



AIR HYGIENE, INC.

Testing Solutions for a Better World

**EMISSION COMPLIANCE TEST
FOR THE
MITSUBISHI, MODEL 501G, UNIT 2A
PREPARED FOR
FLORIDA POWER AND LIGHT
AT THE
WEST COUNTY ENERGY CENTER
LOXAHATCHEE, FLORIDA
NOVEMBER 14-16, 2009**



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FOR THE
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PREPARED FOR
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AT THE
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NOVEMBER 14-16, 2009**

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**Emissions Compliance Test
Mitsubishi, Model 501G, Unit 2A
Florida Power and Light
West County Energy Center
Loxahatchee, Florida
November 14-16, 2009**

1.0 INTRODUCTION

Air Hygiene International, Inc. (Air Hygiene) has completed the emissions testing study for nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOC), ammonia (NH₃), opacity, carbon dioxide (CO₂), and oxygen (O₂) from the exhaust of the Mitsubishi, Model 501G, Unit 2A for Florida Power and Light at the West County Energy Center near Loxahatchee, Florida. This report details the background, results, process description, and the sampling/analysis methodology of the stack sampling survey conducted on November 14-16, 2009.

1.1 TEST PURPOSE AND OBJECTIVES

The purpose of the test was to conduct an initial compliance emission test to document levels of selected pollutants at two test loads (Base Load and Base Load with Duct Burners). The information will be used to confirm compliance with the operating permit issued by the Florida Department of Environmental Protection (FDEP). The specific objective was to determine the emission concentration of NO_x, CO, VOC, NH₃, opacity, CO₂, and O₂ from the exhaust of Florida Power and Light's Mitsubishi, Model 501G, Unit 2A at Base Load and Base Load with Duct Burners of total capacity.

1.2 SUMMARY OF TEST PROGRAM

The following list details pertinent information related to this specific project:

- 1.2.1 Participating Organizations
 - Florida Department of Environmental Protection (FDEP)
 - Florida Power and Light
 - Black and Veatch
 - Air Hygiene
- 1.2.2 Industry
 - Electric Utility / Electric Services
- 1.2.3 Air Permit and Federal Requirements
 - Permit Number: PSD-FL-354
 - Emission Unit Identification (ID): 004
- 1.2.4 Plant Location
 - West County Energy Center near Loxahatchee, Florida
- 1.2.5 Equipment Tested
 - Mitsubishi, Model 501G, Unit 2A

- 1.2.6 Emission Points
 - Exhaust from the Mitsubishi, Model 501G, Unit 2A
 - For all gases, one sample point in the exhaust duct from the Mitsubishi, Model 501G, Unit 2A, determined after conducting a stratification test (refer to Appendix F)
 - For all NH₃ testing, 24 sampling points in the exhaust duct from the Mitsubishi, Model 501G, Unit 2A (refer to Appendix A)
 - For opacity, one sample visual observation point from the exit of the exhaust duct to the atmosphere from the Mitsubishi, Model 501G, Unit 2A
- 1.2.7 Pollutants Measured
 - NO_x
 - CO
 - VOC
 - NH₃
 - Opacity
 - CO₂
 - O₂
- 1.2.8 Dates of Emission Test
 - November 14-16, 2009

1.3 KEY PERSONNEL

Florida Power and Light:	John Mirino	305-242-3895
Florida Power and Light:	David Fawcett	561-904-4907
Florida Power and Light:	Emmett Callow	561-904-4922
Black and Veatch:	Bill Stevenson	913-458-8549
FDEP:	Michael Helmke	561-837-5936
Air Hygiene:	Pandu Sattvika	918-307-8865
Air Hygiene:	Swanson Bierman	918-307-8865

2.0 SUMMARY OF TEST RESULTS

Results from the sampling conducted on Florida Power and Light's Mitsubishi, Model 501G, Unit 2A located at the West County Energy Center on November 14-16, 2009 are summarized in the following table.

**TABLE 2.1
SUMMARY OF MITSUBISHI, 501G, UNIT #2A RESULTS**

Parameter	Base W/O DB Load	Permit Limits	Base W/DB Load	Permit Limits
Run Duration (min / run)	60	–	60	–
Bar. Pressure (in. Hg)	30.01	–	29.99	–
Amb. Temp. (°F)	77	–	75	–
Rel. Humidity (%)	44	–	60	–
Spec. Humidity (lb water / lb air)	0.008677	–	0.011115	–
Turbine Fuel Flow (lb/min)	1,816	–	1,671	–
Duct Burner Fuel Flow (lb/min)	0	–	141	–
Total Fuel Flow (SCFH)	2,501,830	–	2,495,096	–
Stack Flow (RM19) (SCFH)	57,773,728	–	53,056,572	–
Stack Moisture (% Method 4)	8.7	–	9.8	–
Power Output (megawatts)	248.6	–	248.8	–
NOx (ppmvd)	2.56	–	2.56	–
NOx (ppm@15%O ₂)	1.94	2.0	1.78	2.0
NOx (ppm@15%O ₂ &ISO)	1.92	–	1.85	–
NOx (lb/hr)	17.64	20.0	16.22	24.2
NOx (ton/year) at 8760 hr/year	77.26	–	71.03	–
NOx (lb/MMBtu)	0.007	–	0.006	–
CO (ppmvd)	0.47	–	0.52	–
CO (ppm@15%O ₂)	0.36	4.1	0.36	7.6
CO (ppm@15%O ₂ &ISO)	0.36	–	0.38	–
CO (lb/hr)	1.99	23.2	2.01	52.5
CO (ton/year) at 8760 hr/year	8.71	–	8.80	–
CO (lb/MMBtu)	0.001	–	0.001	–
VOC (ppmvd)	1.18	–	1.28	–
VOC (ppm@15%O ₂)	0.89	1.2	0.89	1.5
VOC (ppm@15%O ₂ &ISO)	0.89	–	0.92	–
VOC (lb/hr)	2.83	4.1	2.81	5.4
VOC (ton/year) at 8760 hr/year	12.39	–	12.33	–
VOC (lb/MMBtu)	0.001	–	0.001	–
Sulfur (gr S/100 scf)	<0.032	2	0.0660	2
NH ₃ (ppmvd)	2.01	–	2.10	–
NH ₃ (ppm@15%O ₂)	1.53	5.0	1.46	5.0
NH ₃ (lb/hr)	5.14	–	4.92	–
Opacity (%)	0	10	0	10
CO ₂ (%)	4.50	–	4.86	–
O ₂ (%)	13.13	–	12.40	–

The results of all measured pollutant emissions were below the required limits. All testing was performed without any real or apparent errors. All testing was conducted according to the approved testing protocol. Total hydrocarbons (THC) were report as VOC.

3.0 SOURCE OPERATION

3.1 PROCESS DESCRIPTION

Florida Power and Light (FPL) owns and operates the West County Energy Center (West County) located at 20505 State Road 80 in Loxahatchee, Florida. West County is a nominal 2,500 megawatt (MW) greenfield power plant and consists of two combined cycle units (Unit 1 and 2). Each combined cycle unit consists of: three nominal 250 MW Mitsubishi Model 501G combustion turbine-electrical generator (CTGs) sets with evaporative inlet cooling systems; three supplementary-fired heat recovery steam generators (HRSGs) with selective catalytic reduction (SCR) reactors; one nominal 428 million British thermal units per hour (MMBtu/hour) based on low heat value (LHV) natural gas-fired duct burner (DB) located within each of the three HRSG's; and a common nominal 500 MW steam turbine-electrical generator (STG). The total nominal generating capacity of each of the "3 on 1" combined cycle units is approximately 1,250 MW.

Each CTG has a nominal heat input rate of 2,333 MMBtu/hr when firing natural gas and 2,117 MMBtu/hr when firing distillate fuel oil (based on a compressor inlet air temperature of 59 degrees Fahrenheit (°F), the lower heating value (LHV) of each fuel, and 100 percent load), includes an automated gas turbine control system, and has dual-fuel capability of firing natural gas as the primary fuel or ultra low sulfur distillate (ULSD) fuel oil as a restricted alternate fuel. Each HRSG recovers exhaust, heat energy from each of the CTGs. Each Unit delivers steam to each STG. The efficient combustion of natural gas and restricted firing of ULSD fuel oil minimizes the emissions of carbon monoxide (CO), particulate matter (PM), sulfuric acid mist (H₂SO₄), sulfur dioxide (SO₂) and volatile organic compounds (VOCs). Dry Low-NOx (DLN) combustors for gas firing and water injection for oil firing reduce nitrogen oxides (NOx) emissions. A selective catalytic reduction (SCR) system further reduces NOx emissions.

3.2 SAMPLING LOCATION

The 501G stack is circular and measures 21.9 feet (ft) (263 inches) in diameter at the test ports which are approximately 138 ft above grade level with an exit elevation of approximately 150 ft above grade level. The test ports are located approximately 44.3 ft (531 inches) downstream and approximately 12 ft (144 inches) upstream from the nearest disturbances. All exhaust samples for gaseous emissions were continuously drawn from the exhaust system at the sample ports from a single point determined after conducting a stratification test (Appendix F). During the stratification test three points were traversed from each of the four ports. The probe was allowed to remain at a point for two times the system response time. For NH₃ testing, an initial velocity traverse was performed across the stack at base load from 24 total points. All NH₃ sampling occurred from the same 24 points by leaving the probe at each for an equal amount of time. All opacity observations were made by viewing the point where the exhaust system exited to the atmosphere at the top of the exhaust stack.

4.0 SAMPLING AND ANALYTICAL PROCEDURES

4.1 TEST METHODS

The emission test on the Mitsubishi, Model 501G, Unit 2A at the West County Energy Center was performed following United States Environmental Protection Agency (EPA) methods described by the Code of Federal Regulations (CFR). Table 4.1 outlines the specific methods performed on November 14-16, 2009.

**TABLE 4.1
SUMMARY OF SAMPLING METHODS**

Pollutant or Parameter	Sampling Method	Analysis Method
Sample Point Location	EPA Method 1	Equal Area Method
Stack Flow Rate	EPA Method 2	Pitot
Oxygen	EPA Method 3a	Paramagnetic Cell
Carbon Dioxide	EPA Method 3a	Nondispersive Infrared Analyzer
Nitrogen Oxides	EPA Method 7e	Chemiluminescent Analyzer
Opacity	EPA Method 9	Visual Observation
Carbon Monoxide	EPA Method 10	Nondispersive Infrared Analyzer
Stack Flow Rate	EPA Method 19	Dry Oxygen F Factor
Total Hydrocarbons	EPA Method 25a	Flame Ionization Detector
Ammonia Slip	EPA CTM-027	Ion Chromatography M350.3
Sulfur Content Analysis	ASTM D 6667	Fuel Gas Sample and Laboratory Analysis

4.2 INSTRUMENT CONFIGURATION AND OPERATIONS FOR GAS ANALYSIS

The sampling and analysis procedures used during these tests conform with the methods outlined in the Code of Federal Regulations (CFR), Title 40, Part 60, Appendix A, Methods 1, 2, 3a, 7e, 9, 10, 19, 25a, and Conditional Test Method (CTM)-027.

Figure 4.1 depicts the sample system used for the NO_x, CO, THC, CO₂, and O₂ tests. A stainless steel probe was inserted into the sample ports of the stack to extract gas measurements from the emission stream at a single point in the stack determined after passing an initial stratification test. The gas sample was continuously pulled through the probe and transported, via heat-traced Teflon® tubing, to a stainless steel minimum-contact condenser designed to dry the sample. Transportation of the sample, through Teflon® tubing, continued into the sample manifold within the mobile laboratory via a stainless steel/Teflon® diaphragm pump. From the manifold, the sample was partitioned to the NO_x, CO, CO₂, and O₂ analyzers through rotameters that controlled the flow rate of the sample. Exhaust samples were routed to the THC analyzer prior to gas conditioning.

Figure 4.1 shows that the sample system was also equipped with a separate path through which a calibration gas could be delivered to the probe and back through the entire sampling system. This allowed for convenient performance of system bias checks as required by the testing methods.

All instruments were housed in an air-conditioned, trailer-mounted mobile laboratory. Gaseous calibration standards were provided in aluminum cylinders with the concentrations certified by the vendor. EPA Protocol No. 1 was used to determine the cylinder concentrations where applicable (i.e. NO_x calibration gases).

Table 4.2 provides a description of the analyzers used for the instrument portion of the tests. All data from the continuous monitoring instruments were recorded on a Logic Beach Portable Data Logging System Hyperlogger which retrieves calibrated electronic data from each instrument every one second and reports an average of the collected data every 30 seconds. Data records can be found in Appendix A and B of this report.

Figure 4.2 represents the sample system used for the wet chemistry tests (NH₃). A heated stainless steel probe with an inconel liner and stainless steel nozzle was inserted into the sample ports of the stack to extract gas measurements from the emission stream through a filter and glass impinger train. Flow rates are monitored with oil filled manometers and total sample volumes are measured with a dry gas meter.

Three test runs of approximately 60 minutes each were conducted on the Mitsubishi, Model 501G, Unit 2A at each of the multiple test loads for NO_x, CO, THC, CO₂, NH₃, opacity, and O₂.

The stack gas analysis for O₂ and CO₂ concentrations was performed in accordance with procedures set forth in EPA Method 3a. The O₂ analyzer uses a paramagnetic cell detector and the CO₂ analyzer uses a continuous nondispersive infrared analyzer.

EPA Method 7e was used to determine concentrations of NO_x. A chemiluminescent analyzer was used to determine the nitrogen oxides concentration in the gas stream. A NO₂ in nitrogen certified gas cylinder was used to verify at least a 90 percent NO₂ conversion on the day of the test.

CO emission concentrations were quantified in accordance with procedures set forth in EPA Method 10. A continuous nondispersive infrared (NDIR) analyzer was used for this purpose.

THC emission concentrations were quantified in accordance with procedures set forth in EPA Method 25a. A continuous flame ionization (FID) analyzer was used for this purpose. THC emission concentrations were reported as VOC.

**TABLE 4.2
ANALYTICAL INSTRUMENTATION**

Parameter	Model and Manufacturer	Range	Sensitivity	Detection Principle
NO _x	THERMO 42i-LS	User may select up to 5,000 ppm	0.1 ppm	Thermal reduction of NO ₂ to NO. Chemiluminescence of reaction of NO with O ₃ . Detection by PMT. Inherently linear for listed ranges.
CO	THERMO 48i-LS	User may select up to 5,000 ppm	0.1 ppm	Infrared absorption, gas filter correlation detector, microprocessor based linearization.
CO ₂	THERMO 410i	0-20%	0.1%	Non-dispersive infrared.
THC	THERMO 51C-HT	User may select up to 10,000 ppm	0.1 ppm	Flame Ionization Detector.
O ₂	THERMO 42i-LS	0-25%	0.1%	Paramagnetic cell, inherently linear.

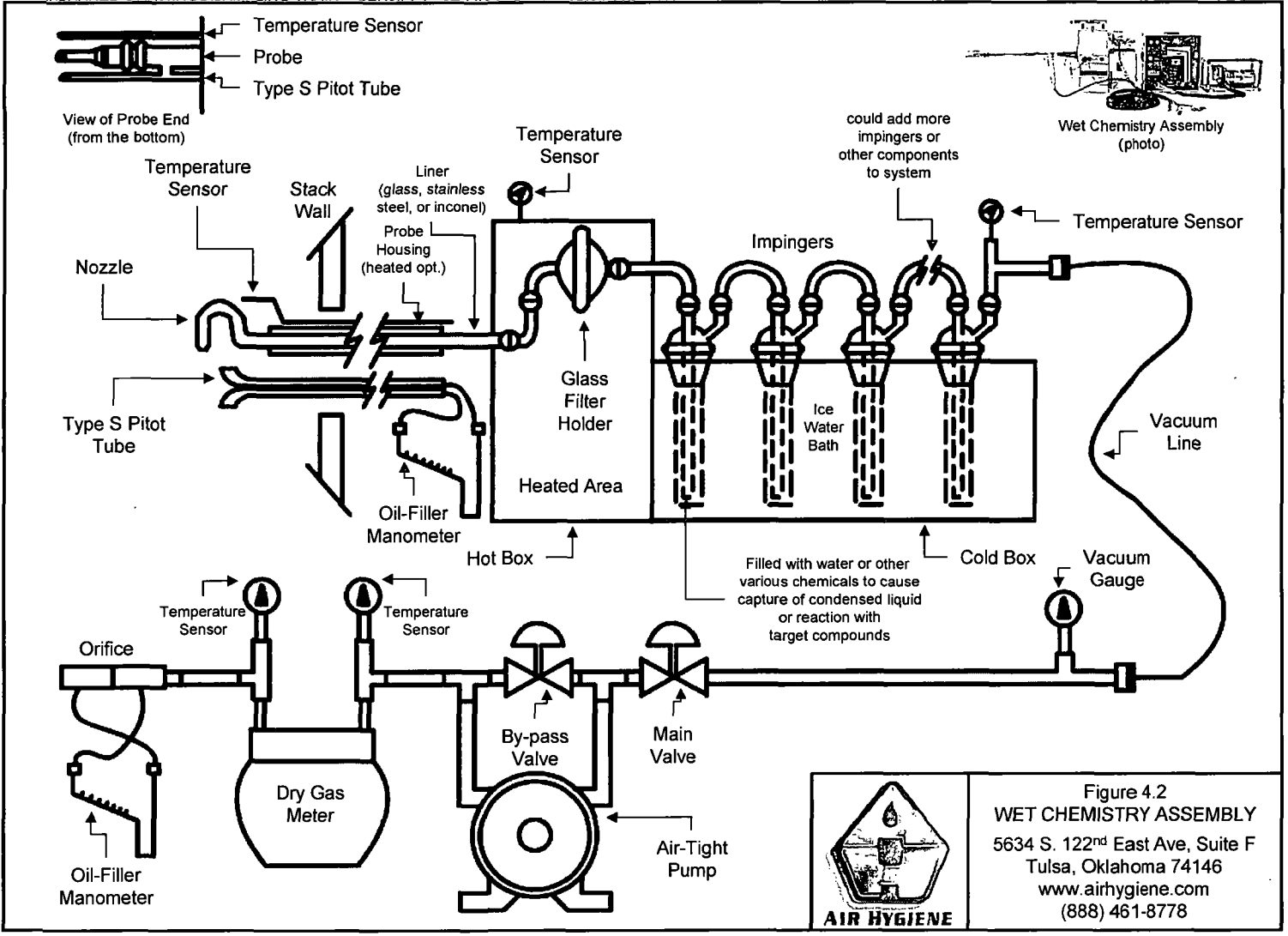


Figure 4.2
WET CHEMISTRY ASSEMBLY
5634 S. 122nd East Ave, Suite F
Tulsa, Oklahoma 74146
www.airhygiene.com
(888) 461-8778

APPENDIX A
TEST RESULTS AND CALCULATIONS

**TABLE A.1:
EMISSIONS TESTING SCHEDULE**

Unit	Load	Test Type	Run	Date	Start	Stop	Time Sync
2A	Normal	Stratification Test	1	11/14/09	11:54:21	12:35:21	EST
2A	Base w/o DB	Compliance	1-1	11/15/09	10:24:17	11:23:47	EST
2A	Base w/o DB	Compliance	1-2	11/15/09	11:45:17	12:44:47	EST
2A	Base w/o DB	Compliance	1-3	11/15/09	13:07:17	14:06:47	EST
2A	Base W/DB	Compliance	2-1	11/16/09	10:35:15	11:34:45	EST
2A	Base W/DB	Compliance	2-2	11/16/09	11:48:15	12:47:45	EST
2A	Base W/DB	Compliance	2-3	11/16/09	13:02:15	14:01:45	EST
2A	Base W/DB	Ammonia	2A-1	11/16/09	10:37:00	11:40:00	EST
2A	Base W/DB	Ammonia	2A-2	11/16/09	11:48:00	12:53:00	EST
2A	Base W/DB	Ammonia	2A-3	11/16/09	13:00:00	14:05:00	EST
2A	Base w/o DB	Preliminaries	2A-V1	11/15/09	9:07:00	9:41:00	EST
2A	Base w/o DB	Ammonia	2A-1	11/15/09	10:26:00	11:34:00	EST
2A	Base w/o DB	Ammonia	2A-2	11/15/09	11:55:00	13:01:00	EST
2A	Base w/o DB	Ammonia	2A-3	11/15/09	13:12:00	14:20:00	EST
2A	Base w/o DB	Opacity	1	11/15/09	10:30:00	11:29:00	EST
2A	Base w/o DB	Opacity	2	11/15/09	11:31:00	12:30:00	EST
2A	Base w/o DB	Opacity	3	11/15/09	12:31:00	13:30:00	EST
2A	Base W/DB	Opacity	1	11/16/09	10:31:00	11:30:00	EST
2A	Base W/DB	Opacity	2	11/16/09	11:31:00	12:30:00	EST
2A	Base W/DB	Opacity	3	11/16/09	12:33:00	13:32:00	EST

TABLE A.2
mitsubishi, 501G, UNIT #2A BASE W/O DB LOAD DATA SUMMARY

Parameter	Base W/O Db Load, Run - 1-1	Base W/O Db Load, Run - 1-2	Base W/O Db Load, Run - 1-3	Average
Run Duration (min / run)	60	60	60	60
Bar. Pressure (in. Hg)	30.03	30.01	29.99	30.01
Amb. Temp. (°F)	74	78	80	77
Rel. Humidity (%)	53	40	39	44
Spec. Humidity (lb water / lb air)	0.009437	0.008124	0.008469	0.008677
Turbine Fuel Flow (lb/min)	1,827	1,815	1,808	1,816
Duct Burner Fuel Flow (lb/min)	0	0	0	0
Total Fuel Flow (SCFH)	2,516,138	2,499,381	2,489,969	2,501,830
Stack Flow (RM19) (SCFH)	58,247,150	57,589,381	57,484,653	57,773,728
Stack Moisture (% Method 4)	8.1	9.0	9.1	8.7
Power Output (megawatts)	250.4	248.4	247.0	248.6
NOx (ppmvd)	2.53	2.51	2.63	2.56
NOx (ppm@15%O ₂)	1.92	1.90	2.00	1.94
NOx (ppm@15%O ₂ &ISO)	1.95	1.86	1.96	1.92
NOx (lb/hr)	17.57	17.29	18.06	17.64
NOx (ton/year) at 8760 hr/year	76.95	75.74	79.09	77.26
NOx (lb/MMBtu)	0.007	0.007	0.007	0.007
CO (ppmvd)	0.53	0.48	0.42	0.47
CO (ppm@15%O ₂)	0.40	0.36	0.32	0.36
CO (ppm@15%O ₂ &ISO)	0.41	0.35	0.31	0.36
CO (lb/hr)	2.23	1.99	1.74	1.99
CO (ton/year) at 8760 hr/year	9.77	8.73	7.63	8.71
CO (lb/MMBtu)	0.001	0.001	0.001	0.001
VOC (ppmvd)	1.52	1.06	0.95	1.18
VOC (ppm@15%O ₂)	1.16	0.81	0.72	0.89
VOC (ppm@15%O ₂ &ISO)	1.17	0.79	0.71	0.89
VOC (lb/hr)	3.68	2.54	2.27	2.83
VOC (ton/year) at 8760 hr/year	16.10	11.13	9.94	12.39
VOC (lb/MMBtu)	0.001	0.001	0.001	0.001
Sulfur (gr S/100 scf)	<0.032	<0.032	<0.032	<0.032
NH ₃ (ppmvd)	2.08	1.92	2.04	2.01
NH ₃ (ppm@15%O ₂)	1.58	1.46	1.55	1.53
NH ₃ (lb/hr)	5.35	4.89	5.19	5.14
Opacity (%)	0	0	0	0
CO ₂ (%)	4.52	4.46	4.52	4.50
O ₂ (%)	13.15	13.11	13.13	13.13

TABLE A.3
MITSUBISHI, 501G, UNIT #2A BASE W/DB LOAD DATA SUMMARY

Parameter	Base W/Db Load, Run - 2-1	Base W/Db Load, Run - 2-2	Base W/Db Load, Run - 2-3	Average
Run Duration (min / run)	60	60	60	60
Bar. Pressure (in. Hg)	30.01	30.00	29.97	29.99
Amb. Temp. (°F)	72	75	79	75
Rel. Humidity (%)	65	60	54	60
Spec. Humidity (lb water / lb air)	0.010851	0.011087	0.011409	0.011115
Turbine Fuel Flow (lb/min)	1,692	1,666	1,655	1,671
Duct Burner Fuel Flow (lb/min)	141	140	140	141
Total Fuel Flow (SCFH)	2,524,632	2,487,674	2,472,982	2,495,096
Stack Flow (RM19) (SCFH)	53,442,011	52,892,099	52,835,605	53,056,572
Stack Moisture (% Method 4)	10.1	9.8	9.6	9.8
Power Output (megawatts)	253.1	247.6	245.6	248.8
NOx (ppmvd)	2.60	2.55	2.53	2.56
NOx (ppm@15%O ₂)	1.80	1.77	1.76	1.78
NOx (ppm@15%O ₂ &ISO)	1.88	1.85	1.83	1.85
NOx (lb/hr)	16.58	16.11	15.96	16.22
NOx (ton/year) at 8760 hr/year	72.64	70.54	69.91	71.03
NOx (lb/MMBtu)	0.007	0.006	0.006	0.006
CO (ppmvd)	0.47	0.49	0.61	0.52
CO (ppm@15%O ₂)	0.32	0.34	0.42	0.36
CO (ppm@15%O ₂ &ISO)	0.34	0.35	0.44	0.38
CO (lb/hr)	1.82	1.87	2.34	2.01
CO (ton/year) at 8760 hr/year	7.97	8.19	10.24	8.80
CO (lb/MMBtu)	0.001	0.001	0.001	0.001
VOC (ppmvd)	1.66	0.27	1.90	1.28
VOC (ppm@15%O ₂)	1.15	0.19	1.32	0.89
VOC (ppm@15%O ₂ &ISO)	1.20	0.20	1.37	0.92
VOC (lb/hr)	3.68	0.60	4.16	2.81
VOC (ton/year) at 8760 hr/year	16.12	2.62	18.24	12.33
VOC (lb/MMBtu)	0.001	0.000	0.002	0.001
Sulfur (gr S/100 scf)	0.0660	0.0660	0.0660	0.0660
NH ₃ (ppmvd)	2.11	2.21	1.98	2.10
NH ₃ (ppm@15%O ₂)	1.46	1.53	1.38	1.46
NH ₃ (lb/hr)	4.98	5.16	4.62	4.92
Opacity (%)	0	0	0	0
CO ₂ (%)	4.85	4.86	4.88	4.86
O ₂ (%)	12.36	12.40	12.44	12.40

TEST RESULTS

**NO_x, CO, VOC, CO₂, and O₂ Emissions
Base Load**

Florida Power and Light
November 15, 2009
Mitsubishi, 601G, Unit #2A
West County Energy Center

Fuel Data		
Fuel Fd factor	8,651	SCF eoh/MBtu
Fuel Heating Value (HHV)	992	Btu/SCF fuel
Turbine Fuel Flow	1,827	lb/min
Duct Burner Fuel Flow	0	lb/min
Total Fuel Flow	2,516.136	SCFH

Weather Data		
Barometric Pressure	30.03	in. Hg
Relative Humidity	53	%
Ambient Temperature	74	°F
Specific Humidity	0.009437	lb H ₂ O / lb air

Unit Data		
Unit Load	250.4	megawatts
Combustor Inlet Pressure	268	psig
Meas. Stack Moisture	8.1	%
Stack Exhaust Flow (M19)	58,247.150	SCFH

Data from: N-8 Run 1

Base W/O Db Load, Run - 1-1

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O ₂ (%)	NOx (ppmv)	CO (ppmv)	VOC (ppmv)	CO ₂ (%)
11/15/09 10:24:17	12300	13.22	2.74	0.58	1.47	4.64
11/15/09 10:24:47	12330	13.21	2.72	0.56	1.99	4.64
11/15/09 10:25:17	12360	13.21	2.67	0.63	1.93	4.65
11/15/09 10:25:47	12390	13.20	2.69	0.58	1.78	4.64
11/15/09 10:26:17	12420	13.20	2.73	0.60	1.58	4.66
11/15/09 10:26:47	12450	13.21	2.70	0.59	1.57	4.65
11/15/09 10:27:17	12480	13.21	2.69	0.56	1.77	4.66
11/15/09 10:27:47	12510	13.20	2.73	0.54	1.69	4.65
11/15/09 10:28:17	12540	13.20	2.72	0.56	1.65	4.67
11/15/09 10:28:47	12570	13.21	2.73	0.50	1.32	4.65
11/15/09 10:29:17	12600	13.20	2.71	0.53	1.27	4.67
11/15/09 10:29:47	12630	13.20	2.70	0.54	1.81	4.66
11/15/09 10:30:17	12660	13.20	2.72	0.48	1.65	4.67
11/15/09 10:30:47	12690	13.20	2.77	0.45	1.95	4.66
11/15/09 10:31:17	12720	13.20	2.79	0.53	2.03	4.67
11/15/09 10:31:47	12750	13.19	2.78	0.56	1.71	4.67
11/15/09 10:32:17	12780	13.19	2.80	0.53	1.59	4.68
11/15/09 10:32:47	12810	13.17	2.83	0.51	1.72	4.69
11/15/09 10:33:17	12840	13.17	2.87	0.52	1.76	4.68
11/15/09 10:33:47	12870	13.20	2.92	0.46	1.65	4.69
11/15/09 10:34:17	12900	13.21	2.89	0.51	1.50	4.68
11/15/09 10:34:47	12930	13.20	2.80	0.52	1.59	4.68
11/15/09 10:35:17	12960	13.20	2.64	0.57	1.67	4.67
11/15/09 10:35:47	12990	13.21	2.51	0.59	1.74	4.69
11/15/09 10:36:17	13020	13.20	2.53	0.58	1.27	4.68
11/15/09 10:36:47	13050	13.18	2.56	0.49	1.22	4.70
11/15/09 10:37:17	13080	13.18	2.57	0.47	1.95	4.69
11/15/09 10:37:47	13110	13.18	2.61	0.48	1.76	4.71
11/15/09 10:38:17	13140	13.17	2.63	0.51	2.10	4.69
11/15/09 10:38:47	13170	13.19	2.62	0.51	2.18	4.70
11/15/09 10:39:17	13200	13.19	2.56	0.48	2.09	4.69
11/15/09 10:39:47	13230	13.19	2.52	0.52	1.93	4.71
11/15/09 10:40:17	13260	13.17	2.53	0.51	1.74	4.71
11/15/09 10:40:47	13290	13.18	2.61	0.47	1.68	4.70
11/15/09 10:41:17	13320	13.19	2.61	0.54	1.16	4.70
11/15/09 10:41:47	13350	13.19	2.57	0.50	1.49	4.69
11/15/09 10:42:17	13380	13.18	2.53	0.51	1.00	4.70
11/15/09 10:42:47	13410	13.18	2.56	0.53	1.72	4.70
11/15/09 10:43:17	13440	13.18	2.59	0.60	1.48	4.71
11/15/09 10:43:47	13470	13.18	2.58	0.52	2.18	4.69
11/15/09 10:44:17	13500	13.18	2.55	0.52	2.12	4.71
11/15/09 10:44:47	13530	13.19	2.56	0.52	2.06	4.70
11/15/09 10:45:17	13560	13.20	2.58	0.46	1.95	4.71
11/15/09 10:45:47	13590	13.19	2.55	0.48	1.74	4.69
11/15/09 10:46:17	13620	13.19	2.55	0.46	1.66	4.71
11/15/09 10:46:47	13650	13.19	2.59	0.49	1.83	4.70
11/15/09 10:47:17	13680	13.18	2.58	0.47	1.88	4.72
11/15/09 10:47:47	13710	13.19	2.57	0.44	1.56	4.70
11/15/09 10:48:17	13740	13.19	2.60	0.48	1.88	4.72
11/15/09 10:48:47	13770	13.18	2.63	0.41	1.19	4.71
11/15/09 10:49:17	13800	13.18	2.64	0.44	1.57	4.72
11/15/09 10:49:47	13830	13.19	2.62	0.41	2.14	4.71
11/15/09 10:50:17	13860	13.19	2.59	0.50	2.01	4.72
11/15/09 10:50:47	13890	13.19	2.57	0.42	1.90	4.72
11/15/09 10:51:17	13920	13.18	2.58	0.44	1.77	4.72
11/15/09 10:51:47	13950	13.18	2.61	0.45	1.41	4.73
11/15/09 10:52:17	13980	13.18	2.66	0.47	1.21	4.73
11/15/09 10:52:47	14010	13.18	2.87	0.50	1.73	4.74
11/15/09 10:53:17	14040	13.19	2.89	0.51	1.72	4.73
11/15/09 10:53:47	14070	13.19	2.67	0.47	1.47	4.73
11/15/09 10:54:17	14100	13.19	2.66	0.48	1.25	4.72
11/15/09 10:54:47	14130	13.19	2.63	0.47	1.29	4.74
11/15/09 10:55:17	14160	13.19	2.59	0.46	1.39	4.73
11/15/09 10:55:47	14190	13.18	2.61	0.44	1.12	4.74
11/15/09 10:56:17	14220	13.18	2.63	0.47	0.90	4.72
11/15/09 10:56:47	14250	13.18	2.59	0.46	0.97	4.74
11/15/09 10:57:17	14280	13.18	2.57	0.47	1.23	4.72
11/15/09 10:57:47	14310	13.20	2.54	0.48	1.26	4.74
11/15/09 10:58:17	14340	13.19	2.53	0.47	1.07	4.72
11/15/09 10:58:47	14370	13.20	2.57	0.46	0.99	4.73
11/15/09 10:59:17	14400	13.20	2.52	0.51	1.07	4.72
11/15/09 10:59:47	14430	13.20	2.51	0.52	1.14	4.73
11/15/09 11:00:17	14460	13.20	2.55	0.46	1.01	4.72
11/15/09 11:00:47	14490	13.19	2.55	0.48	0.96	4.73
11/15/09 11:01:17	14520	13.18	2.59	0.47	1.10	4.72
11/15/09 11:01:47	14550	13.20	2.53	0.42	1.19	4.73
11/15/09 11:02:17	14580	13.20	2.52	0.40	1.06	4.73
11/15/09 11:02:47	14610	13.21	2.48	0.50	1.01	4.73
11/15/09 11:03:17	14640	13.21	2.46	0.52	1.17	4.73
11/15/09 11:03:47	14670	13.20	2.45	0.53	1.18	4.73
11/15/09 11:04:17	14700	13.19	2.45	0.52	1.04	4.74
11/15/09 11:04:47	14730	13.22	2.50	0.50	1.06	4.73
11/15/09 11:05:17	14760	13.21	2.49	0.48	1.14	4.75
11/15/09 11:05:47	14790	13.20	2.50	0.51	1.03	4.74

Florida Power and Light
November 15, 2009
Mitsubishi, 601G, Unit #2A
West County Energy Center

Fuel Data

Fuel Fd factor	8,651	SCF est/MMBtu
Fuel Heating Value (HI-V)	992	Btu/SCF fuel
Turbine Fuel Flow	1,827	lb/min
Duct Burner Fuel Flow	0	lb/min
Total Fuel Flow	2,516,138	SCFH

Weather Data

Barometric Pressure	30.03	in. Hg
Relative Humidity	53	%
Ambient Temperature	74	°F
Specific Humidity	0.009437	lb H ₂ O / lb air

Unit Data

Unit Load	250.4	megawatts
Combsutr Inlet Pressure	268	psig
Meas. Stack Moisture	8.1	%
Stack Exhaust Flow (M19)	58,247,150	SCFH

Data from: N-G Run 1

Base W/O Db Load, Run - 1-1

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O ₂ (%)	NOx (ppmvd)	CO (ppmvd)	VOC (ppmvw)	CO ₂ (%)
11/15/09 11:06:17	14820	13.19	2.54	0.45	0.98	4.75
11/15/09 11:06:47	14850	13.18	2.55	0.47	1.12	4.74
11/15/09 11:07:17	14880	13.18	2.56	0.52	1.32	4.76
11/15/09 11:07:47	14910	13.19	2.60	0.49	1.20	4.74
11/15/09 11:08:17	14940	13.19	2.60	0.46	1.10	4.76
11/15/09 11:08:47	14970	13.19	2.59	0.43	1.19	4.74
11/15/09 11:09:17	15000	13.19	2.57	0.43	1.30	4.75
11/15/09 11:09:47	15030	13.20	2.58	0.45	1.12	4.74
11/15/09 11:10:17	15060	13.20	2.61	0.53	1.25	4.75
11/15/09 11:10:47	15090	13.20	2.60	0.42	1.90	4.75
11/15/09 11:11:17	15120	13.19	2.60	0.47	1.57	4.75
11/15/09 11:11:47	15150	13.20	2.64	0.45	1.09	4.75
11/15/09 11:12:17	15180	13.21	2.65	0.52	1.05	4.74
11/15/09 11:12:47	15210	13.20	2.63	0.39	1.36	4.76
11/15/09 11:13:17	15240	13.19	2.64	0.44	1.97	4.76
11/15/09 11:13:47	15270	13.19	2.72	0.46	1.75	4.77
11/15/09 11:14:17	15300	13.20	2.72	0.45	1.80	4.74
11/15/09 11:14:47	15330	13.20	2.66	0.47	1.68	4.76
11/15/09 11:15:17	15360	13.19	2.62	0.50	1.48	4.75
11/15/09 11:15:47	15390	13.19	2.61	0.47	1.28	4.76
11/15/09 11:16:17	15420	13.20	2.63	0.51	1.28	4.75
11/15/09 11:16:47	15450	13.22	2.63	0.45	1.76	4.76
11/15/09 11:17:17	15480	13.22	2.55	0.50	1.84	4.75
11/15/09 11:17:47	15510	13.20	2.54	0.47	1.72	4.76
11/15/09 11:18:17	15540	13.20	2.60	0.41	1.59	4.75
11/15/09 11:18:47	15570	13.21	2.65	0.47	1.43	4.76
11/15/09 11:19:17	15600	13.20	2.62	0.45	1.37	4.76
11/15/09 11:19:47	15630	13.21	2.64	0.41	1.32	4.76
11/15/09 11:20:17	15660	13.20	2.64	0.49	1.30	4.76
11/15/09 11:20:47	15690	13.19	2.62	0.45	1.54	4.76
11/15/09 11:21:17	15720	13.19	2.60	0.48	1.52	4.76
11/15/09 11:21:47	15750	13.19	2.62	0.42	1.40	4.76
11/15/09 11:22:17	15780	13.21	2.60	0.46	1.26	4.75
11/15/09 11:22:47	15810	13.21	2.54	0.53	1.06	4.74
11/15/09 11:23:17	15840	13.19	2.48	0.48	1.41	4.77
11/15/09 11:23:47	15870	13.20	2.56	0.43	0.91	4.75
RAW AVERAGE		13.19	2.62	0.49	1.49	4.72

	O ₂ (%)	NOx (ppmvd)	CO (ppmvd)	VOC (ppmvw)	CO ₂ (%)
Serial Number: INST-N2-0001	INST-N2-0001	INST-CO-0015	INST-TH-0009	INST-C2-0009	
Initial Zero	0.11	0.09	-0.09	0.10	0.01
Final Zero	0.11	0.09	-0.09	0.20	0.29
Avg. Zero	0.11	0.09	-0.09	0.15	0.15
Initial UpScale	12.10	5.04	5.38	2.92	9.00
Final UpScale	12.20	5.12	5.33	3.20	9.13
Avg. UpScale	12.15	5.08	5.36	3.06	9.07
Upscale Cal Gas	12.10	4.99	4.85	3.00	8.83

EMISSIONS DATA	O ₂	NOx	CO	VOC	CO ₂
Corrected Raw Average (ppm% dry basis)	13.15	2.53	0.53	1.52	4.52
Concentration (ppm@ 15%O ₂)	N/A	1.92	0.40	1.16	N/A
Concentration (ppm@ 15%O ₂ & ISO)	N/A	1.95	0.41	1.17	N/A
Emission Rate (lb/hr)	N/A	17.57	2.23	3.68	N/A
Emission Rate (tons/year) at 8760 hr/yr	N/A	76.95	9.77	16.10	N/A
Emission Rate (lb/MMBtu)	N/A	0.007	0.001	0.001	N/A

Florida Power and Light
November 15, 2009
Mitsubishi, 501G, Unit #2A
West County Energy Center

Fuel Data			
Fuel Fd factor	8.651	SCF exh/MMBtu	
Fuel Heating Value (HHV)	922	Btu/SCF fuel	
Turbine Fuel Flow	1,815	lb/min	
Duct Burner Fuel Flow	0	lb/min	
Total Fuel Flow	2,499,381	SCFH	

Weather Data			
Barometric Pressure	30.01	in. Hg	
Relative Humidity	40	%	
Ambient Temperature	78	°F	
Specific Humidity	0.008124	lb H ₂ O / lb air	

Unit Data			
Unit Load	248.4	megawatts	
Combustor Inlet Pressure	267	psig	
Meas. Stack Moisture	9.0	%	
Stack Exhaust Flow (M9)	57,589,381	SCFH	

Data from: N43 Run 2

Base W/O Db Load, Run - 1-2

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O ₂ (%)	NOx (ppmv)	CO (ppmv)	VOC (ppmv)	CO ₂ (%)
11/15/09 11:45:17	17160	13.17	2.60	0.49	0.86	4.73
11/15/09 11:45:47	17190	13.17	2.63	0.45	0.83	4.75
11/15/09 11:46:17	17220	13.17	2.68	0.47	0.73	4.76
11/15/09 11:46:47	17250	13.18	2.72	0.45	0.77	4.77
11/15/09 11:47:17	17280	13.20	2.72	0.49	0.84	4.75
11/15/09 11:47:47	17310	13.21	2.62	0.46	0.75	4.76
11/15/09 11:48:17	17340	13.18	2.54	0.44	0.71	4.75
11/15/09 11:48:47	17370	13.21	2.59	0.44	0.82	4.78
11/15/09 11:49:17	17400	13.23	2.65	0.48	0.91	4.75
11/15/09 11:49:47	17430	13.22	2.61	0.43	0.82	4.77
11/15/09 11:50:17	17460	13.21	2.56	0.45	0.78	4.75
11/15/09 11:50:47	17490	13.20	2.59	0.45	0.81	4.78
11/15/09 11:51:17	17520	13.19	2.66	0.46	0.84	4.76
11/15/09 11:51:47	17550	13.20	2.66	0.47	0.76	4.77
11/15/09 11:52:17	17580	13.21	2.66	0.48	0.71	4.76
11/15/09 11:52:47	17610	13.20	2.62	0.44	0.78	4.77
11/15/09 11:53:17	17640	13.19	2.61	0.46	0.82	4.77
11/15/09 11:53:47	17670	13.20	2.63	0.43	0.75	4.77
11/15/09 11:54:17	17700	13.20	2.66	0.48	0.69	4.77
11/15/09 11:54:47	17730	13.22	2.68	0.47	0.74	4.77
11/15/09 11:55:17	17760	13.22	2.67	0.47	0.81	4.77
11/15/09 11:55:47	17790	13.23	2.64	0.53	0.75	4.76
11/15/09 11:56:17	17820	13.22	2.62	0.46	0.72	4.77
11/15/09 11:56:47	17850	13.22	2.61	0.47	0.78	4.76
11/15/09 11:57:17	17880	13.21	2.62	0.48	0.86	4.78
11/15/09 11:57:47	17910	13.20	2.67	0.47	0.81	4.76
11/15/09 11:58:17	17940	13.19	2.66	0.47	0.77	4.78
11/15/09 11:58:47	17970	13.20	2.67	0.46	0.80	4.76
11/15/09 11:59:17	18000	13.20	2.64	0.46	0.87	4.78
11/15/09 11:59:47	18030	13.21	2.61	0.44	0.81	4.76
11/15/09 12:00:17	18060	13.20	2.57	0.43	0.74	4.78
11/15/09 12:00:47	18090	13.19	2.61	0.43	0.74	4.77
11/15/09 12:01:17	18120	13.21	2.65	0.50	0.85	4.78
11/15/09 12:01:47	18150	13.22	2.63	0.46	0.79	4.76
11/15/09 12:02:17	18180	13.21	2.55	0.44	0.72	4.77
11/15/09 12:02:47	18210	13.21	2.57	0.47	0.72	4.78
11/15/09 12:03:17	18240	13.21	2.61	0.44	0.77	4.77
11/15/09 12:03:47	18270	13.20	2.62	0.47	0.75	4.79
11/15/09 12:04:17	18300	13.20	2.65	0.49	0.70	4.77
11/15/09 12:04:47	18330	13.20	2.65	0.46	0.72	4.79
11/15/09 12:05:17	18360	13.19	2.62	0.46	0.77	4.77
11/15/09 12:05:47	18390	13.19	2.61	0.42	0.74	4.80
11/15/09 12:06:17	18420	13.19	2.68	0.44	0.70	4.78
11/15/09 12:06:47	18450	13.20	2.70	0.46	0.73	4.79
11/15/09 12:07:17	18480	13.20	2.67	0.39	0.77	4.78
11/15/09 12:07:47	18510	13.21	2.62	0.39	0.74	4.79
11/15/09 12:08:17	18540	13.20	2.58	0.46	0.72	4.78
11/15/09 12:08:47	18570	13.20	2.57	0.42	1.11	4.79
11/15/09 12:09:17	18600	13.20	2.65	0.46	2.34	4.78
11/15/09 12:09:47	18630	13.23	2.62	0.45	2.06	4.76
11/15/09 12:10:17	18660	13.24	2.52	0.49	1.74	4.77
11/15/09 12:10:47	18690	13.23	2.46	0.51	1.70	4.76
11/15/09 12:11:17	18720	13.20	2.47	0.48	1.42	4.79
11/15/09 12:11:47	18750	13.21	2.62	0.41	0.83	4.77
11/15/09 12:12:17	18780	13.22	2.68	0.37	0.74	4.79
11/15/09 12:12:47	18810	13.20	2.71	0.47	1.04	4.78
11/15/09 12:13:17	18840	13.19	2.70	0.47	2.33	4.80
11/15/09 12:13:47	18870	13.21	2.73	0.48	1.92	4.78
11/15/09 12:14:17	18900	13.21	2.67	0.45	1.88	4.79
11/15/09 12:14:47	18930	13.22	2.59	0.45	1.72	4.78
11/15/09 12:15:17	18960	13.20	2.52	0.47	1.36	4.79
11/15/09 12:15:47	18990	13.22	2.59	0.41	1.18	4.78
11/15/09 12:16:17	19020	13.23	2.56	0.47	1.22	4.78
11/15/09 12:16:47	19050	13.22	2.52	0.46	1.06	4.79
11/15/09 12:17:17	19080	13.21	2.52	0.42	0.82	4.79
11/15/09 12:17:47	19110	13.20	2.58	0.46	0.78	4.81
11/15/09 12:18:17	19140	13.19	2.63	0.51	0.83	4.79
11/15/09 12:18:47	19170	13.21	2.61	0.40	0.79	4.81
11/15/09 12:19:17	19200	13.22	2.61	0.39	0.71	4.79
11/15/09 12:19:47	19230	13.21	2.53	0.50	0.71	4.80
11/15/09 12:20:17	19260	13.20	2.51	0.45	0.74	4.79
11/15/09 12:20:47	19290	13.21	2.52	0.41	0.73	4.81
11/15/09 12:21:17	19320	13.21	2.58	0.46	0.77	4.79
11/15/09 12:21:47	19350	13.23	2.61	0.49	1.16	4.81
11/15/09 12:22:17	19380	13.22	2.64	0.47	1.63	4.80
11/15/09 12:22:47	19410	13.23	2.63	0.42	1.42	4.81
11/15/09 12:23:17	19440	13.21	2.60	0.44	1.23	4.80
11/15/09 12:23:47	19470	13.22	2.58	0.40	1.02	4.81
11/15/09 12:24:17	19500	13.21	2.58	0.45	0.75	4.81
11/15/09 12:24:47	19530	13.21	2.59	0.38	0.67	4.81
11/15/09 12:25:17	19560	13.21	2.58	0.43	0.62	4.82
11/15/09 12:25:47	19590	13.21	2.59	0.40	0.66	4.82
11/15/09 12:26:17	19620	13.22	2.58	0.44	1.27	4.82
11/15/09 12:26:47	19650	13.22	2.57	0.43	1.44	4.82

Florida Power and Light
November 15, 2009
Mitsubishi, 501G, Unit #2A
West County Energy Center

Fuel Data

Fuel Fd factor	0.651	SCF cwh/MMBtu
Fuel Heating Value (HHV)	992	Btu/SCF fuel
Turbine Fuel Flow	1,815	lb/min
Duct Burner Fuel Flow	0	lb/min
Total Fuel Flow	2,499,381	SCFH

Weather Data

Barometric Pressure	30.01	in. Hg
Relative Humidity	40	%
Ambient Temperature	79	°F
Specific Humidity	0.006124	lb H ₂ O / lb air

Unit Data

Unit Load	248.4	megawatts
Combustor Inlet Pressure	267	psig
Meas. Stack Moisture	0.0	%
Stack Exhaust Flow (M19)	57,569,381	SCFH

Data from: NR3 Run 2

Base W/O Db Load, Run - 1-2

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O ₂ (%)	NOx (ppmvd)	CO (ppmvd)	VOC (ppmvw)	CO ₂ (%)
11/15/09 12:27:17	19680	13.22	2.53	0.44	1.34	4.82
11/15/09 12:27:47	19710	13.23	2.57	0.47	1.32	4.81
11/15/09 12:28:17	19740	13.22	2.59	0.43	1.20	4.83
11/15/09 12:28:47	19770	13.23	2.59	0.41	1.07	4.81
11/15/09 12:29:17	19800	13.22	2.60	0.40	0.98	4.83
11/15/09 12:29:47	19830	13.21	2.61	0.46	0.80	4.82
11/15/09 12:30:17	19860	13.21	2.64	0.41	0.63	4.84
11/15/09 12:30:47	19890	13.23	2.65	0.41	0.60	4.82
11/15/09 12:31:17	19920	13.23	2.63	0.47	0.67	4.83
11/15/09 12:31:47	19950	13.21	2.57	0.45	0.67	4.82
11/15/09 12:32:17	19980	13.20	2.59	0.43	1.14	4.84
11/15/09 12:32:47	20010	13.23	2.64	0.47	1.38	4.83
11/15/09 12:33:17	20040	13.23	2.62	0.45	1.27	4.83
11/15/09 12:33:47	20070	13.22	2.55	0.42	1.13	4.83
11/15/09 12:34:17	20100	13.21	2.55	0.43	1.02	4.83
11/15/09 12:34:47	20130	13.19	2.59	0.38	1.02	4.86
11/15/09 12:35:17	20160	13.21	2.65	0.41	0.97	4.84
11/15/09 12:35:47	20190	13.20	2.66	0.42	0.94	4.86
11/15/09 12:36:17	20220	13.22	2.63	0.41	1.03	4.83
11/15/09 12:36:47	20250	13.23	2.58	0.42	3.46	4.85
11/15/09 12:37:17	20280	13.23	2.53	0.42	4.98	4.83
11/15/09 12:37:47	20310	13.20	2.48	0.41	4.28	4.86
11/15/09 12:38:17	20340	13.22	2.58	0.44	3.23	4.84
11/15/09 12:38:47	20370	13.22	2.57	0.43	2.70	4.85
11/15/09 12:39:17	20400	13.22	2.58	0.38	2.38	4.85
11/15/09 12:39:47	20430	13.20	2.55	0.39	1.93	4.86
11/15/09 12:40:17	20460	13.20	2.60	0.44	2.20	4.87
11/15/09 12:40:47	20490	13.21	2.63	0.40	1.96	4.85
11/15/09 12:41:17	20520	13.22	2.61	0.41	1.66	4.86
11/15/09 12:41:47	20550	13.23	2.53	0.42	1.46	4.84
11/15/09 12:42:17	20580	13.21	2.47	0.48	1.51	4.86
11/15/09 12:42:47	20610	13.21	2.48	0.43	1.58	4.85
11/15/09 12:43:17	20640	13.22	2.55	0.46	1.60	4.87
11/15/09 12:43:47	20670	13.20	2.57	0.41	1.79	4.85
11/15/09 12:44:17	20700	13.21	2.60	0.44	1.47	4.86
11/15/09 12:44:47	20730	13.22	2.58	0.39	1.49	4.85

RAW AVERAGE

	O ₂ (%)	NOx (ppmvd)	CO (ppmvd)	VOC (ppmvw)	CO ₂ (%)
Serial Number: INST-N2-0001	INST-N2-0001	INST-N2-0001	INST-CO-0015	INST-TH-0009	INST-C2-0009
Initial Zero	0.11	0.09	-0.09	0.20	0.29
Final Zero	0.16	0.09	-0.06	0.25	0.38
Avg. Zero	0.14	0.09	-0.08	0.23	0.34
Initial UpScale	12.20	5.12	5.33	3.20	9.13
Final UpScale	12.20	5.04	5.32	3.20	9.20
Avg. UpScale	12.20	5.08	5.33	3.20	9.17
Upscale Cal Gas	12.10	4.99	4.95	3.00	8.83

EMISSIONS DATA	O ₂	NOx	CO	VOC	CO ₂
Corrected Raw Average (ppm% dry basis)	13.11	2.51	0.48	1.06	4.46
Concentration (ppm@15%O ₂)	N/A	1.90	0.36	0.81	N/A
Concentration (ppm@15%O ₂ & ISO)	N/A	1.86	0.35	0.79	N/A
Emission Rate (lb/hr)	N/A	17.29	1.99	2.54	N/A
Emission Rate (tons/year) at 8760 hr/yr	N/A	75.74	8.73	11.13	N/A
Emission Rate (lb/MMBtu)	N/A	0.007	0.001	0.001	N/A

Florida Power and Light
November 16, 2009
Mitsubishi, 601G, Unit #2A
West County Energy Center

Fuel Data		
Fuel Fd factor	8,651	SCF ezh/MBtu
Fuel Heating Value (HHV)	992	Btu/SCF fuel
Turbine Fuel Flow	1,808	lb/min
Duct Burner Fuel Flow	0	lb/min
Total Fuel Flow	2,489,969	SCFH

Weather Data		
Barometric Pressure	29.99	in. Hg
Relative Humidity	39	%
Ambient Temperature	80	°F
Specific Humidity	0.008489	lb H ₂ O / lb air

Unit Data		
Unit Load	247.0	megawatts
Combustor Inlet Pressure	266	psig
Mass Stack Moisture	9.1	%
Stack Exhaust Flow (M19)	57,484,653	SCFH

Data from: N-G Run 3

Base W/O Db Load, Run - 1-3

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O ₂ (%)	NOx (ppmv)	CO (ppmv)	VOC (ppmv)	CO ₂ (%)
11/15/09 13:07:17	22080	13.23	2.74	0.39	0.59	4.86
11/15/09 13:07:47	22110	13.24	2.72	0.38	0.65	4.89
11/15/09 13:08:17	22140	13.23	2.67	0.35	0.65	4.88
11/15/09 13:08:47	22170	13.24	2.70	0.37	0.60	4.89
11/15/09 13:09:17	22200	13.23	2.75	0.40	0.61	4.89
11/15/09 13:09:47	22230	13.22	2.73	0.34	0.61	4.86
11/15/09 13:10:17	22260	13.23	2.75	0.36	0.58	4.88
11/15/09 13:10:47	22290	13.22	2.70	0.39	0.58	4.88
11/15/09 13:11:17	22320	13.21	2.71	0.38	0.68	4.90
11/15/09 13:11:47	22350	13.22	2.77	0.36	0.73	4.88
11/15/09 13:12:17	22380	13.21	2.78	0.42	0.66	4.90
11/15/09 13:12:47	22410	13.20	2.75	0.37	0.62	4.89
11/15/09 13:13:17	22440	13.19	2.77	0.37	0.66	4.91
11/15/09 13:13:47	22470	13.21	2.76	0.36	0.67	4.89
11/15/09 13:14:17	22500	13.24	2.78	0.35	0.63	4.88
11/15/09 13:14:47	22530	13.22	2.65	0.39	0.63	4.89
11/15/09 13:15:17	22560	13.20	2.64	0.38	0.69	4.89
11/15/09 13:15:47	22590	13.22	2.71	0.35	0.70	4.89
11/15/09 13:16:17	22620	13.21	2.71	0.39	0.64	4.89
11/15/09 13:16:47	22650	13.22	2.69	0.38	0.64	4.90
11/15/09 13:17:17	22680	13.22	2.69	0.44	0.69	4.89
11/15/09 13:17:47	22710	13.22	2.73	0.40	0.66	4.90
11/15/09 13:18:17	22740	13.23	2.74	0.42	0.65	4.88
11/15/09 13:18:47	22770	13.22	2.70	0.44	0.67	4.90
11/15/09 13:19:17	22800	13.22	2.69	0.34	0.71	4.90
11/15/09 13:19:47	22830	13.22	2.72	0.37	0.69	4.90
11/15/09 13:20:17	22860	13.23	2.72	0.38	0.66	4.88
11/15/09 13:20:47	22890	13.23	2.68	0.41	0.68	4.90
11/15/09 13:21:17	22920	13.22	2.67	0.41	0.74	4.90
11/15/09 13:21:47	22950	13.22	2.71	0.36	0.71	4.90
11/15/09 13:22:17	22980	13.22	2.74	0.44	0.67	4.91
11/15/09 13:22:47	23010	13.24	2.74	0.40	0.68	4.89
11/15/09 13:23:17	23040	13.23	2.70	0.40	0.76	4.90
11/15/09 13:23:47	23070	13.21	2.74	0.38	0.91	4.90
11/15/09 13:24:17	23100	13.20	2.73	0.35	1.29	4.91
11/15/09 13:24:47	23130	13.21	2.81	0.36	2.60	4.90
11/15/09 13:25:17	23160	13.23	2.84	0.37	2.13	4.90
11/15/09 13:25:47	23190	13.23	2.76	0.36	1.77	4.89
11/15/09 13:26:17	23220	13.23	2.74	0.38	1.53	4.90
11/15/09 13:26:47	23250	13.22	2.65	0.40	1.51	4.89
11/15/09 13:27:17	23280	13.23	2.65	0.40	1.31	4.91
11/15/09 13:27:47	23310	13.22	2.70	0.38	0.86	4.89
11/15/09 13:28:17	23340	13.21	2.72	0.37	0.72	4.91
11/15/09 13:28:47	23370	13.23	2.78	0.41	0.74	4.89
11/15/09 13:29:17	23400	13.24	2.76	0.35	0.74	4.90
11/15/09 13:29:47	23430	13.23	2.70	0.40	0.69	4.90
11/15/09 13:30:17	23460	13.23	2.74	0.39	0.66	4.91
11/15/09 13:30:47	23490	13.22	2.74	0.41	0.71	4.92
11/15/09 13:31:17	23520	13.21	2.76	0.39	0.69	4.92
11/15/09 13:31:47	23550	13.22	2.70	0.37	0.61	4.91
11/15/09 13:32:17	23580	13.23	2.71	0.37	0.62	4.90
11/15/09 13:32:47	23610	13.23	2.62	0.39	0.66	4.92
11/15/09 13:33:17	23640	13.22	2.58	0.42	0.64	4.91
11/15/09 13:33:47	23670	13.23	2.62	0.37	0.58	4.93
11/15/09 13:34:17	23700	13.24	2.64	0.35	0.56	4.90
11/15/09 13:34:47	23730	13.23	2.60	0.41	0.62	4.92
11/15/09 13:35:17	23760	13.21	2.65	0.38	0.62	4.91
11/15/09 13:35:47	23790	13.22	2.71	0.39	0.58	4.94
11/15/09 13:36:17	23820	13.22	2.72	0.34	0.56	4.93
11/15/09 13:36:47	23850	13.21	2.75	0.37	0.62	4.93
11/15/09 13:37:17	23880	13.21	2.76	0.40	0.69	4.92
11/15/09 13:37:47	23910	13.21	2.75	0.36	0.68	4.93
11/15/09 13:38:17	23940	13.21	2.72	0.40	1.14	4.92
11/15/09 13:38:47	23970	13.24	2.69	0.42	1.65	4.91
11/15/09 13:39:17	24000	13.24	2.68	0.38	1.53	4.92
11/15/09 13:39:47	24030	13.24	2.68	0.40	1.35	4.91
11/15/09 13:40:17	24060	13.24	2.66	0.39	1.20	4.92
11/15/09 13:40:47	24090	13.23	2.68	0.37	1.14	4.92
11/15/09 13:41:17	24120	13.23	2.75	0.36	0.99	4.93
11/15/09 13:41:47	24150	13.23	2.77	0.39	0.70	4.91
11/15/09 13:42:17	24180	13.24	2.75	0.37	0.63	4.92
11/15/09 13:42:47	24210	13.23	2.74	0.41	0.68	4.91
11/15/09 13:43:17	24240	13.22	2.73	0.39	0.68	4.93
11/15/09 13:43:47	24270	13.21	2.74	0.41	0.58	4.92
11/15/09 13:44:17	24300	13.20	2.84	0.36	0.60	4.93
11/15/09 13:44:47	24330	13.22	2.88	0.36	0.68	4.92
11/15/09 13:45:17	24360	13.22	2.87	0.37	0.64	4.93
11/15/09 13:45:47	24390	13.22	2.80	0.37	0.59	4.93
11/15/09 13:46:17	24420	13.20	2.72	0.33	0.66	4.94
11/15/09 13:46:47	24450	13.21	2.76	0.32	1.29	4.93
11/15/09 13:47:17	24480	13.23	2.75	0.40	1.57	4.92
11/15/09 13:47:47	24510	13.23	2.68	0.38	1.38	4.93
11/15/09 13:48:17	24540	13.23	2.64	0.34	1.31	4.93
11/15/09 13:48:47	24570	13.23	2.63	0.36	1.29	4.93

