3		61.2	-24.4
2-6	11:57	72.8		-4.0	6.8		12.2		92.4	6.8
3-1	11:38	88.1		11.3	4.2		14.4		94.5	8.9
3-2	11:42	78.8		2.0	3.1		15.4		79.2	-6.4
3-3	11:46	99.0	80.9	22.2	3.3	4.2	15.1	14.4	100.9	15.3
3-4	11:50	76.8		0.0	3.6		14.9		79.4	-6.2
3-5	11:54	63.3		-13.5	4.4		14.3		68.6	-17.0
3-6	11:58	79.4		2.6	6.4		12.5		98.2	12.6
4-1	11:39	75.0		-1.8	6.1		12.8		90.9	5.3
4-2	11:43	79.3		2.5	2.7		15.7		78.0	-7.6
4-3	11:47	93.5	73.5	16.7	3.0	4.3	15.5	14.3	93.4	7.9
4-4	11:51	74.8		-2.0	3.4		15.0		76.7	-8.9
4-5	11:55	56.2		-20.6	4.2		14.4		60.2	-25.4
4-6	11:59	62.3		-14.5	6.4		12.6		76.7	-8.9
Inlet Averages		76.8			4.7		13.9		85.6	

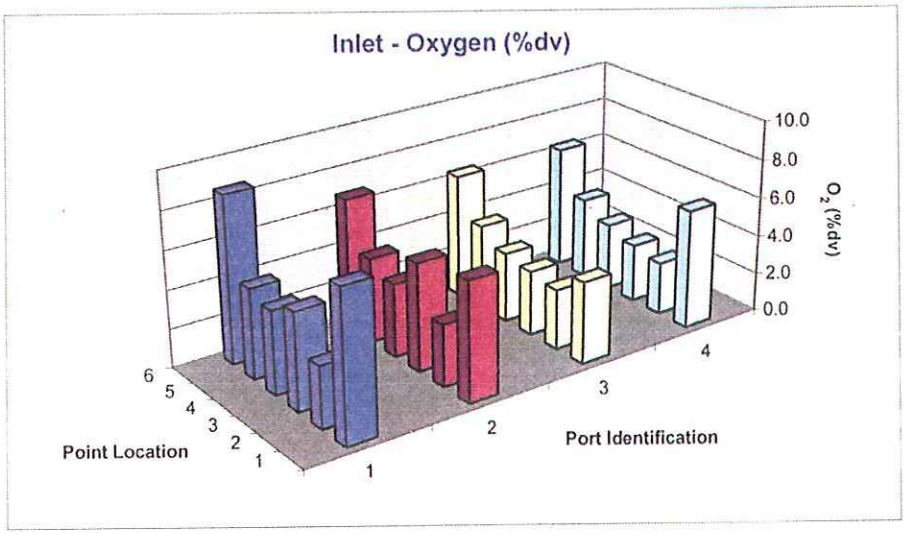
Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	Removal Efficiency	Removal Eff W/ O2 correction
1-1	11:36	69.9		22.6	4.9		13.9		78.2	24.8	7.8	23.7
1-2	11:40	78.3		31.0	5.7		13.2		92.0	38.7	18.8	5.3
1-3	11:44	58.5	62.8	11.2	5.1	5.7	13.7	13.2	66.4	13.1	32.2	31.5
1-4	11:48	71.3		24.0	4.0		14.7		75.4	22.1	9.7	11.4
1-5	11:52	51.0		3.7	6.4		12.6		63.0	9.7	22.5	13.1
1-6	11:56	47.5		0.2	8.2		10.9		66.9	13.6	32.2	34.6
2-1	11:37	30.5		-16.8	5.0		13.8		34.3	-19.0	60.8	63.5
2-2	11:41	54.7		7.4	4.7		14.1		60.5	7.2	31.5	25.1
2-3	11:45	71.9	48.9	24.6	4.9	5.3	14.0	13.5	80.2	26.9	12.7	16.4
2-4	11:49	73.7		26.4	5.8		13.1		87.5	34.2	-0.7	-14.4
2-5	11:53	21.7		-25.6	4.8		14.0		24.2	-29.1	61.6	60.5
2-6	11:57	41.1		-6.2	6.8		12.2		52.2	-1.1	43.5	43.5
3-1	11:38	21.8		-25.5	4.0		14.7		23.0	-30.3	75.3	75.6
3-2	11:42	70.8		23.5	4.4		14.3		76.9	23.6	10.2	2.8
3-3	11:46	82.3	47.9	35.0	4.5	4.6	14.3	14.2	89.6	36.3	16.9	11.3
3-4	11:50	63.3		16.0	4.7		14.0		70.0	16.7	17.6	11.9
3-5	11:54	28.9		-18.4	4.2		14.5		31.0	-22.3	54.3	54.8
3-6	11:58	20.1		-27.2	5.8		13.2		23.8	-29.5	74.7	75.8
4-1	11:39	6.5		-40.8	3.7		14.9		6.8	-46.5	91.3	92.5
4-2	11:43	48.0		0.7	2.8		15.9		47.4	-5.9	39.5	39.3
4-3	11:47	77.4	29.8	30.1	3.3	3.9	15.3	14.8	78.9	25.6	17.2	15.6
4-4	11:51	38.3		-9.0	4.4		14.3		41.6	-11.7	48.8	45.7
4-5	11:55	4.2		-43.1	3.9		14.8		4.4	-48.9	92.5	92.7
4-5	11:59	4.4		-42.9	5.4		13.4		5.1	-48.2	92.9	93.4
Outlet Averages		47.3			4.9		13.9		53.3		40.2	38.6

Run 2: Inlet – Set 2

Date: 3/28/2007
Start Time: 11:36
End Time: 11:59

Inlet - Oxygen (%dv)

AVG	5.6	5.0	4.2	4.3	
6	8.6	6.8	6.4	6.4	7.1
5	4.7	4.4	4.4	4.2	4.4
4	4.3	3.8	3.6	3.4	3.8
3	5.0	5.5	3.3	3.0	4.2
2	3.1	3.2	3.1	2.7	3.0
1	7.7	6.1	4.2	6.1	6.0
	1	2	3	4	4.7

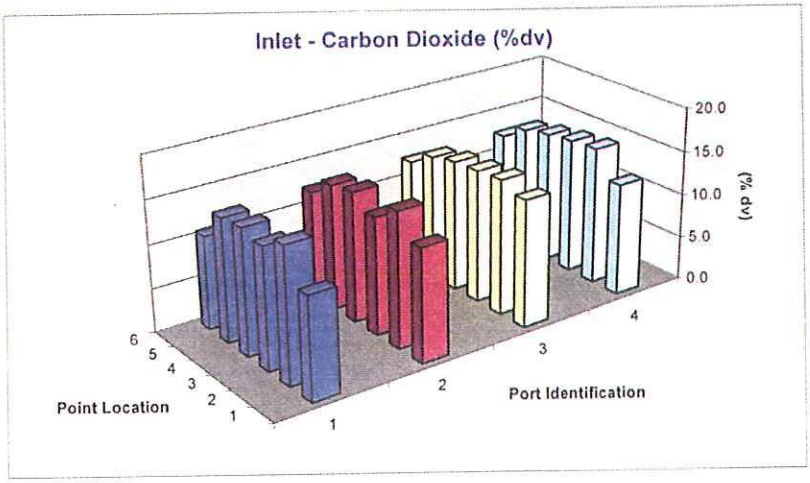


Run 2: Inlet – Set 2

Date: 3/28/2007
Start Time: 11:36
End Time: 11:59

Inlet - Carbon Dioxide (%dv)

AVG	13.3	13.8	14.4	14.3	
6	10.6	12.2	12.5	12.6	12.0
5	14.1	14.3	14.3	14.4	14.3
4	14.3	14.8	14.9	15.0	14.8
3	13.8	13.3	15.1	15.5	14.4
2	15.3	15.3	15.4	15.7	15.4
1	11.5	12.8	14.4	12.8	12.9
	1	2	3	4	13.9

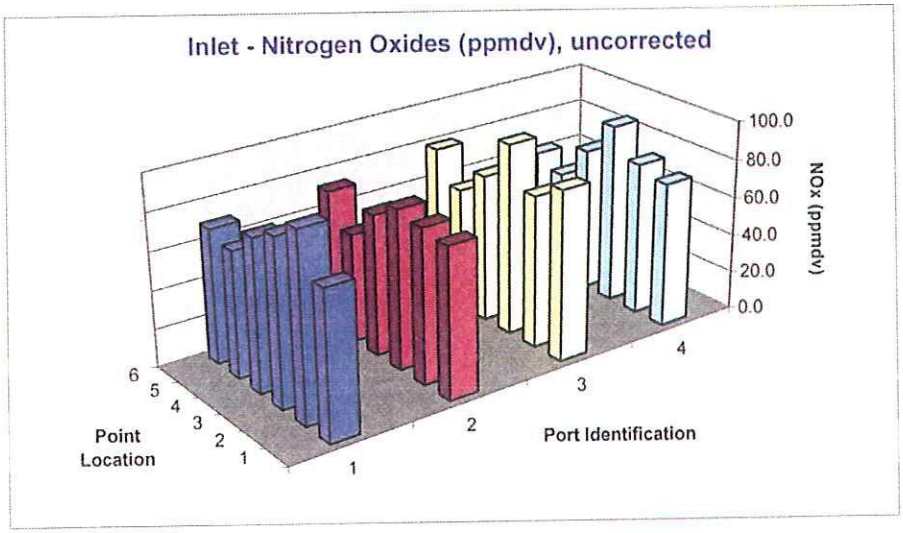


Run 2: Inlet – Set 2

Date: 3/28/2007
Start Time: 11:36
End Time: 11:59

Inlet - Nitrogen Oxides (ppmdv), uncorrected

AVG	78.9	73.8	80.9	73.5	
6	70.1	72.8	79.4	62.3	71.2
5	65.8	56.5	63.3	56.2	60.5
4	79.0	73.2	76.8	74.8	76.0
3	86.3	82.4	99.0	93.5	90.3
2	96.4	79.9	78.8	79.3	83.6
1	75.8	77.8	88.1	75.0	79.2
	1	2	3	4	76.8

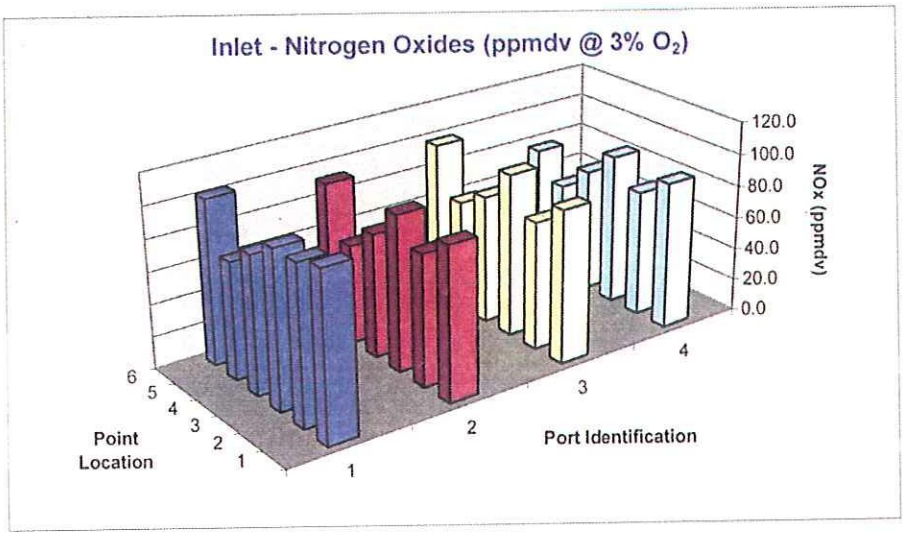


Run 2: Inlet – Set 2

Date: 3/28/2007
Start Time: 11:36
End Time: 11:59

Inlet - Nitrogen Oxides (ppmdv @ 3% O_2)

AVG	92.7	83.5	86.8	79.3	
6	102.3	92.4	98.2	76.7	92.4
5	72.5	61.2	68.6	60.2	65.6
4	85.1	76.4	79.4	76.7	79.4
3	97.0	96.0	100.9	93.4	96.8
2	97.2	80.8	79.2	78.0	83.8
1	102.4	94.2	94.5	90.9	95.5
	1	2	3	4	85.6

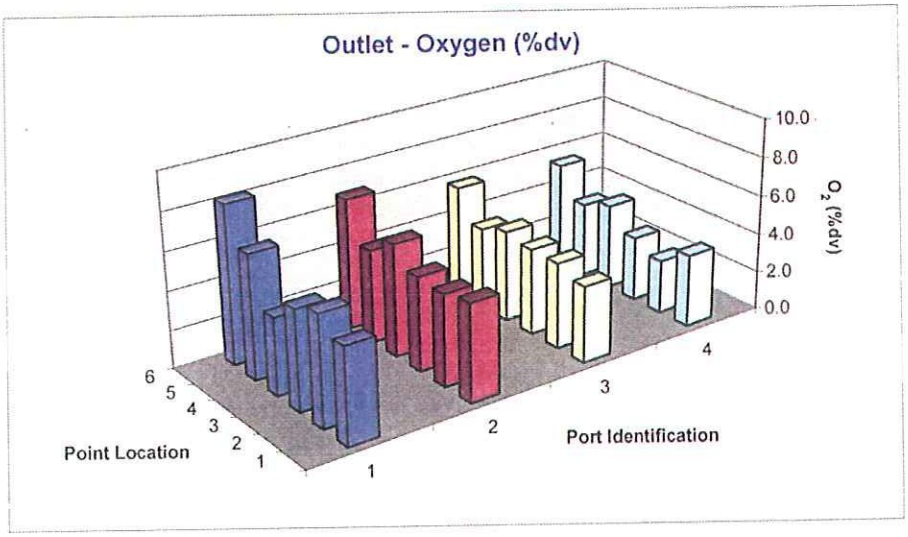


Run 2: Outlet – Set 2

Date: 3/28/2007
Start Time: 11:36
End Time: 11:59

Outlet - Oxygen (%dv)

AVG	5.7	5.3	4.6	3.9	
6	8.2	6.8	5.8	5.4	6.5
5	6.4	4.8	4.2	3.9	4.8
4	4.0	5.8	4.7	4.4	4.7
3	5.1	4.9	4.5	3.3	4.4
2	5.7	4.7	4.4	2.8	4.4
1	4.9	5.0	4.0	3.7	4.4
	1	2	3	4	4.9

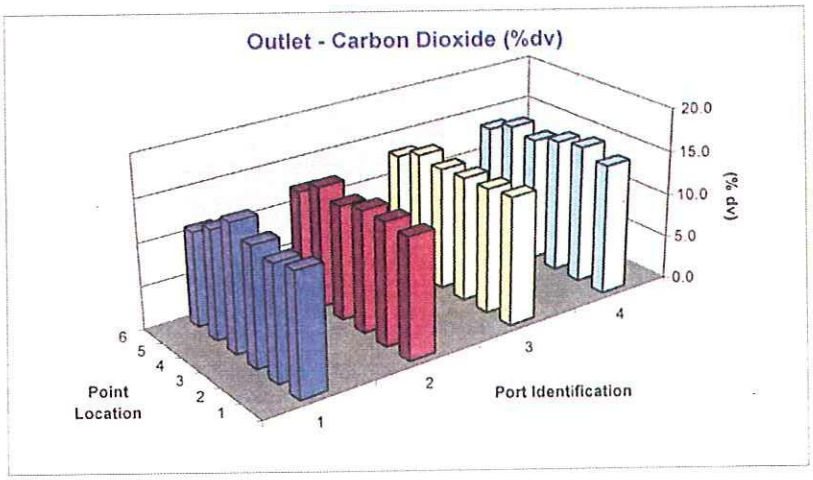


Run 2: Outlet – Set 2

Date: 3/28/2007
Start Time: 11:36
End Time: 11:59

Outlet - Carbon Dioxide (%dv)

AVG	13.2	13.5	14.2	14.8	
6	10.9	12.2	13.2	13.4	12.4
5	12.6	14.0	14.5	14.8	14.0
4	14.7	13.1	14.0	14.3	14.0
3	13.7	14.0	14.3	15.3	14.3
2	13.2	14.1	14.3	15.9	14.4
1	13.9	13.8	14.7	14.9	14.3
	1	2	3	4	13.9

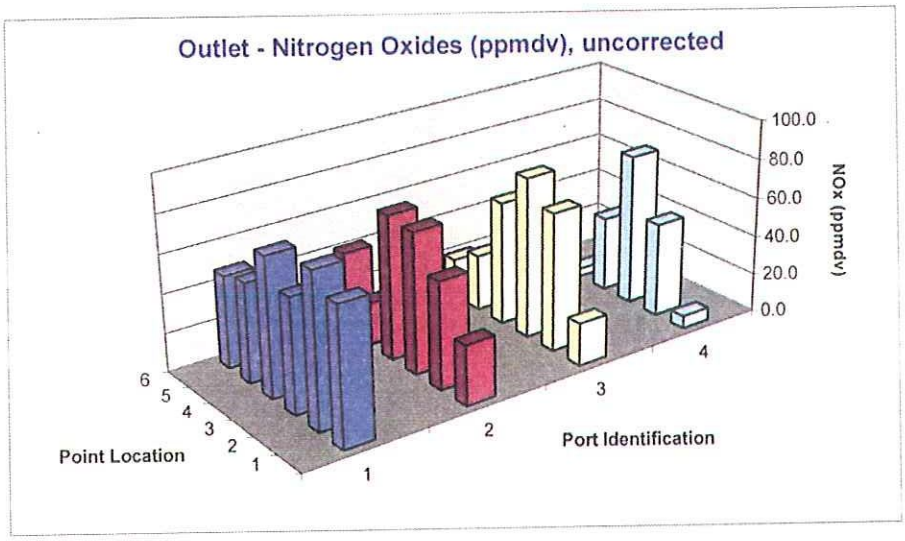


Run 2: Outlet – Set 2

Date: 3/28/2007
Start Time: 11:36
End Time: 11:59

Outlet - Nitrogen Oxides (ppmdv), uncorrected

AVG	62.8	48.9	47.9	29.8	
6	47.5	41.1	20.1	4.4	28.3
5	51.0	21.7	28.9	4.2	26.5
4	71.3	73.7	63.3	38.3	61.7
3	58.5	71.9	82.3	77.4	72.5
2	78.3	54.7	70.8	48.0	63.0
1	69.9	30.5	21.8	6.5	32.2
	1	2	3	4	47.3

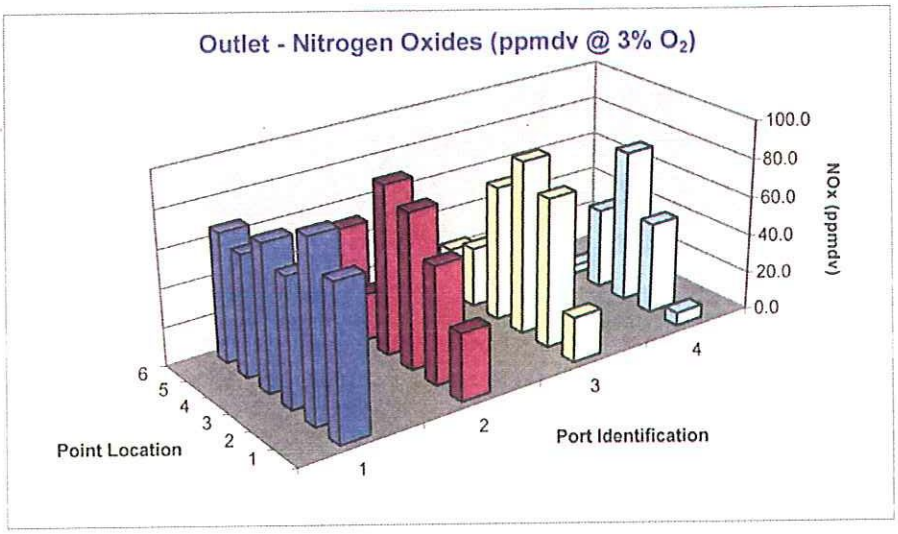


Run 2: Outlet – Set 2

Date: 3/28/2007
Start Time: 11:36
End Time: 11:59

Outlet - Nitrogen Oxides (ppmdv @ 3% O_2)

AVG	73.7	56.5	52.4	30.7	
6	66.9	52.2	23.8	5.1	37.0
5	63.0	24.2	31.0	4.4	30.6
4	75.4	87.5	70.0	41.6	68.6
3	66.4	80.2	89.6	78.9	78.8
2	92.0	60.5	76.9	47.4	69.2
1	78.2	34.3	23.0	6.8	35.6
	1	2	3	4	53.3

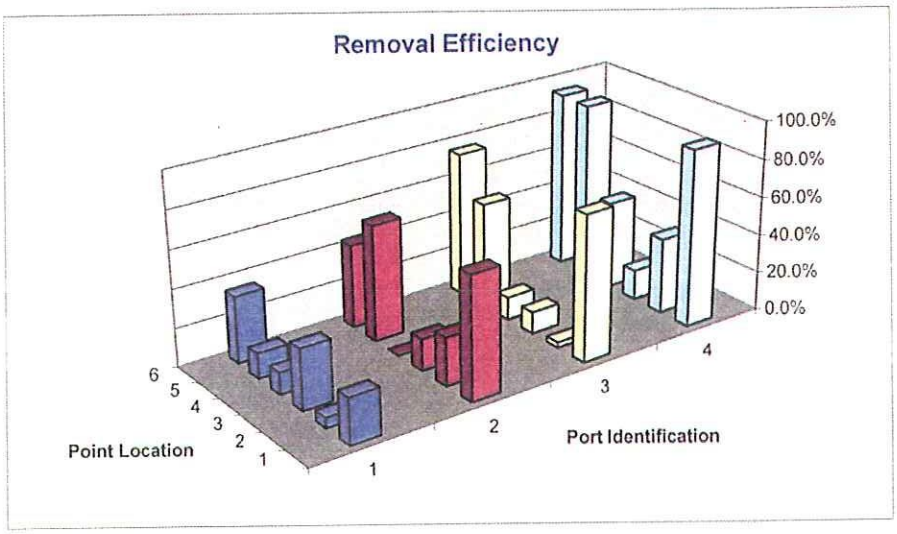


Run 2: Outlet – Set 2

Date: 3/28/2007
Start Time: 11:36
End Time: 11:59

Removal Efficiency (ppmdv @ 3% O_2)

AVG	19.9%	32.4%	38.7%	63.2%	
6	34.6%	43.5%	75.8%	93.4%	61.8%
5	13.1%	60.5%	54.8%	92.7%	55.3%
4	11.4%	-14.4%	11.9%	45.7%	13.6%
3	31.5%	16.4%	11.3%	15.6%	18.7%
2	5.3%	25.1%	2.8%	39.3%	18.1%
1	23.7%	63.5%	75.6%	92.5%	63.8%
	1	2	3	4	38.6%



Clean Air Engineering Project #10192
Consol Energy
AES Dresden

Date: 3/28/2007
Start Time: 12:00
End Time: 12:23

Run # (Cycle #) 2 (3)

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.
1-1	12:00	74.5		-2.1	7.7		11.4		101.3	15.7
1-2	12:04	98.5		21.9	3.3		15.1		100.4	14.8
1-3	12:08	85.5	79.8	8.9	5.0	5.6	13.8	13.3	96.4	10.8
1-4	12:12	79.7		3.1	4.3		14.3		85.1	0.5
1-5	12:16	65.4		-11.2	4.5		14.2		71.5	-14.1
1-6	12:20	68.9		-7.7	8.5		10.8		99.3	13.7
2-1	12:01	77.3		0.7	6.1		12.7		93.7	8.1
2-2	12:05	77.8		1.2	3.3		15.2		79.2	-6.4
2-3	12:09	81.9	74.5	5.3	5.4	5.0	13.4	13.8	94.7	9.1
2-4	12:13	73.8		-2.8	3.8		14.8		77.1	-8.5
2-5	12:17	59.2		-17.4	4.3		14.4		63.9	-21.7
2-6	12:21	77.1		0.5	6.9		12.2		98.3	12.7
3-1	12:02	86.9		10.3	4.3		14.4		93.6	8.0
3-2	12:06	77.4		0.8	3.2		15.2		78.4	-7.2
3-3	12:10	96.4	80.0	19.8	3.3	4.2	15.2	14.4	98.0	12.4
3-4	12:14	76.8		0.2	3.6		14.9		79.4	-6.2
3-5	12:18	63.6		-13.0	4.4		14.3		68.8	-16.8
3-6	12:22	79.0		2.4	6.3		12.6		96.9	11.3
4-1	12:03	74.4		-2.2	6.8		12.2		94.6	9.0
4-2	12:07	78.2		1.6	2.8		15.6		77.3	-8.3
4-3	12:11	94.0	73.1	17.4	3.1	4.4	15.4	14.2	94.6	9.0
4-4	12:15	74.7		-1.9	3.4		15.1		76.4	-9.2
4-5	12:19	55.6		-21.0	4.1		14.5		59.2	-26.4
4-6	12:23	61.4		-15.2	6.4		12.6		75.6	-10.0
Inlet Averages		76.6			4.8		13.9		85.6	

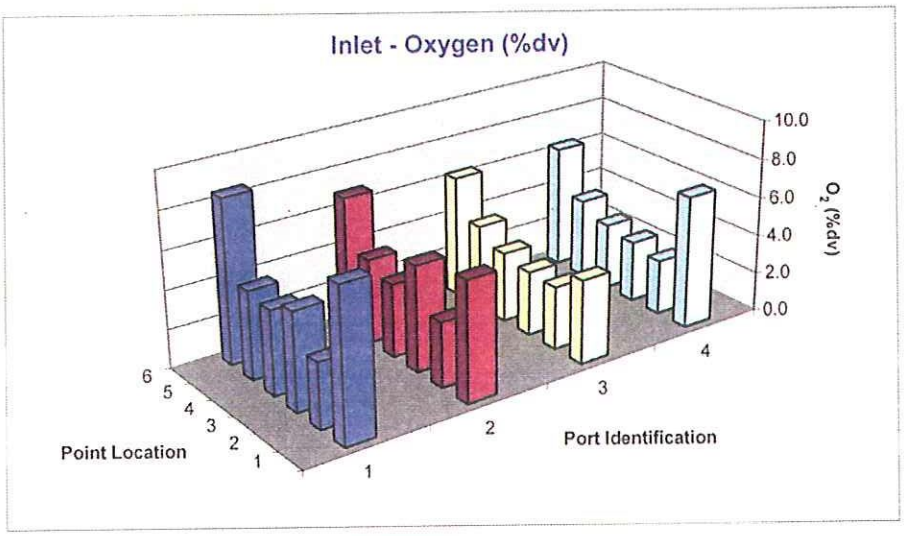
Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	Removal Efficiency	Removal Eff W/ O2 correction
1-1	12:00	68.7		21.5	5.1		13.8		77.6	24.3	7.8	23.4
1-2	12:04	80.1		32.9	5.9		13.1		95.5	42.2	18.7	4.9
1-3	12:08	57.9	62.5	10.7	5.3	5.8	13.6	13.1	66.4	13.1	32.3	31.1
1-4	12:12	68.1		20.9	4.6		14.2		74.6	21.3	14.6	13.4
1-5	12:16	51.3		4.1	6.2		12.7		62.6	9.3	21.6	12.4
1-6	12:20	49.0		1.8	7.9		11.2		67.4	14.1	28.9	32.1
2-1	12:01	30.5		-16.7	5.1		13.7		34.6	-18.7	60.5	63.1
2-2	12:05	53.3		6.1	4.7		14.1		58.9	5.6	31.5	25.6
2-3	12:09	72.1	49.3	24.9	4.7	5.3	14.0	13.5	79.8	26.5	12.0	15.7
2-4	12:13	74.0		26.8	5.8		13.1		87.9	34.6	-0.3	-14.0
2-5	12:17	22.3		-24.9	4.8		14.0		24.8	-28.5	62.3	61.2
2-6	12:21	43.5		-3.7	6.7		12.2		55.0	1.7	43.6	44.1
3-1	12:02	20.4		-26.8	3.8		14.8		21.4	-31.9	76.5	77.1
3-2	12:06	72.6		25.4	4.5		14.3		79.0	25.7	6.2	-0.9
3-3	12:10	83.6	47.9	36.4	4.3	4.6	14.4	14.2	90.2	36.9	13.3	7.9
3-4	12:14	58.6		11.4	4.9		13.9		65.6	12.3	23.7	17.4
3-5	12:18	29.5		-17.7	4.2		14.5		31.6	-21.7	53.6	54.1
3-6	12:22	22.9		-24.3	5.6		13.2		26.8	-26.5	71.0	72.3
4-1	12:03	6.2		-41.0	4.0		14.7		6.6	-46.7	91.7	93.1
4-2	12:07	44.4		-2.8	2.9		15.7		44.2	-9.1	43.2	42.8
4-3	12:11	74.6	28.9	27.4	3.4	4.0	15.3	14.7	76.3	23.0	20.6	19.4
4-4	12:15	39.9		-7.3	4.4		14.4		43.3	-10.0	46.6	43.4
4-5	12:19	3.8		-43.4	3.7		15.0		4.0	-49.3	93.2	93.3
4-6	12:23	4.4		-42.8	5.3		13.6		5.1	-48.2	92.8	93.3
Outlet Averages		47.2			4.9		13.9		53.3		40.2	38.6

Run 2: Inlet – Set 3

Date: 3/28/2007
Start Time: 12:00
End Time: 12:23

Inlet - Oxygen (%dv)

AVG	5.6	5.0	4.2	4.4	
6	8.5	6.9	6.3	6.4	7.0
5	4.5	4.3	4.4	4.1	4.3
4	4.3	3.8	3.6	3.4	3.8
3	5.0	5.4	3.3	3.1	4.2
2	3.3	3.3	3.2	2.8	3.2
1	7.7	6.1	4.3	6.8	6.2
	1	2	3	4	4.8

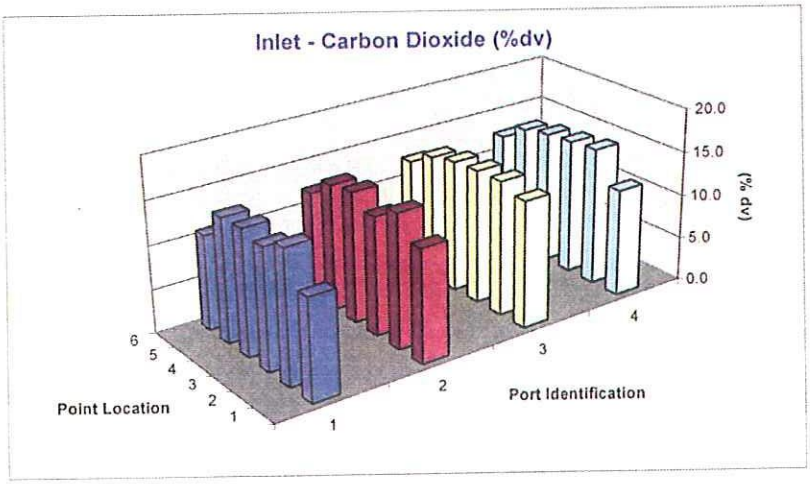


Run 2: Inlet – Set 3

Date: 3/28/2007
Start Time: 12:00
End Time: 12:23

Inlet - Carbon Dioxide (%dv)

AVG	13.3	13.8	14.4	14.2	
6	10.8	12.2	12.6	12.6	12.0
5	14.2	14.4	14.3	14.5	14.3
4	14.3	14.8	14.9	15.1	14.8
3	13.8	13.4	15.2	15.4	14.4
2	15.1	15.2	15.2	15.6	15.3
1	11.4	12.7	14.4	12.2	12.7
	1	2	3	4	13.9

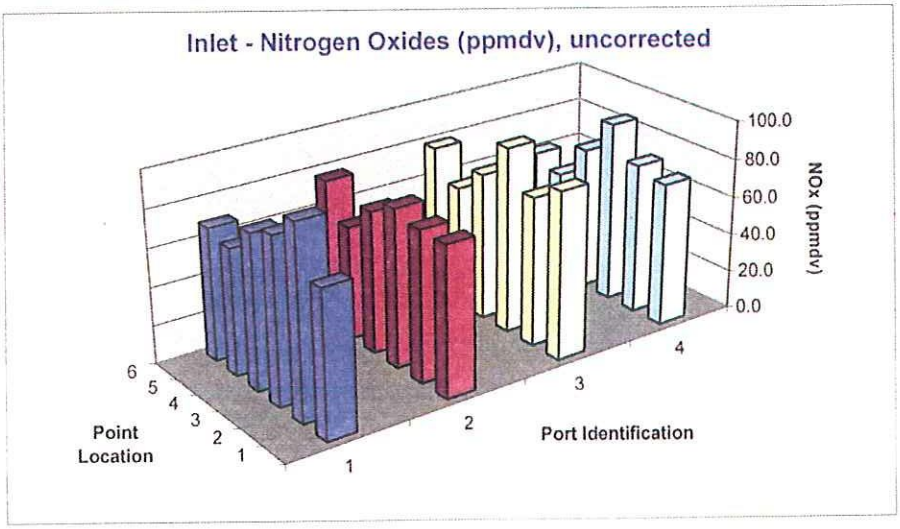


Run 2: Inlet – Set 3

Date: 3/28/2007
Start Time: 12:00
End Time: 12:23

Inlet - Nitrogen Oxides (ppmdv), uncorrected

AVG	78.8	74.5	80.0	73.1	
6	68.9	77.1	79.0	61.4	71.6
5	65.4	59.2	63.6	55.6	61.0
4	79.7	73.8	76.8	74.7	76.3
3	85.5	81.9	96.4	94.0	89.5
2	98.5	77.8	77.4	78.2	83.0
1	74.5	77.3	86.9	74.4	78.3
	1	2	3	4	76.6

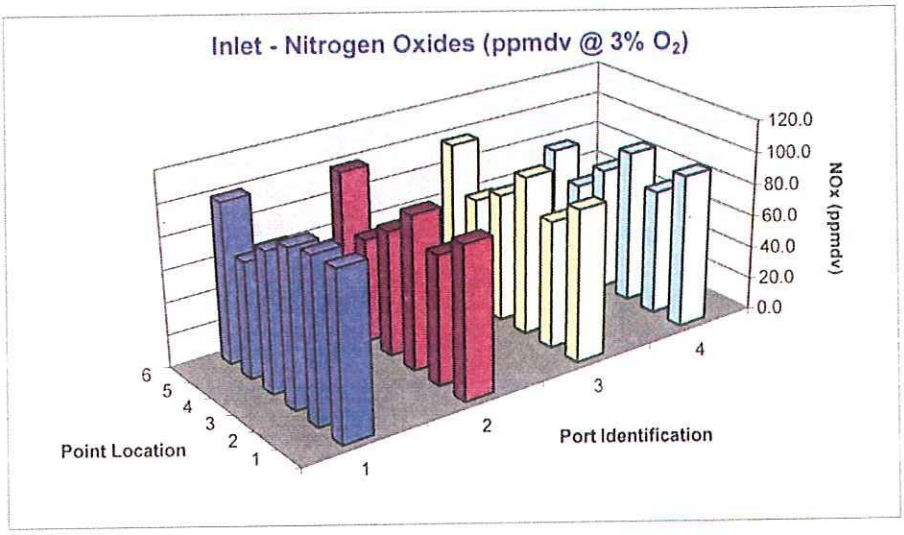


Run 2: Inlet – Set 3

Date: 3/28/2007
Start Time: 12:00
End Time: 12:23

Inlet - Nitrogen Oxides (ppmdv @ 3% O_2)

AVG	92.5	84.5	85.8	79.6	
6	99.3	98.3	96.9	75.6	92.5
5	71.5	63.9	68.8	59.2	65.9
4	86.1	77.1	79.4	76.4	79.7
3	96.4	94.7	98.0	94.6	95.9
2	100.4	79.2	78.4	77.3	83.8
1	101.3	93.7	93.6	94.6	95.8
	1	2	3	4	85.6

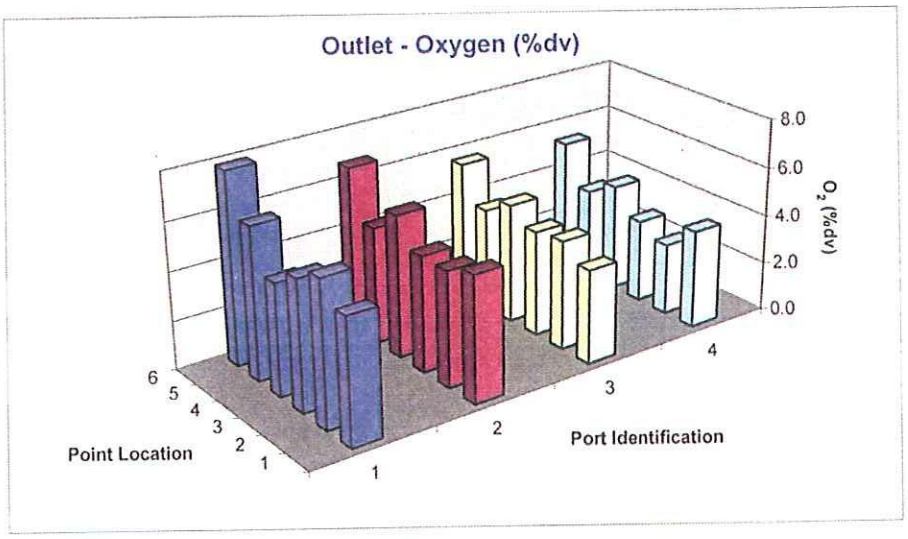


Run 2: Outlet – Set 3

Date: 3/28/2007
Start Time: 12:00
End Time: 12:23

Outlet - Oxygen (%dv)

AVG	5.8	5.3	4.6	4.0	
6	7.9	6.7	5.6	5.3	6.4
5	6.2	4.8	4.2	3.7	4.7
4	4.6	5.8	4.9	4.4	4.9
3	5.3	4.7	4.3	3.4	4.4
2	5.9	4.7	4.5	2.9	4.5
1	5.1	5.1	3.8	4.0	4.5
	1	2	3	4	4.9

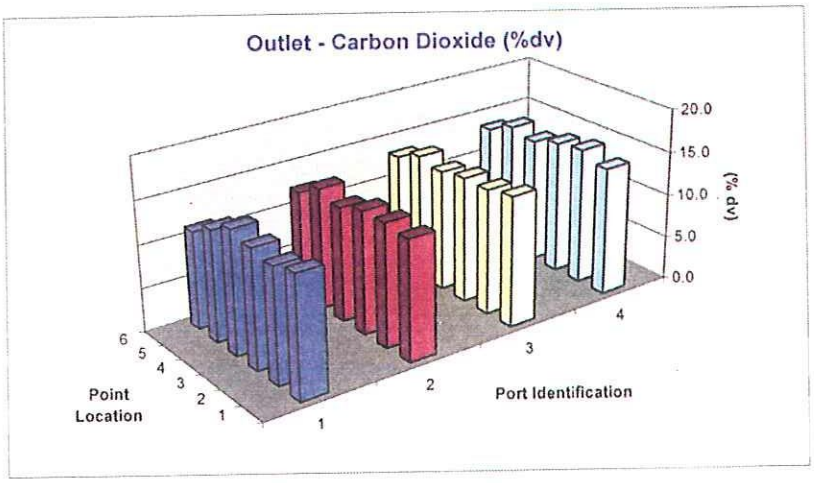


Run 2: Outlet – Set 3

Date: 3/28/2007
Start Time: 12:00
End Time: 12:23

Outlet - Carbon Dioxide (%dv)

AVG	13.1	13.5	14.2	14.7	
6	11.2	12.2	13.2	13.6	12.6
5	12.7	14.0	14.5	15.0	14.0
4	14.2	13.1	13.9	14.4	13.9
3	13.6	14.0	14.4	15.3	14.3
2	13.1	14.1	14.3	15.7	14.3
1	13.8	13.7	14.8	14.7	14.3
	1	2	3	4	13.9

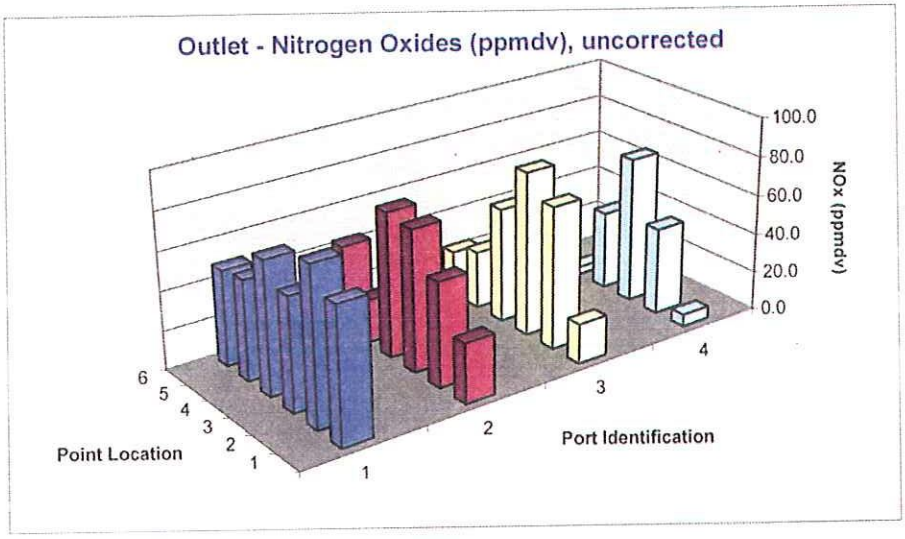


Run 2: Outlet – Set 3

Date: 3/28/2007
Start Time: 12:00
End Time: 12:23

Outlet - Nitrogen Oxides (ppmdv), uncorrected

AVG	62.5	49.3	47.9	28.9	
6	49.0	43.5	22.9	4.4	30.0
5	51.3	22.3	29.5	3.8	26.7
4	68.1	74.0	58.6	39.9	60.2
3	57.9	72.1	83.6	74.6	72.1
2	80.1	53.3	72.6	44.4	62.6
1	68.7	30.5	20.4	6.2	31.5
	1	2	3	4	47.2

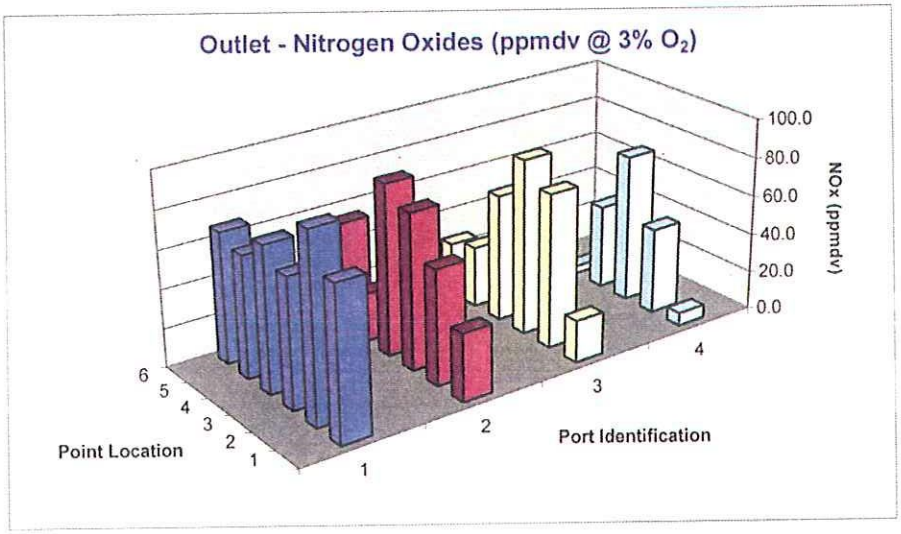


Run 2: Outlet – Set 3

Date: 3/28/2007
Start Time: 12:00
End Time: 12:23

Outlet - Nitrogen Oxides (ppmdv @ 3% O_2)

AVG	74.0	56.8	52.4	29.9	
6	67.4	55.0	26.8	5.1	38.6
5	62.6	24.8	31.6	4.0	30.7
4	74.6	87.9	65.6	43.3	67.8
3	66.4	79.8	90.2	76.3	78.2
2	95.5	58.9	79.0	44.2	69.4
1	77.6	34.6	21.4	6.6	35.0
	1	2	3	4	53.3

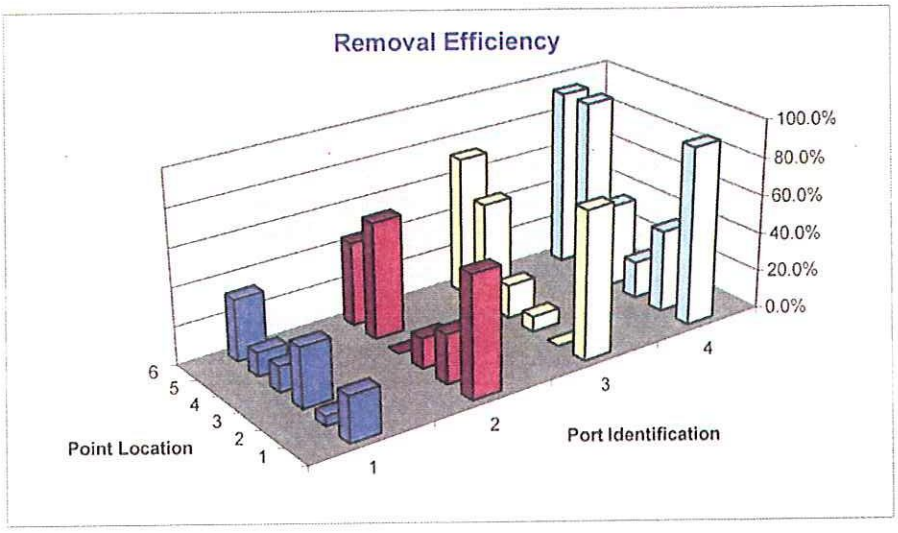


Run 2: Outlet – Set 3

Date: 3/28/2007
Start Time: 12:00
End Time: 12:23

Removal Efficiency (ppmdv @ 3% O_2)

AVG	19.5%	32.6%	38.0%	64.2%	
6	32.1%	44.1%	72.3%	93.3%	60.4%
5	12.4%	61.2%	54.1%	93.3%	55.3%
4	13.4%	-14.0%	17.4%	43.4%	15.0%
3	31.1%	15.7%	7.9%	19.4%	18.5%
2	4.9%	25.6%	-0.9%	42.8%	18.1%
1	23.4%	63.1%	77.1%	93.1%	64.2%
	1	2	3	4	38.6%



Clean Air Engineering Project #10192
Consol Energy
AES Dresden

Date: 3/28/2007
Start Time: 12:48
End Time: 13:11

Run # (Cycle #) 3 (1)

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.
1-1	12:48	69.2		-5.6	7.9		11.3		95.2	11.9
1-2	12:52	101.3		26.5	3.0		15.3		101.3	18.0
1-3	12:56	75.7	74.6	0.9	5.1	5.6	13.6	13.2	85.8	2.5
1-4	13:00	70.5		-4.3	4.4		14.2		76.4	-6.9
1-5	13:04	61.6		-13.2	4.5		14.2		67.2	-16.1
1-6	13:08	69.0		-5.8	8.5		10.8		99.9	16.6
2-1	12:49	78.1		3.3	6.2		12.7		95.4	12.1
2-2	12:53	75.4		0.6	3.3		15.2		76.6	-6.7
2-3	12:57	81.5	73.7	6.7	5.2	4.9	13.6	13.8	93.0	9.7
2-4	13:01	72.5		-2.3	3.6		14.9		75.0	-8.3
2-5	13:05	56.0		-18.8	4.2		14.4		60.1	-23.2
2-6	13:09	78.7		3.9	6.8		12.1		100.2	16.9
3-1	12:50	87.6		12.8	4.4		14.3		94.9	11.6
3-2	12:54	75.2		0.4	3.1		15.3		75.7	-7.6
3-3	12:58	94.6	78.9	19.8	3.2	4.1	15.2	14.5	95.8	12.5
3-4	13:02	75.5		0.7	3.5		15.0		77.7	-5.6
3-5	13:06	61.7		-13.1	4.2		14.4		66.3	-17.0
3-6	13:10	78.5		3.7	6.2		12.7		95.8	12.5
4-1	12:51	74.3		-0.5	6.1		12.8		89.9	6.6
4-2	12:55	75.9		1.1	2.8		15.6		75.1	-8.2
4-3	12:59	93.4	72.2	18.6	3.0	4.3	15.5	14.4	93.3	10.0
4-4	13:03	73.0		-1.8	3.4		15.1		74.5	-8.8
4-5	13:07	54.7		-20.1	3.9		14.7		57.7	-25.6
4-6	13:11	61.6		-13.2	6.5		12.5		76.4	-6.9
Inlet Averages		74.8			4.7		14.0		83.3	

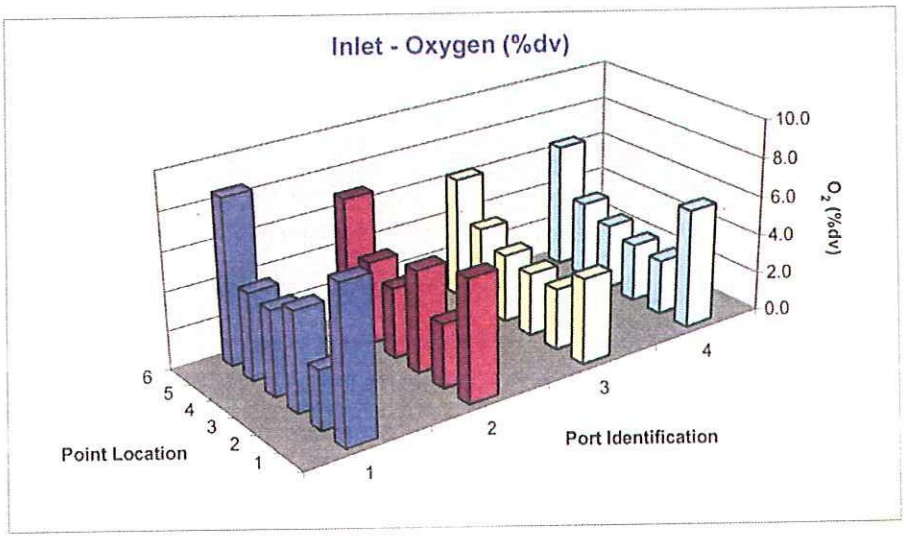
Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	Removal Efficiency	Removal Eff W/ O2 correction
1-1	12:48	43.7		-0.6	6.9		12.0		55.9	5.1	36.8	41.3
1-2	12:52	78.6		34.3	5.6		13.3		92.0	41.2	22.4	9.2
1-3	12:56	48.1	54.5	3.8	7.3	6.5	12.0	12.5	63.2	12.4	36.5	26.3
1-4	13:00	54.2		9.9	5.7		13.2		63.8	13.0	23.1	16.5
1-5	13:04	54.3		10.0	5.1		13.8		61.6	10.8	11.9	8.4
1-6	13:08	47.9		3.6	8.1		11.0		67.1	16.3	30.6	32.8
2-1	12:49	28.3		-16.0	5.3		13.6		32.4	-18.4	63.8	66.1
2-2	12:53	54.7		10.4	4.6		14.2		60.0	9.2	27.5	21.6
2-3	12:57	56.5	47.5	12.2	5.5	5.4	13.3	13.4	65.5	14.7	30.7	29.6
2-4	13:01	71.8		27.5	5.7		13.2		84.6	33.8	1.0	-12.7
2-5	13:05	33.1		-11.2	5.0		13.7		37.3	-13.5	40.9	37.9
2-6	13:09	40.4		-3.9	6.7		12.4		50.8	0.0	48.7	49.3
3-1	12:50	18.6		-25.7	4.1		14.6		19.8	-31.0	78.8	79.2
3-2	12:54	67.6		23.3	4.1		14.5		72.2	21.4	10.1	4.6
3-3	12:58	72.3	45.3	28.0	5.2	4.7	13.6	14.1	82.5	31.7	23.6	13.9
3-4	13:02	60.3		16.0	4.8		14.0		67.0	16.2	20.1	13.7
3-5	13:06	30.7		-13.6	4.2		14.5		32.9	-17.9	50.2	50.3
3-6	13:10	22.1		-22.2	5.9		13.1		25.3	-24.5	71.8	72.6
4-1	12:51	6.3		-38.0	3.9		14.8		6.6	-44.2	91.5	92.6
4-2	12:55	47.6		3.3	2.8		15.8		47.2	-3.6	37.3	37.2
4-3	12:59	78.3	29.9	34.0	3.3	3.9	15.4	14.8	79.5	28.7	16.2	14.8
4-4	13:03	39.1		-5.2	4.3		14.4		42.2	-8.6	46.4	43.4
4-5	13:07	3.8		-40.5	3.5		15.2		3.9	-46.9	93.1	93.2
4-6	13:11	4.3		-40.0	5.4		13.5		5.0	-45.8	93.0	93.5
Outlet Averages		44.3			5.1		13.7		50.8		41.9	39.0

Run 3: Inlet – Set 1

Date: 3/28/2007
Start Time: 12:48
End Time: 13:16

Inlet - Oxygen (%dv)

AVG	5.6	4.9	4.1	4.3	
6	8.5	6.8	6.2	6.5	7.0
5	4.5	4.2	4.2	3.9	4.2
4	4.4	3.6	3.5	3.4	3.7
3	5.1	5.2	3.2	3.0	4.1
2	3.0	3.3	3.1	2.8	3.1
1	7.9	6.2	4.4	6.1	6.2
	1	2	3	4	4.7

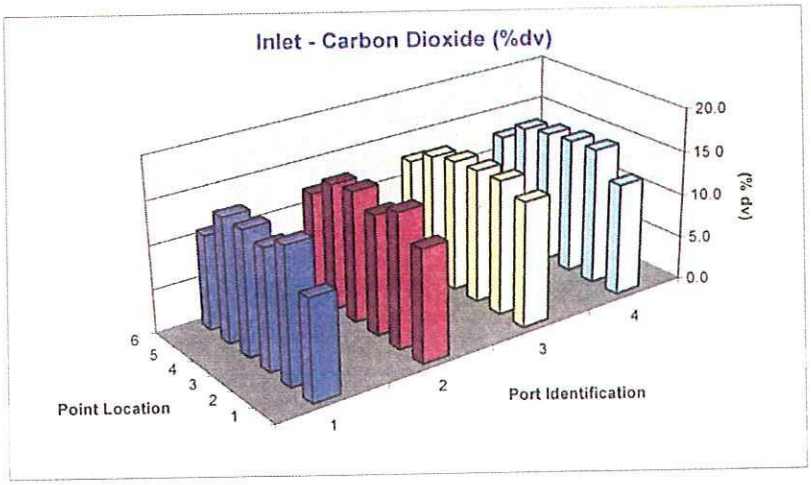


Run 3: Inlet – Set 1

Date: 3/28/2007
Start Time: 12:48
End Time: 13:16

Inlet - Carbon Dioxide (%dv)

AVG	13.2	13.8	14.5	14.4	
6	10.8	12.1	12.7	12.5	12.0
5	14.2	14.4	14.4	14.7	14.4
4	14.2	14.9	15.0	15.1	14.8
3	13.6	13.6	15.2	15.5	14.5
2	15.3	15.2	15.3	15.6	15.4
1	11.3	12.7	14.3	12.8	12.8
	1	2	3	4	14.0

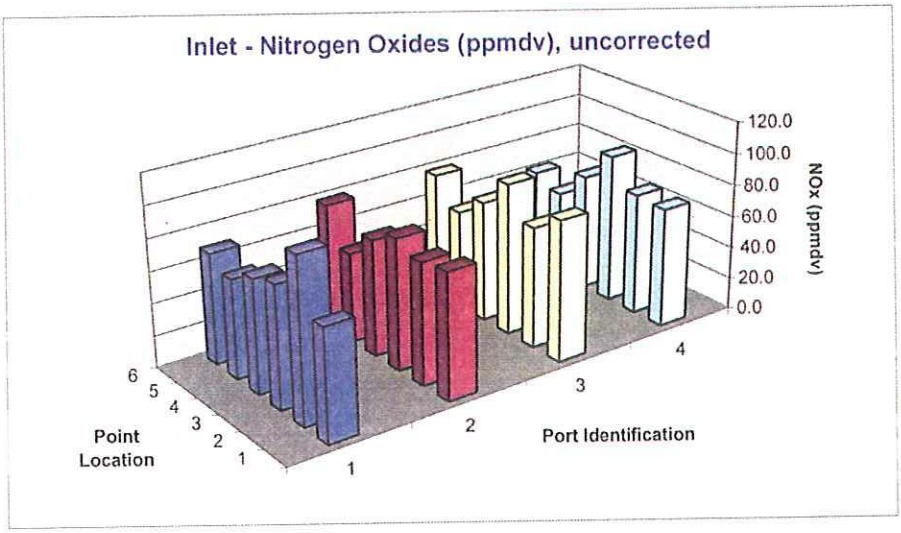


Run 3: Inlet – Set 1

Date: 3/28/2007
Start Time: 12:48
End Time: 13:16

Inlet - Nitrogen Oxides (ppmdv), uncorrected

AVG	74.6	73.7	78.9	72.2	
6	69.0	78.7	78.5	61.6	72.0
5	61.6	56.0	61.7	54.7	58.5
4	70.5	72.5	75.5	73.0	72.9
3	75.7	81.5	94.6	93.4	86.3
2	101.3	75.4	75.2	75.9	82.0
1	69.2	78.1	87.6	74.3	77.3
	1	2	3	4	74.8

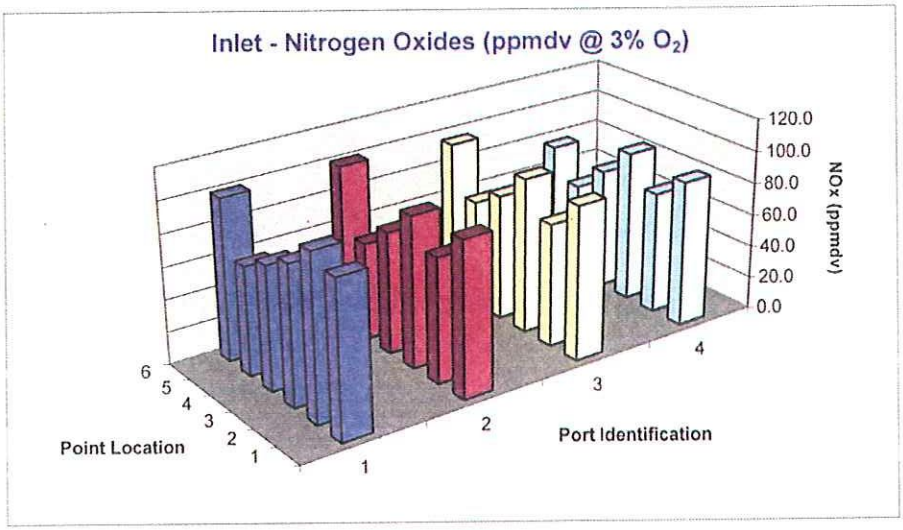


Run 3: Inlet – Set 1

Date: 3/28/2007
Start Time: 12:48
End Time: 13:16

Inlet - Nitrogen Oxides (ppmdv @ 3% O_2)

AVG	87.6	83.4	84.4	77.8	
6	99.9	100.2	95.8	76.4	93.1
5	67.2	60.1	66.3	57.7	62.8
4	76.4	75.0	77.7	74.5	75.9
3	85.8	93.0	95.8	93.3	92.0
2	101.3	76.6	75.7	75.1	82.2
1	95.2	95.4	94.9	89.9	93.9
	1	2	3	4	83.3

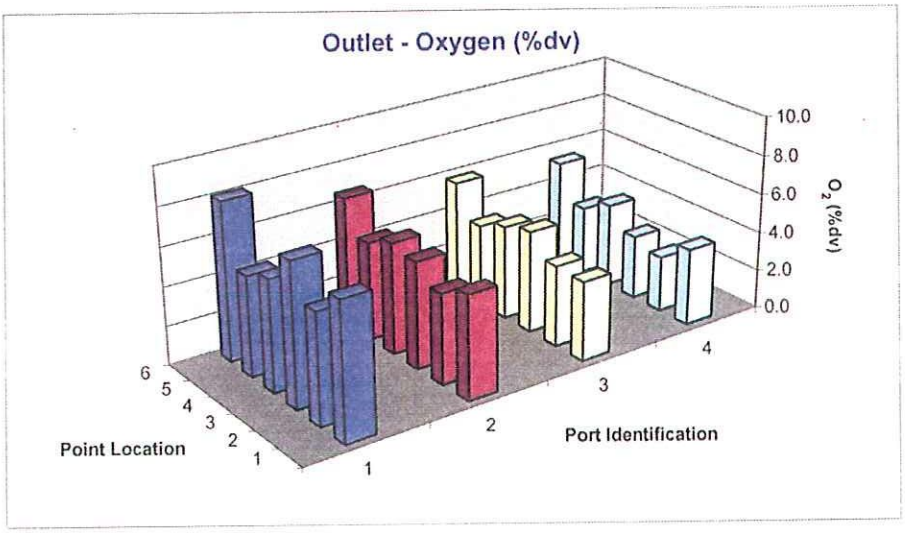


Run 3: Outlet – Set 1

Date: 3/28/2007
Start Time: 12:48
End Time: 13:16

Outlet - Oxygen (%dv)

AVG	6.5	5.4	4.7	3.9	
6	8.1	6.7	5.9	5.4	6.5
5	5.1	5.0	4.2	3.5	4.5
4	5.7	5.7	4.8	4.3	5.1
3	7.3	5.5	5.2	3.3	5.3
2	5.6	4.6	4.1	2.8	4.3
1	6.9	5.3	4.1	3.9	5.0
	1	2	3	4	5.1

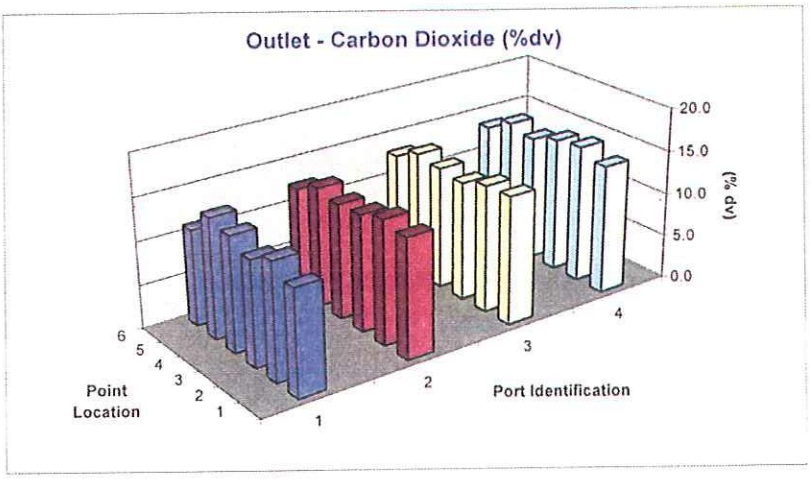


Run 3: Outlet – Set 1

Date: 3/28/2007
Start Time: 12:48
End Time: 13:16

Outlet - Carbon Dioxide (%dv)

AVG	12.5	13.4	14.1	14.8	
6	11.0	12.4	13.1	13.5	12.5
5	13.8	13.7	14.5	15.2	14.3
4	13.2	13.2	14.0	14.4	13.7
3	12.0	13.3	13.6	15.4	13.6
2	13.3	14.2	14.5	15.8	14.4
1	12.0	13.6	14.6	14.8	13.8
	1	2	3	4	13.7

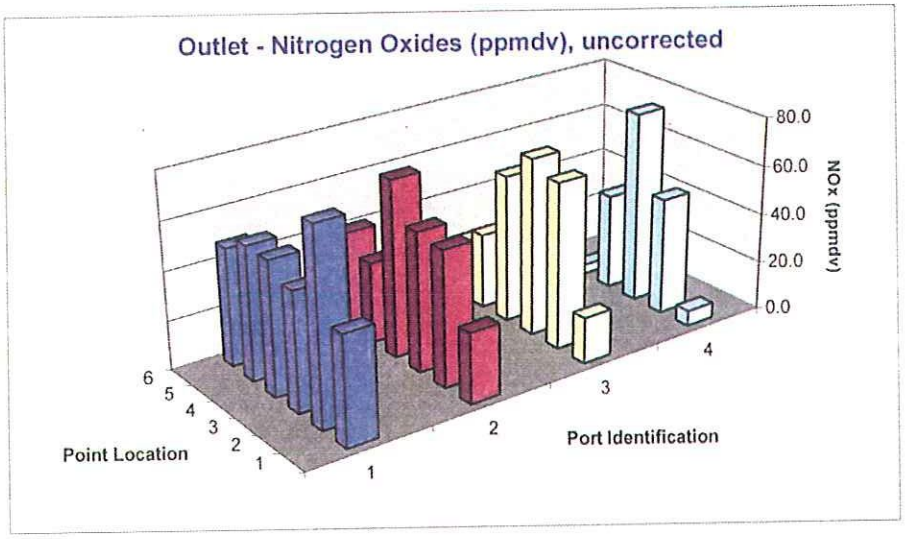


Run 3: Outlet – Set 1

Date: 3/28/2007
Start Time: 12:48
End Time: 13:16

Outlet - Nitrogen Oxides (ppmdv), uncorrected

AVG	54.5	47.5	45.3	29.9	
6	47.9	40.4	22.1	4.3	28.7
5	54.3	33.1	30.7	3.8	30.5
4	54.2	71.8	60.3	39.1	56.4
3	48.1	56.5	72.3	78.3	63.8
2	78.6	54.7	67.6	47.6	62.1
1	43.7	28.3	18.6	6.3	24.2
	1	2	3	4	44.3

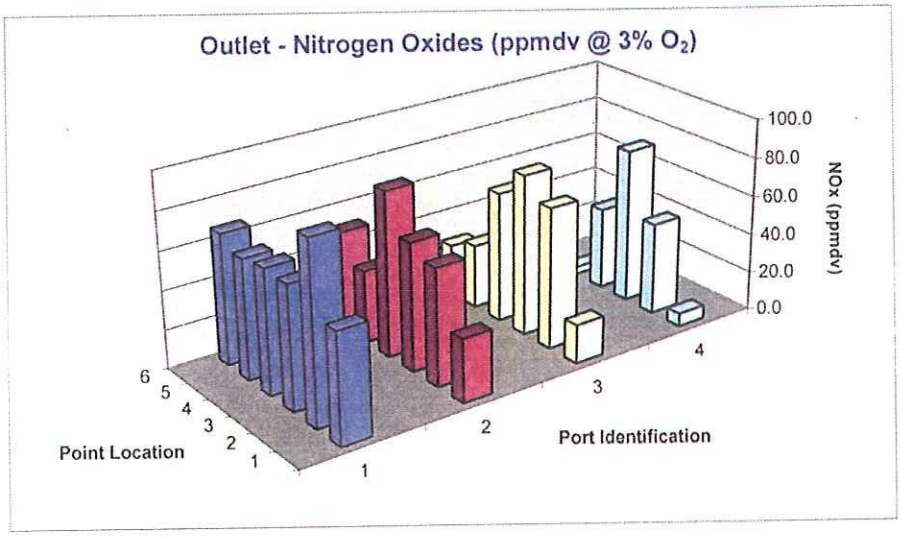


Run 3: Outlet – Set 1

Date: 3/28/2007
Start Time: 12:48
End Time: 13:16

Outlet - Nitrogen Oxides (ppmdv @ 3% O_2)

AVG	67.3	55.1	50.1	30.7	
6	67.1	50.8	26.3	5.0	37.3
5	61.6	37.3	32.9	3.9	33.9
4	63.8	84.6	67.0	42.2	64.4
3	63.2	65.5	82.5	79.5	72.7
2	92.0	60.0	72.2	47.2	67.8
1	55.9	32.4	19.8	6.6	28.7
	1	2	3	4	50.8

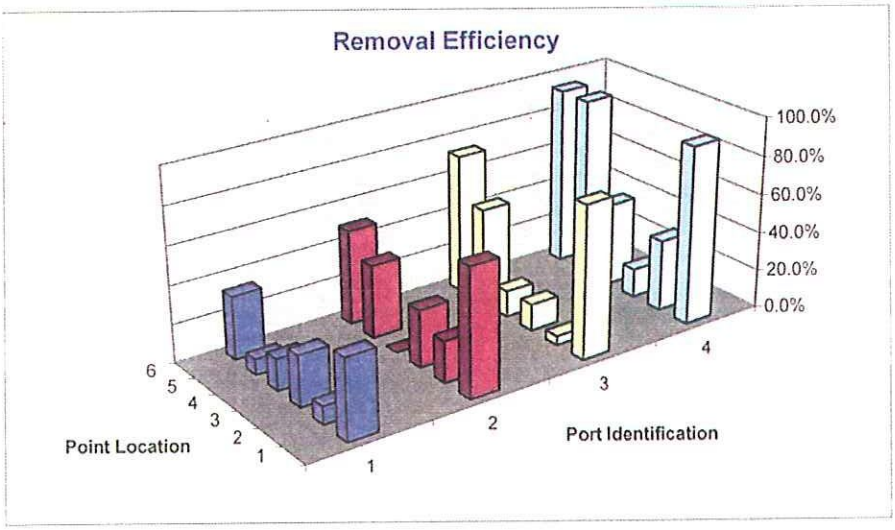


Run 3: Outlet – Set 1

Date: 3/28/2007
Start Time: 12:48
End Time: 13:16

Removal Efficiency (ppmdv @ 3% O_2)

AVG	22.4%	32.0%	39.0%	62.5%	
6	32.8%	49.3%	72.6%	93.5%	62.1%
5	8.4%	37.9%	50.3%	93.2%	47.5%
4	16.5%	-12.7%	13.7%	43.4%	15.2%
3	26.3%	29.6%	13.9%	14.8%	21.1%
2	9.2%	21.6%	4.6%	37.2%	18.2%
1	41.3%	66.1%	79.2%	92.6%	69.8%
	1	2	3	4	39.0%



Clean Air Engineering Project #10192
Consol Energy
AES Dresden

Date: 3/28/2007
Start Time: 13:12
End Time: 13:35

Run # (Cycle #) 3 (2)

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.
1-1	13:12	75.3		-1.3	7.8		11.4		102.7	17.3
1-2	13:16	99.3		22.7	3.3		15.2		100.8	15.3
1-3	13:20	88.2	79.4	11.6	5.0	5.5	13.8	13.3	99.0	13.6
1-4	13:24	79.9		3.3	4.2		14.4		85.7	0.3
1-5	13:28	62.9		-13.7	4.5		14.2		68.5	-16.9
1-6	13:32	70.6		-6.0	8.5		10.8		101.7	16.2
2-1	13:13	79.2		2.6	6.2		12.7		96.6	11.2
2-2	13:17	77.4		0.8	3.5		15.1		79.4	-6.0
2-3	13:21	86.4	74.3	9.8	5.2	4.9	13.6	13.8	88.6	13.2
2-4	13:25	70.1		-6.5	3.7		14.8		72.8	-12.6
2-5	13:29	54.0		-22.6	4.2		14.5		57.7	-27.7
2-6	13:33	78.7		2.1	6.9		12.1		100.8	15.3
3-1	13:14	86.5		9.9	4.2		14.5		92.4	7.0
3-2	13:18	76.3		-0.3	3.3		15.1		77.8	-7.7
3-3	13:22	98.5	79.7	21.9	3.3	4.2	15.2	14.4	100.0	14.6
3-4	13:26	76.7		0.1	3.5		15.0		79.0	-6.4
3-5	13:30	62.9		-13.7	4.3		14.3		68.0	-17.4
3-6	13:34	77.3		0.7	6.3		12.6		94.6	9.2
4-1	13:15	75.4		-1.2	6.1		12.8		91.4	5.9
4-2	13:19	77.1		0.5	2.9		15.6		76.7	-8.8
4-3	13:23	93.9	73.1	17.3	3.1	4.3	15.4	14.3	94.2	8.7
4-4	13:27	74.3		-2.3	3.4		15.1		76.1	-9.3
4-5	13:31	57.0		-19.6	4.2		14.5		60.9	-24.5
4-6	13:35	61.1		-15.5	6.3		12.7		74.7	-10.7
Inlet Averages		76.6			4.7		14.0		85.4	

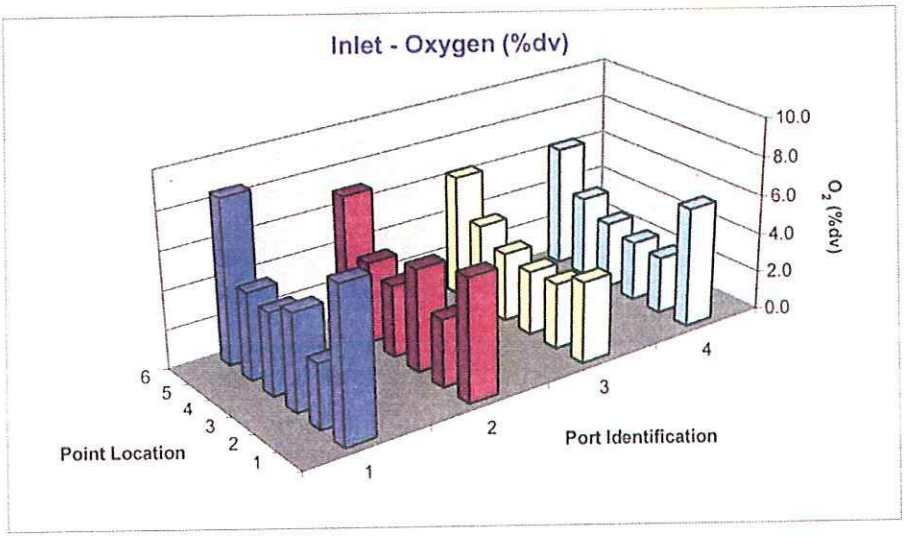
Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	Removal Efficiency	Removal Eff W/ O2 correction
1-1	13:12	70.9		24.7	5.0		13.8		80.0	27.8	5.8	22.2
1-2	13:16	82.0		35.8	5.8		13.2		97.2	45.0	17.4	3.5
1-3	13:20	56.4	63.0	10.2	5.2	5.8	13.6	13.1	64.5	12.3	36.1	34.9
1-4	13:24	68.3		22.1	4.5		14.3		74.5	22.3	14.5	13.2
1-5	13:28	48.8		2.6	6.3		12.7		59.7	7.5	22.4	12.9
1-6	13:32	51.7		5.5	7.8		11.3		70.9	18.7	26.8	30.3
2-1	13:13	30.1		-16.1	5.5		13.3		35.0	-17.2	62.0	63.8
2-2	13:17	51.2		5.0	4.9		13.9		57.1	4.9	33.9	28.1
2-3	13:21	64.7	48.1	18.5	4.8	5.4	14.0	13.4	71.7	19.5	25.1	27.3
2-4	13:25	63.8		17.6	5.5		13.4		74.2	22.0	9.0	-1.9
2-5	13:29	37.8		-8.4	5.2		13.6		43.1	-9.1	30.0	25.3
2-6	13:33	40.7		-5.5	6.7		12.3		51.4	-0.8	48.3	49.0
3-1	13:14	17.9		-28.3	4.5		14.2		19.5	-32.7	79.3	78.9
3-2	13:18	41.8		-4.4	4.1		14.5		44.6	-7.6	45.2	42.7
3-3	13:22	65.1	45.1	18.9	4.4	4.6	14.4	14.1	70.4	18.2	33.9	29.6
3-4	13:26	69.5		23.3	4.4		14.2		75.4	23.2	9.4	4.6
3-5	13:30	55.4		9.2	4.9		13.9		61.9	9.7	11.9	9.0
3-6	13:34	20.8		-25.4	5.3		13.5		23.9	-28.3	73.1	74.7
4-1	13:15	6.1		-40.1	3.9		14.8		6.4	-45.8	91.9	93.0
4-2	13:19	45.5		-0.7	2.8		15.9		44.9	-7.3	41.0	41.4
4-3	13:23	75.7	28.7	29.5	3.3	3.9	15.4	14.8	77.1	24.9	19.4	18.1
4-4	13:27	37.3		-8.9	4.4		14.4		40.4	-11.8	49.8	46.9
4-5	13:31	3.6		-42.6	3.8		14.9		3.8	-48.4	93.7	93.8
4-6	13:35	4.2		-42.0	5.3		13.6		4.8	-47.4	93.1	93.6
Outlet Averages		46.2			4.9		13.9		52.2		40.5	39.0

Run 3: Inlet – Set 2

Date: 3/28/2007
Start Time: 13:12
End Time: 13:35

Inlet - Oxygen (%dv)

AVG	5.5	4.9	4.2	4.3	
6	8.5	6.9	6.3	6.3	7.0
5	4.5	4.2	4.3	4.2	4.3
4	4.2	3.7	3.5	3.4	3.7
3	5.0	5.2	3.3	3.1	4.1
2	3.3	3.5	3.3	2.9	3.2
1	7.8	6.2	4.2	6.1	6.1
	1	2	3	4	4.7

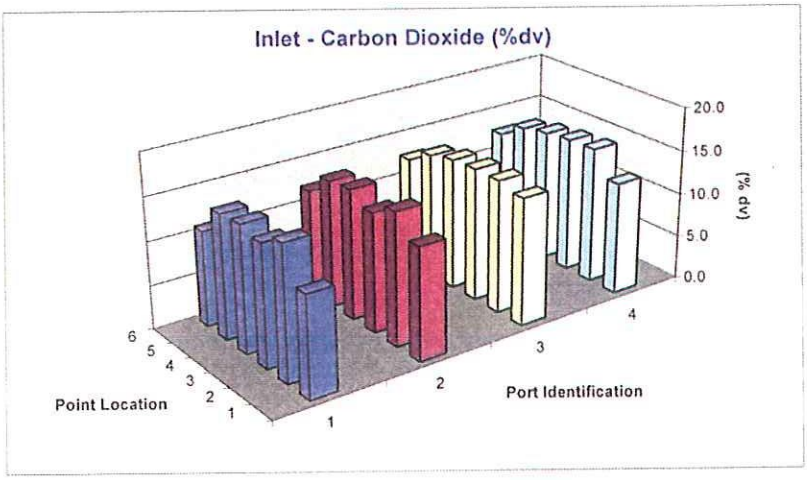


Run 3: Inlet – Set 2

Date: 3/28/2007
Start Time: 13:12
End Time: 13:35

Inlet - Carbon Dioxide (%dv)

AVG	13.3	13.8	14.4	14.3	
6	10.8	12.1	12.6	12.7	12.0
5	14.2	14.5	14.3	14.5	14.4
4	14.4	14.8	15.0	15.1	14.8
3	13.8	13.6	15.2	15.4	14.5
2	15.2	15.1	15.1	15.6	15.2
1	11.4	12.7	14.5	12.8	12.8
	1	2	3	4	14.0

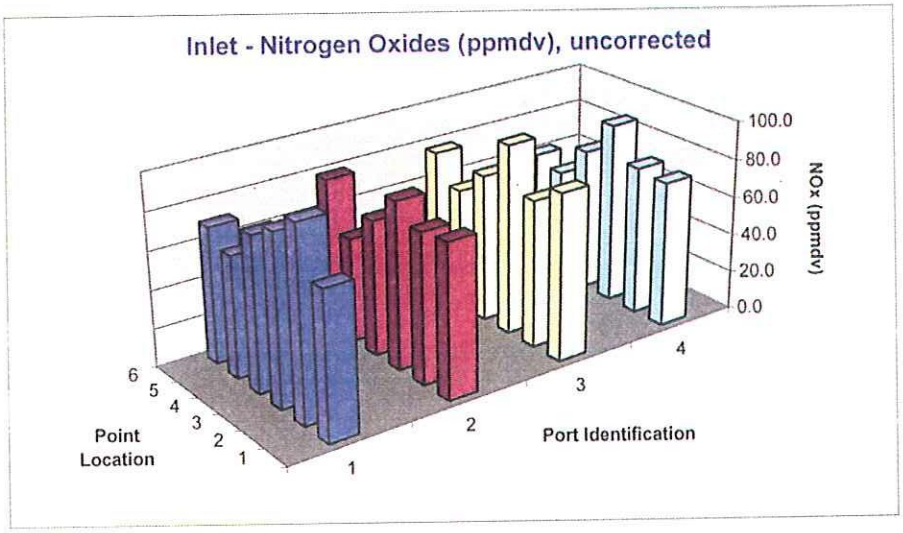


Run 3: Inlet – Set 2

Date: 3/28/2007
Start Time: 13:12
End Time: 13:35

Inlet - Nitrogen Oxides (ppmdv), uncorrected

AVG	79.4	74.3	79.7	73.1	
6	70.6	78.7	77.3	61.1	71.9
5	62.9	54.0	62.9	57.0	59.2
4	79.9	70.1	76.7	74.3	75.3
3	88.2	86.4	98.5	93.9	91.8
2	99.3	77.4	76.3	77.1	82.5
1	75.3	79.2	86.5	75.4	79.1
	1	2	3	4	76.6

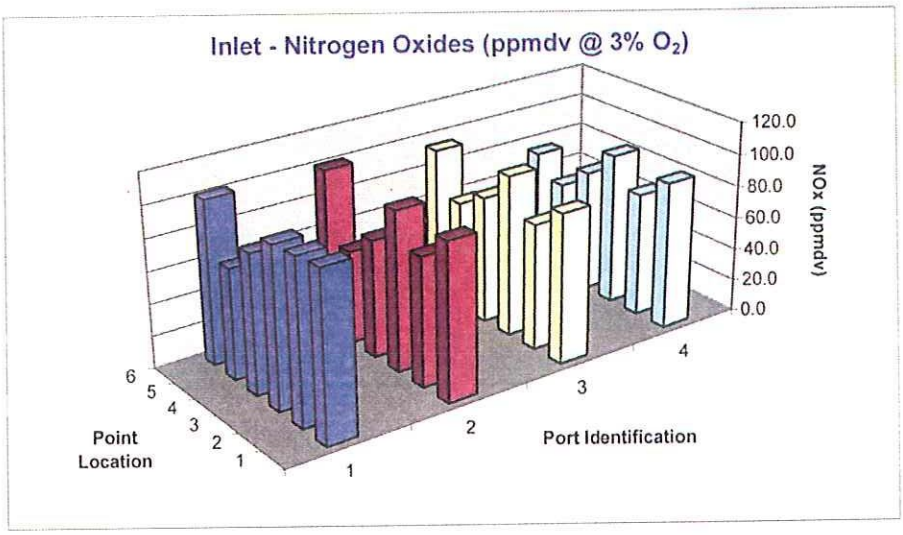


Run 3: Inlet – Set 2

Date: 3/28/2007
Start Time: 13:12
End Time: 13:35

Inlet - Nitrogen Oxides (ppmdv @ 3% O_2)

AVG	93.1	84.3	85.3	79.0	
6	101.7	100.8	94.6	74.7	92.9
5	68.5	57.7	68.0	60.9	63.8
4	85.7	72.8	79.0	76.1	78.4
3	99.0	98.6	100.0	94.2	98.0
2	100.8	79.4	77.8	76.7	83.7
1	102.7	96.6	92.4	91.4	95.8
	1	2	3	4	85.4

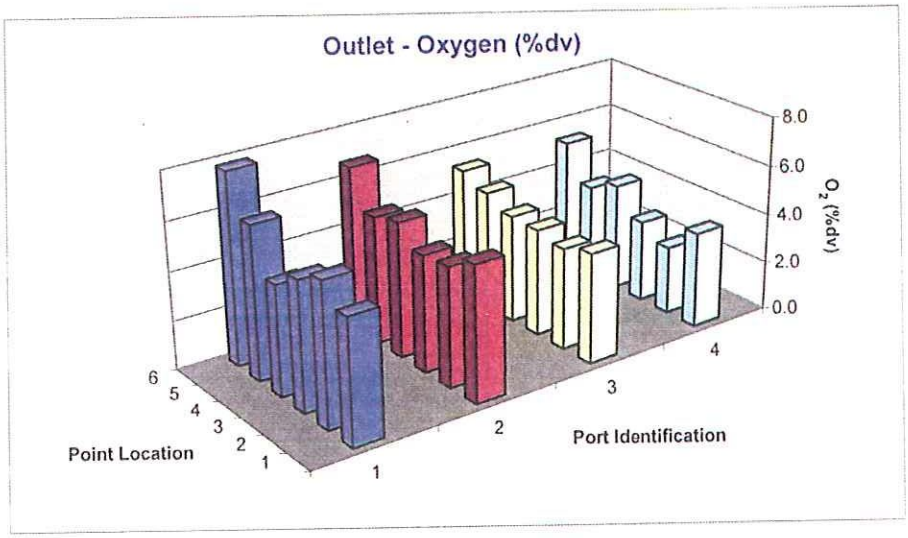


Run 3: Outlet – Set 2

Date: 3/28/2007
Start Time: 13:12
End Time: 13:35

Outlet - Oxygen (%dv)

AVG	5.8	5.4	4.6	3.9	
6	7.8	6.7	5.3	5.3	6.3
5	6.3	5.2	4.9	3.8	5.0
4	4.5	5.5	4.4	4.4	4.7
3	5.2	4.8	4.4	3.3	4.4
2	5.8	4.9	4.1	2.8	4.4
1	5.0	5.5	4.5	3.9	4.7
	1	2	3	4	4.9

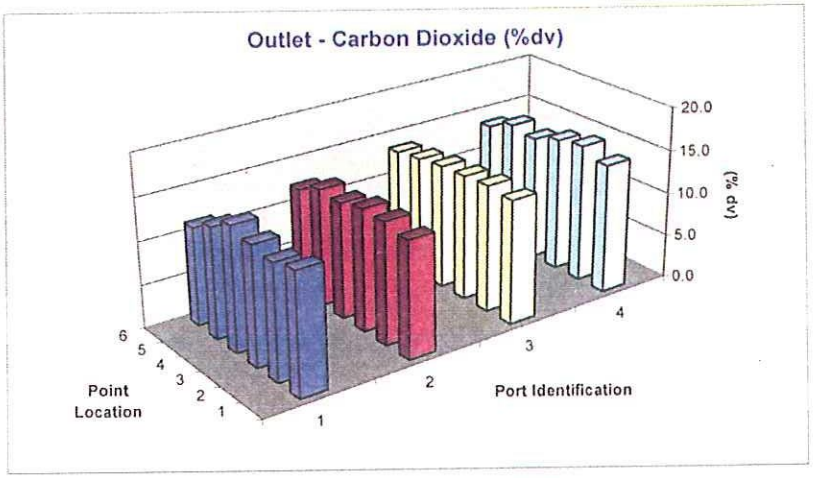


Run 3: Outlet – Set 2

Date: 3/28/2007
Start Time: 13:12
End Time: 13:35

Outlet - Carbon Dioxide (%dv)

AVG	13.1	13.4	14.1	14.8	
6	11.3	12.3	13.5	13.6	12.7
5	12.7	13.6	13.9	14.9	13.8
4	14.3	13.4	14.2	14.4	14.1
3	13.6	14.0	14.4	15.4	14.3
2	13.2	13.9	14.5	15.9	14.4
1	13.8	13.3	14.2	14.8	14.0
	1	2	3	4	13.9

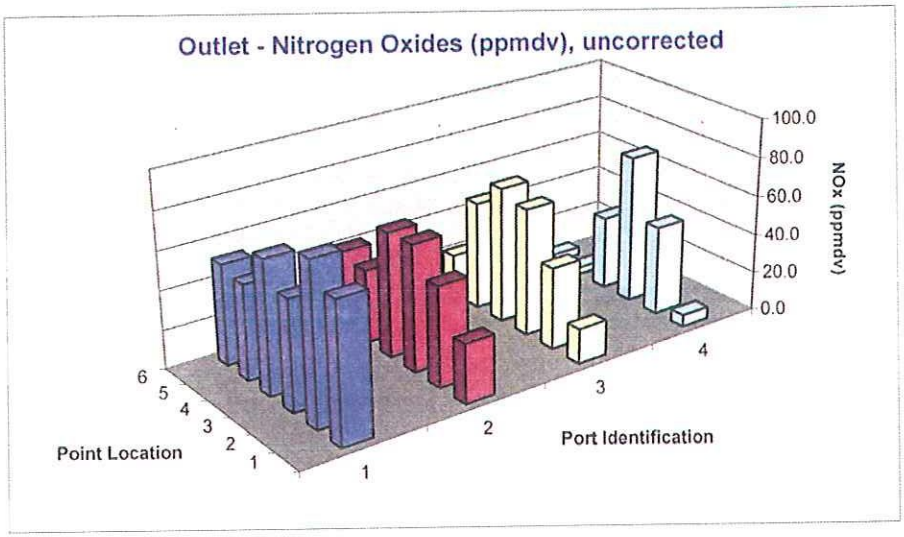


Run 3: Outlet – Set 2

Date: 3/28/2007
Start Time: 13:12
End Time: 13:35

Outlet - Nitrogen Oxides (ppmdv), uncorrected

AVG	63.0	48.1	45.1	28.7	
6	51.7	40.7	20.8	4.2	29.4
5	48.8	37.8	55.4	3.6	36.4
4	68.3	63.8	69.5	37.3	59.7
3	56.4	64.7	65.1	75.7	65.5
2	82.0	51.2	41.8	45.5	55.1
1	70.9	30.1	17.9	6.1	31.3
	1	2	3	4	46.2

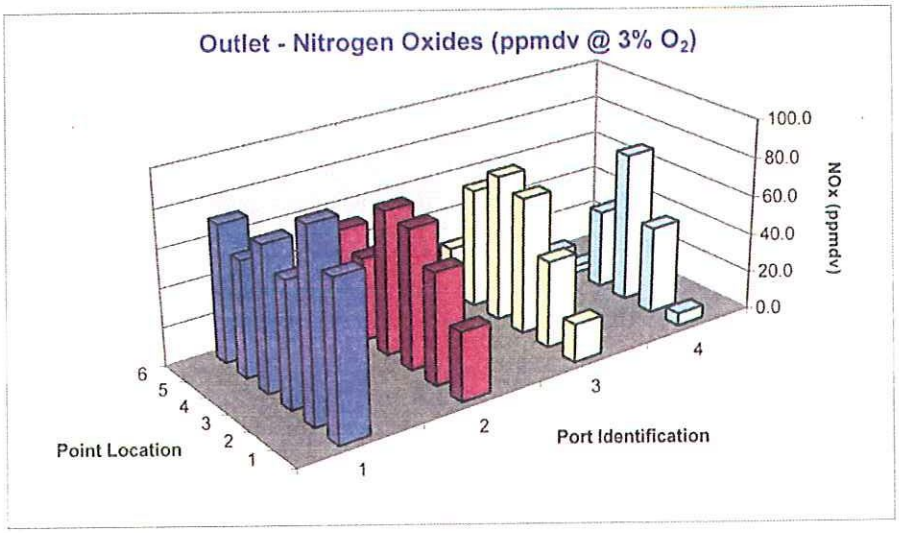


Run 3: Outlet – Set 2

Date: 3/28/2007
Start Time: 13:12
End Time: 13:35

Outlet - Nitrogen Oxides (ppmdv @ 3% O_2)

AVG	74.4	55.4	49.3	29.6	
6	70.9	51.4	23.9	4.8	37.8
5	59.7	43.1	61.9	3.8	42.1
4	74.5	74.2	75.4	40.4	66.1
3	64.5	71.7	70.4	77.1	70.9
2	97.2	57.1	44.6	44.9	60.9
1	80.0	35.0	19.5	6.4	35.2
	1	2	3	4	52.2

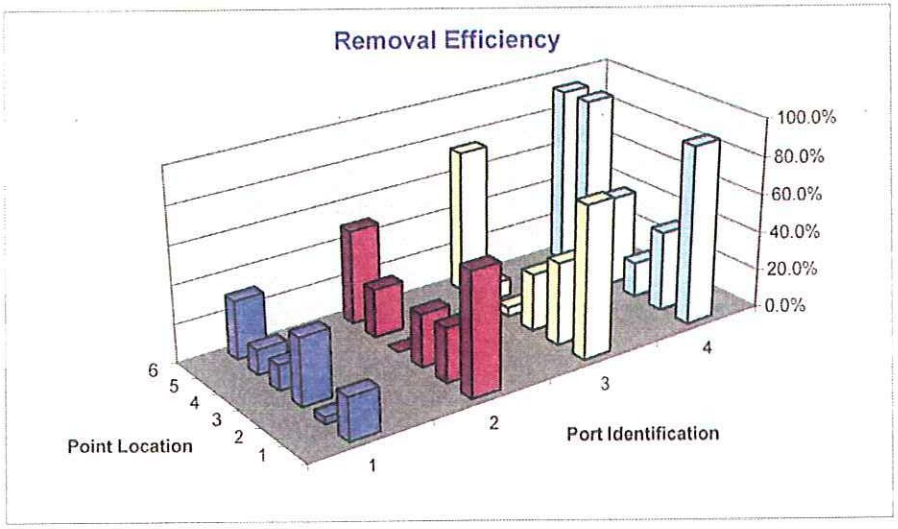


Run 3: Outlet – Set 2

Date: 3/28/2007
Start Time: 13:12
End Time: 13:35

Removal Efficiency (ppmdv @ 3% O_2)

AVG	19.5%	31.9%	39.9%	64.5%	
6	30.3%	49.0%	74.7%	93.6%	61.9%
5	12.9%	25.3%	9.0%	93.8%	35.2%
4	13.2%	-1.9%	4.6%	46.9%	15.7%
3	34.9%	27.3%	29.6%	18.1%	27.5%
2	3.5%	28.1%	42.7%	41.4%	28.9%
1	22.2%	63.8%	78.9%	93.0%	64.5%
	1	2	3	4	39.0%



Clean Air Engineering Project #10192
Consol Energy
AES Dresden

Date: 3/28/2007
Start Time: 13:36
End Time: 13:59

Run # (Cycle #) 3 (3)

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.
1-1	13:36	75.5		-0.8	7.7		11.5		102.3	17.4
1-2	13:40	101.1		24.8	3.3		15.2		102.6	17.7
1-3	13:44	86.5	78.8	10.2	5.0	5.6	13.8	13.3	97.4	12.4
1-4	13:48	76.3		0.0	4.3		14.3		82.5	-2.5
1-5	13:52	64.9		-11.4	4.5		14.2		70.7	-14.2
1-6	13:56	68.2		-8.1	8.7		10.6		100.0	15.0
2-1	13:37	80.5		4.2	6.1		12.8		97.4	12.4
2-2	13:41	76.7		0.4	3.3		15.2		77.9	-7.1
2-3	13:45	84.4	73.8	8.1	5.3	4.9	13.5	13.8	96.8	11.8
2-4	13:49	71.9		-4.4	3.6		14.9		74.4	-10.6
2-5	13:53	56.8		-19.5	4.2		14.5		60.7	-24.2
2-6	13:57	72.3		-4.0	6.9		12.1		92.5	7.6
3-1	13:38	87.7		11.4	4.2		14.4		94.1	9.2
3-2	13:42	74.9		-1.4	3.2		15.3		75.7	-9.3
3-3	13:46	97.1	79.6	20.8	3.3	4.1	15.1	14.5	98.9	14.0
3-4	13:50	76.9		0.6	3.6		15.0		79.3	-5.6
3-5	13:54	61.1		-15.2	4.2		14.4		65.5	-19.4
3-6	13:58	79.9		3.6	6.2		12.7		97.6	12.6
4-1	13:39	76.8		0.5	6.0		12.9		92.0	7.1
4-2	13:43	78.5		2.2	2.8		15.6		77.7	-7.2
4-3	13:47	94.9	73.1	18.6	3.2	4.3	15.3	14.4	95.8	10.9
4-4	13:51	74.2		-2.1	3.3		15.2		75.6	-9.4
4-5	13:55	54.3		-22.0	4.1		14.5		57.8	-27.1
4-6	13:59	59.9		-16.4	6.3		12.7		73.3	-11.6
Inlet Averages		76.3			4.7		14.0		84.9	

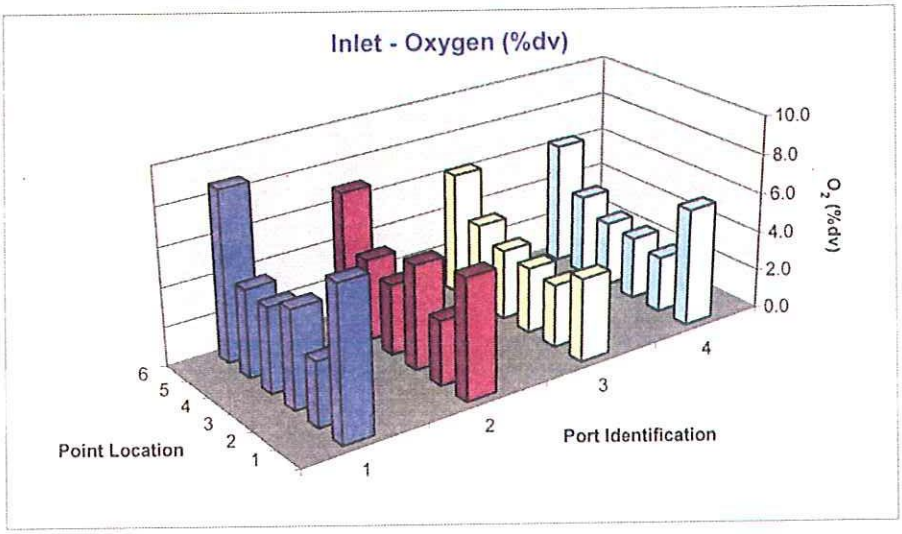
Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	Removal Efficiency	Removal Eff W/ O2 correction
1-1	13:36	69.4		25.8	5.0		13.9		78.0	30.8	8.1	23.8
1-2	13:40	42.1		-0.5	4.9		14.0		47.1	-0.1	58.4	54.1
1-3	13:44	52.5	54.9	9.9	3.7	5.3	15.0	13.6	54.8	7.6	39.3	43.8
1-4	13:48	66.3		23.7	4.6		14.2		72.8	25.6	13.1	11.8
1-5	13:52	49.3		6.7	6.1		12.9		59.7	12.5	24.0	15.6
1-6	13:56	49.9		7.3	7.6		11.4		67.4	20.2	26.8	32.6
2-1	13:37	26.3		-16.3	5.2		13.6		30.0	-17.1	67.3	69.1
2-2	13:41	36.2		-6.4	3.5		15.1		37.3	-9.9	52.8	52.1
2-3	13:45	69.3	42.9	26.7	4.7	5.1	14.1	13.8	76.7	29.5	17.9	20.7
2-4	13:49	69.7		27.1	5.8		13.2		82.4	35.2	3.1	-10.8
2-5	13:53	21.5		-21.1	4.8		14.0		23.8	-23.3	62.1	60.7
2-6	13:57	34.5		-8.1	6.3		12.7		42.3	-4.9	52.3	54.3
3-1	13:38	16.4		-26.2	4.1		14.6		17.4	-29.8	81.3	81.5
3-2	13:42	53.2		10.6	3.5		15.3		54.6	7.4	29.0	27.9
3-3	13:46	79.8	43.1	37.2	4.3	4.3	14.5	14.4	85.8	38.7	17.8	13.2
3-4	13:50	58.3		15.7	4.8		14.0		64.9	17.7	24.2	18.2
3-5	13:54	30.1		-12.5	4.2		14.5		32.2	-15.0	50.7	50.9
3-6	13:58	20.7		-21.9	5.2		13.7		23.5	-23.7	74.1	75.9
4-1	13:39	6.0		-36.6	3.8		14.9		6.3	-40.9	92.2	93.2
4-2	13:43	45.6		3.0	2.8		15.9		45.0	-2.1	41.9	42.0
4-3	13:47	77.0	29.4	34.4	3.5	3.9	15.2	14.8	79.0	31.8	18.9	17.5
4-4	13:51	40.4		-2.2	4.3		14.5		43.5	-3.7	45.6	42.5
4-5	13:55	3.4		-39.2	3.7		15.0		3.5	-43.7	93.7	93.9
4-6	13:59	3.9		-38.7	5.3		13.6		4.5	-42.7	93.5	93.9
Outlet Averages		42.6			4.6		14.1		47.2		45.3	44.9

Run 3: Inlet – Set 3

Date: 3/28/2007
Start Time: 13:36
End Time: 13:59

Inlet - Oxygen (%dv)

AVG	5.6	4.9	4.1	4.3	
6	8.7	6.9	6.2	6.3	7.0
5	4.5	4.2	4.2	4.1	4.2
4	4.3	3.6	3.6	3.3	3.7
3	5.0	5.3	3.3	3.2	4.2
2	3.3	3.3	3.2	2.8	3.1
1	7.7	6.1	4.2	6.0	6.0
	1	2	3	4	4.7

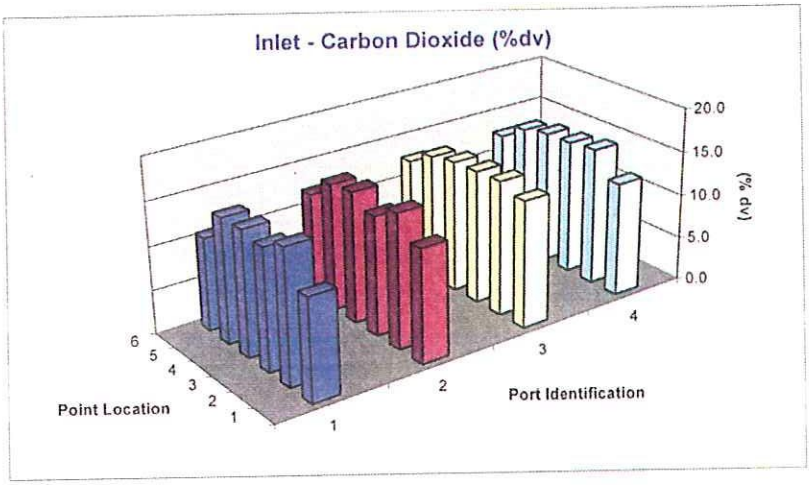


Run 3: Inlet – Set 3

Date: 3/28/2007
Start Time: 13:36
End Time: 13:59

Inlet - Carbon Dioxide (%dv)

AVG	13.3	13.8	14.5	14.4	
6	10.6	12.1	12.7	12.7	12.0
5	14.2	14.5	14.4	14.5	14.4
4	14.3	14.9	15.0	15.2	14.8
3	13.8	13.5	15.1	15.3	14.4
2	15.2	15.2	15.3	15.6	15.3
1	11.5	12.8	14.4	12.9	12.9
	1	2	3	4	14.0

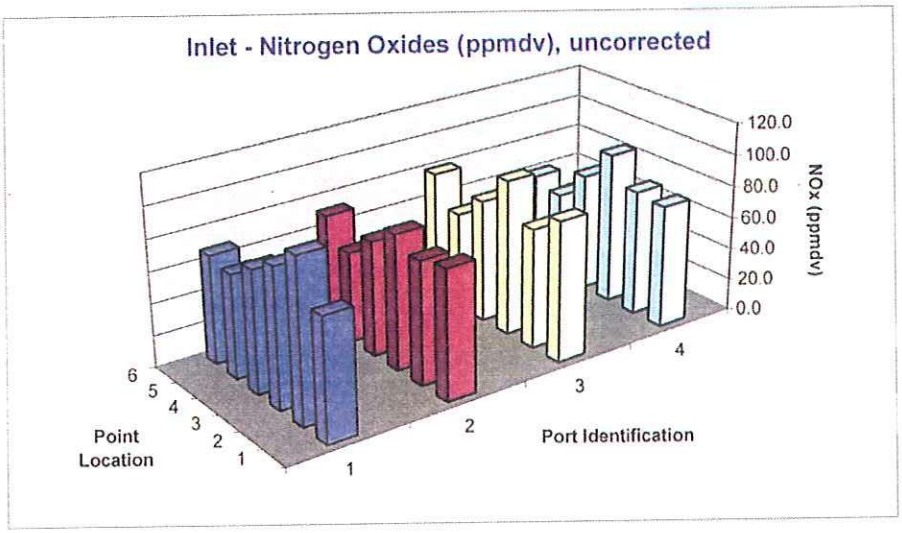


Run 3: Inlet – Set 3

Date: 3/28/2007
Start Time: 13:36
End Time: 13:59

Inlet - Nitrogen Oxides (ppmdv), uncorrected

AVG	78.8	73.8	79.6	73.1	
6	68.2	72.3	79.9	59.9	70.1
5	64.9	56.8	61.1	54.3	59.3
4	76.3	71.9	76.9	74.2	74.8
3	86.5	84.4	97.1	94.9	90.7
2	101.1	76.7	74.9	78.5	82.8
1	75.5	80.5	87.7	76.8	80.1
	1	2	3	4	76.3

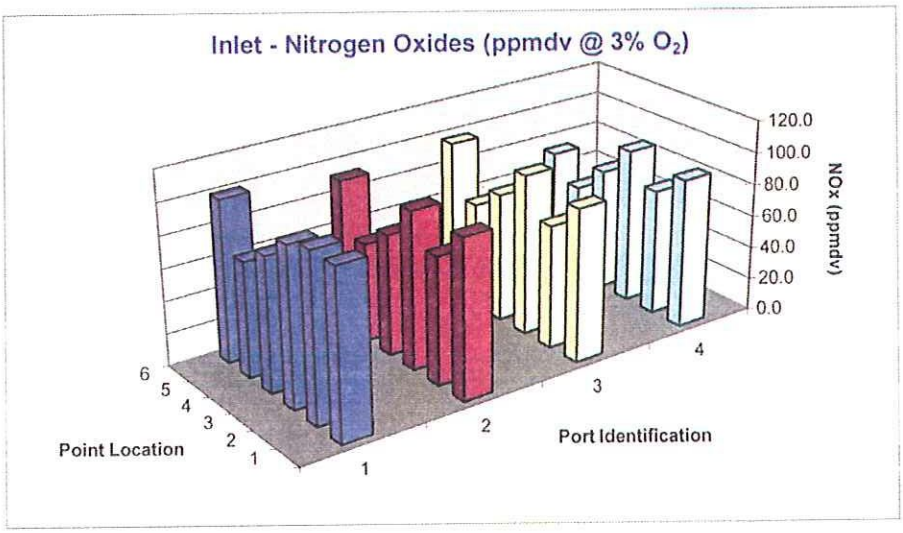


Run 3: Inlet – Set 3

Date: 3/28/2007
Start Time: 13:36
End Time: 13:59

Inlet - Nitrogen Oxides (ppmdv @ 3% O_2)

AVG	92.6	83.3	85.2	78.7	
6	100.0	92.5	97.6	73.3	90.8
5	70.7	60.7	65.5	57.8	63.7
4	82.5	74.4	79.3	75.6	77.9
3	97.4	96.8	98.9	95.8	97.2
2	102.6	77.9	75.7	77.7	83.5
1	102.3	97.4	94.1	92.0	96.4
	1	2	3	4	84.9

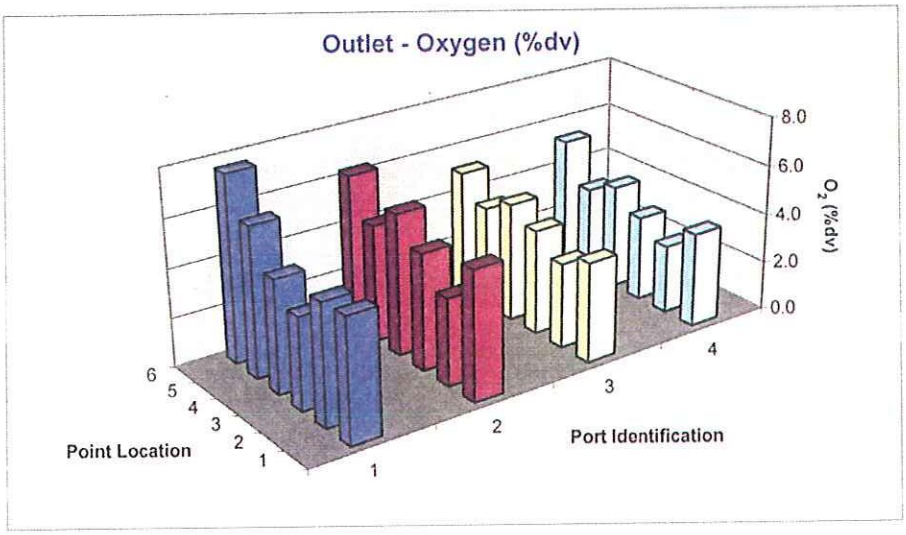


Run 3: Outlet – Set 3

Date: 3/28/2007
Start Time: 13:36
End Time: 13:59

Outlet - Oxygen (%dv)

AVG	5.3	5.1	4.3	3.9	
6	7.6	6.3	5.2	5.3	6.1
5	6.1	4.8	4.2	3.7	4.7
4	4.6	5.8	4.8	4.3	4.9
3	3.7	4.7	4.3	3.5	4.0
2	4.9	3.5	3.5	2.8	3.7
1	5.0	5.2	4.1	3.8	4.5
	1	2	3	4	4.6

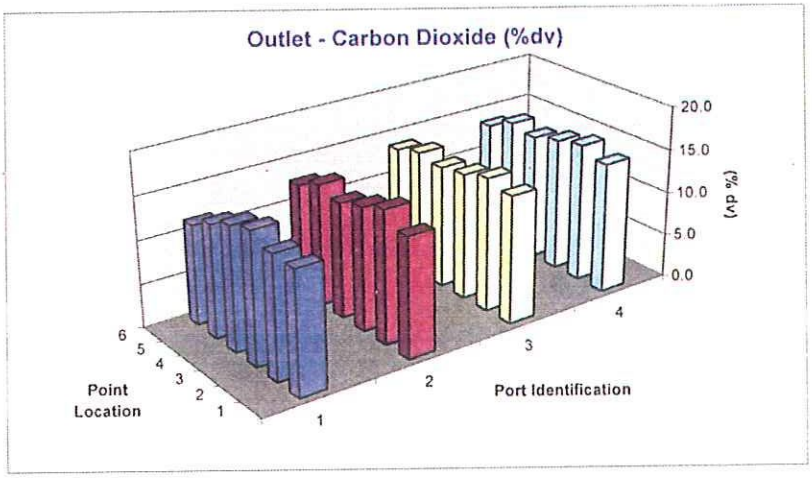


Run 3: Outlet – Set 3

Date: 3/28/2007
Start Time: 13:36
End Time: 13:59

Outlet - Carbon Dioxide (%dv)

AVG	13.6	13.8	14.4	14.8	
6	11.4	12.7	13.7	13.6	12.8
5	12.9	14.0	14.5	15.0	14.1
4	14.2	13.2	14.0	14.5	14.0
3	15.0	14.1	14.5	15.2	14.7
2	14.0	15.1	15.3	15.9	15.1
1	13.9	13.6	14.6	14.9	14.2
	1	2	3	4	14.1

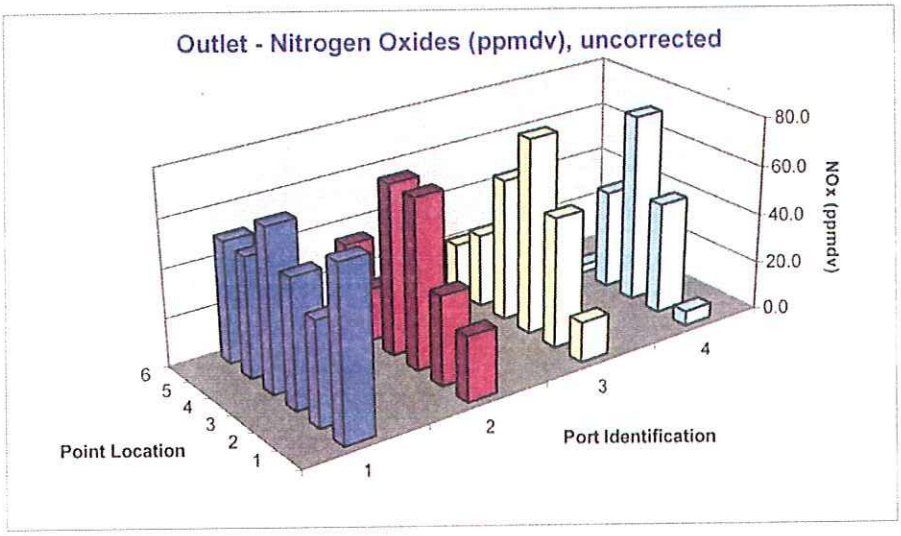


Run 3: Outlet – Set 3

Date: 3/28/2007
Start Time: 13:36
End Time: 13:59

Outlet - Nitrogen Oxides (ppmdv), uncorrected

AVG	54.9	42.9	43.1	29.4	
6	49.9	34.5	20.7	3.9	27.3
5	49.3	21.5	30.1	3.4	26.1
4	66.3	69.7	58.3	40.4	58.7
3	52.5	69.3	79.8	77.0	69.7
2	42.1	36.2	53.2	45.6	44.3
1	69.4	26.3	16.4	6.0	29.5
	1	2	3	4	42.6

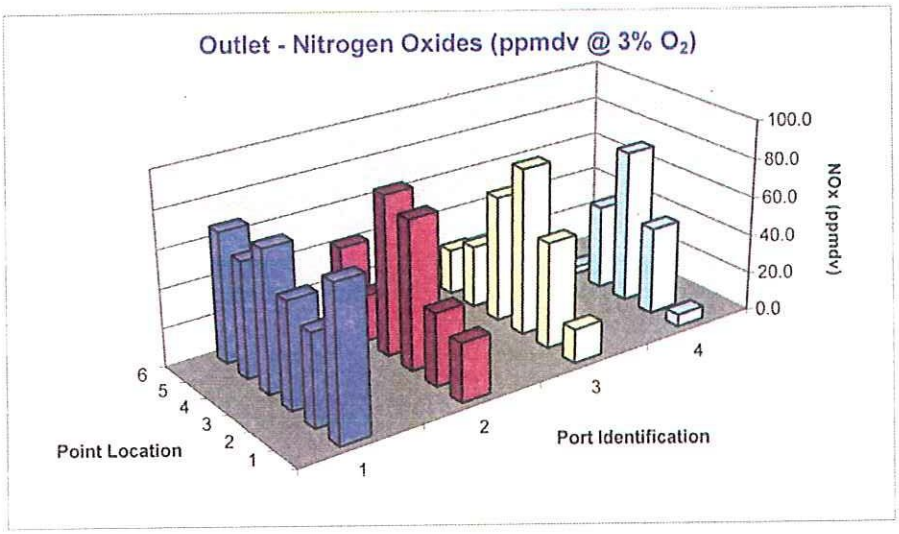


Run 3: Outlet – Set 3

Date: 3/28/2007
Start Time: 13:36
End Time: 13:59

Outlet - Nitrogen Oxides (ppmdv @ 3% O_2)

AVG	63.3	48.8	46.4	30.3	
6	67.4	42.3	23.5	4.5	34.4
5	59.7	23.8	32.2	3.5	29.8
4	72.8	82.4	64.9	43.5	65.9
3	54.8	76.7	85.8	79.0	74.1
2	47.1	37.3	54.6	45.0	46.0
1	78.0	30.0	17.4	6.3	32.9
	1	2	3	4	47.2

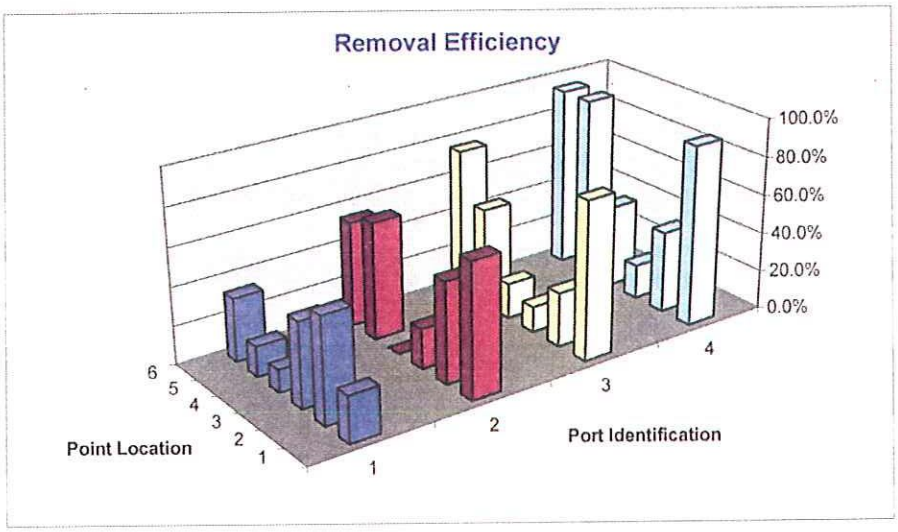


Run 3: Outlet – Set 3

Date: 3/28/2007
Start Time: 13:36
End Time: 13:59

Removal Efficiency (ppmdv @ 3% O_2)

AVG	30.3%	41.0%	44.6%	63.8%	
6	32.6%	54.3%	75.9%	93.9%	64.2%
5	15.6%	60.7%	50.9%	93.9%	55.3%
4	11.8%	-10.8%	18.2%	42.5%	15.4%
3	43.8%	20.7%	13.2%	17.5%	23.8%
2	54.1%	52.1%	27.9%	42.0%	44.0%
1	23.8%	69.1%	81.5%	93.2%	66.9%
	1	2	3	4	44.9%



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REPORT ON POLLUTANT EMISSION CHARACTERIZATION

Performed for:
CONSOL ENERGY, INC.
AIR HEATER INLET AND
UNIT 4 SCR INLET & OUTLET
AES GREENIDGE STATION
DRESDEN, NEW YORK

Client Reference No: 4700146642
CleanAir Project No: 10247
Revision 0: September 7, 2007
Revision 1: November 16, 2007

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.

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REVISION HISTORY

REPORT ON POLLUTANT EMISSION CHARACTERIZATION

Revision History

Revision No:	Date	Pages	Comments
R1	11/16/07		Revision 1 version of original R0 document.
R0	09/07/07	All	Final version of original document.

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PROJECT OVERVIEW

CONSOL Energy, Inc. (CONSOL) contracted Clean Air Engineering (CleanAir) to perform emissions measurements at the AES Greenidge Station located in Dresden, New York in order to characterize pollutant concentration profiles following the installation of a mesh grid to remove popcorn ash buildup in the process.

All testing was performed in accordance with regulations set forth by the United States Environmental Protection Agency (USEPA).

The test parameters included the following pollutants:

- ammonia (NH_3)
- nitrogen oxide (NO_x)
- carbon monoxide (CO)
- flue gas composition (e.g., O_2, CO_2)

The testing took place at the Unit 4 Air Heater Inlet and the Unit 4 Selective Catalytic Reduction (SCR) system (Inlet and Outlet) on May 30 through June 1, 2007. Coordinating the field testing were:

J. Locke – CONSOL Energy
D. Dreska – Clean Air Engineering

Table 1-1 outlines the schedule adhered to during the test program. Table 1-2 summarizes the results of the test program. A more detailed presentation of the test conditions and results of analysis are shown in the Tables and Figures on pages 2-1 through 2-20.

Table 1-1:
Schedule of Activities

Run Number	Location	Method	Analyte	Date	Start Time	End Time
1	Unit 4 Air Heater Inlet	CTM-027	Ammonia	05/31/07	18:04	19:14
2	Unit 4 Air Heater Inlet	CTM-027	Ammonia	06/01/07	10:20	11:07
3	Unit 4 Air Heater Inlet	CTM-027	Ammonia	06/01/07	12:05	12:52
As Found	SCR Inlet/Outlet	MASS	O_2, CO_2, NO_X, CO	05/30/07	11:12	11:35
Final Tuning	SCR Inlet/Outlet	MASS	O_2, CO_2, NO_X, CO	05/31/07	17:36	17:59
1	SCR Inlet/Outlet	MASS	O_2, CO_2, NO_X, CO	05/31/07	18:00	19:11
2	SCR Inlet/Outlet	MASS	O_2, CO_2, NO_X, CO	06/01/07	10:24	11:11
3	SCR Inlet/Outlet	MASS	O_2, CO_2, NO_X, CO	06/01/07	12:00	12:47

Table 1-2:
Summary of Test Results

Source Constituent	Sampling Method	Average Emission[1]
Unit 4 Air Heater Inlet		
NH_3 (ppm @3% O_2)	CTM-027	1.92
Unit 4 SCR Inlet		
NO_x (ppmdv @3% O_2)	EPA M7E	98.7
CO (ppmdv @3% O_2)	EPA M10	122.3
O_2 (% dv)	EPA M3A	4.4
CO_2 (% dv)	EPA M3A	15.3
Unit 4 SCR Outlet		
NO_x (ppmdv @3% O_2)	EPA M7E	60.5
NO_x Removal Efficiency (%)	EPA M7E	41.4
CO (ppmdv @3% O_2)	EPA M10	140.5
O_2 (% dv)	EPA M3A	4.7
CO_2 (% dv)	EPA M3A	14.6

[1] CEMs average emissions are calculated using data collected during the three ammonia runs.

DISCUSSION OF TEST PROGRAM

Unit 4 Air Heater Inlet – NH_3 Concentration Testing

Testing for ammonia concentration at the air heater inlet was performed using Conditional Test Method 027 (CTM-027) procedures. Sampling was performed in the available sample ports following the SCR Outlet location.

The allowable clearance outside the test ports prevented the test crew from using the heated probes initially planned for the project. Therefore, the sampling point was approximately 1 foot into the gas stream and the glass liner support was modified unheated pipe.

CleanAir performed on-site ammonia analysis using an ion specific electrode (ISE) to evaluate the data obtained. The samples were also analyzed later by ion chromatography (IC) performed offsite at the Clean Air Engineering laboratory located in Palatine, Illinois. A comparison of the results in shown on Table 2-1 page 2-1.

DISCUSSION OF TEST PROGRAM (CONTINUED)

Unit 4 Air Heater Inlet – NH_3 Concentration Testing (Continued)

There was a large discrepancy between the results of the two analytical methods. The IC results were on average 4 times lower than the on-site ISE results. Several other QA/QC items were noted between the two analytical methods.

1. The samples were slightly outside the hold time stated in CTM-027 for the IC analysis by 5-6 days.
2. The samples were not kept at 4°C per CTM-027. There is some speculation that this is not a factor so long as the acidity of the sample is maintained.
3. The ISE is temperature sensitive. It is not clear if the ISE equipment performed an automatic temperature correction. A 1°C difference in temperature will give a rise to about 2% measurement error according to electrode manufacturer's instructions. ISE analysis notes show sample temperatures ranging from 69-84°F. This would be an error range of 17%.
4. The ISE ammonia standard (1,000ppm+/-5ppm) for developing the ISE calibration curve was expired by a few months but otherwise new/unopened.
5. The ISE curve was developed for 0-100mg/L. The IC curve was 0-10mg/L
6. The IC QA/QC steps were much more rigorous then that used for the ISE (see Appendix G for copies of both the IC and ISE raw data).

In both cases nearly all (>90%) of the ammonia was found to be in the probe rinse portion of the sample instead of the first impinger catch. This is probably due to the unheated probe extension. Also, both techniques show the results from each individual run trended the same direction with each successive test run having a higher ammonia concentration than the previous.

Unit 4 SCR Inlet/Outlet – NO_x and CO

Runs were performed at the Unit 4 SCR Inlet and SCR Outlet locations using USEPA Methods 7E and 10 procedures modified to include the use of CleanAir's Multi-Point, Automated Sampling System (MASS®) to obtain a concentration profile of the NO_x and CO.

In order to assess local NO_x reductions, CleanAir has developed a proprietary flue gas profiling system called the MASS® system. The MASS® system allows duct emission profiles to be characterized in a matter of minutes, as opposed much longer sampling times for traditional duct emission traverses using "manual" traversing techniques.

PROJECT OVERVIEW

DISCUSSION OF TEST PROGRAM (CONTINUED)

Unit 4 SCR Inlet/Outlet – NO_x and CO (Continued)

CleanAir's MASS® system uses a series of automated 8-point sample modules with integrated programmable logic controllers (PLC's) to sequentially and rapidly cycle through a multi-point sample grid.

The MASS® system's lightweight modular approach facilitates a fast and easy setup. The system is designed for reliable and consistent operation with features such as pre-purged sample points, automated sequencing, and moisture and particulate removal. The system allows for rapid and efficient sampling of large test grids. The 8-point sample selection modules may be configured in various ways to accommodate a variety of sample time requirements for as many points as needed. For this test program a single set of instruments per location was used which provided one-minute cycle times per sampling point.

Sampling was performed at the existing grid probes located in four (4) ports at each location. There are currently 24 sampling points available at each of the test locations. CleanAir performed a complete grid profile measurement over a 24-minute period.

Prior to beginning sampling, NO_x measurements were conducted at each test location at a stationary point to verify steady state test conditions. Once satisfactory conditions existed sampling was performed. NO_x grid measurements where taken while the plant was tuning the boiler and SCR.

During Runs 2 and 3 some individual sampling points in the MASS® grid develop leaks that later become apparent upon data analysis especially in comparison to Run 1. These points have been left out of the averages, grids and plots of the Section 2 results.

Full results using CleanAir's MASS® system are found in Appendix C, Parameters.

