



January 31, 2014

Mr. David McNeal
USEPA, Region 4
Sam Nunn Federal Center
61 Forsyth Street, SW
Atlanta, Georgia USA 30303-3104

Subject: NOx Analyzer Re-certification – Putnam Plant Unit 1-2 (ORIS code 006246)

Dear Mr. McNeal:

In compliance with the Acid Rain Continuous Emission Monitoring Program (40 CFR Part 75.63), Florida Power & Light Company (FPL) is submitting the Continuous Emissions Monitoring System Re-certification Application for the NOx analyzer replacement on Putnam Unit 1-2. In order to continue to ensure CEMS data integrity and analyzer availability, FPL is currently replacing CEMS NOx and O2 analyzers on thirty-eight units throughout the State.

Putnam Unit 1-2 NOx analyzer, serial number 42C 77260-385 was removed from service on November 20, 2013 and replaced by serial number 1324258460. Re-certification test period requirements and data validation, which includes a probationary calibration error test, in accordance with 40 CFR Part 75.20(b)(3)(ii) were performed to initiate a conditional valid data period.

The re-certification of the NOx System was performed in accordance with 40 CFR Part 75, Appendix A during the period of November 20 – December 20, 2013. Enclosed are the quality assurance audits which include a RATA Report, 7 Day Calibration Error Test, Linearity, and updated Monitoring Plan.

If you have any questions with the attached, please feel free to contact me at (561) 691-2781 or Elisa Ostertag at (561) 691-2341.

I am authorized to make this submission of behalf of the owners and operators of the affected source or affected units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Sincerely,

Christian Kiernan

Designated Representative

Attachment

cc: Jeff Koerner –Division of Air Resource Management, FDEP Tallahassee
Khalid AlNahdy – FDEP Northeast District
Jeff Smith - Plant General Manager
Tammy Pratt - Environmental Specialist



ECMPS Client Tool

Version 1.0 2013 Q3

Monitoring Plan Printout Report

January 31, 2014 10:22 AM

Facility Name: Putnam

Facility Details

Facility ID (ORISPL): 6246
Monitoring Plan Location IDs: HRSG12
State: FL
County: Putnam
Latitude: 29.6283
Longitude: -81.5856

Reporting Frequency

Monitoring Plan Location IDs	Reporting Frequency	Begin Quarter	End Quarter
HRSG12	Q - Quarterly	1995 QTR 1	

Monitoring Location Attributes

Unit/Stack/Pipe Identifier	Duct Indicator	Ground Elevation	Stack Height	Cross Area Exit	Cross Area Flow	Material Code	Shape Code	Begin Date	End Date
HRSG12		23	74	84				01/01/1995	

Unit Operation Information

Unit Identifier	Non-Load Based Ind	Commence Commercial Operation Date	Commence Operation Date	Boiler/Turbine Type		Value (mmBtu)	Max Heat Input
				Code	End Date		
HRSG12		04/24/1978	04/24/1978	CC		968.3	01/01/1995
		04/24/1978	04/24/1978	CC		1232.0	12/22/2009

Unit Type Codes: CC - Combined cycle

Unit Program Information

Unit Identifier	Program Code	Unit Class	Unit Monitor Certification Begin Date	Unit Monitor Certification Deadline
HRSG12	ARP	P2	01/01/1995	01/01/1995
	CAIRNOX	A	01/01/2008	01/01/2008
	CAIROS	A	05/01/2008	05/01/2008
	CAIRSO2	A	01/01/2009	01/01/2009
	TRNOXOS	A	05/01/2012	05/01/2012

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Facility Name: Putnam
Facility ID (ORISPL): 6246

Unit Fuel

Unit Identifier	Fuel Type	Fuel Indicator	Demonstration Method for GCY	Demonstration Method for Daily Sulfur	Ozone Season Indicator	Begin Date	End Date
HRSG12	DSL	S				01/01/1995	
	PNG	P				01/01/1995	