Florida Power and Light
November 16, 2009
Mitsubishi, 601G, Unit #2A
West County Energy Center

Fuel Data		
Fuel Fd factor	8.651	SCF edv/MMBtu
Fuel Heating Value (HHV)	992	Btu/SCF fuel
Turbine Fuel Flow	1,808	lb/min
Duct Burner Fuel Flow	0	lb/min
Total Fuel Flow	2,489,969	SCFH

Weather Data		
Barometric Pressure	29.99	in. Hg
Relative Humidity	39	%
Ambient Temperature	80	°F
Specific Humidity	0.008469	lb H ₂ O / lb air

Unit Data		
Unit Load	247.0	megawatts
Combustor Inlet Pressure	268	psig
Mass. Stack Moisture	9.1	%
Stack Exhaust Flow (M19)	57,484,653	SCFH

Data from: NFD Run 3

Base W/O Db Load, Run - 1-3

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O ₂ (%)	NOx (ppmv d)	CO (ppmv d)	VOC (ppmv w)	CO ₂ (%)
11/15/09 13:49:17	24600	13.24	2.67	0.33	1.17	4.93
11/15/09 13:49:47	24630	13.24	2.60	0.42	0.99	4.93
11/15/09 13:50:17	24660	13.23	2.61	0.39	1.02	4.93
11/15/09 13:50:47	24690	13.22	2.70	0.39	1.07	4.95
11/15/09 13:51:17	24720	13.22	2.75	0.42	0.98	4.94
11/15/09 13:51:47	24750	13.22	2.75	0.34	0.90	4.95
11/15/09 13:52:17	24780	13.22	2.74	0.33	0.95	4.94
11/15/09 13:52:47	24810	13.24	2.71	0.35	1.01	4.94
11/15/09 13:53:17	24840	13.22	2.70	0.39	0.93	4.93
11/15/09 13:53:47	24870	13.23	2.70	0.31	0.84	4.96
11/15/09 13:54:17	24900	13.23	2.76	0.35	0.68	4.94
11/15/09 13:54:47	24930	13.22	2.75	0.34	0.55	4.95
11/15/09 13:55:17	24960	13.22	2.73	0.37	0.47	4.94
11/15/09 13:55:47	24990	13.23	2.70	0.36	0.46	4.94
11/15/09 13:56:17	25020	13.23	2.74	0.32	0.50	4.95
11/15/09 13:56:47	25050	13.23	2.76	0.33	0.46	4.94
11/15/09 13:57:17	25080	13.24	2.74	0.36	0.40	4.93
11/15/09 13:57:47	25110	13.24	2.66	0.42	0.40	4.93
11/15/09 13:58:17	25140	13.22	2.65	0.41	3.83	4.95
11/15/09 13:58:47	25170	13.22	2.70	0.38	4.63	4.93
11/15/09 13:59:17	25200	13.22	2.79	0.41	3.26	4.96
11/15/09 13:59:47	25230	13.22	2.87	0.33	3.06	4.94
11/15/09 14:00:17	25260	13.23	2.82	0.34	3.09	4.95
11/15/09 14:00:47	25290	13.22	2.79	0.37	2.87	4.94
11/15/09 14:01:17	25320	13.23	2.77	0.36	2.50	4.95
11/15/09 14:01:47	25350	13.23	2.74	0.40	2.46	4.92
11/15/09 14:02:17	25380	13.22	2.69	0.39	2.45	4.95
11/15/09 14:02:47	25410	13.22	2.63	0.33	1.84	4.95
11/15/09 14:03:17	25440	13.22	2.70	0.43	1.45	4.95
11/15/09 14:03:47	25470	13.23	2.69	0.31	1.45	4.95
11/15/09 14:04:17	25500	13.23	2.66	0.33	1.30	4.95
11/15/09 14:04:47	25530	13.20	2.63	0.38	1.16	4.96
11/15/09 14:05:17	25560	13.20	2.66	0.29	1.01	4.95
11/15/09 14:05:47	25590	13.24	2.71	0.34	1.04	4.95
11/15/09 14:06:17	25620	13.24	2.63	0.42	2.21	4.94
11/15/09 14:06:47	25650	13.22	2.57	0.37	3.12	4.97
RAW AVERAGE		13.22	2.72	0.38	1.06	4.92

BUS	Serial Number:	O ₂	NOx	CO	VOC	CO ₂	
		(%)	(ppmv d)	(ppmv d)	(ppmv w)	(%)	
		Initial Zero	0.16	0.09	-0.06	0.25	0.38
		Final Zero	0.15	0.11	-0.10	0.19	0.41
	Avg. Zero	0.16	0.10	-0.08	0.22	0.40	
	Initial UpScale	12.20	5.04	5.32	3.20	9.20	
	Final UpScale	12.20	5.09	5.35	3.23	9.25	
	Avg. UpScale	12.20	5.07	5.34	3.22	9.23	
Upscale Cal Gas		12.10	4.99	4.95	3.00	8.83	

EMISSIONS DATA		O ₂	NOx	CO	VOC	CO ₂
Corrected Raw Average (ppm% dry basis)		13.13	2.63	0.42	0.95	4.52
Concentration (ppm@ 15%O ₂)		N/A	2.00	0.32	0.72	N/A
Concentration (ppm@ 15%O ₂ & ISO)		N/A	1.96	0.31	0.71	N/A
Emission Rate (lb/hr)		N/A	18.06	1.74	2.27	N/A
Emission Rate (tons/year) at 8760 hr/yr		N/A	79.09	7.63	9.94	N/A
Emission Rate (lb/MMBtu)		N/A	0.007	0.001	0.001	N/A

TEST RESULTS

**NO_x, CO, VOC, CO₂, and O₂ Emissions
Base Load with Duct Burners**

Florida Power and Light
November 16, 2009
Mitsubishi, 501G, Unit #2A
West County Energy Center

Fuel Data

Fuel Fd factor	8.849	SCF edvMMBtu
Fuel Heating Value (H ₂ V)	1,000	Btu/SCF fuel
Turbine Fuel Flow	1,682	lb/min
Duct Burner Fuel Flow	141	lb/min
Total Fuel Flow	2,524,632	SCFH

Weather Data

Barometric Pressure	30.01	in. Hg
Relative Humidity	65	%
Ambient Temperature	72	°F
Specific Humidity	0.010851	lb H ₂ O / lb air

Unit Data

Unit Load	253.1	megawatts
Combustor Inlet Pressure	270	psig
Meas. Stack Moisture	10.1	%
Stack Exhaust Flow (MIS)	53,442,011	SCFH

Data from: N3 Run 1

Base W/Dh Load, Run - 2-1

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O ₂ (%)	NOx (ppmvd)	CO (ppmvd)	VOC (ppmvw)	CO ₂ (%)
11/16/09 10:35:15	8130	12.36	3.00	0.47	3.91	5.06
11/16/09 10:35:45	8160	12.37	3.01	0.40	4.58	5.07
11/16/09 10:36:15	8190	12.36	3.03	0.44	3.85	5.06
11/16/09 10:36:45	8220	12.36	3.03	0.40	2.54	5.07
11/16/09 10:37:15	8250	12.37	3.02	0.42	2.19	5.06
11/16/09 10:37:45	8280	12.37	3.03	0.42	1.74	5.08
11/16/09 10:38:15	8310	12.36	3.02	0.44	2.21	5.07
11/16/09 10:38:45	8340	12.37	3.01	0.43	2.42	5.07
11/16/09 10:39:15	8370	12.32	3.05	0.41	3.64	5.10
11/16/09 10:39:45	8400	12.30	2.93	0.46	3.01	5.12
11/16/09 10:40:15	8430	12.32	2.81	0.45	2.66	5.10
11/16/09 10:40:45	8460	12.33	2.79	0.48	2.61	5.10
11/16/09 10:41:15	8490	12.31	2.74	0.41	2.36	5.10
11/16/09 10:41:45	8520	12.32	2.73	0.47	2.12	5.11
11/16/09 10:42:15	8550	12.32	2.72	0.40	2.14	5.10
11/16/09 10:42:45	8580	12.32	2.74	0.44	2.36	5.13
11/16/09 10:43:15	8610	12.31	2.77	0.45	2.10	5.11
11/16/09 10:43:45	8640	12.32	2.76	0.46	1.21	5.13
11/16/09 10:44:15	8670	12.29	2.75	0.43	0.74	5.12
11/16/09 10:44:45	8700	12.30	2.77	0.43	0.75	5.14
11/16/09 10:45:15	8730	12.31	2.75	0.40	0.69	5.12
11/16/09 10:45:45	8760	12.30	2.72	0.41	0.62	5.14
11/16/09 10:46:15	8790	12.31	2.75	0.42	0.68	5.13
11/16/09 10:46:45	8820	12.31	2.75	0.43	0.77	5.15
11/16/09 10:47:15	8850	12.30	2.75	0.41	0.72	5.13
11/16/09 10:47:45	8880	12.30	2.74	0.38	0.68	5.14
11/16/09 10:48:15	8910	12.32	2.72	0.44	0.74	5.13
11/16/09 10:48:45	8940	12.32	2.70	0.49	0.77	5.14
11/16/09 10:49:15	8970	12.30	2.71	0.40	0.69	5.14
11/16/09 10:49:45	9000	12.30	2.74	0.46	4.58	5.15
11/16/09 10:50:15	9030	12.30	2.74	0.43	4.39	5.14
11/16/09 10:50:45	9060	12.30	2.75	0.42	3.23	5.16
11/16/09 10:51:15	9090	12.30	2.77	0.42	2.70	5.15
11/16/09 10:51:45	9120	12.30	2.74	0.38	2.50	5.16
11/16/09 10:52:15	9150	12.30	2.73	0.44	1.43	5.14
11/16/09 10:52:45	9180	12.31	2.70	0.41	0.75	5.15
11/16/09 10:53:15	9210	12.31	2.68	0.42	0.63	5.14
11/16/09 10:53:45	9240	12.31	2.68	0.38	0.62	5.16
11/16/09 10:54:15	9270	12.29	2.72	0.45	0.66	5.17
11/16/09 10:54:45	9300	12.29	2.76	0.42	0.64	5.16
11/16/09 10:55:15	9330	12.29	2.77	0.39	0.57	5.16
11/16/09 10:55:45	9360	12.29	2.74	0.39	0.61	5.16
11/16/09 10:56:15	9390	12.30	2.73	0.39	0.65	5.16
11/16/09 10:56:45	9420	12.30	2.66	0.39	0.61	5.14
11/16/09 10:57:15	9450	12.31	2.64	0.37	0.59	5.15
11/16/09 10:57:45	9480	12.31	2.61	0.41	0.64	5.14
11/16/09 10:58:15	9510	12.31	2.65	0.40	0.65	5.16
11/16/09 10:58:45	9540	12.30	2.68	0.41	0.60	5.15
11/16/09 10:59:15	9570	12.29	2.73	0.40	0.60	5.17
11/16/09 10:59:45	9600	12.29	2.74	0.39	0.68	5.15
11/16/09 11:00:15	9630	12.29	2.75	0.40	0.67	5.16
11/16/09 11:00:45	9660	12.29	2.76	0.38	0.60	5.15
11/16/09 11:01:15	9690	12.29	2.74	0.43	0.59	5.16
11/16/09 11:01:45	9720	12.30	2.71	0.40	0.65	5.15
11/16/09 11:02:15	9750	12.28	2.72	0.41	0.67	5.18
11/16/09 11:02:45	9780	12.29	2.75	0.40	0.63	5.16
11/16/09 11:03:15	9810	12.27	2.70	0.40	0.65	5.17
11/16/09 11:03:45	9840	12.28	2.69	0.38	0.69	5.16
11/16/09 11:04:15	9870	12.29	2.69	0.36	0.64	5.17
11/16/09 11:04:45	9900	12.31	2.70	0.36	0.61	5.15
11/16/09 11:05:15	9930	12.30	2.72	0.39	0.65	5.16
11/16/09 11:05:45	9960	12.30	2.71	0.43	0.66	5.17
11/16/09 11:06:15	9990	12.30	2.70	0.36	0.62	5.16
11/16/09 11:06:45	10020	12.31	2.70	0.38	0.60	5.17
11/16/09 11:07:15	10050	12.30	2.68	0.38	0.63	5.16
11/16/09 11:07:45	10080	12.30	2.70	0.40	0.64	5.18
11/16/09 11:08:15	10110	12.30	2.69	0.38	0.59	5.16
11/16/09 11:08:45	10140	12.33	2.70	0.41	0.62	5.17
11/16/09 11:09:15	10170	12.32	2.65	0.36	0.68	5.15
11/16/09 11:09:45	10200	12.31	2.64	0.36	0.74	5.17
11/16/09 11:10:15	10230	12.28	2.66	0.36	0.93	5.16
11/16/09 11:10:45	10260	12.30	2.70	0.38	1.03	5.17
11/16/09 11:11:15	10290	12.31	2.70	0.40	0.94	5.16
11/16/09 11:11:45	10320	12.32	2.71	0.36	0.98	5.16
11/16/09 11:12:15	10350	12.30	2.70	0.39	1.08	5.16
11/16/09 11:12:45	10380	12.31	2.67	0.40	2.57	5.17
11/16/09 11:13:15	10410	12.28	2.66	0.35	2.18	5.16
11/16/09 11:13:45	10440	12.30	2.70	0.43	2.02	5.16
11/16/09 11:14:15	10470	12.29	2.68	0.36	3.42	5.14
11/16/09 11:14:45	10500	12.30	2.64	0.40	6.55	5.16
11/16/09 11:15:15	10530	12.31	2.64	0.37	9.56	5.15
11/16/09 11:15:45	10560	12.32	2.65	0.38	6.98	5.15
11/16/09 11:16:15	10590	12.31	2.68	0.39	4.63	5.16
11/16/09 11:16:45	10620	12.32	2.70	0.37	3.39	5.15

Florida Power and Light
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Mitsubishi, 501G, Unit #2A
West County Energy Center

Fuel Data			
Fuel Fd factor	8.648	SCF	ech/MBtu
Fuel Heating Value (HHV)	1,000	Btu	SCF fuel
Turbine Fuel Flow	1,892	lb/min	
Duct Burner Fuel Flow	141	lb/min	
Total Fuel Flow	2,524,632	SCFH	

Weather Data			
Barometric Pressure	30.01	in. Hg	
Relative Humidity	65	%	
Ambient Temperature	72	°F	
Specific Humidity	0.010851	lb H ₂ O / lb air	

Unit Data		
Unit Load	253.1	megawatts
Combustor Inlet Pressure	270	psig
Mean Stack Moisture	10.1	%
Stack Exhaust Flow (M9)	53,442,011	SCFH

Data from: NFG Run 1

Base W/Db Load, Run - 2-1

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O ₂ (%)	NOx (ppmv d)	CO (ppmv d)	VOC (ppmv w)	CO ₂ (%)
11/16/09 11:17:15	10650	12.31	2.70	0.38	2.81	5.17
11/16/09 11:17:45	10680	12.31	2.71	0.41	2.35	5.17
11/16/09 11:18:15	10710	12.28	2.71	0.38	1.54	5.18
11/16/09 11:18:45	10740	12.29	2.72	0.41	1.15	5.16
11/16/09 11:19:15	10770	12.30	2.74	0.38	2.10	5.17
11/16/09 11:19:45	10800	12.31	2.71	0.34	2.00	5.15
11/16/09 11:20:15	10830	12.31	2.69	0.36	1.68	5.18
11/16/09 11:20:45	10860	12.30	2.69	0.35	1.42	5.17
11/16/09 11:21:15	10890	12.30	2.73	0.35	1.37	5.19
11/16/09 11:21:45	10920	12.28	2.77	0.39	1.38	5.19
11/16/09 11:22:15	10950	12.31	2.80	0.33	1.20	5.18
11/16/09 11:22:45	10980	12.30	2.73	0.33	1.04	5.18
11/16/09 11:23:15	11010	12.30	2.71	0.31	1.53	5.19
11/16/09 11:23:45	11040	12.28	2.68	0.29	1.41	5.20
11/16/09 11:24:15	11070	12.28	2.75	0.33	1.19	5.20
11/16/09 11:24:45	11100	12.29	2.76	0.29	1.10	5.21
11/16/09 11:25:15	11130	12.29	2.74	0.32	1.10	5.18
11/16/09 11:25:45	11160	12.30	2.67	0.31	0.98	5.19
11/16/09 11:26:15	11190	12.31	2.65	0.30	0.74	5.17
11/16/09 11:26:45	11220	12.30	2.65	0.33	0.83	5.20
11/16/09 11:27:15	11250	12.31	2.67	0.33	1.73	5.19
11/16/09 11:27:45	11280	12.31	2.66	0.32	1.50	5.21
11/16/09 11:28:15	11310	12.30	2.69	0.26	1.30	5.18
11/16/09 11:28:45	11340	12.31	2.67	0.24	1.21	5.20
11/16/09 11:29:15	11370	12.31	2.64	0.34	1.09	5.18
11/16/09 11:29:45	11400	12.32	2.64	0.33	0.97	5.20
11/16/09 11:30:15	11430	12.30	2.65	0.28	0.76	5.19
11/16/09 11:30:45	11460	12.29	2.70	0.27	0.81	5.22
11/16/09 11:31:15	11490	12.29	2.71	0.28	0.87	5.19
11/16/09 11:31:45	11520	12.30	2.71	0.28	0.88	5.21
11/16/09 11:32:15	11550	12.31	2.71	0.32	0.88	5.20
11/16/09 11:32:45	11580	12.32	2.71	0.28	0.96	5.20
11/16/09 11:33:15	11610	12.32	2.68	0.27	0.85	5.19
11/16/09 11:33:45	11640	12.30	2.69	0.25	0.74	5.22
11/16/09 11:34:15	11670	12.31	2.71	0.24	0.74	5.21
11/16/09 11:34:45	11700	12.31	2.72	0.22	0.70	5.21

RAW AVERAGE O₂ 12.31 NOx 2.73 CO 0.38 VOC 1.57 CO₂ 5.16

	O ₂ (%)	NOx (ppmv d)	CO (ppmv d)	VOC (ppmv w)	CO ₂ (%)
Serial Number:	INST-N2-0001	INST-N2-0001	INST-CO-0015	INST-TH-0009	INST-C2-0009
Initial Zero	-0.05	0.04	0.01	0.01	0.11
Final Zero	-0.13	0.06	-0.21	0.20	0.23
Avg. Zero	-0.09	0.05	-0.10	0.11	0.17
Bias					
Initial UpScale	12.06	5.24	5.00	3.01	9.24
Final UpScale	12.03	5.17	4.95	3.12	9.26
Avg. UpScale	12.05	5.21	4.98	3.07	9.25

Upscale Cal Gas O₂ 12.10 NOx 4.99 CO 4.95 VOC 3.00 CO₂ 8.83

EMISSIONS DATA					
Corrected Raw Average (ppm% dry basis)	O ₂	NOx	CO	VOC	CO ₂
Concentration (ppm@ 15%O ₂)	N/A	1.80	0.32	1.15	N/A
Concentration (ppm@ 15%O ₂ & ISO)	N/A	1.88	0.34	1.20	N/A
Emission Rate (lb/hr)	N/A	16.58	1.82	3.68	N/A
Emission Rate (tons/year) at 8760 hr/yr	N/A	72.64	7.97	16.12	N/A
Emission Rate (lb/MMBtu)	N/A	0.007	0.001	0.001	N/A

Florida Power and Light
November 16, 2009
Mitsubishi, 501G, Unit #2A
West County Energy Center

Fuel Data			
Fuel Fd factor	8.648	SCF	edvMMBtu
Fuel Heating Value (HHV)	1,000	Btu	SCF fuel
Turbine Fuel Flow	1,666	lb/min	
Duct Burner Fuel Flow	140	lb/min	
Total Fuel Flow	2,487.674	SCFH	

Weather Data			
Barometric Pressure	30.00	in. Hg	
Relative Humidity	60	%	
Ambient Temperature	75	°F	
Specific Humidity	0.011087	lb H ₂ O / lb air	

Unit Data			
Unit Load	247.6	megawatts	
Combustor Inlet Pressure	269	psig	
Mass. Stack Moisture	9.8	%	
Stack Exhaust Flow (M19)	52,892,099	SCFH	

Data from: N-3 Run 2

Base W/Db Load, Run - 2-2

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O ₂ (%)	NOx (ppmv)	CO (ppmv)	VOC (ppmw)	CO ₂ (%)
11/16/09 11:48:15	12510	12.31	2.62	0.29	0.61	5.18
11/16/09 11:48:45	12540	12.30	2.62	0.28	0.60	5.20
11/16/09 11:49:15	12570	12.32	2.67	0.26	0.64	5.19
11/16/09 11:49:45	12600	12.31	2.69	0.32	0.61	5.21
11/16/09 11:50:15	12630	12.30	2.66	0.26	0.57	5.20
11/16/09 11:50:45	12660	12.32	2.68	0.31	0.58	5.21
11/16/09 11:51:15	12690	12.30	2.69	0.28	0.62	5.20
11/16/09 11:51:45	12720	12.34	2.71	0.26	0.59	5.20
11/16/09 11:52:15	12750	12.34	2.70	0.22	0.55	5.18
11/16/09 11:52:45	12780	12.31	2.70	0.29	0.57	5.20
11/16/09 11:53:15	12810	12.32	2.72	0.29	0.60	5.19
11/16/09 11:53:45	12840	12.31	2.74	0.30	0.58	5.21
11/16/09 11:54:15	12870	12.31	2.77	0.30	0.54	5.19
11/16/09 11:54:45	12900	12.34	2.75	0.28	0.53	5.20
11/16/09 11:55:15	12930	12.33	2.73	0.27	0.55	5.18
11/16/09 11:55:45	12960	12.34	2.73	0.26	0.52	5.20
11/16/09 11:56:15	12990	12.32	2.73	0.20	0.51	5.19
11/16/09 11:56:45	13020	12.31	2.77	0.28	0.54	5.21
11/16/09 11:57:15	13050	12.33	2.80	0.25	0.53	5.19
11/16/09 11:57:45	13080	12.33	2.80	0.27	0.49	5.19
11/16/09 11:58:15	13110	12.33	2.75	0.29	0.49	5.20
11/16/09 11:58:45	13140	12.33	2.70	0.28	0.50	5.19
11/16/09 11:59:15	13170	12.30	2.72	0.27	0.47	5.22
11/16/09 11:59:45	13200	12.32	2.77	0.28	0.44	5.20
11/16/09 12:00:15	13230	12.32	2.79	0.25	0.46	5.21
11/16/09 12:00:45	13260	12.34	2.75	0.25	0.44	5.19
11/16/09 12:01:15	13290	12.32	2.69	0.25	0.43	5.21
11/16/09 12:01:45	13320	12.31	2.71	0.26	0.45	5.20
11/16/09 12:02:15	13350	12.30	2.72	0.26	0.46	5.22
11/16/09 12:02:45	13380	12.31	2.74	0.23	0.44	5.20
11/16/09 12:03:15	13410	12.33	2.73	0.23	0.43	5.21
11/16/09 12:03:45	13440	12.32	2.66	0.23	0.45	5.20
11/16/09 12:04:15	13470	12.30	2.65	0.20	0.45	5.22
11/16/09 12:04:45	13500	12.33	2.70	0.25	0.43	5.19
11/16/09 12:05:15	13530	12.33	2.70	0.28	0.42	5.21
11/16/09 12:05:45	13560	12.33	2.69	0.25	0.44	5.20
11/16/09 12:06:15	13590	12.32	2.68	0.23	0.45	5.21
11/16/09 12:06:45	13620	12.33	2.70	0.22	0.43	5.20
11/16/09 12:07:15	13650	12.31	2.71	0.23	0.42	5.22
11/16/09 12:07:45	13680	12.32	2.71	0.28	0.43	5.21
11/16/09 12:08:15	13710	12.33	2.71	0.31	0.41	5.21
11/16/09 12:08:45	13740	12.31	2.69	0.29	0.39	5.22
11/16/09 12:09:15	13770	12.30	2.68	0.26	0.39	5.22
11/16/09 12:09:45	13800	12.33	2.68	0.25	0.42	5.21
11/16/09 12:10:15	13830	12.33	2.67	0.24	0.40	5.21
11/16/09 12:10:45	13860	12.33	2.68	0.20	0.38	5.22
11/16/09 12:11:15	13890	12.33	2.68	0.23	0.39	5.21
11/16/09 12:11:45	13920	12.30	2.69	0.26	0.40	5.24
11/16/09 12:12:15	13950	12.31	2.73	0.23	0.38	5.22
11/16/09 12:12:45	13980	12.33	2.75	0.21	0.38	5.23
11/16/09 12:13:15	14010	12.33	2.73	0.24	0.38	5.21
11/16/09 12:13:45	14040	12.33	2.70	0.28	0.38	5.23
11/16/09 12:14:15	14070	12.31	2.67	0.26	0.36	5.23
11/16/09 12:14:45	14100	12.32	2.71	0.20	0.37	5.24
11/16/09 12:15:15	14130	12.31	2.72	0.27	0.37	5.23
11/16/09 12:15:45	14160	12.34	2.72	0.25	0.35	5.23
11/16/09 12:16:15	14190	12.33	2.70	0.24	0.34	5.22
11/16/09 12:16:45	14220	12.32	2.70	0.28	0.35	5.24
11/16/09 12:17:15	14250	12.32	2.74	0.23	0.35	5.22
11/16/09 12:17:45	14280	12.34	2.74	0.24	0.33	5.24
11/16/09 12:18:15	14310	12.31	2.70	0.23	0.34	5.23
11/16/09 12:18:45	14340	12.32	2.68	0.26	0.35	5.24
11/16/09 12:19:15	14370	12.32	2.71	0.24	0.34	5.23
11/16/09 12:19:45	14400	12.32	2.70	0.18	0.32	5.25
11/16/09 12:20:15	14430	12.32	2.68	0.20	0.33	5.22
11/16/09 12:20:45	14460	12.34	2.70	0.17	0.34	5.23
11/16/09 12:21:15	14490	12.35	2.68	0.22	0.32	5.21
11/16/09 12:21:45	14520	12.34	2.62	0.26	0.32	5.23
11/16/09 12:22:15	14550	12.32	2.61	0.20	0.33	5.24
11/16/09 12:22:45	14580	12.33	2.71	0.25	0.32	5.24
11/16/09 12:23:15	14610	12.34	2.80	0.24	0.31	5.24
11/16/09 12:23:45	14640	12.35	2.81	0.24	0.32	5.23
11/16/09 12:24:15	14670	12.34	2.75	0.22	0.32	5.24
11/16/09 12:24:45	14700	12.35	2.73	0.24	0.31	5.23
11/16/09 12:25:15	14730	12.35	2.68	0.21	0.31	5.23
11/16/09 12:25:45	14760	12.34	2.64	0.23	0.33	5.23
11/16/09 12:26:15	14790	12.33	2.63	0.23	0.32	5.25
11/16/09 12:26:45	14820	12.34	2.64	0.19	0.29	5.24
11/16/09 12:27:15	14850	12.35	2.66	0.25	0.30	5.25
11/16/09 12:27:45	14880	12.35	2.69	0.21	0.32	5.24
11/16/09 12:28:15	14910	12.35	2.68	0.26	0.31	5.26
11/16/09 12:28:45	14940	12.34	2.70	0.22	0.29	5.25
11/16/09 12:29:15	14970	12.34	2.74	0.22	0.31	5.27
11/16/09 12:29:45	15000	12.34	2.77	0.24	0.31	5.26

Florida Power and Light
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Mitsubishi, 501G, Unit #2A
West County Energy Center

Fuel Data

Fuel Fd factor	8.648	SCF edv/MMBtu
Fuel Heating Value (HHV)	1,000	Btu/SCF fuel
Turbine Fuel Flow	1,666	lb/min
Duct Burner Fuel Flow	140	lb/min
Total Fuel Flow	2,487,674	SCFH

Weather Data

Barometric Pressure	30.00	in. Hg
Relative Humidity	60	%
Ambient Temperature	75	°F
Specific Humidity	0.011087	lb H ₂ O / lb air

Unit Data

Unit Load	247.6	megawatts
Combustor Inlet Pressure	296	psig
Meas. Stack Moisture	9.8	%
Stack Exhaust Flow (M19)	52,862,099	SCFH

Data from: N-9 Run 2

Base W/Db Load, Run - 2-2

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O ₂ (%)	NOx (ppmv d)	CO (ppmv d)	VOC (ppmv w)	CO ₂ (%)
11/16/09 12:30:15	15030	12.33	2.74	0.22	0.29	5.28
11/16/09 12:30:45	15060	12.33	2.73	0.23	0.31	5.27
11/16/09 12:31:15	15090	12.34	2.68	0.23	0.30	5.28
11/16/09 12:31:45	15120	12.34	2.70	0.22	0.28	5.26
11/16/09 12:32:15	15150	12.34	2.69	0.23	0.29	5.28
11/16/09 12:32:45	15180	12.34	2.66	0.29	0.30	5.27
11/16/09 12:33:15	15210	12.33	2.67	0.25	0.29	5.29
11/16/09 12:33:45	15240	12.33	2.71	0.24	0.27	5.27
11/16/09 12:34:15	15270	12.34	2.72	0.23	0.28	5.28
11/16/09 12:34:45	15300	12.34	2.70	0.29	0.30	5.26
11/16/09 12:35:15	15330	12.33	2.66	0.26	0.28	5.28
11/16/09 12:35:45	15360	12.34	2.68	0.25	0.27	5.26
11/16/09 12:36:15	15390	12.33	2.71	0.23	0.28	5.29
11/16/09 12:36:45	15420	12.34	2.74	0.19	0.28	5.27
11/16/09 12:37:15	15450	12.36	2.72	0.27	0.27	5.28
11/16/09 12:37:45	15480	12.36	2.69	0.23	0.28	5.26
11/16/09 12:38:15	15510	12.33	2.64	0.21	0.28	5.30
11/16/09 12:38:45	15540	12.34	2.71	0.25	0.28	5.27
11/16/09 12:39:15	15570	12.35	2.71	0.21	0.28	5.28
11/16/09 12:39:45	15600	12.34	2.69	0.21	0.29	5.28
11/16/09 12:40:15	15630	12.32	2.70	0.23	0.27	5.30
11/16/09 12:40:45	15660	12.33	2.74	0.19	0.28	5.29
11/16/09 12:41:15	15690	12.33	2.69	0.21	0.27	5.29
11/16/09 12:41:45	15720	12.33	2.65	0.23	0.27	5.30
11/16/09 12:42:15	15750	12.34	2.66	0.24	0.30	5.29
11/16/09 12:42:45	15780	12.35	2.70	0.19	0.33	5.31
11/16/09 12:43:15	15810	12.35	2.70	0.26	0.34	5.29
11/16/09 12:43:45	15840	12.35	2.63	0.26	0.38	5.31
11/16/09 12:44:15	15870	12.34	2.61	0.24	0.45	5.30
11/16/09 12:44:45	15900	12.35	2.62	0.25	0.50	5.31
11/16/09 12:45:15	15930	12.33	2.66	0.28	0.53	5.30
11/16/09 12:45:45	15960	12.34	2.68	0.23	0.56	5.31
11/16/09 12:46:15	15990	12.34	2.64	0.27	0.60	5.29
11/16/09 12:46:45	16020	12.34	2.61	0.29	0.64	5.31
11/16/09 12:47:15	16050	12.35	2.61	0.28	0.69	5.29
11/16/09 12:47:45	16080	12.35	2.61	0.30	3.20	5.31
RAW AVERAGE		12.33	2.70	0.26	0.42	5.24

Serial Number:	O ₂	NOx	CO	VOC	CO ₂
	(%)	(ppmv d)	(ppmv d)	(ppmv w)	(%)
INST-N2-0001	-0.13	0.06	-0.21	0.20	0.23
INST-N2-0001	-0.10	0.12	-0.33	0.20	0.36
INST-CO-0015	-0.12	0.09	-0.27	0.20	0.30
INST-TH-0009					
INST-C2-0009					
Bias					
Initial UpScale	12.03	5.17	4.95	3.12	9.26
Final UpScale	12.03	5.22	5.03	3.20	9.30
Avg. UpScale	12.03	5.20	4.99	3.16	9.28
Upscale Cal Gas	12.10	4.99	4.95	3.00	8.83

EMISSIONS DATA	O ₂	NOx	CO	VOC	CO ₂
Corrected Raw Average (ppm% dry basis)	12.40	2.55	0.49	0.27	4.86
Concentration (ppm@ 15%O ₂)	N/A	1.77	0.34	0.19	N/A
Concentration (ppm@ 15%O ₂ & ISO)	N/A	1.85	0.35	0.20	N/A
Emission Rate (lb/hr)	N/A	16.11	1.87	0.60	N/A
Emission Rate (tons/year) at 8780 hr/yr	N/A	70.54	8.19	2.62	N/A
Emission Rate (lb/MMBtu)	N/A	0.006	0.001	0.000	N/A

Florida Power and Light
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Mitsubishi, 501G, Unit #2A
West County Energy Center

Fuel Data

Fuel Fd factor	8.648	SCF edv/MWh
Fuel Heating Value (HHV)	1,000	Btu/SCF fuel
Turbine Fuel Flow	1,855	lb/min
Duct Burner Fuel Flow	140	lb/min
Total Fuel Flow	2,472,982	SCFH

Weather Data

Barometric Pressure	29.97	In. Hg
Relative Humidity	54	%
Ambient Temperature	79	°F
Specific Humidity	0.011409	lb H ₂ O / lb air

Unit Data

Unit Load	245.6	megawatts
Combustor Inlet Pressure	284	psig
Meas. Stack Moisture	9.6	%
Stack Exhaust Flow (M19)	52,835,605	SCFH

Data from: NRG run 3

Base W/Ds Load, Run - 2-3

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O ₂ (%)	NOx (ppmv)	CO (ppmv)	VOC (ppmv)	CO ₂ (%)
11/16/09 13:02:15	16950	12.34	2.67	0.30	3.48	5.26
11/16/09 13:02:45	16980	12.35	2.66	0.35	2.49	5.29
11/16/09 13:03:15	17010	12.34	2.67	0.26	2.31	5.28
11/16/09 13:03:45	17040	12.35	2.74	0.35	2.19	5.30
11/16/09 13:04:15	17070	12.33	2.82	0.35	1.94	5.30
11/16/09 13:04:45	17100	12.35	2.84	0.25	2.05	5.30
11/16/09 13:05:15	17130	12.38	2.77	0.28	1.96	5.26
11/16/09 13:05:45	17160	12.38	2.70	0.29	1.83	5.28
11/16/09 13:06:15	17190	12.38	2.65	0.32	1.70	5.27
11/16/09 13:06:45	17220	12.38	2.67	0.32	1.73	5.27
11/16/09 13:07:15	17250	12.37	2.68	0.33	1.82	5.28
11/16/09 13:07:45	17280	12.37	2.74	0.30	2.03	5.27
11/16/09 13:08:15	17310	12.37	2.77	0.31	2.59	5.30
11/16/09 13:08:45	17340	12.37	2.76	0.29	2.00	5.29
11/16/09 13:09:15	17370	12.37	2.78	0.30	1.77	5.29
11/16/09 13:09:45	17400	12.37	2.77	0.28	1.64	5.28
11/16/09 13:10:15	17430	12.36	2.74	0.26	1.69	5.30
11/16/09 13:10:45	17460	12.36	2.69	0.25	1.79	5.29
11/16/09 13:11:15	17490	12.36	2.73	0.27	1.81	5.30
11/16/09 13:11:45	17520	12.37	2.71	0.26	1.92	5.29
11/16/09 13:12:15	17550	12.37	2.68	0.31	1.58	5.30
11/16/09 13:12:45	17580	12.36	2.69	0.33	1.12	5.30
11/16/09 13:13:15	17610	12.39	2.70	0.30	0.89	5.29
11/16/09 13:13:45	17640	12.40	2.68	0.36	0.87	5.28
11/16/09 13:14:15	17670	12.37	2.64	0.31	0.92	5.30
11/16/09 13:14:45	17700	12.37	2.68	0.27	2.25	5.30
11/16/09 13:15:15	17730	12.35	2.76	0.27	1.85	5.31
11/16/09 13:15:45	17760	12.37	2.78	0.30	1.73	5.31
11/16/09 13:16:15	17790	12.38	2.72	0.30	1.63	5.29
11/16/09 13:16:45	17820	12.39	2.67	0.30	1.53	5.30
11/16/09 13:17:15	17850	12.38	2.63	0.28	1.53	5.29
11/16/09 13:17:45	17880	12.36	2.65	0.31	2.56	5.31
11/16/09 13:18:15	17910	12.36	2.64	0.29	2.90	5.30
11/16/09 13:18:45	17940	12.37	2.65	0.33	2.34	5.32
11/16/09 13:19:15	17970	12.37	2.65	0.24	2.27	5.30
11/16/09 13:19:45	18000	12.37	2.63	0.28	2.08	5.32
11/16/09 13:20:15	18030	12.37	2.65	0.26	1.93	5.30
11/16/09 13:20:45	18060	12.38	2.63	0.27	1.94	5.31
11/16/09 13:21:15	18090	12.39	2.61	0.28	1.99	5.30
11/16/09 13:21:45	18120	12.40	2.59	0.28	1.55	5.30
11/16/09 13:22:15	18150	12.37	2.60	0.30	0.92	5.32
11/16/09 13:22:45	18180	12.38	2.62	0.29	0.83	5.31
11/16/09 13:23:15	18210	12.37	2.71	0.31	0.87	5.31
11/16/09 13:23:45	18240	12.40	2.70	0.31	0.92	5.29
11/16/09 13:24:15	18270	12.39	2.63	0.27	0.85	5.32
11/16/09 13:24:45	18300	12.38	2.61	0.26	0.82	5.31
11/16/09 13:25:15	18330	12.37	2.67	0.31	0.87	5.33
11/16/09 13:25:45	18360	12.37	2.72	0.34	0.90	5.32
11/16/09 13:26:15	18390	12.38	2.73	0.30	0.84	5.33
11/16/09 13:26:45	18420	12.38	2.70	0.32	0.83	5.32
11/16/09 13:27:15	18450	12.39	2.68	0.32	1.31	5.34
11/16/09 13:27:45	18480	12.39	2.67	0.31	2.12	5.33
11/16/09 13:28:15	18510	12.39	2.67	0.28	1.72	5.33
11/16/09 13:28:45	18540	12.40	2.66	0.29	1.64	5.33
11/16/09 13:29:15	18570	12.39	2.67	0.36	1.58	5.33
11/16/09 13:29:45	18600	12.39	2.68	0.36	1.35	5.34
11/16/09 13:30:15	18630	12.38	2.72	0.30	1.17	5.34
11/16/09 13:30:45	18660	12.38	2.77	0.31	1.02	5.35
11/16/09 13:31:15	18690	12.36	2.77	0.32	0.91	5.34
11/16/09 13:31:45	18720	12.38	2.74	0.28	0.87	5.34
11/16/09 13:32:15	18750	12.38	2.71	0.35	0.96	5.33
11/16/09 13:32:45	18780	12.36	2.69	0.32	1.53	5.35
11/16/09 13:33:15	18810	12.37	2.70	0.37	1.77	5.33
11/16/09 13:33:45	18840	12.36	2.70	0.35	1.51	5.35
11/16/09 13:34:15	18870	12.34	2.73	0.33	4.04	5.34
11/16/09 13:34:45	18900	12.36	2.70	0.30	2.97	5.35
11/16/09 13:35:15	18930	12.38	2.66	0.30	4.13	5.34
11/16/09 13:35:45	18960	12.37	2.64	0.36	3.91	5.35
11/16/09 13:36:15	18990	12.38	2.67	0.30	3.34	5.34
11/16/09 13:36:45	19020	12.39	2.67	0.33	3.23	5.35
11/16/09 13:37:15	19050	12.38	2.63	0.35	3.30	5.33
11/16/09 13:37:45	19080	12.37	2.64	0.32	2.62	5.35
11/16/09 13:38:15	19110	12.36	2.65	0.37	2.17	5.34
11/16/09 13:38:45	19140	12.36	2.64	0.29	2.01	5.35
11/16/09 13:39:15	19170	12.37	2.64	0.34	1.83	5.36
11/16/09 13:39:45	19200	12.37	2.63	0.32	1.59	5.34
11/16/09 13:40:15	19230	12.36	2.65	0.34	1.52	5.36
11/16/09 13:40:45	19260	12.37	2.65	0.34	2.39	5.34
11/16/09 13:41:15	19290	12.36	2.59	0.38	3.06	5.35
11/16/09 13:41:45	19320	12.38	2.55	0.33	2.54	5.33
11/16/09 13:42:15	19350	12.38	2.54	0.35	2.34	5.35
11/16/09 13:42:45	19380	12.38	2.56	0.37	2.12	5.34
11/16/09 13:43:15	19410	12.36	2.60	0.33	2.11	5.37
11/16/09 13:43:45	19440	12.36	2.67	0.36	2.09	5.36

Florida Power and Light
November 16, 2009
Mitsubishi, 501G, Unit #2A
West County Energy Center

Fuel Data		
Fuel Fd factor	8.648	SCF edv/MMBtu
Fuel Heating Value (H-HV)	1,000	Btu/SCF fuel
Turbine Fuel Flow	1,855	lb/min
Duct Burner Fuel Flow	140	lb/min
Total Fuel Flow	2,472,982	SCFH

Weather Data		
Barometric Pressure	29.97	in. Hg
Relative Humidity	54	%
Ambient Temperature	79	*F
Specific Humidity	0.011409	lb H ₂ O / lb air

Unit Data		
Unit Load	245.6	megawatts
Combustor Inlet Pressure	254	psig
Mass Stack Moisture	9.6	%
Stack Exhaust Flow (M19)	52,835,605	SCFH

Data from: N#3 run 3

Base W/Db Load, Run - 2-3

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O ₂ (%)	NOx (ppmvd)	CO (ppmvd)	VOC (ppmvw)	CO ₂ (%)
11/16/09 13:44:15	19470	12.36	2.69	0.34	2.03	5.37
11/16/09 13:44:45	19500	12.38	2.69	0.35	1.94	5.36
11/16/09 13:45:15	19530	12.38	2.65	0.31	1.83	5.37
11/16/09 13:45:45	19560	12.37	2.64	0.36	1.73	5.37
11/16/09 13:46:15	19590	12.37	2.69	0.32	1.64	5.37
11/16/09 13:46:45	19620	12.37	2.72	0.36	1.68	5.39
11/16/09 13:47:15	19650	12.36	2.75	0.32	1.52	5.38
11/16/09 13:47:45	19680	12.35	2.74	0.33	1.46	5.40
11/16/09 13:48:15	19710	12.37	2.76	0.35	1.29	5.39
11/16/09 13:48:45	19740	12.38	2.76	0.33	1.08	5.40
11/16/09 13:49:15	19770	12.35	2.75	0.29	1.06	5.39
11/16/09 13:49:45	19800	12.36	2.75	0.30	1.03	5.41
11/16/09 13:50:15	19830	12.37	2.76	0.39	2.44	5.39
11/16/09 13:50:45	19860	12.36	2.77	0.30	4.35	5.41
11/16/09 13:51:15	19890	12.36	2.75	0.34	4.30	5.40
11/16/09 13:51:45	19920	12.37	2.72	0.39	3.15	5.40
11/16/09 13:52:15	19950	12.37	2.70	0.33	2.42	5.39
11/16/09 13:52:45	19980	12.37	2.69	0.29	2.22	5.39
11/16/09 13:53:15	20010	12.36	2.68	0.35	2.06	5.41
11/16/09 13:53:45	20040	12.36	2.70	0.36	1.86	5.40
11/16/09 13:54:15	20070	12.36	2.74	0.33	1.84	5.42
11/16/09 13:54:45	20100	12.38	2.73	0.31	1.95	5.39
11/16/09 13:55:15	20130	12.38	2.69	0.34	1.87	5.40
11/16/09 13:55:45	20160	12.38	2.66	0.31	1.78	5.38
11/16/09 13:56:15	20190	12.36	2.63	0.29	1.74	5.40
11/16/09 13:56:45	20220	12.37	2.64	0.35	2.27	5.38
11/16/09 13:57:15	20250	12.36	2.64	0.28	2.47	5.41
11/16/09 13:57:45	20280	12.35	2.66	0.26	1.98	5.40
11/16/09 13:58:15	20310	12.35	2.69	0.28	1.87	5.42
11/16/09 13:58:45	20340	12.37	2.68	0.37	1.91	5.40
11/16/09 13:59:15	20370	12.38	2.62	0.30	1.85	5.40
11/16/09 13:59:45	20400	12.36	2.55	0.33	1.84	5.41
11/16/09 14:00:15	20430	12.36	2.56	0.35	2.31	5.40
11/16/09 14:00:45	20460	12.38	2.60	0.33	1.99	5.41
11/16/09 14:01:15	20490	12.36	2.63	0.34	1.71	5.40
11/16/09 14:01:45	20520	12.37	2.66	0.31	1.66	5.42

RAW AVERAGE

Bias	O ₂		NOx		CO		VOC		CO ₂	
	Serial Number:	INST-N2-0001	INST-N2-0001	INST-CO-0015	INST-TH-0009	INST-C2-0009	INST-C2-0009	INST-C2-0009	INST-C2-0009	INST-C2-0009
		(%)	(ppmvd)	(ppmvd)	(ppmvw)	(ppmvw)	(ppmvw)	(ppmvw)	(%)	(%)
	Initial Zero	-0.10	0.12	-0.33	0.20	0.36				
	Final Zero	-0.10	0.07	-0.34	0.23	0.42				
	Avg. Zero	-0.10	0.10	-0.34	0.22	0.39				
	Initial UpScale	12.03	5.22	5.03	3.20	9.30				
	Final UpScale	12.03	5.18	4.87	3.25	9.40				
	Avg. UpScale	12.03	5.20	4.95	3.23	9.35				
	Upscale Cal Gas	12.10	4.99	4.95	3.00	8.83				

EMISSIONS DATA		O ₂	NOx	CO	VOC	CO ₂
Corrected Raw Average (ppm% dry basis)		12.44	2.53	0.61	1.90	4.88
Concentration (ppm@ 15%O ₂)		N/A	1.76	0.42	1.32	N/A
Concentration (ppm@ 15%O ₂ & ISO)		N/A	1.83	0.44	1.37	N/A
Emission Rate (lb/hr)		N/A	15.95	2.34	4.16	N/A
Emission Rate (tons/year) at 8760 hr/yr		N/A	69.91	10.24	18.24	N/A
Emission Rate (lb/MMBtu)		N/A	0.006	0.001	0.002	N/A

TEST RESULTS

**NH₃ Emissions
Base Load**



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AMMONIA ANALYSIS

PARAMETER	UNITS	RUN						BLANK
		1		2		3		
		Front (f)	Back (b)	Front (f)	Back (b)	Front (f)	Back (b)	
Sample Number		U2A-R1-FH	U2A-R1-BH	U2A-R2-FH	U2A-R2-BH	U2A-R3-FH	U2A-R3-BH	Blank
Lab Log Number		91115-01	91115-02	91115-03	91115-04	91115-05	91115-06	91115-B
Results (C_f or C_b)	(mg/L)	8.2600	0.1100	7.7200	0.1000	7.7200	0.1100	0.1000
Practical Quantitation Limit (PQL)	(mg/L)	0.100	0.100	0.100	0.100	0.100	0.100	0.100
Sample Volume (V_{NH_3})	(ml)	210	200	220	220	230	210	100
DGM Volume (V_m) _{dscf}	(dscf)	39.27		41.04		40.95		41.04
DGM Volume (V_m) _{dstdL}	(L _{dstd})	1112.07		1162.06		1159.49		1162.06
Sum of NH ₃ Ion (N)	(mg/L)	8.2600	0.1100	7.7200	0.1000	7.7200	0.1100	0.1000
Total Sample Volume (S)	(ml)	210	200	220	220	230	210	100
Volume of NH ₃ (V_a)	(L)	0.00228	0.00003	0.00223	0.00003	0.00234	0.00003	0.00001
O ₂ Concentration	(%)	13.15		13.11		13.13		N/A
NH ₃ Concentration (C_{NH_3})	(ppmvd)	2.08		1.95		2.04		0.011
C_{NH_3} @ 15% O ₂	(ppmvd)	1.58		1.47		1.55		N/A

Equations & Constants:

Example Using Data from the 1st run

DGM Volume (L_{dstd})

$$(V_m)_{dstdL} (L_{dstd}) = (V_m)_{dscf} \times 28.31685$$

$$(V_m)_{dstdL} (L_{dstd}) = 39.27 \text{ dscf} \times 28.31685 \text{ L/ft}^3 = 1112.07 \text{ L}_{dstd}$$

$(V_m)_{dscf}$ = Volume of gas sample measured by the DGM, corrected to standard conditions.

C_f = Concentration of NH₃ ion in the front half of train (main catch)

MW = molecular weight (ref. ASTM D 3588)

C_b = Concentration of NH₃ ion in the back half of train (breakthrough)

Volume of NH₃ (L)

$$V_a(L) = \frac{N \times S}{MW \times 1000} \times 22.4$$

$$V_a(L) = \frac{8.26 \text{ mg}}{L} \times \frac{210 \text{ ml}}{1000 \text{ ml}} \times \frac{22.4 \text{ L ideal gas}}{\text{g-mol substance}} \times \frac{\text{g-mol NH}_3}{17.03 \text{ g}} \times \frac{\text{g}}{1000 \text{ mg}} = 0.00228 \text{ L}$$

NH₃ Concentration (ppmvd)

$$C_{NH_3}(\text{ppmvd}) = \frac{V_{a(\text{front})} + V_{a(\text{back})}}{(V_m)_{dstdL}} \times 10^6$$

$$C_{NH_3}(\text{ppmvd}) = \frac{0.00228 \text{ L} + 0.00003 \text{ L}}{1112.07 \text{ L}_{dstd}} \times \frac{10^6 \text{ parts}}{1 \text{ part}} = 2.078 \text{ ppmvd}$$

22.4 = liters of ideal gas per mol of substance at 0°C and 1 atm (ref. Civil Engineering Reference Manual, 7th ed. - Michael R. Lindeburg)

CTM 027 (AMMONIA) - RESULTS

Plant Name	West County Energy Center	Date	11/15/09
Sampling Location	Loxahatchee, Florida	Project #	bv-10-westcounty.fl-comp#1
Operator	Pandu Sattvika	Stack Type	Circular

Historical Data						
Run Number		2A-1	2A-2	2A-3	Average	
Run Start Time		10:26	11:55	13:12		hh:mm
Run Stop Time		11:34	13:01	14:20		hh:mm
Meter Calibration Factor	(Y)	0.992	0.992	0.992		
Pitot Tube Coefficient	(C _p)	0.840	0.840	0.840		
Average Nozzle Diameter	(D _{no})	0.215	0.215	0.215		in
Stack Test Data						
Initial Meter Volume	(V _m _i)	938.030	981.160	24.100		ft ³
Final Meter Volume	(V _m _f)	978.102	1023.408	66.410		ft ³
Total Meter Volume	(V _m)	40.072	42.248	42.310	41.543	ft ³
Total Sampling Time	(∅)	60.0	60.0	60.0	60.0	min
Average Meter Temperature	(t _m) _{avg}	78.0	82.8	84.5	81.7	oF
Average Stack Temperature	(t _s) _{avg}	203.4	210.3	210.8	208.2	oF
Barometric Pressure	(P _b)	30.03	30.01	29.99	30.01	in Hg
Stack Static Pressure	(P _{static})	0.75	0.75	0.75	0.75	in H ₂ O
Absolute Stack Pressure	(P _s)	30.09	30.07	30.05	30.07	in Hg
Average Orifice Pressure Drop	(ΔH) _{avg}	1.30	1.40	1.43	1.38	in H ₂ O
Absolute Meter Pressure	(P _m)	30.15	30.13	30.11	30.13	in Hg
Avg Square Root Pitot Pressure	(ΔP ^{1/2}) _{avg}	0.94	0.97	0.98	0.96	(in H ₂ O) ^{1/2}
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V _w)	65.4	77.0	77.5	73.3	ml
Impinger 4 Silica Gel Weight Gain	(W _w)	8.5	8.9	9.0	8.8	g
Total Water Volume Collected	(V _{lc})	73.9	86.0	86.6	82.2	ml
Standard Water Vapor Volume	(V _w) _{std}	3.480	4.047	4.074	3.867	scf
Standard Meter Volume	(V _m) _{std}	39.272	41.038	40.947	40.419	dscf
Calculated Stack Moisture	(B _{ws(calc)})	8.14	8.98	9.05	8.72	%
Saturated Stack Moisture	(B _{ws(svp)})	83.5	96.2	97.2	92.3	%
Reported Stack Moisture Content	(B _{ws})	8.14	8.98	9.05	8.72	%
Gas Analysis Data						
Carbon Dioxide Percentage	(%CO ₂)	4.5	4.5	4.5	4.5	%
Oxygen Percentage	(%O ₂)	13.2	13.1	13.1	13.1	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	(%N ₂)	82.3	82.4	82.3	82.4	%
Dry Gas Molecular Weight	(M _d)	29.25	29.24	29.25	29.25	lb/lb-mole
Wet Stack Gas Molecular Weight	(M _w)	28.33	28.23	28.23	28.26	lb/lb-mole
Calculated Fuel Factor	(F _o)	1.715	1.747	1.719	1.727	
Fuel F-Factor	(F _f)	8651	8651	8651	8651	dscf/MMBtu
Percent Excess Air	(%EA)	153.2	151.5	152.5	152.4	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v _s)	59.57	62.17	62.37	61.37	ft/sec
Stack Cross-Sectional Area	(A _s)	376.17	376.17	376.17	376.17	ft ²
Actual Stack Flow Rate	(Q _{aw})	1,344,424	1,403,230	1,407,589	1,385,081	acfm
Wet Standard Stack Flow Rate	(Q _{sw})	64,558	66,643	66,755	65,985	wkscfh
Dry Standard Stack Flow Rate	(Q _{sd})	988,422	1,010,991	1,011,900	1,003,771	dscfm
Percent of Isokinetic Rate	(I)	99.8	101.2	100.8	100.6	%
Ammonia Rate Data						
Stack Ammonia Concentration	(C _{NH3})	2.08	1.92	2.04	2.01	ppm
	(C _{NH3})	1.58	1.46	1.55	1.53	ppm@15%O ₂

CTM 027 (AMMONIA) SOURCE SAMPLING TITLE PAGE

ALARMS exist and have been acknowledged.