RESULTS

2-1

Table 2-1:
Unit 4 Air Heater Inlet – NH_3 Results

Run No.		1	2	3	Average
Date (2007)		May 31	Jun 1	Jun 1	
Start Time (approx.)		18:04	10:20	12:05	
Stop Time (approx.)		19:14	11:07	12:52	
Gas Conditions					
O_2	Oxygen (dry volume %)	4.4	5.1	6.4	**5.3**
CO_2	Carbon dioxide (dry volume %)	16.5	13.4	12.4	**14.1**
Ammonia (NH_3) Results - Total Combined Results (IC)					
C_{sd}	Ammonia Concentration (ppmdv)	1.28	1.74	1.93	**1.65**
C_{sd7}	Ammonia Concentration @3% O_2 (ppmdv)	1.39	1.98	2.39	**1.92**
C_{sd12}	Ammonia Concentration @12% CO_2 (ppmdv)	0.934	1.56	1.87	**1.45**
Ammonia (NH_3) Results - Total Combined Results (ISE)					
C_{sd}	Ammonia Concentration (ppmdv)	5.72	7.16	8.87	**7.25**
C_{sd7}	Ammonia Concentration @3% O_2 (ppmdv)	6.20	8.11	10.9	**8.42**
C_{sd12}	Ammonia Concentration @12% CO_2 (ppmdv)	4.16	6.41	8.58	**6.38**

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RESULTS

Table 2-2:
Unit 4 SCR Inlet – As Found MASS Results

SCR Inlet
NOx (ppmdv @ 3% O2)

	1	2	3	4	Average
6	121.8	103.0	101.5	93.7	105.0
5	83.0	66.9	75.7	68.5	73.5
4	93.8	84.1	98.0	85.5	90.3
3	113.0	99.7	118.0	105.2	109.0
2	98.4	98.4	95.3	84.6	94.2
1	103.7	84.0	78.3	70.7	84.2
Average	102.3	89.4	94.5	84.7	92.7
			→	North	

SCR Inlet
CO2 (%dv)

	1	2	3	4	Average
6	12.5	14.4	14.7	14.5	14.0
5	16.9	17.2	16.9	17.1	17.0
4	17.1	17.7	17.3	17.5	17.4
3	17.7	18.1	18.6	17.9	18.1
2	14.7	18.9	19.1	17.8	17.6
1	19.1	17.4	18.1	16.2	17.7
Average	16.3	17.3	17.5	16.8	17.0
			→	North	

SCR Inlet
O2 (%dv)

	1	2	3	4	Average
6	8.5	6.6	6.3	6.5	7.0
5	3.9	3.7	3.9	3.8	3.8
4	3.8	3.4	3.6	3.5	3.6
3	3.4	2.8	2.6	3.1	3.0
2	6.6	2.1	2.1	3.2	3.5
1	1.9	3.5	2.7	4.4	3.1
Average	4.7	3.7	3.5	4.1	4.0
			→	North	

SCR Inlet
CO (ppmdv @ 3% O2)

	1	2	3	4	Average
6	64.6	24.7	58.4	72.8	55.1
5	73.5	99.8	112.6	142.6	107.1
4	118.1	95.3	84.0	65.0	90.6
3	49.5	25.4	26.2	30.8	33.0
2	418.3	603.1	340.5	281.5	410.8
1	302.1	490.8	410.4	377.4	395.2
Average	171.0	223.2	172.0	161.7	182.0
			→	North	

RESULTS

Table 2-3:
Unit 4 SCR Outlet – As Found MASS Results

SCR Outlet
NOx (ppmdv @ 3% O2)

	1	2	3	4	Average
6	76.1	19.2	1.4	8.3	26.3
5	97.6	80.9	99.0	2.7	70.0
4	81.4	102.0	105.4	60.5	87.3
3	96.1	89.2	83.2	19.9	72.1
2	82.6	11.4	2.5	1.4	24.5
1	88.5	48.2	3.2	32.1	43.0
Average	87.0	58.5	49.1	20.8	53.9
			→	North	

SCR Outlet
CO (ppmdv @ 3% O2)

	1	2	3	4	Average
6	168.3	594.5	671.9	546.2	495.2
5	184.7	315.2	760.6	353.7	403.6
4	216.7	53.9	30.6	24.9	81.6
3	34.0	26.6	32.7	44.1	34.4
2	68.2	87.3	147.2	236.0	134.7
1	170.6	98.6	104.9	280.1	163.5
Average	140.4	196.0	291.3	247.5	218.8
			→	North	

SCR Outlet
O2 (%dv)

	1	2	3	4	Average
6	5.4	3.6	3.0	3.9	4.0
5	4.1	3.9	2.8	2.4	3.3
4	4.3	4.0	3.2	2.8	3.6
3	3.8	4.7	5.2	3.5	4.3
2	5.1	4.7	3.5	3.4	4.2
1	6.6	6.3	4.5	5.3	5.7
Average	4.9	4.5	3.7	3.6	4.2
			→	North	

SCR Outlet
NOx Removal Efficiency % (@ 3%O2)

	1	2	3	4	Average
6	37.5	81.3	98.6	91.1	77.2
5	-17.6	-20.8	-30.8	96.0	6.7
4	13.2	-21.3	-7.5	29.2	3.4
3	15.0	10.6	29.4	81.1	34.0
2	16.1	88.4	97.4	98.3	75.1
1	14.7	42.7	96.0	54.6	52.0
Average	13.1	30.1	47.2	75.1	41.4
			→	North	

SCR Outlet
CO2 (%dv)

	1	2	3	4	Average
6	13.2	14.6	15.2	14.5	14.4
5	14.2	14.4	15.5	15.9	15.0
4	14.4	14.4	15.2	15.6	14.9
3	14.7	13.9	13.5	14.9	14.3
2	13.6	13.7	14.9	15.1	14.3
1	12.3	12.4	14.0	13.4	13.0
Average	13.7	13.9	14.7	14.9	14.3
			→	North	

RESULTS

2-4

Table 2-4:
Unit 4 SCR Inlet – Final Tuning MASS Results

SCR Inlet
NOx (ppmdv @ 3% O2)

	1	2	3	4	Average
6	113.1	106.2	102.2	101.8	105.8
5	87.5	88.7	84.6	75.1	84.0
4	96.6	105.9	120.7	91.3	103.6
3	128.1	102.5	125.7	111.7	117.0
2	105.5	110.4	108.2	82.1	101.5
1	130.1	104.7	111.0	108.6	113.6
Average	110.1	103.1	108.7	95.1	104.3
			→	North	

SCR Inlet
CO2 (%dv)

	1	2	3	4	Average
6	14.6	15.8	17.7	15.7	16.0
5	15.2	18.1	18.6	18.2	17.5
4	16.3	16.3	16.5	18.1	16.8
3	16.0	17.2	18.2	18.4	17.5
2	17.0	18.7	18.9	19.1	18.4
1	17.0	17.1	17.9	16.1	17.0
Average	16.0	17.2	18.0	17.6	17.2
			→	North	

SCR Inlet
O2 (%dv)

	1	2	3	4	Average
6	6.4	5.8	4.1	5.5	5.5
5	5.6	3.8	3.5	3.2	4.0
4	4.7	5.2	5.2	3.3	4.6
3	5.1	4.3	3.6	3.0	4.0
2	4.3	3.2	2.9	2.3	3.2
1	4.4	4.8	3.9	5.0	4.5
Average	5.1	4.5	3.9	3.7	4.3
			→	North	

SCR Inlet
CO (ppmdv @ 3% O2)

	1	2	3	4	Average
6	694.6	129.6	200.9	207.2	308.1
5	195.3	266.3	325.2	379.1	291.5
4	333.8	105.2	96.0	77.1	153.0
3	120.8	94.5	91.1	60.3	91.6
2	134.0	139.8	136.8	367.3	194.5
1	321.2	172.7	291.0	413.3	299.5
Average	300.0	151.3	190.2	250.7	223.0
			→	North	

RESULTS

Table 2-5:
Unit 4 SCR Outlet – Final Tuning MASS Results

SCR Outlet
NOx (ppmdv @ 3% O2)

	1	2	3	4	Average
6	88.5	40.1	2.8	4.1	33.9
5	65.7	4.5	0.6	1.0	18.0
4	72.7	85.1	76.4	4.1	59.6
3	83.4	105.6	110.3	57.9	89.3
2	158.8	73.2	102.6	2.4	84.3
1	68.0	8.2	1.0	2.6	19.9
Average	89.5	52.8	49.0	12.0	50.8

→ North

SCR Outlet
CO (ppmdv @ 3% O2)

	1	2	3	4	Average
6	701.9	234.9	504.4	482.4	480.9
5	166.0	155.5	264.9	220.1	201.6
4	200.9	68.8	34.9	53.2	89.5
3	73.8	34.8	29.6	46.0	46.0
2	92.4	61.4	71.5	165.0	97.6
1	274.9	277.3	341.8	381.9	319.0
Average	251.6	138.8	207.9	224.8	205.8

→ North

SCR Outlet
O2 (%dv)

	1	2	3	4	Average
6	8.1	3.6	6.4	7.4	6.4
5	4.8	3.4	3.9	4.4	4.1
4	4.3	3.4	4.4	3.8	4.0
3	4.1	3.3	3.7	3.7	3.7
2	9.0	3.1	3.1	2.9	4.5
1	3.2	4.1	5.4	7.7	5.1
Average	5.6	3.5	4.5	5.0	4.6

→ North

SCR Outlet
NOx Removal Efficiency % (@ 3%O2)

	1	2	3	4	Average
6	21.7	62.2	97.2	96.0	69.3
5	24.9	94.9	99.3	98.7	79.4
4	24.7	19.7	36.7	95.5	44.2
3	34.9	-2.9	12.2	48.2	23.1
2	-50.6	33.7	5.2	97.1	21.3
1	47.8	92.2	99.1	97.6	84.2
Average	17.2	50.0	58.3	88.9	53.6

→ North

SCR Outlet
CO2 (%dv)

	1	2	3	4	Average
6	9.4	15.5	15.0	14.8	13.7
5	15.0	15.3	22.0	20.5	18.2
4	19.0	14.8	19.4	20.2	18.4
3	19.3	15.1	21.3	21.1	19.2
2	15.9	18.9	22.4	22.3	19.9
1	19.5	20.5	24.5	18.7	20.8
Average	16.4	16.7	20.8	19.6	18.4

→ North

RESULTS

2-6

Table 2-6:
Unit 4 SCR Inlet – Run 1 MASS Results

SCR Inlet
NOx (ppmdv @ 3% O2)

	1	2	3	4	Average
6	112.7	117.1	110.2	106.7	111.7
5	94.6	97.6	90.9	79.3	90.6
4	98.6	109.5	129.2	93.5	107.7
3	117.2	102.6	129.8	108.6	114.6
2	96.5	106.3	104.0	87.7	98.7
1	134.3	105.8	119.8	114.2	118.5
Average	109.0	106.5	114.0	98.3	107.0
			→	North	

SCR Inlet
CO2 (%dv)

	1	2	3	4	Average
6	14.4	16.0	17.8	16.3	16.1
5	16.5	18.2	18.2	18.4	17.8
4	16.9	16.8	16.5	18.3	17.1
3	16.4	17.9	18.4	18.8	17.9
2	18.4	17.9	17.0	17.0	17.5
1	15.2	15.3	15.6	14.6	15.2
Average	16.3	17.0	17.2	17.2	16.9
			→	North	

SCR Inlet
O2 (%dv)

	1	2	3	4	Average
6	7.0	6.0	4.0	5.2	5.5
5	5.2	3.9	3.6	3.3	4.0
4	4.6	5.4	5.6	3.3	4.7
3	5.2	4.3	3.6	2.9	4.0
2	4.3	3.1	2.8	2.5	3.1
1	4.4	4.9	4.2	5.2	4.7
Average	5.1	4.6	4.0	3.7	4.3
			→	North	

SCR Inlet
CO (ppmdv @ 3% O2)

	1	2	3	4	Average
6	128.9	86.6	200.1	296.0	177.9
5	345.6	162.9	246.8	341.4	274.2
4	226.4	94.6	102.0	77.1	125.0
3	98.4	105.3	85.0	62.1	87.7
2	157.6	225.2	191.9	228.5	200.8
1	206.2	153.8	193.1	194.4	186.9
Average	193.8	138.1	169.8	199.9	175.4
			→	North	

RESULTS

2-7

Table 2-7:
Unit 4 SCR Outlet – Run 1 MASS Results

SCR Outlet
NOx (ppmdv @ 3% O2)

	1	2	3	4	Average
6	113.2	63.1	4.6	40.3	55.3
5	85.5	11.0	1.0	1.4	24.7
4	89.1	92.7	85.5	16.5	71.0
3	90.2	112.6	110.9	58.6	93.1
2	141.3	72.6	99.9	2.4	79.1
1	64.8	13.4	1.3	2.5	20.5
Average	97.4	60.9	50.5	20.3	57.3
			→	North	

SCR Outlet
CO (ppmdv @ 3% O2)

	1	2	3	4	Average
6	191.2	164.4	405.2	476.8	309.4
5	229.0	122.5	179.4	270.6	200.4
4	155.1	47.4	35.6	47.6	71.4
3	61.2	34.5	30.7	40.6	41.8
2	92.7	87.1	83.3	128.5	97.9
1	218.8	260.7	181.6	187.8	212.3
Average	158.0	119.4	152.7	192.0	155.5
			→	North	

SCR Outlet
O2 (%dv)

	1	2	3	4	Average
6	9.1	3.9	6.4	6.9	6.6
5	4.1	3.2	4.0	4.2	3.8
4	3.4	2.9	3.9	3.6	3.4
3	3.7	3.5	3.4	3.2	3.4
2	7.4	3.1	2.8	3.1	4.1
1	2.4	3.6	4.5	7.1	4.4
Average	5.0	3.3	4.1	4.7	4.3
			→	North	

SCR Outlet
NOx Removal Efficiency % (@ 3%O2)

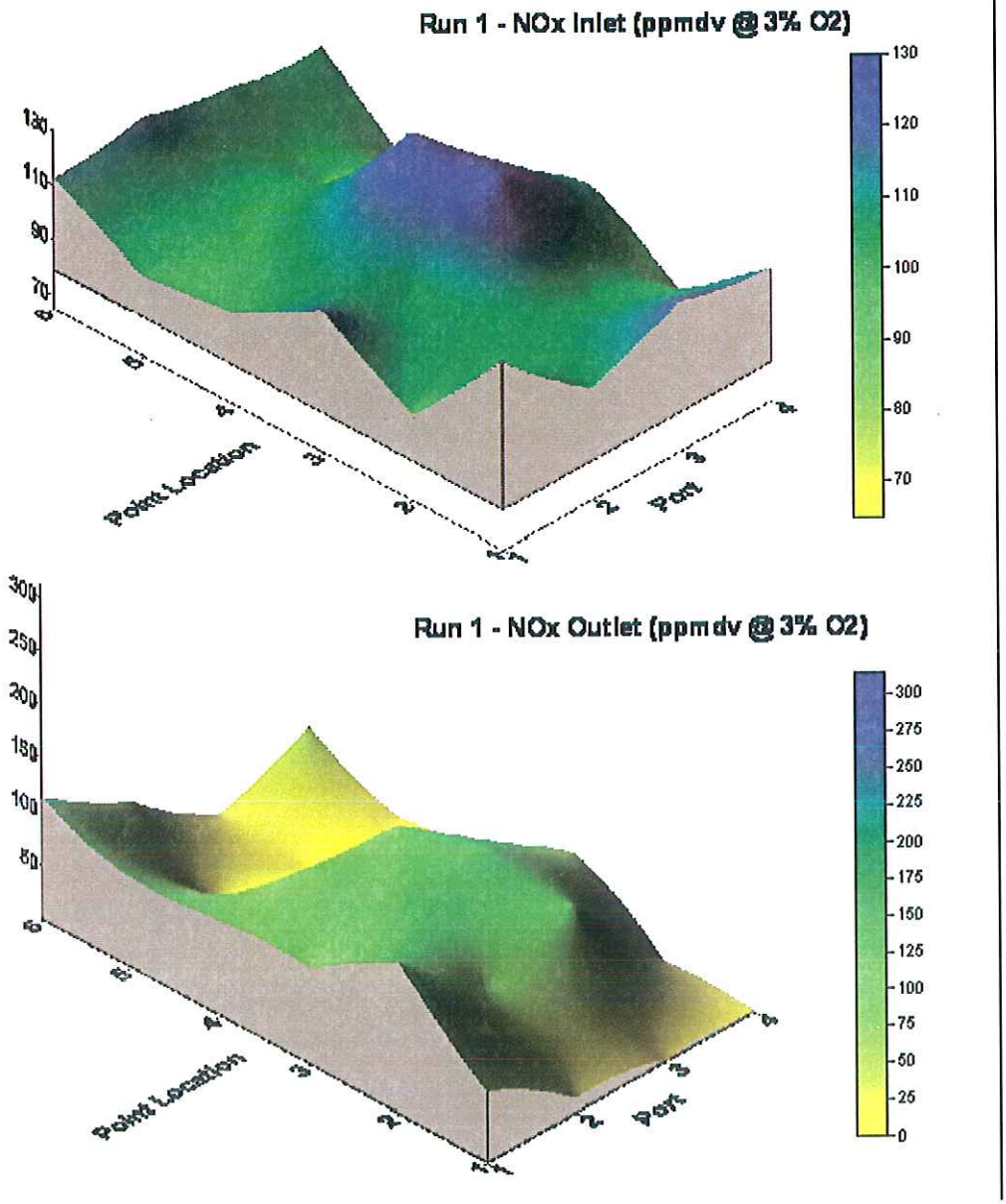
	1	2	3	4	Average
6	-0.5	46.1	95.8	62.3	50.9
5	9.5	88.7	99.0	98.2	73.8
4	9.5	15.3	33.7	82.3	35.2
3	21.0	-9.7	14.5	46.0	17.9
2	-46.5	31.7	3.9	97.3	21.6
1	51.7	87.3	98.9	97.8	84.0
Average	7.4	43.2	57.6	80.7	47.2
			→	North	

SCR Outlet
CO2 (%dv)

	1	2	3	4	Average
6	12.1	13.9	16.4	16.3	14.7
5	15.1	11.8	16.1	18.4	15.3
4	11.6	10.9	15.4	18.5	14.1
3	15.4	16.3	18.4	19.3	17.3
2	12.4	19.5	19.5	20.1	17.8
1	15.8	17.1	15.8	15.4	16.0
Average	13.7	14.9	16.9	18.0	15.9
			→	North	

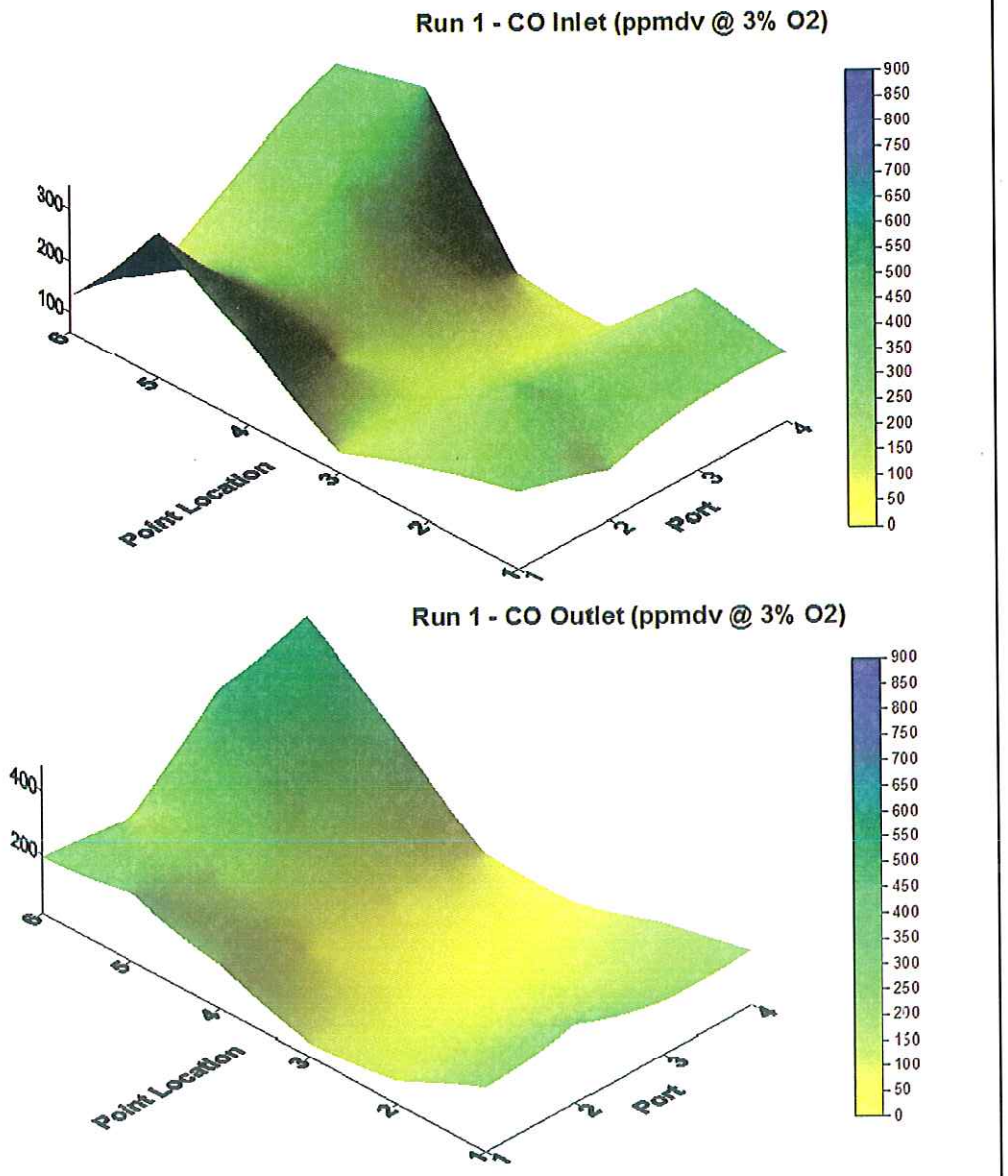
RESULTS

Figure 2-1:
Unit 4 SCR Inlet & Outlet – Run 1 Nitrogen Oxides



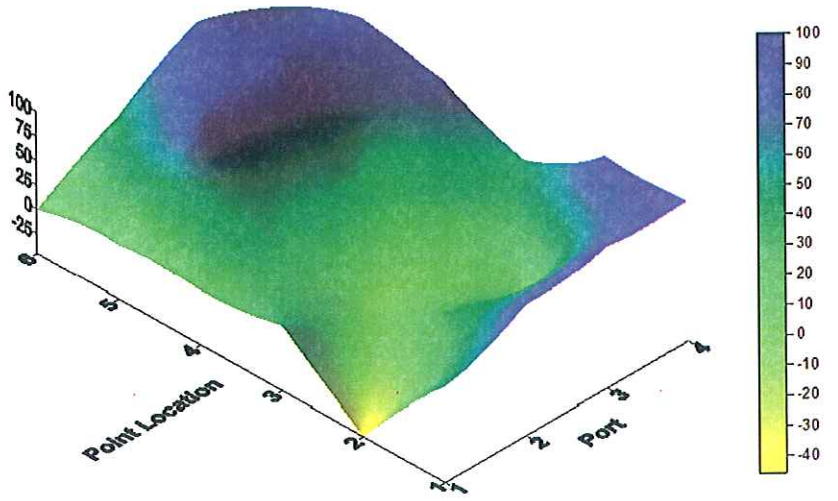
RESULTS

Figure 2-2:
Unit 4 SCR Inlet & Outlet – Run 1 Carbon Monoxide



RESULTS

Figure 2-3:
Unit 4 SCR – Run 1 Nitrogen Oxides Removal Efficiency



RESULTS

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Table 2-8:
Unit 4 SCR Inlet – Run 2 MASS Results

SCR Inlet
NOx (ppmdv @ 3% O2)

	1	2	3	4	Average
6	120.7	114.8	96.5	96.6	107.2
5	98.9	72.8	65.9	68.1	76.4
4	98.4	80.7	88.2	87.5	88.7
3	121.2	82.2	111.9	96.9	103.0
2	119.1	98.4	87.2	73.2	94.5
1	107.5	110.1		97.1	104.9
Average	111.0	93.2	89.9	86.6	95.4

→ North

SCR Inlet
CO2 (%dv)

	1	2	3	4	Average
6	11.9	12.5	14.0	12.8	12.8
5	13.7	14.9	15.3	15.2	14.8
4	15.1	14.1	13.4	13.8	14.1
3	13.9	15.3	15.5	15.8	15.1
2	15.5	16.8	16.4	16.1	16.2
1	14.4	14.8		14.8	14.6
Average	14.1	14.7	14.9	14.7	14.6

→ North

SCR Inlet
O2 (%dv)

	1	2	3	4	Average
6	7.4	7.1	5.4	6.0	6.5
5	5.4	4.4	4.0	3.4	4.3
4	4.1	5.4	5.3	5.1	4.9
3	5.1	4.1	3.4	2.7	3.8
2	3.4	2.7	2.2	2.4	2.6
1	4.5	4.6		3.6	4.2
Average	5.0	4.7	4.0	3.8	4.4

→ North

SCR Inlet
CO (ppmdv @ 3% O2)

	1	2	3	4	Average
6	132.6	31.1	20.0	53.0	59.2
5	129.9	136.7	77.4	109.2	113.3
4	100.7	45.5	44.1	45.4	58.9
3	71.7	43.2	28.6	27.5	42.7
2	130.3	206.1	79.5	77.3	123.3
1	309.6	388.3		80.3	259.4
Average	145.8	141.8	49.9	65.4	102.9

→ North

Revision 1

RESULTS

Table 2-9:
Unit 4 SCR Outlet – Run 2 MASS Results

SCR Outlet NOx (ppmdv @ 3% O2)

	1	2	3	4	Average
6	105.9	64.8		12.7	61.1
5	70.3	30.1		3.5	34.6
4	98.7			8.4	53.5
3	79.7			55.7	67.7
2	96.5	71.6		2.5	56.8
1	106.6	56.9			81.7
Average	93.0	55.8		16.6	57.6

→ North

SCR Outlet CO (ppmdv @ 3% O2)

	1	2	3	4	Average
6	188.9	57.0		123.2	123.0
5	91.1	116.4		87.1	98.2
4	37.1			125.0	81.1
3	161.7			30.3	96.0
2	78.1	138.7		164.7	127.2
1	381.6	619.5			500.6
Average	156.4	175.1	380.6	143.3	160.0

→ North

SCR Outlet O2 (%dv)

	1	2	3	4	Average
6	8.2	6.5		6.7	7.1
5	4.0	7.1		3.7	4.9
4	3.7			3.1	3.4
3	2.8			3.2	3.0
2	1.6	1.9		2.4	2.0
1	6.8	7.3			7.0
Average	4.5	5.7		3.8	4.6

→ North

SCR Outlet NOx Removal Efficiency % (@ 3%O2)

	1	2	3	4	Average
6	12.2	43.5		87.2	47.7
5	29.0	58.8		94.8	60.9
4	-0.3			90.3	45.0
3	34.2			42.5	38.4
2	19.0	27.3		96.6	47.6
1	0.7	48.3			24.5
Average	15.8	44.5		82.3	45.6

→ North

SCR Outlet CO2 (%dv)

	1	2	3	4	Average
6	10.8	12.3		12.0	11.7
5	14.5	11.8		14.8	13.7
4	14.9			15.3	15.1
3	15.6			15.3	15.4
2	16.7	16.5		16.0	16.4
1	12.0	11.5			11.7
Average	14.1	13.0		14.6	14.0

→ North

RESULTS

Figure 2-4:
Unit 4 SCR Inlet & Outlet – Run 2 Nitrogen Oxides

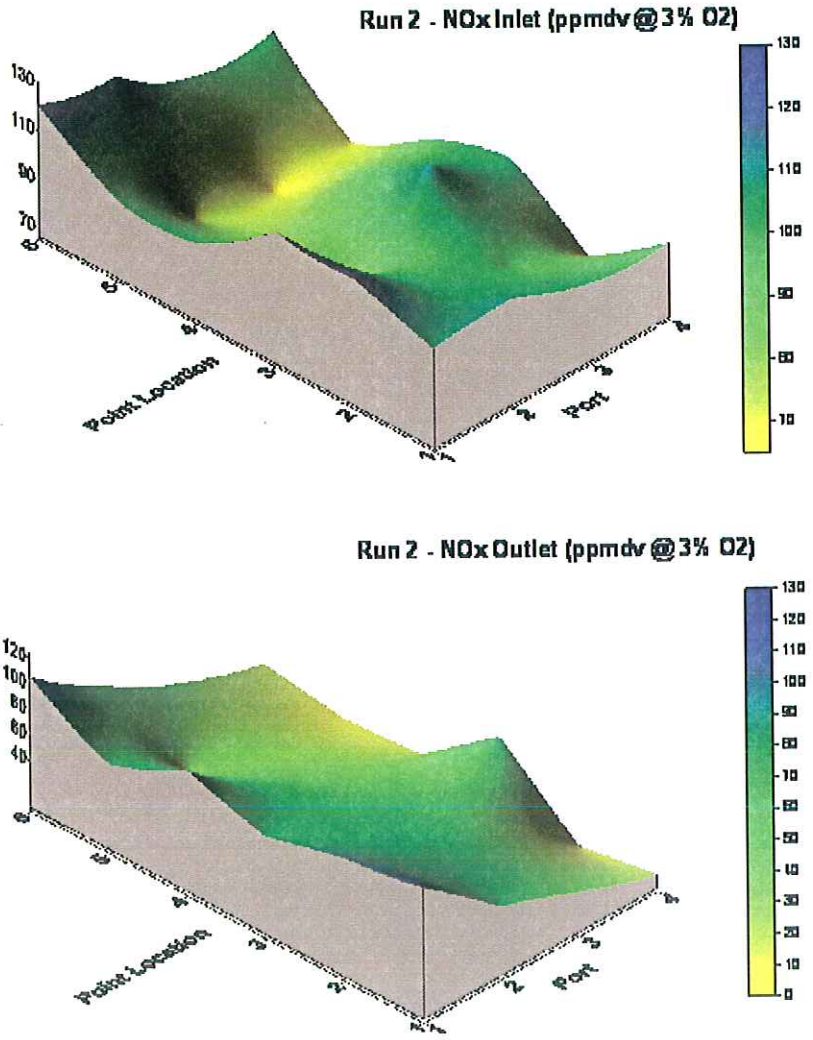
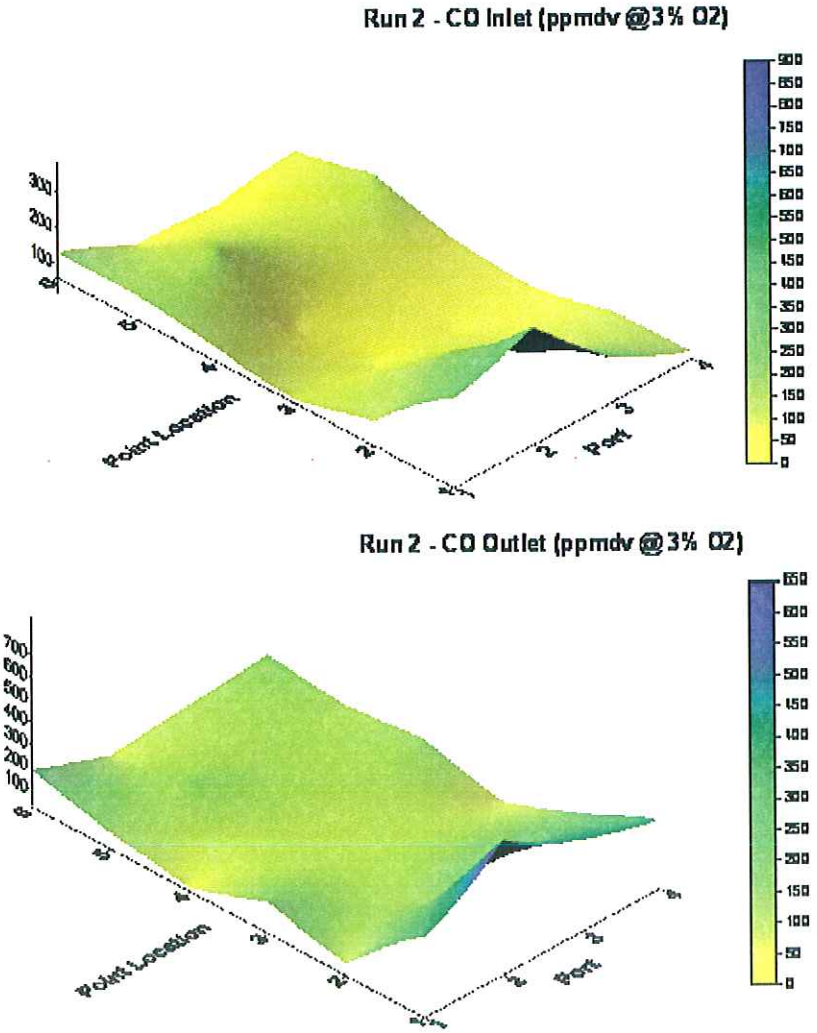
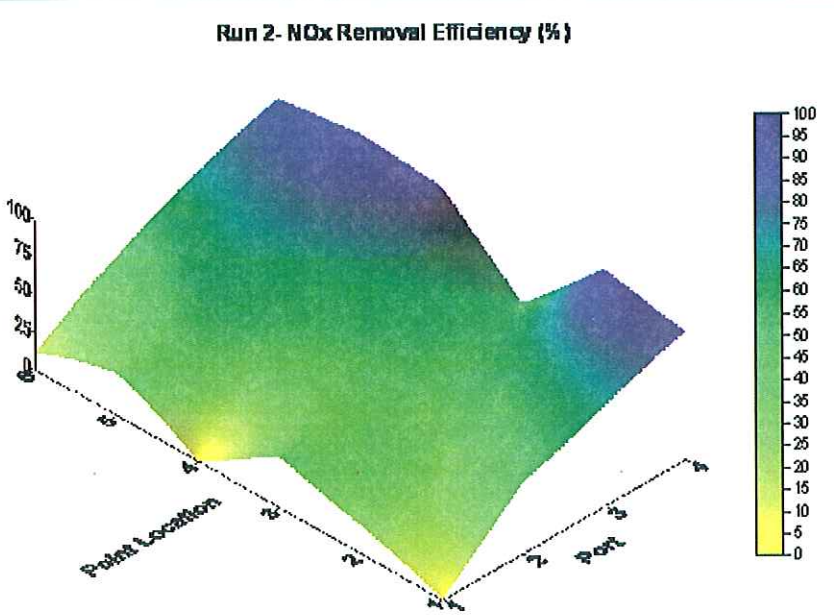


Figure 2-5:
Unit 4 SCR Inlet & Outlet – Run 2 Carbon Monoxide



RESULTS

Figure 2-6:
Unit 4 SCR – Run 2 Nitrogen Oxides Removal Efficiency



RESULTS

Table 2-10:
Unit 4 SCR Inlet – Run 3 MASS Results

SCR Inlet
NOx (ppmdv @ 3% O2)

	1	2	3	4	Average
6	111.9	103.8	112.9	100.2	107.2
5	91.0	75.2	77.8	67.2	77.8
4	94.9	86.5	81.0	88.6	87.7
3	122.0	83.3	101.6	99.0	101.5
2	121.4	83.0	86.2	71.1	90.4
1	106.5	83.8	101.3	95.1	96.7
Average	108.0	85.9	93.5	86.9	93.6
			→	North	

SCR Inlet
CO2 (%dv)

	1	2	3	4	Average
6	11.7	12.5	13.6	12.5	12.6
5	13.3	14.6	14.9	15.0	14.4
4	15.0	14.3	13.8	13.4	14.1
3	14.0	15.3	15.5	15.6	15.1
2	15.2	16.1	16.5	15.9	15.9
1	14.4	14.3	14.5	14.9	14.5
Average	13.9	14.5	14.8	14.5	14.4
			→	North	

SCR Inlet
O2 (%dv)

	1	2	3	4	Average
6	7.6	6.9	5.5	6.1	6.5
5	5.7	4.6	4.0	3.6	4.4
4	4.1	5.2	5.3	5.5	5.0
3	5.1	4.1	3.3	2.8	3.8
2	3.4	2.7	2.3	2.4	2.7
1	4.3	4.7	4.2	3.5	4.2
Average	5.0	4.7	4.1	4.0	4.4
			→	North	

SCR Inlet
CO (ppmdv @ 3% O2)

	1	2	3	4	Average
6	87.2	45.7	51.4	36.6	55.2
5	67.2	63.8	30.7	60.4	55.5
4	87.1	40.3	45.5	71.1	61.0
3	60.8	45.4	47.7	27.4	45.3
2	136.4	166.2	77.6	88.7	117.2
1	235.4	353.1	92.0	88.9	192.4
Average	112.3	119.1	57.5	62.2	87.8
			→	North	

RESULTS

Table 2-11:
Unit 4 SCR Outlet – Run 3 MASS Results

SCR Outlet
NOx (ppmdv @ 3% O2)

	1	2	3	4	Average
6		83.3		13.0	48.2
5	87.9	22.8		3.0	37.9
4	115.6	120.9		8.5	81.7
3	89.6	133.3		47.5	90.1
2	101.2	92.5		2.1	65.3
1	106.9				106.9
Average	100.2	90.6		14.8	68.5

→ North

SCR Outlet
CO (ppmdv @ 3% O2)

	1	2	3	4	Average
6		101.6		158.6	130.1
5	71.4	102.1		107.9	93.8
4	39.8	30.2		69.4	46.5
3	118.3	29.0		21.6	56.3
2	52.3	113.8		115.3	93.8
1	321.9				321.9
Average	120.8	75.3		94.6	96.9

→ North

SCR Outlet
O2 (%dv)

	1	2	3	4	Average
6		7.5		7.0	7.3
5	6.7	8.8		3.6	6.4
4	5.6	8.3		3.0	5.6
3	4.1	6.5		2.7	4.4
2	2.2	6.3		2.7	3.7
1	6.8				6.8
Average	5.1	7.5		3.8	5.4

→ North

SCR Outlet
NOx Removal Efficiency % (@ 3%O2)

	1	2	3	4	Average
6		16.8		87.1	51.9
5	2.8	69.3		95.5	55.9
4	-22.4	-39.8		90.4	9.4
3	26.5	-60.1		52.1	6.2
2	16.7	-14.4		97.0	33.1
1	-0.4				-0.4
Average	4.6	-5.6		84.4	27.8

→ North

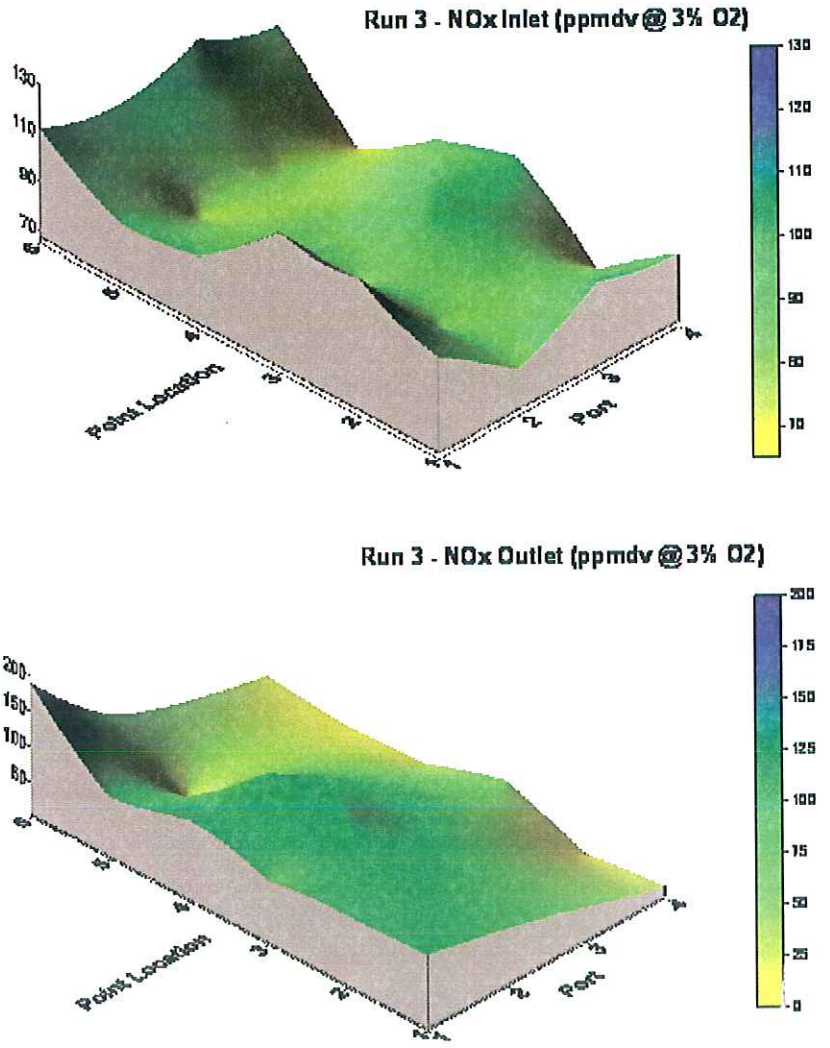
SCR Outlet
CO2 (%dv)

	1	2	3	4	Average
6		11.4		11.8	11.6
5	12.0	10.1		14.9	12.3
4	13.1	10.7		15.5	13.1
3	14.6	12.2		15.8	14.2
2	16.3	12.3		15.8	14.8
1	12.1				12.1
Average	13.6	11.3		14.7	13.2

→ North

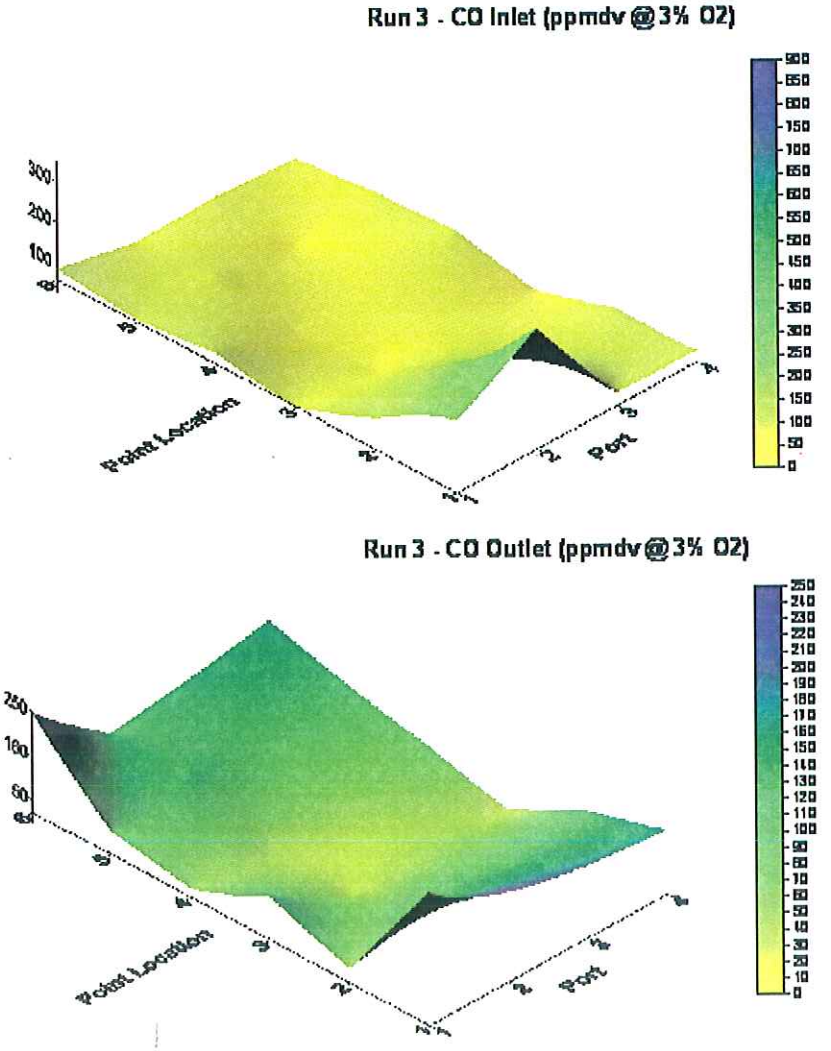
RESULTS

Figure 2-7:
Unit 4 SCR Inlet & Outlet – Run 3 Nitrogen Oxides



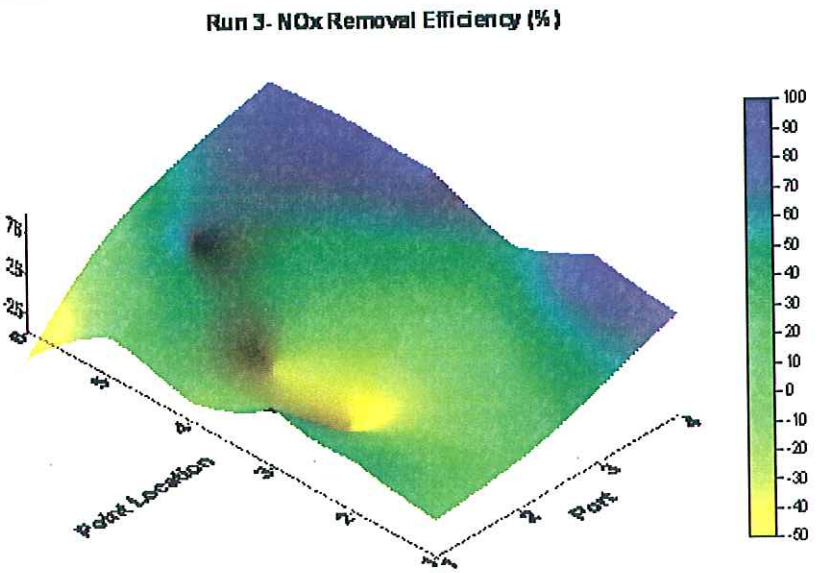
RESULTS

Figure 2-8:
Unit 4 SCR Inlet & Outlet – Run 3 Carbon Monoxide



RESULTS

Figure 2-9:
Unit 4 SCR – Run 3 Nitrogen Oxides Removal Efficiency



DESCRIPTION OF INSTALLATION

3-1

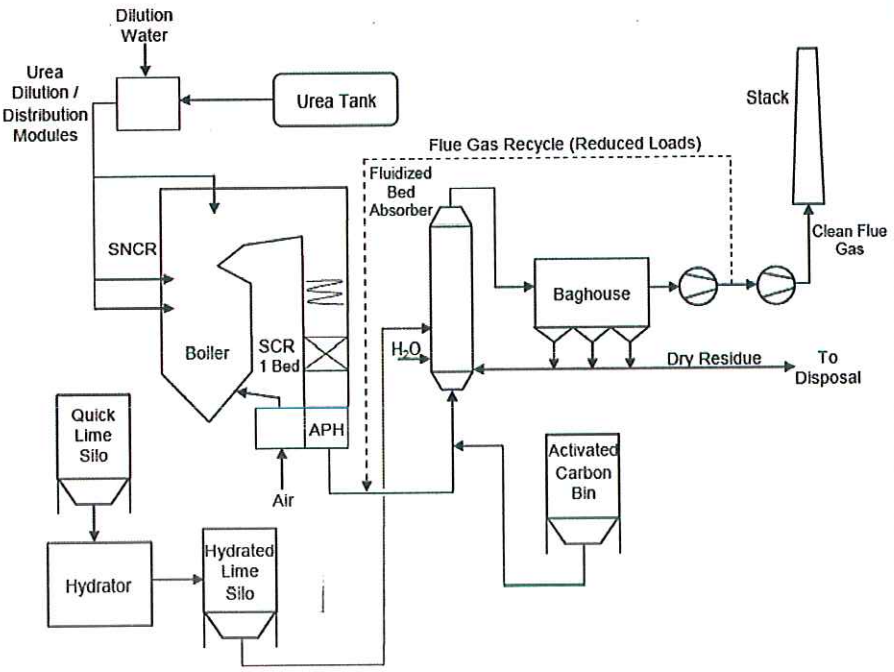
PROCESS DESCRIPTION

AES Greenidge Unit 4 is representative of 492 coal-fired electricity generating units in the United States with capacities of 50-300 MWe. AES Greenidge Unit 4 is a 104-MW coal-fired unit.

The unit has an integrated multi-pollutant control system installed in order to reduce emissions in an economically viable way. This new technology utilizes a hybrid selective non-catalytic reduction / selective catalytic reduction system for NO_x reduction and a circulating fluidized-bed dry scrubber for SO_2 and mercury reduction.

The testing was performed at the Unit 4 SCR Inlet and Outlet and the Unit 4 Air Heater Inlet.

A schematic of the process indicating sampling locations is shown in Figure 3-1.



Source: Quarterly Progress Report, May 19 – June 30, 2006, U.S. DOE Cooperative Agreement No. DE-FC26-06NT41426, D.P Connell, CONSOL Energy, Inc.

Figure 3-1: Process Schematic

DESCRIPTION OF INSTALLATION

DESCRIPTION OF SAMPLING LOCATIONS

Sampling point locations were determined according to EPA Method 1.

Table 3-1 outlines the sampling point configurations. Figures 3-2 through 3-4 illustrate the sampling points and orientation of sampling ports for each of the sources tested in the program.

Table 3-1:
Sampling Points

Location	Constituent	Method	Run No.	Ports	Points per Port[1]	Minutes per Point	Total Minutes	Figure
Unit 4 Air Heater Inlet								
	NH_3	CTM-027	1	2	1	30	60	3-2
	NH_3	CTM-027	2, 3	2	1	20	40	3-2
Unit 4 SCR Inlet and Outlet								
	NO_X, CO, O_2, CO_2	3A, 7E, 10	1-3	4	6	1	24	3-3
	NO_X, CO, O_2, CO_2	3A, 7E, 10	1-3	4	6	1	24	3-4

[1] NH_3 testing was performed at a single point for both the East and West ducts. Due to the length of the sampling probes, testing was conducted slightly closer to the actual ports, rather than the center of the ducts.

DESCRIPTION OF INSTALLATION

DESCRIPTION OF SAMPLING LOCATIONS (CONTINUED)

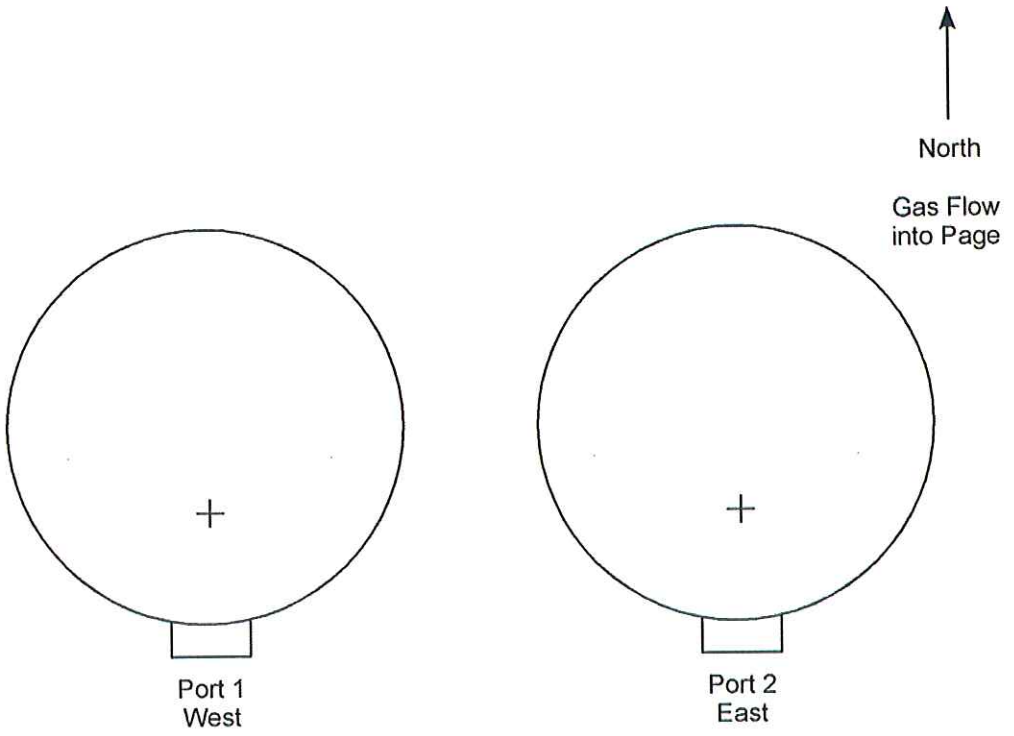
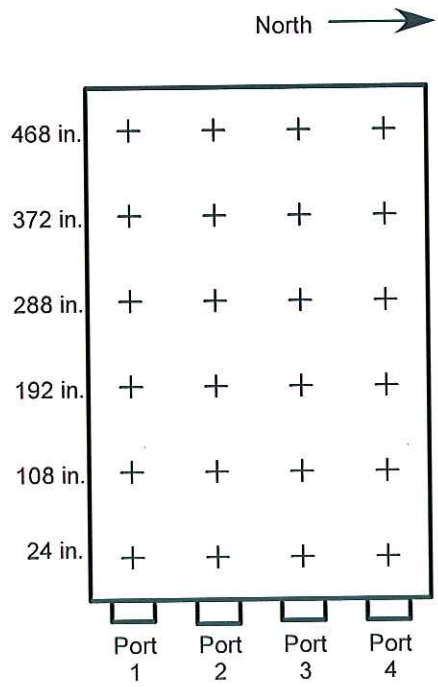


Figure 3-2: Unit 4 Air Heater Inlet Sampling Point Determination (EPA Method 1)

DESCRIPTION OF INSTALLATION

3-4

DESCRIPTION OF SAMPLING LOCATIONS (CONTINUED)



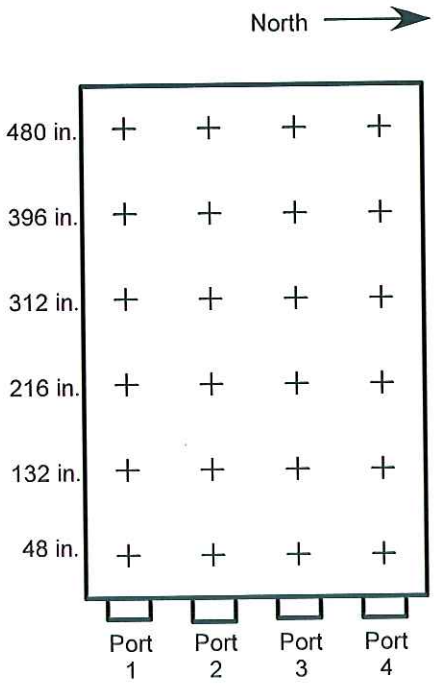
Traverse Point	Port to Point Distance (in.)
1	24
2	108
3	192
4	288
5	372
6	468

Figure 3-3: Unit 4 SCR Inlet – Sampling Point Determination (EPA Method 1)

DESCRIPTION OF INSTALLATION

3-5

DESCRIPTION OF SAMPLING LOCATIONS (CONTINUED)



Traverse Point	Port to Point Distance (in.)
1	48
2	132
3	216
4	312
5	396
6	480

Figure 3-4: Unit 4 SCR Outlet – Sampling Point Determination (EPA Method 1)

METHODOLOGY

Clean Air Engineering followed procedures as detailed in USEPA Methods 1, 2, 3A, 4, 7E, 10 and CTM-027, as well as the CleanAir Proprietary MASS® Method. 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 7E	"Determination of Nitrogen Oxides Emissions from Stationary Sources (Instrumental Analyzer Procedure)"
Method 10	"Determination of Carbon Monoxide Emissions from Stationary Sources"
Conditional Test Methods (CTM)	
CTM-027	"Procedure for Collection and Analysis of Ammonia in Stationary Sources"
CleanAir Proprietary Methods	
MASS®	"Multipoint Automated Sampling System for Stationary Grid Gas Analysis"

These methods appear in detail in Title 40 of the Code of Federal Regulations (CFR) and on the World Wide Web at http://www.cleanair.com.

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 in USEPA "Quality Assurance Handbook for Air Pollution Measurement Systems: Volume III Stationary Source-Specific Methods", EPA/600/R-94/038C. Additional QA/QC methods as prescribed in CleanAir's internal Quality Manual were also followed. Results of all QA/QC activities performed by CleanAir are summarized in Appendix D.

APPENDIX

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

TEST METHOD SPECIFICATIONS

A

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Specification Sheet for Conditional Test Method (CTM) 027

Source Location Name(s)	Unit 4 Air Heater Inlet
Pollutant(s) to be Determined	Ammonia
Other Parameters to be Determined from Train	Gas Density, Moisture

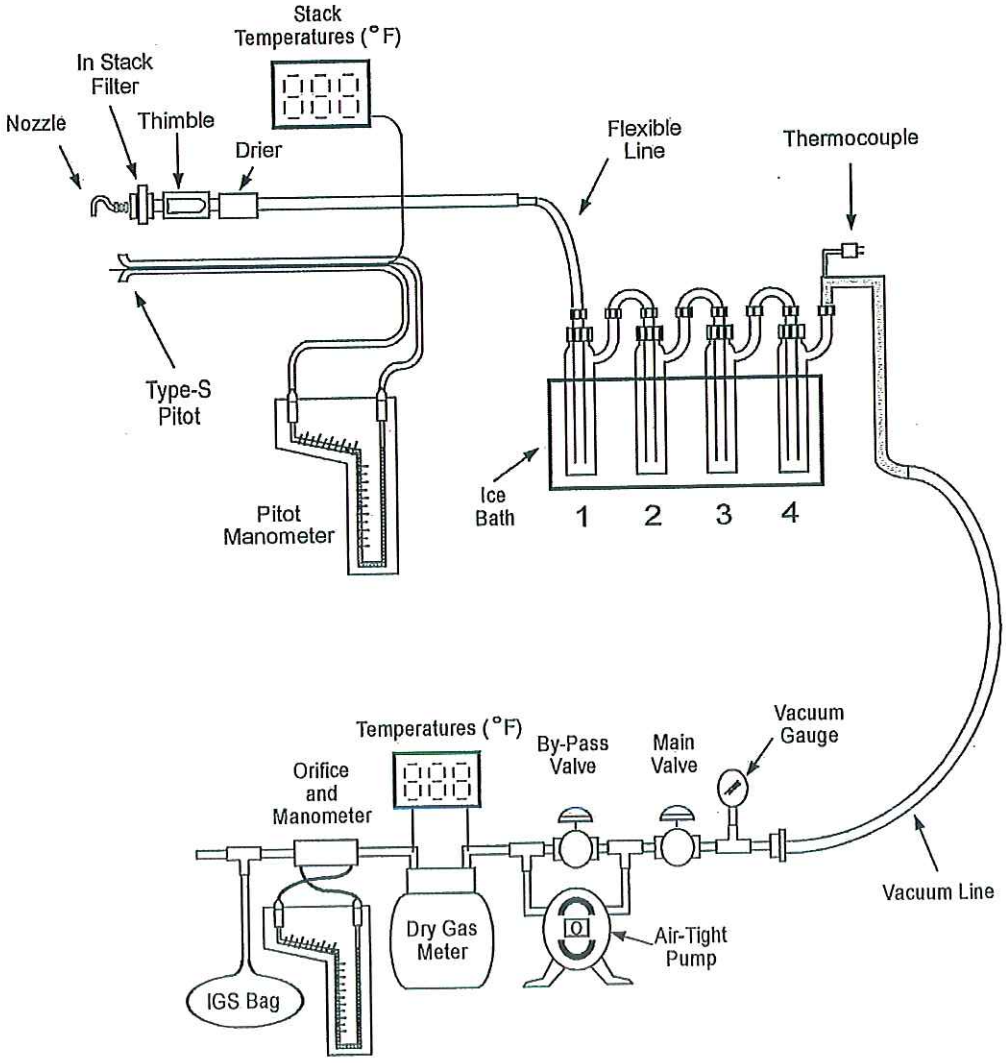
	Standard Method Specification	Actual Specification Used
Pollutant Sampling Information		
Duration of Run	N/A	Run 1 = 60 minutes; Runs 2-3 = 40 minutes
No. of Sample Traverse Points	N/A	1
Sample Time per Point	N/A	5 minutes
Sampling Rate	Isokinetic (90-110%)	N/A
Sampling Probe		
Nozzle Material	Borosilicate or Quartz Glass	None
Nozzle Design	Button-Hook or Elbow	N/A
Probe Liner Material	Borosilicate or Quartz Glass	Borosilicate Glass
Effective Probe Length	N/A	N/A
Probe Temperature Set-Point	Stack Temperature	None
Velocity Measuring Equipment		
Pitot Tube Design	Type S	None
Pitot Tube Coefficient	N/A	N/A
Pitot Tube Calibration by	Geometric or Wind Tunnel	N/A
Pitot Tube Attachment	Attached to Probe	N/A
Metering System Console		
Meter Type	Dry Gas Meter	Dry Gas Meter
Meter Accuracy	±2%	±1%
Meter Resolution	N/A	0.01 cubic feet
Meter Size	N/A	0.1 dcf/revolution
Meter Calibrated Against	Wet Test Meter or Standard DGM	Wet Test Meter
Pump Type	N/A	Rotary Vane
Temperature Measurements	N/A	Type K Thermocouple/Pyrometer
Temperature Resolution	5.4°F	1.0°F
ΔP Differential Pressure Gauge	Inclined Manometer or Equivalent	N/A
ΔH Differential Pressure Gauge	Inclined Manometer or Equivalent	Inclined Manometer
Barometer	Mercury or Aneroid	Digital Barometer calibrated w/Mercury Aneroid
Filter Description		
Filter Location	In Stack	In-Stack
Filter Holder Material	Borosilicate Glass or Teflon	Borosilicate Glass
Filter Support Material	Borosilicate Glass or Teflon	Teflon
Thimble Material	N/A	Glass
Filter Heater Set-Point	N/A	Stack Temp
Filter Material	Glass Fiber	Glass Fiber
Other Components		
Description	N/A	N/A
Location	N/A	N/A
Operating Temperature	N/A	N/A

Specification Sheet for

Conditional Test Method (CTM) 027

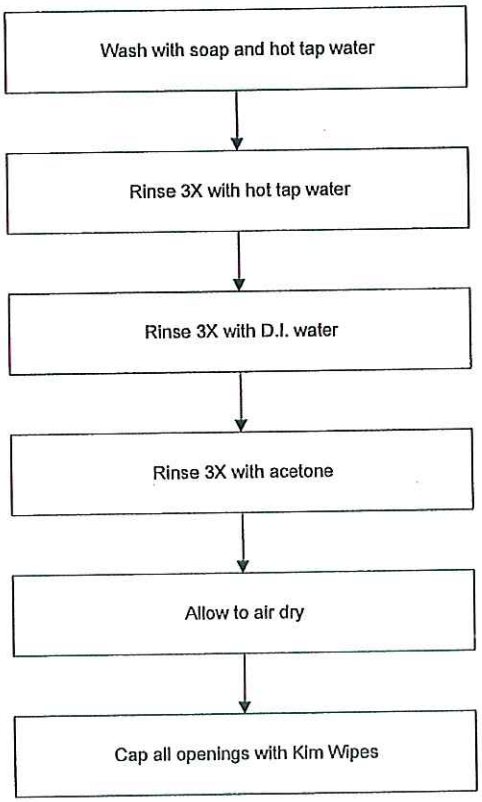
	Standard Method Specification	Actual Specification Used
Impinger Train Description		
Type of Glassware Connections	Leak-Free Glass Connectors	Screw Joint with Silicone Gasket
Connection to Probe or Filter by	Direct or Flexible Tubing	Flexible Teflon Line
Number of Impingers	4	4
Impinger Stem Types		
Impinger 1	Greenburg-Smith	Greenburg-Smith
Impinger 2	Greenburg-Smith	Greenburg-Smith
Impinger 3	Modified Greenburg-Smith	Modified Greenburg-Smith
Impinger 4	Modified Greenburg-Smith	Modified Greenburg-Smith
Impinger 5		
Impinger 6		
Impinger 7		
Impinger 8		
Gas Density Determination		
Sample Collection	Multi-point integrated	Single Point Grab
Sample Collection Medium	Flexible Gas Bag	Direct Interface
Sample Analysis	Orsat or Fyrite Analyzer	CEM
Sample Recovery Information		
Probe Brush Material	None	None
Probe Rinse Reagent	Deionized Water	Deionized Water
Probe Rinse Wash Bottle Material	Polyethylene	Polyethylene
Probe Rinse Storage Container	Polyethylene	Polyethylene
Filter Recovered?	No	Archived
Filter Storage Container	N/A	Polystyrene
Impinger Contents Recovered?	Yes	Yes
Impinger Rinse Reagent	Deionized Water	Deionized Water
Impinger Wash Bottle	Polyethylene	Polyethylene
Impinger Storage Container	Polyethylene	Polyethylene
Analytical Information		
Method 4 H_2O Determination by	Volumetric or Gravimetric	Gravimetric and Volumetric
Filter Preparation Conditions	N/A	N/A
Front-Half Rinse Preparation	Combined with back-half	See Analytical Flow Chart
Back-Half Analysis	Ion Chromatography Analysis	Ion Chromatography
Additional Analysis	N/A	None

CTM-027
Sampling Train Configuration



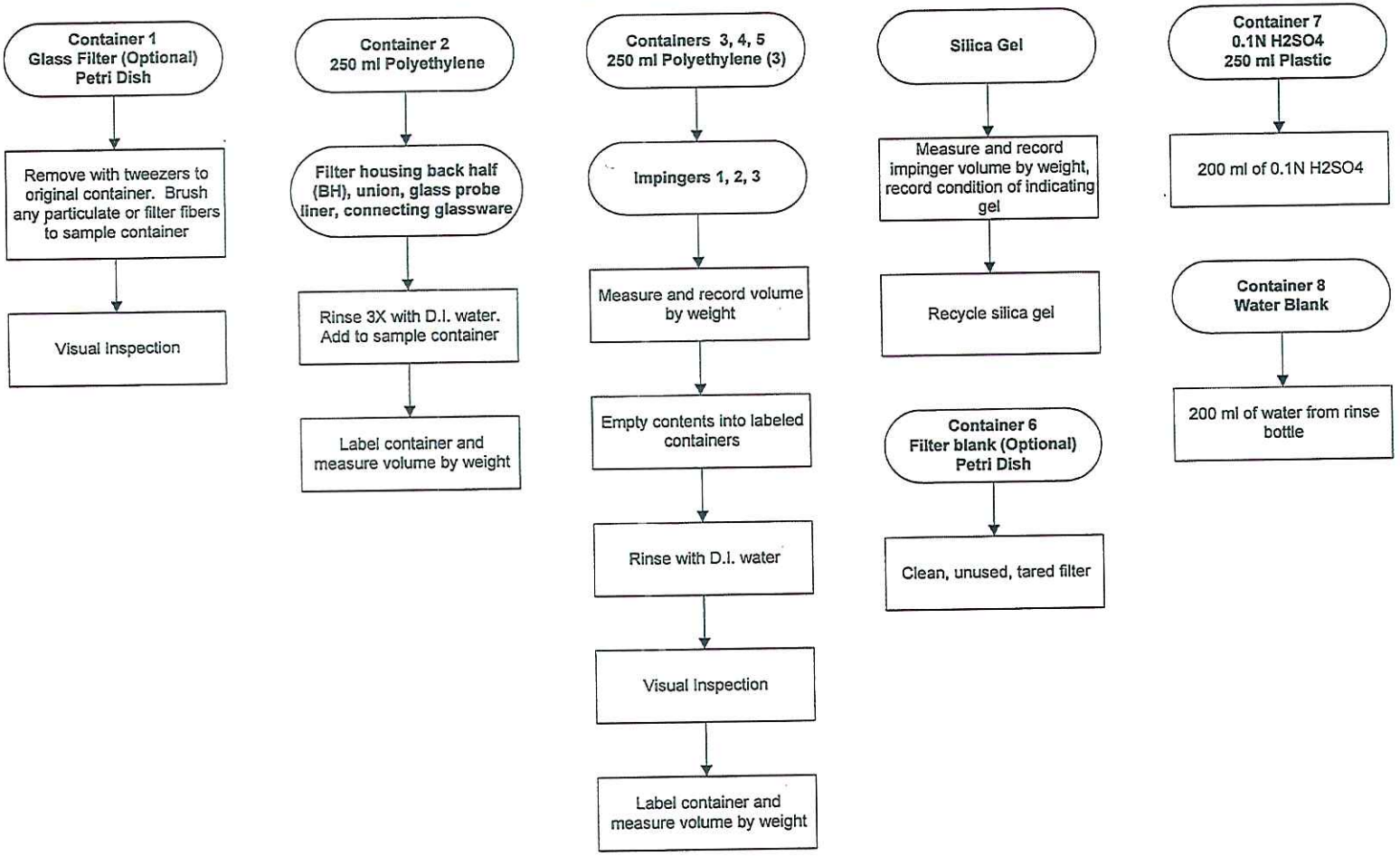
Impinger Contents	
Impinger 1	0.1N H_2SO_4
Impinger 2	0.1N H_2SO_4
Impinger 3	Empty
Impinger 4	Silica Gel

CTM-027
Glassware Preparation Procedures



CTM-027
Sample Recovery Flowchart

- 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)
- Store and ship all samples at ice temperature.



CTM-027
Analytical Flowchart
Log each sample in shipment and verify against chain-of-custody sheet
Note liquid levels in the sample containers and confirm on the chain-of-custody sheet condition
Containers 3, 4, 5
Impingers 1, 2, 3
Quantitatively transfer each sample to a volumetric flask or graduated cylinder and bring to standard volume with D.I. water
Analyze by ion chromatography for NH4
Containers 1 and 2
Filter and Probe Rinse
Optional (Combine with Impingers)
Archive
Sample Blanks

Specification Sheet for EPA Methods 3A, 7E and 10 with MASS

Source Location Name(s)	SCR Inlet & Outlet Test Grid
Pollutant(s) to be Determined	Determination of Nitrogen Oxides (NO_x) and Carbon Monoxide (CO) Emissions
Other Parameters to be Determined from Train	O2 and CO2 (EPA Method 3A)

	Standard Method Specification	Actual Specification Used
Pollutant Sampling Information		
Duration of Run	N/A	24 minutes
No. of Sample Traverse Points	N/A	24
Sample Time per Point	N/A	1 minute
Sampling Rate	Constant Rate	Constant Rate
Sampling Probe		
Nozzle Material	N/A	None
Nozzle Design	N/A	N/A
Probe Liner Material	Stainless Steel or Pyrex Glass	Test Grid
Effective Probe Length	Sufficient to Traverse Points	Test Grid Probes
Probe Temperature Set-Point	Prevent Condensation	Stack Temp
Particulate Filter		
In-Stack Filter	Yes	No
In-Stack Filter Material	Non-reactive to gas	N/A
External Filter	Yes	Yes
External Filter Material	Borosilicate, Quartz Glass Wool or Fiber Mat	Borosilicate Glass Fiber Mat
External Filter Set-Point	Prevent Condensation	Ambient
Sample Delivery System		
Heated Sample Line Material	Stainless Steel or Teflon	Teflon
Heated Sample Line Set-Point	Prevent Condensation	Ambient
Heated Sample Line Connections	Probe Exit to Moisture Removal System	N/A
Moisture Removal System	Refrigerator-type condenser or similar	Coil - Condenser Type
Sample Pump Type	Leak-Free, minimal response time	Piston
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	Probe to Sample Gas Manifold
Additional Filters	Optional	Yes
Additional Filter Type	N/A	Particulate Removal
Additional Filter Location	Optional	Entrance to Sample Manifold
Filter Material	Non-reactive to sample gases	Glass Fiber
Analyzer Description		
Oxygen (O_2)	EPA Method 3A (Paramagnetic)	EPA Method 3A (Paramagnetic)
Carbon Dioxide (CO_2)	EPA Method 3A (Paramagnetic)	EPA Method 3A (Paramagnetic)
Sulfur Dioxide (SO_2)	N/A	N/A
Nitrogen Oxides (NO_x)	EPA Method 7E (Chemiluminescent)	EPA Method 7E (Chemiluminescent)
Carbon Monoxide (CO)	EPA Method 10 (Gas Filter Correlation IR)	EPA Method 10 (Gas Filter Correlation IR)
Total Hydrocarbon (THC)	N/A	N/A
Hydrogen Chloride (HCl)	N/A	N/A
Ammonia (NH_3)	N/A	N/A

Specification Sheet for EPA Methods 3A, 7E and 10 with MASS

	Standard Method Specification	Actual Specification Used
Instrument Span Range		
Oxygen (O_2)	≤ 1.33 x Expected Maximum	0-15%
Carbon Dioxide (CO_2)	≤ 1.33 x Expected Maximum	0-15%
Sulfur Dioxide (SO_2)		N/A
Nitrogen Oxides (NO_x)	≤ 1.33 x Expected Maximum	0-200 ppm
Carbon Monoxide (CO)	≤ 1.33 x Expected Maximum	0-1,000 ppm
Total Hydrocarbon (THC)	N/A	N/A
Hydrogen Chloride (HCl)	N/A	N/A
Ammonia (NH_3)	N/A	N/A
Data Acquisition		
Data Recorder	Strip chart, Analog Computer or Digital Recorder	Analog Computer
Recorder Resolution	0.5 Percent of Span	0.1 Percent of Span
Data Storage	Manually or Automatic	Manually
Measurement Freq. <60 min. Sample Time	1-min. intervals or 30 measurements (less restrictive)	One reading per second
Recording Freq. <60 min. Sample Time	1-min. intervals or 30 measurements (less restrictive)	One Minute Average (60, 1 second readings)
Measurement Freq. >60 min. Sample Time	2-min. intervals or 96 measurements (less restrictive)	N/A
Recording Freq. >60 min. Sample Time	2-min. intervals or 96 measurements (less restrictive)	N/A
Calibration Gas Specifications		
Oxygen (O_2)	EPA Protocol 1	EPA Protocol 1
Carbon Dioxide (CO_2)	N/A	EPA Protocol 1
Sulfur Dioxide (SO_2)	N/A	
Nitrogen Oxides (NO_x)	EPA Protocol 1	EPA Protocol 1
Carbon Monoxide (CO)	N/A	EPA Protocol 1
Total Hydrocarbon (THC)	N/A	
Hydrogen Chloride (HCl)	N/A	
Ammonia (NH_3)	N/A	

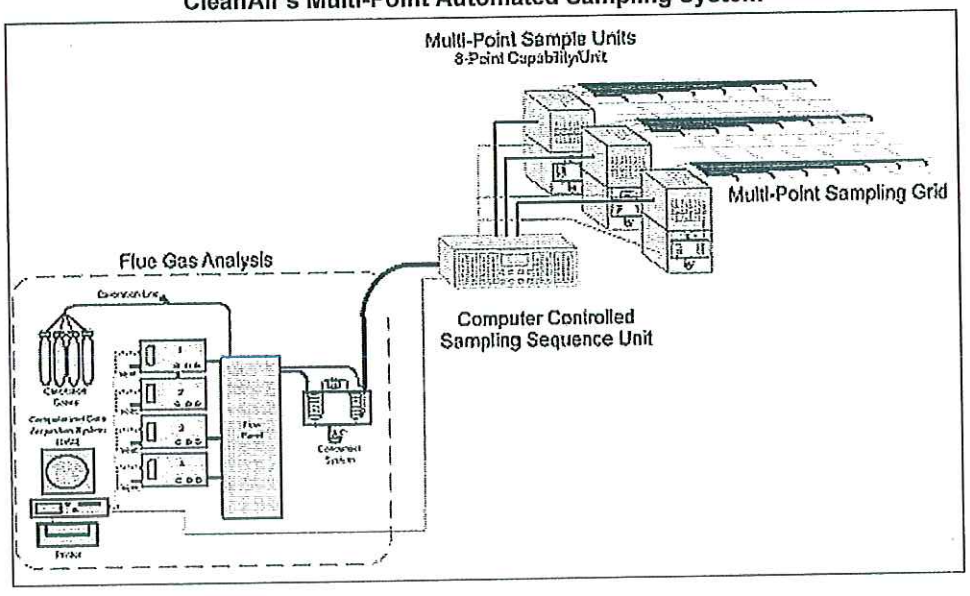
Multi-Point Automated Sampling System®

The NO_x, CO, O_2 and CO_2 distributions at the SCR Inlet and Outlet were measured simultaneously using an extractive continuous emission monitoring (CEM) package contained in a mobile emission laboratory. The system is comprised of three basic subsystems, including; 1) a flue gas sample acquisition and conditioning system, 2) a calibration gas system, and 3) the electronic gas analyzers.

In order to assess local NO_x and CO reductions, CleanAir has developed a proprietary flue gas profiling system called the **Multi-Point Automated Sampling System (MASS®)**. The MASS® system allows duct emission profiles to be characterized in a matter of minutes, as opposed much longer sampling times for traditional duct emission traverses using "manual" traversing techniques.

Clean Air Engineering's MASS® system uses a series of automated 8-point sample modules with integrated programmable logic controllers (PLC's) to sequentially and rapidly cycle through a multi-point sample grid. A diagram of the sampling system is provided in Figure 1.

Figure 1:
CleanAir's Multi-Point Automated Sampling System®



Based on a 24 point grid system (inlet and outlet) for the reactor module, three (3) cycles were performed to obtain a test duration of 24 minutes. A total of three test runs were performed concurrently at both the SCR Inlet and Outlet test grid locations.

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SAMPLE CALCULATIONS

B

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CONSOL Energy - AES Greenidge
Clean Air Project No: 10247
Unit 4 Air Heater Inlet

CTM-027 (Ammonia)
Sampling, Velocity and Moisture Sample Calculations

Sample data taken from Run 1

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

091807 103709
O

1. Volume of water collected (wscf)

$$V_{wstd} = (0.04707)(V_{lc})$$

Where:

V_{lc}	= total volume of liquid collected in impingers and silica gel (ml)	=	70.4	ml
0.04707	= ideal gas conversion factor (ft^3 water vapor/ml or gm)	=	0.04707	ft^3/ml
V_{wstd}	= volume of water vapor collected at standard conditions (ft^3)	=	3.31	ft^3

2. Volume of gas metered, standard conditions (dscf)

$$V_{mstd} = \frac{(17.64)(V_m)\left(P_{bar} + \frac{\Delta H}{13.6}\right)(Y_d)}{(460 + T_m)}$$

Where:

P_{bar}	= barometric pressure (in. Hg)	=	29.44	in. Hg
T_m	= average dry gas meter temperature (°F)	=	102.46	°F
V_m	= volume of gas sample through the dry gas meter at meter conditions (dcf)	=	39.48	dcf
Y_d	= gas meter correction factor (dimensionless)	=	1.0071	
ΔH	= average pressure drop across meter box orifice (in. H_2O)	=	1.50	in. H_2O
17.64	= standard temperature to pressure ratio (°R/in. Hg)	=	17.64	°R/in. Hg
13.6	= conversion factor (in. H_2O/in. Hg)	=	13.6	in.H_2O/in. Hg
460	= °F to °R conversion constant	=	460	
V_{mstd}	= volume of gas sampled through the dry gas meter at standard conditions (dscf)	=	36.848	dscf

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Date 9/18

3. Moisture measured in sample (% by volume)

$$B_{wo} = \frac{V_{wstd}}{(V_{mstd} + V_{wstd})}$$

Where:

V_{mstd}	= volume of gas sampled through the dry gas meter at standard conditions (dscf)	=	36.848	dscf
V_{wstd}	= volume of water collected at standard conditions (scf)	=	3.31	scf
B_{wo}	= proportion of water measured in the gas stream by volume	=	0.0825	
		=	8.25	%

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

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

Where:

CO_2	= proportion of carbon dioxide in the gas stream by volume (%)	=	16.5	%
O_2	= proportion of oxygen in the gas stream by volume (%)	=	4.4	%
100	= conversion factor (%)	=	100	%
N_2+CO	= proportion of nitrogen and CO in the gas stream by volume (%)	=	79.10	%

5. Molecular weight of dry gas stream (lb/lb·mole)

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

Where:

M_{CO2}	= molecular weight of carbon dioxide (lb/lb·mole)	=	44.00	lb/lb·mole
M_{O2}	= molecular weight of oxygen (lb/lb·mole)	=	32.00	lb/lb·mole
M_{N2+CO}	= molecular weight of nitrogen and carbon monoxide (lb/lb·mole)	=	28.00	lb/lb·mole
CO_2	= proportion of carbon dioxide in the gas stream by volume (%)	=	16.5	%
O_2	= proportion of oxygen in the gas stream by volume (%)	=	4.4	%
N_2+CO	= proportion of nitrogen and CO in the gas stream by volume (%)	=	79.1	%
100	= conversion factor (%)	=	100	%
M_d	= dry molecular weight of sample gas (lb/lb·mole)	=	30.82	lb/lb·mole

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CTM-027
NH_3 Analyte Calculations - Front Half Rinse (Fraction 1)

Sample data taken from Run 1

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

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N

1. Ammonium to NH_3 conversion factor

$$K_{NH_3} = \frac{MW_{NH_3}}{n \times MW_{NH_4^+}}$$

Where:

MW_{NH3}	= molecular weight of NH_3 (mg/mg-mole)	=	17.030	mg/mg-mole
MW_{NH4+}	= molecular weight of ammonium ion (mg/mg-mole)	=	18.040	mg/mg-mole
n	= molar ratio of ammonium to NH_3	=	1.0	mole NH_4/mole NH_3
K_{NH3}	= conversion factor to convert mass NH_4^+ to mass NH_3	=	0.944	

2. Total NH_3 collected (mg)

$$m_{NH_3} = K_{NH_3} \times \frac{\left(S_{NH_4} v_1 + S_{NH_4} v_2\right)}{1000}$$

Where:

K_{NH3}	= conversion factor to convert mass NH_4^+ to mass NH_3	=	0.944	
S_{NH4-1}	= ammonium concentration of sample fraction 1 (mg/liter)	=	4.4900	mg/liter
v_1	= liquid volume of sample fraction 1 (ml)	=	208.0	ml
S_{NH4-2}	= ammonium concentration of sample fraction 2 (mg/liter)	=	0.0000	mg/liter
v_2	= liquid volume of sample fraction 2 (ml)	=	0.0	ml
1000	= conversion factor (ml/liter)	=	1000	ml/liter
m_{NH3}	= total NH_3 collected in sample (mg)	=	0.8816	mg

Note: Non-detects are treated as zero in summations.

DEFINITION
Fraction 1 = entire sample except last impinger containing applicable absorbing reagent.
Fraction 2 = last impinger containing applicable absorbing reagent, analyzed separately to evaluate collection efficiency.
If entire sample is analyzed as a single fraction, then data is included as Fraction 1 (Fraction 2 = 0).

3. Allowable blank subtraction (mg)

$$m_b = K_{NH_3} \times B_{NH_4} \times \frac{(v_1 + v_2)}{1000}$$

$$m_b = 0 \quad \text{if } B_{NH_4} < MDL$$

Where:

K_{NH3}	= conversion factor to convert mass NH_4^+ to mass NH_3	=	0.944	
B_{NH4}	= ammonium concentration of blank (mg/liter)	=	<0.0530	mg/liter
v_1	= liquid volume of sample fraction 1 (ml)	=	208.0	ml
v_2	= liquid volume of sample fraction 2 (ml)	=	0.0	ml
1000	= conversion factor (ml/liter)	=	1000	ml/liter
m_b	= allowable blank subtraction (mg)	=	0.0000	mg

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4. Total NH3 collected, corrected for blank (mg)

$$m_{nb} = m_{NH_3} - m_b$$

Where:

m_{NH3}	= total NH_3 collected in sample (mg)	=	0.8816	mg
m_b	= allowable blank subtraction (mg)	=	0.0000	mg
m_{nb}	= total NH_3 collected, corrected for blank (mg)	=	0.8816	mg

5. Minimum detectable NH3 (mg)

$$m_{MDL} = K_{NH_3} \times MDL \times \frac{(v_1 + v_2)}{1000}$$

Where:

K_{NH3}	= conversion factor to convert mass NH_4^+ to mass NH_3	=	0.944	
MDL	= minimum detectable ammonium concentration	=	0.053	mg/liter
v_1	= liquid volume of sample fraction 1 (ml)	=	208.0	ml
v_2	= liquid volume of sample fraction 2 (ml)	=	0.0	ml
1000	= conversion factor (ml/liter)	=	1000	ml/liter
m_{MDL}	= minimum detectable NH_3 (mg)	=	0.0104	mg

6. Total NH3 value used in emission calculations (mg)

$$m_n = MAXIMUM \left[m_{nb} \quad or \quad < m_{MDL} \right]$$

Where:

m_{nb}	= total NH_3 collected, corrected for blank (mg)	=	0.8816	mg
m_{MDL}	= minimum detectable NH_3 (mg)	=	0.0104	mg
m_n	= total NH_3 value used in emission calculations (mg)	=	0.8816	mg

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CTM-027
NH_3 Sample Calculations - Front Half Rinse (Fraction 1)

Sample data taken from Run 1

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

091607 111035
O_N

1. NH_3 concentration (lb/dscf)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)\left(\frac{2.205 \times 10^{-3}}{1000}\right)$$

Where:

m_n	= total NH_3 collected, corrected for applicable blank (mg)	=	0.8816	mg
V_{mstd}	= volume metered, standard (dscf)	=	36.8485	dscf
2.205×10^{-3}	= conversion factor (lb/g)	=	2.205E-03	lb/g
1000	= conversion factor (mg/g)	=	1,000	mg/g
C_{sd}	= NH_3 concentration (lb/dscf)	=	5.2756E-08	lb/dscf

2. NH_3 concentration (ppmdv)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)\left(\frac{0.850}{1000}\right)\left(\frac{10^6}{MW}\right)$$

Where:

m_n	= total NH_3 collected, corrected for applicable blank (mg)	=	0.8816	mg
V_{mstd}	= volume metered, standard (dscf)	=	36.8485	dscf
MW	= molecular weight of NH_3 (g/g-mole)	=	17.030	g/g-mole
0.850	= conversion factor (dscf/g-mole)	=	0.850	dscf/g-mole
1000	= conversion factor (mg/g)	=	1,000	mg/g
10^6	= conversion factor (ppm)	=	10^6	ppm
C_{sd}	= NH_3 concentration (ppmdv)	=	1.1942	ppmdv

3. NH_3 concentration (ppmwv)

$$C_w = C_{sd}\left(1 - \frac{B_w}{100}\right)$$

Where:

C_{sd}	= NH_3 concentration (ppmdv)	=	1.1942	ppmdv
B_w	= actual water vapor in gas (% v/v)	=	8.2509	% v/v
100	= conversion factor (%)	=	100	%
C_w	= NH_3 concentration (ppmwv)	=	1.0956	ppmwv

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4. NH_3 concentration (mg/dscm)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)(35.31)$$

Where:

m_n	= total NH_3 collected, corrected for applicable blank (mg)	=	0.8816	mg
V_{mstd}	= volume metered, standard (dscf)	=	36.8485	dscf
35.31	= conversion factor (dscf/dscm)	=	35.31	dscf/dscm
C_{sd}	= NH_3 concentration (mg/dscm)	=	0.8448	mg/dscm

5. NH_3 concentration (mg/Nm^3 dry)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)(35.31)\left(\frac{68 + 460}{32 + 460}\right)$$

Where:

m_n	= total NH_3 collected, corrected for applicable blank (mg)	=	0.8816	mg
V_{mstd}	= volume metered, standard (dscf)	=	36.8485	dscf
35.31	= conversion factor (dscf/dscm)	=	35.31	dscf/dscm
68	= standard temperature (°F)	=	68	°F
32	= normal temperature (°F)	=	32	°F
460	= °F to °R conversion constant	=	460	
C_{sd}	= NH_3 concentration (mg/Nm^3 dry)	=	0.9066	mg/Nm^3 dry

6. NH_3 concentration corrected to x% O_2 (ppmdv example)

$$C_{sdx} = C_{sd}\left(\frac{20.9 - x}{20.9 - O_2}\right)$$

Where:

C_{sd}	= NH_3 concentration (ppmdv)	=	1.1942	ppmdv
x	= oxygen content of corrected gas (%)	=	3.0	%
O_2	= proportion of oxygen in the gas stream by volume (%)	=	4.4	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
C_{sdx}	= NH_3 concentration corrected to x%O_2 (ppmdv)	=	1.2955	ppmdv @ x%O_2

7. NH_3 concentration corrected to y% CO_2 (ppmdv example)

$$C_{sdy} = C_{sd}\left(\frac{y}{CO_2}\right)$$

Where:

C_{sd}	= NH_3 concentration (ppmdv)	=	1.1942	ppmdv
y	= carbon dioxide content of corrected gas (%)	=	12.0	%
CO_2	= proportion of carbon dioxide in the gas stream by volume (%)	=	16.5	%
C_{sdy}	= NH_3 concentration corrected to y%CO_2 (ppmdv)	=	0.8685	ppmdv @ y%CO_2

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CTM-027
NH_3 Analyte Calculations - Impinger 1 (Fraction 2)

Sample data taken from Run 1

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

091807 103709
N

1. Ammonium to NH_3 conversion factor

$$K_{NH_3} = \frac{MW_{NH_3}}{n \times MW_{NH_4^+}}$$

Where:

MW_{NH3}	= molecular weight of NH_3 (mg/mg-mole)	=	17.030	mg/mg-mole
MW_{NH4+}	= molecular weight of ammonium ion (mg/mg-mole)	=	18.040	mg/mg-mole
n	= molar ratio of ammonium to NH_3	=	1.0	mole NH_4/mole NH_3
K_{NH3}	= conversion factor to convert mass NH_4^+ to mass NH_3	=	0.944	

2. Total NH_3 collected (mg)

$$m_{NH_3} = K_{NH_3} \times \frac{(S_{NH_4} v_1 + S_{NH_4} v_2)}{1000}$$

Where:

K_{NH3}	= conversion factor to convert mass NH_4^+ to mass NH_3	=	0.944	
S_{NH4-1}	= ammonium concentration of sample fraction 1 (mg/liter)	=	0.3600	mg/liter
v_1	= liquid volume of sample fraction 1 (ml)	=	195.0	ml
S_{NH4-2}	= ammonium concentration of sample fraction 2 (mg/liter)	=	0.0000	mg/liter
v_2	= liquid volume of sample fraction 2 (ml)	=	0.0	ml
1000	= conversion factor (ml/liter)	=	1000	ml/liter
m_{NH3}	= total NH_3 collected in sample (mg)	=	0.0663	mg

Note: Non-detects are treated as zero in summations.

DEFINITION
Fraction 1 = entire sample except last impinger containing applicable absorbing reagent.
Fraction 2 = last impinger containing applicable absorbing reagent, analyzed separately to evaluate collection efficiency.
If entire sample is analyzed as a single fraction, then data is included as Fraction 1 (Fraction 2 = 0).

3. Allowable blank subtraction (mg)

$$m_b = K_{NH_3} \times B_{NH_4} \times \frac{(v_1 + v_2)}{1000}$$

$$m_b = 0 \quad \text{if } B_{NH_4} < MDL$$

Where:

K_{NH3}	= conversion factor to convert mass NH_4^+ to mass NH_3	=	0.944	
B_{NH4}	= ammonium concentration of blank (mg/liter)	=	<0.0530	mg/liter
v_1	= liquid volume of sample fraction 1 (ml)	=	195.0	ml
v_2	= liquid volume of sample fraction 2 (ml)	=	0.0	ml
1000	= conversion factor (ml/liter)	=	1000	ml/liter
m_b	= allowable blank subtraction (mg)	=	0.0000	mg

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4. Total NH3 collected, corrected for blank (mg)

$$m_{nb} = m_{NH_3} - m_b$$

Where:				
m_{NH3}	= total NH_3 collected in sample (mg)	=	0.0663	mg
m_b	= allowable blank subtraction (mg)	=	0.0000	mg
m_{nb}	= total NH_3 collected, corrected for blank (mg)	=	0.0663	mg

5. Minimum detectable NH3 (mg)

$$m_{MDL} = K_{NH_3} \times MDL \times \frac{(v_1 + v_2)}{1000}$$

Where:				
K_{NH3}	= conversion factor to convert mass NH_4^+ to mass NH_3	=	0.944	
MDL	= minimum detectable ammonium concentration	=	0.053	mg/liter
v_1	= liquid volume of sample fraction 1 (ml)	=	195.0	ml
v_2	= liquid volume of sample fraction 2 (ml)	=	0.0	ml
1000	= conversion factor (ml/liter)	=	1000	ml/liter
m_{MDL}	= minimum detectable NH_3 (mg)	=	0.0098	mg

6. Total NH3 value used in emission calculations (mg)

$$m_n = MAXIMUM \left[m_{nb} \quad or \quad < m_{MDL} \right]$$

Where:				
m_{nb}	= total NH_3 collected, corrected for blank (mg)	=	0.0663	mg
m_{MDL}	= minimum detectable NH_3 (mg)	=	0.0098	mg
m_n	= total NH_3 value used in emission calculations (mg)	=	0.0663	mg

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CTM-027
NH_3 Sample Calculations - Impinger 1 (Fraction 2)

Sample data taken from Run 1

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

091607 111109
O_N

1. NH_3 concentration (lb/dscf)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)\left(\frac{2.205 \times 10^{-3}}{1000}\right)$$

Where:

m_n	= total NH_3 collected, corrected for applicable blank (mg)	=	0.0663	mg
V_{mstd}	= volume metered, standard (dscf)	=	36.8485	dscf
2.205×10^{-3}	= conversion factor (lb/g)	=	2.205E-03	lb/g
1000	= conversion factor (mg/g)	=	1,000	mg/g
C_{sd}	= NH_3 concentration (lb/dscf)	=	3.9655E-09	lb/dscf

2. NH_3 concentration (ppmdv)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)\left(\frac{0.850}{1000}\right)\left(\frac{10^6}{MW}\right)$$

Where:

m_n	= total NH_3 collected, corrected for applicable blank (mg)	=	0.0663	mg
V_{mstd}	= volume metered, standard (dscf)	=	36.8485	dscf
MW	= molecular weight of NH_3 (g/g-mole)	=	17.030	g/g-mole
0.850	= conversion factor (dscf/g-mole)	=	0.850	dscf/g-mole
1000	= conversion factor (mg/g)	=	1,000	mg/g
10^6	= conversion factor (ppm)	=	10^6	ppm
C_{sd}	= NH_3 concentration (ppmdv)	=	0.0898	ppmdv

3. NH_3 concentration (ppmwv)

$$C_w = C_{sd}\left(1 - \frac{B_w}{100}\right)$$

Where:

C_{sd}	= NH_3 concentration (ppmdv)	=	0.0898	ppmdv
B_w	= actual water vapor in gas (% v/v)	=	8.2509	% v/v
100	= conversion factor (%)	=	100	%
C_w	= NH_3 concentration (ppmwv)	=	0.0824	ppmwv

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4. NH_3 concentration (mg/dscm)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)(35.31)$$

Where:				
m_n	= total NH_3 collected, corrected for applicable blank (mg)	=	0.0663	mg
V_{mstd}	= volume metered, standard (dscf)	=	36.8485	dscf
35.31	= conversion factor (dscf/dscm)	=	35.31	dscf/dscm
C_{sd}	= NH_3 concentration (mg/dscm)	=	0.0635	mg/dscm

5. NH_3 concentration (mg/Nm^3 dry)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)(35.31)\left(\frac{68 + 460}{32 + 460}\right)$$

Where:				
m_n	= total NH_3 collected, corrected for applicable blank (mg)	=	0.0663	mg
V_{mstd}	= volume metered, standard (dscf)	=	36.8485	dscf
35.31	= conversion factor (dscf/dscm)	=	35.31	dscf/dscm
68	= standard temperature (°F)	=	68	°F
32	= normal temperature (°F)	=	32	°F
460	= °F to °R conversion constant	=	460	
C_{sd}	= NH_3 concentration (mg/Nm^3 dry)	=	0.0681	mg/Nm^3 dry

6. NH_3 concentration corrected to x% O_2 (ppmdv example)

$$C_{sdx} = C_{sd}\left(\frac{20.9 - x}{20.9 - O_2}\right)$$

Where:				
C_{sd}	= NH_3 concentration (ppmdv)	=	0.0898	ppmdv
x	= oxygen content of corrected gas (%)	=	3.0	%
O_2	= proportion of oxygen in the gas stream by volume (%)	=	4.4	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
C_{sdx}	= NH_3 concentration corrected to x%O_2 (ppmdv)	=	0.0974	ppmdv @ x%O_2

7. NH_3 concentration corrected to y% CO_2 (ppmdv example)

$$C_{sdy} = C_{sd}\left(\frac{y}{CO_2}\right)$$

Where:				
C_{sd}	= NH_3 concentration (ppmdv)	=	0.0898	ppmdv
y	= carbon dioxide content of corrected gas (%)	=	12.0	%
CO_2	= proportion of carbon dioxide in the gas stream by volume (%)	=	16.5	%
C_{sdy}	= NH_3 concentration corrected to y%CO_2 (ppmdv)	=	0.0653	ppmdv @ y%CO_2

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CTM-027
NH_3 Analyte Calculations - Impingers 2 & 3 (Fraction 3)

Sample data taken from Run 1

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

091607 103709
M

1. Ammonium to NH_3 conversion factor

$$K_{NH_3} = \frac{MW_{NH_3}}{n \times MW_{NH_4^+}}$$

Where:

MW_{NH3}	= molecular weight of NH_3 (mg/mg-mole)	=	17.030	mg/mg-mole
MW_{NH4+}	= molecular weight of ammonium ion (mg/mg-mole)	=	18.040	mg/mg-mole
n	= molar ratio of ammonium to NH_3	=	1.0	mole NH_4/mole NH_3
K_{NH3}	= conversion factor to convert mass NH_4^+ to mass NH_3	=	0.944	

2. Total NH_3 collected (mg)

$$m_{NH_3} = K_{NH_3} \times \frac{(S_{NH_4} v_1 + S_{NH_4} v_2)}{1000}$$

Where:

K_{NH3}	= conversion factor to convert mass NH_4^+ to mass NH_3	=	0.944	
S_{NH4-1}	= ammonium concentration of sample fraction 1 (mg/liter)	=	<0.0530	mg/liter
v_1	= liquid volume of sample fraction 1 (ml)	=	280.0	ml
S_{NH4-2}	= ammonium concentration of sample fraction 2 (mg/liter)	=	0.0000	mg/liter
v_2	= liquid volume of sample fraction 2 (ml)	=	0.0	ml
1000	= conversion factor (ml/liter)	=	1000	ml/liter
m_{NH3}	= total NH_3 collected in sample (mg)	=	<0.0140	mg

Note: Non-detects are treated as zero in summations.

DEFINITION
Fraction 1 = entire sample except last impinger containing applicable absorbing reagent.
Fraction 2 = last impinger containing applicable absorbing reagent, analyzed separately to evaluate collection efficiency.
If entire sample is analyzed as a single fraction, then data is included as Fraction 1 (Fraction 2 = 0).

3. Allowable blank subtraction (mg)

$$m_b = K_{NH_3} \times B_{NH_4} \times \frac{(v_1 + v_2)}{1000}$$

$$m_b = 0 \quad \text{if } B_{NH_4} < MDL$$

Where:

K_{NH3}	= conversion factor to convert mass NH_4^+ to mass NH_3	=	0.944	
B_{NH4}	= ammonium concentration of blank (mg/liter)	=	<0.0530	mg/liter
v_1	= liquid volume of sample fraction 1 (ml)	=	280.0	ml
v_2	= liquid volume of sample fraction 2 (ml)	=	0.0	ml
1000	= conversion factor (ml/liter)	=	1000	ml/liter
m_b	= allowable blank subtraction (mg)	=	0.0000	mg

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4. Total NH3 collected, corrected for blank (mg)

$$m_{nb} = m_{NH_3} - m_b$$

Where:

m_{NH3}	= total NH_3 collected in sample (mg)	=	<0.0140	mg
m_b	= allowable blank subtraction (mg)	=	0.0000	mg
m_{nb}	= total NH_3 collected, corrected for blank (mg)	=	<0.0140	mg

5. Minimum detectable NH3 (mg)

$$m_{MDL} = K_{NH_3} \times MDL \times \frac{(v_1 + v_2)}{1000}$$

Where:

K_{NH3}	= conversion factor to convert mass NH_4^+ to mass NH_3	=	0.944	
MDL	= minimum detectable ammonium concentration	=	0.053	mg/liter
v_1	= liquid volume of sample fraction 1 (ml)	=	280.0	ml
v_2	= liquid volume of sample fraction 2 (ml)	=	0.0	ml
1000	= conversion factor (ml/liter)	=	1000	ml/liter
m_{MDL}	= minimum detectable NH_3 (mg)	=	0.0140	mg

6. Total NH3 value used in emission calculations (mg)

$$m_n = MAXIMUM \left[m_{nb} \quad or \quad < m_{MDL} \right]$$

Where:

m_{nb}	= total NH_3 collected, corrected for blank (mg)	=	<0.0140	mg
m_{MDL}	= minimum detectable NH_3 (mg)	=	0.0140	mg
m_n	= total NH_3 value used in emission calculations (mg)	=	<0.0140	mg

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CTM-027
NH_3 Sample Calculations - Impingers 2 & 3 (Fraction 3)

Sample data taken from Run 1

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

091807 111203
O_M

1. NH_3 concentration (lb/dscf)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)\left(\frac{2.205 \times 10^{-3}}{1000}\right)$$

Where:

m_n	= total NH_3 collected, corrected for applicable blank (mg)	=	<0.0140	mg
V_{mstd}	= volume metered, standard (dscf)	=	36.8485	dscf
2.205×10^{-3}	= conversion factor (lb/g)	=	2.205E-03	lb/g
1000	= conversion factor (mg/g)	=	1,000	mg/g
C_{sd}	= NH_3 concentration (lb/dscf)	=	<8.3829E-10	lb/dscf

2. NH_3 concentration (ppmdv)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)\left(\frac{0.850}{1000}\right)\left(\frac{10^6}{MW}\right)$$

Where:

m_n	= total NH_3 collected, corrected for applicable blank (mg)	=	<0.0140	mg
V_{mstd}	= volume metered, standard (dscf)	=	36.8485	dscf
MW	= molecular weight of NH_3 (g/g-mole)	=	17.030	g/g-mole
0.850	= conversion factor (dscf/g-mole)	=	0.850	dscf/g-mole
1000	= conversion factor (mg/g)	=	1,000	mg/g
10^6	= conversion factor (ppm)	=	10^6	ppm
C_{sd}	= NH_3 concentration (ppmdv)	=	<0.0190	ppmdv

3. NH_3 concentration (ppmwv)

$$C_w = C_{sd}\left(1 - \frac{B_w}{100}\right)$$

Where:

C_{sd}	= NH_3 concentration (ppmdv)	=	<0.0190	ppmdv
B_w	= actual water vapor in gas (% v/v)	=	8.2509	% v/v
100	= conversion factor (%)	=	100	%
C_w	= NH_3 concentration (ppmwv)	=	<0.0174	ppmwv

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4. NH_3 concentration (mg/dscm)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)(35.31)$$

Where:				
m_n	= total NH_3 collected, corrected for applicable blank (mg)	=	<0.0140	mg
V_{mstd}	= volume metered, standard (dscf)	=	36.8485	dscf
35.31	= conversion factor (dscf/dscm)	=	35.31	dscf/dscm
C_{sd}	= NH_3 concentration (mg/dscm)	=	<0.0134	mg/dscm

5. NH_3 concentration (mg/Nm^3 dry)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)(35.31)\left(\frac{68 + 460}{32 + 460}\right)$$

Where:				
m_n	= total NH_3 collected, corrected for applicable blank (mg)	=	<0.0140	mg
V_{mstd}	= volume metered, standard (dscf)	=	36.8485	dscf
35.31	= conversion factor (dscf/dscm)	=	35.31	dscf/dscm
68	= standard temperature (°F)	=	68	°F
32	= normal temperature (°F)	=	32	°F
460	= °F to °R conversion constant	=	460	
C_{sd}	= NH_3 concentration (mg/Nm^3 dry)	=	<0.0144	mg/Nm^3 dry

6. NH_3 concentration corrected to x% O_2 (ppmdv example)

$$C_{sdx} = C_{sd}\left(\frac{20.9 - x}{20.9 - O_2}\right)$$

Where:				
C_{sd}	= NH_3 concentration (ppmdv)	=	<0.0190	ppmdv
x	= oxygen content of corrected gas (%)	=	3.0	%
O_2	= proportion of oxygen in the gas stream by volume (%)	=	4.4	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
C_{sdx}	= NH_3 concentration corrected to x%O_2 (ppmdv)	=	<0.0206	ppmdv @ x%O_2

7. NH_3 concentration corrected to y% CO_2 (ppmdv example)

$$C_{sdy} = C_{sd}\left(\frac{y}{CO_2}\right)$$

Where:				
C_{sd}	= NH_3 concentration (ppmdv)	=	<0.0190	ppmdv
y	= carbon dioxide content of corrected gas (%)	=	12.0	%
CO_2	= proportion of carbon dioxide in the gas stream by volume (%)	=	16.5	%
C_{sdy}	= NH_3 concentration corrected to y%CO_2 (ppmdv)	=	<0.0138	ppmdv @ y%CO_2

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CTM-027
NH_3 Analyte Calculations - Total Combined Results

Sample data taken from Run 1

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

091807 103709
N

1. Ammonium to NH_3 conversion factor

$$K_{NH_3} = \frac{MW_{NH_3}}{n \times MW_{NH_4^+}}$$

Where:

MW_{NH3}	= molecular weight of NH_3 (mg/mg-mole)	=	17.030	mg/mg-mole
MW_{NH4+}	= molecular weight of ammonium ion (mg/mg-mole)	=	18.040	mg/mg-mole
n	= molar ratio of ammonium to NH_3	=	1.0	mole NH_4/mole NH_3
K_{NH3}	= conversion factor to convert mass NH_4^+ to mass NH_3	=	0.944	

2. Total NH_3 collected (mg)

$$m_{NH_3} = K_{NH_3} \times \frac{(S_{NH_4} v_1 + S_{NH_4} v_2)}{1000}$$

Where:

K_{NH3}	= conversion factor to convert mass NH_4^+ to mass NH_3	=	0.944	
S_{NH4-1}	= ammonium concentration of sample fraction 1 (mg/liter)	=	0.9479	mg/liter
v_1	= liquid volume of sample fraction 1 (ml)	=	0.0	ml
S_{NH4-2}	= ammonium concentration of sample fraction 2 (mg/liter)	=	<0.0140	mg/liter
v_2	= liquid volume of sample fraction 2 (ml)	=	0.0	ml
1000	= conversion factor (ml/liter)	=	1000	ml/liter
m_{NH3}	= total NH_3 collected in sample (mg)	=	0.0000	mg

Note: Non-detects are treated as zero in summations.

DEFINITION
Fraction 1 = entire sample except last impinger containing applicable absorbing reagent.
Fraction 2 = last impinger containing applicable absorbing reagent, analyzed separately to evaluate collection efficiency.
If entire sample is analyzed as a single fraction, then data is included as Fraction 1 (Fraction 2 = 0).

3. Allowable blank subtraction (mg)

$$m_b = K_{NH_3} \times B_{NH_4} \times \frac{(v_1 + v_2)}{1000}$$

$$m_b = 0 \quad \text{if } B_{NH_4} < MDL$$

Where:

K_{NH3}	= conversion factor to convert mass NH_4^+ to mass NH_3	=	0.944	
B_{NH4}	= ammonium concentration of blank (mg/liter)	=	<0.0530	mg/liter
v_1	= liquid volume of sample fraction 1 (ml)	=	0.0	ml
v_2	= liquid volume of sample fraction 2 (ml)	=	0.0	ml
1000	= conversion factor (ml/liter)	=	1000	ml/liter
m_b	= allowable blank subtraction (mg)	=	0.0000	mg

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4. Total NH3 collected, corrected for blank (mg)

$$m_{nb} = m_{NH_3} - m_b$$

Where:

m_{NH3}	= total NH_3 collected in sample (mg)	=	0.0000	mg
m_b	= allowable blank subtraction (mg)	=	0.0000	mg
m_{nb}	= total NH_3 collected, corrected for blank (mg)	=	0.0000	mg

5. Minimum detectable NH3 (mg)

$$m_{MDL} = K_{NH_3} \times MDL \times \frac{(v_1 + v_2)}{1000}$$

Where:

K_{NH3}	= conversion factor to convert mass NH_4^+ to mass NH_3	=	0.944	
MDL	= minimum detectable ammonium concentration	=	0.053	mg/liter
v_1	= liquid volume of sample fraction 1 (ml)	=	0.0	ml
v_2	= liquid volume of sample fraction 2 (ml)	=	0.0	ml
1000	= conversion factor (ml/liter)	=	1000	ml/liter
m_{MDL}	= minimum detectable NH_3 (mg)	=	0.0000	mg

6. Total NH3 value used in emission calculations (mg)

$$m_n = MAXIMUM \left[m_{nb} \quad or \quad < m_{MDL} \right]$$

Where:

m_{nb}	= total NH_3 collected, corrected for blank (mg)	=	0.0000	mg
m_{MDL}	= minimum detectable NH_3 (mg)	=	0.0000	mg
m_n	= total NH_3 value used in emission calculations (mg)	=	0.9479	mg

7. Collection QC check (% mass collected in second fraction)

$$EFF = 100 \times \frac{K_{NH_3} \times S_{NH_4-2} \times \frac{v_2}{1000}}{m_{NH_3}}$$

Where:

K_{NH3}	= conversion factor to convert mass NH_4^+ to mass NH_3	=	0.944	
S_{NH4-2}	= ammonium concentration of sample fraction 2 (mg/liter)	=	<0.0140	mg/liter
v_2	= liquid volume of sample fraction 2 (ml)	=	0.0	ml
m_{NH3}	= total NH_3 collected in sample (mg)	=	0.0000	mg
1000	= conversion factor (ml/liter)	=	1000	ml/liter
100	= conversion factor	=	100	%
EFF	= Collection QC check (% mass collected in second fraction)	=	<1.48	%

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CTM-027
NH_3 Sample Calculations - Total Combined Results

Sample data taken from Run 1

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

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O_N

1. NH_3 concentration (lb/dscf)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)\left(\frac{2.205 \times 10^{-3}}{1000}\right)$$

Where:

m_n	= total NH_3 collected, corrected for applicable blank (mg)	=	0.9479	mg
V_{mstd}	= volume metered, standard (dscf)	=	36.8485	dscf
2.205×10^{-3}	= conversion factor (lb/g)	=	2.205E-03	lb/g
1000	= conversion factor (mg/g)	=	1,000	mg/g
C_{sd}	= NH_3 concentration (lb/dscf)	=	5.6721E-08	lb/dscf

2. NH_3 concentration (ppmdv)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)\left(\frac{0.850}{1000}\right)\left(\frac{10^6}{MW}\right)$$

Where:

m_n	= total NH_3 collected, corrected for applicable blank (mg)	=	0.9479	mg
V_{mstd}	= volume metered, standard (dscf)	=	36.8485	dscf
MW	= molecular weight of NH_3 (g/g-mole)	=	17.030	g/g-mole
0.850	= conversion factor (dscf/g-mole)	=	0.850	dscf/g-mole
1000	= conversion factor (mg/g)	=	1,000	mg/g
10^6	= conversion factor (ppm)	=	10^6	ppm
C_{sd}	= NH_3 concentration (ppmdv)	=	1.2839	ppmdv

3. NH_3 concentration (ppmwv)

$$C_w = C_{sd}\left(1 - \frac{B_w}{100}\right)$$

Where:

C_{sd}	= NH_3 concentration (ppmdv)	=	1.2839	ppmdv
B_w	= actual water vapor in gas (% v/v)	=	8.2509	% v/v
100	= conversion factor (%)	=	100	%
C_w	= NH_3 concentration (ppmwv)	=	1.1780	ppmwv

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4. NH_3 concentration (mg/dscm)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)(35.31)$$

Where:

m_n	= total NH_3 collected, corrected for applicable blank (mg)	=	0.9479	mg
V_{mstd}	= volume metered, standard (dscf)	=	36.8485	dscf
35.31	= conversion factor (dscf/dscm)	=	35.31	dscf/dscm
C_{sd}	= NH_3 concentration (mg/dscm)	=	0.9083	mg/dscm

5. NH_3 concentration (mg/Nm^3 dry)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)(35.31)\left(\frac{68 + 460}{32 + 460}\right)$$

Where:

m_n	= total NH_3 collected, corrected for applicable blank (mg)	=	0.9479	mg
V_{mstd}	= volume metered, standard (dscf)	=	36.8485	dscf
35.31	= conversion factor (dscf/dscm)	=	35.31	dscf/dscm
68	= standard temperature (°F)	=	68	°F
32	= normal temperature (°F)	=	32	°F
460	= °F to °R conversion constant	=	460	
C_{sd}	= NH_3 concentration (mg/Nm^3 dry)	=	0.9748	mg/Nm^3 dry

6. NH_3 concentration corrected to x% O_2 (ppmdv example)

$$C_{sdx} = C_{sd}\left(\frac{20.9 - x}{20.9 - O_2}\right)$$

Where:

C_{sd}	= NH_3 concentration (ppmdv)	=	1.2839	ppmdv
x	= oxygen content of corrected gas (%)	=	3.0	%
O_2	= proportion of oxygen in the gas stream by volume (%)	=	4.4	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
C_{sdx}	= NH_3 concentration corrected to x%O_2 (ppmdv)	=	1.3929	ppmdv @ x%O_2

7. NH_3 concentration corrected to y% CO_2 (ppmdv example)

$$C_{sdy} = C_{sd}\left(\frac{y}{CO_2}\right)$$

Where:

C_{sd}	= NH_3 concentration (ppmdv)	=	1.2839	ppmdv
y	= carbon dioxide content of corrected gas (%)	=	12.0	%
CO_2	= proportion of carbon dioxide in the gas stream by volume (%)	=	16.5	%
C_{sdy}	= NH_3 concentration corrected to y%CO_2 (ppmdv)	=	0.9338	ppmdv @ y%CO_2

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CTM-027
NH_3 Analyte Calculations - Preliminary Field Titration

Sample data taken from Run 1

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

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1. Ammonium to NH_3 conversion factor

$$K_{NH_3} = \frac{MW_{NH_3}}{n \times MW_{NH_4^+}}$$

Where:

MW_{NH3}	= molecular weight of NH_3 (mg/mg-mole)	=	17.030	mg/mg-mole
MW_{NH4+}	= molecular weight of ammonium ion (mg/mg-mole)	=	18.040	mg/mg-mole
n	= molar ratio of ammonium to NH_3	=	1.0	mole NH_4/mole NH_3
K_{NH3}	= conversion factor to convert mass NH_4^+ to mass NH_3	=	0.944	

2. Total NH_3 collected (mg)

$$m_{NH_3} = K_{NH_3} \times \frac{(S_{NH_4} v_1 + S_{NH_4} v_2)}{1000}$$

Where:

K_{NH3}	= conversion factor to convert mass NH_4^+ to mass NH_3	=	0.944	
S_{NH4-1}	= ammonium concentration of sample fraction 1 (mg/liter)	=	4.2126	mg/liter
v_1	= liquid volume of sample fraction 1 (ml)	=	0.0	ml
S_{NH4-2}	= ammonium concentration of sample fraction 2 (mg/liter)	=	0.0070	mg/liter
v_2	= liquid volume of sample fraction 2 (ml)	=	0.0	ml
1000	= conversion factor (ml/liter)	=	1000	ml/liter
m_{NH3}	= total NH_3 collected in sample (mg)	=	0.0000	mg

DEFINITION
Fraction 1 = entire sample except last impinger containing applicable absorbing reagent.
Fraction 2 = last impinger containing applicable absorbing reagent, analyzed separately to evaluate collection efficiency.
If entire sample is analyzed as a single fraction, then data is included as Fraction 1 (Fraction 2 = 0).

3. Allowable blank subtraction (mg)

$$m_b = K_{NH_3} \times B_{NH_4} \times \frac{(v_1 + v_2)}{1000}$$

$$m_b = 0 \quad \text{if } B_{NH_4} < MDL$$

Where:

K_{NH3}	= conversion factor to convert mass NH_4^+ to mass NH_3	=	0.944	
B_{NH4}	= ammonium concentration of blank (mg/liter)	=	0.5174	mg/liter
v_1	= liquid volume of sample fraction 1 (ml)	=	0.0	ml
v_2	= liquid volume of sample fraction 2 (ml)	=	0.0	ml
1000	= conversion factor (ml/liter)	=	1000	ml/liter
m_b	= allowable blank subtraction (mg)	=	0.0000	mg

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4. Total NH3 collected, corrected for blank (mg)

$$m_{nb} = m_{NH_3} - m_b$$

Where:

m_{NH3}	= total NH_3 collected in sample (mg)	=	0.0000	mg
m_b	= allowable blank subtraction (mg)	=	0.0000	mg
m_{nb}	= total NH_3 collected, corrected for blank (mg)	=	0.0000	mg

5. Minimum detectable NH3 (mg)

$$m_{MDL} = K_{NH_3} \times MDL \times \frac{(v_1 + v_2)}{1000}$$

Where:

K_{NH3}	= conversion factor to convert mass NH_4^+ to mass NH_3	=	0.944	
MDL	= minimum detectable ammonium concentration	=	0.000	mg/liter
v_1	= liquid volume of sample fraction 1 (ml)	=	0.0	ml
v_2	= liquid volume of sample fraction 2 (ml)	=	0.0	ml
1000	= conversion factor (ml/liter)	=	1000	ml/liter
m_{MDL}	= minimum detectable NH_3 (mg)	=	0.0000	mg

6. Total NH3 value used in emission calculations (mg)

$$m_n = MAXIMUM \left[m_{nb} \quad or \quad < m_{MDL} \right]$$

Where:

m_{nb}	= total NH_3 collected, corrected for blank (mg)	=	0.0000	mg
m_{MDL}	= minimum detectable NH_3 (mg)	=	0.0000	mg
m_n	= total NH_3 value used in emission calculations (mg)	=	4.2196	mg

7. Collection QC check (% mass collected in second fraction)

$$EFF = 100 \times \frac{K_{NH_3} \times S_{NH_4\text{-}2} \times \frac{v_2}{1000}}{m_{NH_3}}$$

Where:

K_{NH3}	= conversion factor to convert mass NH_4^+ to mass NH_3	=	0.944	
S_{NH4-2}	= ammonium concentration of sample fraction 2 (mg/liter)	=	0.0070	mg/liter
v_2	= liquid volume of sample fraction 2 (ml)	=	0.0	ml
m_{NH3}	= total NH_3 collected in sample (mg)	=	0.0000	mg
1000	= conversion factor (ml/liter)	=	1000	ml/liter
100	= conversion factor	=	100	%
EFF	= Collection QC check (% mass collected in second fraction)	=	0.17	%

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CTM-027
NH_3 Sample Calculations - Preliminary Field Titration

Sample data taken from Run 1

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

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O_M

1. NH_3 concentration (lb/dscf)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)\left(\frac{2.205 \times 10^{-3}}{1000}\right)$$

Where:

m_n	= total NH_3 collected, corrected for applicable blank (mg)	=	4.2196	mg
V_{mstd}	= volume metered, standard (dscf)	=	36.8485	dscf
2.205×10^{-3}	= conversion factor (lb/g)	=	2.205E-03	lb/g
1000	= conversion factor (mg/g)	=	1,000	mg/g
C_{sd}	= NH_3 concentration (lb/dscf)	=	2.5250E-07	lb/dscf

2. NH_3 concentration (ppmdv)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)\left(\frac{0.850}{1000}\right)\left(\frac{10^6}{MW}\right)$$

Where:

m_n	= total NH_3 collected, corrected for applicable blank (mg)	=	4.2196	mg
V_{mstd}	= volume metered, standard (dscf)	=	36.8485	dscf
MW	= molecular weight of NH_3 (g/g-mole)	=	17.030	g/g-mole
0.850	= conversion factor (dscf/g-mole)	=	0.850	dscf/g-mole
1000	= conversion factor (mg/g)	=	1,000	mg/g
10^6	= conversion factor (ppm)	=	10^6	ppm
C_{sd}	= NH_3 concentration (ppmdv)	=	5.7155	ppmdv

3. NH_3 concentration (ppmwv)

$$C_w = C_{sd}\left(1 - \frac{B_w}{100}\right)$$

Where:

C_{sd}	= NH_3 concentration (ppmdv)	=	5.7155	ppmdv
B_w	= actual water vapor in gas (% v/v)	=	8.2509	% v/v
100	= conversion factor (%)	=	100	%
C_w	= NH_3 concentration (ppmwv)	=	5.2439	ppmwv

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4. NH_3 concentration (mg/dscm)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)(35.31)$$

Where:

m_n	= total NH_3 collected, corrected for applicable blank (mg)	=	4.2196	mg
V_{mstd}	= volume metered, standard (dscf)	=	36.8485	dscf
35.31	= conversion factor (dscf/dscm)	=	35.31	dscf/dscm
C_{sd}	= NH_3 concentration (mg/dscm)	=	4.0434	mg/dscm

5. NH_3 concentration (mg/Nm^3 dry)

$$C_{sd} = \left(\frac{m_n}{V_{mstd}}\right)(35.31)\left(\frac{68 + .460}{32 + 460}\right)$$

Where:

m_n	= total NH_3 collected, corrected for applicable blank (mg)	=	4.2196	mg
V_{mstd}	= volume metered, standard (dscf)	=	36.8485	dscf
35.31	= conversion factor (dscf/dscm)	=	35.31	dscf/dscm
68	= standard temperature (°F)	=	68	°F
32	= normal temperature (°F)	=	32	°F
460	= °F to °R conversion constant	=	460	
C_{sd}	= NH_3 concentration (mg/Nm^3 dry)	=	4.3393	mg/Nm^3 dry

6. NH_3 concentration corrected to x% O_2 (ppmdv example)

$$C_{sdx} = C_{sd}\left(\frac{20.9 - x}{20.9 - O_2}\right)$$

Where:

C_{sd}	= NH_3 concentration (ppmdv)	=	5.7155	ppmdv
x	= oxygen content of corrected gas (%)	=	3.0	%
O_2	= proportion of oxygen in the gas stream by volume (%)	=	4.4	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
C_{sdx}	= NH_3 concentration corrected to x%O_2 (ppmdv)	=	6.2005	ppmdv @ x%O_2

7. NH_3 concentration corrected to y% CO_2 (ppmdv example)

$$C_{sdy} = C_{sd}\left(\frac{y}{CO_2}\right)$$

Where:

C_{sd}	= NH_3 concentration (ppmdv)	=	5.7155	ppmdv
y	= carbon dioxide content of corrected gas (%)	=	12.0	%
CO_2	= proportion of carbon dioxide in the gas stream by volume (%)	=	16.5	%
C_{sdy}	= NH_3 concentration corrected to y%CO_2 (ppmdv)	=	4.1567	ppmdv @ y%CO_2

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PARAMETERS	C

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TEST LOG

Client: CONSOL Energy - AES Greenidge
Project No: 10247

Run Number	Location	Method	Analyte	Date	Start Time	End Time	Notes
1	Unit 4 Air Heater Inlet	CTM-027	Ammonia	05/31/07	18:04	19:14	
2	Unit 4 Air Heater Inlet	CTM-027	Ammonia	06/01/07	10:20	11:07	
3	Unit 4 Air Heater Inlet	CTM-027	Ammonia	06/01/07	12:05	12:52	

Notes:
None

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CONSOL Energy - AES Greenidge
Clean Air Project No: 10247
Unit 4 Air Heater Inlet

CTM-027 (Ammonia)
Sampling, Velocity and Moisture Parameters

Run No.		1	2	3	Average
Date (2007)		May 31	Jun 1	Jun 1	
Start Time (approx.)		18:04	10:20	12:05	
Stop Time (approx.)		19:14	11:07	12:52	
Sampling Conditions					
Y_d	Dry gas meter correction factor	1.0071	1.0071	1.0071	
C_p	Pitot tube coefficient	0.84	0.84	0.84	
P_g	Static pressure (in. H_2O)	0.0000	0.0000	0.0000	
P_{bar}	Barometric pressure (in. Hg)	29.44	29.47	29.44	**29.4500**
O_2	Oxygen (dry volume %)	4.4000	5.1000	6.4000	**5.3000**
CO_2	Carbon dioxide (dry volume %)	16.5000	13.4000	12.4000	**14.1000**
N_2+CO	Nitrogen plus carbon monoxide (dry volume %)	79.1000	81.5000	81.2000	**80.6000**
V_{lc}	Total Liquid collected (ml)	70.40	57.60	48.80	
V_m	Volume metered, meter conditions (ft^3)	39.4800	26.1850	26.6400	
T_m	Dry gas meter temperature (°F)	102.4583	91.5000	95.6250	
T_s	Sample temperature (°F)	636.7500	0.0000	0.0000	**212.2500**
ΔH	Meter box orifice pressure drop (in. H_2O)	1.5000	1.5000	1.5000	
θ	Total sampling time (min)	60.0	40.0	40.0	
Flow Results					
V_{wstd}	Volume of water collected (ft^3)	3.3137	2.7112	2.2970	**2.7740**
V_{mstd}	Volume metered, standard (dscf)	36.8485	24.9506	25.1701	**28.9897**
B_{wo}	Moisture measured in sample (% by volume)	8.2509	9.8014	8.3628	**8.8050**
M_d	MW of sample gas, dry (lb/lb-mole)	30.8160	30.3480	30.2400	**30.4680**

Comments:
Average includes 3 runs.

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CONSOL Energy - AES Greenidge
Clean Air Project No: 10247
Unit 4 Air Heater Inlet

CTM-027
Ammonium Laboratory Data Summary

Run No.	Blank	1	2	3
Date (2007)		May 31	Jun 1	Jun 1
Start Time (approx.)		18:04	10:20	12:05
Stop Time (approx.)		19:14	11:07	12:52

☐ DRAFT LAB DATA

MDL Min. detectable limit (mg NH_4^+/liter) 0.0530

NH_3 as Total Ammonium (NH_4^+) - Front Half Rinse (Fraction 1)

B_{NH4} Blank concentration (mg NH_4^+/liter) <0.0530

S_{NH4-1}	Fraction 1 concentration (mg NH_4^+/liter)	4.4900	5.5800	5.0200	
v_1	Fraction 1 sample volume (ml)	208.0	153.0	192.0	
m_{NH3}	NH_3 collected before blank subtraction (mg)	0.8816	0.8059	0.9099	
m_b	Allowable blank subtraction (mg)	0.0000	0.0000	0.0000	
m_{nb}	NH_3 collected after blank subtraction (mg)	0.8816	0.8059	0.9099	
m_{MDL}	Minimum detectable NH_3 (mg)	0.0104	0.0077	0.0096	
m_n	*Total NH_3 used in emission calculations (mg)*	0.8816	0.8059	0.9099	

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CONSOL Energy - AES Greenidge
Clean Air Project No: 10247
Unit 4 Air Heater Inlet

CTM-027
NH_3 Parameters

Run No.		1	2	3	Average
Date (2007)		May 31	Jun 1	Jun 1	
Start Time (approx.)		18:04	10:20	12:05	
Stop Time (approx.)		19:14	11:07	12:52	
Gas Conditions					
O_2	Oxygen (dry volume %)	4.4000	5.1000	6.4000	**5.3000**
CO_2	Carbon dioxide (dry volume %)	16.5000	13.4000	12.4000	**14.1000**
T_s	Sample temperature (°F)	636.7500	0.0000	0.0000	**212.2500**
B_w	Actual water vapor in gas (% by volume)	8.2509	0.1425	0.1426	**2.8453**
Sampling Data					
V_{mstd}	Volume metered, standard (dscf)	36.8485	24.9506	25.1701	**28.9897**
Laboratory Data					
m_n	Total NH_3 collected (mg)	0.8816	0.8059	0.9099	**0.8658**
Ammonia (NH_3) Results - Front Half Rinse (Fraction 1)					
C_{sd}	Ammonia Concentration (lb/dscf)	5.2756E-08	7.1224E-08	7.9708E-08	**6.7896E-08**
C_{sd7}	Ammonia Concentration @3% O_2 (lb/dscf)	5.7232E-08	8.0690E-08	9.8398E-08	**7.8773E-08**
C_{sd12}	Ammonia Concentration @12% CO_2 (lb/dscf)	3.8368E-08	6.3783E-08	7.7136E-08	**5.9762E-08**
C_{sd}	Ammonia Concentration (ppmdv)	1.1942	1.6122	1.8042	**1.5369**
C_{sd7}	Ammonia Concentration @3% O_2 (ppmdv)	1.2955	1.8265	2.2273	**1.7831**
C_{sd12}	Ammonia Concentration @12% CO_2 (ppmdv)	0.8685	1.4438	1.7460	**1.3528**
C_w	Ammonia Concentration (ppmwv)	1.0956	1.6099	1.8017	**1.5024**
C_{sd}	Ammonia Concentration (mg/dscm)	0.8448	1.1406	1.2764	**1.0873**
C_{sd7}	Ammonia Concentration @3% O_2 (mg/dscm)	0.9165	1.2921	1.5757	**1.2614**
C_{sd12}	Ammonia Concentration @12% CO_2 (mg/dscm)	0.6144	1.0214	1.2352	**0.9570**
C_{sd}	Ammonia Concentration (mg/Nm^3 dry)	0.9066	1.2240	1.3698	**1.1668**
C_{sd7}	Ammonia Concentration @3% O_2 (mg/Nm^3 dry)	0.9836	1.3867	1.6910	**1.3537**
C_{sd12}	Ammonia Concentration @12% CO_2 (mg/Nm^3 dry)	0.6594	1.0961	1.3256	**1.0270**

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CONSOL Energy - AES Greenidge
Clean Air Project No: 10247
Unit 4 Air Heater Inlet

CTM-027
Ammonium Laboratory Data Summary

Run No.	Blank	1	2	3
Date (2007)		May 31	Jun 1	Jun 1
Start Time (approx.)		18:04	10:20	12:05
Stop Time (approx.)		19:14	11:07	12:52

☐ DRAFT LAB DATA

MDL Min. detectable limit (mg NH_4^+/liter) 0.0530

NH_3 as Total Ammonium (NH_4^+) - Impinger 1 (Fraction 2)

B_{NH4} Blank concentration (mg NH_4^+/liter) <0.0530

S_{NH4-1}	Fraction 1 concentration (mg NH_4^+/liter)	0.3600	0.3300	0.3500	
v_1	Fraction 1 sample volume (ml)	195.0	211.0	195.0	
m_{NH3}	NH_3 collected before blank subtraction (mg)	0.0663	0.0657	0.0644	
m_b	Allowable blank subtraction (mg)	0.0000	0.0000	0.0000	
m_{nb}	NH_3 collected after blank subtraction (mg)	0.0663	0.0657	0.0644	
m_{MDL}	Minimum detectable NH_3 (mg)	0.0098	0.0106	0.0098	
m_n	*Total NH_3 used in emission calculations (mg)*	0.0663	0.0657	0.0644	

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CONSOL Energy - AES Greenidge
Clean Air Project No: 10247
Unit 4 Air Heater Inlet

CTM-027
NH_3 Parameters

Run No.		1	2	3	Average
Date (2007)		May 31	Jun 1	Jun 1	
Start Time (approx.)		18:04	10:20	12:05	
Stop Time (approx.)		19:14	11:07	12:52	
Gas Conditions					
O_2	Oxygen (dry volume %)	4.4000	5.1000	6.4000	**5.3000**
CO_2	Carbon dioxide (dry volume %)	16.5000	13.4000	12.4000	**14.1000**
T_s	Sample temperature (°F)	636.7500	0.0000	0.0000	**212.2500**
B_w	Actual water vapor in gas (% by volume)	8.2509	0.1425	0.1426	**2.8453**
Sampling Data					
V_{mstd}	Volume metered, standard (dscf)	36.8485	24.9506	25.1701	**28.9897**
Laboratory Data					
m_n	Total NH_3 collected (mg)	0.0663	0.0657	0.0644	**0.0655**
Ammonia (NH_3) Results - Impinger 1 (Fraction 2)					
C_{sd}	Ammonia Concentration (lb/dscf)	3.9655E-09	5.8089E-09	5.6441E-09	**5.1395E-09**
C_{sd7}	Ammonia Concentration @3% O_2 (lb/dscf)	4.3020E-09	6.5810E-09	6.9676E-09	**5.9502E-09**
C_{sd12}	Ammonia Concentration @12% CO_2 (lb/dscf)	2.8840E-09	5.2020E-09	5.4621E-09	**4.5160E-09**
C_{sd}	Ammonia Concentration (ppmdv)	0.0898	0.1315	0.1278	**0.1163**
C_{sd7}	Ammonia Concentration @3% O_2 (ppmdv)	0.0974	0.1490	0.1577	**0.1347**
C_{sd12}	Ammonia Concentration @12% CO_2 (ppmdv)	0.0653	0.1178	0.1236	**0.1022**
C_w	Ammonia Concentration (ppmwv)	0.0824	0.1313	0.1276	**0.1137**
C_{sd}	Ammonia Concentration (mg/dscm)	0.0635	0.0930	0.0904	**0.0823**
C_{sd7}	Ammonia Concentration @3% O_2 (mg/dscm)	0.0689	0.1054	0.1116	**0.0953**
C_{sd12}	Ammonia Concentration @12% CO_2 (mg/dscm)	0.0462	0.0833	0.0875	**0.0723**
C_{sd}	Ammonia Concentration (mg/Nm^3 dry)	0.0681	0.0998	0.0970	**0.0883**
C_{sd7}	Ammonia Concentration @3% O_2 (mg/Nm^3 dry)	0.0739	0.1131	0.1197	**0.1023**
C_{sd12}	Ammonia Concentration @12% CO_2 (mg/Nm^3 dry)	0.0496	0.0894	0.0939	**0.0776**

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CONSOL Energy - AES Greenidge
Clean Air Project No: 10247
Unit 4 Air Heater Inlet

CTM-027
Ammonium Laboratory Data Summary

Run No.		Blank	1	2	3
Date (2007)			May 31	Jun 1	Jun 1
Start Time (approx.)			18:04	10:20	12:05
Stop Time (approx.)			19:14	11:07	12:52

☐ DRAFT LAB DATA

MDL	Min. detectable limit (mg NH_4^+/liter)	0.0530

NH_3 as Total Ammonium (NH_4^+) - Impingers 2 & 3 (Fraction 3)

B_{NH4}	Blank concentration (mg NH_4^+/liter)	<0.0530

S_{NH4-1}	Fraction 1 concentration (mg NH_4^+/liter)	<0.0530	<0.0530	<0.0530	
v_1	Fraction 1 sample volume (ml)	280.0	210.0	265.0	
m_{NH3}	NH_3 collected before blank subtraction (mg)	<0.0140	<0.0105	<0.0133	
m_b	Allowable blank subtraction (mg)	0.0000	0.0000	0.0000	
m_{nb}	NH_3 collected after blank subtraction (mg)	<0.0140	<0.0105	<0.0133	
m_{MDL}	Minimum detectable NH_3 (mg)	0.0140	0.0105	0.0133	
m_n	*Total NH_3 used in emission calculations (mg)*	<0.0140	<0.0105	<0.0133	

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CONSOL Energy - AES Greenidge
Clean Air Project No: 10247
Unit 4 Air Heater Inlet

CTM-027
NH_3 Parameters

Run No.		1	2	3	Average
Date (2007)		May 31	Jun 1	Jun 1	
Start Time (approx.)		18:04	10:20	12:05	
Stop Time (approx.)		19:14	11:07	12:52	
Gas Conditions					
O_2	Oxygen (dry volume %)	4.4000	5.1000	6.4000	**5.3000**
CO_2	Carbon dioxide (dry volume %)	16.5000	13.4000	12.4000	**14.1000**
T_s	Sample temperature (°F)	636.7500	0.0000	0.0000	**212.2500**
B_w	Actual water vapor in gas (% by volume)	8.2509	0.1425	0.1426	**2.8453**
Sampling Data					
V_{mstd}	Volume metered, standard (dscf)	36.8485	24.9506	25.1701	**28.9897**
Laboratory Data					
m_n	Total NH_3 collected (mg)	<0.0140	<0.0105	<0.0133	**<0.0126**
Ammonia (NH_3) Results - Impingers 2 & 3 (Fraction 3)					
C_{sd}	Ammonia Concentration (lb/dscf)	<8.3829E-10	<9.2853E-10	<1.1615E-09	**<9.7610E-10**
C_{sd7}	Ammonia Concentration @3% O_2 (lb/dscf)	<9.0942E-10	<1.0519E-09	<1.4338E-09	**<1.1317E-09**
C_{sd12}	Ammonia Concentration @12% CO_2 (lb/dscf)	<6.0967E-10	<8.3152E-10	<1.1240E-09	**<8.5507E-10**
C_{sd}	Ammonia Concentration (ppmdv)	<0.0190	<0.0210	<0.0263	**<0.0221**
C_{sd7}	Ammonia Concentration @3% O_2 (ppmdv)	<0.0206	<0.0238	<0.0325	**<0.0256**
C_{sd12}	Ammonia Concentration @12% CO_2 (ppmdv)	<0.0138	<0.0188	<0.0254	**<0.0194**
C_w	Ammonia Concentration (ppmwv)	<0.0174	<0.0210	<0.0263	**<0.0216**
C_{sd}	Ammonia Concentration (mg/dscm)	<0.0134	<0.0149	<0.0186	**<0.0156**
C_{sd7}	Ammonia Concentration @3% O_2 (mg/dscm)	<0.0146	<0.0168	<0.0230	**<0.0181**
C_{sd12}	Ammonia Concentration @12% CO_2 (mg/dscm)	<0.0098	<0.0133	<0.0180	**<0.0137**
C_{sd}	Ammonia Concentration (mg/Nm^3 dry)	<0.0144	<0.0160	<0.0200	**<0.0168**
C_{sd7}	Ammonia Concentration @3% O_2 (mg/Nm^3 dry)	<0.0156	<0.0181	<0.0246	**<0.0194**
C_{sd12}	Ammonia Concentration @12% CO_2 (mg/Nm^3 dry)	<0.0105	<0.0143	<0.0193	**<0.0147**

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CONSOL Energy - AES Greenidge
Clean Air Project No: 10247
Unit 4 Air Heater Inlet

CTM-027
Ammonium Laboratory Data Summary

Run No.		Blank	1	2	3	
Date (2007)			May 31	Jun 1	Jun 1	
Start Time (approx.)			18:04	10:20	12:05	
Stop Time (approx.)			19:14	11:07	12:52	
☐ DRAFT LAB DATA						
MDL	Min. detectable limit (mg NH_4^+/liter)	0.0530				
	NH_3 as Total Ammonium (NH_4^+) - Total Combined Fractions					
B_{NH4}	Blank concentration (mg NH_4^+/liter)	<0.0530				
S_{NH4-1}	Fraction 1&2 Total NH_3 (mg)		0.9479	0.8717	0.9743	
S_{NH4-2}	Fraction 3 Total NH_3 (mg)		<0.0140	<0.0105	<0.0133	
m_n	*Total NH_3 used in emission calculations (mg)*		0.9479	0.8717	0.9743	
EFF	Collection QC Check (% collected in Fraction 3)		<1.48%	<1.21%	<1.36%	
			0.9479	0.8717	0.9743	

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CONSOL Energy - AES Greenidge
Clean Air Project No: 10247
Unit 4 Air Heater Inlet

CTM-027
NH_3 Parameters

Run No.		1	2	3	Average
Date (2007)		May 31	Jun 1	Jun 1	
Start Time (approx.)		18:04	10:20	12:05	
Stop Time (approx.)		19:14	11:07	12:52	
Gas Conditions					
O_2	Oxygen (dry volume %)	4.4000	5.1000	6.4000	**5.3000**
CO_2	Carbon dioxide (dry volume %)	16.5000	13.4000	12.4000	**14.1000**
T_s	Sample temperature (°F)	636.7500	0.0000	0.0000	**212.2500**
B_w	Actual water vapor in gas (% by volume)	8.2509	0.1425	0.1426	**2.8453**
Sampling Data					
V_{mstd}	Volume metered, standard (dscf)	36.8485	24.9506	25.1701	**28.9897**
Laboratory Data					
m_n	Total NH_3 collected (mg)	0.9479	0.8717	0.9743	**0.9313**
Ammonia (NH_3) Results - Total Combined Fractions					
C_{sd}	Ammonia Concentration (lb/dscf)	5.6721E-08	7.7033E-08	8.5352E-08	**7.3035E-08**
C_{sd7}	Ammonia Concentration @3% O_2 (lb/dscf)	6.1534E-08	8.7271E-08	1.0537E-07	**8.4724E-08**
C_{sd12}	Ammonia Concentration @12% CO_2 (lb/dscf)	4.1252E-08	6.8985E-08	8.2599E-08	**6.4278E-08**
C_{sd}	Ammonia Concentration (ppmdv)	1.2839	1.7437	1.9320	**1.6532**
C_{sd7}	Ammonia Concentration @3% O_2 (ppmdv)	1.3929	1.9755	2.3850	**1.9178**
C_{sd12}	Ammonia Concentration @12% CO_2 (ppmdv)	0.9338	1.5615	1.8697	**1.4550**
C_w	Ammonia Concentration (ppmwv)	1.1780	1.7412	1.9293	**1.6162**
C_{sd}	Ammonia Concentration (mg/dscm)	0.9083	1.2336	1.3668	**1.1696**
C_{sd7}	Ammonia Concentration @3% O_2 (mg/dscm)	0.9854	1.3975	1.6873	**1.3567**
C_{sd12}	Ammonia Concentration @12% CO_2 (mg/dscm)	0.6606	1.1047	1.3227	**1.0293**
C_{sd}	Ammonia Concentration (mg/Nm^3 dry)	0.9748	1.3238	1.4668	**1.2551**
C_{sd7}	Ammonia Concentration @3% O_2 (mg/Nm^3 dry)	1.0575	1.4998	1.8107	**1.4560**
C_{sd12}	Ammonia Concentration @12% CO_2 (mg/Nm^3 dry)	0.7089	1.1855	1.4195	**1.1046**

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CONSOL Energy - AES Greenidge
Clean Air Project No: 10247
Unit 4 Air Heater Inlet

CTM-027
Ammonium Preliminary Field Titration Data Summary

Run No.	Blank	1	2	3
Date (2007)		May 31	Jun 1	Jun 1
Start Time (approx.)		18:04	10:20	12:05
Stop Time (approx.)		19:14	11:07	12:52

☐ DRAFT LAB DATA

MDL Min. detectable limit (mg NH_4^+/liter) NA

NH_3 as Total Ammonium (NH_4^+) - Preliminary Field Titration Total Combined Fractions

B_{NH4} Blank concentration (mg NH_4^+/liter) 0.5174

S_{NH4-1}	Fraction 1&2 Total NH_3 (mg)	4.2126	3.5780	4.0166
S_{NH4-2}	Fraction 3 Total NH_3 (mg)	0.0070	0.0002	0.4563
m_n	*Total NH_3 used in emission calculations (mg)*	4.2196	3.5782	4.4729
EFF	Collection QC Check (% collected in Fraction 3)	0.17%	0.01%	11.36%
		4.2196	3.5782	4.4729

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CONSOL Energy - AES Greenidge
Clean Air Project No: 10247
Unit 4 Air Heater Inlet

CTM-027
NH_3 Preliminary Field Titration Parameters

Run No.		1	2	3	Average
Date (2007)		May 31	Jun 1	Jun 1	
Start Time (approx.)		18:04	10:20	12:05	
Stop Time (approx.)		19:14	11:07	12:52	
Gas Conditions					
O_2	Oxygen (dry volume %)	4.4000	5.1000	6.4000	**5.3000**
CO_2	Carbon dioxide (dry volume %)	16.5000	13.4000	12.4000	**14.1000**
T_s	Sample temperature (°F)	636.7500	0.0000	0.0000	**212.2500**
B_w	Actual water vapor in gas (% by volume)	8.2509	0.1425	0.1426	**2.8453**
Sampling Data					
V_{mstd}	Volume metered, standard (dscf)	36.8485	24.9506	25.1701	**28.9897**
Laboratory Data					
m_n	Total NH_3 collected (mg)	4.2196	3.5782	4.4729	**4.0902**
Ammonia (NH_3) Results - Preliminary Field Titration Total Combined Fractions					
C_{sd}	Ammonia Concentration (lb/dscf)	2.5250E-07	3.1622E-07	3.9184E-07	**3.2019E-07**
C_{sd7}	Ammonia Concentration @3% O_2 (lb/dscf)	2.7392E-07	3.5825E-07	4.8372E-07	**3.7197E-07**
C_{sd12}	Ammonia Concentration @12% CO_2 (lb/dscf)	1.8364E-07	2.8318E-07	3.7920E-07	**2.8201E-07**
C_{sd}	Ammonia Concentration (ppmdv)	5.7155	7.1579	8.8697	**7.2477**
C_{sd7}	Ammonia Concentration @3% O_2 (ppmdv)	6.2005	8.1093	10.9495	**8.4198**
C_{sd12}	Ammonia Concentration @12% CO_2 (ppmdv)	4.1567	6.4101	8.5836	**6.3835**
C_w	Ammonia Concentration (ppmwv)	5.2439	7.1477	8.8570	**7.0829**
C_{sd}	Ammonia Concentration (mg/dscm)	4.0434	5.0639	6.2748	**5.1274**
C_{sd7}	Ammonia Concentration @3% O_2 (mg/dscm)	4.3865	5.7369	7.7462	**5.9565**
C_{sd12}	Ammonia Concentration @12% CO_2 (mg/dscm)	2.9407	4.5348	6.0724	**4.5160**
C_{sd}	Ammonia Concentration (mg/Nm^3 dry)	4.3393	5.4344	6.7340	**5.5025**
C_{sd7}	Ammonia Concentration @3% O_2 (mg/Nm^3 dry)	4.7075	6.1567	8.3130	**6.3924**
C_{sd12}	Ammonia Concentration @12% CO_2 (mg/Nm^3 dry)	3.1558	4.8666	6.5167	**4.8464**

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Clean Air Engineering Project #10247
Consol Energy
AES Dresden

Date: 5/30/2007
Start Time: 11:12
End Time: 11:35

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.
1-1	11:12	84.4		-2.8	8.5		12.5		121.8	29.1	-999.0		-899.5	-1442.1	-1309.6
1-2	11:16	78.8		-8.4	3.9		16.9		83.0	-9.7	69.8		169.3	73.5	206.0
1-3	11:20	89.6	92.0	2.4	3.8	4.7	17.1	16.3	93.8	1.1	112.8	-241.1	212.3	118.1	250.6
1-4	11:24	110.5		23.3	3.4		17.7		113.0	20.3	48.4		147.9	49.5	182.0
1-5	11:28	78.6		-8.6	6.6		14.7		98.4	5.7	-999.0		-899.5	-1250.5	-1118.0
1-6	11:32	110.1		22.9	1.9		19.1		103.7	11.0	320.7		420.2	302.1	434.7
2-1	11:13	82.3		-4.9	6.6		14.4		103.0	10.3	19.7		119.2	24.7	157.2
2-2	11:17	64.3		-22.9	3.7		17.2		66.9	-25.8	95.9		195.4	99.8	232.3
2-3	11:21	82.2	86.8	-5.0	3.4	3.7	17.7	17.3	84.1	-8.6	93.2	-21.9	192.7	95.3	227.9
2-4	11:25	100.8		13.6	2.8		18.1		99.7	7.0	25.7		125.2	25.4	157.9
2-5	11:29	103.3		16.1	2.1		18.9		98.4	5.7	633.4		732.9	603.1	735.6
2-6	11:33	81.7		-5.5	3.5		17.4		84.0	-8.7	-999.0		-899.5	-1027.7	-895.2
3-1	11:14	82.8		-4.4	6.3		14.7		101.5	8.8	47.6		147.1	58.4	190.9
3-2	11:18	71.9		-15.3	3.9		16.9		75.7	-17.0	106.9		206.4	112.6	245.1
3-3	11:22	94.7	91.6	7.5	3.6	3.5	17.3	17.5	98.0	5.3	81.2	-63.2	180.7	84.0	216.5
3-4	11:26	120.6		33.4	2.6		18.6		118.0	25.3	26.8		126.3	26.2	158.7
3-5	11:30	100.1		12.9	2.1		19.1		95.3	2.6	357.6		457.1	340.5	473.0
3-6	11:34	79.6		-7.6	2.7		18.1		78.3	-14.4	-999.0		-899.5	-982.5	-850.0
4-1	11:15	75.4		-11.8	6.5		14.5		93.7	1.0	58.6		158.1	72.8	205.4
4-2	11:19	65.4		-21.8	3.8		17.1		68.5	-24.2	136.2		235.7	142.6	275.1
4-3	11:23	83.1	79.6	-4.1	3.5	4.1	17.5	16.8	85.5	-7.2	63.2	-72.0	162.7	65.0	197.5
4-4	11:27	104.6		17.4	3.1		17.9		105.2	12.5	30.6		130.1	30.8	163.3
4-5	11:31	83.7		-3.5	3.2		17.8		84.6	-8.1	278.4		377.9	281.5	414.1
4-6	11:35	65.2		-22.0	4.4		16.2		70.7	-22.0	-999.0		-899.5	-1083.8	-951.2
Inlet Averages		87.2			4.0		17.0		92.7		-99.5			-132.5	

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction
1-1	11:12	65.9		16.1	5.4		13.2		76.1	22.2	145.7		172.2	168.3	194.7	21.9	37.5	114.6	111.7
1-2	11:16	91.6		41.8	4.1		14.2		97.6	43.7	-999.0		-972.5	-1064.4	-1038.0	-16.2	-17.6	1531.2	1548.3
1-3	11:20	75.5	78.1	25.7	4.3	4.9	14.4	13.7	81.4	27.5	201.0	-70.6	227.5	216.7	243.1	15.7	13.2	-78.2	-83.6
1-4	11:24	91.8		42.0	3.8		14.7		96.1	42.2	32.5		59.0	34.0	60.4	16.9	15.0	32.9	31.3
1-5	11:28	72.9		23.1	5.1		13.6		82.6	28.7	60.2		86.7	68.2	94.6	7.3	16.1	106.0	105.5
1-6	11:32	70.7		20.9	6.6		12.3		88.5	34.6	136.3		162.8	170.6	197.0	35.8	14.7	57.5	43.5
2-1	11:13	18.6		-31.2	3.6		14.6		19.2	-34.6	574.6		601.1	594.5	620.9	77.4	81.3	-2816.8	-2311.0
2-2	11:17	76.8		27.0	3.9		14.4		80.9	27.0	-999.0		-972.5	-1051.9	-1025.5	-19.4	-20.8	1141.7	1154.0
2-3	11:21	96.3	53.7	46.5	4.0	4.5	14.4	13.9	102.0	48.1	50.9	-31.7	77.4	53.9	80.3	-17.2	-21.3	45.4	43.4
2-4	11:25	80.7		30.9	4.7		13.9		89.2	35.3	24.1		50.6	26.6	53.0	19.9	10.6	6.2	-4.8
2-5	11:29	10.3		-39.5	4.7		13.7		11.4	-42.5	79.0		105.5	87.3	113.7	90.0	88.4	87.5	85.5
2-6	11:33	39.3		-10.5	6.3		12.4		48.2	-5.7	80.4		106.9	98.6	125.0	51.9	42.7	108.0	109.6
3-1	11:14	1.4		-48.4	3.0		15.2		1.4	-52.5	-999.0		-972.5	-999.0	-972.6	98.3	98.6	2198.7	1811.8
3-2	11:18	100.1		50.3	2.8		15.5		99.0	45.1	769.1		795.6	760.6	787.0	-39.2	-30.8	-619.5	-575.7
3-3	11:22	104.2	47.3	54.4	3.2	3.7	15.2	14.7	105.4	51.5	30.3	11.4	56.8	30.6	57.0	-10.0	-7.5	62.7	63.5
3-4	11:26	73.0		23.2	5.2		13.5		83.2	29.4	28.7		55.2	32.7	59.1	39.5	29.4	-7.1	-24.8
3-5	11:30	2.4		-47.4	3.5		14.9		2.5	-51.4	143.1		169.6	147.2	173.6	97.6	97.4	60.0	56.8
3-6	11:34	2.9		-46.9	4.5		14.0		3.2	-50.7	96.1		122.6	104.9	131.3	96.4	96.0	109.6	110.7
4-1	11:15	7.9		-41.9	3.9		14.5		8.3	-45.5	-999.0		-972.5	-1051.9	-1025.5	89.5	91.1	1804.8	1544.0
4-2	11:19	2.8		-47.0	2.4		15.9		2.7	-51.2	365.6		392.1	353.7	380.1	95.7	96.0	-188.4	-148.1
4-3	11:23	61.2	20.1	11.4	2.8	3.6	15.6	14.9	60.5	6.7	25.2	-15.1	51.7	24.9	51.3	26.4	29.2	60.1	61.7
4-4	11:27	19.3		-30.5	3.5		14.9		19.9	-34.0	42.9		69.4	44.1	70.5	81.5	81.1	-40.2	-43.4
4-5	11:31	1.4		-48.4	3.4		15.1		1.4	-52.4	230.7		257.2	236.0	262.4	98.3	98.3	17.1	16.2
4-6	11:35	28.0		-21.8	5.3		13.4		32.1	-21.7	244.1		270.6	280.1	306.5	57.1	54.6	124.4	125.8
Outlet Averages		49.8			4.2		14.3		53.9		-26.5			-26.4		42.3	41.4	164.1	159.7

* -999.0 indicates that the analyzer was out of range.

Clean Air Engineering Project #10247
Consol Energy
AES Dresden

Date: 5/30/2007
Start Time: 12:24
End Time: 12:47

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.
1-1	12:24	97.1		-9.4	8.1		12.5		135.8	23.4	-999.0		-909.4	-1397.0	-1280.6
1-2	12:28	111.9		5.4	3.4		17.0		114.5	2.1	467.6		557.2	478.3	594.7
1-3	12:32	113.8	106.4	7.3	3.7	4.5	16.9	16.1	118.4	6.1	140.0	-133.9	229.6	145.7	262.1
1-4	12:36	113.9		7.4	3.6		17.2		117.9	5.5	25.6		115.2	26.5	142.9
1-5	12:40	81.1		-25.4	6.4		14.3		100.1	-12.2	-999.0		-909.4	-1233.2	-1116.8
1-6	12:44	120.4		13.9	1.9		18.7		113.4	1.1	561.3		650.9	528.8	645.2
2-1	12:25	104.0		-2.5	6.0		14.5		124.9	12.6	90.4		180.0	108.6	225.0
2-2	12:29	103.3		-3.2	3.2		17.1		104.5	-7.9	468.4		558.0	473.7	590.1
2-3	12:33	107.4	104.8	0.9	3.2	3.5	17.4	17.0	108.6	-3.7	58.8	-227.7	148.4	59.5	175.9
2-4	12:37	111.7		5.2	3.0		17.7		111.7	-0.6	14.5		104.1	14.5	130.9
2-5	12:41	112.3		5.8	2.2		18.3		107.5	-4.9	-999.0		-909.4	-956.3	-839.8
2-6	12:45	90.3		-16.2	3.5		16.9		92.9	-19.5	-999.0		-909.4	-1027.7	-911.3
3-1	12:26	108.0		1.5	5.8		14.8		128.0	15.7	61.3		150.9	72.7	189.1
3-2	12:30	115.3		8.8	3.5		17.1		116.6	6.3	308.2		397.8	317.1	433.5
3-3	12:34	108.8	107.1	2.3	3.5	3.5	17.2	17.1	111.9	-0.4	73.4	-0.9	163.0	75.5	191.9
3-4	12:38	113.2		6.7	2.9		17.7		112.6	0.2	12.4		102.0	12.3	128.7
3-5	12:42	107.6		1.1	2.3		18.2		103.6	-8.8	538.5		628.1	518.2	634.7
3-6	12:46	89.5		-17.0	2.7		17.5		88.0	-24.3	-999.0		-909.4	-982.5	-866.1
4-1	12:27	105.6		-0.9	5.6		14.9		123.5	11.2	205.7		295.3	240.7	357.1
4-2	12:31	108.6		2.1	3.5		17.0		111.7	-0.6	434.6		524.2	447.1	563.5
4-3	12:35	112.6	107.7	6.1	3.5	4.0	17.2	16.6	115.8	3.5	52.5	3.9	142.1	54.0	170.4
4-4	12:39	119.1		12.6	3.3		17.3		121.1	8.8	12.8		102.4	13.0	129.4
4-5	12:43	110.1		3.6	3.2		17.6		111.3	-1.0	316.9		406.5	320.5	436.9
4-6	12:47	90.4		-16.1	4.7		15.7		99.9	-12.5	-999.0		-909.4	-1103.8	-987.4
Inlet Averages		106.5			3.9		16.7		112.3		-89.6			-116.4	

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction
1-1	12:24	92.3		-13.2	3.9		14.4		97.2	-15.3	-999.0		-887.6	-1051.9	-940.4	4.9	28.4	0.0	24.7
1-2	12:28	95.9		-9.6	3.9		14.6		101.0	-11.5	-999.0		-887.6	-1051.9	-940.4	14.3	11.8	313.6	319.9
1-3	12:32	106.3	99.5	0.8	5.0	5.1	13.7	13.6	119.7	7.2	99.5	-287.7	210.9	112.0	223.5	6.6	-1.0	28.9	23.1
1-4	12:36	111.0		5.5	4.2		14.4		119.0	6.5	14.2		125.6	15.2	126.7	2.5	-1.0	44.5	42.5
1-5	12:40	109.1		3.6	5.1		13.6		123.6	11.2	42.9		154.3	48.6	160.1	-34.5	-23.5	104.3	103.9
1-6	12:44	82.5		-23.0	8.2		11.1		116.3	3.8	115.1		226.5	162.2	273.7	31.5	-2.5	79.5	69.3
2-1	12:25	95.6		-9.9	2.9		15.3		95.1	-17.4	-999.0		-887.6	-993.5	-882.0	8.1	23.9	1205.1	1014.8
2-2	12:29	112.1		6.6	2.5		15.9		109.1	-3.4	529.8		641.2	515.4	626.9	-8.5	-4.4	-13.1	-8.8
2-3	12:33	97.0	102.2	-8.5	4.5	4.1	14.0	14.4	105.9	-6.6	19.9	-25.2	131.3	21.7	133.2	9.7	2.5	66.2	63.5
2-4	12:37	92.1		-13.4	4.5		14.0		100.5	-11.9	13.7		125.1	15.0	126.4	17.5	10.0	5.5	-3.1
2-5	12:41	117.4		11.9	3.6		14.9		121.5	9.0	99.7		211.1	103.2	214.6	-4.5	-13.0	110.0	110.8
2-6	12:45	98.8		-6.7	6.6		12.0		123.7	11.2	185.0		296.4	231.6	343.0	-9.4	-33.1	118.5	122.5
3-1	12:26	96.6		-8.9	2.8		15.4		95.5	-16.9	-999.0		-887.6	-988.0	-876.5	10.6	25.4	1729.7	1459.6
3-2	12:30	117.3		11.8	2.3		16.1		112.9	0.4	289.1		400.5	278.2	389.7	-1.7	4.8	6.2	12.2
3-3	12:34	116.8	111.4	11.3	3.4	3.6	15.1	14.9	119.5	7.0	19.3	-68.4	130.7	19.7	131.2	-7.4	-6.7	73.7	73.9
3-4	12:38	106.8		1.3	5.0		13.6		120.2	7.8	18.5		129.9	20.8	132.3	5.7	-6.8	-49.2	-68.9
3-5	12:42	114.1		8.6	3.4		15.0		116.7	4.3	99.9		211.3	102.2	213.6	-6.0	-12.7	81.4	80.3
3-6	12:46	116.5		11.0	4.4		14.1		126.4	13.9	161.9		273.3	175.6	287.1	-30.2	-43.6	116.2	117.9
4-1	12:27	89.5		-16.0	3.7		14.5		93.1	-19.3	-999.0		-887.6	-1039.7	-928.2	15.2	24.6	585.7	532.0
4-2	12:31	112.6		7.1	2.6		15.8		110.1	-2.3	318.9		430.3	311.9	423.4	-3.7	1.4	26.6	30.2
4-3	12:35	119.6	109.0	14.1	2.9	3.5	15.5	14.9	118.9	6.5	16.5	-64.5	127.9	16.4	127.9	-6.2	-2.7	68.6	69.6
4-4	12:39	116.3		10.8	3.3		15.1		118.3	5.8	32.5		143.9	33.1	144.5	2.4	2.4	-153.9	-153.9
4-5	12:43	109.9		4.4	3.3		15.1		111.8	-0.7	112.1		223.5	114.0	225.5	0.2	-0.4	64.6	64.4
4-6	12:47	106.2		0.7	5.4		13.3		122.6	10.2	132.3		243.7	152.8	264.3	-17.5	-22.8	113.2	113.8
Outlet Averages		105.5			4.1		14.4		112.4		-111.4			-111.5		0.0	-1.6	196.9	175.6

* -999.0 indicates that the analyzer was out of range.