Fuel Type Codes: PNG - Pipeline Natural Gas

DSL - Diesel Oil

S - Secondary

P - Primary

Fuel Indicator Codes:

Monitoring Method

Unit/Stack/Pipe Identifier	Parameter	Methodology	Substitute Data Approach	Bypass Approach Code	Begin Date/Hour	End Date/Hour
HRSG12	CO2	AD	SPTS		01/01/1995 00	
	HI	AD	SPTS		01/01/1995 00	
	NOX	NOXR			01/01/2008 00	
	NOXR	CEM	SPTS		01/01/1995 00	
	OP	EXP			01/01/1995 00	
	SO2	AD	SPTS		01/01/1995 00	

Parameter Codes: SO2 - SO2 Hourly Mass Rate (lb/hr)

OP - Opacity

NOXR - NOx Emission Rate (lb/mmBtu)

NOX - NOx Hourly Mass Rate (lb/hr)

HI - Heat Input Rate (mmBtu/hr)

CO2 - CO2 Hourly Mass Rate (ton/hr)

NOXR - NOx Mass Calculated from NOx Emission Rate

EXP - Exempt

CEM - Continuous Emission Monitor

AD - Appendix D

SPTS - Standard Part 75 for Missing Data

Methodology Codes:

Substitute Data Codes:

Facility Name: Putnam
Facility ID (ORISPL): 6246

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Monitoring System / Analytical Components

Unit/Stack /Pipe Identifier	System					Component								
	ID	Type	Des	Begin Date/Hour	End Date/Hour	ID	Type	SAM	EAS	Manufacturer	Model or Version	Serial Number	Begin Date/Hour	End Date/Hour
HRSG12	112	NOX	P	01/01/1995 00		012	NOX	DIN	W	TECO	42	42D-49812-284	01/01/1995 00	09/30/2003 06
						013	CO2	DIN	W	CALIFORNIA ANALYTICAL	3300	N4C0310T	01/01/1995 00	11/19/2007 09
						017	NOX	DIN	W	TECO	42	42D-49812-284	01/01/1995 00	12/31/2003 23
						888	PRB	DIN		EPM	PPN12PRB02	PPN12PRB02	01/01/1995 00	
						998	DAHS			BABCOCK & WILCOX	8.3.001	NTDAHS-PPN1	01/01/1995 00	
						A12	NOX	DIN	W	TEI	42C	77260-385	09/30/2003 07	11/20/2013 14
						A13	CO2	DIN	W	CALIFORNIA ANALYTICAL	600D	U08066	11/19/2007 10	
						B12	NOX	DIN	W	THERMO	42I	1324258458	11/20/2013 15	
118	GAS	P	01/01/1995 00			018	GFFM	ORF		WESTINGHOUSE	Ovation DCS	BILLFLOW	01/01/1995 00	
						998	DAHS			BABCOCK & WILCOX	8.3.001	NTDAHS-PPN1	01/01/1995 00	
119	OILV	P	01/01/1995 00		019	OFFM	U		CONTROLOTRON	990		U-6396	01/01/1995 00	08/19/2010 09
					020	OFFM	U		CONTROLOTRON	990		U-5784	01/01/1995 00	01/01/1995 00
					021	OFFM	U		Seimens	1010		28668	08/19/2010 10	
					998	DAHS			BABCOCK & WILCOX	8.3.001	NTDAHS-PPN1	01/01/1995 00		

System Types Descriptions:

NOX - NOx Emission Rate
 GAS - Gas Fuel Flow
 OILV - Volumetric Oil Fuel Flow

System Designations Descriptions:
Sample Acquisition Method (SAM):

P - Primary
 U - Ultrasonic
 ORF - Orifice
 DIN - Dilution In-Stack

Component Types Descriptions:

NOX - NOx Concentration
 CO2 - CO2 Concentration
 PRB - Probe
 DAHS - Data Acquisition and Handling System
 GFFM - Gas Fuel Flowmeter
 OFFM - Oil Fuel Flowmeter

Facility Name: Putnam
Facility ID (ORISPL): 6246

Monitoring System Fuel Flow

Unit/Stack/Pipe Identifier	System ID	Fuel Code	Max Fuel Flow Rate	Units of Measure	Source Code	Begin Date/Hour	End Date/Hour
HRSG12	118	PNG	12500.0	HSCF	URV	01/01/1995 00	
	119	DSL	7500.0	GALHR	URV	01/01/1995 00	

System Fuel Codes Descriptions:
PNG - Pipeline Natural Gas

DSL - Diesel Oil

Units of Measure Descriptions:
HSCF - Hundred Standard Cubic Feet / Hour

GALHR - Gallons / Hour

Source Codes Descriptions:
URV - Upper Range Value

Analyzer Range Data

Unit/Stack/Pipe Identifier	Component Type	Component ID	Range Code	Dual Range Indicator	Begin Date/Hour	End Date/Hour
HRSG12	CO2	013	High Range		01/01/1995 00	12/31/2007 23
	CO2	A13	High Range		11/19/2007 10	
	NOX	012	Auto Ranging	Y	01/01/1995 00	12/31/2003 23
	NOX	017	Low Range		01/01/1995 00	12/31/2003 23
	NOX	A12	Auto Ranging	Y	09/30/2003 07	11/20/2013 14
	NOX	B12	Auto Ranging	Y	11/20/2013 15	

Component Types Descriptions:
CO2 - CO2 Concentration
NOX - NOx Concentration

Emissions Formulas

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Facility Name: Putnam

Facility ID (ORISPL): 6246

Unit/Stack/Pipe Identifier	Parameter	Formula ID	Formula Code	Formula	Begin Date/Hour	End Date/Hour
HRSG12	NOXR	012	19-7	$1.194 * 10^{**7} * S\#(B12 - 112) * F\#(018) * (100/S\#(A13-112))$	01/01/1995 00	
	CO2	014	G-4	$(1040 * (F\#(016) * (1/385) * 44.0) / 2000$	01/01/1995 00	
	HI	016	F-20	$S\#(018 - 118) * GCV_GAS / 10^{**6}$	01/01/1995 00	
	HI	017	F-19	$F\#(021) * GCV_OIL / 10^{**6}$	01/01/1995 00	
	FC	018	F-8	$X_OIL * 1420 + X_GAS * 1040$	01/01/1995 00	
	SO2	019	D-2	$2.0 * F\#(021) * \% \text{SULFUR_OIL} / 100$	01/01/1995 00	
	SO2	020	D-5	$0.0006 * F\#(016)$	01/01/1995 00	
	OILM	021	D-3	$S\#(021 - 119) * DENSITY_OIL$	01/01/1995 00	
	CO2	022	G-4	$(1420 * F\#(017) * (1/385) * 44.0) / 2000$	01/01/1995 00	
	HI	023	D-15A	$(F\#(016) * COMBUSTION_TIME_GAS + F\#(017) * COMBUSTION_TIME_OIL) / T_HRSG12$	01/01/1995 00	
	NOX	024	F-24A	$NOX_MASS = F\#(012) * F\#(023) * T_UNIT$	01/01/2008 00	
	SO2	026	D-12	$SO2_TOTAL = ((F\#(019) * T_OIL) + (F\#(020) * T_GAS))$	01/01/1995 00	
	CO2	028	G-4A	$CO2_TOTAL = ((F\#(022) * T_OIL) + (F\#(014) * T_GAS)) / T_UNIT$	01/01/1995 00	

Parameter Codes Descriptions:

- NOXR - NOX Emission Rate (lb/mmBtu)
- CO2 - CO2 Hourly Mass Rate (ton/hr)
- HI - Heat Input Rate (mmBtu/hr)
- FC - F-Factor Carbon-based
- SO2 - SO2 Hourly Mass Rate (lb/hr)
- OILM - Oil Mass Flow Rate (lb/hr)
- NOX - NOX Hourly Mass Rate (lb/hr)
- G-4A - CO2 (from CO2 rate for multiple fuels)
- G-4 - CO2 (from HI, FC)
- F-8 - FD/FC/FW (from multiple fuels)
- F-24A - NOX (from NOX rate, HI)
- F-20 - HI (same as D-6)
- F-19 - HI (same as D-8)
- D-5 - SO2 (from gas SO2 emission rate, HI)
- D-3 - OILM (from volumetric oil flow rate, density)
- D-2 - SO2 (from OILM, oil sulfur content)
- D-15A - HI (from HI rate for multiple fuels)
- D-12 - SO2 (from SO2 rate for multiple fuels)
- 19-7 - NOXR/SO2R (same as F-6)

Formula Codes Descriptions:

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Facility Name: Putnam

Facility ID (ORISPL): 6246

Span Values

Unit/Stack/Pipe Identifier	Comp Type	Scale	Method	MPC/MPF	MEC	Span Value	Full-Scale Range	Units of Measure	Scale Transition Point	Def. High Range Value	Flow Full Range (SCFH)	Flow Span Value (SCFH)	Begin Date/Hour	End Date/Hour
HRSG12	CO2	H	HD	4.0		20.000	20.000	PCT					01/01/1995 00	11/19/2007 10
	CO2	H	HD	4.0		10.000	10.000	PCT					11/19/2007 10	
	NOX	H	TB	400.0	160.0	500.000	500.000	PPM	200.0				01/01/1995 00	
	NOX	L	TR		160.0	200.000	200.000	PPM	200.0				01/01/1995 00	

Component Types Descriptions: CO2 - CO2 Concentration

NOX - NOx Concentration

TR - Test Results

TB - Table Defaults from Part 75

HD - Historical Data

PPM - Parts per Million

PCT - Percentage

Span Method Codes Descriptions:

Units of Measure Descriptions:

Unit/Stack/Pipe Load or Operating Level Information

Unit/Stack/Pipe Identifier	Maximum Hourly Load	Units of Measure	Upper Bound of Range of Operation	Lower Bound of Range of Operation	Designated Normal Op. Level	Second Most Frequently Used Op. Level	Second Normal Indicator	Load Analysis Date	Begin Date/Hour	End Date/Hour
HRSG12	135	MW	125	13	High	Mid	No	03/31/2000	01/01/1995 00	04/15/2002 23
	135	MW	135	13	High	Mid	Yes	04/16/2002	04/16/2002 00	12/31/2010 23
	141	MW	141	13	High	Mid	Yes	01/01/2011	01/01/2011 00	

Units of Measure Descriptions: MW - Megawatt

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Facility Name: Putnam
Facility ID (ORISPL): 6246

Monitoring Defaults

Unit/Stack/Pipe Identifier	Parameter	Value	Units of Measure	Purpose Code	Fuel Type	Operating Condition	Source of Value	Begin Date/Hour	End Date/Hour
HRSG12	CO2N	1.0000	PCT	DC	NFS	A	DEF	01/01/1995 00	
	NORX	1.6950	LBM/MBTU	MD	NFS	A	DEF	01/01/1995 00	

Parameter Codes Descriptions:

CO2N - Maximum NOx Emission Rate (lb/mmBtu)

MD - CO2 Minimum Concentration (pct)

PCT - Percentage

LBM/MBTU - Pounds / mmBtu

DC - Missing Data (or Unmonitored Bypass Stack or Emergency Fuel) Default

DEF - Diluent Cap

NFS - Non-Fuel Specific

A - Any Hour

DEF - Default Value from Part 75

Qualifications

Unit/Stack/Pipe Identifier	Qualification Type	Begin Date	End Date
HRSG12	GF	01/01/2004	12/31/2004