Source Information				
Plant Name	West County Energy Center			
Sampling Location	Loxahatchee, Florida			
Fuel or Source Type	Gas, Natural			
Fuel F-Factor	8651	8651	8651	

Test Information			
Starting Test Date		11/15/09	
Project #		bv-10-westcounty.fl-comp#1	
Operator		Pandu Sattvika	
Standard Temperature		68	oF
Standard Pressure		29.92	in Hg
Minimum Required Sample Vol.	indust. spec.	35	scf
Run Duration	chk Subpart	60	minutes
Unit Number		2A	
Load	% or w/DB	Base wo DB	
Base Run Number		2A	
Number of Ports Available		4	
Number of Ports Used		4	
Port Inside Diameter		5.00	in
Circular Stack			

Test Equipment Information					
Run		1	2	3	
Meter Box Number	from ACS	samp-cp-0012	samp-cp-0012	samp-cp-0012	
Meter Calibration Factor	(Y)	0.992	0.992	0.992	
Orifice Meter Coefficient	($\Delta H @$)	1.597	1.597	1.597	in H ₂ O
Pitot Tube Coefficient	(C _p)	0.840	0.840	0.840	
Nozzle Diameter	(D _n)	0.215	0.215	0.215	in
Probe Length		144.00	144.00	144.00	in
(SS, Glass) Liner Material	from list	inconel	inconel	inconel	

Testing Company Information	
Company Name	Air Hygiene International, Inc. (Tulsa, Oklahoma)
Address	5634 S. 122nd East Ave., Suite F
City, State Country Zip	Tulsa, Oklahoma 74146
Project Manager	Pandu Sattvika
Phone Number	(918) 307-8865
Fax Number	(918) 307-9131

METHOD 1 - SAMPLE AND VELOCITY TRAVERSES FOR CIRCULAR SOURCES

Plant Name	West County Energy Center	Date	11/15/09
Sampling Location	Loxahatchee, Florida	Project #	bv-10-westcounty.fl-comp#1
Operator	Pandu Sattvika	# of Ports Available	4
Stack Type	Circular	# of Ports Used	4
Stack Size	Large	Port Inside Diameter	5.00

Circular Stack or Duct Diameter			
Distance to Far Wall of Stack	(L_{fw})	281.75	in
Distance to Near Wall of Stack	(L_{nw})	19.13	in
Diameter of Stack	(D)	262.62	in
Area of Stack	(A_s)	376.17	ft ²

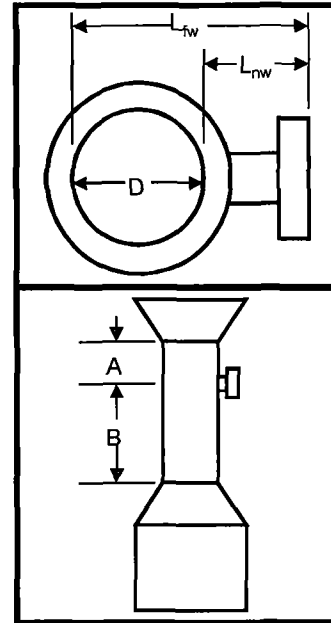
Distance from Port to Disturbances			
Distance Upstream	(A)	144.00	in
Diameters Upstream	(A_D)	0.55	diameters
Distance Downstream	(B)	531.75	in
Diameters Downstream	(B_D)	2.02	diameters

Number of Traverse Points Required			
Diameters to Flow Disturbance		Minimum Number of ¹ Traverse Points	
Down Stream	Up Stream	Particulate Points	Velocity Points
2.00-4.99	0.50-1.24	24	16
5.00-5.99	1.25-1.49	20	16
6.00-6.99	1.50-1.74	16	12
7.00-7.99	1.75-1.99	12	12
≥ 8.00	≥ 2.00	8 or 12 ²	8 or 12 ²
Upstream Spec		24	16
Downstream Spec		24	16
Traverse Pts Required		24	16

¹ Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

² 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches

Location of Traverse Points in Circular Stacks										
Traverse Point	(Fraction of Stack Dimension from Inside Wall to Traverse Point)									
Number	Number of Traverse Points Across the Stack									
1	.146	.067	.044	.032	.026	.021	.018	.016	.014	
2	.854	.250	.146	.105	.082	.067	.057	.049	.044	
3		.750	.296	.194	.146	.118	.099	.085	.075	
4		.933	.704	.323	.226	.177	.146	.125	.109	
5			.854	.677	.342	.250	.201	.169	.146	
6			.956	.806	.658	.356	.269	.220	.188	
7				.895	.774	.644	.366	.283	.236	
8				.968	.854	.750	.634	.375	.296	
9					.918	.823	.731	.625	.382	
10					.974	.882	.799	.717	.618	
11						.933	.854	.780	.704	
12							.979	.901	.831	.764



Number of Traverse Points Used			
4	Ports by	6	Across
24	Pts Used	24	Required
			Particulate Traverse

Traverse Point Locations			
Traverse Point Number	Fraction of Stack Diameter	Distance from Inside Wall	Distance Including Reference Length
		in	in
1	0.02	5 4/8	24 5/8
2	0.07	17 5/8	36 6/8
3	0.12	31	50 1/8
4	0.18	46 4/8	65 5/8
5	0.25	65 5/8	84 6/8
6	0.36	93 4/8	112 5/8
7			
8			
9			
10			
11			
12			

METHOD 2 - DETERMINATION OF STACK GAS VELOCITY AND VOLUMETRIC FLOW RATE

Plant Name	West County Energy Center			Date	11/15/09
Sampling Location	Loxahatchee, Florida			Project #	bv-10-westcounty.fl-comp#1
Operator	Pandu Sattvika			# of Ports Used	4
Stack Type	Circular			Pitot Identification	
Pitot Leak Check	<input checked="" type="checkbox"/>	PreTest	<input checked="" type="checkbox"/>	PostTest	Pitot Coefficient (C_p) 0.84

Diameter or Length of Stack	(D)	262.62	in
Width of Stack	(W)		in
Area of Stack	(A _s)	376.17	ft ²

Barometric Pressure	(P _b)	29.59	in Hg
Static Pressure	(P _{static})	0.75	in H2O
Absolute Stack Pressure	(P _s)	29.65	in Hg

Composition Data:		Estimated Composition	
Carbon Dioxide Concentration	(%CO ₂)	4.4	%
Oxygen Concentration	(%O ₂)	13.4	%
Carbon Monoxide Concentration	(%CO)	0.0	%
Nitrogen Concentration	(%N ₂)	82.2	%
Stack Moisture Content	(B _{wet})	9.000	%
Stack Dry Molecular Weight	(M _d)	29.24	lb/lb-mole
Stack Wet Molecular Weight	(M _w)	28.23	lb/lb-mole

Avg Stack Gas Velocity	(V _s)	59.7	ft/sec
Avg Stack Dry Std Flow Rate	(Q _{sd})	57,500,947	dscf/hr
Avg Stack Dry Std Flow Rate	(Q _{sd})	958,349	dscf/min
Avg Stack Wet Flow Rate	(Q _{sw})	1,346,988	acf/min
Avg Stack Wet Std Flow Rate	(Q _{sw})	63,187,854	ascf/hr

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		Run Number 2A-V1		
	Run Time 9:07	Start 9:41	End	
Traverse Point	Velocity Head (Δp)	Null Angle (N _a)	Stack Temp (t _s)	Local Velocity (V _{s(t)})
	in H2O	deg	oF	ft/sec
A-1	0.94	-5	204	62.0
A-2	1.00	-5	202	63.9
A-3	1.30	-5	202	72.8
A-4	1.30	-5	202	72.8
A-5	1.20	-5	202	70.0
A-6	1.30	-5	209	73.2
B-1	1.30	0	215	73.5
B-2	1.20	0	215	70.7
B-3	0.80	0	216	57.7
B-4	0.85	0	215	59.5
B-5	0.82	0	215	58.4
B-6	0.80	0	213	57.6
C-1	0.65	0	209	51.8
C-2	0.65	0	215	52.0
C-3	0.67	0	215	52.8
C-4	0.76	0	214	56.2
C-5	0.79	0	214	57.3
C-6	0.80	0	207	57.3
D-1	0.51	0	207	45.8
D-2	0.60	0	206	49.6
D-3	0.68	0	205	52.8
D-4	0.70	0	205	53.6
D-5	0.76	0	207	55.9
D-6	0.74	0	205	55.1
Average	0.88	1	209	
	0.93	= Square roots of Δp		

METHOD 3a - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

Plant Name	West County Energy Center			Date	11/15/09		
Sampling Location	Loxahatchee, Florida			Project #	bv-10-westcounty.fl-comp#1		
Operator	Pandu Sattvika			# of Ports Used	4		
Fuel Type	Gas, Natural	Minimum Fuel Factor	1.600	Maximum Fuel Factor	1.836		
Orsat Leak Check	<input checked="" type="checkbox"/>	PreTest	<input checked="" type="checkbox"/>	PostTest	Orsat Identification		

Gas Analysis Data									
Run Number		2A-1		Run Start Time		10:26	Run Stop Time		11:34
Sample Analysis Time	Carbon Dioxide Conc. (%CO ₂)	Oxygen Conc. (%O ₂)	Carbon Monoxide Conc. (ppmCO)	Carbon Dioxide Conc. (%CO ₂)	Oxygen Conc. (%O ₂)	Carbon Monoxide Conc. (%CO)	Nitrogen Conc. (%N ₂)	Dry Molecular Weight (M _d)	Molecular Weight Deviation (ΔM _d)
hh:mm	percent	percent	ppm	percent	percent	percent	percent	lb/lb-mole	lb/lb-mole
1:08	4.5	13.2	0.5	4.5	13.2	0.0	82.3	29.25	0.00
Results			Averages	4.5	13.2	0.0	82.3	29.25	
Average Calculated Fuel Factor			(F _o) _{avg}	1.715	Molecular Wt Deviation < 0.3?			<input checked="" type="checkbox"/>	
Average Excess Air			(%EA) _{avg}	153.2	percent	Fuel Factor in Handbook Range?			<input checked="" type="checkbox"/>

Gas Analysis Data									
Run Number		2A-2		Run Start Time		11:55	Run Stop Time		13:01
Sample Analysis Time	Carbon Dioxide Conc. (%CO ₂)	Oxygen Conc. (%O ₂)	Carbon Monoxide Conc. (ppmCO)	Carbon Dioxide Conc. (%CO ₂)	Oxygen Conc. (%O ₂)	Carbon Monoxide Conc. (%CO)	Nitrogen Conc. (%N ₂)	Dry Molecular Weight (M _d)	Molecular Weight Deviation (ΔM _d)
hh:mm	percent	percent	ppm	percent	percent	percent	percent	lb/lb-mole	lb/lb-mole
1:06	4.5	13.1	0.5	4.5	13.1	0.0	82.4	29.24	0.00
Results			Averages	4.5	13.1	0.0	82.4	29.24	
Average Calculated Fuel Factor			(F _o) _{avg}	1.747	Molecular Wt Deviation < 0.3?			<input checked="" type="checkbox"/>	
Average Excess Air			(%EA) _{avg}	151.5	percent	Fuel Factor in Handbook Range?			<input checked="" type="checkbox"/>

Gas Analysis Data									
Run Number		2A-3		Run Start Time		13:12	Run Stop Time		14:20
Sample Analysis Time	Carbon Dioxide Conc. (%CO ₂)	Oxygen Conc. (%O ₂)	Carbon Monoxide Conc. (ppmCO)	Carbon Dioxide Conc. (%CO ₂)	Oxygen Conc. (%O ₂)	Carbon Monoxide Conc. (%CO)	Nitrogen Conc. (%N ₂)	Dry Molecular Weight (M _d)	Molecular Weight Deviation (ΔM _d)
hh:mm	percent	percent	ppm	percent	percent	percent	percent	lb/lb-mole	lb/lb-mole
1:08	4.5	13.1	0.4	4.5	13.1	0.0	82.3	29.25	0.00
Results			Averages	4.5	13.1	0.0	82.3	29.25	
Average Calculated Fuel Factor			(F _o) _{avg}	1.719	Molecular Wt Deviation < 0.3?			<input checked="" type="checkbox"/>	
Average Excess Air			(%EA) _{avg}	152.5	percent	Fuel Factor in Handbook Range?			<input checked="" type="checkbox"/>

Fuel Factor Fo		
Fuel Type	Minimum	Maximum
Coal, Anthracite	1.016	1.130
Coal, Lignite	1.016	1.130
Coal, Bituminous	1.083	1.230
Oil, Distillate	1.260	1.413
Oil, Residual	1.210	1.370
Gas, Natural	1.600	1.836
Gas, Propane	1.434	1.586
Gas, Butane	1.405	1.553
Wood	1.000	1.120
Wood Bark	1.003	1.130

METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

Plant Name	West County Energy Center			Date	11/15/09		
Sampling Location	Loxahatchee, Florida			Project #	bv-10-westcounty.fl-comp#1		
Operator	Pandu Sattvika			# of Ports Used	4		
Stack Type	Circular			Meter Box Number	samp-cp-0012		
Train Leak Check	<input checked="" type="checkbox"/>	PreTest	<input checked="" type="checkbox"/>	PostTest	Meter Cal Factor (Y)	0.992	

Moisture Content Data								
Run Number	2A-1			Run Start Time	10:26	Run Stop Time	11:34	
Total Meter Volume	(V _m)	40.072	dcf	Barometric Press.	(P _b)	30.03	in Hg	
Avg Stack Temp	(t _s) _{avg}	203	oF	Stack Static Press.	(P _{static})	0.75	in H2O	
Avg Meter Temp	(t _m) _{avg}	78	oF	Avg Orifice Press.	(ΔH) _{avg}	1.30	in H2O	
	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5	Impinger 6	Impinger 7	Impinger 8
	g	g	g	g	g	g	g	g
Contents	H2SO4	H2SO4		Sil Gel				
Final Value	(V _f),(W _f)	799.00	754.60	617.60	954.00			
Initial Value	(V _i),(W _i)	746.60	743.90	615.40	945.50			
Net Value	(V _n),(W _n)	52.4	10.7	2.2	8.5			
Results								
Total Weight	(W _t)	73.80	g	Water Vol Weighed	(V _{wsg(std)})	3.480	scf	
Std Meter Volume	(V _{m(std)})	39.284	dscf	Sat. Moisture Content	(B _{ws(svp)})	83.5	%	
Calc Moisture Content	(B _{ws(calc)})	8.1	%	Final Moisture Content	(B _{ws})	8.1	%	

Moisture Content Data								
Run Number	2A-2			Run Start Time	11:55	Run Stop Time	13:01	
Total Meter Volume	(V _m)	42.248	dcf	Barometric Press.	(P _b)	30.01	in Hg	
Avg Stack Temp	(t _s) _{avg}	210	oF	Stack Static Press.	(P _{static})	0.75	in H2O	
Avg Meter Temp	(t _m) _{avg}	83	oF	Avg Orifice Press.	(ΔH) _{avg}	1.40	in H2O	
	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5	Impinger 6	Impinger 7	Impinger 8
	g	g	g	g	g	g	g	g
Contents	H2SO4	H2SO4		Sil Gel				
Final Value	(V _f),(W _f)	788.40	699.20	625.50	930.03			
Initial Value	(V _i),(W _i)	724.80	689.10	622.30	921.10			
Net Value	(V _n),(W _n)	63.6	10.1	3.2	8.9			
Results								
Total Weight	(W _t)	85.83	g	Water Vol Weighed	(V _{wsg(std)})	4.047	scf	
Std Meter Volume	(V _{m(std)})	41.029	dscf	Sat. Moisture Content	(B _{ws(svp)})	96.2	%	
Calc Moisture Content	(B _{ws})	9.0	%	Final Moisture Content	(B _{ws})	9.0	%	

Moisture Content Data								
Run Number	2A-3			Run Start Time	13:12	Run Stop Time	14:20	
Total Meter Volume	(V _m)	42.310	dcf	Barometric Press.	(P _b)	29.99	in Hg	
Avg Stack Temp	(t _s) _{avg}	211	oF	Stack Static Press.	(P _{static})	0.75	in H2O	
Avg Meter Temp	(t _m) _{avg}	84	oF	Avg Orifice Press.	(ΔH) _{avg}	1.43	in H2O	
	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5	Impinger 6	Impinger 7	Impinger 8
	g	g	g	g	g	g	g	g
Contents	H2SO4	H2SO4		Sil Gel				
Final Value	(V _f),(W _f)	805.30	747.00	616.90	921.70			
Initial Value	(V _i),(W _i)	740.20	736.50	615.10	912.70			
Net Value	(V _n),(W _n)	65.1	10.5	1.8	9.0			
Results								
Total Weight	(W _t)	86.40	g	Water Vol Weighed	(V _{wsg(std)})	4.074	scf	
Std Meter Volume	(V _{m(std)})	40.941	dscf	Sat. Moisture Content	(B _{ws(svp)})	97.2	%	
Calc Moisture Content	(B _{ws})	9.0	%	Final Moisture Content	(B _{ws})	9.0	%	

CTM 027 (AMMONIA) ISOKINETIC SAMPLING DATA

Plant Name	West County Energy Center	Date	11/15/2009
Sampling Location	Loxahatchee, Florida	Project #	bv-10-westcounty.fl-comp#1
Operator	Pandu Sattvika	Run #	2A-1
# of Points Across	6	# of Ports Used	4

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Tube Coefficient	(C _p)	0.84	
Avg Stack Temp	(t _s)	203	oF
Avg Gas Meter Temp	(t _m)	78	
DH @ 0.75 SCFM	(ΔH@)	1.60	in H2O
Avg Pitot Tube Diff. Pressure	(ΔP _{pit})	0.90	in H2O
Stack Moisture Content	(B _{wt})	8.14	%
Stack Dry Molecular Weight	(M _d)	29.25	lb/lb-mole
Estimated Orifice Flow Rate	(Q _e)	0.750	acfm
DP to DH Isokinetic Factor	(K)	1.44	

Leak Checks				
Train	Pre	0	ft ³ /min @	15
OK?	Post	0	ft ³ /min @	15
Pitot	Pre	0	in. H ₂ O for	30
OK?	Post	0	in. H ₂ O for	30
Orsat	OK?			

Sampling Equipment	
Meter #	samp-cp-0012
Meterbox Cal. Factor	(Y) 0.992
Nozzle #	
Average Nozzle Diameter	(D _{no}) 0.2150 in
Rec. Nozzle Diameter	(D _{no}) 0.2265 in
Probe # / Length	/ 144 in
Liner Material	inconel
Sample Case / Oven #	
Impinger Case #	

Nozzle Measurements				
Pre	0.215	0.215	0.215	PASS
Post	0.215	0.215	0.215	PASS

Pressures		
Barometric Pressure	(P _b)	30.03 in Hg
Stack Static Pressure	(P _{stac})	0.75 in H2O
Absolute Stack Pressure	(P _a)	30.09 in Hg
Absolute Meter Pressure	(P _m)	30.15 in Hg

Run Time	
Start	10:26
End	11:34

Weights	Imp 1	Imp 2	Imp 3	Imp 4	Imp 5	Imp 6	Imp 7	Imp 8
Pre	746.60	743.90	615.40	945.50				
Post	799.00	754.60	617.60	954.00				

Wash Volume	H ₂ O	50.0	ml	Filter #
	MeCl			

Traverse Point #	Sampling Time (θ)	Timer Time	Dry Gas Meter Reading (V _d)	Velocity Head (Δp)	Desired Orifice ΔH (ΔH _d)	Actual Orifice ΔH (ΔH _a)	Stack Temp (t _s)	Probe Temp	Filter Temp	Impinger Exit Temp	Aux Temp	Meter Inlet Temp (t _m)	Meter Outlet Temp (t _m)	Pump Vacuum	Square Root ΔP ((ΔP) ^{1/2})	Local Stack Velocity (V _s)	Cumulative Meter Volume (V _m) _{scf}	Cumulative Percent IsoKinetic (%)	Est-Run Meter Volume (V _m) _{scf}
A-1	0.0	0:00:00	938.030	0.740	1.068	1.100	201	248	268	67		76	71	0.0	0.86	54.40	1.659	109.4	39.814
A-2	2.5	0:02:30	939.709	0.800	1.155	1.200	202	246	271	67		78	71	0.0	0.89	56.60	3.231	104.7	38.775
A-3	5.0	0:05:00	941.303	0.740	1.068	1.100	202	245	264	66		79	72	0.0	0.86	54.44	4.907	106.7	39.253
A-4	7.5	0:07:30	943.005	0.640	0.924	1.000	203	245	268	64		79	73	0.0	0.80	50.67	6.378	106.2	38.271
A-5	10.0	0:10:00	944.502	0.650	0.938	1.000	203	246	262	63		79	73	0.0	0.81	51.06	7.861	105.8	37.733
A-6	12.5	0:12:30	946.010	0.600	0.866	0.900	203	246	269	63		79	73	0.0	0.77	49.06	9.229	105.0	36.918
B-1	15.0	0:15:00	947.402	0.600	0.866	0.900	199	239	257	67		78	73	0.0	0.77	48.91	10.613	104.5	36.386
B-2	17.5	0:17:30	948.808	0.740	1.068	1.100	199	233	252	67		79	74	0.0	0.86	54.32	11.793	101.8	35.378
B-3	20.0	0:20:00	950.009	0.800	1.155	1.200	198	238	267	67		80	74	0.0	0.89	56.43	13.168	100.3	35.115
B-4	22.5	0:22:30	951.410	0.750	1.083	1.000	198	234	257	67		81	75	0.0	0.87	54.64	14.433	98.7	34.639
B-5	25.0	0:25:00	952.701	0.700	1.010	1.000	197	238	268	67		81	75	0.0	0.84	52.75	15.711	97.7	34.279
B-6	27.5	0:27:30	954.006	0.640	0.924	1.000	196	237	260	67		81	75	0.0	0.80	50.40	17.081	97.6	34.161
C-1	30.0	0:30:00	955.404	0.600	0.866	0.900	205	235	263	67		80	75	0.0	0.77	49.13	18.557	98.5	34.259
C-2	32.5	0:32:30	956.910	1.200	1.732	1.700	204	240	268	67		82	76	0.0	1.10	69.43	20.220	97.5	34.662
C-3	35.0	0:35:00	958.608	1.200	1.732	1.700	202	235	268	67		83	76	0.0	1.10	69.32	22.076	97.4	35.321
C-4	37.5	0:37:30	960.505	1.200	1.732	1.700	202	235	266	67		83	76	0.0	1.10	69.32	24.033	97.7	36.049
C-5	40.0	0:40:00	962.505	1.300	1.876	1.800	202	235	266	67		83	77	0.0	1.14	72.15	26.085	98.1	36.826
C-6	42.5	0:42:30	964.604	1.200	1.732	1.700	202	236	268	67		83	77	0.0	1.10	69.32	28.140	98.7	37.520
D-1	45.0	0:45:00	966.706	0.900	1.299	1.300	209	240	267	68		82	76	0.0	0.95	60.35	30.002	99.5	37.897
D-2	47.5	0:47:30	968.609	1.000	1.443	1.400	212	239	273	67		82	77	0.0	1.00	63.76	31.758	99.5	38.110
D-3	50.0	0:50:00	970.405	1.100	1.588	1.600	211	239	269	67		83	77	0.0	1.05	66.82	33.418	99.1	38.192
D-4	52.5	0:52:30	972.103	1.200	1.732	1.700	212	240	268	67		84	77	0.0	1.10	69.85	35.273	99.0	38.480
D-5	55.0	0:55:00	974.003	1.200	1.732	1.700	210	237	265	67		85	77	0.0	1.10	69.74	37.227	99.1	38.845
D-6	57.5	0:57:30	976.005	1.100	1.588	1.600	209	237	269	68		85	77	0.0	1.05	66.72	39.272	99.8	39.272
Last Pt	60.0	1:00:00	978.102																
Final Val	60.0	1:00:00	978.102											Max Vac	0.0	Final Values	39.272	99.8	
Average Values				0.90		1.30	203	239	266	67		81	75		0.94	59.57			

CTM 027 (AMMONIA) ISOKINETIC SAMPLING DATA

Plant Name West County Energy Center	Date 11/15/2009
Sampling Location Loxahatchee, Florida	Project # bv-10-westcounty.fl-comp#1
Operator Pandu Satvika	Run # 2A-2
# of Points Across 6	# of Ports Used 4

Leak Checks					
Train	Pre	0	ft3/min @	15	in Hg
OK? <input checked="" type="checkbox"/>	Post	0	ft3/min @	15	in Hg
Pitot	Pre	7	in. H ₂ O for	30	sec
OK? <input checked="" type="checkbox"/>	Post	7	in. H ₂ O for	30	sec
Orsat	OK? <input checked="" type="checkbox"/>				

Sampling Equipment		
Meter #	samp-cp-0012	
Meterbox Cal. Factor	(Y)	0.992
Nozzle #		
Average Nozzle Diameter	(D _{av})	0.2150 in
Rec. Nozzle Diameter	(D _n)	0.2106 in
Probe # / Length	7 / 144 in	
Liner Material	inconel	
Sample Case / Oven #		
Impinger Case #		

Ideal Nozzle Diameter and IsoKinetic Factor Setup		
Pitot Tube Coefficient	(C _p)	0.84
Avg Stack Temp	(t _s)	210 oF
Avg Gas Meter Temp	(t _g)	83
DH @ 0.75 SCFM	(ΔH@)	1.60 in H ₂ O
Avg Pitot Tube Diff. Pressure	(ΔP _{pit})	0.96 in H ₂ O
Stack Moisture Content	(B _w)	8.98 %
Stack Dry Molecular Weight	(M _d)	29.25 lb/lb-mole
Estimated Orifice Flow Rate	(Q _o)	0.658 acfm
DP to DH IsoKinetic Factor	(K)	1.42

Nozzle Measurements			
Pre	0.215	0.215	PASS
Post	0.215	0.215	PASS

Pressures		
Barometric Pressure	(P _b)	30.01 in Hg
Stack Static Pressure	(P _{stac})	0.75 in H ₂ O
Absolute Stack Pressure	(P _a)	30.07 in Hg
Absolute Meter Pressure	(P _m)	30.13 in Hg

Run Time	
Start	11:55
End	13:01

Weights	Imp 1	Imp 2	Imp 3	Imp 4	Imp 5	Imp 6	Imp 7	Imp 8
Pre	724.80	689.10	622.30	921.10				
Post	788.40	699.20	625.50	930.03				

Wash Volume	H ₂ O	MeCl	Filter #
	50.0	ml	
		ml	

Traverse Point #	Sampling Time (θ)	Timer Time	Dry Gas Meter Reading (V _m)	Velocity Head (Δp)	Desired Orifice ΔH (ΔH _d)	Actual Orifice ΔH (ΔH _a)	Stack Temp (t _s)	Probe Temp	Filter Temp	Impinger Exit Temp	Aux Temp	Meter Inlet Temp (t _m)	Meter Outlet Temp (t _{ms})	Pump Vacuum	Square Root ΔP (ΔP ^{1/2})	Local Stack Velocity (v _s)	Cumulative Meter Volume (V _m) _{tot}	Cumulative Percent IsoKinetic (%)	Est-Run Meter Volume (V _m) _{est}
	min	hh:mm:ss	ft ³	in H ₂ O	in H ₂ O	in H ₂ O	oF	oF	oF	oF	oF	oF	oF	in Hg	(in H ₂ O) ^{1/2}	ft/sec	scf	%	scf
A-1	0.0	0:00:00	981.160	0.940	1.335	1.400	215	237	254	68		82	77	1.0	0.97	62.08	1.700	101.3	40.804
A-2	2.5	0:02:30	982.900	1.000	1.420	1.400	215	240	243	68		85	77	1.0	1.00	64.03	3.454	101.3	41.449
A-3	5.0	0:05:00	984.700	1.300	1.846	1.900	216	236	245	57		85	77	3.0	1.14	73.06	5.405	100.4	43.242
A-4	7.5	0:07:30	986.700	1.300	1.846	1.900	215	226	246	55		84	78	2.0	1.14	73.01	7.405	100.7	44.432
A-5	10.0	0:10:00	988.750	1.300	1.846	1.900	215	240	248	55		85	78	3.0	1.14	73.01	9.355	100.3	44.902
A-6	12.5	0:12:30	990.750	1.200	1.704	1.700	213	239	249	55		85	79	2.0	1.10	70.04	11.321	100.8	45.283
B-1	15.0	0:15:00	992.770	0.900	1.278	1.300	209	238	250	60		84	78	1.0	0.95	60.47	13.006	101.0	44.592
B-2	17.5	0:17:30	994.500	1.100	1.562	1.600	208	239	247	56		86	79	1.0	1.05	66.81	14.756	100.4	44.268
B-3	20.0	0:20:00	996.300	1.200	1.704	1.700	207	239	249	57		86	79	2.0	1.10	69.73	16.652	100.3	44.406
B-4	22.5	0:22:30	998.250	1.200	1.704	1.700	205	234	245	57		87	79	2.0	1.10	69.62	18.547	100.2	44.512
B-5	25.0	0:25:00	1000.200	1.300	1.846	1.900	205	236	245	58		87	80	3.0	1.14	72.46	20.489	99.9	44.703
B-6	27.5	0:27:30	1002.200	1.200	1.704	1.700	205	233	247	58		87	80	3.0	1.10	69.62	22.459	100.2	44.919
C-1	30.0	0:30:00	1004.230	0.700	0.994	1.000	207	236	234	62		86	81	0.0	0.84	53.25	24.078	100.9	44.451
C-2	32.5	0:32:30	1005.900	0.800	1.136	1.200	205	239	248	62		86	81	0.0	0.89	56.84	25.677	101.0	44.018
C-3	35.0	0:35:00	1007.550	0.850	1.207	1.200	204	238	243	66		87	81	0.0	0.92	58.55	27.236	100.8	43.578
C-4	37.5	0:37:30	1009.160	0.820	1.164	1.100	204	239	246	67		87	81	0.0	0.91	57.51	28.776	100.6	43.164
C-5	40.0	0:40:00	1010.750	0.800	1.136	1.200	203	243	244	67		87	81	0.0	0.89	56.76	30.423	100.9	42.950
C-6	42.5	0:42:30	1012.450	0.700	0.994	1.000	203	237	246	67		87	81	0.0	0.84	53.09	31.923	101.0	42.564
D-1	45.0	0:45:00	1014.000	0.750	1.065	1.100	215	246	246	68		86	80	0.0	0.87	55.45	33.482	101.1	42.293
D-2	47.5	0:47:30	1015.607	0.740	1.051	1.100	217	244	247	65		87	81	0.0	0.86	55.16	34.930	100.9	41.916
D-3	50.0	0:50:00	1017.102	0.830	1.179	1.200	217	245	248	64		87	81	0.0	0.91	58.42	36.486	100.8	41.699
D-4	52.5	0:52:30	1018.709	0.790	1.122	1.200	215	248	248	65		87	81	0.0	0.89	56.91	37.935	100.6	41.384
D-5	55.0	0:55:00	1020.205	0.750	1.065	1.100	215	247	246	65		86	81	0.0	0.87	55.45	39.485	100.7	41.202
D-6	57.5	0:57:30	1021.804	0.630	0.895	1.000	214	246	247	65		87	81	0.0	0.79	50.79	41.038	101.2	41.038
Last Pt	60.0	1:00:00	1023.408																
Final Val	60.0	1:00:00	1023.408																
Average Values				0.96		1.40	210	239	246	62		86	80	3.0	0.97	62.17	41.038	101.2	

CTM 027 (AMMONIA) ISOKINETIC SAMPLING DATA

Plant Name	West County Energy Center	Date	11/15/2009
Sampling Location	Loxahatchee, Florida	Project #	bv-10-westcounty.fl-comp#1
Operator	Pandu Saitvika	Run #	2A-3
# of Points Across	6	# of Ports Used	4

Ideal Nozzle Diameter and IsoKinetic Factor Setup		
Pitot Tube Coefficient	(C _p)	0.84
Avg Stack Temp	(t _s)	211 oF
Avg Gas Meter Temp	(t _m)	84
DH @ 0.75 SCFM	(ΔH@)	1.60 in H2O
Avg Pitot Tube Diff. Pressure	(ΔP _{pit})	0.97 in H2O
Stack Moisture Content	(B _{wt})	9.05 %
Stack Dry Molecular Weight	(M _d)	29.24 lb/lb-mole
Estimated Orifice Flow Rate	(Q _o)	0.704 acfm
DP to DH Isokinetic Factor	(K)	1.42

Leak Checks				
Train	Pre	0	R3/min @	15 in Hg
OK?	Post	0	R3/min @	15 in Hg
Pitot	Pre	8	in. H ₂ O for	15 sec
OK?	Post	8	in. H ₂ O for	15 sec
Orsat	OK?			

Sampling Equipment	
Meter #	samp-cp-0012
Meterbox Cal. Factor	(γ) 0.992
Nozzle #	
Average Nozzle Diameter	(D _{av}) 0.2150 in
Rec. Nozzle Diameter	(D _n) 0.2158 in
Probe # / Length	1 / 144 in
Liner Material	inconel
Sample Case / Oven #	
Impinger Case #	

Pressures		
Barometric Pressure	(P _b)	29.99 in Hg
Stack Static Pressure	(P _{stg})	0.75 in H2O
Absolute Stack Pressure	(P _a)	30.05 in Hg
Absolute Meter Pressure	(P _m)	30.11 in Hg

Nozzle Measurements			
Pre	0.215	0.215	PASS
Post	0.215	0.215	PASS

Run Time	
Start	13:12
End	14:20

Weights	Imp 1	Imp 2	Imp 3	Imp 4	Imp 5	Imp 6	Imp 7	Imp 8
Pre	740.20	736.50	615.10	912.70				
Post	805.30	747.00	616.90	921.70				

Wash Volume	H ₂ O	MeCl	50.0 ml	Filter #

Traverse Point #	Sampling Time (θ)	Timer Time	Dry Gas Meter Reading (V _m)	Velocity Head (Δp)	Desired Orifice ΔH (ΔH _d)	Actual Orifice ΔH (ΔH _a)	Stack Temp (t _s)	Probe Temp	Filter Temp	Impinger Exit Temp	Aux Temp	Meter Inlet Temp (t _m)	Meter Outlet Temp (t _m)	Pump Vacuum	Square Root ΔP (ΔP ^{1/2})	Local Stack Velocity (V _s)	Cumulative Meter Volume (V _m) _{tot}	Cumulative Percent IsoKinetic (%)	Est-Run Meter Volume (V _m) _{est}
	min	hh:mm:ss	ft ³	in H2O	in H2O	in H2O	oF	oF	oF	oF	oF	oF	oF	in Hg	(in H2O) ^{1/2}	ft/sec	scf	%	scf
A-1	0.0	0:00:00	24.100	0.750	1.064	1.100	213	242	244	68		85	81	0.0	0.87	55.41	1.551	103.4	37.227
A-2	2.5	0:02:30	25.700	0.750	1.064	1.100	216	243	247	66		87	81	0.0	0.87	55.53	3.148	105.0	37.774
A-3	5.0	0:05:00	27.350	0.800	1.135	1.200	215	246	248	65		88	81	0.0	0.89	57.31	4.743	104.4	37.947
A-4	7.5	0:07:30	29.000	0.800	1.135	1.200	215	248	247	67		88	82	0.0	0.89	57.31	6.241	102.8	37.446
A-5	10.0	0:10:00	30.550	0.800	1.135	1.200	214	250	250	66		88	82	0.0	0.89	57.27	7.787	102.0	37.376
A-6	12.5	0:12:30	32.150	0.700	0.993	1.000	214	233	240	66		88	82	0.0	0.84	53.57	9.284	102.2	37.134
B-1	15.0	0:15:00	33.700	0.650	0.922	1.000	207	223	235	68		87	82	0.0	0.81	51.35	10.733	102.4	36.800
B-2	17.5	0:17:30	35.200	0.900	1.277	1.300	207	224	228	65		88	82	0.0	0.95	60.42	12.473	102.8	37.418
B-3	20.0	0:20:00	37.000	0.800	1.135	1.200	206	224	233	62		88	82	0.0	0.89	56.93	13.922	101.8	37.125
B-4	22.5	0:22:30	38.500	0.800	1.135	1.200	205	224	240	61		88	84	0.0	0.89	56.88	15.465	101.5	37.116
B-5	25.0	0:25:00	40.100	0.700	0.993	1.000	205	229	237	62		88	83	0.0	0.84	53.21	16.912	101.3	36.899
B-6	27.5	0:27:30	41.600	0.700	0.993	1.000	204	234	236	62		88	82	0.0	0.84	53.17	18.457	101.7	36.915
C-1	30.0	0:30:00	43.200	0.900	1.277	1.300	210	228	237	64		87	82	0.0	0.95	60.56	20.102	101.5	37.111
C-2	32.5	0:32:30	44.900	1.100	1.561	1.600	209	230	242	63		88	82	0.0	1.05	66.90	21.842	101.1	37.444
C-3	35.0	0:35:00	46.700	1.200	1.702	1.800	208	229	235	63		88	82	0.0	1.10	69.82	23.681	100.7	37.889
C-4	37.5	0:37:30	48.600	1.300	1.844	1.900	206	226	240	63		88	82	0.0	1.14	72.57	25.616	100.5	38.424
C-5	40.0	0:40:00	50.600	1.300	1.844	1.900	206	225	239	63		88	82	0.0	1.14	72.57	27.552	100.2	38.897
C-6	42.5	0:42:30	52.600	1.200	1.702	1.800	205	227	236	63		87	83	0.0	1.10	69.67	29.526	100.5	39.368
D-1	45.0	0:45:00	54.640	0.950	1.348	1.400	216	228	237	67		85	80	0.0	0.97	62.50	31.235	100.5	39.454
D-2	47.5	0:47:30	56.400	1.100	1.561	1.600	216	228	240	64		86	81	0.0	1.05	67.25	33.029	100.4	39.635
D-3	50.0	0:50:00	58.250	1.200	1.702	1.800	217	227	238	65		86	81	0.0	1.10	70.29	34.969	100.5	39.965
D-4	52.5	0:52:30	60.250	1.300	1.844	1.900	215	226	235	65		86	81	0.0	1.14	73.11	36.967	100.6	40.327
D-5	55.0	0:55:00	62.308	1.300	1.844	1.900	215	226	236	65		86	81	0.0	1.14	73.05	38.905	100.5	40.596
D-6	57.5	0:57:30	64.305	1.200	1.702	1.800	214	224	235	66		86	81	0.0	1.10	70.14	40.947	100.8	40.947
Last Pt	60.0	1:00:00	66.410																
Final Val	60.0	1:00:00	66.410											Max Vac	0.0	Final Values	40.947	100.8	
Average Values				0.967		1.425	211	231	239	65		87	82		0.98	62.37			

CTM 027 (AMMONIA) - SAMPLE RECOVERY AND INTEGRITY DATA SHEET

Plant Name	West County Energy Center	Date	11/15/09
Sampling Location	Loxahatchee, Florida	Project #	bv-10-westcounty.fl-comp#1
Operator	Pandu Sattvika	Acetone Lot Number	N/A

Run History Data				
Run Number	2A-1	2A-2	2A-3	
Run Start Time	10:26	11:55	13:12	(hh:mm)
Run Stop Time	11:34	13:01	14:20	(hh:mm)
Train Prepared By	AS	AS	AS	
Train Recovered By	AS	AS	AS	
Recovery Date	11/15/2009	11/15/2009	11/15/2009	(mm/dd/yy)



Moisture Content Data					
Impingers 1, 2, and 3 - Liquid Volume					
Final Volume	(V _f)	2175.1	2116.9	2173.1	ml
Initial Volume	(V _i)	2109.7	2039.9	2095.6	ml
Net Volume	(V _n)	65.4	77.0	77.5	ml
Comments					
Impinger 4 - Silica Gel Weight					
Final Weight	(W _f)	954.0	930.0	921.7	g
Initial Weight	(W _i)	945.5	921.1	912.7	g
Net Weight	(W _n)	8.5	8.9	9.0	g
Comments					
Total Water Collected					
Total Volume	(V _c)	73.9	86.0	86.6	ml

Ammonia Sample Log-In Sheet

Lab Tech: Albert Septiano
 Project: bv-10-westcounty.fl-comp#1
 Collected by: Albert Septiano
 Date Received: 11/15/2009



BLANKS

Filter

AHI Lab #	Sample ID	Sample Source Description	Run #	Contents	Sample Date	Comments	Volume (ml)
91115-B	Blank			H ₂ SO ₄ , H ₂ O	11/15/2009		100

SAMPLES

AHI Lab #	Sample ID	Sample Source Description	Run #	Contents	Sample Date	Comments	Volume (ml)
91115-01	U2A-R1-FH	Unit 2A Run 1 Impinger 1	1	H ₂ SO ₄ , H ₂ O	11/15/2009		210
91115-02	U2A-R1-BH	Unit 2A Run 1 Impinger 2	1	H ₂ SO ₄ , H ₂ O	11/15/2009		200
91115-03	U2A-R2-FH	Unit 2A Run 2 Impinger 1	2	H ₂ SO ₄ , H ₂ O	11/15/2009		220
91115-04	U2A-R2-BH	Unit 2A Run 2 Impinger 2	2	H ₂ SO ₄ , H ₂ O	11/15/2009		220
91115-05	U2A-R3-FH	Unit 2A Run 3 Impinger 1	3	H ₂ SO ₄ , H ₂ O	11/15/2009		230
91115-06	U2A-R3-BH	Unit 2A Run 3 Impinger 2	3	H ₂ SO ₄ , H ₂ O	11/15/2009		210

bv-10-westcounty#1-U2A-NH3 Analysis NDB

Ammonia Sample Measurement

Lab Tech:	Albert Septiano
Project:	bv-10-westcounty.fl-comp#1
Date Analyzed:	11/15/2009
Time Analyzed:	2:45 PM
Analysis Method	350.3



AIR HYGIENE

Calibration Data		
Concentration (ppm)	Pre-Cal (ppm)	Pre-Cal (mV)
0.0	0.0	95.1
1.0	1.0	-7.6
5.0	5.0	-47.0
10.0	10.0	-63.7
20.0	20.0	-80.8
Slope		
Linearity	1.0000	N/A

Sample ID	Sample Amt Used (ml)	ISA/pH Volume (ml)	Meter Reading (mg/L)	Time Analyzed (hh:mm:ss)	Dilution Factor	Sample Volume	MQL (mg/L)	PQL (mg/L)	Final Conc. (mg/L)
91115-B	100.0	1.0	0.00	15:15:00	1.0	100.0	0.10	0.1	BPQL
91115-01	100.0	1.0	8.26	15:24:00	1.0	210.0	0.10	0.1	8.3
91115-02	100.0	1.0	0.11	15:29:00	1.0	200.0	0.10	0.1	0.1
91115-03	100.0	1.0	7.72	15:33:00	1.0	220.0	0.10	0.1	7.7
91115-04	100.0	1.0	0.06	15:38:00	1.0	220.0	0.10	0.1	BPQL
91115-05	100.0	1.0	7.72	15:43:00	1.0	230.0	0.10	0.1	7.7
91115-06	100.0	1.0	0.11	15:48:00	1.0	210.0	0.10	0.1	0.1

bv-10-westcounty#1-U2A-NH3 Analysis NDB



Ammonia Analysis

Project Name: bv-10-westcounty.fl-comp#1
Date Received: 11/15/2009

AHI Lab No.: 91115-B
Sample ID: Blank
Sampling Date: 11/15/2009

Test Requested	Method Parameter	Prep Info	Result	PQL*	Analysis Date
Ammonia Nitrogen	EPA 350.3 Ammonia	N/A	BPQL	0.10	11/15/09 15:15
Volume	Volume in ml	N/A	100	N/A	11/15/09 14:45

AHI Lab No.: 91115-01
Sample ID: U2A-R1-FH
Sampling Date: 11/15/2009

Test Requested	Method Parameter	Prep Info	Result	PQL*	Analysis Date
Ammonia Nitrogen	EPA 350.3 Ammonia	N/A	8.26	0.10	11/15/09 15:24
Volume	Volume in ml	N/A	210	N/A	11/15/09 14:45

AHI Lab No.: 91115-02
Sample ID: U2A-R1-BH
Sampling Date: 11/15/2009

Test Requested	Method Parameter	Prep Info	Result	PQL*	Analysis Date
Ammonia Nitrogen	EPA 350.3 Ammonia	N/A	0.11	0.10	11/15/09 15:29
Volume	Volume in ml	N/A	200	N/A	11/15/09 14:45

AHI Lab No.: 91115-03
Sample ID: U2A-R2-FH
Sampling Date: 11/15/2009

Test Requested	Method Parameter	Prep Info	Result	PQL*	Analysis Date
Ammonia Nitrogen	EPA 350.3 Ammonia	N/A	7.72	0.10	11/15/09 15:33
Volume	Volume in ml	N/A	220	N/A	11/15/09 14:45

AHI Lab No.: 91115-04
Sample ID: U2A-R2-BH
Sampling Date: 11/15/2009

Test Requested	Method Parameter	Prep Info	Result	PQL*	Analysis Date
Ammonia Nitrogen	EPA 350.3 Ammonia	N/A	BPQL	0.10	11/15/09 15:38
Volume	Volume in ml	N/A	220	N/A	11/15/09 14:45

AHI Lab No.: 91115-05
Sample ID: U2A-R3-FH
Sampling Date: 11/15/2009

Test Requested	Method Parameter	Prep Info	Result	PQL*	Analysis Date
Ammonia Nitrogen	EPA 350.3 Ammonia	N/A	7.72	0.10	11/15/09 15:43
Volume	Volume in ml	N/A	230	N/A	11/15/09 14:45

AHI Lab No.: 91115-06
Sample ID: U2A-R3-BH
Sampling Date: 11/15/2009

Test Requested	Method Parameter	Prep Info	Result	PQL*	Analysis Date
Ammonia Nitrogen	EPA 350.3 Ammonia	N/A	0.11	0.10	11/15/09 15:48
Volume	Volume in ml	N/A	210	N/A	11/15/09 14:45

TEST RESULTS

**NH₃ Emissions
Base Load with Duct Burners**



Air Hygiene International, Inc.
5634 S. 122nd East Ave, Suite F
Tulsa, Oklahoma 74146
(888) 461-8778
www.airhygiene.com

AMMONIA ANALYSIS

PARAMETER	UNITS	RUN						BLANK
		1		2		3		
		Front (f)	Back (b)	Front (f)	Back (b)	Front (f)	Back (b)	
Sample Number		U2A-R1-FH	U2A-R1-BH	U2A-R2-FH	U2A-R2-BH	U2A-R3-FH	U2A-R3-BH	Blank
Lab Log Number		91116-01	91116-02	91116-03	91116-04	91116-05	91116-06	91116-B
Results (C _f or C _b)	(mg/L)	7.0500	0.1000	7.8000	0.1000	6.8300	0.1000	0.1000
Practical Quantitation Limit (PQL)	(mg/L)	0.100	0.100	0.100	0.100	0.100	0.100	0.100
Sample Volume (V _{NH3})	(ml)	240	220	240	240	250	240	100
DGM Volume (V _m) _{dscf}	(dscf)	37.78		39.93		40.67		40.67
DGM Volume (V _m) _{dstdL}	(L _{dstd})	1069.70		1130.82		1151.65		1151.65
Sum of NH ₃ Ion (N)	(mg/L)	7.0500	0.1000	7.8000	0.1000	6.8300	0.1000	0.1000
Total Sample Volume (S)	(ml)	240	220	240	240	250	240	100
Volume of NH ₃ (V _a)	(L)	0.00223	0.00003	0.00246	0.00003	0.00225	0.00003	0.00001
O ₂ Concentration	(%)	12.36		12.40		12.44		N/A
NH ₃ Concentration (C _{NH3})	(ppmvd)	2.11		2.21		1.98		0.011
C _{NH3} @ 15% O ₂	(ppmvd)	1.46		1.53		1.38		N/A

Equations & Constants:

Example Using Data from the 1st run

DGM Volume (L_{dstd})

$$(V_m)_{dstdL} (L_{dstd}) = (V_m)_{dscf} \times 28.31685$$

$$(V_m)_{dstdL} (L_{dstd}) = 37.78 \text{ dscf} \times 28.31685 \text{ L/ft}^3 = 1069.70 \text{ L}_{dstd}$$

(V_m)_{dscf} = Volume of gas sample measured by the DGM, corrected to standard conditions.

C_f = Concentration of NH₃ ion in the front half of train (main catch)

C_b = Concentration of NH₃ ion in the back half of train (breakthrough)

MW = molecular weight (ref. ASTM D 3588)

Volume of NH₃ (L)

$$V_a(L) = \frac{N \times S}{MW \times 1000} \times 22.4$$

$$V_a(L) = \frac{7.05 \text{ mg}}{L} \times \frac{240 \text{ ml}}{1000 \text{ ml}} \times \frac{22.4 \text{ L ideal gas}}{\text{g-mol substance}} \times \frac{\text{g-mol NH}_3}{17.03 \text{ g}} \times \frac{\text{g}}{1000 \text{ mg}} = 0.00223 \text{ L}$$

NH₃ Concentration (ppmvd)

$$C_{NH3}(\text{ppmvd}) = \frac{V_{a(\text{front})} + V_{a(\text{back})}}{(V_m)_{dstdL}} \times 10^6$$

$$C_{NH3}(\text{ppmvd}) = \frac{0.00223 \text{ L} + 0.00003 \text{ L}}{1069.70 \text{ L}_{dstd}} \times \frac{10^6 \text{ parts}}{1 \text{ part}} = 2.108 \text{ ppmvd}$$

22.4 = liters of ideal gas per mol of substance at 0°C and 1 atm (ref. Civil Engineering Reference Manual, 7th ed. - Michael R. Lindeburg)

CTM 027 (AMMONIA) - RESULTS

Plant Name	West County Energy Center	Date	11/16/09
Sampling Location	Loxahatchee, Florida	Project #	bv-10-westcounty.fl-comp#1
Operator	Pandu Sattvika	Stack Type	Circular

Historical Data						
Run Number		2A-1	2A-2	2A-3	Average	
Run Start Time		10:37	11:48	13:00		hh:mm
Run Stop Time		11:40	12:53	14:05		hh:mm
Meter Calibration Factor	(Y)	0.992	0.992	0.992		
Pitot Tube Coefficient	(C _p)	0.840	0.840	0.840		
Average Nozzle Diameter	(D _{na})	0.215	0.215	0.215		in
Stack Test Data						
Initial Meter Volume	(V _m) _i	120.900	159.409	200.602		ft ³
Final Meter Volume	(V _m) _f	159.109	200.304	242.370		ft ³
Total Meter Volume	(V _m)	38.209	40.895	41.768	40.291	ft ³
Total Sampling Time	(Θ)	60.0	60.0	60.0	60.0	min
Average Meter Temperature	(t _m) _{avg}	73.0	79.7	80.8	77.8	oF
Average Stack Temperature	(t _s) _{avg}	209.8	208.8	210.9	209.8	oF
Barometric Pressure	(P _b)	30.01	30.00	29.97	29.99	in Hg
Stack Static Pressure	(P _{static})	0.75	0.75	0.75	0.75	in H ₂ O
Absolute Stack Pressure	(P _s)	30.07	30.06	30.03	30.05	in Hg
Average Orifice Pressure Drop	(ΔH) _{avg}	1.31	1.35	1.45	1.37	in H ₂ O
Absolute Meter Pressure	(P _m)	30.13	30.12	30.09	30.11	in Hg
Avg Square Root Pitot Pressure	(ΔP ^{1/2}) _{avg}	0.93	0.97	0.98	0.96	(in H ₂ O) ^{1/2}
Moisture Content Data						
Impingers 1-3 Water Volume Gain	(V _w)	81.5	84.2	83.1	82.9	ml
Impinger 4 Silica Gel Weight Gain	(W _w)	8.5	7.6	8.8	8.3	g
Total Water Volume Collected	(V _w) _c	90.1	91.8	92.0	91.3	ml
Standard Water Vapor Volume	(V _w) _{std}	4.239	4.319	4.329	4.296	scf
Standard Meter Volume	(V _m) _{std}	37.776	39.934	40.670	39.460	dscf
Calculated Stack Moisture	(B _{ws(calc)})	10.09	9.76	9.62	9.82	%
Saturated Stack Moisture	(B _{ws(svp)})	95.3	93.3	97.5	95.3	%
Reported Stack Moisture Content	(B _{ws})	10.09	9.76	9.62	9.82	%
Gas Analysis Data						
Carbon Dioxide Percentage	(%CO ₂)	4.9	4.9	4.9	4.9	%
Oxygen Percentage	(%O ₂)	12.4	12.4	12.4	12.4	%
Carbon Monoxide Percentage	(%CO)	0.0	0.0	0.0	0.0	%
Nitrogen Percentage	(%N ₂)	82.8	82.7	82.7	82.7	%
Dry Gas Molecular Weight	(M _d)	29.27	29.27	29.28	29.27	lb/lb-mole
Wet Stack Gas Molecular Weight	(M _w)	28.13	28.17	28.19	28.17	lb/lb-mole
Calculated Fuel Factor	(F _d)	1.761	1.749	1.734	1.748	
Fuel F-Factor	(F _w)	8648	8648	8648	8648	dscf/MMBtu
Percent Excess Air	(%EA)	130.2	131.3	132.5	131.3	%
Volumetric Flow Rate Data						
Average Stack Gas Velocity	(v _s)	59.45	62.14	62.70	61.43	ft/sec
Stack Cross-Sectional Area	(A _s)	376.17	376.17	376.17	376.17	ft ²
Actual Stack Flow Rate	(Q _{aw})	1,341,796	1,402,471	1,415,260	1,386,509	acfm
Wet Standard Stack Flow Rate	(Q _{sw})	63,769	66,738	67,062	65,856	wkscfh
Dry Standard Stack Flow Rate	(Q _{sd})	955,595	1,003,725	1,010,183	989,834	dscfm
Percent of Isokinetic Rate	(I)	99.1	99.6	100.8	99.8	%
Ammonia Rate Data						
Stack Ammonia Concentration	(C _{NH3})	2.11	2.21	1.98	2.10	ppm
	(C _{NH3})	1.46	1.53	1.38	1.46	ppm@15%O ₂

CTM 027 (AMMONIA) SOURCE SAMPLING TITLE PAGE

ALARMS exist and have been acknowledged.