Clean Air Engineering Project #10247
Consol Energy
AES Dresden

Date: 5/30/2007
Start Time: 13:12
End Time: 13:35

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.
1-1	13:12	90.6		-5.1	8.0		12.2		125.6	-18.2	-999.0		-801.1	-1386.2	-974.5
1-2	13:16	111.1		15.5	3.6		16.7		115.0	-28.8	71.2		269.1	73.7	485.4
1-3	13:20	101.9	99.0	6.3	3.9	4.6	16.4	15.9	107.3	-36.5	41.4	-476.4	239.3	43.6	455.3
1-4	13:24	107.4		11.8	3.6		17.2		111.1	-32.6	26.2		224.1	27.1	438.8
1-5	13:28	75.6		-20.0	6.2		14.3		92.1	-51.7	-999.0		-801.1	-1216.5	-804.7
1-6	13:32	107.4		11.8	2.1		18.6		102.3	-41.5	-999.0		-801.1	-951.2	-539.4
2-1	13:13	73.0		-22.6	17.7		2.7		408.3	264.6	81.5		279.4	455.9	867.6
2-2	13:17	98.3		2.7	3.5		16.7		101.1	-42.6	117.4		315.3	120.8	532.5
2-3	13:21	88.2	86.2	-7.4	3.8	9.9	16.4	10.3	92.3	-51.4	38.1	-290.1	236.0	39.9	451.6
2-4	13:25	101.5		5.9	3.2		17.5		102.6	-41.1	20.2		218.1	20.4	432.2
2-5	13:29	72.7		-22.9	15.3		4.6		232.4	88.6	-999.0		-801.1	-3193.2	-2781.5
2-6	13:33	83.3		-12.3	16.1		4.1		310.6	166.9	-999.0		-801.1	-3725.4	-3313.7
3-1	13:14	97.1		1.5	9.1		11.5		147.3	3.5	128.9		326.8	195.5	607.3
3-2	13:18	101.2		5.6	3.5		16.7		104.1	-39.7	134.0		331.9	137.9	549.6
3-3	13:22	85.1	96.6	-10.5	16.3	6.9	3.5	13.5	331.2	187.4	28.9	31.3	226.8	112.5	524.2
3-4	13:26	106.1		10.5	3.1		17.6		106.7	-37.1	22.5		220.4	22.6	434.4
3-5	13:30	102.4		6.8	3.7		16.9		106.6	-37.2	872.7		1070.6	908.2	1319.9
3-6	13:34	87.6		-8.0	5.4		14.6		101.2	-42.6	-999.0		-801.1	-1153.7	-742.0
4-1	13:15	107.0		11.4	6.2		14.1		130.3	-13.5	67.0		264.9	81.6	493.3
4-2	13:19	102.9		7.3	4.2		16.1		110.3	-33.5	98.8		296.7	105.9	517.6
4-3	13:23	96.4	100.7	0.8	3.5	4.3	17.2	16.2	99.2	-44.6	22.8	-56.3	220.7	23.5	435.2
4-4	13:27	111.1		15.5	3.4		17.1		113.6	-30.1	24.4		222.3	25.0	436.7
4-5	13:31	102.6		7.0	3.5		17.5		105.5	-38.2	448.5		646.4	461.4	873.1
4-6	13:35	84.3		-11.3	4.8		15.4		93.7	-50.0	-999.0		-801.1	-1110.7	-699.0
Inlet Averages		95.6			6.4		14.0		143.8		-197.9			-411.7	

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction
1-1	13:12	88.7		-6.9	5.4		13.3		102.4	-0.4	-999.0		-921.2	-1153.7	-1061.3	2.0	18.4	0.0	16.8
1-2	13:16	91.7		-3.9	5.7		12.9		108.0	5.2	108.7		186.5	128.0	220.4	17.5	6.1	-52.7	-73.8
1-3	13:20	90.0	90.1	-5.6	4.0	4.6	14.5	13.9	95.3	-7.5	85.8	-35.4	163.6	90.9	183.3	11.7	11.2	-107.2	-108.5
1-4	13:24	90.4		-5.2	4.6		13.9		99.3	-3.5	24.1		101.9	26.5	118.9	15.8	10.7	8.0	2.4
1-5	13:28	94.9		-0.7	3.8		14.6		99.3	-3.5	73.4		151.2	76.8	169.2	-25.5	-7.9	107.3	106.3
1-6	13:32	84.6		-11.0	3.9		14.4		89.1	-13.7	494.4		572.2	520.6	613.0	21.2	12.9	149.5	164.7
2-1	13:13	76.8		-18.8	6.7		12.0		96.8	-6.0	-999.0		-921.2	-1259.3	-1166.9	-5.2	76.3	1325.8	376.2
2-2	13:17	95.4		-0.2	4.8		13.7		105.1	3.3	100.7		178.5	112.0	204.4	3.0	-4.9	14.2	7.3
2-3	13:21	89.2	89.2	-6.4	4.5	4.6	14.0	13.9	97.4	-5.4	63.0	-266.5	140.8	68.8	161.2	-1.1	-5.5	-65.4	-72.4
2-4	13:25	91.1		-4.5	4.4		14.1		98.8	-4.0	22.1		99.9	24.0	116.4	10.2	3.7	-8.4	-17.4
2-5	13:29	96.9		1.3	3.4		14.9		99.1	-3.7	213.2		291.0	218.1	310.5	-33.3	57.3	121.3	106.8
2-6	13:33	85.5		-10.1	3.5		14.6		88.0	-14.8	-999.0		-921.2	-1027.7	-935.3	-2.6	71.7	0.0	72.4
3-1	13:14	114.2		18.6	4.5		14.0		124.6	21.8	715.4		793.2	780.8	873.2	-17.6	15.4	-455.0	-299.3
3-2	13:18	103.4		7.8	4.0		14.3		109.5	6.7	126.7		204.5	134.2	226.6	-2.2	-5.2	5.4	2.7
3-3	13:22	91.5	102.4	-4.1	5.4	4.0	13.3	14.5	105.7	2.9	43.5	38.1	121.3	50.2	142.7	-7.5	68.1	-50.5	55.3
3-4	13:26	105.3		9.7	3.7		14.7		109.6	6.8	17.9		95.7	18.6	111.0	0.8	-2.7	20.4	17.7
3-5	13:30	105.2		9.6	2.7		15.6		103.5	0.7	324.1		401.9	318.8	411.2	-2.7	2.9	62.9	64.9
3-6	13:34	95.0		-0.6	3.4		14.8		97.2	-5.6	-999.0		-921.2	-1021.8	-929.4	-8.4	3.9	0.0	11.4
4-1	13:15	107.7		12.1	5.5		13.2		125.2	22.4	205.3		283.1	238.6	331.0	-0.7	3.9	-208.4	-192.5
4-2	13:19	99.5		3.9	3.8		14.7		104.2	1.4	120.6		198.4	126.2	218.7	3.3	5.6	-22.1	-19.2
4-3	13:23	96.3	100.9	0.7	3.5	3.9	14.8	14.6	99.1	-3.7	23.4	-47.2	101.2	24.1	116.5	0.1	0.1	-2.6	-2.6
4-4	13:27	112.2		16.6	3.2		15.2		113.5	10.7	23.4		101.2	23.7	116.1	-1.0	0.2	4.1	5.2
4-5	13:31	104.9		9.3	2.9		15.5		104.3	1.5	342.9		420.7	341.0	433.4	-2.2	1.2	23.5	26.1
4-6	13:35	84.8		-10.8	4.3		14.1		91.4	-11.4	-999.0		-921.2	-1077.2	-984.8	-0.6	2.4	0.0	3.0
Outlet Averages		95.6			4.2		14.2		102.8		-77.8			-92.4		-1.1	14.4	36.3	10.1

* -999.0 indicates that the analyzer was out of range.

Clean Air Engineering Project #10247
Consol Energy
AES Dresden

Date: 5/30/2007
Start Time: 16:55
End Time: 17:18

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.
1-6	17:12	109.4		-8.8	7.6		18.8		147.2	16.9	388.3		459.3	522.6	594.9
1-5	17:16	125.3		7.1	5.9		20.8		149.5	19.2	19.5		90.5	23.3	95.6
1-4	16:56	119.1	121.1	0.9	4.2	5.2	23.0	21.9	127.7	-2.7	18.7	131.2	89.7	20.0	92.4
1-3	17:00	130.8		12.6	5.2		21.5		149.1	18.8	27.4		98.4	31.2	103.6
1-2	17:04	95.7		-22.5	4.2		23.4		102.6	-27.8	245.6		316.6	263.2	335.6
1-1	17:08	146.2		28.0	4.3		23.7		157.6	27.3	87.9		158.9	94.8	167.1
2-6	17:13	114.7		-3.5	7.0		19.7		147.7	17.3	11.8		82.8	15.2	87.5
2-5	17:17	104.6		-13.6	4.7		22.3		115.6	-14.8	23.2		94.2	25.6	98.0
2-4	16:57	106.9	108.9	-11.3	5.2	4.7	21.2	22.7	121.9	-8.5	12.6	-113.2	83.6	14.4	86.7
2-3	17:01	89.4		-28.8	4.2		22.9		95.8	-34.5	29.7		100.7	31.8	104.2
2-2	17:05	120.5		2.3	2.8		26.0		119.2	-11.2	242.6		313.6	239.9	312.2
2-1	17:09	117.4		-0.8	4.0		23.8		124.3	-6.0	-999.0		-928.0	-1058.1	-985.8
3-6	17:14	119.0		0.8	5.9		21.1		142.0	11.6	10.6		81.6	12.6	85.0
3-5	17:18	114.8		-3.4	4.3		23.0		123.8	-6.6	17.9		88.9	19.3	91.6
3-4	16:58	118.9	118.8	0.7	5.2	4.2	21.5	-147.6	135.6	5.2	11.4	-151.5	82.4	13.0	85.3
3-3	17:02	121.9		3.7	3.4		24.2		124.7	-5.7	13.2		84.2	13.5	85.8
3-2	17:06	129.9		11.7	2.5		-999.0		126.4	-4.0	37.0		108.0	36.0	108.3
3-1	17:10	108.5		-9.7	4.0		23.8		114.9	-15.4	-999.0		-928.0	-1058.1	-985.8
4-6	17:15	126.2		8.0	6.9		19.5		161.4	31.0	14.2		85.2	18.2	90.5
4-5	16:55	118.3		0.1	4.0		22.8		125.3	-5.1	18.9		89.9	20.0	92.3
4-4	16:59	124.3	124.2	6.1	3.8	4.2	23.2	23.3	130.1	-0.2	12.4	-150.6	83.4	13.0	85.3
4-3	17:03	137.0		18.8	3.0		24.8		137.0	6.6	14.6		85.6	14.6	86.9
4-2	17:07	128.1		9.9	2.9		26.8		127.4	-3.0	35.3		106.3	35.1	107.4
4-1	17:11	111.0		-7.2	4.6		22.8		121.9	-8.5	-999.0		-928.0	-1097.1	-1024.7
Inlet Averages		118.2			4.6		-19.9		130.4		-71.0			-72.3	

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction
1-6	17:12	110.2		-8.0	6.0		12.8		132.4	4.6	505.8		343.0	607.6	436.7	-0.7	10.1	-30.3	-16.3
1-5	17:16	111.7		-6.5	6.1		12.6		135.1	7.3	17.3		-145.5	20.9	-150.0	10.9	9.6	11.3	10.1
1-4	16:56	124.8	114.5	6.6	4.1	4.3	14.4	14.3	133.0	5.2	28.9	167.7	-133.9	30.8	-140.1	-4.8	-4.2	-54.5	-53.6
1-3	17:00	114.9		-3.3	3.5		14.9		118.2	-9.6	17.0		-145.8	17.5	-153.4	12.2	20.7	38.0	44.0
1-2	17:04	113.8		-4.4	3.3		15.2		115.7	-12.0	43.1		-119.7	43.8	-127.1	-18.9	-12.8	82.5	88.3
1-1	17:08	111.5		-6.7	2.7		15.6		109.7	-18.1	393.8		231.0	387.3	216.4	23.7	30.4	-348.0	-308.6
2-6	17:13	114.5		-3.7	8.0		11.0		158.9	31.1	35.7		-127.1	49.5	-121.4	0.2	-7.6	-202.5	-226.0
2-5	17:17	110.2		-8.0	4.6		14.1		121.0	-6.7	19.6		-143.2	21.5	-149.4	-5.4	-4.7	15.5	16.0
2-4	16:57	114.8	116.9	-3.4	4.0	4.6	14.6	14.1	121.6	-6.2	17.8	146.1	-145.0	18.9	-152.0	-7.4	0.2	-41.3	-31.2
2-3	17:01	118.1		-0.1	2.9		15.5		117.4	-10.3	15.9		-146.9	15.8	-155.1	-32.1	-22.6	46.5	50.3
2-2	17:05	128.8		10.6	5.3		13.4		147.8	20.0	172.6		9.8	198.0	27.1	-6.9	-24.0	28.9	17.5
2-1	17:09	115.0		-3.2	2.7		15.8		113.1	-14.7	614.7		451.9	604.6	433.7	2.0	9.0	161.5	157.1
3-6	17:14	119.9		1.7	6.7		12.2		151.1	23.4	21.4		-141.4	27.0	-143.9	-0.8	-6.4	-101.9	-113.3
3-5	17:18	111.2		-7.0	4.5		14.0		121.4	-6.4	23.3		-139.5	25.4	-145.5	3.1	2.0	-30.2	-31.8
3-4	16:58	115.4	121.9	-2.8	3.6	4.1	14.9	14.4	119.4	-8.4	13.4	165.1	-149.4	13.9	-157.0	2.9	11.9	-17.5	-6.7
3-3	17:02	132.4		14.2	3.5		14.8		136.2	8.4	21.7		-141.1	22.3	-148.6	-8.6	-9.2	-64.4	-65.3
3-2	17:06	137.1		18.9	2.5		15.7		133.4	5.6	138.4		-24.4	134.6	-36.3	-5.5	-5.5	-274.1	-274.1
3-1	17:10	115.1		-3.1	3.8		14.6		120.5	-7.3	772.3		609.5	808.4	637.5	-6.1	-4.8	177.3	176.4
4-6	17:15	121.7		3.5	6.7		12.1		153.4	25.6	20.4		-142.4	25.7	-145.2	3.6	4.9	-43.7	-41.6
4-5	16:55	111.1		-7.1	4.4		14.2		120.5	-7.2	29.5		-133.3	32.0	-138.9	6.1	3.8	-56.1	-59.9
4-4	16:59	117.3	119.6	-0.9	3.8	3.9	14.6	14.6	122.8	-5.0	13.9	172.4	-148.9	14.6	-156.3	5.6	5.6	-12.1	-12.1
4-3	17:03	135.1		16.9	2.7		15.6		132.9	5.1	20.2		-142.6	19.9	-151.0	1.4	3.0	-38.4	-36.1
4-2	17:07	126.6		8.4	2.5		15.8		123.2	-4.6	115.9		-46.9	112.8	-58.1	1.2	3.3	-226.3	-221.2
4-1	17:11	105.9		-12.3	3.3		15.1		107.7	-20.1	834.5		671.7	848.7	677.8	4.6	11.6	183.5	177.4
Outlet Averages		118.2			4.2		14.3		127.8		162.8			170.9		-0.8	1.0	-33.3	-31.9

* -999.0 indicates that the analyzer was out of range.

Clean Air Engineering Project #10247
Consol Energy
AES Dresden

Date: 5/30/2007
Start Time: 17:32
End Time: 17:55

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	17:36	111.5		-12.9	6.7				140.6	4.3	42.8		-6.8	54.0	0.6
1-5	17:40	127.6		3.2	5.9				152.3	16.0	23.7		-25.9	28.3	-25.1
1-4	17:44	126.0	126.0	1.6	4.0	5.1			133.5	-2.8	23.8	50.1	-25.8	25.2	-28.2
1-3	17:48	135.2		10.8	4.8				150.3	14.1	52.1		2.5	57.9	4.6
1-2	17:52	108.2		-16.2	4.3				116.7	-19.6	26.3		-23.3	28.4	-25.0
1-1	17:32	147.7		23.3	5.0				166.3	30.0	132.1		82.5	148.7	95.4
2-6	17:37	119.6		-4.8	6.8				151.8	15.6	7.7		-41.9	9.8	-43.6
2-5	17:41	111.4		-13.0	4.4				120.9	-15.4	21.7		-27.9	23.5	-29.8
2-4	17:45	115.4	123.2	-9.0	5.2	4.7			131.6	-4.7	21.4	50.9	-28.2	24.4	-29.0
2-3	17:49	138.6		14.2	4.3				149.5	13.2	81.7		32.1	88.1	34.7
2-2	17:53	136.1		11.7	2.9				135.3	-0.9	58.6		9.0	58.3	4.9
2-1	17:33	118.0		-6.4	4.6				129.6	-6.7	114.1		64.5	125.3	71.9
3-6	17:38	116.1		-8.3	5.3				133.2	-3.0	9.0		-40.6	10.3	-43.0
3-5	17:42	111.1		-13.3	4.1				118.4	-17.9	22.1		-27.5	23.5	-29.8
3-4	17:46	126.5	123.9	2.1	5.2	4.2			144.2	8.0	18.2	51.1	-31.4	20.8	-32.6
3-3	17:50	139.0		14.6	3.4				142.2	5.9	72.8		23.2	74.5	21.1
3-2	17:54	131.5		7.1	2.6				128.6	-7.6	109.7		60.1	107.3	53.9
3-1	17:34	119.2		-5.2	4.4				129.3	-6.9	75.0		25.4	81.4	28.0
4-6	17:39	124.7		0.3	6.7				157.2	21.0	14.9		-34.7	18.8	-34.6
4-5	17:43	120.8		-3.6	3.6				125.0	-11.2	34.3		-15.3	35.5	-17.9
4-4	17:47	128.8	124.4	4.4	3.3	4.0			131.0	-5.2	17.6	46.2	-32.0	17.9	-35.5
4-3	17:51	137.2		12.8	2.8				135.7	-0.6	46.1		-3.5	45.6	-7.8
4-2	17:55	125.8		1.4	2.6				123.1	-13.2	83.8		34.2	82.0	28.6
4-1	17:35	109.2		-15.2	5.1				123.7	-12.5	80.7		31.1	91.4	38.1
Inlet Averages		124.4			4.5		18.1		136.2		49.6			53.4	

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O_2 correction
1-6	17:36	105.0		-15.3	6.3		12.6		128.7	1.1	83.8		41.0	102.7	57.4	5.8	8.4	-95.8	-90.4
1-5	17:40	110.6		-9.7	5.8		13.0		131.1	3.5	18.9		-23.9	22.4	-22.9	13.3	13.9	20.3	20.8
1-4	17:44	124.8	115.6	4.5	3.7	4.0	14.7	14.5	129.9	2.3	39.3	43.2	-3.5	40.9	-4.4	1.0	2.7	-65.1	-62.2
1-3	17:48	109.4		-10.9	3.0		15.4		109.4	-18.2	22.6		-20.2	22.6	-22.7	19.1	27.2	56.6	61.0
1-2	17:52	123.1		2.8	2.7		15.6		121.1	-6.5	38.8		-4.0	38.2	-7.2	-13.8	-3.8	-47.5	-34.6
1-1	17:32	120.6		0.3	2.4		15.9		116.7	-10.9	55.5		12.7	53.7	8.4	18.3	29.8	58.0	63.9
2-6	17:37	116.1		-4.2	7.6		11.3		156.3	28.6	23.5		-19.3	31.6	-13.7	2.9	-2.9	-205.2	-223.6
2-5	17:41	110.4		-9.9	3.8		14.7		115.6	-12.1	22.7		-20.1	23.8	-21.6	0.9	4.4	-4.6	-0.9
2-4	17:45	119.5	120.0	-0.8	3.4	4.2	15.0	14.4	122.2	-5.4	22.8	35.2	-20.0	23.3	-22.0	-3.6	7.1	-6.5	4.4
2-3	17:49	129.0		8.7	2.6		15.8		126.2	-1.4	21.2		-21.6	20.7	-24.6	6.9	15.6	74.1	76.5
2-2	17:53	131.7		11.4	5.6		13.2		154.1	26.5	76.9		34.1	90.0	44.6	3.2	-13.8	-31.2	-54.4
2-1	17:33	113.2		-7.1	2.1		16.2		107.8	-19.8	44.2		1.4	42.1	-3.2	4.1	16.8	61.3	66.4
3-6	17:38	120.5		0.2	6.4		12.4		148.8	21.1	20.9		-21.9	25.8	-19.5	-3.8	-11.7	-132.2	-149.9
3-5	17:42	116.4		-3.9	4.4		14.2		126.3	-1.3	26.3		-16.5	28.5	-16.8	-4.8	-6.7	-19.0	-21.2
3-4	17:46	120.7	124.4	0.4	3.1	3.7	15.3	14.8	121.4	-6.2	15.1	44.9	-27.7	15.2	-30.1	4.6	15.8	17.0	26.8
3-3	17:50	135.2		14.9	2.2		16.2		129.4	1.8	28.8		-14.0	27.6	-17.8	2.7	9.0	60.4	63.0
3-2	17:54	141.7		21.4	2.0		16.3		134.2	6.6	102.8		60.0	97.4	52.0	-7.8	-4.3	6.3	0.3
3-1	17:34	111.6		-8.7	4.1		14.5		118.9	-8.7	75.4		32.6	80.3	35.0	6.4	8.0	-0.5	1.3
4-6	17:39	120.6		0.3	6.5		12.3		149.9	22.3	28.8		-14.0	35.8	-9.5	3.3	4.6	-93.3	-90.6
4-5	17:43	113.9		-6.4	4.6		13.9		125.1	-2.5	45.7		2.9	50.2	4.9	5.7	-0.1	-33.2	-41.4
4-4	17:47	126.4	121.1	6.1	3.2	3.8	15.2	14.7	127.8	0.2	17.8	48.1	-25.0	18.0	-27.3	1.9	2.4	-1.1	-0.8
4-3	17:51	135.1		14.8	2.3		16.1		130.0	2.4	29.4		-13.4	28.3	-17.0	1.5	4.2	36.2	37.9
4-2	17:55	125.2		4.9	2.2		16.1		119.8	-7.8	85.8		43.0	82.1	36.8	0.5	2.6	-2.4	-0.2
4-1	17:35	105.4		-14.9	4.1		14.5		112.3	-15.3	81.2		38.4	86.5	41.2	3.5	9.2	-0.6	5.4
Outlet Averages		120.3			3.9		14.6		127.6		42.8			45.3		3.0	5.8	-14.5	-13.9

Clean Air Engineering Project #10247
Consol Energy
AES Dresden

Date: 5/30/2007
Start Time: 18:40
End Time: 19:03

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.
1-6	18:48	214.2		14.7	5.6		250.6	26.5	30.6		3.6	35.8	6.2
1-5	18:52	216.5		17.0	4.7		239.2	15.1	66.2		39.2	73.1	43.5
1-4	18:56	202.7	207.5	3.2	5.5	5.7	235.6	11.5	17.9	23.6	-9.1	20.8	-8.8
1-3	19:00	206.9		7.4	5.7		243.7	19.5	11.1		-15.9	13.1	-16.6
1-2	18:40	182.7		-16.8	6.0		219.5	-4.7	4.8		-22.2	5.8	-23.0
1-1	18:44	222.1		22.6	6.8		282.0	57.8	10.8		-16.2	13.7	-15.9
2-6	18:49	226.0		26.5	4.8		251.3	27.1	73.1		46.1	81.3	51.6
2-5	18:53	197.4		-2.1	3.5		203.1	-21.1	56.1		29.1	57.7	28.1
2-4	18:57	194.0	203.6	-5.5	5.8	5.1	230.0	5.8	14.1	29.0	-12.9	16.7	-12.9
2-3	19:01	209.1		9.6	5.8		247.9	23.7	9.0		-18.0	10.7	-19.0
2-2	18:41	209.7		10.2	4.7		231.7	7.6	9.7		-17.3	10.7	-18.9
2-1	18:45	185.4		-14.1	6.1		224.2	0.1	12.1		-14.9	14.6	-15.0
3-6	18:50	194.2		-5.3	4.0		205.7	-18.4	63.0		36.0	66.7	37.1
3-5	18:54	181.7		-17.8	3.5		186.9	-37.2	49.2		22.2	50.6	21.0
3-4	18:58	192.8	188.9	-6.7	5.5	4.6	224.1	0.0	11.1	26.3	-15.9	12.9	-16.7
3-3	19:02	204.3		4.8	4.6		224.4	0.2	11.4		-15.6	12.5	-17.1
3-2	18:42	186.4		-13.1	4.3		201.0	-23.1	8.5		-18.5	9.2	-20.5
3-1	18:46	173.9		-25.6	5.4		200.8	-23.3	14.5		-12.5	16.7	-12.9
4-6	18:51	216.4		16.9	4.7		239.1	15.0	71.6		44.6	79.1	49.5
4-5	18:55	183.3		-16.2	3.7		190.8	-33.4	53.7		26.7	55.9	26.2
4-4	18:59	201.1	197.9	1.6	3.6	4.2	208.1	-16.1	12.5	29.1	-14.5	12.9	-16.7
4-3	19:03	210.3		10.8	3.6		217.6	-6.5	12.6		-14.4	13.0	-16.6
4-2	18:43	195.9		-3.6	3.2		198.1	-26.0	11.4		-15.6	11.5	-18.1
4-1	18:47	180.3		-19.2	6.5		224.1	0.0	13.0		-14.0	16.2	-13.5
Inlet Averages		199.5			4.9		224.1		27.0			29.6	

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction
1-6	18:48	205.7		12.1	6.7		12.1		259.3	52.8	40.2		15.6	50.7	24.1	4.0	-3.5	-31.4	-41.5
1-5	18:52	206.1		12.5	4.0		14.5		218.3	11.8	61.2		36.6	64.8	38.3	4.8	8.7	7.6	11.4
1-4	18:56	186.0	189.8	-7.6	3.9	4.1	14.6	14.4	195.8	-10.6	21.4	27.3	-3.2	22.5	-4.0	8.2	16.9	-19.6	-8.3
1-3	19:00	192.9		-0.7	3.7		14.9		200.8	-5.7	12.5		-12.1	13.0	-13.6	6.8	17.6	-12.5	0.5
1-2	18:40	170.4		-23.2	3.4		15.0		174.3	-32.2	13.5		-11.1	13.8	-12.8	6.7	20.6	-181.3	-139.5
1-1	18:44	177.4		-16.2	3.1		15.3		178.4	-28.1	14.9		-9.7	15.0	-11.6	20.1	36.7	-38.0	-9.3
2-6	18:49	209.5		15.9	5.6		13.1		245.1	38.6	45.6		21.0	53.3	26.8	7.3	2.5	37.6	34.4
2-5	18:53	193.7		0.1	3.0		15.5		193.7	-12.8	30.7		6.1	30.7	4.1	1.9	4.6	45.3	46.8
2-4	18:57	191.7	191.4	-1.9	3.3	4.2	15.2	14.4	195.0	-11.5	11.7	21.2	-12.9	11.9	-14.7	1.2	15.2	17.0	28.8
2-3	19:01	188.7		-4.9	4.3		14.3		203.5	-3.0	11.2		-13.4	12.1	-14.5	9.8	17.9	-24.4	-13.2
2-2	18:41	188.5		-5.1	4.6		14.0		207.0	0.5	13.0		-11.6	14.3	-12.3	10.1	10.7	-34.0	-33.2
2-1	18:45	176.2		-17.4	4.5		14.2		192.3	-14.1	15.0		-9.6	16.4	-10.2	5.0	14.2	-24.0	-11.9
3-6	18:50	214.3		20.7	4.4		14.2		232.5	26.0	50.0		25.4	54.2	27.7	-10.4	-13.0	20.6	18.7
3-5	18:54	190.9		-2.7	3.1		15.3		192.0	-14.5	44.9		20.3	45.2	18.6	-5.1	-2.7	8.7	10.8
3-4	18:58	198.5	200.1	4.9	3.4	3.9	15.2	14.6	203.0	-3.4	10.5	24.7	-14.1	10.7	-15.8	-3.0	9.4	5.4	16.8
3-3	19:02	202.9		9.3	3.7		14.9		211.2	4.7	11.5		-13.1	12.0	-14.6	0.7	5.9	-0.9	4.4
3-2	18:42	205.7		12.1	3.0		15.4		205.7	-0.8	13.4		-11.2	13.4	-13.2	-10.4	-2.3	-57.6	-46.2
3-1	18:46	188.5		-5.1	5.9		12.8		224.9	18.5	18.0		-6.6	21.5	-5.1	-8.4	-12.0	-24.1	-28.3
4-6	18:51	208.0		14.4	4.4		14.2		225.6	19.2	62.9		38.3	68.2	41.7	3.9	5.6	12.2	13.7
4-5	18:55	178.2		-15.4	3.0		15.4		178.2	-28.3	33.6		9.0	33.6	7.0	2.8	6.6	37.4	39.9
4-4	18:59	199.4	193.1	5.8	3.4	3.9	15.0	14.6	204.0	-2.5	12.0	25.4	-12.6	12.3	-14.3	0.8	2.0	4.0	5.1
4-3	19:03	205.5		11.9	3.6		14.9		212.6	6.2	11.4		-13.2	11.8	-14.8	2.3	2.3	9.5	9.5
4-2	18:43	194.8		1.2	3.1		15.3		195.9	-10.6	14.0		-10.6	14.1	-12.5	0.6	1.1	-22.8	-22.1
4-1	18:47	172.7		-20.9	5.9		12.9		206.1	-0.4	18.4		-6.2	22.0	-4.6	4.2	8.0	-41.5	-35.9
Outlet Averages		193.6			4.0		14.5		206.5		24.6			26.6		2.7	7.2	-12.8	-6.2

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge

Date: 5/31/2007
Start Time: 9:36
End Time: 9:59

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.
1-1	9:36	91.6		-3.7	19.7		0.9		1366.4	1211.2	110.9		-132.1	1654.3	1333.6
1-2	9:40	88.0		-7.3	5.2		13.5		100.3	-54.8	201.4		-41.6	229.6	-91.0
1-3	9:44	106.0	110.0	10.7	4.3	7.2	14.6	11.8	114.3	-40.8	207.7	267.1	-35.3	224.0	-96.7
1-4	9:48	127.2		31.9	5.0		13.6		143.2	-11.9	195.0		-48.0	219.5	-101.1
1-5	9:52	108.7		13.4	4.1		14.4		115.8	-39.3	164.0		-79.0	174.7	-145.9
1-6	9:56	138.2		42.9	4.9		13.7		154.6	-0.5	723.6		480.6	809.5	488.9
2-1	9:37	81.7		-13.6	6.3		13.5		100.2	-55.0	40.7		-202.3	49.9	-270.8
2-2	9:41	59.2		-36.1	3.7		16.3		61.6	-93.5	153.1		-89.9	159.3	-161.3
2-3	9:45	53.8	76.6	-41.5	5.2	4.5	14.2	15.1	61.3	-93.8	73.6	140.1	-169.4	83.9	-236.8
2-4	9:49	60.2		-35.1	4.0		15.1		63.8	-91.4	137.4		-105.6	145.5	-175.1
2-5	9:53	101.1		5.8	3.0		16.7		101.1	-54.0	168.4		-74.6	168.4	-152.3
2-6	9:57	103.7		8.4	4.9		14.8		116.0	-39.1	267.2		24.2	298.9	-21.7
3-1	9:38	89.6		-5.7	4.8		14.5		99.6	-55.5	43.2		-199.8	48.0	-272.6
3-2	9:42	80.9		-14.4	3.4		15.9		82.7	-72.4	228.9		-14.1	234.1	-86.5
3-3	9:46	112.8	104.5	17.5	5.6	3.9	14.1	15.3	132.0	-23.2	103.3	226.5	-139.7	120.9	-199.8
3-4	9:50	131.7		36.4	3.0		15.9		131.7	-23.4	219.7		-23.3	219.7	-101.0
3-5	9:54	100.6		5.3	2.5		16.5		97.9	-57.3	649.2		406.2	631.6	310.9
3-6	9:58	111.2		15.9	4.2		14.9		119.2	-35.9	114.9		-128.1	123.2	-197.5
4-1	9:39	78.7		-16.6	6.1		12.9		95.2	-59.9	36.8		-206.2	44.5	-276.2
4-2	9:43	74.1		-21.2	3.1		15.6		74.5	-80.6	202.8		-40.2	203.9	-116.7
4-3	9:47	91.4	90.0	-3.9	3.0	3.6	15.7	15.1	91.4	-63.7	92.9	338.4	-150.1	92.9	-227.8
4-4	9:51	117.6		22.3	2.3		16.1		113.2	-41.9	215.2		-27.8	207.1	-113.6
4-5	9:55	81.0		-14.3	2.0		16.5		76.7	-78.4	686.2		443.2	649.9	329.2
4-6	9:59	97.3		2.0	5.1		13.8		110.2	-44.9	796.7		553.7	902.6	581.9
Inlet Averages		95.3			4.8		14.3		155.1		243.0			320.7	

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction
1-1	9:36	2.3		-45.9	11.3		18.4		4.3	-47.6	121.0		-13.0	225.6	74.2	97.5	99.7	-9.1	86.4
1-2	9:40	61.6		13.4	4.4		25.0		66.8	14.9	61.4		-72.6	66.6	-84.8	30.0	33.4	69.5	71.0
1-3	9:44	97.9	73.1	49.7	4.4	6.0	25.0	-147.6	106.2	54.3	125.3	151.3	-8.7	135.9	-15.5	7.6	7.1	39.7	39.3
1-4	9:48	86.8		38.6	3.6		26.0		89.8	37.9	57.3		-76.7	59.3	-92.2	31.8	37.3	70.6	73.0
1-5	9:52	113.3		65.1	9.8		19.3		182.7	130.8	138.9		4.9	224.0	72.5	-4.2	-57.8	15.3	-28.2
1-6	9:56	76.5		28.3	2.5		-999.0		74.4	22.5	404.0		270.0	393.0	241.6	44.6	51.9	44.2	51.5
2-1	9:37	25.6		-22.6	7.2		17.2		33.4	-18.5	39.2		-94.8	51.2	-100.2	68.7	66.6	3.7	-2.6
2-2	9:41	4.9		-43.3	3.9		11.1		5.2	-46.8	126.2		-7.8	132.9	-18.6	91.7	91.6	17.8	16.6
2-3	9:45	94.8	53.4	46.6	3.0	4.2	11.4	15.6	94.8	42.9	32.2	81.2	-101.8	32.2	-119.2	-76.2	-54.6	58.3	61.6
2-4	9:49	116.4		68.2	2.6		10.4		113.9	61.9	36.1		-97.9	35.3	-116.1	-93.4	-78.6	73.7	75.7
2-5	9:53	73.5		25.3	2.6		24.9		71.9	20.0	156.4		22.4	153.0	1.5	27.3	28.9	7.1	9.2
2-6	9:57	5.4		-42.8	5.8		18.6		6.4	-45.5	96.9		-37.1	114.9	-36.6	94.8	94.5	63.7	61.6
3-1	9:38	1.9		-46.3	8.2		21.9		2.7	-49.2	85.6		-48.4	120.6	-30.8	97.9	97.3	-68.1	-151.2
3-2	9:42	0.9		-47.3	4.0		21.5		1.0	-51.0	142.5		8.5	150.9	-0.5	98.9	98.8	37.7	35.5
3-3	9:46	76.2	50.8	28.0	4.0	4.5	22.4	-318.4	80.7	28.8	34.5	111.1	-99.5	36.5	-114.9	32.4	38.8	66.6	69.8
3-4	9:50	117.8		69.6	2.4		22.1		114.0	62.1	83.4		-50.6	80.7	-70.7	10.6	13.5	62.0	63.3
3-5	9:54	106.9		58.7	2.6		-999.0		104.6	52.7	163.0		29.0	159.4	8.0	-6.3	-6.8	74.9	74.8
3-6	9:58	0.9		-47.3	5.7		-999.0		1.1	-50.9	157.5		23.5	185.5	34.0	99.2	99.1	-37.1	-50.6
4-1	9:39	2.4		-45.8	7.8		16.7		3.3	-48.6	82.0		-52.0	112.0	-39.4	97.0	96.6	-122.8	-151.7
4-2	9:43	0.9		-47.3	4.0		19.7		1.0	-51.0	179.5		45.5	190.1	38.7	98.8	98.7	11.5	6.8
4-3	9:47	11.4	15.5	-36.8	3.1	4.4	20.7	19.9	11.5	-40.4	58.4	192.3	-75.6	58.7	-92.7	87.5	87.5	37.1	36.8
4-4	9:51	73.8		25.6	2.5		21.0		71.8	19.9	118.3		-15.7	115.1	-36.4	37.2	36.6	45.0	44.4
4-5	9:55	2.4		-45.8	2.3		23.4		2.3	-49.6	360.8		226.8	347.2	195.8	97.0	97.0	47.4	46.6
4-6	9:59	1.8		-46.4	6.9		18.0		2.3	-49.6	354.9		220.9	453.8	302.3	98.2	97.9	55.5	49.7
Outlet Averages		48.2			4.8		-107.6		51.9		134.0			151.4		48.7	49.0	26.3	24.5

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge

Date: 5/31/2007
Start Time: 10:00
End Time: 10:23

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	10:00	101.0		5.7	19.7		0.8		1506.6	1345.6	151.4		-134.7	2258.4	1863.8
1-5	10:04	87.2		-8.1	6.4		11.9		107.6	-53.4	684.4		398.3	844.9	450.3
1-4	10:08	104.6	110.2	9.3	4.4	7.5	14.1	11.4	113.5	-47.5	396.0	335.4	109.9	429.6	35.0
1-3	10:12	129.7		34.4	5.2		13.5		147.9	-13.1	200.0		-86.1	228.0	-166.5
1-2	10:16	106.0		10.7	4.4		14.2		115.0	-46.0	157.1		-129.0	170.4	-224.1
1-1	10:20	132.9		37.6	4.8		13.8		147.8	-13.3	423.3		137.2	470.6	76.1
2-6	10:01	88.0		-7.3	6.0		13.4		105.7	-55.3	99.6		-186.5	119.7	-274.9
2-5	10:05	62.4		-32.9	3.5		16.2		64.2	-96.8	591.8		305.7	608.8	214.2
2-4	10:09	57.5	77.3	-37.8	6.3	4.6	13.7	14.8	70.5	-90.5	240.2	227.5	-45.9	294.5	-100.1
2-3	10:13	70.7		-24.6	4.5		14.5		77.2	-83.8	109.7		-176.4	119.7	-274.8
2-2	10:17	89.6		-5.7	2.8		16.5		88.6	-72.4	101.7		-184.4	100.6	-294.0
2-1	10:21	95.8		0.5	4.5		14.6		104.6	-56.4	222.0		-64.1	242.3	-152.3
3-6	10:02	97.8		2.5	4.2		14.9		104.8	-56.2	145.3		-140.8	155.7	-238.8
3-5	10:06	80.6		-14.7	3.4		15.8		82.4	-78.6	483.3		197.2	494.3	99.8
3-4	10:10	111.8	104.8	16.5	5.4	3.9	13.6	15.3	129.1	-31.9	270.1	293.0	-16.0	311.9	-82.6
3-3	10:14	132.3		37.0	3.5		15.5		136.1	-24.9	134.1		-152.0	138.0	-256.6
3-2	10:18	101.8		6.5	2.6		16.6		99.6	-61.4	473.3		187.2	463.0	68.4
3-1	10:22	104.7		9.4	4.0		15.2		110.9	-50.1	252.0		-34.1	266.9	-127.7
4-6	10:03	90.7		-4.6	5.2		13.4		103.4	-57.6	212.1		-74.0	241.8	-152.7
4-5	10:07	69.0		-26.3	2.9		15.5		68.6	-92.4	677.2		391.1	673.4	278.9
4-4	10:11	87.2	88.7	-8.1	3.1	3.6	15.5	14.9	87.7	-73.3	113.8	288.6	-172.3	114.4	-280.1
4-3	10:15	117.6		22.3	2.6		15.8		115.0	-46.0	142.3		-143.8	139.2	-255.4
4-2	10:19	81.3		-14.0	2.2		16.1		77.8	-83.2	475.2		189.1	454.9	60.3
4-1	10:23	86.3		-9.0	5.4		13.3		99.7	-61.3	111.2		-174.9	128.4	-266.1
Inlet Averages		95.3			4.9		14.1		161.0		286.1			394.6	

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O_2 correction
1-6	10:00	2.1		-48.9	11.2		18.1		3.9	-51.2	124.4		-85.2	229.6	-6.4	97.9	99.7	17.6	89.8
1-5	10:04	62.3		11.3	4.0		25.0		66.0	10.9	413.5		203.9	438.0	202.0	28.6	38.7	39.6	48.2
1-4	10:08	100.9	72.8	49.9	4.3	6.0	24.6	23.0	108.8	53.8	240.9	210.5	31.3	259.8	23.8	3.5	4.1	39.2	39.5
1-3	10:12	89.8		38.8	4.0		25.0		95.1	40.1	88.9		-120.7	94.2	-141.8	30.8	35.7	55.6	58.7
1-2	10:16	113.9		62.9	9.8		19.0		183.7	128.6	117.5		-92.1	189.5	-46.4	-7.5	-59.7	25.2	11.2
1-1	10:20	67.7		16.7	2.5		26.2		65.9	10.8	278.0		68.4	270.4	34.5	49.1	55.4	34.3	42.5
2-6	10:01	49.1		-1.9	6.5		14.6		61.0	6.0	170.1		-39.5	211.4	-24.5	44.2	42.3	-70.8	-76.7
2-5	10:05	6.4		-44.6	4.5		11.7		7.0	-48.1	406.5		196.9	443.7	207.8	89.7	89.1	31.3	27.1
2-4	10:09	98.5	59.7	47.5	2.7	3.5	13.5	12.9	96.9	41.8	45.6	181.7	-164.0	44.8	-191.1	-71.3	-37.4	81.0	84.8
2-3	10:13	120.5		69.5	2.7		12.5		118.5	63.5	34.7		-174.9	34.1	-201.8	-70.4	-53.6	68.4	71.5
2-2	10:17	79.3		28.3	2.9		11.5		78.9	23.8	280.6		71.0	279.0	43.1	11.5	11.0	-175.9	-177.4
2-1	10:21	4.4		-46.6	1.7		13.7		4.1	-50.9	152.6		-57.0	142.3	-93.7	95.4	96.1	31.3	41.3
3-6	10:02	2.3		-48.7	7.8		20.6		3.1	-51.9	352.3		142.7	481.4	245.5	97.6	97.0	-142.5	-209.1
3-5	10:06	0.9		-50.1	3.4		21.2		0.9	-54.1	377.0		167.4	385.6	149.7	98.9	98.9	22.0	22.0
3-4	10:10	76.8	52.7	25.8	4.0	4.2	20.0	21.3	81.3	26.3	43.4	220.9	-166.2	46.0	-190.0	31.3	37.0	83.9	85.3
3-3	10:14	121.8		70.8	2.7		20.0		119.8	64.8	37.4		-172.2	36.8	-199.1	7.9	12.0	72.1	73.3
3-2	10:18	113.5		62.5	2.1		22.6		108.1	53.0	262.0		52.4	249.5	13.5	-11.5	-8.5	44.6	46.1
3-1	10:22	0.9		-50.1	5.2		23.4		1.0	-54.0	253.0		43.4	288.5	52.5	99.1	99.1	-0.4	-8.1
4-6	10:03	19.0		-32.0	6.7		17.9		24.0	-31.1	449.0		239.4	566.0	330.1	79.1	76.8	-111.7	-134.1
4-5	10:07	0.9		-50.1	3.5		20.3		0.9	-54.1	375.6		166.0	386.4	150.5	98.7	98.7	44.5	42.6
4-4	10:11	7.6	18.8	-43.4	3.0	4.3	20.0	19.9	7.6	-47.4	76.9	225.5	-132.7	76.9	-159.0	91.3	91.3	32.4	32.8
4-3	10:15	81.5		30.5	2.7		20.5		80.2	25.1	72.5		-137.1	71.3	-164.6	30.7	30.3	49.1	48.8
4-2	10:19	2.5		-48.5	2.5		21.4		2.4	-52.6	194.6		-15.0	189.3	-46.6	96.9	96.9	59.0	58.4
4-1	10:23	1.4		-49.6	7.6		19.2		1.9	-53.2	184.1		-25.5	247.8	11.9	98.4	98.1	-65.6	-92.9
Outlet Averages		51.0			4.5		19.3		55.0		209.6			235.9		46.7	47.9	11.0	8.5

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge

Date: 5/31/2007
Start Time: 11:36
End Time: 11:59

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.
1-6	11:36	98.1		1.1	20.5		4390.0	4106.7	36.8		-112.5	1646.8	1421.3
1-5	11:40	91.2		-5.8	5.5		106.0	-177.3	221.1		71.8	257.0	31.5
1-4	11:44	110.0	109.5	13.0	4.3	7.5	118.6	-164.7	318.5	173.0	169.2	343.4	117.9
1-3	11:48	128.8		31.8	5.3		147.8	-135.5	105.5		-43.8	121.1	-104.5
1-2	11:52	100.0		3.0	4.1		106.5	-176.8	69.9		-79.4	74.5	-151.0
1-1	11:56	128.9		31.9	5.2		147.0	-136.3	286.3		137.0	326.4	100.9
2-6	11:37	74.6		-22.4	6.5		92.7	-190.6	22.2		-127.1	27.6	-197.9
2-5	11:41	71.5		-25.5	4.0		75.7	-207.6	149.1		-0.2	157.9	-67.6
2-4	11:45	72.6	85.3	-24.4	5.4	4.7	83.8	-199.5	223.2	100.4	73.9	257.8	32.2
2-3	11:49	101.5		4.5	4.3		109.4	-173.9	60.4		-88.9	65.1	-160.4
2-2	11:53	99.1		2.1	2.9		98.5	-184.8	53.1		-96.2	52.8	-172.7
2-1	11:57	92.2		-4.8	5.1		104.5	-178.8	94.1		-55.2	106.6	-118.9
3-6	11:38	97.6		0.6	4.6		107.2	-176.1	46.3		-103.0	50.8	-174.7
3-5	11:42	83.4		-13.6	3.5		85.8	-197.5	176.0		26.7	181.1	-44.5
3-4	11:46	116.4	104.6	19.4	5.4	3.9	134.4	-148.9	177.5	158.5	28.2	205.0	-20.5
3-3	11:50	130.6		33.6	3.2		132.1	-151.2	67.0		-82.3	67.8	-157.8
3-2	11:54	98.0		1.0	2.3		94.3	-189.0	437.0		287.7	420.6	195.0
3-1	11:58	101.5		4.5	4.4		110.1	-173.2	46.9		-102.4	50.9	-174.6
4-6	11:39	86.5		-10.5	5.8		102.5	-180.8	64.8		-84.5	76.8	-148.7
4-5	11:43	70.7		-26.3	3.2		71.5	-211.8	353.2		203.9	357.2	131.7
4-4	11:47	92.3	88.6	-4.7	3.3	3.7	93.9	-189.4	75.8	165.6	-73.5	77.1	-148.4
4-3	11:51	115.8		18.8	2.4		112.0	-171.3	79.0		-70.3	76.4	-149.1
4-2	11:55	83.4		-13.6	2.1		79.4	-203.9	361.2		211.9	343.9	118.4
4-1	11:59	83.1		-13.9	5.3		95.4	-188.0	59.3		-90.0	68.0	-157.5
Inlet Averages		97.0			4.9		283.3		149.3			225.5	

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction
1-6	11:36	0.5		-48.2	11.9		1.0	-52.8	27.7		-72.4	55.1	-59.5	99.5	100.0	24.7	96.7
1-5	11:40	72.5		23.8	5.1		82.1	28.3	75.6		-24.5	85.6	-28.9	20.5	22.5	65.8	66.7
1-4	11:44	108.6	74.2	59.9	4.9	6.5	121.5	67.7	116.8	82.7	16.7	130.7	16.1	1.3	-2.4	63.3	62.0
1-3	11:48	93.3		44.6	3.9		98.2	44.4	46.9		-53.2	49.4	-65.2	27.6	33.5	55.5	59.2
1-2	11:52	108.1		59.4	10.5		186.1	132.2	80.1		-20.0	137.9	23.3	-8.1	-74.6	14.6	-85.1
1-1	11:56	62.0		13.3	2.6		60.6	6.8	149.1		49.0	145.8	31.3	51.9	58.7	47.9	55.3
2-6	11:37	43.9		-4.8	4.9		49.1	-4.7	62.5		-37.6	69.9	-44.6	41.2	47.0	-181.5	-153.4
2-5	11:41	4.4		-44.3	5.9		5.3	-48.6	161.2		61.1	192.4	77.8	93.8	93.1	-8.1	-21.8
2-4	11:45	102.0	55.3	53.3	4.5	4.2	111.3	57.5	31.3	83.9	-68.8	34.2	-80.4	-40.5	-32.8	86.0	86.7
2-3	11:49	116.5		67.8	2.3		112.1	58.3	27.8		-72.3	26.8	-87.8	-14.8	-2.4	54.0	58.9
2-2	11:53	61.4		12.7	2.3		59.1	5.3	168.2		68.1	161.9	47.3	38.0	40.0	-216.8	-206.6
2-1	11:57	3.4		-45.3	5.0		3.8	-50.0	52.3		-47.8	58.9	-55.7	96.3	96.3	44.4	44.8
3-6	11:38	1.9		-46.8	8.0		2.6	-51.2	151.9		51.8	210.8	96.2	98.1	97.5	-228.1	-314.5
3-5	11:42	0.9		-47.8	4.4		1.0	-52.9	198.4		98.3	215.2	100.7	98.9	98.9	-12.7	-18.9
3-4	11:46	80.9	49.9	32.2	4.9	4.7	90.5	36.7	34.8	112.0	-65.3	38.9	-75.6	30.5	32.7	80.4	81.0
3-3	11:50	115.6		66.9	2.4		111.9	58.0	33.6		-66.5	32.5	-82.0	11.5	15.3	49.9	52.0
3-2	11:54	99.1		50.4	2.8		98.0	44.2	166.7		66.6	164.9	50.3	-1.1	-3.9	61.9	60.8
3-1	11:58	0.9		-47.8	5.5		1.0	-52.8	86.3		-13.8	100.3	-14.2	99.1	99.0	-84.0	-97.2
4-6	11:39	11.6		-37.1	7.8		15.9	-38.0	168.5		68.4	230.2	115.7	86.6	84.5	-160.0	-199.7
4-5	11:43	0.9		-47.8	3.9		0.9	-52.9	198.8		98.7	209.3	94.8	98.7	98.7	43.7	41.4
4-4	11:47	14.4	15.5	-34.3	3.6	4.7	14.9	-38.9	43.5	122.0	-56.6	45.0	-69.5	84.4	84.1	42.6	41.6
4-3	11:51	62.5		13.8	2.6		61.1	7.3	49.5		-50.6	48.4	-66.1	46.0	45.4	37.3	36.7
4-2	11:55	2.1		-46.6	2.9		2.1	-51.7	159.5		59.4	158.6	44.1	97.5	97.4	55.8	53.9
4-1	11:59	1.4		-47.3	7.2		1.8	-52.0	112.2		12.1	146.6	32.0	98.3	98.1	-89.2	-115.4
Outlet Averages		48.7			5.0		53.8		100.1			114.6		52.3	51.1	-7.6	-13.1

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge

Date: 5/31/2007
Start Time: 12:00
End Time: 12:23

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.
1-6	12:00	99.4		-26.6	20.4		3558.5	3279.1	70.4		-31.2	2520.3	2309.5
1-5	12:04	132.1		6.1	5.4		152.6	-126.9	294.0		192.5	339.5	128.8
1-4	12:08	137.0	129.9	11.0	3.6	7.4	141.8	-137.7	-999.0	-68.6	-1100.6	-1033.6	-1244.4
1-3	12:12	140.5		14.5	5.4		162.3	-117.2	68.7		-32.9	79.3	-131.4
1-2	12:16	118.5		-7.5	4.4		128.6	-150.9	28.0		-73.6	30.4	-180.4
1-1	12:20	151.8		25.8	5.0		170.9	-108.5	126.2		24.7	142.1	-68.7
2-6	12:01	80.4		-45.6	6.3		98.6	-180.9	42.5		-59.1	52.1	-158.7
2-5	12:05	102.0		-24.0	3.5		104.9	-174.5	281.0		179.5	289.1	78.3
2-4	12:09	107.7	112.3	-18.3	5.9	4.7	126.5	-150.9	154.4	114.5	52.9	184.3	-26.5
2-3	12:13	132.2		6.2	4.3		142.6	-136.9	87.4		-14.2	94.2	-116.5
2-2	12:17	130.9		4.9	3.1		131.6	-147.8	24.3		-77.3	24.4	-186.3
2-1	12:21	120.4		-5.6	5.2		137.3	-142.2	97.3		-4.3	110.9	-99.8
3-6	12:02	114.5		-11.5	4.2		122.7	-156.7	91.1		-10.5	97.6	-113.1
3-5	12:06	130.1		4.1	3.1		130.8	-148.6	477.9		376.4	480.6	269.8
3-4	12:10	134.7	132.4	8.7	5.7	3.9	158.6	-120.8	230.2	169.2	128.7	271.1	60.3
3-3	12:14	145.2		19.2	3.4		148.5	-130.9	88.5		-13.1	90.5	-120.2
3-2	12:18	136.8		10.8	2.7		134.5	-144.9	91.1		-10.5	89.6	-121.2
3-1	12:22	132.9		6.9	4.3		143.3	-136.1	36.6		-65.0	39.5	-171.3
4-6	12:03	127.5		1.5	5.5		148.2	-131.2	140.4		38.9	163.2	-47.6
4-5	12:07	123.9		-2.1	2.5		120.5	-158.9	716.4		614.9	696.9	486.2
4-4	12:11	133.7	129.6	7.7	3.4	3.6	136.8	-142.7	33.6	191.1	-68.0	34.4	-176.4
4-3	12:15	142.1		16.1	2.6		139.0	-140.4	39.9		-61.7	39.0	-171.7
4-2	12:19	129.3		3.3	2.3		124.4	-155.0	141.8		40.3	136.5	-74.3
4-1	12:23	121.1		-4.9	5.5		140.8	-138.7	74.5		-27.1	86.6	-124.2
Inlet Averages		126.0			4.9		279.4		101.6			210.8	

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction
1-6	12:00	0.5		-100.1	11.6		1.0	-110.3	55.4		-65.4	106.6	-30.3	99.5	100.0	21.3	95.8
1-5	12:04	113.1		12.5	4.8		125.7	14.5	161.6		40.8	179.7	42.7	14.4	17.6	45.0	47.1
1-4	12:08	129.8	104.2	29.2	5.0	6.3	146.1	34.9	491.5	138.1	370.7	553.3	416.4	5.3	-3.1	149.2	153.5
1-3	12:12	120.3		19.7	3.7		125.2	14.0	25.2		-95.6	26.2	-110.7	14.4	22.8	63.3	66.9
1-2	12:16	134.6		34.0	10.3		227.3	116.1	26.1		-94.7	44.1	-92.9	-13.6	-76.8	6.8	-45.1
1-1	12:20	126.9		26.3	2.6		124.1	12.9	68.7		-52.1	67.2	-69.8	16.4	27.4	45.6	52.7
2-6	12:01	90.5		-10.1	6.1		109.5	-1.8	82.7		-38.1	100.0	-36.9	-12.6	-11.0	-94.6	-92.0
2-5	12:05	27.1		-73.5	3.3		27.6	-83.7	216.0		95.2	219.7	82.7	73.4	73.7	23.1	24.0
2-4	12:09	126.6	100.2	26.0	3.0	4.0	126.6	15.4	65.7	80.4	-55.1	65.7	-71.3	-17.5	1.5	57.4	64.3
2-3	12:13	135.8		35.2	2.6		132.8	21.6	24.1		-96.7	23.6	-113.4	-2.7	6.8	72.4	75.0
2-2	12:17	140.3		39.7	2.3		135.0	23.8	53.0		-67.8	51.0	-86.0	-7.2	-2.6	-118.1	-108.7
2-1	12:21	81.0		-19.6	6.7		102.1	-9.1	41.1		-79.7	51.8	-85.2	32.7	25.6	57.8	53.3
3-6	12:02	4.3		-96.3	7.4		5.7	-105.5	219.4		98.6	290.9	153.9	96.2	95.4	-140.8	-197.9
3-5	12:06	10.2		-90.4	3.8		10.7	-100.6	362.2		241.4	379.1	242.2	92.2	91.8	24.2	21.1
3-4	12:10	119.4	83.8	18.8	5.2	4.6	136.1	24.9	16.9	123.7	-103.9	19.3	-117.7	11.4	14.2	92.7	92.9
3-3	12:14	139.0		38.4	3.4		142.2	30.9	34.5		-86.3	35.3	-101.7	4.3	4.3	61.0	61.0
3-2	12:18	144.5		43.9	3.0		144.5	33.3	55.8		-65.0	55.8	-81.2	-5.6	-7.4	38.7	37.7
3-1	12:22	85.4		-15.2	5.0		96.1	-15.1	53.2		-67.6	59.9	-77.1	35.7	32.9	-45.4	-51.8
4-6	12:03	115.9		15.3	7.2		151.4	40.2	275.6		154.8	360.1	223.1	9.1	-2.2	-96.3	-120.7
4-5	12:07	99.8		-0.8	3.0		99.8	-11.4	351.4		230.6	351.4	214.4	19.5	17.2	50.9	49.6
4-4	12:11	128.5	114.2	27.9	3.8	4.4	134.5	23.3	18.8	141.0	-102.0	19.7	-117.3	3.9	1.6	44.0	42.7
4-3	12:15	140.0		39.4	3.0		140.0	28.8	26.6		-94.2	26.6	-110.4	1.5	-0.7	33.3	31.8
4-2	12:19	99.3		-1.3	2.8		98.2	-13.0	66.0		-54.8	65.3	-71.7	23.2	21.1	53.5	52.2
4-1	12:23	101.6		1.0	6.6		127.2	15.9	107.8		-13.0	134.9	-2.0	16.1	9.6	-44.7	-55.8
Outlet Averages		100.6			4.8		111.2		120.8			137.0		21.2	19.2	16.7	14.6

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge

Date: 5/31/2007
Start Time: 12:24
End Time: 12:47

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.
1-6	12:24	116.8		-13.7	7.2		152.6	11.2	57.5		-83.3	75.1	-77.5
1-5	12:28	137.8		7.3	5.2		157.1	15.7	421.2		280.4	480.2	327.6
1-4	12:32	136.8	135.3	6.3	4.3	5.3	147.5	6.1	382.1	219.6	241.3	412.0	259.4
1-3	12:36	145.5		15.0	5.1		164.8	23.4	99.2		-41.6	112.4	-40.2
1-2	12:40	119.4		-11.1	4.5		130.3	-11.1	78.7		-62.1	85.9	-66.7
1-1	12:44	155.5		25.0	5.2		177.3	35.9	278.6		137.8	317.6	165.0
2-6	12:25	117.0		-13.5	6.1		141.5	0.1	105.1		-35.7	127.1	-25.5
2-5	12:29	120.7		-9.8	3.5		124.2	-17.2	424.2		283.4	436.4	283.8
2-4	12:33	118.9	119.2	-11.6	5.6	4.7	139.1	-2.3	84.5	149.0	-56.3	98.9	-53.7
2-3	12:37	108.9		-21.6	4.4		118.1	-23.3	76.1		-64.7	82.6	-70.1
2-2	12:41	127.2		-3.3	3.4		130.1	-11.3	50.3		-90.5	51.4	-101.2
2-1	12:45	122.4		-8.1	5.1		138.7	-2.7	154.0		13.2	174.5	21.9
3-6	12:26	126.4		-4.1	4.1		134.7	-6.7	173.1		32.3	184.4	31.8
3-5	12:30	136.9		6.4	3.0		136.9	-4.5	-999.0		-1139.8	-999.0	-1151.6
3-4	12:34	139.5	135.7	9.0	5.1	3.8	158.0	16.6	79.8	-70.9	-61.0	90.4	-52.2
3-3	12:38	144.3		13.8	3.4		147.6	6.2	105.6		-35.2	108.0	-44.6
3-2	12:42	137.5		7.0	2.7		135.2	-6.2	157.7		16.9	155.1	2.5
3-1	12:46	129.4		-1.1	4.3		139.5	-1.9	57.3		-83.5	61.8	-90.8
4-6	12:27	130.4		-0.1	5.1		147.7	6.3	199.3		58.5	225.8	73.2
4-5	12:31	129.1		-1.4	2.8		127.7	-13.7	1008.3		867.5	997.2	844.6
4-4	12:35	136.4	132.0	5.9	3.2	3.6	137.9	-3.5	81.9	265.7	-58.9	82.8	-69.8
4-3	12:39	145.7		15.2	2.7		143.3	1.9	109.9		-30.9	108.1	-44.5
4-2	12:43	132.5		2.0	2.1		126.2	-15.3	156.3		15.5	148.8	-3.8
4-1	12:47	117.8		-12.7	5.6		137.8	-3.6	38.5		-102.3	45.0	-107.6
Inlet Averages		130.5			4.3		141.4		140.8			152.6	

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction
1-6	12:24	115.7		-13.8	10.2		193.6	50.8	73.1		-79.1	122.3	-47.7	0.9	-26.8	-27.1	-62.8
1-5	12:28	121.6		-7.8	4.0		128.8	-13.9	228.1		75.9	241.6	71.6	11.8	18.0	45.8	49.7
1-4	12:32	132.3	127.1	2.9	4.5	5.9	144.4	1.7	140.0	120.6	-12.2	152.8	-17.2	3.3	2.1	63.4	62.9
1-3	12:36	123.8		-5.6	4.3		133.5	-9.2	56.0		-96.2	60.4	-109.6	14.9	19.0	43.5	46.3
1-2	12:40	136.2		6.8	9.7		217.7	75.0	87.0		-65.2	139.0	-31.0	-14.1	-67.0	-10.5	-61.9
1-1	12:44	132.7		3.3	2.5		129.1	-13.6	139.5		-12.7	135.7	-34.3	14.7	27.2	49.9	57.3
2-6	12:25	124.7		-4.7	6.7		157.2	14.5	211.0		58.8	266.0	96.0	-6.6	-11.1	-100.8	-109.2
2-5	12:29	129.1		-0.3	2.9		128.4	-14.3	259.5		107.3	258.1	88.1	-7.0	-3.4	38.8	40.9
2-4	12:33	131.4	131.4	2.0	2.6	3.9	128.5	-14.2	31.0	113.7	-121.2	30.3	-139.7	-10.5	7.6	63.3	69.3
2-3	12:37	139.2		9.8	2.9		138.4	-4.3	30.8		-121.4	30.6	-139.4	-27.8	-17.2	59.5	62.9
2-2	12:41	143.2		13.8	2.4		138.6	-4.2	96.0		-56.2	92.9	-77.1	-12.6	-6.5	-90.9	-80.5
2-1	12:45	120.5		-8.9	5.6		141.0	-1.7	53.8		-98.4	62.9	-107.1	1.6	-1.7	65.1	63.9
3-6	12:26	126.8		-2.6	7.1		164.5	21.8	383.0		230.8	496.8	326.8	-0.3	-22.1	-121.3	-169.4
3-5	12:30	122.2		-7.2	3.1		122.9	-19.8	396.8		244.6	399.0	229.0	10.7	10.2	139.7	139.9
3-4	12:34	129.7	130.9	0.3	3.8	3.9	135.8	-6.9	32.9	166.6	-119.3	34.4	-135.6	7.0	14.1	58.8	61.9
3-3	12:38	141.7		12.3	2.9		140.9	-1.8	26.2		-126.0	26.1	-144.0	1.8	4.5	75.2	75.9
3-2	12:42	148.1		18.7	2.3		142.5	-0.2	74.3		-77.9	71.5	-98.5	-7.7	-5.4	52.9	53.9
3-1	12:46	117.1		-12.4	4.2		125.5	-17.2	86.6		-65.6	92.8	-77.2	9.5	10.0	-51.1	-50.2
4-6	12:27	125.2		-4.2	6.3		153.5	10.8	444.9		292.7	545.5	375.5	4.0	-3.9	-123.2	-141.6
4-5	12:31	124.3		-5.1	3.5		127.9	-14.8	505.8		353.6	520.3	350.3	3.7	-0.2	49.8	47.8
4-4	12:35	134.1	128.5	4.7	3.3	3.9	136.4	-6.3	51.9	207.7	-100.3	52.8	-117.2	1.7	1.1	36.6	36.3
4-3	12:39	142.2		12.8	2.6		139.1	-3.6	60.2		-92.0	58.9	-111.1	2.4	2.9	45.2	45.5
4-2	12:43	129.8		0.4	2.3		124.9	-17.8	114.9		-37.3	110.6	-59.4	2.0	1.0	26.5	25.7
4-1	12:47	115.2		-14.3	5.5		132.2	-10.5	68.7		-83.5	78.8	-91.2	2.2	4.1	-78.4	-75.0
Outlet Averages		129.5			4.4		142.7		152.2			170.0		0.2	-1.8	12.9	7.9

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge

Date: 5/31/2007
Start Time: 12:48
End Time: 13:11

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.
1-6	12:48	117.3		-6.9	7.2		153.3	18.8	40.4		-151.8	52.8	-152.8
1-5	12:52	142.0		17.8	5.2		161.9	27.4	547.9		355.7	624.7	419.1
1-4	12:56	143.5	140.2	19.3	4.4	5.4	155.7	21.2	483.8	237.4	291.6	524.8	319.3
1-3	13:00	143.5		19.3	5.1		162.6	28.1	148.9		-43.3	168.7	-36.8
1-2	13:04	127.4		3.2	4.7		140.8	6.3	88.8		-103.4	98.1	-107.4
1-1	13:08	167.5		43.3	5.5		194.7	60.2	114.4		-77.8	133.0	-72.6
2-6	12:49	103.2		-21.0	5.9		123.2	-11.3	93.8		-98.4	111.9	-93.6
2-5	12:53	98.6		-25.6	3.3		100.3	-34.2	351.7		159.5	357.7	152.2
2-4	12:57	113.1	79.4	-11.1	5.4	4.6	130.6	-3.9	135.6	128.2	-56.6	156.6	-48.9
2-3	13:01	108.5		-15.7	4.4		117.7	-16.8	132.5		-59.7	143.7	-61.8
2-2	13:05	25.3		-98.9	3.2		25.6	-108.9	12.0		-180.2	12.1	-193.4
2-1	13:09	27.8		-96.4	5.2		31.7	-102.8	43.4		-148.8	49.5	-156.1
3-6	12:50	130.1		5.9	3.7		135.4	0.9	179.2		-13.0	186.5	-19.0
3-5	12:54	135.3		11.1	3.0		135.3	0.8	489.6		297.4	489.6	284.1
3-4	12:58	138.2	138.8	14.0	5.2	3.8	157.6	23.1	225.7	192.3	33.5	257.3	51.8
3-3	13:02	143.6		19.4	3.7		149.4	15.0	110.2		-82.0	114.7	-90.9
3-2	13:06	144.4		20.2	3.0		144.4	9.9	83.4		-108.8	83.4	-122.1
3-1	13:10	141.4		17.2	4.3		152.5	18.0	65.8		-126.4	71.0	-134.6
4-6	12:51	134.0		9.8	4.8		149.0	14.5	260.6		68.4	289.7	84.2
4-5	12:55	135.5		11.3	3.0		135.5	1.0	696.5		504.3	696.5	491.0
4-4	12:59	140.4	138.3	16.2	3.0	3.5	140.4	5.9	65.0	210.8	-127.2	65.0	-140.5
4-3	13:03	148.5		24.3	2.6		145.3	10.8	72.3		-119.9	70.7	-134.8
4-2	13:07	145.0		20.8	2.4		140.3	5.8	113.6		-78.6	109.9	-95.6
4-1	13:11	126.2		2.0	5.3		144.8	10.3	56.6		-135.6	64.9	-140.6
Inlet Averages		**124.2**			**4.3**		**134.5**		**192.2**			**205.5**	

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction
1-6	12:48	116.7		-18.8	8.0		161.9	19.9	118.4		-54.2	164.3	-18.6	0.5	-5.7	-193.1	-211.2
1-5	12:52	127.1		-8.4	3.1		127.8	-14.2	343.4		170.8	345.3	162.5	10.5	21.1	37.3	44.7
1-4	12:56	141.1	133.0	5.6	3.4	4.7	144.3	2.3	159.5	138.8	-13.1	163.1	-19.7	1.7	7.3	67.0	68.9
1-3	13:00	131.4		-4.1	3.1		132.1	-9.9	54.0		-118.6	54.3	-128.6	8.4	18.7	63.7	67.8
1-2	13:04	140.1		4.6	8.1		195.9	53.9	71.5		-101.1	100.0	-82.9	-10.0	-39.2	19.5	-1.9
1-1	13:08	141.6		6.1	2.6		138.5	-3.5	85.8		-86.8	83.9	-98.9	15.5	28.9	25.0	36.9
2-6	12:49	127.8		-7.7	4.7		141.2	-0.8	243.0		70.4	268.5	85.6	-23.8	-14.7	-159.1	-139.9
2-5	12:53	133.6		-1.9	4.4		144.9	2.9	315.1		142.5	341.8	159.0	-35.5	-44.5	10.4	4.4
2-4	12:57	139.4	137.3	3.9	2.4	3.3	134.9	-7.1	32.3	127.1	-140.3	31.3	-151.6	-23.3	-3.3	76.2	80.0
2-3	13:01	140.4		4.9	2.4		135.8	-6.2	42.2		-130.4	40.8	-142.0	-29.4	-15.4	68.2	71.6
2-2	13:05	146.9		11.4	3.3		149.4	7.4	62.2		-110.4	63.3	-119.6	-480.6	-483.9	-418.3	-421.3
2-1	13:09	135.7		0.2	2.6		132.7	-9.3	68.0		-104.6	66.5	-116.4	-388.1	-318.8	-56.7	-34.4
3-6	12:50	132.1		-3.4	5.4		152.6	10.5	403.5		230.9	466.0	283.1	-1.5	-12.7	-125.2	-149.9
3-5	12:54	127.2		-8.3	2.2		121.8	-20.3	543.1		370.5	519.9	337.0	6.0	10.0	-10.9	-6.2
3-4	12:58	131.6	136.4	-3.9	3.4	3.3	134.6	-7.4	33.3	194.7	-139.3	34.1	-148.8	4.8	14.6	85.2	86.8
3-3	13:02	144.5		9.0	2.8		142.9	0.9	29.0		-143.6	28.7	-154.2	-0.6	4.4	73.7	75.0
3-2	13:06	153.7		18.2	2.0		145.6	3.5	74.4		-98.2	70.5	-112.4	-6.4	-0.8	10.8	15.5
3-1	13:10	129.4		-6.1	3.7		134.7	-7.4	84.6		-88.0	88.0	-94.8	8.5	11.7	-28.6	-24.1
4-6	12:51	129.4		-6.1	5.0		145.7	3.7	611.9		439.3	688.9	506.0	3.4	2.2	-134.8	-137.8
4-5	12:55	131.6		-3.9	2.7		129.4	-12.6	482.3		309.7	474.4	291.5	2.9	4.5	30.8	31.9
4-4	12:59	138.0	135.4	2.5	2.6	3.5	135.0	-7.0	46.7	229.8	-125.9	45.7	-137.2	1.7	3.9	28.2	29.7
4-3	13:03	145.6		10.1	2.3		140.1	-1.9	47.2		-125.4	45.4	-137.4	2.0	3.5	34.7	35.8
4-2	13:07	141.2		5.7	2.3		135.9	-6.1	101.9		-70.7	98.1	-84.8	2.6	3.1	10.3	10.8
4-1	13:11	126.4		-9.1	5.9		150.8	8.8	88.9		-83.7	106.1	-76.8	-0.2	-4.2	-57.1	-63.3
Outlet Averages		**135.5**			**3.7**		**142.0**		**172.6**			**182.9**		**-38.8**	**-33.7**	**-22.6**	**-22.1**

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge

Date: 5/31/2007
Start Time: 13:12
End Time: 13:35

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.
1-6	13:12	126.4		-16.3	6.5		157.1	2.3	308.0		-110.3	382.9	-60.0
1-5	13:16	152.0		9.3	5.0		171.1	16.3	2000.0		1581.7	2251.6	1808.7
1-4	13:20	146.5	145.7	3.8	4.6	5.5	160.9	6.1	426.9	496.7	8.6	468.8	26.0
1-3	13:24	147.9		5.2	5.7		174.2	19.3	97.0		-321.3	114.2	-328.6
1-2	13:28	136.3		-6.4	5.3		156.4	1.6	94.4		-323.9	108.3	-334.5
1-1	13:32	165.3		22.6	5.7		194.7	39.8	54.1		-364.2	63.7	-379.1
2-6	13:13	126.2		-16.5	4.9		141.2	-13.6	319.3		-99.0	357.2	-85.6
2-5	13:17	123.0		-19.7	3.3		125.1	-29.7	633.6		215.3	644.4	201.6
2-4	13:21	124.3	128.8	-18.4	5.6	4.6	145.4	-9.4	89.7	192.0	-328.6	104.9	-337.9
2-3	13:25	131.4		-11.3	4.6		144.3	-10.5	49.6		-368.7	54.5	-388.4
2-2	13:29	141.1		-1.6	3.9		148.6	-6.3	33.7		-384.6	35.5	-407.3
2-1	13:33	126.7		-16.0	5.0		142.6	-12.2	26.1		-392.2	29.4	-413.4
3-6	13:14	149.6		6.9	3.0		149.6	-5.2	520.0		101.7	520.0	77.2
3-5	13:18	152.4		9.7	3.0		152.4	-2.4	2000.0		1581.7	2000.0	1557.2
3-4	13:22	151.7	151.9	9.0	5.4	3.8	175.2	20.4	134.6	475.0	-283.7	155.4	-287.4
3-3	13:26	156.1		13.4	3.7		162.5	7.6	90.8		-327.5	94.5	-348.3
3-2	13:30	160.5		17.8	3.5		165.1	10.3	79.8		-338.5	82.1	-360.7
3-1	13:34	141.1		-1.6	4.2		151.2	-3.6	24.9		-393.4	26.7	-416.1
4-6	13:15	145.5		2.8	4.3		156.9	2.1	758.3		340.0	817.7	374.9
4-5	13:19	136.0		-6.7	3.1		136.8	-18.1	2000.0		1581.7	2011.2	1568.4
4-4	13:23	146.6	144.4	3.9	3.2	3.6	148.3	-6.6	70.7	509.3	-347.6	71.5	-371.3
4-3	13:27	159.2		16.5	2.9		158.3	3.5	129.9		-288.4	129.2	-313.6
4-2	13:31	151.9		9.2	2.7		149.4	-5.4	48.5		-369.8	47.7	-395.1
4-1	13:35	127.1		-15.6	5.6		148.7	-6.1	48.2		-370.1	56.4	-386.4
Inlet Averages		142.7			4.4		154.8		418.3			442.8	

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction
1-6	13:12	127.3		-13.5	8.8		188.3	36.7	290.8		-27.4	430.2	78.5	-0.7	-19.9	5.6	-12.4
1-5	13:16	136.8		-4.0	3.3		139.1	-12.4	490.4		172.2	498.8	147.1	10.0	18.7	75.5	77.8
1-4	13:20	143.6	139.0	2.8	3.9	5.1	151.2	-0.4	120.1	175.9	-198.1	126.5	-225.2	2.0	6.0	71.9	73.0
1-3	13:24	134.9		-5.9	3.8		141.2	-10.4	42.4		-275.8	44.4	-307.3	8.8	18.9	56.3	61.1
1-2	13:28	149.1		8.3	8.4		213.5	61.9	65.2		-253.0	93.4	-258.3	-9.4	-36.5	30.9	13.8
1-1	13:32	142.0		1.2	2.6		138.9	-12.7	46.5		-271.7	45.5	-306.2	14.1	28.6	14.0	28.6
2-6	13:13	137.6		-3.2	5.0		154.9	3.3	756.7		438.5	851.9	500.2	-9.0	-9.7	-137.0	-138.5
2-5	13:17	140.3		-0.5	3.0		140.3	-11.3	406.2		88.0	406.2	54.5	-14.1	-12.2	35.9	37.0
2-4	13:21	139.8	143.4	-1.0	2.5	3.4	136.0	-15.6	25.9	215.7	-292.3	25.2	-326.5	-12.5	6.5	71.1	76.0
2-3	13:25	143.7		2.9	2.7		141.3	-10.2	27.3		-290.9	26.9	-324.8	-9.4	2.1	45.0	50.7
2-2	13:29	160.5		19.7	2.5		156.1	4.6	29.2		-289.0	28.4	-323.3	-13.7	-5.1	13.4	19.9
2-1	13:33	138.6		-2.2	4.6		152.2	0.6	48.8		-269.4	53.6	-298.1	-9.4	-6.7	-87.0	-82.4
3-6	13:14	140.5		-0.3	4.9		157.2	5.6	2000.0		1681.8	2237.5	1885.8	6.1	-5.1	-284.6	-330.3
3-5	13:18	132.1		-8.7	3.3		134.4	-17.2	453.0		134.8	460.7	109.0	13.3	11.8	77.4	77.0
3-4	13:22	133.1	140.6	-7.7	5.1	4.0	150.8	-0.8	26.0	437.4	-292.2	29.5	-322.2	12.3	13.9	80.7	81.1
3-3	13:26	145.3		4.5	3.6		150.3	-1.2	36.0		-282.2	37.2	-314.4	6.9	7.5	60.4	60.6
3-2	13:30	161.6		20.8	3.2		163.4	11.9	28.8		-289.4	29.1	-322.6	-0.7	1.0	63.9	64.5
3-1	13:34	130.7		-10.1	3.6		135.2	-16.3	80.7		-237.5	83.5	-268.2	7.4	10.6	-224.1	-212.9
4-6	13:15	140.8		0.0	4.9		157.5	5.9	2000.0		1681.8	2237.5	1885.8	3.2	-0.4	-163.7	-173.6
4-5	13:19	134.0		-6.8	3.7		139.5	-12.1	428.7		110.5	446.1	94.5	1.5	-2.0	78.6	77.8
4-4	13:23	144.0	140.5	3.2	3.6	4.0	149.0	-2.6	42.3	443.7	-275.9	43.8	-307.9	1.8	-0.5	40.2	38.8
4-3	13:27	152.1		11.3	2.8		150.4	-1.2	63.4		-254.8	62.7	-289.0	4.5	5.0	51.2	51.5
4-2	13:31	148.1		7.3	3.0		148.1	-3.5	54.3		-263.9	54.3	-297.4	2.5	0.9	-12.0	-13.8
4-1	13:35	123.8		-17.0	6.0		148.7	-2.8	73.2		-245.0	87.9	-263.8	2.6	0.0	-51.9	-55.9
Outlet Averages		140.8			4.1		151.6		318.2			351.7		0.7	1.4	-3.7	-5.4

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge

Date: 5/31/2007
Start Time: 15:36
End Time: 15:59

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.
1-6	15:36	137.7		-7.5	7.5		183.9	22.5	85.6		-35.2	114.3	-15.3
1-5	15:40	177.8		32.6	6.0		213.6	52.1	20.8		-100.0	25.0	-104.6
1-4	15:44	165.2	150.2	20.0	4.1	5.3	176.0	14.6	17.0	97.3	-103.8	18.1	-111.5
1-3	15:48	158.2		13.0	5.2		180.4	18.9	66.3		-54.5	75.6	-54.0
1-2	15:52	106.9		-38.3	4.6		117.4	-44.1	104.9		-15.9	115.2	-14.4
1-1	15:56	155.6		10.4	4.4		168.8	7.3	289.1		168.3	313.6	184.0
2-6	15:37	168.2		23.0	6.2		204.8	43.4	11.3		-109.5	13.8	-115.9
2-5	15:41												
2-4	15:45	170.7	150.5	25.5	5.2	4.6	194.6	33.2	13.5	83.7	-107.3	15.4	-114.2
2-3	15:49	140.2		-5.0	4.3		151.2	-10.3	114.3		-6.5	123.3	-6.4
2-2	15:53	137.3		-7.9	2.9		136.5	-24.9	90.0		-30.8	89.5	-40.1
2-1	15:57	136.1		-9.1	4.3		146.8	-14.7	189.6		68.8	204.4	74.8
3-6	15:38	20.7		-124.5	5.9		24.7	-136.8	12.7		-108.1	15.2	-114.5
3-5	15:42	173.3		28.1	5.3		198.9	37.4	5.7		-115.1	6.5	-123.1
3-4	15:46	165.2	128.5	20.0	5.5	4.5	192.0	30.6	15.7	123.7	-105.1	18.2	-111.4
3-3	15:50	153.7		8.5	3.4		157.2	-4.2	199.6		78.8	204.2	74.5
3-2	15:54	133.7		-11.5	2.4		129.4	-32.1	275.1		154.3	266.2	136.6
3-1	15:58	124.6		-20.6	4.2		133.6	-27.9	233.6		112.8	250.4	120.8
4-6	15:39	185.2		40.0	6.7		233.5	72.0	18.4		-102.4	23.2	-106.4
4-5	15:43	190.2		45.0	4.7		210.2	48.7	13.4		-107.4	14.8	-114.8
4-4	15:47	148.8	152.6	3.6	3.7	4.3	154.9	-6.6	24.5	172.1	-96.3	25.5	-104.1
4-3	15:51	148.9		3.7	2.7		146.4	-15.0	194.8		74.0	191.6	62.0
4-2	15:55	125.2		-20.0	2.8		123.8	-37.6	272.4		151.6	269.4	139.8
4-1	15:59	117.0		-28.2	5.4		135.1	-26.3	509.1		388.3	587.9	458.3
Inlet Averages		145.2			4.7		161.5		120.8			129.6	

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction
1-6	15:36	115.4		16.6	10.8		204.5	85.2	422.0		259.9	747.9	558.4	16.2	-11.2	-393.0	-554.1
1-5	15:40	127.6		28.8	4.9		142.8	23.5	15.2		-146.9	17.0	-172.5	28.2	33.2	26.9	31.9
1-4	15:44	135.7	111.9	36.9	4.1	5.5	144.6	25.3	29.1	176.7	-133.0	31.0	-158.5	17.9	17.9	-71.2	-71.2
1-3	15:48	111.4		12.6	3.0		111.4	-7.9	34.5		-127.6	34.5	-155.0	29.6	38.2	48.0	54.4
1-2	15:52	105.8		7.0	7.9		145.7	26.4	124.5		-37.6	171.4	-18.1	1.0	-24.1	-18.7	-48.8
1-1	15:56	75.3		-23.5	2.1		71.7	-47.6	434.6		272.5	413.8	224.3	51.6	57.5	-50.3	-31.9
2-6	15:37	125.8		27.0	6.1		152.2	32.9	129.6		-32.5	156.7	-32.7	25.2	25.7	-1046.9	-1039.2
2-5	15:41			-98.8													
2-4	15:45	124.4	93.1	25.6	4.2	4.1	133.3	14.1	22.7	250.1	-139.4	24.3	-165.2	27.1	31.5	-68.1	-58.1
2-3	15:49	120.5		21.7	2.9		119.8	0.6	35.0		-127.1	34.8	-154.7	14.1	20.7	69.4	71.8
2-2	15:53	71.9		-26.9	2.7		70.7	-48.6	122.4		-39.7	120.4	-69.1	47.6	48.2	-36.0	-34.5
2-1	15:57	23.0		-75.8	4.5		25.1	-94.2	940.9		778.8	1027.0	837.5	83.1	82.9	-396.3	-402.3
3-6	15:38	156.0		57.2	13.1		358.0	238.7	62.8		-99.3	144.1	-45.4	-653.6	-1349.3	-394.5	-850.9
3-5	15:42	152.1		53.3	4.8		169.1	49.8	17.0		-145.1	18.9	-170.6	12.2	15.0	-198.2	-189.0
3-4	15:46	128.8	111.0	30.0	4.0	5.1	136.4	17.1	15.0	123.7	-147.1	15.9	-173.6	22.0	29.0	4.5	12.9
3-3	15:50	121.4		22.6	2.5		118.1	-1.2	76.7		-85.4	74.6	-114.9	21.0	24.9	61.6	63.5
3-2	15:54	106.0		7.2	2.3		102.0	-17.3	173.1		11.0	166.6	-22.9	20.7	21.1	37.1	37.4
3-1	15:58	1.9		-96.9	3.6		2.0	-117.3	397.6		235.5	411.4	221.9	98.5	98.5	-70.2	-64.3
4-6	15:39	157.8		59.0	6.9		201.8	82.5	18.9		-143.2	24.2	-165.3	14.8	13.6	-2.7	-4.2
4-5	15:43	154.9		56.1	5.2		176.6	57.3	20.7		-141.4	23.6	-165.9	18.6	16.0	-54.5	-59.4
4-4	15:47	77.9	78.1	-20.9	3.5	4.5	80.1	-39.1	18.8	112.8	-143.3	19.3	-170.2	47.6	48.2	23.3	24.1
4-3	15:51	70.3		-28.5	2.6		68.8	-50.5	109.4		-52.7	107.0	-82.5	52.8	53.0	43.8	44.1
4-2	15:55	4.0		-94.8	3.0		4.0	-115.3	158.8		-3.3	158.8	-30.7	96.8	96.8	41.7	41.1
4-1	15:59	3.9		-94.9	5.8		4.6	-114.6	350.1		188.0	415.0	225.5	96.7	96.6	31.2	29.4
Outlet Averages		98.8			4.8		119.3		162.1			189.5		8.2	-22.4	-104.9	-130.3

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge

Date: 5/31/2007
Start Time: 16:00
End Time: 16:23

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.
1-6	16:00	128.1		-6.3	8.0		177.8	28.2	192.7		90.4	267.4	154.6
1-5	16:04	135.2		0.8	5.7		159.2	9.7	33.2		-69.1	39.1	-73.7
1-4	16:08	133.5	135.6	-0.9	4.4	5.3	144.8	-4.7	27.7	101.3	-74.6	30.1	-82.8
1-3	16:12	155.6		21.2	5.2		177.4	27.9	24.8		-77.5	28.3	-84.5
1-2	16:16	103.3		-31.1	3.9		108.8	-40.8	141.1		38.8	148.6	35.7
1-1	16:20	157.9		23.5	4.3		170.3	20.7	188.1		85.8	202.8	90.0
2-6	16:01	133.7		-0.7	7.2		174.7	25.1	15.1		-87.2	19.7	-93.1
2-5	16:05	129.3		-5.1	5.0		145.6	-4.0	25.1		-77.2	28.3	-84.6
2-4	16:09	126.6	133.0	-7.8	5.4	4.9	146.2	-3.3	16.0	58.6	-86.3	18.5	-94.3
2-3	16:13	132.3		-2.1	4.0		140.1	-9.4	24.5		-77.8	25.9	-86.9
2-2	16:17	145.8		11.4	2.9		145.0	-4.6	175.0		72.7	174.0	61.2
2-1	16:21	130.3		-4.1	4.7		144.0	-5.6	95.6		-6.7	105.6	-7.2
3-6	16:02	95.7		-38.7	5.6		112.0	-37.6	17.4		-84.9	20.4	-92.5
3-5	16:06	128.1		-6.3	4.9		143.3	-6.2	22.6		-79.7	25.3	-87.5
3-4	16:10	133.8	130.1	-0.6	5.7	4.5	157.6	8.0	17.4	75.3	-84.9	20.5	-92.3
3-3	16:14	156.3		21.9	3.4		159.9	10.3	33.4		-68.9	34.2	-78.7
3-2	16:18	146.1		11.7	2.8		144.5	-5.1	140.5		38.2	138.9	26.1
3-1	16:22	120.6		-13.8	4.3		130.0	-19.5	220.5		118.2	237.8	124.9
4-6	16:03	156.6		22.2	6.4		193.3	43.8	30.0		-72.3	37.0	-75.8
4-5	16:07	118.2		-16.2	4.4		128.2	-21.3	25.8		-76.5	28.0	-84.8
4-4	16:11	135.6	138.7	1.2	4.7	4.4	149.8	0.3	19.8	174.2	-82.5	21.9	-90.9
4-3	16:15	162.3		27.9	3.1		163.2	13.7	36.5		-65.8	36.7	-76.1
4-2	16:19	139.3		4.9	2.7		137.0	-12.5	256.8		154.5	252.6	139.7
4-1	16:23	120.4		-14.0	5.1		136.4	-13.1	676.4		574.1	766.3	653.5
Inlet Averages		134.4			4.7		149.5		102.3			112.8	

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction
1-6	16:00	82.7		26.8	8.8		122.3	61.0	229.6		132.6	339.7	230.6	35.4	31.2	-19.1	-27.0
1-5	16:04	72.9		17.0	5.0		82.1	20.8	28.3		-68.7	31.9	-77.2	46.1	48.5	14.8	18.5
1-4	16:08	99.9	87.5	44.0	4.4	5.1	108.4	47.1	34.2	94.9	-62.8	37.1	-72.0	25.2	25.2	-23.5	-23.5
1-3	16:12	90.6		34.7	3.3		92.1	30.8	19.5		-77.5	19.8	-89.3	41.8	48.1	21.4	29.9
1-2	16:16	100.8		44.9	6.8		128.0	66.7	58.3		-38.7	74.0	-35.1	2.4	-17.6	58.7	50.2
1-1	16:20	78.3		22.4	2.0		74.2	12.9	199.7		102.7	189.1	80.0	50.4	56.4	-6.2	6.8
2-6	16:01	50.7		-5.2	4.9		56.7	-4.6	30.8		-66.2	34.5	-74.6	62.1	67.5	-104.0	-74.7
2-5	16:05	10.7		-45.2	4.3		11.5	-49.8	30.9		-66.1	33.3	-75.8	91.7	92.1	-23.1	-17.9
2-4	16:09	97.1	62.5	41.2	4.1	4.1	103.5	42.2	18.6	89.8	-78.4	19.8	-89.3	23.3	29.2	-16.3	-7.3
2-3	16:13	118.6		62.7	4.2		127.1	65.8	23.0		-74.0	24.7	-84.4	10.4	9.3	6.1	5.0
2-2	16:17	81.0		25.1	2.9		80.6	19.3	90.0		-7.0	89.5	-19.6	44.4	44.4	48.6	48.6
2-1	16:21	17.1		-38.8	4.2		18.3	-43.0	345.5		248.5	370.3	261.2	86.9	87.3	-261.4	-260.6
3-6	16:02	5.5		-50.4	12.1		11.2	-50.1	31.9		-65.1	64.9	-44.2	94.3	90.0	-83.3	-218.8
3-5	16:06	1.4		-54.5	4.8		1.6	-59.7	35.6		-61.4	39.6	-69.5	98.9	98.9	-57.5	-56.5
3-4	16:10	73.6	50.4	17.7	4.2	5.1	78.9	17.6	14.9	85.7	-82.1	16.0	-93.1	45.0	49.9	14.4	22.1
3-3	16:14	113.7		57.8	2.9		113.1	51.8	31.3		-65.7	31.1	-78.0	27.3	29.3	6.3	8.9
3-2	16:18	106.6		50.7	2.6		104.3	43.0	82.6		-14.4	80.8	-28.3	27.0	27.8	41.2	41.9
3-1	16:22	1.4		-54.5	3.9		1.5	-59.8	317.8		220.8	334.6	225.5	98.8	98.9	-44.1	-40.7
4-6	16:03	47.1		-8.8	6.8		59.8	-1.5	38.8		-58.2	49.3	-59.8	69.9	69.1	-29.3	-33.0
4-5	16:07	1.4		-54.5	4.9		1.6	-59.7	33.3		-63.7	37.3	-71.8	98.8	98.8	-29.1	-33.1
4-4	16:11	10.5	23.3	-45.4	5.0	4.8	11.8	-49.5	15.9	117.7	-81.1	17.9	-91.2	92.3	92.1	19.7	18.2
4-3	16:15	73.1		17.2	3.4		74.8	13.5	34.2		-62.8	35.0	-74.1	55.0	54.2	6.3	4.7
4-2	16:19	4.1		-51.8	3.0		4.1	-57.2	169.9		72.9	169.9	60.8	97.1	97.0	33.8	32.7
4-1	16:23	3.4		-52.5	5.4		3.9	-57.4	414.3		317.3	478.4	369.3	97.2	97.1	38.7	37.6
Outlet Averages		55.9			4.7		61.3		97.0			109.1		59.2	59.4	-16.1	-19.1

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge

Date: 5/31/2007
Start Time: 16:24
End Time: 16:47

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx lb/MMBtu
1-6	16:24	109.8		4.2	4.6		16.2		120.6	4.7	543.9		442.5	597.3	487.9	
1-5	16:28	0.6		-105.0	6.9		13.8		0.8	-115.2	42.6		-58.9	54.5	-54.9	
1-4	16:32	0.6	25.4	-105.0	5.0	4.6	15.7	16.3	0.7	-115.2	26.4	151.4	-75.1	29.7	-79.7	
1-3	16:36	0.4		-105.2	4.3		16.6		0.4	-115.5	34.2		-67.3	36.9	-72.5	
1-2	16:40	0.3		-105.3	2.9		18.2		0.3	-115.6	86.7		-14.8	86.2	-23.2	
1-1	16:44	40.9		-64.7	3.7		17.5		42.6	-73.4	174.5		73.1	181.6	72.2	
2-6	16:25	134.2		28.6	6.8		14.8		170.4	54.4	21.6		-79.9	27.4	-82.0	0.232
2-5	16:29	126.8		21.2	5.3		16.5		145.5	29.6	36.9		-64.6	42.3	-67.0	0.198
2-4	16:33	125.4	129.5	19.8	5.3	4.9	16.5	17.0	143.9	28.0	42.9	52.1	-58.6	49.2	-60.2	0.196
2-3	16:37	129.2		23.6	3.9		18.3		136.0	20.1	19.6		-81.9	20.6	-88.8	0.186
2-2	16:41	137.8		32.2	3.1		19.0		138.6	22.6	70.0		-31.5	70.4	-39.0	0.189
2-1	16:45	123.5		17.9	4.9		17.0		138.2	22.2	121.5		20.1	135.9	26.5	0.188
3-6	16:26	134.2		28.6	5.4		16.2		155.0	39.1	23.3		-78.2	26.9	-82.5	0.211
3-5	16:30	128.2		22.6	5.2		16.4		146.2	30.2	19.3		-82.2	22.0	-87.4	0.199
3-4	16:34	132.6	134.7	26.9	5.6	4.4	15.8	17.3	155.0	39.1	18.3	68.0	-83.2	21.4	-88.0	0.211
3-3	16:38	162.5		56.9	3.2		18.7		164.3	48.4	48.3		-53.2	48.8	-60.5	0.224
3-2	16:42	142.3		36.7	2.6		19.3		139.2	23.3	126.3		24.9	123.5	14.2	0.190
3-1	16:46	108.4		2.8	4.2		17.2		116.2	0.3	172.7		71.3	185.1	75.7	0.158
4-6	16:27	143.1		37.5	6.5		14.6		177.9	62.0	29.1		-72.4	36.2	-73.2	0.243
4-5	16:31	129.1		23.5	5.0		16.3		145.3	29.4	23.6		-77.9	26.6	-82.8	0.198
4-4	16:35	139.2	132.9	33.6	4.1	4.4	17.3	16.9	148.3	32.4	23.5	134.3	-78.0	25.0	-84.3	0.202
4-3	16:39	151.5		45.9	2.8		18.9		149.8	33.9	86.3		-15.2	85.3	-24.0	0.204
4-2	16:43	133.1		27.5	2.8		18.7		131.6	15.7	272.5		171.1	269.5	160.1	0.179
4-1	16:47	101.3		-4.3	5.2		15.7		115.5	-0.4	370.8		269.4	422.8	313.4	0.157
Inlet Averages		**105.6**			**4.6**		**16.9**		**115.9**		**101.5**			**109.4**		**0.198**

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction	NOx lb/MMBtu
1-6	16:24	64.9		20.0	8.0		9.6		90.1	39.0	659.5		549.6	915.1	782.2	40.9	25.3	-21.3	-53.2	0.1228
1-5	16:28	61.4		16.5	6.5		10.3		76.3	25.3	30.9		-79.0	38.4	-94.5	-10133.3	-9849.1	27.5	29.5	0.1041
1-4	16:32	51.7	53.6	6.8	5.7	7.8	11.1	9.5	60.9	9.9	37.9	172.2	-72.0	44.6	-88.3	-8516.7	-8913.5	-43.6	-50.2	0.0830
1-3	16:36	51.7		6.8	8.0		9.2		71.7	20.7	31.3		-78.6	43.4	-89.5	-12825.0	-16532.2	8.5	-17.8	0.0978
1-2	16:40	48.0		3.1	9.8		7.6		77.4	26.4	98.7		-11.2	159.2	26.2	-15900.0	-25845.9	-13.8	-84.6	0.1055
1-1	16:44	43.7		-1.2	8.8		9.1		64.6	13.6	174.6		64.7	258.3	125.3	-6.8	-51.9	-0.1	-42.2	0.0882
2-6	16:25	52.4		7.5	4.6		13.9		57.5	6.5	188.9		79.0	207.4	74.5	61.0	66.2	-774.5	-656.5	0.0785
2-5	16:29	8.9		-36.0	4.4		12.7		9.7	-41.4	35.1		-74.8	38.1	-94.9	93.0	93.4	4.9	10.1	0.0132
2-4	16:33	93.4	61.1	48.5	3.9	3.9	12.9	13.3	98.3	47.3	26.9	93.1	-83.0	28.3	-104.6	25.5	31.7	37.3	42.5	0.1341
2-3	16:37	118.8		73.9	4.1		12.8		126.6	75.5	34.4		-75.5	36.7	-96.3	8.0	7.0	-75.5	-77.6	0.1726
2-2	16:41	74.0		29.1	2.9		13.7		73.6	22.6	100.0		-9.9	99.4	-33.5	46.3	46.9	-42.9	-41.3	0.1003
2-1	16:45	19.1		-25.8	3.5		13.9		19.6	-31.4	173.2		63.3	178.2	45.2	84.5	85.8	-42.6	-31.1	0.0268
3-6	16:26	4.3		-40.6	6.8		13.2		5.5	-45.6	32.7		-77.2	41.5	-91.4	96.8	96.5	-40.3	-54.3	0.0074
3-5	16:30	1.4		-43.5	4.9		15.1		1.6	-49.5	27.6		-82.3	30.9	-102.1	98.9	98.9	-43.0	-40.3	0.0021
3-4	16:34	74.1	50.1	29.2	4.2	4.2	14.9	15.0	79.4	28.4	16.4	73.4	-93.5	17.6	-115.4	44.1	48.8	10.4	17.9	0.1083
3-3	16:38	115.9		71.0	2.5		16.9		112.8	61.7	40.6		-69.3	39.5	-93.4	28.7	31.4	15.9	19.1	0.1537
3-2	16:42	103.7		58.8	2.5		16.6		100.9	49.8	99.9		-10.0	97.2	-35.8	27.1	27.5	20.9	21.3	0.1376
3-1	16:46	1.4		-43.5	4.0		13.2		1.5	-49.5	223.2		113.3	236.4	103.5	98.7	98.7	-29.2	-27.7	0.0020
4-6	16:27	22.6		-22.3	7.0		11.7		29.1	-21.9	37.1		-72.8	47.8	-85.2	84.2	83.6	-27.5	-32.1	0.0397
4-5	16:31	1.4		-43.5	5.2		13.3		1.6	-49.4	32.7		-77.2	37.3	-95.7	98.9	98.9	-38.6	-40.3	0.0022
4-4	16:35	5.3	14.9	-39.6	4.7	4.8	13.7	13.4	5.9	-45.2	19.5	101.1	-90.4	21.5	-111.4	96.2	96.1	17.0	13.9	0.0080
4-3	16:39	54.7		9.8	2.9		15.1		54.4	3.4	52.5		-57.4	52.2	-80.7	63.9	63.7	39.2	38.8	0.0742
4-2	16:43	3.5		-41.4	3.0		14.9		3.5	-47.5	144.0		34.1	144.0	11.1	97.4	97.3	47.2	46.6	0.0048
4-1	16:47	2.0		-42.9	5.7		11.9		2.4	-48.7	320.7		210.8	377.7	244.7	98.0	98.0	13.5	10.7	0.0032
Outlet Averages		**44.9**			**5.2**		**12.8**		**51.0**		**109.9**			**132.9**		**-1920.4**	**-2495.7**	**-39.6**	**-41.6**	**0.070**

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge

Date: 5/31/2007
Start Time: 17:36
End Time: 17:59

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx lb/MMBtu
1-6	17:36	91.6		-4.9	6.4		14.6		113.1	8.8	562.7		357.5	694.6	471.6	0.154
1-5	17:40	74.8		-21.7	5.6		15.2		87.5	-16.8	166.9		-38.3	195.3	-27.8	0.119
1-4	17:44	87.4	97.4	-9.1	4.7	5.1	16.3	16.0	96.6	-7.7	302.1	259.8	96.9	333.8	110.8	0.132
1-3	17:48	113.1		16.6	5.1		16.0		128.1	23.9	106.6		-98.6	120.8	-102.3	0.175
1-2	17:52	97.8		1.3	4.3		17.0		105.5	1.2	124.3		-80.9	134.0	-89.0	0.144
1-1	17:56	119.9		23.4	4.4		17.0		130.1	25.8	296.1		90.9	321.2	98.2	0.177
2-6	17:37	89.6		-6.9	5.8		15.8		106.2	1.9	109.3		-95.9	129.6	-93.5	0.145
2-5	17:41	84.7		-11.8	3.8		18.1		88.7	-15.6	254.4		49.2	266.3	43.3	0.121
2-4	17:45	92.9	94.3	-3.6	5.2	4.5	16.3	17.2	105.9	1.7	92.3	139.5	-112.9	105.2	-117.8	0.144
2-3	17:49	95.1		-1.4	4.3		17.2		102.5	-1.7	87.6		-117.6	94.5	-128.6	0.140
2-2	17:53	109.2		12.7	3.2		18.7		110.4	6.2	138.2		-67.0	139.8	-83.3	0.151
2-1	17:57	94.2		-2.3	4.8		17.1		104.7	0.5	155.3		-49.9	172.7	-50.4	0.143
3-6	17:38	95.9		-0.6	4.1		17.7		102.2	-2.1	188.6		-16.6	200.9	-22.1	0.139
3-5	17:42	82.2		-14.3	3.5		18.6		84.6	-19.7	316.1		110.9	325.2	102.1	0.115
3-4	17:46	105.9	103.3	9.4	5.2	3.9	16.5	18.0	120.7	16.5	84.2	181.8	-121.0	96.0	-127.0	0.165
3-3	17:50	121.5		25.0	3.6		18.2		125.7	21.4	88.0		-117.2	91.1	-132.0	0.171
3-2	17:54	108.8		12.3	2.9		18.9		108.2	3.9	137.6		-67.6	136.8	-86.2	0.148
3-1	17:58	105.4		8.9	3.9		17.9		111.0	6.7	276.4		71.2	291.0	68.0	0.151
4-6	17:39	87.6		-8.9	5.5		15.7		101.8	-2.4	178.3		-26.9	207.2	-15.8	0.139
4-5	17:43	74.3		-22.2	3.2		18.2		75.1	-29.1	374.9		169.7	379.1	156.1	0.102
4-4	17:47	89.8	90.9	-6.7	3.3	3.7	18.1	17.6	91.3	-12.9	75.8	239.7	-129.4	77.1	-146.0	0.125
4-3	17:51	111.7		15.2	3.0		18.4		111.7	7.4	60.3		-144.9	60.3	-162.7	0.152
4-2	17:55	85.3		-11.2	2.3		19.1		82.1	-22.2	381.7		176.5	367.3	144.3	0.112
4-1	17:59	96.5		0.0	5.0		16.1		108.6	4.4	367.1		161.9	413.3	190.2	0.148
Inlet Averages		96.5			4.3		17.2		104.3		205.2			223.0		0.142

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction	NOx lb/MMBtu
1-6	17:36	63.3		17.4	8.1		9.4		88.5	37.7	501.9		325.3	701.9	496.1	30.9	21.7	10.8	-1.0	0.1207
1-5	17:40	59.1		13.2	4.8		15.0		65.7	14.9	149.3		-27.3	166.0	-39.8	21.0	24.9	10.5	15.0	0.0896
1-4	17:44	67.4	73.5	21.5	4.3	5.6	19.0	16.4	72.7	21.9	186.3	206.7	9.7	200.9	-4.9	22.9	24.7	38.3	39.8	0.0991
1-3	17:48	78.3		32.4	4.1		19.3		83.4	32.6	69.3		-107.3	73.8	-131.9	30.8	34.9	35.0	38.9	0.1138
1-2	17:52	105.6		59.7	9.0		15.9		158.8	108.0	61.4		-115.2	92.4	-113.4	-8.0	-50.6	50.6	31.1	0.2166
1-1	17:56	67.2		21.3	3.2		19.5		68.0	17.1	271.8		95.2	274.9	69.1	44.0	47.8	8.2	14.4	0.0927
2-6	17:37	38.8		-7.1	3.6		15.5		40.1	-10.7	227.0		50.4	234.9	29.1	56.7	62.2	-107.7	-81.3	0.0547
2-5	17:41	4.4		-41.5	3.4		15.3		4.5	-46.3	152.0		-24.6	155.5	-50.3	94.8	94.9	40.3	41.6	0.0061
2-4	17:45	83.2	51.8	37.3	3.4	3.5	14.8	16.7	85.1	34.3	67.3	133.7	-109.3	68.8	-136.9	10.4	19.7	27.1	34.6	0.1160
2-3	17:49	103.8		57.9	3.3		15.1		105.6	54.8	34.2		-142.4	34.8	-171.0	-9.1	-2.9	61.0	63.2	0.1440
2-2	17:53	72.8		26.9	3.1		18.9		73.2	22.4	61.1		-115.5	61.4	-144.3	33.3	33.7	55.8	56.0	0.0998
2-1	17:57	7.7		-38.2	4.1		20.5		8.2	-42.6	260.3		83.7	277.3	71.6	91.8	92.2	-67.6	-60.6	0.0112
3-6	17:38	2.3		-43.6	6.4		15.0		2.8	-48.0	408.6		232.0	504.4	298.6	97.6	97.2	-116.6	-151.0	0.0039
3-5	17:42	0.6		-45.3	3.9		22.0		0.6	-50.2	251.6		75.0	264.9	59.2	99.3	99.3	20.4	18.5	0.0009
3-4	17:46	70.4	47.0	24.5	4.4	4.5	19.4	20.8	76.4	25.6	32.2	181.3	-144.4	34.9	-170.8	33.5	36.7	61.8	63.6	0.1041
3-3	17:50	106.0		60.1	3.7		21.3		110.3	59.5	28.4		-148.2	29.6	-176.2	12.8	12.2	67.7	67.5	0.1504
3-2	17:54	102.0		56.1	3.1		22.4		102.6	51.8	71.1		-105.5	71.5	-134.3	6.3	5.2	48.3	47.7	0.1399
3-1	17:58	0.9		-45.0	5.4		24.5		1.0	-49.8	296.0		119.4	341.8	136.1	99.1	99.1	-7.1	-17.5	0.0014
4-6	17:39	3.1		-42.8	7.4		14.8		4.1	-46.7	363.8		187.2	482.4	276.6	96.5	96.0	-104.0	-132.8	0.0056
4-5	17:43	0.9		-45.0	4.4		20.5		1.0	-49.8	202.9		26.3	220.1	14.4	98.8	98.7	45.9	41.9	0.0013
4-4	17:47	3.9	11.3	-42.0	3.8	5.0	20.2	19.6	4.1	-46.7	50.8	184.9	-125.8	53.2	-152.6	95.7	95.5	33.0	31.0	0.0056
4-3	17:51	55.6		9.7	3.7		21.1		57.9	7.0	44.2		-132.4	46.0	-159.8	50.2	48.2	26.7	23.7	0.0789
4-2	17:55	2.4		-43.5	2.9		22.3		2.4	-48.4	165.9		-10.7	165.0	-40.8	97.2	97.1	56.5	55.1	0.0033
4-1	17:59	1.9		-44.0	7.7		18.7		2.6	-48.2	281.6		105.0	381.9	176.1	98.0	97.6	23.3	7.6	0.0035
Outlet Averages		45.9			4.6		18.4		50.8		176.6			205.8		54.3	53.6	13.3	10.3	0.069

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge

Fd 9780

Date: 5/31/2007
Start Time: 18:00
End Time: 18:23

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx lb/MMBtu
1-6	18:00	87.3		-10.1	6.9		14.4		111.6	6.6	123.4		-78.4	157.8	-58.2	0.15
1-5	18:04	87.8		-9.6	5.2		16.6		100.1	-5.0	370.6		168.8	422.5	206.6	0.14
1-4	18:08	90.4	93.9	-7.0	4.4	5.0	17.1	16.5	98.1	-7.0	227.2	199.4	25.4	246.5	30.5	0.13
1-3	18:12	87.0		-10.4	5.2		16.3		99.2	-5.9	89.0		-112.8	101.5	-114.5	0.14
1-2	18:16	89.0		-8.4	4.1		17.7		94.8	-10.2	158.1		-43.7	168.5	-47.5	0.13
1-1	18:20	121.9		24.5	4.4		17.1		132.2	27.2	227.9		26.1	247.2	31.3	0.18
2-6	18:01	96.7		-0.7	5.7		15.7		113.9	8.8	83.9		-117.9	98.8	-117.1	0.16
2-5	18:05	91.9		-5.5	3.9		17.8		96.8	-8.3	200.1		-1.7	210.7	-5.3	0.13
2-4	18:09	95.6	96.5	-1.8	5.3	4.5	16.7	17.3	109.7	4.6	79.9	145.3	-121.9	91.7	-124.3	0.15
2-3	18:13	95.8		-1.6	4.3		17.7		103.3	-1.8	108.7		-93.1	117.2	-98.7	0.14
2-2	18:17	106.2		8.8	3.0		18.9		106.2	1.1	250.9		49.1	250.9	34.9	0.14
2-1	18:21	92.8		-4.6	4.8		17.2		103.2	-1.9	148.1		-53.7	164.7	-51.3	0.14
3-6	18:02	104.4		7.0	3.8		17.8		109.3	4.2	268.2		66.4	280.7	64.8	0.15
3-5	18:06	87.5		-9.9	3.6		18.0		90.5	-14.5	313.1		111.3	324.0	108.0	0.12
3-4	18:10	109.7	106.1	12.3	5.3	3.9	16.4	17.9	125.9	20.8	98.1	213.1	-103.7	112.6	-103.4	0.17
3-3	18:14	124.2		26.8	3.5		18.2		127.8	22.7	90.4		-111.4	93.0	-123.0	0.17
3-2	18:18	103.5		6.1	2.8		19.1		102.4	-2.7	265.7		63.9	262.8	46.8	0.14
3-1	18:22	107.5		10.1	4.1		17.7		114.5	9.5	242.8		41.0	258.7	42.7	0.16
4-6	18:03	94.8		-2.6	5.0		16.1		106.7	1.7	391.5		189.7	440.7	224.8	0.15
4-5	18:07	78.5		-18.9	3.3		18.1		79.8	-25.2	371.4		169.6	377.7	161.8	0.11
4-4	18:11	92.5	93.0	-4.9	3.3	3.7	18.0	17.8	94.1	-11.0	77.1	249.7	-124.7	78.4	-137.5	0.13
4-3	18:15	106.2		8.8	2.8		18.7		105.0	0.0	79.0		-122.8	78.1	-137.8	0.14
4-2	18:19	89.3		-8.1	2.5		19.1		86.9	-18.2	361.4		159.6	351.6	135.6	0.12
4-1	18:23	96.6		-0.8	5.1		16.6		109.4	4.4	217.7		15.9	246.6	30.7	0.15
Inlet Averages		**97.4**			**4.3**		**17.4**		105.06		**201.8**			**216.0**		0.1

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction	NOx lb/MMBtu
1-6	18:00	74.0		20.1	9.8		13.5		119.3	60.2	140.9		-18.2	227.2	44.7	15.2	-6.9	-14.2	-44.0	0.163
1-5	18:04	82.7		28.8	3.9		17.6		87.1	28.0	225.6		66.5	237.5	55.1	5.8	13.0	39.1	43.8	0.119
1-4	18:08	106.5	87.5	52.6	3.5	5.1	11.7	14.5	109.6	50.5	136.2	153.5	-22.9	140.1	-42.4	-17.8	-11.7	40.1	43.2	0.149
1-3	18:12	88.1		34.2	3.7		13.7		91.7	32.6	50.9		-108.2	53.0	-129.5	-1.3	7.6	42.8	47.8	0.125
1-2	18:16	106.8		52.9	7.4		13.7		141.6	82.5	88.3		-70.8	117.1	-65.4	-20.0	-49.3	44.1	30.5	0.193
1-1	18:20	66.9		13.0	2.5		16.8		65.1	6.0	278.9		119.8	271.3	88.8	45.1	50.8	-22.4	-9.7	0.089
2-6	18:01	58.9		5.0	3.7		17.0		61.3	2.2	187.4		28.3	195.0	12.5	39.1	46.2	-123.4	-97.4	0.084
2-5	18:05	9.0		-44.9	3.1		11.2		9.1	-50.0	131.5		-27.6	132.2	-50.2	90.2	90.6	34.3	37.2	0.012
2-4	18:09	95.1	59.7	41.2	2.8	3.4	9.5	15.8	94.0	35.0	32.8	131.6	-126.3	32.4	-150.0	0.5	14.3	58.9	64.6	0.128
2-3	18:13	109.9		56.0	3.8		18.3		115.0	56.0	33.1		-126.0	34.6	-147.8	-14.7	-11.4	69.5	70.4	0.157
2-2	18:17	72.7		18.8	3.1		21.3		73.1	14.0	100.6		-58.5	101.2	-81.3	31.5	31.2	59.9	59.7	0.100
2-1	18:21	12.6		-41.3	3.6		17.5		13.0	-46.0	304.0		144.9	314.5	132.1	86.4	87.4	-105.3	-91.0	0.018
3-6	18:02	3.6		-50.3	7.2		21.0		4.7	-54.4	405.3		246.2	529.6	347.1	96.6	95.7	-51.1	-98.6	0.006
3-5	18:06	0.9		-53.0	4.7		18.9		1.0	-58.1	179.9		20.8	198.8	16.3	99.0	98.9	42.5	38.6	0.001
3-4	18:10	83.7	49.5	29.8	4.3	4.8	19.3	22.0	90.3	31.2	35.7	156.0	-123.4	38.5	-144.0	23.7	28.3	63.6	65.8	0.123
3-3	18:14	107.5		53.6	3.9		25.7		113.2	54.1	29.1		-130.0	30.6	-151.8	13.4	11.4	67.8	67.1	0.154
3-2	18:18	100.6		46.7	3.2		25.5		101.7	42.7	94.4		-64.7	95.5	-87.0	2.8	0.6	64.5	63.7	0.139
3-1	18:22	0.9		-53.0	5.2		21.4		1.0	-58.1	191.3		32.2	218.1	35.6	99.2	99.1	21.2	15.7	0.001
4-6	18:03	35.8		-18.1	7.3		18.9		47.1	-12.0	500.9		341.8	659.3	476.8	62.2	55.8	-27.9	-49.6	0.064
4-5	18:07	1.4		-52.5	4.5		20.7		1.5	-57.6	263.8		104.7	287.9	105.5	98.2	98.1	29.0	23.8	0.002
4-4	18:11	15.6	18.7	-38.3	3.9	5.0	20.8	20.5	16.4	-42.7	42.8	195.5	-116.3	45.1	-137.4	83.1	82.5	44.5	42.5	0.022
4-3	18:15	55.2		1.3	3.3		22.5		56.1	-2.9	43.2		-115.9	43.9	-138.5	48.0	46.5	45.3	43.8	0.077
4-2	18:19	2.4		-51.5	3.3		22.3		2.4	-56.6	165.7		6.6	168.5	-14.0	97.3	97.2	54.2	52.1	0.003
4-1	18:23	1.9		-52.0	7.4		17.5		2.5	-56.6	156.4		-2.7	207.4	24.9	98.0	97.7	28.2	15.9	0.003
Outlet Averages		**53.9**			**4.5**		**18.2**		**59.1**		**159.1**			**182.5**		**45.1**	**44.7**	**21.1**	**18.6**	**0.081**

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge

Fd 9780

Date: 5/31/2007
Start Time: 18:48
End Time: 19:11

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx lb/MMBtu
1-6	18:48	88.4		-11.6	7.0		14.3		113.8	5.0	77.6		-47.1	99.9	-34.9	0.155
1-5	18:52	78.7		-21.3	5.1		16.3		89.2	-19.7	237.1		112.4	268.6	133.7	0.122
1-4	18:56	89.7	98.7	-10.3	4.7	5.1	16.6	16.0	99.1	-9.7	186.7	145.5	62.0	206.3	71.4	0.135
1-3	19:00	119.4		19.4	5.1		16.5		135.3	26.4	84.2		-40.5	95.4	-39.5	0.184
1-2	19:04	90.5		-9.5	4.4		19.0		98.2	-10.7	135.2		10.5	146.7	11.8	0.134
1-1	19:08	125.6		25.6	4.4		13.3		136.3	27.4	152.3		27.6	165.2	30.4	0.186
2-6	18:49	98.8		-1.2	6.2		16.2		120.3	11.5	61.1		-63.6	74.4	-60.5	0.164
2-5	18:53	93.4		-6.6	3.9		18.5		98.3	-10.5	109.4		-15.3	115.2	-19.7	0.134
2-4	18:57	94.7	97.4	-5.3	5.4	4.6	16.8	16.6	109.4	0.5	84.4	111.3	-40.3	97.5	-37.4	0.149
2-3	19:01	94.5		-5.5	4.3		18.0		101.9	-6.9	86.6		-38.1	93.4	-41.5	0.139
2-2	19:05	105.9		5.9	3.1		16.8		106.5	-2.4	198.4		73.7	199.5	64.6	0.145
2-1	19:09	96.9		-3.1	4.9		13.3		108.4	-0.4	127.7		3.0	142.9	8.0	0.148
3-6	18:50	103.6		3.6	4.2		17.7		111.0	2.2	111.5		-13.2	119.5	-15.4	0.151
3-5	18:54	88.2		-11.8	3.6		18.3		91.3	-17.6	163.9		39.2	169.6	34.7	0.124
3-4	18:58	111.1	109.0	11.1	5.9	4.1	16.5	16.6	132.6	23.7	76.7	111.3	-48.0	91.5	-43.3	0.181
3-3	19:02	127.4		27.4	3.6		18.5		131.8	23.0	74.4		-50.3	77.0	-57.9	0.180
3-2	19:06	107.5		7.5	2.7		14.8		105.7	-3.1	123.1		-1.6	121.1	-13.8	0.144
3-1	19:10	116.0		16.0	4.3		13.5		125.1	16.2	118.2		-6.5	127.5	-7.4	0.171
4-6	18:51	92.4		-7.6	5.4		16.5		106.7	-2.1	130.9		6.2	151.2	16.3	0.146
4-5	18:55	77.4		-22.6	3.3		18.6		78.7	-30.1	300.0		175.3	305.1	170.2	0.107
4-4	18:59	91.4	94.9	-8.6	3.3	3.8	18.6	16.7	93.0	-15.9	74.5	130.8	-50.2	75.8	-59.1	0.127
4-3	19:03	112.8		12.8	2.9		18.9		112.2	3.3	46.4		-78.3	46.1	-88.7	0.153
4-2	19:07	91.1		-8.9	2.5		14.8		88.6	-20.2	108.3		-16.4	105.4	-29.5	0.121
4-1	19:11	104.4		4.4	5.2		12.6		119.0	10.2	124.7		0.0	142.2	7.3	0.162
Inlet Averages		**100.0**			**4.4**		**16.5**		**108.8**		**124.7**			**134.9**		**0.148**

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction	NOx lb/MMBtu
1-6	18:48	75.4		23.4	8.3		10.7		107.1	51.6	109.2		-9.3	155.1	26.6	14.7	5.9	-40.7	-55.2	0.1461
1-5	18:52	77.8		25.8	4.3		12.6		83.9	28.4	204.4		85.9	220.4	91.9	1.1	5.9	13.8	17.9	0.1144
1-4	18:56	67.5	80.0	15.5	3.3	4.9	11.5	12.9	68.7	13.2	167.2	128.8	48.7	170.1	41.5	24.7	30.7	10.4	17.6	0.0936
1-3	19:00	85.3		33.3	3.7		17.1		88.8	33.3	66.8		-51.7	69.5	-59.0	28.6	34.4	20.7	27.1	0.1210
1-2	19:04	106.4		54.4	7.4		11.0		141.1	85.6	51.6		-66.9	68.4	-60.1	-17.6	-43.7	61.8	53.4	0.1924
1-1	19:08	67.4		15.4	2.2		14.7		64.5	9.1	173.8		55.3	166.4	37.8	46.3	52.7	-14.1	-0.7	0.0880
2-6	18:49	61.3		9.3	4.0		10.7		64.9	9.5	126.3		7.8	133.8	5.2	38.0	46.0	-106.7	-79.8	0.0885
2-5	18:53	12.9		-39.1	3.2		12.4		13.0	-42.4	111.5		-7.0	112.8	-15.8	86.2	86.7	-1.9	2.1	0.0178
2-4	18:57	91.4	60.1	39.4	3.0	3.3	12.2	14.0	91.4	35.9	62.3	101.4	-56.2	62.3	-66.3	3.5	16.4	26.2	36.1	0.1246
2-3	19:01	109.5		57.5	3.1		14.3		110.1	54.6	34.1		-84.4	34.3	-94.3	-15.9	-8.1	60.6	63.3	0.1502
2-2	19:05	72.1		20.1	3.0		17.6		72.1	16.6	73.1		-45.4	73.1	-55.5	31.9	32.3	63.2	63.4	0.0983
2-1	19:09	13.4		-38.6	3.5		16.6		13.8	-41.7	201.1		82.6	206.9	78.3	86.2	87.3	-57.5	-44.8	0.0188
3-6	18:50	3.9		-48.1	5.6		11.8		4.6	-50.9	240.0		121.5	280.8	152.2	96.2	95.9	-115.2	-134.9	0.0062
3-5	18:54	0.9		-51.1	3.2		13.2		0.9	-54.6	158.3		39.8	160.1	31.5	99.0	99.0	3.4	5.6	0.0012
3-4	18:58	79.0	49.5	27.0	3.4	3.5	11.5	11.9	80.8	25.3	31.9	112.4	-86.6	32.6	-95.9	28.9	39.1	58.4	64.4	0.1102
3-3	19:02	109.9		57.9	2.8		11.1		108.7	53.2	31.2		-87.3	30.9	-97.7	13.7	17.5	58.1	59.9	0.1482
3-2	19:06	101.9		49.9	2.3		13.4		98.1	42.6	74.0		-44.5	71.2	-57.3	5.2	7.2	39.9	41.2	0.1337
3-1	19:10	1.5		-50.5	3.8		10.2		1.6	-53.9	138.7		20.2	145.2	16.6	98.7	98.7	-17.3	-13.9	0.0021
4-6	18:51	26.9		-25.1	6.5		13.7		33.4	-22.0	236.7		118.2	294.2	165.7	70.9	68.7	-80.8	-94.6	0.0456
4-5	18:55	1.3		-50.7	3.8		16.1		1.4	-54.1	242.0		123.5	253.3	124.8	98.3	98.3	19.3	17.0	0.0019
4-4	18:59	16.4	18.3	-35.6	3.2	4.4	16.1	15.5	16.6	-38.9	49.5	131.4	-69.0	50.1	-78.5	82.1	82.2	33.6	33.9	0.0226
4-3	19:03	60.8		8.8	3.1		16.0		61.1	5.7	37.0		-81.5	37.2	-91.3	46.1	45.5	20.3	19.4	0.0834
4-2	19:07	2.3		-49.7	2.8		17.8		2.3	-53.2	89.4		-29.1	88.4	-40.1	97.5	97.4	17.5	16.1	0.0031
4-1	19:11	1.9		-50.1	6.7		13.3		2.4	-53.1	133.5		15.0	168.3	39.7	98.2	98.0	-7.1	-18.4	0.0033
Outlet Averages		**52.0**			**4.0**		**13.6**		**55.5**		**118.5**			**128.6**		**48.4**	**49.8**	**2.7**	**4.0**	**0.076**

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge Fd 9780

Date: 5/31/2007
Start Time: 19:36
End Time: 19:59

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx lb/MMBtu
1-6	19:36	100.4		-8.2	6.7		11.4		126.6	8.9	58.5		-21.2	73.7	-12.7	0.173
1-5	19:40	115.7		7.1	4.9		12.9		129.4	11.7	355.2		275.6	397.4	310.9	0.177
1-4	19:44	109.0	114.8	0.4	4.5	5.1	13.3	12.8	119.0	1.3	117.8	102.7	38.2	128.6	42.1	0.162
1-3	19:48	122.6		14.0	5.2		12.8		139.8	22.1	26.4		-53.3	30.1	-56.3	0.191
1-2	19:52	103.8		-4.8	4.4		13.4		112.6	-5.1	42.5		-37.2	46.1	-40.3	0.154
1-1	19:56	137.3		28.7	4.8		12.9		152.7	35.0	15.8		-63.9	17.6	-68.9	0.208
2-6	19:37	116.6		8.0	5.8		12.1		138.2	20.5	48.2		-31.5	57.1	-29.3	0.188
2-5	19:41	122.2		13.6	3.6		14.0		126.4	8.7	134.7		55.1	139.4	52.9	0.172
2-4	19:45	123.2	124.1	14.6	5.1	4.5	12.8	13.3	139.6	21.9	36.0	61.7	-43.7	40.8	-45.7	0.190
2-3	19:49	122.0		13.4	4.3		13.4		131.6	13.9	39.8		-39.9	42.9	-43.5	0.179
2-2	19:53	135.8		27.2	3.4		14.2		138.9	21.2	66.9		-12.8	68.4	-18.0	0.189
2-1	19:57	124.9		16.3	4.9		13.0		139.7	22.0	44.6		-35.1	49.9	-36.6	0.191
3-6	19:38	60.6		-48.0	4.2		13.8		65.0	-52.7	77.0		-2.6	82.5	-3.9	0.089
3-5	19:42	6.5		-102.1	3.6		14.1		6.7	-111.0	112.9		33.3	116.8	30.4	0.009
3-4	19:46	0.9	67.3	-107.7	5.3	4.0	12.7	13.8	1.0	-116.7	24.2	59.4	-55.5	27.8	-58.7	0.001
3-3	19:50	51.6		-57.0	3.4		14.3		52.8	-64.9	67.5		-12.2	69.0	-17.4	0.072
3-2	19:54	141.3		32.7	3.3		14.4		143.7	26.0	19.5		-60.2	19.8	-66.6	0.196
3-1	19:58	143.1		34.5	4.4		13.6		155.2	37.5	55.0		-24.7	59.7	-26.8	0.212
4-6	19:39	122.0		13.4	4.7		13.1		134.8	17.1	198.5		118.9	219.3	132.9	0.184
4-5	19:43	122.5		13.9	3.3		14.2		124.6	6.9	221.5		141.9	225.3	138.8	0.170
4-4	19:47	127.7	128.2	19.1	3.4	3.8	14.1	13.8	130.6	12.9	21.8	94.9	-57.9	22.3	-64.2	0.178
4-3	19:51	133.8		25.2	3.0		14.4		133.8	16.1	18.7		-61.0	18.7	-67.7	0.182
4-2	19:55	133.3		24.7	3.1		14.5		134.0	16.4	17.3		-62.4	17.4	-69.1	0.183
4-1	19:59	129.8		21.2	5.2		12.7		148.0	30.3	91.3		11.7	104.1	17.6	0.202
Inlet Averages		**108.6**			**4.4**		**13.4**		**117.7**		**79.7**			**86.4**		**0.160**

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction	NOx lb/MMBtu
1-6	19:36	103.4		-18.9	6.9		7.6		132.2	5.5	115.9		12.3	148.2	40.2	-3.0	-4.5	-98.1	-100.9	0.1803
1-5	19:40	111.7		-10.6	2.9		9.9		111.1	-15.6	372.1		268.5	370.0	262.0	3.5	14.2	-4.8	6.9	0.1515
1-4	19:44	120.1	118.2	-2.2	3.1	4.1	9.7	8.9	120.8	-5.9	102.9	116.1	-0.7	103.5	-4.5	-10.2	-1.5	12.6	19.5	0.1647
1-3	19:48	113.6		-8.7	3.1		9.9		114.2	-12.5	24.7		-78.9	24.8	-83.2	7.3	18.3	6.4	17.5	0.1558
1-2	19:52	126.7		4.4	6.2		8.4		154.3	27.6	29.7		-73.9	36.2	-71.8	-22.1	-37.0	30.1	21.6	0.2104
1-1	19:56	133.5		11.2	2.5		7.9		129.9	3.2	51.1		-52.5	49.7	-58.3	2.8	14.9	-223.4	-183.0	0.1771
2-6	19:37	106.2		-16.1	4.0		9.2		112.5	-14.2	111.1		7.5	117.7	9.7	8.9	18.6	-130.5	-105.9	0.1534
2-5	19:41	112.6		-9.7	2.9		10.3		112.0	-14.7	165.4		61.8	164.5	56.5	7.9	11.4	-22.8	-18.0	0.1527
2-4	19:45	114.1	118.3	-8.2	3.0	3.0	10.1	9.8	114.1	-12.6	22.1	74.3	-81.5	22.1	-85.9	7.4	18.3	38.6	45.8	0.1556
2-3	19:49	121.9		-0.4	2.7		10.2		119.9	-6.8	17.3		-86.3	17.0	-91.0	0.1	8.9	56.5	60.4	0.1635
2-2	19:53	131.3		9.0	2.5		9.3		127.7	1.0	38.1		-65.5	37.1	-70.9	3.3	8.0	43.0	45.8	0.1742
2-1	19:57	123.4		1.1	2.9		9.7		122.7	-4.0	91.6		-12.0	91.1	-16.9	1.2	12.2	-105.4	-82.6	0.1673
3-6	19:38	121.0		-1.3	4.6		8.2		132.9	6.2	236.2		132.6	259.4	151.4	-99.7	-104.6	-206.8	-214.3	0.1812
3-5	19:42	110.2		-12.1	2.7		9.7		108.4	-18.3	213.6		110.0	210.1	102.1	-1595.4	-1511.5	-89.2	-79.8	0.1478
3-4	19:46	118.6	126.6	-3.7	5.5	3.7	7.9	7.4	137.9	11.1	20.4	109.2	-83.2	23.7	-84.3	-13077.8	-13248.9	15.7	14.6	0.1880
3-3	19:50	133.5		11.2	4.5		7.3		145.7	19.0	19.9		-83.7	21.7	-86.3	-158.7	-176.1	70.5	68.5	0.1987
3-2	19:54	148.3		26.0	2.2		5.5		142.0	15.3	30.4		-73.2	29.1	-78.9	-5.0	1.2	-55.9	-46.7	0.1936
3-1	19:58	127.9		5.6	2.9		5.6		127.2	0.5	134.9		31.3	134.2	26.2	10.6	18.1	-145.3	-124.8	0.1734
4-6	19:39	119.6		-2.7	4.6		8.9		131.3	4.6	342.3		238.7	375.9	267.9	2.0	2.6	-72.4	-71.4	0.1791
4-5	19:43	118.4		-3.9	3.2		10.1		119.7	-7.0	203.5		99.9	205.8	97.8	3.3	3.9	8.1	8.6	0.1633
4-4	19:47	125.6	126.2	3.3	2.9	3.4	10.3	8.9	124.9	-1.8	21.7	114.9	-81.9	21.6	-86.4	1.6	4.4	0.5	3.2	0.1703
4-3	19:51	134.6		12.3	2.4		8.8		130.2	3.5	20.7		-82.9	20.0	-88.0	-0.6	2.7	-10.7	-7.1	0.1776
4-2	19:55	130.9		8.6	2.6		9.1		128.0	1.3	23.1		-80.5	22.6	-85.4	1.8	4.5	-33.5	-29.9	0.1746
4-1	19:59	127.9		5.6	4.7		6.4		141.3	14.6	77.8		-25.8	86.0	-22.0	1.5	4.5	14.8	17.4	0.1927
Outlet Averages		**122.3**			**3.6**		**8.8**		**126.7**		**103.6**			**108.0**		**-621.2**	**-621.6**	**-37.6**	**-30.6**	**0.173**

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge

Fd 9780

Date: 6/1/2007
Start Time: 8:48
End Time: 9:11

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx lb/MMBtu
1-6	8:48	93.9		-0.2	6.2		12.4		114.3	12.9	4.5		-104.3	5.5	-108.8	0.156
1-5	8:52	90.2		-3.9	5.5		13.0		104.8	3.4	62.6		-46.2	72.8	-41.5	0.143
1-4	8:56	97.5	103.7	3.4	3.8	4.7	14.7	14.0	102.1	0.6	60.8	106.9	-48.0	63.6	-50.6	0.139
1-3	9:00	112.9		18.8	4.9		13.8		126.3	24.9	56.3		-52.5	63.0	-51.2	0.172
1-2	9:04	121.9		27.8	3.5		15.3		125.4	24.0	117.6		8.8	121.0	6.7	0.171
1-1	9:08	105.9		11.8	4.0		14.9		112.2	10.7	339.8		231.0	359.9	245.7	0.153
2-6	8:49	90.0		-4.1	7.1		11.8		116.7	15.3	14.8		-94.0	19.2	-95.0	0.159
2-5	8:53	78.6		-15.5	4.2		14.8		84.2	-17.2	100.8		-8.0	108.0	-6.2	0.115
2-4	8:57	82.2	86.9	-11.9	5.2	4.5	13.9	14.4	93.7	-7.7	27.2	145.6	-81.6	31.0	-83.2	0.128
2-3	9:01	86.7		-7.4	3.8		15.0		90.8	-10.7	36.5		-72.3	38.2	-76.0	0.124
2-2	9:05	98.5		4.4	2.4		16.4		95.3	-6.1	262.0		153.2	253.5	139.3	0.130
2-1	9:09	85.6		-8.5	4.5		14.6		93.4	-8.0	432.3		323.5	471.8	357.6	0.127
3-6	8:50	97.2		3.1	5.7		13.1		114.5	13.0	19.0		-89.8	22.4	-91.9	0.156
3-5	8:54	86.1		-8.0	3.9		14.8		90.7	-10.8	63.2		-45.6	66.5	-47.7	0.124
3-4	8:58	92.5	100.6	-1.6	5.2	4.0	13.6	14.7	105.5	4.0	21.2	83.7	-87.6	24.2	-90.1	0.144
3-3	9:02	116.7		22.6	3.2		15.5		118.0	16.6	33.1		-75.7	33.5	-80.8	0.161
3-2	9:06	96.0		1.9	2.2		16.5		91.9	-9.5	108.6		-0.2	104.0	-10.3	0.125
3-1	9:10	114.9		20.8	4.0		14.6		121.7	20.3	257.3		148.5	272.5	158.3	0.166
4-6	8:51	84.9		-9.2	5.9		13.4		101.3	-0.1	38.9		-69.9	46.4	-67.8	0.138
4-5	8:55	70.1		-24.0	3.1		15.7		70.5	-30.9	74.3		-34.5	74.7	-39.5	0.096
4-4	8:59	81.4	85.1	-12.7	4.4	3.7	14.5	15.4	88.3	-13.1	48.2	98.9	-60.6	52.3	-61.9	0.120
4-3	9:03	98.6		4.5	2.6		16.4		96.4	-5.0	32.0		-76.8	31.3	-82.9	0.132
4-2	9:07	79.0		-15.1	2.5		16.7		76.9	-24.6	88.2		-20.6	85.8	-28.4	0.105
4-1	9:11	96.5		2.4	3.5		15.7		99.3	-2.2	311.5		202.7	320.5	206.2	0.135
Inlet Averages		**94.1**			**4.2**		**14.6**		**101.4**		**108.8**			**114.2**		**0.138**

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction	NOx lb/MMBtu
1-6	8:48	72.4		20.7	14.2		5.2		193.4	123.1	117.6		-20.9	314.2	140.2	22.9	-69.2	-2513.3	-5633.7	0.2638
1-5	8:52	70.6		18.9	4.3		14.0		76.1	5.8	64.4		-74.1	69.4	-104.5	21.7	27.4	-2.9	4.6	0.1038
1-4	8:56	92.9	85.7	41.2	3.7	5.5	14.8	13.1	96.7	26.4	42.2	160.4	-96.3	43.9	-130.0	4.7	5.3	30.6	31.0	0.1318
1-3	9:00	81.0		29.3	2.7		15.7		79.7	9.3	340.6		202.1	335.0	161.0	28.3	36.9	-505.0	-431.8	0.1086
1-2	9:04	107.0		55.3	1.6		16.8		99.2	28.9	103.1		-35.4	95.6	-78.3	12.2	20.9	12.3	21.0	0.1353
1-1	9:08	90.0		38.3	6.5		12.2		111.9	41.5	294.3		155.8	365.8	191.9	15.0	0.3	13.4	-1.6	0.1526
2-6	8:49	51.7		0.0	12.4		6.9		108.9	38.5	72.4		-66.1	152.5	-21.5	42.6	6.7	-389.2	-684.2	0.1485
2-5	8:53	21.5		-30.2	9.7		9.4		34.4	-36.0	69.2		-69.3	110.6	-63.4	72.6	59.2	31.3	-2.4	0.0469
2-4	8:57	78.1	63.1	26.4	12.5	8.6	6.9	10.4	166.4	96.1	25.6	152.9	-112.9	54.6	-119.4	5.0	-77.6	5.9	-75.9	0.2269
2-3	9:01	104.0		52.3	11.6		7.7		200.2	129.8	64.7		-73.8	124.5	-49.4	-20.0	-120.6	-77.3	-225.9	0.2730
2-2	9:05	74.1		22.4	1.9		16.5		69.8	-0.5	142.5		4.0	134.3	-39.7	24.8	26.8	45.6	47.0	0.0952
2-1	9:09	49.4		-2.3	3.5		14.9		50.8	-19.5	543.1		404.6	558.7	384.8	42.3	45.6	-25.6	-18.4	0.0693
3-6	8:50	3.4		-48.3	10.0		8.9		5.6	-64.7	67.7		-70.8	111.2	-62.8	96.5	95.1	-256.3	-396.9	0.0076
3-5	8:54	0.9		-50.8	7.9		10.8		1.2	-69.1	130.4		-8.1	179.6	5.6	99.0	98.6	-106.3	-169.8	0.0017
3-4	8:58	65.1	45.0	13.4	7.4	7.1	11.3	11.6	86.3	16.0	19.6	129.2	-118.9	26.0	-148.0	29.6	18.2	7.5	-7.5	0.1177
3-3	9:02	99.1		47.4	5.1		13.4		112.3	41.9	24.7		-113.8	28.0	-146.0	15.1	4.9	25.4	16.4	0.1531
3-2	9:06	93.5		41.8	4.8		13.7		104.0	33.6	178.4		39.9	198.3	24.4	2.6	-13.1	-64.3	-90.8	0.1418
3-1	9:10	7.8		-43.9	7.4		11.4		10.3	-60.0	354.5		216.0	470.0	296.1	93.2	91.5	-37.8	-72.5	0.0141
4-6	8:51	6.7		-45.0	6.9		11.8		8.6	-61.8	86.9		-51.6	111.1	-62.8	92.1	91.5	-123.4	-139.3	0.0117
4-5	8:55	3.4		-48.3	3.7		14.8		3.5	-66.8	88.9		-49.6	92.5	-81.4	95.1	95.0	-19.7	-23.8	0.0048
4-4	8:59	17.4	13.1	-34.3	3.1	4.9	15.3	13.8	17.5	-52.8	189.1	111.5	50.6	190.2	16.2	78.6	80.2	-292.3	-263.7	0.0239
4-3	9:03	47.6		-4.1	2.6		15.8		46.6	-23.8	33.4		-105.1	32.7	-141.3	51.7	51.7	-4.4	-4.4	0.0635
4-2	9:07	2.4		-49.3	2.5		15.9		2.3	-68.0	117.0		-21.5	113.8	-60.1	97.0	97.0	-32.7	-32.7	0.0032
4-1	9:11	1.3		-50.4	10.4		8.9		2.2	-68.1	153.9		15.4	262.4	88.4	98.7	97.8	50.6	18.1	0.0030
Outlet Averages		**51.7**			**6.5**		**12.2**		**70.3**		**138.5**			**174.0**		**46.7**	**32.1**	**-176.2**	**-339.5**	**0.096**

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge

Fd 9780

Date: 6/1/2007
Start Time: 9:12
End Time: 9:35

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx lb/MMBtu
1-6	9:12	95.6		1.7	7.5		11.8		127.7	26.0	68.6		-76.1	91.6	-61.4	0.174
1-5	9:16	89.4		-4.5	5.6		14.2		104.6	2.9	70.2		-74.5	82.1	-70.9	0.143
1-4	9:20	90.9	101.0	-3.0	3.9	5.0	15.4	14.3	95.7	-6.0	223.2	150.8	78.5	235.0	82.0	0.131
1-3	9:24	107.0		13.1	5.0		14.3		120.5	18.7	56.0		-88.7	63.0	-90.0	0.164
1-2	9:28	117.8		23.9	3.7		15.5		122.6	20.9	186.0		41.3	193.6	40.5	0.167
1-1	9:32	105.2		11.3	4.1		14.8		112.1	10.4	300.7		156.0	320.4	167.3	0.153
2-6	9:13	94.2		0.3	6.8		12.5		119.6	17.9	26.7		-118.0	33.9	-119.2	0.163
2-5	9:17	79.2		-14.7	4.4		14.8		85.9	-15.8	79.7		-65.0	86.5	-66.6	0.117
2-4	9:21	84.7	91.1	-9.2	5.1	4.5	14.2	14.6	96.0	-5.8	83.7	167.4	-61.0	94.8	-58.2	0.131
2-3	9:25	83.2		-10.7	3.9		15.2		87.6	-14.1	58.0		-86.7	61.1	-92.0	0.119
2-2	9:29	103.0		9.1	2.5		16.3		100.2	-1.5	236.5		91.8	230.1	77.0	0.137
2-1	9:33	102.2		8.3	4.5		14.3		111.5	9.8	519.8		375.1	567.3	414.3	0.152
3-6	9:14	96.7		2.8	5.1		13.9		109.6	7.8	24.5		-120.2	27.8	-125.3	0.149
3-5	9:18	85.3		-8.6	3.6		15.5		88.3	-13.5	105.8		-38.9	109.5	-43.6	0.120
3-4	9:22	90.0	99.3	-3.9	5.3	3.9	14.0	15.1	103.3	1.5	51.8	143.9	-92.9	59.4	-93.6	0.141
3-3	9:26	113.7		19.8	3.1		15.9		114.3	12.6	53.0		-91.7	53.3	-99.8	0.156
3-2	9:30	95.5		1.6	2.7		16.1		93.9	-7.8	102.1		-42.6	100.4	-52.6	0.128
3-1	9:34	114.6		20.7	3.8		15.0		120.0	18.2	526.4		381.7	551.0	398.0	0.164
4-6	9:15	82.7		-11.2	6.0		13.5		99.4	-2.4	32.1		-112.6	38.6	-114.5	0.135
4-5	9:19	67.0		-26.9	3.1		16.3		67.4	-34.3	224.4		79.7	225.7	72.6	0.092
4-4	9:23	81.0	84.4	-12.9	4.4	3.7	14.7	15.5	87.9	-13.9	41.1	116.6	-103.6	44.6	-108.5	0.120
4-3	9:27	101.3		7.4	2.8		16.2		100.2	-1.5	38.4		-106.3	38.0	-115.1	0.137
4-2	9:31	79.9		-14.0	2.4		16.6		77.3	-24.4	82.9		-61.8	80.2	-72.8	0.105
4-1	9:35	94.4		0.5	3.3		15.5		96.0	-5.7	280.6		135.9	285.4	132.3	0.131
Inlet Averages		**93.9**			**4.3**		**14.9**		**101.7**		**144.7**			**153.1**		**0.139**