Qualification Percentages for Qualification Type Code GF Begin Date 01/01/2004

Qualification Year	Average Percent Value	Year 1			Year 2			Year 3		
		Data Year	Data Type Cd	Percent Value	Data Year	Data Type Cd	Percent Value	Data Year	Data Type Cd	Percent Value
2004	97.0	2002	A	97.0	2003	A	97.0	2004	P	97.0

Qualification Types Descriptions:

GF - Gas-Fired Unit

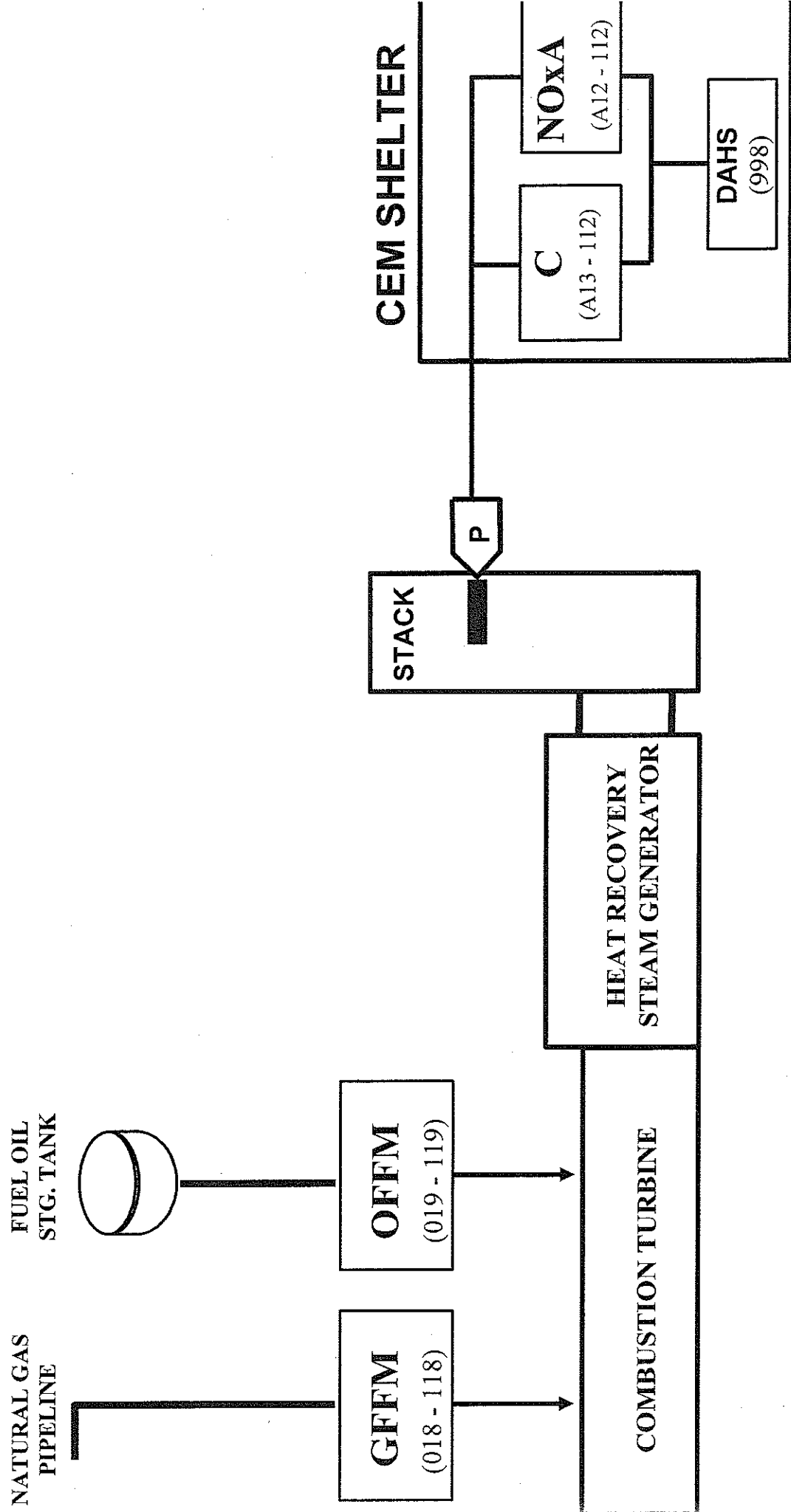
A - Actual

D - Demonstration