Source Information				
Plant Name	West County Energy Center			
Sampling Location	Loxahatchee, Florida			
Fuel or Source Type	Gas, Natural			
Fuel F-Factor	8648	8648	8648	

Test Information				
Starting Test Date		11/16/09		
Project #		bv-10-westcounty.fl-comp#1		
Operator		Pandu Sattvika		
Standard Temperature		68	oF	
Standard Pressure		29.92	in Hg	
Minimum Required Sample Vol.	indust. spec.	35	scf	
Run Duration	chk Subpart	60	minutes	
Unit Number		2A		
Load	% or w/DB	Base with DB		
Base Run Number		2A		
Number of Ports Available		4		
Number of Ports Used		4		
Port Inside Diameter		5.00	in	
Circular Stack				

Test Equipment Information					
Run		1	2	3	
Meter Box Number	from ACS	samp-cp-0012	samp-cp-0012	samp-cp-0012	
Meter Calibration Factor	(Y)	0.992	0.992	0.992	
Orifice Meter Coefficient	($\Delta H @$)	1.597	1.597	1.597	in H ₂ O
Pitot Tube Coefficient	(C _p)	0.840	0.840	0.840	
Nozzle Diameter	(D _n)	0.215	0.215	0.215	in
Probe Length		144.00	144.00	144.00	in
(SS, Glass) Liner Material	from list	inconel	inconel	inconel	

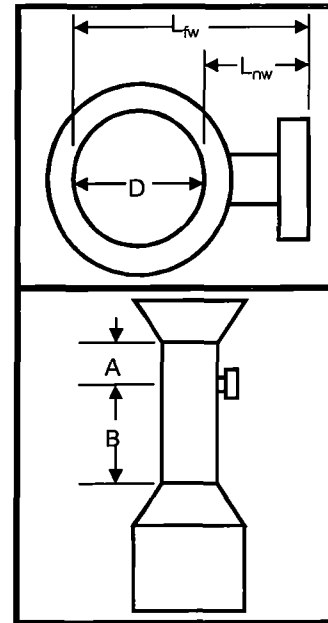
Testing Company Information	
Company Name	Air Hygiene International, Inc. (Tulsa, Oklahoma)
Address	5634 S. 122nd East Ave., Suite F
City, State Country Zip	Tulsa, Oklahoma 74146
Project Manager	Pandu Sattvika
Phone Number	(918) 307-8865
Fax Number	(918) 307-9131

METHOD 1 - SAMPLE AND VELOCITY TRAVERSES FOR CIRCULAR SOURCES

Plant Name	West County Energy Center	Date	11/16/09
Sampling Location	Loxahatchee, Florida	Project #	bv-10-westcounty.fl-comp#1
Operator	Pandu Satvika	# of Ports Available	4
Stack Type	Circular	# of Ports Used	4
Stack Size	Large	Port Inside Diameter	5.00

Circular Stack or Duct Diameter			
Distance to Far Wall of Stack	(L _{fw})	281.75	in
Distance to Near Wall of Stack	(L _{nw})	19.13	in
Diameter of Stack	(D)	262.62	in
Area of Stack	(A _s)	376.17	ft ²

Distance from Port to Disturbances			
Distance Upstream	(A)	144.00	in
Diameters Upstream	(A _D)	0.55	diameters
Distance Downstream	(B)	531.75	in
Diameters Downstream	(B _D)	2.02	diameters



Number of Traverse Points Required			
Diameters to Flow Disturbance		Minimum Number of ¹ Traverse Points	
Down Stream	Up Stream	Particulate Points	Velocity Points
2.00-4.99	0.50-1.24	24	16
5.00-5.99	1.25-1.49	20	16
6.00-6.99	1.50-1.74	16	12
7.00-7.99	1.75-1.99	12	12
>= 8.00	>=2.00	8 or 12 ²	8 or 12 ²
Upstream Spec		24	16
Downstream Spec		24	16
Traverse Pts Required		24	16

¹ Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.
² 8 for Circular Stacks 12 to 24 inches
 12 for Circular Stacks over 24 inches

Number of Traverse Points Used			
4	Ports by	6	Across
24	Pts Used	24	Required
		Particulate Traverse	

Location of Traverse Points in Circular Stacks									
Traverse Point	(Fraction of Stack Dimension from Inside Wall to Traverse Point)								
Number	Number of Traverse Points Across the Stack								
	2	4	6	8	10	12	14	16	18
1	.146	.067	.044	.032	.026	.021	.018	.016	.014
2	.854	.250	.146	.105	.082	.067	.057	.049	.044
3		.750	.296	.194	.146	.118	.099	.085	.075
4		.933	.704	.323	.226	.177	.146	.125	.109
5			.854	.677	.342	.250	.201	.169	.146
6			.956	.806	.658	.356	.269	.220	.188
7				.895	.774	.644	.366	.283	.236
8				.968	.854	.750	.634	.375	.296
9					.918	.823	.731	.625	.382
10					.974	.882	.799	.717	.618
11						.933	.854	.780	.704
12						.979	.901	.831	.764

Traverse Point Locations			
Traverse Point Number	Fraction of Stack Diameter	Distance from Inside Wall	Distance Including Reference Length
		in	in
1	0.02	5 4/8	24 5/8
2	0.07	17 5/8	36 6/8
3	0.12	31	50 1/8
4	0.18	46 4/8	65 5/8
5	0.25	65 5/8	84 6/8
6	0.36	93 4/8	112 5/8
7			
8			
9			
10			
11			
12			

METHOD 2 - DETERMINATION OF STACK GAS VELOCITY AND VOLUMETRIC FLOW RATE

Plant Name	West County Energy Center			Date	11/16/09	
Sampling Location	Loxahatchee, Florida			Project #	bv-10-westcounty.fl-comp#1	
Operator	Pandu Sattvika			# of Ports Used	4	
Stack Type	Circular			Pitot Identification		
Pitot Leak Check	<input checked="checked" type="checkbox"/>	PreTest	<input checked="checked" type="checkbox"/>	PostTest	Pitot Coefficient (C_p) 0.84	

Stack Dimensions				Velocity Traverse Data				
Diameter or Length of Stack	(D)	262.62	in	Run Number		2A-V1		
Width of Stack	(W)		in	Run Time	Velocity	Null	Stack	Local
Area of Stack	(A _s)	376.17	ft ²	Point	Head	Angle	Temp	Velocity
					(Δp)	(N _a)	(t _s)	(v _{s(t)})
					in H ₂ O	deg	oF	ft/sec

Pressures			
Barometric Pressure	(P _b)	29.59	in Hg
Static Pressure	(P _{static})	0.75	in H ₂ O
Absolute Stack Pressure	(P _s)	29.65	in Hg

Stack Gas Composition			
Composition Data:		Estimated Composition	
Carbon Dioxide Concentration	(%CO ₂)	5.0	%
Oxygen Concentration	(%O ₂)	12.5	%
Carbon Monoxide Concentration	(%CO)	0.0	%
Nitrogen Concentration	(%N ₂)	82.5	%
Stack Moisture Content	(B _{ws})	9.000	%
Stack Dry Molecular Weight	(M _d)	29.30	lb/lb-mole
Stack Wet Molecular Weight	(M _s)	28.28	lb/lb-mole

Results			
Avg Stack Gas Velocity	(v _s)	59.7	ft/sec
Avg Stack Dry Std Flow Rate	(Q _{sd})	57,465,569	dscf/hr
Avg Stack Dry Std Flow Rate	(Q _{sd})	957,759	dscf/min
Avg Stack Wet Flow Rate	(Q _{aw})	1,347,584	acf/min
Avg Stack Wet Std Flow Rate	(Q _{sw})	63,148,977	ascf/hr

Stack Cross Section Schematic			

A-1	0.80	-5	211	57.5
A-2	0.85	-5	214	59.4
A-3	0.90	-5	214	61.1
A-4	0.85	-5	214	59.4
A-5	0.80	-5	213	57.5
A-6	0.70	-5	213	53.8
B-1	0.70	0	208	53.6
B-2	0.80	0	206	57.2
B-3	0.90	0	204	60.6
B-4	0.80	0	204	57.2
B-5	0.80	0	203	57.1
B-6	0.60	0	203	49.5
C-1	0.70	0	205	53.5
C-2	0.87	0	211	59.9
C-3	1.00	0	208	64.1
C-4	1.00	0	207	64.0
C-5	1.00	0	206	64.0
C-6	1.00	0	205	64.0
D-1	0.80	0	212	57.5
D-2	1.00	0	216	64.5
D-3	1.00	0	216	64.5
D-4	1.00	0	215	64.4
D-5	1.00	0	215	64.4
D-6	1.00	0	213	64.3
Average	0.87	1	210	
	0.93	= Square roots of Δp		

METHOD 3a - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

Plant Name	West County Energy Center			Date	11/16/09		
Sampling Location	Loxahatchee, Florida			Project #	bv-10-westcounty.fl-comp#1		
Operator	Pandu Sattvika			# of Ports Used	4		
Fuel Type	Gas, Natural	Minimum Fuel Factor	1.600	Maximum Fuel Factor	1.836		
Orsat Leak Check	<input checked="" type="checkbox"/>	PreTest	<input checked="" type="checkbox"/>	PostTest	Orsat Identification		

Gas Analysis Data									
Run Number		2A-1		Run Start Time		10:37	Run Stop Time		11:40
Sample Analysis Time	Carbon Dioxide Conc. (%CO ₂)	Oxygen Conc. (%O ₂)	Carbon Monoxide Conc. (ppmCO)	Carbon Dioxide Conc. (%CO ₂)	Oxygen Conc. (%O ₂)	Carbon Monoxide Conc. (%CO)	Nitrogen Conc. (%N ₂)	Dry Molecular Weight (M _d)	Molecular Weight Deviation (ΔM _d)
hh:mm	percent	percent	ppm	percent	percent	percent	percent	lb/lb-mole	lb/lb-mole
1:03	4.9	12.4	0.5	4.9	12.4	0.0	82.8	29.27	0.00
Results			Averages	4.9	12.4	0.0	82.8	29.27	
Average Calculated Fuel Factor			(F _o) _{avg}	1.761	Molecular Wt Deviation < 0.3?			<input checked="" type="checkbox"/>	
Average Excess Air			(%EA) _{avg}	130.2	percent	Fuel Factor in Handbook Range?			<input checked="" type="checkbox"/>

Gas Analysis Data									
Run Number		2A-2		Run Start Time		11:48	Run Stop Time		12:53
Sample Analysis Time	Carbon Dioxide Conc. (%CO ₂)	Oxygen Conc. (%O ₂)	Carbon Monoxide Conc. (ppmCO)	Carbon Dioxide Conc. (%CO ₂)	Oxygen Conc. (%O ₂)	Carbon Monoxide Conc. (%CO)	Nitrogen Conc. (%N ₂)	Dry Molecular Weight (M _d)	Molecular Weight Deviation (ΔM _d)
hh:mm	percent	percent	ppm	percent	percent	percent	percent	lb/lb-mole	lb/lb-mole
1:05	4.9	12.4	0.5	4.9	12.4	0.0	82.7	29.27	0.00
Results			Averages	4.9	12.4	0.0	82.7	29.27	
Average Calculated Fuel Factor			(F _o) _{avg}	1.749	Molecular Wt Deviation < 0.3?			<input checked="" type="checkbox"/>	
Average Excess Air			(%EA) _{avg}	131.3	percent	Fuel Factor in Handbook Range?			<input checked="" type="checkbox"/>

Gas Analysis Data									
Run Number		2A-3		Run Start Time		13:00	Run Stop Time		14:05
Sample Analysis Time	Carbon Dioxide Conc. (%CO ₂)	Oxygen Conc. (%O ₂)	Carbon Monoxide Conc. (ppmCO)	Carbon Dioxide Conc. (%CO ₂)	Oxygen Conc. (%O ₂)	Carbon Monoxide Conc. (%CO)	Nitrogen Conc. (%N ₂)	Dry Molecular Weight (M _d)	Molecular Weight Deviation (ΔM _d)
hh:mm	percent	percent	ppm	percent	percent	percent	percent	lb/lb-mole	lb/lb-mole
1:05	4.9	12.4	0.1	4.9	12.4	0.0	82.7	29.28	0.00
Results			Averages	4.9	12.4	0.0	82.7	29.28	
Average Calculated Fuel Factor			(F _o) _{avg}	1.734	Molecular Wt Deviation < 0.3?			<input checked="" type="checkbox"/>	
Average Excess Air			(%EA) _{avg}	132.5	percent	Fuel Factor in Handbook Range?			<input checked="" type="checkbox"/>

Fuel Factor Fo		
Fuel Type	Minimum	Maximum
Coal, Anthracite	1.016	1.130
Coal, Lignite	1.016	1.130
Coal, Bituminous	1.083	1.230
Oil, Distillate	1.260	1.413
Oil, Residual	1.210	1.370
Gas, Natural	1.600	1.836
Gas, Propane	1.434	1.586
Gas, Butane	1.405	1.553
Wood	1.000	1.120
Wood Bark	1.003	1.130

METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

Plant Name	West County Energy Center			Date	11/16/09		
Sampling Location	Loxahatchee, Florida			Project #	bv-10-westcounty.fl-comp#1		
Operator	Pandur Sattvika			# of Ports Used	4		
Stack Type	Circular			Meter Box Number	samp-cp-0012		
Train Leak Check	<input checked="" type="checkbox"/>	PreTest	<input checked="" type="checkbox"/>	PostTest	Meter Cal Factor (Y)	0.992	

Moisture Content Data								
Run Number	2A-1		Run Start Time		10:37	Run Stop Time		11:40
Total Meter Volume	(V _m)	38.209	dcf	Barometric Press.		(P _b)	30.01	in Hg
Avg Stack Temp	(t _s) _{avg}	210	oF	Stack Static Press.		(P _{static})	0.75	in H2O
Avg Meter Temp	(t _m) _{avg}	73	oF	Avg Orifice Press.		(ΔH) _{avg}	1.31	in H2O
	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5	Impinger 6	Impinger 7	Impinger 8
	g	g	g	g	g	g	g	g
Contents	H2SO4		H2SO4		Sil Gel			
Final Value	(V _f),(W _f)	787.50	702.00	625.70	919.50			
Initial Value	(V _i),(W _i)	721.30	689.90	622.60	911.00			
Net Value	(V _n),(W _n)	66.2	12.1	3.1	8.5			
Results								
Total Weight	(W _t)	89.90	g	Water Vol Weighed		(V _{wsg(std)})	4.239	scf
Std Meter Volume	(V _{m(std)})	37.780	dscf	Sat. Moisture Content		(B _{ws(svp)})	95.3	%
Calc Moisture Content	(B _{ws(calc)})	10.1	%	Final Moisture Content		(B _{ws})	10.1	%

Moisture Content Data								
Run Number	2A-2		Run Start Time		11:48	Run Stop Time		12:53
Total Meter Volume	(V _m)	40.895	dcf	Barometric Press.		(P _b)	30.00	in Hg
Avg Stack Temp	(t _s) _{avg}	209	oF	Stack Static Press.		(P _{static})	0.75	in H2O
Avg Meter Temp	(t _m) _{avg}	80	oF	Avg Orifice Press.		(ΔH) _{avg}	1.35	in H2O
	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5	Impinger 6	Impinger 7	Impinger 8
	g	g	g	g	g	g	g	g
Contents	H2SO4		H2SO4		Sil Gel			
Final Value	(V _f),(W _f)	812.60	756.50	616.90	911.50			
Initial Value	(V _i),(W _i)	742.80	744.60	614.60	903.90			
Net Value	(V _n),(W _n)	69.8	11.9	2.3	7.6			
Results								
Total Weight	(W _t)	91.60	g	Water Vol Weighed		(V _{wsg(std)})	4.319	scf
Std Meter Volume	(V _{m(std)})	39.927	dscf	Sat. Moisture Content		(B _{ws(svp)})	93.3	%
Calc Moisture Content	(B _{ws})	9.8	%	Final Moisture Content		(B _{ws})	9.8	%

Moisture Content Data								
Run Number	2A-3		Run Start Time		13:00	Run Stop Time		14:05
Total Meter Volume	(V _m)	41.768	dcf	Barometric Press.		(P _b)	29.97	in Hg
Avg Stack Temp	(t _s) _{avg}	211	oF	Stack Static Press.		(P _{static})	0.75	in H2O
Avg Meter Temp	(t _m) _{avg}	81	oF	Avg Orifice Press.		(ΔH) _{avg}	1.45	in H2O
	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Impinger 5	Impinger 6	Impinger 7	Impinger 8
	g	g	g	g	g	g	g	g
Contents	H2SO4		H2SO4		Sil Gel			
Final Value	(V _f),(W _f)	793.10	710.90	623.90	916.90			
Initial Value	(V _i),(W _i)	724.70	698.90	621.30	908.10			
Net Value	(V _n),(W _n)	68.4	12.0	2.6	8.8			
Results								
Total Weight	(W _t)	91.80	g	Water Vol Weighed		(V _{wsg(std)})	4.328	scf
Std Meter Volume	(V _{m(std)})	40.668	dscf	Sat. Moisture Content		(B _{ws(svp)})	97.5	%
Calc Moisture Content	(B _{ws})	9.6	%	Final Moisture Content		(B _{ws})	9.6	%

CTM 027 (AMMONIA) ISOKINETIC SAMPLING DATA

Plant Name	West County Energy Center	Date	11/16/2009
Sampling Location	Loxahatchee, Florida	Project #	bv-10-westcounty.fl-comp#1
Operator	Pandu Saitvika	Run #	2A-1
# of Points Across	6	# of Ports Used	4

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Tube Coefficient	(C _p)	0.84	
Avg Stack Temp	(t _s)	210	oF
Avg Gas Meter Temp	(t _m)	73	
DH @ 0.75 SCFM	(ΔH@)	1.60	in H2O
Avg Pitot Tube Diff. Pressure	(ΔP _{pt})	0.87	in H2O
Stack Moisture Content	(B _w)	10.09	%
Stack Dry Molecular Weight	(M _d)	29.27	lb/lb-mole
Estimated Orifice Flow Rate	(Q _e)	0.750	acfm
DP to DH IsoKinetic Factor	(K)	1.37	

Leak Checks				
Train	Pre	0.015	ft3/min @	15 in Hg
OK?	Post	0	ft3/min @	15 in Hg
Pitot	Pre	0	in. H ₂ O for	30 sec
OK?	Post	0	in. H ₂ O for	30 sec
Orsat	OK?	<input checked="" type="checkbox"/>		

Sampling Equipment			
Meter #	samp-cp-0012		
Meterbox Cal. Factor	(Y)	0.992	
Nozzle #			
Average Nozzle Diameter	(D _{av})	0.2150	in
Rec. Nozzle Diameter	(D _n)	0.2321	in
Probe # / Length	/ 144 in		
Liner Material	inconel		
Sample Case / Oven #			
Impinger Case #			

Pressures			
Barometric Pressure	(P _b)	30.01	in Hg
Stack Static Pressure	(P _{st})	0.75	in H2O
Absolute Stack Pressure	(P _a)	30.07	in Hg
Absolute Meter Pressure	(P _m)	30.13	in Hg

Nozzle Measurements				
Pre	0.215	0.215	0.215	PASS
Post	0.215	0.215	0.215	PASS

Run Time		
Start	10:37	End 11:40

Weights	Imp 1	Imp 2	Imp 3	Imp 4	Imp 5	Imp 6	Imp 7	Imp 8
Pre	721.30	689.90	622.60	911.00				
Post	787.50	702.00	625.70	919.50				

Wash Volume	H ₂ O MeCl	50.0	ml	Filter #

Traverse Point #	Sampling Time (min)	Timer Time (hh:mm:ss)	Dry Gas Meter Reading (V _m)	Velocity Head (ΔP)	Desired Orifice ΔH (ΔH _d)	Actual Orifice ΔH (ΔH _a)	Stack Temp (t _s)	Probe Temp (t _p)	Filter Temp (t _f)	Impinger Exit Temp (t _i)	Aux Temp (t _a)	Meter Inlet Temp (t _m)	Meter Outlet Temp (t _o)	Pump Vacuum (in Hg)	Square Root ΔP (ΔP ^{1/2})	Local Stack Velocity (V _s)	Cumulative Meter Volume (V _m) _{tot}	Cumulative Percent IsoKinetic (%)	Est-Run Meter Volume (V _m) _{est}
A-1	0.0	0:00:00	120.900	0.800	1.093	1.200	211	231	233	68		70	67	0.0	0.89	57.21	1.545	100.5	37.087
A-2	2.5	0:02:30	122.450	0.850	1.161	1.300	214	230	229	65		74	67	1.0	0.92	59.10	3.234	103.8	38.810
A-3	5.0	0:05:00	124.150	0.900	1.230	1.350	214	231	230	62		74	68	1.0	0.95	60.81	4.872	102.8	38.976
A-4	7.5	0:07:30	125.800	0.850	1.161	1.300	214	231	231	61		75	68	1.0	0.92	59.10	6.558	103.8	39.346
A-5	10.0	0:10:00	127.500	0.800	1.093	1.200	213	232	232	60		75	68	1.0	0.89	57.29	8.243	105.0	39.566
A-6	12.5	0:12:30	129.200	0.700	0.956	1.050	213	229	231	60		75	68	1.0	0.84	53.59	9.749	105.0	38.997
B-1	15.0	0:15:00	130.720	0.700	0.956	1.050	208	224	225	63		74	68	0.0	0.84	53.39	11.227	104.7	38.493
B-2	17.5	0:17:30	132.210	0.800	1.093	1.100	206	223	225	61		74	69	0.0	0.89	56.99	12.704	103.6	38.112
B-3	20.0	0:20:00	133.700	0.900	1.230	1.350	204	224	225	61		76	69	0.0	0.95	60.36	14.238	102.5	37.968
B-4	22.5	0:22:30	135.250	0.800	1.093	1.200	204	223	225	62		76	69	0.0	0.89	56.91	15.673	101.7	37.615
B-5	25.0	0:25:00	136.700	0.800	1.093	1.200	203	226	225	61		77	69	0.0	0.89	56.87	17.162	101.2	37.444
B-6	27.5	0:27:30	138.206	0.800	0.820	1.000	203	225	229	62		77	69	0.0	0.77	49.25	18.746	102.6	37.491
C-1	30.0	0:30:00	139.809	0.700	0.956	1.000	205	228	228	66		74	69	0.0	0.84	53.27	20.226	102.6	37.340
C-2	32.5	0:32:30	141.303	0.870	1.189	1.400	211	230	225	65		77	70	0.0	0.93	59.66	21.710	101.9	37.217
C-3	35.0	0:35:00	142.805	1.000	1.366	1.500	208	230	227	65		78	70	0.0	1.00	63.82	23.292	101.2	37.267
C-4	37.5	0:37:30	144.407	1.000	1.366	1.500	207	230	227	65		78	70	0.0	1.00	63.77	24.776	100.3	37.164
C-5	40.0	0:40:00	145.910	1.000	1.366	1.500	206	230	229	65		77	70	0.0	1.00	63.72	26.251	99.5	37.060
C-6	42.5	0:42:30	147.402	1.000	1.366	1.500	205	223	229	65		78	70	0.0	1.00	63.67	27.736	98.8	36.981
D-1	45.0	0:45:00	148.906	0.800	1.093	1.200	212	223	229	67		77	71	0.0	0.89	57.25	29.315	99.0	37.030
D-2	47.5	0:47:30	150.507	1.000	1.366	1.500	216	224	234	67		78	71	0.0	1.00	64.20	30.797	98.4	36.956
D-3	50.0	0:50:00	152.009	1.000	1.366	1.500	216	228	230	66		80	71	0.0	1.00	64.20	32.373	98.1	36.997
D-4	52.5	0:52:30	153.609	1.000	1.366	1.500	215	228	228	66		81	72	0.0	1.00	64.15	34.142	98.4	37.245
D-5	55.0	0:55:00	155.409	1.000	1.366	1.500	215	230	230	66		81	72	1.0	1.00	64.15	35.905	98.6	37.466
D-6	57.5	0:57:30	157.203	1.000	1.366	1.500	213	230	231	66		81	73	1.0	1.00	64.06	37.776	99.1	37.776
Last Pt	60.0	1:00:00	159.109																
Final Val	60.0	1:00:00	159.109											Max Vac	1.0	Final Values	37.776	99.1	
Average Values				0.87		1.31	210	228	229	64		77	70		0.93	59.45			

CTM 027 (AMMONIA) ISOKINETIC SAMPLING DATA

Plant Name	West County Energy Center	Date	11/16/2009
Sampling Location	Loxshatchee, Florida	Project #	bv-10-westcounty.fl-comp#1
Operator	Pandu Saitvika	Run #	2A-2
# of Points Across	6	# of Ports Used	4

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Tube Coefficient	(C _p)	0.84	
Avg Stack Temp	(t _s)	209	oF
Avg Gas Meter Temp	(t _g)	80	
DH @ 0.75 SCFM	(ΔH _{0.75})	1.60	in H ₂ O
Avg Pitot Tube Diff. Pressure	(ΔP _{pit})	0.96	in H ₂ O
Stack Moisture Content	(B _w)	9.76	%
Stack Dry Molecular Weight	(M _d)	29.27	lb/lb-mole
Estimated Orifice Flow Rate	(Q _e)	0.637	acfm
DP to DH IsoKinetic Factor	(K)	1.39	

Leak Checks					
Train	Pre	0	ft ³ /min @	15	in Hg
OK?	Post	0	ft ³ /min @	15	in Hg
Pitot	Pre	7	in. H ₂ O for	30	sec
OK?	Post	7	in. H ₂ O for	30	sec
Orsat	OK?	<input checked="" type="checkbox"/>			

Sampling Equipment	
Meter #	samp-cp-0012
Meterbox Cal. Factor	(Y) 0.992
Nozzle #	
Average Nozzle Diameter	(D _a) 0.2150 in
Rec. Nozzle Diameter	(D _r) 0.2069 in
Probe # / Length	/ 144 in
Liner Material	inconel
Sample Case / Oven #	
Impinger Case #	

Pressures			
Barometric Pressure	(P _b)	30.00	in Hg
Stack Static Pressure	(P _{stac})	0.75	in H ₂ O
Absolute Stack Pressure	(P _a)	30.06	in Hg
Absolute Meter Pressure	(P _m)	30.12	in Hg

Nozzle Measurements				
Pre	0.215	0.215	0.215	PASS
Post	0.215	0.215	0.215	PASS

Run Time		
Start	11:48	End 12:53

Weights	Imp 1	Imp 2	Imp 3	Imp 4	Imp 5	Imp 6	Imp 7	Imp 8
Pre	742.80	744.60	614.60	903.90				
Post	812.60	756.50	616.90	911.50				

Wash Volume	H ₂ O	50.0	ml	Filter #
	MeCl			

Traverse Point #	Sampling Time (e)	Timer Time	Dry Gas Meter Reading (V _m)	Velocity Head (Δp)	Desired Orifice ΔH (ΔH _d)	Actual Orifice ΔH (ΔH _a)	Stack Temp (t _s)	Probe Temp	Filter Temp	Impinger Exit Temp	Aux Temp	Meter Inlet Temp (t _m)	Meter Outlet Temp (t _{mo})	Pump Vacuum	Square Root ΔP (ΔP ^{1/2})	Local Stack Velocity (V _s)	Cumulative Meter Volume (V _{m,tot})	Cumulative Percent IsoKinetic (I)	Est-Run Meter Volume (V _{m,tot})
A-1	0.0	0:00:00	159.409	0.850	1.185	1.200	213	228	229	65		79	73	1.0	0.92	59.03	1.858	117.1	44.598
A-2	2.5	0:02:30	161.300	1.100	1.534	1.500	216	223	233	66		81	74	1.0	1.05	67.30	3.525	105.5	42.305
A-3	5.0	0:05:00	163.000	1.200	1.673	1.700	216	224	229	68		82	74	1.0	1.10	70.29	5.241	100.8	41.926
A-4	7.5	0:07:30	164.750	1.200	1.673	1.700	216	223	228	66		82	74	0.0	1.10	70.29	6.976	98.7	41.855
A-5	10.0	0:10:00	166.520	1.200	1.673	1.700	214	225	231	66		82	74	0.0	1.10	70.19	8.721	97.5	41.859
A-6	12.5	0:12:30	168.300	1.200	1.673	1.700	212	223	228	66		82	75	0.0	1.10	70.08	10.415	96.2	41.659
B-1	15.0	0:15:00	170.030	0.800	1.116	1.100	208	224	226	67		81	75	0.0	0.89	57.05	11.952	96.6	40.977
B-2	17.5	0:17:30	171.600	1.200	1.673	1.700	206	226	227	68		83	75	0.0	1.10	69.77	13.908	97.6	41.725
B-3	20.0	0:20:00	173.600	1.200	1.673	1.700	205	223	229	68		84	75	0.0	1.10	69.72	15.766	97.6	42.042
B-4	22.5	0:22:30	175.500	1.200	1.673	1.700	205	223	228	68		84	76	0.0	1.10	69.72	17.670	97.9	42.408
B-5	25.0	0:25:00	177.450	1.200	1.673	1.700	204	223	232	68		84	76	0.0	1.10	69.66	19.574	98.2	42.708
B-6	27.5	0:27:30	179.400	1.200	1.673	1.700	202	223	229	67		84	76	0.0	1.10	69.56	21.430	98.1	42.860
C-1	30.0	0:30:00	181.300	0.700	0.976	1.000	205	223	224	68		82	76	0.0	0.84	53.25	23.188	99.9	42.809
C-2	32.5	0:32:30	183.100	0.800	1.116	1.100	202	224	224	66		84	77	0.0	0.89	56.80	24.747	99.9	42.423
C-3	35.0	0:35:00	184.700	0.800	1.116	1.100	202	226	229	62		84	77	0.0	0.89	56.80	26.354	100.1	42.167
C-4	37.5	0:37:30	186.350	0.800	1.116	1.100	201	228	230	61		89	77	0.0	0.89	56.75	27.906	100.1	41.859
C-5	40.0	0:40:00	187.950	0.750	1.046	1.050	201	224	226	61		84	77	0.0	0.87	54.95	29.426	100.2	41.542
C-6	42.5	0:42:30	189.510	0.700	0.976	1.000	201	224	225	61		85	77	0.0	0.84	53.09	30.973	100.5	41.297
D-1	45.0	0:45:00	191.100	0.700	0.976	1.000	212	225	228	62		83	78	0.0	0.84	53.53	32.483	100.7	41.031
D-2	47.5	0:47:30	192.650	0.800	1.116	1.100	213	227	235	59		84	78	0.0	0.89	57.27	33.992	100.6	40.790
D-3	50.0	0:50:00	194.200	0.850	1.185	1.200	215	231	229	59		84	78	0.0	0.92	59.12	35.452	100.2	40.516
D-4	52.5	0:52:30	195.700	0.900	1.255	1.300	214	229	232	58		84	78	0.0	0.95	60.78	36.913	99.8	40.268
D-5	55.0	0:55:00	197.200	0.850	1.185	1.200	214	225	229	60		84	78	0.0	0.92	59.07	38.470	99.7	40.143
D-6	57.5	0:57:30	198.800	0.800	1.116	1.100	213	228	230	60		84	78	0.0	0.89	57.27	39.934	99.6	39.934
Last Pt	60.0	1:00:00	200.304																
Final Val	60.0	1:00:00	200.304											Max Vac	1.0	Final Values	39.934	99.6	
Average Values				0.96		1.35	209	225	229	64		83	76		0.97	62.14			

CTM 027 (AMMONIA) ISOKINETIC SAMPLING DATA

Plant Name	West County Energy Center	Date	11/16/2009
Sampling Location	Loxahatchee, Florida	Project #	bv-10-westcounty.fl-comp#1
Operator	Pandu Sattvika	Run #	2A-3
# of Points Across	6	# of Ports Used	4

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Tube Coefficient (C _p)	0.84		
Avg Stack Temp (T _s)	211	oF	
Avg Gas Meter Temp (T _m)	81		
DH @ 0.75 SCFM (ΔH _{0.75})	1.60	in H ₂ O	
Avg Pitot Tube Diff. Pressure (ΔP _{pitot})	0.98	in H ₂ O	
Stack Moisture Content (B _w)	9.62	%	
Stack Dry Molecular Weight (M _d)	29.27	lb/lb-mole	
Estimated Orifice Flow Rate (Q _e)	0.682	acfm	
DP to DH Isokinetic Factor (K)	1.40		

Leak Checks					
Train	Pre	0	ft ³ /min @	15	in Hg
OK?	Post	0	ft ³ /min @	15	in Hg
Pitot	Pre	8	in. H ₂ O for	15	sec
OK?	Post	8	in. H ₂ O for	15	sec
Orsat	OK?				

Sampling Equipment			
Meter #	samp-cp-0012		
Meterbox Cal. Factor (Y)	0.992		
Nozzle #			
Average Nozzle Diameter (D _{av})	0.2150	in	
Rec. Nozzle Diameter (D _{re})	0.2130	in	
Probe # / Length	/ 144 in		
Liner Material	inconel		
Sample Case / Oven #			
Impinger Case #			

Pressures			
Barometric Pressure (P _b)	29.97	in Hg	
Stack Static Pressure (P _{stack})	0.75	in H ₂ O	
Absolute Stack Pressure (P _a)	30.03	in Hg	
Absolute Meter Pressure (P _m)	30.09	in Hg	

Nozzle Measurements				
Pre	0.215	0.215	0.215	PASS
Post	0.215	0.215	0.215	PASS

Run Time		
Start	13:00	End 14:05

Weights	Imp 1	Imp 2	Imp 3	Imp 4	Imp 5	Imp 6	Imp 7	Imp 8
Pre	724.70	698.90	621.30	908.10				
Post	793.10	710.90	623.90	916.90				

Wash Volume	H ₂ O	50.0	ml	Filter #
	MeCl		ml	

Traverse Point #	Sampling Time (e)	Timer Time	Dry Gas Meter Reading (V _m)	Velocity Head (Δp)	Desired Orifice ΔH (ΔH _d)	Actual Orifice ΔH (ΔH _a)	Stack Temp (t _s)	Probe Temp	Filter Temp	Impinger Exit Temp	Aux Temp	Meter Inlet Temp (t _m)	Meter Outlet Temp (t _{mo})	Pump Vacuum	Square Root ΔP (ΔP ^{1/2})	Local Stack Velocity (V _s)	Cumulative Meter Volume (V _m) _{tot}	Cumulative Percent IsoKinetic (I)	Est-Run Meter Volume (V _m) _{hw}
A-1	0.0	0:00:00	200.602	0.720	1.006	1.100	214	226	231	67		81	78	0.0	0.85	54.38	1.568	107.4	37.631
A-2	2.5	0:02:30	202.210	0.770	1.075	1.200	215	228	230	66		84	78	0.0	0.88	56.27	3.021	102.0	36.253
A-3	5.0	0:05:00	203.704	0.790	1.103	1.200	216	229	229	65		84	78	0.0	0.89	57.04	4.483	100.0	35.864
A-4	7.5	0:07:30	205.207	0.770	1.075	1.200	216	232	230	63		84	78	0.0	0.88	56.32	5.843	97.7	35.056
A-5	10.0	0:10:00	206.605	0.800	1.117	1.200	216	229	227	63		85	79	0.0	0.89	57.40	7.925	107.6	38.041
A-6	12.5	0:12:30	208.750	0.700	0.978	1.050	215	226	228	63		84	79	0.0	0.84	53.66	9.479	107.7	37.917
B-1	15.0	0:15:00	210.350	0.700	0.978	1.050	210	223	228	68		82	79	0.0	0.84	53.46	10.890	106.4	37.339
B-2	17.5	0:17:30	211.800	0.850	1.187	1.200	208	225	231	65		83	79	0.0	0.92	58.82	12.349	104.6	37.048
B-3	20.0	0:20:00	213.300	0.850	1.187	1.300	207	227	226	65		83	79	0.0	0.92	58.77	13.780	103.1	36.745
B-4	22.5	0:22:30	214.770	0.800	1.117	1.200	207	224	231	65		83	79	0.0	0.89	57.02	15.268	102.4	36.642
B-5	25.0	0:25:00	216.300	0.800	1.117	1.200	206	224	231	65		83	78	0.0	0.89	56.98	16.728	101.7	36.497
B-6	27.5	0:27:30	217.800	0.700	0.978	1.050	206	225	230	66		83	79	0.0	0.84	53.30	18.235	101.9	36.470
C-1	30.0	0:30:00	219.350	0.950	1.327	1.400	213	224	229	68		82	78	0.0	0.97	62.41	19.863	101.5	36.670
C-2	32.5	0:32:30	221.020	1.200	1.676	1.800	211	223	232	64		83	78	2.0	1.10	70.04	21.696	101.1	37.193
C-3	35.0	0:35:00	222.900	1.200	1.676	1.800	208	224	234	65		84	78	2.0	1.10	69.89	23.644	101.3	37.831
C-4	37.5	0:37:30	224.900	1.200	1.676	1.800	208	224	230	65		84	78	2.0	1.10	69.89	25.495	101.0	38.242
C-5	40.0	0:40:00	226.800	1.300	1.816	1.900	206	223	228	65		84	78	2.0	1.14	72.63	27.444	100.8	38.744
C-6	42.5	0:42:30	228.800	1.300	1.816	1.900	205	223	231	65		84	78	2.0	1.14	72.58	29.392	100.7	39.189
D-1	45.0	0:45:00	230.800	0.900	1.257	1.300	211	227	233	66		81	78	1.0	0.95	60.66	31.099	100.9	39.263
D-2	47.5	0:47:30	232.550	1.100	1.536	1.645	214	223	233	67		83	78	1.0	1.05	67.21	32.902	100.8	39.483
D-3	50.0	0:50:00	234.400	1.200	1.676	1.800	214	225	231	66		83	78	2.0	1.10	70.20	34.804	100.8	39.775
D-4	52.5	0:52:30	236.350	1.300	1.816	1.900	213	224	231	66		83	78	2.0	1.14	73.01	36.803	100.9	40.148
D-5	55.0	0:55:00	238.400	1.300	1.816	1.900	212	225	230	66		84	78	2.0	1.14	72.96	38.800	100.9	40.487
D-6	57.5	0:57:30	240.450	1.200	1.676	1.800	211	225	231	66		84	78	2.0	1.10	70.04	40.670	100.8	40.670
Last Pt	60.0	1:00:00	242.370																
Final Val	60.0	1:00:00	242.370											Max Vac	2.0	Final Values	40.670	100.8	
Average Values				0.975		1.454	211	225	230	65		83	78		0.98	62.70			

CTM 027 (AMMONIA) - SAMPLE RECOVERY AND INTEGRITY DATA SHEET

Plant Name	West County Energy Center	Date	11/16/09
Sampling Location	Loxahatchee, Florida	Project #	bv-10-westcounty.fl-comp#1
Operator	Pandu Sattvika	Acetone Lot Number	N/A

Run History Data				
Run Number	2A-1	2A-2	2A-3	
Run Start Time	10:37	11:48	13:00	(hh:mm)
Run Stop Time	11:40	12:53	14:05	(hh:mm)
Train Prepared By	AS	AS	AS	
Train Recovered By	11/16/09	11/16/09	11/16/09	
Recovery Date	11/16/09	11/16/09	11/16/09	(mm/dd/yy)



Moisture Content Data					
Impingers 1, 2, and 3 - Liquid Volume					
Final Volume	(V _f)	2119.0	2189.9	2131.7	ml
Initial Volume	(V _i)	2037.5	2105.8	2048.6	ml
Net Volume	(V _n)	81.5	84.2	83.1	ml
Comments					
Impinger 4 - Silica Gel Weight					
Final Weight	(W _f)	919.5	911.5	916.9	g
Initial Weight	(W _i)	911.0	903.9	908.1	g
Net Weight	(W _n)	8.5	7.6	8.8	g
Comments					
Total Water Collected					
Total Volume	(V _{tc})	90.1	91.8	92.0	ml

Ammonia Sample Log-In Sheet

Lab Tech: Albert Septiano
 Project: bv-10-westcounty.fl-comp#1
 Collected by: Albert Septiano
 Date Received: 11/16/2009



BLANKS

AHI Lab #	Sample ID	Sample Source Description	Run #	Filter	Contents	Sample Date	Comments	Volume (ml)
91116-B	Blank				H ₂ SO ₄ , H ₂ O	11/16/2009		100

SAMPLES

AHI Lab #	Sample ID	Sample Source Description	Run #	Contents	Sample Date	Comments	Volume (ml)
91116-01	U2A-R1-FH	Unit 2A Run 1 Impinger 1 with Duct Burners	1	H ₂ SO ₄ , H ₂ O	11/16/2009		240
91116-02	U2A-R1-BH	Unit 2A Run 1 Impinger 2 with Duct Burners	1	H ₂ SO ₄ , H ₂ O	11/16/2009		220
91116-03	U2A-R2-FH	Unit 2A Run 2 Impinger 1 with Duct Burners	2	H ₂ SO ₄ , H ₂ O	11/16/2009		240
91116-04	U2A-R2-BH	Unit 2A Run 2 Impinger 2 with Duct Burners	2	H ₂ SO ₄ , H ₂ O	11/16/2009		240
91116-05	U2A-R3-FH	Unit 2A Run 3 Impinger 1 with Duct Burners	3	H ₂ SO ₄ , H ₂ O	11/16/2009		250
91116-06	U2A-R3-BH	Unit 2A Run 3 Impinger 2 with Duct Burners	3	H ₂ SO ₄ , H ₂ O	11/16/2009		240

bv-10-westcounty#1-U2A-NH3 Analysis wDB

Ammonia Sample Measurement

Lab Tech:	Albert Septiano
Project:	bv-10-westcounty.fl-comp#1
Date Analyzed:	
Time Analyzed:	
Analysis Method	350.3



Calibration Data		
Concentration (ppm)	Pre-Cal (ppm)	Pre-Cal (mV)
0.0	0.0	94.9
5.0	5.0	-52.3
10.0	10.0	-70.2
20.0	20.0	-87.4
Slope		
Linearity	1.0000	N/A

Sample ID	Sample Amt Used (ml)	ISA/pH Volume (ml)	Meter Reading (mg/L)	Time Analyzed (hh:mm:ss)	Dilution Factor	Sample Volume	MQL (mg/L)	PQL (mg/L)	Final Conc. (mg/L)
91116-B	100.0	1.0	0.00	15:00:00	1.0	100.0	0.10	0.1	BPQL
91116-01	100.0	1.0	7.05	15:07:00	1.0	240.0	0.10	0.1	7.1
91116-02	100.0	1.0	0.03	15:12:00	1.0	220.0	0.10	0.1	BPQL
91116-03	100.0	1.0	7.80	15:19:00	1.0	240.0	0.10	0.1	7.8
91116-04	100.0	1.0	0.01	15:24:00	1.0	240.0	0.10	0.1	BPQL
91116-05	100.0	1.0	6.83	15:29:00	1.0	250.0	0.10	0.1	6.8
91116-06	100.0	1.0	0.03	15:34:00	1.0	240.0	0.10	0.1	BPQL

bv-10-westcounty#1-U2A-NH3 Analysis wDB



Ammonia Analysis

Project Name: bv-10-westcounty.fl-comp#1
Date Received: 11/16/2009

AHI Lab No.: 91116-B
Sample ID: Blank
Sampling Date: 11/16/2009

Test Requested	Method Parameter	Prep Info	Result	PQL*	Analysis Date
Ammonia Nitrogen	EPA 350.3 Ammonia	N/A	BPQL	0.10	1/0/00 15:00
Volume	Volume in ml	N/A	100	N/A	1/0/00 0:00

AHI Lab No.: 91116-01
Sample ID: U2A-R1-FH
Sampling Date: 11/16/2009

Test Requested	Method Parameter	Prep Info	Result	PQL*	Analysis Date
Ammonia Nitrogen	EPA 350.3 Ammonia	N/A	7.05	0.10	1/0/00 15:07
Volume	Volume in ml	N/A	240	N/A	1/0/00 0:00

AHI Lab No.: 91116-02
Sample ID: U2A-R1-BH
Sampling Date: 11/16/2009

Test Requested	Method Parameter	Prep Info	Result	PQL*	Analysis Date
Ammonia Nitrogen	EPA 350.3 Ammonia	N/A	BPQL	0.10	1/0/00 15:12
Volume	Volume in ml	N/A	220	N/A	1/0/00 0:00

AHI Lab No.: 91116-03
Sample ID: U2A-R2-FH
Sampling Date: 11/16/2009

Test Requested	Method Parameter	Prep Info	Result	PQL*	Analysis Date
Ammonia Nitrogen	EPA 350.3 Ammonia	N/A	7.8	0.10	1/0/00 15:19
Volume	Volume in ml	N/A	240	N/A	1/0/00 0:00

AHI Lab No.: 91116-04
Sample ID: U2A-R2-BH
Sampling Date: 11/16/2009

Test Requested	Method Parameter	Prep Info	Result	PQL*	Analysis Date
Ammonia Nitrogen	EPA 350.3 Ammonia	N/A	BPQL	0.10	1/0/00 15:24
Volume	Volume in ml	N/A	240	N/A	1/0/00 0:00

AHI Lab No.: 91116-05
Sample ID: U2A-R3-FH
Sampling Date: 11/16/2009

Test Requested	Method Parameter	Prep Info	Result	PQL*	Analysis Date
Ammonia Nitrogen	EPA 350.3 Ammonia	N/A	6.83	0.10	1/0/00 15:29
Volume	Volume in ml	N/A	250	N/A	1/0/00 0:00

AHI Lab No.: 91116-06
Sample ID: U2A-R3-BH
Sampling Date: 11/16/2009

Test Requested	Method Parameter	Prep Info	Result	PQL*	Analysis Date
Ammonia Nitrogen	EPA 350.3 Ammonia	N/A	BPQL	0.10	1/0/00 15:34
Volume	Volume in ml	N/A	240	N/A	1/0/00 0:00

TEST RESULTS

**Opacity
Base Load**

Company: Florida Power and Light Equipment: Mitsubishi 501G without Duct Burners Location: West County Energy Center Date: November 15, 2009 Project #: bv-10-westcounty.fl-comp#1						Run 1			Average Opacity: 0.00 % Maximum Opacity: 0 % 6 Minute Average: 0.00 % 6 Minute Maximum: 0.00 % Max Time w/ Opacity: 0.00 minutes		
TIME (min)	OPACITY (%)	6 MIN AVG.	TIME (min)	OPACITY (%)	6 MIN AVG.	TIME (min)	OPACITY (%)	6 MIN AVG.	TIME (min)	OPACITY (%)	6 MIN AVG.
0.00	0	N/A	15.00	0	0.00	30.00	0	0.00	45.00	0	0.00
0.25	0	N/A	15.25	0	0.00	30.25	0	0.00	45.25	0	0.00
0.50	0	N/A	15.50	0	0.00	30.50	0	0.00	45.50	0	0.00
0.75	0	N/A	15.75	0	0.00	30.75	0	0.00	45.75	0	0.00
1.00	0	N/A	16.00	0	0.00	31.00	0	0.00	46.00	0	0.00
1.25	0	N/A	16.25	0	0.00	31.25	0	0.00	46.25	0	0.00
1.50	0	N/A	16.50	0	0.00	31.50	0	0.00	46.50	0	0.00
1.75	0	N/A	16.75	0	0.00	31.75	0	0.00	46.75	0	0.00
2.00	0	N/A	17.00	0	0.00	32.00	0	0.00	47.00	0	0.00
2.25	0	N/A	17.25	0	0.00	32.25	0	0.00	47.25	0	0.00
2.50	0	N/A	17.50	0	0.00	32.50	0	0.00	47.50	0	0.00
2.75	0	N/A	17.75	0	0.00	32.75	0	0.00	47.75	0	0.00
3.00	0	N/A	18.00	0	0.00	33.00	0	0.00	48.00	0	0.00
3.25	0	N/A	18.25	0	0.00	33.25	0	0.00	48.25	0	0.00
3.50	0	N/A	18.50	0	0.00	33.50	0	0.00	48.50	0	0.00
3.75	0	N/A	18.75	0	0.00	33.75	0	0.00	48.75	0	0.00
4.00	0	N/A	19.00	0	0.00	34.00	0	0.00	49.00	0	0.00
4.25	0	N/A	19.25	0	0.00	34.25	0	0.00	49.25	0	0.00
4.50	0	N/A	19.50	0	0.00	34.50	0	0.00	49.50	0	0.00
4.75	0	N/A	19.75	0	0.00	34.75	0	0.00	49.75	0	0.00
5.00	0	N/A	20.00	0	0.00	35.00	0	0.00	50.00	0	0.00
5.25	0	N/A	20.25	0	0.00	35.25	0	0.00	50.25	0	0.00
5.50	0	N/A	20.50	0	0.00	35.50	0	0.00	50.50	0	0.00
5.75	0	0.00	20.75	0	0.00	35.75	0	0.00	50.75	0	0.00
6.00	0	0.00	21.00	0	0.00	36.00	0	0.00	51.00	0	0.00
6.25	0	0.00	21.25	0	0.00	36.25	0	0.00	51.25	0	0.00
6.50	0	0.00	21.50	0	0.00	36.50	0	0.00	51.50	0	0.00
6.75	0	0.00	21.75	0	0.00	36.75	0	0.00	51.75	0	0.00
7.00	0	0.00	22.00	0	0.00	37.00	0	0.00	52.00	0	0.00
7.25	0	0.00	22.25	0	0.00	37.25	0	0.00	52.25	0	0.00
7.50	0	0.00	22.50	0	0.00	37.50	0	0.00	52.50	0	0.00
7.75	0	0.00	22.75	0	0.00	37.75	0	0.00	52.75	0	0.00
8.00	0	0.00	23.00	0	0.00	38.00	0	0.00	53.00	0	0.00
8.25	0	0.00	23.25	0	0.00	38.25	0	0.00	53.25	0	0.00
8.50	0	0.00	23.50	0	0.00	38.50	0	0.00	53.50	0	0.00
8.75	0	0.00	23.75	0	0.00	38.75	0	0.00	53.75	0	0.00
9.00	0	0.00	24.00	0	0.00	39.00	0	0.00	54.00	0	0.00
9.25	0	0.00	24.25	0	0.00	39.25	0	0.00	54.25	0	0.00
9.50	0	0.00	24.50	0	0.00	39.50	0	0.00	54.50	0	0.00
9.75	0	0.00	24.75	0	0.00	39.75	0	0.00	54.75	0	0.00
10.00	0	0.00	25.00	0	0.00	40.00	0	0.00	55.00	0	0.00
10.25	0	0.00	25.25	0	0.00	40.25	0	0.00	55.25	0	0.00
10.50	0	0.00	25.50	0	0.00	40.50	0	0.00	55.50	0	0.00
10.75	0	0.00	25.75	0	0.00	40.75	0	0.00	55.75	0	0.00
11.00	0	0.00	26.00	0	0.00	41.00	0	0.00	56.00	0	0.00
11.25	0	0.00	26.25	0	0.00	41.25	0	0.00	56.25	0	0.00
11.50	0	0.00	26.50	0	0.00	41.50	0	0.00	56.50	0	0.00
11.75	0	0.00	26.75	0	0.00	41.75	0	0.00	56.75	0	0.00
12.00	0	0.00	27.00	0	0.00	42.00	0	0.00	57.00	0	0.00
12.25	0	0.00	27.25	0	0.00	42.25	0	0.00	57.25	0	0.00
12.50	0	0.00	27.50	0	0.00	42.50	0	0.00	57.50	0	0.00
12.75	0	0.00	27.75	0	0.00	42.75	0	0.00	57.75	0	0.00
13.00	0	0.00	28.00	0	0.00	43.00	0	0.00	58.00	0	0.00
13.25	0	0.00	28.25	0	0.00	43.25	0	0.00	58.25	0	0.00
13.50	0	0.00	28.50	0	0.00	43.50	0	0.00	58.50	0	0.00
13.75	0	0.00	28.75	0	0.00	43.75	0	0.00	58.75	0	0.00
14.00	0	0.00	29.00	0	0.00	44.00	0	0.00	59.00	0	0.00
14.25	0	0.00	29.25	0	0.00	44.25	0	0.00	59.25	0	0.00
14.50	0	0.00	29.50	0	0.00	44.50	0	0.00	59.50	0	0.00
14.75	0	0.00	29.75	0	0.00	44.75	0	0.00	59.75	0	0.00

Company: Florida Power and Light Equipment: Mitsubishi 501G without Duct Burners Location: West County Energy Center Date: November 15, 2009 Project #: bv-10-westcounty.fl-comp#1						Run 2	Average Opacity: 0.00 % Maximum Opacity: 0 % 6 Minute Average: 0.00 % 6 Minute Maximum: 0.00 % Max Time w/ Opacity: 0.00 minutes				
TIME (min)	OPACITY (%)	6 MIN AVG.	TIME (min)	OPACITY (%)	6 MIN AVG.	TIME (min)	OPACITY (%)	6 MIN AVG.	TIME (min)	OPACITY (%)	6 MIN AVG.
0.00	0	N/A	15.00	0	0.00	30.00	0	0.00	45.00	0	0.00
0.25	0	N/A	15.25	0	0.00	30.25	0	0.00	45.25	0	0.00
0.50	0	N/A	15.50	0	0.00	30.50	0	0.00	45.50	0	0.00
0.75	0	N/A	15.75	0	0.00	30.75	0	0.00	45.75	0	0.00
1.00	0	N/A	16.00	0	0.00	31.00	0	0.00	46.00	0	0.00
1.25	0	N/A	16.25	0	0.00	31.25	0	0.00	46.25	0	0.00
1.50	0	N/A	16.50	0	0.00	31.50	0	0.00	46.50	0	0.00
1.75	0	N/A	16.75	0	0.00	31.75	0	0.00	46.75	0	0.00
2.00	0	N/A	17.00	0	0.00	32.00	0	0.00	47.00	0	0.00
2.25	0	N/A	17.25	0	0.00	32.25	0	0.00	47.25	0	0.00
2.50	0	N/A	17.50	0	0.00	32.50	0	0.00	47.50	0	0.00
2.75	0	N/A	17.75	0	0.00	32.75	0	0.00	47.75	0	0.00
3.00	0	N/A	18.00	0	0.00	33.00	0	0.00	48.00	0	0.00
3.25	0	N/A	18.25	0	0.00	33.25	0	0.00	48.25	0	0.00
3.50	0	N/A	18.50	0	0.00	33.50	0	0.00	48.50	0	0.00
3.75	0	N/A	18.75	0	0.00	33.75	0	0.00	48.75	0	0.00
4.00	0	N/A	19.00	0	0.00	34.00	0	0.00	49.00	0	0.00
4.25	0	N/A	19.25	0	0.00	34.25	0	0.00	49.25	0	0.00
4.50	0	N/A	19.50	0	0.00	34.50	0	0.00	49.50	0	0.00
4.75	0	N/A	19.75	0	0.00	34.75	0	0.00	49.75	0	0.00
5.00	0	N/A	20.00	0	0.00	35.00	0	0.00	50.00	0	0.00
5.25	0	N/A	20.25	0	0.00	35.25	0	0.00	50.25	0	0.00
5.50	0	N/A	20.50	0	0.00	35.50	0	0.00	50.50	0	0.00
5.75	0	0.00	20.75	0	0.00	35.75	0	0.00	50.75	0	0.00
6.00	0	0.00	21.00	0	0.00	36.00	0	0.00	51.00	0	0.00
6.25	0	0.00	21.25	0	0.00	36.25	0	0.00	51.25	0	0.00
6.50	0	0.00	21.50	0	0.00	36.50	0	0.00	51.50	0	0.00
6.75	0	0.00	21.75	0	0.00	36.75	0	0.00	51.75	0	0.00
7.00	0	0.00	22.00	0	0.00	37.00	0	0.00	52.00	0	0.00
7.25	0	0.00	22.25	0	0.00	37.25	0	0.00	52.25	0	0.00
7.50	0	0.00	22.50	0	0.00	37.50	0	0.00	52.50	0	0.00
7.75	0	0.00	22.75	0	0.00	37.75	0	0.00	52.75	0	0.00
8.00	0	0.00	23.00	0	0.00	38.00	0	0.00	53.00	0	0.00
8.25	0	0.00	23.25	0	0.00	38.25	0	0.00	53.25	0	0.00
8.50	0	0.00	23.50	0	0.00	38.50	0	0.00	53.50	0	0.00
8.75	0	0.00	23.75	0	0.00	38.75	0	0.00	53.75	0	0.00
9.00	0	0.00	24.00	0	0.00	39.00	0	0.00	54.00	0	0.00
9.25	0	0.00	24.25	0	0.00	39.25	0	0.00	54.25	0	0.00
9.50	0	0.00	24.50	0	0.00	39.50	0	0.00	54.50	0	0.00
9.75	0	0.00	24.75	0	0.00	39.75	0	0.00	54.75	0	0.00
10.00	0	0.00	25.00	0	0.00	40.00	0	0.00	55.00	0	0.00
10.25	0	0.00	25.25	0	0.00	40.25	0	0.00	55.25	0	0.00
10.50	0	0.00	25.50	0	0.00	40.50	0	0.00	55.50	0	0.00
10.75	0	0.00	25.75	0	0.00	40.75	0	0.00	55.75	0	0.00
11.00	0	0.00	26.00	0	0.00	41.00	0	0.00	56.00	0	0.00
11.25	0	0.00	26.25	0	0.00	41.25	0	0.00	56.25	0	0.00
11.50	0	0.00	26.50	0	0.00	41.50	0	0.00	56.50	0	0.00
11.75	0	0.00	26.75	0	0.00	41.75	0	0.00	56.75	0	0.00
12.00	0	0.00	27.00	0	0.00	42.00	0	0.00	57.00	0	0.00
12.25	0	0.00	27.25	0	0.00	42.25	0	0.00	57.25	0	0.00
12.50	0	0.00	27.50	0	0.00	42.50	0	0.00	57.50	0	0.00
12.75	0	0.00	27.75	0	0.00	42.75	0	0.00	57.75	0	0.00
13.00	0	0.00	28.00	0	0.00	43.00	0	0.00	58.00	0	0.00
13.25	0	0.00	28.25	0	0.00	43.25	0	0.00	58.25	0	0.00
13.50	0	0.00	28.50	0	0.00	43.50	0	0.00	58.50	0	0.00
13.75	0	0.00	28.75	0	0.00	43.75	0	0.00	58.75	0	0.00
14.00	0	0.00	29.00	0	0.00	44.00	0	0.00	59.00	0	0.00
14.25	0	0.00	29.25	0	0.00	44.25	0	0.00	59.25	0	0.00
14.50	0	0.00	29.50	0	0.00	44.50	0	0.00	59.50	0	0.00
14.75	0	0.00	29.75	0	0.00	44.75	0	0.00	59.75	0	0.00

Company: Florida Power and Light
 Equipment: Mitsubishi 501G without Duct Burners
 Location: West County Energy Center
 Date: November 15, 2009
 Project #: bv-10-westcounty.fl-comp#1

Run 3

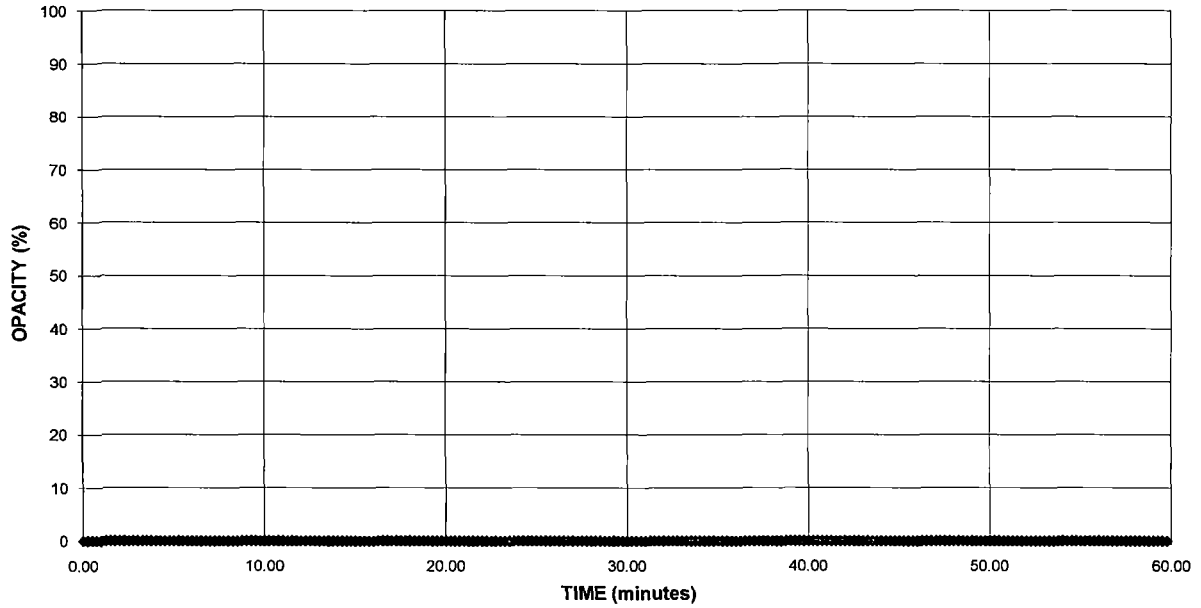
Average Opacity: 0.00 %
 Maximum Opacity: 0 %
 6 Minute Average: 0.00 %
 6 Minute Maximum: 0.00 %
 Max Time w/ Opacity: 0.00 minutes

TIME (min)	OPACITY (%)	6 MIN AVG.	TIME (min)	OPACITY (%)	6 MIN AVG.	TIME (min)	OPACITY (%)	6 MIN AVG.	TIME (min)	OPACITY (%)	6 MIN AVG.
0.00	0	N/A	15.00	0	0.00	30.00	0	0.00	45.00	0	0.00
0.25	0	N/A	15.25	0	0.00	30.25	0	0.00	45.25	0	0.00
0.50	0	N/A	15.50	0	0.00	30.50	0	0.00	45.50	0	0.00
0.75	0	N/A	15.75	0	0.00	30.75	0	0.00	45.75	0	0.00
1.00	0	N/A	16.00	0	0.00	31.00	0	0.00	46.00	0	0.00
1.25	0	N/A	16.25	0	0.00	31.25	0	0.00	46.25	0	0.00
1.50	0	N/A	16.50	0	0.00	31.50	0	0.00	46.50	0	0.00
1.75	0	N/A	16.75	0	0.00	31.75	0	0.00	46.75	0	0.00
2.00	0	N/A	17.00	0	0.00	32.00	0	0.00	47.00	0	0.00
2.25	0	N/A	17.25	0	0.00	32.25	0	0.00	47.25	0	0.00
2.50	0	N/A	17.50	0	0.00	32.50	0	0.00	47.50	0	0.00
2.75	0	N/A	17.75	0	0.00	32.75	0	0.00	47.75	0	0.00
3.00	0	N/A	18.00	0	0.00	33.00	0	0.00	48.00	0	0.00
3.25	0	N/A	18.25	0	0.00	33.25	0	0.00	48.25	0	0.00
3.50	0	N/A	18.50	0	0.00	33.50	0	0.00	48.50	0	0.00
3.75	0	N/A	18.75	0	0.00	33.75	0	0.00	48.75	0	0.00
4.00	0	N/A	19.00	0	0.00	34.00	0	0.00	49.00	0	0.00
4.25	0	N/A	19.25	0	0.00	34.25	0	0.00	49.25	0	0.00
4.50	0	N/A	19.50	0	0.00	34.50	0	0.00	49.50	0	0.00
4.75	0	N/A	19.75	0	0.00	34.75	0	0.00	49.75	0	0.00
5.00	0	N/A	20.00	0	0.00	35.00	0	0.00	50.00	0	0.00
5.25	0	N/A	20.25	0	0.00	35.25	0	0.00	50.25	0	0.00
5.50	0	N/A	20.50	0	0.00	35.50	0	0.00	50.50	0	0.00
5.75	0	0.00	20.75	0	0.00	35.75	0	0.00	50.75	0	0.00
6.00	0	0.00	21.00	0	0.00	36.00	0	0.00	51.00	0	0.00
6.25	0	0.00	21.25	0	0.00	36.25	0	0.00	51.25	0	0.00
6.50	0	0.00	21.50	0	0.00	36.50	0	0.00	51.50	0	0.00
6.75	0	0.00	21.75	0	0.00	36.75	0	0.00	51.75	0	0.00
7.00	0	0.00	22.00	0	0.00	37.00	0	0.00	52.00	0	0.00
7.25	0	0.00	22.25	0	0.00	37.25	0	0.00	52.25	0	0.00
7.50	0	0.00	22.50	0	0.00	37.50	0	0.00	52.50	0	0.00
7.75	0	0.00	22.75	0	0.00	37.75	0	0.00	52.75	0	0.00
8.00	0	0.00	23.00	0	0.00	38.00	0	0.00	53.00	0	0.00
8.25	0	0.00	23.25	0	0.00	38.25	0	0.00	53.25	0	0.00
8.50	0	0.00	23.50	0	0.00	38.50	0	0.00	53.50	0	0.00
8.75	0	0.00	23.75	0	0.00	38.75	0	0.00	53.75	0	0.00
9.00	0	0.00	24.00	0	0.00	39.00	0	0.00	54.00	0	0.00
9.25	0	0.00	24.25	0	0.00	39.25	0	0.00	54.25	0	0.00
9.50	0	0.00	24.50	0	0.00	39.50	0	0.00	54.50	0	0.00
9.75	0	0.00	24.75	0	0.00	39.75	0	0.00	54.75	0	0.00
10.00	0	0.00	25.00	0	0.00	40.00	0	0.00	55.00	0	0.00
10.25	0	0.00	25.25	0	0.00	40.25	0	0.00	55.25	0	0.00
10.50	0	0.00	25.50	0	0.00	40.50	0	0.00	55.50	0	0.00
10.75	0	0.00	25.75	0	0.00	40.75	0	0.00	55.75	0	0.00
11.00	0	0.00	26.00	0	0.00	41.00	0	0.00	56.00	0	0.00
11.25	0	0.00	26.25	0	0.00	41.25	0	0.00	56.25	0	0.00
11.50	0	0.00	26.50	0	0.00	41.50	0	0.00	56.50	0	0.00
11.75	0	0.00	26.75	0	0.00	41.75	0	0.00	56.75	0	0.00
12.00	0	0.00	27.00	0	0.00	42.00	0	0.00	57.00	0	0.00
12.25	0	0.00	27.25	0	0.00	42.25	0	0.00	57.25	0	0.00
12.50	0	0.00	27.50	0	0.00	42.50	0	0.00	57.50	0	0.00
12.75	0	0.00	27.75	0	0.00	42.75	0	0.00	57.75	0	0.00
13.00	0	0.00	28.00	0	0.00	43.00	0	0.00	58.00	0	0.00
13.25	0	0.00	28.25	0	0.00	43.25	0	0.00	58.25	0	0.00
13.50	0	0.00	28.50	0	0.00	43.50	0	0.00	58.50	0	0.00
13.75	0	0.00	28.75	0	0.00	43.75	0	0.00	58.75	0	0.00
14.00	0	0.00	29.00	0	0.00	44.00	0	0.00	59.00	0	0.00
14.25	0	0.00	29.25	0	0.00	44.25	0	0.00	59.25	0	0.00
14.50	0	0.00	29.50	0	0.00	44.50	0	0.00	59.50	0	0.00
14.75	0	0.00	29.75	0	0.00	44.75	0	0.00	59.75	0	0.00