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction	NOx lb/MMBtu
1-6	9:12	76.7		23.1	8.2		10.8		108.1	39.3	98.8		-29.5	139.3	-32.2	19.8	15.3	-44.0	-52.0	0.1474
1-5	9:16	73.4		19.8	4.0		14.5		77.7	9.0	51.1		-77.2	54.1	-117.4	17.9	25.7	27.2	34.1	0.1060
1-4	9:20	101.0	88.8	47.4	3.4	4.4	15.0	14.1	103.3	34.5	50.9	125.6	-77.4	52.1	-119.4	-11.1	-7.9	77.2	77.8	0.1409
1-3	9:24	81.7		28.1	2.7		15.6		80.4	11.6	138.9		10.6	136.6	-34.9	23.6	33.3	-148.0	-116.7	0.1096
1-2	9:28	107.1		53.5	1.6		16.7		99.3	30.6	90.1		-38.2	83.6	-87.9	9.1	19.0	51.6	56.6	0.1354
1-1	9:32	93.1		39.5	6.6		12.1		116.5	47.8	324.0		195.7	405.6	234.1	11.5	-4.0	-7.7	-26.6	0.1589
2-6	9:13	56.4		2.8	6.1		12.7		68.2	-0.6	47.3		-81.0	57.2	-114.3	40.1	43.0	-77.2	-68.8	0.0930
2-5	9:17	23.4		-30.2	3.3		15.1		23.8	-45.0	52.1		-76.2	53.0	-118.5	70.5	72.3	34.5	38.7	0.0325
2-4	9:21	82.8	64.9	29.2	4.3	3.9	14.4	14.7	89.3	20.5	26.9	131.5	-101.4	29.0	-142.5	2.2	7.0	67.9	69.4	0.1217
2-3	9:25	103.3		49.7	4.3		14.4		111.4	42.6	23.3		-105.0	25.1	-146.4	-24.2	-27.2	59.8	58.9	0.1519
2-2	9:29	75.4		21.8	1.7		16.7		70.3	1.5	169.3		41.0	157.8	-13.6	26.8	29.8	28.4	31.4	0.0959
2-1	9:33	48.1		-5.5	3.5		15.0		49.5	-19.3	470.2		341.9	483.7	312.2	52.9	55.6	9.5	14.7	0.0675
3-6	9:14	2.9		-50.7	10.6		8.5		5.0	-63.7	63.5		-64.8	110.4	-61.1	97.0	95.4	-159.2	-297.6	0.0069
3-5	9:18	1.2		-52.4	9.6		9.3		1.9	-65.9	124.2		-4.1	196.7	25.3	98.6	97.8	-17.4	-79.7	0.0026
3-4	9:22	69.1	47.0	15.5	10.4	10.8	8.6	8.3	117.8	49.0	25.2	126.0	-103.1	43.0	-128.5	23.2	-14.1	51.4	27.7	0.1606
3-3	9:26	100.2		46.6	12.4		6.9		211.0	142.2	24.3		-104.0	51.2	-120.3	11.9	-84.5	54.2	4.0	0.2877
3-2	9:30	93.6		40.0	12.9		6.4		209.4	140.7	138.0		9.7	308.8	137.3	2.0	-123.0	-35.2	-207.5	0.2856
3-1	9:34	14.9		-38.7	8.8		10.1		22.0	-46.7	380.7		252.4	563.2	391.7	87.0	81.6	27.7	-2.2	0.0301
4-6	9:15	9.0		-44.6	6.7		12.0		11.3	-57.4	88.7		-39.6	111.8	-59.7	89.1	88.6	-176.3	-189.9	0.0155
4-5	9:19	3.9		-49.7	3.2		15.1		3.9	-64.8	164.5		36.2	166.4	-5.1	94.2	94.1	26.7	26.3	0.0054
4-4	9:23	16.2	13.7	-37.4	3.0	5.3	15.3	13.3	16.2	-52.6	142.2	130.2	13.9	142.2	-29.3	80.0	81.6	-246.0	-218.9	0.0221
4-3	9:27	49.0		-4.6	2.7		15.6		48.2	-20.6	33.0		-95.3	32.5	-139.0	51.6	51.9	14.1	14.5	0.0657
4-2	9:31	2.4		-51.2	2.5		15.9		2.3	-66.4	114.4		-13.9	111.3	-60.2	97.0	97.0	-38.0	-38.7	0.0032
4-1	9:35	1.4		-52.2	13.8		5.6		3.5	-65.2	238.4		110.1	601.0	429.6	98.5	96.3	15.0	-110.6	0.0048
Outlet Averages		**53.6**			**6.1**		**12.6**		**68.8**		**128.3**			**171.5**		**44.6**	**34.4**	**-16.8**	**-39.8**	**0.094**

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge Fd 9780

Date: 6/1/2007
Start Time: 9:36
End Time: 9:59

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx lb/MMBtu
1-6	9:36	94.9		2.1	7.4		11.8		125.8	25.4	58.6		-58.4	77.7	-46.5	0.172
1-5	9:40	87.6		-5.2	5.2		13.7		99.9	-0.5	99.8		-17.2	113.8	-10.4	0.136
1-4	9:44	93.0	102.0	0.2	4.1	4.9	14.8	14.1	99.1	-1.3	134.9	131.2	17.9	143.7	19.6	0.135
1-3	9:48	110.3		17.5	5.1		14.0		125.0	24.6	59.1		-57.9	67.0	-57.2	0.170
1-2	9:52	122.0		29.2	3.5		15.4		125.5	25.1	143.3		26.3	147.4	23.3	0.171
1-1	9:56	104.1		11.3	4.1		15.0		110.9	10.5	291.3		174.3	310.4	186.2	0.151
2-6	9:37	90.1		-2.7	6.7		12.3		113.6	13.2	31.6		-85.4	39.8	-84.3	0.155
2-5	9:41	69.1		-23.7	4.2		14.5		74.1	-26.3	87.4		-29.6	93.7	-30.5	0.101
2-4	9:45	69.7	84.5	-23.1	5.5	4.6	13.8	14.4	81.0	-19.4	40.8	134.4	-76.2	47.4	-76.7	0.110
2-3	9:49	73.8		-19.0	4.0		15.0		78.2	-22.2	32.3		-84.7	34.2	-90.0	0.107
2-2	9:53	101.7		8.9	2.6		16.2		99.5	-0.9	219.4		102.4	214.6	90.4	0.136
2-1	9:57	102.3		9.5	4.3		14.6		110.3	9.9	394.9		277.9	425.8	301.7	0.150
3-6	9:38	92.6		-0.2	5.0		13.8		104.2	3.9	24.0		-93.0	27.0	-97.1	0.142
3-5	9:42	83.0		-9.8	4.2		14.9		89.0	-11.4	81.1		-35.9	86.9	-37.2	0.121
3-4	9:46	93.3	100.3	0.5	5.5	4.0	13.7	14.9	108.4	8.1	46.6	111.8	-70.4	54.2	-70.0	0.148
3-3	9:50	118.5		25.7	3.2		15.7		119.8	19.5	32.7		-84.3	33.1	-91.1	0.163
3-2	9:54	98.7		5.9	2.2		16.5		94.5	-5.9	111.5		-5.5	106.7	-17.4	0.129
3-1	9:58	115.6		22.8	4.0		14.9		122.4	22.1	375.0		258.0	397.2	273.0	0.167
4-6	9:39	81.2		-11.6	5.6		13.3		95.0	-5.4	43.0		-74.0	50.3	-73.9	0.130
4-5	9:43	67.2		-25.6	3.2		15.6		68.0	-32.4	115.5		-1.5	116.8	-7.4	0.093
4-4	9:47	82.2	84.6	-10.6	4.8	3.7	13.7	15.0	91.4	-9.0	69.6	90.7	-47.4	77.4	-46.8	0.125
4-3	9:51	102.1		9.3	2.7		15.9		100.4	0.0	24.7		-92.3	24.3	-99.9	0.137
4-2	9:55	82.0		-10.8	2.4		16.1		79.3	-21.0	96.1		-20.9	93.0	-31.2	0.108
4-1	9:59	92.9		0.1	3.2		15.3		93.9	-6.4	195.3		78.3	197.5	73.3	0.128
Inlet Averages		**92.8**			**4.3**		**14.6**		**100.4**		**117.0**			**124.2**		**0.137**

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction	NOx lb/MMBtu
1-6	9:36	75.1		15.7	8.1		10.8		105.0	17.1	129.3		-2.8	180.8	3.4	20.9	16.5	-120.6	-132.7	0.1432
1-5	9:40	71.7		12.3	3.8		14.7		75.1	-12.9	85.7		-46.4	89.7	-87.7	18.2	24.9	14.1	21.2	0.1023
1-4	9:44	96.7	91.9	37.3	3.5	4.4	15.0	14.2	99.5	11.5	43.5	142.5	-88.6	44.8	-132.7	-4.0	-0.4	67.8	68.9	0.1356
1-3	9:48	83.3		23.9	2.8		15.6		82.4	-5.6	185.6		53.5	183.5	6.1	24.5	34.1	-214.0	-174.1	0.1123
1-2	9:52	113.7		54.3	1.6		16.7		105.5	17.5	84.1		-48.0	78.0	-99.4	6.8	16.0	41.3	47.1	0.1438
1-1	9:56	110.8		51.4	6.5		12.2		137.7	49.8	327.0		194.9	406.5	229.1	-6.4	-24.2	-12.3	-31.0	0.1878
2-6	9:37	52.5		-6.9	6.3		12.3		64.4	-23.6	58.4		-73.7	71.6	-105.8	41.7	43.3	-84.8	-79.7	0.0878
2-5	9:41	21.5		-37.9	11.2		8.0		39.7	-48.3	73.4		-58.7	135.4	-42.0	68.9	46.4	16.0	-44.6	0.0541
2-4	9:45	80.8	73.7	21.4	16.5	9.5	3.3	9.5	328.7	240.7	27.2	133.0	-104.9	110.7	-66.8	-15.9	-305.7	33.3	-133.3	0.4482
2-3	9:49	107.0		47.6	14.4		5.0		294.7	206.7	23.2		-108.9	63.9	-113.5	-45.0	-277.0	28.2	-86.7	0.4018
2-2	9:53	98.0		38.6	3.2		15.3		99.1	11.1	156.6		24.5	158.4	-19.1	3.6	0.4	28.6	26.2	0.1351
2-1	9:57	82.4		23.0	5.3		13.2		94.5	6.6	459.4		327.3	527.1	349.7	19.5	14.3	-16.3	-23.8	0.1289
3-6	9:38	2.9		-56.5	11.0		8.1		5.2	-82.7	99.5		-32.6	179.9	2.5	96.9	95.0	-314.6	-565.8	0.0071
3-5	9:42	1.2		-58.2	9.6		9.3		1.9	-86.1	142.1		10.0	225.1	47.7	98.6	97.9	-75.2	-158.9	0.0026
3-4	9:46	71.5	53.3	12.1	9.2	9.1	9.7	9.8	109.4	21.4	32.6	127.9	-99.5	49.9	-127.6	23.4	-0.9	30.0	7.9	0.1492
3-3	9:50	110.5		51.1	9.0		9.9		166.2	78.2	25.5		-106.6	38.4	-139.1	6.8	-38.7	22.0	-16.0	0.2266
3-2	9:54	109.8		50.4	8.5		10.3		158.5	70.5	120.2		-11.9	173.5	-3.9	-11.2	-67.8	-7.8	-52.6	0.2161
3-1	9:58	23.7		-35.7	7.2		11.5		31.0	-57.0	347.4		215.3	453.9	276.5	79.5	74.7	7.4	-14.3	0.0422
4-6	9:39	5.8		-53.6	6.3		12.3		7.1	-80.9	122.6		-9.5	150.3	-27.1	92.9	92.5	-185.1	-198.8	0.0097
4-5	9:43	3.4		-56.0	3.4		15.0		3.5	-84.5	128.1		-4.0	131.0	-46.4	94.9	94.9	-10.9	-12.2	0.0047
4-4	9:47	15.7	18.6	-43.7	3.0	5.2	15.3	13.4	15.7	-72.3	88.9	125.1	-43.2	88.9	-88.5	80.9	82.8	-27.7	-14.9	0.0214
4-3	9:51	81.0		21.6	2.6		15.7		79.2	-8.7	24.6		-107.5	24.1	-153.4	20.7	21.1	0.4	0.9	0.1080
4-2	9:55	4.1		-55.3	2.4		16.9		4.0	-84.0	161.1		29.0	155.9	-21.6	95.0	95.0	-67.6	-67.6	0.0054
4-1	9:59	1.4		-58.0	13.4		6.1		3.3	-84.6	225.0		92.9	537.0	359.6	98.5	96.4	-15.2	-171.9	0.0046
Outlet Averages		**59.4**			**7.0**		**11.7**		**88.0**		**132.1**			**177.4**		**37.9**	**9.6**	**-36.0**	**-75.7**	**0.120**

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge

Fd 9780

Date: 6/1/2007
Start Time: 10:00
End Time: 10:23

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx lb/MMBtu
1-6	10:00	90.9		2.7	7.6		11.8		122.3	26.7	61.9		-75.4	83.3	-63.8	0.167
1-5	10:04	82.8		-5.4	5.3		13.7		95.0	-0.6	132.2		-5.1	151.7	4.5	0.130
1-4	10:08	89.5	97.4	1.3	3.9	4.9	14.4	14.0	94.2	-1.4	168.1	134.1	30.8	177.0	29.9	0.129
1-3	10:12	106.4		18.2	5.2		14.0		121.3	25.7	62.0		-75.3	70.7	-76.5	0.165
1-2	10:16	114.8		26.6	3.6		15.4		118.8	23.1	113.1		-24.2	117.0	-30.1	0.162
1-1	10:20	99.8		11.6	4.0		14.7		105.7	10.1	267.5		130.2	283.3	136.2	0.144
2-6	10:01	81.7		-6.5	6.7		12.2		103.0	7.3	27.2		-110.1	34.3	-112.9	0.140
2-5	10:05	64.1		-24.1	4.5		14.4		70.0	-25.7	139.0		1.7	151.7	4.6	0.095
2-4	10:09	75.5	81.2	-12.7	5.1	4.6	13.8	14.5	85.5	-10.1	71.6	185.4	-65.7	81.1	-66.0	0.117
2-3	10:13	87.3		-0.9	4.0		14.8		92.5	-3.2	45.8		-91.5	48.5	-98.6	0.126
2-2	10:17	89.4		1.2	2.9		16.9		88.9	-6.7	223.1		85.8	221.9	74.7	0.121
2-1	10:21	89.1		0.9	4.6		14.8		97.8	2.2	605.8		468.5	665.3	518.1	0.133
3-6	10:02	96.9		8.7	5.0		13.8		109.1	13.4	28.7		-108.6	32.3	-114.8	0.149
3-5	10:06	79.8		-8.4	3.9		15.0		84.0	-11.6	126.8		-10.5	133.5	-13.6	0.115
3-4	10:10	86.8	96.0	-1.4	5.2	3.9	13.8	15.1	99.0	3.3	59.5	114.9	-77.8	67.8	-79.3	0.135
3-3	10:14	112.5		24.3	3.2		16.0		113.8	18.1	46.1		-91.2	46.6	-100.5	0.155
3-2	10:18	89.4		1.2	2.2		16.4		85.6	-10.1	114.1		-23.2	109.2	-37.9	0.117
3-1	10:22	110.6		22.4	4.1		15.5		117.8	22.2	314.2		176.9	334.8	187.6	0.161
4-6	10:03	82.8		-5.4	5.7		13.2		97.5	1.9	158.3		21.0	186.4	39.3	0.133
4-5	10:07	62.5		-25.7	3.3		15.2		63.6	-32.1	105.7		-31.6	107.5	-39.6	0.087
4-4	10:11	74.0	78.4	-14.2	4.8	3.7	14.1	15.0	82.3	-13.4	46.7	114.6	-90.6	51.9	-95.2	0.112
4-3	10:15	94.8		6.6	2.7		15.8		93.2	-2.4	29.6		-107.7	29.1	-118.0	0.127
4-2	10:19	69.1		-19.1	2.3		16.3		66.5	-29.1	100.1		-37.2	96.3	-50.8	0.091
4-1	10:23	87.0		-1.2	3.2		15.3		88.0	-7.7	247.3		110.0	250.1	103.0	0.120
Inlet Averages		88.2			4.3		14.6		95.6		137.3			147.1		0.130

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction	NOx lb/MMBtu
1-6	10:00	76.3		29.8	8.1		10.8		106.7	48.2	112.8		-40.6	157.7	-78.7	16.1	12.8	-82.2	-89.3	0.1455
1-5	10:04	75.3		28.8	4.1		14.4		80.2	21.8	141.1		-12.3	150.3	-86.1	9.1	15.6	-6.7	0.9	0.1094
1-4	10:08	81.8	80.7	35.3	3.6	4.5	14.9	14.1	84.6	26.2	57.2	119.0	-96.2	59.2	-177.3	8.6	10.2	66.0	66.6	0.1154
1-3	10:12	73.0		26.5	2.8		15.6		72.2	13.7	153.9		0.5	152.2	-84.2	31.4	40.5	-148.2	-115.3	0.0984
1-2	10:16	102.2		55.7	1.7		16.6		95.3	36.8	68.7		-84.7	64.0	-172.4	11.0	19.8	39.3	45.3	0.1299
1-1	10:20	75.7		29.2	6.5		12.2		94.1	35.6	180.4		27.0	224.2	-12.2	24.1	11.0	32.6	20.9	0.1283
2-6	10:01	52.6		6.1	10.9		8.2		94.2	35.7	67.1		-86.3	120.1	-116.3	35.6	8.6	-146.7	-250.3	0.1284
2-5	10:05	17.8		-28.7	7.9		10.8		24.5	-34.0	154.4		1.0	212.6	-23.9	72.2	65.0	-11.1	-40.1	0.0334
2-4	10:09	73.8	54.1	27.3	7.8	7.2	11.3	11.6	100.8	42.4	34.9	175.5	-118.5	47.7	-188.8	2.3	-17.9	51.3	41.2	0.1375
2-3	10:13	97.3		50.8	7.4		11.5		129.0	70.5	27.2		-126.2	36.1	-200.4	-11.5	-39.5	40.6	25.7	0.1759
2-2	10:17	59.1		12.6	3.1		15.2		59.4	1.0	117.3		-36.1	118.0	-118.5	33.9	33.1	47.4	46.8	0.0810
2-1	10:21	24.0		-22.5	6.3		12.6		29.4	-29.0	652.3		498.9	799.7	563.3	73.1	69.9	-7.7	-20.2	0.0401
3-6	10:02	3.9		-42.6	12.2		7.1		8.0	-50.4	114.9		-38.5	236.4	0.0	96.0	92.6	-300.3	-631.7	0.0109
3-5	10:06	0.9		-45.6	9.7		9.2		1.4	-57.0	156.7		3.3	250.4	14.0	98.9	98.3	-23.6	-87.6	0.0020
3-4	10:10	63.8	41.4	17.3	9.5	10.4	9.4	8.7	100.2	41.7	29.8	164.2	-123.6	46.8	-189.7	26.5	-1.2	49.9	31.0	0.1366
3-3	10:14	94.1		47.6	8.3		10.5		133.7	75.2	25.4		-128.0	36.1	-200.4	16.4	-17.5	44.9	22.6	0.1823
3-2	10:18	84.0		37.5	8.5		10.4		121.3	62.8	160.3		6.9	231.4	-5.0	6.0	-41.7	-40.5	-111.9	0.1653
3-1	10:22	1.9		-44.6	14.0		5.5		4.9	-53.5	497.9		344.5	1291.7	1055.2	98.3	95.8	-58.5	-285.8	0.0067
4-6	10:03	12.5		-34.0	6.6		12.1		15.6	-42.8	215.9		62.5	270.3	33.8	84.9	84.0	-36.4	-45.0	0.0213
4-5	10:07	2.8		-43.7	3.6		14.8		2.9	-55.6	103.9		-49.5	107.5	-128.9	95.5	95.4	1.7	0.0	0.0040
4-4	10:11	4.6	9.9	-41.9	3.1	5.3	15.2	13.2	4.6	-53.8	115.5	155.0	-37.9	116.1	-120.3	93.8	94.4	-147.3	-123.7	0.0063
4-3	10:15	36.8		-9.7	2.6		15.6		36.0	-22.5	30.1		-123.3	29.4	-207.0	61.2	61.4	-1.7	-1.1	0.0491
4-2	10:19	2.0		-44.5	2.3		16.0		1.9	-56.5	155.9		2.5	150.0	-86.4	97.1	97.1	-55.7	-55.7	0.0026
4-1	10:23	0.9		-45.6	13.7		5.7		2.2	-56.2	308.4		155.0	766.7	530.3	99.0	97.5	-24.7	-206.6	0.0031
Outlet Averages		46.5			6.8		11.9		58.5		153.4			236.4		49.1	41.0	-29.9	-73.5	0.080

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge

Fd 9780

Date: 6/1/2007
Start Time: 10:24
End Time: 10:47

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx lb/MMBtu
1-6	10:24	91.7		4.4	7.3		12.1		120.7	25.4	143.3		56.6	188.6	94.6	0.165
1-5	10:28	84.9		-2.4	5.4		13.6		98.0	2.8	54.2		-32.5	62.6	-31.4	0.134
1-4	10:32	94.1	99.0	6.8	4.2	5.1	15.2	14.1	100.9	5.6	78.0	113.6	-8.7	83.6	-10.4	0.138
1-3	10:36	106.5		19.3	5.1		14.0		120.7	25.4	42.4		-44.3	48.0	-46.0	0.165
1-2	10:40	118.7		31.5	3.4		15.4		121.4	26.1	105.6		18.9	108.0	14.0	0.166
1-1	10:44	98.0		10.8	4.9		14.1		109.6	14.4	257.8		171.1	288.4	194.4	0.150
2-6	10:25	88.3		1.0	7.1		12.6		114.5	19.3	24.6		-62.1	31.9	-62.1	0.156
2-5	10:29	66.6		-20.7	4.5		14.8		72.7	-22.6	98.4		11.7	107.4	13.4	0.099
2-4	10:33	72.1	84.4	-15.2	5.5	4.7	13.9	14.7	83.8	-11.5	39.4	113.1	-47.3	45.8	-48.2	0.114
2-3	10:37	79.3		-8.0	4.1		15.3		84.5	-10.8	37.4		-49.3	39.8	-54.2	0.115
2-2	10:41	100.7		13.5	2.5		16.9		98.0	2.7	204.6		117.9	199.0	105.0	0.134
2-1	10:45	99.4		12.2	4.6		14.6		109.2	13.9	274.0		187.3	300.9	206.9	0.149
3-6	10:26	83.9		-3.4	5.6		14.4		98.2	2.9	13.9		-72.8	16.3	-77.8	0.134
3-5	10:30	41.0		-46.3	4.0		15.9		43.4	-51.8	58.8		-27.9	62.3	-31.7	0.059
3-4	10:34	66.7	83.3	-20.6	5.4	4.1	13.2	15.0	77.0	-18.2	25.4	65.4	-61.3	29.3	-64.7	0.105
3-3	10:38	105.3		18.1	3.5		15.6		108.3	13.1	22.8		-63.9	23.5	-70.6	0.148
3-2	10:42	90.2		2.9	2.3		16.2		86.8	-8.5	74.7		-12.0	71.9	-22.1	0.118
3-1	10:46	112.9		25.7	4.0		14.7		119.6	24.3	196.7		110.0	208.3	114.3	0.163
4-6	10:27	78.0		-9.3	6.0		12.8		93.7	-1.6	25.3		-61.4	30.4	-63.6	0.128
4-5	10:31	67.0		-20.3	3.6		15.2		69.3	-25.9	84.9		-1.8	87.8	-6.2	0.095
4-4	10:35	78.2	82.3	-9.1	5.0	3.8	14.0	14.8	88.0	-7.2	36.2	54.9	-50.5	40.8	-53.3	0.120
4-3	10:39	99.9		12.7	2.8		15.7		98.8	3.5	22.1		-64.6	21.9	-72.2	0.135
4-2	10:43	76.4		-10.9	2.3		16.2		73.5	-21.7	66.5		-20.2	64.0	-30.0	0.100
4-1	10:47	94.2		6.9	3.3		15.1		95.8	0.5	94.4		7.7	96.0	2.0	0.131
Inlet Averages		87.3			4.4		14.6		95.3		86.7			94.0		0.130

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction	NOx lb/MMBtu
1-6	10:24	73.0		24.3	8.1		10.8		102.1	0.2	168.6		52.7	235.8	-19.4	20.4	15.4	-17.7	-25.0	0.1392
1-5	10:28	55.5		6.8	4.1		14.4		59.1	-42.8	47.5		-68.4	50.6	-204.6	34.6	39.7	12.4	19.1	0.0806
1-4	10:32	94.3	81.6	45.6	3.7	4.5	14.8	14.0	98.1	-3.8	29.5	125.9	-86.4	30.7	-224.5	-0.2	2.7	62.2	63.3	0.1338
1-3	10:36	80.7		32.0	2.8		15.5		79.8	-22.1	152.1		36.2	150.4	-104.7	24.2	33.9	-256.7	-213.1	0.1088
1-2	10:40	105.4		56.7	1.7		16.6		98.3	-3.6	76.0		-39.9	70.9	-184.3	11.2	19.1	28.0	34.4	0.1340
1-1	10:44	80.9		32.2	6.7		12.0		102.0	0.1	281.5		165.6	354.8	99.7	17.4	7.0	-9.2	-23.0	0.1391
2-6	10:25	43.4		-5.3	6.4		12.3		53.6	-48.3	47.5		-68.4	58.6	-196.5	50.8	53.2	-93.1	-83.8	0.0731
2-5	10:29	7.7		-41.0	3.9		14.6		8.1	-93.8	70.5		-45.4	74.2	-180.9	88.4	88.8	28.4	30.9	0.0111
2-4	10:33	80.8	59.5	32.1	13.2	7.7	6.3	11.2	187.8	85.9	22.5	126.4	-93.4	52.3	-202.9	-12.1	-124.1	42.9	-14.2	0.2561
2-3	10:37	104.1		55.4	13.6		5.9		255.3	153.4	24.2		-91.7	59.3	-195.8	-31.3	-202.1	35.3	-48.9	0.3481
2-2	10:41	77.2		28.5	1.9		16.4		72.7	-29.2	147.1		31.2	138.6	-116.6	23.3	25.8	28.1	30.4	0.0992
2-1	10:45	43.5		-5.2	6.9		11.7		55.6	-46.3	446.4		330.5	570.8	315.6	56.2	49.0	-62.9	-89.7	0.0758
3-6	10:26	1.9		-46.8	17.9		2.0		11.3	-90.6	77.8		-38.1	464.2	209.0	97.7	88.5	-459.7	-2754.5	0.0155
3-5	10:30	0.9		-47.8	18.1		1.8		5.8	-96.1	103.6		-12.3	662.3	407.1	97.8	86.8	-76.2	-963.4	0.0078
3-4	10:34	59.9	42.7	11.2	17.4	17.4	2.5	2.5	306.3	204.5	22.9	110.6	-93.0	117.1	-138.0	10.2	-297.7	9.8	-299.3	0.4177
3-3	10:38	95.4		46.7	17.1		2.7		449.4	347.5	30.5		-85.4	143.7	-111.5	9.4	-314.8	-33.8	-512.5	0.6128
3-2	10:42	93.4		44.7	16.8		2.9		407.8	305.9	171.5		55.6	748.7	493.6	-3.5	-369.8	-129.6	-941.5	0.5560
3-1	10:46	4.5		-44.2	17.0		2.8		20.7	-81.2	257.2		141.3	1180.5	925.3	96.0	82.7	-30.8	-466.6	0.0282
4-6	10:27	1.9		-46.8	6.8		11.9		2.4	-99.5	77.4		-38.5	98.3	-156.9	97.6	97.4	-205.9	-223.3	0.0033
4-5	10:31	2.9		-45.8	3.7		14.8		3.0	-98.9	58.3		-57.6	60.7	-194.5	95.7	95.6	31.3	30.9	0.0041
4-4	10:35	3.0	11.0	-45.7	3.2	5.8	15.2	12.9	3.0	-98.9	118.0	100.8	2.1	119.3	-135.8	96.2	96.6	-226.0	-192.8	0.0041
4-3	10:39	54.2		5.5	3.8		14.7		56.7	-45.2	32.2		-83.7	33.7	-221.5	45.7	42.6	-45.7	-54.2	0.0774
4-2	10:43	2.5		-46.2	2.4		15.9		2.4	-99.5	137.2		21.3	132.8	-122.4	96.7	96.7	-106.3	-107.4	0.0033
4-1	10:47	1.4		-47.3	14.6		4.9		4.0	-97.9	181.5		65.6	515.7	260.5	98.5	95.8	-92.3	-437.1	0.0054
Outlet Averages		48.7			8.8		10.1		101.9		115.9			255.2		46.7	-8.0	-65.4	-301.7	0.139

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge Fd 9780

Date: 6/1/2007
Start Time: 10:48
End Time: 11:11

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx lb/MMBtu
1-6	10:48	90.4		0.4	7.5		11.7		120.8	-81.5	57.4		-55.0	76.7	-216.4	0.165
1-5	10:52	86.4		-3.6	5.4		13.7		99.8	-102.5	170.8		58.4	197.2	-95.8	0.136
1-4	10:56	91.2	98.1	1.2	3.9	4.9	14.9	14.1	96.0	-106.2	111.9	147.3	-0.5	117.8	-175.2	0.131
1-3	11:00	107.5		17.5	5.1		13.8		121.8	-80.5	84.1		-28.3	95.3	-197.7	0.166
1-2	11:04	114.2		24.2	3.4		15.5		116.8	-85.5	149.1		36.7	152.5	-140.5	0.159
1-1	11:08	98.9		8.9	4.1		14.7		105.4	-96.9	310.5		198.1	330.8	37.8	0.144
2-6	10:49	89.3		-0.7	7.0		12.4		115.0	-87.3	23.5		-88.9	30.3	-262.8	0.157
2-5	10:53	67.7		-22.3	4.3		15.0		73.0	-129.3	153.9		41.5	166.0	-127.1	0.100
2-4	10:57	68.0	83.6	-22.0	5.2	4.7	14.2	14.7	77.5	-124.7	39.6	151.6	-72.8	45.1	-247.9	0.106
2-3	11:01	75.4		-14.6	4.0		15.2		79.9	-122.4	43.9		-68.5	46.5	-246.5	0.109
2-2	11:05	99.9		9.9	2.8		16.7		98.8	-103.5	215.6		103.2	213.2	-79.8	0.135
2-1	11:09	101.1		11.1	4.6		14.9		111.0	-91.2	433.1		320.7	475.6	182.6	0.151
3-6	10:50	83.2		-6.8	5.2		13.5		94.9	-107.4	20.8		-91.6	23.7	-269.3	0.129
3-5	10:54	83.4		-6.6	4.0		14.7		88.3	-113.9	87.3		-25.1	92.5	-200.6	0.120
3-4	10:58	87.1	96.4	-2.9	5.2	6.6	13.6	12.4	99.3	-103.0	51.6	79.9	-60.8	56.8	-234.2	0.135
3-3	11:02	114.2		24.2	3.2		15.4		115.5	-86.8	33.3		-79.1	33.7	-259.4	0.157
3-2	11:06	92.5		2.5	2.0		16.5		87.6	-114.7	92.0		-20.4	87.1	-205.9	0.119
3-1	11:10	117.7		27.7	20.1		0.7		2633.5	2431.3	194.2		81.8	4345.2	4052.2	3.591
4-6	10:51	83.4		-6.6	5.9		12.8		99.5	-102.7	63.4		-49.0	75.7	-217.4	0.136
4-5	10:55	66.1		-23.9	3.2		15.2		66.8	-135.4	129.1		16.7	130.6	-162.5	0.091
4-4	10:59	76.7	82.0	-13.3	5.1	3.9	13.6	14.6	86.9	-115.4	44.1	70.9	-68.3	50.0	-243.1	0.118
4-3	11:03	97.1		7.1	2.6		15.8		95.0	-107.3	33.9		-78.5	33.2	-259.9	0.130
4-2	11:07	75.4		-14.6	2.4		16.0		73.0	-129.3	93.7		-18.7	90.7	-202.4	0.099
4-1	11:11	93.4		3.4	3.9		14.4		98.3	-103.9	61.3		-51.1	64.5	-228.5	0.134
Inlet Averages		90.0			5.0		14.0		202.3		112.4			293.0		0.276

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction	NOx lb/MMBtu
1-6	10:48	77.9		24.4	8.2		10.7		109.8	34.0	100.8		-23.8	142.1	-30.5	13.8	9.1	-75.6	-85.3	0.1497
1-5	10:52	77.4		23.9	3.9		14.6		81.5	5.7	124.9		0.4	131.5	-41.0	10.4	18.3	26.9	33.3	0.1111
1-4	10:56	95.9	87.1	42.4	3.6	4.5	14.9	14.1	99.2	23.4	42.1	143.0	-82.5	43.6	-129.0	-5.2	-3.3	62.4	63.0	0.1353
1-3	11:00	81.0		27.5	2.7		15.6		79.7	3.8	175.9		51.4	173.0	0.4	24.7	34.6	-109.2	-81.6	0.1086
1-2	11:04	102.7		49.2	1.5		16.8		94.8	18.9	92.4		-32.2	85.3	-87.3	10.1	18.9	38.0	44.1	0.1292
1-1	11:08	87.6		34.1	6.8		11.9		111.2	35.4	321.7		197.2	408.4	235.8	11.4	-5.5	-3.6	-23.4	0.1516
2-6	10:49	61.2		7.7	6.5		12.2		76.1	0.2	44.5		-80.1	55.3	-117.2	31.5	33.8	-89.4	-82.8	0.1037
2-5	10:53	31.1		-22.4	10.2		8.9		52.0	-23.8	94.8		-29.8	158.6	-14.0	54.1	28.7	38.4	4.4	0.0709
2-4	10:57	83.8	66.4	30.3	10.4	8.6	8.7	10.4	142.9	67.0	24.5	139.5	-100.1	41.8	-130.8	-23.2	-84.3	38.1	7.5	0.1948
2-3	11:01	104.1		50.6	14.9		4.7		310.6	234.7	28.4		-96.2	84.7	-87.8	-38.1	-288.9	35.3	-62.2	0.4235
2-2	11:05	75.1		21.6	1.8		16.6		70.4	-5.5	148.2		23.7	138.9	-33.7	24.8	28.8	31.3	34.9	0.0960
2-1	11:09	43.2		-10.3	7.6		11.3		58.1	-17.7	496.5		372.0	668.2	495.7	57.3	47.6	-14.6	-40.5	0.0793
3-6	10:50	3.3		-50.2	13.9		5.4		8.4	-67.4	65.8		-58.8	168.3	-4.3	96.0	91.1	-216.3	-609.5	0.0115
3-5	10:54	1.1		-52.4	10.5		8.6		1.9	-73.9	92.2		-32.4	158.7	-13.9	98.7	97.9	-5.6	-71.6	0.0026
3-4	10:58	69.9	44.4	16.4	10.1	11.1	8.9	8.0	115.9	40.0	26.3	108.3	-98.3	43.6	-129.0	19.7	-16.7	49.0	25.9	0.1580
3-3	11:02	97.7		44.2	9.7		9.1		156.1	80.3	24.1		-100.5	38.5	-134.0	14.4	-35.2	27.6	-14.4	0.2129
3-2	11:06	94.0		40.5	9.7		9.3		150.2	74.4	172.0		47.5	274.9	102.3	-1.6	-71.5	-87.0	-215.5	0.2049
3-1	11:10	0.5		-53.0	12.4		6.9		1.1	-74.8	269.2		144.7	566.9	394.3	99.6	100.0	-38.6	87.0	0.0014
4-6	10:51	18.3		-35.2	6.6		12.0		22.9	-52.9	118.3		-6.2	148.1	-24.5	78.1	77.0	-86.6	-95.7	0.0312
4-5	10:55	3.9		-49.6	3.6		14.8		4.0	-71.8	109.7		-14.9	113.5	-59.0	94.1	94.0	15.0	13.1	0.0055
4-4	10:59	13.8	16.0	-39.7	3.0	5.4	15.3	13.2	13.8	-62.0	130.7	107.5	6.2	130.7	-41.9	82.0	84.1	-196.4	-161.6	0.0188
4-3	11:03	56.2		2.7	2.5		15.8		54.7	-21.2	27.7		-96.9	26.9	-145.6	42.1	42.4	18.3	18.7	0.0746
4-2	11:07	2.6		-50.9	2.4		16.0		2.5	-73.3	203.3		78.8	196.7	24.2	96.6	96.6	-117.0	-117.0	0.0034
4-1	11:11	0.9		-52.6	14.0		5.5		2.3	-73.5	55.2		-69.4	143.2	-29.4	99.0	97.6	10.0	-121.9	0.0032
Outlet Averages		53.5			7.4		11.4		75.8		124.6			172.6		41.3	20.6	-27.1	-61.3	0.103

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge Fd 9780

Date: 6/1/2007
Start Time: 11:12
End Time: 11:35

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx lb/MMBtu
1-6	11:12	93.4		9.4	7.8		11.6		127.6	35.6	47.9		-29.1	65.5	-17.6	0.174
1-5	11:16	83.7		-0.3	5.5		13.3		97.3	5.3	95.5		18.5	111.0	27.9	0.133
1-4	11:20	87.5	76.3	3.5	4.0	4.9	14.8	14.0	92.7	0.6	130.9	73.0	53.9	138.6	55.6	0.126
1-3	11:24	105.5		21.5	5.0		14.0		118.8	26.7	73.2		-3.8	82.4	-0.6	0.162
1-2	11:28	82.8		-1.2	3.4		15.1		84.7	-7.3	25.5		-51.5	26.1	-57.0	0.115
1-1	11:32	4.6		-79.4	3.7		15.1		4.8	-87.2	65.1		-11.9	67.7	-15.3	0.007
2-6	11:13	94.8		10.8	6.8		12.7		120.3	28.3	51.8		-25.2	65.8	-17.3	0.164
2-5	11:17	78.3		-5.7	4.6		14.5		86.0	-6.0	104.4		27.4	114.6	31.6	0.117
2-4	11:21	79.6	83.5	-4.4	5.2	4.7	13.9	14.5	90.8	-1.3	88.1	67.2	11.1	100.4	17.4	0.124
2-3	11:25	76.7		-7.3	4.1		15.0		81.7	-10.3	72.7		-4.3	77.5	-5.6	0.111
2-2	11:29	91.9		7.9	2.8		16.3		90.9	-1.2	46.5		-30.5	46.0	-37.1	0.124
2-1	11:33	79.7		-4.3	4.8		14.4		88.6	-3.4	39.7		-37.3	44.1	-38.9	0.121
3-6	11:14	100.2		16.2	5.5		13.3		116.5	24.4	72.5		-4.5	84.3	1.2	0.159
3-5	11:18	78.1		-5.9	4.0		14.7		82.7	-9.3	68.0		-9.0	72.0	-11.0	0.113
3-4	11:22	85.3	97.3	1.3	5.6	4.1	13.5	14.6	99.8	7.8	54.8	65.3	-22.2	64.1	-18.9	0.136
3-3	11:26	114.0		30.0	3.3		15.0		115.9	23.9	53.1		-23.9	54.0	-29.1	0.158
3-2	11:30	91.6		7.6	2.2		16.6		87.7	-4.4	82.7		5.7	79.2	-3.9	0.120
3-1	11:34	114.5		30.5	4.1		14.5		122.0	30.0	60.9		-16.1	64.9	-18.2	0.166
4-6	11:15	80.4		-3.6	6.2		12.4		97.9	5.9	53.2		-23.8	64.8	-18.3	0.133
4-5	11:19	61.7		-22.3	3.3		15.0		62.8	-29.3	141.4		64.4	143.8	60.8	0.086
4-4	11:23	72.4	79.1	-11.6	5.1	3.8	13.7	14.6	82.0	-10.0	56.1	102.6	-20.9	63.6	-19.5	0.112
4-3	11:27	98.5		14.5	2.6		15.6		96.3	4.3	48.2		-28.8	47.1	-35.9	0.131
4-2	11:31	70.4		-13.6	2.4		15.9		68.1	-23.9	122.5		45.5	118.5	35.5	0.093
4-1	11:35	91.4		7.4	3.3		14.9		93.0	0.9	194.0		117.0	197.3	114.2	0.127
Inlet Averages		84.0			4.4		14.4		92.0		77.0			83.1		0.125

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction	NOx lb/MMBtu
1-6	11:12	78.3		26.6	8.2		10.7		110.4	-52.5	135.8		13.3	191.4	-175.3	16.2	13.5	-183.5	-192.4	0.1505
1-5	11:16	74.2		22.5	4.2		14.3		79.5	-83.4	112.8		-9.7	120.9	-245.8	11.4	18.3	-18.1	-8.9	0.1084
1-4	11:20	92.0	84.3	40.3	3.7	9.6	14.8	9.5	95.7	-67.1	49.7	117.1	-72.8	51.7	-315.0	-5.1	-3.3	62.0	62.7	0.1305
1-3	11:24	79.6		27.9	3.2		15.3		80.5	-82.4	148.6		26.1	150.3	-216.4	24.5	32.2	-103.0	-82.4	0.1098
1-2	11:28	103.9		52.2	18.1		1.9		664.2	501.3	78.9		-43.6	504.4	137.7	-25.5	-684.3	-209.4	-1833.6	0.9057
1-1	11:32	77.6		25.9	20.2		0.0		1984.3	1821.5	177.0		54.5	4526.1	4159.5	-1587.0	-41350.9	-171.9	-6580.7	2.7058
2-6	11:13	63.9		12.2	4.6		14.0		70.2	-92.7	113.6		-8.9	124.8	-241.9	32.6	41.7	-119.3	-89.7	0.0957
2-5	11:17	27.5		-24.2	3.2		15.2		27.8	-135.1	97.3		-25.2	98.4	-268.3	64.9	67.7	6.8	14.2	0.0379
2-4	11:21	80.4	63.9	28.7	3.2	3.3	15.2	15.1	81.3	-81.6	27.0	118.0	-95.5	27.3	-339.4	-1.0	10.4	69.4	72.8	0.1109
2-3	11:25	101.2		49.5	3.2		15.2		102.3	-60.5	25.9		-96.6	26.2	-340.5	-31.9	-25.2	64.4	66.2	0.1396
2-2	11:29	71.6		19.9	2.3		16.0		68.9	-94.0	116.4		-6.1	112.0	-254.7	22.1	24.2	-150.3	-143.6	0.0940
2-1	11:33	38.7		-13.0	3.3		15.1		39.4	-123.5	327.9		205.4	333.5	-33.2	51.4	55.6	-725.9	-659.6	0.0537
3-6	11:14	3.8		-47.9	10.6		8.6		6.6	-156.3	125.8		3.3	218.6	-148.1	96.2	94.3	-73.5	-159.4	0.0090
3-5	11:18	0.9		-50.8	9.7		9.3		1.4	-161.5	146.9		24.4	234.8	-131.9	98.8	98.3	-116.0	-226.0	0.0020
3-4	11:22	66.6	43.7	14.9	9.2	10.3	9.8	8.8	101.9	-61.0	26.3	122.9	-96.2	40.2	-326.5	21.9	-2.1	52.0	37.2	0.1389
3-3	11:26	94.3		42.6	9.2		9.8		144.3	-18.6	20.0		-102.5	30.6	-336.1	17.3	-24.4	62.3	43.3	0.1967
3-2	11:30	92.9		41.2	9.4		9.6		144.6	-18.3	125.6		3.1	195.5	-171.2	-1.4	-64.9	-51.9	-147.0	0.1972
3-1	11:34	3.8		-47.9	13.5		5.9		9.2	-153.7	292.6		170.1	707.8	341.1	96.7	92.5	-380.5	-990.8	0.0125
4-6	11:15	21.9		-29.8	6.9		11.8		28.0	-134.9	200.6		78.1	256.5	-110.2	72.8	71.4	-277.1	-295.9	0.0382
4-5	11:19	3.4		-48.3	3.5		14.9		3.5	-159.4	149.9		27.4	154.2	-212.5	94.5	94.4	-6.0	-7.2	0.0048
4-4	11:23	10.3	15.1	-41.4	2.9	5.3	15.4	13.3	10.2	-152.6	104.4	132.0	-18.1	103.8	-262.9	85.8	87.5	-86.1	-63.4	0.0140
4-3	11:27	51.6		-0.1	2.6		15.8		50.5	-112.4	25.2		-97.3	24.6	-342.0	47.6	47.6	47.7	47.7	0.0688
4-2	11:31	2.4		-49.3	2.2		16.1		2.3	-160.6	144.5		22.0	138.3	-228.4	96.6	96.6	-18.0	-16.7	0.0031
4-1	11:35	0.9		-50.8	13.9		5.5		2.3	-160.6	167.6		45.1	428.6	61.9	99.0	97.5	13.6	117.2	0.0031
Outlet Averages		51.7			7.1		11.7		162.9		122.5			366.7		-25.1	-1713.0	-96.3	-469.4	0.222

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge

Fd 9780

Date: 6/1/2007
Start Time: 12:00
End Time: 12:23

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx lb/MMBtu
1-6	12:00	75.1		-11.5	7.6		11.6		101.1	6.2	82.9		-1.5	111.6	19.8	0.138
1-5	12:04	71.6		-15.0	5.8		13.2		84.9	-10.0	50.6		-33.8	60.0	-31.7	0.116
1-4	12:08	91.5	94.1	4.9	4.1	5.0	15.0	14.1	97.5	2.7	79.9	109.3	-4.5	85.1	-6.6	0.133
1-3	12:12	109.4		22.8	5.1		14.1		123.9	29.1	50.8		-33.6	57.6	-34.2	0.169
1-2	12:16	118.6		32.0	3.5		15.6		122.0	27.2	107.3		22.9	110.4	18.7	0.166
1-1	12:20	98.4		11.8	4.1		14.8		104.8	10.0	284.1		199.7	302.7	211.0	0.143
2-6	12:01	89.3		2.7	7.0		12.3		115.0	20.2	38.0		-46.4	48.9	-42.8	0.157
2-5	12:05	70.6		-16.0	4.8		14.2		78.5	-16.3	49.3		-35.1	54.8	-36.9	0.107
2-4	12:09	75.5	77.8	-11.1	5.3	4.8	14.1	14.5	86.6	-8.2	41.1	111.2	-43.3	47.2	-44.6	0.118
2-3	12:13	78.0		-8.6	4.1		15.1		83.1	-11.7	40.0		-44.4	42.6	-49.1	0.113
2-2	12:17	77.9		-8.7	2.6		16.8		76.2	-18.6	123.3		38.9	120.6	28.9	0.104
2-1	12:21	75.2		-11.4	4.8		14.7		83.6	-11.2	375.6		291.2	417.6	325.9	0.114
3-6	12:02	106.6		20.0	5.6		13.2		124.7	29.9	42.7		-41.7	50.0	-41.8	0.170
3-5	12:06	71.6		-15.0	4.1		14.7		76.3	-18.5	28.5		-55.9	30.4	-61.4	0.104
3-4	12:10	74.3	92.8	-12.3	5.4	4.1	13.7	14.7	85.8	-9.0	38.9	57.6	-45.5	44.9	-46.8	0.117
3-3	12:14	108.7		22.1	3.2		15.4		109.9	15.1	37.1		-47.3	37.5	-54.2	0.150
3-2	12:18	90.2		3.6	2.3		16.6		86.8	-8.0	69.5		-14.9	66.9	-24.8	0.118
3-1	12:22	105.6		19.0	4.2		14.8		113.2	18.4	129.0		44.6	138.3	46.5	0.154
4-6	12:03	81.9		-4.7	6.4		12.2		101.1	6.3	31.8		-52.6	39.3	-52.5	0.138
4-5	12:07	65.1		-21.5	3.5		15.0		67.0	-27.9	58.9		-25.5	60.6	-31.1	0.091
4-4	12:11	76.2	81.7	-10.4	5.6	4.0	13.3	14.5	89.1	-5.7	57.2	59.6	-27.2	66.9	-24.8	0.122
4-3	12:15	101.7		15.1	2.8		15.5		100.6	5.7	21.9		-62.5	21.7	-70.1	0.137
4-2	12:19	74.7		-11.9	2.3		16.0		71.9	-22.9	86.8		2.4	83.5	-8.2	0.098
4-1	12:23	90.7		4.1	3.3		15.1		92.2	-2.6	100.8		16.4	102.5	10.8	0.126
Inlet Averages		**86.6**			**4.5**		**14.5**		**94.8**		**84.4**			**91.7**		**0.129**

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction	NOx lb/MMBtu
1-6	12:00	81.3		29.2	15.6		4.1		274.6	202.2	104.3		6.0	352.3	207.5	-8.3	-171.7	-25.8	-215.7	0.3744
1-5	12:04	66.3		14.2	7.8		10.8		90.6	18.2	59.6		-38.7	81.4	-63.3	7.4	-5.7	-17.8	-35.8	0.1235
1-4	12:08	96.6	87.7	44.5	3.8	6.6	14.7	12.2	101.1	28.7	30.7	128.2	-67.6	32.1	-112.6	-5.6	-3.7	61.6	52.3	0.1379
1-3	12:12	84.2		32.1	3.0		15.5		84.2	11.8	120.0		21.7	120.0	-24.8	23.0	32.1	-136.2	-108.5	0.1148
1-2	12:16	109.4		57.3	2.6		15.8		107.0	34.6	79.4		-18.9	77.7	-67.1	7.8	12.3	26.0	29.6	0.1459
1-1	12:20	88.5		36.4	6.5		12.2		110.0	37.6	375.3		277.0	466.5	321.7	10.1	-4.9	-32.1	-54.1	0.1500
2-6	12:01	57.2		5.1	5.1		13.5		64.8	-7.6	43.4		-54.9	49.2	-95.6	35.9	43.6	-14.2	-0.5	0.0884
2-5	12:05	14.4		-37.7	6.6		11.9		18.0	-54.4	51.6		-46.7	64.6	-80.2	79.6	77.0	-4.7	-17.8	0.0246
2-4	12:09	83.0	62.7	30.9	8.2	7.7	10.8	11.1	117.0	44.6	21.5	105.1	-76.8	30.3	-114.5	-9.9	-35.0	47.7	35.7	0.1595
2-3	12:13	106.8		54.7	7.3		11.4		140.6	68.2	21.1		-77.2	27.8	-117.0	-36.9	-69.1	47.3	34.8	0.1917
2-2	12:17	72.4		20.3	9.6		9.1		114.7	42.3	113.0		14.7	179.0	34.2	7.1	-50.5	8.4	-48.4	0.1564
2-1	12:21	42.5		-9.6	9.3		9.6		65.6	-6.8	380.1		281.8	586.5	441.8	43.5	21.6	-1.2	-40.5	0.0894
3-6	12:02	2.5		-49.6	6.4		12.3		3.1	-69.3	68.1		-30.2	84.1	-60.7	97.7	97.5	-59.5	-58.3	0.0042
3-5	12:06	0.9		-51.2	13.3		6.1		2.1	-70.3	64.2		-34.1	151.2	6.4	98.7	97.2	-125.3	-398.0	0.0029
3-4	12:10	67.0	45.2	14.9	8.9	8.3	9.9	10.5	99.9	27.6	19.3	69.0	-79.0	28.8	-116.0	9.8	-16.5	50.4	35.9	0.1363
3-3	12:14	101.6		49.5	7.6		11.2		136.7	64.4	19.1		-79.2	25.7	-119.1	6.5	-24.4	48.5	31.5	0.1865
3-2	12:18	96.0		43.9	6.7		11.9		121.0	48.6	95.2		-3.1	120.0	-24.8	-6.4	-39.4	-37.0	-79.4	0.1650
3-1	12:22	3.4		-48.7	7.1		11.8		4.4	-68.0	148.0		49.7	192.0	47.2	96.8	96.1	-14.7	-39.8	0.0060
4-6	12:03	10.7		-41.4	7.4		11.4		14.2	-58.2	121.3		23.0	160.8	16.1	86.9	86.0	-261.4	-309.7	0.0193
4-5	12:07	2.9		-49.2	3.6		14.9		3.0	-69.4	102.4		4.1	106.0	-38.8	95.5	95.5	-73.9	-74.9	0.0041
4-4	12:11	8.4	12.9	-43.7	3.0	5.6	15.4	13.1	8.4	-64.0	71.6	90.7	-26.7	71.6	-73.2	89.0	90.6	-25.2	-7.0	0.0115
4-3	12:15	52.3		0.2	2.7		15.7		51.4	-20.9	21.4		-76.9	21.0	-123.7	48.6	48.9	2.3	2.8	0.0701
4-2	12:19	2.3		-49.8	2.4		16.0		2.2	-70.2	98.4		0.1	95.2	-49.6	96.9	96.9	-13.4	-14.0	0.0030
4-1	12:23	0.9		-51.2	14.3		5.2		2.4	-69.9	129.3		31.0	350.7	205.9	99.0	97.4	-28.3	-242.1	0.0033
Outlet Averages		**52.1**			**7.0**		**11.7**		**72.4**		**98.3**			**144.8**		**40.5**	**23.8**	**-24.9**	**-63.4**	**0.099**

Clean Air Engineering Project #10247
Consol Energy
AES Greenidge

Fd 9780

Date: 6/1/2007
Start Time: 12:24
End Time: 12:47

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx lb/MMBtu
1-6	12:24	91.9		7.2	7.5		11.8		122.8	30.5	47.0		-31.4	62.8	-21.0	0.167
1-5	12:28	83.0		-1.8	5.6		13.4		97.1	4.8	63.6		-14.8	74.4	-9.4	0.132
1-4	12:32	87.1	97.7	2.3	4.0	5.0	15.0	13.8	92.3	0.0	84.0	94.1	5.6	89.0	5.2	0.126
1-3	12:36	106.0		21.3	5.1		13.9		120.1	27.8	56.6		-21.8	64.1	-19.7	0.164
1-2	12:40	118.8		34.1	3.3		14.8		120.8	28.6	159.6		81.2	162.3	78.5	0.165
1-1	12:44	99.1		14.4	4.5		14.0		108.2	15.9	154.0		75.6	168.1	84.3	0.147
2-6	12:25	72.9		-11.9	6.8		12.6		92.5	0.3	33.5		-44.9	42.5	-41.3	0.126
2-5	12:29	66.6		-18.2	4.3		15.0		71.8	-20.5	67.5		-10.9	72.8	-11.0	0.098
2-4	12:33	76.2	77.1	-8.6	5.1	4.6	14.5	14.5	86.3	-5.9	29.5	109.3	-48.9	33.4	-50.4	0.118
2-3	12:37	78.3		-6.5	4.1		15.5		83.4	-8.8	45.3		-33.1	48.3	-35.6	0.114
2-2	12:41	91.4		6.7	2.7		15.3		89.9	-2.4	215.4		137.0	211.8	128.0	0.123
2-1	12:45	77.0		-7.8	4.5		13.8		84.0	-8.2	264.5		186.1	288.7	204.9	0.115
3-6	12:26	87.6		2.8	5.4		13.9		101.2	8.9	45.8		-32.6	52.9	-30.9	0.138
3-5	12:30	75.7		-9.1	3.8		15.0		79.2	-13.0	29.7		-48.7	31.1	-52.7	0.108
3-4	12:34	67.2	82.5	-17.6	5.1	4.0	13.9	14.8	76.1	-16.1	40.7	51.3	-37.7	46.1	-37.7	0.104
3-3	12:38	91.7		7.0	3.3		15.6		93.3	1.0	56.9		-21.5	57.9	-25.9	0.127
3-2	12:42	89.0		4.3	2.3		16.4		85.7	-6.6	91.8		13.4	88.3	4.5	0.117
3-1	12:46	83.5		-1.3	4.2		14.2		89.5	-2.8	42.6		-35.8	45.7	-38.2	0.122
4-6	12:27	83.7		-1.1	5.8		12.8		99.2	7.0	28.7		-49.7	34.0	-49.8	0.135
4-5	12:31	65.2		-19.6	3.6		15.0		67.5	-24.8	58.1		-20.3	60.1	-23.7	0.092
4-4	12:35	76.3	81.8	-8.5	5.4	3.9	13.4	14.5	88.1	-4.2	65.1	59.1	-13.3	75.2	-8.6	0.120
4-3	12:39	99.0		14.3	2.7		15.6		97.4	5.1	33.6		-44.8	33.0	-50.8	0.133
4-2	12:43	72.2		-12.6	2.5		15.7		70.2	-22.0	96.4		18.0	93.8	10.0	0.096
4-1	12:47	94.6		9.8	3.6		14.6		97.9	5.6	72.8		-5.6	75.3	-8.5	0.133
Inlet Averages		84.8			4.4		14.4		92.3		78.4			83.8		0.126

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction	NOx lb/MMBtu
1-6	12:24	76.3		24.5	8.2		10.7		107.5	37.0	101.6		-0.6	143.2	-39.3	17.0	12.4	-116.2	-128.1	0.1466
1-5	12:28	72.8		21.0	5.6		13.1		85.2	14.7	52.5		-49.7	61.4	-121.0	12.3	12.3	17.5	17.5	0.1161
1-4	12:32	98.9	85.7	47.1	7.3	5.8	11.5	12.9	130.2	59.7	36.1	76.5	-66.1	47.5	-135.0	-13.5	-41.1	57.0	46.6	0.1775
1-3	12:36	83.3		31.5	5.2		13.6		95.0	24.5	102.3		0.1	116.6	-65.8	21.4	20.9	-80.7	-81.9	0.1295
1-2	12:40	102.3		50.5	1.7		16.7		95.4	24.9	28.9		-73.3	26.9	-155.5	13.9	21.1	81.9	83.4	0.1301
1-1	12:44	80.6		28.8	7.0		11.9		103.8	33.3	137.7		35.5	177.3	-5.1	18.7	4.0	10.6	-5.5	0.1415
2-6	12:25	62.6		10.8	9.9		9.2		101.9	31.4	94.7		-7.5	154.1	-28.4	14.1	-10.1	-182.7	-262.4	0.1389
2-5	12:29	15.3		-36.5	11.0		8.2		27.7	-42.8	77.2		-25.0	139.6	-42.9	77.0	61.5	-14.4	-91.8	0.0377
2-4	12:33	87.1	63.4	35.3	8.4	7.6	10.6	11.3	124.7	54.2	21.0	86.1	-81.2	30.1	-152.4	-14.3	-44.5	28.8	10.0	0.1701
2-3	12:37	107.7		55.9	5.6		12.9		126.0	55.5	25.8		-76.4	30.2	-152.3	-37.5	-51.0	43.0	37.5	0.1718
2-2	12:41	70.4		18.6	3.0		15.4		70.4	-0.1	48.6		-53.6	48.6	-133.9	23.0	21.7	77.4	77.1	0.0960
2-1	12:45	37.3		-14.5	7.5		11.4		49.8	-20.7	249.0		146.8	332.6	150.2	51.6	40.7	5.9	-15.2	0.0679
3-6	12:26	3.2		-48.6	15.8		4.4		11.2	-59.3	113.1		10.9	397.0	214.5	96.3	88.9	-146.9	-650.5	0.0153
3-5	12:30	0.9		-50.9	14.4		5.2		2.5	-68.0	106.2		4.0	292.5	110.0	98.8	96.9	-257.6	-840.7	0.0034
3-4	12:34	73.8	46.7	22.0	11.7	12.7	7.5	6.8	143.6	73.1	23.2	122.6	-79.0	45.1	-137.3	-9.8	-68.6	43.0	2.1	0.1958
3-3	12:38	100.2		48.4	10.9		8.3		179.4	108.9	23.4		-78.8	41.9	-140.6	-9.3	-92.3	58.9	27.6	0.2446
3-2	12:42	98.9		47.1	9.8		9.2		159.5	89.0	110.9		8.7	178.8	-3.6	-11.1	-86.2	-20.8	-102.4	0.2175
3-1	12:46	2.9		-48.9	13.6		5.9		7.1	-63.4	358.6		256.4	879.3	696.8	96.5	92.1	-741.8	-1825.7	0.0097
4-6	12:27	9.4		-42.4	6.6		12.1		11.8	-58.7	124.9		22.7	156.3	-26.1	88.8	88.1	-335.2	-959.5	0.0160
4-5	12:31	2.9		-48.9	3.5		14.9		3.0	-67.5	106.7		4.5	109.8	-72.7	95.6	95.6	-83.6	-82.6	0.0041
4-4	12:35	8.6	11.4	-43.2	2.9	5.4	15.5	13.2	8.6	-61.9	67.6	123.5	-34.6	67.2	-115.2	88.7	90.3	-3.8	10.6	0.0117
4-3	12:39	44.5		-7.3	2.6		15.8		43.5	-27.0	22.6		-79.6	22.1	-160.4	55.1	55.3	32.7	33.1	0.0594
4-2	12:43	2.0		-49.8	2.9		15.6		2.0	-68.5	136.2		34.0	135.4	-47.0	97.2	97.2	-41.3	-44.4	0.0027
4-1	12:47	0.9		-50.9	14.1		5.5		2.4	-68.1	283.2		181.0	745.5	563.0	99.0	97.6	-289.0	-889.7	0.0032
Outlet Averages		51.8			7.9		11.0		70.5		102.2			182.5		40.4	24.3	-77.4	-209.8	0.096

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QA/QC DATA

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CONSOL Energy - AES Greenidge
Clean Air Project No: 10247
Unit 4 Air Heater Inlet

CTM-027 (Ammonia)
QA/QC Results

Run No.	1	2	3
Date (2007)	May 31	Jun 1	Jun 1
Start Time (approx.)	18:04	10:20	12:05
Stop Time (approx.)	19:14	11:07	12:52
Total Duration of Test Run (min.)	70	47	47
Net Sampling Time (min.)	60	40	40
Sampling System Calibration Summary			
Nozzle ID No:	NA	NA	NA
D_n Nozzle Diameter (in):	NA	NA	NA
Probe ID No:	NA	NA	NA
C_p Pitot Coefficient:	0.840	0.840	0.840
Meter Box ID. No:	68-B	68-B	68-B
Y_d Meter Box Yd - Field Sheet	1.0071	1.0071	1.0071
Meter Box Yd - Database	1.0071	1.0071	1.0071
Meter Box ΔH@ - Field Sheet	1.8055	1.8055	1.8055
Meter Box ΔH@ - Database	1.8055	1.8055	1.8055
QA/QC			
Final Leak Check			
(a) 4% of Sampling Rate (cfm)	0.0263	0.0262	0.0266
(b) Allowable Rate from Method (cfm)	0.0200	0.0200	0.0200
Allowable Limit - minimum of a and b (cfm)	0.0200	0.0200	0.0200
Actual Final Leak Rate (cfm)	0.0030	0.0020	0.0030

091807 104827
OHP@

Prepared by Clean Air Engineering Proprietary Software
SS ISOKINETIC Version 2006-13a

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QA/QC JW
Date 9/18

OMEGA ENGINEERING INC
An OMEGA Technologies Company

Certificate of Calibration

Customer:	CLEAN AIR ENGINEERING INC.
Customer P.O.:	029486865000
Instrument:	Omega CL23A
Work Order Number:	707991284
Description:	CALIBRATOR THERMOMETER
Serial Number:	T-119130
Equipment I.D.#:	605945856
A.R. Number:	707-5530

Cal-3

Omega Engineering, Inc. hereby certifies that the above instrumentation has been calibrated and tested to **meet or exceed** the published specifications. This calibration and testing was performed using instrumentation and standards that are traceable to the **National Institute of Standards and Technology**. Omega Engineering, Inc. is in compliance with ISO 10012-1, ISO 9001:2000 and ANSI/NCSL Z540-1-1994. This certificate shall not be reproduced, except in full, without the written consent of Omega Engineering, Inc.

CALIBRATION INFORMATION

Cal Date: 17-Jul-07
Cal Due Date: 17-Jul-08

Temperature: 22 C ± 5 C
Humidity: Below 80%

Absolute Uncertainty: 0.19F
Comments:

Pass: Y **Technician:** VA
Procedure: QAP-2100

Seals OK: Yes
Certificate #: 707991284

STANDARDS USED FOR CALIBRATION

Asset Number	Description	NIST Traceable Number	Cal. Date	Due Date
ST-098-04	FLUKE 5700A Multicalibrator	10NNST09804	23-Mar-07	23-Mar-08
CL-098-19	Omega TRCIII Ice Point	10NNCL09819	21-Jul-06	21-Jul-07
DM-098-22	Agilent 34401A Multimeter	10NNDM09822	11-Aug-06	11-Aug-07

Metrology Technician:

Quality Assurance Inspector:

OMEGA Engineering, Inc., One Omega Circle, P.O. Box 336, Bridgeport, NJ 08014-0336 Telephone: (856) 467-4200 · FAX: (856) 467-1212
www.omega.com e-mail: info@omega.com

Calibration Results

Customer:	CLEAN AIR ENGINEERING INC.	**Result:**	PASS
P.O. Number:	029486865000	**Cal Date:**	17-Jul-07
Work Order #:	707991284	**Cal Due Date:**	17-Jul-08
Instrument:	Omega CL23A	**Technician:**	VA
Description:	CALIBRATOR THERMOMETER	**Temperature:**	22 °C ± 5 °C
Serial Number:	T-119130	**Humidity:**	Below 80%
Equipment I.D.#:	605945856	**Condition F/L:**	AS-LEFT
A.R. Number:	707-5530	**Procedure:**	QAP-2100
		Certificate #:	707991284

Standards Used

Asset #	Description	NIST Traceable Number	Cal Date	Due Date
CL-098-19	Omega TRCIII Ice Point	10NNCL09819	21-Jul-06	21-Jul-07
DM-098-22	Agilent 34401A Multimeter	10NNDM09822	11-Aug-06	11-Aug-07
ST-098-04	FLUKE 5700A Multicalibrator	10NNST09804	23-Mar-07	23-Mar-08

Test Data

Test Description	True Value	Test Result	Lower limit	Upper limit	
Thermocouple Input					
32.0 DegreeKF		32.1	31.5	32.5	Pass
2400.0 DegreeKF		2400.1	2399.0	2401.0	Pass
32.0 DegreeJF		31.6	31.5	32.5	Pass
1390.0 DegreeJF		1389.7	1389.4	1390.6	Pass
32.0 DegreeTF		32.1	31.5	32.5	Pass
750.0 DegreeTF		749.9	749.5	750.5	Pass
Thermocouple Output					
0.000 mV		-0.002	-0.011	0.011	Pass
52.952 mV		52.943	52.933	52.971	Pass
0.000 mV		0.008	-0.014	0.014	Pass
42.564 mV		42.567	42.543	42.585	Pass
0.000 mV		-0.004	-0.011	0.011	Pass
20.803 mV		20.796	20.786	20.820	Pass

End of Test Data

OMEGA Engineering, Inc., One Omega Circle, P.O. Box 336, Bridgeport, NJ 08014-0336 Telephone: (856) 467-4200 · FAX: (856) 467-1212
www.omega.com e-mail: info@omega.com

Meter Box Full Test Calibration

Meter Box No: 68-B

Date of Calibration: 3/12/2007

Calibration conducted by: Bill Dimitroff

Signature

Meter Box Y_d: 1.0071

Meter Box ΔH@: 1.8055

Barometric Pressure: 29.38

				Standard Meter Gas Volume (ft^3)			Meter Box Gas Volume (ft^3)			Std. Meter Temperature (°F)			Meter Box Temperature (°F)			Time (min.)	Calibration Results	
Q	ΔH	ΔP	Y_{ds}	Initial	Final	V_{ds} Net	Initial	Final	V_d Net	In	Out	T_{ds} Avg.	In	T_o Out	T_d Avg.	Θ	Y_d	ΔH@
0.392	0.50	-0.20	1.0000	12.000	24.000	12.000	768.840	780.940	12.100	71.0	71.0	71.00	77.5	73.0	75.25	29.88	0.9979	1.7810
0.393	0.50	-0.20	1.0000	24.000	34.000	10.000	780.940	791.000	10.060	71.0	71.0	71.00	77.0	73.5	75.25	24.83	1.0002	1.7694
0.679	1.50	-0.40	1.0000	38.000	48.000	10.000	794.990	805.020	10.030	71.0	71.0	71.00	80.5	74.0	77.25	14.37	1.0040	1.7750
0.674	1.50	-0.40	1.0000	48.000	58.000	10.000	805.020	814.980	9.960	71.0	71.0	71.00	81.5	74.5	78.00	14.48	1.0124	1.8022
0.940	3.00	-0.60	1.0000	62.000	80.000	18.000	818.960	836.840	17.880	71.0	71.0	71.00	84.5	75.5	80.00	18.68	1.0146	1.8478
0.937	3.00	-0.60	1.0000	80.000	90.000	10.000	836.840	846.800	9.960	71.0	71.0	71.00	85.0	76.5	80.75	10.42	1.0133	1.8575
																Averages	1.00708	1.80549

Nomenclature

P_b	Barometric Pressure (in. Hg)
Q	Flow Rate (cfm)
ΔH	Orifice Pressure differential (in. H_2O)
ΔP	Inlet Pressure Differential (in. H_2O)
V_d	Gas Meter Volume - Dry (ft^3)
V_{ds}	Standard Meter Volume - Dry (ft^3)
T_d	Average Meter Box Temperature (°F)
T_o	Outlet Meter Box Temperature (°F)
T_{ds}	Average Standard Meter Temperature (°F)
Y_d	Meter Correction Factor (unitless), $Y_i \leq Y_{avg} \pm 0.02$
Y_{ds}	Standard Meter Correction Factor (unitless)
ΔH@	Orifice Pressure Differential giving 0.75 cfm of air at 68°F and 29.92 in. Hg (in. H_2O) $\Delta H@_i \leq \Delta H@_{avg} \pm 0.2$
Θ	Duration of Run (minutes)

Equations

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

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

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

Vacuum Gauge

Standard (in.Hg)	Gauge (in.Hg)
5.0	5.0
10.0	10.0
15.0	15.0
20.0	20.0
25.0	25.0

CleanAir ENGINEERING

CDS005C-Meter Full, April 2004a
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Meter Box - Pyrometer Calibration Sheet

Meter Box No: 68-B

Calibrated by: Bill Dimitroff

Date: 3/12/07

Temperature Scale Used: Fahrenheit

Office: Pittsburgh

Client: NA

Job No: NA

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 DGM In	7 DGM Out
50	50	49	49	50	50	50	50
100	100	99	99	100	100	100	100
150	151	150	149	151	151	151	151
200	202	201	199				
250	252	250	249				
300	302	300	299				
350	352	350	349				
400	401	400	399				
450	450	449	449				
500	500	500	499				
550	551	549	549				
600	601	600	599				

Tolerance = ±2°F difference from reference setting.

Calibration Reference Information

Reference Used: Digimite

Calibrated By: Omega

Calibration Report No: 503977790

Serial No: T119130

Date Calibrated: 5/26/2006

CleanAir ENGINEERING

CDSC05C-Meter Full, April 2004a
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Meter Box Critical Orifice Post-Test Calibration Data

Project No. 10247 | Meter No. 68-B | Orifice 63-G

Location Office | Meter Yd 1.0071 | Orifice K' 0.5759

Test Date 06/07/07 | Meter ΔH@ 1.8055 | Orifice Cal. Date 01/24/07

Operator Bill Dimitroff | Full Test Cal. Date 03/12/07

Leak Checks

Negative Pressure — *No movement of manometer in one-minute* ☑ Pass

Positive Pressure — *No movement of manometer in one-minute* ☑ Pass

Important: All leak checks must pass in order for calibration to be valid.

Barom. Press. (P_b) 29.21 in. Hg

Run	Elapsed Time (minutes)	Meter Volume (dcf)	Meter Temperature Inlet (°F)	Meter Temperature Outlet (°F)	Ambient Temp. - T_{amb} (°F)	Orifice ΔH (in. W.C.)	Vacuum (in. Hg)	Net Run Time - θ (minutes)	Net Meter Volume for Run - V_m (dcf)	Avg Meter Temp. for Run T_m (°F)	DGM Calibration Factor - Y_i	Percent Variation - ΔY_i
	0.0	285.00	77	73								
1	10.0	292.55	77	74	71	1.70	19	10.0	7.55	75.3	1.0001	0.0%
2	16.0	297.07	78	74	71	1.70	19	6.0	4.52	75.8	1.0033	0.3%
3	28.0	306.18	78	74	71	1.70	19	12.0	9.11	76.0	0.9960	-0.4%
										Average Y_i	0.9998	
										Cal. Error	-0.7%	

Calculations and Specifications

$$Y_i = \frac{K' \times P_b \times (T_m + 460) \times \theta}{17.64 \times V_m \times \left(P_b + {}^{\Delta H}/_{13.6}\right) \times \sqrt{T_{amb} + 460}}$$

$$\Delta Y_i = \frac{Y_i - \overline{Y_i}}{\overline{Y_i}} \times 100 \qquad \text{Spec.: } \Delta Y_i \le \pm 2\%$$

$$Cal.Error = \frac{\overline{Y_i} - Y_d}{Y_d} \times 100 \qquad \text{Spec.: } Cal.Error \le \pm 5\%$$

CDS005B-Meter Post-CO, February 2004

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CleanAir ENGINEERING

DENVER INSTRUMENT

Report of Traceability

All Denver Instrument Company weights have been verified using standards of mass traceable to the International Prototype Kilogram (IPK) through the National Institute of Standards and Technology (NIST),and meet or exceed specifications for type and class.

Chain of Traceability

Primary Standards MT57 Calibrated at NIST 02/11/03 under test # 822/268214-03
1kg A & 1kg B
↓
Working Standards MT7, MT50 and MT53 Calibrated at Denver Instrument Co. 11/09/04 under test #04-102604
↓

Class 1 Weight Range: 1000 g: S/N: 05-J06467-8 Date of Report: 01/10/05
all weights were found to be in tolerance see chart page 2.

Denver Instrument Reported Uncertainties

Nominal Value	Uncertainty K=2	Nominal Value	Uncertainty K=2	Nominal Value	Uncertainty K=2
5000g	1.5 mg	100g	0.025 mg	500mg	0.0015 mg
2000g	0.75 mg	50g	0.017 mg	200mg	0.0014 mg
1000g	0.332 mg	30g	0.012 mg	100mg	0.0014 mg
500g	0.192 mg	20g	0.011 mg	50mg	0.0014 mg
400g	0.117mg	10g	0.008 mg	20mg	0.0014 mg
300g	0.116mg	5g	0.005 mg	10mg	0.0014 mg
200g	0.076mg	2g	0.005 mg	5mg	0.0014 mg
160g	0.041 mg	1g	0.005 mg	2mg	0.0014 mg
150g	0.041 mg			1mg	0.0014 mg

Type: 1
5kg – 10mg
Material: Stainless Steel Assumed Density: 7.85g/cm^3
5mg – 1mg
Material: Aluminum Assumed Density: 2.70g/cm^3

Signature: Mich. M. Swisgood
Production Coordinator

NVLAP
NVLAP Lab Code 2200106-0

This report pertains to the above listed artifacts and parameters only. At the time of test, which may vary from date of report the weight(s) were found to meet the stated specification. Weights are calibrated using weighing designs A.2.1 or A.2.3 described in NBS Tech note 952 data reduction uses the NIST masscode software. Using the NIST provided masscode software we propagate mass values from our primary standards MT57, which are calibrated every three years, and use the values reported under NIST test #822/268214-03 dated 02/11/03. Our working standards MT7, MT50 and MT53 are calibrated every 6 months the last Calibration was on 05/17/04 under test number 04-051404. *Therefore, the reported values provide traceability to the International Prototype Kilogram through NIST* and comply with ANSI/NCSL Z540 and ANSI/ISO/IEC 17025:2000. Accredited by NVLAP for the specific scope of accreditation under lab code 200106-0. This report does not provide endorsement by NVLAP or any other government agency, and may not be reproduced except in full without our written permission.

Page 1 of 2

1855 Blake Street, Suite 201 • Denver, CO 80202
800.321.1135 • 303.431.7255 • 303.423.4831 FAX
www.denverinstrument.com

Table of Weight Tolerances

	ASTM E617					NBS Circular 547				OIML R-111			
	Class 0(U*)	Class 1	Class 2	Class 3	Class 4	Class M	Class S	Class S1	Class P	Class E1	Class E2	Class F1	Class F2
Nominal Value	Tolerance in mg	Tolerance in mg	Tolerance in mg	Tolerance in mg	Tolerance in mg	Tolerance in mg	Tolerance in mg	Tolerance in mg	Tolerance in mg	Tolerance in mg	Tolerance in mg	Tolerance in mg	Tolerance in mg
5 kg	6.00	12.0	25.0	50	100	25.0	12.0	50	100	2.5	7.5	25	75
3 kg	3.75	7.5	15.0	30	60	15.0	7.5	30	60				
2 kg	2.50	5.0	10.0	20	40	10.0	5.0	20	40	1.0	3.0	10	30
1 kg	1.25	2.5	5.0	10	20	5.0	2.5	10	20	0.5	1.5	5	15
500 g	0.600	1.20	2.50	5.0	10.0	2.50	1.20	5.0	10.0	0.25	0.75	2.5	7.5
300 g	0.380	0.75	1.50	3.0	6.0	1.50	0.75	3.0	6.0				
200 g	0.250	0.50	1.00	2.0	4.0	1.00	0.50	2.0	4.0	0.10	0.30	1.0	3.0
100 g	0.125	0.25	0.50	1.0	2.0	0.50	0.25	1.0	2.0	0.05	0.15	0.5	1.5
50 g	0.060	0.120	0.250	0.60	1.20	0.250	0.120	0.60	1.20	0.030	0.10	0.30	1.0
30 g	0.037	0.074	0.150	0.45	0.90	0.150	0.074	0.45	0.90				
20 g	0.037	0.074	0.100	0.35	0.70	0.100	0.074	0.35	0.70	0.025	0.080	0.25	0.8
10 g	0.025	0.050	0.074	0.25	0.50	0.050	0.074	0.25	0.50	0.020	0.060	0.20	0.6
5 g	0.017	0.034	0.054	0.18	0.36	0.034	0.054	0.18	0.36	0.015	0.050	0.15	0.5
3 g	0.017	0.034	0.054	0.15	0.30	0.034	0.054	0.15	0.30				
2 g	0.017	0.034	0.054	0.13	0.26	0.034	0.054	0.13	0.25	0.012	0.040	0.12	0.4
1 g	0.017	0.034	0.054	0.10	0.20	0.034	0.054	0.10	0.20	0.010	0.030	0.10	0.3
500 mg	0.005	0.010	0.025	0.080	0.16	0.010	0.025	0.080	0.16	0.008	0.025	0.08	0.25
300 mg	0.005	0.010	0.025	0.070	0.14	0.010	0.025	0.070	0.14				
200 mg	0.005	0.010	0.025	0.060	0.12	0.010	0.025	0.060	0.12	0.006	0.020	0.06	0.20
100 mg	0.005	0.010	0.025	0.050	0.10	0.010	0.025	0.050	0.10	0.005	0.015	0.05	0.15
50 mg	0.005	0.010	0.014	0.042	0.085	0.010	0.014	0.042	0.085	0.004	0.012	0.04	0.12
30 mg	0.005	0.010	0.014	0.038	0.075	0.010	0.014	0.038	0.075				
20 mg	0.005	0.010	0.014	0.035	0.070	0.010	0.014	0.035	0.070	0.003	0.010	0.030	0.10
10 mg	0.005	0.010	0.014	0.030	0.060	0.010	0.014	0.030	0.060	0.002	0.008	0.025	0.08
5 mg	0.005	0.010	0.014	0.028	0.055	0.010	0.014	0.028	0.055	0.002	0.006	0.020	0.06
3 mg	0.005	0.010	0.014	0.026	0.052	0.010	0.014	0.026	0.052				
2 mg	0.005	0.010	0.014	0.025	0.050	0.010	0.014	0.025	0.050	0.002	0.006	0.020	0.06
1 mg	0.005	0.010	0.014	0.025	0.050	0.010	0.014	0.025	0.050	0.002	0.006	0.020	0.06

For values between those shown on the chart use the value of the weight which would fall below it on the chart. For non-metric weights convert to metric and follow the same procedure. For example: If using a 400 gram or a 1 lb (453.6g) weight use the tolerance for 300 grams. For classes not shown contact Denver Instrument Company for tolerances. * Class U is a Denver Instrument classification in which the weights are adjusted to class zero tolerances but meet class 1 specifications for markings and density.

Uncertainty

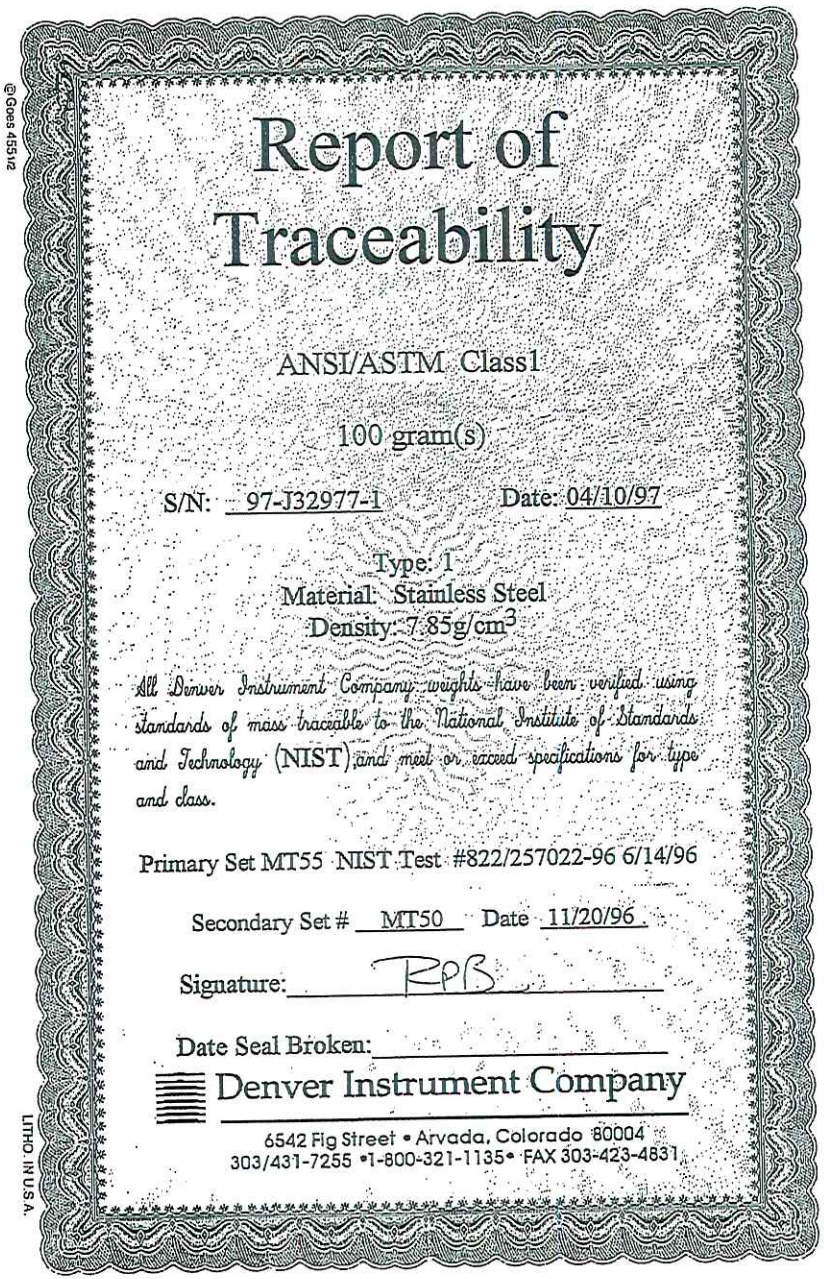
The combined uncertainty includes: Type A components: The standard deviation of the balance. Type B components: Uncertainty of the Air Density Calculation, Uncertainty of the Standard, Uncertainty of the Standard's Density, and the Uncertainty of the Density of the mass under test. The combined uncertainty is multiplied by a coverage factor of 2 to give the expanded uncertainty at the 95 percent confidence level. The expanded uncertainty presented in this report is consistent with the ISO Guide to the Expression of Uncertainty in Measurement. The expanded uncertainty should not be used as a tolerance limit by the user during application.

When to Recertify Mass Standards

ISO/IEC 17025 paragraph 5.10.4.4 states: *"A calibration certificate (or calibration label) shall not contain any recommendation on the calibration interval except where this has been agreed with the client."* Therefore, Denver Instrument Company does not provide a calibration due date. Setting calibration intervals is the responsibility of the end user. As a general guideline the following calibration intervals may be appropriate:

1. Normal usage; One year
2. Heavy daily use; Three – six months
3. Light usage; Two – three years

Normal usage can be daily but only one or two times a day. Heavy usage is daily use in excess of ten or more times a day. Light usage would be two or three times in a three-month period. Weights should also be recertified if they become contaminated with foreign material or are subjected to dropping, abrasion, scratching or denting. If the user experiences significant changes in mass between calibrations a reduction in the calibration interval should be considered. If you would like to discuss your specific requirements please give us a call.



Report of Traceability

ANSI/ASTM Class1

100 gram(s)

S/N: 97-J32977-1 Date: 04/10/97

Type: 1
Material: Stainless Steel
Density: 7.85g/cm^3

All Denver Instrument Company weights have been verified using standards of mass traceable to the National Institute of Standards and Technology (NIST), and meet or exceed specifications for type and class.

Primary Set MT55 NIST Test #822/257022-96 6/14/96

Secondary Set # MT50 Date 11/20/96

Signature: RPB

Date Seal Broken:

Denver Instrument Company

6542 Fig Street • Arvada, Colorado 80004
303/431-7255 •1-800-321-1135• FAX 303-423-4831

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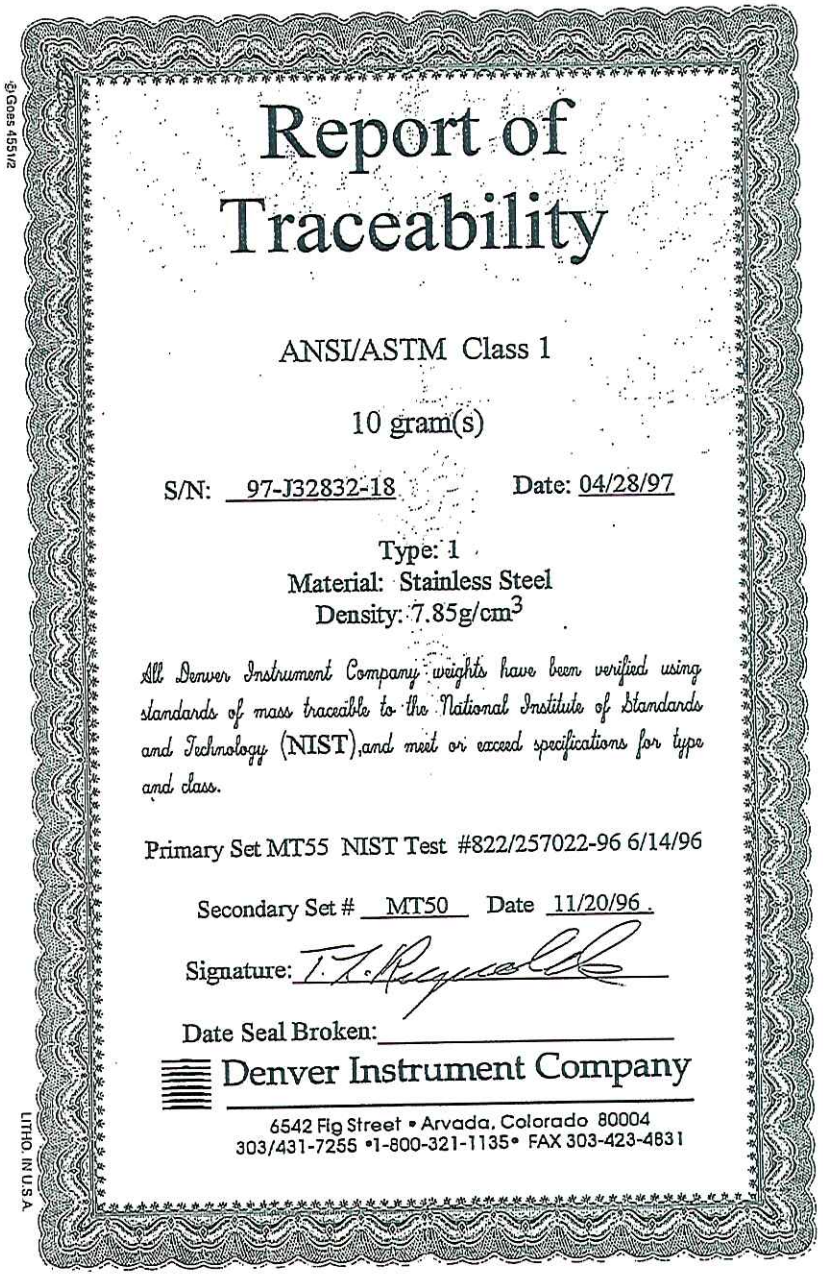

Report of Traceability

ANSI/ASTM Class 1

10 gram(s)

S/N: 97-J32832-18 Date: 04/28/97

Type: 1
Material: Stainless Steel
Density: 7.85g/cm^3

All Denver Instrument Company weights have been verified using standards of mass traceable to the National Institute of Standards and Technology (NIST), and meet or exceed specifications for type and class.

Primary Set MT55 NIST Test #822/257022-96 6/14/96

Secondary Set # MT50 Date 11/20/96.

Signature: T. T. Reynolds

Date Seal Broken:

Denver Instrument Company

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Report of Traceability

ANSI/ASTM Class 1

1 gram(s)

S/N: 97-J33700-21 Date: 05/27/97

Type: 1
Material: Stainless Steel
Density: 7.85g/cm^3

All Denver Instrument Company weights have been verified using standards of mass traceable to the National Institute of Standards and Technology (NIST), and meet or exceed specifications for type and class.

Primary Set MT55 NIST Test #822/257022-96 6/14/96

Secondary Set # MT50 Date 05/20/97.

Signature: T. L. Reynolds

Date Seal Broken: _____

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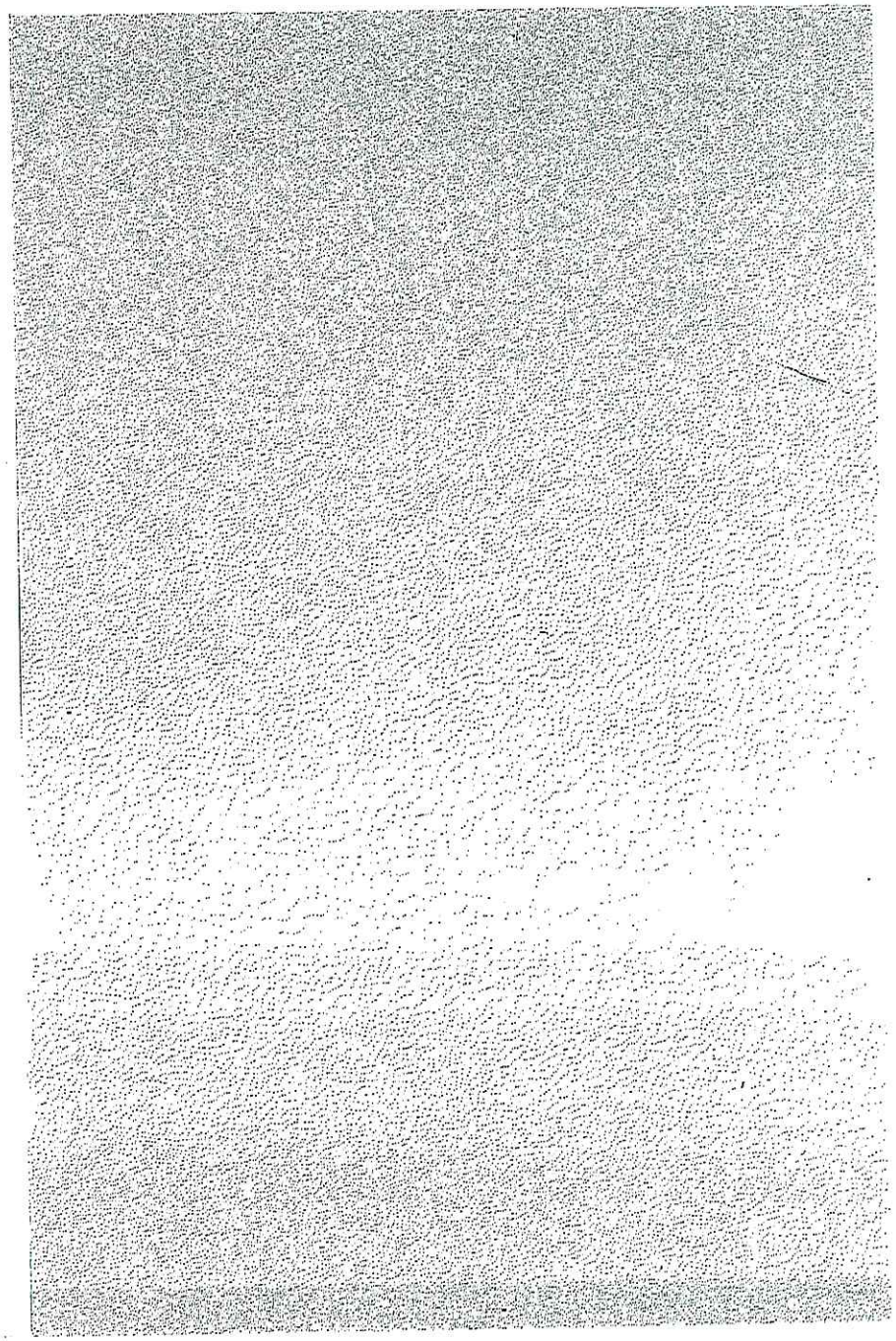

Analytical Instruments Company, Inc.
Laboratory Balance Service, Calibration & Repair Since 1975
Member, American Society for Quality (ASQ)
P.O. Box 97112 Pittsburgh PA 15229-0112
Phone or Fax (412)-367-5776

CALIBRATION REPORT

DATE OF SERVICE: August 29, 2006

NEXTCALIBRATION DUE DATE: August 30, 2007

CLEAN AIR ENGINEERING, INC.
ATTN: LILLIAN CRAWFORD
1601 PARKWAY VIEW DRIVE
PARKWAY WEST INDUSTRIAL PARK BLDG 16
PITTSBURGH PA 15205-1409

Procedures:
A.) Toploading balances > one kilogram capacity use procedure A5A.
B.) Toploading balances <= one kilogram capacity use procedure A4A.
C.) Analytical balances use calibration procedure A1A.
D.) Micro balances use procedure A2A.

Nr.	Manuf.	Model	Serial Nr.	Location	Cal. Weight/ Procedure	Pre-Service Reading	Post-Service Reading	Readability ±mg	Repeatability ±mg	Condition or Not/Serviced
1	FISHER	XA-200	4160	FIELD	200g / B	NOT IN LAB	NOT SERVICED	----	------	NOT SERVICED
2	OHAUS	AP250D	1127292828	LAB	100g / C	10.00039/ 50.00160/ 100.0027/ 200.0052	10.00000=> 50.00000/ 100.0000=> 200.0000	0.1	0.03/ 0.2	GOOD SC INT
3	A&D	EK4100i	P1840031	FIELD	4 kg / A	500.1/ 1000.1/ 2000.2/ 3000.3/4000.4	500.0=> 4000.0	100	100	GOOD SC EXT
4	A&D	EK4100i	P1840029	FIELD	4 kg / A	1000.0/ 2000.0/ 2999.9/ 3999.8	1000.0=> 4000.0	100	100	GOOD SC EXT
5	A&D	EK4100i	P1840031	FIELD	4 kg / A	1000.1/ 2000.2/ 3000.4/ 4000.6	1000.0=> 4000.0	100	100	GOOD SC EXT
6	A&D	EK4100i	P1840031	FIELD	4 kg / A	1000.0/ 1999.9/ 3000.0/ 3999.9	1000.0=> 4000.0	100	100	GOOD SC EXT
7	OHAUS	TS4000	4970	FIELD	4 kg / A	1000.0/ 2000.2/ 3000.3/ 4000.4	1000.0=> 4000.0	100	100	GOOD SC EXT
8	OHAUS	AP250D	1127293152	FIELD	100g / C	10.00011/ 50.00027/ 100.0001/ 200.0005	10.00000/ 50.00000/ 100.0000/ 200.0000	0.01/ 0.1	0.03/0.2	GOOD SC INT

Samuel M. Prepelka, Pres.

August 29, 2006
Date

◊ NIST TRACEABLE WEIGHTS CERTIFICATION ◊ NRD ANTISTATIC PRODUCTS ◊ MEMBER, AMERICAN SOCIETY FOR QUALITY (ASQ) ◊
SERVICING BALANCES FROM NEW YORK TO CALIFORNIA FOR OVER THIRTY YEARS THANK YOU FOR CHOOSING ANALYTICAL INSTRUMENTS COMPANY!

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Search Results: 1 records found for the following search criteria:
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County: ALLEGHENY
State: PA

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2-760: Clean Air Engineering
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1601 Parkway View Dr
Pittsburgh , PA 15205-1409
Allegheny County
(412) 787-9130

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DEPARTMENT OF ENVIRONMENTAL QUALITY
KATHLEEN BABINEAUX BLANCO
GOVERNOR
MIKE D. McDANIEL, Ph.D.
SECRETARY

CERTIFIED MAIL #7007 0710 0005 6108 1458
Return Receipt Requested

June 30, 2007

AI #85668 **LELAP Certificate #03099**

Mr. Robert Doran
Clean Air Engineering
321 Century Plaza #130
Houston, TX 77073

RE: Accreditation Certificate

Dear Mr. Doran:

In accordance with Louisiana Administrative Code, Title 33, Part I, Subpart 3, Laboratory Accreditation, the State of Louisiana formally recognizes that this laboratory has successfully completed the accreditation process and is technically competent to perform the environmental analyses listed on the scope of accreditation detailed in the attachment. Accreditation does not constitute an endorsement of the suitability of the listed methods for any specific purpose. Parameters or analytes that the laboratory has applied for accreditation not included in the scope of accreditation attachment are not accredited.

NELAP accreditation is granted **only** for those methods/analytes for which "NELAP" is indicated as the type of accreditation. "STATE" is indicated as the type of accreditation for those methods/analytes for which NELAP accreditation is not available. Accreditation is dependent on the laboratory's successful ongoing compliance with regulations as outlined in the Louisiana Administrative Code, Title 33, Part I, Subpart 3, Laboratory Accreditation.

The enclosed accreditation certificate is property of the State of Louisiana. Should a change in accreditation status occur, the Department may recall the original accreditation certificate and attachments. The recalled certificate and attachments should be returned

ENVIRONMENTAL **ASSESSMENT**
LABORATORY SERVICES DIVISION
: PO BOX 4314, BATON ROUGE, LA 70821-4314
P:225-219-9800 F:225-219-9898
WWW.DEQ.LOUISIANA.GOV

to: Office of Environmental Assessment, Louisiana Environmental Laboratory Accreditation Program, P.O. Box 4314, Baton Rouge, LA 70821-4314, Attention: Dr. David L. Boucher.

LAC 33:I.5313.A requires that the laboratory report must include all relevant information. Therefore, the certificate number shall be placed in the upper right corner of all laboratory reports. If the test report includes results of any test for which the laboratory is not accredited, the unaccredited results must be clearly identified as such.

Please be advised that it is your responsibility to examine the scope of accreditation attachment for accuracy and completeness. If you find that an analyte for which you expected to be accredited is not listed, please examine your records to ensure that:

1. You have met the requirements for successful participation in proficiency test studies as outlined in LAC 33:I.4711 and in the NELAC Standard 2.7.2.

2. In the case of accreditation by recognition, the requested analyte must be listed for the requested method and matrix on both the certificate issued by the Primary AA ***and*** on the Louisiana application form.

If you have any questions, please contact the Louisiana Environmental Laboratory Accreditation Program at (225) 219-9800.

Sincerely,

Dr. David L. Boucher, Acting Supervisor
Louisiana Environmental Laboratory Accreditation Program

db

Enclosure

DEQ
LOUISIANA

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY

Louisiana Environmental Lab Accreditation Program
LELAP

Is hereby granting a Louisiana Environmental Laboratory Accreditation to:

Clean Air Engineering
321 Century Plaza #130
Houston, TX 77073

Agency Interest No. 85668

According to the Louisiana Administrative Code, Title 33, Part I, Subpart 3, LABORATORY ACCREDITATION, the State of Louisiana formally recognizes that this laboratory is technically competent to perform the environmental analyses listed on the scope of accreditation detailed in the attachment.

The laboratory agrees to perform all analyses listed on this scope of accreditation according to the Part I, Subpart 3 requirements and acknowledges that continued accreditation is dependent on successful ongoing compliance with the applicable requirements of Part I. Please contact the Department of Environmental Quality, Louisiana Environmental Laboratory Accreditation Program (LELAP) to verify the laboratory's scope of accreditation and accreditation status. Accreditation by the State of Louisiana is not an endorsement or a guarantee of validity of the data generated by the laboratory, and does not constitute an endorsement of the suitability of the listed methods for any specific application.

To be accredited initially and maintain accreditation, the laboratory agrees to participate in two single-blind, single-concentration PT studies, where available, per year for each field of testing for which it seeks accreditation or maintains accreditation as required in LAC 33:I.4711.

Melvin C. Mitchell Sr., Accreditation Officer
Louisiana Environmental Laboratory Accreditation Program

Certificate Number: 03099
Expiration Date: June 30, 2008
Issued On: July 1, 2007

Louisiana Environmental Laboratory
LELAP
Accreditation Program

Laboratory Scope of Accreditation

Organization

03099
Clean Air Engineering
321 Century Plaza #130
Houston , TX 77073

(281) 443-6400

Louisiana Stack Testing Program Certification

Method Code	Method Ref	Analyte	Status	Date Effective	Type	AA
895	NCASI DI/MEOH 94.03	Methanol	Accredited	7/1/2003	STATE	LA
1217	Method 1 40 CFR 60 App. A	Traverse Points	Accredited	7/1/2003	STATE	LA
1218	Method 10 40 CFR 60 App. A	Carbon monoxide (CO)	Accredited	7/1/2003	STATE	LA
1232	Method 10A 40 CFR 60 App. A	Carbon monoxide (CO)	Accredited	7/1/2003	STATE	LA
1233	Method 10B 40 CFR 60 App. A	Carbon monoxide (CO)	Accredited	7/1/2003	STATE	LA
1248	Method 1A 40 CFR 60 App. A	Traverse Points	Accredited	7/1/2003	STATE	LA
1249	Method 2 40 CFR 60 App. A	Stack gas velocity volume flow rate	Accredited	7/1/2003	STATE	LA
1250	Method 20 40 CFR 60 App. A	Nitrogen Oxides (NOx)	Accredited	7/1/2003	STATE	LA
1250	Method 20 40 CFR 60 App. A	Oxygen	Accredited	7/1/2003	STATE	LA
1250	Method 20 40 CFR 60 App. A	Sulfur dioxide	Accredited	7/1/2003	STATE	LA
1251	Method 201A 40 CFR 51 App. M	Particulates <10 um	Accredited	7/1/2003	STATE	LA
1252	Method 202 40 CFR 51 App. M	Particulate Matter <2.5 um	Accredited	7/1/2003	STATE	LA
1262	Method 22 40 CFR 60 App. A	Visible emissions from coke oven batteries	Accredited	7/1/2003	STATE	LA
1271	Method 2A 40 CFR 60 App. A	Stack gas velocity volume flow rate in small stacks/ducts	Accredited	7/1/2003	STATE	LA
1272	Method 2B 40 CFR 60 App. A	Stack gas velocity volume flow rate	Accredited	7/1/2003	STATE	LA
1273	Method 2C 40 CFR 60 App. A	Stack gas velocity volume flow rate in small stacks/ducts	Accredited	7/1/2003	STATE	LA
1274	Method 2D 40 CFR 60 App. A	Stack gas velocity volume flow rate in small stacks/ducts	Accredited	7/1/2003	STATE	LA
1275	Method 2E 40 CFR 60 App. A	Stack gas velocity volume flow rate	Accredited	7/1/2003	STATE	LA
1276	Method 2F 40 CFR 60 App. A	Stack gas velocity volume flow rate	Accredited	7/1/2003	STATE	LA
1277	Method 2G 40 CFR 60 App. A	Stack gas velocity volume flow rate	Accredited	7/1/2003	STATE	LA
1278	Method 2H 40 CFR 60 App. A	Stack gas velocity volume flow rate	Accredited	7/1/2003	STATE	LA
1279	Method 3 40 CFR 60 App. A	Carbon dioxide oxygen dry molecular weight	Accredited	7/1/2003	STATE	LA
1296	Method 3A 40 CFR 60 App. A	Carbon dioxide	Accredited	7/1/2003	STATE	LA
1296	Method 3A 40 CFR 60 App. A	Oxygen	Accredited	7/1/2003	STATE	LA
1297	Method 3B 40 CFR 60 App. A	Emission Rate Correction Factors	Accredited	7/1/2003	STATE	LA
1298	Method 3C 40 CFR 60 App. A	Carbon dioxide	Accredited	7/1/2003	STATE	LA
1302	Method 4 40 CFR 60 App. A	Moisture content	Accredited	7/1/2003	STATE	LA

Issue Date: July 1, 2007
Expiration Date: June 30, 2008

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Louisiana Environmental Laboratory
LELAP
Accreditation Program

Laboratory Scope of Accreditation

Organization

03099 (281) 443-6400
Clean Air Engineering
321 Century Plaza #130
Houston , TX 77073

Louisiana Stack Testing Program Certification

Method Code	Method Ref	Analyte	Status	Date Effective	Type	AA
1303	Method 5 40 CFR 60 App. A	Particulates	Accredited	7/1/2003	STATE	LA
1304	Method 5A 40 CFR 60 App. A	Particulates from asphalt processing	Accredited	7/1/2003	STATE	LA
1305	Method 5B 40 CFR 60 App. A	Particulates	Accredited	7/1/2003	STATE	LA
1306	Method 5D 40 CFR 60 App. A	Particulates from fabric filters	Accredited	7/1/2003	STATE	LA
1307	Method 5E 40 CFR 60 App. A	Particulates from wool fiberglass insulation	Accredited	7/1/2003	STATE	LA
1308	Method 5F 40 CFR 60 App. A	Particulates	Accredited	7/1/2003	STATE	LA
1315	Method 6C 40 CFR 60 App. A	Sulfur dioxide	Accredited	7/1/2003	STATE	LA
1321	Method 7E 40 CFR 60 App. A	Nitrogen Oxides (NOx)	Accredited	7/1/2003	STATE	LA
1761	Method 101A 40 CFR 61 App. B (Sample Only)	Mercury	Accredited	7/1/2003	STATE	LA
1789	Method 11 40 CFR 60 App. A (Sample Only)	Hydrogen sulfide	Accredited	7/1/2003	STATE	LA
1793	Method 12 40 CFR 60 App. A (Sample Only)	Lead	Accredited	7/1/2003	STATE	LA
1797	Method 13B 40 CFR 60 App. A (Sample Only)	Fluoride	Accredited	7/1/2003	STATE	LA
1799	Method 14 40 CFR 60 App. A (Sample Only)	Fluoride	Accredited	7/1/2003	STATE	LA
1801	Method 15 40 CFR 60 App. A (Sample Only)	Carbon disulfide	Accredited	7/1/2003	STATE	LA
1801	Method 15 40 CFR 60 App. A (Sample Only)	Carbonyl sulfide	Accredited	7/1/2003	STATE	LA
1801	Method 15 40 CFR 60 App. A (Sample Only)	Hydrogen sulfide	Accredited	7/1/2003	STATE	LA
1803	Method 15A 40 CFR 60 App. A (Sample Only)	Total reduced sulfur	Accredited	7/1/2003	STATE	LA
1805	Method 16 40 CFR 60 App. A (Sample Only)	Dimethyl Disulfide	Accredited	7/1/2003	STATE	LA
1805	Method 16 40 CFR 60 App. A (Sample Only)	Dimethyl Sulfide	Accredited	7/1/2003	STATE	LA
1805	Method 16 40 CFR 60 App. A (Sample Only)	Hydrogen sulfide	Accredited	7/1/2003	STATE	LA
1805	Method 16 40 CFR 60 App. A (Sample Only)	Methyl Mercaptan	Accredited	7/1/2003	STATE	LA
1807	Method 16A 40 CFR 60 App. A (Sample Only)	Total reduced sulfur	Accredited	7/1/2003	STATE	LA
1809	Method 16B 40 CFR 60 App. A (Sample Only)	Total reduced sulfur	Accredited	7/1/2003	STATE	LA
1811	Method 17 40 CFR 60 App. A (Sample Only)	Particulates	Accredited	7/1/2003	STATE	LA
1813	Method 18 40 CFR 60 App. A (Sample Only)	Gaseous Organic Compound Emissions	Accredited	7/1/2003	STATE	LA
1815	Method 19 40 CFR 60 App. A (Sample Only)	Nitrogen Oxides (NOx)	Accredited	7/1/2003	STATE	LA
1815	Method 19 40 CFR 60 App. A (Sample Only)	Particulates SO2 NOx sulfur removal efficiency	Accredited	7/1/2003	STATE	LA

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Louisiana Stack Testing Program Certification

Method Code	Method Ref	Analyte	Status	Date Effective	Type	AA
1815	Method 19 40 CFR 60 App. A (Sample Only)	Sulfur dioxide	Accredited	7/1/2003	STATE	LA
1847	Method 23 40 CFR 60 App. A (Sample Only)	Dioxins/Furans	Accredited	7/1/2003	STATE	LA
1849	Method 25 40 CFR 60 App. A (Sample Only)	Gaseous Nonmethane Organic Emissions	Accredited	7/1/2003	STATE	LA
1851	Method 25A 40 CFR 60 App. A (Sample Only)	Gaseous Organic Emissions	Accredited	7/1/2003	STATE	LA
1857	Method 26 40 CFR 60 App. A (Sample Only)	Bromine (Br2)	Accredited	7/1/2003	STATE	LA
1857	Method 26 40 CFR 60 App. A (Sample Only)	Chlorine	Accredited	7/1/2003	STATE	LA
1857	Method 26 40 CFR 60 App. A (Sample Only)	Hydrochloric acid (Hydrogen chloride (gas only))	Accredited	7/1/2003	STATE	LA
1857	Method 26 40 CFR 60 App. A (Sample Only)	Hydrogen Bromide (HBr)	Accredited	7/1/2003	STATE	LA
1857	Method 26 40 CFR 60 App. A (Sample Only)	Hydrogen fluoride (Hydrofluoric acid)	Accredited	7/1/2003	STATE	LA
1859	Method 26A 40 CFR 60 App. A (Sample Only)	Bromine (Br2)	Accredited	7/1/2003	STATE	LA
1859	Method 26A 40 CFR 60 App. A (Sample Only)	Chlorine	Accredited	7/1/2003	STATE	LA
1859	Method 26A 40 CFR 60 App. A (Sample Only)	Hydrochloric acid (Hydrogen chloride (gas only))	Accredited	7/1/2003	STATE	LA
1859	Method 26A 40 CFR 60 App. A (Sample Only)	Hydrogen Bromide (HBr)	Accredited	7/1/2003	STATE	LA
1859	Method 26A 40 CFR 60 App. A (Sample Only)	Hydrogen fluoride (Hydrofluoric acid)	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Antimony	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Arsenic	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Barium	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Beryllium	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Cadmium	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Chromium	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Cobalt	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Copper	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Lead	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Manganese	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Mercury	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Nickel	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Phosphorus total	Accredited	7/1/2003	STATE	LA

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Houston , TX 77073

Louisiana Stack Testing Program Certification

Method Code	Method Ref	Analyte	Status	Date Effective	Type	AA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Selenium	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Silver	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Thallium	Accredited	7/1/2003	STATE	LA
1861	Method 29 40 CFR 60 App. A (Sample Only)	Zinc	Accredited	7/1/2003	STATE	LA
1885	Method 306 40 CFR 63 App. A (Sample Only)	Chromium	Accredited	7/1/2003	STATE	LA
1889	Method 308 40 CFR 63 App. A (Sample Only)	Methanol	Accredited	7/1/2003	STATE	LA
1911	Method 316 40 CFR 63 App. A (Sample Only)	Formaldehyde	Accredited	7/1/2003	STATE	LA
1945	Method 6 40 CFR 60 App. A (Sample Only)	Sulfur dioxide	Accredited	7/1/2003	STATE	LA
1953	Method 7 40 CFR 60 App. A (Sample Only)	Nitrogen Oxides (NOx)	Accredited	7/1/2003	STATE	LA
1955	Method 7A 40 CFR 60 App. A (Sample Only)	Nitrogen Oxides (NOx)	Accredited	7/1/2003	STATE	LA
1957	Method 7B 40 CFR 60 App. A (Sample Only)	Nitrogen Oxides (NOx)	Accredited	7/1/2003	STATE	LA
1959	Method 7C 40 CFR 60 App. A (Sample Only)	Nitrogen Oxides (NOx)	Accredited	7/1/2003	STATE	LA
1961	Method 7D 40 CFR 60 App. A (Sample Only)	Nitrogen Oxides (NOx)	Accredited	7/1/2003	STATE	LA
1965	Method 8 40 CFR 60 App. A (Sample Only)	Sulfuric Acid Mist	Accredited	7/1/2003	STATE	LA
1967	Method 9 40 CFR 60 App. A (Sample Only)	Opacity	Accredited	7/1/2003	STATE	LA
1977	SW-846 0010 (Sample Only)	Modified Method 5 Sample Train	Accredited	7/1/2003	STATE	LA
1979	SW-846 0011 (Sample Only)	Acetaldehyde	Accredited	7/1/2003	STATE	LA
1979	SW-846 0011 (Sample Only)	Acetophenone	Accredited	7/1/2003	STATE	LA
1979	SW-846 0011 (Sample Only)	Formaldehyde	Accredited	7/1/2003	STATE	LA
1979	SW-846 0011 (Sample Only)	Isophorone	Accredited	7/1/2003	STATE	LA
1979	SW-846 0011 (Sample Only)	Propionaldehyde	Accredited	7/1/2003	STATE	LA
1983	SW-846 0023A (Sample Only)	Dioxin & Furan Sampling System	Accredited	7/1/2003	STATE	LA
1985	SW-846 0030 (Sample Only)	Volatile Organic Sampling Train (VOST)	Accredited	7/1/2003	STATE	LA
1987	SW-846 0031 (Sample Only)	Sampling Method for VOCs (SMVOC)	Accredited	7/1/2003	STATE	LA
1991	SW-846 0050 (Sample Only)	Isokinetic HCl/Cl2 Sampling Train	Accredited	7/1/2003	STATE	LA
1994	SW-846 0051 (Analysis Only)	Midget Impinger HCl/Cl2 Sampling Train	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Antimony	Accredited	7/1/2003	STATE	LA

Issue Date: July 1, 2007
Expiration Date: June 30, 2008

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03099
Clean Air Engineering
321 Century Plaza #130
Houston , TX 77073

(281) 443-6400

Louisiana Stack Testing Program Certification

Method Code	Method Ref	Analyte	Status	Date Effective	Type	AA
1995	SW-846 0060 (Sample Only)	Arsenic	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Barium	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Beryllium	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Cadmium	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Cobalt	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Copper	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Lead	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Manganese	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Mercury	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Nickel	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Particulates	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Phosphorus total	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Selenium	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Silver	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Thallium	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Total chromium	Accredited	7/1/2003	STATE	LA
1995	SW-846 0060 (Sample Only)	Zinc	Accredited	7/1/2003	STATE	LA
1997	SW-846 0061 (Sample Only)	Chromium VI				

Non-Potable Water Certification

Method Code	Method Ref	Analyte	Status	Date Effective	Type	AA
10053006	EPA 300.0	Chloride	Accredited	1/25/2006	STATE	LA
10053006	EPA 300.0	Fluoride	Accredited	1/25/2006	STATE	LA
10053006	EPA 300.0	Nitrite	Accredited	1/25/2006	STATE	LA
10053006	EPA 300.0	Sulfate	Accredited	1/25/2006	STATE	LA

Issue Date: July 1, 2007
Expiration Date: June 30, 2008

Print Date 6/8/2007 12:17:09 PM

State of New Jersey
Department of Environmental Protection

Certifies That

Clean Air Engineering Inc

Laboratory Certification ID #: IL004

having duly met the requirements of the

Regulations Governing The Certification Of
Laboratories And Environmental Measurements N.J.A.C. 7:18 et. seq.

is hereby approved as a

State Certified Environmental Laboratory

to perform the analyses as indicated on the Annual Certified Parameter List
which must accompany this certificate to be valid

Expiration Date June 30, 2008

THE GREAT SEAL OF THE STATE OF NEW JERSEY

Joseph F. Aiello, Chief
Office of Quality Assurance

THIS CERTIFICATE IS TO BE CONSPICUOUSLY DISPLAYED AT THE LABORATORY WITH THE ANNUAL CERTIFIED PARAMETER LIST IN A LOCATION ON THE PREMISES VISIBLE TO THE PUBLIC

New Jersey Department of Environmental Protection

Environmental Laboratory Certification Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 07/01/2007 until 06/30/2008

Laboratory Name: CLEAN AIR ENGINEERING INC Laboratory Number: IL004 Activity ID: SLC070001
500 WEST WOOD ST
PALATINE, IL 60067

Category: CAP01 – Atmos. Inorg. Parameters, Non-Metals

Status	Code	Matrix	Technique Description	Approved Method	Parameter Description
Dropped	CAP01.00005	AE	Thermal Conductivity	[EPA 3C]	Carbon Dioxide
Dropped	CAP01.00015	AE	Spectrophotometric	[EPA 10A]	Carbon monoxide
Dropped	CAP01.00020	AE	Gas Chromatography / FPD	[EPA 15]	Carbon disulfide
Dropped	CAP01.00025	AE	Gas Chromatography / FPD	[EPA 15]	Carbon oxysulfide (Carbonyl sulfide)
Dropped	CAP01.00035	AE	Specific Ion Electrode	[EPA 13B]	Fluoride
Dropped	CAP01.00040	AE	Primary Aluminum Plants	[EPA 14A]	Fluoride
Certified	CAP01.00045	AE	Ion Chromatography	[EPA 26] [EPA 26A]	Hydrogen chloride, Halides and Halogens
Dropped	CAP01.00050	AE	Gas Chromatography / FPD	[EPA 15]	Hydrogen sulfide
Applied	CAP01.00055	AE	Emission Sampling Train	[EPA 0051, Rev 0, 12/96]	Impinger HCl/Cl2
Dropped	CAP01.00060	AE	Gravimetric	[EPA 24A]	Inks and coatings
Certified	CAP01.00065	AE	Emission Sampling Train	[EPA 0050, Rev 0, 12/96]	Isokinetic HCl/Cl2
Applied	CAP01.00068	AE	Thermal Conductivity	[EPA 3C]	Methane
Applied	CAP01.00070	AE	Thermal Conductivity	[EPA 3C]	Nitrogen
Applied	CAP01.00100	AE	Thermal Conductivity	[EPA 3C]	Oxygen
Certified	CAP01.00105	AE	Gravimetric	[EPA 5] [EPA 17]	Particulate Matter
Certified	CAP01.00110	AE	Gravimetric	[EPA 5A]	Particulate Matter
Certified	CAP01.00115	AE	Gravimetric	[EPA 5B]	Particulate Matter
Certified	CAP01.00120	AE	Gravimetric	[EPA 5E]	Particulate Matter
Certified	CAP01.00125	AE	Gravimetric	[EPA 5F]	Particulate Matter
Certified	CAP01.00145	AE	Gravimetric	[EPA 201A]	Particulate Matter
Certified	CAP01.00150	AE	Gravimetric	[EPA 202]	Surface coatings
Dropped	CAP01.00180	AE	Standard Methods	[EPA 24]	Sulfur, Total Reduced
Dropped	CAP01.00185	AE	Barium-Thorin Titration	[EPA 15A]	Sulfur, Total Reduced
Dropped	CAP01.00190	AE	Barium-Thorin Titration	[EPA 16A]	Sulfur, Total Reduced
Dropped	CAP01.00195	AE	Gas Chromatography / FPD	[EPA 16B]	Sulfur Dioxide
Applied	CAP01.00200	AE	Barium-Thorin Titration	[EPA 6]	Sulfuric acid
Applied	CAP01.00210	AE	Barium-Thorin Titration	[EPA 8]	

Category: CAP03 – Atmospheric Organic Parameters

Status	Code	Matrix	Technique Description	Approved Method	Parameter Description
Dropped	CAP03.00025	AE	GC/FID	[EPA 308]	Methyl alcohol (Methanol)

KEY: AE = Air and Emissions, BT = Biological Tissues, DW = Drinking Water, NPW = Non-Potable Water, SCM = Solid and Chemical Materials

New Jersey Department of Environmental Protection
Environmental Laboratory Certification Program

ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 07/01/2007 until 06/30/2008

Laboratory Name: CLEAN AIR ENGINEERING INC Laboratory Number: IL004 Activity ID: SLC070001
500 WEST WOOD ST
PALATINE, IL 60067

Category: CAP03 – Atmospheric Organic Parameters

Status	Code	Matrix	Technique Description	Approved Method	Parameter Description
Certified	CAP03.00040	AE	GC	[EPA 18]	Volatile organics

Joseph F. Aiello, Chief

KEY: AE = Air and Emissions, BT = Biological Tissues, DW = Drinking Water, NPW = Non-Potable Water, SCM = Solid and Chemical Materials

New Jersey Department of Environmental Protection
Environmental Laboratory Certification Program

LABORATORY PERSONNEL LIST

Effective as of: 07/01/2007

Laboratory Name: CLEAN AIR ENGINEERING INC Laboratory Number: IL004 Activity ID: SLC070001
500 WEST WOOD ST
PALATINE, IL 60067

Position: Manager

Employee	Category/Instrument	Start Date	End Date	Documentation Status	Complete Date	Comments
DOUGLAS RHODES		7/1/2007		Complete/Qualified		
JAMES WRIGHT		4/27/2004	6/30/2007	Complete/Qualified		

Position: QA Officer

Employee	Category/Instrument	Start Date	End Date	Documentation Status	Complete Date	Comments
DOUGLAS RHODES		7/1/2007		Incomplete		
JAMES WRIGHT		4/27/2004	6/30/2007	Complete/Qualified		

Position: Supervisor/Tech Dir

Employee	Category/Instrument	Start Date	End Date	Documentation Status	Complete Date	Comments
DOUGLAS RHODES	SDW02, WPP02, CAP01 or CAP04	7/1/2007		Incomplete		
JAMES WRIGHT	SDW02, WPP02, CAP01 or CAP04	4/27/2004	6/30/2007	Complete/Qualified		
DOUGLAS RHODES	SDW04, WPP04, SHW04, 09, 10 or CAP02	7/1/2007		Incomplete		
JAMES WRIGHT	SDW04, WPP04, SHW04, 09, 10 or CAP02	4/27/2004	6/30/2007	Complete/Qualified		
DOUGLAS RHODES	SDW05, 06, WPP05-07, SHW05-12 or CAP03	7/1/2007		Incomplete		
JAMES WRIGHT	SDW05, 06, WPP05-07, SHW05-12 or CAP03	4/27/2004	6/30/2007	Complete/Qualified		

STACK TESTING ACCREDITATION COUNCIL
35704 HUNT AVENUE
INGLESIDE, ILLINOIS 60041
E-MAIL: SEVANS@BETTERDATA.ORG

June 7, 2007

Mr.Rob Doran
Clean Air Engineering

VIA E-mail

Dear Mr. Doran,

On behalf of the STAC Board of Directors, I am pleased to inform you that Clean Air Engineering has been granted interim accreditation by the Stack Testing Accreditation Council (STAC). After careful review of your Quality System documentation and procedures, STAC has determined that they are in conformance with ASTM D7036-04 "Standard Practice for the Competency of Air Emission Testing Bodies". Final accreditation is contingent upon successful completion of your field audit. Please see Module 3 of STAC policy documentation for scheduling requirements.

During this period of interim accreditation, Clean Air Engineering may not claim to be a STAC accredited organization. This requires evidence that your Quality System is effectively implemented in your organization as determined by the field assessment. You may claim, however, that your Quality System meets ASTM D7036 requirements.

Please note that the Attestation of Compliance you signed as part of your application for accreditation requires Clean Air Engineering to be in continuous compliance with the provisions of ASTM D7036. You are also required to comply with all relevant STAC policies and procedures. I encourage you to review this information.

If you have any questions, please feel free to contact me at 847-654-4569. Thank you for your participation in the STAC process and congratulations.

Yours truly,

Scott Evans
Chair, STAC Board of Directors

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FIELD DATA

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Impinger Weight Sheet

Client	CONSOL	Unit Name / Location	Unit 4 Air Heater Inlet
Plant	AES Greenidge	Job No. 10247	Method ~~[illegible]~~ CTM-027 (JW)

Run No.	1	Filter Type	GLASS FIBER	THIMBLE	Sample Box No. 68-A
Date	5/31/07	Lot No.	NA		pH NA
Analyst	DD	Filter No.	NA		Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	100 ml .1N H_2SO_4	799.7	762.8	36.9	
Impinger 2	100 ml .1N H_2SO_4	761.2	747.8	13.4	QA/QC JM
Impinger 3	EMPTY	663.2	658.8	4.4	Date 6/18/07
Impinger 4	GEL	917.2	901.5	15.7	
Impinger 5					Total Weight (gm)
Impinger 6					54.7
Impinger 7					70.4

Run No.	2	Filter Type	GLASS FIBER	THIMBLE	Sample Box No. 68-C
Date	6/1/07	Lot No.	NA		pH NA
Analyst	DD	Filter No.	NA		Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	100 ml .1N H_2SO_4	789.0	759.3	29.7	
Impinger 2	100 ml .1N H_2SO_4	775.3	764.9	10.4	QA/QC JM
Impinger 3	EMPTY	664.9	660.0	4.9	Date 6/18/07
Impinger 4	GEL	843.7	831.1	12.6	
Impinger 5					Total Weight (gm)
Impinger 6					45.0
Impinger 7					57.6

Run No.	3	Filter Type	GLASS FIBER	THIMBLE	Sample Box No. 68-A
Date	6/1/07	Lot No.	10247-052507		pH NA
Analyst	ED	Filter No.	Thimble GF		Rinse NA

	Contents	Gross Weight (gm)	Tare Weight (gm)	Net Weight Gain (gm)	
Impinger 1	100ml 0.1N H_2SO_4	793.8	766.5	27.3	
Impinger 2	100ml 0.1N H_2SO_4	760.4	751.6	8.8	QA/QC JM
Impinger 3	EMPTY	663.2	660.5	2.7	Date 6/18/07
Impinger 4	GEL	926.5	916.5	10.0	
Impinger 5					Total Weight (gm)
Impinger 6					38.8
Impinger 7					48.8

QA/QC JW
Date 8/23

CleanAir ENGINEERING

FDS004B-Impinger/WL Feb 2002

TEST LOCATION: Air Heater Inlet Ammonia TESTING METHOD: ~~26~~ CTM-027 (JW) PAGE 1 OF 1

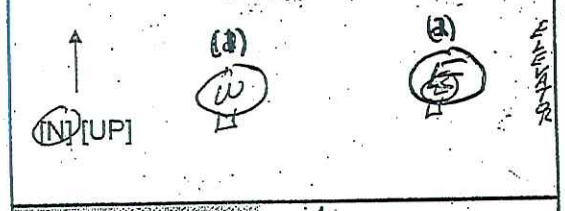
UNIT: 4 RUN: 1

FIELD DATA SHEET

Client	CONSOL	Project No.	10247
Plant	AES GREENIDGE	Date	5-30-07
Meter Operator	TIM RICHARDS		
Probe Operator	ERIC DOAK		

Meter Box	68-B	Sample Box No.	68A
Meter Y_d	1.0071	Meter $\Delta H_@$	1.8055
K Factor	N/A	Pitot C_p	0.84
Leak Rate Before	.002 [cfm] [Lpm] @ 10 (in. Hg)		
Leak Rate After	.003 [cfm] [Lpm] @ 18 (in. Hg)		
Pitot Leak Check Before	☒	After Good ☑ Bad ☐	

Cross-Section of Test Location



Duct Dimensions (in.)	NA		
Static Pres. (in. H_2O)	Port Len. (in.)	Gas Flow [In] [Out] of page	First point all the way [In] [Out]
- NA	4.5		

Amb. Temp. (°F)	80	Bar. Press.	29.44 [in. Hg] [mbar]
Probe I.D. No.	N/A		
Liner Material	GLASS		

Filter No.	N/A		
Thimble No.	N/A		
Nozzle Diameter	N/A	Nozzle I.D.	N/A

Start Time	18:04	Stop Time	19:14

Traverse Point Number	Min/pt (N) ~~5~~ 30 Elapsed Time	Velocity Head ΔP (in. H_2O)	Orifice Setting ΔH (in. H_2O)	Gas Sample Volume V_m Init. Vol. [ft³] [L] 60.615	Stack Temp. Ts (°F)	Probe T_p (°F) Set Points ~~275~~ TR ~~248~~	Filter T_f (°F) ~~275~~ TR ~~248~~	Cond. Temp. T_c (°F)	DGM Inlet $T_{m\,in}$ (°F)	DGM Outlet $T_{m\,out}$ (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp. T_t (°F)	Notes
~~12~~-1	5	N/A	TR ~~1.2~~ 1.5	64.08	634	N/A	N/A	60	102	102	6	N/A	VLC = 70.4
1	10			67.41	635			60	103	101	7		
1	15			70.71	635			60	103	100	8		
1	20			73.93	635			59	105	99	8		
1	25			TR ~~76~~ 77.10	634			59	106	99	10		
1	30			80.120	634			59	107	100	10		L.C. 0.003 @ 19" Hg
(JW) ~~10~~-1	35			83.92	633			59	104	100	12		~~N.V. 80.559~~
1	40			87.30	635			59	105	100	14		80.560
1	45			90.67	640			58	106	100	16		(-.4400)
1	50			94.05	642			58	106	100	17		4.4 O_2
1	55			97.33	642			59	106	100	18		16.5 CO_2
1	60			100.535	642			59	105	100	18		
	Total	*		39.480	7641					2549			
	Average		1.5		636.7500				102.4583				

* Sum of square roots.

Circle correct bracketed units on data sheet.

QA/QC JW

Date 8/23

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TEST LOCATION: Air Heater Inlet Ammonia TESTING METHOD: CTM-027 26 (SW) PAGE 1 OF 1

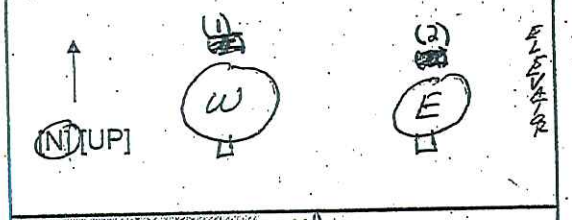
UNIT: 4 RUN: 2

FIELD DATA SHEET

Client	Consol	Project No.	10247
Plant	AES Greenidge	Date	TR 5-31-07 TR
Meter Operator	Tim Richards 6-1-07		
Probe Operator	Tim Rodak		

Meter Box	68B	Sample Box No.	68C
Meter Y_d	1.0071	Meter $\Delta H_@$	1.8055
K Factor	N/A	Pitot C_p	0.84
Leak Rate Before	0.003 [cfm] [Lpm] @ 15 (in. Hg)		
Leak Rate After	0.002 [cfm] [Lpm] @ 15 (in. Hg)		
Pitot Leak Check Before ☑	After Good ☑ Bad ☐		

Cross-Section of Test Location



Duct Dimensions (in.)	NA		
Static Pres. (in. H_2O)	Port Len. (in.)	Gas Flow [In] (Out) of page	First point all the way (In) [Out]
NA	4.5		

Amb. Temp. (°F)	75	Bar. Press.	29.47 (in. Hg) [mbar]
Probe I.D. No.	N/A		
Liner Material	Glass		

Filter No.	N/A		
Thimble No.	N/A		
Nozzle Diameter	N/A	Nozzle I.D.	N/A

Start Time: 10:20 Stop Time: 11:07

Traverse Point Number	Min/pt (SW) 5 20 Elapsed Time	Velocity Head ΔP (in. H_2O)	Orifice Setting ΔH (in. H_2O)	Gas Sample Volume V_m Init. Vol. (ft³) [L]	Stack Temp. Ts (°F)	Probe T (°F) Set Points	Filter T (°F) Set Points	Cond. Temp. T_c (°F)	DGM Inlet $T_{m\,in}$ (°F)	DGM Outlet $T_{m\,out}$ (°F)	Pump Vacuum (in Hg)	XAD Trap Temp. T_x (°F)	Notes
				103.655	N/A TR	TR 275	TR 275						
1 (SW)	5	N/A	TR +21.5	106.91	~~517~~	N/A	N/A	61	87	86	6	N/A	
-1	10			110.18				61	90	87	7		
-1	15			113.48				60	93	87	7		
-1	20			116.795				60	95	88	8		117.210
(SW) -1	25			120.47				59	97	89	10		-.4150
TR -1	30			123.76				59	97	90	12		
E -1	35			126.98				58	98	90	13	L	
TR 1 +	~~40~~ 40 TR			130.255				58	99	91	16		O_2 - 5.1
TR -1	~~45~~												CO_2 - 13.4
TR +	~~50~~												
TR -1	~~55~~												
TR +	~~60~~												
										1464			
	Total *			26.1850					91.5000				
	Average		1.5										

* Sum of square roots.

Circle correct bracketed units on data sheet.

QA/QC JW

Date 8/23

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TEST LOCATION: Air Heater Inlet Ammonia TESTING METHOD: CTM-027 26 (JLW) PAGE 1 OF 1

UNIT: 4 RUN: 3

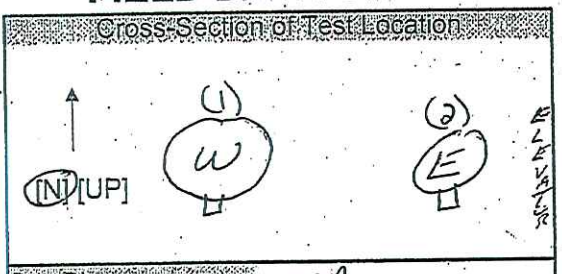
FIELD DATA SHEET

TR 44

Client	ConSol	Project No.	10247
Plant	AES Greenidge	Date	TR ~~5-31-07~~ 6-1-07
Meter Operator	Tim Richards		
Probe Operator	Tim Rodak		

Meter Box	68-13	Sample Box No.	68-A
Meter Y	1.0071	Meter ΔH@	1.8055
K Factor	N/A	Pitot C_p	0.84
Leak Rate Before	.003 [cfm] [Lpm] @	15	(in. Hg)
Leak Rate After	.003 [cfm] [Lpm] @	20	(in. Hg)
Pitot Leak Check Before ☑	After Good ☑	Bad ☐	

Cross Section of Test Location



Amb. Temp. (°F)	75	Bar. Press.	29.47 (in. Hg) [mbar]
Probe I.D. No.	N/A		
Liner Material	Glass		

Filter No.	N/A		
Thimble No.	N/A		
Nozzle Diameter	N/A	Nozzle I.D.	N/A

Duct Dimensions (in.) NA

Static Pres. (in. H_2O)	Port Len. (in.)	Gas Flow [In] [Out] of page	First point all the way [In] [Out]
NA	4.5		

Start Time: 12:05 Stop Time: 12:52

Traverse Point Number	Min. pt. ~~5~~ 20 Elapsed Time	Velocity Head ΔP (in. H_2O)	Orifice Setting ΔH (in. H_2O)	Gas Sample Volume V_m Init. Vol. 130.710 [ft^3] [L]	Stack Temp. T_s (°F)	Probe T_p (°F) Set Points TR ~~275~~	Filter T_f (°F) Set Points TR ~~275~~	Cond. Temp. T_c (°F)	DGM Inlet $T_{m\,in}$ (°F)	DGM Outlet $T_{m\,out}$ (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp. T_x (°F)	Notes
(JLW) 2 E -1	5	NA	TR 1.21.5	134.11	NA	N/A	N/A	61	93	93	7	N/A	
-1	10			137.42				61	94	92	8		
-1	15			140.68				60	97	92	9		
1	20			143.900				60	99	93	11.5		144.175
(JLW) 1 60-1	25			147.50				61	98	93	13		(JLW) -.2750
1	30			150.84				61	100	94	15		
TR 1	35			154.24				61	101	94	16.5		
1	40			157.625				61	102	95	18		O_2 - 6.4
TR + ~~45~~													CO_2 - 12.4
TR 1 ~~50~~													
TR 1 ~~55~~													
TR 1 ~~60~~													
	Total *			26.640						1530			
	Average		1.5						95.6250				

* Sum of square roots.

Circle correct bracketed units on data sheet.

QA/QC TR

Date 6-1-07

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FIELD DATA PRINTOUTS

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USEPA Method 3 Laboratory Data

Test Method: CTM-027
Analyte: Ammonia

Location: Unit 4 Air Heater Inlet
Client: CONSOL Energy - AES Greenidge
Project No: 10247
Method: EPA Method 3A
Fuel Type: Bituminous Coal
F_o for Fuel: 1.083 to 1.23

Analyst: D. Dreska
Analyst Emp No: 364

Run Number	Trial	Percent CO_2	Percent O_2+CO_2	Percent O_2	Percent N_2	Dry Mol. Weight	F_o	Method of Analysis: CEM
1	1							
	2							
	3							
	Avg.							
CEM or Other Avg:		16.50000		4.40000	79.10000	30.81600	1.00000	☐ Fo value within expected range.

Run Number	Trial	Percent CO_2	Percent O_2+CO_2	Percent O_2	Percent N_2	Dry Mol. Weight	F_o	Method of Analysis: CEM
2	1							
	2							
	3							
	Avg.							
CEM or Other Avg:		13.40000		5.10000	81.50000	30.34800	1.17910	☑ Fo value within expected range.

Run Number	Trial	Percent CO_2	Percent O_2+CO_2	Percent O_2	Percent N_2	Dry Mol. Weight	F_o	Method of Analysis: CEM
3	1							
	2							
	3							
	Avg.							
CEM or Other Avg:		12.40000		6.40000	81.20000	30.24000	1.16935	☑ Fo value within expected range.

Run Number	Trial	Percent CO_2	Percent O_2+CO_2	Percent O_2	Percent N_2	Dry Mol. Weight	F_o	Method of Analysis:
	1							
	2							
	3							
	Avg.							
CEM or Other Avg:								☐ Fo value within expected range.

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QA/QC JW
Date 9/18

USEPA Method 4 Laboratory Data

Location: Unit 4 Air Heater Inlet
Client: CONSOL Energy - AES Greenidge
Project No: 10247

Test Method: CTM-027
Analyte: Ammonia
Analyst: D. Dreska & E. Doak
Analyst Emp No: 364, 349

Test Run: 1

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	0.1 N H2SO4	799.7	762.8	36.9
Impinger 2	0.1 N H2SO4	761.2	747.8	13.4
Impinger 3	Empty	663.2	658.8	4.4
Impinger 4	Silica Gel	917.2	901.5	15.7
Impinger 5				
Impinger 6				
Impinger 7				
Impinger 8				

Rinse: (ml or gm)

		Field Data Check	
54.7	Liquid (gm)		
0.0	less rinse (gm)		
54.7	Net Liquid (gm)	54.7	☑ QA/QC OK
+ 15.7	Silica Gel (gm)	15.7	☑ QA/QC OK
70.4	Total Vlc (gm)	70.4	☑ QA/QC OK

Test Run: 2

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	0.1 N H2SO4	789.0	759.3	29.7
Impinger 2	0.1 N H2SO4	775.3	764.9	10.4
Impinger 3	Empty	664.9	660.0	4.9
Impinger 4	Silica Gel	843.7	831.1	12.6
Impinger 5				
Impinger 6				
Impinger 7				
Impinger 8				

Rinse: (ml or gm)

		Field Data Check	
45.0	Liquid (gm)		
0.0	less rinse (gm)		
45.0	Net Liquid (gm)	45.0	☑ QA/QC OK
+ 12.6	Silica Gel (gm)	12.6	☑ QA/QC OK
57.6	Total Vlc (gm)	57.6	☑ QA/QC OK

Test Run: 3

	Contents	Gross (gm)	Tare (gm)	Net (gm)
Impinger 1	0.1 N H2SO4	793.8	766.5	27.3
Impinger 2	0.1 N H2SO4	760.4	751.6	8.8
Impinger 3	Empty	663.2	660.5	2.7
Impinger 4	Silica Gel	926.5	916.5	10.0
Impinger 5				
Impinger 6				
Impinger 7				
Impinger 8				

Rinse: (ml or gm)

		Field Data Check	
38.8	Liquid (gm)		
0.0	less rinse (gm)		
38.8	Net Liquid (gm)	38.8	☑ QA/QC OK
+ 10.0	Silica Gel (gm)	10.0	☑ QA/QC OK
48.8	Total Vlc (gm)	48.8	☑ QA/QC OK

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				

Rinse: (ml or gm)

		Field Data Check	
	Liquid (gm)		
	less rinse (gm)		
	Net Liquid (gm)		☐ QA/QC OK
	Silica Gel (gm)		☐ QA/QC OK
	Total Vlc (gm)		☐ QA/QC OK

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QA/QC
Date 9/18

Field Data Printout

Test Method: CTM-027
Analyte: Ammonia

Location: Unit 4 Air Heater Inlet
Test Run: 1
Client: CONSOL Energy - AES Greenidge
Project No: 10247

Bar. Press. (in. Hg): 29.44

O_2 (dry volume %): 4.40
CO_2 (dry volume %): 16.50
N_2+CO (dry volume %): 79.10

Nozzle ID No: NA
Nozzle Diameter (D_n): NA
Probe ID No: NA
Pitot C_p: 0.84
Pitot Leak Check: ☑ Pass ☐ Fail

Meter Operator:	T. Richards	714
Probe Operator:	E. Doak	349
Test Date:	5/31/07	
Start Time:	18:04	
Stop Time:	19:14	
Leak Rate Before:	0.002 cfm	@ 10 "Hg
Leak Rate After:	0.003 cfm	@ 18 "Hg

H_2O (condensate, ml or gm): 54.7
H_2O (silica, g): 15.7
Actual Moisture (%): 8.25

Meter Box ID. No: 68-B
Meter ΔH@: 1.80550
Meter Y_d: 1.00710

Traverse Point	Run Time 5.0 min/read	Pitot ΔP_s (in. H_2O)	Sample ΔH (in. H_2O)	Metered (dcf)	Stack T_s (°F)	Dry Gas Meter $T_{m\text{-}in}$ (°F)	Dry Gas Meter $T_{m\text{-}out}$ (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{}$in. H_2O)	Volume (calculated) (ft^3)	Isokinetics (calculated) (%)
	0.0			60.615						
2-01	5.0		1.50	64.080	634	102	102		3.47	
2-01	10.0		1.50	67.410	635	103	101		3.33	
2-01	15.0		1.50	70.710	635	103	100		3.30	
2-01	20.0		1.50	73.930	635	105	99		3.22	
2-01	25.0		1.50	77.100	634	106	99		3.17	
2-01	30.0		1.50	80.120	634	107	100		3.02	
Leak Check	30.0			80.560						
1-01	35.0		1.50	83.920	633	104	100		3.36	
1-01	40.0		1.50	87.300	635	105	100		3.38	
1-01	45.0		1.50	90.670	640	106	100		3.37	
1-01	50.0		1.50	94.050	642	106	100		3.38	
1-01	55.0		1.50	97.330	642	106	100		3.28	
1-01	60.0		1.50	100.535	642	105	100		3.21	
Final	60.0		1.50000	39.48000	636.75000	102.45833			39.48000	
2 points sampled		Sq.RLAP	1.5000	39.4800	636.7500	102.4583				
QC Check: Field Averages			☐ Avg. OK	☑ Avg. OK	☑ Avg. OK	☑ Avg. OK	☑ Avg. OK			

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Date 6/11/8

Field Data Printout

Test Method: CTM-027
Analyte: Ammonia

Location: Unit 4 Air Heater Inlet
Test Run: 2
Client: CONSOL Energy - AES Greenidge
Project No: 10247

Bar. Press. (in. Hg): 29.47

O_2 (dry volume %): 5.10
CO_2 (dry volume %): 13.40
N_2+CO (dry volume %): 81.50

Nozzle ID No: NA
Nozzle Diameter (D_n): NA
Probe ID No: NA
Pitot C_p: 0.84
Pitot Leak Check: ☑ Pass ☐ Fail

Meter Operator:	T. Richards	714
Probe Operator:	T. Rodak	228
Test Date:	6/01/07	
Start Time:	10:20	
Stop Time:	11:07	
Leak Rate Before:	0.003	cfm @ 15 "Hg
Leak Rate After:	0.002	cfm @ 15 "Hg

H_2O (condensate, ml or gm): 45.0
H_2O (silica, g): 12.6
Actual Moisture (%): 0.14

Meter Box ID. No: 68-B
Meter ΔH@: 1.60550
Meter Y_d: 1.00710

Traverse Point	Run Time 5.0 min/read	Pitot ΔP_s (in. H_2O)	Sample ΔH (in. H_2O)	Metered (dcf)	Stack T_s (°F)	Dry Gas Meter $T_{m\text{-}in}$ (°F)	Dry Gas Meter $T_{m\text{-}out}$ (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{}$in. H_2O)	Volume (calculated) (ft^3)	Isokinetics (calculated) (%)
	0.0			103.655						
1-01	5.0		1.50	106.910		87	86		3.26	
1-01	10.0		1.50	110.180		90	87		3.27	
1-01	15.0		1.50	113.480		93	87		3.30	
1-01	20.0		1.50	116.795		95	88		3.32	
Leak Check	20.0			117.210						
2-01	25.0		1.50	120.470		97	89		3.26	
2-01	30.0		1.50	123.760		97	90		3.29	
2-01	35.0		1.50	126.980		98	90		3.22	
2-01	40.0		1.50	130.255		99	91		3.27	
Final	40.0		1.50000	26.18500		91.50000			26.18500	
2 points sampled		Sq.RLΔP								
QC-Check: Field Averages			1.5000	26.1850		91.5000				
		☐ Avg. OK	☑ Avg. OK	☑ Avg. OK	☐ Avg. OK	☑ Avg. OK				

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Date

Field Data Printout

Test Method: CTM-027
Analyte: Ammonia

Location: Unit 4 Air Heater Inlet
Test Run: 3
Client: CONSOL Energy - AES Greenidge
Project No: 10247

Bar. Press. (in. Hg): 29.44

O_2 (dry volume %): 6.40
CO_2 (dry volume %): 12.40
N_2+CO (dry volume %): 81.20

Nozzle ID No: NA
Nozzle Diameter (D_n): NA
Probe ID No: NA
Pitot C_p: 0.84
Pitot Leak Check: ☑ Pass ☐ Fail

Meter Operator:	T. Richards	714
Probe Operator:	T. Rodak	228
Test Date:	6/01/07	
Start Time:	12:05	
Stop Time:	12:52	
Leak Rate Before:	0.003	cfm @ 15 "Hg
Leak Rate After:	0.003	cfm @ 20 "Hg

H_2O (condensate, ml or gm): 38.8
H_2O (silica, g): 10.0
Actual Moisture (%): 0.14

Meter Box ID. No: 68-B
Meter ΔH@: 1.80550
Meter Y_d: 1.00710

Traverse Point	Run Time 5.0 min/read	Pitot ΔP_s (in. H_2O)	Sample ΔH (in. H_2O)	Metered (dcf)	Stack T_s (°F)	Dry Gas Meter $T_{m\text{-}in}$ (°F)	Dry Gas Meter $T_{m\text{-}out}$ (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{}$in. H_2O)	Volume (calculated) (ft^3)	Isokinetics (calculated) (%)
	0.0			130.710						
2-01	5.0		1.50	134.110		93	93		3.40	
2-01	10.0		1.50	137.420		94	92		3.31	
2-01	15.0		1.50	140.680		97	92		3.26	
2-01	20.0		1.50	143.900		99	93		3.22	
Leak Check	20.0			144.175						
1-01	25.0		1.50	147.500		98	93		3.32	
1-01	30.0		1.50	150.840		100	94		3.34	
1-01	35.0		1.50	154.240		101	94		3.40	
1-01	40.0		1.50	157.625		102	95		3.38	
Final	40.0		1.50000	26.64000		95.62500			26.64000	
2 points sampled		Sq.RLAP								
QC Check: Field Averages			1.5000	26.6400		95.6250				
		☐ Avg. OK	☑ Avg. OK	☑ Avg. OK	☐ Avg. OK	☑ Avg. OK				

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LABORATORY DATA

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TOTAL AMMONIA ANALYSIS DATA SHEET
Analytical Technique: Ion Specific Electrode

Project No. 10247
Date of Analysis 05/31/07

CALIBRATION DATA

Concentration of Standard* C (mg/liter)	Electrode Reading P (mV)
100	39.2
50	56.3
10	93.5
5	109.5
1	146.2
0.5	162.0

* - assumes standard is ammonia as NH_3

Residuals

Calculated Concentration C (mg/liter)	Percentage Error
103.056	3.1
49.172	-1.7
9.832	-1.7
4.920	-1.6
1.005	0.5
0.507	1.5

Log (C) (mg/liter)
2.00000
1.69897
1.00000
0.69897
0.00000
-0.30103

Regression Analysis Results

Slope (m)	-0.01879
Intercept (b)	2.749754
Correlation (r2)	0.999884

Form of Equation:
Log(C)=(m)(P)+b

SCR 126.6' LEVEL SAMPLE DATA AND RESULTS

Sample Number	Sample Collection Date	Sample Volume ml	Electrode Potential mV	Dilution Factor	Ammonia Concentration mg/liter	Total Ammonia mg	
R1 Probe & Jumper	05/31/07	208	76.8	1	20.2518	4.2124	84 F
R1 Imp 1 Catch	05/31/07	195	301.0	1	0.0012	0.0002	69 F
R1 Imp 2&3 Catch	05/31/07	280	231.5	1	0.0251	0.0070	71 F

TOTAL AMMONIA ANALYSIS DATA SHEET
Analytical Technique: Ion Specific Electrode

Project No. 10247
Date of Analys 06/01/07

CALIBRATION DATA

Concentration of Standard* C (mg/liter)	Electrode Reading P (mV)
100	42.7
50	58.4
10	92.0
5	107.5
1	141.8
0.5	157.4

Residuals

Calculated Concentration C (mg/liter)	Percentage Error
100.913	0.9
48.691	-2.6
10.235	2.4
4.984	-0.3
1.014	1.4
0.492	-1.7

Log (C) (mg/liter)

2.00000
1.69897
1.00000
0.69897
0.00000
-0.30103

* - assumes standard is ammonia as nh3

Regression Analysis Results

Slope (m)	-0.02016
Intercept (b)	2.864755
Correlation (r2)	0.999906

Form of Equation:
Log(C)=(m)(P)+b

SCR 126.6' LEVEL SAMPLE DATA AND RESULTS

Sample Number	Sample Collection Date	Sample Volume ml	Electrode Potential mV	Dilution Factor	Ammonia Concentration mg/liter	Total Ammonia mg	
R2 Probe & Jumper	06/01/07	153	74.2	1	23.3844	3.5778	77.7 F
R2 Imp 1 Catch	06/01/07	211	293.1	1	0.0009	0.0002	69 F
R2 Imp 2&3 Catch	06/01/07	210	291.2	1	0.0010	0.0002	71.3 F
R3 Probe & Jumper	06/01/07	192	76.6	1	20.9191	4.0165	77.5 F
R3 Imp 1 Catch	06/01/07	195	303.4	1	0.0006	0.0001	69 F
R3 Imp 2&3 Catch	06/01/07	265	130.4	1	1.7217	0.4563	71.9 F
Field Blank	06/01/07	431	156.3	1	0.5174	0.2230	

CleanAir Engineering, Inc.
500 West Wood Street
Palatine, IL 60067

Laboratory Report
CleanAir Project No: 10247

Analytes
Ammonium

Applicable Analytical Method
CTM-027

Customer
Pittsburgh Engineering Group
1601 Parkway View Drive
Pittsburgh, PA 15205

CleanAir.

Analysis Case Narrative

Ion Chromatography Analysis

Client Name:	Consol Energy	Date Received:	6/13/2007
Plant/Facility:	Greenridge Power Plant	Date Reported:	6/20/2007
Project Number:	10247	Sample Type:	Imp C&R
Sample Numbers:	-01 through -12	Parameters:	Ammonium
Applicable Analytical Method			CTM-027

Summary of Analysis

This report summarizes the results of analysis performed on samples received on: 06/13/07
The samples were anlayzed in accordance with procedures in the EPA Method listed above.

Method Detection Limits

Method Detection Limits have been determined in accordance with procedures in 40 CFR 136, Appendix B, and in accordance with procedures outlined in CleanAir SOP EPA5-11. Documentation showing the determination of detection limits are included with this report.

Reporting Detection Limits

Reporting limits have been determined in accordance with CleanAir SOPs in reference to the above listed EPA Method.

Sample Preparation

Samples were prepared according to the procedures listed in the EPA Method above. Each sample was analyzed at full strength and a dilution was prepared if necessary to achieve a concentration that was within calibration range limits.

Analysis QA/QC

In accordance with the corresponding CleanAir SOP, The following Quality Assurance steps were taken:
Before the first sample was analyzed and every twenty samples thereafter(and before the final calibration) a Continuing Calibration Blank (CCB) and a Continuing Calibration Verification (CCV) were analyzed. The CCB must show a a regression concentration of zero; and the CCV must show a regression concentration that matches its actual concentration within 10 percent of the actual concentration. The CCV is a standard that is prepared from the same stock as the calibration standards. A Quality Control (QC) sample was analyzed after the tenth sample and every twenty samples thereafter (as applicable). The QC is prepared from a stock that comes from a completely different manufacturer than used for calibration standards. The QC must also meet the same acceptance criteria as the CCV. In addition to the preceeding Quality Assurance steps a matrix spike analysis is performed on ten percent of the total number of samples. This sample is prepared with equal amounts of a sample and a calibration standard whose concentration is known to be larger than that of the sample. The Matrix Spike must have a recovery of 100 ± 10 percent.

CleanAir.

CleanAir Engineering
500 W. Wood Street
Palatine, IL 60067-4975
800-627-0033
www.cleanair.com

CERTIFICATE OF ANALYSIS

Client Name: Consol Energy
Plant/Facility: Greenridge Power Plant
Project Number: 10247
Sample Numbers: -01 through -12

Date Received: 6/13/2007
Date Reported: 6/20/2007
Sample Type: Imp C&R
Parameters: Ammonium

Laboratory Number	Sample Identification	Sample Volume (ml)	NH4+ Sample Conc. (mg/l)	Detection Limit (mg/l)	Reporting Limit (mg/l)
		CleanAir			
10247-00	CCB	n.a.	<	0.053	0.264
10247-00	CCV	n.a.	Difference	0.54%	<10% Yes
		Reagent Blank			
10247-01	0.1 N H2SO4 & DI H2O	300	<	0.053	0.264
		Field Blank			
10247-02	Imp C&R	431	<	0.053	0.264
		Air Heater Inlet			
10247-03	R1 F1/2 Rinse	208	4.49	0.053	0.264
10247-04	R1 Imp 1 C&R	195	0.36	0.053	0.264
10247-05	R1 Imp 2&3 C&R	280	<	0.053	0.264
10247-06	R2 F1/2 Rinse	153	5.58	0.053	0.264
		CleanAir			
10247-00	QC	n.a.	Difference	0.34%	<10% Yes
		Air Heater Inlet			
10247-07	R2 Imp 1 C&R	211	0.33	0.053	0.264
10247-08	R2 Imp 2&3 C&R	210	<	0.053	0.264
10247-09	R3 F1/2 Rinse	192	5.02	0.053	0.264
10247-10	R3 Imp 1 C&R	195	0.35	0.053	0.264
10247-11	R3 Imp 2&3 C&R	265	<	0.053	0.264
10247-12	Post R3 Rinse	96	<	0.053	0.264
		CleanAir			
10247-00	CCV	n.a.	Difference	0.15%	<10% Yes
10247-00	CCB	n.a.	<	0.053	0.264

Matrix Spike Analysis	% Recovery
10247-09	100.2%
10247-11	97.6%

Analyst: _____
Daniel J. Nuñez

CHROMATOGRAPHIC DATA REDUCTION

Client	Consol Energy
Project Number:	10247
Analyte	Ammonium
Date	6/20/2007
Stock Standard	5027.14 mg/l
Working Stock Conc.	50.2714 mg/l
CCV	8.0434 mg/l
QC	3.5100 mg/l

Analyte: Ammonium

Standards Calibration Data

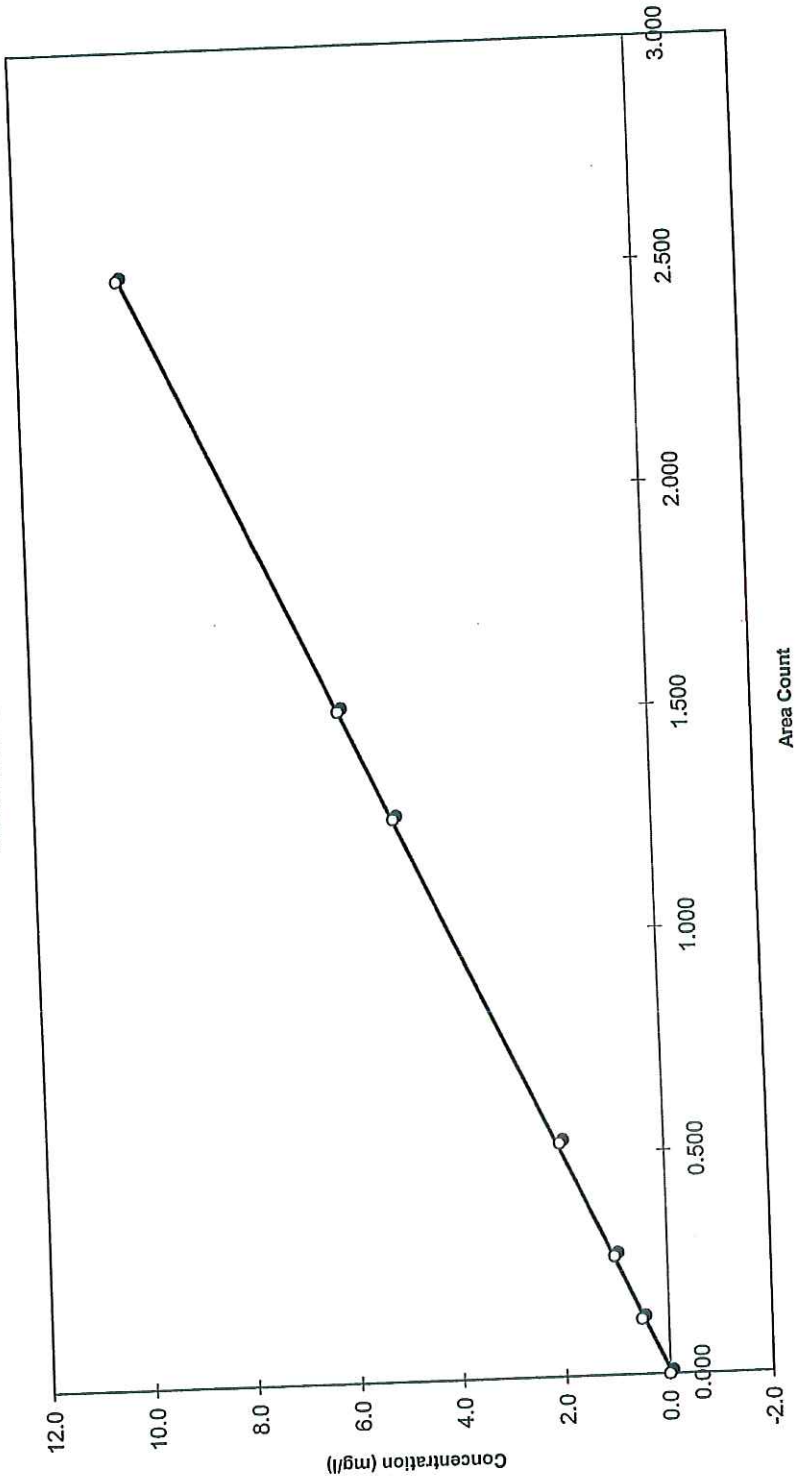
Calibration Point, Conc. (mg/l)	Date of Injection	1 0.0000	2 0.5027	3 1.0054	4 2.0109	5 5.0271	6 6.0326	7 10.0543
Pre-Cal 1 Trial 1	6/18/07	0.0000	0.1304	0.2610	0.5177	1.2522	1.5069	2.4952
Pre-Cal 1 Trial 2		0.0000	0.1264	0.2668	0.5059	1.2538	1.5062	2.5007
Pre-Cal 1 Trial 3			0.1231					
Pre-Cal 1 Trial 4			0.1242					
Pre-Cal 1 Trial 5			0.1213					
Post-Cal 1 Trial 1						1.2541		
Pre-Cal 2 Trial 1	6/19/07				0.5234			
Post-Cal 2 Trial 1			0.1172	0.2652	0.5337	1.2581	1.5064	2.4794
Post-Cal 2 Trial 2			0.1219	0.2678	0.5340	1.2825	1.5021	2.4703
Average		0.0000	0.1235	0.2652	0.5229	1.2601	1.5054	2.4864
%RSD		0.00	3.37	1.13	2.25	1.01	0.15	0.56
Response Factor		0.00	4.07	3.79	3.85	3.99	4.01	4.04
Avg RF=		3.96						
%RSD Resp. Factor		2.86						

Measured Area Counts (Counts)	Actual Concentration (mg/L)	Regression Concentration (mg/L)	Difference pt-Line (% Scale)	Is Difference Less Than 2% of Scale?	Difference pt-Line (Relative %)	Is Relative Difference Less Than 10%?
0.0000	0.000	-0.044	0.44%	Yes	0.00%	Yes
0.1235	0.503	0.455	0.47%	Yes	9.39%	Yes
0.2652	1.005	1.029	-0.23%	Yes	-2.34%	Yes
0.5229	2.011	2.072	-0.61%	Yes	-3.04%	Yes
1.2601	5.027	5.055	-0.28%	Yes	-0.56%	Yes
1.5054	6.033	6.048	-0.15%	Yes	-0.25%	Yes
2.4864	10.054	10.018	0.36%	Yes	0.36%	Yes

Regression Constants			Is Coefficient of Regression > 0.9957?
Slope	m =	4.0468	
Intercept	b =	-0.0443	
Coeff.	R^2 =	0.9999	Yes

CHROMATOGRAPHIC DATA REDUCTION

Client Consol Energy
Project Number: 10247
Analyte Ammonium
Date 6/20/2007



CHROMATOGRAPHIC DATA REDUCTION

Client: Consol Energy
Project Number: 10247
Analyte: Ammonium
Date: 6/20/2007

MDL=	0.053 mg/l
MRL=	0.264 mg/l

Sample Location	Sample Identification Number	Sample Identification	Area Counts Trial 1	Area Counts Trial 2	Area Count Average	Area Count Duplicate Difference	Is Duplicate Difference Within Warning - Control Limits ?	Duplicate Relative Difference (%)	DF (Analysis Dilution Factor)	V_{soln} (Total Sample Volume, ml)	C_{reg} (Concentration, mg/l from Reg Curve)	C_{resp} (Concentration mg/l from Resp Factor)	$M_{analyte}$ Total Amount of Analyte (mg)
CleanAir	10247-00	CCB	0.0000	0.0000	0.0000	na	na	na	1	n.a.	<	<	
CleanAir	10247-00	CCV	2.0193	1.9991	2.0092	0.0202	Yes	1.0%	1	n.a.	8.09	Difference	0.54%
CleanAir	10247-00		0.0000	0.0000	0.0000	na	na	na	1	300	<	<	<0.079
Reagent Blank	10247-01	0.1 N H2SO4 & DI H2O	0.0000	0.0000	0.0000	na	na	na	1	431	<	<	<0.114
Field Blank	10247-02	Imp C&R	0.0000	0.0000	1.1212	0.0552	Yes	4.9%	1	208	4.49	4.44	0.93
Air Heater Inlet	10247-03	R1 F1/2 Rinse	1.0936	1.1488	0.0995	0.0007	Yes	0.7%	1	195	0.36	0.39	0.07
Air Heater Inlet	10247-04	R1 Imp 1 C&R	0.0991	0.0998	0.0343	0.0001	Yes	0.3%	1	280	<	<	<0.074
Air Heater Inlet	10247-05	R1 Imp 2&3 C&R	0.0342	0.0343	1.3891	0.0581	Yes	4.2%	1	153	5.58	5.50	0.85
Air Heater Inlet	10247-06	R2 F1/2 Rinse	1.4181	1.3600	0.8754	0.0001	Yes	0.0%	1	n.a.	3.50	Difference	0.34%
CleanAir	10247-00	QC	0.8753	0.8754	0.0927	0.0014	Yes	1.5%	1	211	0.33	0.37	0.07
Air Heater Inlet	10247-07	R2 Imp 1 C&R	0.0934	0.0920	0.0422	0.0014	Yes	3.3%	1	210	<	<	<0.056
Air Heater Inlet	10247-08	R2 Imp 2&3 C&R	0.0429	0.0415	1.2527	0.0021	Yes	0.2%	1	192	5.02	4.96	0.96
Air Heater Inlet	10247-09	R3 F1/2 Rinse	1.2537	1.2516	0.0976	0.0045	Yes	4.6%	1	195	0.35	0.39	0.07
Air Heater Inlet	10247-10	R3 Imp 1 C&R	0.0953	0.0998	0.0345	0.0005	Yes	1.5%	1	265	<	<	<0.070
Air Heater Inlet	10247-11	R3 Imp 2&3 C&R	0.0347	0.0342	0.0000	na	na	na	1	96	<	<	<0.025
Air Heater Inlet	10247-12	Post R3 Rinse	0.0000	0.0000	1.9955	0.0056	Yes	0.3%	1	n.a.	8.03	Difference	0.15%
CleanAir	10247-00	CCV	1.9983	1.9927	0.0000	na	na	na	1	n.a.	<	<	
CleanAir	10247-00	CCB	0.0000	0.0000									Spike Recovery
													100.2%
Matrix Spike	10247-09	R3 F1/2 Rinse	1.8675	1.8756	1.8716	0.0081	Yes	0.4%					97.6%
	10247-11	R3 Imp 2&3 C&R	0.2749	0.2700	0.2725	0.0049	Yes	1.8%					

	Variable	Value
Control Limits for Duplicate Analyses	R_{avg}	0.0122
	D_4	3.2680
	UCL	0.0397
	UWL	0.0386
	LCL	0.0000
	LWL	0.0000

CHROMATOGRAPHIC DATA REDUCTION

Client Consol Energy
Project Number: 10247
Analyte Ammonium
Date 6/20/2007

Determination of Control Limits for Duplicate Analyses

$$R_i = |AreaCount_{\ 1} - AreaCount_{\ 2}|$$

$$R_{avg} = \frac{\sum_{i=1}^{n} R_i}{n}$$

Where: n = Number of duplicates
R_i = Range for each set of duplicates
D_4 = Constant (3.268 for duplicates)
UCL = Upper Control Limit
UWL = Upper Warning Limit
LCL = Lower Control Limit
LWL = Lower Warning Limit

$$UCL = D_4 R_{avg}$$

$$UWL = \tfrac{2}{3}(D_4 R_{avg}) + R_{avg}$$

Note: For duplicates, both LCL and LWL are zero.

Variable	Value
R_{avg}	0.0122
D_4	3.268
UCL	0.0397
UWL	0.0386
LCL	0.0000
LWL	0.0000

Values for	10247-03
m	4.0468
b	-0.0443
AreaCount	1.1212
DF	1
RF_{avg}	3.9579
V_{soln}	208
C_{reg}	4.49
C_{resp}	4.44
$M_{Analyte}$	0.93

QA/QC:

CCV: Calibration Control Verification
CCB: Calibration Control Blank
QC: Quality Check

Determination of Concentration of Analyte

$$C_{reg} = [m(AreaCount\ ) + b]DF$$

Where: C_{reg} = Analyte concentration from regression curve (mg/l)
m = Slope of regression curve
b = Y-Intercept of regression curve
AreaCount = Average area count from duplicate analyses
DF = Sample dilution factor

$$C_{resp} = RF_{avg}(AreaCount)DF$$

Where: C_{resp} = Analyte concentration from response factors (mg/l)
RF_{avg} = Average response factor for analyte (ppm/Area Count)
DF = Sample dilution factor

$$M_{Analyte} = \frac{C_{reg}(V_{soln})}{1000}$$

Where: $M_{Analyte}$ = Total amount of analyte in sample (mg)
C_{reg} = Analyte concentration from regression curve (mg/l)
V_{soln} = Total sample volume (ml)
1000 = Conversion factor (ml/l)

CHROMATOGRAPHIC DATA REDUCTION

Client: Consol Energy
Project Number: 10247
Analyte: Ammonium
Date: 6/20/2007

Determination of Detection Limit

(in accordance with 40 CFR 136, Appendix B)

Analyte	Ammonium
Area Count	
Trial 1	0.1304
Trial 2	0.1264
Trial 3	0.1231
Trial 4	0.1242
Trial 5	0.1213
Trial 6	0.1172
Trial 7	0.1219
Average	**0.1235**
Std Dev	0.0042
RMS Dev	3.37%

n	$t_{(n-1,0.99)}$
7	3.143
8	2.998
9	2.896
10	2.821
11	2.764
16	2.602

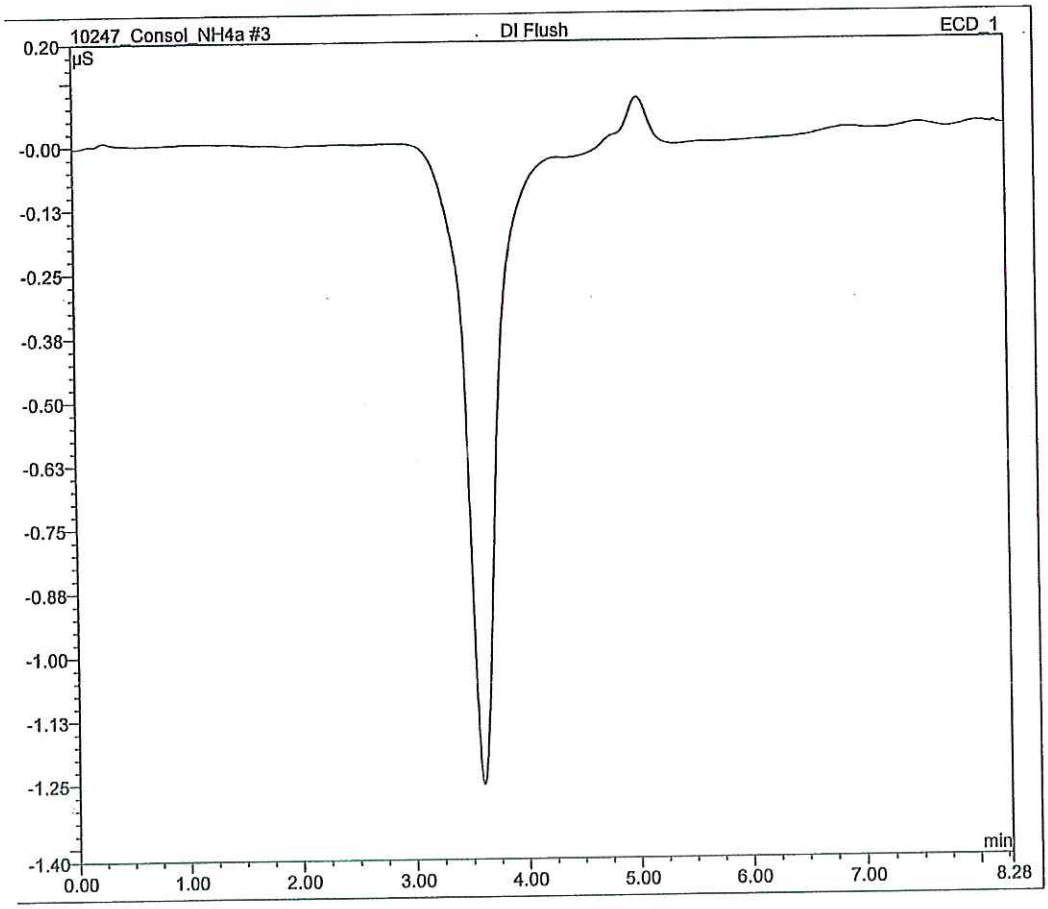
Average Response Factor	3.96
Measured Concentration (mg/l)	
Trial 1	0.483
Trial 2	0.467
Trial 3	0.454
Trial 4	0.458
Trial 5	0.447
Trial 6	0.430
Trial 7	0.449
Average	**0.455**
Std Dev	0.0168
RMS Dev	3.69%
$t_{(n-1,0.99)}$	3.143
Det Lim (mg/l)	**0.053**
Rep Lim (mg/L)	**0.264**

Actual Conc	0.5027
Slope	4.05E+00
Intercept	-0.0443
Coeff of Corr	0.9999

Integration Report - ECD_1

Sample Name:	DI Flush	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 09:02	*Run Time:*	8.28

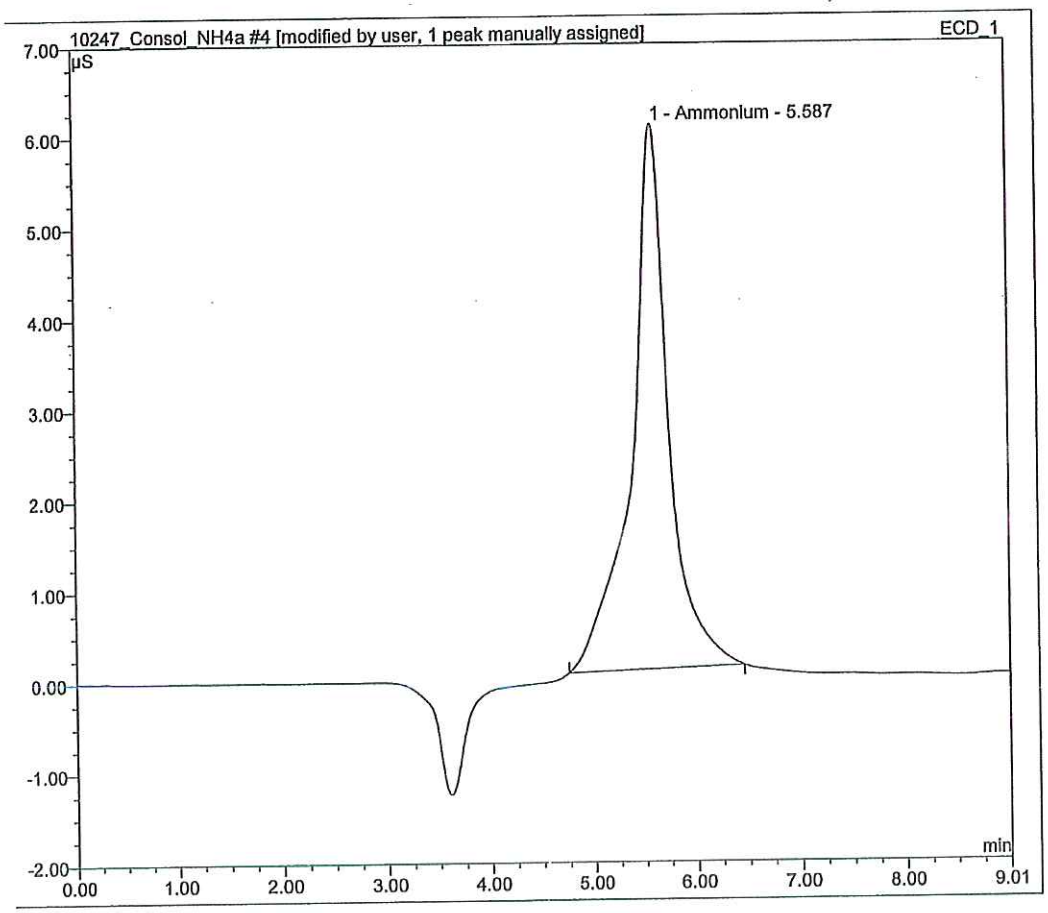
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
		TOTAL:		0.00	0.00	0.00



Integration Report - ECD_1

Sample Name:	Cal_06	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 09:12	*Run Time:*	9.01

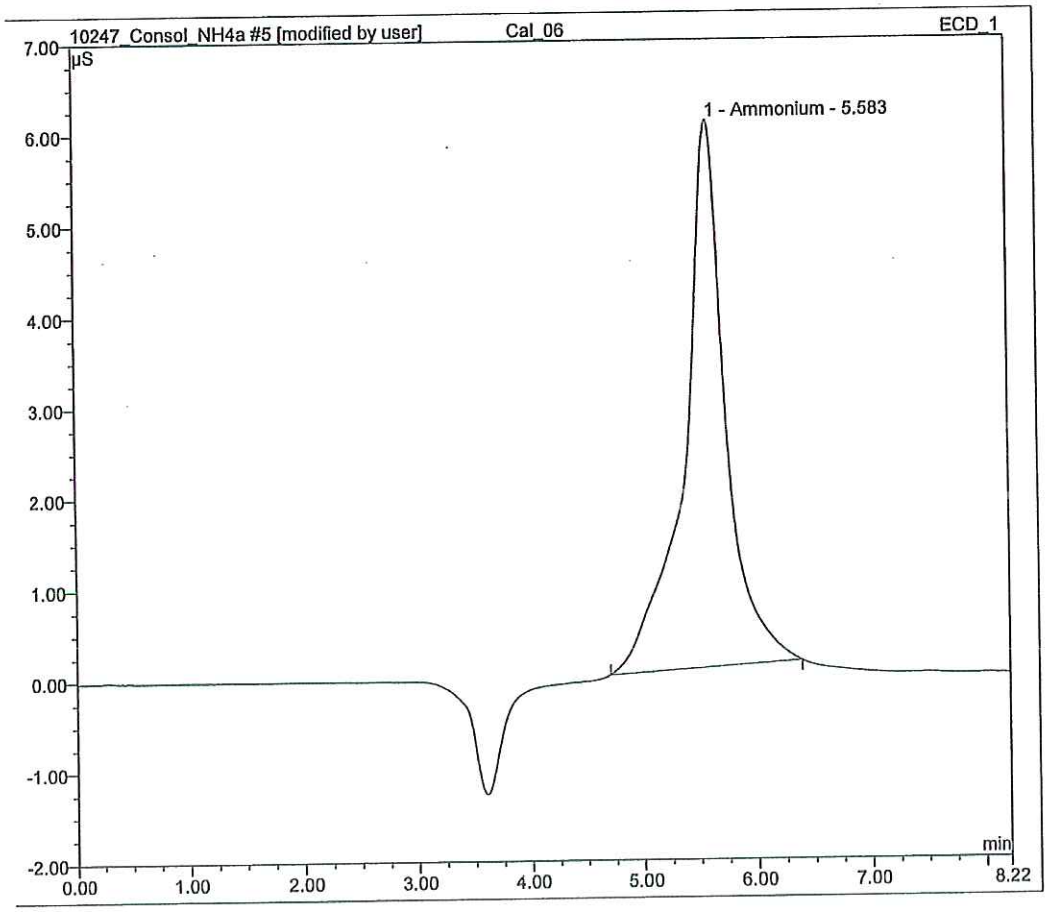
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
		TOTAL:		0.00	0.00	0.00



Integration Report - ECD_1

Sample Name:	Cal_06	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 09:22	*Run Time:*	8.22

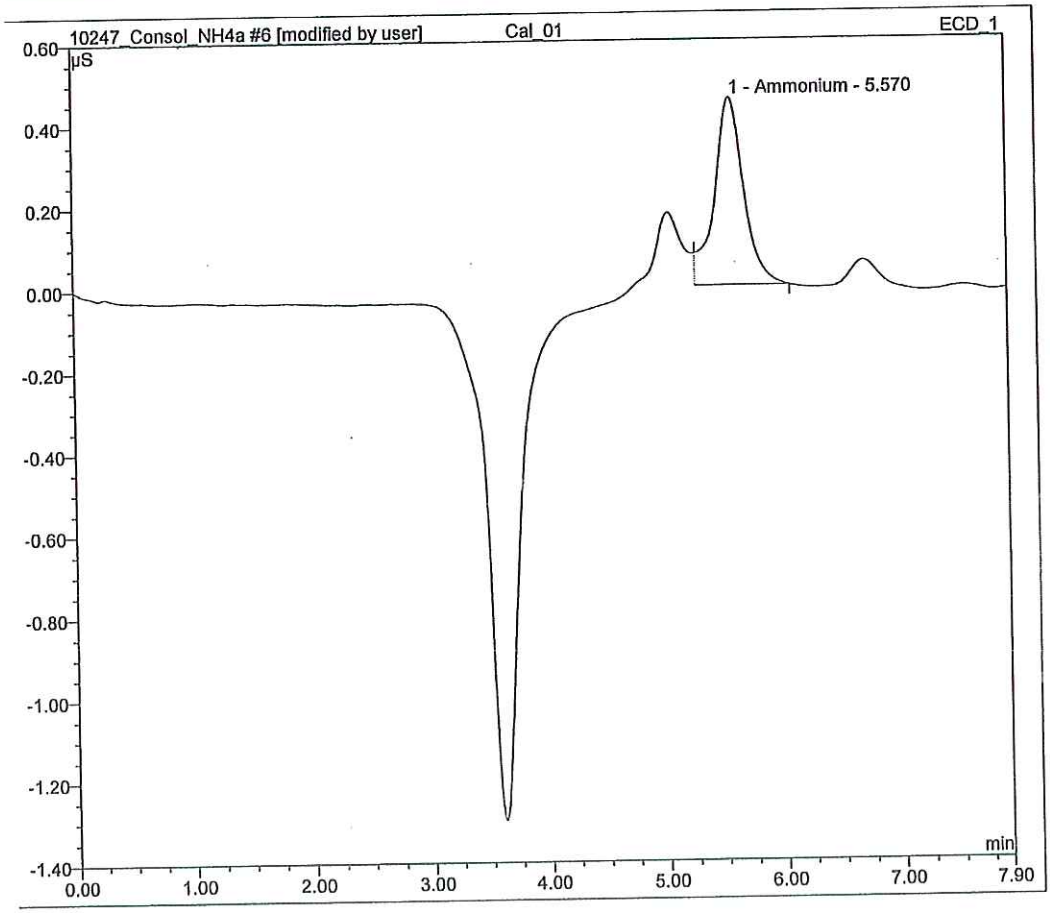
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.58	Ammonium	BMB*	2.501	6.003	n.a.
		TOTAL:		2.50	6.00	0.00



Integration Report - ECD_1

Sample Name:	Cal_01	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 09:31	*Run Time:*	7.90

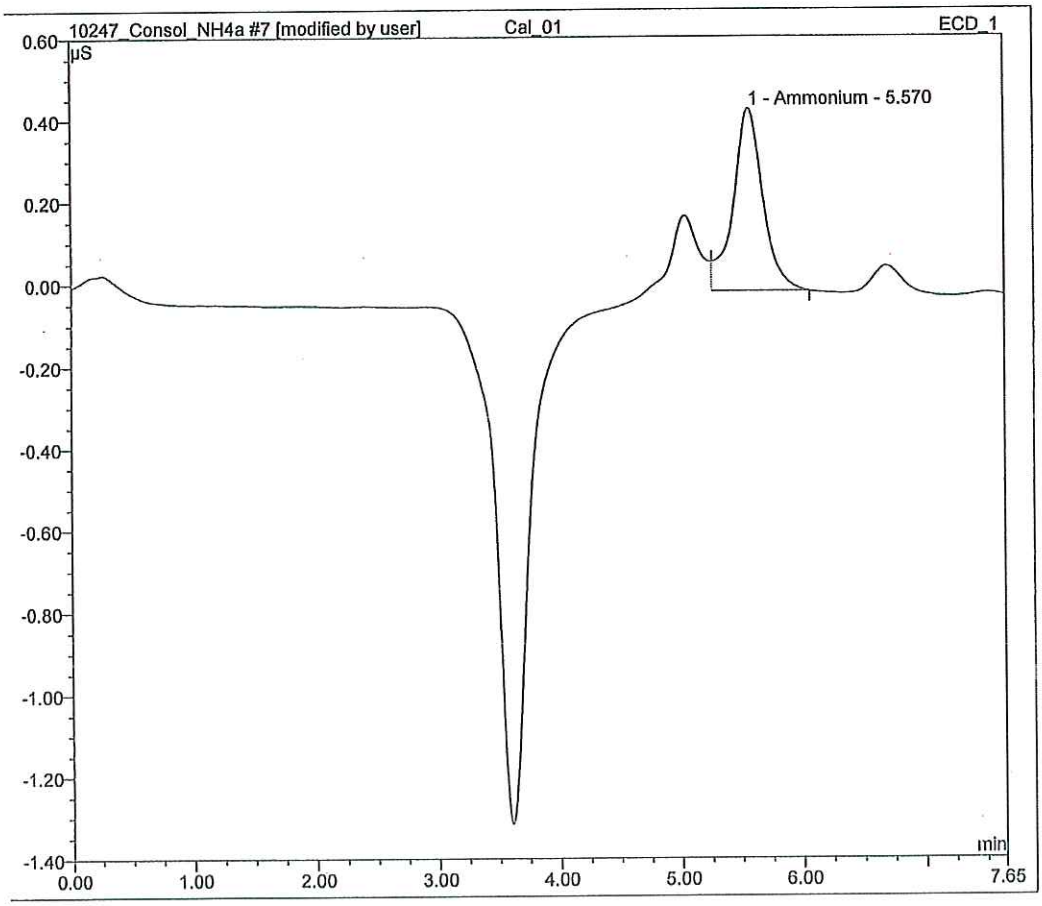
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.57	Ammonium	MB*	0.130	0.456	n.a.
		TOTAL:		0.13	0.46	0.00



Integration Report - ECD_1

Sample Name:	Cal_01	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 09:40	*Run Time:*	7.65

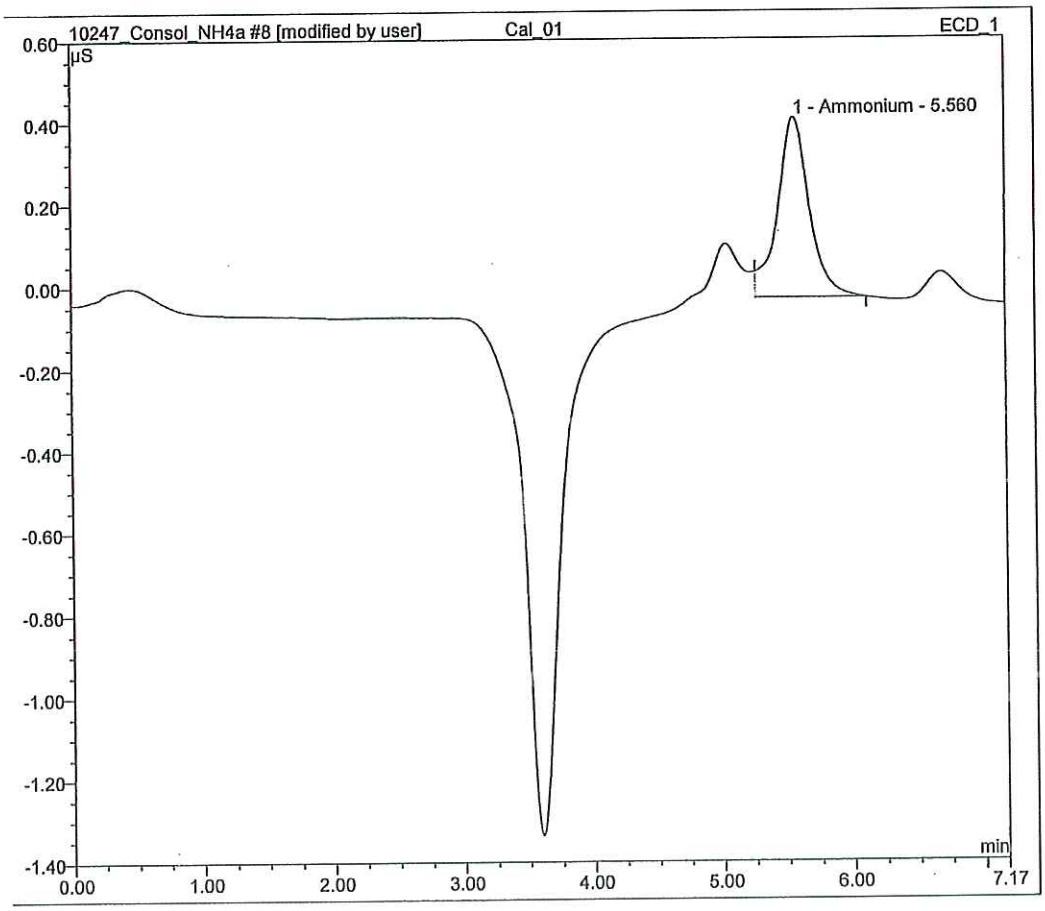
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.57	Ammonium	MB*	0.126	0.444	n.a.
		TOTAL:		0.13	0.44	0.00



Integration Report - ECD_1

Sample Name:	Cal_01	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 09:48	*Run Time:*	7.17

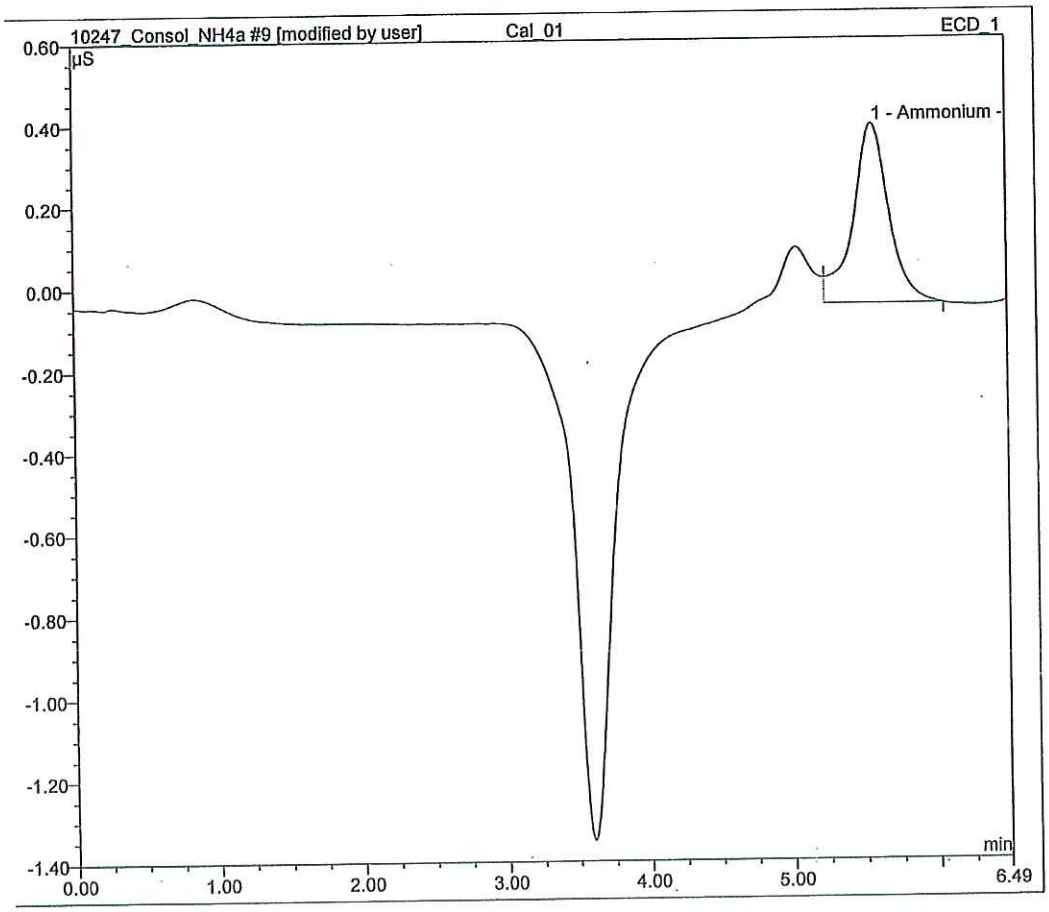
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.56	Ammonium	MB*	0.123	0.438	n.a.
		TOTAL:		0.12	0.44	0.00



Integration Report - ECD_1

Sample Name:	Cal_01	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 09:56	*Run Time:*	6.49

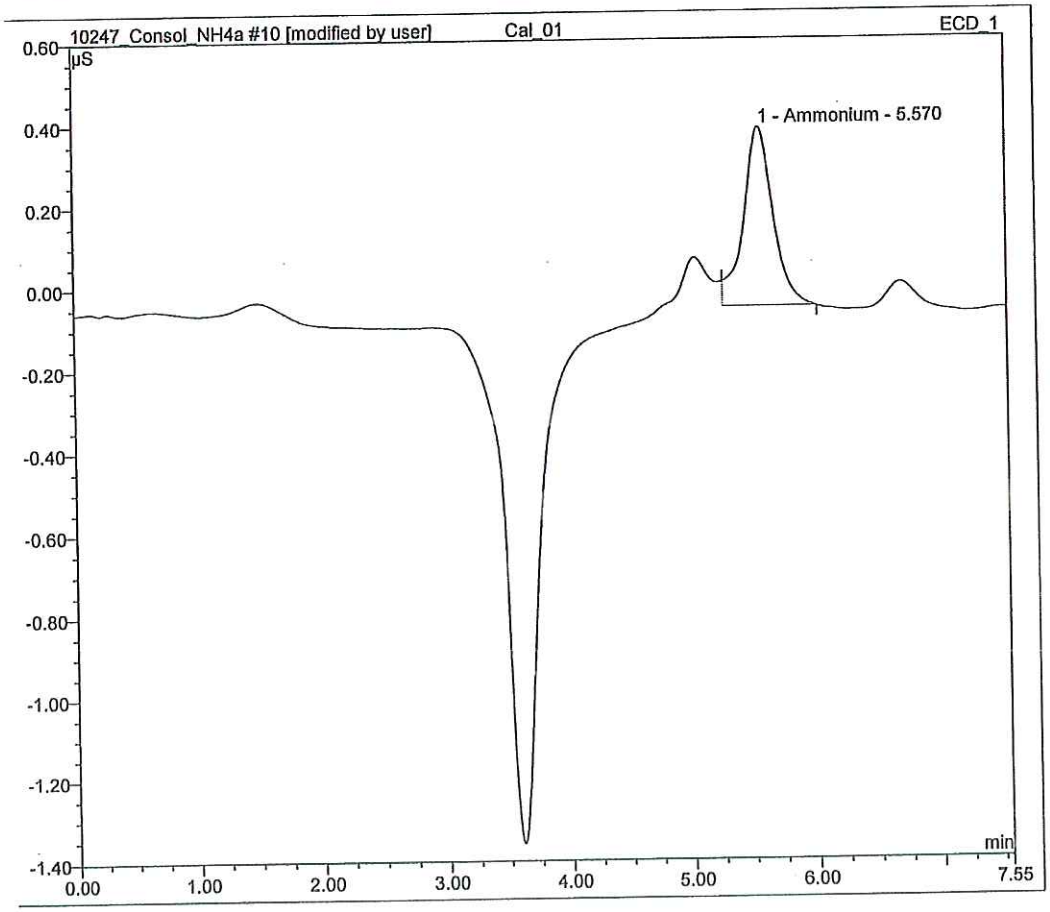
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.56	Ammonium	MB*	0.124	0.437	n.a.
		TOTAL:		0.12	0.44	0.00



Integration Report - ECD_1

Sample Name:	Cal_01	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 10:04	*Run Time:*	7.55

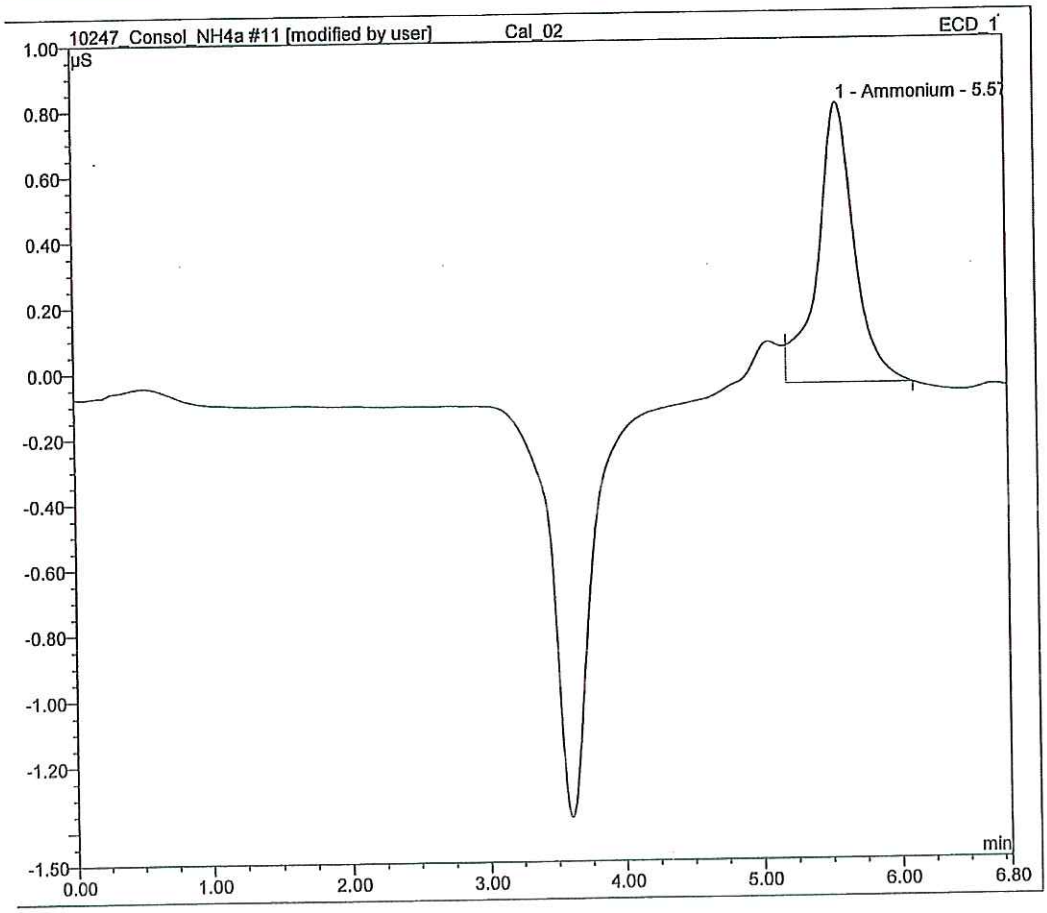
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.57	Ammonium	MB*	0.121	0.437	n.a.
TOTAL:				0.12	0.44	0.00



Integration Report - ECD_1

Sample Name:	Cal_02	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 10:12	*Run Time:*	6.80

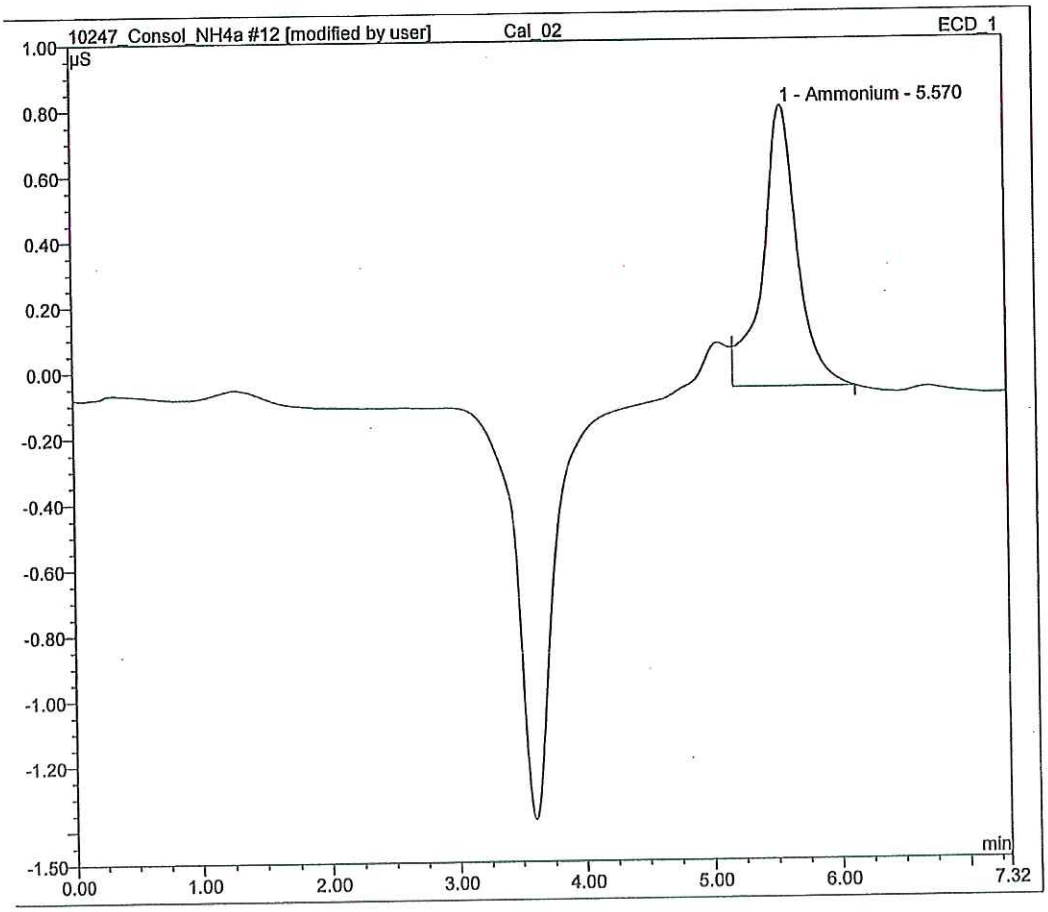
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.57	Ammonium	MB*	0.261	0.853	n.a.
TOTAL:				0.26	0.85	0.00



Integration Report - ECD_1

Sample Name:	Cal_02	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 10:20	*Run Time:*	7.32

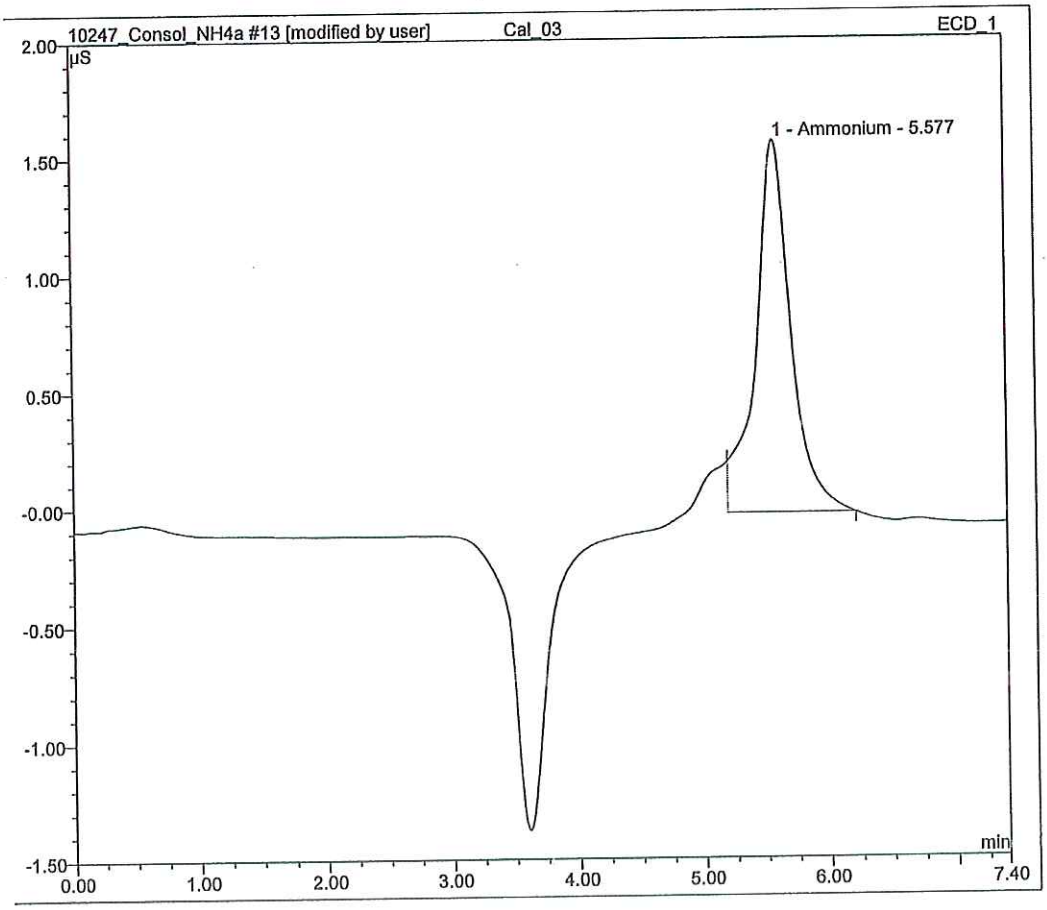
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.57	Ammonium	MB*	0.267	0.858	n.a.
		TOTAL:		0.27	0.86	0.00



Integration Report - ECD_1

Sample Name:	Cal_03	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 10:28	*Run Time:*	7.40

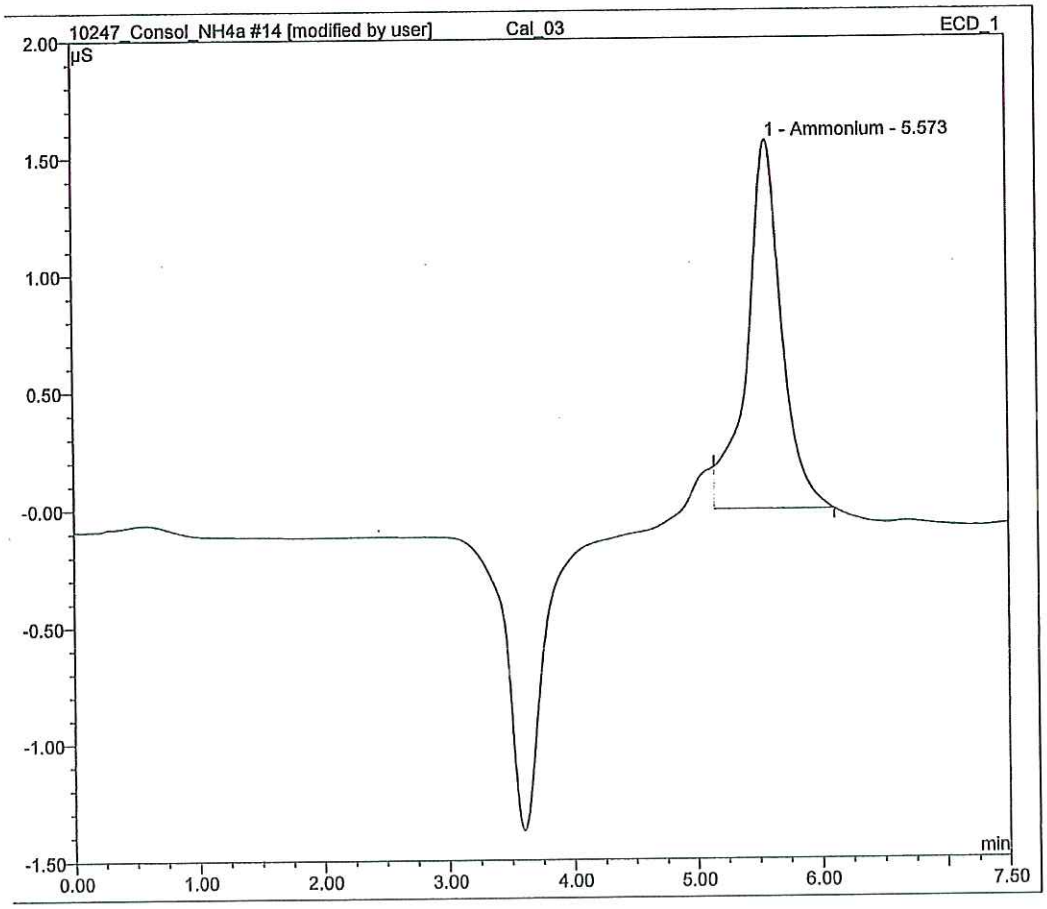
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.58	Ammonium	MB*	0.518	1.592	n.a.
		TOTAL:		0.52	1.59	0.00



Integration Report - ECD_1

Sample Name:	Cal_03	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 10:36	*Run Time:*	7.50

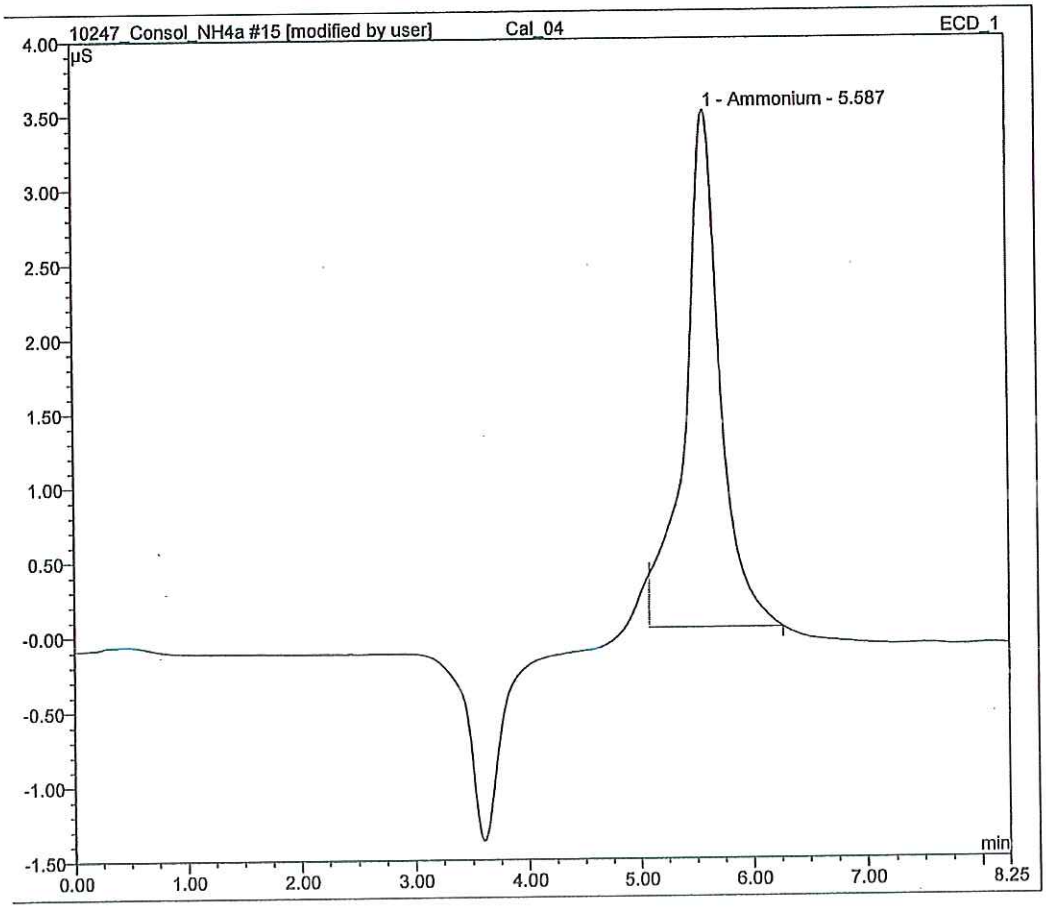
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.57	Ammonium	MB*	0.506	1.572	n.a.
		TOTAL:		0.51	1.57	0.00



Integration Report - ECD_1

Sample Name:	Cal_04	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 10:45	*Run Time:*	8.25

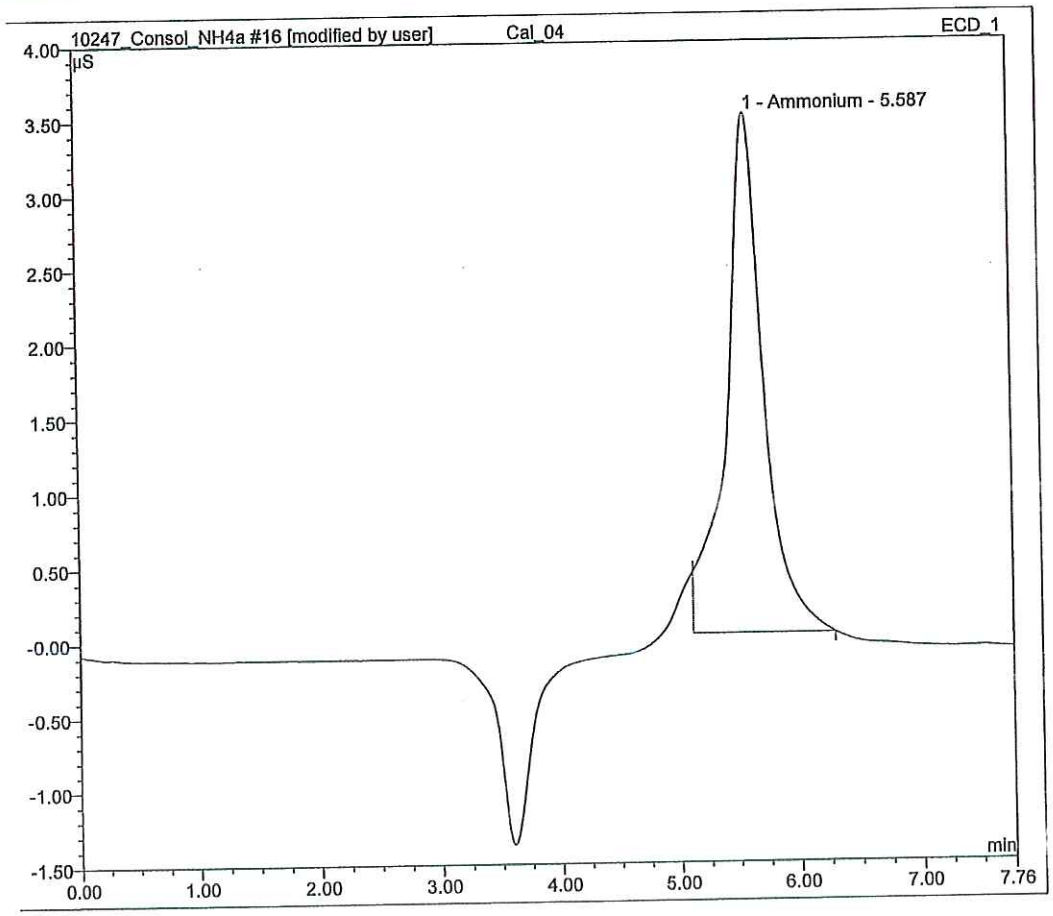
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.59	Ammonium	MB*	1.252	3.467	n.a.
		TOTAL:		1.25	3.47	0.00



Integration Report - ECD_1

Sample Name:	Cal_04	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 10:54	*Run Time:*	7.76

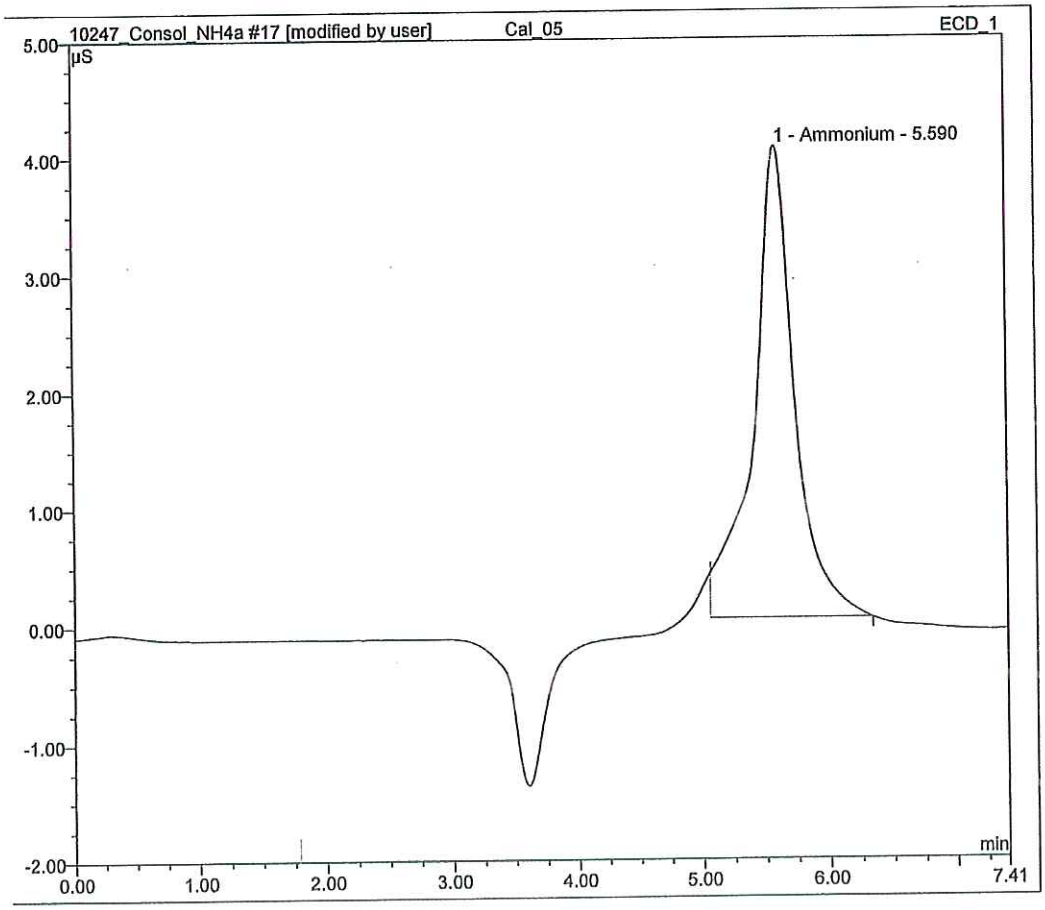
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.59	Ammonium	MB*	1.254	3.480	n.a.
TOTAL:				1.25	3.48	0.00



Integration Report - ECD_1

Sample Name:	Cal_05	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 11:03	*Run Time:*	7.41

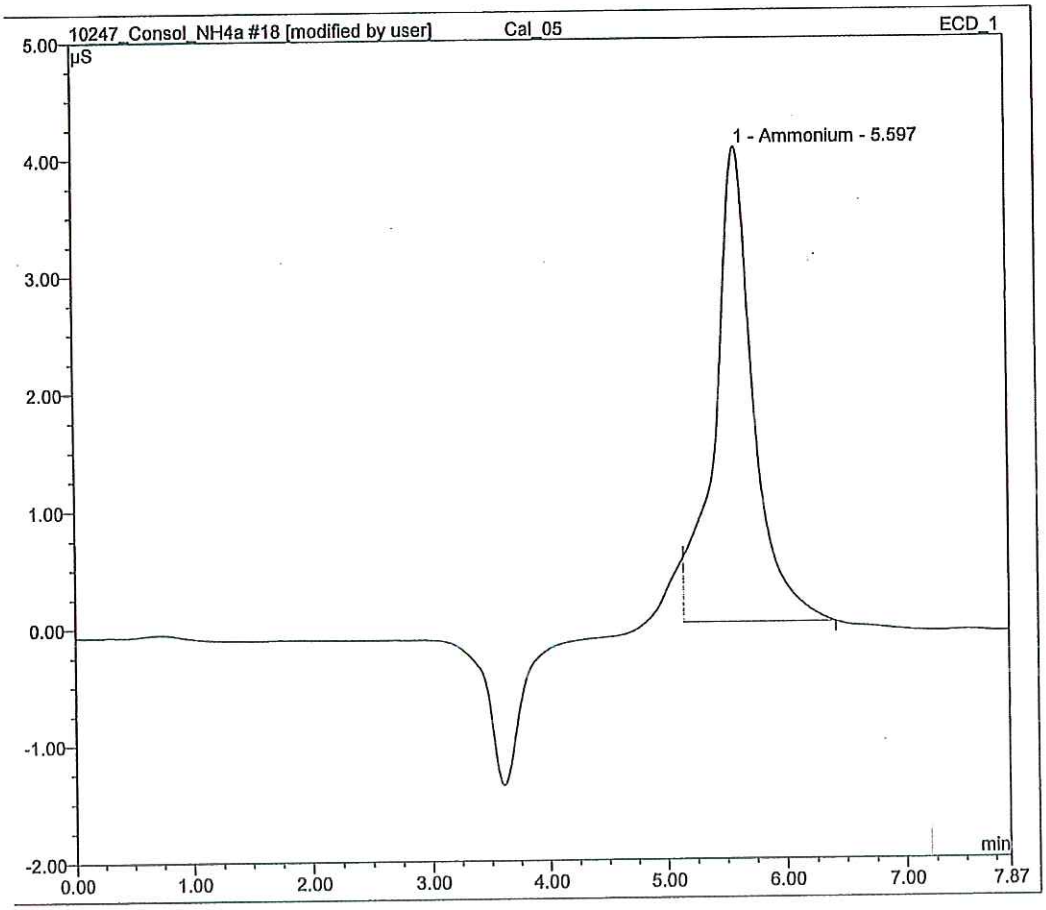
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.59	Ammonium	MB*	1.507	4.023	n.a.
		TOTAL:		1.51	4.02	0.00



Integration Report - ECD_1

Sample Name:	Cal_05	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 11:11	*Run Time:*	7.87

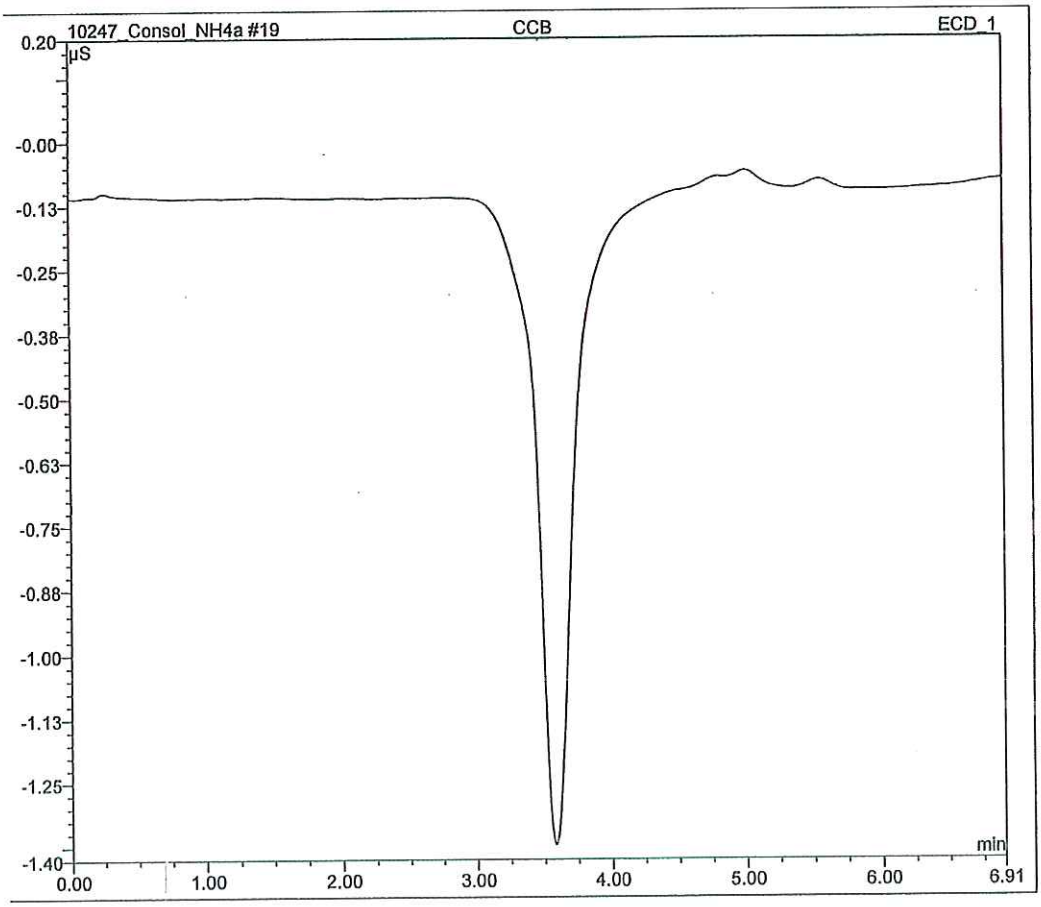
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.60	Ammonium	MB*	1.506	4.049	n.a.
		TOTAL:		1.51	4.05	0.00



Integration Report - ECD_1

Sample Name:	CCB	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 11:20	*Run Time:*	6.91

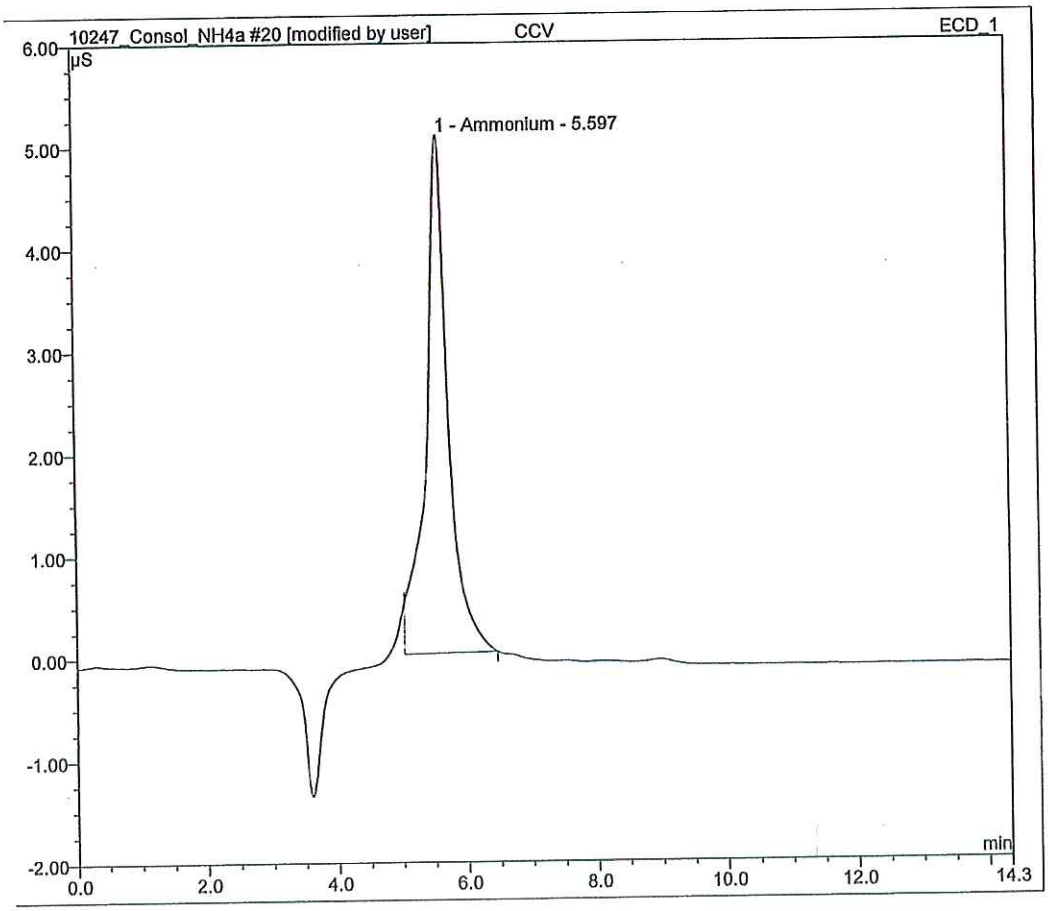
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
		TOTAL:		0.00	0.00	0.00



Integration Report - ECD_1

Sample Name:	CCV	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 11:28	*Run Time:*	14.34

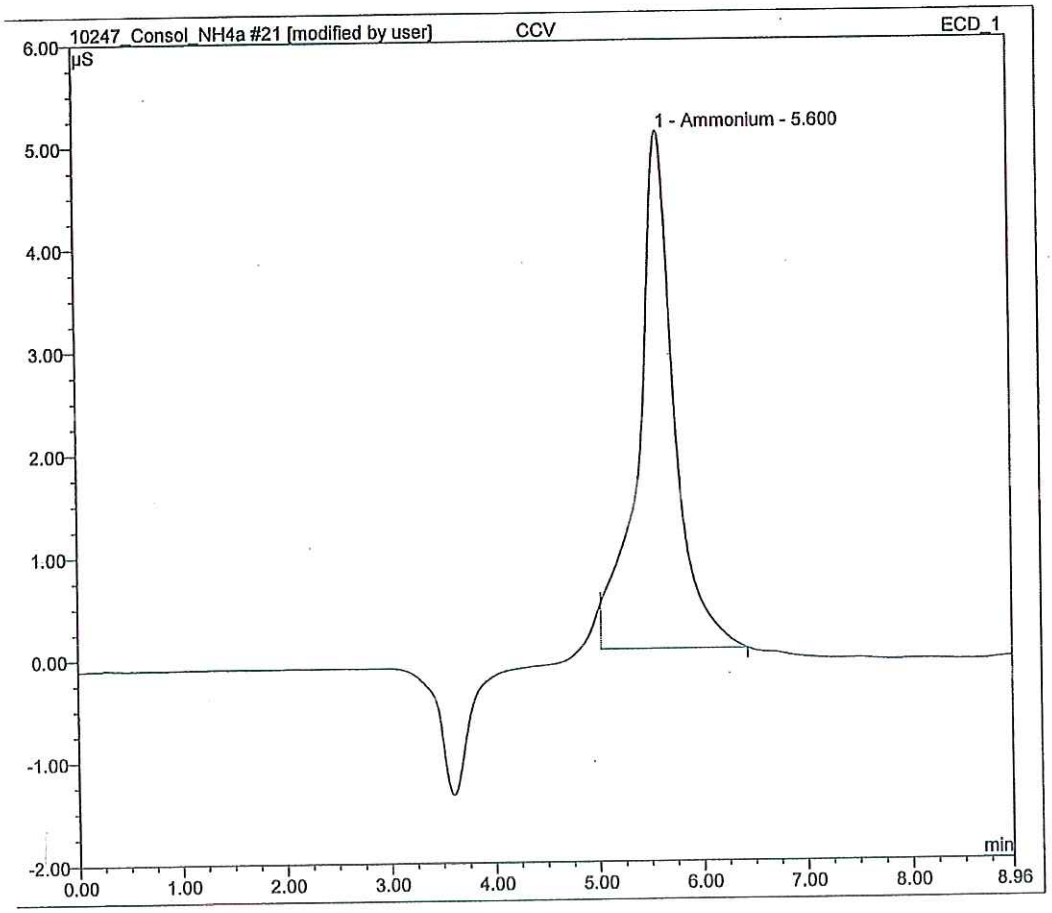
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.60	Ammonium	MB*	2.019	5.061	n.a.
		TOTAL:		2.02	5.06	0.00



Integration Report - ECD_1

Sample Name:	CCV	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 11:43	*Run Time:*	8.96

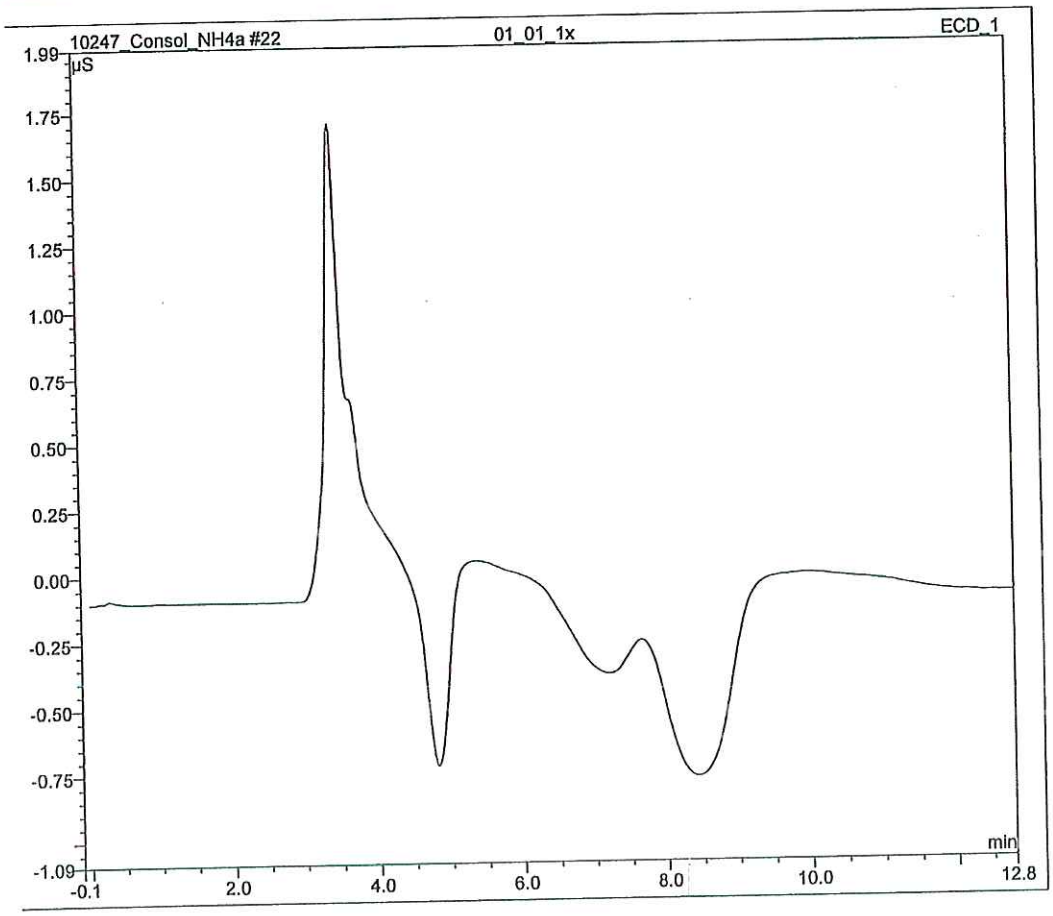
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.60	Ammonium	MB*	1.999	5.044	n.a.
TOTAL:				2.00	5.04	0.00



Integration Report - ECD_1

Sample Name:	01_01_1x	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 11:53	*Run Time:*	73.95

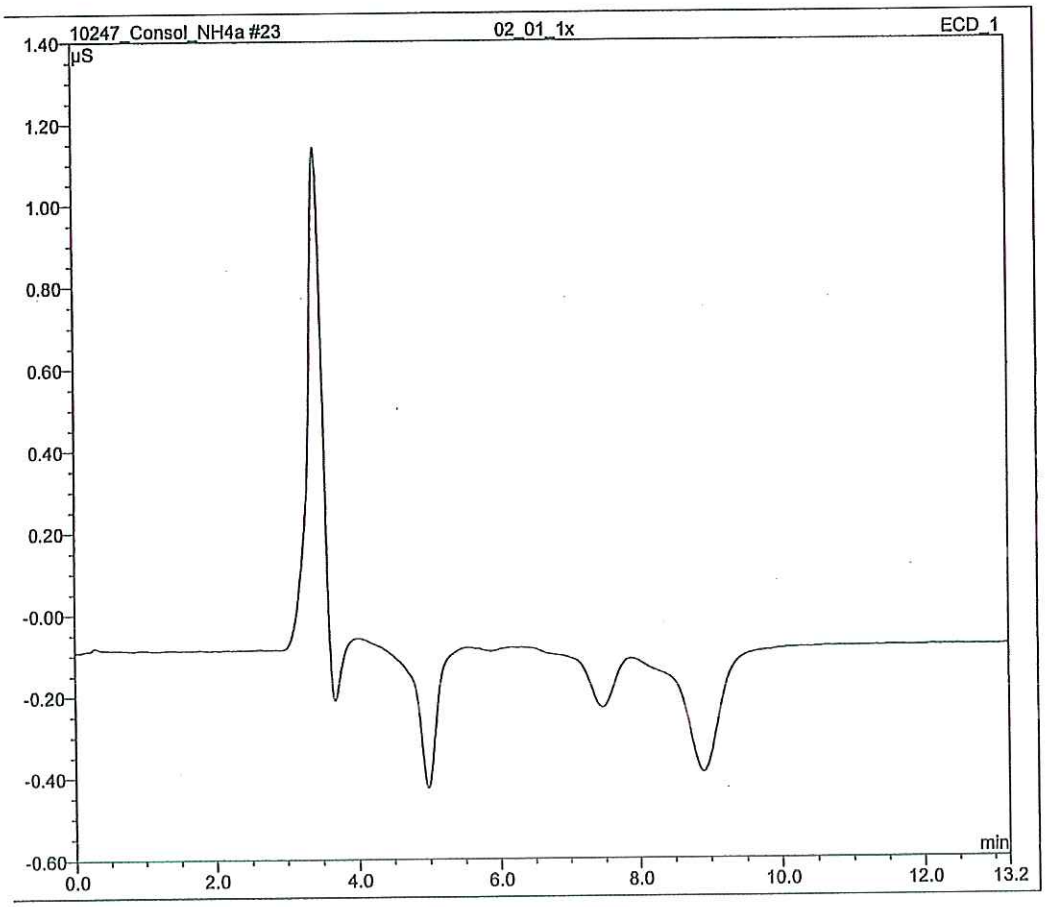
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
		TOTAL:		0.00	0.00	0.00



Integration Report - ECD_1

Sample Name:	02_01_1x	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 13:09	*Run Time:*	13.20

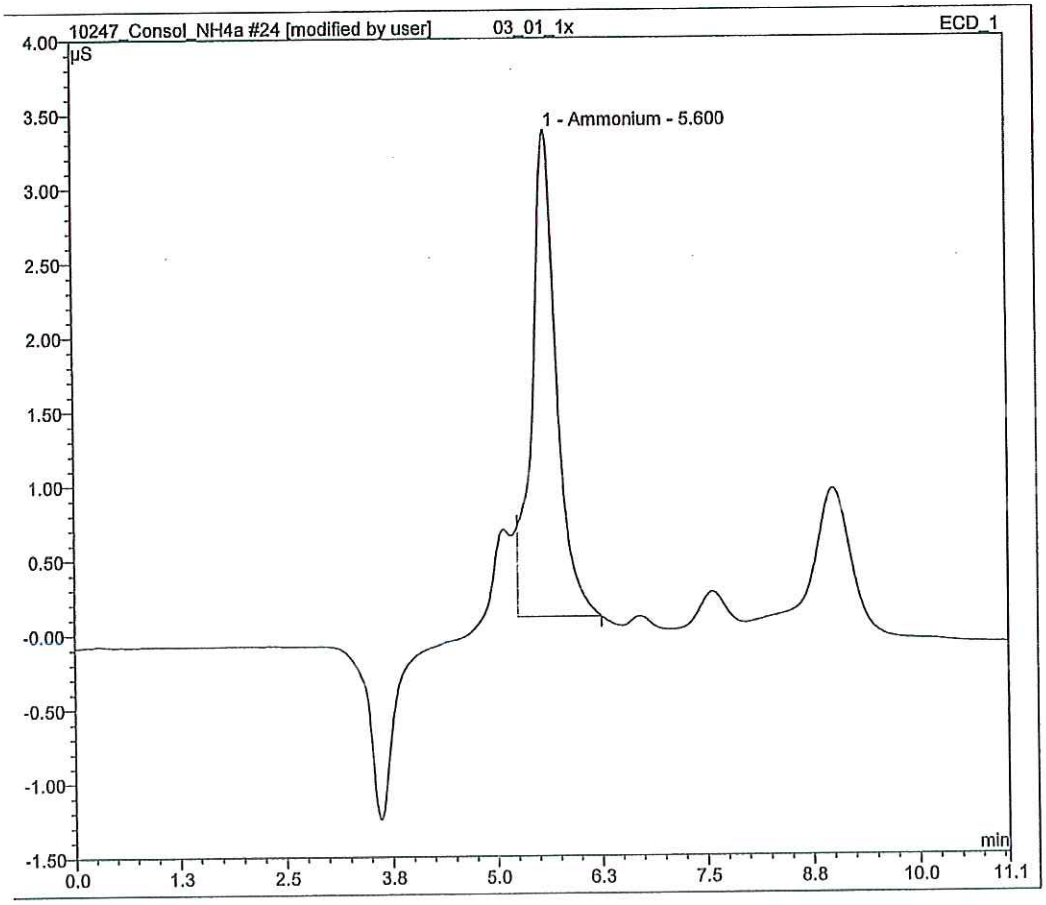
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
		TOTAL:		0.00	0.00	0.00



Integration Report - ECD_1

Sample Name:	03_01_1x	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 13:25	*Run Time:*	11.06

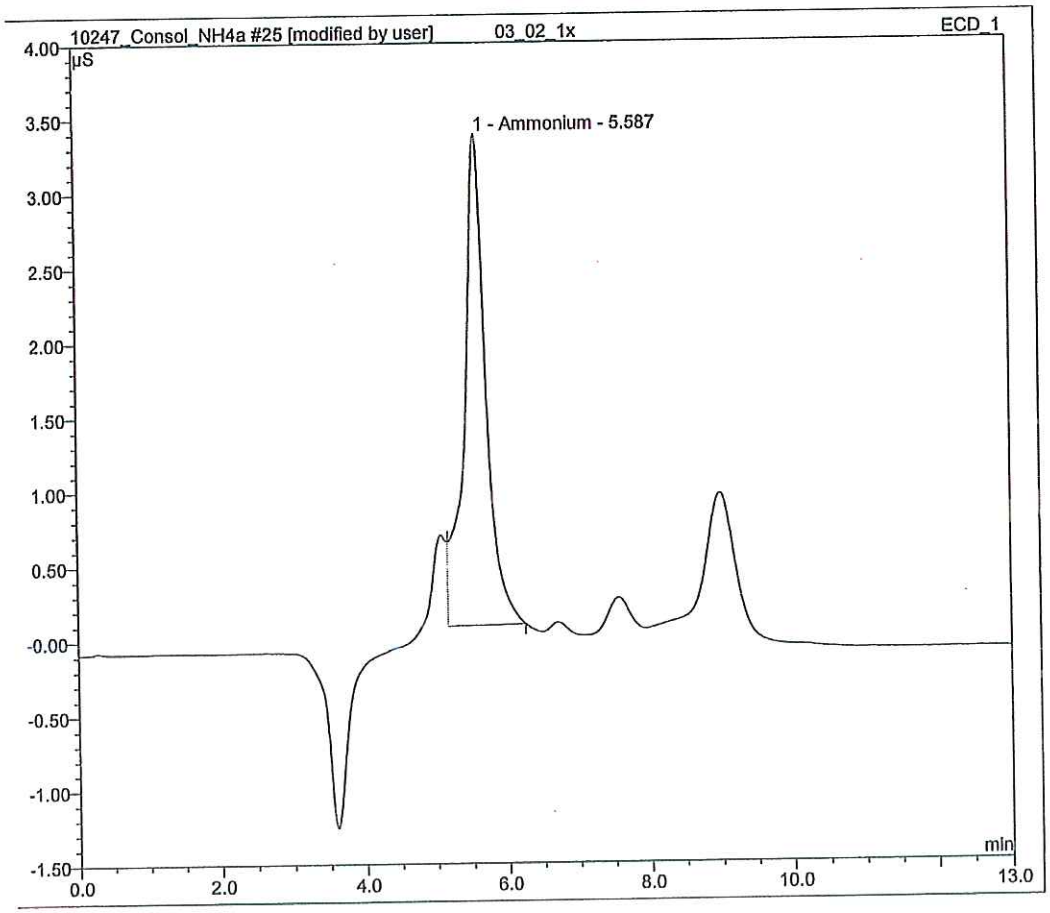
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.60	Ammonium	MB*	1.094	3.274	n.a.
		TOTAL:		1.09	3.27	0.00



Integration Report - ECD_1

Sample Name:	03_02_1x	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 13:37	*Run Time:*	13.03

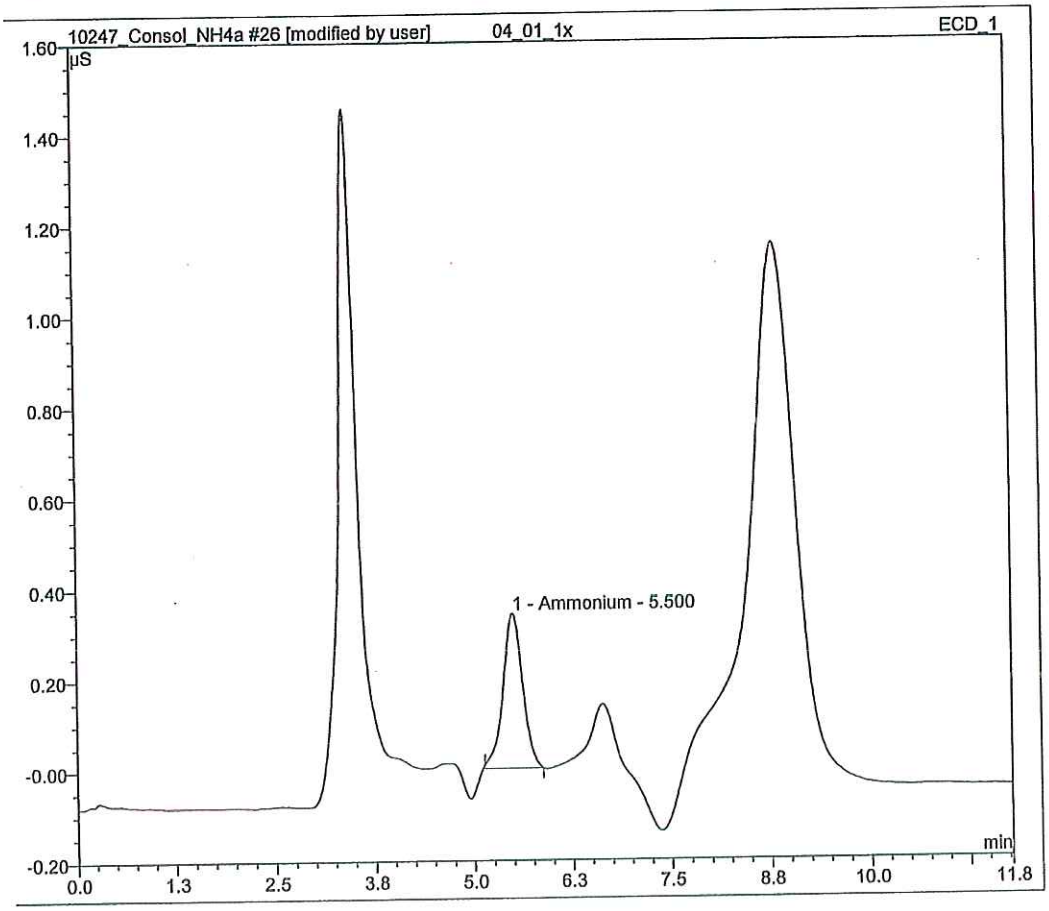
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.59	Ammonium	MB*	1.149	3.290	n.a.
		TOTAL:		1.15	3.29	0.00



Integration Report - ECD_1

Sample Name:	04_01_1x	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 13:51	*Run Time:*	11.78

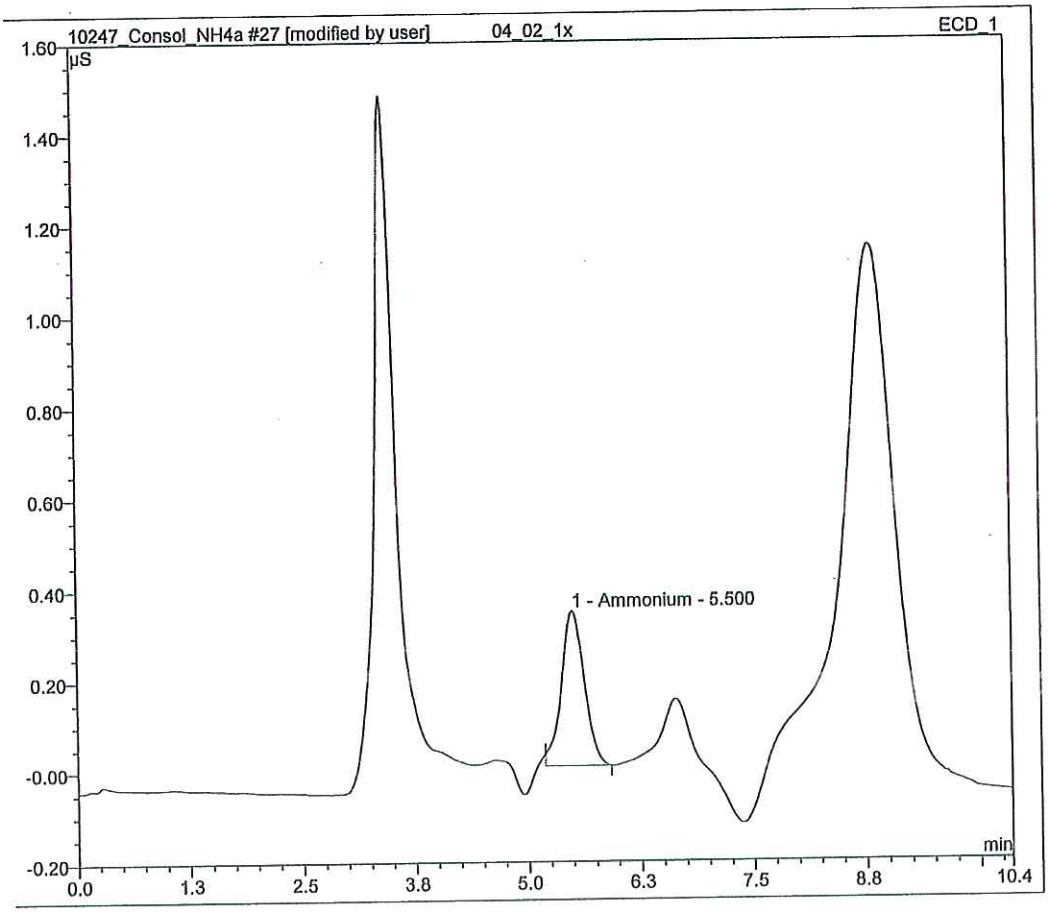
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.50	Ammonium	MB*	0.099	0.341	n.a.
		TOTAL:		0.10	0.34	0.00



Integration Report - ECD_1

Sample Name:	04_02_1x	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J.Nunez
Inj. Date/Time:	18.06.07 14:04	*Run Time:*	10.35

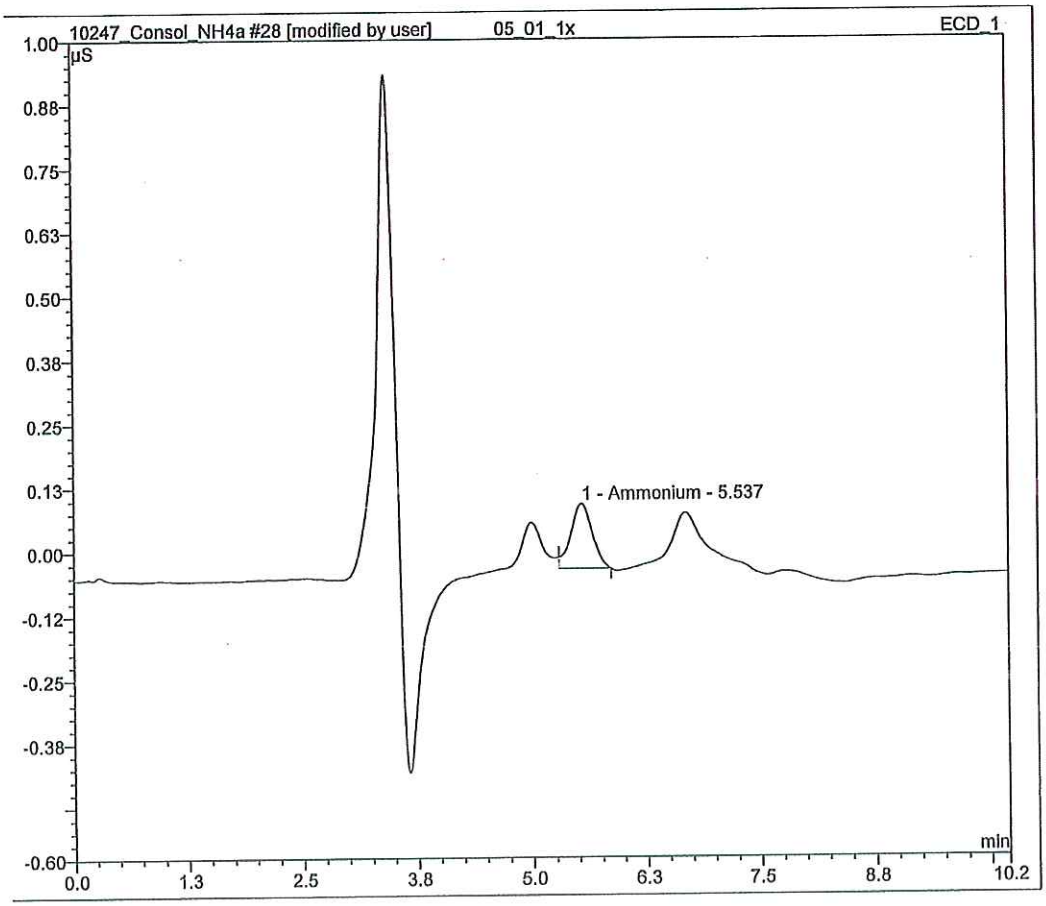
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.50	Ammonium	MB*	0.100	0.341	n.a.
TOTAL:				0.10	0.34	0.00



Integration Report - ECD_1

Sample Name:	05_01_1x	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 14:14	*Run Time:*	10.19

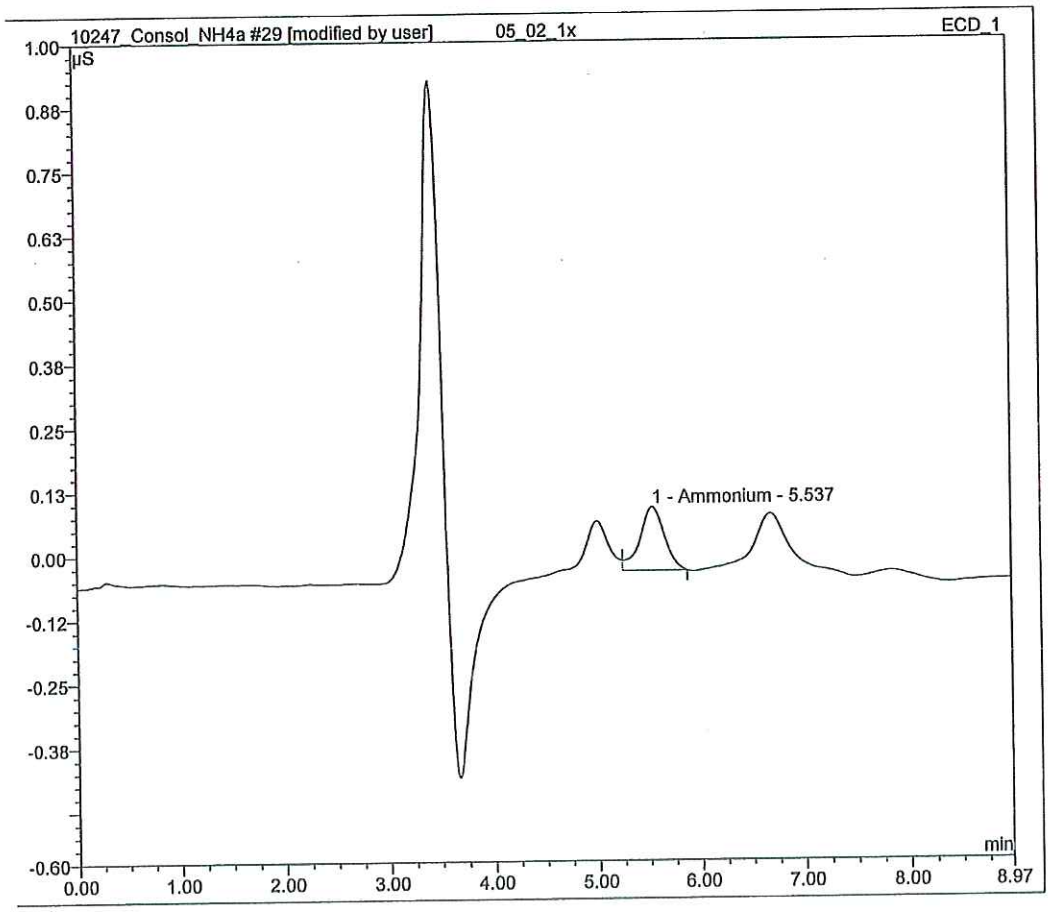
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.54	Ammonium	MB*	0.034	0.127	n.a.
		TOTAL:		0.03	0.13	0.00



Integration Report - ECD_1

Sample Name:	05_02_1x	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 14:26	*Run Time:*	8.97

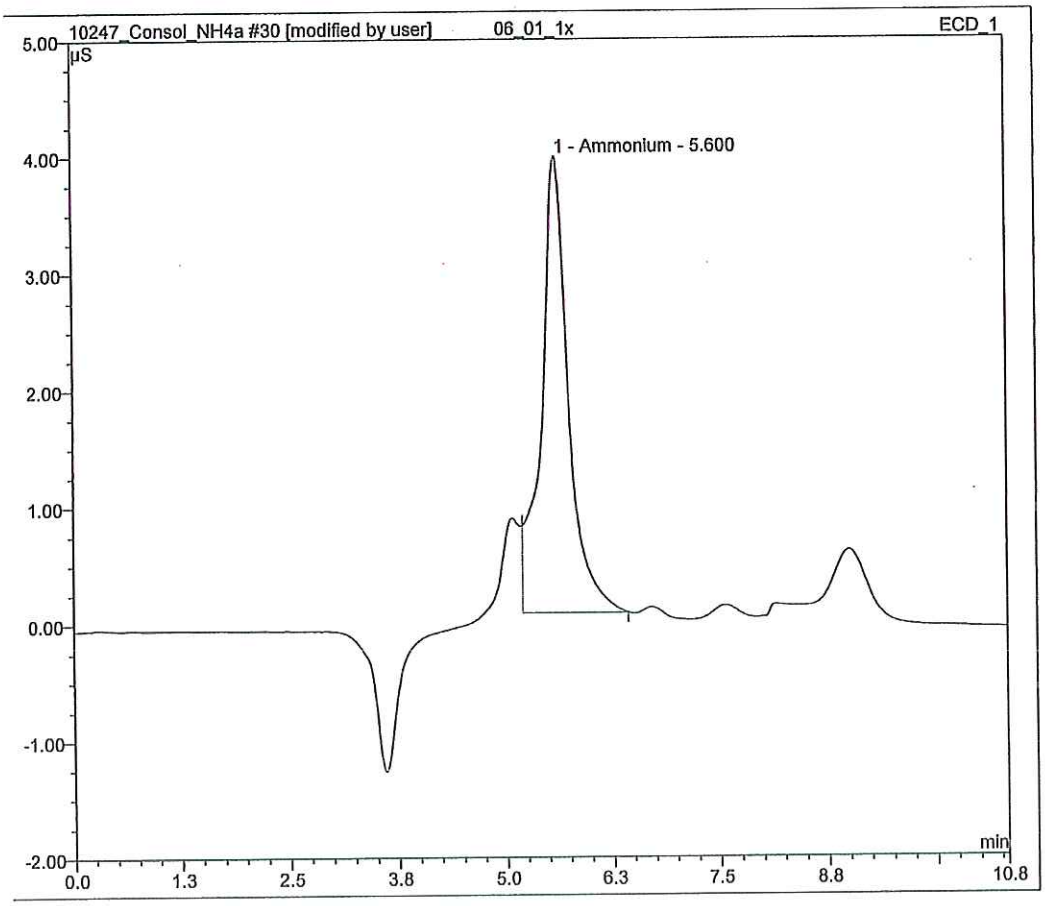
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.54	Ammonium	MB*	0.034	0.124	n.a.
TOTAL:				0.03	0.12	0.00



Integration Report - ECD_1

Sample Name:	06_01_1x	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 14:36	*Run Time:*	10.82

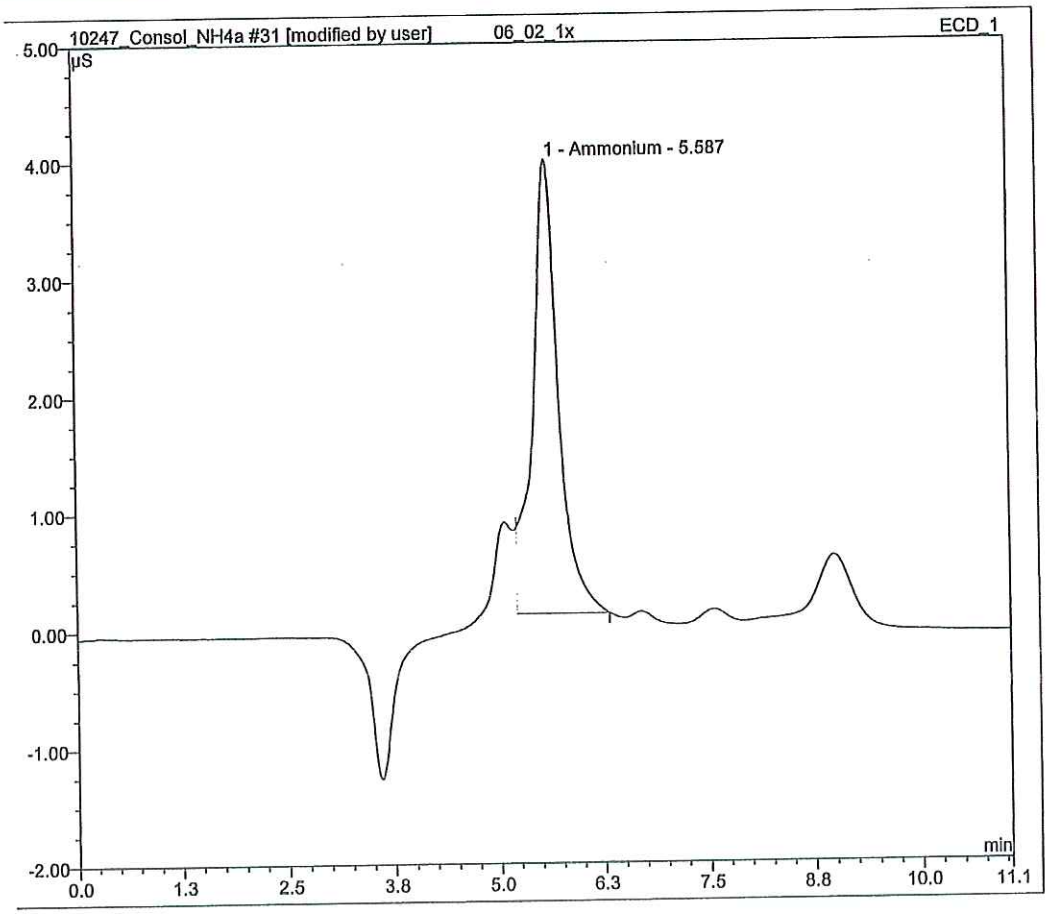
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.60	Ammonium	MB*	1.418	3.901	n.a.
		TOTAL:		1.42	3.90	0.00



Integration Report - ECD_1

Sample Name:	06_02_1x	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 14:48	*Run Time:*	11.06

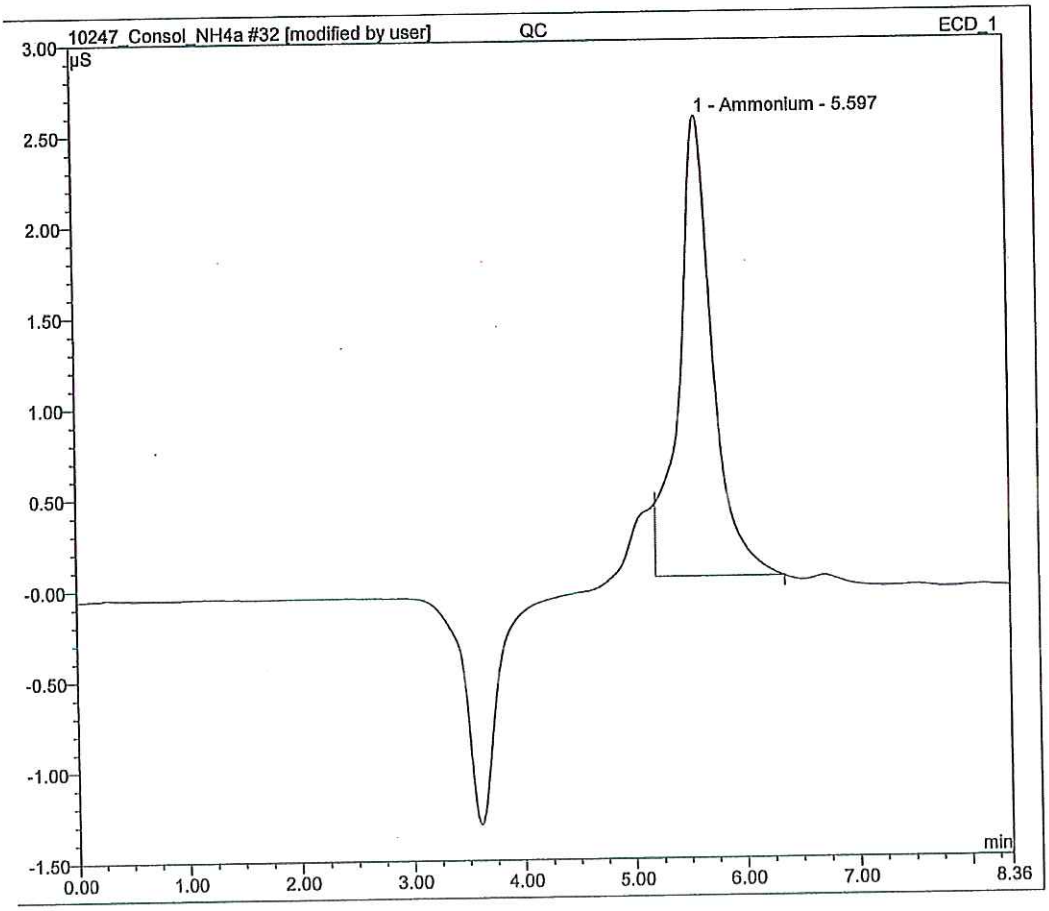
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.59	Ammonium	MB*	1.360	3.869	n.a.
		TOTAL:		1.36	3.87	0.00



Integration Report - ECD_1

Sample Name:	QC	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 15:00	*Run Time:*	8.36

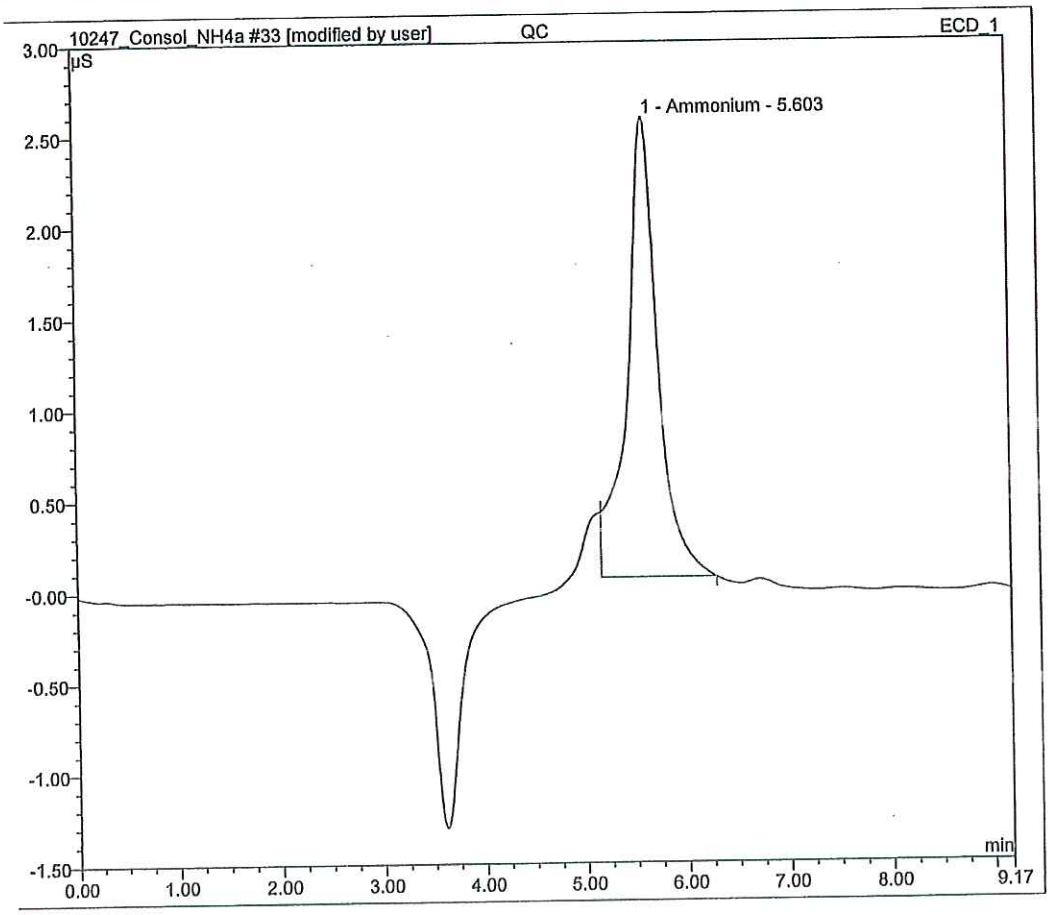
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.60	Ammonium	MB*	0.875	2.531	n.a.
		TOTAL:		0.88	2.53	0.00



Integration Report - ECD_1

Sample Name:	QC	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 15:09	*Run Time:*	9.17

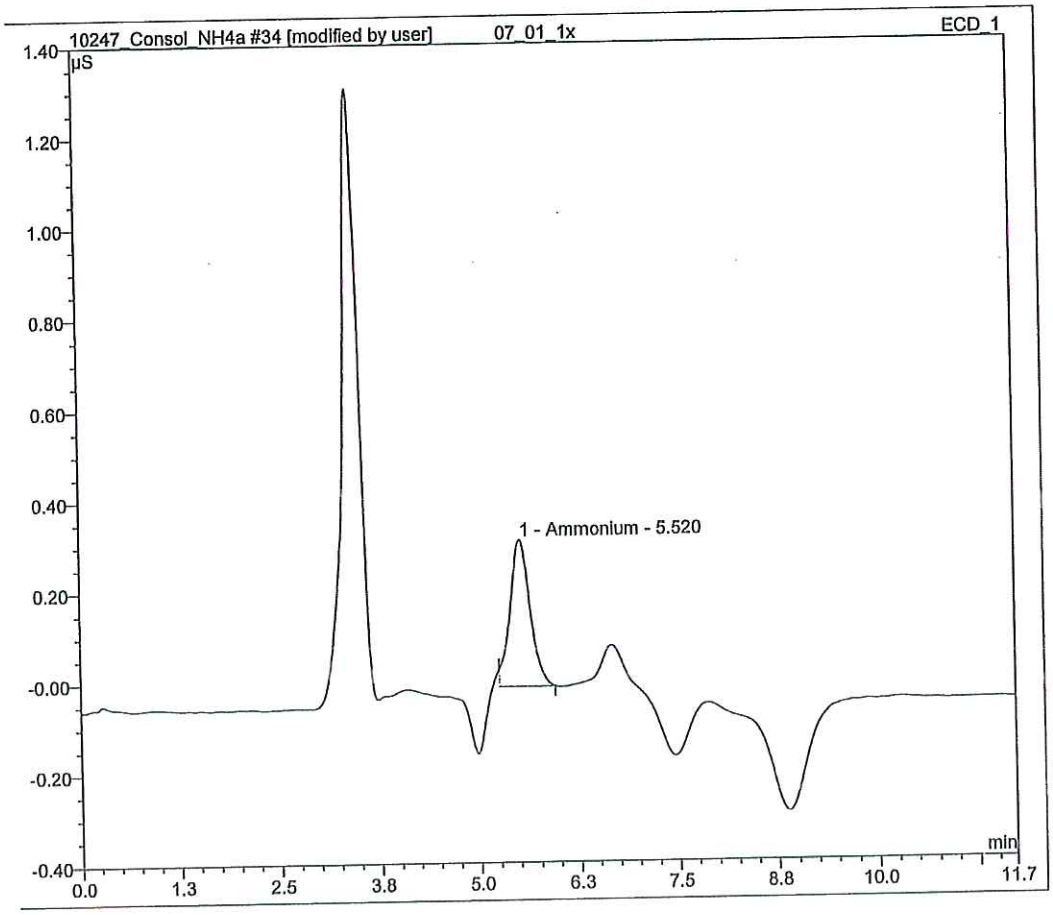
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.60	Ammonium	MB*	0.875	2.521	n.a.
		TOTAL:		0.88	2.52	0.00



Integration Report - ECD_1

Sample Name:	07_01_1x	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 15:19	*Run Time:*	11.71

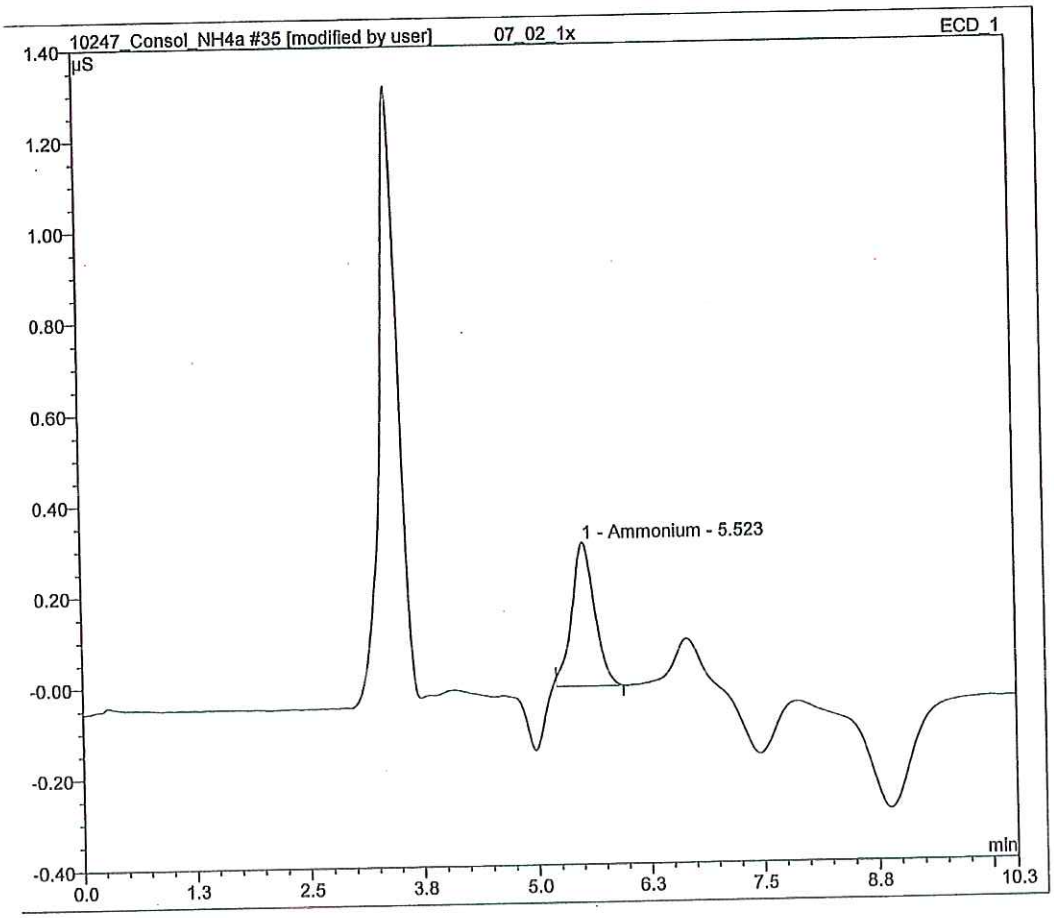
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.52	Ammonium	MB*	0.093	0.323	n.a.
TOTAL:				0.09	0.32	0.00



Integration Report - ECD_1

Sample Name:	07_02_1x	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 15:32	*Run Time:*	10.27

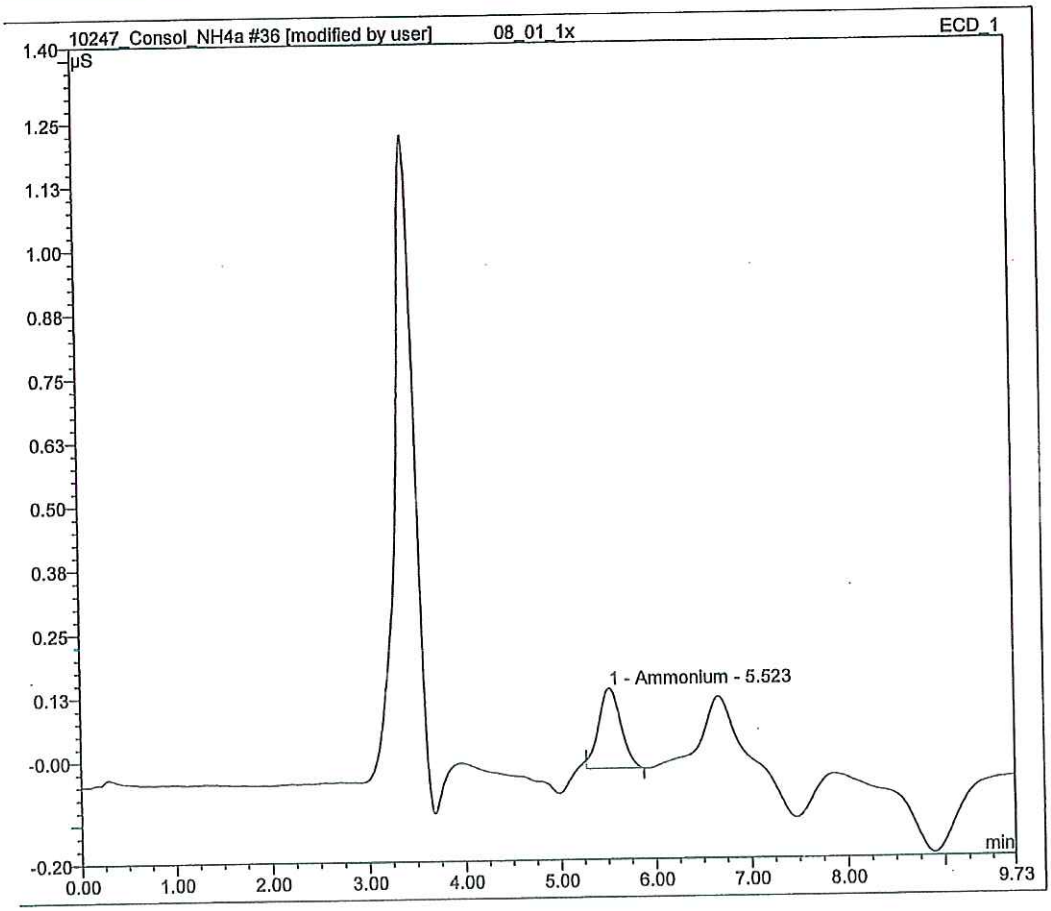
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.52	Ammonium	MB*	0.092	0.315	n.a.
TOTAL:				0.09	0.32	0.00



Integration Report - ECD_1

Sample Name:	08_01_1x	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 15:43	*Run Time:*	9.73

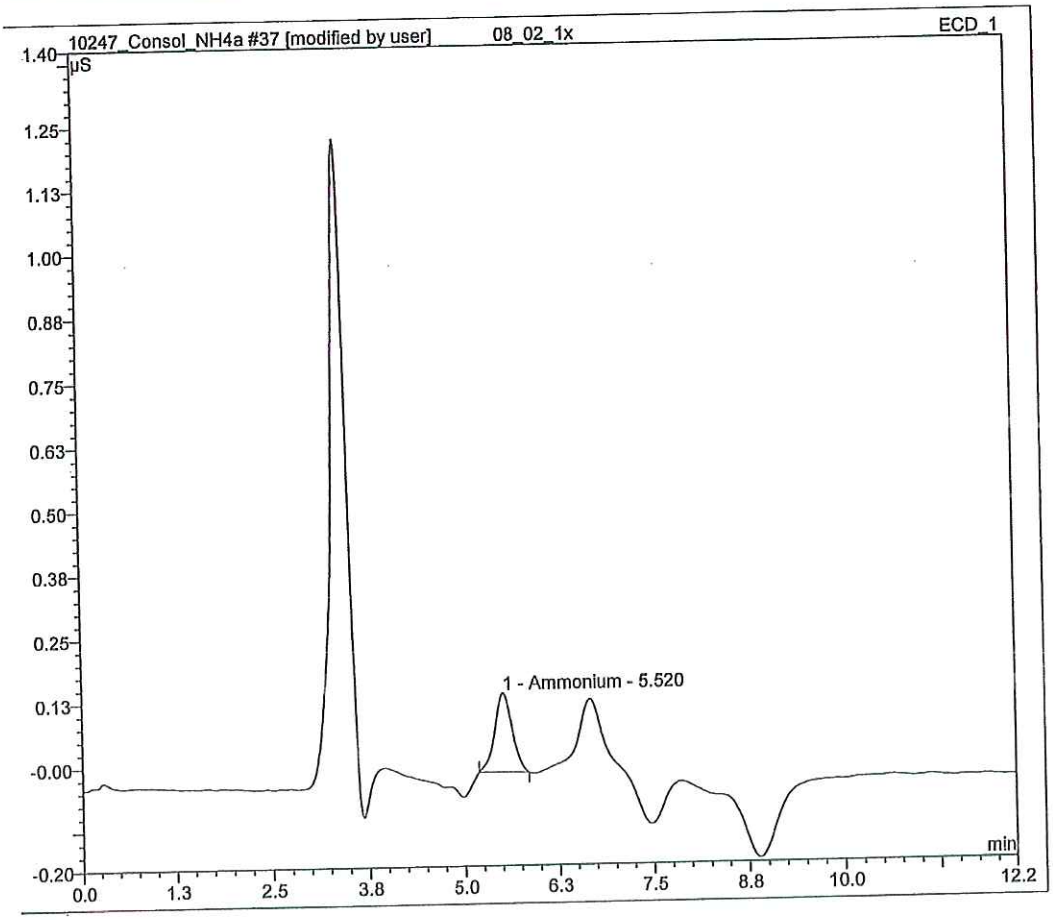
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.52	Ammonium	MB*	0.043	0.158	n.a.
TOTAL:				0.04	0.16	0.00



Integration Report - ECD_1

Sample Name:	08_02_1x	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 15:53	*Run Time:*	12.24

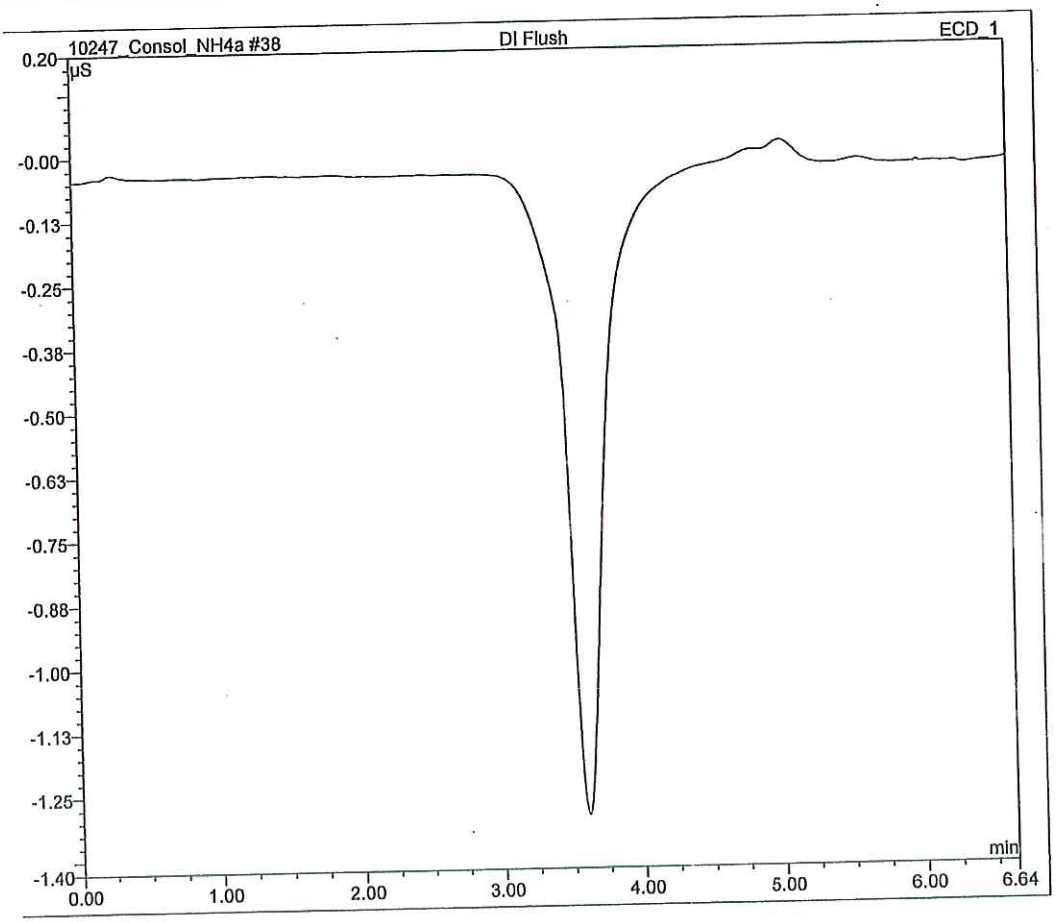
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.52	Ammonium	BMB*	0.041	0.153	n.a.
TOTAL:				0.04	0.15	0.00