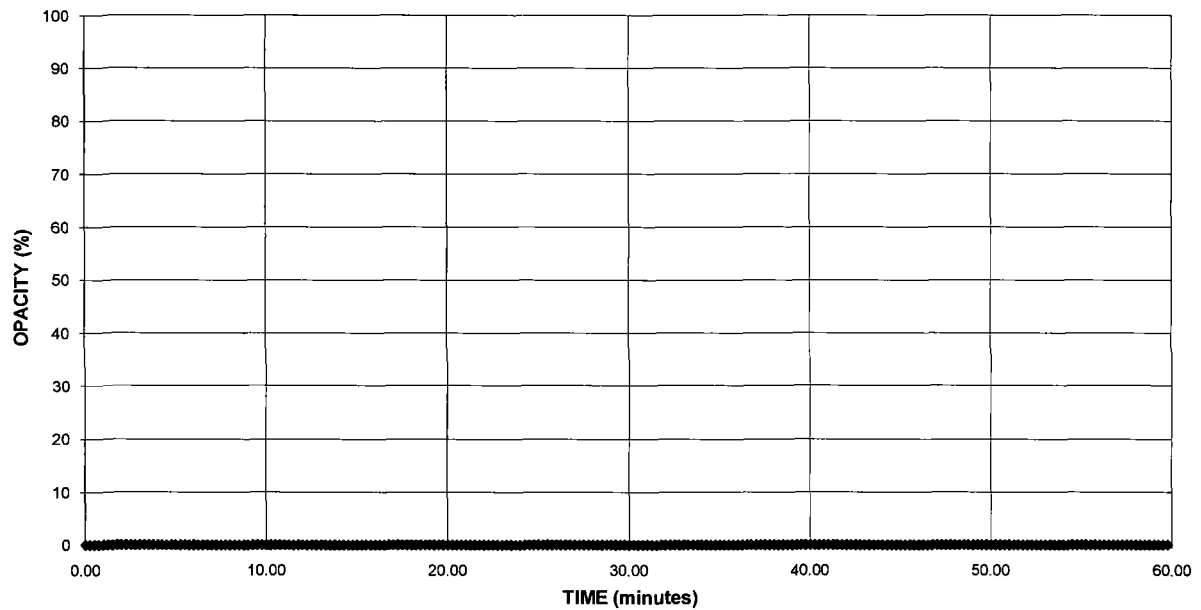
Company: Florida Power and Light
Equipment: Mitsubishi 501G without Duct Burners
Location: West County Energy Center
Date: November 15, 2009
Project #: bv-10-westcounty.fl-comp#1

Run 1	Average Opacity:	0.00 %
	Maximum Opacity:	0 %
	6 Minute Average:	0.00 %
	6 Minute Maximum:	0.00 %
	Max Time w/ Opacity:	0.00 minutes

**OPACITY READINGS
(15 second intervals)**



**OPACITY RESULTS
(6 minute averages)**

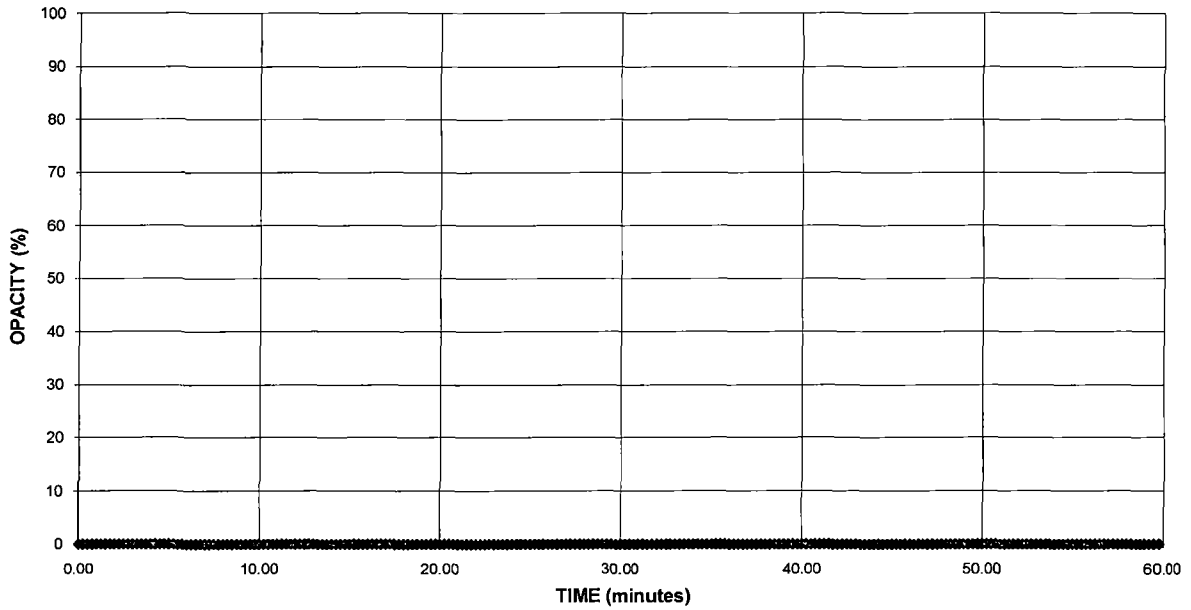


Company: Florida Power and Light
Equipment: Mitsubishi 501G without Duct Burners
Location: West County Energy Center
Date: November 15, 2009
Project #: bv-10-westcounty.fl-comp#1

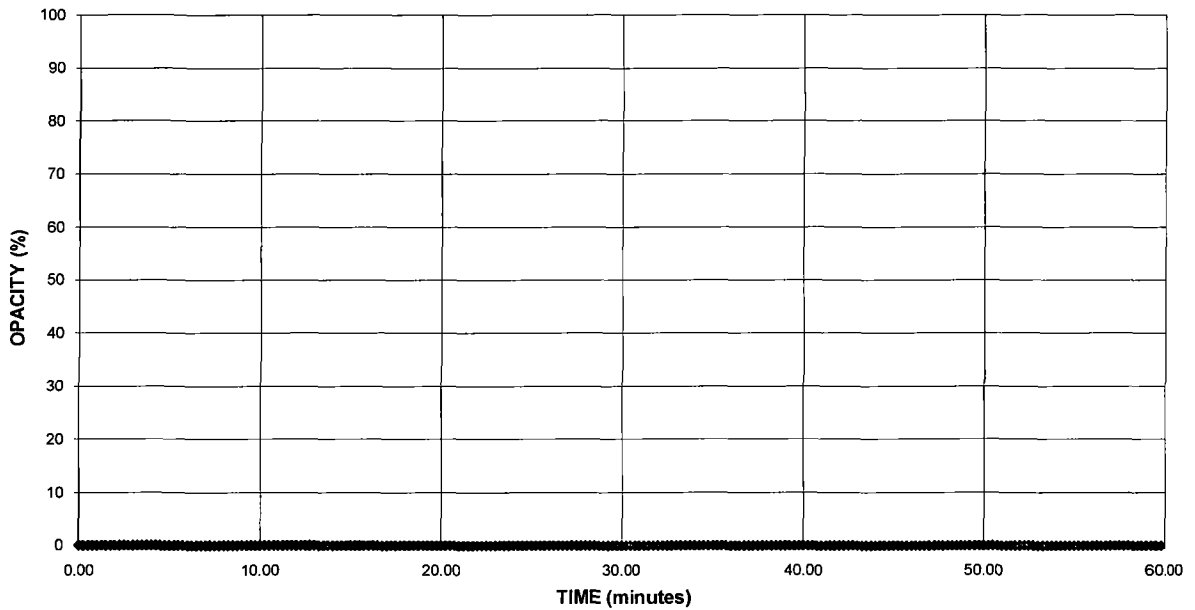
Run 2

Average Opacity: 0.00 %
Maximum Opacity: 0 %
6 Minute Average: 0.00 %
6 Minute Maximum: 0.00 %
Max Time w/ Opacity: 0.00 minutes

OPACITY READINGS (15 second intervals)



OPACITY RESULTS (6 minute averages)

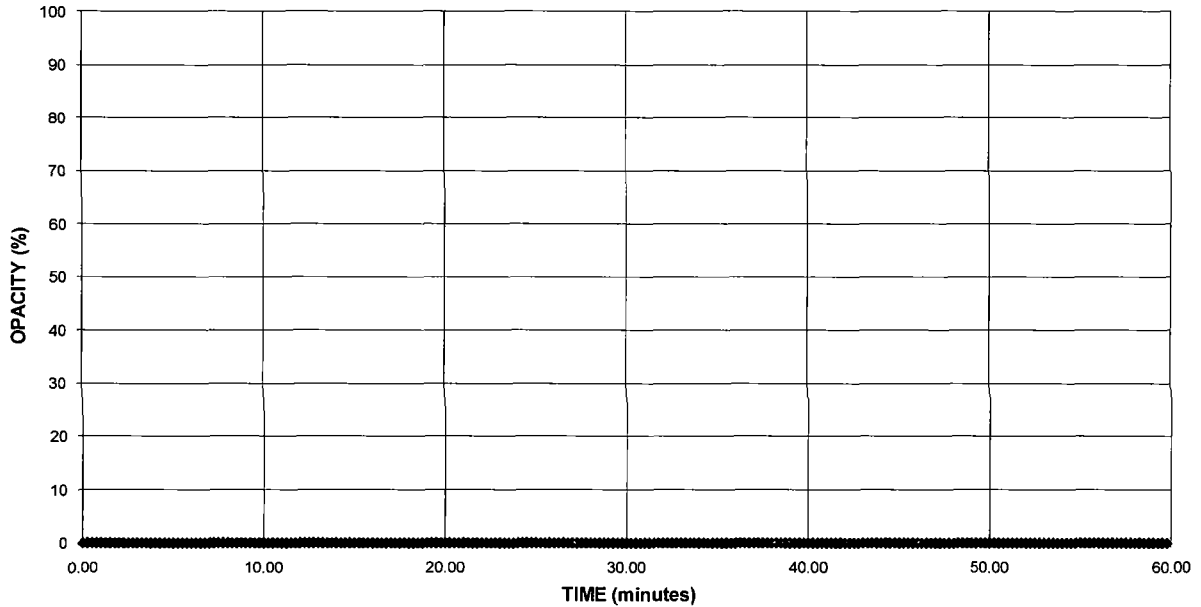


Company: Florida Power and Light
Equipment: Mitsubishi 501G without Duct Burners
Location: West County Energy Center
Date: November 15, 2009
Project #: bv-10-westcounty.fl-comp#1

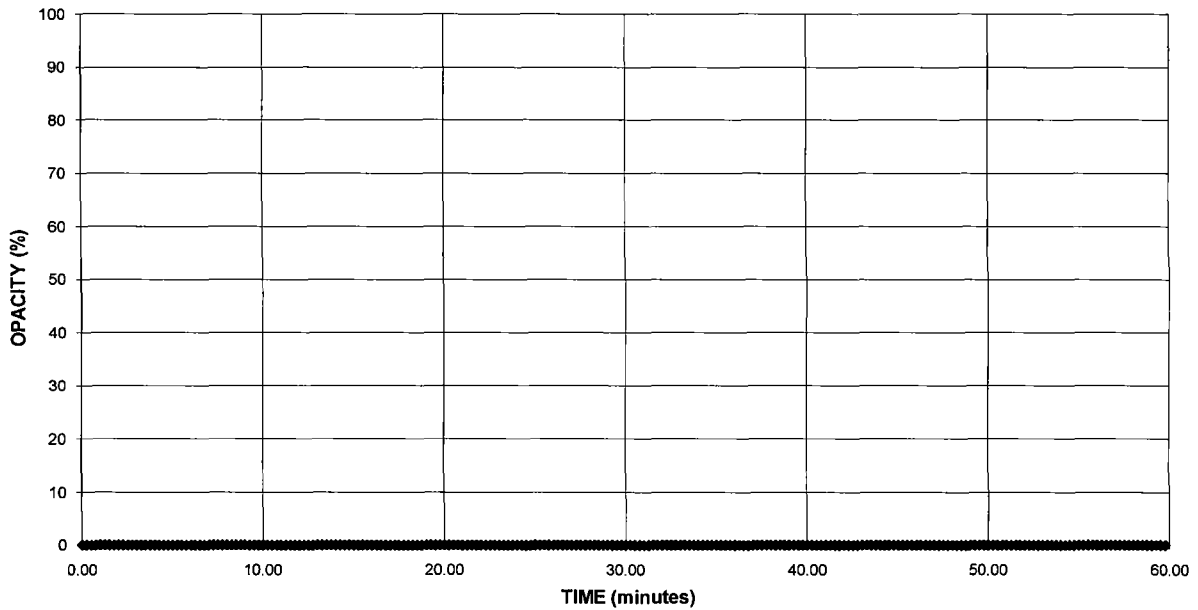
Run 3

Average Opacity: 0.00 %
Maximum Opacity: 0 %
6 Minute Average: 0.00 %
6 Minute Maximum: 0.00 %
Max Time w/ Opacity: 0.00 minutes

OPACITY READINGS (15 second intervals)



OPACITY RESULTS (6 minute averages)



Method Used (Circle One) Method 9 203A 203B Other: _____

VISUAL EMISSIONS OBSERVATION FORM

Company Name Florida Power & Light
 Facility Name West County Energy Center
 Street Address 20505 State Rd. 820
 City Loxahatchee State FL Zip 32740

Form Number _____ Page 1 of 6
 Continued on Form Number _____

Process Natural Gas Unit # 2a Operating Mode Rise W/RTB
 Control Equipment HRSG Operating Mode 150%e

Observation Date 11-15-09 Time Zone Eastern Start Time 1030 End Time 1129

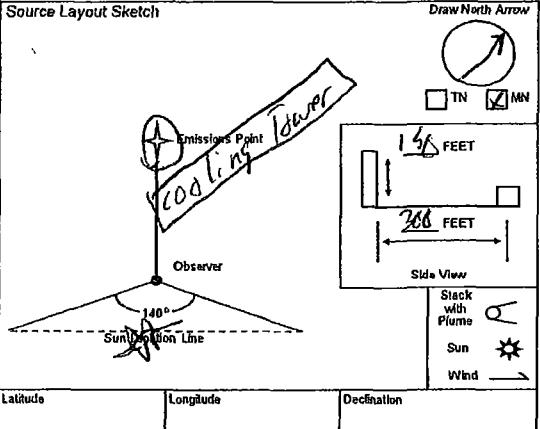
Describe Emissions Point
 Height of Emiss. Pt. Start 150ft End 150 Height of Emiss. Pt. Rel. to Observer Start 145ft End 145
 Distance to Emiss. Pt. Start 500ft End 500ft Direction to Emiss. Pt. (Degrees) Start 320° End 320°

Min	Sec	0	15	30	45	Comments
1		0	0	0	0	
2		0	0	0	0	
3		0	0	0	0	
4		0	0	0	0	
5		0	0	0	0	
6		0	0	0	0	
7		0	0	0	0	
8		0	0	0	0	
9		0	0	0	0	
10		0	0	0	0	
11		0	0	0	0	
12		0	0	0	0	
13		0	0	0	0	
14		0	0	0	0	
15		0	0	0	0	
16		0	0	0	0	
17		0	0	0	0	
18		0	0	0	0	
19		0	0	0	0	
20		0	0	0	0	
21		0	0	0	0	
22		0	0	0	0	
23		0	0	0	0	
24		0	0	0	0	
25		0	0	0	0	
26		0	0	0	0	
27		0	0	0	0	
28		0	0	0	0	
29		0	0	0	0	
30		0	0	0	0	

Vertical Angle to Obs. Pt. Start _____ End _____ Direction to Obs. Pt. (Degrees) Start 140° End 140°
 Distance and Direction to Observation Point from Emission Point Start _____ End _____

Describe Emissions Start Not visible End Not visible
 Emission Color Water Droplet Plume
 Start clear End clear Start NONE End NONE

Describe Plume Background Start sky End sky
 Background Color Start Blue End Blue Sky Conditions Start clear End clear
 Wind Speed Start 3-5 End 3-5 Wind Direction Start NW End NW
 Ambient Temp. Start 79 End 86 Wet Bulb Temp. NA RH Percent _____



Observer's Name (Print) Rob White
 Observer's Signature _____ Date 11-15-09
 Organization AHI
 Certified By ETA Date 10-21-09

Additional Information _____

Method Used (Circle One)
 Method 9 203A 203B Other: _____

VISUAL EMISSIONS OBSERVATION FORM

Company Name: Florida Power & Light
 Facility Name: West County Energy Center
 Street Address: 20605 State Rd 80
 City: Loxahatchee State: FL Zip: 33740

Form Number _____ Page 2 of 6
 Continued on Form Number _____

Process: Natural Gas Unit #: 2a Operating Mode: Base w/ B1B
 Control Equipment: HRSG Operating Mode: Base

Observation Date: 11-15-09 Time Zone: Eastern Start Time: 10:30 End Time: 11:29

Describe Emissions Point
 Height of Emiss. Pt. Start 150 ft End 150 Height of Emiss. Pt. Rel. to Observer Start 145 End 145
 Distance to Emiss. Pt. Start 500 ft End 500 Direction to Emiss. Pt. (Degrees) Start 320° End 320°

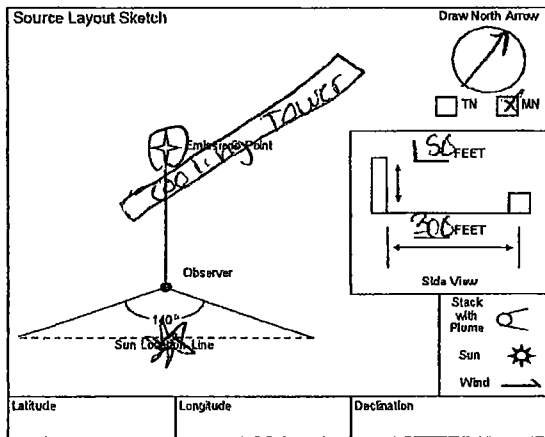
Min	Sec				Comments
	0	15	30	45	

Vertical Angle to Obs. Pt. Start _____ End _____ Direction to Obs. Pt. (Degrees) Start 140° End 140°
 Distance and Direction to Observation Point from Emission Point Start _____ End _____

1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	
8	0	0	0	0	
9	0	0	0	0	
10	0	0	0	0	
11	0	0	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
15	0	0	0	0	
16	0	0	0	0	
17	0	0	0	0	
18	0	0	0	0	
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0	0	0	0	
24	0	0	0	0	
25	0	0	0	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
30	0	0	0	0	

Describe Emissions Start Not Visible End Not Visible
 Emission Color Start clear End clear Water Droplet Plume Start NONE End NONE

Describe Plume Background Start sky End sky
 Background Color Start blue End blue Sky Conditions Start clear End clear
 Wind Speed Start 3-5 End 3-5 Wind Direction Start NW End NW
 Ambient Temp. Start 79 End 85 Wet Bulb Temp. NA RH Percent _____



Observer's Name (Print): Rob White
 Observer's Signature: _____ Date: 11-15-09
 Organization: AHE
 Certified By: EIA Date: 10-21-09

Additional Information

Method Used (Circle One)
 Method 9 203A 203B Other: _____

VISUAL EMISSIONS OBSERVATION FORM

Form Number _____ Page 3 of 6

Company Name Florida Power & Light
 Facility Name West County Energy Center
 Street Address 9050 S State Rd 80
 City Loxahatchee State FL Zip 32740

Continued on Form Number _____

Proprietor GenCorp Unit # _____ Operating Mode Base W/D/B
~~Prof~~
 Control Equipment HR56 Operating Mode Base

Observation Date 11-15-09 Time-Zone Eastern Start Time 11:31 End Time 12:38

Describe Emissions Point
 Height of Emiss. Pt. Start 150 FT End 150 Height of Emiss. Pt. Rel. to Observer Start 145 FT End 145
 Distance to Emiss. Pt. Start 300 FT End 300 Direction to Emiss. Pt. (Degrees) Start 320° End 320°

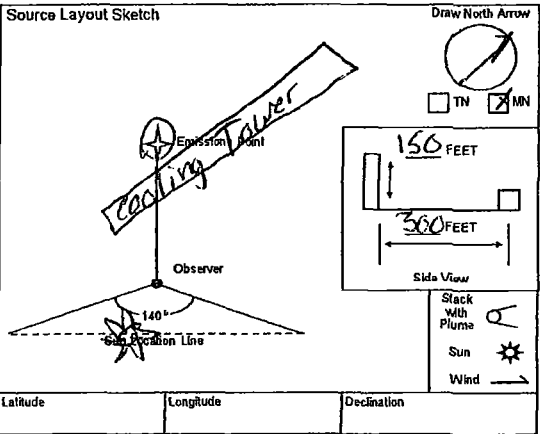
No.	Sec.	0	15	30	45	Comments
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Vertical Angle to Obs. Pt. Direction to Obs. Pt. (Degrees) Start _____ End _____ Start 140° End 140°
 Distance and Direction to Observation Point from Emission Point Start _____ End _____

1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	
8	0	0	0	0	
9	0	0	0	0	
10	0	0	0	0	
11	0	0	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
15	0	0	0	0	
16	0	0	0	0	
17	0	0	0	0	
18	0	0	0	0	
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0	0	0	0	
24	0	0	0	0	
25	0	0	0	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
30	0	0	0	0	

Describe Emissions Start Not Visible End Not Visible
 Emission Color Start Clear End Clear Water Droplet Plume Start NONE End NONE

Describe Plume Background Start Sky End Sky
 Background Color Start Blue End Blue Sky Conditions Start Clear End Clear
 Wind Speed Start 3-5 End 3-5 Wind Direction Start NW End NW
 Ambient Temp. Start 83 End _____ Wet Bulb Temp. NA RH Percent _____



Observer's Name (Print) Rob White
 Observer's Signature _____ Date 11-15-09
 Organization AHI
 Certified By EIA Date 10-21-09

Additional Information _____

Method Used (Circle One)
 Method A 203A 203B Other: _____

VISUAL EMISSIONS OBSERVATION FORM

Form Number _____ Page 4 of 6
 Continued on Form Number _____

Company Name: Florida Power & Light
 Facility Name: West county Energy Center
 Street Address: 20505 State Rd 80
 City: Loxahatchee State: FL Zip: 32740

Observation Date: 11-15-09 Time Zone: Eastern Start Time: 11:31 End Time: 12:30

Process: Natural Gas Unit #: 2a Operating Mode: Base w/DB
 Control Equipment: HRSG Operating Mode: 130%bc

Min Sec 0 15 30 45 Comments

Describe Emissions Point

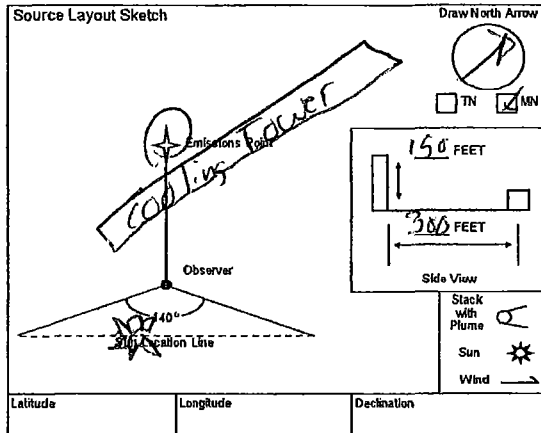
1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
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7	0	0	0	0	
8	0	0	0	0	
9	0	0	0	0	
10	0	0	0	0	
11	0	0	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
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18	0	0	0	0	
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0	0	0	0	
24	0	0	0	0	
25	0	0	0	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
30	0	0	0	0	

Height of Emiss. Pt. Start 150ft End 150ft Height of Emiss. Pt. Rel. to Observer Start 145ft End 145
 Distance to Emiss. Pt. Start 300 End 300 Direction to Emiss. Pt. (Degrees) Start 320° End 320°

Vertical Angle to Obs. Pt. Start _____ End _____ Direction to Obs. Pt. (Degrees) Start 140° End 140°
 Distance and Direction to Observation Point from Emission Point Start _____ End _____

Describe Emissions Start not visible End not visible
 Emission Color Start clear End clear Water Droplet Plume Start NONE End NONE

Describe Plume Background Start sky End sky
 Background Color Start Blue End Blue Sky Conditions Start clear End clear
 Wind Speed Start 3-5 End 3-5 Wind Direction Start W End W
 Ambient Temp. Start 83 End _____ Wet Bulb Temp. _____ RH Percent _____



Observer's Name (Print): Rob White
 Observer's Signature: _____ Date: 11-15-09
 Organization: AHL
 Certified By: ETA Date: 10-21-09

Additional Information

Method Used (Circle One)
 Method 9 203A 203B Other: _____

VISUAL EMISSIONS OBSERVATION FORM

Form Number _____ Page 5 of 6

Company Name Florida Power & Light
 Facility Name West County Energy Center
 Street Address 20505 State Rd 80
 City Loxahatchee State FL Zip 32740

Continued on Form Number _____

Process Natural Gas Unit # 2a Operating Mode Base w/DB
 Control Equipment HRSG Operating Mode Base

Observation Date 11-15-09 Time Zone Eastern Start Time 1231 End Time 1330

Describe Emissions Point
 Height of Emiss. Pt. Start 150ft End 150 Height of Emiss. Pt. Rel. to Observer Start 145ft End 145
 Distance to Emiss. Pt. Start 800ft End 800 Direction to Emiss. Pt. (Degrees) Start 320 End 320

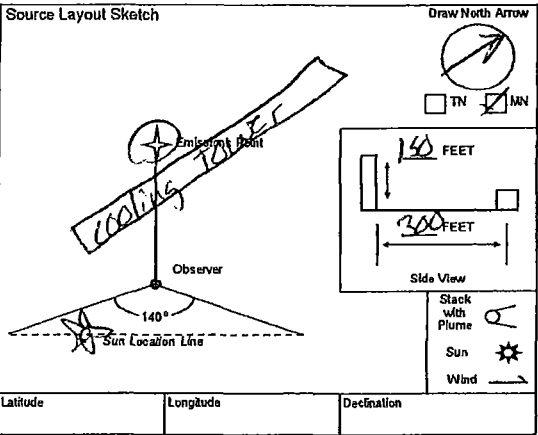
Obs. No.	Time Zone				Comments
	0	15	30	45	

Vertical Angle to Obs. Pt. Start _____ End _____ Direction to Obs. Pt. (Degrees) Start 140 End 140
 Distance and Direction to Observation Point from Emission Point Start _____ End _____

1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	
8	0	0	0	0	
9	0	0	0	0	
10	0	0	0	0	
11	0	0	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
15	0	0	0	0	
16	0	0	0	0	
17	0	0	0	0	
18	0	0	0	0	
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0	0	0	0	
24	0	0	0	0	
25	0	0	0	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
30	0	0	0	0	

Describe Emissions Start Not Visible End Not Visible
 Emission Color Start clear End clear Water Droplet Plume Start NONE End NONE

Describe Plume Background Start sky End sky
 Background Color Start Blue End Blue Sky Conditions Start Clear End clear
 Wind Speed Start 3-5 End 3-5 Wind Direction Start WNW End WNW
 Ambient Temp. Start 85 End 8 Wet Bulb Temp. _____ RH Percent _____



Observer's Name (Print) Rob White
 Observer's Signature _____ Date 11-15-09
 Organization AHI
 Certified By ETA Date 10-21-09

Additional Information _____

Method Used (Circle One)
 Method 9 203A 203B Other: _____

VISUAL EMISSIONS OBSERVATION FORM

Company Name
 Florida Power & Light
 Facility Name
 West Cnty Energy Center
 Street Address
 20505 State Rd 80
 City
 Ocala FL State
 FL Zip
 32740

Form Number _____ Page 6 of 6
 Continued on Form Number _____

Process
 Natural Gas Unit # Operating Mode
 2a Base w/DB
 Control Equipment
 HRSG Operating Mode
 Base

Observation Date
 11-15-09 Time Zone
 Eastern Start Time
 1731 End Time
 1830

Describe Emissions Point
 Height of Emiss. Pt. Height of Emiss. Pt. Rel. to Observer
 Start 150ft End 150ft Start 145 End 145
 Distance to Emiss. Pt. Direction to Emiss. Pt. (Degrees)
 Start 580ft End 500 Start 320° End 320°

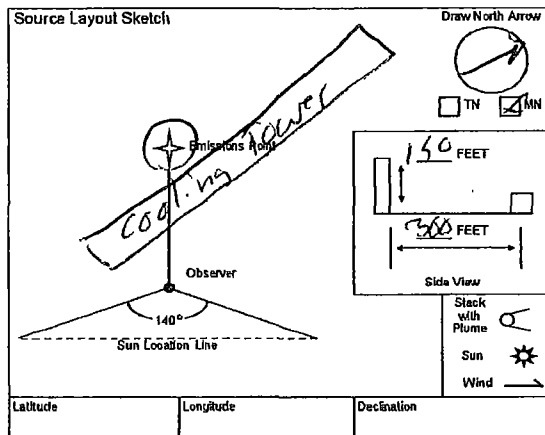
Min	Sec				Comments
	0	15	30	45	

Vertical Angle to Obs. Pt. Direction to Obs. Pt. (Degrees)
 Start End Start 140° End 140°
 Distance and Direction to Observation Point from Emission Point
 Start End

1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	
8	0	0	0	0	
9	0	0	0	0	
10	0	0	0	0	
11	0	0	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
15	0	0	0	0	
16	0	0	0	0	
17	0	0	0	0	
18	0	0	0	0	
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0	0	0	0	
24	0	0	0	0	
25	0	0	0	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
30	0	0	0	0	

Describe Emissions
 Start Not Visible End Not Visible
 Emission Color Water Droplet Plume
 Start clear End clear Start NONE End NONE

Describe Plume Background
 Start sky End sky
 Background Color Sky Conditions
 Start Blue End Blue Start clear End clear
 Wind Speed Wind Direction
 Start 3-5 End 3-5 Start NW End NW
 Ambient Temp. Wet Bulb Temp. RH Percent
 Start 85 End NA



Observer's Name (Print)
 R. B. White
 Observer's Signature
 [Signature] Date
 11-15-09
 Organization
 AHI
 Certified By
 ETA Date
 10-21-09

Additional Information

TEST RESULTS

**Opacity
Base Load with Duct Burners**

Company: Florida Power and Light Equipment: Mitsubishi 501G with Duct Burners Location: West County Energy Center Date: November 16, 2009 Project #: bv-10-westcounty.fl-comp#1						Run 1	Average Opacity: 0.00 % Maximum Opacity: 0 % 6 Minute Average: 0.00 % 6 Minute Maximum: 0.00 % Max Time w/ Opacity: 0.00 minutes				
TIME (min)	OPACITY (%)	6 MIN AVG.	TIME (min)	OPACITY (%)	6 MIN AVG.	TIME (min)	OPACITY (%)	6 MIN AVG.	TIME (min)	OPACITY (%)	6 MIN AVG.
0.00	0	N/A	15.00	0	0.00	30.00	0	0.00	45.00	0	0.00
0.25	0	N/A	15.25	0	0.00	30.25	0	0.00	45.25	0	0.00
0.50	0	N/A	15.50	0	0.00	30.50	0	0.00	45.50	0	0.00
0.75	0	N/A	15.75	0	0.00	30.75	0	0.00	45.75	0	0.00
1.00	0	N/A	16.00	0	0.00	31.00	0	0.00	46.00	0	0.00
1.25	0	N/A	16.25	0	0.00	31.25	0	0.00	46.25	0	0.00
1.50	0	N/A	16.50	0	0.00	31.50	0	0.00	46.50	0	0.00
1.75	0	N/A	16.75	0	0.00	31.75	0	0.00	46.75	0	0.00
2.00	0	N/A	17.00	0	0.00	32.00	0	0.00	47.00	0	0.00
2.25	0	N/A	17.25	0	0.00	32.25	0	0.00	47.25	0	0.00
2.50	0	N/A	17.50	0	0.00	32.50	0	0.00	47.50	0	0.00
2.75	0	N/A	17.75	0	0.00	32.75	0	0.00	47.75	0	0.00
3.00	0	N/A	18.00	0	0.00	33.00	0	0.00	48.00	0	0.00
3.25	0	N/A	18.25	0	0.00	33.25	0	0.00	48.25	0	0.00
3.50	0	N/A	18.50	0	0.00	33.50	0	0.00	48.50	0	0.00
3.75	0	N/A	18.75	0	0.00	33.75	0	0.00	48.75	0	0.00
4.00	0	N/A	19.00	0	0.00	34.00	0	0.00	49.00	0	0.00
4.25	0	N/A	19.25	0	0.00	34.25	0	0.00	49.25	0	0.00
4.50	0	N/A	19.50	0	0.00	34.50	0	0.00	49.50	0	0.00
4.75	0	N/A	19.75	0	0.00	34.75	0	0.00	49.75	0	0.00
5.00	0	N/A	20.00	0	0.00	35.00	0	0.00	50.00	0	0.00
5.25	0	N/A	20.25	0	0.00	35.25	0	0.00	50.25	0	0.00
5.50	0	N/A	20.50	0	0.00	35.50	0	0.00	50.50	0	0.00
5.75	0	0.00	20.75	0	0.00	35.75	0	0.00	50.75	0	0.00
6.00	0	0.00	21.00	0	0.00	36.00	0	0.00	51.00	0	0.00
6.25	0	0.00	21.25	0	0.00	36.25	0	0.00	51.25	0	0.00
6.50	0	0.00	21.50	0	0.00	36.50	0	0.00	51.50	0	0.00
6.75	0	0.00	21.75	0	0.00	36.75	0	0.00	51.75	0	0.00
7.00	0	0.00	22.00	0	0.00	37.00	0	0.00	52.00	0	0.00
7.25	0	0.00	22.25	0	0.00	37.25	0	0.00	52.25	0	0.00
7.50	0	0.00	22.50	0	0.00	37.50	0	0.00	52.50	0	0.00
7.75	0	0.00	22.75	0	0.00	37.75	0	0.00	52.75	0	0.00
8.00	0	0.00	23.00	0	0.00	38.00	0	0.00	53.00	0	0.00
8.25	0	0.00	23.25	0	0.00	38.25	0	0.00	53.25	0	0.00
8.50	0	0.00	23.50	0	0.00	38.50	0	0.00	53.50	0	0.00
8.75	0	0.00	23.75	0	0.00	38.75	0	0.00	53.75	0	0.00
9.00	0	0.00	24.00	0	0.00	39.00	0	0.00	54.00	0	0.00
9.25	0	0.00	24.25	0	0.00	39.25	0	0.00	54.25	0	0.00
9.50	0	0.00	24.50	0	0.00	39.50	0	0.00	54.50	0	0.00
9.75	0	0.00	24.75	0	0.00	39.75	0	0.00	54.75	0	0.00
10.00	0	0.00	25.00	0	0.00	40.00	0	0.00	55.00	0	0.00
10.25	0	0.00	25.25	0	0.00	40.25	0	0.00	55.25	0	0.00
10.50	0	0.00	25.50	0	0.00	40.50	0	0.00	55.50	0	0.00
10.75	0	0.00	25.75	0	0.00	40.75	0	0.00	55.75	0	0.00
11.00	0	0.00	26.00	0	0.00	41.00	0	0.00	56.00	0	0.00
11.25	0	0.00	26.25	0	0.00	41.25	0	0.00	56.25	0	0.00
11.50	0	0.00	26.50	0	0.00	41.50	0	0.00	56.50	0	0.00
11.75	0	0.00	26.75	0	0.00	41.75	0	0.00	56.75	0	0.00
12.00	0	0.00	27.00	0	0.00	42.00	0	0.00	57.00	0	0.00
12.25	0	0.00	27.25	0	0.00	42.25	0	0.00	57.25	0	0.00
12.50	0	0.00	27.50	0	0.00	42.50	0	0.00	57.50	0	0.00
12.75	0	0.00	27.75	0	0.00	42.75	0	0.00	57.75	0	0.00
13.00	0	0.00	28.00	0	0.00	43.00	0	0.00	58.00	0	0.00
13.25	0	0.00	28.25	0	0.00	43.25	0	0.00	58.25	0	0.00
13.50	0	0.00	28.50	0	0.00	43.50	0	0.00	58.50	0	0.00
13.75	0	0.00	28.75	0	0.00	43.75	0	0.00	58.75	0	0.00
14.00	0	0.00	29.00	0	0.00	44.00	0	0.00	59.00	0	0.00
14.25	0	0.00	29.25	0	0.00	44.25	0	0.00	59.25	0	0.00
14.50	0	0.00	29.50	0	0.00	44.50	0	0.00	59.50	0	0.00
14.75	0	0.00	29.75	0	0.00	44.75	0	0.00	59.75	0	0.00

Company: Florida Power and Light Equipment: Mitsubishi 501G with Duct Burners Location: West County Energy Center Date: November 16, 2009 Project #: bv-10-westcounty.fl-comp#1						Run 2			Average Opacity: 0.00 % Maximum Opacity: 0 % 6 Minute Average: 0.00 % 6 Minute Maximum: 0.00 % Max Time w/ Opacity: 0.00 minutes		
TIME (min)	OPACITY (%)	6 MIN AVG.	TIME (min)	OPACITY (%)	6 MIN AVG.	TIME (min)	OPACITY (%)	6 MIN AVG.	TIME (min)	OPACITY (%)	6 MIN AVG.
0.00	0	N/A	15.00	0	0.00	30.00	0	0.00	45.00	0	0.00
0.25	0	N/A	15.25	0	0.00	30.25	0	0.00	45.25	0	0.00
0.50	0	N/A	15.50	0	0.00	30.50	0	0.00	45.50	0	0.00
0.75	0	N/A	15.75	0	0.00	30.75	0	0.00	45.75	0	0.00
1.00	0	N/A	16.00	0	0.00	31.00	0	0.00	46.00	0	0.00
1.25	0	N/A	16.25	0	0.00	31.25	0	0.00	46.25	0	0.00
1.50	0	N/A	16.50	0	0.00	31.50	0	0.00	46.50	0	0.00
1.75	0	N/A	16.75	0	0.00	31.75	0	0.00	46.75	0	0.00
2.00	0	N/A	17.00	0	0.00	32.00	0	0.00	47.00	0	0.00
2.25	0	N/A	17.25	0	0.00	32.25	0	0.00	47.25	0	0.00
2.50	0	N/A	17.50	0	0.00	32.50	0	0.00	47.50	0	0.00
2.75	0	N/A	17.75	0	0.00	32.75	0	0.00	47.75	0	0.00
3.00	0	N/A	18.00	0	0.00	33.00	0	0.00	48.00	0	0.00
3.25	0	N/A	18.25	0	0.00	33.25	0	0.00	48.25	0	0.00
3.50	0	N/A	18.50	0	0.00	33.50	0	0.00	48.50	0	0.00
3.75	0	N/A	18.75	0	0.00	33.75	0	0.00	48.75	0	0.00
4.00	0	N/A	19.00	0	0.00	34.00	0	0.00	49.00	0	0.00
4.25	0	N/A	19.25	0	0.00	34.25	0	0.00	49.25	0	0.00
4.50	0	N/A	19.50	0	0.00	34.50	0	0.00	49.50	0	0.00
4.75	0	N/A	19.75	0	0.00	34.75	0	0.00	49.75	0	0.00
5.00	0	N/A	20.00	0	0.00	35.00	0	0.00	50.00	0	0.00
5.25	0	N/A	20.25	0	0.00	35.25	0	0.00	50.25	0	0.00
5.50	0	N/A	20.50	0	0.00	35.50	0	0.00	50.50	0	0.00
5.75	0	0.00	20.75	0	0.00	35.75	0	0.00	50.75	0	0.00
6.00	0	0.00	21.00	0	0.00	36.00	0	0.00	51.00	0	0.00
6.25	0	0.00	21.25	0	0.00	36.25	0	0.00	51.25	0	0.00
6.50	0	0.00	21.50	0	0.00	36.50	0	0.00	51.50	0	0.00
6.75	0	0.00	21.75	0	0.00	36.75	0	0.00	51.75	0	0.00
7.00	0	0.00	22.00	0	0.00	37.00	0	0.00	52.00	0	0.00
7.25	0	0.00	22.25	0	0.00	37.25	0	0.00	52.25	0	0.00
7.50	0	0.00	22.50	0	0.00	37.50	0	0.00	52.50	0	0.00
7.75	0	0.00	22.75	0	0.00	37.75	0	0.00	52.75	0	0.00
8.00	0	0.00	23.00	0	0.00	38.00	0	0.00	53.00	0	0.00
8.25	0	0.00	23.25	0	0.00	38.25	0	0.00	53.25	0	0.00
8.50	0	0.00	23.50	0	0.00	38.50	0	0.00	53.50	0	0.00
8.75	0	0.00	23.75	0	0.00	38.75	0	0.00	53.75	0	0.00
9.00	0	0.00	24.00	0	0.00	39.00	0	0.00	54.00	0	0.00
9.25	0	0.00	24.25	0	0.00	39.25	0	0.00	54.25	0	0.00
9.50	0	0.00	24.50	0	0.00	39.50	0	0.00	54.50	0	0.00
9.75	0	0.00	24.75	0	0.00	39.75	0	0.00	54.75	0	0.00
10.00	0	0.00	25.00	0	0.00	40.00	0	0.00	55.00	0	0.00
10.25	0	0.00	25.25	0	0.00	40.25	0	0.00	55.25	0	0.00
10.50	0	0.00	25.50	0	0.00	40.50	0	0.00	55.50	0	0.00
10.75	0	0.00	25.75	0	0.00	40.75	0	0.00	55.75	0	0.00
11.00	0	0.00	26.00	0	0.00	41.00	0	0.00	56.00	0	0.00
11.25	0	0.00	26.25	0	0.00	41.25	0	0.00	56.25	0	0.00
11.50	0	0.00	26.50	0	0.00	41.50	0	0.00	56.50	0	0.00
11.75	0	0.00	26.75	0	0.00	41.75	0	0.00	56.75	0	0.00
12.00	0	0.00	27.00	0	0.00	42.00	0	0.00	57.00	0	0.00
12.25	0	0.00	27.25	0	0.00	42.25	0	0.00	57.25	0	0.00
12.50	0	0.00	27.50	0	0.00	42.50	0	0.00	57.50	0	0.00
12.75	0	0.00	27.75	0	0.00	42.75	0	0.00	57.75	0	0.00
13.00	0	0.00	28.00	0	0.00	43.00	0	0.00	58.00	0	0.00
13.25	0	0.00	28.25	0	0.00	43.25	0	0.00	58.25	0	0.00
13.50	0	0.00	28.50	0	0.00	43.50	0	0.00	58.50	0	0.00
13.75	0	0.00	28.75	0	0.00	43.75	0	0.00	58.75	0	0.00
14.00	0	0.00	29.00	0	0.00	44.00	0	0.00	59.00	0	0.00
14.25	0	0.00	29.25	0	0.00	44.25	0	0.00	59.25	0	0.00
14.50	0	0.00	29.50	0	0.00	44.50	0	0.00	59.50	0	0.00
14.75	0	0.00	29.75	0	0.00	44.75	0	0.00	59.75	0	0.00

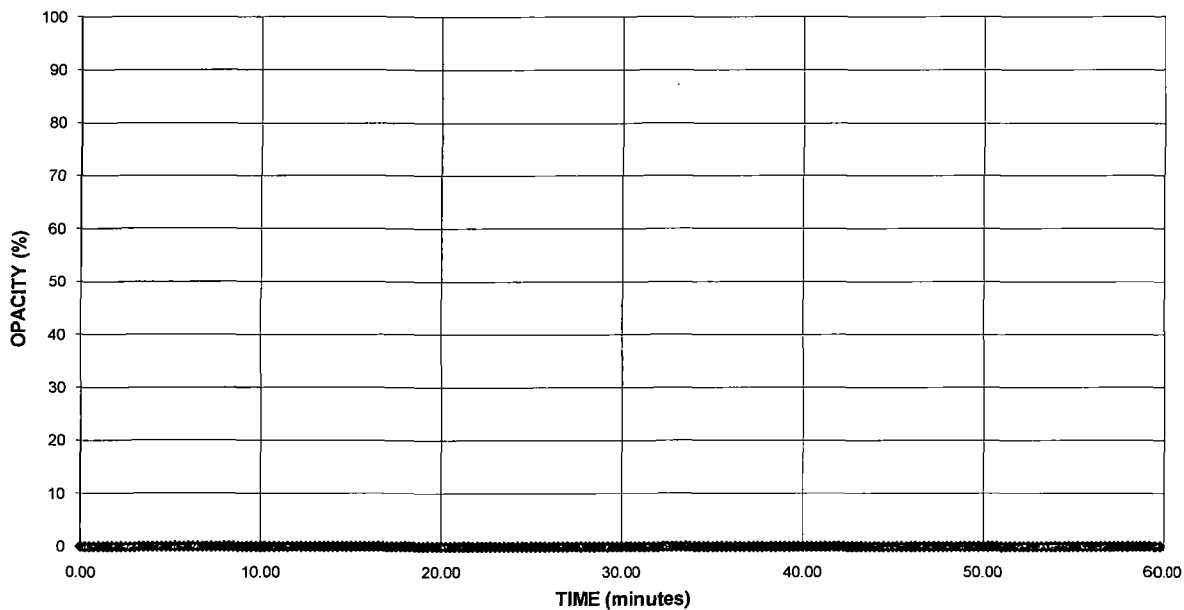
Company: Florida Power and Light Equipment: Mitsubishi 501G with Duct Burners Location: West County Energy Center Date: November 16, 2009 Project #: bv-10-westcounty.fl-comp#1						Run 3			Average Opacity: 0.00 % Maximum Opacity: 0 % 6 Minute Average: 0.00 % 6 Minute Maximum: 0.00 % Max Time w/ Opacity: 0.00 minutes		
TIME (min)	OPACITY (%)	6 MIN AVG.	TIME (min)	OPACITY (%)	6 MIN AVG.	TIME (min)	OPACITY (%)	6 MIN AVG.	TIME (min)	OPACITY (%)	6 MIN AVG.
0.00	0	N/A	15.00	0	0.00	30.00	0	0.00	45.00	0	0.00
0.25	0	N/A	15.25	0	0.00	30.25	0	0.00	45.25	0	0.00
0.50	0	N/A	15.50	0	0.00	30.50	0	0.00	45.50	0	0.00
0.75	0	N/A	15.75	0	0.00	30.75	0	0.00	45.75	0	0.00
1.00	0	N/A	16.00	0	0.00	31.00	0	0.00	46.00	0	0.00
1.25	0	N/A	16.25	0	0.00	31.25	0	0.00	46.25	0	0.00
1.50	0	N/A	16.50	0	0.00	31.50	0	0.00	46.50	0	0.00
1.75	0	N/A	16.75	0	0.00	31.75	0	0.00	46.75	0	0.00
2.00	0	N/A	17.00	0	0.00	32.00	0	0.00	47.00	0	0.00
2.25	0	N/A	17.25	0	0.00	32.25	0	0.00	47.25	0	0.00
2.50	0	N/A	17.50	0	0.00	32.50	0	0.00	47.50	0	0.00
2.75	0	N/A	17.75	0	0.00	32.75	0	0.00	47.75	0	0.00
3.00	0	N/A	18.00	0	0.00	33.00	0	0.00	48.00	0	0.00
3.25	0	N/A	18.25	0	0.00	33.25	0	0.00	48.25	0	0.00
3.50	0	N/A	18.50	0	0.00	33.50	0	0.00	48.50	0	0.00
3.75	0	N/A	18.75	0	0.00	33.75	0	0.00	48.75	0	0.00
4.00	0	N/A	19.00	0	0.00	34.00	0	0.00	49.00	0	0.00
4.25	0	N/A	19.25	0	0.00	34.25	0	0.00	49.25	0	0.00
4.50	0	N/A	19.50	0	0.00	34.50	0	0.00	49.50	0	0.00
4.75	0	N/A	19.75	0	0.00	34.75	0	0.00	49.75	0	0.00
5.00	0	N/A	20.00	0	0.00	35.00	0	0.00	50.00	0	0.00
5.25	0	N/A	20.25	0	0.00	35.25	0	0.00	50.25	0	0.00
5.50	0	N/A	20.50	0	0.00	35.50	0	0.00	50.50	0	0.00
5.75	0	0.00	20.75	0	0.00	35.75	0	0.00	50.75	0	0.00
6.00	0	0.00	21.00	0	0.00	36.00	0	0.00	51.00	0	0.00
6.25	0	0.00	21.25	0	0.00	36.25	0	0.00	51.25	0	0.00
6.50	0	0.00	21.50	0	0.00	36.50	0	0.00	51.50	0	0.00
6.75	0	0.00	21.75	0	0.00	36.75	0	0.00	51.75	0	0.00
7.00	0	0.00	22.00	0	0.00	37.00	0	0.00	52.00	0	0.00
7.25	0	0.00	22.25	0	0.00	37.25	0	0.00	52.25	0	0.00
7.50	0	0.00	22.50	0	0.00	37.50	0	0.00	52.50	0	0.00
7.75	0	0.00	22.75	0	0.00	37.75	0	0.00	52.75	0	0.00
8.00	0	0.00	23.00	0	0.00	38.00	0	0.00	53.00	0	0.00
8.25	0	0.00	23.25	0	0.00	38.25	0	0.00	53.25	0	0.00
8.50	0	0.00	23.50	0	0.00	38.50	0	0.00	53.50	0	0.00
8.75	0	0.00	23.75	0	0.00	38.75	0	0.00	53.75	0	0.00
9.00	0	0.00	24.00	0	0.00	39.00	0	0.00	54.00	0	0.00
9.25	0	0.00	24.25	0	0.00	39.25	0	0.00	54.25	0	0.00
9.50	0	0.00	24.50	0	0.00	39.50	0	0.00	54.50	0	0.00
9.75	0	0.00	24.75	0	0.00	39.75	0	0.00	54.75	0	0.00
10.00	0	0.00	25.00	0	0.00	40.00	0	0.00	55.00	0	0.00
10.25	0	0.00	25.25	0	0.00	40.25	0	0.00	55.25	0	0.00
10.50	0	0.00	25.50	0	0.00	40.50	0	0.00	55.50	0	0.00
10.75	0	0.00	25.75	0	0.00	40.75	0	0.00	55.75	0	0.00
11.00	0	0.00	26.00	0	0.00	41.00	0	0.00	56.00	0	0.00
11.25	0	0.00	26.25	0	0.00	41.25	0	0.00	56.25	0	0.00
11.50	0	0.00	26.50	0	0.00	41.50	0	0.00	56.50	0	0.00
11.75	0	0.00	26.75	0	0.00	41.75	0	0.00	56.75	0	0.00
12.00	0	0.00	27.00	0	0.00	42.00	0	0.00	57.00	0	0.00
12.25	0	0.00	27.25	0	0.00	42.25	0	0.00	57.25	0	0.00
12.50	0	0.00	27.50	0	0.00	42.50	0	0.00	57.50	0	0.00
12.75	0	0.00	27.75	0	0.00	42.75	0	0.00	57.75	0	0.00
13.00	0	0.00	28.00	0	0.00	43.00	0	0.00	58.00	0	0.00
13.25	0	0.00	28.25	0	0.00	43.25	0	0.00	58.25	0	0.00
13.50	0	0.00	28.50	0	0.00	43.50	0	0.00	58.50	0	0.00
13.75	0	0.00	28.75	0	0.00	43.75	0	0.00	58.75	0	0.00
14.00	0	0.00	29.00	0	0.00	44.00	0	0.00	59.00	0	0.00
14.25	0	0.00	29.25	0	0.00	44.25	0	0.00	59.25	0	0.00
14.50	0	0.00	29.50	0	0.00	44.50	0	0.00	59.50	0	0.00
14.75	0	0.00	29.75	0	0.00	44.75	0	0.00	59.75	0	0.00

Company: Florida Power and Light
Equipment: Mitsubishi 501G with Duct Burners
Location: West County Energy Center
Date: November 16, 2009
Project #: bv-10-westcounty.fl-comp#1

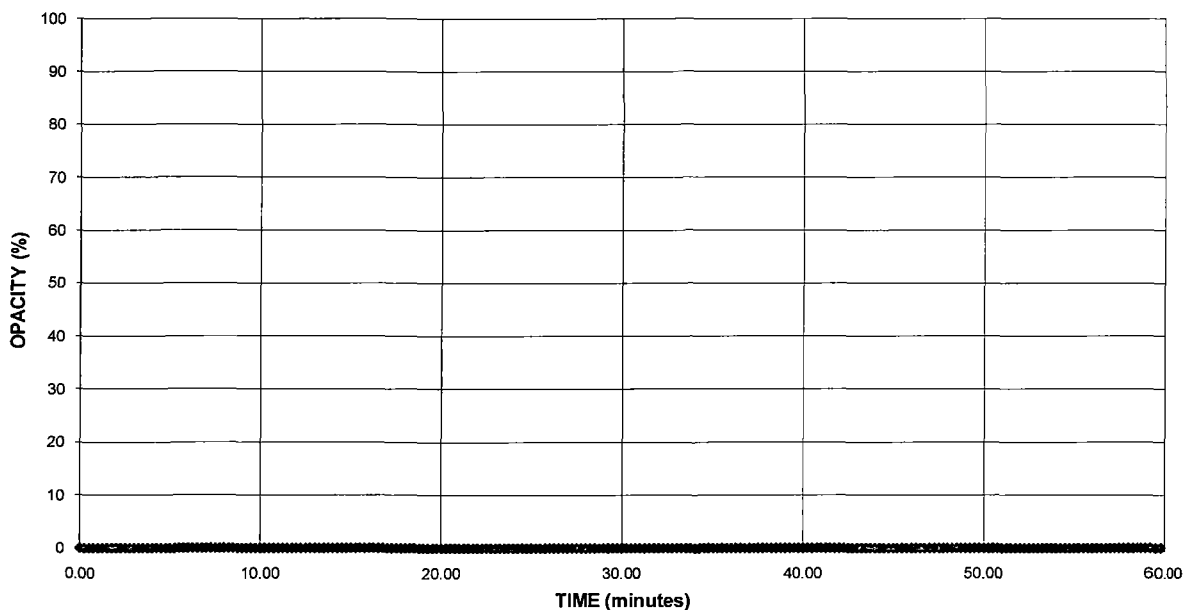
Run 1

Average Opacity: 0.00 %
Maximum Opacity: 0 %
6 Minute Average: 0.00 %
6 Minute Maximum: 0.00 %
Max Time w/ Opacity: 0.00 minutes

OPACITY READINGS (15 second intervals)



OPACITY RESULTS (6 minute averages)

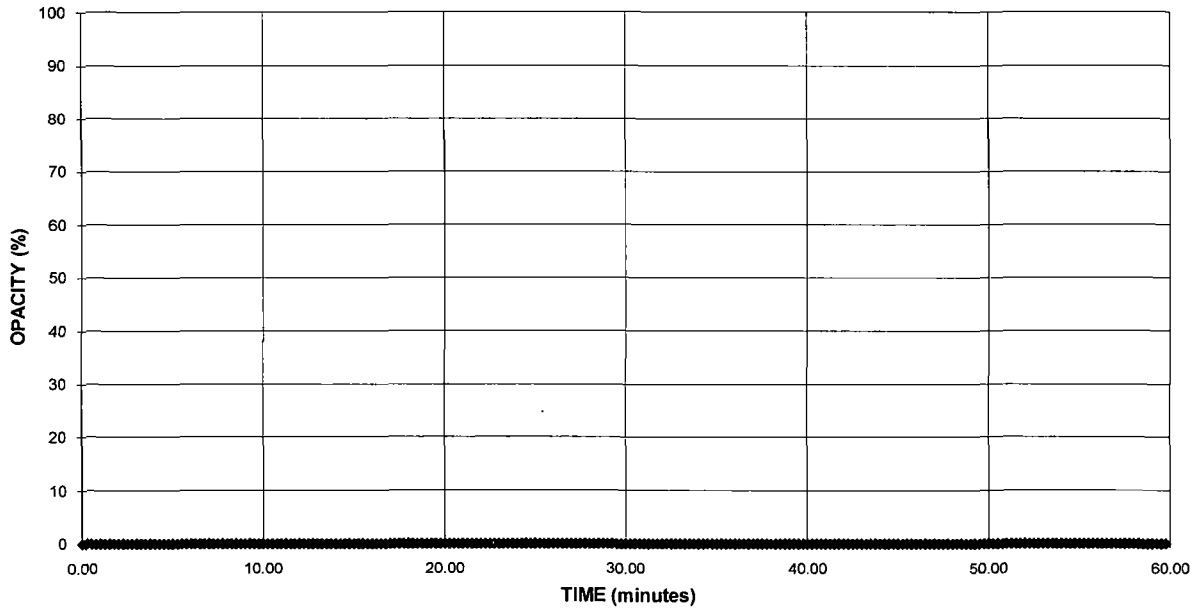


Company: Florida Power and Light
Equipment: Mitsubishi 501G with Duct Burners
Location: West County Energy Center
Date: November 16, 2009
Project #: bv-10-westcounty.fl-comp#1