Integration Report - ECD_1

Sample Name:	DI Flush	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 16:07	*Run Time:*	6.64

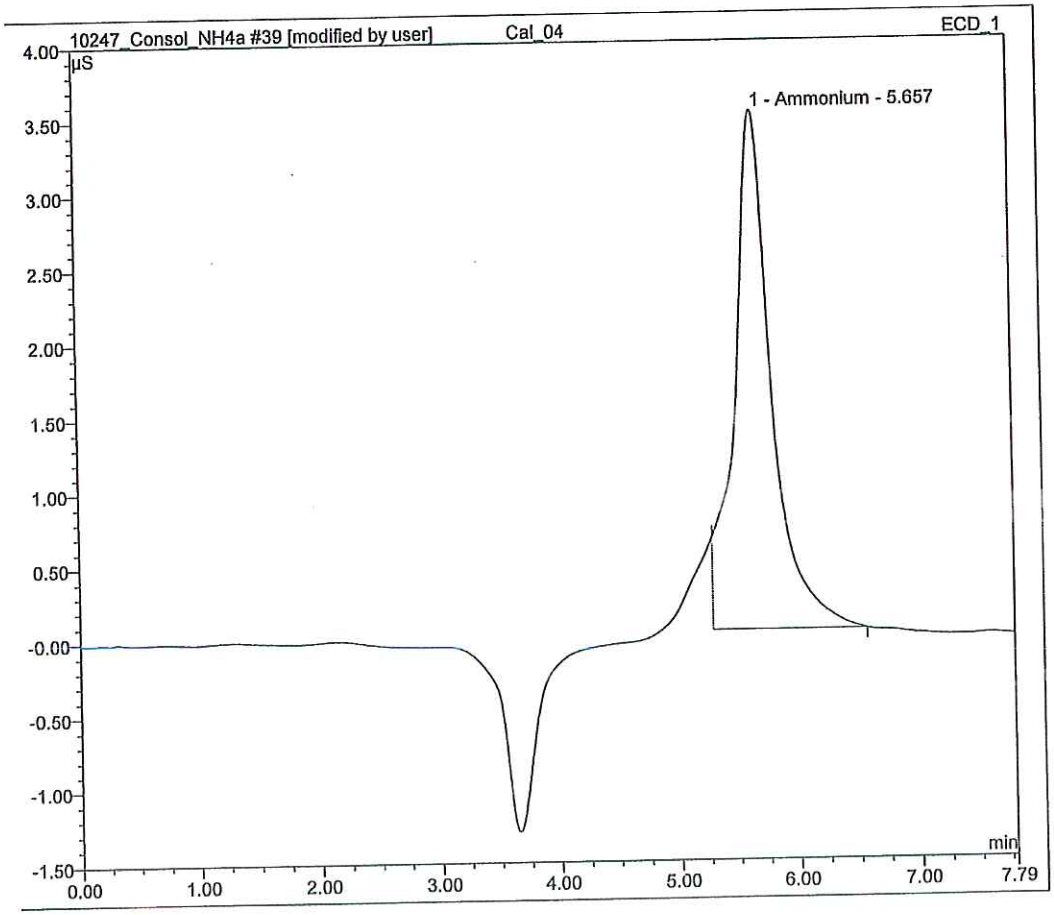
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
		TOTAL:		0.00	0.00	0.00



Integration Report - ECD_1

Sample Name:	Cal_04	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	18.06.07 16:13	*Run Time:*	7.79

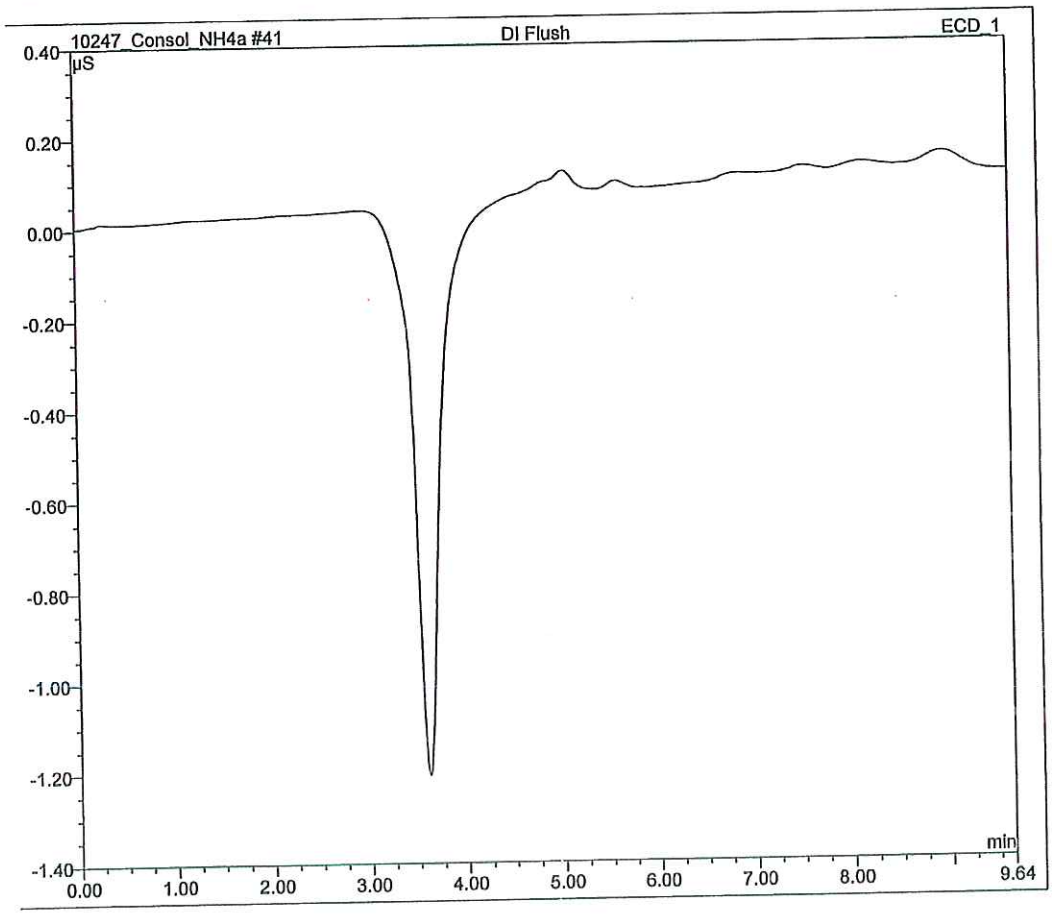
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.66	Ammonium	MB*	1.254	3.484	n.a.
		TOTAL:		1.25	3.48	0.00



Integration Report - ECD_1

Sample Name:	DI Flush	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 08:27	*Run Time:*	9.64

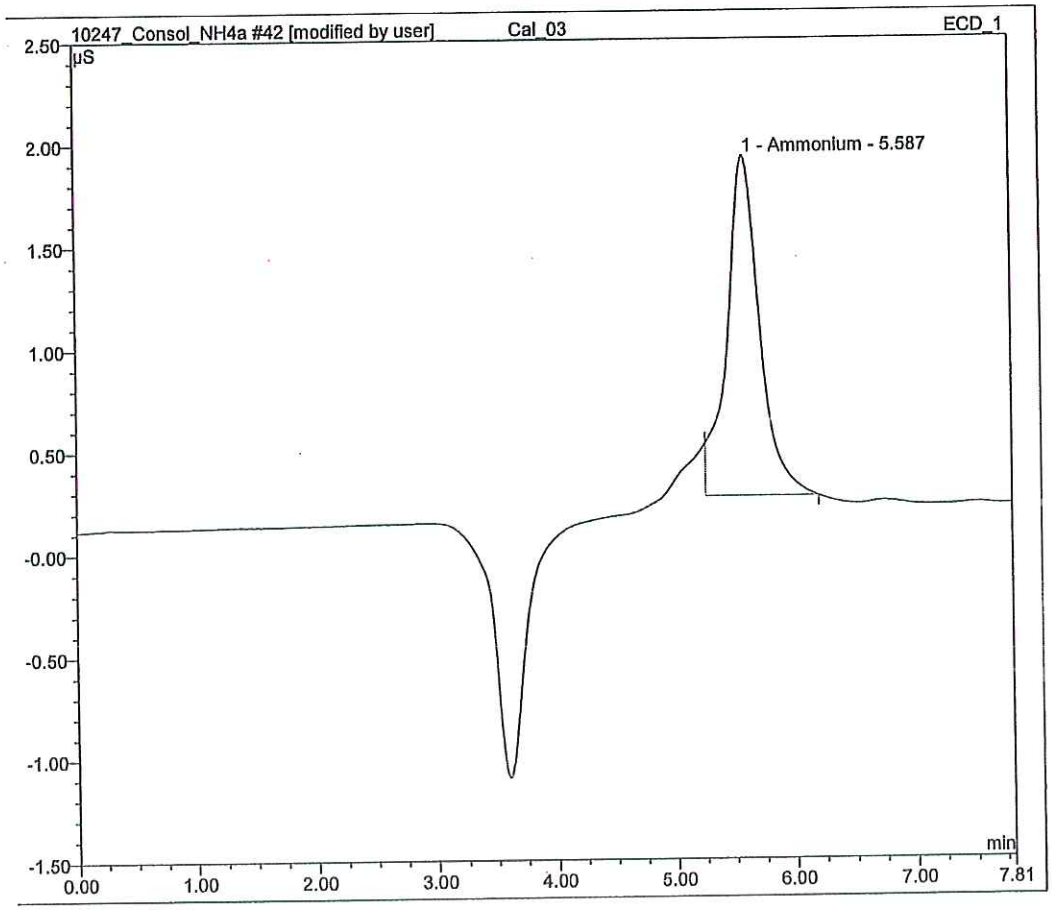
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
		TOTAL:		0.00	0.00	0.00



Integration Report - ECD_1

Sample Name:	Cal_03	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 08:38	*Run Time:*	7.81

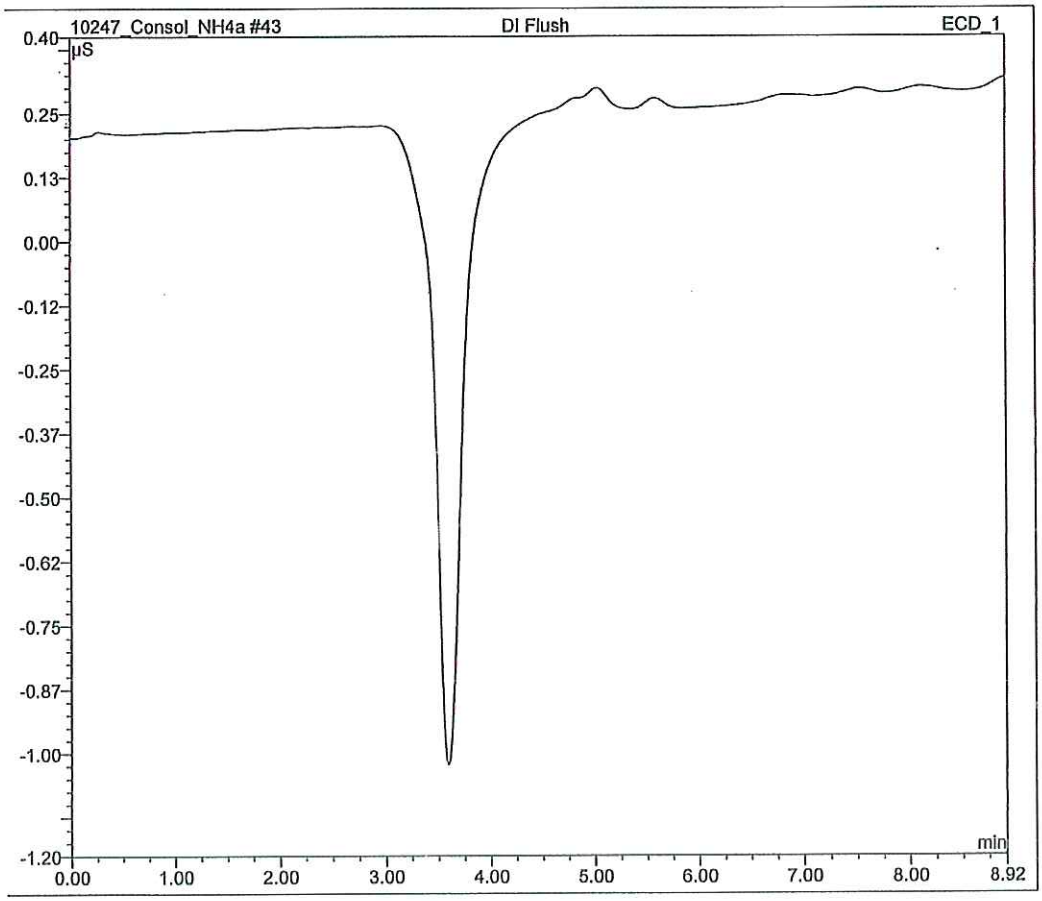
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.59	Ammonium	MB*	0.523	1.659	n.a.
		TOTAL:		0.52	1.66	0.00



Integration Report - ECD_1

Sample Name:	DI Flush	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 08:48	*Run Time:*	8.92

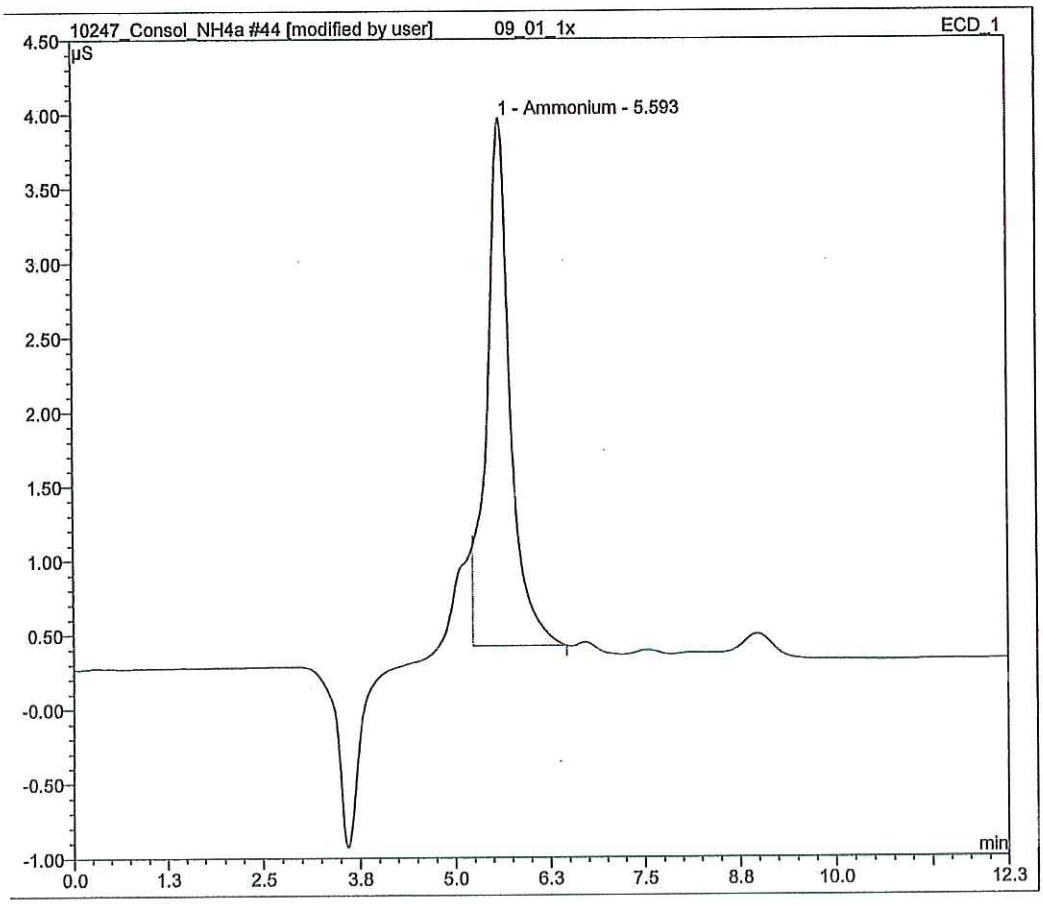
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
		TOTAL:		0.00	0.00	0.00



Integration Report - ECD_1

Sample Name:	09_01_1x	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 08:58	*Run Time:*	12.25

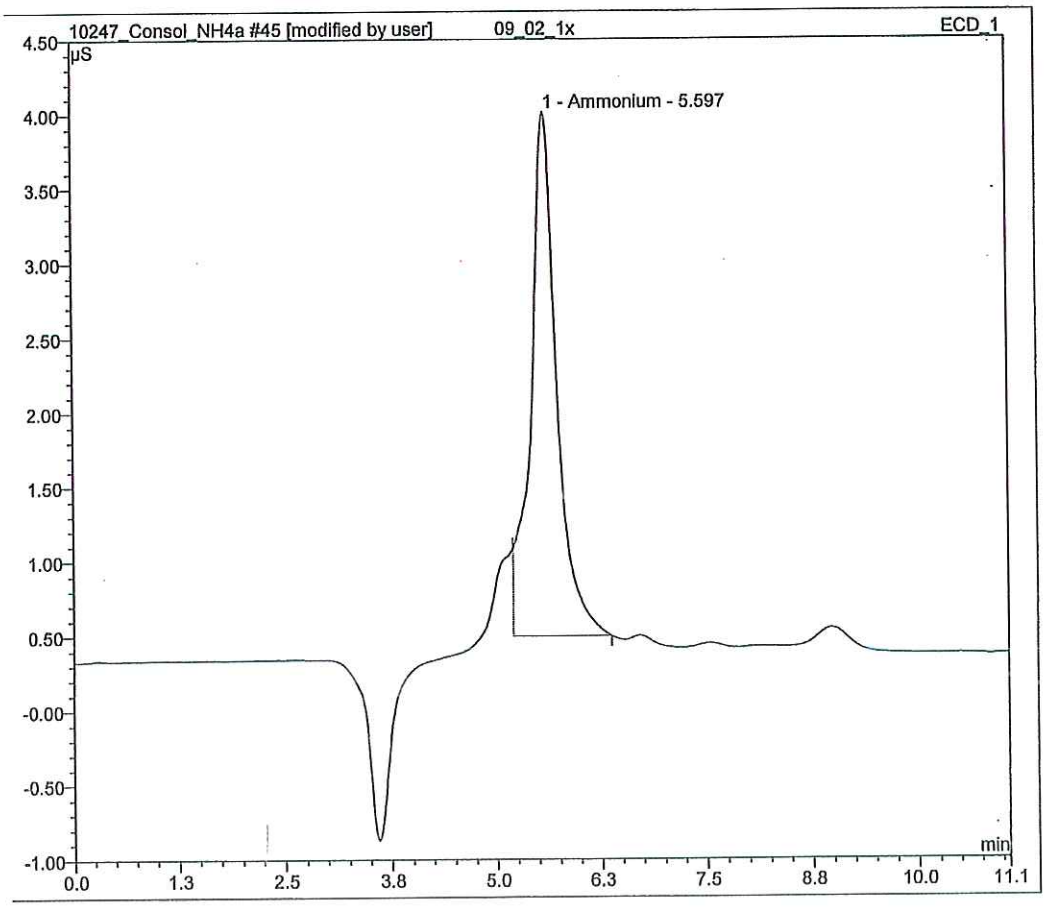
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.59	Ammonium	MB*	1.254	3.546	n.a.
		TOTAL:		1.25	3.55	0.00



Integration Report - ECD_1

Sample Name:	09_02_1x	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 09:11	*Run Time:*	11.07

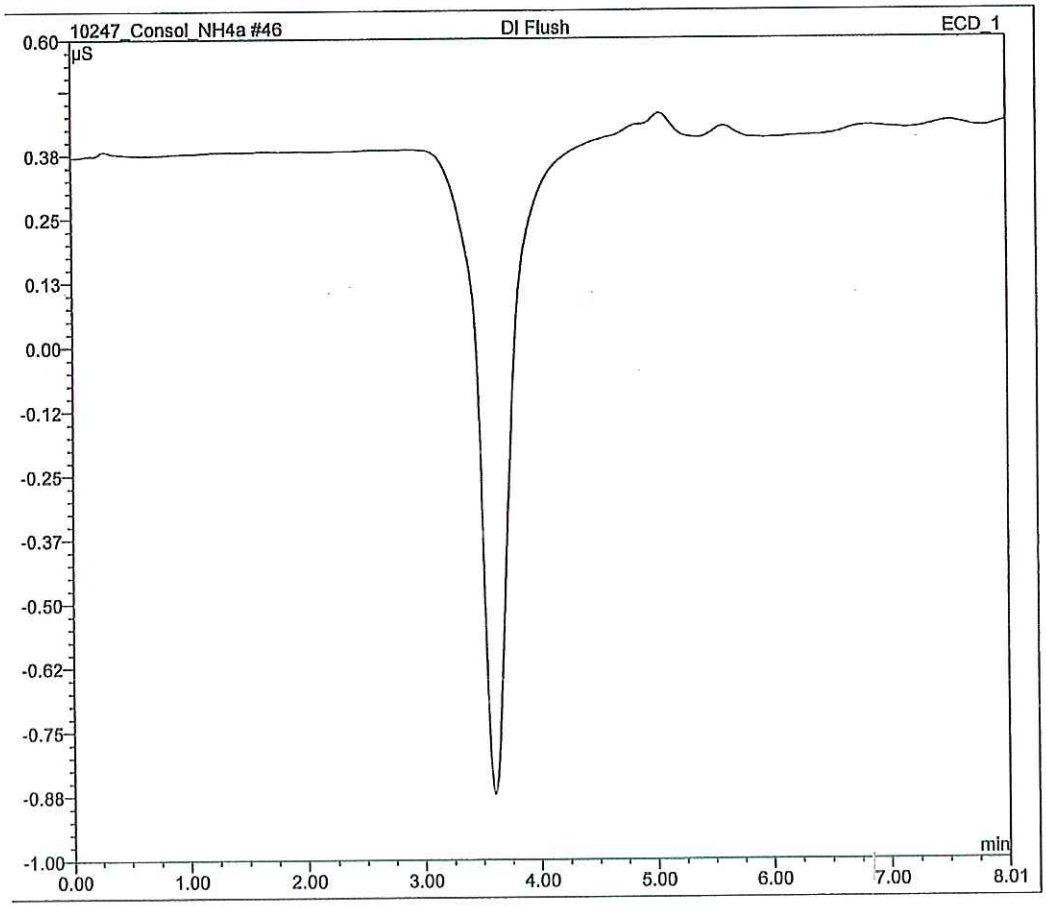
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.60	Ammonium	MB*	1.252	3.515	n.a.
		TOTAL:		1.25	3.51	0.00



Integration Report - ECD_1

Sample Name:	DI Flush	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 09:22	*Run Time:*	8.01

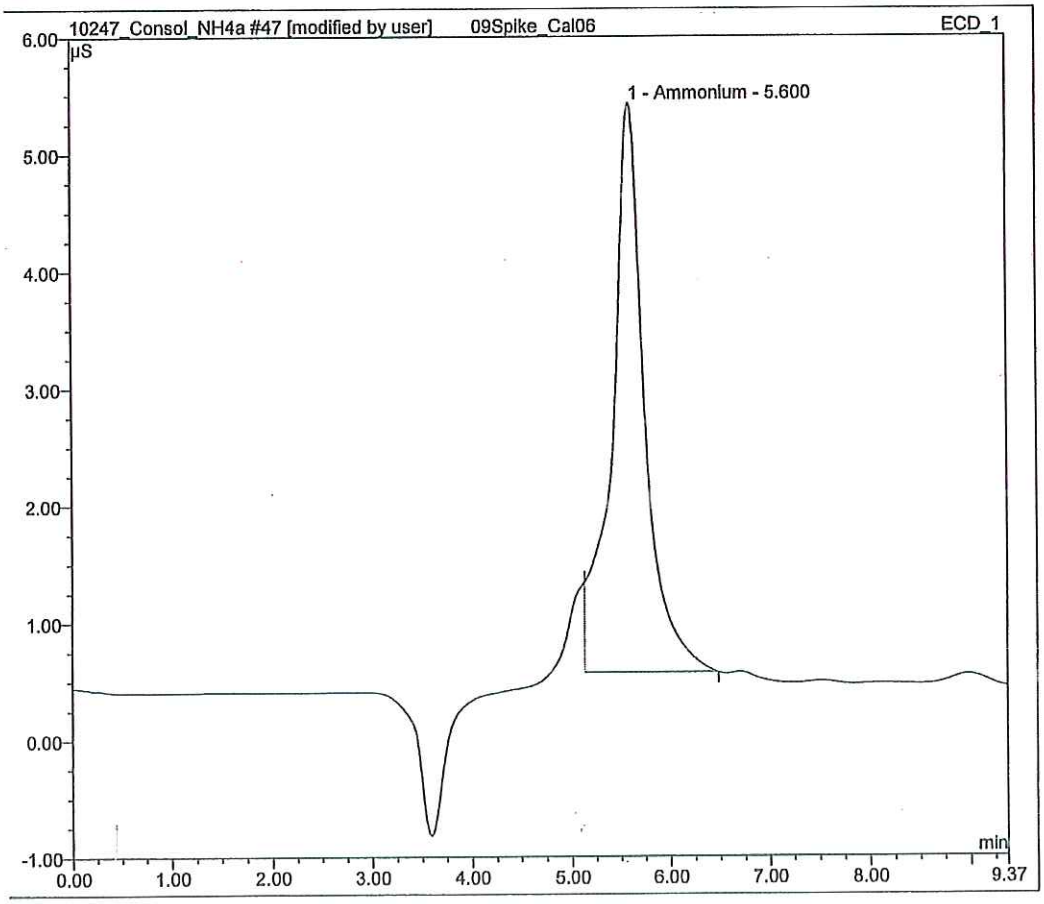
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
		TOTAL:		0.00	0.00	0.00



Integration Report - ECD_1

Sample Name:	09Spike_Cal06	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 09:31	*Run Time:*	9.37

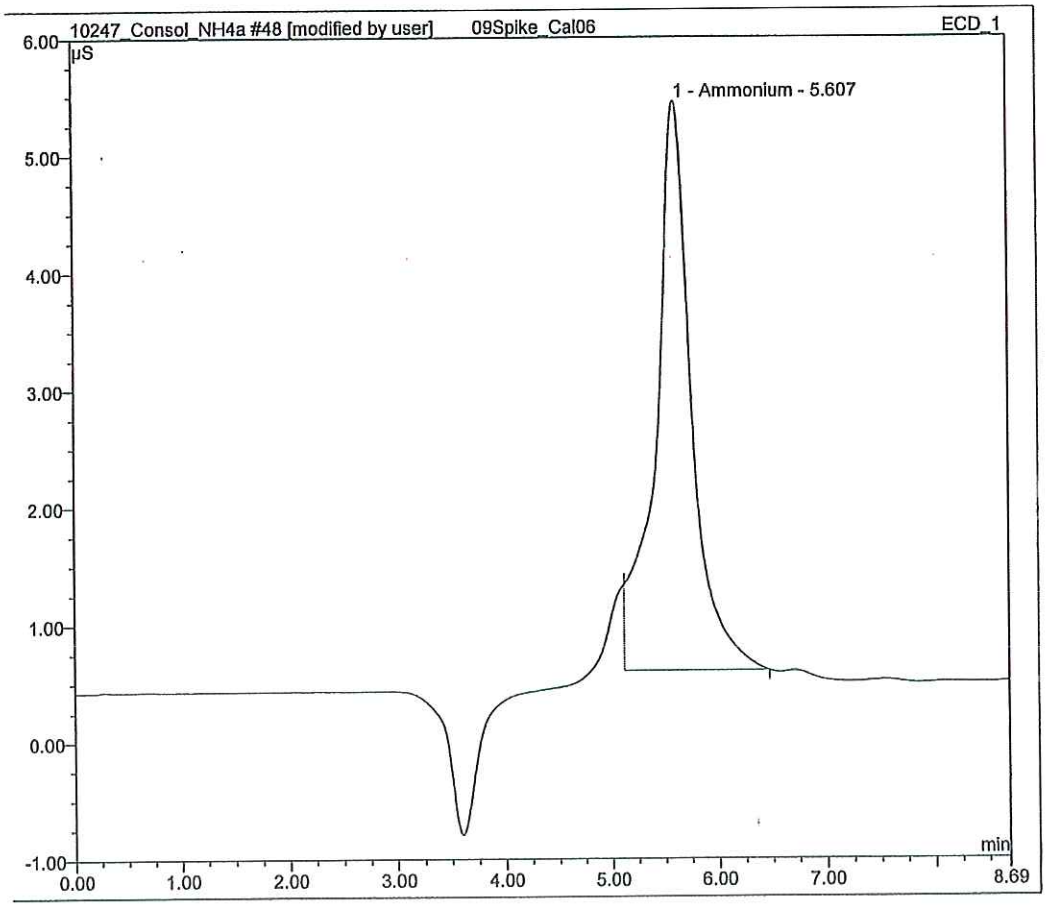
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.60	Ammonium	MB*	1.868	4.857	n.a.
		TOTAL:		1.87	4.86	0.00



Integration Report - ECD_1

Sample Name:	09Spike_Cal06	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 09:42	*Run Time:*	8.69

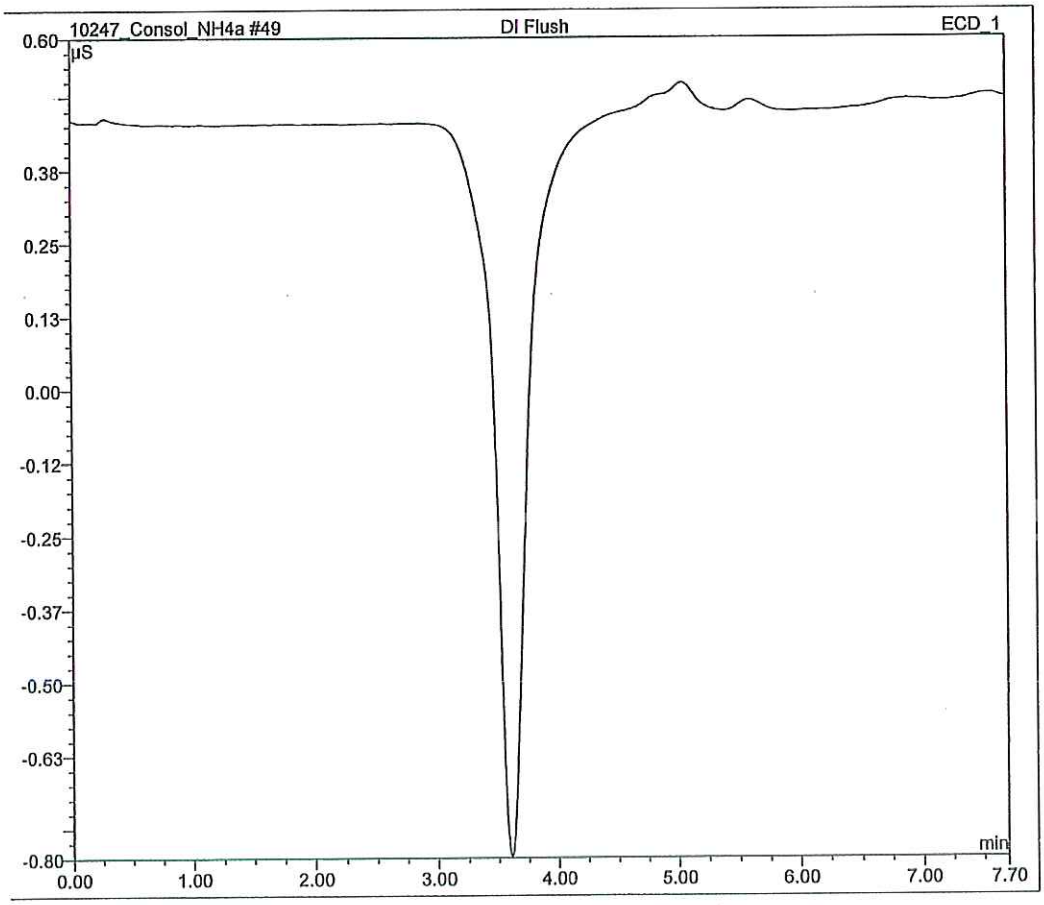
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.61	Ammonium	MB*	1.876	4.847	n.a.
		TOTAL:		1.88	4.85	0.00



Integration Report - ECD_1

Sample Name:	DI Flush	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 09:51	*Run Time:*	7.70

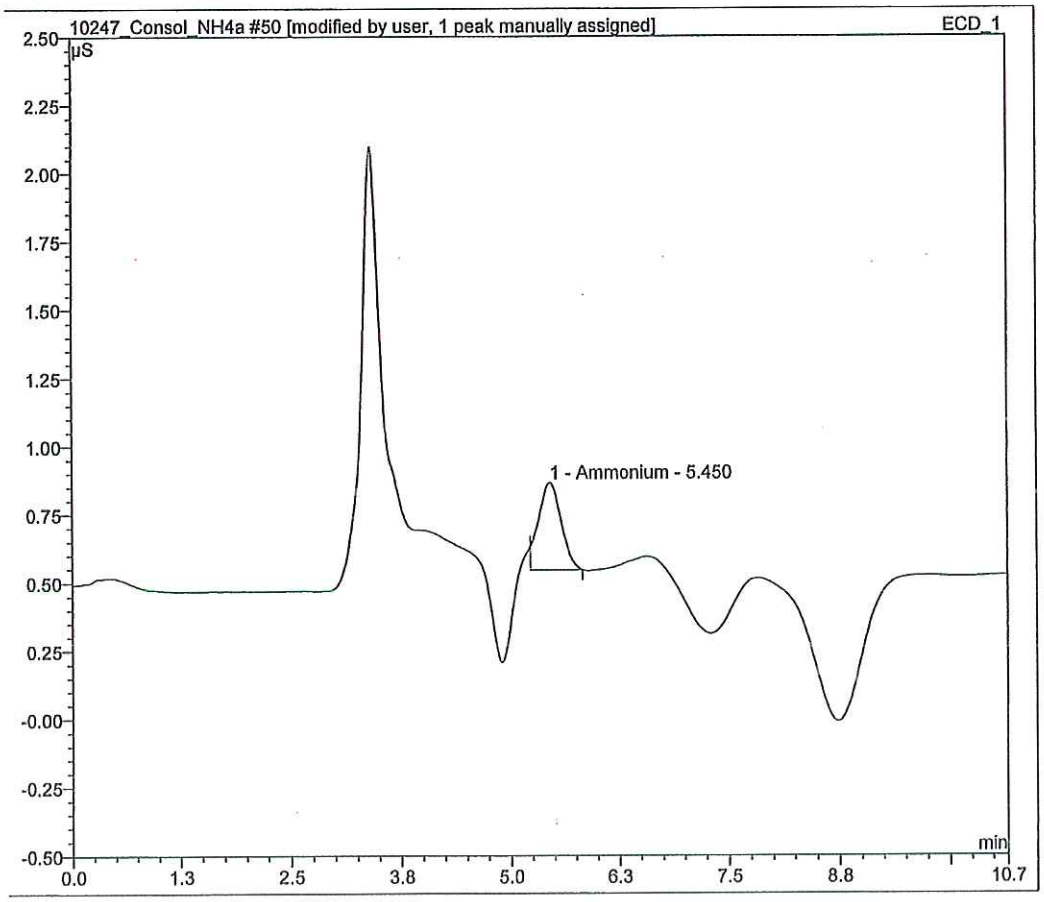
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
		TOTAL:		0.00	0.00	0.00



Integration Report - ECD_1

Sample Name:	10_01_1x	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 10:00	*Run Time:*	10.66

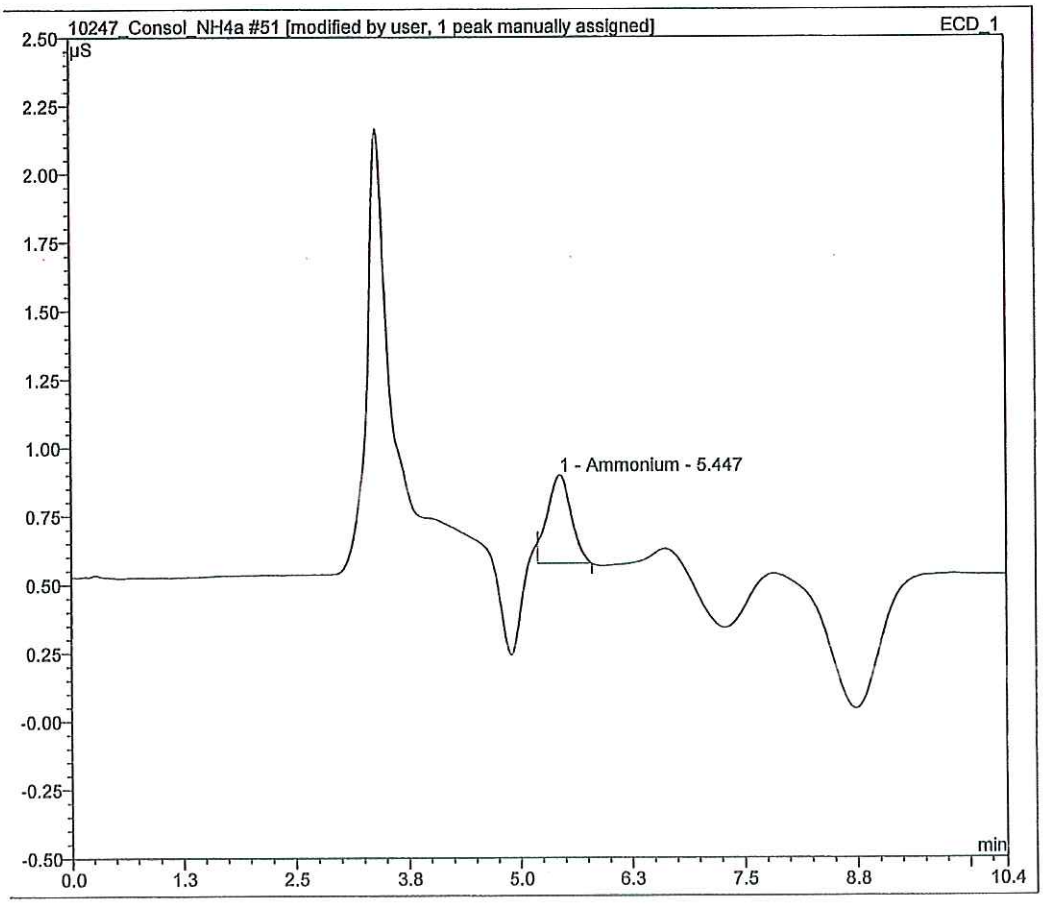
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.45	Ammonium	MB*^	0.095	0.319	n.a.
		TOTAL:		0.10	0.32	0.00



Integration Report - ECD_1

Sample Name:	10_02_1x	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 10:11	*Run Time:*	10.41

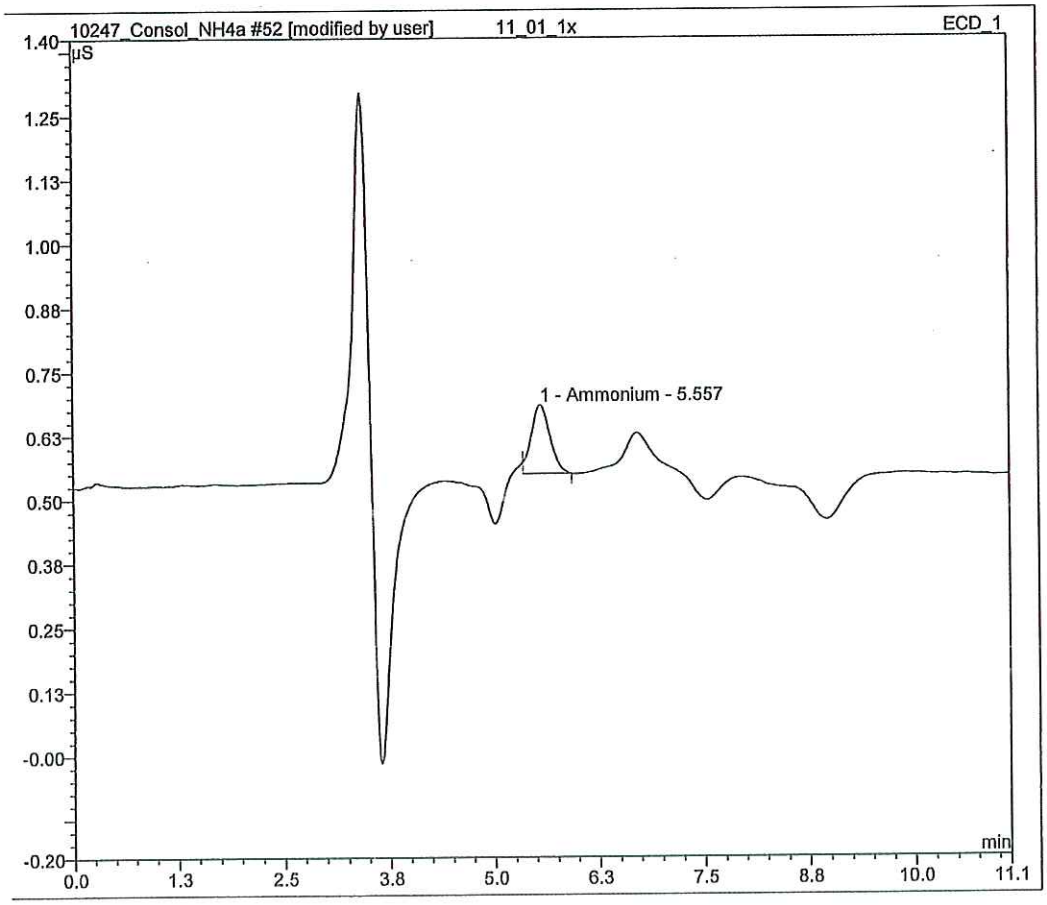
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.45	Ammonium	MB*^	0.100	0.323	n.a.
		TOTAL:		0.10	0.32	0.00



Integration Report - ECD_1

Sample Name:	11_01_1x	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 10:23	*Run Time:*	11.13

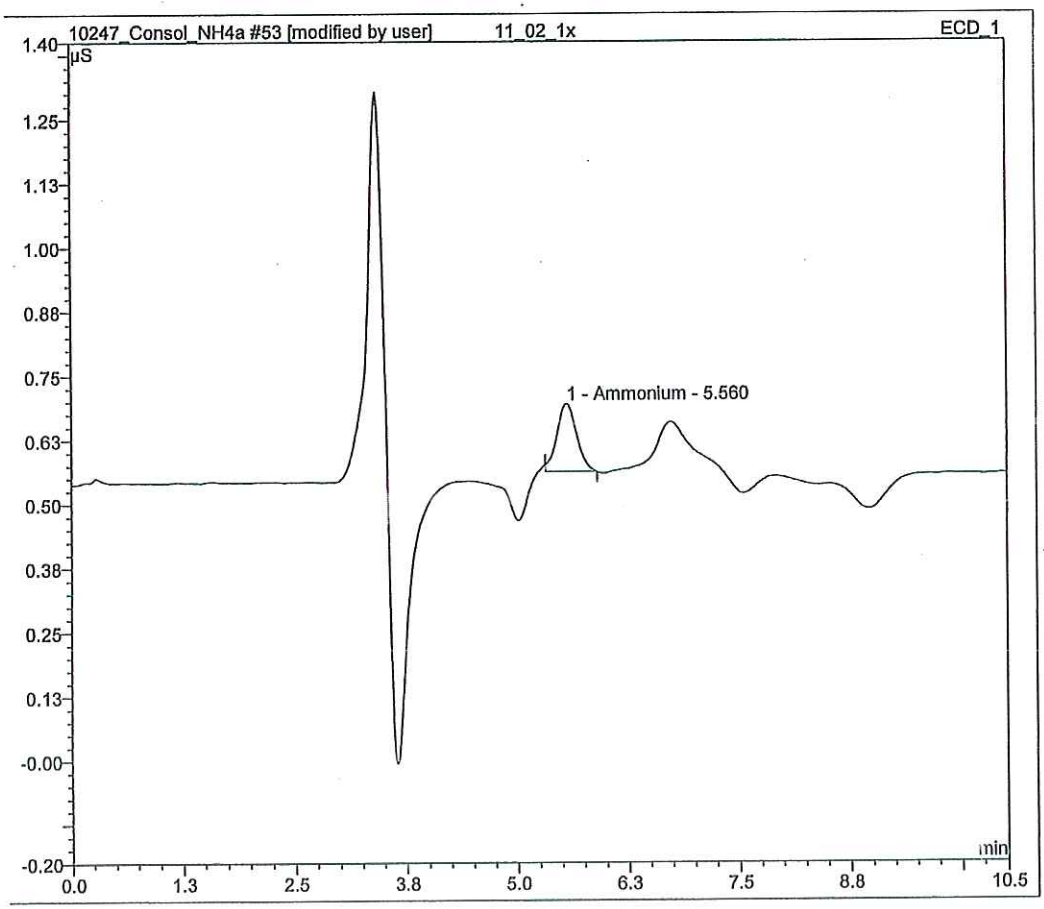
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.56	Ammonium	MB*	0.035	0.134	n.a.
		TOTAL:		0.03	0.13	0.00



Integration Report - ECD_1

Sample Name:	11_02_1x	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 10:35	*Run Time:*	10.51

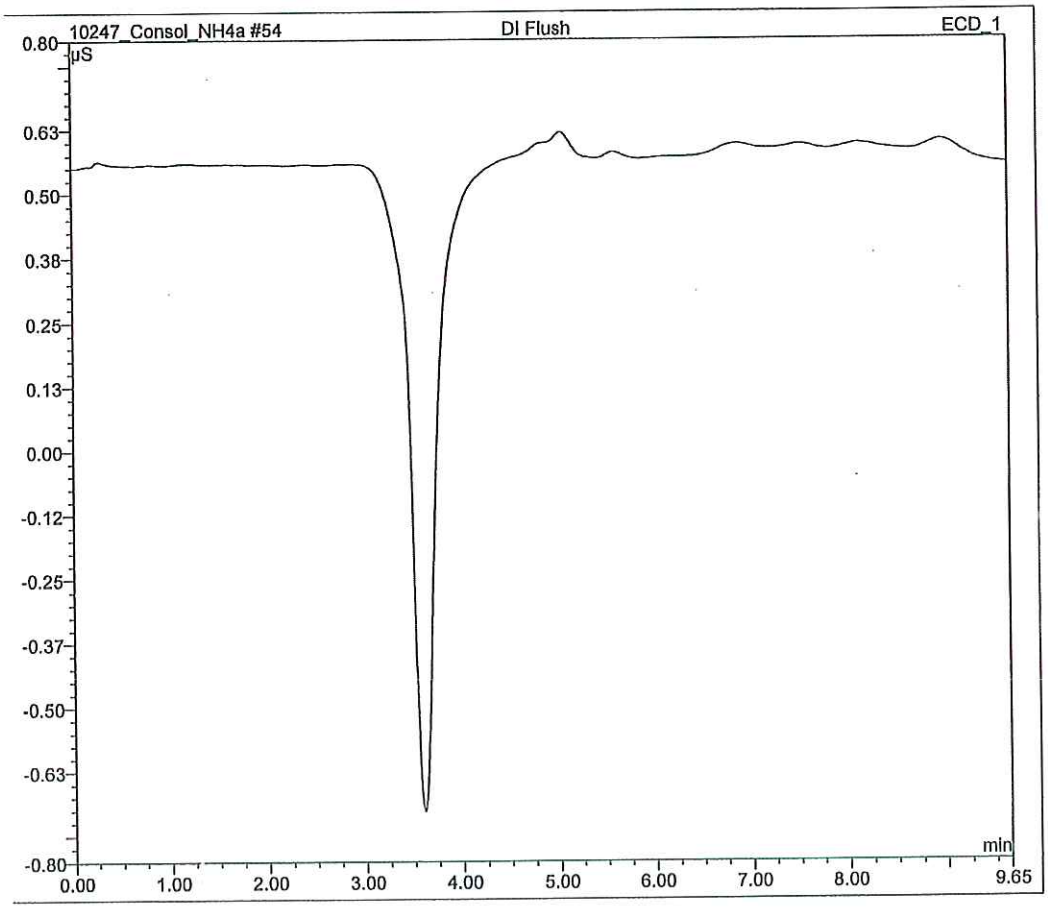
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.56	Ammonium	MB*	0.034	0.133	n.a.
		TOTAL:		0.03	0.13	0.00



Integration Report - ECD_1

Sample Name:	DI Flush	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 10:46	*Run Time:*	9.65

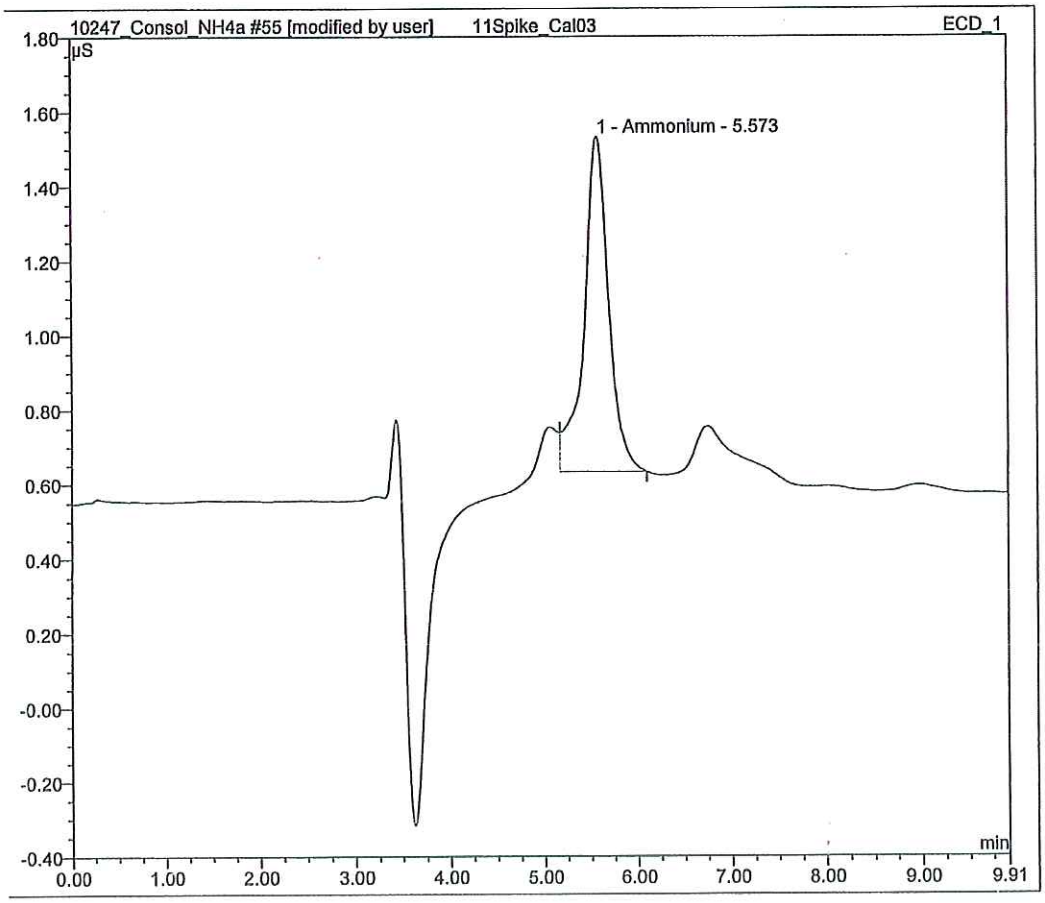
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
		TOTAL:		0.00	0.00	0.00



Integration Report - ECD_1

Sample Name:	11Spike_Cal03	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 10:57	*Run Time:*	9.91

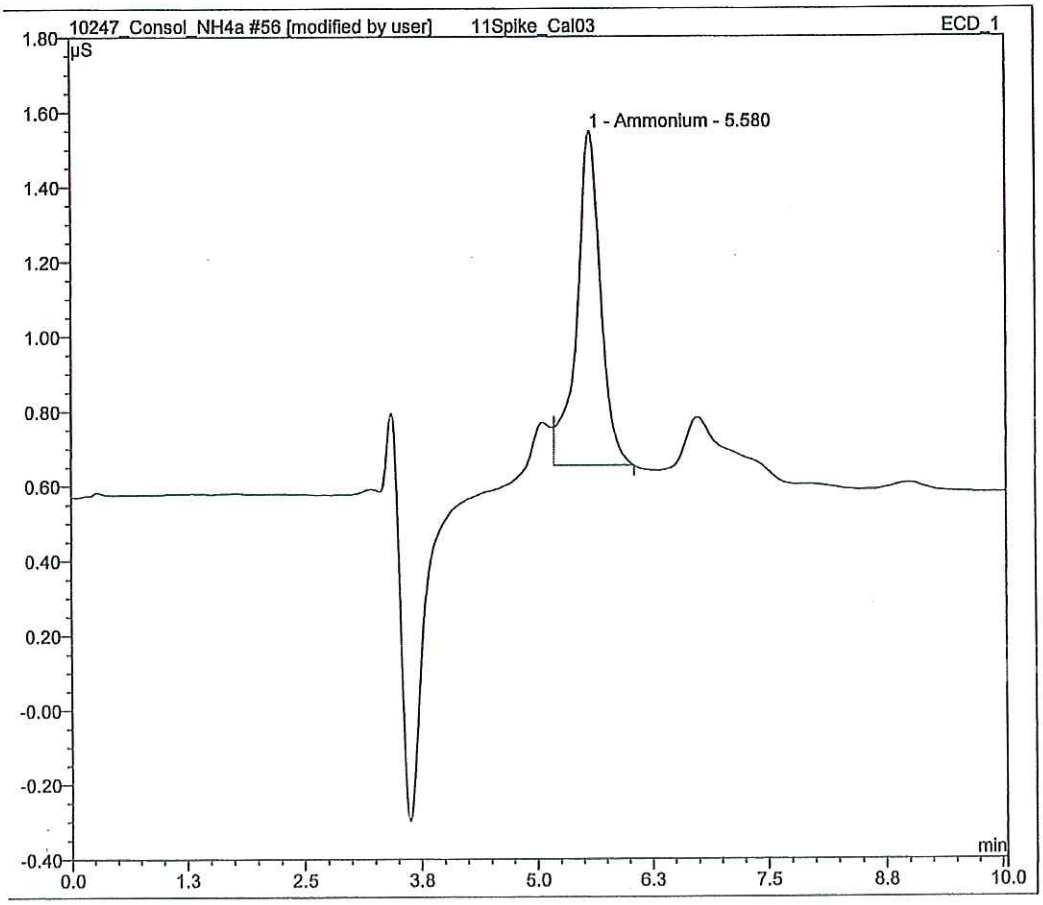
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.57	Ammonium	MB*	0.275	0.900	n.a.
		TOTAL:		0.27	0.90	0.00



Integration Report - ECD_1

Sample Name:	11Spike_Cal03	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 11:07	*Run Time:*	10.05

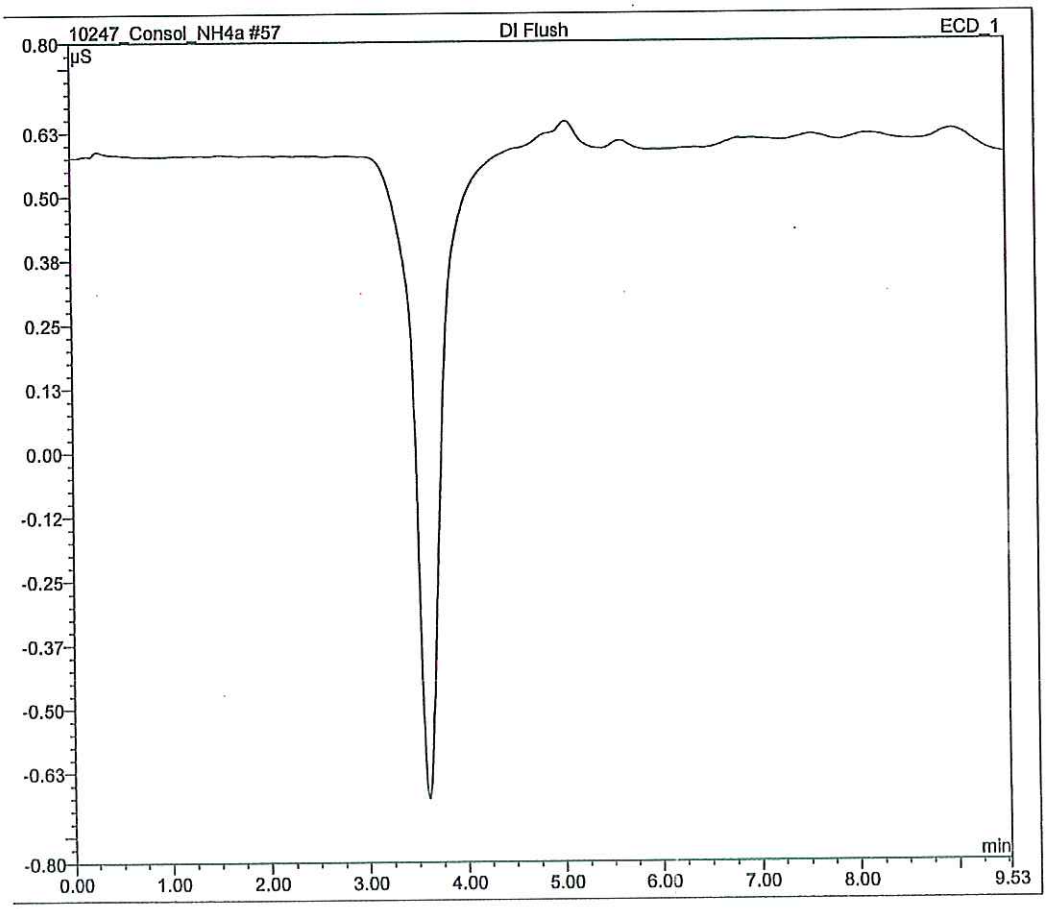
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.58	Ammonium	MB*	0.270	0.896	n.a.
		TOTAL:		0.27	0.90	0.00



Integration Report - ECD_1

Sample Name:	DI Flush	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 11:19	*Run Time:*	9.53

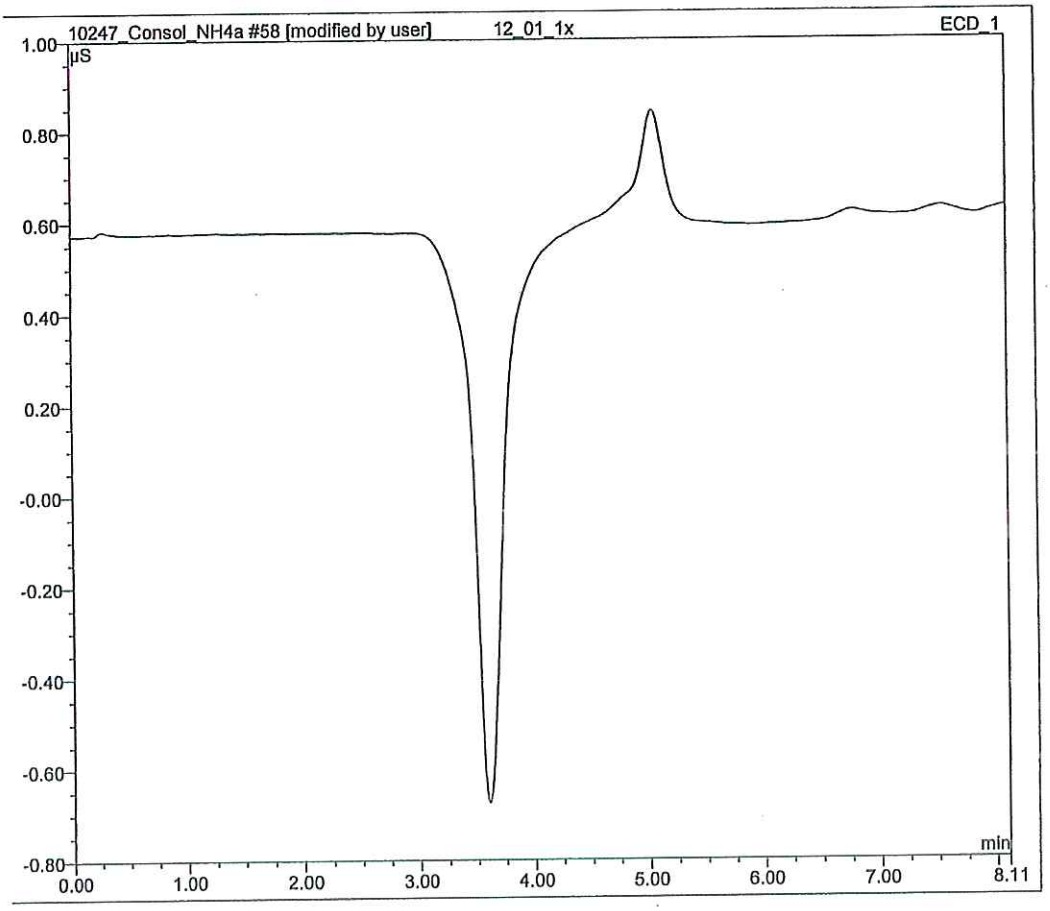
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
		TOTAL:		0.00	0.00	0.00



Integration Report - ECD_1

Sample Name:	12_01_1x	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 11:29	*Run Time:*	8.11

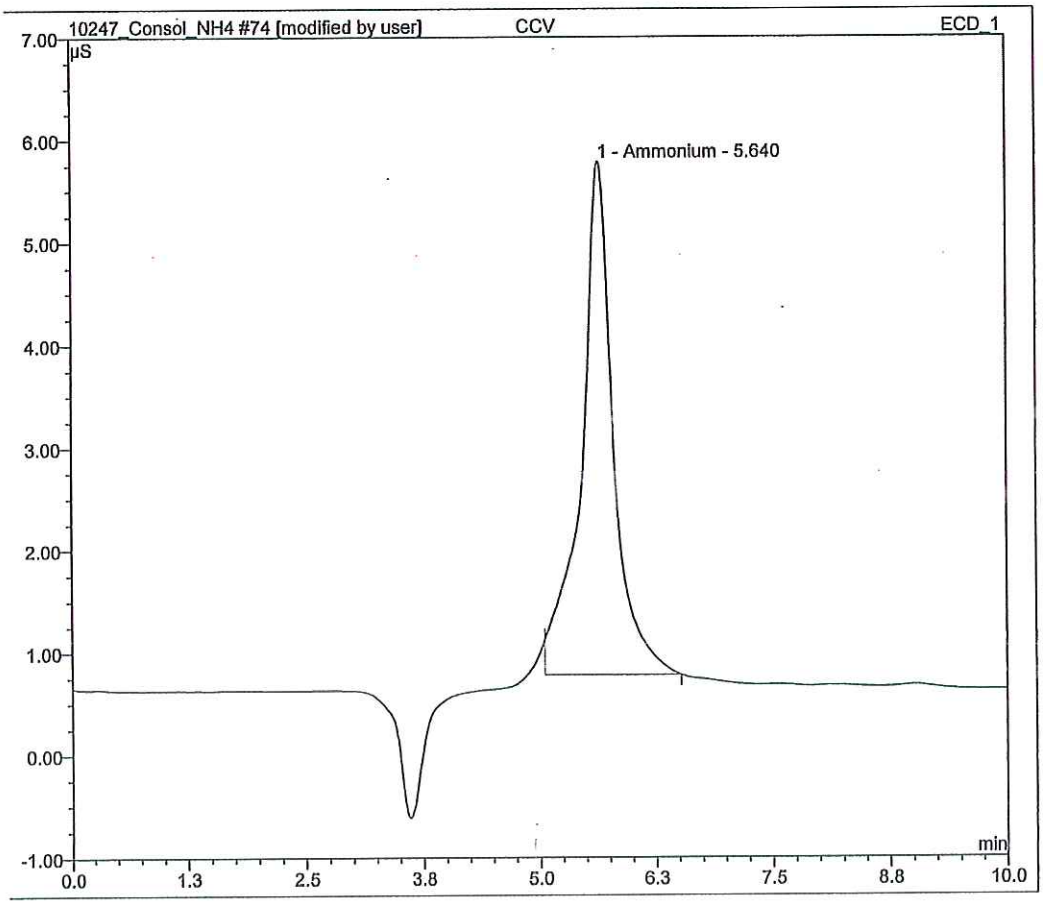
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
		TOTAL:		0.00	0.00	0.00



Integration Report - ECD_1

Sample Name:	CCV	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 15:33	*Run Time:*	10.00

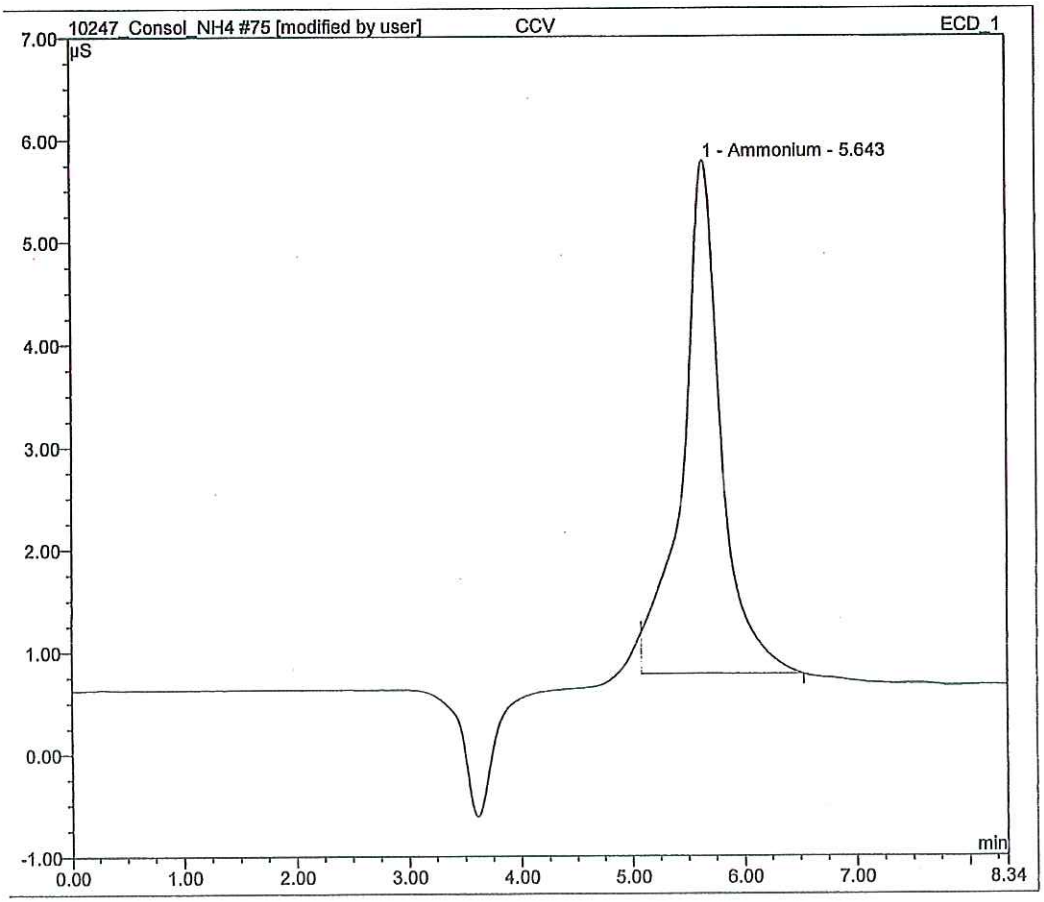
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.64	Ammonium	MB*	1.998	5.008	n.a.
		TOTAL:		2.00	5.01	0.00



Integration Report - ECD_1

Sample Name:	CCV	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 15:44	*Run Time:*	8.34

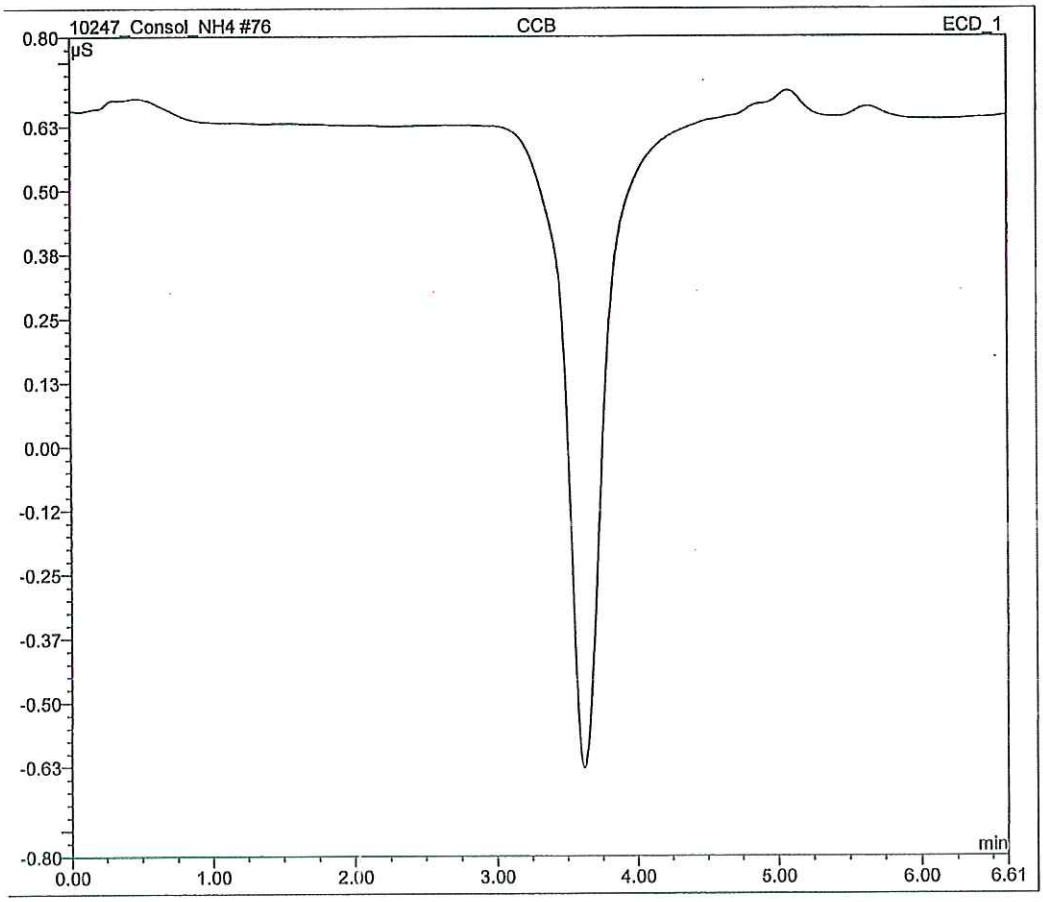
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.64	Ammonium	MB*	1.993	5.008	n.a.
		TOTAL:		1.99	5.01	0.00



Integration Report - ECD_1

Sample Name:	CCB	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 15:52	*Run Time:*	6.61

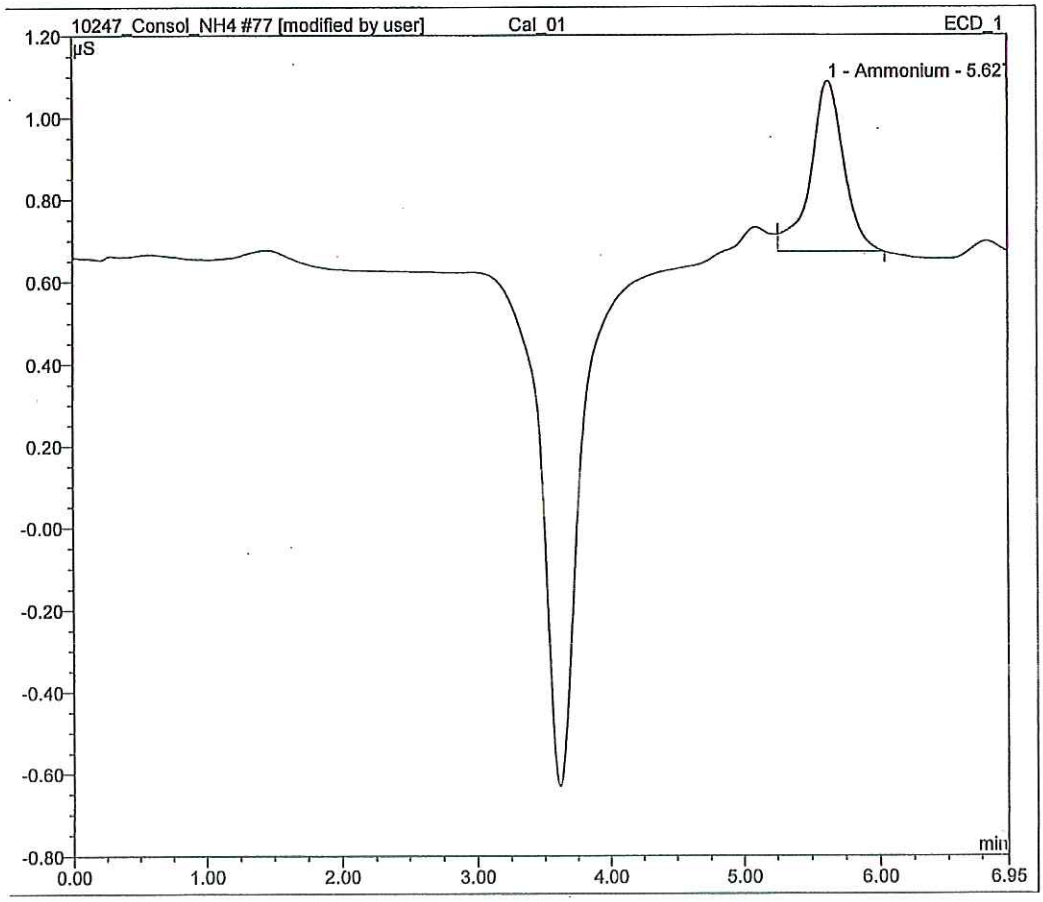
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
		TOTAL:		0.00	0.00	0.00



Integration Report - ECD_1

Sample Name:	Cal_01	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 16:00	*Run Time:*	6.95

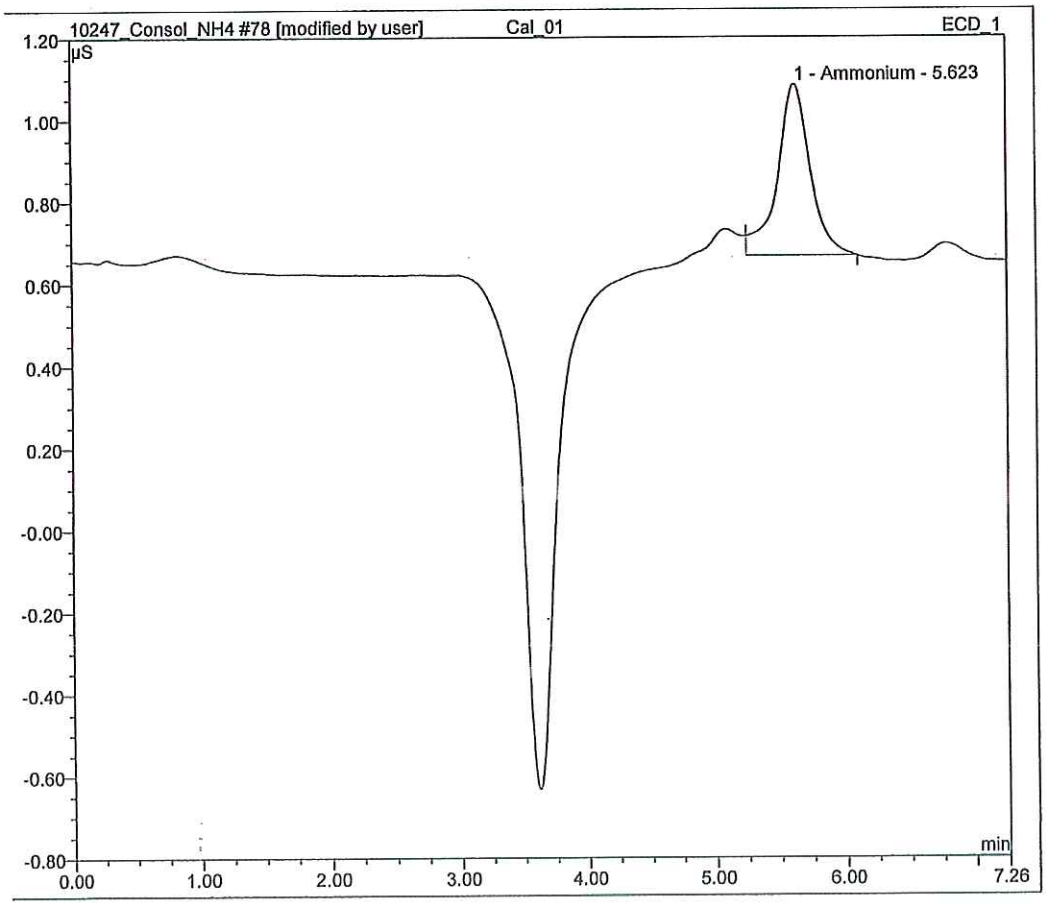
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.63	Ammonium	MB*	0.117	0.416	n.a.
		TOTAL:		0.12	0.42	0.00



Integration Report - ECD_1

Sample Name:	Cal_01	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 16:08	*Run Time:*	7.26

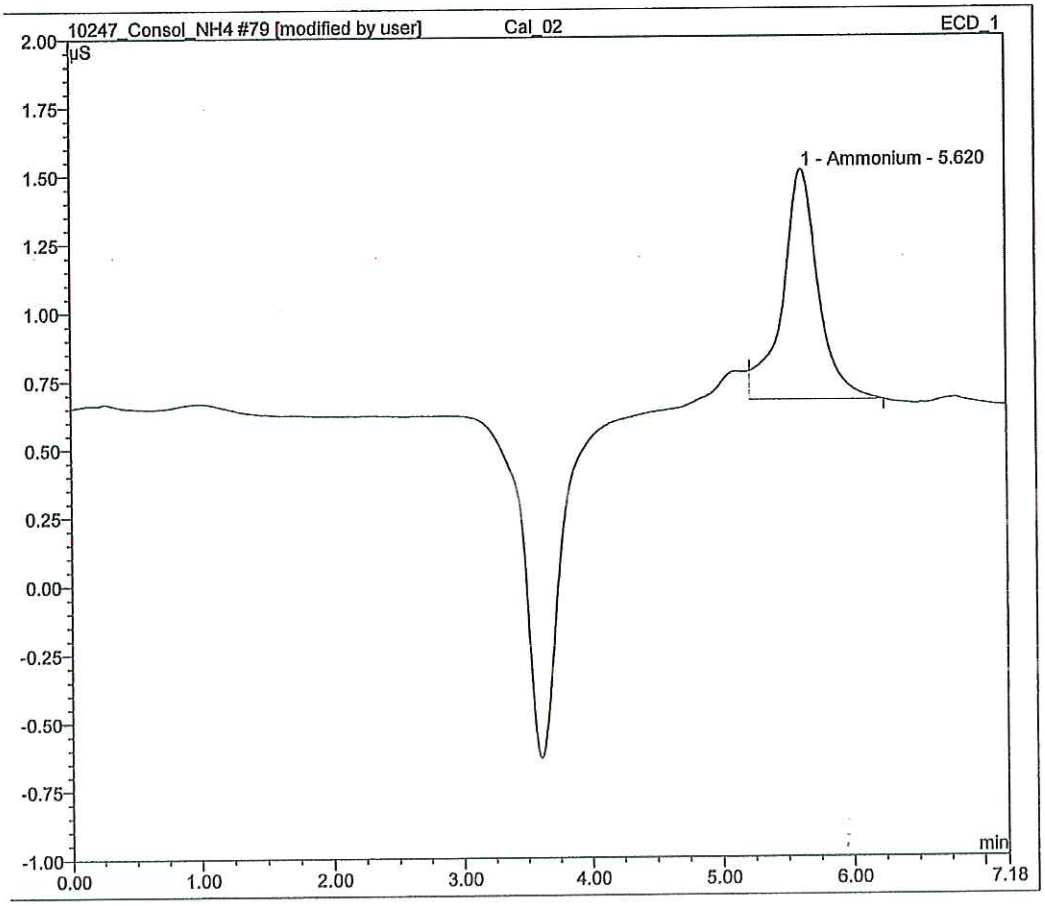
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.62	Ammonium	MB*	0.122	0.418	n.a.
		TOTAL:		0.12	0.42	0.00



Integration Report - ECD_1

Sample Name:	Cal_02	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 16:16	*Run Time:*	7.18

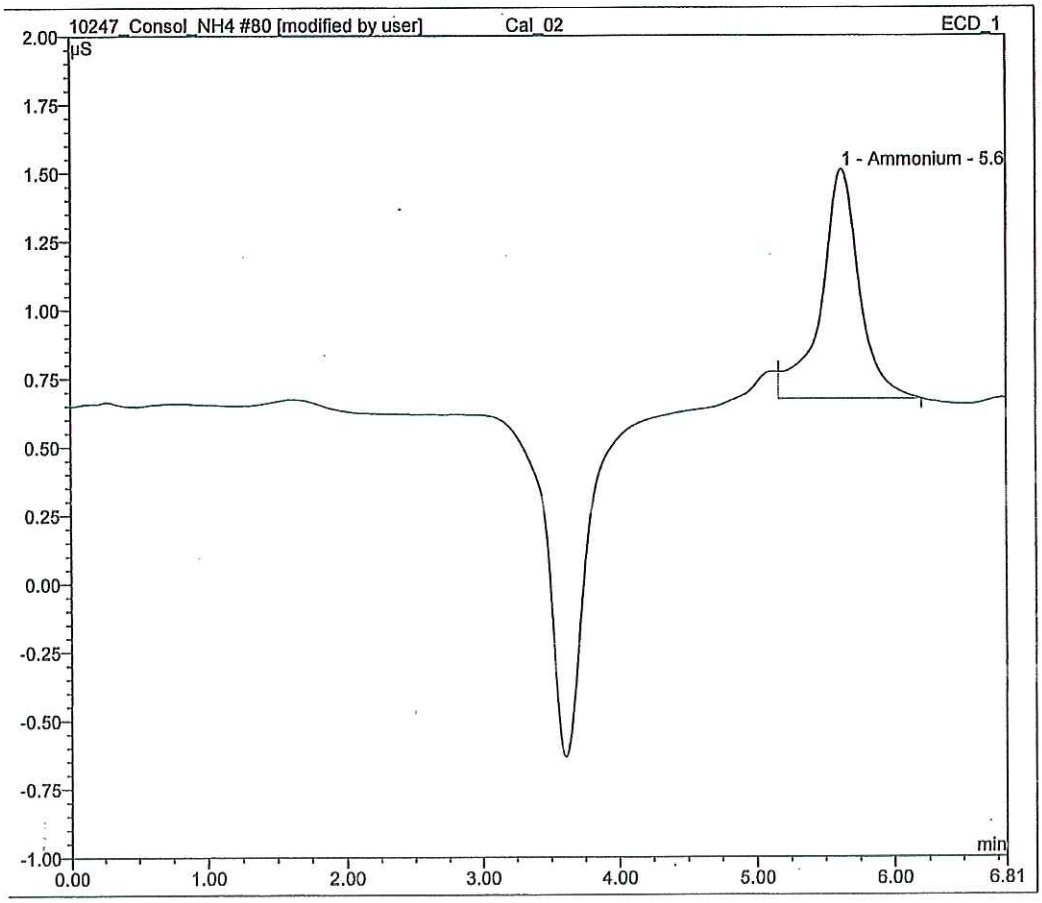
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.62	Ammonium	MB*	0.265	0.841	n.a.
		TOTAL:		0.27	0.84	0.00



Integration Report - ECD_1

Sample Name:	Cal_02	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 16:24	*Run Time:*	6.81

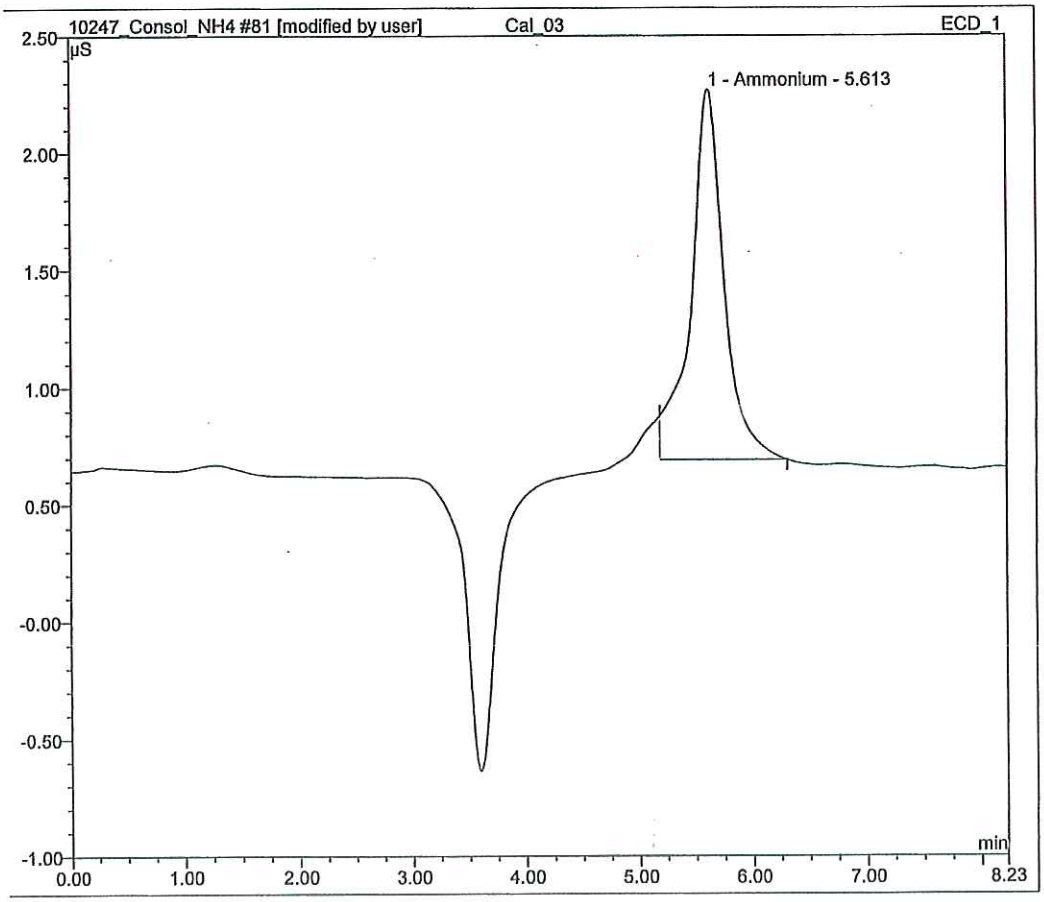
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.62	Ammonium	MB*	0.268	0.838	n.a.
		TOTAL:		0.27	0.84	0.00



Integration Report - ECD_1

Sample Name:	Cal_03	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 16:31	*Run Time:*	8.23

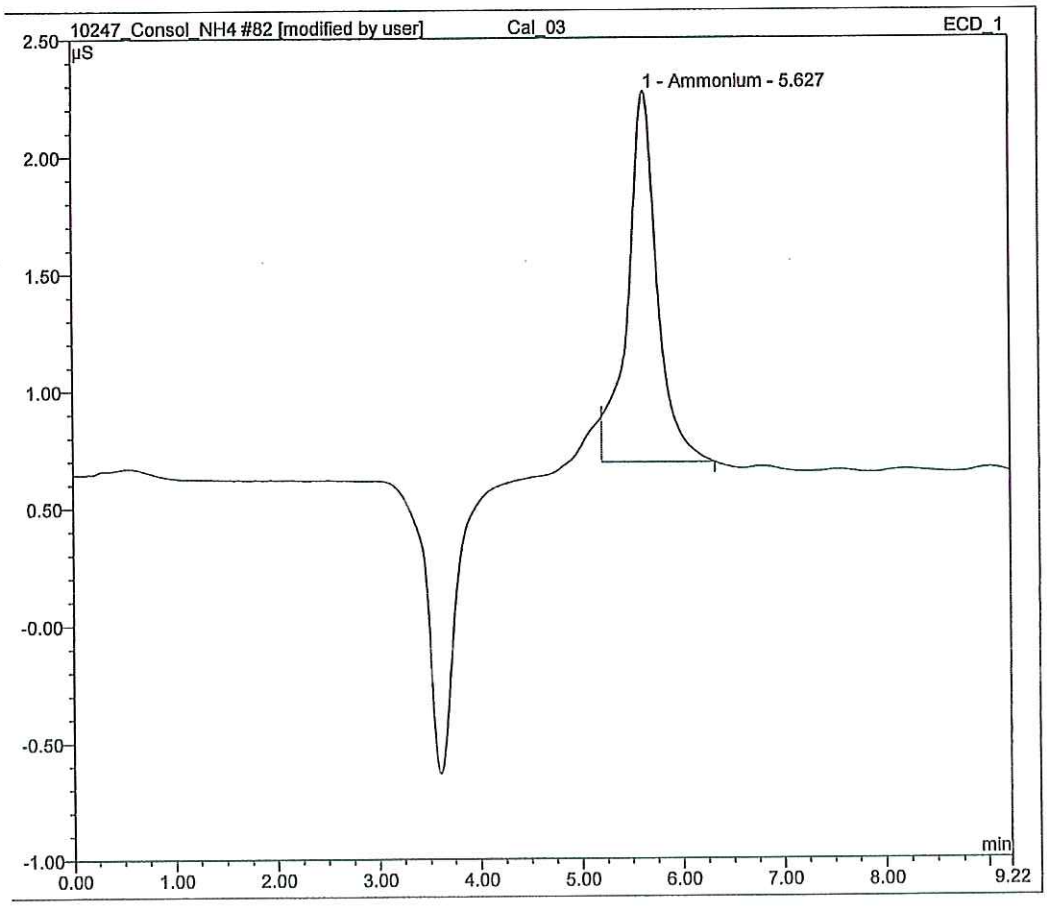
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.61	Ammonium	MB*	0.534	1.579	n.a.
		TOTAL:		0.53	1.58	0.00



Integration Report - ECD_1

Sample Name:	Cal_03	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 16:40	*Run Time:*	9.22

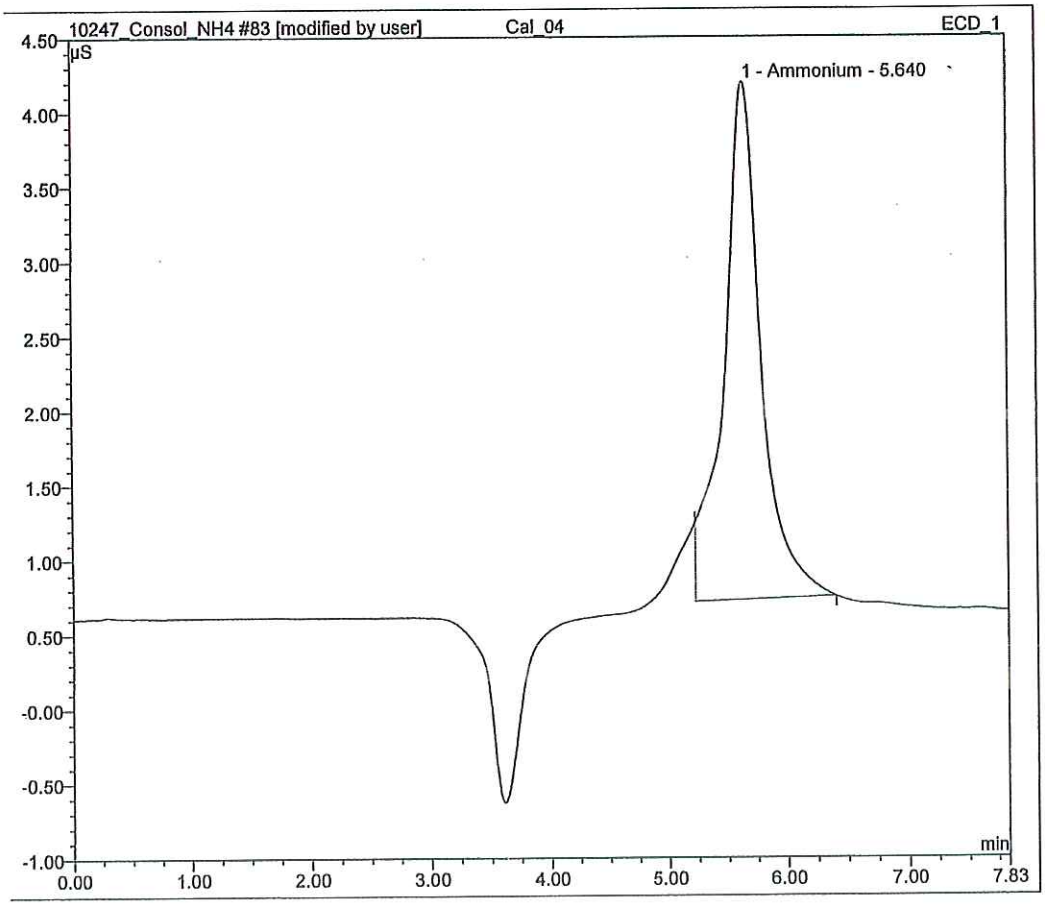
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.63	Ammonium	MB*	0.534	1.581	n.a.
		TOTAL:		0.53	1.58	0.00



Integration Report - ECD_1

Sample Name:	Cal_04	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 16:50	*Run Time:*	7.83

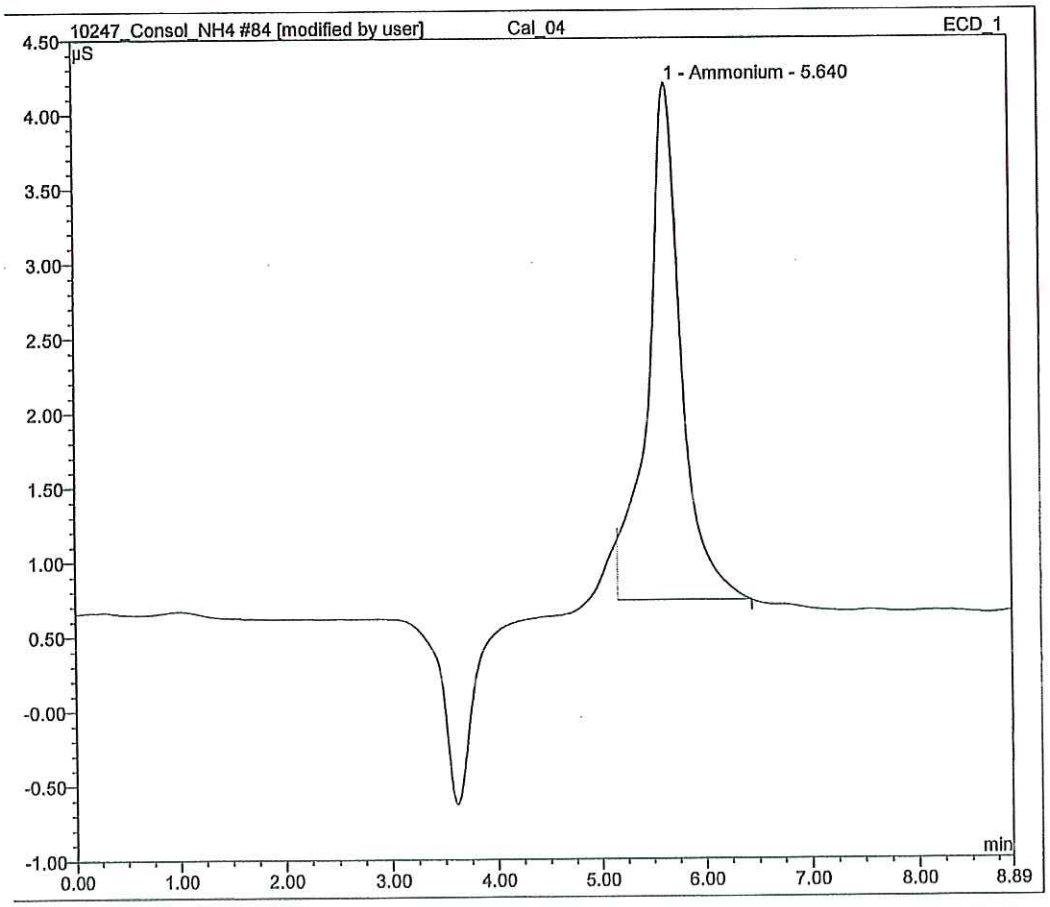
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.64	Ammonium	MB*	1.258	3.469	n.a.
		TOTAL:		1.26	3.47	0.00



Integration Report - ECD_1

Sample Name:	Cal_04	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 16:58	*Run Time:*	8.89

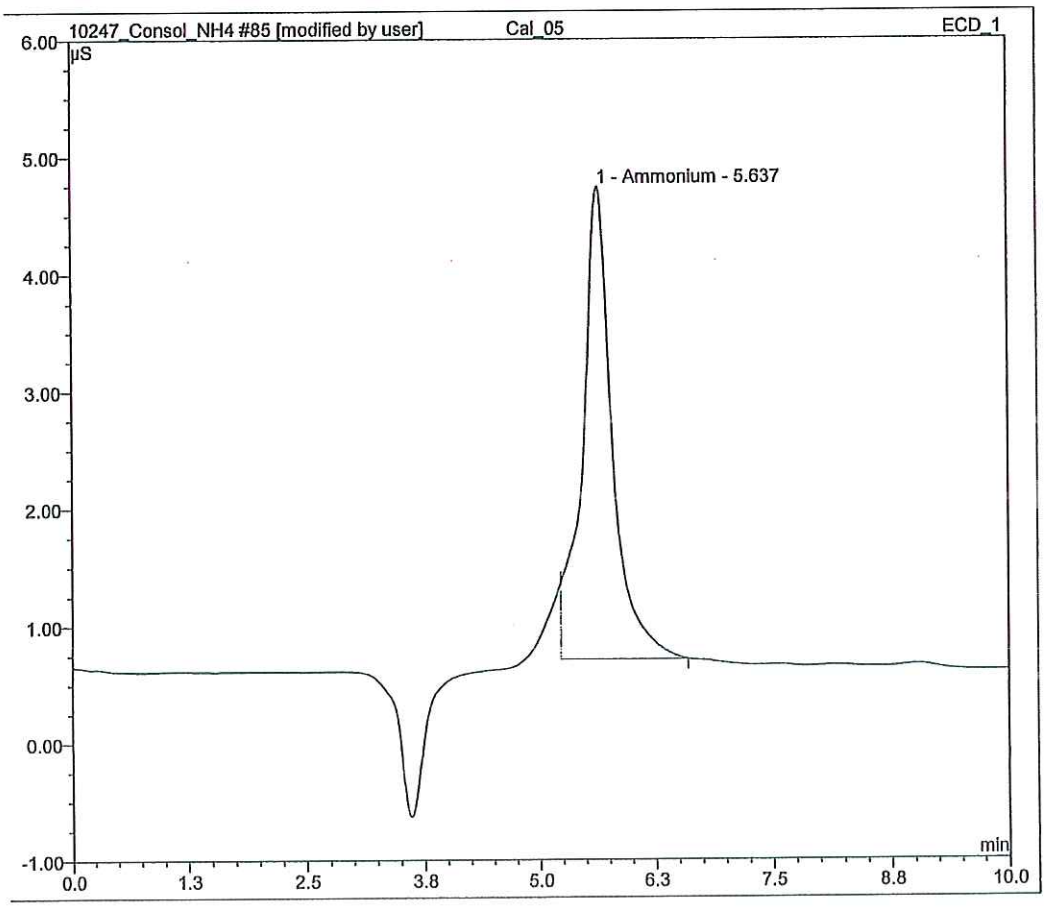
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.64	Ammonium	MB*	1.283	3.463	n.a.
		TOTAL:		1.28	3.46	0.00



Integration Report - ECD_1

Sample Name:	Cal_05	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 17:07	*Run Time:*	10.01

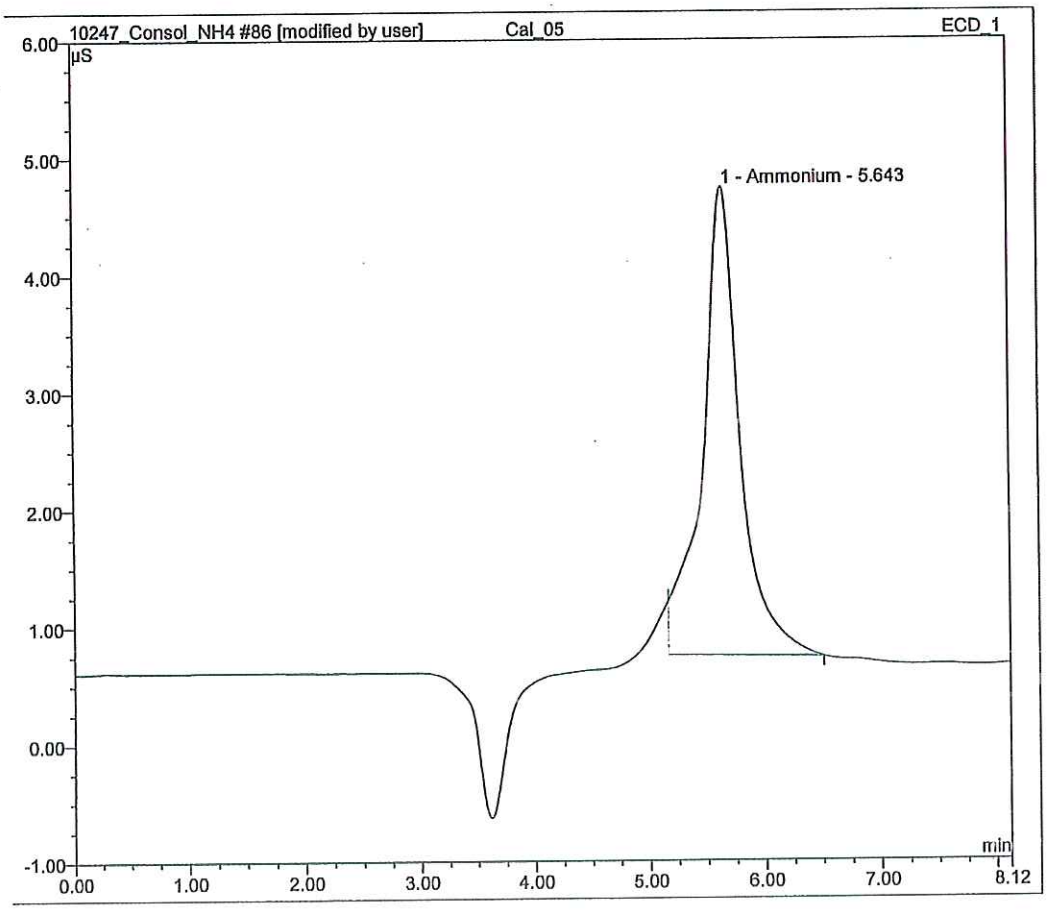
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.64	Ammonium	MB*	1.506	4.027	n.a.
		TOTAL:		1.51	4.03	0.00



Integration Report - ECD_1

Sample Name:	Cal_05	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 17:18	*Run Time:*	8.12

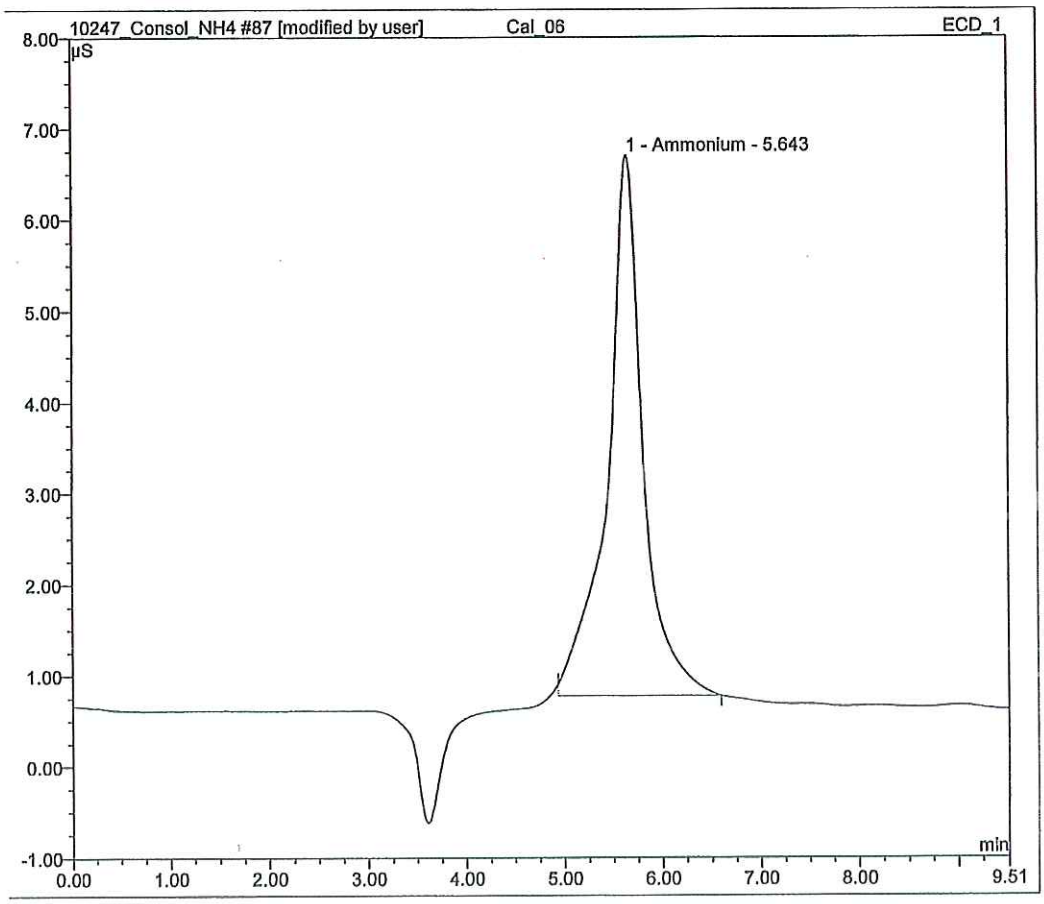
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.64	Ammonium	MB*	1.505	3.992	n.a.
TOTAL:				1.51	3.99	0.00



Integration Report - ECD_1

Sample Name:	Cal_06	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 17:27	*Run Time:*	9.51

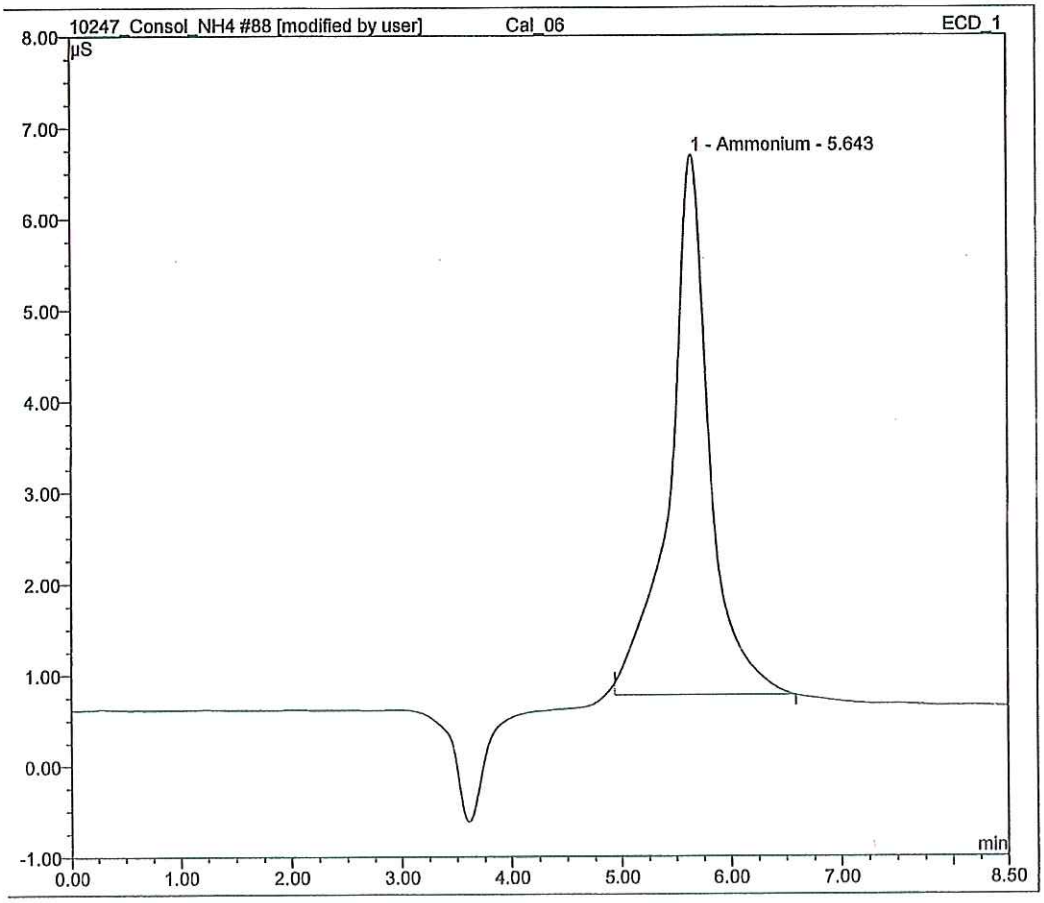
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.64	Ammonium	MB*	2.479	5.930	n.a.
		TOTAL:		2.48	5.93	0.00



Integration Report - ECD_1

Sample Name:	Cal_06	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 17:37	*Run Time:*	8.50

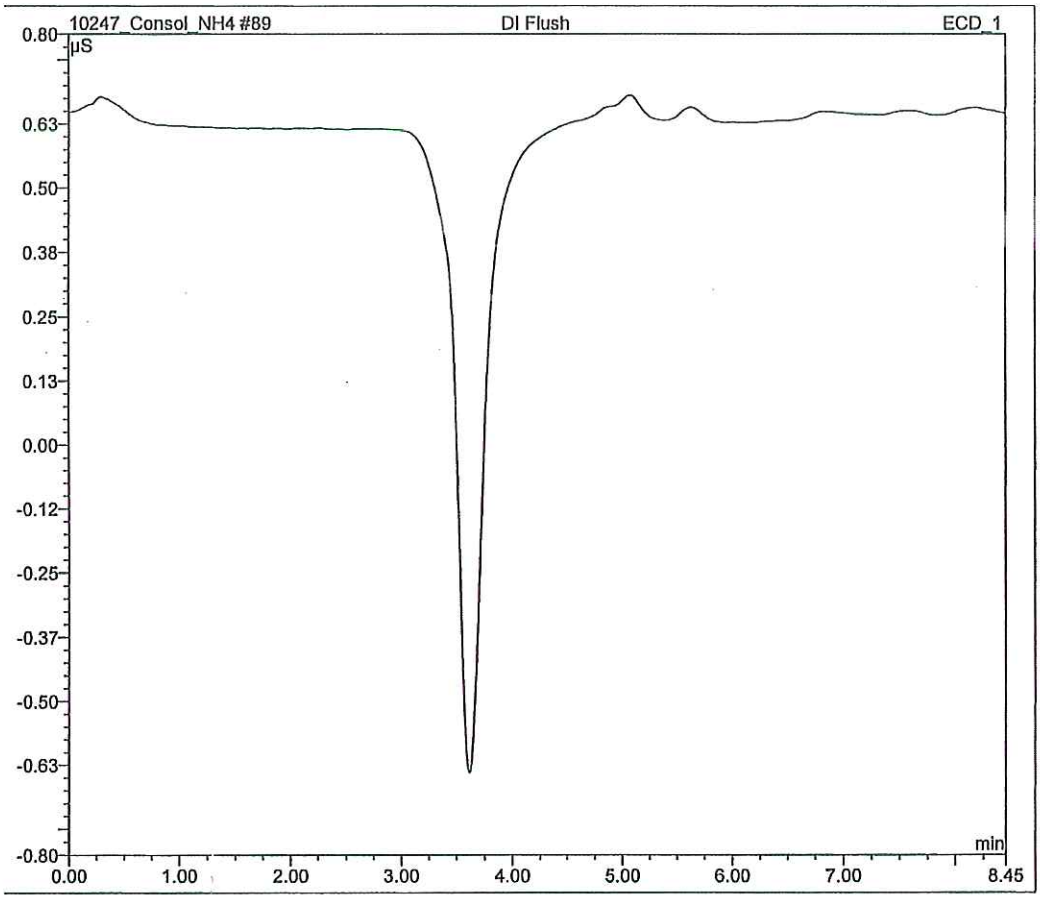
No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
1	5.64	Ammonium	MB*	2.470	5.923	n.a.
		TOTAL:		2.47	5.92	0.00



Integration Report - ECD_1

Sample Name:	DI Flush	*Inj. Vol.:*	1.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:		*Operator:*	Daniel J Nunez
Inj. Date/Time:	19.06.07 17:45	*Run Time:*	8.45

No. ECD_1	Time ECD_1 min	Peak Name ECD_1	Type ECD_1	Area ECD_1 µS*min	Height ECD_1 µS	Amount ECD_1
		TOTAL:		0.00	0.00	0.00



Stock Solution Standard Mixing Recipe (Cations)

Order of Elution	1	2	3	4	5	6
Analyte	**Lithium**	**Sodium**	**Ammonium**	**Potassium**	**Magnesium**	**Calcium**
Analyte Weight (g/g-mole)	6.94	22.99	18.05	39.1	24.31	40.08
Solid Formula	LiCl	NaCl	NH_4Cl	KCl	$MgCl_2 \cdot 6H_2O$	$CaCl_2 \cdot 2H_2O$
Number of ions/Formula	1	1	1	1	1	1
Formula Weight (g/g-mole)	42.39	58.44	53.49	74.55	203.3	147.02
% Analyte in Solid	16.37%	39.34%	33.74%	52.45%	11.96%	27.26%
			0.3374			
Recomended Analyte Concentration (mg/l)	500	1,200	5,000	3,000	5,000	7,000

Amount of Solid Required to Achieve the Above Stock Solution Concentration In The Listed Volumetric Flask:

500 ml	1.5270	1.5252	7.4086	2.8600	20.9070	12.8386

Enter Size of Flask	500 ml						
Enter Amount of Solid Used							
Actual Concentration (mg/l)			5027.14				

Concentration in the Five Cal Flasks

Stock (1 liter Flask) Solution Concentrations
10 ml Original Solution Used

50.2714

FlaskSize	AliquotStock		
500	5	0.5027	1
250	5	1.0054	2
250	10	2.0109	3
200	20	5.0271	4
250	30	6.0326	5
250	40	8.0434	CCV
200	40	10.0543	6

Lab Project #	28132
Clean Air Project #	10247
Internal Dept #	68
Customer	Consol Energy
Plant/Facility	Greenridge Power Plant
Chain-of-Custody	Yes
Date Started	6/13/2007
Date Finishe	
Analyst	Daniel Nunez

Contact Name	Eric Doak
PhoneNumbe	
Fax Number	
Email Addres	edoak@cleanair.com
MailingAddress	
PO Number	
Client Note	

CleanAir ENGINEERING

In 20 Jun 2007

Sun	Mon	Tue	Wed	Thu	Fri	Sat
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
1	2	3	4	5	6	7

	Analysis #1	Analysis #2	Analysis #3	Analysis #4	Analysis #5	Analysis #6
Date Ordered	6/2/2007					
Date Received	6/13/2007					
Date Due						
First Sample No	-01					
Last Sample No.	-12					
Sample Type	Imp C&R					
Method	Ctm-027					
Analysis Details	Ammonium by Ion Chromatography					
Container	Plastic Jar					
Sample Condition	OK					
Comments	Sample -06 leaked during shipping. COC not signed					

CHAIN OF CUSTODY FORM

CLIENT Consol Energy
PLANT Greenidge Power Plant
PROJECT MANAGER Eric Doak
PROJECT NO. 10247
DEPT. 68

CAE LAB NO.	RUN NO.	TEST LOCATION	DATE	SAMPLE MATRIX	NO. OF CONTAINERS	ORIGINAL		ANALYSIS REQUESTED: NH3 - IC Analysis			ADDITIONAL INFORMATION
	1	Unit 4 - Air Heater Inlet	5/31/2007	Front Half Rinse	1	208		x			
	1	Unit 4 - Air Heater Inlet	5/31/2007	Imp 1 Catch & Rinse	1	195		x			
	1	Unit 4 - Air Heater Inlet	5/31/2007	Imp 2 & 3 Catch & Rinse	1	280		x			
	2	Unit 4 - Air Heater Inlet	6/1/2007	Front Half Rinse	1	153		x			
	2	Unit 4 - Air Heater Inlet	6/1/2007	Imp 1 Catch & Rinse	1	211		x			
	2	Unit 4 - Air Heater Inlet	6/1/2007	Imp 2 & 3 Catch & Rinse	1	210		x			
			6/1/2007								
	3	Unit C - Inlet	6/1/2007	Front Half Rinse	1	192		x			
	3	Unit C - Inlet	6/1/2007	Imp 1 Catch & Rinse	1	195		x			
	3	Unit C - Inlet	6/1/2007	Imp 2 & 3 Catch & Rinse	1	265		x			
					1						
	NA	Field Blank	6/1/2007	Entire Train	1	431		x			
	NA	Final Rinse	6/1/2007	Final Rinse	1			x			Need Volume
	NA	Reagent Blank	6/1/2007	0.1 N H2SO4	1			x			Need Volume

sample collected during shipping

Relinquished by:(Signature)	Date/Time	Received by:(Signature)	Date/Time	Relinquished by:(Signature)	Date/Time
Courier:	Date/Time	Relinquished by:(Signature)	Date/Time	Rec'd for Analysis by:	Date/Time 06/13/07 1500

Special Handling Instructions

Forwarding Lab: Clean Air - Palatine
Attn: D. Rhoades

PO Number: 68-10247

This form was completed by:
Eric Doak

Signature: *Eric Doak* Date: 2-Jun

CleanAir ENGINEERING
1601 Parkway View Drive
Pittsburgh, PA 15205
(412) 787-9130 ph
(412) 787-9138 fax

DS COC Pittsburgh
FXCL R0-8/3/95

Clean Air Engineering
NO_x, CO, O_2, and CO_2 Sampling Results
SCR Inlet and Outlet Sampling Grids
June 20, 2007, 20:00-20:47

Clean Air Engineering Project #10268
AES Greenidge
AES Dresden

Date: 6/20/2007
Start Time: 20:00
End Time: 20:23

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.
1-6	20:00	63.1		-32.3	8.7		10.3		92.6	-10.0	112.3		31.9	164.8	77.9
1-5	20:04	91.6		-3.8	4.2		14.3		98.2	-4.4	44.8		-35.6	48.0	-38.9
1-4	20:08	88.5	86.6	-6.9	4.1	4.8	14.4	13.6	94.3	-8.2	33.3	75.2	-47.1	35.5	-51.4
1-3	20:12	85.9		-9.5	3.6		14.4		88.9	-13.7	46.2		-34.2	47.8	-39.1
1-2	20:16	111.5		16.1	2.3		15.7		107.3	4.8	101.8		21.4	98.0	11.1
1-1	20:20	78.9		-16.5	6.0		12.4		94.8	-7.8	112.9		32.5	135.6	48.7
2-6	20:01	82.7		-12.7	6.5		12.6		102.8	0.3	22.8		-57.6	28.3	-58.6
2-5	20:05	100.6		5.2	4.1		14.7		107.2	4.6	36.5		-43.9	38.9	-48.0
2-4	20:09	104.9	100.9	9.5	3.1	3.8	15.4	14.8	105.5	2.9	49.0	91.7	-31.4	49.3	-37.6
2-3	20:13	112.6		17.2	2.6		16.0		110.1	7.6	108.0		27.6	105.6	18.7
2-2	20:17	109.9		14.5	2.3		16.0		105.8	3.2	163.8		83.4	157.6	70.7
2-1	20:21	94.7		-0.7	4.4		14.3		102.7	0.2	170.0		89.6	184.4	97.5
3-6	20:02	76.7		-18.7	6.3		12.5		94.0	-8.5	27.9		-52.5	34.2	-52.7
3-5	20:06	96.7		1.3	4.0		14.5		102.4	-0.1	38.2		-42.2	40.5	-46.4
3-4	20:10	89.0	96.3	-6.4	4.0	4.0	14.9	14.7	94.3	-8.3	47.0	85.5	-33.4	49.8	-37.1
3-3	20:14	110.0		14.6	2.8		15.6		108.8	6.2	103.6		23.2	102.5	15.6
3-2	20:18	112.1		16.7	2.6		15.8		109.6	7.1	121.0		40.6	118.4	31.5
3-1	20:22	93.0		-2.4	4.0		14.6		98.5	-4.0	175.2		94.8	185.6	98.7
4-6	20:03	86.0		-9.4	6.5		12.3		106.9	4.4	39.5		-40.9	49.1	-37.8
4-5	20:07	98.6		3.2	4.9		13.7		110.3	7.8	41.0		-39.4	45.9	-41.0
4-4	20:11	103.0	97.7	7.6	4.1	4.6	14.7	14.1	109.7	7.2	30.9	69.3	-49.5	32.9	-54.0
4-3	20:15	104.1		8.7	3.1		15.6		104.7	2.1	64.6		-15.8	65.0	-21.9
4-2	20:19	112.6		17.2	3.1		15.4		113.2	10.7	101.0		20.6	101.6	14.7
4-1	20:23	81.8		-13.6	6.0		12.6		98.3	-4.3	138.6		58.2	166.5	79.6
Inlet Averages		95.4			4.3		14.3		102.5		80.4			86.9	

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction
1-6	20:00	56.2		2.6	7.8		11.1		76.8	17.7	100.4		32.6	137.2	63.2	10.9	17.1	10.6	16.7
1-5	20:04	70.7		17.1	5.5		13.1		82.2	23.1	27.9		-39.9	32.4	-41.6	22.8	16.3	37.7	32.5
1-4	20:08	67.1	69.7	13.5	4.4	5.3	14.2	13.4	72.8	13.7	35.8	72.9	-32.0	38.8	-35.2	24.2	22.8	-7.5	-9.5
1-3	20:12	64.2		10.6	5.2		13.4		73.2	14.1	28.7		-39.1	32.7	-41.3	25.3	17.6	37.9	31.5
1-2	20:16	84.6		31.0	4.4		14.2		91.8	32.7	91.8		24.0	99.6	25.6	24.1	14.5	9.8	-1.7
1-1	20:20	75.2		21.6	4.5		14.1		82.1	23.0	152.8		85.0	166.8	92.8	4.7	13.4	-35.3	-23.0
2-6	20:01	54.0		0.4	7.1		11.8		70.0	11.0	20.8		-47.0	27.0	-47.0	34.7	31.9	8.8	4.8
2-5	20:05	43.7		-9.9	4.2		14.2		46.8	-12.2	26.7		-41.1	28.6	-45.4	56.6	56.3	26.8	26.4
2-4	20:09	59.6	57.7	6.0	5.3	4.6	13.2	13.9	68.4	9.3	26.3	71.9	-41.5	30.2	-43.8	43.2	35.2	46.3	38.8
2-3	20:13	72.3		18.7	4.0		14.4		76.6	17.5	25.0		-42.8	26.5	-47.5	35.8	30.5	76.9	74.9
2-2	20:17	68.1		14.5	2.6		15.8		66.6	7.5	125.9		58.1	123.1	49.1	38.0	37.0	23.1	21.9
2-1	20:21	48.6		-5.0	4.3		14.0		52.4	-6.7	206.8		139.0	223.0	149.0	48.7	49.0	-21.6	-20.9
3-6	20:02	32.4		-21.2	4.3		14.9		34.9	-24.2	26.1		-41.7	28.1	-45.9	57.8	62.8	6.5	17.7
3-5	20:06	46.3		-7.3	5.3		14.0		53.1	-6.0	43.8		-24.0	50.3	-23.8	52.1	48.1	-14.7	-24.2
3-4	20:10	45.3	52.2	-8.3	5.1	4.2	14.1	14.9	51.3	-7.8	18.0	62.8	-49.8	20.4	-53.6	49.1	45.6	61.7	59.0
3-3	20:14	66.5		12.9	3.6		15.5		68.8	9.7	45.9		-21.9	47.5	-26.5	39.5	36.7	55.7	53.6
3-2	20:18	85.3		31.7	2.7		16.2		83.9	24.8	113.0		45.2	111.1	37.1	23.9	23.5	6.6	6.1
3-1	20:22	37.2		-16.4	4.4		14.7		40.4	-18.7	129.7		61.9	140.7	66.7	60.0	59.0	26.0	24.2
4-6	20:03	49.9		-3.7	6.0		12.8		59.9	0.9	30.9		-36.9	37.1	-36.9	42.0	43.9	21.8	24.4
4-5	20:07	21.2		-32.4	4.3		14.2		22.9	-36.2	34.6		-33.2	37.3	-36.7	78.5	79.3	15.6	18.7
4-4	20:11	13.0	34.8	-40.6	3.6	4.2	14.9	14.4	13.5	-45.6	28.1	63.6	-39.7	29.1	-44.9	87.4	87.7	9.1	11.7
4-3	20:15	51.6		-2.0	2.8		15.6		51.0	-8.1	59.0		-8.8	58.3	-15.7	50.4	51.3	8.7	10.2
4-2	20:19	34.5		-19.1	2.7		15.7		33.9	-25.2	95.2		27.4	93.6	19.6	69.4	70.0	5.7	7.8
4-1	20:23	38.3		-15.3	5.6		13.1		44.8	-14.3	133.9		66.1	156.7	82.6	53.2	54.4	3.4	5.9
Outlet Averages		53.6			4.6		14.1		59.1		67.8			74.0		43.0	41.8	17.5	17.0

Clean Air Engineering Project #10268
AES Greenidge
AES Dresden

Date: 6/20/2007
Start Time: 20:24
End Time: 20:47

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.
1-6	20:24	66.1		-30.6	8.9		10.5		98.6	-5.5	56.0		-41.1	83.5	-21.4
1-5	20:28	89.0		-7.7	4.3		14.0		96.0	-8.2	97.2		0.1	104.8	-0.1
1-4	20:32	89.4	90.2	-7.3	4.2	4.9	14.3	13.7	95.8	-8.3	31.5	67.7	-65.6	33.8	-71.2
1-3	20:36	100.8		4.1	3.5		15.0		103.7	-0.4	44.6		-52.5	45.9	-59.1
1-2	20:40	116.2		19.5	2.4		15.6		112.4	8.3	66.7		-30.4	64.5	-40.4
1-1	20:44	79.8		-16.9	5.9		12.5		95.2	-8.9	110.2		13.1	131.5	26.6
2-6	20:25	85.2		-11.5	6.5		12.6		105.9	1.8	22.1		-75.0	27.5	-77.5
2-5	20:29	101.9		5.2	4.3		14.5		109.9	5.7	32.6		-64.5	35.2	-69.8
2-4	20:33	105.5	102.7	8.8	3.2	3.9	15.4	14.8	106.7	2.6	54.4	100.5	-42.7	55.0	-49.9
2-3	20:37	118.0		21.3	2.6		16.0		115.4	11.3	68.9		-28.2	67.4	-37.5
2-2	20:41	112.0		15.3	2.3		16.1		107.8	3.6	157.7		60.6	151.8	46.8
2-1	20:45	93.5		-3.2	4.5		14.3		102.1	-2.1	267.2		170.1	291.6	186.7
3-6	20:26	79.1		-17.6	6.6		12.3		99.0	-5.1	24.7		-72.4	30.9	-74.0
3-5	20:30	95.9		-0.8	4.1		14.3		102.2	-2.0	36.5		-60.6	38.9	-66.1
3-4	20:34	88.2	96.0	-8.5	4.0	3.9	14.5	14.6	93.4	-10.7	57.1	110.0	-40.0	60.5	-44.5
3-3	20:38	114.7		18.0	2.6		15.8		112.2	8.1	64.6		-32.5	63.2	-41.8
3-2	20:42	110.1		13.4	2.5		15.8		107.1	3.0	166.4		69.3	161.9	56.9
3-1	20:46	87.8		-8.9	3.8		14.6		91.9	-12.2	310.9		213.8	325.4	220.5
4-6	20:27	83.7		-13.0	6.5		12.3		104.0	-0.1	120.7		23.6	150.0	45.1
4-5	20:31	98.4		1.7	5.1		13.6		111.5	7.3	37.4		-59.7	42.4	-62.6
4-4	20:35	106.7	98.0	10.0	4.1	4.6	14.4	14.0	113.7	9.6	28.8	110.0	-68.3	30.7	-74.3
4-3	20:39	110.4		13.7	3.1		15.4		111.0	6.9	73.8		-23.3	74.2	-30.7
4-2	20:43	109.0		12.3	3.1		15.4		109.6	5.5	129.2		32.1	129.9	25.0
4-1	20:47	79.9		-16.8	5.7		13.0		94.1	-10.0	270.1		173.0	318.1	213.1
Inlet Averages		96.7			4.3		14.3		104.1		97.1			104.9	

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O2 %dv	O2 Port Avg	CO2 %dv	CO2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction	CO Removal Efficiency	CO Removal Eff W/ O2 correction
1-6	20:24	57.7		4.4	8.1		11.4		80.7	21.7	106.5		30.3	148.9	65.5	12.7	18.2	-90.2	-78.3
1-5	20:28	72.7		19.4	5.6		13.4		85.1	26.1	24.2		-52.0	28.3	-55.1	18.3	11.4	75.1	73.0
1-4	20:32	72.9	71.5	19.6	4.3	5.4	14.2	13.4	78.6	19.7	33.1	73.1	-43.1	35.7	-47.7	18.5	18.0	-5.1	-5.7
1-3	20:36	61.7		8.4	5.4		13.3		71.3	12.3	22.0		-54.2	25.4	-58.0	38.8	31.3	50.7	44.6
1-2	20:40	88.8		35.5	4.3		14.2		95.8	36.8	48.6		-27.6	52.4	-31.0	23.6	14.8	27.1	18.8
1-1	20:44	75.0		21.7	4.5		13.9		81.9	22.9	204.4		128.2	223.1	139.7	6.0	14.0	-85.5	-69.6
2-6	20:25	55.8		2.5	7.3		12.0		73.4	14.5	18.9		-57.3	24.9	-58.5	34.5	30.7	14.5	9.4
2-5	20:29	42.7		-10.6	4.4		14.3		46.3	-12.6	23.1		-53.1	25.1	-58.3	58.1	57.8	29.1	28.7
2-4	20:33	62.1	58.8	8.8	5.4	4.7	13.3	14.0	71.7	12.8	22.9	81.7	-53.3	26.4	-57.0	41.1	32.8	57.9	51.9
2-3	20:37	75.5		22.2	4.1		14.4		80.4	21.5	21.5		-54.7	22.9	-60.5	36.0	30.3	68.8	66.0
2-2	20:41	71.1		17.8	2.6		15.8		69.5	10.6	99.8		23.6	97.6	14.2	36.5	35.5	36.7	35.7
2-1	20:45	45.7		-7.6	4.3		14.3		49.3	-9.7	303.7		227.5	327.5	244.1	51.1	51.7	-13.7	-12.3
3-6	20:26	28.8		-24.5	4.5		14.6		31.4	-27.5	22.6		-53.6	24.7	-58.7	63.6	68.3	8.5	20.2
3-5	20:30	46.0		-7.3	5.5		13.7		53.5	-5.5	28.8		-47.4	33.5	-49.9	52.0	47.7	21.1	13.9
3-4	20:34	47.0	51.0	-6.3	5.2	4.2	14.0	14.9	53.6	-5.4	17.6	72.3	-58.6	20.1	-63.3	46.7	42.6	69.2	66.8
3-3	20:38	69.6		16.3	3.3		15.7		70.8	11.8	35.7		-40.5	36.3	-47.1	39.3	36.9	44.7	42.5
3-2	20:42	87.0		33.7	2.6		16.3		85.1	26.2	134.0		57.8	131.1	47.7	21.0	20.5	19.5	19.0
3-1	20:46	27.4		-25.9	4.2		14.8		29.4	-29.6	195.0		118.8	209.0	125.6	68.8	68.0	37.3	35.8
4-6	20:27	49.9		-3.4	5.9		12.8		59.5	0.6	29.2		-47.0	34.8	-48.6	40.4	42.8	75.8	76.8
4-5	20:31	14.6		-38.7	4.4		14.2		15.8	-43.1	32.7		-43.5	35.5	-47.9	85.2	85.8	12.6	16.3
4-4	20:35	12.1	31.9	-41.2	3.8	4.2	14.6	14.3	12.7	-46.3	20.7	77.7	-55.5	21.7	-61.7	88.7	88.9	28.1	29.4
4-3	20:39	56.3		3.0	3.0		15.4		56.3	-2.6	38.0		-38.2	38.0	-45.4	49.0	49.3	48.5	48.8
4-2	20:43	27.7		-25.6	2.7		15.7		27.2	-31.7	128.3		52.1	126.2	42.8	74.6	75.1	0.7	2.9
4-1	20:47	30.5		-22.8	5.5		13.2		35.5	-23.5	217.3		141.1	252.6	169.2	61.8	62.3	19.5	20.6
Outlet Averages		53.3			4.6		14.1		58.9		76.2			83.4		44.4	43.1	23.0	23.1

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REPORT ON FLUE GAS CHARACTERIZATION

Performed for:
CONSOL ENERGY INC.
UNIT 4 – SCR INLET & SCR OUTLET
AES GREENIDGE STATION

Client Reference No: 4700179470
CleanAir Project No: 10544
Revision 0: September 16, 2008
Revision 1: September 29, 2008

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.

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REPORT ON FLUE GAS CHARACTERIZATION

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PROJECT OVERVIEW

INTRODUCTION

Consol Energy Inc. (Consol) contracted Clean Air Engineering (CleanAir) to characterize the selective catalytic reduction (SCR) system performance at the AES Greenidge Station in Dresden, NY. The test was conducted to demonstrate how the SCR system responded to changes in unit load and in the regions of the furnace into which urea was being injected.

All testing was conducted in accordance with the regulations set-forth by the United States Environmental Protection Agency (USEPA).

Key Project Participants

Individuals responsible for coordinating and conducting the test program were:

D. Connell – Consol Energy Inc.
J. McKeever – CleanAir Engineering

Test Program Parameters

The testing performed at the Unit 4 SCR Inlet and Outlet on May 21 through May 22, 2008 included the following emissions measurements:

SCR Inlet

- nitrogen oxides (NO_x)
- carbon monoxide (CO)
- oxygen (O_2)
- carbon dioxide (CO_2)

SCR Outlet

- nitrogen oxides (NO_x)
- oxygen (O_2)
- carbon dioxide (CO_2)

PROJECT OVERVIEW

TEST PROGRAM SYNOPSIS

Test Schedule

The on-site schedule followed during the test program is outlined in Table 1-1.

Table 1-1:
Schedule of Activities

Load Condition	Location	Method	Analyte	Date	Start Time	End Time
Intermediate	Unit 4 SCR Inlet	USEPA Method 3A, 7E, 10	O_2, CO_2, NO_x, CO	05/21/08	03:12	05:59
Full	Unit 4 SCR Inlet	USEPA Method 3A, 7E, 10	O_2, CO_2, NO_x, CO	05/21/08	07:12	09:59
Low	Unit 4 SCR Inlet	USEPA Method 3A, 7E, 10	O_2, CO_2, NO_x, CO	05/22/08	00:48	05:35
Intermediate	Unit 4 SCR Outlet	USEPA Method 3A, 7E	O_2, CO_2, NO_x	05/21/08	03:12	05:59
Full	Unit 4 SCR Outlet	USEPA Method 3A, 7E	O_2, CO_2, NO_x	05/21/08	07:12	09:59
Low	Unit 4 SCR Outlet	USEPA Method 3A, 7E	O_2, CO_2, NO_x	05/22/08	00:48	05:35

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TEST PROGRAM SYNOPSIS (CONTINUED)

Results Summary

Table 1-2 through 1-4 summarizes 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 2-24 on pages 2-1 through 2-24.

Table 1-2:
Unit 4 SCR: Intermediate Load - Test Results

Source Constituent	Sampling Method	Average Emission
Unit 4 SCR Inlet		
NO_x (ppmdv @ 3% O_2)	EPA M7E	112.37
NO_x (lb/MMBtu)	EPA M7E	0.1532
CO (ppmdv @ 3% O_2)	EPA M10	25.41
CO (lb/MMBtu)	EPA M10	0.0211
O_2 (%dv)	EPA M3A	5.29
CO_2 (%dv)	EPA M3A	13.29
Unit 4 SCR Outlet		
NO_x (ppmdv @ 3% O_2)	EPA M7E	76.56
NO_x (lb/MMBtu)	EPA M7E	0.1044
O_2 (%dv)	EPA M3A	5.01
CO_2 (%dv)	EPA M3A	13.53
Unit 4 SCR Removal Efficiency		
NO_x (%)		31.9%

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PROJECT OVERVIEW

TEST PROGRAM SYNOPSIS (CONTINUED)

Results Summary (Continued)

Table 1-3:
Unit 4 SCR: Full Load - Test Results

Source Constituent	Sampling Method	Average Emission
Unit 4 SCR Inlet		
NO_x (ppmdv @ 3% O_2)	EPA M7E	97.74
NO_x (lb/MMBtu)	EPA M7E	0.1333
CO (ppmdv @ 3% O_2)	EPA M10	170.21
CO (lb/MMBtu)	EPA M10	0.1413
O_2 (%dv)	EPA M3A	4.55
CO_2 (%dv)	EPA M3A	13.94
Unit 4 SCR Outlet		
NO_x (ppmdv @ 3% O_2)	EPA M7E	71.00
NO_x (lb/MMBtu)	EPA M7E	0.0968
O_2 (%dv)	EPA M3A	4.04
CO_2 (%dv)	EPA M3A	14.38
Unit 4 SCR Removal Efficiency		
NO_x (%)		27.4%

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PROJECT OVERVIEW

TEST PROGRAM SYNOPSIS (CONTINUED)

Results Summary (Continued)

Table 1-4:
Unit 4 SCR: Low Load - Test Results

Source Constituent	Sampling Method	Average Emission
Unit 4 SCR Inlet		
NO_x (ppmdv @ 3% O_2)	EPA M7E	130.73
NO_x (lb/MMBtu)	EPA M7E	0.1782
CO (ppmdv @ 3% O_2)	EPA M10	19.32
CO (lb/MMBtu)	EPA M10	0.0160
O_2 (%dv)	EPA M3A	7.61
CO_2 (%dv)	EPA M3A	11.34
Unit 4 SCR Outlet		
NO_x (ppmdv @ 3% O_2)	EPA M7E	126.17
NO_x (lb/MMBtu)	EPA M7E	0.1720
O_2 (%dv)	EPA M3A	7.24
CO_2 (%dv)	EPA M3A	11.58
Unit 4 SCR Removal Efficiency		
NO_x (%)		3.5%

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TEST PROGRAM SYNOPSIS (CONTINUED)

Discussion of Test Program

To collect NO_x, CO, CO_2, and O_2 emissions data, Clean Air used its Multipoint Automated Sampling System (MASS). Using the MASS, Clean Air was able to establish a sampling grid and develop a detailed NO_x, CO, CO_2, and O_2 profile for the SCR Inlet and a detailed NO_x, CO_2, and O_2 profile for the SCR Outlet. This proprietary system allows a large number of sample points to be individually analyzed in a short amount of time giving a more complete view of the gas profile within the duct. In addition to determining overall concentrations in the duct, the MASS system allows spatial stratification and temporal variation to be evaluated.

This tool takes much of the wait out of boiler or SCR tuning and optimization by creating an efficient method of data collection. Decision making time is reduced and enhanced with expedient, accurate, and reliable data. The expanded data capacity allows for increased analytical ability and a better "big picture" of unit operation.

The MASS system was operated while the plant was at different load conditions. Table 1-5 shows the load conditions along with the corresponding zones the urea was injected into.

Table 1-5:
Unit 4 SCR: Load Conditions

Load Condition	(MW_{net})	Urea Injection Zone
Intermediate	~74	1 & 2
Full	~102	2 & 3
Low	~50	1

092708 121612

On the SCR Outlet, Port 3 Point 4 was excluded from all the averages throughout the test program. This point had a leak causing the MASS system to pull ambient air.

During Full Load testing Port 4 Point 4 on the SCR Outlet was also excluded from the averages because of a malfunction in the sample module controller at that point. These points are highlighted in the tables in the Results section. The average for the duct was used for the excluded points when showing the results graphically in order to show no distortions in the graph.

PROJECT OVERVIEW

TEST PROGRAM SYNOPSIS (CONTINUED)

Port 1 Point 2 reading showed higher NO_x concentration at the SCR Outlet compared to the SCR Inlet NO_x concentration at that same point. The raw data was thoroughly check for data accuracy, there is no obvious reason on why this point showed such a significant difference.