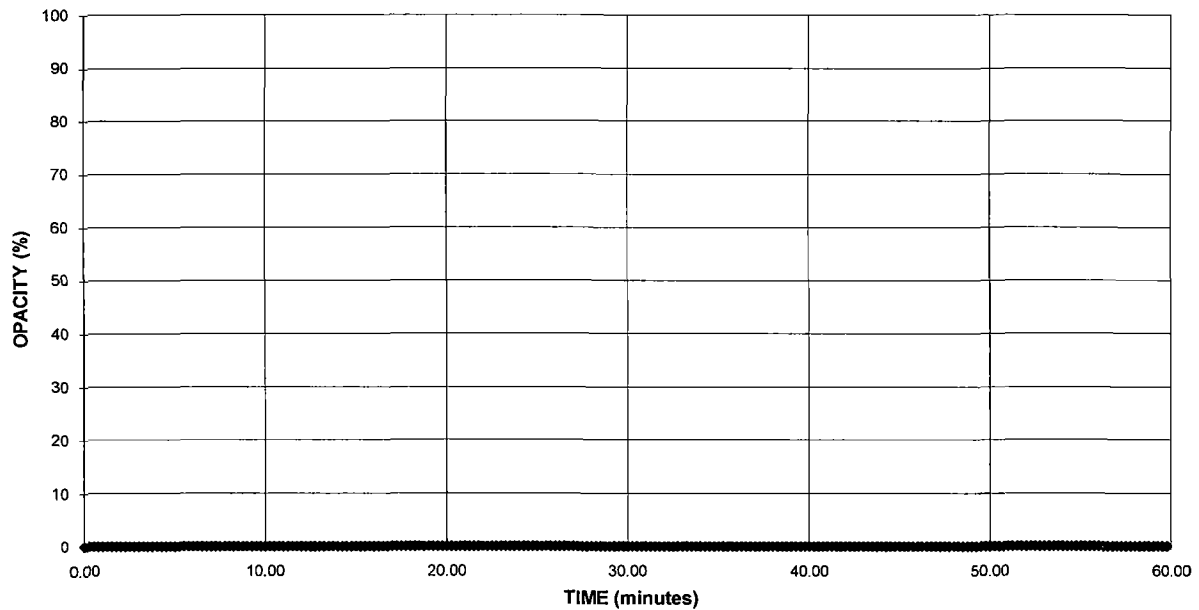
Run 2

Average Opacity: 0.00 %
Maximum Opacity: 0 %
6 Minute Average: 0.00 %
6 Minute Maximum: 0.00 %
Max Time w/ Opacity: 0.00 minutes

**OPACITY READINGS
(15 second intervals)**



**OPACITY RESULTS
(6 minute averages)**

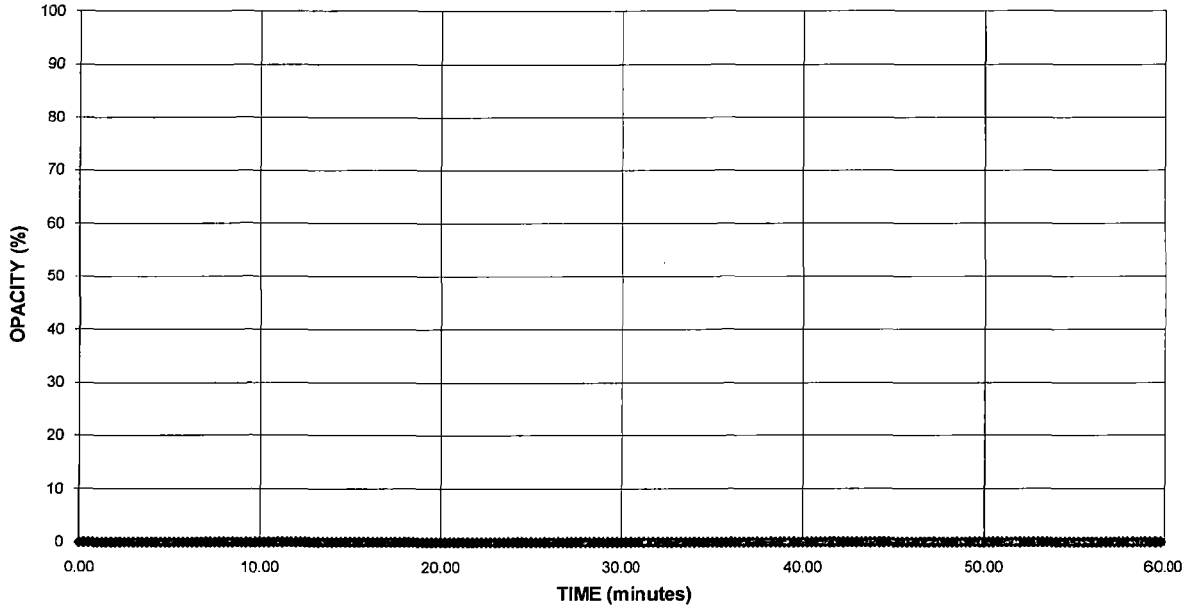


Company: Florida Power and Light
Equipment: Mitsubishi 501G with Duct Burners
Location: West County Energy Center
Date: November 16, 2009
Project #: bv-10-westcounty.fl-comp#1

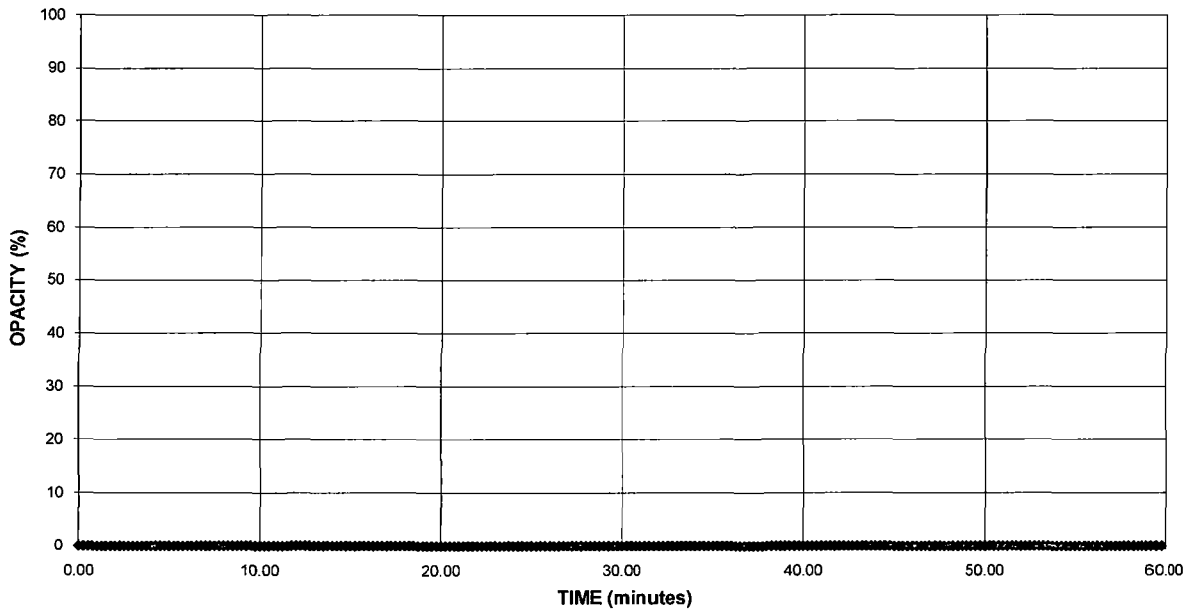
Run 3

Average Opacity: 0.00 %
Maximum Opacity: 0 %
6 Minute Average: 0.00 %
6 Minute Maximum: 0.00 %
Max Time w/ Opacity: 0.00 minutes

**OPACITY READINGS
(15 second intervals)**



**OPACITY RESULTS
(6 minute averages)**



Method Used (Circle One)
 Methods 203A 203B Other: _____

VISUAL EMISSIONS OBSERVATION FORM

Company Name
Florida Power & Light

Facility Name
West County Energy Center

Street Address
20505 State Rd 30

City
Loxahatchee State FL Zip 33440

Form Number _____ Page 1 of 6

Continued on Form Number _____

Process
Natural Gas Unit # 2a Operating Mode
Base w/ DB

Control Equipment
HRSG Operating Mode
Base

Observation Date
11-16-09 Time Zone
Pacific Start Time
10:31 End Time
11:30

Describe Emissions Point

Height of Emiss. Pt. Start 190 End 150 Height of Emiss. Pt. Rel. to Observer Start 195 End 145

Distance to Emiss. Pt. Start 300ft End 300 Direction to Emiss. Pt. (Degrees) Start 40 End 40

Min.	Sec.	0	15	30	45	Comments
1		0	0	0	0	
2		0	0	0	0	
3		0	0	0	0	
4		0	0	0	0	
5		0	0	0	0	
6		0	0	0	0	
7		0	0	0	0	
8		0	0	0	0	
9		0	0	0	0	
10		0	0	0	0	
11		0	0	0	0	
12		0	0	0	0	
13		0	0	0	0	
14		0	0	0	0	
15		0	0	0	0	
16		0	0	0	0	
17		0	0	0	0	
18		0	0	0	0	
19		0	0	0	0	
20		0	0	0	0	
21		0	0	0	0	
22		0	0	0	0	
23		0	0	0	0	
24		0	0	0	0	
25		0	0	0	0	
26		0	0	0	0	
27		0	0	0	0	
28		0	0	0	0	
29		0	0	0	0	
30		0	0	0	0	

Vertical Angle to Obs. Pt. Direction to Obs. Pt. (Degrees) Start 220 End 220

Distance and Direction to Observation Point from Emission Point Start _____ End _____

Describe Emissions Start not visible End not visible

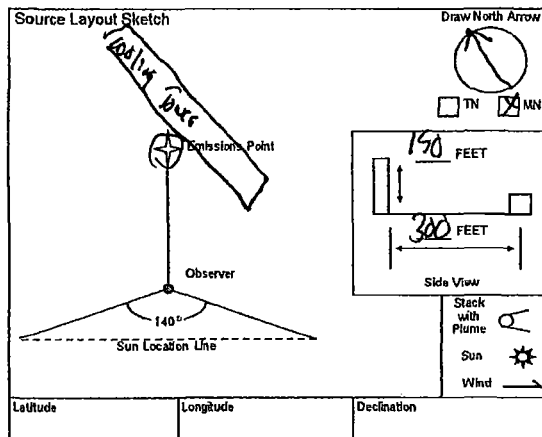
Emission Color Start clear End clear Water Droplet Plume Start NONE End NONE

Describe Plume Background Start sky End sky

Background Color Start blue End blue Sky Conditions Start clear End clear

Wind Speed Start 3-5 End 3-5 Wind Direction Start NW End NW

Ambient Temp. Start 74 End 78 Wet Bulb Temp. NA RH Percent _____



Observer's Name (Print) Rob White

Observer's Signature _____ Date 11-16-09

Organization AHE

Certified By EIA Date 10-21-09

Additional Information

Method Used (Circle One)
 Method 9 203A 203B Other: _____

VISUAL EMISSIONS OBSERVATION FORM

Form Number _____ Page 2 of 6

Company Name
Florida Power & Light

Facility Name
Worst County Energy Center

Street Address
20505 State Rd 80

City
Loxahatchee State
FL Zip
32740

Continued on Form Number _____

Process
Natural Gas Unit #
15 Operating Mode
Base Load

Control Equipment
HRSG Operating Mode
Base

Observation Date
11-16-09 Time Zone
Eastern Start Time
10:31 End Time
11:30

Describe Emissions Point

Height of Emiss. Pt. Start
150ft End
150ft Height of Emiss. Pt. Rel. to Observer Start
145 End
145

Distance to Emiss. Pt. Start
500ft End
500 Direction to Emiss. Pt. (Degrees) Start
40° End
40°

Min	Sec.	0	15	30	45	Comments
-----	------	---	----	----	----	----------

Vertical Angle to Obs. Pt. Start
220° End
220° Direction to Obs. Pt. (Degrees) Start
220° End
220°

Distance and Direction to Observation Point from Emission Point Start _____ End _____

1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	
8	0	0	0	0	
9	0	0	0	0	
10	0	0	0	0	
11	0	0	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
15	0	0	0	0	
16	0	0	0	0	
17	0	0	0	0	
18	0	0	0	0	
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0	0	0	0	
24	0	0	0	0	
25	0	0	0	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
30	0	0	0	0	

Describe Emissions Start
Not visible End
not visible

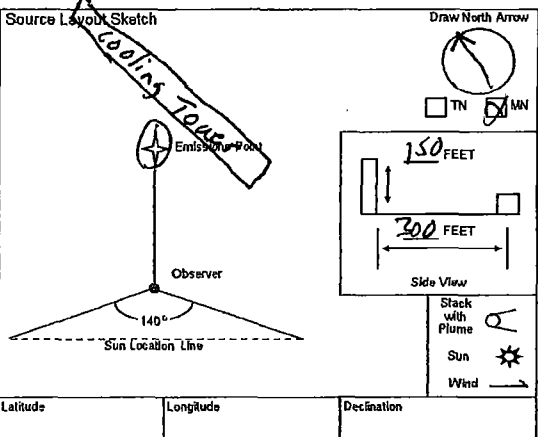
Emission Color Start
clear End
clear Water Droplet Plume Start
NONE End
NONE

Describe Plume Background Start
sky End
sky

Background Color Start
Blue Gray End
Blue Gray Sky Condition Start
clear End
cloudy

Wind Speed Start
3-5 End
3-5 Wind Direction Start
NW End
NW

Ambient Temp. Start
74 End
78 Wet Bulb Temp. Start
NA End
NA RH Percent _____



Observer's Name (Print)
Rob White

Observer's Signature
[Signature] Date
11-16-09

Organization
AHI

Certified By
ETA Date
10-21-09

Additional Information

Method Used (Circle One)
 Method B 203A 203B Other: _____

VISUAL EMISSIONS OBSERVATION FORM

Company Name: Florida Power & Light
 Facility Name: West County Energy Center
 Street Address: 20505 State Rd 80
 City: Loxahatchee State: FL Zip: 32740

Form Number _____ Page 3 of 6

Continued on Form Number _____

Process: Natural Gas Unit #: 2a Operating Mode: Base w/ Base
 Control Equipment: HRSG Operating Mode: Base

Observation Date: 11-16-09 Time Zone: Eastern Start Time: 11:31 End Time: 12:30

Describe Emissions Point
 Height of Emiss. Pt. Start 150 ft End 150 Height of Emiss. Pt. Rel. to Observer Start 145 End 145
 Distance to Emiss. Pt. Start 300 ft End 300 Direction to Emiss. Pt. (Degrees) Start 40° End 40°

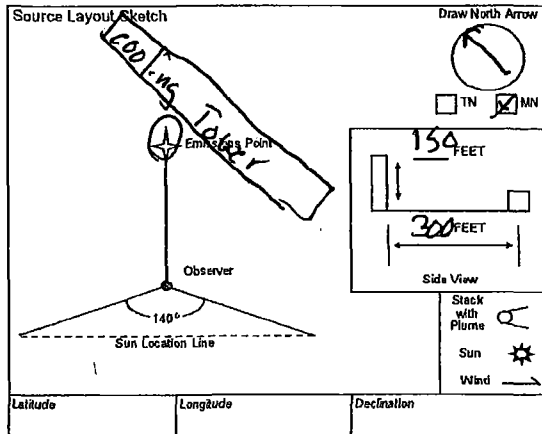
Obs. Sec.	Time Zone				Comments
	0	15	30	45	

Vertical Angle to Obs. Pt. Direction to Obs. Pt. (Degrees) Start _____ End _____ Start 220° End 220°
 Distance and Direction to Observation Point from Emission Point Start _____ End _____

1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	
8	0	0	0	0	
9	0	0	0	0	
10	0	0	0	0	
11	0	0	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
15	0	0	0	0	
16	0	0	0	0	
17	0	0	0	0	
18	0	0	0	0	
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0	0	0	0	
24	0	0	0	0	
25	0	0	0	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
30	0	0	0	0	

Describe Emissions Start Not visible End Not visible
 Emission Color Start clear End clear Water Droplet Plume Start none End none

Describe Plume Background Start sky End sky
 Background Color Start gray End gray Sky Conditions Start cloudy End cloudy
 Wind Speed Start 3-5 End 3-5 Wind Direction Start NW End NW
 Ambient Temp. Start 78 End 76 Wet Bulb Temp. NA RH Percent _____



Observer's Name (Print) Rob White

Additional Information

Observer's Signature _____ Date 11-16-09

Organization XHI

Certified By ETA Date 10-21-09

Method Used (Circle One)
 Method 203A 203B Other: _____

VISUAL EMISSIONS OBSERVATION FORM

Form Number _____ Page 4 of 6

Company Name
Florida Power & Light

Facility Name
West County Energy Center

Street Address
20505 Stok Rd PO

City
Loxahatchee State
FL Zip
33740

Continued on Form Number _____

Process
Natural Gas Unit #
2a Operating Mode
1308 w/ DIB

Control Equipment
HRSG Operating Mode
1309c

Observation Date
11-16-09 Time Zone
Eastern Start Time
11:31 End Time
12:30

Describe Emissions Point

Obs.	0	15	30	45	Comments
1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	
8	0	0	0	0	
9	0	0	0	0	
10	0	0	0	0	
11	0	0	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
15	0	0	0	0	
16	0	0	0	0	
17	0	0	0	0	
18	0	0	0	0	
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0	0	0	0	
24	0	0	0	0	
25	0	0	0	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
30	0	0	0	0	

Height of Emiss. Pt. Start 150 End 150 Height of Emiss. Pt. Rel. to Observer Start 145 End 145

Distance to Emiss. Pt. Start 300 End 300 Direction to Emiss. Pt. (Degrees) Start 40° End 40°

Vertical Angle to Obs. Pt. Start not visible End not visible Direction to Obs. Pt. (Degrees) Start 220° End 220°

Distance and Direction to Observation Point from Emission Point Start _____ End _____

Describe Emissions Start not visible End not visible

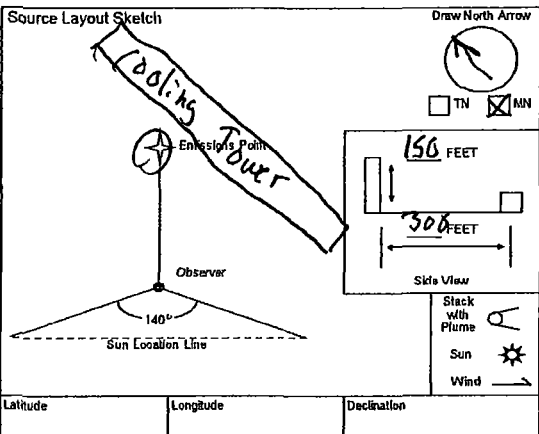
Emission Color clear Water Droplet Plume Start NONE End NONE

Describe Plume Background Start sky End sky

Background Color gray Sky Conditions cloudy

Wind Speed Start 3-5 End 3-5 Wind Direction Start NW End NW

Ambient Temp. Start 68 End 76 Wet Bulb Temp. _____ RH Percent _____



Additional Information

Observer's Name (Print) Rob White

Observer's Signature _____ Date 11-16-09

Organization AHI

Certified By ETA Date 10-21-09

Method Used (Circle One)
 Method 9 203A 203B Other: _____

VISUAL EMISSIONS OBSERVATION FORM

Company Name: Florida Power & Light
 Facility Name: West County Energy Center
 Street Address: 20505 State Rd 80
 City: Loxahatchee State: FL Zip: 32740

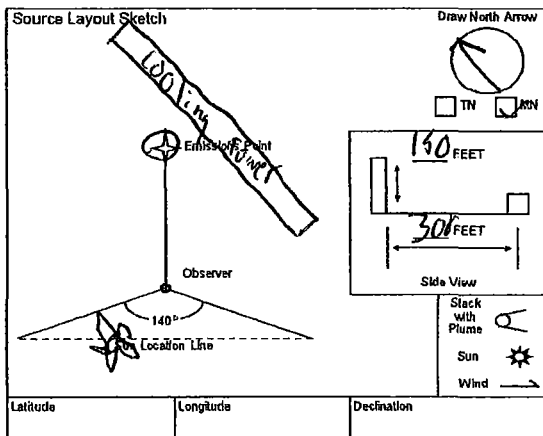
Process: Natural Gas Unit #: 2a Operating Mode: Base Load
 Control Equipment: HRSG Operating Mode: Base

Describe Emissions Point
 Height of Emiss. Pt. Start 150 ft End 160 ft Height of Emiss. Pt. Rel. to Observer Start 145 End 145
 Distance to Emiss. Pt. Start 300 ft End 300 Direction to Emiss. Pt. (Degrees) Start 45 End 45

Vertical Angle to Obs. Pt. Start _____ End _____ Direction to Obs. Pt. (Degrees) Start 225 End 225
 Distance and Direction to Observation Point from Emission Point Start _____ End _____

Describe Emissions Start Not visible End Not visible
 Emission Color Start clear End clear Water Droplet Plume Start None End None

Describe Plume Background Start sky End sky
 Background Color Start gray End gray Sky Conditions Start cloudy End cloudy
 Wind Speed Start 5-10 End 5-10 Wind Direction Start NW End NW
 Ambient Temp. Start 77 End 80 Wet Bulb Temp. _____ RH Percent _____



Form Number _____ Page 3 of 6
 Continued on Form Number _____

Min.	Time Zone				Comments
	0	15	30	45	
1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	
8	0	0	0	0	
9	0	0	0	0	
10	0	0	0	0	
11	0	0	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
15	0	0	0	0	
16	0	0	0	0	
17	0	0	0	0	
18	0	0	0	0	
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0	0	0	0	
24	0	0	0	0	
25	0	0	0	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
30	0	0	0	0	

Observer's Name (Print) Rob White
 Observer's Signature _____ Date 11-16-09
 Organization AHI
 Certified By EJA Date 11-10-09

Additional Information

Method Used (Circle One)
 Method 203A 203B Other: _____

VISUAL EMISSIONS OBSERVATION FORM

Form Number _____ Page 6 of 6
 Continued on Form Number _____

Company Name Florida Power & Light
 Facility Name West County Energy Center
 Street Address 20505 State Rd 80
 City Loxahatchee State FL Zip 37740

Observation Date 11-16-09 Time Zone Eastern Start Time 1233 End Time 1332

Process Natural Gas Unit # 2a Operating Mode Normal w/113
 Control Equipment HRSG Operating Mode Normal

No.	Sec	0	15	30	45	Comments
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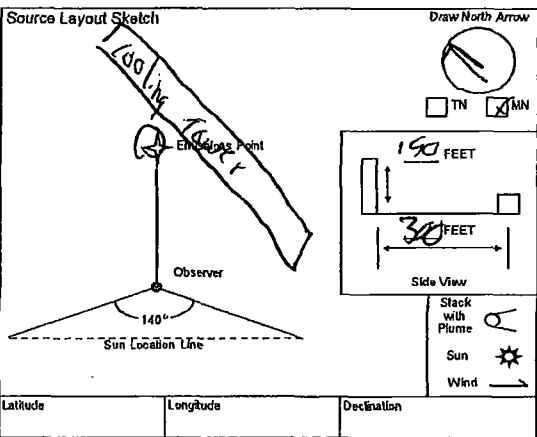
Describe Emissions Point
 Height of Emiss. Pt. Start 150ft End 150ft Height of Emiss. Pt. Rel. to Observer Start 145 End 145
 Distance to Emiss. Pt. Start 300ft End 300 Direction to Emiss. Pt. (Degrees) Start 45 End 45

1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	
8	0	0	0	0	
9	0	0	0	0	
10	0	0	0	0	
11	0	0	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
15	0	0	0	0	
16	0	0	0	0	
17	0	0	0	0	
18	0	0	0	0	
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0	0	0	0	
24	0	0	0	0	
25	0	0	0	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
30	0	0	0	0	

Vertical Angle to Obs. Pt. Start _____ End _____ Direction to Obs. Pt. (Degrees) Start 225 End 225
 Distance and Direction to Observation Point from Emission Point Start _____ End _____

Describe Emissions Start not visible End not visible
 Emission Color Start clear End clear Water Droplet Plume Start none End none

Describe Plume Background Start sky End sky
 Background Color Start gray End gray Sky Conditions Start cloudy End cloudy
 Wind Speed Start 5-10 End 5-10 Wind Direction Start NE End NE
 Ambient Temp Start 77 End 70 Wet Bulb Temp _____ RH Percent _____



Latitude _____ Longitude _____ Declination _____
 Additional Information _____

Observer's Name (Print) Rob White
 Observer's Signature _____ Date 11-16-09
 Organization AIF
 Certified By ETA Date 10-21-09

CALCULATIONS

EXAMPLE CALCULATIONS (FFACTOR)

RM 19, (07-19-06),
2.0 Summary of Method,
2.1 Emission Rates. Oxygen (O₂) or carbon dioxide (CO₂) concentrations and appropriate F factors (ratios of combustion gas volumes to heat inputs) are used to calculate pollutant emission rates from pollutant concentrations.

RM 19, (07-19-06),
12.2 Emission Rates of PM, SO₂, and NO_x. Select from the following sections the applicable procedure to compute the PM, SO₂, or NO_x emission rate (E) in lb/MMBtu. The pollutant concentration must be in lb/scf and the F factor must be in scf/MMBtu. If the pollutant concentration (C) is not in the appropriate units, use Table 19-1 in Section 17.0 to make the proper conversion. An F factor is the ratio of the gas volume of the products of combustion to the heat content of the fuel. The dry F factor (F_d) includes all components of combustion less water, the wet F factor (F_w) includes all components of combustion, and the carbon F factor (F_c) includes only carbon dioxide.

Mark's Std Hdbk, 10th ed., pg 4-26
High Heat Value Dry (HHV_{dry}), calc for Methane (single component for the fuel gas)

$$HHV_{dry} (Btu / SCF) = \left[\left(\frac{M_{\%}}{100} \right) \times GCM \right] \quad HHV_{dry} = \frac{95.91 \%}{100.00} \times \frac{994.85 \text{ Btu}}{SCF} = \frac{954.15 \text{ Btu}}{SCF}$$

Mark's Std Hdbk, 10th ed., pg 4-26
Low Heat Value Dry (LHV_{dry}), calc for Methane (single component for the fuel gas)

$$LHV_{dry} (Btu / SCF) = \left[\left(\frac{M_{\%}}{100} \right) \times NCM \right] \quad LHV_{dry} = \frac{95.91 \%}{100.00} \times \frac{895.75 \text{ Btu}}{SCF} = \frac{859.11 \text{ Btu}}{SCF}$$

Civil Eng. Ref. Man., 7th Ed., pg 14-9/GPA Ref. Bulletin 181-86, App. C
High Heat Value Wet (HHV_{wet}), calc for entire sample (all components of the fuel gas)

$$HHV_{wet} (Btu / SCF) = \frac{HHV_{dry}}{W / D. \text{factor}} \quad HHV_{wet} = \frac{992.38 \text{ Btu/SCF}}{1.0236} = 969.50 \text{ Btu/SCF}$$

Civil Eng. Ref. Man., 7th Ed., pg 14-9/GPA Ref. Bulletin 181-86, App. C
Low Heat Value Wet (LHV_{wet}), calc for entire sample (all components of the fuel gas)

$$LHV_{wet} (Btu / SCF) = \frac{LHV_{dry}}{W / D. \text{factor}} \quad LHV_{wet} = \frac{894.14 \text{ Btu/SCF}}{1.0236} = 873.52 \text{ Btu/SCF}$$

Lbs Component per Lb-Mol of Gas (CM), calc for Methane (single component for the fuel gas)

$$CM (lb / lb - mol) = \left[\left(\frac{M_{\%}}{100} \right) \times MW \right] \quad CM = \frac{95.91 \%}{100.00} \times \frac{16.04 \text{ lb}}{\text{lb-mol}} = 15.39 \text{ lb/lb-mol}$$

ASTM D 3588
Fuel Molecular Weight (MW_{Fuel})

$$MW_{Fuel} (lb / lb \cdot mol) = \left[\sum (CM) \right] \quad MW_{Fuel} = 15.39 \text{ lb/lb-mol} + 0.52 \text{ lb/lb-mol} + \text{etc.} = 16.782 \text{ lb/lb-mol}$$

Btu per Lb of Gas Gross (GCV)

$$GCV (Btu / lb) = \left[\frac{HHV_{dry} \times G}{MW_{Fuel}} \right] \quad GCV = \frac{992.38 \text{ Btu/SCF} \times 385.23 \text{ ft}^3/\text{lbmol}}{16.782 \text{ lb/lb-mol}} = 22,780.47 \text{ Btu/lb}$$

ASTM D 3588 (SG)
Specific Gravity

$$SG = \left[\frac{MW_{Fuel}}{MW_{AIR}} \right] \quad SG = \frac{16.78 \text{ lb/lb-mol}}{28.96 \text{ lb/lb-mol}} = 0.5794$$

Btu per Lb of Gas Net (NCV)

$$NCV (Btu / lb) = \left[\frac{LHV_{dry} \times G}{MW_{Fuel}} \right] \quad NCV = \frac{894.14 \text{ Btu/SCF} \times 385.23 \text{ ft}^3/\text{lbmol}}{16.782 \text{ lb/lb-mol}} = 20,525.26 \text{ Btu/lb}$$

Weight Percent of Component (C_%), methane

$$C_{\%} (\%) = \left[\left(\frac{CM}{MW_{Fuel}} \right) \times 100 \right] \quad C_{\%} = \frac{15.39 \text{ lb/lb-mol}}{16.78 \text{ lb/lb-mol}} \times 100 = 91.69 \%$$

RM 19, (07-19-06), **Weight Percent of Volatile Organic Compounds (VOC_%)**

$$VOC_{\%} (\%) = \left[\sum_{C_2H_4}^{C_6H_{14}} M_{\%} \right] \quad VOC_{\%} = 0.53 \% + 0.11 \% + 0.10 \% + \text{etc.} = 0.88 \%$$

RM 19, (07-19-06), 12.3.2 **Determined F Factors**. If the fuel burned is not listed in Table 19-2 or if the owner or operator chooses to determine an F factor rather than use the values in Table 19-2, use the procedure below: 12.3.2.1 Equations. Use the eq

RM 19, (07-19-6),
12.1 Nomenclature

K (scf/lb)%

H	3.64
C	1.53
S	0.57
N ₂	0.14
O ₂	0.46

$$F_d = \frac{K(K_{hd} \%H + K_c \%C + K_s \%S + K_n \%N - K_o \%O)}{GCV} \quad \text{Eq. 19-13}$$

$$F_d = \frac{10^6 \text{ Btu}}{\text{MMBtu}} \times \left[\frac{3.64 \text{ SCF}}{\text{lb} \cdot \%} \times 23.82 \% + \frac{1.53 \text{ SCF}}{\text{lb} \cdot \%} \times 72.49 \% + \frac{0.57 \text{ SCF}}{\text{lb} \cdot \%} \times 0.00 \% + \frac{0.14 \text{ SCF}}{\text{lb} \cdot \%} \times 1.92 \% - \frac{0.46 \text{ SCF}}{\text{lb} \cdot \%} \times 1.76 \% \right] \times \frac{\text{lb}}{22,780.47 \text{ Btu}} = \frac{8,651.24 \text{ SCF}}{\text{MMBtu}}$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

EXAMPLE CALCULATIONS (INFORMATION)

Specific Humidity (RH_{sp})

Note: RH_{sp} (gr/lb) calculated using temperature, relative humidity, and barometric pressure with psychrometric chart, psychrometric calculator, or built in psychrometric algorithm.

$$RH_{sp} (lb/lb) = \left[\left(\frac{gr}{lb} \right) \times \frac{lb}{7000gr} \right]$$

$$RH_{sp} = \frac{66.06 \text{ gr}}{lb} \times \frac{1 \text{ lb}}{7000 \text{ gr}} = 0.009437 \frac{\text{lb H}_2\text{O}}{\text{lb Air}}$$

Fuel Flow Conversion (Q_f)

Note: Q_f(lb/min) is a value uptained from the source operator.

$$Q_f = \left[Q_f \times G \times \left(\frac{1}{MW_{Fuel}} \right) \right]$$

$$Q_f = \frac{1,826.83 \text{ lb}}{\text{min}} \times \frac{60 \text{ min}}{\text{hr}} \times \frac{385.23 \text{ ft}^3}{\text{lb-mol}} \times \frac{\text{lb-mol}}{16.78 \text{ lb}} = 2,516,138 \text{ SCFH}$$

Combustor Inlet Pressure / Compressor Discharge Pressure (CIP / CDP)
(corrected from gauge to atmospheric pres. and conv. to mm Hg.)

Note: CIP / CDP (psig) is a value obtained from the source operator.

$$CIP / CDP = \left[(psig + P) \times \frac{51.71493 \text{ mmHg}}{1 \text{ psi}} \right]$$

$$CIP / CDP = (268.2 \text{ psig} + 14.7494) \times \frac{51.71493 \text{ mmHg}}{1 \text{ psia}} = 14,633 \text{ mmHg (abs)}$$

EXAMPLE CALCULATIONS (CALIBRATION)

Analyzer Calibration Error

RM 7E, (08-15-06), 12.2 Analyzer Calibration Error. For non-dilution systems, use Equation 7E-1 to calculate the analyzer calibration error for the low-, mid-, and high-level calibration gases. (calc for NOx analyzer mid gas, if applicable)

$$ACE = \left(\frac{C_{Dir} - C_V}{CS} \right) \times 100 \quad \text{Eq. 7E-1}$$

$$ACE = \frac{5.23 \text{ ppm} - 4.99 \text{ ppm}}{9.11 \text{ ppm}} \times 100 = 2.63 \%$$

Calibration Error and Estimated Point, RM 25A, THC Analyzer

RM 25A, (07-19-06), 8.4 Calibration Error Test. Immediately prior to the test series (within 2 hours of the start of the test), introduce zero gas and high-level calibration gas at the calibration valve assembly. Adjust the analyzer output to the appropriate levels, if necessary. Calculate the predicted response for the low-level and mid-level gases based on a linear response line between the zero and high-level response. Then introduce low-level and mid-level calibration gases successively to the measurement system. ... These differences must be less than 5 percent of the respective calibration gas value. (calc for THC analyzer mid gas, if applicable)

$$E_p = \frac{C_{Dir(H)} - C_{Dir(Z)}}{C_{V(H)} - C_{V(Z)}} \times C_{Dir(M)} + C_{Dir(Z)} \quad \text{Eq. of a line } y=mx+b$$

$$E_p = \frac{8.60 \text{ ppm} - -0.01 \text{ ppm}}{8.40 \text{ ppm} - 0.00 \text{ ppm}} \times 4.94 \text{ ppm} + -0.01 = 5.05 \text{ ppm}$$

$$ACE = \left(\frac{C_{Dir} - C_V}{CS} \right) \times 100 \quad \text{Eq. 7E-1}$$

$$ACE_{THC} = \frac{4.81 \text{ ppm} - 5.05 \text{ ppm}}{4.94 \text{ ppm}} \times 100 = -4.93 \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

EXAMPLE CALCULATIONS (BIAS, DRIFT, AND CORRECTED RAW AVERAGE)

System Bias

RM 7E, (08-15-06), 12.3 System Bias. For non-dilution systems, use Equation 7E-2 to calculate the system bias separately for the low-level and upscale calibration gases. (calc for NOx analyzer upscale gas, Run 1 initial bias, if applicable)

$$SB = \left(\frac{C_S - C_{Dir}}{C_S} \right) \times 100 \quad \text{Eq. 7E-2} \quad SB = \frac{5.04 \text{ ppm} - 5.23 \text{ ppm}}{9.11 \text{ ppm}} \times 100 = -2.09 \%$$

Drift Assessment

RM 7E, (08-15-06), 12.5 Drift Assessment. Use Equation 7E-4 to separately calculate the low-level and upscale drift over each test run. (calc for NOx analyzer upscale drift, Run 1, if applicable)

$$D = |SB_{final} - SB_i| \quad \text{Eq. 7E-4} \quad D = | -1.21 \% - -2.09 \% | = 0.88 \%$$

Alternative Drift and Bias

RM 7E, (08-15-06), 13.2 / 13.3 System Bias and Drift. Alternatively, the results are acceptable if $|C_s - C_{dir}|$ is ≤ 0.5 ppmv or if $|C_s - C_v|$ is ≤ 0.5 ppmv (as applicable). (calc for NOx analyzer initial upscale, Run 1, if applicable)

$$SB / D_{Alt} = |C_S - C_{Dir}| \quad \text{Eq. Section 13.2 and 13.3} \quad SB / D_{Alt} = | 5.04 \text{ ppm} - 5.23 \text{ ppm} | = 0.19 \text{ ppm}$$

Bias Adjusted Average

RM 7E, (08-15-06), 12.6 Effluent Gas Concentration. For each test run, calculate C_{avg} , the arithmetic average of all valid NOx concentration values (e.g., 1-minute averages). Then adjust the value of C_{avg} for bias, using Equation 7E-5. (calc for NOx analyzer, Run 1, if applicable)

$$C_{Gas} = (C_{Avg} - C_O) \times \left(\frac{C_{MA}}{C_M - C_O} \right) \quad \text{Eq. 7E-5} \quad C_{Gas} = \left(2.62 \text{ ppm} - 0.09 \text{ ppm} \right) \times \left(\frac{4.99 \text{ ppm}}{5.08 \text{ ppm} - 0.09 \text{ ppm}} \right) = 2.53 \text{ ppm}$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

EXAMPLE CALCULATIONS (RUNS)

Stack Exhaust Flow (Q_s) - RM19

$$Q_s = \left(\frac{FFactor \times Q_f \times HHV}{1,000,000} \right) \times \left(\frac{20.9\%}{20.9\% - C_{Gas(O_2)}} \right)$$

$$Q_s = \frac{8,651.24 \text{ SCF}}{\text{MMBtu}} \times \frac{2,516,138.48 \text{ SCF}}{\text{hr}} \times \frac{992.38 \text{ Btu}}{\text{SCF}}$$

$$\times \frac{\text{MMBtu}}{10^6 \text{ Btu}} \times \left(\frac{20.90\%}{20.9\% - 13.1\%} \right) = 58,247,149.63 \text{ SCFH}$$

Diluent-Corrected Pollutant Concentration, O₂ Based

RM 20, (11-26-02), 7.3.1 Correction of Pollutant Concentration Using O₂ Concentration. Calculate the O₂ corrected pollutant concentration, as follows: (calc for NOx gas, Run 1, if applicable)

$$C_{adj} = C_{Gas(Argument)} \times \left(\frac{20.9\% - AdjFactor}{20.9\% - C_{Gas(O_2)}} \right) \quad \text{Eq. 20-4}$$

$$C_{adj} = 2.53 \text{ ppm} \times \left(\frac{20.9\% - 15.00\%}{20.9\% - 13.15\%} \right) = 1.92 \text{ ppm@15\%O}_2$$

Diluent-Corrected Pollutant Concentration Corrected to ISO Conditions

40CFR60.335(b)(1), Conversion for conc. at ISO Conditions (68°F, 1 atm). Calculate, as follows: (calc for NOx@15% with Run 1 data, if applicable)

$$C_{ISO} = C_{Adj} \times \sqrt{\frac{P_r}{P_o}} \times e^{(19 \times (T_o - 0.00633))} \times \left(\frac{288}{T_o} \right)^{1.53}$$

$$C_{ISO} = 1.92 \text{ ppm@15\%O}_2 \times \left(\frac{268.2 \text{ psig} + 14.69232 \text{ psi}}{0.01933677 \text{ psi/mm Hg.}} \right) \times 2.718 \times \left(\frac{288 \text{ K}}{296 \text{ K}} \right)^{1.53} = 1.95 \text{ ppm@15\% and ISO}$$

(19x(0.009437 lb/lb-0.00633))

EXAMPLE CALCULATIONS (RUNS)

Emissions Rate (lb/hr)

Calculation for pound per hour emission rate. Calculate, as follows: (calc for NOx gas Run 1, if applicable)

$$E_{lb/hr} = \frac{C_{Gas} \times Q_s \times MW}{10^6 \times G}$$

$$E_{lb/hr} = \frac{2.53 \text{ ppm}}{10^6 \text{ ppm/part}} \times \frac{58,247,150 \text{ SCFH} \times 46.01 \text{ lb/lb-mol}}{385.23 \text{ SCF/lb-mol}} = \frac{17.57 \text{ lb}}{\text{hr}}$$

Emissions Rate (ton/year)

Calculation for tons per year emission rate based on 8760 hours per year. Calculate, as follows: (calc for NOx gas Run 1, if applicable)

$$E_{ton/yr} = \frac{E_{lb/hr} \times \text{hr}_{year}}{2000}$$

$$E_{ton/yr} = \frac{17.57 \text{ lb}}{\text{hr}} \times \frac{8,760 \text{ hr}}{\text{year}} \times \frac{\text{ton}}{2000 \text{ lb}} = \frac{76.95 \text{ ton}}{\text{year}}$$

Emissions Rate (lb/MMBtu)

RM 19, (07-19-06), 12.2 Emission Rates of PM, SO₂, and NOx. Select from the following sections the applicable procedure to compute the PM, SO₂, or NOx emission rate (E) in ng/J (lb/million Btu). (calc for NOx gas Run 1, if applicable)

Oxygen Based

12.2.1 Oxygen-Based F Factor, Dry Basis. When measurements are on a dry basis for both O₂ (%O₂d) and pollutant (Cd) concentrations, use the following equation:

$$E_{lb/MMBtu} = \frac{C_{Gas} \times F_d \text{ Factor} \times Conv_c \times 20.9\%}{20.9\% - C_{Gas(O_2)}} \quad \text{Eq. 19-1}$$

$$E_{lb/MMBtu} = \frac{2.53 \text{ ppm} \times 8,651.24 \text{ SCF/MMBtu} \times 0.0000001194 \text{ lb/ppm} \cdot \text{ft}^3 \times 20.9\%}{20.9\% - 13.15\%} = \frac{0.007 \text{ lb}}{\text{MMBtu}}$$

Conversion Constant

Conv_c for NOx

$$Conv_c (\text{lb} / \text{ppm} \cdot \text{ft}^3) = \frac{MW}{10^6}$$

$$Conv_c = \frac{46.01 \text{ lb}}{\text{lb} \cdot \text{mole}} \times \frac{\text{lb} \cdot \text{mole}}{385.23 \text{ SCF}} = \frac{0.0000001194 \text{ lb}}{\text{ppm} \cdot \text{ft}^3}$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

RM 7E, (08-15-06), 12.1 Nomenclature. The terms used in the equations are defined as follows:

ACE = Analyzer calibration error, percent of calibration span.
B_{WS} = Moisture content of sample gas as measured by Method 4 or other approved method, percent/100.
C_{AVG} = Average unadjusted gas concentration indicated by data recorder for the test run.
C_D = Pollutant concentration adjusted to dry conditions.
C_{Dir} = Measured concentration of a calibration gas (low, mid, or high) when introduced in direct calibration mode.
C_{Gas} = Average effluent gas concentration adjusted for bias.
C_M = Average of initial and final system calibration bias (or 2-point system calibration error) check responses for the upscale calibration gas.
C_{MA} = Actual concentration of the upscale calibration gas, ppmv.
C_O = Average of the initial and final system calibration bias (or 2-point system calibration error) check responses from the low-level (or zero) calibration gas.
C_S = Measured concentration of a calibration gas (low, mid, or high) when introduced in system calibration mode.
C_{SS} = Concentration of NOx measured in the spiked sample.
C_{Spike} = Concentration of NOx in the undiluted spike gas.
C_{Calc} = Calculated concentration of NOx in the spike gas diluted in the sample.
C_V = Manufacturer certified concentration of a calibration gas (low, mid, or high).
C_W = Pollutant concentration measured under moist sample conditions, wet basis.
CS = Calibration span.
D = Drift assessment, percent of calibration span.
E_p = The predicted response for the low-level and mid-level gases based on a linear response line between the zero and high-level response.
Eff_{NO2} = NO₂ to NO converter efficiency, percent.
H = High calibration gas, designator.
L = Low calibration gas, designator.
M = Mid calibration gas, designator.
NOFinal = The average NO concentration observed with the analyzer in the NO mode during the converter efficiency test in Section 16.2.2.
NOxCorr = The NOx concentration corrected for the converter efficiency.
NOxFinal = The final NOx concentration observed during the converter efficiency test in Section 16.2.2.
NOxPeak = The highest NOx concentration observed during the converter efficiency test in Section 16.2.2.
Q_{Spike} = Flow rate of spike gas introduced in system calibration mode, L/min.
Q_{Total} = Total sample flow rate during the spike test, L/min.
R = Spike recovery, percent.
SB = System bias, percent of calibration span.
SB_i = Pre-run system bias, percent of calibration span.
SB_f = Post-run system bias, percent of calibration span.
SB / D_{Alt} = Alternative absolute difference criteria to pass bias and/or drift checks.
SCE = System calibration error, percent of calibration span.
SCE_i = Pre-run system calibration error, percent of calibration span.
SCE_f = Post-run system calibration error, percent of calibration span.
Z = Zero calibration gas, designator.

40CFR60.355(b)(1), (09-20-06), Nomenclature. The terms used in the equations are defined as follows:

P_r = reference combustor inlet absolute pressure at 101.3 kilopascals ambient pressure, mm Hg
P_o = observed combustor inlet absolute pressure at test, mm Hg
H_o = observed humidity of ambient air, g H₂O/g air
e = transcendental constant, 2.718
T_a = ambient temperature, K

RM 19, (07-29-06), 12.1 Nomenclature. The terms used in the equations are defined as follows:

AdjFactor = Percent oxygen or carbon dioxide adjustment applied to a target pollutant
 $E_{a,w}$ = Moisture fraction of ambient air, percent.
 Btu = British thermal unit
 $\%C$ = Concentration of carbon from an ultimate analysis of fuel, weight percent.
 $\%CO_{2,d}, \%CO_{2,w}$ = Concentration of carbon dioxide on a dry and wet basis, respectively, percent.
 CIP / CDP = Combustor inlet pressure / compressor discharge pressure (mm Hg); note, some manufactures reference as PCD.
 E = Pollutant emission rate, ng/J (lb/million Btu).
 E_s = Average pollutant rate for the specified performance test period, ng/J (lb/million Btu).
 $E_{s,i}, E_{s,o}$ = Average pollutant rate of the control device, outlet and inlet, respectively, for the performance test period, ng/J (lb/million Btu).
 $E_{s,u}$ = Pollutant rate from the steam generating unit, ng/J (lb/million Btu).
 $E_{s,w}$ = Pollutant emission rate from the steam generating unit, ng/J (lb/million Btu).
 $E_{s,c}$ = Pollutant rate in combined effluent, ng/J (lb/million Btu).
 $E_{s,e}$ = Pollutant emission rate in combined effluent, ng/J (lb/million Btu).
 E_s = Average pollutant rate for each sampling period (e.g., 24-hr Method 6B sample or 24-hr fuel sample) or for each fuel lot (e.g., amount of fuel bunkered), ng/J (lb/million Btu).
 $E_{s,i}$ = Average inlet SO₂ rate for each sampling period d, ng/J (lb/million Btu).
 $E_{s,g}$ = Pollutant rate from gas turbine, ng/J (lb/million Btu).
 $E_{s,g}$ = Daily geometric average pollutant rate, ng/J (lb/million Btu) or ppm corrected to 7 percent O₂.
 $E_{s,i}, E_{s,o}$ = Matched pair hourly arithmetic average pollutant rate, outlet and inlet, respectively, ng/J (lb/million Btu) or ppm corrected to 7 percent O₂.
 E_h = Hourly average pollutant, ng/J (lb/million Btu).
 $E_{h,i}$ = Hourly arithmetic average pollutant rate for hour "i," ng/J (lb/million Btu) or ppm corrected to 7 percent O₂.
 EXP = Natural logarithmic base (2.718) raised to the value enclosed by brackets.
 Fc = Ratio of the volume of carbon dioxide produced to the gross calorific value of the fuel from Method 19
 F_d, F_w, F_c = Volumes of combustion components per unit of heat content, scmV (scf/million Btu).
 ft³ = cubic feet
 G = ideal gas conversion factor
 (385.23 SCF/lb-mol at 68 deg F & 14.696 psia)
 GCM = gross Btu per SCF (constant, compound based)
 GCV = Gross calorific value of the fuel consistent with the ultimate analysis, kJ/kg (Btu/lb).
 GCV_p, GCV_r = Gross calorific value for the product and raw fuel lots, respectively, dry basis, kJ/kg (Btu/lb).
 $\%H$ = Concentration of hydrogen from an ultimate analysis of fuel, weight percent.
 H_s = Heat input rate to the steam generating unit from fuels fired in the steam generating unit, J/hr (million Btu/hr).
 H_g = Heat input rate to gas turbine from all fuels fired in the gas turbine, J/hr (million Btu/hr).
 $\%H_{2O}$ = Concentration of water from an ultimate analysis of fuel, weight percent.
 H_t = Total numbers of hours in the performance test period (e.g., 720 hours for 30-day performance test period).
 K = volume of combustion component per pound of component (constant)
 K = Conversion factor, 10⁻⁹ (kJ/J)/(%) [10⁶ Btu/million Btu].
 $K_c = (9.57 \text{ scm}^3/\text{kg})/\%$ [(1.53 scf/lb)/%].
 $K_{cc} = (2.0 \text{ scm}^3/\text{kg})/\%$ [(0.321 scf/lb)/%].
 $K_{cd} = (22.7 \text{ scm}^3/\text{kg})/\%$ [(3.64 scf/lb)/%].
 $K_{cw} = (34.74 \text{ scm}^3/\text{kg})/\%$ [(5.57 scf/lb)/%].
 $K_n = (0.86 \text{ scm}^3/\text{kg})/\%$ [(0.14 scf/lb)/%].
 $K_o = (2.85 \text{ scm}^3/\text{kg})/\%$ [(0.46 scf/lb)/%].
 $K_s = (3.54 \text{ scm}^3/\text{kg})/\%$ [(0.57 scf/lb)/%].
 $K_{wftu} = 2 \times 10^4 \text{ Btu}/\text{wt}\% \text{-MMBtu}$
 $K_w = (1.30 \text{ scm}^3/\text{kg})/\%$ [(0.21 scf/lb)/%].
 lb = pound
 ln = Natural log of indicated value.
 L_p, L_r = Weight of the product and raw fuel lots, respectively, metric ton (ton).
 $\%N$ = Concentration of nitrogen from an ultimate analysis of fuel, weight percent.
 $M\%$ = mole percent
 mol = mole
 MW = molecular weight (lb/lb-mol)
 $MW_{AIR} = \text{molecular weight of air (} 28.9625 \text{ lb/lb-mole)}$ ¹
 NCM = net Btu per SCF (constant based on compound)
 $\%O$ = Concentration of oxygen from an ultimate analysis of fuel, weight percent.
 $\%O_{2,d}, \%O_{2,w}$ = Concentration of oxygen on a dry and wet basis, respectively, percent.
 P_B = barometric pressure, in Hg
 P_s = Potential SO₂ emissions, percent.
 $\%S$ = Sulfur content of as-fired fuel lot, dry basis, weight percent.
 S_s = Standard deviation of the hourly average pollutant rates for each performance test period, ng/J (lb/million Btu).
 $\%S_f$ = Concentration of sulfur from an ultimate analysis of fuel, weight percent.
 $S(wt\%)$ = weight percent of sulfur, per lab analysis by appropriate ASTM standard
 S_i = Standard deviation of the hourly average inlet pollutant rates for each performance test period, ng/J (lb/million Btu).
 S_e = Standard deviation of the hourly average emission rates for each performance test period, ng/J (lb/million Btu).
 $\%S_p, \%S_r$ = Sulfur content of the product and raw fuel lots respectively, dry basis, weight percent.
 SCF = standard cubic feet
 SH = specific humidity, pounds of water per pound of air
 $t_{0.95}$ = Values shown in Table 19-3 for the indicated number of data points n.
 T_{amb} = ambient temperature, °F
 $W/D \text{ Factor} = 1.0236 = \text{conv. at } 14.696 \text{ psia and } 68 \text{ deg F (ref. Civil Eng. Ref. Manual, 7th Ed.)}$
 X_{CO_2} = CO₂ Correction factor, percent.
 X_k = Fraction of total heat input from each type of fuel k.

Calculations, Formulas, and Constants

The following information supports the spreadsheets for this testing project.

Given Data:

Ideal Gas Conversion Factor = 385.23 SCF/lb-mol at 68 deg F & 14.696 psia

Fuel Heating Value is based upon Air Hygiene's fuel gas calculation sheet. All calculations are based upon a correction to 68 deg F & 14.696 psia

High Heating Values (HHV) are used for the Fuel Heating Value, F-Factor, and Fuel Flow Data per EPA requirements.

80.06

0.0000002078239

ASTM D 3588

Molecular Weight of NOx (lb/lb-mole) = 46.01
 Molecular Weight of CO (lb/lb-mole) = 28.00
 Molecular Weight of SO₂ (lb/lb-mole) = 64.00
 Molecular Weight of THC (propane) (lb/lb-mole) = 44.00
 Molecular Weight of VOC (methane) (lb/lb-mole) = 16.00
 Molecular Weight of NH₃ (lb/lb-mole) = 17.03
 Molecular Weight of HCHO (lb/lb-mole) = 30.03

40CFR60, App. A., RM 19, Table 19-1

Conversion Constant for NOx = 0.0000001194351
 Conversion Constant for CO = 0.0000000726839
 Conversion Constant for SO₂ = 0.0000001661345
 Conversion Constant for THC = 0.0000001142175
 Conversion Constant for VOC (methane) = 0.0000000415336
 Conversion Constant for NH₃ = 0.0000000442074
 Conversion Constant for HCHO = 0.0000000779534

NOTE: units are lb/ppm*ft³

Formulas:

1. Corrected Raw Average (C_{Gas}), 40CFR60, App. A, RM 7E, Eq. 7E-5 (08/15/06)

$$C_{Gas} = (C_{Avg} - C_o) \times \left(\frac{C_{MA}}{C_M - C_o} \right)$$

2. Correction to % O₂, 40CFR60, App. A, RM 20, Eq. 20-5 (11/26/02)

$$C_{adj} = C_{Gas(Target)} \times \left(\frac{20.9\% - AdjFactor}{20.9\% - C_{Gas(O_2)}} \right)$$

3. Correction to % O₂ and ISO Conditions

$$C_{ISO} = C_{adj} \times \sqrt{\frac{P_r}{P_o}} \times e^{(19 \times (H_o - 0.00633))} \times \left(\frac{288}{T_a} \right)^{1.53}$$

4. Method 19 stack exhaust flow (scfh)

$$Q_s = \left(\frac{FFactor \times Q_f \times HHV}{1,000,000} \right) \times \left(\frac{20.9\%}{20.9\% - C_{Gas(O_2)}} \right)$$

5. Emission Rate in lb/hr

$$E_{lb/hr} = \frac{C_{Gas}}{10^6} \times \frac{Q_s \times MW}{G}$$

6. Emission Rate in tons per year

$$E_{ton/yr} = \frac{E_{lb/hr} \times hr_{year}}{2000}$$

7. Emission Concentration in lb/MMBtu (O₂ based)

$$E_{lb/MMBtu} = \frac{C_{Gas} \times F_d Factor \times Conv_C \times 20.9\%}{20.9\% - C_{Gas(O_2)}}$$

8. Emission Concentration in g/hp*hr

$$E_{g/hp\cdot hr} = \frac{E_{lb/hr} \times 453.6}{mw \times 1314.022} \text{ OR } \frac{E_{lb/hr} \times 453.6}{hp}$$

APPENDIX B
UNIT OPERATION PARAMETERS

Florida Power and Light

Air Permit # :	PSD-FL-354
Plant Name or Location:	West County Energy Center
Date:	November 14-16, 2009
Project Number:	bv-10-westcounty.fl-comp#1
Manufacturer & Equipment:	Mitsubishi
Model:	501G
Unit Number:	2A
Test Load:	Base with and without Duct Burners
Tester(s) / Test Unit(s):	PS/RW/SB/AS/KM/206

		RUN					
	UNITS	1-1	1-2	1-3	2-1	2-2	2-3
Start Time	hh:mm:ss	10:24:17	11:45:17	13:07:17	10:35:15	11:48:15	13:02:15
End Time	hh:mm:ss	11:23:47	12:44:47	14:06:47	11:34:45	12:47:45	14:01:45
Bar. Pressure	in. Hg	30.03	30.01	29.99	30.01	30.00	29.97
Amb. Temp.	°F	74	78	80	72	75	79
Rel. Humidity	%	53	40	39	65	60	54
Spec. Humidity	lb water / lb air	0.009437	0.008124	0.008469	0.010851	0.011087	0.011409
Date	mm/dd/yy	11/15/09	11/15/09	11/15/09	11/16/09	11/16/09	11/16/09
Comb. Inlet Pres.	psig	268.2	266.8	265.6	269.6	265.8	264.4
Turbine Fuel Flow	lb/min	1,827	1,815	1,808	1,692	1,666	1,655
Duct Burner Fuel Flow	lb/min	0	0	0	141	140	140
Total Fuel Flow	SCFH	2,516,138	2,499,381	2,489,969	2,524,632	2,487,674	2,472,982
Stack Moisture	% Method 4	8.1	9.0	9.1	10.1	9.8	9.6
Power Output	megawatts	250.4	248.4	247.0	253.1	247.6	245.6

UNIT OPERATION PARAMETERS

Base Load

	Combustor Inlet Pressure A psig	CT A FG Flow KPPH	DB A FG Flow KPPH	CT A Load MW
15-Nov-09 10:24:17	268.62	109.57	0.00	250.36
15-Nov-09 10:25:17	268.63	109.38	0.00	250.98
15-Nov-09 10:26:17	268.80	109.93	0.00	250.82
15-Nov-09 10:27:17	268.72	109.73	0.00	250.30
15-Nov-09 10:28:17	268.59	109.72	0.00	250.52
15-Nov-09 10:29:17	268.79	109.57	0.00	250.64
15-Nov-09 10:30:17	268.62	109.78	0.00	250.51
15-Nov-09 10:31:17	268.61	109.87	0.00	250.54
15-Nov-09 10:32:17	268.70	109.44	0.00	250.55
15-Nov-09 10:33:17	268.71	109.50	0.00	251.00
15-Nov-09 10:34:17	268.36	109.71	0.00	250.69
15-Nov-09 10:35:17	268.31	109.67	0.00	250.59
15-Nov-09 10:36:17	268.57	109.84	0.00	250.91
15-Nov-09 10:37:17	268.59	109.63	0.00	250.88
15-Nov-09 10:38:17	268.66	109.83	0.00	250.72
15-Nov-09 10:39:17	268.34	109.55	0.00	250.65
15-Nov-09 10:40:17	268.23	109.88	0.00	250.95
15-Nov-09 10:41:17	268.37	109.84	0.00	250.98
15-Nov-09 10:42:17	268.20	109.85	0.00	250.95
15-Nov-09 10:43:17	268.49	109.79	0.00	250.72
15-Nov-09 10:44:17	268.42	109.90	0.00	250.62
15-Nov-09 10:45:17	268.37	109.82	0.00	250.74
15-Nov-09 10:46:17	268.42	109.77	0.00	250.92
15-Nov-09 10:47:17	268.51	109.75	0.00	250.76
15-Nov-09 10:48:17	268.35	109.63	0.00	250.52
15-Nov-09 10:49:17	268.47	109.67	0.00	250.62
15-Nov-09 10:50:17	268.34	109.70	0.00	250.68
15-Nov-09 10:51:17	268.36	109.65	0.00	250.89
15-Nov-09 10:52:17	268.37	109.64	0.00	250.69
15-Nov-09 10:53:17	268.38	109.65	0.00	250.68
15-Nov-09 10:54:17	268.18	109.42	0.00	250.91
15-Nov-09 10:55:17	268.22	109.55	0.00	250.69
15-Nov-09 10:56:17	268.25	109.96	0.00	250.78
15-Nov-09 10:57:17	268.19	109.89	0.00	250.94
15-Nov-09 10:58:17	268.20	109.47	0.00	250.66
15-Nov-09 10:59:17	268.07	109.36	0.00	250.08
15-Nov-09 11:00:17	267.98	109.56	0.00	250.25
15-Nov-09 11:01:17	267.93	109.30	0.00	249.89
15-Nov-09 11:02:17	268.00	109.73	0.00	250.14
15-Nov-09 11:03:17	267.89	109.27	0.00	249.96
15-Nov-09 11:04:17	267.67	109.78	0.00	249.81
15-Nov-09 11:05:17	267.62	109.19	0.00	249.27
15-Nov-09 11:06:17	267.65	109.61	0.00	249.79
15-Nov-09 11:07:17	267.84	109.32	0.00	249.81
15-Nov-09 11:08:17	268.07	109.39	0.00	250.28
15-Nov-09 11:09:17	267.97	109.41	0.00	250.56
15-Nov-09 11:10:17	267.99	109.56	0.00	250.35
15-Nov-09 11:11:17	267.89	109.72	0.00	249.94
15-Nov-09 11:12:17	268.03	109.71	0.00	250.25
15-Nov-09 11:13:17	268.03	109.94	0.00	250.19
15-Nov-09 11:14:17	268.03	109.58	0.00	249.90
15-Nov-09 11:15:17	267.99	109.68	0.00	250.51
15-Nov-09 11:16:17	267.73	109.29	0.00	250.09
15-Nov-09 11:17:17	267.73	109.29	0.00	249.64
15-Nov-09 11:18:17	267.70	109.25	0.00	249.90
15-Nov-09 11:19:17	267.77	109.25	0.00	249.64
15-Nov-09 11:20:17	267.83	109.39	0.00	250.01
15-Nov-09 11:21:17	267.68	109.03	0.00	249.40
15-Nov-09 11:22:17	267.65	109.89	0.00	249.51
15-Nov-09 11:23:17	267.52	109.30	0.00	249.33
Average	268.20	109.61	0.00	250.40

	Combustor Inlet Pressure A psig	CT A FG Flow KPPH	DB A FG Flow KPPH	CT A Load MW
15-Nov-09 11:45:17	267.27	109.25	0.00	249.08
15-Nov-09 11:46:17	267.26	109.68	0.04	248.86
15-Nov-09 11:47:17	267.52	108.71	0.00	249.14
15-Nov-09 11:48:17	267.64	109.54	0.00	249.98
15-Nov-09 11:49:17	267.29	109.39	0.00	249.14
15-Nov-09 11:50:17	267.16	109.30	0.00	248.80
15-Nov-09 11:51:17	267.25	109.16	0.00	249.22
15-Nov-09 11:52:17	267.43	108.77	0.00	248.95
15-Nov-09 11:53:17	267.63	109.06	0.01	249.76
15-Nov-09 11:54:17	267.49	109.67	0.10	249.58
15-Nov-09 11:55:17	267.34	109.19	0.09	248.97
15-Nov-09 11:56:17	267.07	108.73	0.00	248.96
15-Nov-09 11:57:17	266.90	108.66	0.04	248.42
15-Nov-09 11:58:17	267.04	108.56	0.00	248.36
15-Nov-09 11:59:17	267.30	109.61	0.00	249.26
15-Nov-09 12:00:17	267.05	108.97	0.00	248.56
15-Nov-09 12:01:17	266.84	108.82	0.00	248.35
15-Nov-09 12:02:17	266.79	109.62	0.00	248.50
15-Nov-09 12:03:17	266.64	108.61	0.00	248.05
15-Nov-09 12:04:17	266.80	108.29	0.00	248.19
15-Nov-09 12:05:17	267.13	109.07	0.00	248.90
15-Nov-09 12:06:17	267.21	109.52	0.00	249.24
15-Nov-09 12:07:17	267.23	109.13	0.00	248.77
15-Nov-09 12:08:17	266.97	108.86	0.00	249.04
15-Nov-09 12:09:17	266.55	108.78	0.00	248.01
15-Nov-09 12:10:17	266.42	108.66	0.00	247.45
15-Nov-09 12:11:17	266.13	108.46	0.00	247.71
15-Nov-09 12:12:17	266.33	108.45	0.00	247.42
15-Nov-09 12:13:17	266.98	108.60	0.00	248.28
15-Nov-09 12:14:17	267.15	108.72	0.00	248.82
15-Nov-09 12:15:17	266.89	108.57	0.06	248.66
15-Nov-09 12:16:17	266.64	109.06	0.00	248.46
15-Nov-09 12:17:17	266.52	108.99	0.00	248.16
15-Nov-09 12:18:17	266.44	108.82	0.00	247.58
15-Nov-09 12:19:17	266.63	108.29	0.00	248.14
15-Nov-09 12:20:17	266.60	109.05	0.00	248.30
15-Nov-09 12:21:17	266.49	109.01	0.00	247.91
15-Nov-09 12:22:17	266.68	108.38	0.00	247.80
15-Nov-09 12:23:17	266.75	108.89	0.00	248.62
15-Nov-09 12:24:17	266.75	109.05	0.00	248.45
15-Nov-09 12:25:17	266.79	108.89	0.00	248.40
15-Nov-09 12:26:17	266.92	108.66	0.00	248.60
15-Nov-09 12:27:17	266.75	108.78	0.00	248.35
15-Nov-09 12:28:17	266.63	109.03	0.00	248.37
15-Nov-09 12:29:17	266.62	108.85	0.00	247.92
15-Nov-09 12:30:17	266.67	109.14	0.00	248.24
15-Nov-09 12:31:17	266.73	108.71	0.00	248.05
15-Nov-09 12:32:17	266.56	109.11	0.00	248.63
15-Nov-09 12:33:17	266.49	108.63	0.00	248.12
15-Nov-09 12:34:17	266.39	108.82	0.00	247.82
15-Nov-09 12:35:17	266.39	108.59	0.00	247.68
15-Nov-09 12:36:17	266.49	108.63	0.00	248.15
15-Nov-09 12:37:17	266.22	108.82	0.00	247.90
15-Nov-09 12:38:17	266.05	108.74	0.00	247.50
15-Nov-09 12:39:17	266.17	108.30	0.00	247.45
15-Nov-09 12:40:17	266.24	108.55	0.00	247.83
15-Nov-09 12:41:17	266.41	109.06	0.00	247.85
15-Nov-09 12:42:17	266.18	108.66	0.00	247.97
15-Nov-09 12:43:17	266.01	108.57	0.00	247.34
15-Nov-09 12:44:17	266.27	108.53	0.00	247.56
Average	266.79	108.88	0.01	248.39

	Combustor Inlet Pressure A psig	CT A FG Flow KPPH	DB A FG Flow KPPH	CT A Load MW
15-Nov-09 13:07:17	265.68	108.88	0.00	246.90
15-Nov-09 13:08:17	265.73	108.48	0.00	246.96
15-Nov-09 13:09:17	265.66	108.29	0.00	247.01
15-Nov-09 13:10:17	265.83	108.48	0.00	247.21
15-Nov-09 13:11:17	265.99	108.24	0.00	247.18
15-Nov-09 13:12:17	265.96	108.63	0.00	247.44
15-Nov-09 13:13:17	266.00	108.00	0.00	247.35
15-Nov-09 13:14:17	265.97	108.30	0.00	247.27
15-Nov-09 13:15:17	265.78	109.42	0.00	247.70
15-Nov-09 13:16:17	265.78	107.54	0.00	246.90
15-Nov-09 13:17:17	265.70	108.25	0.00	247.25
15-Nov-09 13:18:17	265.72	109.76	0.00	247.17
15-Nov-09 13:19:17	265.79	108.94	0.00	247.35
15-Nov-09 13:20:17	265.82	107.52	0.00	247.29
15-Nov-09 13:21:17	265.82	108.10	0.00	247.01
15-Nov-09 13:22:17	265.72	109.36	0.00	247.38
15-Nov-09 13:23:17	265.81	108.95	0.00	247.40
15-Nov-09 13:24:17	265.65	107.91	0.00	246.83
15-Nov-09 13:25:17	265.68	107.98	0.00	246.98
15-Nov-09 13:26:17	265.64	109.26	0.00	247.28
15-Nov-09 13:27:17	265.43	108.80	0.00	246.94
15-Nov-09 13:28:17	265.31	108.16	0.00	246.51
15-Nov-09 13:29:17	265.55	107.81	0.00	246.70
15-Nov-09 13:30:17	265.58	108.91	0.00	247.06
15-Nov-09 13:31:17	265.60	108.01	0.00	247.02
15-Nov-09 13:32:17	265.78	108.63	0.00	247.22
15-Nov-09 13:33:17	265.58	108.82	0.00	247.25
15-Nov-09 13:34:17	265.56	108.72	0.00	246.70
15-Nov-09 13:35:17	265.55	108.28	0.00	246.90
15-Nov-09 13:36:17	265.62	108.38	0.00	246.73
15-Nov-09 13:37:17	265.68	108.15	0.00	246.95
15-Nov-09 13:38:17	265.72	108.30	0.00	246.92
15-Nov-09 13:39:17	265.57	109.47	0.00	247.30
15-Nov-09 13:40:17	265.39	108.65	0.00	246.79
15-Nov-09 13:41:17	265.30	107.75	0.00	246.20
15-Nov-09 13:42:17	265.66	107.80	0.00	246.72
15-Nov-09 13:43:17	265.59	108.08	0.00	246.84
15-Nov-09 13:44:17	265.72	109.13	0.00	246.89
15-Nov-09 13:45:17	265.78	109.22	0.00	247.26
15-Nov-09 13:46:17	265.44	108.98	0.00	247.63
15-Nov-09 13:47:17	265.29	108.82	0.00	246.75
15-Nov-09 13:48:17	265.03	108.85	0.00	246.63
15-Nov-09 13:49:17	265.06	108.30	0.00	246.16
15-Nov-09 13:50:17	265.15	108.15	0.00	246.27
15-Nov-09 13:51:17	265.44	107.98	0.00	246.47
15-Nov-09 13:52:17	265.68	108.27	0.00	247.07
15-Nov-09 13:53:17	265.76	108.34	0.00	247.55
15-Nov-09 13:54:17	265.59	108.66	0.00	247.11
15-Nov-09 13:55:17	265.61	108.30	0.00	246.84
15-Nov-09 13:56:17	265.51	108.56	0.00	247.12
15-Nov-09 13:57:17	265.35	108.38	0.00	246.83
15-Nov-09 13:58:17	265.25	108.65	0.00	246.84
15-Nov-09 13:59:17	265.26	108.27	0.00	246.54
15-Nov-09 14:00:17	265.46	108.61	0.00	246.85
15-Nov-09 14:01:17	265.40	108.33	0.00	247.13
15-Nov-09 14:02:17	265.14	108.28	0.00	246.61
15-Nov-09 14:03:17	265.17	108.14	0.00	246.39
15-Nov-09 14:04:17	265.37	108.31	0.00	246.44
15-Nov-09 14:05:17	265.37	108.25	0.00	246.83
15-Nov-09 14:06:17	265.38	108.43	0.00	246.77
Average	265.57	108.47	0.00	246.96

UNIT OPERATION PARAMETERS

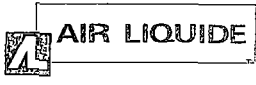
Base Load with Duct Burners

	Combustor Inlet Pressure A psig	CT A FG Flow KPPH	DB A FG Flow KPPH	CT A Load MW
16-Nov-09 10:35:15	270.77	101.79	8.50	254.08
16-Nov-09 10:36:15	270.80	101.16	8.50	253.67
16-Nov-09 10:37:15	270.68	102.05	8.49	254.02
16-Nov-09 10:38:15	270.86	101.74	8.49	254.35
16-Nov-09 10:39:15	270.76	101.66	8.49	254.25
16-Nov-09 10:40:15	270.86	102.21	8.48	254.52
16-Nov-09 10:41:15	270.72	101.86	8.48	253.91
16-Nov-09 10:42:15	270.64	101.77	8.48	253.94
16-Nov-09 10:43:15	270.65	101.80	8.48	254.08
16-Nov-09 10:44:15	270.72	101.32	8.47	254.43
16-Nov-09 10:45:15	270.61	102.03	8.47	254.33
16-Nov-09 10:46:15	270.48	102.13	8.47	254.26
16-Nov-09 10:47:15	270.54	102.86	8.46	254.48
16-Nov-09 10:48:15	270.60	101.90	8.46	254.31
16-Nov-09 10:49:15	270.55	102.07	8.47	254.26
16-Nov-09 10:50:15	270.56	101.81	8.47	254.41
16-Nov-09 10:51:15	270.47	101.97	8.46	254.23
16-Nov-09 10:52:15	270.48	102.25	8.46	254.40
16-Nov-09 10:53:15	270.24	101.95	8.46	253.98
16-Nov-09 10:54:15	270.37	102.24	8.46	253.95
16-Nov-09 10:55:15	270.36	101.78	8.46	254.34
16-Nov-09 10:56:15	270.17	101.92	8.46	254.08
16-Nov-09 10:57:15	270.02	102.94	8.46	254.77
16-Nov-09 10:58:15	269.90	102.56	8.46	254.22
16-Nov-09 10:59:15	269.84	101.93	8.46	253.55
16-Nov-09 11:00:15	269.80	101.12	8.46	253.57
16-Nov-09 11:01:15	269.92	101.90	8.46	253.89
16-Nov-09 11:02:15	269.84	102.11	8.46	253.80
16-Nov-09 11:03:15	269.74	101.73	8.46	253.44
16-Nov-09 11:04:15	269.77	101.65	8.45	253.51
16-Nov-09 11:05:15	269.62	101.65	8.46	253.15
16-Nov-09 11:06:15	269.59	101.51	8.45	253.33
16-Nov-09 11:07:15	269.63	101.26	8.45	253.44
16-Nov-09 11:08:15	269.56	101.61	8.45	252.93
16-Nov-09 11:09:15	269.46	101.68	8.45	253.02
16-Nov-09 11:10:15	269.26	101.73	8.45	252.84
16-Nov-09 11:11:15	269.29	101.39	8.46	252.63
16-Nov-09 11:12:15	269.22	100.81	8.45	252.54
16-Nov-09 11:13:15	269.22	101.20	8.47	252.78
16-Nov-09 11:14:15	269.08	101.25	8.46	252.31
16-Nov-09 11:15:15	269.02	101.05	8.46	252.36
16-Nov-09 11:16:15	268.75	101.23	8.46	251.70
16-Nov-09 11:17:15	268.87	100.79	8.46	251.78
16-Nov-09 11:18:15	268.85	101.06	8.46	252.09
16-Nov-09 11:19:15	268.82	101.16	8.46	251.85
16-Nov-09 11:20:15	268.67	101.15	8.46	251.84
16-Nov-09 11:21:15	268.53	100.77	8.46	251.47
16-Nov-09 11:22:15	268.77	100.87	8.46	251.82
16-Nov-09 11:23:15	268.85	101.10	8.46	252.13
16-Nov-09 11:24:15	268.75	101.26	8.46	252.30
16-Nov-09 11:25:15	268.70	100.90	8.46	251.88
16-Nov-09 11:26:15	268.49	101.10	8.45	252.06
16-Nov-09 11:27:15	268.20	100.81	8.45	251.37
16-Nov-09 11:28:15	268.26	101.06	8.44	251.38
16-Nov-09 11:29:15	268.20	100.70	8.44	251.09
16-Nov-09 11:30:15	267.94	100.61	8.44	251.11
16-Nov-09 11:31:15	267.95	100.60	8.43	250.71
16-Nov-09 11:32:15	268.01	100.75	8.43	250.80
16-Nov-09 11:33:15	267.91	100.90	8.43	250.59
16-Nov-09 11:34:15	267.58	101.18	8.43	250.43
Average	269.58	101.52	8.46	253.05

	Combustor Inlet Pressure A psig	CT A FG Flow KPPH	DB A FG Flow KPPH	CT A Load MW
16-Nov-09 11:48:15	267.03	100.58	8.42	249.36
16-Nov-09 11:49:15	266.86	100.52	8.42	249.12
16-Nov-09 11:50:15	266.94	100.17	8.42	248.63
16-Nov-09 11:51:15	266.89	100.39	8.42	249.29
16-Nov-09 11:52:15	266.86	100.20	8.42	248.96
16-Nov-09 11:53:15	266.67	100.41	8.42	248.97
16-Nov-09 11:54:15	266.79	100.31	8.41	248.63
16-Nov-09 11:55:15	266.81	100.45	8.42	248.82
16-Nov-09 11:56:15	266.66	100.57	8.41	248.92
16-Nov-09 11:57:15	266.67	100.35	8.42	248.54
16-Nov-09 11:58:15	266.81	100.19	8.41	248.97
16-Nov-09 11:59:15	266.67	100.33	8.41	248.63
16-Nov-09 12:00:15	266.50	100.24	8.41	248.69
16-Nov-09 12:01:15	266.39	100.27	8.41	248.67
16-Nov-09 12:02:15	266.15	99.99	8.41	248.12
16-Nov-09 12:03:15	266.17	99.72	8.41	247.92
16-Nov-09 12:04:15	266.19	99.99	8.42	247.97
16-Nov-09 12:05:15	266.09	100.16	8.42	248.11
16-Nov-09 12:06:15	266.14	100.14	8.41	248.30
16-Nov-09 12:07:15	266.27	100.13	8.41	247.98
16-Nov-09 12:08:15	266.25	100.30	8.41	248.44
16-Nov-09 12:09:15	266.18	100.12	8.41	248.14
16-Nov-09 12:10:15	266.12	99.88	8.41	248.07
16-Nov-09 12:11:15	266.09	100.17	8.41	247.48
16-Nov-09 12:12:15	266.00	100.14	8.42	247.61
16-Nov-09 12:13:15	266.04	99.84	8.41	247.53
16-Nov-09 12:14:15	265.76	100.21	8.40	248.02
16-Nov-09 12:15:15	265.64	99.79	8.41	247.13
16-Nov-09 12:16:15	265.65	99.64	8.41	247.26
16-Nov-09 12:17:15	265.56	99.73	8.41	247.12
16-Nov-09 12:18:15	265.60	99.72	8.42	247.06
16-Nov-09 12:19:15	265.43	99.83	8.41	246.84
16-Nov-09 12:20:15	265.40	99.76	8.41	247.31
16-Nov-09 12:21:15	265.23	99.46	8.41	246.86
16-Nov-09 12:22:15	265.27	99.80	8.42	247.29
16-Nov-09 12:23:15	265.44	99.88	8.41	246.60
16-Nov-09 12:24:15	265.65	99.95	8.41	247.12
16-Nov-09 12:25:15	265.61	99.82	8.42	247.35
16-Nov-09 12:26:15	265.34	99.77	8.42	246.91
16-Nov-09 12:27:15	265.19	99.53	8.42	246.75
16-Nov-09 12:28:15	265.43	99.51	8.41	246.90
16-Nov-09 12:29:15	265.57	99.90	8.41	247.46
16-Nov-09 12:30:15	265.52	99.78	8.41	246.89
16-Nov-09 12:31:15	265.38	99.87	8.41	247.20
16-Nov-09 12:32:15	265.22	99.64	8.41	246.84
16-Nov-09 12:33:15	265.16	99.44	8.41	246.83
16-Nov-09 12:34:15	265.21	99.58	8.41	246.68
16-Nov-09 12:35:15	265.23	100.03	8.41	247.14
16-Nov-09 12:36:15	265.30	100.16	8.42	246.68
16-Nov-09 12:37:15	265.26	99.33	8.42	246.04
16-Nov-09 12:38:15	265.21	99.45	8.42	246.83
16-Nov-09 12:39:15	265.23	99.64	8.42	246.47
16-Nov-09 12:40:15	265.26	99.35	8.42	246.91
16-Nov-09 12:41:15	265.49	100.50	8.42	246.81
16-Nov-09 12:42:15	265.16	99.77	8.41	246.93
16-Nov-09 12:43:15	265.02	100.15	8.42	246.43
16-Nov-09 12:44:15	265.08	99.54	8.42	246.52
16-Nov-09 12:45:15	264.96	99.53	8.42	246.38
16-Nov-09 12:46:15	265.01	99.87	8.42	246.45
16-Nov-09 12:47:15	264.94	99.80	8.42	246.24
Average	265.83	99.96	8.41	247.57

	Combustor Inlet Pressure A psig	CT A FG Flow KPPH	DB A FG Flow KPPH	CT A Load MW
16-Nov-09 13:02:15	264.25	99.24	8.42	245.64
16-Nov-09 13:03:15	264.18	98.37	8.42	245.17
16-Nov-09 13:04:15	264.46	99.50	8.41	245.62
16-Nov-09 13:05:15	264.68	99.46	8.42	246.03
16-Nov-09 13:06:15	264.51	99.45	8.42	245.96
16-Nov-09 13:07:15	264.22	99.43	8.42	245.44
16-Nov-09 13:08:15	264.41	99.13	8.42	245.38
16-Nov-09 13:09:15	264.66	98.68	8.41	245.60
16-Nov-09 13:10:15	264.74	99.98	8.42	245.83
16-Nov-09 13:11:15	264.57	99.84	8.42	245.76
16-Nov-09 13:12:15	264.43	99.33	8.41	245.46
16-Nov-09 13:13:15	264.26	98.77	8.41	245.45
16-Nov-09 13:14:15	264.19	99.33	8.42	245.34
16-Nov-09 13:15:15	264.15	99.19	8.42	245.64
16-Nov-09 13:16:15	264.33	99.11	8.42	245.12
16-Nov-09 13:17:15	264.28	99.20	8.42	245.52
16-Nov-09 13:18:15	264.22	99.23	8.41	245.16
16-Nov-09 13:19:15	264.16	99.23	8.41	245.23
16-Nov-09 13:20:15	264.19	98.96	8.41	245.24
16-Nov-09 13:21:15	264.15	99.00	8.41	245.33
16-Nov-09 13:22:15	264.10	99.37	8.42	245.25
16-Nov-09 13:23:15	264.07	98.95	8.41	245.02
16-Nov-09 13:24:15	264.31	99.28	8.41	245.27
16-Nov-09 13:25:15	264.18	99.04	8.41	245.33
16-Nov-09 13:26:15	264.20	98.76	8.41	245.11
16-Nov-09 13:27:15	264.38	99.81	8.42	245.75
16-Nov-09 13:28:15	264.27	99.35	8.41	245.50
16-Nov-09 13:29:15	264.37	99.19	8.41	245.19
16-Nov-09 13:30:15	264.41	99.43	8.41	245.29
16-Nov-09 13:31:15	264.52	99.21	8.41	245.30
16-Nov-09 13:32:15	264.59	99.46	8.42	245.99
16-Nov-09 13:33:15	264.40	99.40	8.42	245.70
16-Nov-09 13:34:15	264.30	99.35	8.41	245.59
16-Nov-09 13:35:15	264.53	99.31	8.41	245.76
16-Nov-09 13:36:15	264.52	99.43	8.41	245.89
16-Nov-09 13:37:15	264.54	99.28	8.41	246.14
16-Nov-09 13:38:15	264.56	99.50	8.42	245.93
16-Nov-09 13:39:15	264.47	99.28	8.42	245.58
16-Nov-09 13:40:15	264.53	99.15	8.41	245.61
16-Nov-09 13:41:15	264.70	99.35	8.41	245.61
16-Nov-09 13:42:15	264.39	99.57	8.42	245.70
16-Nov-09 13:43:15	264.33	99.36	8.44	245.53
16-Nov-09 13:44:15	264.51	98.87	8.43	245.18
16-Nov-09 13:45:15	264.66	99.50	8.44	245.98
16-Nov-09 13:46:15	264.59	99.61	8.43	245.60
16-Nov-09 13:47:15	264.63	99.84	8.43	245.72
16-Nov-09 13:48:15	264.62	99.51	8.44	246.14
16-Nov-09 13:49:15	264.53	98.84	8.43	245.57
16-Nov-09 13:50:15	264.52	99.57	8.44	246.18
16-Nov-09 13:51:15	264.51	99.69	8.43	245.82
16-Nov-09 13:52:15	264.42	99.45	8.43	246.32
16-Nov-09 13:53:15	264.46	99.51	8.43	245.89
16-Nov-09 13:54:15	264.53	99.51	8.43	245.91
16-Nov-09 13:55:15	264.60	99.10	8.43	245.74
16-Nov-09 13:56:15	264.57	98.99	8.42	245.83
16-Nov-09 13:57:15	264.44	99.25	8.41	245.78
16-Nov-09 13:58:15	264.60	99.36	8.41	245.88
16-Nov-09 13:59:15	264.57	99.59	8.41	246.50
16-Nov-09 14:00:15	264.43	99.78	8.41	246.04
16-Nov-09 14:01:15	264.35	99.35	8.41	245.67
Average	264.42	99.31	8.42	245.63

APPENDIX C
CALIBRATION GAS CERTIFICATIONS



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

P.O. No.: 9081310
AIR LIQUIDE AMERICA SPECIALTY GASES LLC Project No.: 05-79607-011
1290 COMBERMERE STREET
TROY, MI 48083

Customer

AIR LIQUIDE AMERICA L.P.
AIR HYGIENE
1319 NORTH PEORIA AVE
TULSA OK 74106

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: ALM010501 Certification Date: 09Sep2009 Exp. Date: 08Sep2012
Cylinder Pressure***: 2000 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ANALYTICAL ACCURACY**	TRACEABILITY
CARBON DIOXIDE	8.83 %	+/- 1%	Direct NIST and VSL
OXYGEN	12.1 %	+/- 1%	Direct NIST and VSL
NITROGEN	BALANCE		

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

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

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1674	01May2010	K003066	7.016 %	CARBON DIOXIDE
NTRM 2658	01Jan2010	K001290	10.03 %	OXYGEN

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
PIR/2000/609015	26Aug2009	NDIR
CAI/110P/V03018	04Sep2009	PARAMAGNETIC

ANALYZER READINGS

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

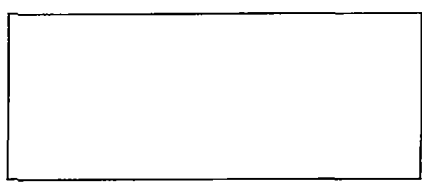
First Triad Analysis

Second Triad Analysis

Calibration Curve

CARBON DIOXIDE

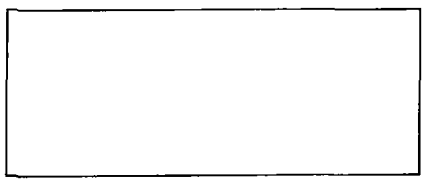
Date: 09Sep2009 Response Unit:%
 Z1=0.00000 R1=49.22000 T1=58.34000
 R2=49.22000 Z2=0.00000 T2=58.34000
 Z3=0.00000 T3=58.34000 R3=49.22000
 Avg. Concentration: 8.832 %



Concentration = A + Bx + Cx² + Dx³ + Ex⁴
 r = 0.999997
 Constants: A = 0.00330273
 B = 0.109712583 C = 0.0003454
 D = 0.000599 E =

OXYGEN

Date: 08Sep2009 Response Unit:09080
 Z1=0.00000 R1=10.07000 T1=12.08000
 R2=10.07000 Z2=0.00000 T2=12.08000
 Z3=0.00000 T3=12.08000 R3=10.07000
 Avg. Concentration: 12.06 %



Concentration = A + Bx + Cx² + Dx³ + Ex⁴
 r = 0.9999980
 Constants: A = -0.02226588
 B = 1.000347036 C =
 D = E =

APPROVED BY: _____



AIR LIQUIDE

Air Liquide America
Specialty Gases LLC



Scott™

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

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

P.O. No.: 9091310

Project No.: 05-80447-011

Customer

AIR LIQUIDE AMERICA L.P.

801 W NORTH CARRIER PKWY
GRAND PRAIRIE TX 75050-1003

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: ALM014788 Certification Date: 05Oct2009 Exp. Date: 04Oct2012
Cylinder Pressure***: 1950 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ANALYTICAL ACCURACY**	TRACEABILITY
CARBON DIOXIDE	19.2 %	+/- 1%	Direct NIST and VSL
OXYGEN	21.1 %	+/- 1%	Direct NIST and VSL
NITROGEN	BALANCE		

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

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

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 2300	01Nov2010	1D002807	23.04 %	CARBON DIOXIDE
NTRM 2350	01Dec2011	K016398	23.20 %	OXYGEN

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
VARIAN/3700/10880-13	30Sep2009	THERMAL CONDUCTIVITY
CAI/110P/V03018	01Oct2009	PARAMAGNETIC

ANALYZER READINGS

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

First Triad Analysis

Second Triad Analysis

Calibration Curve

CARBON DIOXIDE

Date: 05Oct2009	Response Unit: MV	
Z1=0.00000	R1=121825.0	T1=101395.0
R2=121842.0	Z2=0.00000	T2=101331.0
Z3=0.00000	T3=101045.0	R3=121788.0
Avg. Concentration:	19.24	%



Concentration = A + Bx + Cx ² + Dx ³ + Ex ⁴	
r = 0.9999	
Constants:	A = -0.3033388
	B = 0.0001956 C = 0
	D = 0 E = 0

OXYGEN

Date: 05Oct2009	Response Unit: MV	
Z1=0.00000	R1=23.20000	T1=21.13000
R2=23.20000	Z2=0.00000	T2=21.10000
Z3=0.00000	T3=21.10000	R3=23.20000
Avg. Concentration:	21.10	%



Concentration = A + Bx + Cx ² + Dx ³ + Ex ⁴	
r = 0.9999	
Constants:	A = -0.02466393
	B = 1.000647921 C = 0
	D = 0 E = 0

APPROVED BY: _____

HILARY THATCHER



AIR LIQUIDE

Air Liquide America
Specialty Gases LLC



Scott



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

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

P.O. No.: 9062801 AIR HYGIENE
Project No.: 05-78099-007

Customer

AIR HYGIENE

JOHN FALLS
1319 N. PEORIA AVENUE
TULSA OK 74106

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: CC66639 **Certification Date:** 29Jul2009 **Exp. Date:** 27Jan2010
Cylinder Pressure*:** 2000 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY**	TRACEABILITY
CARBON MONOXIDE	4.95 PPM	+/- 1%	Direct NIST and NMI
NITRIC OXIDE	4.95 PPM	+/- 1%	Direct NIST and NMI
NITROGEN - OXYGEN FREE	BALANCE		
TOTAL OXIDES OF NITROGEN	4.99 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 1677	01Jun2012	KAL003969	9.855 PPM	CARBON MONOXIDE
NTRM 2629	15Aug2013	KAL003016	19.83 PPM	NITRIC OXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
HORIBA/APMA-360/42244670011	28Jul2009	NDIR
ECO PHYSICS/CLD 84M/84M0359	13Jul2009	CHEMI

ANALYZER READINGS

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

First Triad Analysis

Second Triad Analysis

Calibration Curve

CARBON MONOXIDE

Date: 21Jul2009 Response Unit: PPM
Z1=0.00000 R1=9.85500 T1=4.95500
R2=9.83700 Z2=0.00000 T2=4.98600
Z3=0.00000 T3=4.96800 R3=9.84400
Avg. Concentration: 4.927 PPM

Date: 29Jul2009 Response Unit: PPM
Z1=0.00000 R1=9.84000 T1=5.01500
R2=9.84000 Z2=0.00000 T2=5.01500
Z3=0.00000 T3=5.01500 R3=9.84000
Avg. Concentration: 4.977 PPM

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999999
Constants: A = -0.00161482
B = 1.00404143 C = -0.004485
D = 0.000426615 E = 0

NITRIC OXIDE

Date: 21Jul2009 Response Unit: MV
Z1=0.00000 R1=19.76000 T1=4.93000
R2=19.86000 Z2=0.00000 T2=4.92900
Z3=0.00000 T3=4.93500 R3=19.86000
Avg. Concentration: 4.940 PPM

Date: 28Jul2009 Response Unit: MV
Z1=0.00000 R1=19.84000 T1=4.95400
R2=19.83000 Z2=0.00000 T2=4.95300
Z3=0.00000 T3=4.95000 R3=19.86000
Avg. Concentration: 4.960 PPM

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999998
Constants: A = 0.0151146
B = 0.999480696 C = 0
D = 0 E = 0

APPROVED BY:

JEFF CROTEAU



CERTIFICATION OF ANALYSIS

Interference Free Multi-Component EPA Protocol Gases

Note: Analytical uncertainty and NIST traceability are in compliance with EPA-600/R-97/121
Section 2.2, Procedure G-1

Cylinder S/N: EB0011495

Customer: AIR HYGIENE
Location: TULSA, OK

Shipping Order Number: 30277953
Transfer Number: 30277953
Lot Number: SFS123410
Valve: CGA 660
Cylinder Pressure*: 2000 PSIG
*Cylinder should not be used when gas pressure is below 150 psig

P.O. Number: 8071601
Item Number: SGZCAH071

Assay Date: 10-Aug-2008

Expiration Date: 10-Aug-2010

Components	Requested Concentration	Assay Concentration
Nitrogen	Balance	Balance
Carbon Monoxide	9 ppm	9.05 ± 0.16 ppm
Nitric Oxide	9 ppm	9.11 ± 0.13 ppm
NOx		9.11 ppm

Reference Standard(s) Employed For Analysis

Certified Concentration and Uncertainty	Component	Balance	Cyl. No.	SRM/PRM/Mix No.	Exp. Date	Sample No.	Type
2.52 ± 0.03 ppm	Carbon Monoxide	Nitrogen	CC109330	SFS97696	18-Oct-2008	XZ	GMIS
10.03 ± 0.10 ppm	Nitric Oxide	Nitrogen	CC171193	SFS109913	31-Jan-2010	ZV	GMIS

Analytical Data

Component:		FIRST TRIAD ANALYSIS			SECOND TRIAD ANALYSIS						
Carbon Monoxide		3-Aug-2008			10-Aug-2008						
Analyzer Information		Trial 1	Trial 2	Trial 3	Units	Trial 1	Trial 2	Trial 3	Units		
Analyzer Type:	Fourier Transform IR	0.0045	-0.0028	-0.0028	ppm	Zero	-0.0032	-0.0051	-0.0139	ppm	
Manufacturer:	MKS Instruments	Reference	2.5073	2.5003	2.4868	ppm	Reference	2.4734	2.4845	2.4772	ppm
Model Number:	2031	Candidate	8.9813	8.9602	8.9568	ppm	Candidate	8.9533	8.9518	8.9491	ppm
Serial Number:	10387278	Result	9.018	9.024	9.033	ppm	Result	9.113	9.086	9.067	ppm
MPR Last Calibrated:	30-Jul-2008	Evaluation	Valid	Valid	Valid		Evaluation	Valid	Valid	Valid	
Analytical Principle:	FTIR	Mean Analytical Result: 9.025 ppm				Mean Analytical Result: 9.082 ppm					

Component:		FIRST TRIAD ANALYSIS			SECOND TRIAD ANALYSIS						
Nitric Oxide		3-Aug-2008			10-Aug-2008						
Analyzer Information		Trial 1	Trial 2	Trial 3	Units	Trial 1	Trial 2	Trial 3	Units		
Analyzer Type:	Fourier Transform IR	0.0153	0.0086	0.0181	ppm	Zero	-0.0141	0.0095	0.0012	ppm	
Manufacturer:	MKS Instruments	Reference	9.7835	9.7858	9.7855	ppm	Reference	9.7635	9.7726	9.7698	ppm
Model Number:	2031	Candidate	8.8950	8.8960	8.8748	ppm	Candidate	8.8575	8.8552	8.8984	ppm
Serial Number:	10387278	Result	9.118	9.117	9.094	ppm	Result	9.101	9.086	9.135	ppm
MPR Last Calibrated:	21-Jul-2008	Evaluation	Valid	Valid	Valid		Evaluation	Valid	Valid	Valid	
Analytical Principle:	FTIR	Mean Analytical Result: 9.110 ppm				Mean Analytical Result: 9.108 ppm					

Analyst:  Tan Ngo

Approved by:  Thuan Tran



AIR LIQUIDE

CERTIFICATION OF ANALYSIS

Interference Free Multi-Component EPA Protocol Gases

Note: Analytical uncertainty and NIST traceability are in compliance with EPA-600/R-97/121
Section 2.2, Procedure G-1

Cylinder S/N: CC150921

Customer: AIR HYGIENE
Location: TULSA, OK

Shipping Order Number: 30555150
Transfer Number: 30555150
Lot Number: SFS124130
Valve: CGA 350
Cylinder Pressure*: 2000 PSIG
*Cylinder should not be used when
gas pressure is below 150 psig

P.O. Number: 8080801
Item Number: SGZCAH001

Assay Date: 25-Aug-2008

Expiration Date: 25-Aug-2011

Components	Requested Concentration	Assay Concentration
Nitrogen	Balance	Balance
Methane	3 ppm	3.00 ± 0.03 ppm

Reference Standard(s) Employed For Analysis

Certified Concentration and Uncertainty	Component	Balance	Cyl. No.	SRM/PRM/Mix No.	Exp. Date	Sample No.	Type
9.863 ± 0.030 ppm	Methane	Air	FF28576	1659a	25-Apr-2012	11-G-24	SRM

Analytical Data

Component: Methane		FIRST TRIAD ANALYSIS 25-Aug-2008				Units
Analyzer Information		Zero	Trial 1	Trial 2	Trial 3	
Analyzer Type:	Gas Chromatograph	0.058	0.058	0.0000	0.161	Area
Manufacturer:	Hewlett Packard	Reference	87.036	87.257	87.485	Area
Model Number:	G1540A	Candidate	26.557	26.535	26.651	Area
Serial Number:	US00003390/Meth	Result	3.005	2.999	2.992	ppm
MPR Last Calibrated:	12-Aug-2008	Evaluation	Valid	Valid	Valid	
Analytical Principle:	FID & TCD	Mean Analytical Result:				2.999 ppm

Analyst: Tan Ngo

Approved by: Thuan Tran



AIR LIQUIDE

CERTIFICATION OF ANALYSIS

Interference Free Multi-Component EPA Protocol Gases

Note: Analytical uncertainty and NIST traceability are in compliance with EPA-600/R-97/121 Section 2.2, Procedure G-1

Cylinder S/N: CC150841

Customer: AIR HYGIENE
Location: TULSA, OK

Shipping Order Number: 30336104
Transfer Number: 30336104
Lot Number: SFS123631
Valve: CGA 350
Cylinder Pressure*: 2000 PSIG
*Cylinder should not be used when gas pressure is below 150 psig

P.O. Number: 8071801
Item Number: SGZCAH002

Assay Date: 4-Aug-2008

Expiration Date: 4-Aug-2011

Table with 3 columns: Components, Requested Concentration, Assay Concentration. Rows for Nitrogen and Methane.

Reference Standard(s) Employed For Analysis

Table with 9 columns: Certified Concentration and Uncertainty, Component, Balance, Cyl. No., SRM/PRM/Mix No., Exp. Date, Sample No., Type. Row for Methane.

Analytical Data

Table with columns: Component, Analyzer Information, FIRST TRIAD ANALYSIS (Trial 1, 2, 3), Units, Mean Analytical Result. Row for Methane.

Analyst: [Signature] Gary Williams

Approved by: [Signature] Thuan Tran



AIR LIQUIDE

CERTIFICATION OF ANALYSIS

Interference Free Multi-Component EPA Protocol Gases

Note: Analytical uncertainty and NIST traceability are in compliance with EPA-600/R-97/121
Section 2.2, Procedure G-1

Cylinder S/N: CC53032

Customer: AIR HYGIENE
Location: TULSA, OK

Shipping Order Number: 30736937
Transfer Number: 30736937
Lot Number: SFS125022
Valve: CGA 350
Cylinder Pressure*: 2000 PSIG
*Cylinder should not be used when
gas pressure is below 150 psig

P.O. Number: 8082701
Item Number: SGZCAH006

Assay Date: 25-Sep-2008

Expiration Date: 25-Sep-2011

Components	Requested Concentration	Assay Concentration
Nitrogen	Balance	Balance
Methane	8.5 ppm	8.40 ± 0.10 ppm

Reference Standard(s) Employed For Analysis

Certified Concentration and Uncertainty	Component	Balance	Cyl. No.	SRM/PRM/Mix No.	Exp. Date	Sample No.	Type
10.06 ± 0.04 ppm	Methane	Air	CC52347	SFS103877	18-Mar-2010	NK	GMIS

Analytical Data

Component: Methane		FIRST TRIAD ANALYSIS 25-Sep-2008				Units
Analyzer Information		Zero	Trial 1	Trial 2	Trial 3	
Analyzer Type:	Gas Chromatograph	0.0000	0.0000	0.009	0.0000	Area
Manufacturer:	Hewlett Packard	Reference	95.357	95.042	95.188	Area
Model Number:	G1540A	Candidate	79.484	79.558	79.410	Area
Serial Number:	US00003390/Meth	Result	8.385	8.421	8.392	ppm
MPR Last Calibrated:	24-Sep-2008	Evaluation	Valid	Valid	Valid	
Analytical Principle:	FID & TCD	Mean Analytical Result:				8.399 ppm

Analyst: Tan Ngo

Approved by: Thuan Tran



Air Liquide America
Specialty Gases LLC



COMPLIANCE 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

P.O. No.: 9092010
AIR LIQUIDE AMERICA SPECIALTY GASES LLC Project No.: 05-80747-012
1290 COMBERMERE STREET
TROY, MI 48083

Customer

AIR LIQUIDE AMERICA L.P.
801 W NORTH CARRIER PKWY
GRAND PRAIRIE TX 75050-1003

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: ALM010682 Certification Date: 13Oct2009 Exp. Date: 13Apr2010
Cylinder Pressure***: 1950 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ANALYTICAL	
			ACCURACY**	TRACEABILITY
NITROGEN DIOXIDE	48.1	PPM	+/- 2%	NIST and VSL
NITROGEN		BALANCE		

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

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

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
GMIS NO2/AIR	03Dec2010	ALM058077	107.0 PPM	NITROGEN DIOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
AMETEK 921/921 CE NO2/AW-921-S281	18Sep2009	UV

APPROVED BY:

HILARY THATCHER

APPENDIX D

QUALITY ASSURANCE AND QUALITY CONTROL DATA

QA/QC PROGRAM

Air Hygiene ensures the quality and validity of its emission measurement and reporting procedures through a rigorous quality assurance (QA) program. The program is developed and administered by an internal QA team and encompasses five major areas:

1. QA reviews of reports, laboratory work, and field testing
2. Equipment calibration and maintenance
3. Chain-of-custody
4. Training
5. Knowledge of current test methods

Each of these areas is discussed individually below.

QA Reviews

Air Hygiene's review procedure includes review of each source test report, along with laboratory and fieldwork, by the QA Team. The most important review is the one that takes place before a test program begins. The QA Team works closely with technical division personnel to prepare and review test protocols. Test protocol review includes selection of appropriate test procedures, evaluation of interferences or other restrictions that might preclude use of standard test procedures, and evaluation and/or development of alternate procedures.

Equipment Calibration and Maintenance

The equipment used to conduct the emission measurements is maintained according to the manufacturer's instructions to ensure proper operation. In addition to the maintenance program, calibrations are carried out on each measurement device according to the schedule outlined by the Environmental Protection Agency. Quality control checks are also conducted in the field for each test program.

Chain-of-Custody

Air Hygiene maintains full chain-of-custody documentation on all samples and data sheets. In addition to normal documentation of changes between field sample custodians, laboratory personnel, and field test personnel, Air Hygiene documents every individual who handles any test component in the field (e.g., probe wash, impinger loading and recovery, filter loading and recovery, etc.). Samples are stored in a locked area to which only Air Hygiene personnel have access. Field data sheets are secured at Air Hygiene's offices upon return from the field.

Training

Personnel's training is essential to ensure quality testing. Air Hygiene has formal and informal training programs, which include:

1. Attendance at EPA-sponsored training courses
2. Enrollment in EPA correspondence courses
3. A requirement for all technicians to read and understand Air Hygiene's QA manual
4. In-house training and QA meetings on a regular basis
5. Maintenance of training records

Knowledge of Current Test Methods

With the constant updating of standard test methods and the wide variety of emerging test procedures, it is essential that any qualified source tester keep abreast of new developments. Air Hygiene subscribes to services, which provide updates on EPA reference methods, rules, and regulations. Additionally, source test personnel regularly attend and present papers at testing and emission-related seminars and conferences. Air Hygiene personnel maintain membership in the Air and Waste Management Association and the American Industrial Hygiene Association.

COMBUSTION TESTING QUALITY ASSURANCE ACTIVITIES

A number of quality assurance activities were undertaken before, during, and after this testing project. This section of the report combined with the documentation in Appendix C describes each of those activities.

Each instrument's response was checked and adjusted in the field prior to the collection of data via multi-point calibration. The instrument's linearity was checked by adjusting its zero and span responses to zero nitrogen and an upscale calibration gas in the range of the expected concentrations. The instrument response was then challenged with other calibration gases of known concentration and accepted as being linear if the response of the other calibration gases agreed within plus or minus two percent of the range of predicted values. NO₂ to NO conversion was checked via direct connect with an EPA Protocol certified concentration of NO₂ in a balance of nitrogen. Conversion was verified to be between 90 and 110 percent.

After each test run, the analyzers were checked for zero and span drift. This allowed each test run to be bracketed by calibrations and documents the precision of the data just collected. The criterion for acceptable data is that the instrument drift is no more than three percent of the full-scale response. The quality assurance worksheets in the following pages summarize all multipoint calibration checks and zero to span checks performed during the tests. These worksheets (as prepared from the data records of Appendix A) show that no drifts in excess of three percent occurred in the zero to span checks following each test run.

The sampling systems were leak checked by demonstrating that a vacuum greater than 10 in Hg could be held for at least one minute with a decline of less than one inch of Hg. A leak test was conducted after the sample system was set up and before the system was dismantled. This test was conducted to ensure that ambient air had not diluted the sample. Any leakage detected prior to the tests would be repaired and another leak check conducted before testing commenced. No leaks were found during the pre or post-test leak checks.

The absence of leaks in the sampling system was also verified by a sampling system bias check. The sampling system's integrity was tested by comparing the responses of the analyzers to the calibration gases introduced via two paths. The first path was directly into the analyzer and the second path via the sample system at the sample probe. Any difference in the instrument responses by these two methods was attributed to sampling system bias or leakage. The criterion for acceptance is agreement within five percent of the span of the analyzer.

The control gases used to calibrate the instruments were analyzed and certified by the compressed gas vendors to plus or minus one percent accuracy for all gases. EPA Protocol No. 1 was used, where applicable to assign the concentration values traceable to the National Institute of Standards and Technology (NIST), Standard Reference Materials (SRM's). The gas calibration sheets as prepared by the vendor are contained in Appendix C.

Air Hygiene collected and reported the enclosed test data in accordance with the procedures and quality assurance activities described in this test report. Air Hygiene makes no warranty as to the suitability of the test methods. Air Hygiene also assumes no liability relating to the interpretation and use of the test data.

INSTRUMENTAL ANALYSIS QUALITY ASSURANCE DATA

Date: November 14-16, 2009
Company: Florida Power and Light
Location: Loxahatchee, Florida
Techs: PS/SB

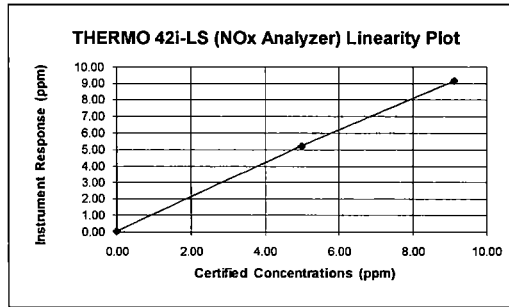
Sample System Leak Check

Date	Sample System	Leak Rate (l/min)
November 14-16, 2009	1	0

Calibration Date: November 15, 2009
 Client: Florida Power and Light

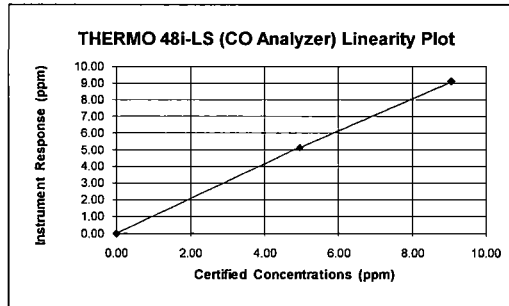
NOx Span (ppm) = 9.11

THERMO 42i-LS (NOx Analyzer)				
Certified Concentration (ppm)	Instrument Response (ppm)	Calibration Error (%)	Absolute Conc. (ppm)	Pass or Fail (±2% ≤0.5ppm)
0.00	0.05	0.55	0.05	YES (%)
4.99	5.23	2.63	0.24	YES (abs)
9.11	9.17	0.66	0.06	YES (%)
Linearity = 0.997				



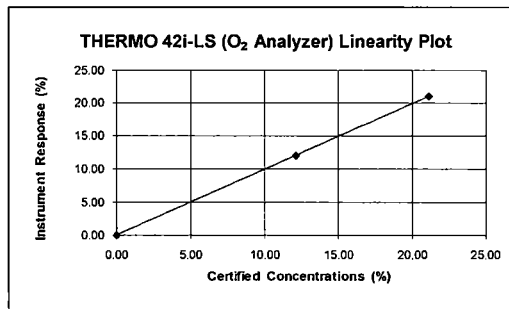
CO Span (ppm) = 9.05

THERMO 48i-LS (CO Analyzer)				
Certified Concentration (ppm)	Instrument Response (ppm)	Calibration Error (%)	Absolute Conc. (ppm)	Pass or Fail (±2% ≤0.5ppm)
0.00	0.00	0.00	0.00	YES (%)
4.95	5.14	2.10	0.19	YES (abs)
9.05	9.10	0.55	0.05	YES (%)
Linearity = 0.993				



O₂ Span (%) = 21.10

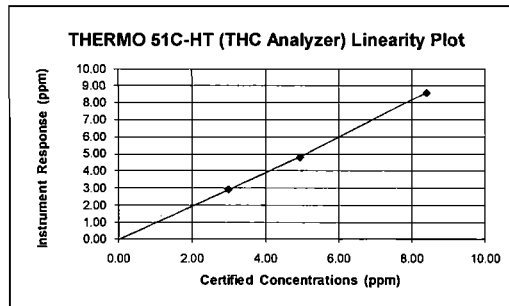
THERMO 42i-LS (O ₂ Analyzer)				
Certified Concentration (%)	Instrument Response (%)	Calibration Error (%)	Absolute Conc. (%)	Pass or Fail (±2% ≤0.5%)
0.00	0.05	0.24	0.05	YES (%)
12.10	12.09	-0.05	0.01	YES (%)
21.10	21.10	0.00	0.00	YES (%)
Linearity = 1.003				



THC Range (ppm) = 10

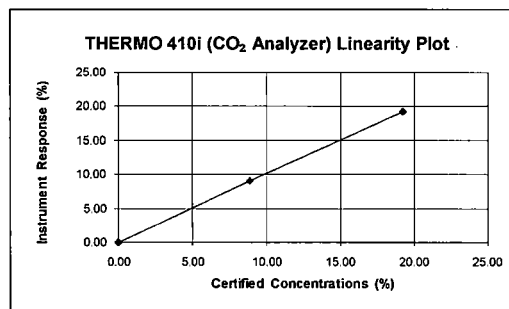
THERMO 51C-HT (THC Analyzer)				
Certified Concentration (ppm)	Instrument Response (ppm)	Calibration Error (%)	Estimated Point (ppm)	Pass or Fail (±2.5% ¹)
0.00	-0.01	-0.10	N/A	YES
3.00	2.92	-4.83	3.07	YES
4.94	4.81	-4.93	5.05	YES
8.40	8.60	2.00	N/A	YES
Linearity = 0.945				

¹zero/high based on 2% of span, low/mid based on 5% of concentration



CO₂ Span (%) = 19.20

THERMO 410i (CO ₂ Analyzer)				
Certified Concentration (%)	Instrument Response (%)	Calibration Error (%)	Absolute Conc. (%)	Pass or Fail (±2% ≤0.5%)
0.00	0.00	0.00	0.00	YES (%)
8.83	9.07	1.25	0.24	YES (%)
19.20	19.20	0.00	0.00	YES (%)
Linearity = 1.000				



NOx Converter Efficiency

Date: November 15, 2009

Analyzer: INST-N2-0001

RM 7E, (08-15-06), 8.2.4.1 Introduce a concentration of 40 to 60 ppmv NO₂ to the analyzer in direct calibration mode and record the NOx concentration displayed by the analyzer. ... Calculate the converter efficiency using Equation 7E-7 in Section 12.7. The specification for converter efficiency in Section 13.5 must be met. ... The NO₂ must be prepared according to the EPA Traceability Protocol and have an accuracy within 2.0 percent.

Audit Gas:	NO ₂ Concentration (C _v), ppmvd	48.10
Converter Efficiency Calculations:		
	Analyzer Reading, NO Channel, ppmvd	2.24
	Analyzer Reading, NOx Channel, ppmvd	46.99
	Analyzer Reading, NO ₂ Channel (C _{Dir(NO2)}), ppmvd	44.75
	Converter Efficiency, %	93.04

RM 7E, (08-15-06), 13.5 NO₂ to NO Conversion Efficiency Test (as applicable). The NO₂ to NO conversion efficiency, calculated according to Equation 7E-7 or Equation 7E-9, must be greater than or equal to 90 percent.

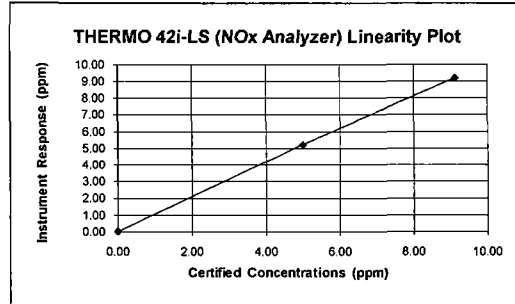
$$Eff_{NO_2} = \left(\frac{C_{Dir}}{C_v} \right) \times 100 \quad \text{Eq. 7E-7} = \frac{44.75 \text{ ppmvd}}{48.10 \text{ ppmvd}} \times 100 = 93.04\%$$

Date/Time mm/dd/yy hh:mm:ss	Elapsed Time Seconds	NOx ppmvd	NO ppmvd
11/15/09 07:22:27	1390	5.31	4.35
11/15/09 07:22:37	1400	14.43	2.67
11/15/09 07:22:47	1410	32.42	1.99
11/15/09 07:22:57	1420	41.97	2.31
11/15/09 07:23:07	1430	43.22	2.50
11/15/09 07:23:17	1440	43.97	2.57
11/15/09 07:23:27	1450	44.20	2.57
11/15/09 07:23:37	1460	44.56	2.54
11/15/09 07:23:47	1470	45.01	2.49
11/15/09 07:23:57	1480	45.40	2.42
11/15/09 07:24:07	1490	45.76	2.38
11/15/09 07:24:17	1500	46.10	2.33
11/15/09 07:24:27	1510	46.41	2.29
11/15/09 07:24:37	1520	46.99	2.24
11/15/09 07:24:47	1530	48.09	2.13

Calibration Date: November 16, 2009
 Client: Florida Power and Light

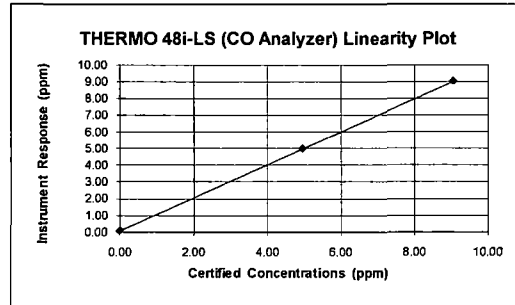
NOx Span (ppm) = 9.11

THERMO 42i-LS (NOx Analyzer)				
Certified Concentration (ppm)	Instrument Response (ppm)	Calibration Error (%)	Absolute Conc. (ppm)	Pass or Fail ($\pm 2\%$ $\leq 0.5\text{ppm}$)
0.00	0.04	0.44	0.04	YES (%)
4.99	5.23	2.63	0.24	YES (abs)
9.11	9.19	0.88	0.08	YES (%)
Linearity = 0.994				



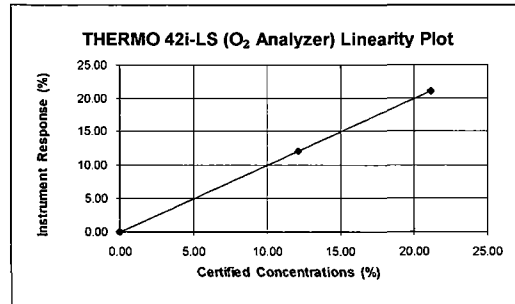
CO Span (ppm) = 9.05

THERMO 48i-LS (CO Analyzer)				
Certified Concentration (ppm)	Instrument Response (ppm)	Calibration Error (%)	Absolute Conc. (ppm)	Pass or Fail ($\pm 2\%$ $\leq 0.5\text{ppm}$)
0.00	0.10	1.10	0.10	YES (%)
4.95	4.99	0.44	0.04	YES (%)
9.05	9.03	-0.22	0.02	YES (%)
Linearity = 1.013				



O2 Span (%) = 21.10

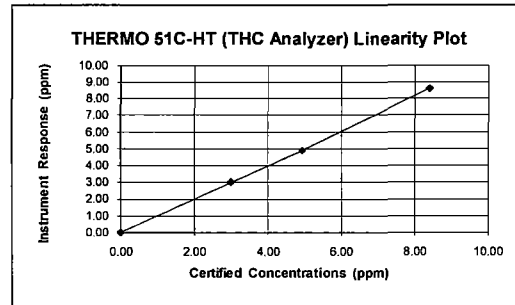
THERMO 42i-LS (O2 Analyzer)				
Certified Concentration (%)	Instrument Response (%)	Calibration Error (%)	Absolute Conc. (%)	Pass or Fail ($\pm 2\%$ $\leq 0.5\%$)
0.00	0.01	0.05	0.01	YES (%)
12.10	12.08	-0.09	0.02	YES (%)
21.10	21.10	0.00	0.00	YES (%)
Linearity = 1.001				



THC Range (ppm) = 10.5

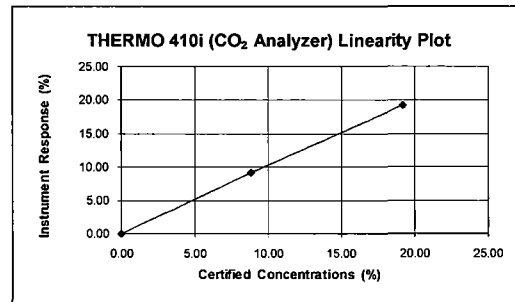
THERMO 51C-HT (THC Analyzer)				
Certified Concentration (ppm)	Instrument Response (ppm)	Calibration Error (%)	Estimated Point (ppm)	Pass or Fail ($\pm 2.5\%$ ¹)
0.00	0.01	0.10	N/A	YES
3.00	3.01	-2.26	3.08	YES
4.94	4.91	-3.07	5.06	YES
8.40	8.60	1.90	N/A	YES
Linearity = 0.962				

¹-zero/high based on 2% of span, low/mid based on 5% of concentration



CO2 Span (%) = 19.20

THERMO 410i (CO2 Analyzer)				
Certified Concentration (%)	Instrument Response (%)	Calibration Error (%)	Absolute Conc. (%)	Pass or Fail ($\pm 2\%$ $\leq 0.5\%$)
0.00	0.02	0.10	0.02	YES (%)
8.83	9.21	1.98	0.38	YES (%)
19.20	19.22	0.10	0.02	YES (%)
Linearity = 1.001				



NOx Converter Efficiency

Date: November 16, 2009

Analyzer: INST-N2-0001

RM 7E, (08-15-06), 8.2.4.1 Introduce a concentration of 40 to 60 ppmv NO₂ to the analyzer in direct calibration mode and record the NOx concentration displayed by the analyzer. ... Calculate the converter efficiency using Equation 7E-7 in Section 12.7. The specification for converter efficiency in Section 13.5 must be met. ... The NO₂ must be prepared according to the EPA Traceability Protocol and have an accuracy within 2.0 percent.