Description of the MASS System

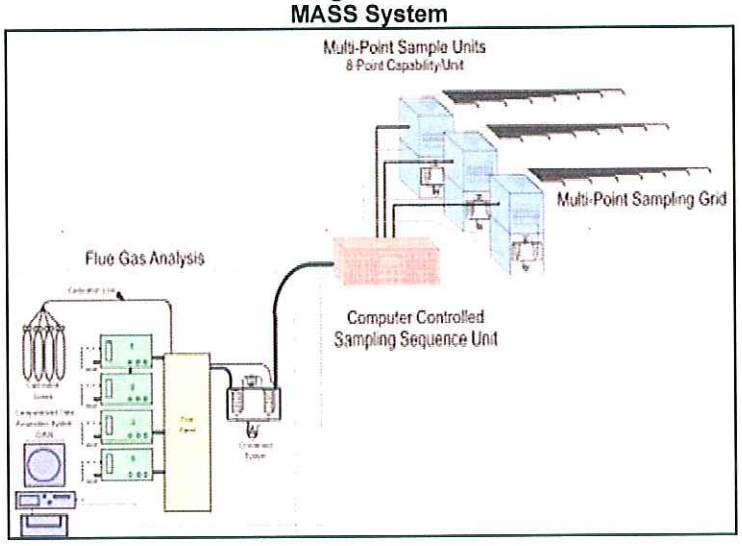
Clean Air Engineering's MASS system uses a series of automated 8-point sample modules with integrated programmable logic controllers (PLC's) to sequentially and rapidly cycle through a multi-point test grid. For this program, 24-point permanent inlet and outlet grids were tested using an 8-module system. Using a bank of two O_2/CO_2 monitors and two NO_x and one CO (inlet) monitors, the 24-point inlet and 24-point outlet traverse was completed in 24 minutes. This is a considerable time savings over the typical 2 hour manual traverse.

PROJECT OVERVIEW

TEST PROGRAM SYNOPSIS (CONTINUED)

The MASS has been programmed to automatically cycle through and analyze each point on the grid. The key is the dynamic switching which allows for a vented "pre-purge" prior the actual analysis allowing for zero wasted analyzer time. This modular and expandable system is capable of analyzing 128 individual sample point in 32 minutes or less. A diagram of the system can be seen in Figure 1-1 below. This shows a general arrangement process flow diagram for a "typical" 21-point MASS system arrangement.

Figure 1-1:
MASS System



End of Section 1 – Project Overview

RESULTS

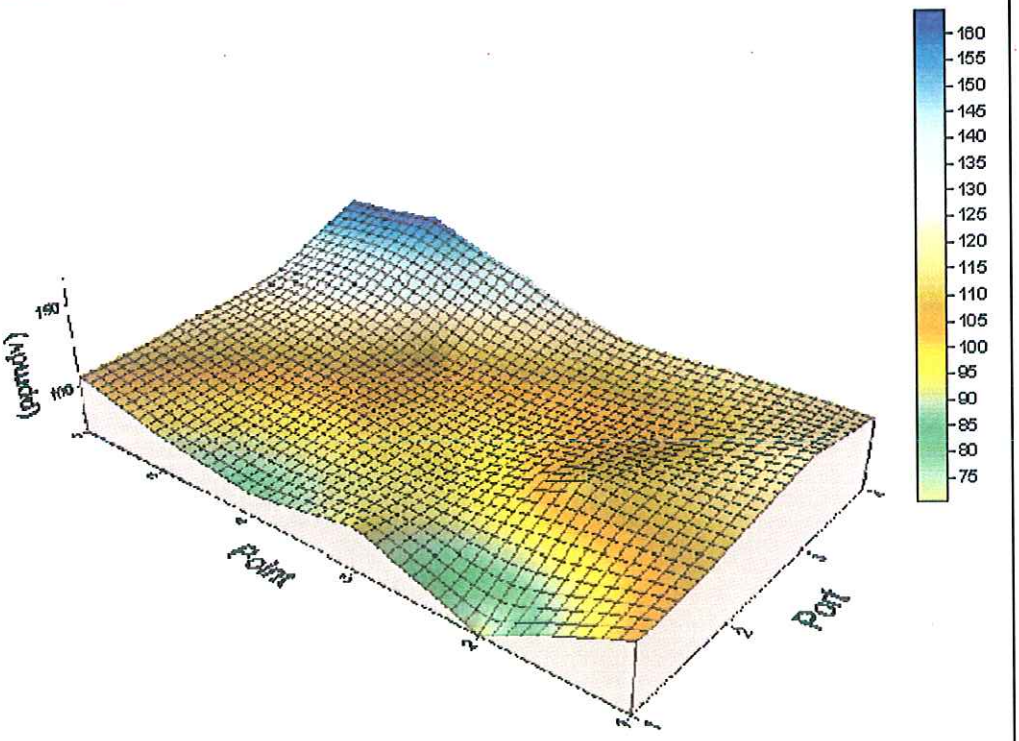
2-1

Table 2-1:
Unit 4: SCR Inlet – NO_x (ppmdv @ 3% O_2), Intermediate Load

	AVG	91.58	106.61	115.04	136.25	
Point	6	105.99	117.82	129.75	163.63	129.30
	5	91.82	104.35	126.93	164.78	121.97
	4	83.12	100.77	105.94	140.49	107.58
	3	93.68	93.34	101.83	118.09	101.74
	2	70.01	112.22	104.23	117.23	100.93
	1	104.89	111.17	121.58	113.28	112.73
		1	2	3	4	112.37

Port

Figure 2-1:
Unit 4: SCR Inlet – NO_x (ppmdv @ 3% O_2), Intermediate Load

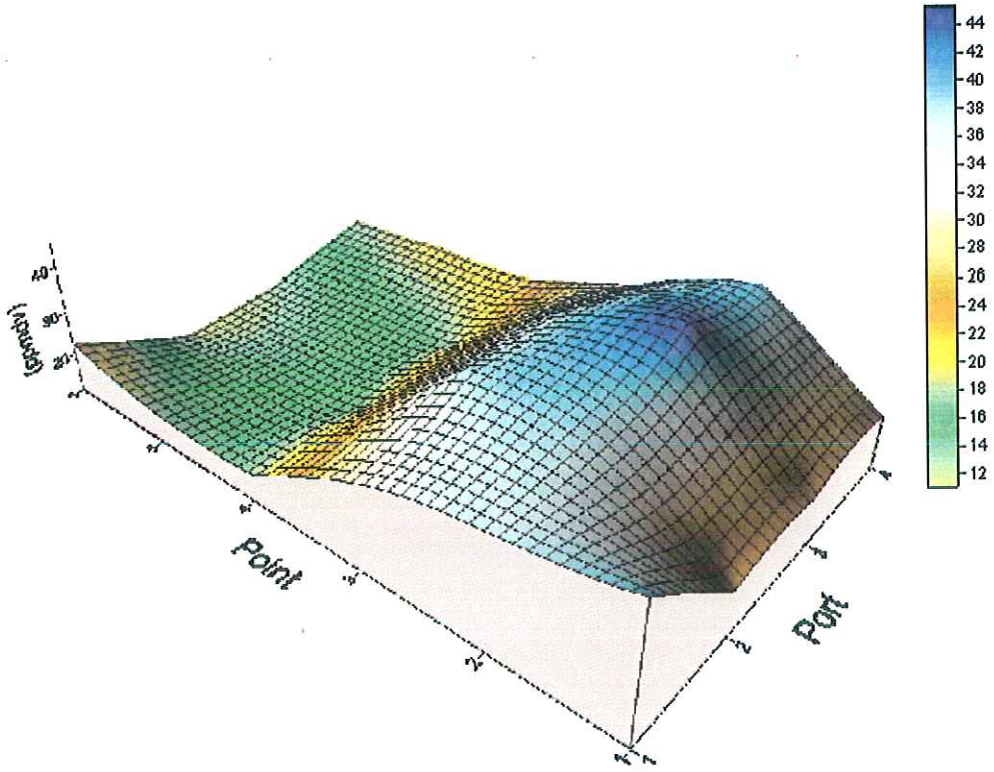


RESULTS

Table 2-2:
Unit 4: SCR Inlet – CO (ppmdv @ 3% O_2), Intermediate Load

Point	Port 1	Port 2	Port 3	Port 4	AVG
6	22.50	11.06	12.51	18.07	16.04
5	17.48	14.21	15.56	20.14	16.85
4	17.56	16.56	17.47	21.77	18.34
3	30.54	38.15	36.53	30.73	33.99
2	36.64	37.80	45.46	41.09	40.25
1	41.84	21.07	21.83	23.28	27.01
AVG	27.76	23.14	24.89	25.85	25.41

Figure 2-2:
Unit 4: SCR Inlet – CO (ppmdv @ 3% O_2), Intermediate Load



RESULTS

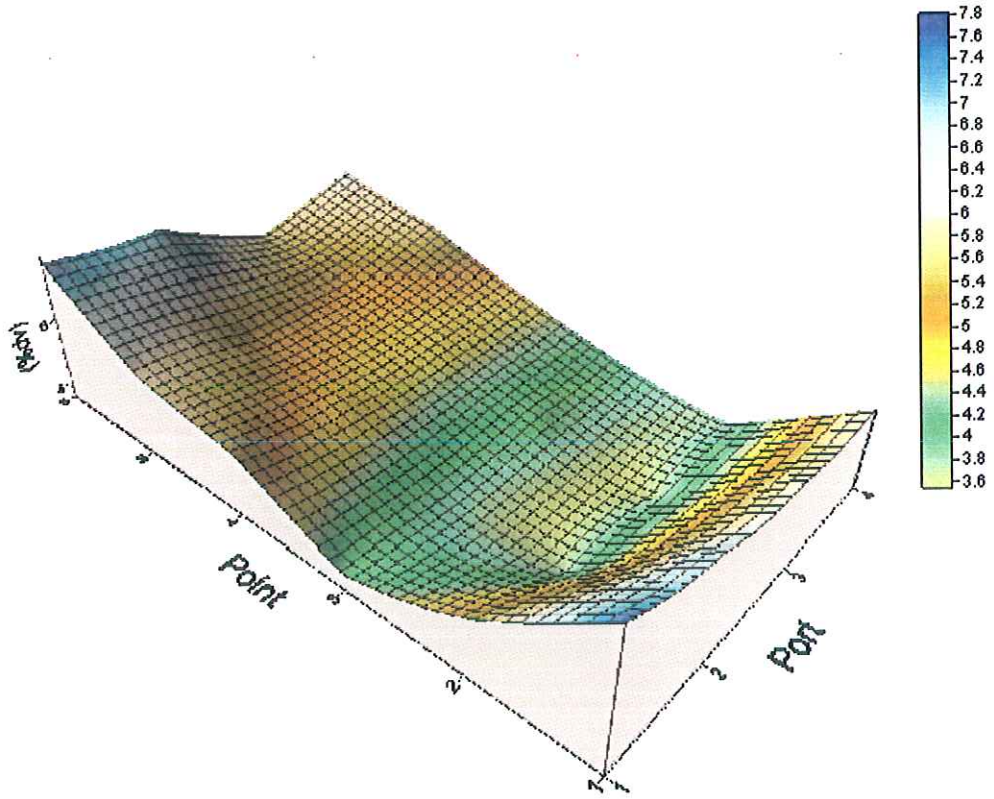
2-3

Table 2-3:
Unit 4: SCR Inlet – O_2 (%dv), Intermediate Load

Point	1	2	3	4	AVG
6	7.65	7.13	5.46	6.23	6.62
5	5.91	5.24	5.07	5.67	5.48
4	5.43	4.85	4.69	4.77	4.93
3	4.03	3.81	4.03	4.03	3.98
2	5.29	3.71	3.59	3.73	4.08
1	7.81	6.74	6.10	6.00	6.66
AVG	6.02	5.25	4.82	5.07	5.29

Port

Figure 2-3:
Unit 4: SCR Inlet – O_2 (%dv), Intermediate Load



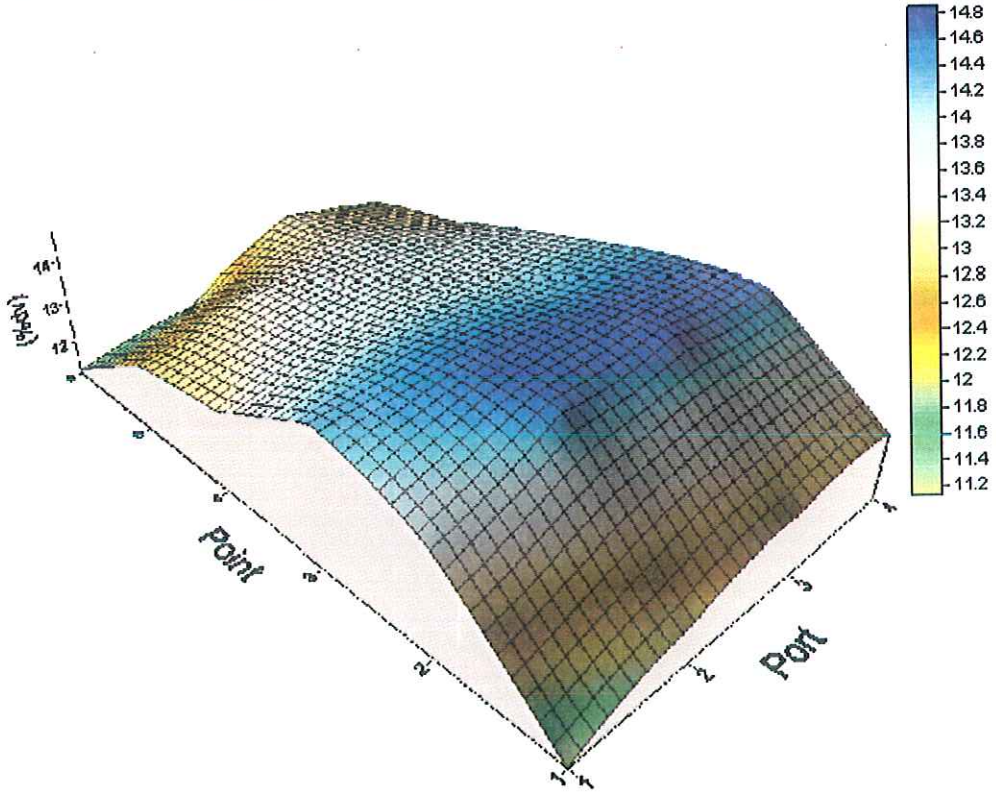
RESULTS

Table 2-4:
Unit 4: SCR Inlet – CO_2 (%dv), Intermediate Load

Point	1	2	3	4	AVG
6	11.23	11.67	13.06	12.47	12.11
5	12.71	13.30	13.44	12.96	13.10
4	13.09	13.65	13.77	13.73	13.56
3	14.37	14.59	14.40	14.40	14.44
2	13.50	14.63	14.83	14.70	14.41
1	11.13	12.03	12.54	12.74	12.11
AVG	12.67	13.31	13.67	13.50	13.29

Port

Figure 2-4:
Unit 4: SCR Inlet – CO_2 (%dv), Intermediate Load



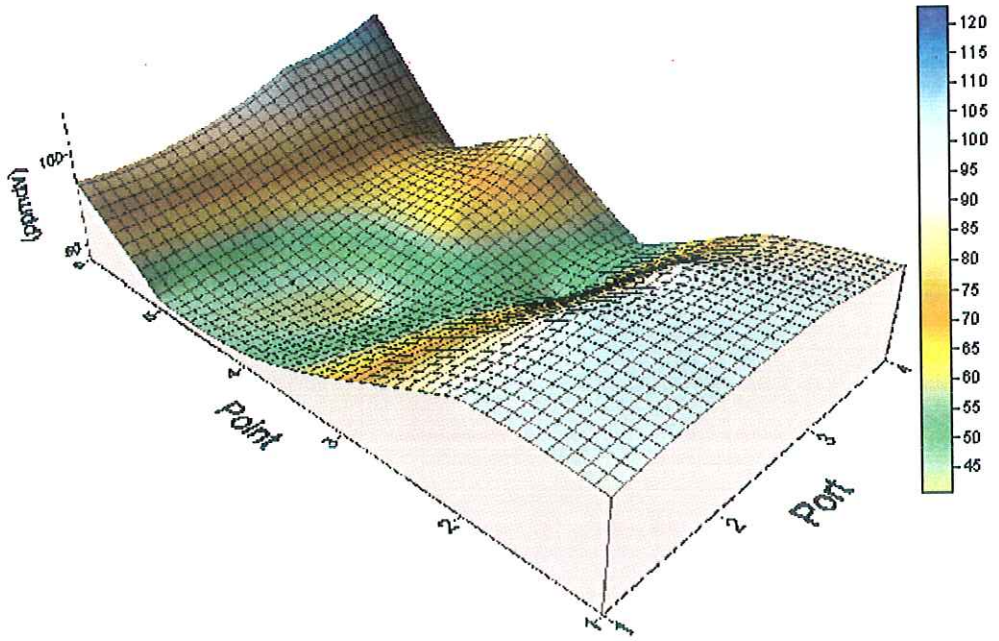
RESULTS

Table 2-5:
Unit 4: SCR Outlet – NO_x (ppmdv @ 3% O_2), Intermediate Load

	AVG	72.02	73.10	81.40	80.54	
Point	6	85.02	88.31	108.43	122.89	101.16
	5	46.07	53.80	64.40	58.50	55.70
	4	48.12	40.76	44.34	87.97	58.95
	3	68.03	61.83	45.49	46.94	55.57
	2	93.70	97.40	90.62	78.15	89.97
	1	91.19	96.47	98.07	88.81	93.64
		1	2	3	4	76.56

Port

Figure 2-5:
Unit 4: SCR Outlet – NO_x (ppmdv @ 3% O_2), Intermediate Load



RESULTS

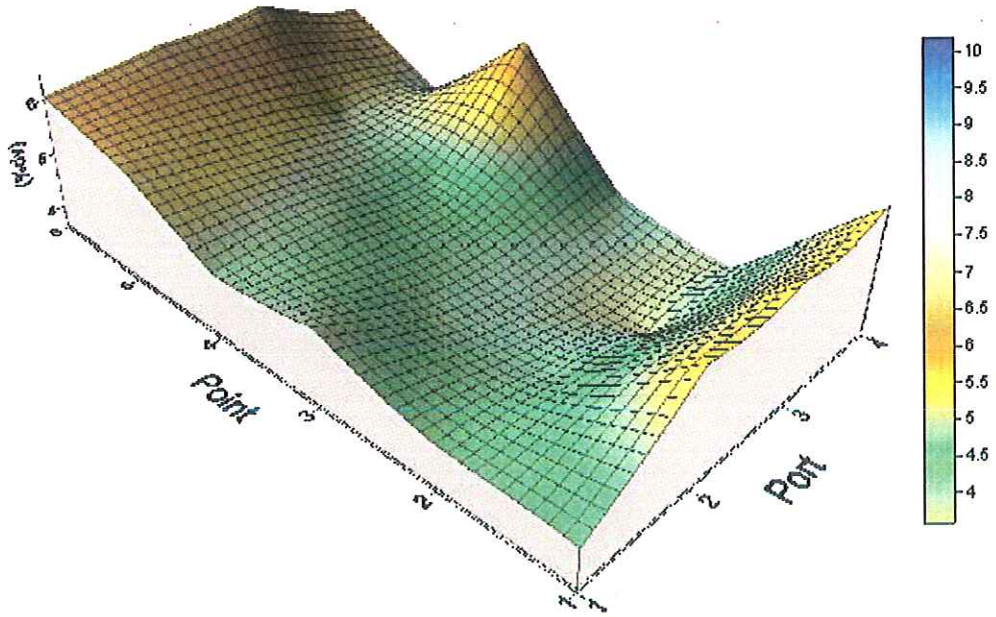
2-6

Table 2-6:
Unit 4: SCR Outlet – O_2 (%dv), Intermediate Load

Point	1	2	3	4	AVG
6	6.06	6.31	6.44	5.74	6.14
5	5.57	5.29	4.91	4.73	5.13
4	4.70	4.71	10.40	6.36	5.26
3	4.93	4.13	4.01	4.19	4.31
2	4.34	4.10	3.64	3.77	3.96
1	4.27	5.56	5.66	5.80	5.32
AVG	4.98	5.02	4.93	5.10	5.01

Port

Figure 2-6:
Unit 4: SCR Outlet – O_2 (%dv), Intermediate Load



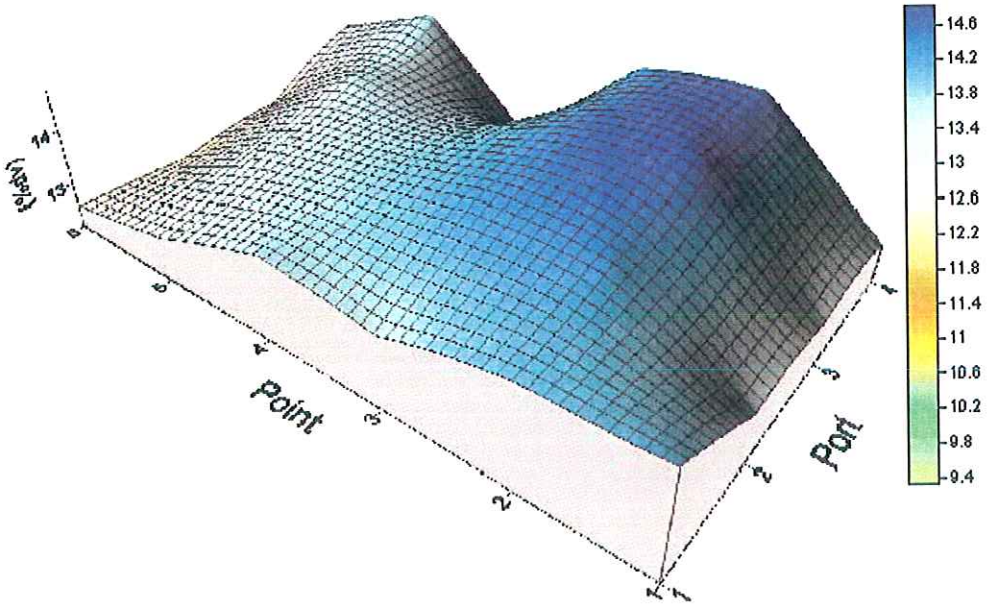
RESULTS

2-7

Table 2-7:
Unit 4: SCR Outlet – CO_2 (%dv), Intermediate Load

Point	Port 1	Port 2	Port 3	Port 4	AVG
6	12.57	12.24	12.24	12.93	12.50
5	12.97	13.29	13.61	13.84	13.43
4	13.77	13.80	9.17	12.12	13.23
3	13.54	14.33	14.44	14.31	14.16
2	14.11	14.36	14.76	14.69	14.48
1	14.24	13.07	12.93	12.90	13.29
AVG	13.54	13.51	13.60	13.47	13.53

Figure 2-7:
Unit 4: SCR Outlet – CO_2 (%dv), Intermediate Load



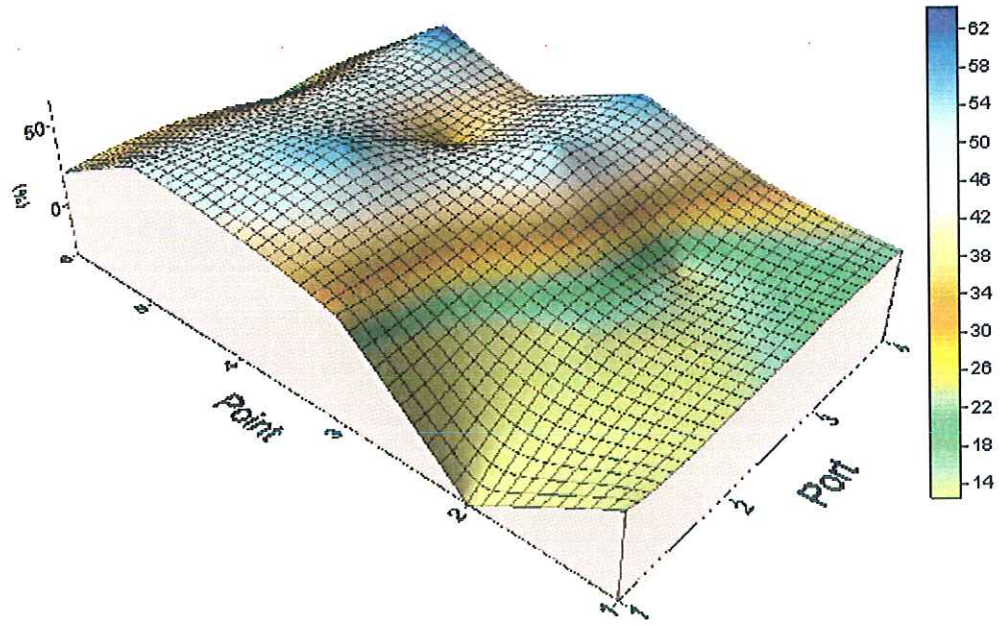
RESULTS

Table 2-8:
Unit 4: NO_x Removal Efficiency (@ 3% O_2), Intermediate Load

Point	AVG	21.4%	31.4%	29.2%	40.9%	
	6	19.8%	25.0%	16.4%	24.9%	21.8%
	5	49.8%	48.4%	49.3%	64.5%	54.3%
	4	42.1%	59.5%	58.1%	37.4%	45.2%
	3	27.4%	33.8%	55.3%	60.3%	45.4%
	2	-33.8%	13.2%	13.1%	33.3%	10.9%
	1	13.1%	13.2%	19.3%	21.6%	16.9%
		1	2	3	4	31.9%

Port

Figure 2-8:
Unit 4: NO_x Removal Efficiency (@ 3% O_2), Intermediate Load

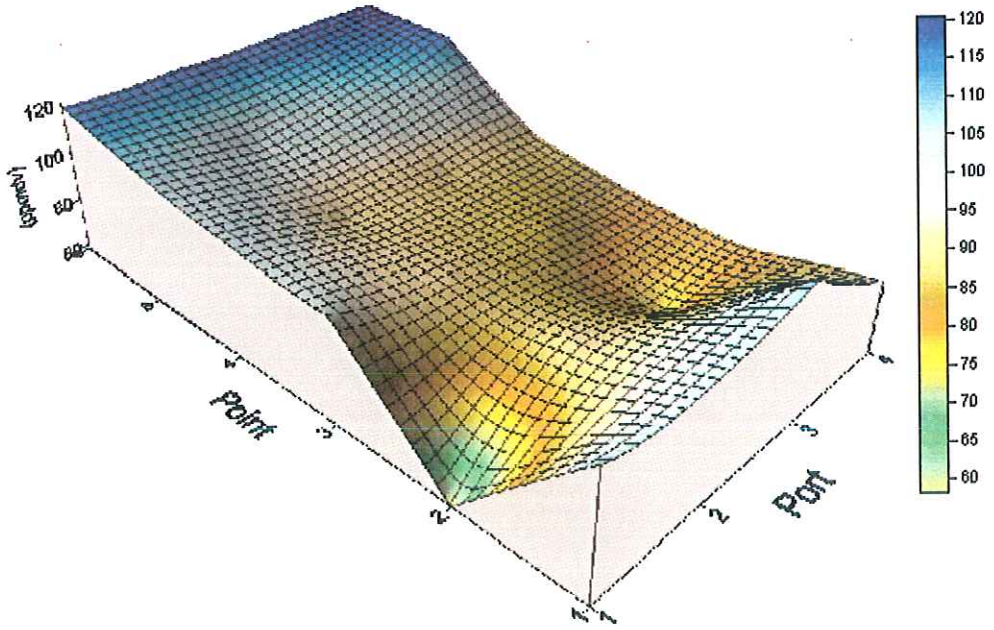


RESULTS

Table 2-9:
Unit 4: SCR Inlet – NO_x (ppmdv @ 3% O_2), Full Load

	AVG	98.54	98.70	97.90	95.84	
Point	6	118.44	119.05	119.82	120.19	119.37
	5	108.60	101.76	107.81	118.20	109.09
	4	102.33	89.56	88.60	89.47	92.49
	3	98.62	89.85	85.58	81.67	88.93
	2	57.78	90.05	75.37	78.47	75.42
	1	105.44	101.92	110.22	87.04	101.15
		1	2	3	4	97.74
		Port				

Figure 2-9:
Unit 4: SCR Inlet – NO_x (ppmdv @ 3% O_2), Full Load



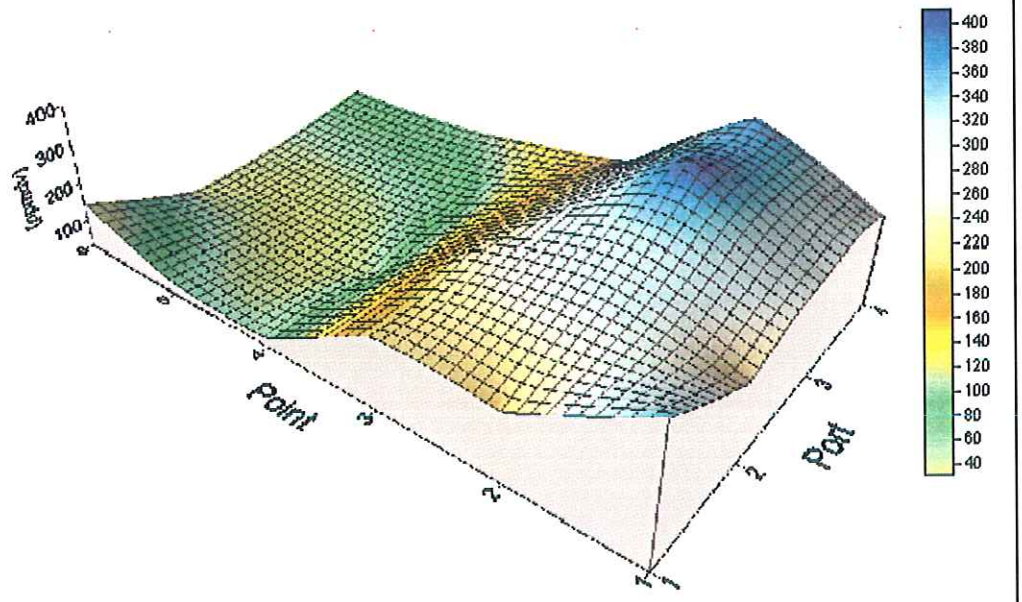
RESULTS

Table 2-10:
Unit 4: SCR Inlet – CO (ppmdv @ 3% O_2), Full Load

	AVG	174.28	144.05	176.99	185.53	
Point	6	147.03	33.17	43.37	84.02	76.90
	5	61.47	34.14	45.75	87.71	57.27
	4	55.03	43.63	73.21	124.15	74.00
	3	213.08	237.96	211.61	171.52	208.54
	2	201.08	292.76	415.79	388.85	324.62
	1	368.00	222.65	272.23	256.96	279.96
		1	2	3	4	170.21

Port

Figure 2-10:
Unit 4: SCR Inlet – CO (ppmdv @ 3% O_2), Full Load



RESULTS

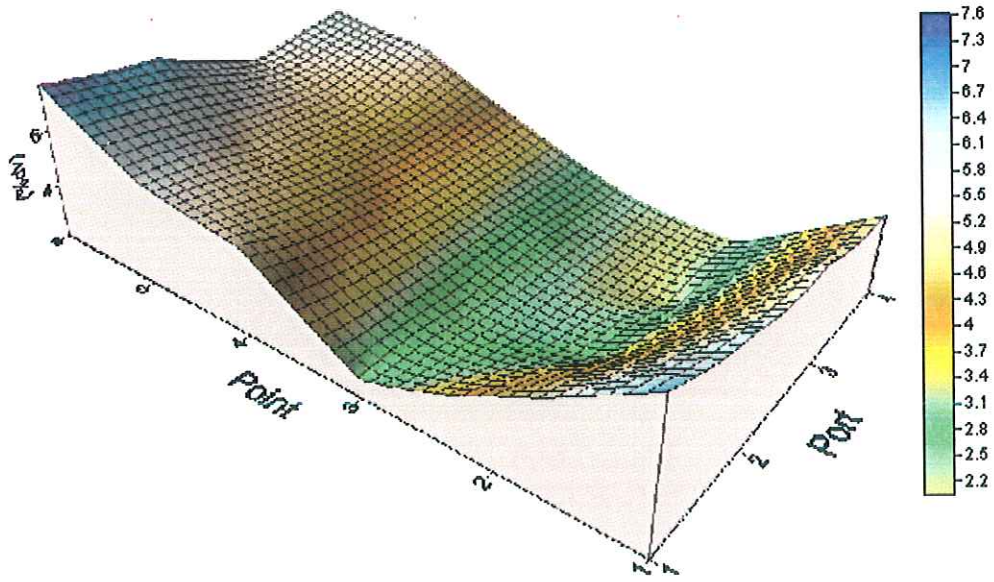
2-11

Table 2-11:
Unit 4: SCR Inlet – O_2 (%dv), Full Load

Point	1	2	3	4	AVG
6	7.61	7.00	5.44	6.04	6.53
5	5.67	5.00	4.73	5.60	5.25
4	5.10	4.20	3.81	3.86	4.24
3	2.69	2.60	2.70	2.46	2.61
2	4.50	2.81	2.09	2.13	2.88
1	6.99	5.83	5.40	4.84	5.76
AVG	5.43	4.57	4.03	4.15	4.55

Port

Figure 2-11:
Unit 4: SCR Inlet – O_2 (%dv), Full Load

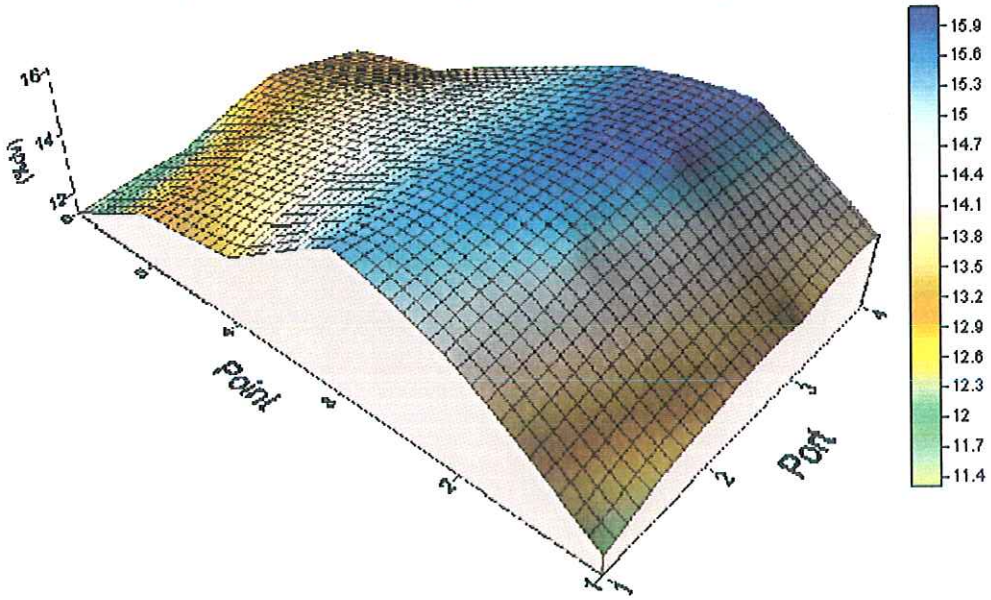


RESULTS

Table 2-12:
Unit 4: SCR Inlet – CO_2 (%dv), Full Load

	AVG	13.24	13.90	14.37	14.27	
Point	6	11.31	11.79	13.11	12.64	12.21
	5	12.96	13.51	13.77	13.08	13.33
	4	13.40	14.26	14.60	14.49	14.19
	3	15.57	15.64	15.56	15.76	15.63
	2	14.31	15.36	16.04	16.06	15.44
	1	11.87	12.81	13.11	13.61	12.85
		1	2	3	4	13.94
		Port				

Figure 2-12:
Unit 4: SCR Inlet – CO_2 (%dv), Full Load



RESULTS

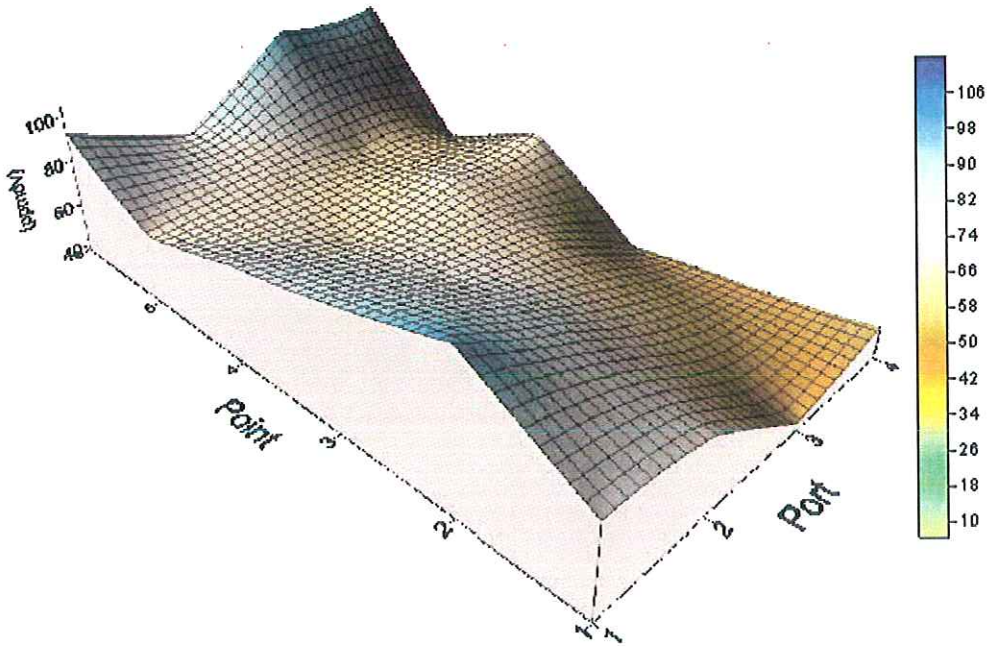
2-13

Table 2-13:
Unit 4: SCR Outlet – NO_x (ppmdv @ 3% O_2), Full Load

	AVG	86.04	72.21	65.71	56.78	
Point	6	93.04	72.43	104.07	100.27	92.45
	5	68.12	69.37	62.95	50.66	62.78
	4	80.86	66.40	4.81	116.32	73.63
	3	91.57	74.13	64.51	37.32	66.89
	2	105.71	79.86	56.27	43.67	71.38
	1	76.96	71.09	40.72	51.96	60.18
		1	2	3	4	71.00

Port

Figure 2-13:
Unit 4: SCR Outlet – NO_x (ppmdv @ 3% O_2), Full Load



RESULTS

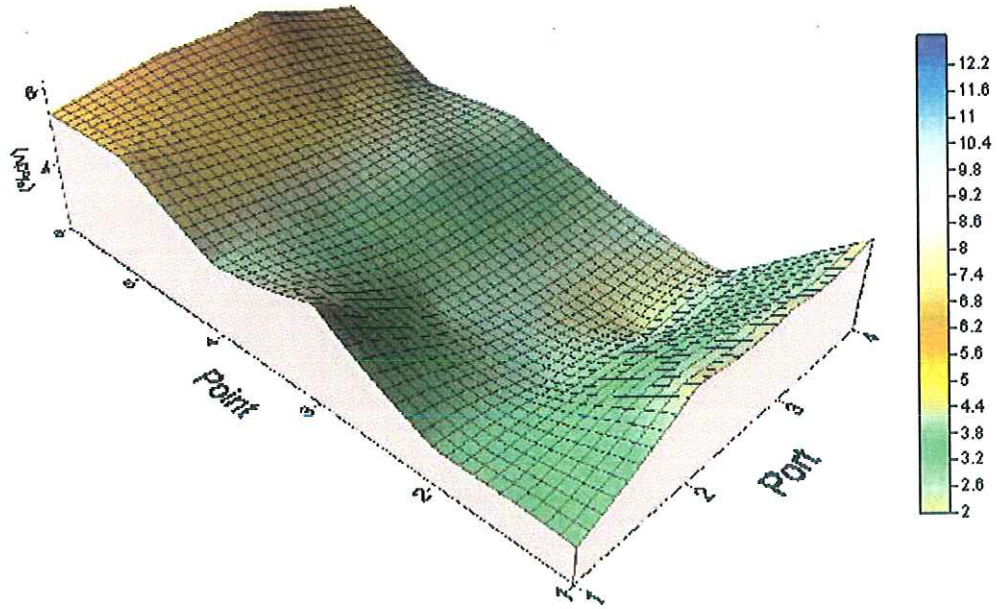
2-14

Table 2-14:
Unit 4: SCR Outlet – O_2 (%dv), Full Load

Point	1	2	3	4	AVG
6	5.34	5.94	6.20	5.50	5.75
5	5.31	4.91	4.53	4.03	4.70
4	3.97	3.77	11.27	13.06	3.87
3	4.59	2.81	2.73	2.86	3.25
2	3.04	2.63	2.14	2.19	2.50
1	3.00	4.44	4.37	4.51	4.08
AVG	4.04				

Port

Figure 2-14:
Unit 4: SCR Outlet – O_2 (%dv), Full Load



RESULTS

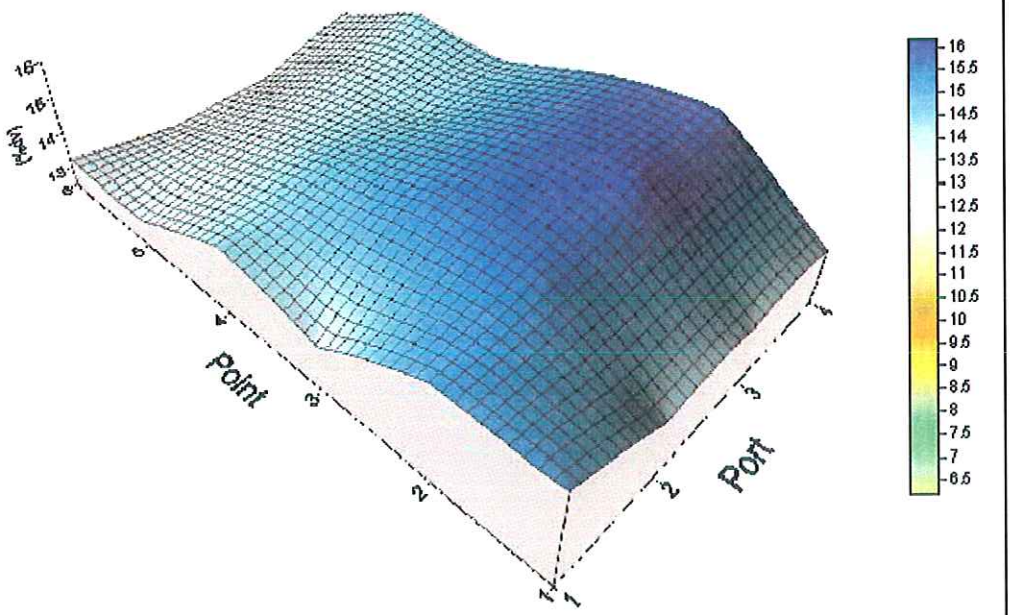
2-15

Table 2-15:
Unit 4: SCR Outlet – CO_2 (%dv), Full Load

Point	AVG	14.21	14.33	14.41	14.60	
	6	13.26	12.54	12.44	13.11	12.84
	5	13.19	13.61	13.91	14.44	13.79
	4	14.43	14.67	8.59	6.03	14.55
	3	13.76	15.47	15.56	15.43	15.05
	2	15.30	15.61	16.06	15.99	15.74
	1	15.36	14.06	14.06	14.01	14.37
		1	2	3	4	14.38

Port

Figure 2-15:
Unit 4: SCR Outlet – CO_2 (%dv), Full Load



RESULTS

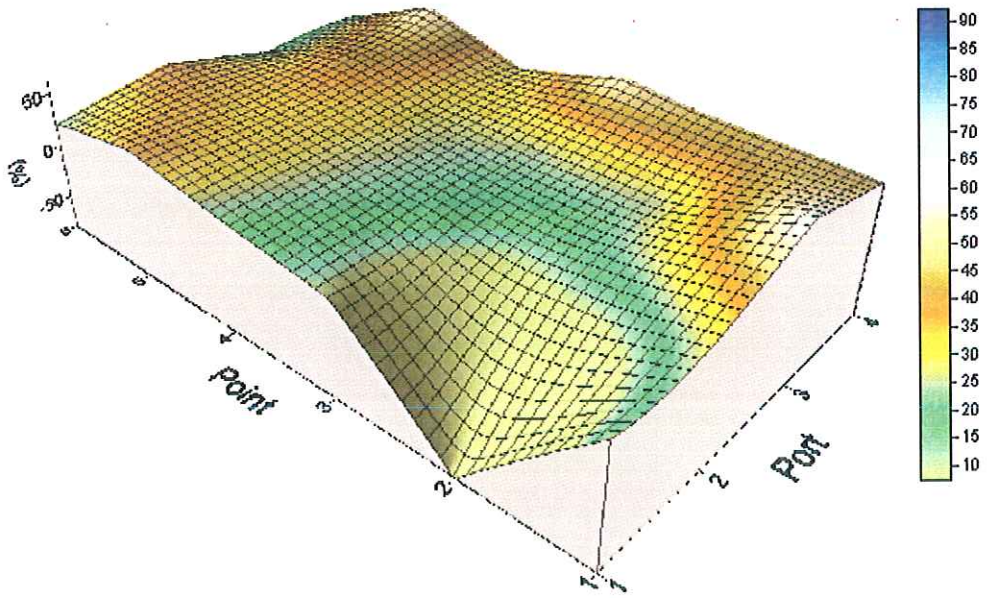
2-16

Table 2-16:
Unit 4: NO_x Removal Efficiency (@ 3% O_2), Full Load

Point	1	2	3	4	AVG
6	21.4%	39.2%	13.1%	16.6%	22.5%
5	37.3%	31.8%	41.6%	57.1%	42.5%
4	21.0%	25.9%	94.6%	-30.0%	20.4%
3	7.1%	17.5%	24.6%	54.3%	24.8%
2	-82.9%	11.3%	25.3%	44.3%	5.4%
1	27.0%	30.2%	63.1%	40.3%	40.5%
AVG	12.7%	26.8%	32.9%	40.8%	27.4%

Port

Figure 2-16:
Unit 4: NO_x Removal Efficiency (@ 3% O_2), Full Load



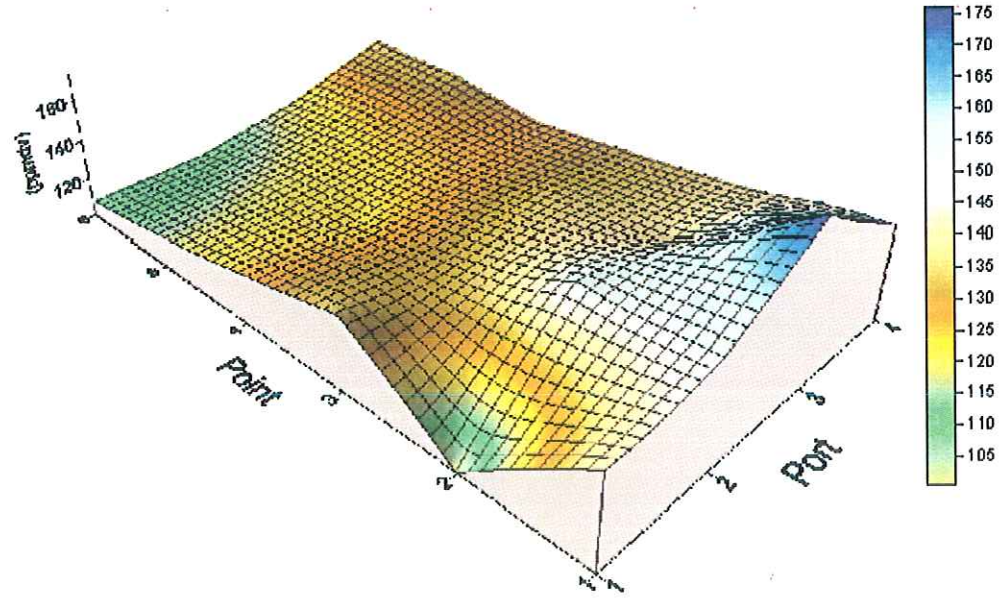
RESULTS

2-17

Table 2-17:
Unit 4: SCR Inlet – NO_x (ppmdv @ 3% O_2), Low Load

	AVG	121.34	129.83	136.48	135.26	
Point	6	108.11	109.46	119.07	136.12	118.19
	5	115.31	118.07	123.77	134.24	122.85
	4	125.06	121.15	125.47	126.73	124.60
	3	136.33	131.92	135.00	131.31	133.64
	2	100.10	149.61	139.00	137.12	131.46
	1	143.14	148.76	176.56	146.05	153.63
		1	2	3	4	130.73
		Port				

Figure 2-17:
Unit 4: SCR Inlet – NO_x (ppmdv @ 3% O_2), Low Load



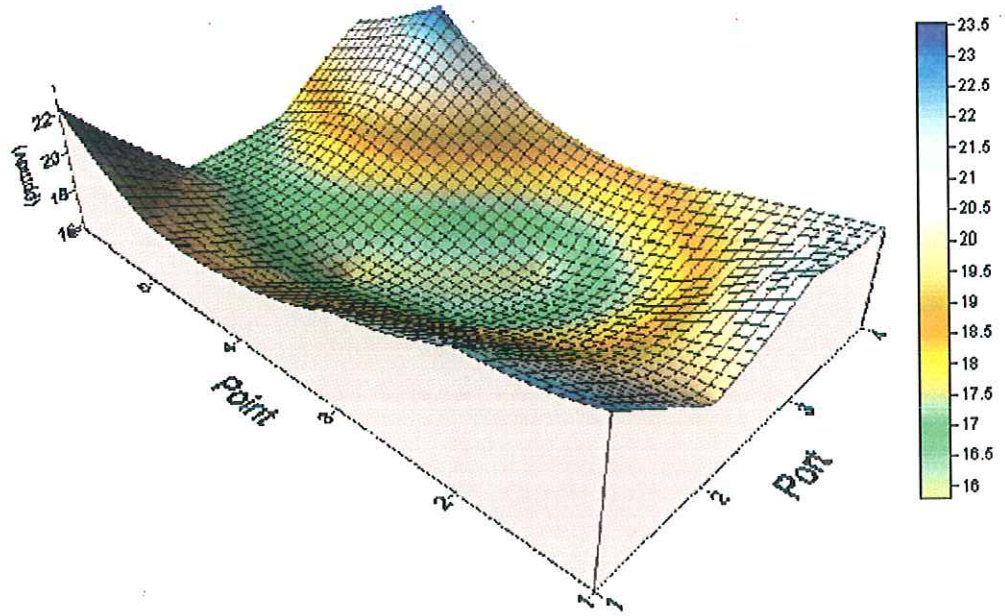
RESULTS

2-18

Table 2-18:
Unit 4: SCR Inlet – CO (ppmdv @ 3% O_2), Low Load

	AVG	21.12	17.34	18.19	20.63
Point	6	22.39	16.58	17.14	21.01	19.28
	5	18.84	16.80	19.05	23.44	19.53
	4	18.95	15.78	17.52	19.84	18.02
	3	20.57	16.66	15.94	18.69	17.97
	2	22.42	18.55	17.75	19.88	19.65
	1	23.55	19.69	21.72	20.90	21.47
		1	2	3	4	19.32
		Port				

Figure 2-18:
Unit 4: SCR Inlet – CO (ppmdv @ 3% O_2), Low Load

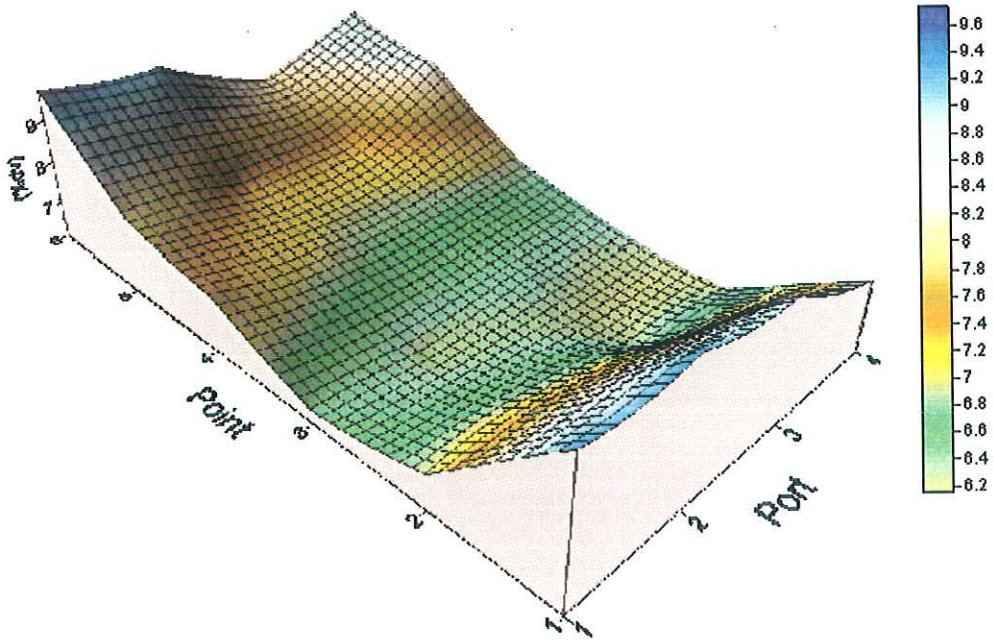


RESULTS

Table 2-19:
Unit 4: SCR Inlet – O_2 (%dv), Low Load

	AVG	7.98	7.70	7.31	7.47
Point	6	9.73	9.33	8.08	9.00	9.04
	5	7.88	7.33	7.33	8.53	7.77
	4	7.45	6.93	6.79	6.92	7.02
	3	6.46	6.23	6.38	6.34	6.35
	2	6.96	6.95	6.29	6.21	6.60
	1	9.43	9.42	8.95	7.84	8.91
		1	2	3	4	7.61
		Port				

Figure 2-19:
Unit 4: SCR Inlet – O_2 (%dv), Low Load

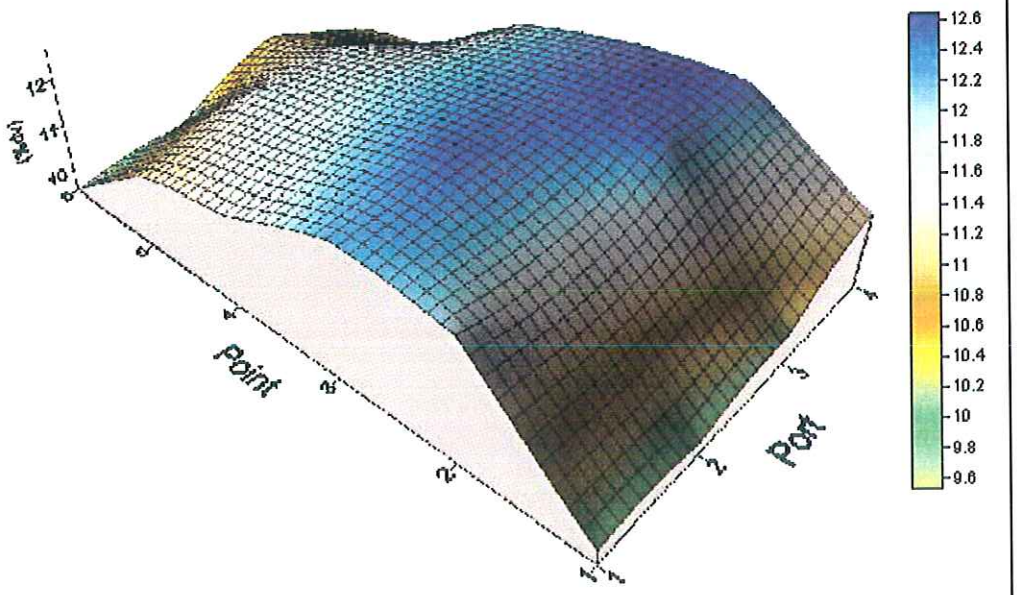


RESULTS

Table 2-20:
Unit 4: SCR Inlet – CO_2 (%dv), Low Load

	AVG	11.03	11.25	11.61	11.47
Point	6	9.53	9.83	10.89	10.12	10.09
	5	11.03	11.57	11.60	10.53	11.18
	4	11.46	11.95	12.11	11.98	11.88
	3	12.33	12.56	12.48	12.48	12.46
	2	12.04	11.86	12.47	12.61	12.24
	1	9.82	9.76	10.09	11.12	10.20
		1	2	3	4	11.34
		Port				

Figure 2-20:
Unit 4: SCR Inlet – CO_2 (%dv), Low Load



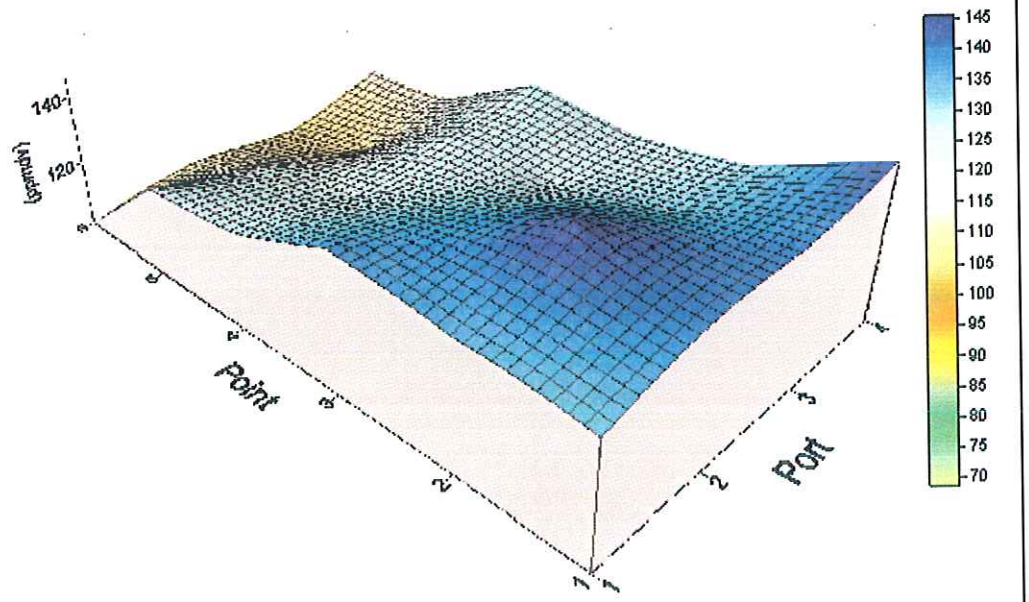
RESULTS

Table 2-21:
Unit 4: SCR Outlet – NO_x (ppmdv @ 3% O_2), Low Load

	AVG	127.19	127.75	122.27	126.81	
Point	6	100.18	106.67	103.77	113.60	106.05
	5	125.60	117.60	109.40	114.62	116.81
	4	128.07	122.69	66.70	130.63	127.13
	3	139.70	133.43	125.40	126.53	131.26
	2	136.10	145.81	132.35	130.34	136.15
	1	133.49	140.29	140.45	145.12	139.84
		1	2	3	4	126.17

Port

Figure 2-21:
Unit 4: SCR Outlet – NO_x (ppmdv @ 3% O_2), Low Load

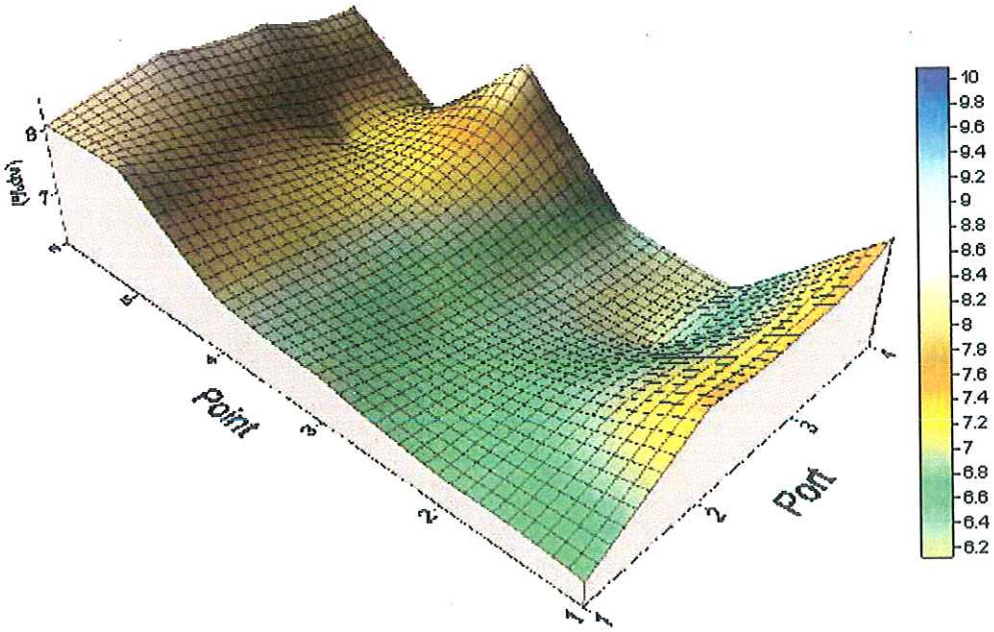


RESULTS

Table 2-22:
Unit 4: SCR Outlet – O_2 (%dv), Low Load

	AVG	7.17	7.30	7.12	7.34
Point	6	8.08	8.58	8.50	8.28	8.36
	5	8.08	7.58	7.10	7.02	7.44
	4	7.00	6.94	10.21	8.38	7.44
	3	6.83	6.51	6.41	6.46	6.55
	2	6.57	6.73	6.18	6.16	6.41
	1	6.48	7.46	7.42	7.77	7.28
		1	2	3	4	7.24
		Port				

Figure 2-22:
Unit 4: SCR Outlet – O_2 (%dv), Low Load

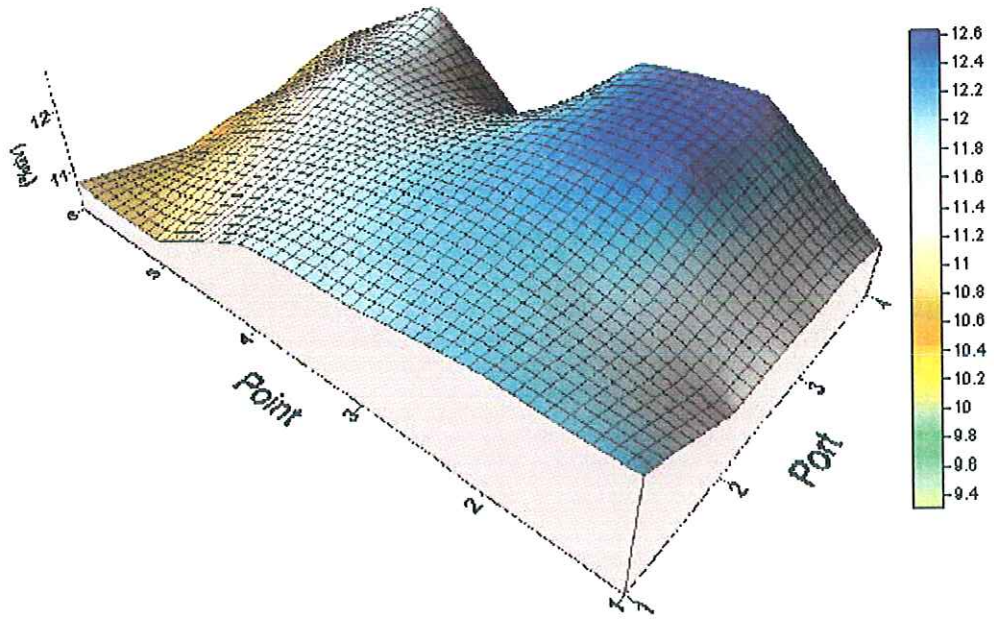


RESULTS

Table 2-23:
Unit 4: SCR Outlet – CO_2 (%dv), Low Load

	AVG	11.63	11.50	11.69	11.52	
Point	6	10.81	10.33	10.43	10.68	10.56
	5	10.78	11.21	11.72	11.86	11.39
	4	11.78	11.85	9.21	10.43	11.36
	3	11.93	12.21	12.35	12.33	12.20
	2	12.20	12.01	12.53	12.62	12.34
	1	12.26	11.38	11.40	11.21	11.56
		1	2	3	4	11.58
		Port				

Figure 2-23:
Unit 4: SCR Outlet – CO_2 (%dv), Low Load



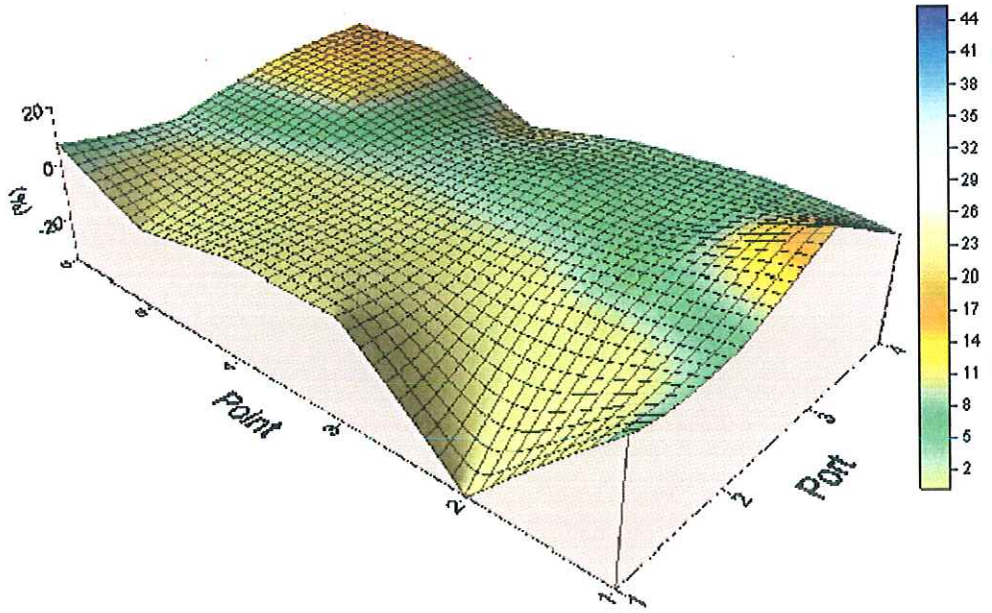
RESULTS

Table 2-24:
Unit 4: NO_x Removal Efficiency (@ 3% O_2), Low Load

Point	1	2	3	4	AVG
6	7.3%	2.6%	12.8%	16.5%	10.3%
5	-8.9%	0.4%	11.6%	14.6%	4.9%
4	-2.4%	-1.3%	46.8%	-3.1%	-2.0%
3	-2.5%	-1.1%	7.1%	3.6%	1.8%
2	-36.0%	2.5%	4.8%	4.9%	-3.6%
1	6.7%	5.7%	20.5%	0.6%	9.0%
AVG	-4.8%	1.6%	10.4%	6.3%	3.5%

Port

Figure 2-24:
Unit 4: NO_x Removal Efficiency (@ 3% O_2), Low Load



End of Section 2 – Results

DESCRIPTION OF INSTALLATION

3-1

PROCESS DESCRIPTION

AES Greenidge Unit 4 is a 107 megawatt (MW) coal-fired unit. The unit had an integrated multipollutant control system installed on it, which is going to reduce emissions in an economically viable way. This new technology utilizes a hybrid selective non-catalytic reduction / selective catalytic reduction system for NO_x reduction and a circulating fluidized-bed dry scrubber for SO_2 and Mercury Reduction

The testing reported in this document was performed at the SCR Inlet for NO_x, CO, and O_2/CO_2 and at the SCR Outlet for NO_x, and O_2/CO_2.

A schematic of the process is shown in Figure 3-1.

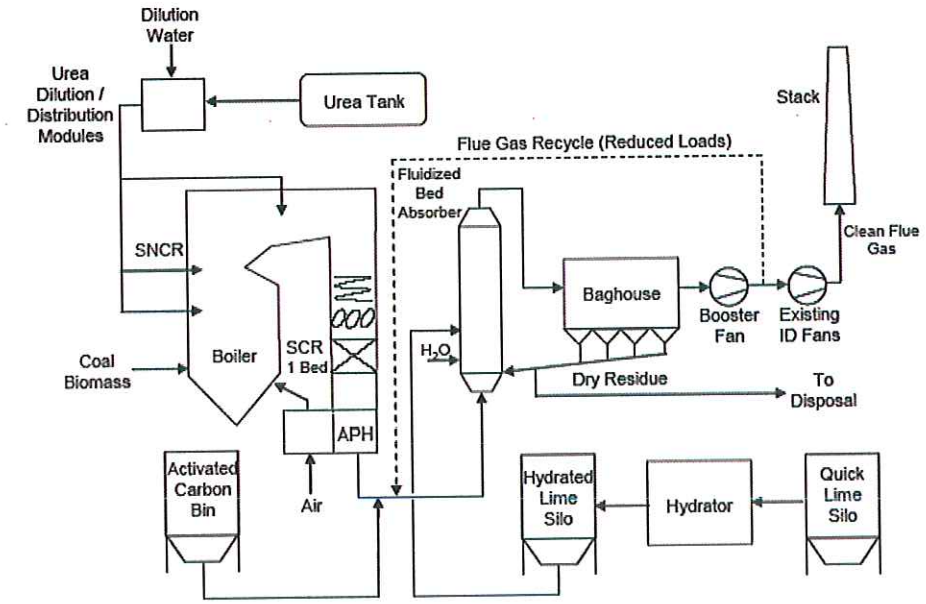


Figure 3-1: Process Schematic

DESCRIPTION OF INSTALLATION

3-2

DESCRIPTION OF SAMPLING LOCATIONS

Sampling points for the MASS system were located on a grid at both the SCR Inlet and SCR Outlet locations. The grid consisted of four ports with six points per port from which NO_x, CO, O_2, and CO_2 were measured.

Table 3-1 outlines the sampling point configurations. Figure 3-2 through 3-3 illustrates the sampling points and orientation of sampling ports for each of the sources tested in the program.

Table 3-1:
Sampling Points

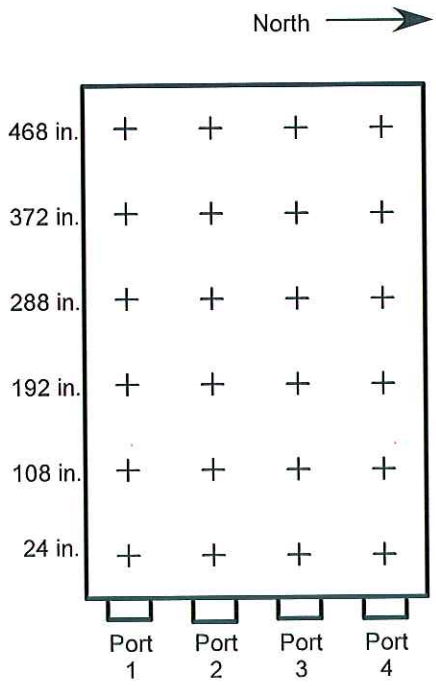
Source Constituent	Method	Run No.	Ports	Points per Port	Minutes per Point	Total Minutes	Figure
Unit 4 SCR Inlet NO_x, CO, O_2, CO_2	3A, 7E, 10	1-3	4	6	1	24 [1]	3-2
Unit 4 SCR Outlet NO_x, O_2, CO_2	3A, 7E	1-3	4	6	1	24 [1]	3-3

[1] Each cycle for the MASS system took 24 minutes, cycles were combined for different load conditions. 092708 121614

DESCRIPTION OF INSTALLATION

3-3

DESCRIPTION OF SAMPLING LOCATIONS (CONTINUED)

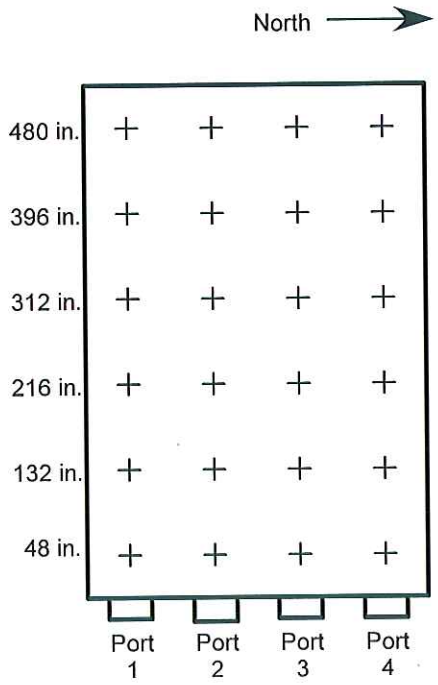


<Traverse-Sampling> Point	Port to Point Distance (in.)
1	24
2	108
3	192
4	288
5	372
6	468

Figure 3-2: Unit 4 – SCR Inlet: Sampling Points

DESCRIPTION OF INSTALLATION

DESCRIPTION OF SAMPLING LOCATIONS (CONTINUED)



<Traverse-Sampling> Point	Port to Point Distance (in.)
1	48
2	132
3	216
4	312
5	396
6	480

Figure 3-3: Unit 4 – SCR Outlet: Sampling Points

End of Section 3 – Description of Installation

METHODOLOGY

Clean Air Engineering followed procedures as detailed in U.S. Environmental Protection Agency (EPA) Method 3A, 7E, and 10 as well as Clean Air Proprietary Method MASS. 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 3A	"Determination of Oxygen and Carbon Dioxide Concentrations in 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"
CleanAir Proprietary Methods	
Multipoint Automated Sampling System (MASS)	

These methods appear in detail in Title 40 of the Code of Federal Regulations (CFR) and on the World Wide Web at http://www.cleanair.com.

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 in USEPA "Quality Assurance Handbook for Air Pollution Measurement Systems: Volume III Stationary Source-Specific Methods", EPA/600/R-94/038C. Additional QA/QC methods as prescribed in CleanAir's internal Quality Manual were also followed. Results of all QA/QC activities performed by CleanAir are summarized in Appendix D.

End of Section 4 – Methodology

APPENDIX

TEST METHOD SPECIFICATIONS ..... A
SAMPLE CALCULATIONS ..... B
QA/QC DATA C
FIELD DATA PRINTOUTS ..... D

TEST METHOD SPECIFICATIONS

A

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Specification Sheet for EPA Method 3A, 10, and 7E with MASS

Source Location Name(s)	SCR Inlet Outlet Grid
Pollutant(s) to be Determined	Nitrogen Oxides (NO_x), Carbon Monoxide (CO)
Other Parameters to be Determined from Train	O2 and CO2 (EPA Method 3A)

	Standard Method Specification	Actual Specification Used
Pollutant Sampling Information		
Duration of Run	N/A	vary
No. of Sample Traverse Points	N/A	24
Sample Time per Point	N/A	1 minutes
Sampling Rate	Constant Rate	Constant Rate
Sampling Probe		
Nozzle Material	N/A	None
Nozzle Design	N/A	N/A
Probe Liner Material	Stainless Steel or Pyrex Glass	Test Grid
Effective Probe Length	Sufficient to Traverse Points	See Report Section 3 for point location
Probe Temperature Set-Point	Prevent Condensation	Stack Temp
Particulate Filter		
In-Stack Filter	Yes	No
In-Stack Filter Material	Non-reactive to gas	N/A
External Filter	Yes	Yes
External Filter Material	Borosilicate, Quartz Glass Wool or Fiber Mat	Borosilicate Glass Fiber Mat
External Filter Set-Point	Prevent Condensation	Ambient
Sample Delivery System		
Heated Sample Line Material	Stainless Steel or Teflon	Teflon
Heated Sample Line Set-Point	Prevent Condensation	Ambient
Heated Sample Line Connections	Probe Exit to Moisture Removal System	N/A
Moisture Removal System	Refrigerator-type condenser or similar	Coil - Condenser Type
Sample Pump Type	Leak-Free, minimal response time	Piston
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	Probe to Sample Gas Manifold
Additional Filters	Optional	Yes
Additional Filter Type	N/A	Particulate Removal
Additional Filter Location	Optional	Entrance to Sample Manifold
Filter Material	Non-reactive to sample gases	Glass Fiber
Analyzer Description		
Oxygen (O_2)	EPA Method 3A (Paramagnetic)	EPA Method 3A (Paramagnetic)
Carbon Dioxide (CO_2)	EPA Method 3A (NDIR)	EPA Method 3A (NDIR)
Sulfur Dioxide (SO_2)	N/A	N/A
Nitrogen Oxides (NO_x)	EPA Method 7E (Chemiluminescent)	EPA Method 7E (Chemiluminescent)
Carbon Monoxide (CO)	EPA Method 10 (Gas Filter Correlation IR)	EPA Method 10 (Gas Filter Correlation IR)
Total Hydrocarbon (THC)	N/A	
Hydrogen Chloride (HCl)	N/A	
Ammonia (NH_3)	N/A	

Specification Sheet for EPA Method 3A, 10, and 7E with MASS

	Standard Method Specification	Actual Specification Used
Instrument Span Range		
Oxygen (O_2)	≤ 1.33 x Expected Maximum	0-15%
Carbon Dioxide (CO_2)	≤ 1.33 x Expected Maximum	0-15%
Sulfur Dioxide (SO_2)		N/A
Nitrogen Oxides (NO_x)	≤ 1.33 x Expected Maximum	0-1,000 ppm
Carbon Monoxide (CO)	N/A	0-1,000 ppm
Total Hydrocarbon (THC)	N/A	N/A
Hydrogen Chloride (HCl)	N/A	N/A
Ammonia (NH_3)	N/A	N/A
Data Acquisition		
Data Recorder	Strip chart, Analog Computer or Digital Recorder	Analog Computer
Recorder Resolution	0.5 Percent of Span	0.1 Percent of Span
Data Storage	Manually or Automatic	Automatic
Measurement Freq. <60 min. Sample Time	1-min. intervals or 30 measurements (less restrictive)	One reading per second
Recording Freq. <60 min. Sample Time	1-min. intervals or 30 measurements (less restrictive)	One Minute Average (60, 1 second readings)
Measurement Freq. >60 min. Sample Time	2-min. intervals or 96 measurements (less restrictive)	N/A
Recording Freq. >60 min. Sample Time	2-min. intervals or 96 measurements (less restrictive)	N/A
Calibration Gas Specifications		
Oxygen (O_2)	EPA Protocol 1	EPA Protocol 1
Carbon Dioxide (CO_2)	EPA Protocol 1	EPA Protocol 1
Sulfur Dioxide (SO_2)	N/A	
Nitrogen Oxides (NO_x)	EPA Protocol 1	EPA Protocol 1
Carbon Monoxide (CO)	N/A	EPA Protocol 1
Total Hydrocarbon (THC)	N/A	
Hydrogen Chloride (HCl)	N/A	
Ammonia (NH_3)	N/A	

End of Appendix Section

SAMPLE CALCULATIONS

B

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Consol Energy
CleanAir Project No. 10544
AES Greenidge Station
SCR Inlet

CEM Emissions Sample Calculations for NOX SCR Inlet

Intermediate Load

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.

091508 133711

1. NOX concentration corrected to 3% O2 (ppmdv example)

$$C(ppmdv@x\%02) = C(ppmdv) \times \left(\frac{20.9 - x}{20.9 - O_2} \right)$$

Where:

C (ppmdv)	= NOX concentration (ppmdv)	=	97.770	ppmdv
x	= oxygen content of corrected gas (%)	=	3.00	%
O_2	= proportion of oxygen in the gas stream by volume (%)	=	5.290	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
C (ppmdv - O2	= NOX concentration corrected to 3% O2 (ppmdv example)	=	112.370	ppmdv @ 3%O2

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

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

Where:

C (ppmdv)	= NOX concentration (ppmdv)	=	97.770	ppmdv
y	= carbon dioxide content of corrected gas (%)	=	12.00	%
CO_2	= proportion of carbon dioxide in the gas stream by volume (%)	=	13.290	%
C (ppmdv -CO	= NOX concentration corrected to 12% CO2 (ppmdv example)	=	88.280	ppmdv @ 12%CO2

3. NOX Fd-based emission rate (lb/MMBtu @ 3% O2)

$$E_{Fd} = C(ppmdv) \times 1.194 \times 10^{-7} \times F_d \times \left(\frac{20.9}{20.9 - O_2} \right)$$

Where:

C (ppmdv)	= NOX concentration (ppmdv@ 3% O2)	=	112.37	lb/dscf
F_d	= ratio of gas volume to heat content of fuel (dscf/MMBtu)	=	9780	dscf/MMBtu
O_2	= proportion of oxygen in the gas stream by volume (%)	=	3.000	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
1.194x10-7	= conversion factor	=	1.19E-07	
E_{Fd}	= NOX Fd-based emission rate (lb/MMBtu @ 3% O2)	=	0.104	lb/MMBtu

Prepared by Clean Air Engineering Proprietary Software
SS CEM Version 06-2004a

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Consol Energy

CleanAir Project No. 10544

AES Greenidge Station

SCR Inlet

4. CO Fd-based emission rate (lb/MMBtu @ 3% O2)

$$E_{Fd} = C(ppmdv) \times 7.27E-08 \times F_d \times \left(\frac{20.9}{20.9 - O_2} \right)$$

Where:

C (ppmdv)	= CO concentration (ppmdv@ 3% O2	=	25.41	lb/dscf
F_d	= ratio of gas volume to heat content of fuel (dscf/MMBtu)	=	9780	dscf/MMBtu
O_2	= proportion of oxygen in the gas stream by volume (%)	=	3.000	%
20.9	= oxygen content of ambient air (%)	=	20.9	%
7.27E-08	= conversion factor	=	7.27E-08	
E_{Fd}	= CO Fd-based emission rate (lb/MMBtu @ 3% O2)	=	0.0211	lb/MMBtu

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SS CEM Version 06-2004a

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End of Appendix Section

QA/QC DATA

C

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Airgas

Airgas Great Lakes, Inc.
2009 Bellaire Ave.
Royal Oak, MI 48067
Ph: (248) 399-9150
Fax: (248) 584-2540
http://www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Customer:	CREIGHTON		
Part Number:	E03NI80E15A01E2	Reference Number:	32-112589541-3
Cylinder Number:	SG9138549BAL	Cylinder Volume:	149 Cu.Ft.
Laboratory:	MIC - Royal Oak - MI	Cylinder Pressure:	2015 PSIG
Analysis Date:	Sep 24, 2007	Valve Outlet:	590

Expiration Date: Sep 24, 2010

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

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON DIOXIDE	6.000 %	6.249 %	G1	+/- 1% NIST Traceable
OXYGEN	14.00 %	14.19 %	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	97050910	SG9183177BAL	8.954% CARBON DIOXIDE/NITROGEN	Jul 01, 2009
NTRM	03060215	XC024387B	22.60% OXYGEN/NITROGEN	Jul 01, 2011

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
E/N 54, 9%FS CO2, Nicolet 6700	Fourier Transform Infrared (FTIR)	Aug 27, 2007
E/N 51, 25%FS O2, Rosemont 755R	Paramagnetic (Para)	Sep 04, 2007

Triad Data Available Upon Request

Notes:

L. Otten V

QA Approval

Airgas

Certificate of Analysis: EPA Protocol Gas Mixture

Airgas Great Lakes, Inc.
2009 Bellaire Ave.
Royal Oak, MI 48067
Ph: (248) 399-9150
Fax: (248) 584-2540
http://www.airgas.com

Cylinder Number: CC210739
Cylinder Pressure: 2000.6 PSIG
Certification Date: 9/19/2006
Reference Number: 32-112503706-4
Expiration Date: 9/19/2009
Laboratory: MIC - Royal Oak - MI

Certified Concentrations

Component	Concentration	Accuracy	Analytical Principle	Procedure
OXYGEN	6.040 %	+/- 1%	Paramagnetic (Para)	G1
CARBON DIOXIDE	13.98 %	+/- 1%	Nondispersive Infrared (NDIR)	G1
NITROGEN	Balance			

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences.

Notes: CREIGHTON

Do not use cylinder below 150 psig.

Approval Signature Cathy D. Stewart

Reference Standard Information

Type	Balance Gas	Component	Cyl.Number	Concentration
NTRM 82745	NITROGEN	CARBON DIOXIDE	SG9183197BAL	15.862 %
NTRM 82658x	NITROGEN	OXYGEN	SG9160230BAL	7.015 %

Analytical Results

1st Component — OXYGEN

1st Analysis Date: 09/19/2006

R 3.51	S 3.02	Z 0.00	Conc 6.040 %
S 3.02	Z 0.00	R 3.51	Conc 6.040 %
Z 0.00	R 3.51	S 3.02	Conc 6.040 %
			AVG: 6.040 %

2nd Component — CARBON DIOXIDE

1st Analysis Date: 09/19/2006

R 7.93	S 6.99	Z 0.00	Conc 13.98 %
S 6.99	Z 0.00	R 7.93	Conc 13.98 %
Z 0.00	R 7.93	S 6.99	Conc 13.98 %
			AVG: 13.98 %

RATA CLASS

Scott Specialty Gases

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

SCOTT SPECIALTY GASES
1290 COMBERMERE STREET
TROY,MI 48083

P.O. No.: 55302-71-65000
Project No.: 05-49082-020

Customer
CLEAN AIR ENGINEERING
DON ALLEN
500 W. WOOD STREET
PALATINE IL 60067

ANALYTICAL INFORMATION

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

Cylinder Number: ALM028079 **Certification Date:** 15Nov2006 **Exp. Date:** 14Nov2008
Cylinder Pressure*:** 1932 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ANALYTICAL ACCURACY**	TRACEABILITY
NITRIC OXIDE	990.8	PPM	+/- 1%	Direct NIST and NMi
NITROGEN - OXYGEN FREE		BALANCE		
TOTAL OXIDES OF NITROGEN	990.8	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 1687	01Dec2008	AAL070211	970.3 PPM	NITRIC OXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR//0928621	13Nov2006	FTIR

ANALYZER READINGS

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

NITRIC OXIDE

First Triad Analysis

Date: 08Nov2006 Response Unit:PPM

Z1=0.10897	R1=968.7834	T1=991.9330
R2=971.7240	Z2=1.12536	T2=992.3520
Z3=1.28613	T3=992.9595	R3=972.6352

Avg. Concentration: 991.7 PPM

Second Triad Analysis

Date: 15Nov2006 Response Unit: PPM

Z1=-0.02701	R1=971.4890	T1=990.7795
R2=971.6500	Z2=0.62180	T2=991.6490
Z3=0.64144	T3=992.0393	R3=972.4893

Avg. Concentration: 989.9 PPM

Calibration Curve

Concentration=A+Bx+Cx2+Dx3+Ex4
r=9.99995E-1

Constants:	
B=9.89054E-1	A=0.00000E+0
D=0.00000E+0	C=1.81000E-4
	E=0.00000E+0

APPROVED BY: _____
JEFF CROTEAU

RATA CLASS

Scott Specialty Gases

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

SCOTT SPECIALTY GASES
1290 COMBERMERE STREET
TROY,MI 48083

P.O. No.: 55678-71-65000
Project No.: 05-54263-006

Customer

CLEAN AIR ENGINEERING
DON ALLEN
500 W. WOOD STREET
PALATINE IL 60067

ANALYTICAL INFORMATION

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

Cylinder Number: ALM016221 **Certification Date:** 01May2007 **Exp. Date:** 30Apr2009
Cylinder Pressure*:** 1852 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ANALYTICAL ACCURACY**	TRACEABILITY
NITRIC OXIDE	494.3	PPM	+/- 1%	Direct NIST and NMi
NITROGEN - OXYGEN FREE		BALANCE		
TOTAL OXIDES OF NITROGEN	494.7	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 1686	01Jan2010	AAL071059	497.7 PPM	NITRIC OXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR//09286Z1	17Apr2007	FTIR

ANALYZER READINGS

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

NITRIC OXIDE

First Triad Analysis

Date: 23Apr2007 Response Unit:PPM
Z1=-0.11010 R1=500.6537 T1=496.2046
R2=500.9024 Z2=0.33503 T2=496.3593
Z3=0.67514 T3=496.9481 R3=501.5296
Avg. Concentration: 493.2 PPM

Second Triad Analysis

Date: 01May2007 Response Unit: PPM
Z1=-0.00847 R1=497.7681 T1=493.7291
R2=498.4169 Z2=0.02351 T2=496.8580
Z3=0.08068 T3=497.3447 R3=498.7058
Avg. Concentration: 495.4 PPM

Calibration Curve

Concentration=A+Bx+Cx2+Dx3+Ex4
r=9.99999E-1
Constants: A=0.00000E+0
B=9.85321E-1 C=5.10000E-5
D=0.00000E+0 E=0.00000E+0

APPROVED BY: Scott King

RATA CLASS

Scott Specialty Gases

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

SCOTT SPECIALTY GASES
1290 COMBERMERE STREET
TROY,MI 48083

P.O. No.: 55302-71-65000
Project No.: 05-49082-012

Customer

CLEAN AIR ENGINEERING
DON ALLEN
500 W. WOOD STREET
PALATINE IL 60067

ANALYTICAL INFORMATION

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

Cylinder Number: ALM001625 **Certification Date:** 27Nov2006 **Exp. Date:** 26Nov2009
Cylinder Pressure*:** 1815 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ANALYTICAL ACCURACY**	TRACEABILITY
CARBON MONOXIDE	996.3	PPM	+/- 1%	Direct NIST and NMi
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 1681	01Mar2008	ALM024603	1013. PPM	CARBON MONOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR//0928621	27Nov2006	FTIR

ANALYZER READINGS

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

First Triad Analysis

CARBON MONOXIDE

Date: 14Nov2006 Response Unit:PPM
Z1=-0.01362 R1=1016.789 T1=1000.985
R2=1018.153 Z2=0.62182 T2=1001.612
Z3=0.68740 T3=1002.647 R3=1021.420
Avg. Concentration: 996.1 PPM

Second Triad Analysis

Date: 27Nov2006 Response Unit: PPM
Z1=0.07888 R1=1016.719 T1=1000.068
R2=1016.811 Z2=0.60251 T2=1000.387
Z3=0.61890 T3=1000.423 R3=1017.121
Avg. Concentration: 996.5 PPM

Calibration Curve

Concentration=A+Bx+Cx2+Dx3+Ex4
r=9.99982E-1
Constants: A=0.00000E+0
B=3.61194E-1 C=8.40000E-5
D=0.00000E+0 E=0.00000E+0

APPROVED BY: _____
JEFF CROTEAU

AIR LIQUIDE
Scott Specialty Gases
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

SCOTT SPECIALTY GASES
1290 COMBERMERE STREET
TROY, MI 48083

P.O. No.: 56306-71-65000
Project No.: 05-62048-002

Customer

CLEAN AIR ENGINEERING
DON ALLEN
500 W. WOOD STREET
PALATINE IL 60067

ANALYTICAL INFORMATION

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

Cylinder Number: ALM066671 **Certification Date:** 28Jan2008 **Exp. Date:** 27Jan2011
Cylinder Pressure*:** 2000 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ANALYTICAL ACCURACY**	TRACEABILITY
CARBON MONOXIDE	492.3	PPM	+/- 1%	Direct NIST and NMi
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 1680	01Nov2008	ALM059546	498.0 PPM	CARBON MONOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR//0928621	17Jan2008	FTIR

ANALYZER READINGS

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

CARBON MONOXIDE

First Triad Analysis

Date: 18Jan2008 Response Unit:PPM

Z1 = 0.03781	R1 = 495.6371	T1 = 489.9570
R2 = 495.8672	Z2 = 0.33285	T2 = 490.3161
Z3 = 0.45475	T3 = 490.4215	R3 = 496.4662
Avg. Concentration:	492.2	PPM

Second Triad Analysis

Date: 28Jan2008 Response Unit: PPM

Z1 = 0.01098	R1 = 495.7082	T1 = 490.3437
R2 = 496.3777	Z2 = 0.41081	T2 = 490.6801
Z3 = 0.50599	T3 = 490.8478	R3 = 496.5735
Avg. Concentration:	492.4	PPM

Calibration Curve

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 9.99975E-1

Constants:	A = 0.00000E+0
B = 5.91777E-1	C = 2.14000E-4
D = 0.00000E+0	E = 0.00000E+0

APPROVED BY: _____
Rob McCrandall

End of Appendix Section

FIELD DATA PRINTOUTS

D

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Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy

AES Dresden

Date: 5/21/2008
Start Time: 2:24
End Time: 2:47

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	2:24	0.0		-71.2	20.6		0.1		0.0	-93.1	0.7		-9.7	41.8	8.3
1-5	2:28	90.6		19.4	5.7		12.8		106.7	13.6	10.7		0.3	12.6	-20.9
1-4	2:32	77.2	57.3	6.0	5.2	10.7	13.3	8.6	88.0	-5.1	14.3	9.7	3.9	16.3	-17.2
1-3	2:36	95.0		23.8	3.7		14.7		98.9	5.8	24.5		14.1	25.5	-8.0
1-2	2:40	0.2		-71.0	20.5		0.2		9.0	-84.1	0.3		-10.1	13.4	-20.1
1-1	2:44	80.8		9.6	8.6		10.2		117.6	24.5	7.8		-2.6	11.4	-22.1
2-6	2:25	96.4		25.2	8.9		9.8		143.8	50.7	3.3		-7.1	4.9	-28.6
2-5	2:29	90.7		19.5	5.6		13.0		106.1	13.0	8.9		-1.5	10.4	-23.1
2-4	2:33	69.3	71.4	-1.9	6.9	8.8	12.0	10.2	88.6	-4.5	13.5	10.8	3.1	17.3	-16.2
2-3	2:37	84.8		13.6	4.2		14.2		90.9	-2.2	23.2		12.8	24.9	-8.6
2-2	2:41	5.1		-66.1	19.6		1.0		70.2	-22.9	1.1		-9.3	15.1	-18.3
2-1	2:45	82.0		10.8	7.4		11.3		108.7	15.6	14.5		4.1	19.2	-14.3
3-6	2:26	119.3		48.1	5.6		12.9		139.6	46.5	9.0		-1.4	10.5	-22.9
3-5	2:30	118.9		47.7	4.9		13.5		133.0	39.9	10.8		0.4	12.1	-21.4
3-4	2:34	95.4	90.8	24.2	4.7	8.9	13.7	10.0	105.4	12.3	16.1	10.9	5.7	17.8	-15.7
3-3	2:38	0.2		-71.0	19.8		1.0		3.3	-89.8	9.6		-0.8	156.2	122.7
3-2	2:42	113.9		42.7	12.5		6.3		242.7	149.6	3.1		-7.3	6.6	-26.9
3-1	2:46	97.3		26.1	5.8		12.7		115.3	22.3	16.7		6.3	19.8	-13.7
4-6	2:27	138.7		67.5	6.6		12.1		173.6	80.5	12.3		1.9	15.4	-18.1
4-5	2:31	142.9		71.7	5.7		12.9		168.3	75.2	15.1		4.7	17.8	-15.7
4-4	2:35	111.2	65.5	40.0	4.9	13.0	13.6	6.7	124.4	31.3	19.0	10.1	8.6	21.3	-12.2
4-3	2:39	0.0		-71.2	20.6		0.1		0.0	-93.1	0.3		-10.1	17.9	-15.6
4-2	2:43	0.0		-71.2	20.0		0.8		0.0	-93.1	5.4		-5.0	107.4	73.9
4-1	2:47	0.0		-71.2	20.1		0.7		0.0	-93.1	8.4		-2.0	188.0	154.5
Inlet Averages		71.2			10.3		8.9		93.1		10.4			33.5	

	lb/MMBtu
NOx Outlet	0.1085

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction
1-6	2:24	87.9		18.3	6.2		12.5		107.0	27.3	#DIV/0!	#DIV/0!
1-5	2:28	51.2		-18.4	5.6		13.0		59.9	-19.8	43.5	43.9
1-4	2:32	44.1	70.3	-25.5	4.5	5.0	14.0	13.6	48.1	-31.6	42.9	45.3
1-3	2:36	61.4		-8.2	4.5		14.0		67.0	-12.7	35.4	32.2
1-2	2:40	88.0		18.4	4.4		14.1		95.5	15.7	-43900.0	-966.7
1-1	2:44	88.9		19.3	4.8		13.8		98.8	19.1	-10.0	15.9
2-6	2:25	91.3		21.7	6.6		12.0		114.3	34.6	5.3	20.5
2-5	2:29	55.0		-14.6	5.1		13.5		62.3	-17.4	39.4	41.3
2-4	2:33	32.7	70.1	-36.9	4.5	4.9	14.1	13.6	35.7	-44.0	52.8	59.7
2-3	2:37	55.8		-13.8	4.0		14.5		59.1	-20.6	34.2	35.0
2-2	2:41	98.4		28.8	3.7		14.7		102.4	22.7	-1829.4	-45.8
2-1	2:45	87.1		17.5	5.6		13.0		101.9	22.2	6.2	6.3
3-6	2:26	97.7		28.1	5.4		12.3		120.6	40.9	18.1	13.6
3-5	2:30	63.2		-6.4	4.7		13.8		69.8	-9.9	46.8	47.5
3-4	2:34	23.5	67.7	-46.1	11.7	6.0	8.0	12.8	45.7	-34.0	75.4	56.6
3-3	2:38	36.1		-33.5	3.9		14.5		38.0	-41.7	-17950.0	-1067.9
3-2	2:42	94.7		25.1	3.6		14.9		98.0	18.3	16.9	59.6
3-1	2:46	90.9		21.3	5.4		13.2		105.0	25.3	6.6	9.0
4-6	2:27	110.1		40.5	5.7		12.9		129.7	49.9	20.6	25.3
4-5	2:31	54.7		-14.9	4.5		14.0		59.7	-20.0	61.7	64.5
4-4	2:35	60.1	70.3	-9.5	6.9	5.2	11.6	13.4	76.8	-2.9	46.0	38.2
4-3	2:39	32.1		-37.5	4.2		14.3		34.4	-45.3	#DIV/0!	#DIV/0!
4-2	2:43	88.8		19.2	4.0		14.5		94.1	14.3	#DIV/0!	#DIV/0!
4-1	2:47	75.9		6.3	5.7		13.0		89.4	9.7	#DIV/0!	#DIV/0!
Outlet Averages		69.6			5.3		13.3		79.7		#DIV/0!	#DIV/0!

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy
AES Dresden

Date: 5/21/2008
Start Time: 2:48
End Time: 3:11

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	2:48	0.2		-66.7	20.5		0.2		9.0	-85.4	0.3		-10.6	13.4	-30.8
1-5	2:52	80.5		13.6	5.9		12.7		96.1	1.7	11.5		0.6	13.7	-30.5
1-4	2:56	72.7	53.6	5.8	5.3	11.0	13.2	8.4	83.4	-10.9	13.5	10.7	2.6	15.5	-28.7
1-3	3:00	93.4		26.5	3.8		14.5		97.8	3.4	31.9		21.0	33.4	-10.8
1-2	3:04	0.7		-66.2	20.5		0.3		31.3	-63.0	0.6		-10.3	26.9	-17.4
1-1	3:08	73.9		7.0	9.7		9.2		118.1	23.8	6.5		-4.4	10.4	-33.8
2-6	2:49	88.3		21.4	8.7		10.0		129.6	35.2	3.3		-7.6	4.8	-39.4
2-5	2:53	83.1		16.2	5.9		12.7		99.2	4.8	9.7		-1.2	11.6	-32.6
2-4	2:57	2.1	57.6	-64.8	20.1	11.1	0.7	8.3	47.0	-47.4	4.0	10.6	-6.9	89.5	45.3
2-3	3:01	91.2		24.3	4.2		14.3		97.8	3.4	30.9		20.0	33.1	-11.1
2-2	3:05	0.1		-66.8	20.6		0.2		6.0	-88.4	0.3		-10.6	17.9	-26.3
2-1	3:09	80.9		14.0	7.1		11.6		104.9	10.6	15.4		4.5	20.0	-24.2
3-6	2:50	116.8		49.9	5.4		13.1		134.9	40.5	8.4		-2.5	9.7	-34.5
3-5	2:54	120.6		53.7	5.0		13.4		135.8	41.4	11.5		0.6	12.9	-31.3
3-4	2:58	96.4	89.4	29.5	5.5	9.6	12.9	9.4	112.0	17.7	8.0	11.9	-2.9	9.3	-34.9
3-3	3:02	0.4		-66.5	19.8		1.1		6.5	-87.8	24.9		14.0	405.2	361.0
3-2	3:06	105.5		38.6	15.7		3.5		363.2	268.8	2.4		-8.5	8.3	-35.9
3-1	3:10	96.4		29.5	5.9		12.5		115.0	20.7	16.0		5.1	19.1	-25.1
4-6	2:51	133.7		66.8	6.5		12.2		166.2	71.8	11.8		0.9	14.7	-29.5
4-5	2:55	148.1		81.2	5.8		12.9		175.6	81.2	14.8		3.9	17.5	-26.7
4-4	2:59	121.6	67.2	54.7	4.8	12.8	13.6	6.9	135.2	40.8	17.5	10.5	6.6	19.5	-24.7
4-3	3:03	0.0		-66.9	20.6		0.2		0.0	-94.3	0.4		-10.5	23.9	-20.3
4-2	3:07	0.0		-66.9	19.4		1.4		0.0	-94.3	8.3		-2.6	99.0	54.8
4-1	3:11	0.0		-66.9	19.5		1.2		0.0	-94.3	10.3		-0.6	131.7	87.5
Inlet Averages		66.9			11.1		8.2		94.3		10.9			44.2	

	lb/MMBtu
NOx Outlet	0.1033

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction
1-6	2:48	76.8		10.5	5.9		12.7		91.6	15.9	-38300.0	-924.0
1-5	2:52	38.4		-27.9	5.8		12.9		45.5	-30.2	52.3	52.6
1-4	2:56	34.8	62.7	-31.5	4.7	4.9	13.8	13.6	38.5	-37.3	52.1	53.9
1-3	3:00	60.5		-5.8	4.4		14.0		65.6	-10.1	35.2	32.9
1-2	3:04	87.6		21.3	4.2		14.3		93.9	18.2	-12414.3	-199.7
1-1	3:08	78.3		12.0	4.5		14.0		85.5	9.7	-6.0	27.6
2-6	2:49	83.5		17.2	6.3		12.3		102.4	26.6	5.4	21.0
2-5	2:53	47.5		-18.8	5.2		13.4		54.2	-21.6	42.8	45.4
2-4	2:57	28.4	65.8	-37.9	4.6	5.0	14.0	13.6	31.2	-44.5	-1252.4	33.6
2-3	3:01	60.1		-6.2	4.0		14.5		63.7	-12.1	34.1	34.9
2-2	3:05	91.8		25.5	4.3		14.2		99.0	23.3	-91700.0	-1559.0
2-1	3:09	83.2		16.9	5.5		13.1		96.7	21.0	-2.8	7.8
3-6	2:50	91.7		25.4	6.3		12.4		112.4	36.7	21.5	16.7
3-5	2:54	61.8		-4.5	4.8		13.8		68.7	-7.0	48.8	49.4
3-4	2:58	23.6	66.3	-42.7	11.1	5.9	8.6	12.8	43.1	-32.6	75.5	61.5
3-3	3:02	40.1		-26.2	4.0		14.4		42.5	-33.3	-9925.0	-552.5
3-2	3:06	97.2		30.9	4.0		14.5		103.0	27.2	7.9	71.7
3-1	3:10	83.5		17.2	5.3		13.2		95.8	20.1	13.4	16.7
4-6	2:51	101.8		35.5	5.9		12.8		121.5	45.7	23.9	26.9
4-5	2:55	55.7		-10.6	4.8		13.8		61.9	-13.8	62.4	64.7
4-4	2:59	69.0	70.3	2.7	6.5	5.2	12.0	13.4	85.8	10.0	43.3	36.6
4-3	3:03	42.3		-24.0	4.2		14.4		45.3	-30.4	#DIV/0!	#DIV/0!
4-2	3:07	84.2		17.9	3.8		14.7		88.1	12.4	#DIV/0!	#DIV/0!
4-1	3:11	69.0		2.7	5.8		12.9		81.8	6.1	#DIV/0!	#DIV/0!
Outlet Averages		66.3			5.2		13.4		75.7		#DIV/0!	#DIV/0!

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy

AES Dresden

Date: 5/21/2008
Start Time: 3:12
End Time: 3:35

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	3:12	0.8		-87.0	20.5		0.3		35.8	-66.6	0.4		-23.8	17.9	-13.7
1-5	3:16	74.4		-13.4	5.9		12.7		88.8	-13.6	19.7		-4.5	23.5	-8.1
1-4	3:20	66.1	63.3	-21.7	5.2	8.2	13.3	10.9	75.4	-27.0	18.1	20.6	-6.1	20.6	-11.0
1-3	3:24	85.9		-1.9	3.9		14.5		90.4	-12.0	27.1		2.9	28.5	-3.1
1-2	3:28	77.9		-9.9	5.6		13.1		91.1	-11.3	28.1		3.9	32.9	1.2
1-1	3:32	74.8		-13.0	7.8		11.2		102.2	-0.2	30.3		6.1	41.4	9.8
2-6	3:13	84.7		-3.1	8.3		10.4		120.3	17.9	4.8		-19.4	6.8	-24.8
2-5	3:17	86.9		-0.9	5.5		13.1		101.0	-1.4	13.6		-10.6	15.8	-15.8
2-4	3:21	0.8	74.8	-87.0	19.7	7.9	1.1	11.0	11.9	-90.5	6.7	23.2	-17.5	99.9	68.3
2-3	3:25	84.4		-3.4	3.9		14.4		88.9	-13.5	41.8		17.6	44.0	12.4
2-2	3:29	107.9		20.1	3.4		14.8		110.4	8.0	50.2		26.0	51.3	19.7
2-1	3:33	83.9		-3.9	6.6		12.1		105.0	2.6	22.0		-2.2	27.5	-4.1
3-6	3:14	107.3		19.5	5.4		13.1		123.9	21.5	10.7		-13.5	12.4	-19.3
3-5	3:18	112.9		25.1	4.8		13.6		125.5	23.1	15.7		-8.5	17.5	-14.2
3-4	3:22	95.1	100.7	7.3	4.8	4.7	13.6	13.7	105.7	3.3	13.1	26.3	-11.1	14.6	-17.1
3-3	3:26	92.6		4.8	4.0		14.4		98.1	-4.3	32.4		8.2	34.3	2.7
3-2	3:30	101.6		13.8	3.4		15.0		103.9	1.5	65.6		41.4	67.1	35.5
3-1	3:34	94.6		6.8	6.0		12.6		113.6	11.2	20.4		-3.8	24.5	-7.1
4-6	3:15	127.6		39.8	6.2		12.4		155.4	53.0	18.0		-6.2	21.9	-9.7
4-5	3:19	128.2		40.4	5.5		13.1		149.0	46.6	24.0		-0.2	27.9	-3.7
4-4	3:23	114.7	112.4	26.9	4.8	5.1	13.6	13.5	127.5	25.1	20.8	26.7	-3.4	23.1	-8.5
4-3	3:27	102.8		15.0	4.2		14.2		110.2	7.8	27.5		3.3	29.5	-2.1
4-2	3:31	110.1		22.3	3.7		14.7		114.6	12.2	48.3		24.1	50.3	18.6
4-1	3:35	90.7		2.9	6.0		12.7		109.0	6.6	21.4		-2.8	25.7	-5.9
Inlet Averages		87.8			6.5		12.3		102.4		24.2			31.6	

	lb/MMBtu
NOx Outlet	0.0905

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction
1-6	3:12	62.1		3.6	6.2		12.5		75.6	9.1	-7662.5	-111.2
1-5	3:16	33.1		-25.4	5.4		13.1		38.2	-28.3	55.5	56.9
1-4	3:20	26.4	56.4	-32.1	4.6	4.9	13.9	13.6	29.0	-37.5	60.1	61.5
1-3	3:24	50.7		-7.8	4.6		13.9		55.7	-10.8	41.0	38.4
1-2	3:28	83.6		25.1	4.4		14.1		90.7	24.2	-7.3	0.5
1-1	3:32	82.2		23.7	4.4		14.2		89.2	22.7	-9.9	12.8
2-6	3:13	63.5		5.0	6.5		12.1		78.9	12.4	25.0	34.4
2-5	3:17	38.9		-19.6	4.9		13.6		43.5	-23.0	55.2	56.9
2-4	3:21	18.9	56.6	-39.6	4.5	4.8	14.0	13.7	20.6	-45.9	-2262.5	-72.9
2-3	3:25	47.8		-10.7	3.8		14.5		50.0	-16.5	43.4	43.7
2-2	3:29	89.3		30.8	3.6		14.8		92.4	25.9	17.2	16.3
2-1	3:33	81.0		22.5	5.5		13.1		94.1	27.6	3.5	10.4
3-6	3:14	81.9		23.4	6.6		12.1		102.5	36.0	23.7	17.3
3-5	3:18	48.4		-10.1	4.7		13.8		53.5	-13.0	57.1	57.4
3-4	3:22	23.1	58.8	-35.4	10.4	5.8	9.2	13.0	39.4	-27.1	75.7	62.8
3-3	3:26	29.7		-28.8	3.8		14.6		31.1	-35.4	67.9	68.3
3-2	3:30	86.3		27.8	3.5		14.9		88.8	22.3	15.1	14.6
3-1	3:34	83.1		24.6	5.5		13.1		96.6	30.1	12.2	15.0
4-6	3:15	96.0		37.5	5.6		13.0		112.3	45.8	24.8	27.7
4-5	3:19	38.3		-20.2	4.6		14.0		42.1	-24.5	70.1	71.8
4-4	3:23	63.1	62.4	4.6	6.2	5.0	12.3	13.6	76.8	10.3	45.0	39.7
4-3	3:27	31.8		-26.7	4.3		14.2		34.3	-32.2	69.1	68.9
4-2	3:31	72.8		14.3	3.7		14.8		75.8	9.2	33.9	33.9
4-1	3:35	72.5		14.0	5.7		13.0		85.4	18.9	20.1	21.6
Outlet Averages		58.5			5.1		13.5		66.5		-380.3	26.9

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy
AES Dresden

Date: 5/21/2008
Start Time: 3:36
End Time: 3:59

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	3:38	79.8		-17.5	7.6		11.3		107.4	-4.4	17.0		-2.6	22.9	0.6
1-5	3:40	78.6		-18.7	5.7		12.9		92.6	-19.2	14.7		-4.9	17.3	-5.0
1-4	3:44	70.5	75.5	-26.8	5.3	6.0	13.2	12.7	80.9	-30.9	15.9	19.7	-3.7	18.2	-4.0
1-3	3:48	88.9		-8.4	3.9		14.5		93.6	-18.2	26.5		6.9	27.9	5.6
1-2	3:52	59.1		-38.2	5.9		13.0		70.5	-41.3	22.4		2.8	26.7	4.4
1-1	3:56	76.0		-21.3	7.6		11.3		102.3	-9.5	21.9		2.3	29.5	7.2
2-6	3:37	90.0		-7.3	6.9		11.9		115.1	3.3	9.4		-10.2	12.0	-10.3
2-5	3:41	89.3		-8.0	5.0		13.5		100.5	-11.3	12.9		-6.7	14.5	-7.8
2-4	3:45	86.1	91.7	-11.2	4.9	5.2	13.6	13.3	96.3	-15.5	15.2	17.0	-4.4	17.0	-5.3
2-3	3:49	86.5		-10.8	3.8		14.6		90.5	-21.2	26.9		7.3	28.2	5.9
2-2	3:53	111.4		14.1	4.0		14.3		118.0	6.2	22.1		2.5	23.4	1.1
2-1	3:57	86.7		-10.6	6.7		12.1		109.3	-2.5	15.6		-4.0	19.7	-2.6
3-6	3:38	112.6		15.3	5.3		13.2		129.2	17.4	10.3		-9.3	11.8	-10.5
3-5	3:42	117.1		19.8	4.7		13.8		129.4	17.6	14.9		-4.7	16.5	-5.8
3-4	3:46	96.0	103.7	-1.3	4.7	4.8	13.8	13.7	105.1	-5.7	17.8	20.1	-1.8	19.7	-2.8
3-3	3:50	94.5		-2.8	4.1		14.3		100.7	-11.1	30.7		11.1	32.7	10.4
3-2	3:54	105.3		8.0	3.7		14.7		109.6	-2.2	29.0		9.4	30.2	7.9
3-1	3:58	96.4		-0.9	6.2		12.4		117.4	5.6	17.9		-1.7	21.8	-0.5
4-6	3:39	133.5		36.2	6.3		12.4		163.7	51.9	14.6		-5.0	17.9	-4.4
4-5	3:43	139.3		42.0	5.6		13.0		163.0	51.2	17.0		-2.6	19.9	-2.4
4-4	3:47	123.8	118.6	26.5	4.9	5.2	13.6	13.4	138.5	26.7	19.7	21.4	0.1	22.0	-0.2
4-3	3:51	106.6		9.3	4.3		14.2		114.9	3.2	24.0		4.4	25.9	3.6
4-2	3:55	116.3		19.0	4.0		14.5		123.2	11.4	34.0		14.4	36.0	13.7
4-1	3:59	91.8		-5.5	6.0		12.8		110.3	-1.5	19.3		-0.3	23.2	0.9
Inlet Averages		97.3			5.3		13.3		111.8		19.6			22.3	

	lb/MMBtu
NOx Outlet	0.0986

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff. W/ O2 correction
1-6	3:36	71.6		8.0	6.0		12.6		86.0	13.7	10.3	19.9
1-5	3:40	34.6		-29.0	5.5		13.0		40.2	-32.1	56.0	56.6
1-4	3:44	34.8	61.7	-28.8	4.6	4.9	13.9	13.6	38.2	-34.1	50.6	52.8
1-3	3:48	56.8		-6.8	4.6		13.9		62.4	-9.9	36.1	33.4
1-2	3:52	85.5		21.9	4.5		14.0		93.3	21.0	-44.7	-32.3
1-1	3:56	86.8		23.2	4.2		14.2		93.0	20.8	-14.2	9.0
2-6	3:37	72.8		9.2	6.4		12.2		89.9	17.6	19.1	21.9
2-5	3:41	42.7		-20.9	5.1		13.5		48.4	-23.9	52.2	51.9
2-4	3:45	27.7	62.2	-35.9	4.7	5.0	13.8	13.6	30.6	-41.7	67.8	68.2
2-3	3:49	52.7		-10.9	4.0		14.4		55.8	-16.5	39.1	38.4
2-2	3:53	92.9		29.3	4.3		14.2		100.2	27.9	16.6	15.1
2-1	3:57	84.1		20.5	5.4		13.2		97.1	24.8	3.0	11.1
3-6	3:38	87.4		23.8	6.4		12.3		107.9	35.6	22.4	16.5
3-5	3:42	54.2		-9.4	4.9		13.5		60.6	-11.6	53.7	53.1
3-4	3:46	15.8	61.3	-47.8	9.1	5.6	10.3	13.1	24.0	-48.3	83.5	77.4
3-3	3:50	35.6		-28.0	3.9		14.5		37.5	-34.8	62.3	62.8
3-2	3:54	90.1		26.5	3.6		14.7		93.2	20.9	14.4	14.9
3-1	3:58	84.7		21.1	5.5		13.0		98.5	26.2	12.1	16.1
4-6	3:39	101.8		38.2	5.7		13.0		119.9	47.6	23.7	26.8
4-5	3:43	48.4		-15.2	4.7		13.9		53.5	-18.8	65.3	67.2
4-4	3:47	73.1	69.3	9.5	6.4	5.2	12.1	13.4	90.2	18.0	41.0	34.8
4-3	3:51	34.4		-29.2	4.3		14.2		37.1	-35.2	67.7	67.7
4-2	3:55	81.1		17.5	4.0		14.5		85.9	13.6	30.3	30.3
4-1	3:59	77.1		13.5	5.8		12.9		91.4	19.1	16.0	17.1
Outlet Averages		63.6			5.2		13.4		72.3		32.7	34.6

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy
AES Dresden

Date: 5/21/2008
Start Time: 4:00
End Time: 4:23

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	4:00	81.0		-17.1	7.5		11.3		108.2	-4.2	16.4		-3.0	21.9	-0.3
1-5	4:04	78.3		-19.8	5.9		12.7		93.4	-19.0	14.8		-4.6	17.7	-4.5
1-4	4:08	70.3	74.6	-27.8	5.4	6.0	13.1	12.7	81.2	-31.2	17.0	20.4	-2.4	19.6	-2.5
1-3	4:12	87.9		-10.2	4.2		14.2		94.2	-18.2	24.6		5.2	26.4	4.2
1-2	4:16	58.3		-39.8	5.4		13.4		67.3	-45.1	22.3		2.9	25.8	3.6
1-1	4:20	72.0		-26.1	7.5		11.4		96.2	-16.2	27.1		7.7	36.2	14.0
2-6	4:01	91.7		-6.4	5.8		12.0		116.4	4.0	9.2		-10.2	11.7	-10.5
2-5	4:05	94.4		-3.7	5.2		13.3		107.6	-4.8	12.1		-7.3	13.8	-8.4
2-4	4:09	89.7	93.7	-8.4	4.9	5.2	13.6	13.4	100.4	-12.1	15.2	16.9	-4.2	17.0	-5.2
2-3	4:13	89.2		-8.9	4.0		14.4		94.5	-17.9	23.5		4.1	24.9	2.7
2-2	4:17	111.5		13.4	3.8		14.6		116.7	4.3	24.3		4.9	25.4	3.3
2-1	4:21	85.5		-12.6	6.5		12.3		106.3	-6.1	17.3		-2.1	21.5	-0.7
3-6	4:02	111.6		13.5	5.3		13.2		128.1	15.6	12.3		-7.1	14.1	-8.1
3-5	4:06	119.8		21.7	4.9		13.5		134.0	21.6	13.5		-5.9	15.1	-7.1
3-4	4:10	99.0	103.3	0.9	4.7	4.8	13.7	13.7	109.4	-3.0	16.2	19.2	-3.2	17.9	-4.3
3-3	4:14	97.5		-0.6	4.2		14.2		104.5	-7.9	21.7		2.3	23.3	1.1
3-2	4:18	97.5		-0.6	3.5		14.9		100.3	-12.1	32.6		13.2	33.5	11.4
3-1	4:22	94.1		-4.0	6.1		12.5		113.8	1.4	18.8		-0.6	22.7	0.6
4-6	4:03	134.6		36.5	6.2		12.5		163.9	51.5	17.3		-2.1	21.1	-1.1
4-5	4:07	147.3		49.2	5.6		13.0		172.3	59.9	16.9		-2.5	19.8	-2.4
4-4	4:11	126.7	121.0	28.6	4.9	5.1	13.6	13.5	141.7	29.3	19.0	21.3	-0.4	21.3	-0.9
4-3	4:15	110.7		12.6	4.3		14.1		119.4	6.9	21.4		2.0	23.1	0.9
4-2	4:19	114.0		15.9	4.0		14.5		120.7	8.3	32.9		13.5	34.8	12.7
4-1	4:23	92.5		-5.6	5.5		13.1		107.5	-4.9	20.3		0.9	23.6	1.4
Inlet Averages		98.1			5.3		13.3		112.4		19.4			22.2	

	lb/MMBtu
NOx Outlet	0.1020

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction
1-6	4:00	75.2		9.8	6.0		12.7		90.3	15.7	7.2	16.5
1-5	4:04	38.0		-27.4	5.5		13.0		44.2	-30.5	51.5	52.7
1-4	4:08	39.7	63.3	-25.7	4.7	5.0	13.8	13.6	43.9	-30.8	43.5	46.0
1-3	4:12	60.2		-5.2	4.7		13.8		66.5	-8.2	31.5	29.4
1-2	4:16	87.2		21.8	4.6		13.9		95.8	21.1	-49.6	-42.2
1-1	4:20	79.2		13.8	4.2		14.3		84.9	10.2	-10.0	11.7
2-6	4:01	74.4		9.0	6.2		12.3		90.6	15.9	18.9	22.2
2-5	4:05	46.8		-18.6	5.3		13.3		53.7	-21.0	50.4	50.1
2-4	4:09	33.8	63.6	-31.6	4.8	5.1	13.7	13.5	37.6	-37.1	62.3	62.6
2-3	4:13	57.0		-8.4	4.3		14.2		61.5	-13.2	36.1	34.9
2-2	4:17	92.8		27.4	4.6		13.9		101.9	27.2	10.8	12.7
2-1	4:21	76.7		11.3	5.2		13.3		87.4	12.8	10.3	17.7
3-6	4:02	88.2		22.8	6.4		12.3		108.9	34.2	21.0	15.0
3-5	4:06	58.2		-7.2	5.0		13.6		65.5	-9.2	51.4	51.1
3-4	4:10	22.5	63.8	-42.9	10.4	5.8	9.2	12.9	38.4	-36.3	77.3	64.9
3-3	4:14	42.6		-22.8	4.1		14.3		45.4	-29.3	56.3	56.6
3-2	4:18	90.2		24.8	3.7		14.7		93.9	19.2	7.5	6.4
3-1	4:22	80.8		15.4	5.3		13.2		92.7	18.0	14.1	18.5
4-6	4:03	105.2		39.8	5.7		13.0		123.9	49.2	21.8	24.4
4-5	4:07	54.2		-11.2	4.8		13.8		60.3	-14.4	63.2	65.0
4-4	4:11	75.5	71.1	10.1	6.3	5.2	12.2	13.4	92.6	17.9	40.4	34.7
4-3	4:15	44.5		-20.9	4.4		14.1		48.3	-26.4	59.8	58.6
4-2	4:19	79.5		14.1	4.0		14.5		84.2	9.5	30.3	30.3
4-1	4:23	67.9		2.5	5.7		13.0		80.0	5.3	26.6	25.6
Outlet Averages		65.4			5.2		13.3		74.7		30.8	31.9

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy
AES Dresden

Date: 5/21/2008
Start Time: 4:24
End Time: 4:47

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	4:24	76.6		-21.1	7.7		11.2		103.9	-8.0	17.3		-8.1	23.6	-5.0
1-5	4:28	76.5		-21.2	5.9		12.7		91.3	-20.6	14.4		-11.0	17.2	-11.2
1-4	4:32	70.6	74.5	-27.1	5.5	5.9	13.0	12.8	82.1	-29.8	14.1	26.6	-11.3	16.4	-12.0
1-3	4:36	88.5		-9.2	4.0		14.4		93.7	-16.2	38.2		12.8	40.5	12.0
1-2	4:40	59.2		-38.5	4.8		13.9		65.8	-46.1	33.4		8.0	37.1	8.7
1-1	4:44	75.7		-22.0	7.4		11.5		100.4	-11.5	42.2		16.8	56.0	27.5
2-6	4:25	91.1		-6.6	6.9		11.9		116.5	4.6	9.4		-16.0	12.0	-16.4
2-5	4:29	88.1		-9.6	5.3		13.3		101.1	-10.8	12.1		-13.3	13.9	-14.5
2-4	4:33	87.7	93.1	-10.0	4.8	5.1	13.7	13.5	97.5	-14.4	14.5	24.5	-10.9	16.1	-12.3
2-3	4:37	90.8		-6.9	3.6		14.8		93.9	-17.9	49.2		23.8	50.9	22.5
2-2	4:41	110.5		12.8	3.5		14.9		113.7	1.8	45.2		19.8	46.5	18.1
2-1	4:45	90.5		-7.2	6.5		12.2		112.5	0.6	16.4		-9.0	20.4	-8.0
3-6	4:26	114.8		17.1	5.4		13.1		132.6	20.7	11.2		-14.2	12.9	-15.5
3-5	4:30	103.1		5.4	5.7		13.0		121.4	9.5	13.1		-12.3	15.4	-13.0
3-4	4:34	97.9	103.4	0.2	4.6	4.9	13.9	13.7	107.5	-4.4	16.6	27.0	-8.8	18.2	-10.2
3-3	4:38	94.3		-3.4	4.0		14.5		99.9	-12.0	49.8		24.4	52.7	24.3
3-2	4:42	107.5		9.8	3.6		14.8		111.2	-0.7	53.3		27.9	55.1	26.7
3-1	4:46	103.0		5.3	5.9		12.7		122.9	11.0	17.8		-7.6	21.2	-7.2
4-6	4:27	137.6		39.9	6.2		12.5		167.6	55.7	17.3		-8.1	21.1	-7.4
4-5	4:31	136.6		38.9	5.9		12.8		163.0	51.1	14.0		-11.4	16.7	-11.7
4-4	4:35	125.5	119.9	27.8	4.6	5.1	13.9	13.5	137.8	25.9	21.8	23.4	-3.6	23.9	-4.5
4-3	4:39	110.4		12.7	3.9		14.5		116.2	4.3	30.4		5.0	32.0	3.6
4-2	4:43	115.4		17.7	3.5		14.9		118.7	6.8	37.4		12.0	38.5	10.1
4-1	4:47	93.9		-3.8	6.2		12.6		114.3	2.4	19.6		-5.8	23.9	-4.6
Inlet Averages		97.7			5.2		13.4		111.9		25.4			28.4	

	lb/MMBtu
NOx Outlet	0.1039

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff. W/ O2 correction
1-6	4:24	74.8		7.7	6.0		12.6		89.9	13.9	2.3	13.5
1-5	4:28	38.5		-28.6	5.6		13.0		45.0	-31.0	49.7	50.7
1-4	4:32	48.8	68.3	-18.3	4.7	4.9	13.8	13.6	53.9	-22.1	30.9	34.3
1-3	4:36	65.1		-2.0	4.6		13.8		71.5	-4.5	26.4	23.7
1-2	4:40	94.2		27.1	4.0		14.4		99.8	23.8	-59.1	-51.6
1-1	4:44	88.4		21.3	4.4		14.2		95.9	19.9	-16.8	4.5
2-6	4:25	70.0		2.9	6.4		12.2		86.4	10.4	23.2	25.8
2-5	4:29	44.6		-22.5	5.6		13.0		52.2	-23.8	49.4	48.4
2-4	4:33	39.8	66.8	-27.3	4.7	5.0	13.8	13.5	44.0	-32.0	54.5	54.9
2-3	4:37	63.0		-4.1	3.9		14.5		66.3	-9.7	30.6	29.4
2-2	4:41	98.4		31.3	3.9		14.5		103.6	27.6	11.0	8.9
2-1	4:45	85.2		18.1	5.5		13.1		99.0	23.0	5.9	12.0
3-6	4:26	87.7		20.6	6.6		12.1		109.8	33.8	23.6	17.2
3-5	4:30	53.7		-13.4	5.1		13.4		60.8	-15.2	47.9	49.9
3-4	4:34	21.0	63.2	-46.1	9.7	5.7	9.8	13.0	33.6	-42.4	78.5	68.8
3-3	4:38	43.7		-23.4	3.9		14.6		46.0	-30.0	53.7	53.9
3-2	4:42	90.3		23.2	3.5		14.9		92.9	16.9	16.0	16.5
3-1	4:46	82.8		15.7	5.5		13.1		96.2	20.2	19.6	21.7
4-6	4:27	106.9		39.8	5.6		13.0		125.1	49.1	22.3	25.4
4-5	4:31	52.2		-14.9	4.7		13.9		57.7	-18.3	61.8	64.6
4-4	4:35	73.0	70.1	5.9	6.1	4.9	12.3	13.6	88.3	12.3	41.8	35.9
4-3	4:39	39.1		-28.0	4.1		14.4		41.7	-34.3	64.6	64.2
4-2	4:43	74.3		7.2	3.5		14.9		76.4	0.4	35.6	35.6
4-1	4:47	75.1		8.0	5.6		13.1		87.9	11.9	20.0	23.2
Outlet Averages		67.1			5.1		13.4		76.0		28.9	30.5

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy
AES Dresden

Date: 5/21/2008
Start Time: 4:48
End Time: 5:11

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	4:48	73.9		-21.2	7.7		11.2		100.2	-9.0	17.1		-4.9	23.2	-1.7
1-5	4:52	71.0		-24.1	6.1		12.5		85.9	-23.3	12.5		-9.5	15.1	-9.8
1-4	4:56	71.6	74.1	-23.5	5.6	5.9	12.9	12.7	83.8	-25.4	13.1	23.4	-8.9	15.3	-9.6
1-3	5:00	91.1		-4.0	3.9		14.5		95.9	-13.3	27.8		5.8	29.3	4.4
1-2	5:04	60.1		-35.0	4.7		14.0		66.4	-42.8	29.8		7.8	32.9	8.0
1-1	5:08	76.9		-18.2	7.6		11.3		103.5	-5.7	40.3		18.3	54.2	29.3
2-6	4:49	83.6		-11.5	7.0		11.8		107.7	-1.5	9.2		-12.8	11.8	-13.0
2-5	4:53	88.8		-6.3	5.3		13.2		101.9	-7.3	11.8		-10.2	13.5	-11.4
2-4	4:57	86.5	91.7	-8.6	5.0	5.2	13.5	13.4	97.4	-11.8	14.2	20.8	-7.8	16.0	-8.9
2-3	5:01	90.5		-4.6	3.7		14.7		94.2	-15.0	34.2		12.2	35.6	10.7
2-2	5:05	112.3		17.2	3.4		15.0		114.9	5.7	38.9		16.9	39.8	14.9
2-1	5:09	88.4		-6.7	6.6		12.2		110.7	1.5	16.2		-5.8	20.3	-4.6
3-6	4:50	100.3		5.2	5.9		12.7		119.7	10.5	9.2		-12.8	11.0	-13.9
3-5	4:54	99.6		4.5	5.3		13.2		114.3	5.1	12.2		-9.8	14.0	-10.9
3-4	4:58	93.3	98.0	-1.8	4.7	4.9	13.8	13.7	103.1	-6.1	15.0	22.1	-7.0	16.6	-8.3
3-3	5:02	95.9		0.8	4.0		14.5		101.6	-7.6	30.3		8.3	32.1	7.2
3-2	5:06	95.5		0.4	3.6		14.9		98.8	-10.4	47.6		25.6	49.3	24.4
3-1	5:10	103.1		8.0	5.9		12.8		123.0	13.8	18.4		-3.6	22.0	-2.9
4-6	4:51	125.6		30.5	6.5		12.3		156.1	46.9	12.2		-9.8	15.2	-9.7
4-5	4:55	134.6		39.5	6.0		12.7		161.7	52.5	13.9		-8.1	16.7	-8.2
4-4	4:59	122.6	116.6	27.5	4.8	5.1	13.8	13.5	136.3	27.1	18.3	21.9	-3.7	20.3	-4.5
4-3	5:03	107.9		12.8	3.9		14.6		113.6	4.4	26.2		4.2	27.6	2.7
4-2	5:07	114.0		18.9	3.5		14.9		117.3	8.1	40.7		18.7	41.9	17.0
4-1	5:11	94.7		-0.4	5.9		12.9		113.0	3.8	20.0		-2.0	23.9	-1.0
Inlet Averages		95.1			5.3		13.3		109.2		22.0			24.9	

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff. W/ O2 correction
1-6	4:48	70.4		3.5	6.0		12.7		84.6	8.7	4.7	15.6
1-5	4:52	42.3		-24.6	5.8		12.9		50.1	-25.7	40.4	41.6
1-4	4:56	49.1	66.8	-17.8	4.9	4.9	13.6	13.6	54.9	-20.9	31.4	34.4
1-3	5:00	66.2		-0.7	4.9		13.5		74.1	-1.8	27.3	22.8
1-2	5:04	87.0		20.1	4.0		14.3		92.1	16.3	-44.8	-38.8
1-1	5:08	86.0		19.1	3.5		14.8		86.5	12.6	-11.8	14.5
2-6	4:49	73.1		6.2	6.5		12.1		90.9	15.0	12.6	15.6
2-5	4:53	45.8		-21.1	5.5		13.1		53.2	-22.6	48.4	47.8
2-4	4:57	39.2	67.4	-27.7	4.8	5.0	13.7	13.6	43.6	-32.3	54.7	55.2
2-3	5:01	63.9		-3.0	4.2		14.3		66.5	-7.3	29.4	27.3
2-2	5:05	96.9		32.0	3.7		14.7		102.9	27.1	11.9	10.4
2-1	5:09	83.2		16.3	5.0		13.6		93.7	17.8	5.9	15.4
3-6	4:50	82.2		15.3	6.6		12.1		102.9	27.1	18.0	14.0
3-5	4:54	56.2		-10.7	4.9		13.6		62.9	-13.0	43.6	45.0
3-4	4:58	23.5	64.5	-43.4	10.1	5.8	9.5	13.0	38.9	-36.9	74.8	62.2
3-3	5:02	48.9		-18.0	4.0		14.5		51.8	-24.0	49.0	49.0
3-2	5:06	93.5		26.6	3.4		15.0		95.6	19.8	2.1	3.2
3-1	5:10	82.8		15.9	5.5		13.1		96.2	20.4	19.7	21.8
4-6	4:51	99.7		32.8	5.8		12.9		118.2	42.3	20.6	24.3
4-5	4:55	50.7		-16.2	4.9		13.7		58.7	-19.1	62.3	64.9
4-4	4:59	72.4	68.9	5.5	6.8	5.1	11.7	13.5	91.9	16.1	40.9	32.6
4-3	5:03	41.3		-25.6	4.0		14.5		43.7	-32.1	61.7	61.5
4-2	5:07	76.8		9.9	3.5		14.9		79.0	3.2	32.6	32.6
4-1	5:11	72.7		5.8	5.6		13.0		85.1	9.2	23.2	24.7
Outlet Averages		66.9			5.2		13.4		75.8		27.5	29.1

	lb/MMBtu
NOx Outlet	0.1038

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy

AES Dresden

Date: 5/21/2008
Start Time: 5:12
End Time: 5:35

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	5:12	76.1		-22.3	7.8		11.1		104.0	-9.7	17.3		-7.7	23.6	-4.5
1-5	5:16	76.9		-21.5	6.1		12.6		93.0	-20.7	12.9		-12.1	15.6	-12.5
1-4	5:20	74.1	74.6	-24.3	5.5	6.3	13.0	12.5	86.1	-27.6	13.9	25.7	-11.1	16.2	-12.0
1-3	5:24	85.3		-13.1	4.2		14.2		91.4	-22.3	29.2		4.2	31.3	3.1
1-2	5:28	55.5		-42.9	5.5		13.4		64.5	-49.2	54.0		29.0	62.8	34.6
1-1	5:32	79.8		-18.6	8.5		10.6		115.2	1.5	26.8		1.8	38.7	10.5
2-6	5:13	93.9		-4.5	7.0		11.8		120.9	7.2	8.7		-16.3	11.2	-16.9
2-5	5:17	92.8		-5.6	5.3		13.3		106.5	-7.2	11.7		-13.3	13.4	-14.7
2-4	5:21	95.5	93.9	-2.9	4.7	5.3	13.8	13.3	105.5	-8.2	15.1	23.5	-9.9	16.7	-11.5
2-3	5:25	91.3		-7.1	3.8		14.7		95.6	-18.1	47.7		22.7	49.9	21.8
2-2	5:29	100.1		1.7	3.9		14.4		105.4	-8.3	43.0		18.0	45.3	17.1
2-1	5:33	89.5		-8.9	7.2		11.6		116.9	3.3	15.0		-10.0	19.6	-8.6
3-6	5:14	116.7		18.3	5.4		13.1		134.8	21.1	9.5		-15.5	11.0	-17.2
3-5	5:18	112.2		13.8	5.1		13.4		127.1	13.4	12.8		-12.2	14.5	-13.7
3-4	5:22	85.3	102.3	-13.1	4.6	4.8	13.8	13.7	93.7	-20.0	16.8	24.9	-8.2	18.4	-9.7
3-3	5:26	96.4		-2.0	3.9		14.5		101.5	-12.2	49.6		24.6	52.2	24.1
3-2	5:30	99.2		0.8	3.6		14.8		102.6	-11.0	43.7		18.7	45.2	17.1
3-1	5:34	104.1		5.7	6.4		12.3		128.5	14.8	17.0		-8.0	21.0	-7.2
4-6	5:15	134.8		36.4	6.1		12.6		163.0	49.4	11.4		-13.6	13.8	-14.4
4-5	5:19	142.8		44.4	5.6		13.0		167.1	53.4	15.5		-9.5	18.1	-10.0
4-4	5:23	134.5	122.8	36.1	4.7	5.0	13.8	13.5	148.6	34.9	19.5	25.7	-5.5	21.5	-6.6
4-3	5:27	118.5		20.1	3.6		14.7		122.6	8.9	45.6		20.6	47.2	19.0
4-2	5:31	108.9		10.5	3.7		14.7		113.3	-0.3	44.6		19.6	46.4	18.3
4-1	5:35	97.5		-0.9	6.4		12.4		120.4	6.7	17.6		-7.2	22.0	-6.2
Inlet Averages		98.4			5.4		13.2		113.7		25.0			28.2	

	lb/MMBtu
NOx Outlet	0.1091

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction
1-6	5:12	66.5		-1.6	5.9		12.7		79.4	-2.8	12.6	23.7
1-5	5:16	46.1		-22.0	5.6		12.9		53.9	-28.2	40.1	42.0
1-4	5:20	51.3	64.9	-16.8	4.6	5.1	13.7	13.3	56.3	-25.8	30.8	34.6
1-3	5:24	61.4		-6.7	6.5		12.0		76.3	-5.8	28.0	16.5
1-2	5:28	81.8		13.7	4.0		14.4		86.6	4.5	47.4	34.3
1-1	5:32	82.1		14.0	4.2		14.3		88.0	5.9	29.9	23.6
2-6	5:13	77.7		9.6	5.9		12.6		92.7	10.6	17.3	23.3
2-5	5:17	52.7		-15.4	5.4		13.2		60.9	-21.3	43.2	42.8
2-4	5:21	49.3	67.0	-18.8	4.6	5.2	13.9	13.4	54.1	-28.0	48.4	48.7
2-3	5:25	59.5		-8.6	4.5		14.0		64.9	-17.2	34.8	32.0
2-2	5:29	81.8		13.7	4.5		14.0		89.3	7.2	18.3	15.3
2-1	5:33	81.2		13.1	6.1		12.6		98.2	16.1	9.3	16.0
3-6	5:14	89.1		21.0	5.1		12.6		107.8	25.6	23.7	20.0
3-5	5:18	61.4		-6.7	4.9		13.7		68.7	-13.4	45.3	46.0
3-4	5:22	37.7	66.2	-30.4	12.1	6.2	7.6	12.5	76.7	-5.4	55.8	18.1
3-3	5:26	47.3		-20.8	4.2		14.3		50.7	-31.4	50.9	50.1
3-2	5:30	79.3		11.2	3.9		14.5		83.5	1.4	20.1	18.6
3-1	5:34	82.4		14.3	6.2		12.4		100.3	18.2	20.8	21.9
4-6	5:15	104.2		36.1	5.9		12.8		124.3	42.2	22.7	23.7
4-5	5:19	56.9		-11.2	4.7		13.8		62.9	-19.2	60.2	62.4
4-4	5:23	81.4	74.2	13.3	12.3	6.2	6.8	12.5	169.4	87.3	39.5	-14.0
4-3	5:27	56.9		-11.2	4.0		14.5		60.3	-21.8	52.0	50.8
4-2	5:31	68.7		0.6	3.8		14.6		71.9	-10.2	36.9	36.5
4-1	5:35	76.8		8.7	6.2		12.6		93.5	11.4	21.2	22.3
Outlet Averages		68.1			5.7		12.9		82.1		28.4	26.7

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy

AES Dresden

Date: 5/21/2008
Start Time: 5:36
End Time: 5:59

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	5:36	83.4		-19.6	7.6		11.3		112.2	-6.3	14.8		-6.0	19.9	-3.7
1-5	5:40	82.5		-20.5	5.8		12.9		97.8	-20.8	13.5		-7.3	16.0	-7.6
1-4	5:44	79.5	78.9	-23.5	5.5	6.1	13.1	12.7	92.4	-26.2	14.2	21.7	-6.6	16.5	-7.1
1-3	5:48	90.5		-12.5	4.1		14.3		96.4	-22.2	28.1		7.3	29.9	6.3
1-2	5:52	56.8		-46.2	5.1		13.7		64.3	-54.2	33.8		13.0	38.3	14.7
1-1	5:56	80.5		-22.4	8.3		10.6		114.5	-4.1	26.0		5.2	36.9	13.3
2-6	5:37	99.3		-3.7	7.0		11.9		127.9	9.3	9.2		-11.6	11.8	-11.8
2-5	5:41	98.7		-4.3	5.1		13.4		111.8	-6.8	12.8		-8.0	14.5	-9.1
2-4	5:45	96.7	96.2	-6.3	4.8	5.3	13.7	13.3	107.5	-11.1	14.9	19.0	-5.9	16.6	-7.0
2-3	5:49	91.0		-12.0	3.9		14.5		95.8	-22.8	31.9		11.1	33.6	10.0
2-2	5:53	100.6		-2.4	4.0		14.4		106.6	-12.0	31.0		10.2	32.8	9.2
2-1	5:57	90.6		-12.4	7.1		11.7		117.5	-1.1	14.3		-6.5	18.5	-5.1
3-6	5:38	120.5		17.5	5.5		13.0		140.1	21.5	12.4		-8.4	14.4	-9.2
3-5	5:42	121.5		18.5	5.0		13.5		136.8	18.2	14.2		-6.6	16.0	-7.6
3-4	5:46	105.1	109.2	2.1	4.7	4.9	13.8	13.7	116.1	-2.5	15.3	20.2	-5.5	16.9	-6.7
3-3	5:50	100.6		-2.4	4.0		14.4		106.6	-12.0	26.8		6.0	28.4	4.8
3-2	5:54	99.1		-3.9	3.7		14.7		103.1	-15.5	36.3		15.5	37.8	14.2
3-1	5:58	108.2		5.2	6.2		12.5		131.8	13.2	10.1		-4.7	19.6	-4.0
4-6	5:39	145.3		42.3	6.1		12.6		175.7	57.1	12.9		-7.9	15.6	-8.0
4-5	5:43	152.6		49.6	5.5		13.1		177.4	58.8	18.8		-2.0	21.9	-1.8
4-4	5:47	138.4	127.6	35.4	4.7	5.0	13.8	13.6	152.9	34.3	18.2	22.3	-2.6	20.1	-3.5
4-3	5:51	122.4		19.4	4.0		14.5		129.6	11.1	28.2		7.4	29.9	6.3
4-2	5:55	108.4		5.4	3.7		14.7		112.8	-5.8	36.2		17.4	39.8	16.1
4-1	5:59	98.6		-4.4	6.0		12.7		118.5	-0.1	17.3		-3.5	20.8	-2.8
Inlet Averages		103.0			5.3		13.3		118.6		20.8			23.6	

	lb/MMBtu
NOx Outlet	0.1144

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction
1-6	5:36	72.9		0.9	6.3		12.2		89.4	4.5	12.6	20.4
1-5	5:40	43.4		-28.6	5.6		12.9		50.8	-34.1	47.4	48.1
1-4	5:44	54.5	68.2	-17.5	4.8	5.2	13.7	13.4	60.6	-24.3	31.4	34.4
1-3	5:48	63.5		-8.5	4.6		13.9		69.7	-15.2	29.8	27.7
1-2	5:52	87.2		15.2	4.9		13.7		97.6	12.6	-53.5	-51.6
1-1	5:56	87.8		15.8	5.0		13.7		98.8	13.9	-8.9	13.7
2-6	5:37	72.4		0.4	6.3		12.2		88.8	3.8	27.1	30.6
2-5	5:41	56.8		-15.2	5.2		13.3		64.8	-20.2	42.5	42.1
2-4	5:45	49.0	68.7	-23.0	4.9	5.2	13.7	13.4	54.8	-30.1	49.3	49.0
2-3	5:49	61.3		-10.7	4.2		14.3		65.7	-19.2	32.6	31.4
2-2	5:53	85.9		13.9	4.1		14.4		91.5	6.6	14.6	14.1
2-1	5:57	86.8		14.8	6.2		12.6		105.7	20.8	4.2	10.1
3-6	5:38	96.6		24.6	6.4		12.2		119.3	34.3	19.8	14.9
3-5	5:42	70.4		-1.6	4.9		13.7		78.8	-6.2	42.1	42.4
3-4	5:46	32.9	70.3	-39.1	11.0	6.1	8.6	12.7	59.5	-25.4	68.7	48.8
3-3	5:50	52.2		-19.8	4.2		14.3		56.0	-29.0	48.1	47.5
3-2	5:54	82.1		10.1	3.9		14.6		86.4	1.5	17.2	16.2
3-1	5:58	87.6		15.6	6.1		12.6		105.9	21.0	19.0	19.6
4-6	5:39	114.4		42.4	5.9		12.8		136.5	51.6	21.3	22.3
4-5	5:43	69.2		-2.8	4.7		13.8		76.5	-8.5	54.7	56.9
4-4	5:47	89.4	80.7	17.4	9.9	5.8	8.9	12.9	145.5	60.6	35.4	4.9
4-3	5:51	59.0		-13.0	4.2		14.3		63.2	-21.7	51.8	51.2
4-2	5:55	70.1		-1.9	3.9		14.6		73.8	-11.1	35.3	34.6
4-1	5:59	82.0		10.0	6.0		12.7		98.5	13.6	16.8	16.8
Outlet Averages		72.0			5.6		13.1		84.9		27.5	26.9