Audit Gas:	NO ₂ Concentration (C _v), ppmvd	48.10
Converter Efficiency Calculations:		
	Analyzer Reading, NO Channel, ppmvd	2.35
	Analyzer Reading, NOx Channel, ppmvd	48.33
	Analyzer Reading, NO ₂ Channel (C _{Dir(NO2)}), ppmvd	45.98
	Converter Efficiency, %	95.59

RM 7E, (08-15-06), 13.5 NO₂ to NO Conversion Efficiency Test (as applicable). The NO₂ to NO conversion efficiency, calculated according to Equation 7E-7 or Equation 7E-9, must be greater than or equal to 90 percent.

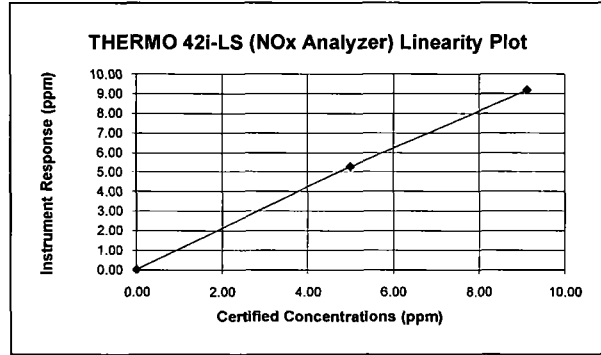
$$Eff_{NO_2} = \left(\frac{C_{Dir}}{C_V} \right) \times 100 \quad \text{Eq. 7E-7} = \frac{45.98 \text{ ppmvd}}{48.10 \text{ ppmvd}} \times 100 = 95.59\%$$

Date/Time	Elapsed Time	NOx	NO
mm/dd/yy hh:mm:ss	Seconds	ppmvd	ppmvd
11/16/09 08:43:05	1400	5.26	5.21
11/16/09 08:43:15	1410	6.29	5.21
11/16/09 08:43:25	1420	11.26	4.91
11/16/09 08:43:35	1430	18.43	3.30
11/16/09 08:43:45	1440	33.88	2.10
11/16/09 08:43:55	1450	46.09	2.36
11/16/09 08:44:05	1460	45.48	2.60
11/16/09 08:44:15	1470	45.07	2.67
11/16/09 08:44:25	1480	45.43	2.71
11/16/09 08:44:35	1490	45.81	2.68
11/16/09 08:44:45	1500	46.29	2.64
11/16/09 08:44:55	1510	46.70	2.60
11/16/09 08:45:05	1520	47.08	2.53
11/16/09 08:45:15	1530	47.45	2.48
11/16/09 08:45:25	1540	47.75	2.41
11/16/09 08:45:35	1550	48.05	2.36
11/16/09 08:45:45	1560	48.33	2.35

Calibration Date: November 14, 2009
 Client: Florida Power and Light

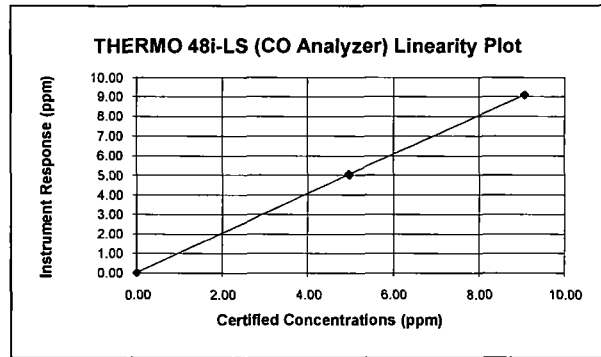
NOx Span (ppm) = 9.11

THERMO 42i-LS (NOx Analyzer)				
Certified Concentration (ppm)	Instrument Response (ppm)	Calibration Error (%)	Absolute Conc. (ppm)	Pass or Fail (±2%, ≤0.5ppm)
0.00	0.03	0.33	0.03	YES (%)
4.99	5.29	3.29	0.30	YES (abs)
9.11	9.18	0.77	0.07	YES (%)
Linearity = 0.993				



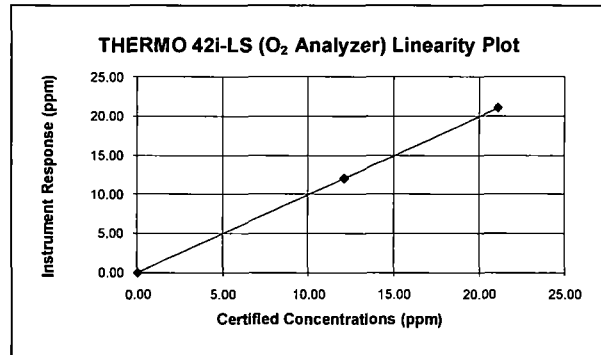
CO Span (ppm) = 9.05

THERMO 48i-LS (CO Analyzer)				
Certified Concentration (ppm)	Instrument Response (ppm)	Calibration Error (%)	Absolute Conc. (ppm)	Pass or Fail (±2%, ≤0.5ppm)
0.00	0.03	0.33	0.03	YES (%)
4.95	5.06	1.22	0.11	YES (%)
9.05	9.09	0.44	0.04	YES (%)
Linearity = 0.998				



O2 Span (%) = 21.10

THERMO 42i-LS (O ₂ Analyzer)				
Certified Concentration (%)	Instrument Response (%)	Calibration Error (%)	Absolute Conc. (%)	Pass or Fail (±2%, ≤0.5%)
0.00	0.01	0.05	0.01	YES (%)
12.10	12.05	-0.24	0.05	YES (%)
21.10	21.08	-0.09	0.02	YES (%)
Linearity = 1.002				



NOx Converter Efficiency

Date: November 14, 2009

Analyzer: INST-N2-0001

RM 7E, (08-15-06), 8.2.4.1 Introduce a concentration of 40 to 60 ppmv NO₂ to the analyzer in direct calibration mode and record the NO_x concentration displayed by the analyzer. ... Calculate the converter efficiency using Equation 7E-7 in Section 12.7. The specification for converter efficiency in Section 13.5 must be met. ... The NO₂ must be prepared according to the EPA Traceability Protocol and have an accuracy within 2.0 percent.

Audit Gas:	NO ₂ Concentration (C _v), ppmvd	48.10
Converter Efficiency Calculations:		
	Analyzer Reading, NO Channel, ppmvd	2.13
	Analyzer Reading, NO _x Channel, ppmvd	47.68
	Analyzer Reading, NO ₂ Channel (C _{Dir(NO2)}), ppmvd	45.55
	Converter Efficiency, %	94.70

RM 7E, (08-15-06), 13.5 NO₂ to NO Conversion Efficiency Test (as applicable). The NO₂ to NO conversion efficiency, calculated according to Equation 7E-7 or Equation 7E-9, must be greater than or equal to 90 percent.

$$Eff_{NO_2} = \left(\frac{C_{Dir}}{C_V} \right) \times 100 \quad \text{Eq. 7E-7} = \frac{45.55 \text{ ppmvd}}{48.10 \text{ ppmvd}} \times 100 = 94.7\%$$

Date/Time	Elapsed Time	NO _x	NO
mm/dd/yy hh:mm:ss	Seconds	ppmvd	ppmvd
11/14/09 10:54:51	98130	3.76	4.60
11/14/09 10:55:21	98160	32.84	1.75
11/14/09 10:55:51	98190	45.07	2.37
11/14/09 10:56:21	98220	46.71	2.25
11/14/09 10:56:51	98250	47.68	2.13
11/14/09 10:57:21	98280	45.94	2.22

DRIFT AND BIAS CHECK		
Strat Test Pre and Post QA/QC Check	O2	NOx
Initial Zero	0.27	0.22
Final Zero	0.04	0.05
Avg. Zero	0.16	0.14
Initial UpScale	11.99	5.02
Final UpScale	11.88	5.03
Avg. UpScale	11.94	5.03
Sys Resp (Zero)	0.01	0.03
Sys Resp (Upscale)	12.05	5.29
Upscale Cal Gas	12.10	4.99
Initial Zero Bias	1.23%	2.09%
Final Zero Bias	0.14%	0.22%
Zero Drift	1.09%	1.87%
Initial Upscale Bias	-0.28%	-2.96%
Final Upscale Bias	-0.81%	-2.85%
Upscale Drift	0.52%	0.11%
Alternative Specification Abs Diff	Initial Zero	0.26
	Final Zero	0.03
	Initial Upscale	0.06
	Final Upscale	0.17
Calibration Span	21.10	9.11
3% of Range (drift)	0.63	0.27
5% of Range (bias)	1.06	0.46

Response Time (min)	0.8	1.5
Sys. Response (min)	1.5	

INJECTIONS

Date/Time mm/dd/yy hh:mm:ss	z	O ₂	s z	NOx	s
11/14/09 13:13:01		0.06		0.05	
11/14/09 13:13:11		0.07		0.05	
11/14/09 13:13:21		0.06		0.05	
11/14/09 13:13:31		0.07		0.05	
11/14/09 13:13:41	x	0.06		0.06	x
11/14/09 13:13:51		0.08		0.06	
11/14/09 13:14:01		0.07		0.06	
11/14/09 13:14:11		4.36		0.07	
11/14/09 13:14:21		11.23		0.06	
11/14/09 13:14:31		11.82	x	0.09	
11/14/09 13:14:41		11.86		0.09	
11/14/09 13:14:51		11.88		0.09	
11/14/09 13:16:01		11.92	x	0.08	x
11/14/09 13:16:11		11.93		0.07	
11/14/09 13:16:21		11.93		0.06	
11/14/09 13:16:31		11.93		0.06	
11/14/09 13:16:41		8.21		0.07	
11/14/09 13:16:51		0.75		0.06	
11/14/09 13:17:01		0.21		1.39	
11/14/09 13:17:11		0.16		2.69	
11/14/09 13:17:21		0.13		3.66	
11/14/09 13:17:31		0.12		4.77	x
11/14/09 13:17:41		0.12		4.93	
11/14/09 13:17:51		0.11		4.97	
11/14/09 13:18:01		0.10		4.98	

DRIFT AND BIAS CHECK						
Base W/O Db Load, Run - 1-1	O ₂	NOx	CO	VOC	CO ₂	
Raw Average	13.19	2.62	0.49	1.49	4.72	
Corrected Average	13.15	2.53	0.53	1.52	4.52	
Initial Zero	0.11	0.09	-0.09	0.10	0.01	
Final Zero	0.11	0.09	-0.09	0.20	0.29	
Avg. Zero	0.11	0.09	-0.09	0.15	0.15	
Initial UpScale	12.10	5.04	5.38	2.92	9.00	
Final UpScale	12.20	5.12	5.33	3.20	9.13	
Avg. UpScale	12.15	5.08	5.36	3.06	9.07	
Sys Resp (Zero)	0.05	0.05	0.00	-0.01	0.00	
Sys Resp (Upscale)	12.09	5.23	5.14	2.92	9.07	
Upscale Cal Gas	12.10	4.99	4.95	3.00	8.83	
Initial Zero Bias	0.28%	0.44%	-0.99%	1.10%	0.05%	
Final Zero Bias	0.28%	0.44%	-0.99%	2.10%	1.51%	
Zero Drift	0.00%	0.00%	0.00%	1.00%	1.46%	
Initial Upscale Bias	0.05%	-2.09%	2.65%	0.00%	-0.36%	
Final Upscale Bias	0.52%	-1.21%	2.10%	2.80%	0.31%	
Upscale Drift	0.47%	0.88%	0.55%	2.80%	0.68%	
Alternative Specification Abs Diff	Initial Zero	0.06	0.04	0.09	--	0.01
	Final Zero	0.06	0.04	0.09	--	0.29
	Initial Upscale	0.01	0.19	0.24	--	0.07
	Final Upscale	0.11	0.11	0.19	--	0.06
Calibration Span	21.10	9.11	9.05	10.00	19.20	
3% of Cal. Span (drift)	0.63	0.27	0.27	0.30	0.58	
5% of Cal. Span (bias)	1.06	0.46	0.45	0.50	0.96	

DRIFT AND BIAS CHECK						
Base W/O Db Load, Run - 1-2	O ₂	NOx	CO	VOC	CO ₂	
Raw Average	13.21	2.60	0.44	1.16	4.80	
Corrected Average	13.11	2.51	0.48	1.06	4.46	
Initial Zero	0.11	0.09	-0.09	0.20	0.29	
Final Zero	0.16	0.09	-0.06	0.25	0.38	
Avg. Zero	0.14	0.09	-0.08	0.23	0.34	
Initial UpScale	12.20	5.12	5.33	3.20	9.13	
Final UpScale	12.20	5.04	5.32	3.20	9.20	
Avg. UpScale	12.20	5.08	5.33	3.20	9.17	
Sys Resp (Zero)	0.05	0.05	0.00	-0.01	0.00	
Sys Resp (Upscale)	12.09	5.23	5.14	2.92	9.07	
Upscale Cal Gas	12.10	4.99	4.95	3.00	8.83	
Initial Zero Bias	0.28%	0.44%	-0.99%	2.10%	1.51%	
Final Zero Bias	0.52%	0.44%	-0.66%	2.60%	1.98%	
Zero Drift	0.24%	0.00%	0.33%	0.50%	0.47%	
Initial Upscale Bias	0.52%	-1.21%	2.10%	2.80%	0.31%	
Final Upscale Bias	0.52%	-2.09%	1.99%	2.80%	0.68%	
Upscale Drift	0.00%	0.88%	0.11%	0.00%	0.36%	
Alternative Specification Abs Diff	Initial Zero	0.06	0.04	0.09	--	0.29
	Final Zero	0.11	0.04	0.06	--	0.38
	Initial Upscale	0.11	0.11	0.19	--	0.06
	Final Upscale	0.11	0.19	0.18	--	0.13
Calibration Span	21.10	9.11	9.05	10.00	19.20	
3% of Cal. Span (drift)	0.63	0.27	0.27	0.30	0.58	
5% of Cal. Span (bias)	1.06	0.46	0.45	0.50	0.96	

DRIFT AND BIAS CHECK						
Base W/O Db Load, Run - 1-3	O ₂	NOx	CO	VOC	CO ₂	
Raw Average	13.22	2.72	0.38	1.06	4.92	
Corrected Average	13.13	2.63	0.42	0.95	4.52	
Initial Zero	0.16	0.09	-0.06	0.25	0.38	
Final Zero	0.15	0.11	-0.10	0.19	0.41	
Avg. Zero	0.16	0.10	-0.08	0.22	0.40	
Initial UpScale	12.20	5.04	5.32	3.20	9.20	
Final UpScale	12.20	5.09	5.35	3.23	9.25	
Avg. UpScale	12.20	5.07	5.34	3.22	9.23	
Sys Resp (Zero)	0.05	0.05	0.00	-0.01	0.00	
Sys Resp (Upscale)	12.09	5.23	5.14	2.92	9.07	
Upscale Cal Gas	12.10	4.99	4.95	3.00	8.83	
Initial Zero Bias	0.52%	0.44%	-0.66%	2.60%	1.98%	
Final Zero Bias	0.47%	0.66%	-1.10%	2.00%	2.14%	
Zero Drift	0.05%	0.22%	0.44%	0.60%	0.16%	
Initial Upscale Bias	0.52%	-2.09%	1.99%	2.80%	0.68%	
Final Upscale Bias	0.52%	-1.54%	2.32%	3.10%	0.94%	
Upscale Drift	0.00%	0.55%	0.33%	0.30%	0.26%	
Alternative Specification Abs Diff	Initial Zero	0.11	0.04	0.06	--	0.38
	Final Zero	0.10	0.06	0.10	--	0.41
	Initial Upscale	0.11	0.19	0.18	--	0.13
	Final Upscale	0.11	0.14	0.21	--	0.18
Calibration Span	21.10	9.11	9.05	10.00	19.20	
3% of Cal. Span (drift)	0.63	0.27	0.27	0.30	0.58	
5% of Cal. Span (bias)	1.06	0.46	0.45	0.50	0.96	

DRIFT AND BIAS CHECK						
Base W/Db Load, Run - 2-1	O ₂	NOx	CO	VOC	CO ₂	
Raw Average	12.31	2.73	0.38	1.57	5.16	
Corrected Average	12.36	2.60	0.47	1.66	4.85	
Initial Zero	-0.05	0.04	0.01	0.01	0.11	
Final Zero	-0.13	0.06	-0.21	0.20	0.23	
Avg. Zero	-0.09	0.05	-0.10	0.11	0.17	
Initial UpScale	12.06	5.24	5.00	3.01	9.24	
Final UpScale	12.03	5.17	4.95	3.12	9.26	
Avg. UpScale	12.05	5.21	4.98	3.07	9.25	
Sys Resp (Zero)	0.01	0.04	0.10	0.01	0.02	
Sys Resp (Upscale)	12.08	5.23	4.99	3.01	9.21	
Upscale Cal Gas	12.10	4.99	4.95	3.00	8.83	
Initial Zero Bias	-0.28%	0.00%	-0.99%	0.00%	0.47%	
Final Zero Bias	-0.66%	0.22%	-3.43%	1.81%	1.09%	
Zero Drift	0.38%	0.22%	2.43%	1.81%	0.63%	
Initial Upscale Bias	-0.09%	0.11%	0.11%	0.00%	0.16%	
Final Upscale Bias	-0.24%	-0.66%	-0.44%	1.05%	0.26%	
Upscale Drift	0.14%	0.77%	0.55%	1.05%	0.10%	
Alternative Specification Abs Diff	Initial Zero	0.06	0.00	0.09	--	0.09
	Final Zero	0.14	0.02	0.31	--	0.21
	Initial Upscale	0.02	0.01	0.01	--	0.03
	Final Upscale	0.05	0.06	0.04	--	0.05
Calibration Span	21.10	9.11	9.05	10.50	19.20	
3% of Cal. Span (drift)	0.63	0.27	0.27	0.32	0.58	
5% of Cal. Span (bias)	1.06	0.46	0.45	0.53	0.96	

DRIFT AND BIAS CHECK						
Base W/Db Load, Run - 2-2	O ₂	NOx	CO	VOC	CO ₂	
Raw Average	12.33	2.70	0.25	0.42	5.24	
Corrected Average	12.40	2.55	0.49	0.27	4.86	
Initial Zero	-0.13	0.06	-0.21	0.20	0.23	
Final Zero	-0.10	0.12	-0.33	0.20	0.36	
Avg. Zero	-0.12	0.09	-0.27	0.20	0.30	
Initial UpScale	12.03	5.17	4.95	3.12	9.26	
Final UpScale	12.03	5.22	5.03	3.20	9.30	
Avg. UpScale	12.03	5.20	4.99	3.16	9.28	
Sys Resp (Zero)	0.01	0.04	0.10	0.01	0.02	
Sys Resp (Upscale)	12.08	5.23	4.99	3.01	9.21	
Upscale Cal Gas	12.10	4.99	4.95	3.00	8.83	
Initial Zero Bias	-0.66%	0.22%	-3.43%	1.81%	1.09%	
Final Zero Bias	-0.52%	0.88%	-4.75%	1.81%	1.77%	
Zero Drift	0.14%	0.66%	1.33%	0.00%	0.68%	
Initial Upscale Bias	-0.24%	-0.66%	-0.44%	1.05%	0.26%	
Final Upscale Bias	-0.24%	-0.11%	0.44%	1.81%	0.47%	
Upscale Drift	0.00%	0.55%	0.88%	0.76%	0.21%	
Alternative Specification Abs Diff	Initial Zero	0.14	0.02	0.31	--	0.21
	Final Zero	0.11	0.08	0.43	--	0.34
	Initial Upscale	0.05	0.06	0.04	--	0.05
	Final Upscale	0.05	0.01	0.04	--	0.09
Calibration Span	21.10	9.11	9.05	10.50	19.20	
3% of Cal. Span (drift)	0.63	0.27	0.27	0.32	0.58	
5% of Cal. Span (bias)	1.06	0.46	0.45	0.53	0.96	

DRIFT AND BIAS CHECK						
Base W/Db Load, Run - 2-3	O ₂	NOx	CO	VOC	CO ₂	
Raw Average	12.37	2.68	0.32	1.91	5.34	
Corrected Average	12.44	2.53	0.61	1.90	4.88	
Initial Zero	-0.10	0.12	-0.33	0.20	0.36	
Final Zero	-0.10	0.07	-0.34	0.23	0.42	
Avg. Zero	-0.10	0.10	-0.34	0.22	0.39	
Initial UpScale	12.03	5.22	5.03	3.20	9.30	
Final UpScale	12.03	5.18	4.87	3.25	9.40	
Avg. UpScale	12.03	5.20	4.95	3.23	9.35	
Sys Resp (Zero)	0.01	0.04	0.10	0.01	0.02	
Sys Resp (Upscale)	12.08	5.23	4.99	3.01	9.21	
Upscale Cal Gas	12.10	4.99	4.95	3.00	8.83	
Initial Zero Bias	-0.52%	0.88%	-4.75%	1.81%	1.77%	
Final Zero Bias	-0.52%	0.33%	-4.86%	2.10%	2.08%	
Zero Drift	0.00%	0.55%	0.11%	0.29%	0.31%	
Initial Upscale Bias	-0.24%	-0.11%	0.44%	1.81%	0.47%	
Final Upscale Bias	-0.24%	-0.55%	-1.33%	2.29%	0.99%	
Upscale Drift	0.00%	0.44%	1.77%	0.48%	0.52%	
Alternative Specification Abs Diff	Initial Zero	0.11	0.08	0.43	--	0.34
	Final Zero	0.11	0.03	0.44	--	0.40
	Initial Upscale	0.05	0.01	0.04	--	0.09
	Final Upscale	0.05	0.05	0.12	--	0.19
Calibration Span	21.10	9.11	9.05	10.50	19.20	
3% of Cal. Span (drift)	0.63	0.27	0.27	0.32	0.58	
5% of Cal. Span (bias)	1.06	0.46	0.45	0.53	0.96	

METERING SYSTEM CALIBRATION SHEET

EPA Reference Method 5

Metering System Pre-Test Calibration

Air Hygiene Assett ID: samp-cp-0012

Filename: \\SERVER2\public\Shared\QAQC\Calibrations\PM-Equipment\IM-5 Consoles\Calibration Sheet v4.0\Current\{SAMP-CP-0012 Calibraton 9-30-09.xls}Original (5 point)

Make: Thermo Environmental

Date: 09/30/09

Model #: MST-C1

Barometric Pressure: 29.00 (in. Hg)

Serial #: 90699

Theoretical Critical Vacuum: 13.68 (in. Hg)

DRY GAS METER READINGS							
ΔH (in H ₂ O)	Time (min)	Volume			Initial Temps.		
		Initial (cu ft)	Final (cu ft)	Total (cu ft)	Inlet (deg F)	Outlet (deg F)	
0.24	17.00	142.640	147.900	5.260	71.0	70.0	
0.55	12.00	147.900	153.420	5.520	74.0	71.0	
0.97	10.00	153.420	159.420	6.000	76.0	72.0	
1.70	10.00	159.420	167.170	7.750	77.0	73.0	
3.00	10.00	167.170	177.630	10.460	79.0	74.0	
Final Temps.		Orifice Serial# (number)	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	Ambient Temperature		
Inlet (deg F)	Outlet (deg F)				Initial (deg F)	Final (deg F)	Average (deg F)
74.0	71.0	40	0.2354	16.0	71.2	72.1	71.7
77.0	72.0	48	0.3491	16.0	72.3	72.7	72.5
80.0	73.0	55	0.4530	16.0	72.9	73.0	73.0
81.0	74.0	63	0.5840	16.0	73.2	73.6	73.4
83.0	75.0	73	0.7945	15.0	73.6	73.8	73.7

RESULTS				
DRY GAS METER		ORIFICE		
VOLUME CORRECTED	VOLUME CORRECTED	VOLUME CORRECTED	VOLUME CORRECTED	VOLUME NOMINAL
Vm(std) (cu ft)	Vm(std) (liters)	Vcr(std) (cu ft)	Vcr(std) (liters)	Vcr (cu ft)
5.066	143.46	5.033	142.5	5.231
5.300	150.11	5.265	149.1	5.480
5.749	162.80	5.691	161.2	5.928
7.425	210.28	7.333	207.7	7.646
10.026	283.94	9.973	282.4	10.405
DRY GAS METER CALIBRATION FACTOR Y		ORIFICE CALIBRATION FACTOR ΔH@		
Variation (number)	Value (number)	Value (in H ₂ O)	Value (mm H ₂ O)	Variation (in H ₂ O)
0.002	0.994	1.486	37.74	-0.111
0.001	0.993	1.548	39.31	-0.049
-0.002	0.990	1.619	41.13	0.023
-0.004	0.988	1.706	43.33	0.109
0.003	0.995	1.624	41.26	0.028
AVERAGE:	0.992	1.597	40.55	PASSED

Notes: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +/- 0.02. For Orifice Calibration Factor ΔH@, the orifice differential pressure in inches of H₂O that equates to 0.75 cfm of air at 68 °F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is +/- 0.2. For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above. The Critical Orifice Coefficient, K', must be entered in English units, (ft)³*(deg R)^{0.5}/((in.Hg)*(min)).

SIGNATURE: _____

Craig McCarty

DATE: 09/30/09

METERING SYSTEM CALIBRATION SHEET
EPA Reference Method 5
Metering System Post-Test Calibration
Air Hygiene Asset ID: samp-cp-0012

Filename: \\SERVER2\public\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.0\Current\{SAMP-CP-0012 Calibraton 9-30-09.xls}11-25-09 (3 point)

Make: Thermo Environmental Date: 11/25/09
 Model #: MST-C1 Barometric Pressure: 29.06 (in. Hg)
 Serial #: 90699 Theoretical Critical Vacuum: 13.71 (in. Hg)

DRY GAS METER READINGS						
-H (in H ₂ O)	Time (min)	Volume			Initial Temps.	
		Initial (cu ft)	Final (cu ft)	Total (cu ft)	Inlet (deg F)	Outlet (deg F)
1.70	10.00	792.260	800.230	7.970	72.0	72.0
1.70	10.00	800.230	808.160	7.930	69.0	71.0
1.70	10.00	808.160	816.070	7.910	70.0	70.0

Final Temps.		Orifice Serial# (number)	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	Ambient Temperature		
Inlet (deg F)	Outlet (deg F)				Initial (deg F)	Final (deg F)	Average (deg F)
68.0	72.0	63	0.584	16.0	60.4	60.8	60.6
70.0	70.0	63	0.584	16.0	60.8	60.8	60.8
70.0	69.0	63	0.584	16.0	60.8	61.0	60.9

RESULTS				
DRY GAS METER		ORIFICE		
VOLUME CORRECTED	VOLUME CORRECTED	VOLUME CORRECTED	VOLUME CORRECTED	VOLUME NOMINAL
Vm(std) (cu ft)	Vm(std) (liters)	Vcr(std) (cu ft)	Vcr(std) (liters)	Vcr (cu ft)
7.727	218.83	7.438	210.6	7.554
7.703	218.15	7.437	210.6	7.555
7.687	217.70	7.436	210.6	7.556

DRY GAS METER CALIBRATION FACTOR Y		ORIFICE CALIBRATION FACTOR -H@		
Variation (number)	Value (number)	Value (in H ₂ O)	Value (mm H ₂ O)	Variation (in H ₂ O)
-0.003	0.963	1.666	42.32	-0.005
0.000	0.965	1.671	42.46	0.001
0.002	0.967	1.675	42.54	0.004
AVERAGE:	0.965	1.671	42.44	PASSED

LAST 5-PT:	0.992	1.597	PASSED	5-PT Date:
% DIFF:	2.8%	4.7%		09/30/09

40 CFR - CHAPTER I - PART 60
 Appendix A, Method 5
 10.3.2 Calibration After Use
 After each field use, the calibration of the metering system shall be checked by performing three calibration runs at a single, intermediate orifice setting (based on the previous field test)....Calculate the average value of the DGM calibration factor. If the value has changed by more than 5 percent, recalibrate the meter over the full range of orifice settings, as detailed in Section 10.3.1.

10.3.3 Acceptable Variation in Calibration
 If the DGM coefficient values obtained before and after a test series differ by more than 5 percent, the test series shall either be voided, or calculations for the test series shall be performed using whichever meter coefficient value (i.e., before or after) gives the lower value of total sample volume.

Notes: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +/- 0.02. For Orifice Calibration Factor dH@, the orifice differential pressure in inches of H₂O that equates to 0.75 cfm of air at 68 °F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is +/- 0.2. For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above. The Critical Orifice Coefficient, K', must be entered in English units, (ft)³*(deg R)^{0.5}/((in.Hg)*(min)).

SIGNATURE: Craig McCarty DATE: 11/25/09

VISIBLE EMISSIONS EVALUATOR

This is to certify that

ROB WHITE

met the specifications of Federal Reference Method 9 and qualifies as a visible emissions evaluator. Maximum deviation on white and black smoke did not exceed 7.5% opacity and no single error exceeding 15% opacity was incurred during the certification test conducted by Eastern Technical Associates of Raleigh, NC. This certificate is valid for six months from date of issue.

379435

CERT NUMBER

10/21/2009

DATE OF SCHOOL

TULSA, OK

SCHOOL LOCATION

4/22/2010

CERTIFICATION EXP DATE

WHI886376

IDENT ID NUMBER

Michael W. Langford

MANAGER OF TRAINING SERVICES

EASTERN TECHNICAL ASSOCIATES

ROB WHITE

WHI886376 STUDENT ID NUMBER

met the specifications of Federal Reference Method 9 and qualifies as a visible emissions evaluator. Maximum deviation on white and black smoke did not exceed 7.5% opacity and no single error exceeding 15% opacity was incurred during the certification test conducted by Eastern Technical Associates of Raleigh, NC. This certificate is valid for six months from date of issue and expires on the date below.

Customer Support

Debbie or Sheila

919-878-3188

www.eta-is-opacity.com

TULSA, OK
SCHOOL LOCATION

10/21/2009
DATE OF SCHOOL

379435
CERT NUMBER

TULF06
LAST LECTURE

4/22/2010
CERTIFICATION EXP DATE

BEARER

APPENDIX E
FUEL ANALYSIS RECORDS

Client: Florida Power and Light
 Location: West County Energy Center
 Date: November 15, 2009
 Project #: bv-10-westcounty.fl-comp#1

Natural Gas - Fuel Analysis

Standardized to 68 deg F and 14.696 psia - EPA Standards

Gas Component		Mole (%)	Molecular ¹ Weight (lb/lb-mole)	Lbs Component per Lb-Mole of Gas	Wt. % of Component	Ideal Gross ^{1,3} Heating Value (Btu/ft ³)	Fuel Heat Value [HHV] (Btu/SCF)	Ideal Net ^{1,3} Heating Value (Btu/ft ³)	Fuel Heat Value [LHV] (Btu/SCF)
Methane	CH ₄	95.909	16.0430	15.39	91.69	994.85	954.15	895.75	859.11
Ethane	C ₂ H ₆	1.721	30.0700	0.52	3.08	1,743.15	30.00	1,594.41	27.44
Propane	C ₃ H ₈	0.203	44.0970	0.09	0.53	2,478.35	5.03	2,280.17	4.63
iso-Butane	iC ₄ H ₁₀	0.032	58.1230	0.02	0.11	3,203.11	1.02	2,955.38	0.95
n-Butane	nC ₄ H ₁₀	0.030	58.1230	0.02	0.10	3,213.35	0.96	2,965.62	0.89
Iso-Pentane	iC ₅ H ₁₂	0.009	72.1500	0.01	0.04	3,940.87	0.35	3,643.50	0.33
n-Pentane	nC ₅ H ₁₂	0.004	72.1500	0.00	0.02	3,948.75	0.16	3,648.32	0.15
Hexanes	C ₆ H ₁₄	0.015	86.1770	0.01	0.08	4,684.54	0.70	4,337.82	0.65
Heptanes	C ₇ H ₁₆	0.000	100.2040	0.00	0.00	5,419.94	0.00	5,023.77	0.00
Octanes	C ₈ H ₁₈	0.000	114.2310	0.00	0.00	6,155.14	0.00	5,709.23	0.00
Carbon Dioxide	CO ₂	0.924	44.0100	0.41	2.42	0.00	0.00	0.00	0.00
Nitrogen	N ₂	1.153	28.0134	0.32	1.92	0.00	0.00	0.00	0.00
Hydrogen Sulfide	H ₂ S	0.000	34.0800	0.00	0.00	627.54	0.00	578.00	0.00
Oxygen	O ₂	0.000	31.9988	0.00	0.00	0.00	0.00	0.00	0.00
Helium	He	0.000	4.0026	0.00	0.00	0.00	0.00	0.00	0.00
Hydrogen	H ₂	0.000	2.0159	0.00	0.00	319.34	0.00	269.82	0.00
Totals		100.000		16.78	100.00	dry	992.38	dry	894.14
						wet^{2,5}	969.50	wet^{2,5}	873.52

Characteristics of Fuel Gas	
Molecular Weight of gas =	16.782 lb/lb-mole
Btu per lb. of gas ⁴ =	22,780.472 gross (HHV)
Btu per lb. of gas ⁴ =	20,525.264 net (LHV)
Density of fuel gas ² =	0.0436 lb/cu. ft
Wt % VOC in fuel gas =	0.88 %
Specific Gravity ¹ =	0.5794

Component	Wt%
carbon	72.49
oxygen	1.76
hydrogen	23.82
nitrogen	1.92
helium	0.00
sulfur	0.00
Total	100.00

F-Factor (SCF dry exhaust per MMBtu [HHV]) = 8,651.24
 (Based on EPA RM-19) at 68 deg F and 14.696 psia

F-Factor Calculation:

$$F\text{-Factor} = 1,000,000 \times ((3.64\%H) + (1.53\%C) + (0.57\%S) + (0.14\%N) - (0.46\%O)) / GCV$$

GCV = Gross Btu per lb. of gas (HHV)

%H, %C, %S, %N, & %O are percent weight values calculated from fuel analysis and have units of (scf/lb)/%

Density of natural gas based on specific gravity multiplied by density of air at 68 deg F and 14.696 psia.

References:

- ¹ ASTM D 3588
- ² Civil Engineering Reference Manual, 7th ed. - Michael R. Lindeburg
- ³ Mark's Standard Handbook for Mechanical Engineers, 10th ed. - Eugene A. Avallone, Theodore Baumeister III
- ⁴ Introduction to Fluid Mechanics, 3rd ed. - William S. Janna
- ⁵ GPA Reference Bulletin 181-86, revised 1986, reprinted 1995



HOUSTON LABORATORIES
 8820 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis

Number: 1030-2009110393-003A

Albert Septiano
 Air Hygiene
 5634 S. 122nd East Ave.
 Suite F
 Tulsa OK 74146

November 24, 2009

Sample ID:
 Station Name : Unit 2A NG w/o DB
 Station Number :
 Station Location : Tulsa, Oklahoma
 Sample Point: Bleed Valve

Sampled By: PS
 Sample Of: Gas Spot
 Sample Date: 11/15/2009 11:00
 Sample Conditions: N.G. Pres. , N.G. Temp.
 PO / Ref. No:
 COC. No:

ANALYTICAL DATA

Components	Mol %	Wt %	GPM at 14.696 psia	Method	Lab Tech.	Date Analyzed
				GPA-2261 M	PW	11/23/2009 2:17:51
Nitrogen	1.153	1.925				
Carbon Dioxide	0.924	2.423				
Methane	95.909	91.681				
Ethane	1.721	3.084	0.459			
Propane	0.203	0.533	0.056			
Iso Butane	0.032	0.111	0.010			
n-Butane	0.030	0.104	0.009			
Iso Pentane	0.009	0.039	0.003			
n-Pentane	0.004	0.017	0.001			
Hexanes Plus	0.015	0.083	0.007			
	100.000	100.000	0.545			
	C2 +	C3 +	IC5 +			
GPM TOTAL :	0.545	0.086	0.011			
Relative Density	Real Gas			0.5804		
Calculated Molecular Weight				16.78		
Compressibility Factor				0.9979		
Calculated Gross BTU per ft ³ @14.696 psia & 60°F						
Real Gas	Dry Basis	1010				
	Saturated Basis	992				

Comments :

Cylinder Number 1191

Ch. Staley

Hydrocarbon Laboratory Manager

Quality Assurance:

The above analyses are performed in accordance with ASTM, UOP or GPA guidelines for quality assurance, unless otherwise stated



HOUSTON LABORATORIES
 6820 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis

Number: 1030-2009110393-003A

Albert Septiano
 Air Hygiene
 5634 S. 122nd East Ave.
 Suite F
 Tulsa OK 74146

November 24, 2009

Sample ID:		Sampled By:	PS
Station Name:	Unit 2A NG w/o DB	Sample Of:	Gas
Station Number :		Sample Date:	11/15/2009 11:00
Location:	Tulsa, Oklahoma	Sample Condition:	
Sample Point:	Bleed Valve	PO / Ref. No:	

ANALYTICAL DATA

Test	Method	Result	Unit	Detection Limit	Lab Tech.	Date Analyzed
Total Sulfur By UV	ASTM-D-6667	<1.0	PPMW	1.0	EM	11/24/09
Total Sulfur By UV	ASTM-D-6667	<0.0001	Wt%.		EM	11/24/09
Total Sulfur By UV	ASTM-D-6667	<0.032	gr/100 cu.ft.		EM	11/24/09

Comments: Cylinder Number: 1191

Sample On: 11/15/2009 11:00

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP or GPA guidelines for quality assurance, unless otherwise stated.

Client: Florida Power and Light
 Location: West County Energy Center
 Date: November 14-16, 2009
 Project #: bv-10-westcounty.fi-comp#1

Natural Gas - Fuel Analysis

Standardized to 68 deg F and 14.696 psia - EPA Standards

Gas Component		Mole (%)	Molecular ¹ Weight (lb/lb-mole)	Lbs Component per Lb-Mole of Gas	Wt. % of Component	Ideal Gross ^{1,3} Heating Value (Btu/ft ³)	Fuel Heat Value [HHV] (Btu/SCF)	Ideal Net ^{1,3} Heating Value (Btu/ft ³)	Fuel Heat Value [LHV] (Btu/SCF)
Methane	CH ₄	96.061	16.0430	15.41	91.58	994.85	955.66	895.75	860.47
Ethane	C ₂ H ₆	1.871	30.0700	0.56	3.34	1,743.15	32.61	1,594.41	29.83
Propane	C ₃ H ₈	0.272	44.0970	0.12	0.71	2,478.35	6.74	2,280.17	6.20
iso-Butane	iC ₄ H ₁₀	0.053	58.1230	0.03	0.18	3,203.11	1.70	2,955.38	1.57
n-Butane	nC ₄ H ₁₀	0.047	58.1230	0.03	0.16	3,213.35	1.51	2,965.62	1.39
Iso-Pentane	iC ₅ H ₁₂	0.015	72.1500	0.01	0.06	3,940.87	0.59	3,643.50	0.55
n-Pentane	nC ₅ H ₁₂	0.007	72.1500	0.01	0.03	3,948.75	0.28	3,648.32	0.26
Hexanes	C ₆ H ₁₄	0.021	86.1770	0.02	0.11	4,684.54	0.98	4,337.82	0.91
Heptanes	C ₇ H ₁₆	0.000	100.2040	0.00	0.00	5,419.94	0.00	5,023.77	0.00
Octanes	C ₈ H ₁₈	0.000	114.2310	0.00	0.00	6,155.14	0.00	5,709.23	0.00
Carbon Dioxide	CO ₂	1.124	44.0100	0.49	2.94	0.00	0.00	0.00	0.00
Nitrogen	N ₂	0.529	28.0134	0.15	0.88	0.00	0.00	0.00	0.00
Hydrogen Sulfide	H ₂ S	0.000	34.0800	0.00	0.00	627.54	0.00	578.00	0.00
Oxygen	O ₂	0.000	31.9988	0.00	0.00	0.00	0.00	0.00	0.00
Helium	He	0.000	4.0026	0.00	0.00	0.00	0.00	0.00	0.00
Hydrogen	H ₂	0.000	2.0159	0.00	0.00	319.34	0.00	269.82	0.00
Totals		100.000		16.83	100.00	dry	1,000.07	dry	901.18
						wet^{2,5}	977.02	wet^{2,5}	880.40

Characteristics of Fuel Gas	
Molecular Weight of gas =	16.829 lb/lb-mole
Btu per lb. of gas ⁴ =	22,893.083 gross (HHV)
Btu per lb. of gas ⁴ =	20,629.227 net (LHV)
Density of fuel gas ² =	0.0437 lb/cu. ft
Wt % VOC in fuel gas =	1.26 %
Specific Gravity ¹ =	0.5810

Component	Wt%
carbon	73.07
oxygen	2.14
hydrogen	23.91
nitrogen	0.88
helium	0.00
sulfur	0.00
Total	100.00

F-Factor (SCF dry exhaust per MMBtu [HHV]) = 8,647.86
 (Based on EPA RM-19) at 68 deg F and 14.696 psia

F-Factor Calculation:

F-Factor = 1,000,000*((3.64*%H)+(1.53*%C)+(0.57*%S)+(0.14*%N)-(0.46*%O))/GCV

GCV = Gross Btu per lb. of gas (HHV)

%H, %C, %S, %N, & %O are percent weight values calculated from fuel analysis and have units of (scf/lb)/%

Density of natural gas based on specific gravity multiplied by density of air at 68 deg F and 14.696 psia.

References:

- ¹ ASTM D 3588
- ² Civil Engineering Reference Manual, 7th ed. - Michael R. Lindeburg
- ³ Mark's Standard Handbook for Mechanical Engineers, 10th ed. - Eugene A. Avallone, Theodore Baumeister III
- ⁴ Introduction to Fluid Mechanics, 3rd ed. - William S. Janna
- ⁵ GPA Reference Bulletin 181-86, revised 1986, reprinted 1995



HOUSTON LABORATORIES
 8820 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis

Number: 1030-2009110393-004A

Albert Septiano
 Air Hygiene
 5634 S. 122nd East Ave.
 Suite F
 Tulsa OK 74146

November 24, 2009

Sample ID:		Sampled By:	PS
Station Name :	Unit 2A NG with DB	Sample Of:	Gas Spot
Station Number :		Sample Date:	11/16/2009 11:00
Station Location :	Tulsa, Oklahoma	Sample Conditions:	N.G. Pres. , N.G. Temp.
Sample Point:	Bleed Valve	PO / Ref. No:	
		COC. No:	

ANALYTICAL DATA

Components	Mol %	Wt %	GPM at 14.696 psia	Method	Lab Tech.	Date Analyzed
				GPA-2261 M	PW	11/23/2009 2:16:12
Nitrogen	0.529	0.881				
Carbon Dioxide	1.124	2.939				
Methane	96.061	91.569				
Ethane	1.871	3.343	0.499			
Propane	0.272	0.713	0.075			
Iso Butane	0.053	0.183	0.017			
n-Butane	0.047	0.162	0.015			
Iso Pentane	0.015	0.064	0.005			
n-Pentane	0.007	0.030	0.003			
Hexanes Plus	0.021	0.116	0.009			
	100.000	100.000	0.623			
	C2 +	C3 +	IC5 +			
GPM TOTAL :	0.623	0.124	0.017			
Relative Density	Real Gas			0.5821		
Calculated Molecular Weight				16.83		
Compressibility Factor				0.9979		
Calculated Gross BTU per ft ³ @14.696 psia & 60°F						
Real Gas	Dry Basis	1018				
	Saturated Basis	1000				

Comments :

Cylinder Number 165

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP or GPA guidelines for quality assurance, unless otherwise stated



HOUSTON LABORATORIES
 8820 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis

Number: 1030-2009110393-004A

Albert Septiano
 Air Hygiene
 5634 S. 122nd East Ave.
 Suite F
 Tulsa OK 74146

November 24, 2009

Sample ID:		Sampled By:	PS
Station Name:	Unit 2A NG with DB	Sample Of:	Gas
Station Number :		Sample Date:	11/16/2009 11:00
Location:	Tulsa, Oklahoma	Sample Condition:	
Sample Point:	Bleed Valve	PO / Ref. No:	

ANALYTICAL DATA

Test	Method	Result	Unit	Detection Limit	Lab Tech.	Date Analyzed
Total Sulfur By UV	ASTM-D-6667	2.1	PPMW	1.0	EM	11/24/09
Total Sulfur By UV	ASTM-D-6667	0.0002	Wt%.		EM	11/24/09
Total Sulfur By UV	ASTM-D-6667	0.066	gr/100 cu.ft.		EM	11/24/09

Comments: Cylinder Number: 165

Sample On: 11/16/2009 11:00

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP or GPA guidelines for quality assurance, unless otherwise stated.

SAMPLE DESCRIPTION AND CHAIN OF CUSTODY RECORD



Air Hygiene International, Inc.
5634 S. 122nd East Ave, Suite F
Tulsa, Oklahoma 74146
(888) 461-8778
www.airhygiene.com

Project Number:		bv-10-westcounty.fl-comp#1		Laboratory Analysis Requested:			
Person Taking Samples:		Pandu Sattvika		C1 - C6 mol wt%, Sulfur Content			
Cylinder Tag	Location	Date	Pressure	Analysis Method			
				GPA-2261	ASTM-D-2267		
002882	Unit 2B NG w/o DB, Bleed Valve	11/13/2009		X	X		
002653	Unit 2B NG with DB, Bleed Valve	11/13/2009		X	X		
001191	Unit 2A NG w/o DB, Bleed Valve	11/15/2009		X	X		
000165	Unit 2A NG with DB, Bleed Valve	11/16/2009		X	X		
000377	Unit 2C NG w/o DB, Bleed Valve	11/17/2009		X	X		
003061	Unit 2C NG with DB, Bleed Valve	11/17/2009		X	X		
				Email results to: psattvika@airhygiene.com, jake@airhygiene.com, aseptiano@airhygiene.com Any questions, comments, concerns, please call Pandu (832-368-9297)			
Relinquished by: (Signature) <i>Pandu Sattvika</i>		Date: 11/17/09	Time: 16:00	Received by: (Signature) <i>Martin Cisneros</i>		Date: 11/23/09	Time: 17:05
Relinquished by: (Signature)		Date:	Time:	Received by: (Signature)		Date:	Time:

bv-10-westcounty.fl-comp#1-Unit2A-NH3_with_DB

APPENDIX F
STRATIFICATION TEST DATA

Source Information	
Company	Florida Power and Light
Plant Name	West County Energy Center
Equipment	Mitsubishi 501G
Location	Loxahatchee, Florida

Test Information	
Date	11/14/09
Project #	bv-10-westcounty.fl-comp#1
Unit Number	2A
Load	Normal
Number of Ports Available	4
Number of Ports Used	4

Stack and Test Type	
<input type="radio"/> Isokinetic Traverse (Wet Chemistry Testing) <input type="radio"/> Velocity Traverse (Flow and Flow RATA Test) <input type="radio"/> Stratification Traverse (Compliance Test) <input type="checkbox"/> RM 20 <input checked="" type="radio"/> Stratification Traverse (RATA) <input type="checkbox"/> Part 60 <input checked="" type="checkbox"/> Part 75	Circular Stack

METHOD 1 - STRATIFICATION TEST FOR A CIRCULAR SOURCE

Company	Florida Power and Light	Date	11/14/09
Plant Name	West County Energy Center	Project #	bv-10-westcounty.fl-comp#1
Equipment	Mitsubishi 501G	# of Ports Available	4
Location	Loxahatchee, Florida	# of Ports Used	4

Circular Stack or Duct Diameter			
Distance to Far Wall of Stack	(L _{fw})	281.75	in.
Distance to Near Wall of Stack	(L _{nw})	19.13	in.
Diameter of Stack	(D)	262.63	in.
Area of Stack	(A _s)	376.18	ft ²

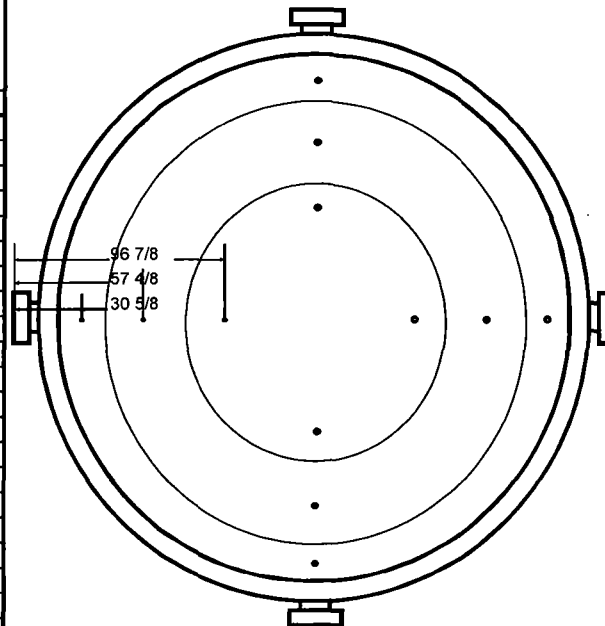
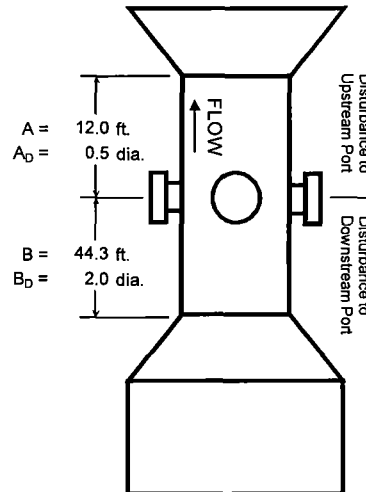
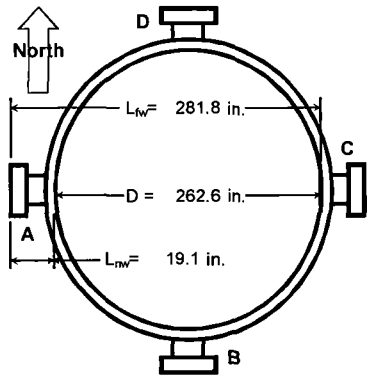
Distance from Disturbances to Port			
Distance Upstream	(A)	144.00	in.
Diameters Upstream	(A _D)	0.55	diameters
Distance Downstream	(B)	531.75	in.
Diameters Downstream	(B _D)	2.02	diameters

Number of Traverse Points Required					
Diameters to Flow Disturbance		Minimum Number of ¹ Traverse Points		Minimum Number of Traverse Points	
Down (B _D)	Up (A _D)	Particulate	Velocity	Comp Stratification	
Stream	Stream	Points	Points	Criteria	Points
2.00-4.99	0.50-1.24	24	16	RM 7E 8.1.2	12 RM1 pts
5.00-5.99	1.25-1.49	20	16	Alt 7E 8.1.2	3 points
6.00-6.99	1.50-1.74	16	12		
7.00-7.99	1.75-1.99	12	12		
>= 8.00	>= 2.00	8 or 12 ²	8 or 12 ²		
Upstream Spec		24	16	Minimum Number of Traverse Points	
Downstream Spec		24	16	RATA Stratification	
Traverse Pts Required		24	16	Criteria	Points
				Part75/60	12 RM1 pts
				75 abrv (a)	3 points
				75 abrv (b)	6 points
					12 points

¹ Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.
² 8 for Circular Stacks 12 to 24 inches
 12 for Circular Stacks over 24 inches

Number of Traverse Points Used				
4	Ports by	3	Pts / port	Stratification Traverse (RATA)
12	Pts Used	12	Required	

Traverse Point Locations			
Traverse Point Number	Percent of Stack Diameter	Distance from Inside Wall	Distance Including Reference Length
	%	in.	in.
1	4.4%	11 4/8	30 5/8
2	14.6%	38 3/8	57 4/8
3	29.6%	77 6/8	96 7/8
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STRATIFICATION TRAVERSE (RATA) RESULTS

Company	Florida Power and Light	Date	11/14/09
Plant Name	West County Energy Center	Project #	bv-10-westcounty.fl-comp#1
Equipment	Mitsubishi 501G	# of Ports Available	4
Location	Loxahatchee, Florida	# of Ports Used	4

Stack Dimensions				Traverse Data			
Diameter or Length of Stack	(D)	262.63	in.	4	Ports by	3	Pts / port
Width of Stack	(W)		in.	12	Pts Used	12	Required
Area of Stack	(A _s)	376.18	ft ²	Run Start	11:54:21	Run End	12:35:21

Traverse Point	Time Per Point	Point Start Time	Point Stop Time (Reading)	O ₂	Percent Difference	NOx	Percent Difference
	min.	hh:mm:ss	hh:mm:ss	%	%	ppm	%
D-3	3.00	11:54:21	11:57:21	12.93	0.25%	2.50	2.46%
D-2	3.00	11:57:21	12:00:21	12.91	0.09%	2.33	4.51%
D-1	3.00	12:00:21	12:03:21	12.90	0.01%	2.26	7.38%
C-3	4.00	12:03:21	12:07:21	12.90	0.01%	2.49	2.05%
C-2	3.00	12:07:21	12:10:21	12.89	0.06%	2.33	4.51%
C-1	3.00	12:10:21	12:13:21	12.90	0.01%	2.25	7.79%
B-3	5.00	12:13:21	12:18:21	12.89	0.06%	2.59	6.15%
B-2	3.00	12:18:21	12:21:21	12.88	0.14%	2.53	3.69%
B-1	3.00	12:21:21	12:24:21	12.89	0.06%	2.34	4.10%
A-3	5.00	12:24:21	12:29:21	12.91	0.09%	2.68	9.84%
A-2	3.00	12:29:21	12:32:21	12.89	0.06%	2.49	2.05%
A-1	3.00	12:32:21	12:35:21	12.89	0.06%	2.49	2.05%
Average				12.90		2.44	

RATA SAMPLE POINTS FOR CIRCULAR STACK

Company	Florida Power and Light	Date	11/14/09
Plant Name	West County Energy Center	Project #	bv-10-westcounty.fl-comp#1
Equipment	Mitsubishi 501G	# of Ports Available	4
Location	Loxahatchee, Florida	# of Ports Used	4

Stack Dimensions				Traverse Data			
Diameter or Length of Stack	(D)	262.63	in.	4	Ports by	3	Pts / port
Width of Stack	(W)		in.	12	Pts Used	12	Required
Area of Stack	(A _s)	376.18	ft ²	Run Start	11:54:21	Run End	12:35:21

40 CFR 75 Criteria														
Stratification Results		Traverse Point Number	Percent of Stack Diameter	Distance from Inside Wall	Distance Including Reference Length									
Maximum Percent Difference	9.84 % for NOx													
Maximum Pollutant Conc. Diff.	0.24 ppm for NOx													
Maximum Diluent Conc. Diff.	0.03 % for O2													
Stack Diameter	262.63 in.		%	in.	in.									
Stratification Conclusions		1	>14.99%	>39.37	>58.495									
Maximum % Diff.	Percent Diff. ≤10% Passed 6.5.6.3(a) Criteria	2												
Maximum Conc. Diff.	Conc. Diff. ≤ 0.3% Passed 6.5.6.3(b) Criteria	3												
Stack Diameter	D > 93.6 in.													
Passed Strat. Test Under 6.5.6.3(b) Criteria		<table border="0"> <tr> <td>Test Type</td> <td><input type="checkbox"/> Moisture, for MW</td> <td><input type="checkbox"/> Use 6.5.6.3(a) points?</td> </tr> <tr> <td></td> <td><input type="checkbox"/> Moisture, for wet-to-dry</td> <td><input type="checkbox"/> 6.5.6(b)(2) alt. points could apply</td> </tr> <tr> <td></td> <td><input checked="" type="checkbox"/> Gas</td> <td></td> </tr> </table>				Test Type	<input type="checkbox"/> Moisture, for MW	<input type="checkbox"/> Use 6.5.6.3(a) points?		<input type="checkbox"/> Moisture, for wet-to-dry	<input type="checkbox"/> 6.5.6(b)(2) alt. points could apply		<input checked="" type="checkbox"/> Gas	
Test Type	<input type="checkbox"/> Moisture, for MW	<input type="checkbox"/> Use 6.5.6.3(a) points?												
	<input type="checkbox"/> Moisture, for wet-to-dry	<input type="checkbox"/> 6.5.6(b)(2) alt. points could apply												
	<input checked="" type="checkbox"/> Gas													