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy
AES Dresden

Date: 5/21/2008
Start Time: 6:00
End Time: 6:23

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	6:00	87.6		-5.5	7.7		11.2		118.8	1.0	13.7		-49.5	18.6	-88.7
1-5	6:04	63.8		-29.3	5.6		13.0		74.6	-43.2	17.9		-45.3	20.9	-65.3
1-4	6:08	63.9	74.6	-29.2	5.5	7.8	13.0	11.1	74.3	-43.6	15.0	35.6	-48.2	17.4	-69.8
1-3	6:12	88.1		-5.0	3.4		14.9		90.1	-27.7	46.6		-16.6	47.7	-39.6
1-2	6:16	56.9		-36.2	17.4		2.3		291.0	173.2	4.5		-58.7	23.0	-64.2
1-1	6:20	87.2		-5.9	6.9		11.9		111.5	-5.3	116.0		52.8	148.3	61.1
2-6	6:01	96.0		2.9	6.8		12.0		121.9	4.0	9.4		-53.8	11.9	-75.3
2-5	6:05	74.5		-18.6	5.1		13.4		84.4	-33.4	17.0		-46.2	19.3	-68.0
2-4	6:09	74.6	92.7	-18.5	4.7	4.8	13.8	13.7	82.4	-35.4	18.2	72.0	-45.0	20.1	-67.1
2-3	6:13	86.6		-6.5	3.1		15.2		87.1	-30.7	114.3		51.1	114.9	27.7
2-2	6:17	127.8		34.7	3.5		14.8		131.5	13.6	70.4		7.2	72.4	-14.8
2-1	6:21	96.8		3.7	5.7		12.8		114.0	-3.8	202.6		139.4	238.6	151.3
3-6	6:02	109.2		16.1	5.2		13.4		124.5	6.7	19.3		-43.9	22.0	-65.2
3-5	6:06	102.6		9.5	5.0		13.6		115.5	-2.3	15.9		-47.3	17.9	-69.3
3-4	6:10	86.5	105.7	-6.6	4.4	4.4	14.1	14.1	93.8	-24.0	44.5	76.1	-18.7	48.3	-39.0
3-3	6:14	99.8		6.7	3.7		14.8		103.9	-14.0	72.6		9.4	75.6	-11.7
3-2	6:18	127.7		34.6	3.3		15.1		129.9	12.0	107.1		43.9	108.9	21.7
3-1	6:22	108.1		15.0	4.9		13.5		120.9	3.1	197.0		133.8	220.4	133.2
4-6	6:03	118.9		25.8	5.9		12.8		141.9	24.1	26.5		-36.7	31.6	-55.6
4-5	6:07	123.2		30.1	6.2		12.6		150.0	32.2	15.1		-48.1	18.4	-68.9
4-4	6:11	116.9	99.5	23.8	5.0	7.6	13.5	11.3	131.6	13.8	35.2	69.3	-28.0	39.6	-47.6
4-3	6:15	3.3		-89.8	20.2		0.5		84.4	-33.4	15.9		-47.3	406.6	319.3
4-2	6:19	130.6		37.5	3.2		15.1		132.1	14.2	119.6		56.4	121.0	33.7
4-1	6:23	104.0		10.9	5.1		13.5		117.8	0.0	203.3		140.1	230.3	143.1
Inlet Averages		93.1			6.1		12.5		117.8		63.2			87.2	

	lb/MMBtu
NOx Outlet	0.1010

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction
1-6	6:00	81.8		15.8	6.5		12.3		101.7	28.3	6.5	14.4
1-5	6:04	33.7		-32.3	5.6		13.0		39.4	-33.9	47.2	47.2
1-4	6:08	36.8	69.5	-29.2	4.9	4.9	13.6	13.7	41.2	-32.2	42.4	44.6
1-3	6:12	60.1		-5.9	4.3		14.1		64.8	-8.5	31.8	28.1
1-2	6:16	108.7		42.7	4.1		14.3		115.8	42.5	-91.0	60.2
1-1	6:20	95.6		29.6	3.7		14.7		99.5	26.1	-9.6	10.8
2-6	6:01	80.7		14.7	6.6		12.0		101.0	27.7	15.9	17.1
2-5	6:05	34.7		-31.3	5.3		13.3		39.8	-33.5	53.4	52.8
2-4	6:09	32.3	67.2	-33.7	4.7	4.7	13.8	13.8	35.7	-37.7	56.7	56.7
2-3	6:13	56.6		-9.4	3.3		15.0		57.6	-15.8	34.6	33.9
2-2	6:17	113.0		47.0	3.7		14.6		117.6	44.3	11.6	10.6
2-1	6:21	86.1		20.1	4.5		13.9		94.0	20.6	11.1	17.5
3-6	6:02	84.7		18.7	6.6		12.0		106.0	32.7	22.4	14.8
3-5	6:06	42.9		-23.1	5.0		13.5		48.3	-25.1	58.2	58.2
3-4	6:10	11.7	57.5	-54.3	9.9	5.5	9.7	13.2	19.0	-54.3	86.5	79.7
3-3	6:14	42.3		-23.7	3.4		14.9		43.3	-30.1	57.6	58.3
3-2	6:18	113.4		47.4	3.1		15.2		114.0	40.7	11.2	12.2
3-1	6:22	50.2		-15.8	4.7		13.7		55.5	-17.9	53.6	54.1
4-6	6:03	95.5		29.5	5.5		13.1		111.0	37.7	19.7	21.8
4-5	6:07	41.7		-24.3	4.9		13.7		46.7	-26.7	66.2	68.9
4-4	6:11	67.3	69.7	1.3	6.3	4.8	12.2	13.7	82.5	9.2	42.4	37.3
4-3	6:15	62.7		-3.3	4.0		14.5		66.4	-6.9	-1800.0	21.3
4-2	6:19	95.6		29.6	3.3		15.1		97.2	23.9	26.8	26.4
4-1	6:23	55.4		-10.6	5.0		13.5		62.4	-11.0	46.7	47.1
Outlet Averages		66.0			5.0		13.6		73.3		-45.8	37.2

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy
AES Dresden

Date: 5/21/2008
Start Time: 6:24
End Time: 6:47

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	6:24	97.2		3.9	7.2		11.7		127.0	21.5	107.7		24.2	140.7	49.8
1-5	6:28	90.7		-2.6	6.3		12.4		111.2	5.7	22.3		-61.2	27.3	-63.8
1-4	6:32	85.0	82.4	-8.3	5.5	5.3	13.1	13.3	98.8	-6.7	31.4	89.6	-52.1	36.5	-54.6
1-3	6:36	89.8		-3.5	3.5		14.8		92.4	-13.1	99.6		16.1	102.5	11.3
1-2	6:40	61.7		-31.6	3.6		14.9		63.8	-41.6	80.8		-2.7	83.6	-7.5
1-1	6:44	70.0		-23.3	5.9		12.8		83.5	-21.9	195.7		112.2	233.5	142.4
2-6	6:25	102.0		8.7	7.1		11.8		132.3	26.8	23.5		-60.0	30.5	-60.6
2-5	6:29	93.6		0.3	5.6		13.0		109.5	4.0	19.6		-63.9	22.9	-68.2
2-4	6:33	89.2	91.3	-4.1	4.6	4.9	13.8	13.6	98.0	-7.5	39.9	78.1	-43.6	43.8	-47.3
2-3	6:37	89.1		-4.2	3.1		15.2		89.6	-15.9	144.6		61.1	145.4	54.3
2-2	6:41	92.1		-1.2	3.0		15.2		92.1	-13.4	116.6		33.1	116.6	25.5
2-1	6:45	81.7		-11.6	5.7		12.8		96.2	-9.3	124.4		40.9	146.5	55.4
3-6	6:26	128.1		34.8	5.7		13.1		150.9	45.4	21.0		-62.5	24.7	-66.4
3-5	6:30	123.1		29.8	5.0		13.5		138.6	33.1	23.5		-60.0	26.5	-64.7
3-4	6:34	90.4	97.9	-2.9	4.5	4.5	14.0	14.0	98.7	-6.8	38.4	62.6	-45.1	41.9	-49.2
3-3	6:38	81.6		-11.7	3.4		14.9		83.5	-22.0	125.4		41.9	128.3	37.2
3-2	6:42	77.6		-15.7	2.7		15.5		76.3	-29.2	157.8		74.3	155.2	64.1
3-1	6:46	86.5		-6.8	5.5		13.0		100.5	-4.9	129.6		46.1	150.6	59.5
4-6	6:27	130.6		37.3	6.9		11.9		167.0	61.5	22.5		-61.0	28.8	-62.3
4-5	6:31	128.8		35.5	6.2		12.5		156.8	51.4	31.0		-52.5	37.7	-53.4
4-4	6:35	99.7	101.7	6.4	4.3	4.6	14.2	13.9	107.5	2.0	52.6	83.7	-30.9	56.7	-34.4
4-3	6:39	87.9		-5.4	3.1		15.2		88.4	-17.1	89.1		15.6	99.7	8.5
4-2	6:43	86.6		-6.7	2.6		15.6		84.7	-20.8	159.1		75.6	155.6	64.5
4-1	6:47	76.6		-16.7	4.6		13.8		84.1	-21.4	137.6		54.1	151.1	60.0
Inlet Averages		93.3			4.8		13.7		105.5		83.5			91.1	

	lb/MMBtu
NOx Outlet	0.0774

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/O2 correction
1-6	6:24	87.3		36.5	5.5		13.1		101.5	44.9	10.2	20.1
1-5	6:28	44.6		-6.2	6.0		12.7		53.6	-3.0	50.8	51.8
1-4	6:32	56.8	68.1	6.0	4.8	4.6	13.7	13.9	63.2	6.6	33.2	36.1
1-3	6:36	69.1		18.3	4.1		14.3		73.6	17.0	23.1	20.3
1-2	6:40	89.6		38.8	3.6		14.8		92.7	36.1	-45.2	-45.2
1-1	6:44	61.2		10.4	3.5		15.0		63.0	6.4	12.6	24.6
2-6	6:25	71.8		21.0	6.1		12.4		86.8	30.2	29.6	34.4
2-5	6:29	43.7		-7.1	5.7		12.9		51.5	-5.1	53.3	53.0
2-4	6:33	51.4	56.0	0.6	4.6	4.6	13.9	13.9	56.4	-0.1	42.4	42.4
2-3	6:37	56.3		5.5	3.4		15.0		57.6	1.0	36.8	35.7
2-2	6:41	65.1		14.3	3.4		14.9		66.6	10.0	29.3	27.7
2-1	6:45	47.7		-3.1	4.5		14.0		52.1	-4.5	41.6	45.9
3-6	6:26	87.0		36.2	6.4		12.2		107.4	50.8	32.1	28.8
3-5	6:30	40.6		-10.2	5.3		13.2		46.6	-10.0	67.0	66.4
3-4	6:34	0.0	39.3	-50.8	11.1	5.6	8.7	13.1	0.0	-56.6	100.0	100.0
3-3	6:38	43.3		-7.5	3.3		15.0		44.0	-12.6	46.9	47.2
3-2	6:42	40.7		-10.1	2.8		15.5		40.3	-16.3	47.6	47.3
3-1	6:46	24.4		-26.4	4.6		13.8		26.8	-29.8	71.8	73.3
4-6	6:27	87.3		36.5	6.0		12.7		104.9	48.3	33.2	37.2
4-5	6:31	31.5		-19.3	4.8		13.7		35.0	-21.6	75.5	77.7
4-4	6:35	40.5	39.9	-10.3	6.7	4.7	11.7	13.7	51.1	-5.5	59.4	52.5
4-3	6:39	13.0		-37.8	3.3		15.1		13.2	-43.4	85.2	85.0
4-2	6:43	32.1		-18.7	2.8		15.4		31.7	-24.8	62.9	62.5
4-1	6:47	34.8		-16.0	4.8		13.7		38.7	-17.9	54.6	54.0
Outlet Averages		50.8			4.9		13.6		56.6		43.9	44.9

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy

AES Dresden

Date: 5/21/2008
Start Time: 6:48
End Time: 7:11

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	6:48	76.6		-8.8	7.6		11.3		103.1	8.1	98.1		-35.3	132.0	-11.0
1-5	6:52	77.8		-7.6	5.7		12.9		91.6	-3.4	93.8		-39.6	110.5	-32.5
1-4	6:56	82.6	76.7	-2.8	5.0	5.5	13.4	13.1	93.0	-2.0	66.7	130.6	-66.7	75.1	-67.9
1-3	7:00	93.5		8.1	3.0		15.2		93.5	-1.5	172.4		39.0	172.4	29.4
1-2	7:04	52.1		-33.3	4.6		14.2		57.2	-37.8	145.5		12.1	159.8	16.8
1-1	7:08	77.8		-7.6	7.0		11.8		100.2	5.2	206.8		73.4	266.3	123.3
2-6	6:49	88.5		3.1	7.3		11.6		116.5	21.5	30.4		-103.0	40.0	-103.0
2-5	6:53	84.1		-1.3	4.9		13.6		94.1	-0.9	64.1		-69.3	71.7	-71.3
2-4	6:57	82.9	87.3	-2.5	4.3	4.7	14.2	13.8	89.4	-5.6	39.8	107.9	-93.6	42.9	-100.1
2-3	7:01	89.1		3.7	2.7		15.5		87.6	-7.4	233.4		100.0	229.6	86.6
2-2	7:05	95.1		9.7	3.0		15.2		95.1	0.1	193.5		60.1	193.5	50.5
2-1	7:09	83.9		-1.5	6.1		12.6		101.5	6.4	85.9		-47.5	103.9	-39.1
3-6	6:50	97.8		12.4	5.7		12.9		115.2	20.1	29.8		-103.6	35.1	-107.9
3-5	6:54	95.5		10.1	4.6		13.9		104.9	9.8	110.8		-22.6	121.7	-21.3
3-4	6:58	84.7	89.3	-0.7	3.9	4.2	14.5	14.2	89.2	-5.8	53.8	144.8	-79.6	56.6	-86.3
3-3	7:02	82.5		-2.9	3.0		15.3		82.5	-12.5	251.0		117.6	251.0	108.0
3-2	7:06	82.1		-3.3	2.5		15.7		79.9	-15.2	311.2		177.8	302.7	159.8
3-1	7:10	93.0		7.6	5.4		13.0		107.4	12.4	112.0		-21.4	129.3	-13.6
4-6	6:51	94.8		9.4	5.3		12.4		116.2	21.2	59.9		-73.5	73.4	-69.5
4-5	6:55	101.1		15.7	5.9		12.8		120.6	25.6	94.2		-39.2	112.4	-30.6
4-4	6:59	91.1	88.5	5.7	3.6	4.3	14.7	14.2	94.3	-0.8	97.9	150.4	-35.5	101.3	-41.7
4-3	7:03	86.7		1.3	2.8		15.4		85.7	-9.3	168.8		35.4	166.9	23.9
4-2	7:07	82.8		-2.6	2.4		15.8		80.1	-14.9	345.5		212.1	334.3	191.3
4-1	7:11	74.6		-10.8	4.6		13.9		81.9	-13.1	135.8		2.4	149.1	6.1
Inlet Averages		85.4			4.7		13.8		95.0		133.4			143.0	

	lb/MMBtu
NOx Outlet	0.0807

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction
1-6	6:48	72.3		17.8	5.4		13.2		83.5	24.6	5.6	19.0
1-5	6:52	49.8		-4.7	5.5		13.0		57.9	-1.0	36.0	36.8
1-4	6:56	67.9	72.3	13.4	4.2	4.2	14.3	14.3	72.8	13.9	17.8	21.7
1-3	7:00	77.5		23.0	3.8		14.6		81.1	22.3	17.1	13.2
1-2	7:04	99.0		44.5	3.4		15.0		101.3	42.4	-90.0	-77.0
1-1	7:08	67.2		12.7	2.8		15.4		66.5	7.6	13.5	33.7
2-6	6:49	52.3		-2.2	6.0		12.5		62.8	4.0	40.9	46.1
2-5	6:53	49.8		-4.7	4.9		13.6		55.7	-3.1	40.8	40.8
2-4	6:57	57.1	59.1	2.6	3.8	4.2	14.6	14.2	59.8	0.9	31.1	33.1
2-3	7:01	63.5		9.0	2.9		15.4		63.1	4.3	28.7	27.9
2-2	7:05	77.1		22.6	3.4		14.9		78.9	20.0	18.9	17.1
2-1	7:09	54.5		0.0	4.1		14.4		58.1	-0.8	35.0	42.8
3-6	6:50	79.8		25.3	6.4		12.3		98.5	39.7	18.4	14.5
3-5	6:54	47.5		-7.0	4.6		13.9		52.2	-6.7	50.3	50.3
3-4	6:58	0.1	44.3	-54.4	9.1	5.1	10.5	13.6	0.2	-58.7	99.9	99.8
3-3	7:02	53.8		-0.7	2.9		15.4		53.5	-5.3	34.8	35.2
3-2	7:06	53.7		-0.8	2.6		15.6		52.5	-6.3	34.6	34.2
3-1	7:10	31.0		-23.5	4.7		13.7		34.3	-24.6	66.7	68.1
4-6	6:51	74.1		19.6	5.7		12.9		87.3	28.4	21.8	24.9
4-5	6:55	41.3		-13.2	4.2		14.3		44.3	-14.6	59.1	63.3
4-4	6:59	43.3	42.2	-11.2	5.6	4.3	12.8	14.1	50.7	-8.2	52.5	46.3
4-3	7:03	22.9		-31.6	3.1		15.3		23.0	-35.8	73.6	73.1
4-2	7:07	34.9		-19.6	2.6		15.5		34.1	-24.7	57.9	57.4
4-1	7:11	36.7		-17.8	4.7		13.8		40.6	-18.3	50.8	50.5
Outlet Averages		54.5			4.4		14.0		58.9		34.0	36.4

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy

AES Dresden

Date: 5/21/2008
Start Time: 7:12
End Time: 7:35

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	7:12	78.3		-4.9	7.8		11.1		107.0	14.1	84.4		-92.7	115.3	-70.7
1-5	7:16	83.3		0.1	5.8		12.8		98.7	5.9	30.0		-147.1	35.6	-150.4
1-4	7:20	84.1	78.5	0.9	4.9	5.5	13.6	13.2	94.1	1.2	53.5	160.1	-123.6	59.9	-126.1
1-3	7:24	95.7		12.5	2.7		15.5		94.1	1.2	245.9		68.8	241.8	55.9
1-2	7:28	51.5		-31.7	4.8		14.1		57.3	-35.6	236.2		59.1	262.6	76.6
1-1	7:32	78.2		-5.0	7.0		11.8		100.7	7.8	310.8		133.7	400.2	214.2
2-6	7:13	85.3		2.1	7.2		11.6		111.5	18.6	18.4		-158.7	24.0	-162.0
2-5	7:17	81.5		-1.7	5.2		13.3		92.9	0.0	25.9		-151.2	29.5	-156.5
2-4	7:21	78.6	84.1	-4.6	4.3	4.7	14.1	13.8	84.8	-8.1	38.8	160.5	-138.3	41.8	-144.2
2-3	7:25	86.5		3.3	2.5		15.7		84.1	-8.7	372.0		194.9	361.9	175.9
2-2	7:29	89.6		6.4	2.9		15.3		89.1	-3.8	365.5		188.4	353.5	177.5
2-1	7:33	83.3		0.1	5.9		12.7		99.4	6.5	142.6		-34.5	170.2	-15.8
3-6	7:14	89.2		6.0	6.2		12.4		108.6	15.7	19.6		-157.5	23.9	-162.1
3-5	7:18	85.7		2.5	5.2		13.3		97.7	4.8	33.4		-143.7	38.1	-147.9
3-4	7:22	78.7	84.3	-4.5	4.0	4.3	14.4	14.1	83.4	-9.5	57.3	205.6	-119.8	60.7	-125.3
3-3	7:26	80.6		-2.6	2.6		15.6		78.8	-14.1	429.9		252.8	420.5	234.5
3-2	7:30	75.8		-7.4	2.3		15.9		72.9	-19.9	497.3		320.2	478.6	292.6
3-1	7:34	95.7		12.5	5.5		13.0		111.2	18.3	196.0		18.9	227.8	41.8
4-6	7:15	95.0		11.8	6.5		12.2		118.1	25.2	28.3		-148.8	35.2	-150.8
4-5	7:19	95.5		12.3	5.7		13.0		112.5	19.6	57.8		-119.3	68.1	-117.9
4-4	7:23	87.6	86.1	4.4	3.7	4.3	14.6	14.2	91.2	-1.7	86.6	182.1	-90.5	90.1	-95.9
4-3	7:27	82.5		-0.7	2.6		15.6		80.7	-12.2	278.2		101.1	272.1	86.1
4-2	7:31	80.4		-2.8	2.2		16.0		77.0	-15.9	459.3		282.2	439.7	253.7
4-1	7:35	75.3		-7.9	4.8		13.7		83.7	-9.2	182.4		5.3	202.8	16.8
Inlet Averages		83.2			4.7		13.8		92.9		177.1			186.0	

	lb/MMBtu
NOx Outlet	0.0798

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction
1-6	7:12	69.4		16.5	5.7		13.0		81.7	23.6	11.4	23.6
1-5	7:16	47.3		-5.6	5.6		13.0		55.3	-2.8	43.2	44.0
1-4	7:20	63.2	70.2	10.3	4.1	4.3	14.3	14.2	67.3	9.2	24.9	28.4
1-3	7:24	73.7		20.8	3.9		14.4		77.6	19.5	23.0	17.6
1-2	7:28	97.8		44.9	3.2		15.2		98.9	40.8	-89.9	-72.7
1-1	7:32	69.6		16.7	3.2		15.2		70.4	12.3	11.0	30.1
2-6	7:13	54.7		1.8	6.2		12.3		66.6	8.5	35.9	40.2
2-5	7:17	47.4		-5.5	5.0		13.5		53.4	-4.8	41.8	42.6
2-4	7:21	49.4	58.3	-3.5	3.8	4.1	14.7	14.3	51.7	-6.4	37.2	39.0
2-3	7:25	66.0		13.1	2.6		15.7		64.6	6.4	23.7	23.3
2-2	7:29	75.6		22.7	2.5		15.7		73.5	15.4	15.6	17.5
2-1	7:33	56.5		3.6	4.7		13.9		62.4	4.3	32.2	37.2
3-6	7:14	75.4		22.5	6.4		12.2		93.1	35.0	15.5	14.3
3-5	7:18	43.4		-9.5	4.5		13.9		47.4	-10.8	49.4	51.5
3-4	7:22	0.0	43.3	-52.9	10.8	5.2	9.0	13.4	0.0	-58.1	100.0	100.0
3-3	7:26	55.3		2.4	2.7		15.6		54.4	-3.7	31.4	31.0
3-2	7:30	52.7		-0.2	2.2		16.0		50.4	-7.7	30.5	30.8
3-1	7:34	32.7		-20.2	4.8		13.6		36.4	-21.8	65.8	67.3
4-6	7:15	73.2		20.3	5.9		12.8		87.4	29.2	22.9	26.0
4-5	7:19	32.2		-20.7	4.1		14.3		34.3	-23.8	66.3	69.5
4-4	7:23	36.9	39.9	-16.0	11.1	5.2	7.6	13.2	67.4	9.3	57.9	25.1
4-3	7:27	21.9		-31.0	2.9		15.4		21.8	-36.3	73.5	73.0
4-2	7:31	34.7		-18.2	2.2		15.8		33.2	-24.9	56.8	56.8
4-1	7:35	40.7		-12.2	5.0		13.5		45.8	-12.3	45.9	45.3
Outlet Averages		52.9			4.7		13.8		58.1		34.4	35.9

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy
AES Dresden

Date: 5/21/2008
Start Time: 7:36
End Time: 7:59

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	7:36	82.6		-0.4	7.7		11.2		112.0	17.5	85.0		-70.1	115.3	-50.8
1-5	7:40	88.0		5.0	5.8		12.8		104.3	9.8	29.2		-125.9	34.6	-131.5
1-4	7:44	86.8	79.8	3.8	5.5	5.5	12.9	13.1	100.9	6.4	21.4	147.1	-133.7	24.9	-141.2
1-3	7:48	97.0		14.0	2.7		15.6		95.4	0.9	172.3		17.2	169.5	3.4
1-2	7:52	47.1		-35.9	4.6		14.2		51.7	-42.8	216.4		61.3	237.6	71.6
1-1	7:56	77.5		-5.5	6.9		11.9		99.1	4.6	358.4		203.3	458.2	292.2
2-6	7:37	86.2		3.2	7.0		11.8		111.0	16.5	25.7		-129.4	33.1	-133.0
2-5	7:41	86.0		3.0	5.1		13.4		97.4	2.9	26.7		-128.4	30.2	-135.8
2-4	7:45	80.4	84.9	-2.6	4.3	4.6	14.2	13.8	86.7	-7.8	37.3	140.2	-117.8	40.2	-125.8
2-3	7:49	88.1		5.1	2.6		15.6		86.2	-8.4	225.8		70.7	220.9	54.8
2-2	7:53	87.0		4.0	2.8		15.3		86.0	-8.5	356.0		200.9	352.1	186.0
2-1	7:57	81.8		-1.2	5.9		12.7		97.6	3.1	169.5		14.4	202.3	36.2
3-6	7:38	96.2		13.2	5.5		13.0		111.8	17.3	31.5		-123.6	36.6	-129.5
3-5	7:42	85.9		2.9	5.1		13.4		97.3	2.8	32.8		-122.3	37.2	-128.9
3-4	7:46	80.8	85.6	-2.2	3.9	4.1	14.5	14.3	85.1	-9.4	48.2	167.9	-106.9	50.8	-115.3
3-3	7:50	81.7		-1.3	2.8		15.4		80.8	-13.7	206.8		51.7	204.5	38.4
3-2	7:54	76.0		-7.0	2.1		16.0		72.4	-22.2	502.4		347.3	478.3	312.3
3-1	7:58	93.1		10.1	5.2		13.3		106.1	11.6	185.8		30.7	211.8	45.8
4-6	7:39	97.3		14.3	5.1		12.5		117.7	23.2	37.0		-118.1	44.8	-121.3
4-5	7:43	67.7		-15.3	12.0		8.1		136.2	41.6	46.3		-108.8	93.1	-73.0
4-4	7:47	88.2	81.7	5.2	3.6	5.3	14.7	13.4	91.3	-3.3	67.8	165.4	-87.3	70.2	-95.9
4-3	7:51	81.2		-1.8	2.6		15.6		78.4	-15.1	213.6		58.5	208.9	42.9
4-2	7:55	79.4		-3.6	2.1		16.1		75.6	-18.9	443.9		288.8	422.6	256.6
4-1	7:59	76.4		-6.6	5.1		13.5		86.6	-8.0	183.6		28.5	208.0	41.9
Inlet Averages		83.0			4.9		13.7		94.5		155.1			166.1	

	lb/MMBtu
NOx Outlet	0.0862

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff. W/ O2 correction
1-6	7:36	73.7		17.2	5.9		12.8		87.9	24.9	10.8	21.5
1-5	7:40	52.0		-4.5	5.5		13.0		60.4	-2.6	40.9	42.1
1-4	7:44	70.3	73.5	13.8	4.1	4.3	14.3	14.1	74.9	11.9	19.0	25.8
1-3	7:48	74.5		18.0	4.3		14.0		80.3	17.3	23.2	15.8
1-2	7:52	99.8		43.3	3.0		15.3		99.8	36.8	-111.9	-92.9
1-1	7:56	70.6		14.1	3.0		15.3		70.6	7.6	8.9	28.8
2-6	7:37	56.8		0.3	6.3		12.2		69.6	6.6	34.1	37.3
2-5	7:41	52.9		-3.6	5.1		13.4		59.9	-3.1	38.5	38.5
2-4	7:45	57.3	61.6	0.8	3.8	4.3	14.6	14.2	60.0	-3.1	28.7	30.8
2-3	7:49	65.4		8.9	2.9		15.4		65.0	2.0	25.8	24.5
2-2	7:53	75.7		19.2	2.8		15.5		74.9	11.8	13.0	13.0
2-1	7:57	61.2		4.7	4.6		13.9		67.2	4.2	25.2	31.2
3-6	7:38	80.1		23.6	6.4		12.2		98.9	35.8	16.7	11.6
3-5	7:42	47.8		-8.7	4.6		13.8		52.5	-10.5	44.4	46.1
3-4	7:46	6.5	46.4	-50.0	14.2	5.8	5.8	12.9	17.4	-45.7	92.0	79.6
3-3	7:50	56.1		-0.4	2.8		15.5		55.5	-7.6	31.3	31.3
3-2	7:54	53.6		-2.9	2.2		16.0		51.3	-11.7	29.5	29.1
3-1	7:58	34.3		-22.2	4.5		14.0		37.4	-25.6	63.2	64.7
4-6	7:39	79.8		23.3	5.7		12.9		94.0	30.9	18.0	20.1
4-5	7:43	37.2		-19.3	4.2		14.3		39.9	-23.2	45.1	70.7
4-4	7:47	43.7	44.6	-12.8	11.8	5.3	7.1	13.3	86.0	22.9	50.5	5.8
4-3	7:51	27.6		-28.9	2.9		15.4		27.4	-35.6	66.0	65.4
4-2	7:55	39.2		-17.3	2.2		16.0		37.5	-25.5	50.6	50.4
4-1	7:59	40.2		-16.3	4.7		13.8		44.4	-18.6	47.4	48.7
Outlet Averages		56.5			4.9		13.6		63.0		29.6	30.8

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy
AES Dresden

Date: 5/21/2008
Start Time: 8:00
End Time: 8:23

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	8:00	86.2		-0.9	7.6		11.3		116.0	20.2	103.6		-79.4	139.4	-51.4
1-5	8:04	89.8		2.7	5.6		13.0		105.1	9.2	36.2		-146.8	42.4	-148.5
1-4	8:08	88.3	83.0	1.2	4.9	5.1	13.6	13.5	98.8	2.9	46.0	165.8	-137.0	51.5	-139.4
1-3	8:12	97.7		10.6	2.7		15.5		96.1	0.2	230.5		47.5	226.7	35.9
1-2	8:16	55.5		-31.6	3.0		15.5		55.5	-40.3	221.6		38.6	221.6	30.8
1-1	8:20	80.2		-6.9	7.0		11.8		103.3	7.4	357.1		174.1	459.9	269.0
2-6	8:01	89.2		2.1	7.0		11.8		114.9	19.0	19.7		-163.3	25.4	-165.5
2-5	8:05	87.4		0.3	5.0		13.5		98.4	2.5	25.4		-157.6	28.6	-162.2
2-4	8:09	81.2	87.1	-5.9	4.3	4.6	14.2	13.9	87.6	-8.3	33.8	163.5	-149.2	36.4	-154.4
2-3	8:13	89.5		2.4	2.6		15.6		87.5	-8.3	382.3		199.3	373.9	183.1
2-2	8:17	90.5		3.4	2.8		15.3		89.5	-6.3	364.9		181.9	360.9	170.0
2-1	8:21	84.5		-2.6	5.9		12.7		100.8	5.0	154.6		-28.4	184.5	-6.3
3-6	8:02	106.8		19.7	5.3		13.3		122.5	26.7	29.4		-153.6	33.7	-157.1
3-5	8:06	97.6		10.5	4.7		13.8		107.8	12.0	34.5		-148.5	38.1	-152.7
3-4	8:10	82.8	91.7	-4.3	3.9	4.0	14.5	14.4	87.2	-8.7	100.5	203.1	-82.5	105.6	-85.0
3-3	8:14	97.2		0.1	2.8		15.5		86.2	-9.6	248.4		65.4	245.7	54.8
3-2	8:18	91.2		-5.9	2.0		16.1		76.9	-18.9	600.3		417.3	568.5	377.7
3-1	8:22	94.4		7.3	5.4		13.1		109.0	13.2	205.7		22.7	237.6	46.7
4-6	8:03	97.1		10.0	5.9		12.8		115.9	20.0	32.7		-150.3	39.0	-151.8
4-5	8:07	97.4		10.3	5.4		13.2		112.5	16.6	44.5		-138.5	51.4	-139.4
4-4	8:11	85.5	86.6	-1.6	3.6	4.0	14.7	14.4	88.5	-7.4	116.7	199.4	-66.3	120.7	-70.1
4-3	8:15	81.1		-6.0	2.4		15.7		78.5	-17.4	208.9		25.9	202.1	11.3
4-2	8:19	81.5		-5.6	2.0		16.2		77.2	-18.7	576.6		393.6	546.1	355.3
4-1	8:23	76.7		-10.4	4.7		13.9		84.7	-11.1	217.0		34.0	239.8	49.0
Inlet Averages		87.1			4.4		14.0		95.8		183.0			190.8	

	lb/MMBtu
NOx Outlet	0.0933

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction
1-6	8:00	78.2		16.2	5.0		13.4		88.0	20.0	9.3	24.1
1-5	8:04	56.2		-5.8	5.2		13.3		64.1	-3.9	37.4	39.0
1-4	8:08	74.9	79.4	12.9	4.0	4.1	14.4	14.4	79.3	11.3	15.2	19.7
1-3	8:12	82.8		20.8	3.8		14.5		86.7	18.7	15.3	9.8
1-2	8:16	106.9		44.9	3.1		15.3		107.5	39.5	-92.6	-93.7
1-1	8:20	77.6		15.6	3.3		15.2		78.9	10.9	3.2	23.6
2-6	8:01	57.8		-4.2	5.7		12.7		68.1	0.1	35.2	40.7
2-5	8:05	58.6		-3.4	4.8		13.7		65.2	-2.9	33.0	33.8
2-4	8:09	62.3	66.8	0.3	3.7	4.0	14.7	14.4	64.8	-3.2	23.3	26.0
2-3	8:13	73.7		11.7	2.7		15.6		72.5	4.5	17.7	17.2
2-2	8:17	83.2		21.2	2.4		15.8		80.5	12.5	8.1	10.1
2-1	8:21	65.1		3.1	4.5		14.0		71.1	3.0	23.0	29.5
3-6	8:02	87.6		25.6	6.1		12.6		105.9	37.9	18.0	13.5
3-5	8:06	53.8		-8.2	4.5		14.0		58.7	-9.3	44.9	45.5
3-4	8:10	5.7	52.0	-56.3	13.3	5.5	6.7	13.2	13.4	-54.6	93.1	84.6
3-3	8:14	64.8		2.8	2.8		15.5		64.1	-3.9	25.7	25.7
3-2	8:18	61.2		-0.8	2.1		16.1		58.3	-9.7	24.6	24.2
3-1	8:22	39.0		-23.0	4.4		14.0		42.3	-25.7	58.7	61.2
4-6	8:03	83.4		21.4	5.4		13.2		96.3	28.3	14.1	16.9
4-5	8:07	42.4		-19.6	4.1		14.4		45.2	-22.8	56.5	59.8
4-4	8:11	44.8	49.7	-17.2	12.2	5.2	6.7	13.4	92.2	24.2	47.6	-4.2
4-3	8:15	34.2		-27.8	2.7		15.7		33.6	-34.4	57.8	57.1
4-2	8:19	48.6		-13.4	2.1		16.1		46.3	-21.7	40.4	40.1
4-1	8:23	44.8		-17.2	4.6		14.0		49.2	-18.8	41.6	41.9
Outlet Averages		62.0			4.7		13.8		68.0		27.1	26.9

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy
AES Dresden

Date: 5/21/2008
Start Time: 8:24
End Time: 8:47

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	8:24	86.0		-0.7	7.7		11.2		116.6	19.8	115.1		-56.9	156.1	-29.0
1-5	8:28	90.0		3.3	5.9		12.7		107.4	10.5	55.2		-116.8	65.9	-119.2
1-4	8:32	90.3	82.8	3.6	5.8	5.4	12.6	13.2	107.0	10.2	36.7	166.9	-135.3	43.5	-141.6
1-3	8:36	99.6		12.9	2.7		15.5		98.0	1.1	267.8		95.8	253.4	78.3
1-2	8:40	53.0		-33.7	3.2		15.3		53.6	-43.3	206.8		34.8	209.1	24.0
1-1	8:44	78.0		-8.7	7.0		11.9		100.4	3.6	319.5		147.5	411.4	226.3
2-6	8:25	89.7		3.0	7.1		11.7		116.4	19.5	29.7		-142.3	38.5	-146.6
2-5	8:29	88.3		1.6	5.2		13.3		100.7	3.8	33.5		-138.5	38.2	-146.9
2-4	8:33	83.3	87.2	-3.4	4.2	4.6	14.2	13.9	89.3	-7.6	52.3	147.9	-119.7	56.1	-129.0
2-3	8:37	91.4		4.7	2.6		15.6		89.4	-7.5	222.3		50.3	217.4	32.3
2-2	8:41	88.6		1.9	2.9		15.3		88.1	-8.8	277.5		105.5	276.0	90.9
2-1	8:45	81.7		-5.0	5.6		13.0		95.6	-1.3	272.1		100.1	318.3	133.2
3-6	8:26	102.6		15.9	5.4		13.1		118.5	21.6	49.7		-122.3	57.4	-127.7
3-5	8:30	99.7		13.0	4.7		13.7		110.2	13.3	44.4		-127.6	49.1	-136.0
3-4	8:34	84.1	91.1	-2.6	3.8	4.0	14.6	14.4	88.0	-8.8	91.6	187.7	-80.4	95.9	-89.2
3-3	8:38	87.3		0.6	2.7		15.6		85.9	-11.0	210.8		38.8	207.3	22.2
3-2	8:42	79.1		-7.6	2.0		16.1		74.9	-21.9	417.3		245.3	395.2	210.1
3-1	8:46	93.6		6.9	6.3		13.2		107.4	10.5	312.3		140.3	358.3	173.2
4-6	8:27	98.5		11.8	5.8		12.8		116.8	19.9	69.1		-102.9	81.9	-103.2
4-5	8:31	101.7		15.0	6.6		12.5		127.3	30.4	75.6		-96.4	94.6	-90.5
4-4	8:35	69.9	85.6	-16.8	6.5	4.7	11.9	13.8	86.9	-10.0	127.4	185.8	-44.6	158.4	-26.7
4-3	8:39	82.5		-4.2	2.3		15.8		79.4	-17.5	176.1		4.1	169.5	-15.6
4-2	8:43	81.9		-4.8	2.0		16.1		77.6	-19.3	398.1		226.1	377.0	191.9
4-1	8:47	78.9		-7.8	5.1		13.5		89.4	-7.5	268.2		96.2	303.8	118.7
Inlet Averages		86.7			4.7		13.8		96.9		172.0			185.1	

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction
1-6	8:24	81.3		18.0	5.6		13.0		95.1	23.6	5.5	18.4
1-5	8:28	61.6		-1.7	5.5		13.1		71.6	0.0	31.6	33.3
1-4	8:32	79.4	80.6	16.1	4.0	4.3	14.4	14.2	84.1	12.5	12.1	21.4
1-3	8:36	84.7		21.4	4.7		13.6		93.6	22.0	15.0	4.5
1-2	8:40	103.4		40.1	2.9		15.4		102.8	31.3	-95.1	-91.8
1-1	8:44	73.4		10.1	2.8		15.5		72.6	1.0	5.9	27.7
2-6	8:25	61.8		-1.5	6.2		12.3		75.3	3.7	31.1	35.3
2-5	8:29	63.5		0.2	5.1		13.4		71.9	0.4	28.1	28.5
2-4	8:33	63.5	67.8	0.2	3.9	4.2	14.6	14.3	66.9	-4.7	23.8	25.1
2-3	8:37	76.7		13.4	2.9		15.4		76.3	4.7	16.1	14.7
2-2	8:41	78.1		14.8	2.5		15.7		76.0	4.4	11.9	13.8
2-1	8:45	63.2		-0.1	4.4		14.1		68.6	-3.0	22.6	28.3
3-6	8:26	86.6		23.3	6.3		12.4		106.2	34.6	15.6	10.4
3-5	8:30	60.4		-2.9	4.5		13.9		65.9	-5.6	39.4	40.2
3-4	8:34	0.0	51.1	-63.3	10.9	5.1	8.9	13.5	0.0	-71.6	100.0	100.0
3-3	8:38	68.6		5.3	2.7		15.6		67.5	-4.1	21.4	21.4
3-2	8:42	57.0		-6.3	2.0		16.2		54.0	-17.6	27.9	27.9
3-1	8:46	33.9		-29.4	4.3		14.2		36.6	-35.0	63.8	66.0
4-6	8:27	86.7		23.4	5.5		13.1		100.8	29.2	12.0	13.7
4-5	8:31	51.2		-12.1	4.0		14.5		54.2	-17.3	49.7	57.4
4-4	8:35	51.0	53.8	-12.3	14.5	5.6	4.7	13.0	142.6	71.1	27.0	-54.2
4-3	8:39	39.4		-23.9	2.8		15.5		39.0	-32.6	52.2	50.9
4-2	8:43	47.0		-16.3	2.1		16.1		44.8	-26.8	42.6	42.3
4-1	8:47	47.3		-16.0	4.4		14.2		51.3	-20.2	40.1	42.6
Outlet Averages		63.3			4.8		13.7		71.6		25.0	23.7

	lb/MMBtu
NOx Outlet	0.0958

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy

AES Dresden

Date: 5/21/2008
Start Time: 8:48
End Time: 9:11

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	8:48	94.2		3.2	7.5		11.5		125.8	25.7	98.3		-67.0	131.3	-45.1
1-5	8:52	97.3		6.3	5.4		13.2		112.4	12.2	102.8		-62.5	118.7	-57.7
1-4	8:56	93.3	87.2	2.3	4.9	5.5	13.7	13.2	104.4	4.2	68.9	165.5	-96.4	77.1	-99.3
1-3	9:00	102.5		11.5	2.6		15.6		100.3	0.1	288.3		123.0	282.0	105.6
1-2	9:04	53.8		-37.2	5.9		13.3		64.2	-36.0	162.9		-2.4	194.4	18.0
1-1	9:08	81.8		-9.2	6.9		11.9		104.6	4.4	272.0		106.7	347.8	171.3
2-6	8:49	95.9		4.9	6.8		11.9		121.7	21.6	32.7		-132.6	41.5	-134.9
2-5	8:53	93.3		2.3	4.8		13.7		103.7	3.6	39.5		-125.8	43.9	-132.5
2-4	8:57	85.3	91.2	-5.7	4.1	4.6	14.3	13.9	90.9	-9.3	43.4	123.7	-121.9	46.2	-130.2
2-3	9:01	92.2		1.2	2.7		15.6		90.7	-9.5	212.5		47.2	209.0	32.6
2-2	9:05	91.7		0.7	3.2		15.0		92.7	-7.4	271.3		106.0	274.4	97.9
2-1	9:09	88.6		-2.4	5.9		12.8		105.7	5.6	143.0		-22.3	170.6	-5.8
3-6	8:50	107.6		16.6	5.2		13.3		122.7	22.5	45.0		-120.3	51.3	-125.1
3-5	8:54	103.8		12.8	4.4		14.1		112.6	12.4	65.9		-99.4	71.5	-104.9
3-4	8:58	87.4	94.0	-3.6	3.7	3.9	14.7	14.5	91.0	-9.2	80.6	166.7	-84.7	83.9	-92.5
3-3	9:02	89.5		-1.5	2.6		15.6		87.5	-12.6	197.4		32.1	193.1	16.7
3-2	9:06	80.4		-10.6	2.0		16.0		76.1	-24.0	413.2		247.9	391.3	214.9
3-1	9:10	95.2		4.2	5.5		13.0		110.7	10.5	197.6		32.5	229.9	53.5
4-6	8:51	104.8		13.8	5.9		12.8		125.1	24.9	161.3		-4.0	192.5	16.1
4-5	8:55	107.2		16.2	5.3		13.3		123.0	22.8	111.2		-54.1	127.6	-48.8
4-4	8:59	89.9	91.7	-1.1	3.1	3.9	15.3	14.5	90.4	-9.8	204.2	205.3	38.9	205.3	28.9
4-3	9:03	89.4		-1.6	2.4		15.9		86.5	-13.7	142.5		-22.8	137.9	-38.5
4-2	9:07	84.2		-6.8	2.1		16.1		80.2	-20.0	399.0		233.7	379.9	203.5
4-1	9:11	74.6		-16.4	4.5		13.8		81.4	-18.8	213.5		48.2	233.0	56.6
Inlet Averages		91.0			4.5		14.0		100.2		165.3			176.4	

	lb/MMBtu
NOx Outlet	0.0997

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff. W/ O2 correction
1-6	8:48	66.3		19.7	5.0		13.6		97.2	23.1	8.4	22.8
1-5	8:52	61.4		-5.2	5.0		13.4		69.1	-5.0	38.9	38.5
1-4	8:56	81.1	84.0	14.5	3.9	4.1	14.5	14.4	85.4	11.3	13.1	18.2
1-3	9:00	86.0		19.4	4.5		13.9		93.9	19.8	16.1	6.4
1-2	9:04	108.7		42.1	3.1		15.3		109.3	35.2	-102.0	-70.3
1-1	9:08	80.2		13.6	3.0		15.4		80.2	6.1	2.0	23.3
2-6	8:49	61.9		-4.7	5.6		12.9		72.4	-1.7	35.5	40.5
2-5	8:53	66.9		0.3	4.9		13.6		74.8	0.8	28.3	27.6
2-4	8:57	66.4	71.1	-0.2	3.8	4.1	14.7	14.3	69.5	-4.6	22.2	23.5
2-3	9:01	79.1		12.5	3.0		15.3		79.1	5.0	14.2	12.8
2-2	9:05	84.1		17.5	2.9		15.4		83.6	9.5	8.3	9.8
2-1	9:09	68.0		1.4	4.4		14.1		73.8	-0.3	23.3	30.2
3-6	8:50	88.9		22.3	6.0		12.6		106.8	32.7	17.4	12.9
3-5	8:54	63.5		-3.1	4.5		14.0		69.3	-4.8	38.8	38.5
3-4	8:58	0.0	54.4	-66.6	9.2	4.8	10.4	13.8	0.0	-74.1	100.0	100.0
3-3	9:02	70.5		3.9	2.7		15.5		69.3	-4.7	21.2	20.8
3-2	9:06	62.9		-3.7	2.2		16.0		60.2	-13.9	21.8	20.9
3-1	9:10	40.7		-25.9	4.2		14.2		43.6	-30.5	57.2	60.6
4-6	8:51	90.6		24.0	5.3		13.3		104.0	29.9	13.5	16.9
4-5	8:55	52.9		-13.7	4.0		14.5		56.0	-18.1	50.7	54.4
4-4	8:59	53.6	57.1	-13.0	13.7	5.4	5.5	13.1	133.3	59.2	40.4	-47.4
4-3	9:03	45.6		-21.0	2.8		15.4		45.1	-29.0	49.0	47.9
4-2	9:07	48.2		-18.4	2.2		16.0		46.1	-27.9	42.8	42.4
4-1	9:11	51.6		-15.0	4.4		14.1		56.0	-18.1	30.8	31.3
Outlet Averages		66.6			4.6		13.9		74.1		24.6	24.3

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy
AES Dresden

Date: 5/21/2008
Start Time: 9:12
End Time: 9:35

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	9:12	92.5		0.9	7.4		11.5		122.6	21.4	138.7		-9.4	183.9	22.7
1-5	9:16	96.1		4.5	5.7		13.0		113.2	11.9	52.6		-95.5	61.9	-99.3
1-4	9:20	91.9	87.1	0.3	4.8	5.8	13.7	13.0	102.2	0.9	66.8	126.2	-79.3	76.5	-84.8
1-3	9:24	102.8		11.2	2.7		15.6		101.1	-0.1	188.1		40.0	185.0	23.7
1-2	9:28	55.0		-36.6	6.9		12.4		70.3	-30.9	155.2		7.1	198.4	37.2
1-1	9:32	84.5		-7.1	7.0		11.9		108.8	7.6	153.7		5.6	197.9	36.7
2-6	9:13	100.3		8.7	7.0		11.8		129.2	27.9	26.0		-122.1	33.5	-127.8
2-5	9:17	97.6		6.0	4.9		13.6		109.2	7.9	31.6		-116.5	35.4	-125.9
2-4	9:21	86.8	93.8	-4.8	4.1	4.5	14.4	14.0	92.5	-8.8	44.3	130.2	-103.8	47.2	-114.1
2-3	9:25	95.9		4.3	2.6		15.7		93.8	-7.4	163.7		15.6	160.1	-1.1
2-2	9:29	93.7		2.1	2.6		15.6		91.7	-9.6	231.4		83.3	226.3	65.1
2-1	9:33	88.6		-3.0	5.7		13.0		104.3	3.1	284.0		135.9	334.4	173.2
3-6	9:14	109.4		17.8	5.3		13.3		125.5	24.3	43.1		-105.0	49.5	-111.8
3-5	9:18	104.4		12.8	4.4		14.1		113.3	12.0	41.6		-106.5	45.1	-116.1
3-4	9:22	87.5	95.0	-4.1	3.7	3.9	14.7	14.5	91.1	-10.2	60.7	156.8	-87.4	63.2	-98.1
3-3	9:26	90.4		-1.2	2.7		15.6		88.9	-12.3	112.4		-35.7	110.5	-50.7
3-2	9:30	82.6		-9.0	2.1		16.1		78.6	-22.6	321.2		173.1	305.8	144.6
3-1	9:34	95.5		3.9	6.4		13.1		110.3	9.0	361.6		213.5	417.6	256.3
4-6	9:15	103.4		11.8	6.1		12.6		125.1	23.8	91.3		-56.8	110.4	-50.8
4-5	9:19	102.5		10.9	5.2		13.3		116.9	15.6	84.0		-64.1	95.8	-65.5
4-4	9:23	86.6	90.4	-5.0	3.2	4.0	15.1	14.4	87.6	-13.7	153.9	179.5	5.8	155.6	-5.6
4-3	9:27	84.7		-6.9	2.4		15.9		82.0	-19.3	130.6		-17.5	126.4	-34.9
4-2	9:31	84.5		-7.1	2.3		15.9		81.3	-19.9	259.5		111.4	249.7	88.5
4-1	9:35	80.9		-10.7	4.9		13.4		90.5	-10.7	357.4		209.3	399.8	238.6
Inlet Averages		91.6			4.5		14.0		101.2		148.1			161.3	

	lb/MMBtu
NOx Outlet	0.1027

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff. W/ O2 correction
1-6	9:12	88.3		20.1	5.2		13.4		100.7	23.7	4.5	17.9
1-5	9:16	66.4		-1.8	5.3		13.2		76.2	-0.8	30.9	32.7
1-4	9:20	80.8	86.1	12.6	3.8	4.2	14.6	14.2	84.6	7.6	12.1	17.2
1-3	9:24	86.9		20.7	5.1		13.3		100.7	23.7	13.5	0.4
1-2	9:28	109.7		41.5	2.9		15.4		109.1	32.1	-99.5	-55.1
1-1	9:32	82.6		14.4	2.8		15.5		81.7	4.7	2.2	24.9
2-6	9:13	65.0		-3.2	5.9		12.6		77.6	0.6	35.2	39.9
2-5	9:17	70.4		2.2	4.8		13.8		78.3	1.3	27.9	28.3
2-4	9:21	67.7	72.4	-0.5	3.8	4.1	14.6	14.3	70.9	-6.1	22.0	23.4
2-3	9:25	78.7		10.5	3.0		15.2		78.7	1.7	17.9	16.1
2-2	9:29	84.1		15.9	2.9		15.4		83.6	6.6	10.2	8.7
2-1	9:33	68.6		0.4	4.2		14.2		73.5	-3.5	22.6	29.5
3-6	9:14	91.0		22.8	6.2		12.5		110.8	33.8	16.8	11.7
3-5	9:18	65.2		-3.0	4.5		14.0		71.2	-5.8	37.5	37.2
3-4	9:22	0.0	54.8	-68.2	10.0	5.0	9.7	13.7	0.0	-77.0	100.0	100.0
3-3	9:26	71.3		3.1	2.8		15.5		70.5	-6.5	21.1	20.7
3-2	9:30	60.7		-7.5	2.2		16.0		58.1	-18.9	26.5	26.1
3-1	9:34	40.7		-27.5	4.2		14.2		43.6	-33.4	57.4	60.4
4-6	9:15	93.5		25.3	5.4		13.2		108.0	31.0	9.6	13.7
4-5	9:19	58.8		-9.4	3.8		14.6		61.6	-15.4	42.6	47.3
4-4	9:23	55.8	59.4	-12.4	14.6	5.6	4.7	13.0	158.5	81.5	35.6	-81.0
4-3	9:27	45.7		-22.5	2.9		15.4		45.4	-31.5	46.0	44.5
4-2	9:31	49.7		-18.5	2.3		15.9		47.8	-29.2	41.2	41.2
4-1	9:35	52.7		-15.5	4.3		14.2		56.8	-20.2	34.9	37.2
Outlet Averages		68.2			4.7		13.8		77.0		23.7	22.6

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy
AES Dresden

Date: 5/21/2008
Start Time: 9:36
End Time: 9:59

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	9:36	95.8		1.9	7.6		11.4		128.9	25.5	139.6		23.1	197.9	62.0
1-5	9:40	102.5		8.6	5.5		13.2		118.1	15.7	61.3		-55.2	71.3	-54.6
1-4	9:44	97.4	91.3	3.5	4.9	5.2	13.7	13.6	109.0	5.6	46.4	114.6	-70.1	51.9	-73.9
1-3	9:48	107.2		13.3	2.7		15.7		105.4	2.0	126.2		8.7	123.1	-2.7
1-2	9:52	51.6		-42.3	3.1		15.4		51.9	-51.5	83.3		-33.2	83.8	-42.1
1-1	9:56	93.4		-0.5	7.1		11.9		121.1	17.8	231.7		115.2	300.5	174.7
2-6	9:37	100.7		6.8	6.9		11.9		128.8	25.4	28.3		-88.2	36.2	-89.7
2-5	9:41	98.9		5.0	4.8		13.8		110.0	6.6	29.8		-86.7	33.1	-92.7
2-4	9:45	89.4	96.1	-4.5	4.1	4.5	14.4	14.1	95.3	-8.1	35.1	94.9	-81.4	37.4	-88.4
2-3	9:49	99.4		5.5	2.6		15.7		97.2	-6.2	125.2		8.7	122.5	-3.4
2-2	9:53	95.8		1.9	2.5		15.7		93.2	-10.2	201.7		85.2	196.2	70.4
2-1	9:57	92.1		-1.8	5.9		12.8		109.9	6.5	149.3		32.8	178.2	52.3
3-6	9:38	113.2		19.3	5.2		13.4		129.1	25.7	44.9		-71.6	51.2	-74.6
3-5	9:42	105.4		11.5	4.6		14.0		115.7	12.3	37.5		-79.0	41.2	-84.7
3-4	9:46	90.8	97.0	-3.1	3.7	4.0	14.8	14.5	94.5	-8.9	50.2	122.1	-66.3	52.2	-73.8
3-3	9:50	92.4		-1.5	2.7		15.6		90.9	-12.5	101.3		-15.2	99.6	-26.2
3-2	9:54	79.5		-14.4	2.1		16.1		75.7	-27.7	307.4		190.9	292.7	166.8
3-1	9:58	100.5		6.6	5.5		13.1		116.8	13.4	191.5		75.0	222.6	96.8
4-6	9:39	102.2		8.3	6.0		12.8		122.8	19.4	70.2		-46.3	84.3	-41.5
4-5	9:43	101.4		7.5	5.4		13.2		117.1	13.7	72.2		-44.3	83.4	-42.5
4-4	9:47	89.0	91.3	-4.9	3.3	4.0	15.1	14.4	90.5	-12.9	67.5	134.5	-49.0	68.7	-57.2
4-3	9:51	87.6		-6.3	2.5		15.8		85.2	-18.2	86.1		-30.4	83.8	-42.1
4-2	9:55	84.1		-9.8	2.2		16.0		80.5	-22.9	320.6		204.1	306.9	181.0
4-1	9:59	83.6		-10.3	4.8		13.5		92.9	-10.5	190.2		73.7	211.5	85.6
Inlet Averages		93.9			4.4		14.1		103.4		116.5			125.8	

	lb/MMBtu
NOx Outlet	0.1056

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction
1-6	9:36	89.4		18.1	5.0		13.6		100.6	21.6	6.7	21.9
1-5	9:40	70.7		-0.6	5.1		13.3		80.1	1.0	31.0	32.8
1-4	9:44	85.8	89.0	14.5	3.9	4.3	14.5	14.1	90.3	11.3	11.9	17.1
1-3	9:48	91.3		20.0	5.8		12.6		108.2	29.1	14.8	-2.7
1-2	9:52	111.9		40.6	3.1		15.2		112.5	33.4	-116.9	-116.9
1-1	9:56	84.8		13.5	2.9		15.4		84.3	5.2	9.2	30.4
2-6	9:37	65.8		-5.5	5.7		12.8		77.5	-1.6	34.7	39.8
2-5	9:41	74.3		3.0	4.7		13.9		82.1	3.0	24.9	25.3
2-4	9:45	78.3	78.0	7.0	3.6	3.9	14.8	14.5	81.0	1.9	12.4	14.9
2-3	9:49	84.6		13.3	2.6		15.7		82.8	3.7	14.9	14.9
2-2	9:53	89.8		18.5	2.4		15.8		86.0	7.8	6.3	6.8
2-1	9:57	75.2		3.9	4.3		14.2		81.1	2.0	18.3	26.2
3-6	9:38	88.9		17.6	6.0		12.6		106.8	27.7	21.5	17.2
3-5	9:42	68.9		-2.4	4.6		13.8		75.7	-3.4	34.6	34.6
3-4	9:46	2.5	56.5	-68.8	10.5	4.2	9.6	14.3	2.9	-76.2	97.2	95.9
3-3	9:50	71.9		0.6	2.6		15.7		70.3	-8.8	22.2	22.6
3-2	9:54	64.7		-6.6	2.1		16.1		61.6	-17.5	18.6	18.6
3-1	9:58	42.1		-29.2	4.2		14.2		45.1	-34.0	58.1	61.4
4-6	9:39	97.2		25.9	5.3		13.3		111.5	32.4	4.9	9.2
4-5	9:43	59.9		-11.4	4.0		14.5		63.4	-15.6	40.9	45.8
4-4	9:47	55.5	61.6	-15.8	13.5	5.4	5.9	13.2	134.3	55.2	37.6	-48.3
4-3	9:51	48.9		-22.4	3.0		15.2		48.9	-30.2	44.2	42.6
4-2	9:55	52.2		-19.1	2.2		16.0		50.0	-29.1	37.9	37.9
4-1	9:59	56.1		-15.2	4.2		14.3		60.1	-19.0	32.9	35.3
Outlet Averages		71.3			4.4		14.0		79.1		21.6	20.2

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy
AES Dresden

Date: 5/21/2008
Start Time: 10:00
End Time: 10:23

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	10:00	100.3		-30.6	7.6		11.4		135.0	-7.5	89.2		-27.9	120.1	-5.6
1-5	10:04	133.7		2.8	5.8		12.9		158.5	16.0	22.4		-94.7	26.6	-99.1
1-4	10:08	136.1	117.1	5.2	4.8	5.2	13.8	13.5	151.3	8.8	32.4	110.5	-84.7	36.0	-89.6
1-3	10:12	149.1		18.2	2.6		15.7		145.8	3.4	200.7		83.6	196.3	70.7
1-2	10:16	76.7		-54.2	3.6		15.1		79.4	-63.1	109.6		-7.5	113.4	-12.3
1-1	10:20	106.5		-24.4	6.8		12.1		135.2	-7.3	208.9		91.8	265.2	139.5
2-6	10:01	102.9		-28.0	7.1		11.8		133.5	-9.0	17.8		-99.3	23.1	-102.6
2-5	10:05	136.3		5.4	4.9		13.6		152.5	10.0	16.3		-100.8	18.2	-107.4
2-4	10:09	142.2	131.0	11.3	4.2	4.5	14.4	14.0	152.4	9.9	16.7	109.8	-100.4	17.9	-107.8
2-3	10:13	147.9		17.0	2.6		15.7		144.7	2.2	156.2		39.1	152.8	27.1
2-2	10:17	145.0		14.1	2.6		15.6		141.8	-0.7	220.6		103.5	215.8	90.1
2-1	10:21	111.8		-19.1	5.7		12.9		131.7	-10.8	231.3		114.2	272.4	146.7
3-6	10:02	119.4		-11.5	5.4		13.2		137.9	-4.6	24.4		-92.7	28.2	-97.5
3-5	10:06	142.6		11.7	4.4		14.1		154.7	12.2	30.9		-86.2	33.5	-92.1
3-4	10:10	147.9	138.1	17.0	3.9	4.0	14.6	14.5	155.7	13.2	22.4	126.0	-94.7	23.6	-102.1
3-3	10:14	152.5		21.6	2.6		15.7		149.2	6.7	161.0		43.9	157.5	31.8
3-2	10:18	133.3		2.4	2.1		16.0		126.9	-15.6	258.2		141.1	245.8	120.2
3-1	10:22	132.9		2.0	5.5		13.1		154.5	12.0	259.2		142.1	301.3	175.6
4-6	10:03	122.7		-8.2	6.3		12.5		150.4	7.9	36.9		-80.2	45.2	-80.4
4-5	10:07	129.4		-1.5	5.5		13.2		150.4	7.9	52.1		-65.0	60.6	-65.1
4-4	10:11	146.0	137.4	15.1	3.2	4.1	15.2	14.4	147.6	5.2	66.5	122.2	-50.6	67.3	-58.4
4-3	10:15	152.3		21.4	2.4		15.9		147.4	4.9	132.8		15.7	128.5	2.8
4-2	10:19	144.2		13.3	2.3		15.9		138.8	-3.7	185.5		68.4	178.5	52.9
4-1	10:23	129.9		-1.0	4.8		13.6		144.4	1.9	259.2		142.1	288.2	162.5
Inlet Averages		130.9			4.4		14.1		142.5		117.1			125.7	

	lb/MMBtu
NOx Outlet	0.1910

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff w/ O2 correction
1-6	10:00	93.1		-32.5	4.9		13.6		104.2	-45.6	7.2	22.8
1-5	10:04	126.7		1.1	5.5		13.0		147.3	-2.5	5.2	7.1
1-4	10:08	136.5	127.7	10.9	3.9	4.4	14.5	14.0	143.7	-6.1	-0.3	5.0
1-3	10:12	140.8		15.2	6.4		12.0		173.8	24.0	5.6	-19.2
1-2	10:16	136.6		11.0	2.9		15.4		135.8	-13.9	-78.1	-71.2
1-1	10:20	132.6		7.0	2.7		15.6		130.4	-19.4	-24.5	3.5
2-6	10:01	71.4		-54.2	5.7		12.8		84.1	-65.7	30.6	37.0
2-5	10:05	135.8		10.2	4.7		13.8		150.1	0.3	0.4	1.6
2-4	10:09	142.2	128.7	16.6	3.6	3.8	14.8	14.6	147.1	-2.7	0.0	3.5
2-3	10:13	146.6		21.0	2.6		15.7		143.4	-6.4	0.9	0.9
2-2	10:17	148.2		22.6	2.2		16.1		141.9	-7.9	-2.2	0.0
2-1	10:21	127.7		2.1	4.2		14.4		136.9	-12.9	-14.2	-4.0
3-6	10:02	93.7		-31.9	6.2		12.5		114.1	-35.7	21.5	17.3
3-5	10:06	136.2		10.6	4.4		14.1		147.8	-2.0	4.5	4.5
3-4	10:10	10.7	109.0	-114.9	13.5	5.4	6.7	13.3	25.9	-123.9	82.8	83.4
3-3	10:14	142.9		17.3	2.5		15.8		139.0	-10.8	6.3	6.8
3-2	10:18	142.3		16.7	2.0		16.2		134.8	-15.0	-6.8	-6.2
3-1	10:22	128.3		2.7	3.9		14.5		135.1	-14.7	3.5	12.5
4-6	10:03	134.6		9.0	5.6		13.0		157.5	7.7	-9.7	-4.7
4-5	10:07	143.6		18.0	4.0		14.5		152.1	2.3	-11.0	-1.1
4-4	10:11	141.1	136.9	15.5	16.3	5.8	3.3	12.8	549.1	399.3	3.4	-271.9
4-3	10:15	145.6		20.0	2.7		15.5		143.2	-6.6	4.4	2.8
4-2	10:19	136.4		10.8	2.2		16.0		130.6	-19.2	5.4	5.9
4-1	10:23	120.1		-5.5	4.0		14.4		127.2	-22.6	7.5	11.9
Outlet Averages		125.6			4.9		13.7		149.8		2.2	-6.3

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy

AES Dresden

Date: 5/21/2008
Start Time: 10:24
End Time: 10:47

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	10:24	111.6		13.3	7.6		11.4		150.2	42.4	98.8		-146.3	133.0	-123.1
1-5	10:28	108.4		10.1	5.7		13.0		127.7	19.8	41.2		-203.9	48.5	-207.6
1-4	10:32	99.2	95.5	0.9	5.1	5.1	13.5	13.6	112.4	4.6	96.1	228.6	-149.0	108.9	-147.2
1-3	10:36	108.9		10.6	2.5		15.8		105.9	-1.9	342.6		97.5	333.3	77.2
1-2	10:40	57.4		-40.9	2.8		15.7		56.8	-51.1	298.8		53.7	295.5	39.4
1-1	10:44	87.3		-11.0	6.8		12.1		110.8	3.0	493.9		248.8	627.0	370.9
2-6	10:25	113.4		15.1	7.2		11.7		148.2	40.3	15.2		-229.9	19.9	-236.2
2-5	10:29	104.0		5.7	4.9		13.6		116.4	8.5	21.3		-223.8	23.8	-232.3
2-4	10:33	92.3	99.9	-6.0	4.1	4.5	14.3	14.0	98.3	-9.5	93.5	222.2	-151.6	99.6	-156.5
2-3	10:37	102.2		3.9	2.4		15.8		98.9	-8.9	413.6		168.5	400.2	144.1
2-2	10:41	98.0		-0.3	2.4		15.7		94.8	-13.0	494.4		249.3	478.4	222.3
2-1	10:45	89.4		-8.9	5.9		12.8		106.7	-1.1	295.0		49.9	352.0	95.9
3-6	10:26	122.1		23.8	5.0		13.5		137.5	29.6	29.3		-215.8	33.0	-223.1
3-5	10:30	112.7		14.4	4.5		14.1		123.0	15.2	39.7		-205.4	43.3	-212.8
3-4	10:34	93.2	101.8	-5.1	3.7	3.9	14.7	14.5	97.0	-10.8	155.5	248.2	-89.6	161.8	-94.3
3-3	10:38	96.1		-2.2	2.7		15.6		94.5	-13.3	240.0		-5.1	236.0	-20.1
3-2	10:42	90.0		-8.3	1.9		16.2		84.8	-23.0	688.7		443.6	648.8	392.7
3-1	10:46	96.5		-1.8	6.6		13.0		112.9	5.1	336.1		91.0	393.2	137.1
4-6	10:27	106.1		7.8	6.9		12.8		126.6	18.8	60.0		-185.1	71.6	-184.5
4-5	10:31	109.5		11.2	5.0		13.6		123.3	15.5	140.5		-104.6	158.2	-97.9
4-4	10:35	93.2	95.9	-5.1	3.0	3.8	15.4	14.6	93.2	-14.6	195.5	281.5	-49.6	195.5	-60.6
4-3	10:39	87.7		-10.6	2.2		16.0		83.9	-23.9	259.0		13.9	247.9	-8.2
4-2	10:43	91.4		-6.9	2.0		16.2		85.6	-21.3	582.6		437.5	646.5	390.4
4-1	10:47	87.6		-10.7	4.8		13.5		97.4	-10.4	351.1		106.0	390.4	134.3
Inlet Averages		98.3			4.3		14.2		107.8		245.1			256.1	

	lb/MMBtu
NOx Outlet	0.1215

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff. W/ O2 correction
1-6	10:24	110.3		29.9	4.8		13.8		122.6	31.9	1.2	18.4
1-5	10:28	77.7		-2.7	5.2		13.2		88.6	-2.1	28.3	30.6
1-4	10:32	85.8	95.8	5.4	4.0	4.1	14.4	14.3	90.9	0.2	13.5	19.1
1-3	10:36	96.8		16.4	4.9		13.4		108.3	17.6	11.1	-2.2
1-2	10:40	116.3		35.9	2.9		15.4		115.7	25.0	-102.6	-103.7
1-1	10:44	88.1		7.7	2.9		15.4		87.6	-3.1	-0.9	20.9
2-6	10:25	119.7		39.3	5.4		13.0		138.2	47.5	-5.6	6.7
2-5	10:29	82.0		1.6	4.7		13.8		90.6	-0.1	21.2	22.1
2-4	10:33	74.4	90.1	-6.0	3.9	3.9	14.6	14.5	78.3	-12.4	19.4	20.3
2-3	10:37	89.7		9.3	2.7		15.6		88.2	-2.5	12.2	10.8
2-2	10:41	98.3		17.9	2.6		15.7		95.6	4.9	-0.3	-0.9
2-1	10:45	76.4		-4.0	4.3		14.2		82.4	-8.3	14.5	22.8
3-6	10:26	107.8		27.4	6.1		12.6		130.4	39.7	11.7	5.1
3-5	10:30	78.7		-1.7	4.6		13.9		86.4	-4.3	30.2	29.7
3-4	10:34	2.1	66.5	-78.3	13.5	5.4	6.6	13.3	5.1	-85.6	97.7	94.8
3-3	10:38	82.3		1.9	2.5		15.8		80.1	-10.6	14.4	15.3
3-2	10:42	76.5		-3.9	1.9		16.3		72.1	-18.6	15.0	15.0
3-1	10:46	51.4		-29.0	4.0		14.5		54.4	-36.3	46.7	51.8
4-6	10:27	102.5		22.1	5.4		13.1		118.4	27.7	3.4	6.5
4-5	10:31	68.3		-12.1	4.0		14.5		72.3	-18.4	37.6	41.3
4-4	10:35	64.7	69.3	-15.7	14.8	5.5	4.6	13.1	189.9	99.2	30.6	-103.7
4-3	10:39	54.5		-25.9	2.7		15.6		53.6	-37.1	37.9	36.1
4-2	10:43	67.2		-13.2	2.0		16.2		63.6	-27.1	26.5	26.5
4-1	10:47	58.8		-21.6	4.3		14.3		63.4	-27.3	32.9	34.9
Outlet Averages		80.4			4.8		13.8		90.7		16.5	13.3

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy

AES Dresden

Date: 5/22/2008
Start Time: 0:48
End Time: 1:11

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	0:48	68.4		-28.8	9.7		9.5		109.3	-20.9	13.9		0.9	22.2	4.8
1-5	0:52	84.6		-12.6	7.6		11.2		113.9	-16.3	12.9		-0.1	17.4	-0.1
1-4	0:56	91.2	85.8	-6.0	7.5	8.0	11.4	11.1	121.8	-8.4	13.6	14.2	0.6	18.2	0.7
1-3	1:00	102.3		5.1	6.5		12.3		127.2	-3.0	15.1		2.1	18.8	1.3
1-2	1:04	78.6		-18.6	7.3		11.8		103.5	-26.7	15.8		2.8	20.8	3.4
1-1	1:08	89.8		-7.4	9.2		10.1		137.4	7.2	13.6		0.6	20.8	3.4
2-6	0:49	75.4		-21.8	9.1		10.0		114.4	-15.8	9.6		-3.4	14.6	-2.9
2-5	0:53	90.3		-6.9	7.2		11.7		118.0	-12.2	11.6		-1.4	15.2	-2.3
2-4	0:57	93.6	96.9	-3.6	6.9	7.6	12.0	11.4	119.7	-10.5	11.4	11.4	-1.6	14.6	-2.9
2-3	1:01	106.5		9.3	6.2		12.6		129.7	-0.5	12.1		-0.9	14.7	-2.7
2-2	1:05	119.2		22.0	6.7		12.1		150.3	20.1	12.6		-0.4	15.9	-1.6
2-1	1:09	96.3		-0.9	9.3		9.9		148.6	18.4	11.1		-1.9	17.1	-0.3
3-6	0:50	89.3		-7.9	8.1		10.9		124.9	-5.3	10.9		-2.1	15.2	-2.2
3-5	0:54	93.6		-3.6	7.3		11.8		123.2	-7.0	13.0		0.0	17.1	-0.3
3-4	0:58	95.3	104.0	-1.9	6.8	7.2	12.1	11.7	121.0	-9.2	12.7	12.3	-0.3	16.1	-1.3
3-3	1:02	103.4		6.2	6.4		12.4		127.6	-2.6	12.0		-1.0	14.8	-2.6
3-2	1:06	117.4		20.2	6.3		12.5		143.9	13.7	13.0		0.0	15.9	-1.5
3-1	1:10	125.1		27.9	8.1		10.8		174.9	44.7	12.2		-0.8	17.1	-0.4
4-6	0:51	94.6		-2.6	8.9		10.2		141.1	10.9	12.7		-0.3	18.9	1.5
4-5	0:55	96.2		-1.0	8.5		10.5		138.9	8.7	15.0		2.0	21.7	4.2
4-4	0:59	93.8	102.3	-3.4	7.0	7.4	11.9	11.5	120.8	-9.4	14.5	14.0	1.5	18.7	1.2
4-3	1:03	100.8		3.6	6.3		12.5		123.6	-6.6	14.1		1.1	17.3	-0.1
4-2	1:07	114.5		17.3	6.2		12.6		139.4	9.2	14.6		1.6	17.8	0.3
4-1	1:11	113.6		16.4	7.5		11.4		151.7	21.6	13.2		0.2	17.6	0.2
Inlet Averages		97.2			7.5		11.4		130.2		13.0			17.4	

	lb/MMBtu
NOx Outlet	0.1707

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction
1-6	0:48	75.0		-20.1	8.1		10.8		104.9	-19.5	-9.6	4.1
1-5	0:52	92.1		-3.0	7.8		11.0		125.8	1.5	-8.9	-10.5
1-4	0:56	96.8	97.2	1.7	7.0	7.2	11.8	11.7	124.7	0.3	-6.1	-2.3
1-3	1:00	102.8		7.7	6.7		12.0		129.6	5.2	-0.5	-1.9
1-2	1:04	110.1		15.0	6.7		12.1		138.8	14.4	-40.1	-34.2
1-1	1:08	106.1		11.0	6.6		12.3		132.8	8.4	-18.2	3.3
2-6	0:49	78.5		-16.6	8.4		10.5		112.4	-12.0	-4.1	1.7
2-5	0:53	88.9		-6.2	7.4		11.4		117.9	-6.5	1.6	0.1
2-4	0:57	94.7	99.1	-0.4	6.9	7.2	11.9	11.6	121.1	-3.3	-1.2	-1.2
2-3	1:01	105.3		10.2	6.4		12.3		130.0	5.6	1.1	-0.2
2-2	1:05	118.6		23.5	6.7		12.0		149.5	25.1	0.5	0.5
2-1	1:09	108.5		13.4	7.5		11.3		144.9	20.5	-12.7	2.5
3-6	0:50	74.5		-20.6	8.4		10.5		106.7	-17.7	16.6	14.6
3-5	0:54	83.8		-11.3	7.1		11.7		108.7	-15.7	10.5	11.8
3-4	0:58	36.7	86.4	-58.4	10.0	7.6	9.4	11.3	50.3	-64.1	61.5	50.2
3-3	1:02	98.3		3.2	6.4		12.3		121.3	-3.0	4.9	4.9
3-2	1:06	113.2		18.1	6.2		12.5		137.8	13.5	3.6	4.2
3-1	1:10	111.6		16.5	7.4		11.4		148.0	23.6	10.8	15.4
4-6	0:51	85.2		-9.9	8.2		10.7		120.1	-4.3	9.9	14.9
4-5	0:55	88.7		-6.4	7.1		11.8		115.1	-9.3	7.8	17.2
4-4	0:59	87.2	97.8	-7.9	8.1	7.3	10.7	11.6	121.9	-2.4	7.0	-1.0
4-3	1:03	99.3		4.2	6.5		12.4		123.4	-1.0	1.5	0.1
4-2	1:07	112.2		17.1	6.1		12.7		135.7	11.3	2.0	2.7
4-1	1:11	114.4		19.3	7.6		11.4		154.0	29.6	-0.7	-1.5
Outlet Averages		95.1			7.3		11.5		124.4		1.6	4.0

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy
AES Dresden

Date: 5/22/2008
Start Time: 1:12
End Time: 1:35

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	1:12	71.3		-26.9	9.8		9.4		115.0	-16.6	12.5		-0.3	20.2	3.0
1-5	1:16	87.1		-11.1	7.9		11.0		119.9	-11.6	11.7		-1.1	16.1	-1.0
1-4	1:20	92.7	87.5	-5.5	7.4	7.9	11.5	11.1	122.9	-8.6	12.8	13.8	0.0	17.0	-0.2
1-3	1:24	106.6		8.4	6.5		12.3		132.5	0.9	15.3		2.5	19.0	1.9
1-2	1:28	80.6		-17.6	6.6		12.3		100.9	-30.7	16.2		3.4	20.3	3.1
1-1	1:32	86.8		-11.4	9.2		10.0		132.8	1.2	14.1		1.3	21.6	4.4
2-6	1:13	76.1		-22.1	9.3		9.9		117.4	-14.1	8.8		-4.0	13.6	-3.6
2-5	1:17	93.7		-4.5	7.2		11.7		122.4	-9.1	11.0		-1.8	14.4	-2.8
2-4	1:21	96.4	98.7	-1.8	6.9	7.6	12.0	11.4	123.3	-8.3	11.4	11.4	-1.4	14.6	-2.6
2-3	1:25	108.0		9.8	6.2		12.6		131.5	-0.1	12.5		-0.3	15.2	-1.9
2-2	1:29	119.1		20.9	6.6		12.2		149.1	17.5	13.5		0.7	16.9	-0.2
2-1	1:33	98.8		0.6	9.2		10.0		151.2	19.6	11.2		-1.6	17.1	0.0
3-6	1:14	88.2		-10.0	8.1		10.9		123.3	-8.2	10.5		-2.3	14.7	-2.5
3-5	1:18	95.2		-3.0	7.2		11.7		124.4	-7.2	12.4		-0.4	16.2	-0.9
3-4	1:22	96.7	103.0	-1.5	6.9	7.2	12.0	11.7	123.6	-7.9	12.7	12.3	-0.1	16.2	-0.9
3-3	1:26	103.5		5.3	6.4		12.5		127.8	-3.8	12.3		-0.5	15.2	-2.0
3-2	1:30	113.6		15.4	6.2		12.5		138.3	6.8	13.4		0.6	16.3	-0.8
3-1	1:34	120.7		22.5	8.4		10.5		172.8	41.3	12.2		-0.6	17.5	0.3
4-6	1:15	93.8		-4.4	9.0		10.1		141.1	9.5	11.8		-1.0	17.7	0.6
4-5	1:19	99.3		1.1	8.5		10.5		143.3	11.8	14.0		1.2	20.2	3.1
4-4	1:23	97.4	103.5	-0.8	7.0	7.5	11.9	11.5	125.4	-6.1	14.5	13.7	1.7	18.7	1.5
4-3	1:27	103.3		5.1	6.3		12.5		126.6	-4.9	14.1		1.3	17.3	0.1
4-2	1:31	115.9		17.7	6.2		12.6		141.1	9.6	14.6		1.8	17.8	0.6
4-1	1:35	111.1		12.9	7.7		11.3		150.7	19.1	13.0		0.2	17.6	0.5
Inlet Averages		98.2			7.5		11.4		131.6		12.8			17.1	

	lb/MMBtu
NOx Outlet	0.1727

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff. W/ O2 correction
1-6	1:12	78.1		-18.1	8.1		10.8		109.2	-16.6	-9.5	5.0
1-5	1:16	92.1		-4.1	8.1		10.8		128.8	2.9	-5.7	-7.4
1-4	1:20	98.0	98.1	1.8	7.0	7.1	11.8	11.7	126.2	0.3	-5.7	-2.7
1-3	1:24	104.2		8.0	6.9		11.9		133.2	7.4	2.3	-0.5
1-2	1:28	106.6		10.6	6.4		12.3		131.8	6.0	-32.5	-30.7
1-1	1:32	109.5		13.3	6.3		12.4		134.3	8.4	-26.2	-1.1
2-6	1:13	79.5		-16.7	8.6		10.3		115.7	-10.2	-4.5	1.5
2-5	1:17	91.1		-5.1	7.6		11.2		122.6	-3.2	2.8	-0.1
2-4	1:21	95.3	99.8	-0.9	6.9	7.3	11.9	11.6	121.8	-4.0	1.1	1.1
2-3	1:25	105.1		8.9	6.5		12.2		130.6	4.8	2.7	0.7
2-2	1:29	117.3		21.1	6.7		12.1		147.9	22.0	1.5	0.8
2-1	1:33	110.4		14.2	7.2		11.6		144.2	18.4	-11.7	4.6
3-6	1:14	75.3		-20.9	8.4		10.5		107.8	-18.0	14.5	12.6
3-5	1:18	87.1		-9.1	7.0		11.8		112.2	-13.7	8.5	9.8
3-4	1:22	37.7	87.7	-58.5	10.3	7.6	9.1	11.3	63.7	-62.2	61.0	48.5
3-3	1:26	99.5		3.3	6.4		12.3		122.8	-3.0	3.9	3.9
3-2	1:30	113.6		17.4	6.1		12.6		137.4	11.5	0.0	0.7
3-1	1:34	113.2		17.0	7.3		11.5		149.0	23.1	6.2	13.8
4-6	1:15	86.3		-9.9	8.3		10.6		122.6	-3.3	8.0	13.1
4-5	1:19	91.8		-4.4	7.0		11.9		118.2	-7.6	7.6	17.5
4-4	1:23	90.2	99.1	-6.0	8.2	7.3	10.7	11.6	127.1	1.3	7.4	-1.4
4-3	1:27	100.8		4.6	6.4		12.4		124.4	-1.4	2.4	1.7
4-2	1:31	111.8		15.6	6.2		12.6		136.1	10.3	3.5	3.5
4-1	1:35	113.4		17.2	7.6		11.3		152.6	26.8	-2.1	-1.3
Outlet Averages		96.2			7.3		11.5		125.9		1.5	3.9

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy
AES Dresden

Date: 5/22/2008
Start Time: 1:36
End Time: 1:59

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	1:36	68.8		-28.7	9.7		9.6		110.0	-20.9	13.1		0.3	20.9	3.7
1-5	1:40	82.1		-15.4	8.0		10.9		113.9	-17.0	12.2		-0.6	16.9	-0.3
1-4	1:44	89.6	85.8	-7.9	7.6	8.1	11.3	10.9	120.6	-10.3	12.9	13.9	0.1	17.4	0.1
1-3	1:48	101.0		3.5	6.5		12.2		125.5	-5.3	16.1		3.3	20.0	2.8
1-2	1:52	78.9		-18.6	7.3		11.8		103.8	-27.0	16.1		3.3	21.2	4.0
1-1	1:56	94.6		-2.9	9.5		9.7		148.5	17.7	12.9		0.1	20.3	3.0
2-6	1:37	75.6		-21.9	9.4		9.8		117.7	-13.2	9.2		-3.6	14.3	-2.9
2-5	1:41	93.5		-4.0	7.2		11.7		122.2	-8.7	11.2		-1.6	14.6	-2.6
2-4	1:45	96.4	98.8	-1.1	6.8	7.6	12.1	11.4	122.4	-8.5	11.4	11.5	-1.4	14.5	-2.8
2-3	1:49	108.4		10.9	6.2		12.6		132.0	1.1	13.6		0.8	16.6	-0.7
2-2	1:53	120.1		22.6	6.6		12.2		150.3	19.4	13.1		0.3	16.4	-0.8
2-1	1:57	98.7		1.2	9.2		9.9		151.0	20.1	10.6		-2.2	18.2	-1.0
3-6	1:38	88.7		-8.8	8.0		10.9		123.1	-7.8	10.4		-2.4	14.4	-2.8
3-5	1:42	96.2		-1.3	7.1		11.8		124.8	-6.1	12.5		-0.3	16.2	-1.0
3-4	1:46	96.5	103.6	-1.0	6.8	7.2	12.1	11.7	122.5	-8.4	12.5	12.2	-0.3	15.9	-1.4
3-3	1:50	105.3		7.8	6.4		12.5		130.0	-0.9	12.2		-0.6	15.1	-2.2
3-2	1:54	114.1		16.6	6.2		12.6		138.9	8.1	13.0		0.2	15.8	-1.4
3-1	1:58	120.5		23.0	8.4		10.5		172.6	41.7	12.4		-0.4	17.8	0.5
4-6	1:39	93.1		-4.4	9.0		10.1		140.0	9.2	11.9		-0.9	17.9	0.7
4-5	1:43	94.2		-3.3	8.5		10.6		136.0	5.1	14.0		1.2	20.2	3.0
4-4	1:47	97.3	101.7	-0.2	6.9	7.4	12.0	11.6	124.4	-6.5	14.2	13.7	1.4	18.2	0.9
4-3	1:51	101.6		4.1	6.5		12.4		126.3	-4.6	14.2		1.4	17.7	0.4
4-2	1:55	112.9		15.4	6.3		12.6		138.4	7.5	14.4		1.6	17.7	0.4
4-1	1:59	111.2		13.7	7.3		11.6		146.4	15.5	13.2		0.4	17.4	0.1
Inlet Averages		97.5			7.6		11.4		130.9		12.8			17.2	

	lb/MMBtu
NOx Outlet	0.1714

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff. W/ O2 correction
1-6	1:36	74.8		-20.8	7.8		11.0		102.2	-22.7	-8.7	7.0
1-5	1:40	90.5		-5.1	8.1		10.7		126.6	1.7	-10.2	-11.1
1-4	1:44	96.4	97.3	0.8	6.9	7.1	11.8	11.7	123.3	-1.6	-7.6	-2.2
1-3	1:48	105.8		10.2	6.7		12.0		133.4	8.5	-4.8	-6.2
1-2	1:52	106.3		10.7	6.5		12.2		132.1	7.3	-34.7	-27.2
1-1	1:56	110.0		14.4	6.3		12.4		134.9	10.0	-16.3	9.2
2-6	1:37	78.2		-17.4	8.6		10.3		113.8	-11.1	-3.4	3.3
2-5	1:41	89.8		-5.8	7.6		11.2		120.9	-4.0	4.0	1.1
2-4	1:45	95.2	99.5	-0.4	6.9	7.3	11.9	11.6	121.7	-3.1	1.2	0.5
2-3	1:49	106.3		10.7	6.5		12.2		132.1	7.3	1.9	-0.1
2-2	1:53	117.4		21.8	6.7		12.1		148.0	23.1	2.2	1.6
2-1	1:57	110.1		14.5	7.2		11.6		143.9	19.0	-11.6	4.7
3-6	1:38	75.1		-20.5	8.5		10.4		108.4	-16.5	15.3	11.9
3-5	1:42	85.7		-9.9	7.0		11.8		110.4	-14.5	10.9	11.6
3-4	1:46	38.0	87.6	-57.6	10.3	7.6	9.2	11.3	64.2	-60.7	60.5	47.6
3-3	1:50	100.5		4.9	6.4		12.3		124.1	-0.8	4.6	4.6
3-2	1:54	113.2		17.6	6.1		12.6		136.9	12.0	0.8	1.5
3-1	1:58	112.9		17.3	7.2		11.6		147.5	22.6	6.3	14.5
4-6	1:39	85.3		-10.3	8.3		10.7		121.2	-3.7	8.4	13.5
4-5	1:43	90.7		-4.9	7.0		11.9		116.8	-8.1	3.7	14.1
4-4	1:47	91.1	98.1	-4.5	8.0	7.3	10.8	11.6	126.4	1.5	8.4	-1.5
4-3	1:51	100.6		5.0	6.5		12.3		125.1	0.2	1.0	1.0
4-2	1:55	109.4		13.8	6.2		12.6		133.2	8.3	3.1	3.8
4-1	1:59	111.4		15.8	7.6		11.3		149.9	25.1	-0.2	-2.4
Outlet Averages		95.6			7.3		11.5		124.9		1.4	4.2

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy

AES Dresden

Date: 5/22/2008
Start Time: 2:00
End Time: 2:23

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	2:00	72.7		-25.8	9.9		9.4		118.3	-14.4	11.6		-1.0	18.9	2.0
1-5	2:04	87.2		-11.3	7.9		11.1		120.1	-12.6	11.5		-1.1	15.8	-1.1
1-4	2:08	97.1	89.2	-1.4	7.4	8.0	11.6	11.1	128.7	-3.9	11.7	13.1	-0.9	15.5	-1.4
1-3	2:12	108.3		9.8	6.4		12.4		133.7	1.0	14.5		1.9	17.9	1.0
1-2	2:16	75.6		-22.9	6.9		12.1		96.7	-36.0	16.2		3.6	20.7	3.8
1-1	2:20	94.1		-4.4	9.6		9.7		149.1	16.4	13.1		0.5	20.8	3.8
2-6	2:01	76.4		-22.1	9.3		9.9		117.9	-14.8	8.9		-3.7	13.7	-3.2
2-5	2:05	90.9		-7.6	7.4		11.5		120.5	-12.2	11.4		-1.2	15.1	-1.8
2-4	2:09	96.1	98.1	-2.4	6.8	7.6	12.1	11.3	122.0	-10.7	11.4	11.3	-1.2	14.5	-2.4
2-3	2:13	106.1		7.6	6.2		12.6		129.2	-3.5	12.2		-0.4	14.9	-2.0
2-2	2:17	119.7		21.2	6.8		12.0		152.0	19.3	13.1		0.5	16.6	-0.3
2-1	2:21	99.1		0.6	9.3		9.9		152.9	20.2	10.6		-2.0	16.4	-0.5
3-6	2:02	89.3		-9.2	8.0		11.0		123.9	-8.8	10.4		-2.2	14.4	-2.5
3-5	2:06	97.5		-1.0	7.3		11.6		128.3	-4.4	12.6		0.0	16.6	-0.3
3-4	2:10	96.0	104.0	-2.5	6.7	7.2	12.2	11.7	121.0	-11.7	12.7	12.2	0.1	16.0	-0.9
3-3	2:14	104.5		6.0	6.3		12.5		128.1	-4.6	12.1		-0.5	14.8	-2.1
3-2	2:18	114.7		16.2	6.3		12.5		140.6	7.9	13.4		0.8	16.4	-0.5
3-1	2:22	122.0		23.5	8.7		10.3		179.0	46.3	12.2		-0.4	17.9	1.0
4-6	2:03	96.0		-2.5	8.9		10.2		143.2	10.5	11.4		-1.2	17.0	0.1
4-5	2:07	97.6		-0.9	8.6		10.5		142.0	9.3	13.9		1.3	20.2	3.3
4-4	2:11	94.3	102.9	-4.2	7.0	7.4	11.9	11.5	121.4	-11.3	14.2	13.6	1.6	18.3	1.4
4-3	2:15	103.9		5.4	6.4		12.4		128.3	-4.4	14.0		1.4	17.3	0.4
4-2	2:19	114.5		16.0	6.1		12.7		138.5	5.8	15.0		2.4	18.1	1.2
4-1	2:23	110.8		12.3	7.6		11.4		149.1	16.4	13.2		0.6	17.8	0.9
Inlet Averages		98.5			7.6		11.4		132.7		12.6			16.9	

	lb/MMBtu
NOx Outlet	0.1708

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction
1-6	2:00	74.4		-20.7	7.7		11.1		100.9	-23.5	-2.3	14.7
1-5	2:04	87.4		-7.7	8.2		10.7		123.2	-1.2	-0.2	-2.6
1-4	2:08	95.0	95.1	-0.1	7.1	7.1	11.7	11.7	123.2	-1.2	2.2	4.3
1-3	2:12	100.7		5.6	7.0		11.8		129.7	5.3	7.0	3.0
1-2	2:16	106.0		10.9	6.4		12.3		130.9	6.4	-40.2	-35.4
1-1	2:20	107.0		11.9	6.0		12.6		128.5	4.1	-13.7	13.8
2-6	2:01	78.4		-16.7	8.4		10.4		112.3	-12.1	-2.6	4.8
2-5	2:05	86.8		-8.3	7.8		11.0		118.6	-5.8	4.5	1.6
2-4	2:09	94.2	96.2	-0.9	7.0	7.3	11.8	11.5	121.3	-3.1	2.0	0.6
2-3	2:13	102.5		7.4	6.6		12.2		128.3	3.9	3.4	0.7
2-2	2:17	116.7		21.6	6.6		12.1		146.1	21.7	2.5	3.9
2-1	2:21	110.6		15.5	7.1		11.7		143.5	19.0	-11.6	6.2
3-6	2:02	74.6		-20.5	8.5		10.4		107.7	-16.7	16.5	13.1
3-5	2:06	86.5		-8.6	7.2		11.6		113.0	-11.4	11.3	11.9
3-4	2:10	40.3	88.3	-54.8	10.6	7.7	8.9	11.3	70.0	-54.4	58.0	42.1
3-3	2:14	100.2		5.1	6.3		12.4		122.8	-1.6	4.1	4.1
3-2	2:18	114.2		19.1	6.1		12.6		138.1	13.7	0.4	1.8
3-1	2:22	114.1		19.0	7.2		11.6		149.1	24.7	6.5	16.7
4-6	2:03	85.9		-9.2	8.2		10.8		121.1	-3.3	10.5	15.5
4-5	2:07	90.6		-4.5	7.1		11.8		117.5	-6.9	7.2	17.3
4-4	2:11	87.6	98.9	-7.5	8.0	7.3	10.8	11.6	121.5	-2.9	7.1	-0.1
4-3	2:15	102.1		7.0	6.5		12.3		126.9	2.5	1.7	1.1
4-2	2:19	110.7		15.6	6.1		12.7		133.9	9.5	3.3	3.3
4-1	2:23	116.4		21.3	7.7		11.3		157.8	33.4	-5.1	-5.9
Outlet Averages		95.1			7.3		11.5		124.4		3.0	5.7

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy
AES Dresden

Date: 5/22/2008
Start Time: 2:24
End Time: 2:47

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	2:24	73.9		-26.6	9.8		9.5		119.2	-15.4	12.2		-0.5	19.7	2.5
1-5	2:28	88.9		-11.6	7.8		11.1		121.5	-14.1	11.4		-1.3	15.6	-1.6
1-4	2:32	97.7	91.6	-2.8	7.5	7.9	11.5	11.1	130.5	-5.1	12.6	13.7	-0.1	16.8	-0.4
1-3	2:36	115.9		15.4	6.4		12.4		143.1	7.5	15.1		2.4	18.6	1.5
1-2	2:40	79.1		-21.4	6.8		12.2		100.4	-35.2	16.8		4.1	21.3	4.1
1-1	2:44	94.2		-6.3	9.2		9.9		144.1	8.5	14.0		1.3	21.4	4.2
2-6	2:25	76.5		-24.0	9.3		9.9		118.0	-17.5	8.8		-3.9	13.6	-3.6
2-5	2:29	92.9		-7.6	7.3		11.7		122.3	-13.3	11.0		-1.7	14.5	-2.7
2-4	2:33	97.0	99.8	-3.5	7.0	7.7	11.9	11.3	124.9	-10.7	11.4	11.5	-1.3	14.7	-2.5
2-3	2:37	111.2		10.7	6.2		12.6		135.4	-0.2	12.7		0.0	15.5	-1.7
2-2	2:41	120.4		19.9	7.1		11.7		156.2	20.6	14.0		1.3	18.2	1.0
2-1	2:45	100.6		0.1	9.3		9.8		155.2	19.7	10.8		-1.9	16.7	-0.5
3-6	2:26	89.8		-10.7	8.0		11.0		124.6	-11.0	10.3		-2.4	14.3	-2.9
3-5	2:30	96.0		-4.5	7.3		11.6		126.4	-9.2	12.3		-0.4	16.2	-1.0
3-4	2:34	101.4	106.0	0.9	6.9	7.3	12.0	11.6	129.6	-5.9	12.3	12.1	-0.4	15.7	-1.5
3-3	2:38	109.0		8.5	6.4		12.5		134.6	-1.0	12.1		-0.6	14.9	-2.2
3-2	2:42	116.2		15.7	6.4		12.4		143.4	7.9	13.4		0.7	16.5	-0.6
3-1	2:46	123.8		23.3	9.0		10.1		186.2	50.6	12.4		-0.3	18.7	1.5
4-6	2:27	95.6		-4.9	9.0		10.1		143.8	8.2	11.7		-1.0	17.6	0.4
4-5	2:31	94.0		-6.5	8.5		10.5		135.7	0.1	13.9		1.2	20.1	2.9
4-4	2:35	98.5	104.6	-2.0	7.1	7.5	11.8	11.4	127.8	-7.8	14.2	13.7	1.5	18.4	1.2
4-3	2:39	107.1		6.6	6.4		12.4		132.2	-3.4	14.1		1.4	17.4	0.2
4-2	2:43	118.6		18.1	6.2		12.6		144.4	8.8	15.0		2.3	18.3	1.1
4-1	2:47	113.9		13.4	7.7		11.2		154.5	18.9	13.2		0.5	17.9	0.7
Inlet Averages		100.5			7.6		11.4		135.6		12.7			17.2	

	lb/MMBtu
NOx Outlet	0.1792

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction
1-6	2:24	80.6		-18.6	8.2		10.8		113.6	-16.9	-9.1	4.7
1-5	2:28	95.1		-4.1	7.9		10.9		130.9	0.4	-7.0	-7.8
1-4	2:32	102.9	103.7	3.7	7.1	7.3	11.8	11.6	133.5	2.9	-5.3	-2.3
1-3	2:36	113.4		14.2	6.8		12.0		144.0	13.4	2.2	-0.6
1-2	2:40	112.5		13.3	6.8		12.0		142.8	12.3	-42.2	-42.2
1-1	2:44	117.8		18.6	6.8		12.1		149.5	19.0	-25.1	-3.8
2-6	2:25	80.2		-19.0	8.6		10.3		116.7	-13.8	-4.8	1.1
2-5	2:29	90.7		-8.5	7.5		11.3		121.2	-9.4	2.4	0.9
2-4	2:33	96.7	101.6	-2.5	7.1	7.3	11.7	11.5	125.4	-5.1	0.3	-0.4
2-3	2:37	109.1		9.9	6.5		12.2		135.6	5.1	1.9	-0.2
2-2	2:41	119.9		20.7	6.8		11.9		152.2	21.7	0.4	2.5
2-1	2:45	113.2		14.0	7.4		11.4		150.1	19.6	-12.5	3.3
3-6	2:26	77.4		-21.8	8.5		10.5		111.7	-18.8	13.8	10.3
3-5	2:30	87.8		-11.4	7.1		11.7		113.9	-16.7	8.5	9.9
3-4	2:34	43.0	90.6	-56.2	10.7	7.7	8.8	11.3	75.5	-55.1	57.6	41.8
3-3	2:38	103.6		4.4	6.4		12.4		127.9	-2.6	5.0	5.0
3-2	2:42	117.6		18.4	6.1		12.6		142.2	11.7	-1.2	0.8
3-1	2:46	114.1		14.9	7.3		11.6		150.2	19.6	7.8	19.4
4-6	2:27	87.6		-11.6	8.3		10.7		124.4	-6.1	8.4	13.5
4-5	2:31	91.6		-7.6	7.0		11.9		118.0	-12.6	2.6	13.1
4-4	2:35	92.5	101.0	-6.7	8.2	7.3	10.6	11.6	130.4	-0.2	6.1	-2.0
4-3	2:39	104.4		5.2	6.5		12.3		129.8	-0.8	2.5	1.8
4-2	2:43	114.7		15.5	6.1		12.7		138.7	8.2	3.3	3.9
4-1	2:47	115.0		15.8	7.6		11.4		154.8	24.2	-1.0	-0.2
Outlet Averages		99.2			7.4		11.5		130.5		0.6	3.0

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy
AES Dresden

Date: 5/22/2008
Start Time: 2:48
End Time: 3:11

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	2:48	74.4		-25.4	9.6		9.6		117.9	-17.0	12.8		-0.1	20.3	2.9
1-5	2:52	88.0		-11.8	7.8		11.1		120.2	-14.6	11.7		-1.2	16.0	-1.4
1-4	2:56	97.0	91.3	-2.8	7.6	7.9	11.3	11.1	130.5	-4.3	12.8	13.8	-0.1	17.2	-0.2
1-3	3:00	111.3		11.5	6.5		12.3		138.4	3.5	15.0		2.1	18.6	1.3
1-2	3:04	79.0		-20.8	6.6		12.3		98.9	-35.9	16.7		3.8	20.9	3.5
1-1	3:08	98.0		-1.8	9.4		9.9		152.5	17.7	13.8		0.9	21.5	4.1
2-6	2:49	75.8		-24.0	9.4		9.8		118.0	-16.8	8.6		-4.3	13.4	-4.0
2-5	2:53	90.6		-9.2	7.3		11.5		119.2	-15.6	10.8		-2.1	14.2	-3.2
2-4	2:57	95.3	97.7	-4.5	7.1	7.8	11.8	11.2	123.6	-11.2	11.5	11.5	-1.4	14.9	-2.5
2-3	3:01	107.3		7.5	6.2		12.5		130.7	-4.2	12.7		-0.2	15.5	-1.9
2-2	3:05	116.8		17.0	7.4		11.5		154.9	20.1	14.3		1.4	19.0	1.6
2-1	3:09	100.2		0.4	9.3		9.8		154.6	19.8	11.1		-1.8	17.1	-0.3
3-6	2:50	90.1		-9.7	7.9		11.0		124.1	-10.8	10.3		-2.6	14.2	-3.2
3-5	2:54	97.2		-2.6	7.3		11.6		127.9	-6.9	12.4		-0.5	16.3	-1.1
3-4	2:58	97.3	104.2	-2.5	6.8	7.3	12.1	11.6	123.5	-11.3	12.8	12.4	-0.1	16.2	-1.1
3-3	3:02	107.3		7.5	6.3		12.5		131.6	-3.3	12.2		-0.7	15.0	-2.4
3-2	3:06	109.8		10.0	6.3		12.4		134.6	-0.2	13.4		0.5	16.4	-1.0
3-1	3:10	123.5		23.7	9.1		10.0		187.3	52.5	13.2		0.3	20.0	2.6
4-6	2:51	94.1		-5.7	9.0		10.1		141.5	6.7	11.8		-1.1	17.7	0.4
4-5	2:55	97.6		-2.2	8.5		10.5		140.9	6.1	14.2		1.3	20.5	3.1
4-4	2:59	100.6	106.1	0.8	6.9	7.4	12.0	11.5	128.6	-6.2	13.9	13.9	1.0	17.8	0.4
4-3	3:03	106.7		6.9	6.3		12.5		130.8	-4.0	14.1		1.2	17.3	-0.1
4-2	3:07	121.0		21.2	6.2		12.6		147.3	12.5	15.0		2.1	18.3	0.9
4-1	3:11	116.4		16.6	7.7		11.2		157.8	23.0	14.1		1.2	19.1	1.7
Inlet Averages		99.8			7.6		11.3		134.8		12.9			17.4	

	lb/MMBtu
NOx Outlet	0.1796

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff. W/ O2 correction
1-6	2:48	80.9		-18.5	8.2		10.7		114.0	-16.8	-8.7	3.3
1-5	2:52	93.5		-5.9	8.0		10.9		129.7	-1.1	-8.3	-7.9
1-4	2:56	104.7	103.8	5.3	7.1	7.3	11.7	11.6	135.8	5.0	-7.9	-4.0
1-3	3:00	110.8		11.4	6.9		11.9		141.7	10.9	0.4	-2.4
1-2	3:04	114.8		15.4	6.6		12.2		143.7	12.9	-45.3	-45.3
1-1	3:08	118.0		18.6	6.7		12.1		148.7	17.9	-20.4	2.5
2-6	2:49	80.5		-18.9	8.7		10.3		118.1	-12.7	-6.2	-0.1
2-5	2:53	90.4		-9.0	7.5		11.3		120.8	-10.0	0.2	-1.3
2-4	2:57	98.3	101.5	-1.1	7.0	7.3	11.8	11.5	126.6	-4.2	-3.1	-2.4
2-3	3:01	107.2		7.8	6.5		12.2		133.3	2.5	0.1	-2.0
2-2	3:05	120.6		21.2	6.5		12.2		149.9	19.1	-3.3	3.2
2-1	3:09	111.7		12.3	7.5		11.3		149.2	18.4	-11.5	3.5
3-6	2:50	77.4		-22.0	8.6		10.4		112.6	-18.2	14.1	9.2
3-5	2:54	87.2		-12.2	7.1		11.8		113.1	-17.7	10.3	11.6
3-4	2:58	41.7	91.2	-57.7	10.6	7.7	8.9	11.3	72.5	-58.3	57.1	41.3
3-3	3:02	104.6		5.2	6.4		12.4		129.1	-1.7	2.5	1.8
3-2	3:06	118.3		18.9	6.0		12.7		142.1	11.3	-7.7	-5.6
3-1	3:10	117.9		18.5	7.3		11.5		155.2	24.4	4.5	17.2
4-6	2:51	86.1		-13.3	8.3		10.7		122.3	-8.5	8.5	13.6
4-5	2:55	92.9		-6.5	7.0		11.9		119.6	-11.2	4.8	15.1
4-4	2:59	94.0	101.4	-5.4	8.5	7.3	10.3	11.5	135.7	4.9	6.6	-5.5
4-3	3:03	99.4		0.0	6.4		12.3		122.7	-8.1	6.8	6.2
4-2	3:07	116.7		17.3	6.1		12.7		141.1	10.3	3.6	4.2
4-1	3:11	119.1		19.7	7.7		11.3		161.5	30.7	-2.3	-2.3
Outlet Averages		99.4			7.4		11.5		130.8		-0.1	2.2

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy
AES Dresden

Date: 5/22/2008
Start Time: 3:12
End Time: 3:35

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	3:12	76.0		-37.3	9.9		9.4		123.7	-35.7	12.6		-1.1	20.5	0.9
1-5	3:16	107.6		-5.7	8.2		10.7		151.7	-7.7	9.4		-4.3	13.2	-6.3
1-4	3:20	114.7	103.4	1.4	7.5	8.3	11.4	10.8	153.2	-6.2	11.3	13.6	-2.4	15.1	-4.5
1-3	3:24	132.6		19.3	6.3		12.5		162.6	3.2	14.0		0.3	17.2	-2.4
1-2	3:28	89.8		-23.5	7.1		11.8		116.5	-42.9	16.8		3.1	21.8	2.2
1-1	3:32	99.6		-13.7	10.6		8.8		173.1	13.7	17.3		3.6	30.1	10.5
2-6	3:13	76.7		-36.6	9.5		9.7		120.4	-38.9	8.6		-5.1	13.5	-6.1
2-5	3:17	108.6		-4.7	7.8		11.1		148.4	-11.0	12.3		-1.4	16.8	-2.8
2-4	3:21	108.6	108.0	-4.7	7.3	8.3	11.6	10.7	142.9	-16.4	10.5	12.8	-3.2	13.8	-5.7
2-3	3:25	125.4		12.1	6.3		12.5		153.7	-5.6	13.0		-0.7	15.9	-3.6
2-2	3:29	129.0		15.7	8.4		10.6		184.7	25.4	15.9		2.2	22.8	3.2
2-1	3:33	99.7		-13.6	10.7		8.6		175.0	15.6	16.2		2.5	28.4	8.9
3-6	3:14	103.6		-9.7	8.5		10.5		149.6	-9.8	8.6		-5.1	12.4	-7.1
3-5	3:18	117.7		4.4	7.7		11.3		159.6	0.2	13.8		0.1	18.7	-0.8
3-4	3:22	118.9	123.0	5.6	6.8	7.9	12.1	11.1	150.9	-8.4	11.0	13.8	-2.7	14.0	-5.6
3-3	3:26	144.0		30.7	6.7		12.2		181.5	22.1	12.4		-1.3	15.6	-3.9
3-2	3:30	139.5		26.2	7.4		11.6		185.0	25.6	17.8		4.1	23.6	4.0
3-1	3:34	114.3		1.0	10.5		8.8		196.7	37.4	19.0		5.3	32.7	13.1
4-6	3:15	112.5		-0.8	9.2		10.0		172.1	12.7	8.9		-4.8	13.6	-5.9
4-5	3:19	96.6		-16.7	9.0		10.1		145.3	-14.1	12.3		-1.4	18.5	-1.1
4-4	3:23	117.9	118.8	4.6	6.8	8.1	12.1	10.9	149.7	-9.7	12.2	14.6	-1.5	15.5	-4.1
4-3	3:27	138.2		24.9	8.9		12.0		176.7	17.3	14.3		0.6	18.3	-1.3
4-2	3:31	137.2		23.9	7.3		11.6		180.6	21.2	20.0		6.3	26.3	6.8
4-1	3:35	110.1		-3.2	9.4		9.8		171.4	12.0	20.0		6.3	31.1	11.6
Inlet Averages		113.3			8.2		10.9		159.4		13.7			19.6	

	lb/MMBtu
NOx Outlet	0.2058

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff. W/ O2 correction
1-6	3:12	83.1		-26.9	8.1		10.8		116.2	-33.8	-9.3	6.0
1-5	3:16	118.9		8.9	8.4		10.5		170.3	20.3	-10.5	-12.3
1-4	3:20	121.1	117.7	11.1	7.3	7.6	11.5	11.3	159.4	9.4	-5.6	-4.0
1-3	3:24	136.7		26.7	6.7		12.1		172.3	22.3	-3.1	-6.0
1-2	3:28	137.1		27.1	7.1		11.8		177.8	27.8	-52.7	-52.7
1-1	3:32	109.3		-0.7	8.0		11.0		151.7	1.7	-9.7	12.4
2-6	3:13	84.0		-26.0	8.8		10.2		124.3	-25.7	-9.5	-3.2
2-5	3:17	112.5		2.5	7.8		11.0		153.7	3.7	-3.6	-3.6
2-4	3:21	114.4	112.2	4.4	7.1	7.8	11.7	11.1	148.4	-1.6	-5.3	-3.8
2-3	3:25	123.2		13.2	6.7		12.1		155.3	5.3	1.8	-1.0
2-2	3:29	136.8		26.8	7.0		11.8		176.2	26.2	-6.0	4.6
2-1	3:33	102.1		-7.9	9.1		10.0		154.9	4.9	-2.4	11.5
3-6	3:14	92.9		-17.1	8.7		10.3		136.3	-13.7	10.3	8.9
3-5	3:18	111.7		1.7	7.3		11.6		147.0	-3.0	5.1	7.9
3-4	3:22	49.3	97.1	-60.7	10.6	8.2	8.8	10.8	85.7	-64.3	58.5	43.2
3-3	3:26	114.0		4.0	6.6		12.2		142.7	-7.3	20.8	21.4
3-2	3:30	115.4		5.4	7.2		11.7		150.8	0.8	17.3	18.5
3-1	3:34	99.1		-10.9	8.7		10.2		145.4	-4.6	13.3	26.1
4-6	3:15	107.8		-2.2	8.5		10.5		155.6	5.6	4.2	9.6
4-5	3:19	109.5		-0.5	7.4		11.5		145.2	-4.8	-13.4	0.1
4-4	3:23	111.0	113.0	1.0	8.3	7.9	10.5	11.0	157.7	7.7	5.9	-5.4
4-3	3:27	127.4		17.4	6.9		12.0		162.9	12.9	7.8	7.8
4-2	3:31	130.7		20.7	7.2		11.6		170.8	20.8	4.7	5.4
4-1	3:35	91.8		-18.2	9.1		10.0		139.3	-10.7	16.6	18.7
Outlet Averages		110.0			7.9		11.1		150.0		1.5	4.6

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy

AES Dresden

Date: 5/22/2008
Start Time: 3:36
End Time: 3:59

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	3:36	61.8		-30.6	10.5		8.9		106.4	-21.8	16.9		1.2	29.1	6.9
1-5	3:40	79.6		-12.8	8.7		10.3		116.8	-11.4	15.9		0.2	23.3	1.2
1-4	3:44	87.6	85.5	-4.8	7.6	8.3	11.3	10.8	117.9	-10.3	16.0	16.4	0.3	21.5	-0.6
1-3	3:48	120.8		28.4	6.8		12.1		153.4	25.1	15.0		-0.7	19.0	-3.1
1-2	3:52	82.3		-10.1	6.7		12.2		103.7	-24.5	17.3		1.6	21.8	-0.3
1-1	3:56	80.6		-11.8	9.6		9.7		127.7	-0.5	17.2		1.5	27.2	5.1
2-6	3:37	84.0		-28.4	10.1		9.1		106.1	-22.1	13.0		-2.7	21.5	-0.6
2-5	3:41	84.0		-8.4	7.9		11.0		115.7	-12.6	14.8		-0.9	20.4	-1.8
2-4	3:45	97.1	89.6	-5.3	7.1	8.2	11.7	10.8	113.0	-15.2	13.3	14.1	-2.4	17.3	-4.9
2-3	3:49	116.4		24.0	6.5		12.3		144.7	16.5	11.5		-4.2	14.3	-7.8
2-2	3:53	103.5		11.1	8.1		10.8		144.7	16.5	15.6		-0.1	21.8	-0.3
2-1	3:57	82.6		-9.8	9.6		9.6		130.8	2.6	16.2		0.5	25.7	3.5
3-6	3:38	80.8		-11.6	8.7		10.3		118.6	-9.7	14.8		-0.9	21.7	-0.4
3-5	3:42	87.8		-4.6	7.8		11.1		120.0	-8.2	16.9		1.2	23.1	1.0
3-4	3:46	96.0	98.3	3.6	7.3	7.8	11.6	11.2	126.4	-1.9	14.4	15.2	-1.3	19.0	-3.2
3-3	3:50	118.3		25.9	6.7		12.2		149.1	20.9	11.1		-4.6	14.0	-8.1
3-2	3:54	103.9		11.5	6.9		11.9		132.8	4.6	15.6		-0.1	19.9	-2.2
3-1	3:58	102.9		10.5	9.3		9.8		156.8	30.6	18.4		2.7	28.4	6.3
4-6	3:39	86.4		-6.0	9.7		9.6		138.1	9.9	16.4		0.7	26.2	4.1
4-5	3:43	87.5		-4.9	8.9		10.2		130.5	2.3	20.3		4.6	30.3	8.1
4-4	3:47	103.9	98.3	11.5	7.2	7.8	11.8	11.2	135.8	7.5	15.5	17.1	-0.2	20.3	-1.9
4-3	3:51	113.5		21.1	6.6		12.3		142.1	13.9	14.0		-1.7	17.5	-4.6
4-2	3:55	91.5		-0.9	6.2		12.6		111.4	-16.8	17.4		1.7	21.2	-1.0
4-1	3:59	95.0		2.6	8.1		10.8		132.9	4.6	19.2		3.5	26.9	4.7
Inlet Averages		92.4			8.0		11.0		128.2		15.7			22.1	

	lb/MMBtu
NOx Outlet	0.1612

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff. W/ O2 correction
1-6	3:36	65.4		-21.3	9.3		9.7		100.9	-16.5	-5.8	5.1
1-5	3:40	82.0		-4.7	8.8		10.1		121.3	3.9	-3.0	-3.9
1-4	3:44	94.3	91.2	7.6	7.1	7.7	11.7	11.2	122.3	4.9	-7.6	-3.7
1-3	3:48	119.5		32.8	7.2		11.6		156.1	38.7	1.1	-1.8
1-2	3:52	94.4		7.7	6.9		11.9		120.7	3.3	-14.7	-16.3
1-1	3:56	91.8		5.1	6.8		12.0		116.5	-0.9	-13.9	8.7
2-6	3:37	67.4		-19.3	9.4		9.6		104.9	-12.5	-5.3	1.1
2-5	3:41	79.8		-6.9	8.3		10.5		113.4	-4.0	5.0	2.0
2-4	3:45	88.6	89.3	1.9	7.1	7.8	11.7	11.0	114.9	-2.5	-1.7	-1.7
2-3	3:49	115.0		28.3	6.8		11.9		146.0	28.6	1.2	-0.9
2-2	3:53	97.5		10.8	7.3		11.4		128.3	10.9	5.8	11.3
2-1	3:57	87.4		0.7	7.8		11.0		119.4	2.0	-5.8	8.7
3-6	3:38	62.8		-23.9	9.2		9.8		95.1	-21.3	22.3	19.0
3-5	3:42	76.1		-10.6	7.6		11.2		102.4	-15.0	13.3	14.6
3-4	3:46	36.9	78.3	-49.8	10.5	8.0	8.9	10.9	63.5	-53.9	61.6	49.7
3-3	3:50	113.4		26.7	6.7		12.1		142.9	25.6	4.1	4.1
3-2	3:54	87.9		1.2	6.4		12.3		108.5	-8.9	15.4	18.3
3-1	3:58	92.4		5.7	7.5		11.3		123.4	6.0	10.2	22.3
4-6	3:39	71.3		-15.4	9.0		10.1		107.2	-10.1	17.5	22.3
4-5	3:43	79.7		-7.0	7.2		11.6		104.1	-13.3	8.9	20.2
4-4	3:47	92.5	88.0	5.8	8.8	7.7	10.0	11.2	136.8	19.4	11.0	-0.8
4-3	3:51	105.1		18.4	6.7		12.1		132.5	15.1	7.4	6.7
4-2	3:55	83.4		-3.3	6.2		12.6		101.6	-15.8	8.9	8.9
4-1	3:59	96.2		9.5	8.0		11.0		133.5	16.1	-1.3	-0.5
Outlet Averages		86.7			7.8		11.1		117.4		5.6	8.1

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy
AES Dresden

Date: 5/22/2008
Start Time: 4:00
End Time: 4:23

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-8	4:00	60.1		-29.0	9.6		9.6		95.2	-24.2	16.8		0.5	26.6	4.7
1-5	4:04	79.5		-9.6	7.7		11.2		107.8	-11.6	17.3		1.0	23.5	1.5
1-4	4:08	98.3	83.9	9.2	7.3	7.8	11.6	11.2	129.4	10.0	16.4	17.4	0.1	21.6	-0.4
1-3	4:12	112.6		23.5	6.4		12.4		139.0	19.5	18.0		1.7	22.2	0.3
1-2	4:16	66.6		-22.5	6.5		12.4		82.8	-36.6	19.8		3.5	24.6	2.7
1-1	4:20	86.0		-3.1	9.3		9.9		132.7	13.3	15.8		-0.5	24.4	2.4
2-8	4:01	59.8		-29.3	9.3		9.8		92.3	-27.1	13.8		-2.5	21.3	-0.7
2-5	4:05	75.0		-14.1	7.5		11.3		100.2	-19.2	14.3		-2.0	19.1	-2.8
2-4	4:09	88.6	86.5	-0.5	7.0	7.6	11.8	11.3	114.1	-5.3	13.6	14.2	-2.7	17.5	-4.4
2-3	4:13	100.8		11.7	6.3		12.5		123.6	4.2	14.1		-2.2	17.3	-4.7
2-2	4:17	106.6		17.5	6.3		12.4		130.7	11.3	15.4		-0.9	18.9	-3.1
2-1	4:21	88.0		-1.1	9.4		9.8		137.0	17.6	13.8		-2.5	21.5	-0.5
3-8	4:02	73.7		-15.4	8.2		10.8		103.9	-15.5	16.3		0.0	23.0	1.0
3-5	4:06	84.0		-5.1	7.5		11.5		112.2	-7.2	17.2		0.9	23.0	1.0
3-4	4:10	98.4	93.0	9.3	6.8	7.3	12.1	11.6	124.9	5.5	16.5	15.7	0.2	20.9	-1.0
3-3	4:14	99.0		9.9	6.3		12.5		121.4	2.0	14.3		-2.0	17.5	-4.4
3-2	4:18	94.3		5.2	6.9		12.7		112.5	-6.8	14.8		-1.5	17.7	-4.3
3-1	4:22	108.3		19.2	9.0		10.0		162.9	43.5	15.0		-1.3	22.6	0.6
4-8	4:03	81.0		-8.1	9.0		10.1		121.8	2.5	19.1		2.8	28.7	6.8
4-5	4:07	90.8		1.7	8.5		10.6		131.1	11.7	20.4		4.1	29.4	7.5
4-4	4:11	98.6	93.1	9.5	6.8	7.4	12.1	11.6	125.2	5.8	18.1	17.9	1.8	23.0	1.0
4-3	4:15	97.1		8.0	6.2		12.6		118.2	-1.1	17.4		1.1	21.2	-0.8
4-2	4:19	98.4		9.3	6.0		12.8		118.2	-1.2	16.6		0.3	19.9	-2.0
4-1	4:23	92.9		3.8	7.9		11.1		127.9	8.5	15.6		-0.7	21.5	-0.5
Inlet Averages		89.1			7.5		11.4		119.4		16.3			22.0	

	lb/MMBtu
NOx Outlet	0.1543

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff. W/ O2 correction
1-8	4:00	60.6		-25.3	8.1		10.8		84.7	-27.6	-0.8	11.0
1-5	4:04	83.1		-2.8	8.0		10.9		115.3	3.0	-4.5	-7.0
1-4	4:08	103.3	91.5	17.4	7.0	7.1	11.8	11.7	133.0	20.7	-5.1	-2.8
1-3	4:12	108.8		22.9	6.8		12.0		138.1	25.8	3.4	0.6
1-2	4:16	96.9		11.0	6.5		12.2		120.5	8.1	-45.5	-45.5
1-1	4:20	96.1		10.2	5.9		12.6		114.7	2.3	-11.7	13.6
2-8	4:01	61.0		-24.9	8.6		10.3		88.8	-23.6	-2.0	3.8
2-5	4:05	78.3		-7.6	7.5		11.2		104.6	-7.7	-4.4	-4.4
2-4	4:09	96.5	89.0	10.6	6.9	7.2	11.8	11.6	123.4	11.0	-0.9	-8.1
2-3	4:13	102.7		16.8	6.4		12.3		126.8	14.4	-1.9	-2.6
2-2	4:17	101.6		15.7	6.8		11.9		129.0	16.6	4.7	1.3
2-1	4:21	94.1		8.2	7.9		11.8		121.2	8.8	-6.9	11.5
3-8	4:02	58.2		-27.7	8.5		10.4		84.0	-28.3	21.0	19.1
3-5	4:06	76.4		-9.5	7.1		11.7		99.1	-13.2	9.0	11.7
3-4	4:10	41.7	77.2	-44.2	10.4	7.6	9.0	11.3	71.1	-41.3	57.6	43.1
3-3	4:14	95.7		9.8	6.4		12.4		118.1	5.8	3.3	2.7
3-2	4:18	97.4		11.5	6.1		12.6		117.8	5.5	-3.3	-4.7
3-1	4:22	94.0		8.1	7.3		11.5		123.7	11.4	13.2	24.1
4-8	4:03	64.0		-21.9	8.2		10.7		90.2	-22.1	21.0	25.0
4-5	4:07	86.8		0.9	7.0		11.9		111.8	-0.6	4.4	14.7
4-4	4:11	89.4	86.0	3.5	8.9	7.3	9.9	11.5	133.4	21.0	9.3	-6.5
4-3	4:15	91.1		5.2	6.3		12.4		111.7	-0.6	6.2	5.5
4-2	4:19	92.2		6.3	6.0		12.7		110.8	-1.6	6.3	6.3
4-1	4:23	92.5		6.6	7.6		11.3		124.5	12.2	0.4	2.7
Outlet Averages		85.9			7.3		11.5		112.3		2.7	4.8

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy
AES Dresden

Date: 5/22/2008
Start Time: 4:24
End Time: 4:47

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	4:24	54.9		-36.3	9.2		10.0		84.0	-36.9	16.2		-0.2	24.8	2.9
1-5	4:28	66.8		-24.4	8.1		10.8		93.4	-27.5	17.9		1.5	25.0	3.2
1-4	4:32	84.7	77.7	-6.5	7.6	7.8	11.2	11.2	114.0	-6.9	18.1	18.3	1.7	24.4	2.5
1-3	4:36	96.9		5.7	6.6		12.1		121.3	0.4	21.4		5.0	26.8	4.9
1-2	4:40	77.4		-13.8	6.4		12.5		95.5	-25.4	19.1		2.7	23.6	1.7
1-1	4:44	85.7		-5.5	8.9		10.3		127.8	6.9	16.9		0.5	25.2	3.3
2-6	4:25	59.3		-31.9	9.2		9.9		90.7	-30.2	14.1		-2.3	21.6	-0.3
2-5	4:29	86.3		-4.9	7.1		11.8		111.9	-9.0	15.2		-1.2	19.7	-2.2
2-4	4:33	97.5	92.7	6.3	6.7	7.5	12.1	11.5	122.9	2.0	14.5	15.1	-1.9	18.3	-3.6
2-3	4:37	108.0		16.8	6.2		12.6		131.5	10.6	18.2		1.8	22.2	0.3
2-2	4:41	113.7		22.5	6.2		12.5		138.5	17.5	15.3		-1.1	18.6	-3.2
2-1	4:45	91.5		0.3	9.4		9.8		142.4	21.5	13.0		-3.4	20.2	-1.6
3-6	4:26	76.0		-15.2	7.8		11.2		103.8	-17.1	16.0		-0.4	21.9	0.0
3-5	4:30	89.2		-2.0	7.2		11.7		116.5	-4.4	16.4		0.0	21.4	-0.5
3-4	4:34	101.2	99.5	10.0	6.5	7.1	12.3	11.8	125.8	4.9	15.9	15.3	-0.5	19.8	-2.1
3-3	4:38	105.5		14.3	6.2		12.7		128.5	7.5	14.6		-1.8	17.8	-4.1
3-2	4:42	108.9		17.7	5.9		12.8		130.0	9.0	15.0		-1.4	17.9	-4.0
3-1	4:46	116.0		24.8	9.2		9.9		177.5	56.5	14.0		-2.4	21.4	-0.5
4-6	4:27	78.8		-12.4	8.8		10.3		116.6	-4.4	17.3		0.9	25.6	3.7
4-5	4:31	88.7		-2.5	8.3		10.7		126.0	5.1	18.5		2.1	26.3	4.4
4-4	4:35	96.9	94.9	5.7	6.8	7.3	12.0	11.6	123.0	2.1	18.0	17.0	1.6	22.9	1.0
4-3	4:39	100.1		8.9	6.0		12.7		120.3	-0.7	17.2		0.8	20.7	-1.2
4-2	4:43	105.2		14.0	5.9		12.9		125.5	4.6	16.7		0.3	19.9	-1.9
4-1	4:47	99.4		8.2	7.7		11.2		134.8	13.9	14.2		-2.2	19.3	-2.6
Inlet Averages		91.2			7.4		11.5		120.9		16.4			21.9	

	lb/MMBtu
NOx Outlet	0.1561

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction
1-6	4:24	56.5		-31.3	7.7		11.1		76.6	-36.9	-2.9	8.8
1-5	4:28	81.6		-6.2	8.0		10.8		113.2	-0.3	-22.2	-21.2
1-4	4:32	95.5	90.9	7.7	6.8	6.9	11.9	11.8	121.2	7.7	-12.8	-6.4
1-3	4:36	105.1		17.3	6.8		11.9		133.4	19.9	-8.5	-10.0
1-2	4:40	104.5		16.7	6.2		12.5		127.2	13.7	-35.0	-33.2
1-1	4:44	101.9		14.1	5.9		12.7		121.6	8.1	-18.9	4.9
2-6	4:25	58.1		-29.7	8.3		10.5		82.5	-31.0	2.0	9.0
2-5	4:29	80.6		-7.2	7.5		11.3		107.7	-5.9	6.6	3.8
2-4	4:33	94.1	91.2	6.3	6.8	7.1	12.0	11.7	119.5	5.9	3.5	2.8
2-3	4:37	103.8		16.0	6.5		12.2		129.0	15.5	3.9	1.9
2-2	4:41	110.0		22.2	6.6		12.1		137.7	24.2	3.3	0.5
2-1	4:45	100.5		12.7	7.1		11.8		130.4	16.8	-9.8	8.5
3-6	4:26	56.7		-31.1	8.3		10.6		80.6	-33.0	25.4	22.4
3-5	4:30	79.7		-8.1	6.9		11.9		101.9	-11.6	10.7	12.6
3-4	4:34	42.1	80.5	-45.7	10.3	7.5	9.1	11.4	71.1	-42.4	58.4	43.5
3-3	4:38	98.6		10.8	6.3		12.5		120.9	7.3	6.5	5.9
3-2	4:42	104.7		16.9	6.0		12.7		125.8	12.2	3.9	3.2
3-1	4:46	101.2		13.4	7.1		11.7		131.3	17.7	12.8	28.0
4-6	4:27	64.5		-23.3	8.1		10.8		90.2	-23.3	18.1	22.6
4-5	4:31	84.0		-3.8	6.9		12.0		107.4	-6.1	5.3	14.8
4-4	4:35	89.3	88.9	1.5	8.2	7.2	10.6	11.7	125.9	12.3	7.8	-2.3
4-3	4:39	96.0		8.2	6.2		12.6		116.9	3.4	4.1	2.8
4-2	4:43	99.7		11.9	5.9		12.9		119.0	5.4	5.2	5.2
4-1	4:47	99.6		11.8	7.6		11.4		134.0	20.5	-0.2	0.6
Outlet Averages		87.8			7.2		11.7		113.5		2.8	5.3

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy
AES Dresden

Date: 5/22/2008
Start Time: 4:48
End Time: 5:11

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	4:48	60.3		-32.2	9.4		9.9		93.9	-29.0	15.0		-0.8	23.3	2.2
1-5	4:52	72.1		-20.4	7.7		11.2		97.8	-25.1	17.2		1.4	23.3	2.1
1-4	4:56	87.0	82.6	-5.5	7.2	8.1	11.7	11.0	113.7	-9.2	16.7	17.1	0.9	21.8	0.6
1-3	5:00	103.6		11.1	6.3		12.4		127.0	4.1	20.1		4.3	24.6	3.5
1-2	5:04	75.9		-16.6	8.7		10.7		111.4	-11.5	18.3		2.5	26.9	5.7
1-1	5:08	96.9		4.4	9.3		9.9		149.5	26.6	15.0		-0.8	23.1	2.0
2-6	4:49	64.3		-28.2	9.0		10.1		96.7	-26.2	13.1		-2.7	19.7	-1.5
2-5	4:53	82.7		-9.8	7.1		11.8		107.3	-15.6	14.7		-1.1	19.1	-2.1
2-4	4:57	91.9	93.6	-0.6	6.7	7.4	12.2	11.5	115.8	-7.1	13.9	13.9	-1.9	17.5	-3.7
2-3	5:01	108.2		15.7	6.0		12.7		130.0	7.1	15.7		-0.1	18.9	-2.3
2-2	5:05	117.9		25.4	6.3		12.5		144.5	21.6	13.6		-2.2	16.7	-4.5
2-1	5:09	96.4		3.9	9.3		9.9		148.8	25.9	12.2		-3.6	18.8	-2.4
3-6	4:50	73.5		-19.0	7.9		11.0		101.2	-21.7	14.9		-0.9	20.5	-0.7
3-5	4:54	83.9		-8.6	7.2		11.8		109.6	-13.3	16.8		1.0	22.0	0.8
3-4	4:58	93.6	97.9	1.1	6.5	7.1	12.4	11.8	116.4	-6.6	15.8	15.1	0.0	19.6	-1.5
3-3	5:02	105.3		12.8	6.2		12.6		128.2	5.3	14.3		-1.5	17.4	-3.8
3-2	5:06	112.7		20.2	5.8		12.9		133.6	10.7	15.0		-0.8	17.8	-3.4
3-1	5:10	118.2		25.7	6.8		10.2		174.9	52.0	13.6		-2.2	20.1	-1.1
4-6	4:51	77.5		-15.0	8.8		10.2		114.6	-8.3	17.9		2.1	26.5	5.3
4-5	4:55	85.3		-7.2	8.2		10.8		120.2	-2.7	19.1		3.3	26.9	5.7
4-4	4:59	95.2	95.8	2.7	6.7	7.2	12.2	11.7	120.0	-2.9	18.1	17.4	2.3	22.8	1.6
4-3	5:03	104.8		12.3	6.0		12.8		125.9	3.0	17.4		1.6	20.9	-0.3
4-2	5:07	110.6		18.1	5.9		12.9		132.0	9.1	17.5		1.7	20.9	-0.3
4-1	5:11	101.6		9.1	7.6		11.3		136.7	13.8	14.2		-1.6	19.1	-2.1
Inlet Averages		92.5			7.4		11.5		122.9		15.8			21.2	

	lb/MMBtu
NOx Outlet	0.1582

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff w/O2 correction
1-6	4:48	62.9		-26.4	7.7		11.1		85.3	-29.7	-4.3	9.1
1-5	4:52	78.8		-10.5	7.9		10.9		108.5	-6.5	-9.3	-11.0
1-4	4:56	92.1	93.2	2.8	6.7	6.9	12.0	11.8	116.1	1.1	-5.9	-2.1
1-3	5:00	104.3		15.0	6.7		12.0		131.5	16.5	-0.7	-3.5
1-2	5:04	109.9		20.6	6.3		12.5		134.7	19.7	-44.8	-21.0
1-1	5:08	111.1		21.8	6.2		12.5		135.3	20.3	-14.7	9.5
2-6	4:49	64.6		-24.7	8.2		10.7		91.1	-24.0	-0.5	5.9
2-5	4:53	77.8		-11.5	7.4		11.4		103.2	-11.9	5.9	3.8
2-4	4:57	89.8	93.0	0.5	6.8	7.1	12.0	11.7	114.0	-1.0	2.3	1.0
2-3	5:01	103.1		13.8	6.4		12.3		127.3	12.3	4.7	2.1
2-2	5:05	115.6		26.3	6.5		12.2		143.7	28.7	2.0	0.6
2-1	5:09	107.0		17.7	7.2		11.6		139.8	24.8	-11.0	6.0
3-6	4:50	59.3		-30.0	8.3		10.6		84.2	-30.8	19.3	16.8
3-5	4:54	75.8		-13.5	6.9		11.9		96.9	-18.1	9.7	11.6
3-4	4:58	41.5	81.1	-47.8	10.4	7.5	9.1	11.4	70.7	-44.3	55.7	39.2
3-3	5:02	101.7		12.4	6.3		12.5		124.7	9.7	3.4	2.8
3-2	5:06	109.4		20.1	5.9		12.8		130.6	15.5	2.9	2.3
3-1	5:10	98.8		9.5	7.2		11.6		129.1	14.1	16.4	26.2
4-6	4:51	65.2		-24.1	8.1		10.8		91.2	-23.8	15.9	20.5
4-5	4:55	81.0		-8.3	6.7		12.1		102.1	-12.9	5.0	15.1
4-4	4:59	87.8	89.9	-1.5	8.0	7.0	10.7	11.8	121.8	6.8	7.8	-1.5
4-3	5:03	100.5		11.2	6.1		12.6		121.6	6.5	4.1	3.5
4-2	5:07	103.4		14.1	5.8		12.9		122.6	7.6	6.5	7.1
4-1	5:11	101.5		12.2	7.4		11.5		134.6	19.6	0.1	1.6
Outlet Averages		89.3			7.1		11.7		115.0		2.9	6.1

Clean Air Engineering
Clean Air Project No.: 10544

CleanAir ENGINEERING

Consol Energy
AES Dresden

Date: 5/22/2008
Start Time: 5:12
End Time: 5:35

Inlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	CO ppmdv	CO Port Avg	PPM Dev from Avg.	CO @ 3% O_2	PPM Dev from Avg.
1-6	5:12	65.5		-26.4	9.7		9.6		104.7	-17.5	13.9		-2.5	22.2	0.4
1-5	5:16	81.7		-10.2	7.2		11.7		106.7	-15.5	15.2		-1.2	19.9	-2.0
1-4	5:20	89.9	84.5	-2.0	7.2	7.7	11.7	11.3	117.5	-4.8	16.0	17.0	-0.4	20.9	-0.9
1-3	5:24	108.0		16.1	6.3		12.5		132.4	10.2	19.6		3.2	24.0	2.2
1-2	5:28	69.6		-22.3	6.6		12.4		87.1	-35.1	20.1		3.7	25.2	3.3
1-1	5:32	92.3		0.4	9.3		9.9		142.4	20.2	17.0		0.6	26.2	4.4
2-6	5:13	68.5		-23.4	9.1		10.0		103.9	-18.3	12.0		-4.4	18.2	-3.6
2-5	5:17	84.5		-7.4	7.0		12.0		108.8	-13.4	14.4		-2.0	18.5	-3.3
2-4	5:21	86.0	88.5	-5.9	6.8	7.5	12.1	11.4	109.2	-13.0	13.8	14.3	-2.8	17.3	-4.6
2-3	5:25	91.2		-0.7	6.2		12.6		111.1	-11.2	15.7		-0.7	19.1	-2.7
2-2	5:29	109.1		17.2	6.9		11.8		139.5	17.3	16.3		-0.1	20.8	-1.0
2-1	5:33	91.5		-0.4	9.0		10.1		137.6	15.4	14.0		-2.4	21.1	-0.8
3-6	5:14	79.0		-12.9	7.8		11.2		107.9	-14.3	13.9		-2.5	19.0	-2.8
3-5	5:18	86.6		-5.3	7.1		11.9		112.3	-9.9	16.8		0.4	21.8	0.0
3-4	5:22	95.2	99.7	3.3	6.7	7.1	12.3	11.8	120.0	-2.2	16.5	16.0	0.1	20.8	-1.0
3-3	5:26	107.4		15.5	6.3		12.6		131.7	9.5	15.6		-0.8	19.1	-2.7
3-2	5:30	112.5		20.6	5.9		12.8		134.3	12.0	15.6		-0.8	18.6	-3.2
3-1	5:34	117.4		25.5	8.9		10.2		175.1	52.9	17.8		1.4	26.6	4.7
4-6	5:15	81.4		-10.5	8.7		10.4		119.4	-2.8	16.7		0.3	24.5	2.7
4-5	5:19	85.1		-6.8	8.3		10.8		120.9	-1.3	19.0		2.6	27.0	5.2
4-4	5:23	93.5	95.0	1.6	6.8	7.3	12.1	11.6	118.7	-3.5	18.7	18.2	2.3	23.7	1.9
4-3	5:27	102.4		10.5	6.2		12.6		124.7	2.5	17.7		1.3	21.6	-0.3
4-2	5:31	107.0		15.1	6.0		12.8		128.5	6.3	18.7		2.3	22.5	0.6
4-1	5:35	100.8		8.9	7.9		11.1		138.8	16.6	18.6		2.2	25.6	3.8
Inlet Averages		91.9			7.4		11.6		122.2		16.4			21.8	

	lb/MMBtu
NOx Outlet	0.1574

Outlet Point	Time Sampled	NOx ppmdv	NOx Port Avg	PPM Dev from Avg.	O_2 %dv	O_2 Port Avg	CO_2 %dv	CO_2 Port Avg	NOx @ 3% O2	PPM Dev from Avg.	NOx Removal Efficiency	NOx Removal Eff W/ O2 correction
1-6	5:12	67.9		-20.9	7.9		11.0		93.5	-21.6	-3.7	10.7
1-5	5:16	83.7		-5.1	7.7		11.1		113.5	-1.6	-2.4	-6.3
1-4	5:20	92.4	94.2	3.6	6.9	7.0	11.9	11.8	118.1	3.0	-2.8	-0.6
1-3	5:24	105.1		16.3	6.8		11.9		133.4	18.3	2.7	-0.8
1-2	5:28	107.0		18.2	6.4		12.4		132.1	17.0	-53.7	-51.6
1-1	5:32	108.8		20.0	6.3		12.4		133.4	18.3	-17.9	6.3
2-6	5:13	70.0		-18.8	8.3		10.6		99.4	-15.7	-2.2	4.3
2-5	5:17	82.4		-6.4	7.1		11.7		106.9	-8.2	2.5	1.8
2-4	5:21	89.9	94.4	1.1	6.8	7.1	12.0	11.7	114.1	-1.0	-4.5	-4.5
2-3	5:25	103.4		14.6	6.3		12.4		125.8	11.7	-13.4	-14.2
2-2	5:29	113.7		24.9	6.5		12.3		141.3	26.2	-4.2	-1.3
2-1	5:33	107.1		18.3	7.4		11.4		142.0	26.9	-17.0	-3.2
3-6	5:14	78.0		-10.8	8.1		10.7		109.1	-6.0	1.3	-1.0
3-5	5:18	73.7		-15.1	6.9		11.9		94.2	-20.9	14.9	16.1
3-4	5:22	23.6	77.1	-65.2	7.8	7.1	11.3	11.7	32.2	-82.9	75.2	73.1
3-3	5:26	87.5		-1.3	6.3		12.4		107.3	-7.8	18.5	18.5
3-2	5:30	100.0		11.2	6.0		12.7		120.1	5.0	11.1	10.5
3-1	5:34	100.0		11.2	7.5		11.3		133.6	18.5	14.8	23.7
4-6	5:15	71.0		-17.8	7.8		11.1		97.0	-18.1	12.8	18.8
4-5	5:19	78.5		-10.3	6.8		12.0		99.7	-15.5	7.8	17.6
4-4	5:23	83.5	89.6	-5.3	9.3	7.4	9.6	11.5	128.8	13.7	10.7	-8.6
4-3	5:27	97.0		8.2	6.5		12.3		120.6	5.5	5.3	3.3
4-2	5:31	100.4		11.6	6.0		12.7		120.6	5.5	6.2	6.2
4-1	5:35	105.9		18.1	7.7		11.3		145.0	29.8	-6.1	-4.4
Outlet Averages		88.8			7.1		11.7		115.1		2.3	4.8

End of Appendix Section