P - Projected

Data Type Codes Descriptions:

ATTACHMENT # SCHEMATIC DIAGRAM
PUTNAM PLANT - UNIT 1-2
ORIS CODE: 6246
NADB BOILER ID: HRSG12

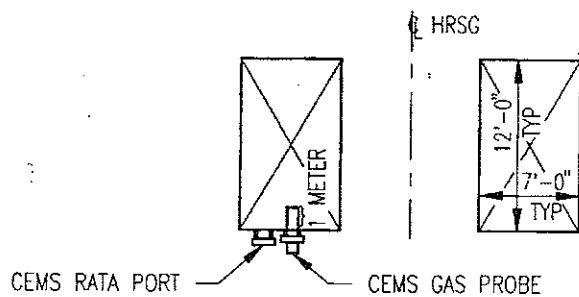


ATTACHMENT #2

ENGINEERING DRAWING FOR PUTNAM POWER PLANT
UNIT 1-2

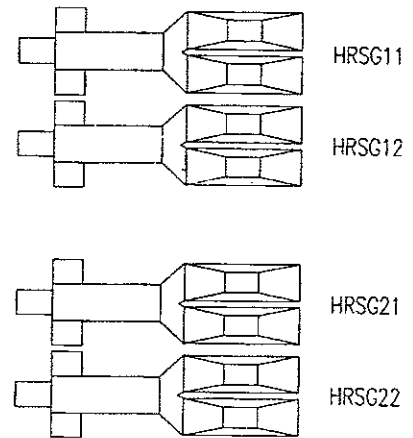
ORIS CODE: 6246

NADB BOILER ID: HRSG12



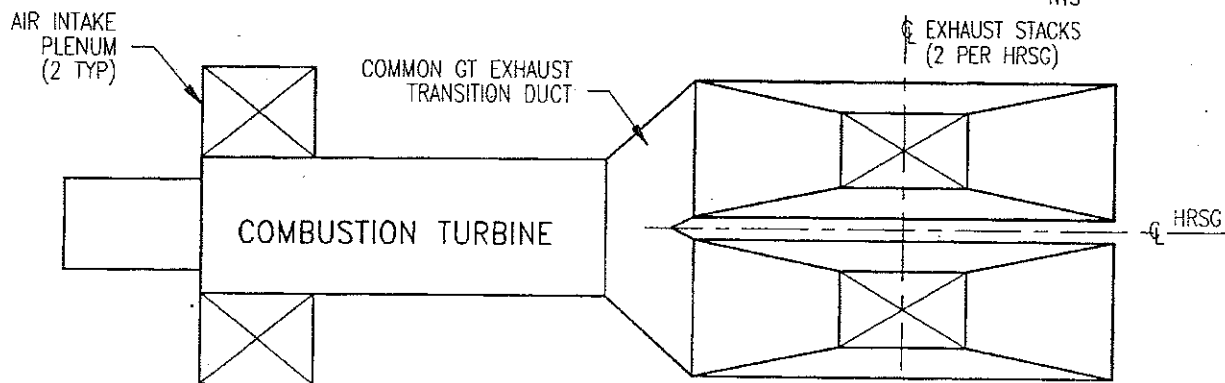
DETAIL 1

STACK CROSS SECTION
AT SAMPLING LEVEL
EL. 61'-6"



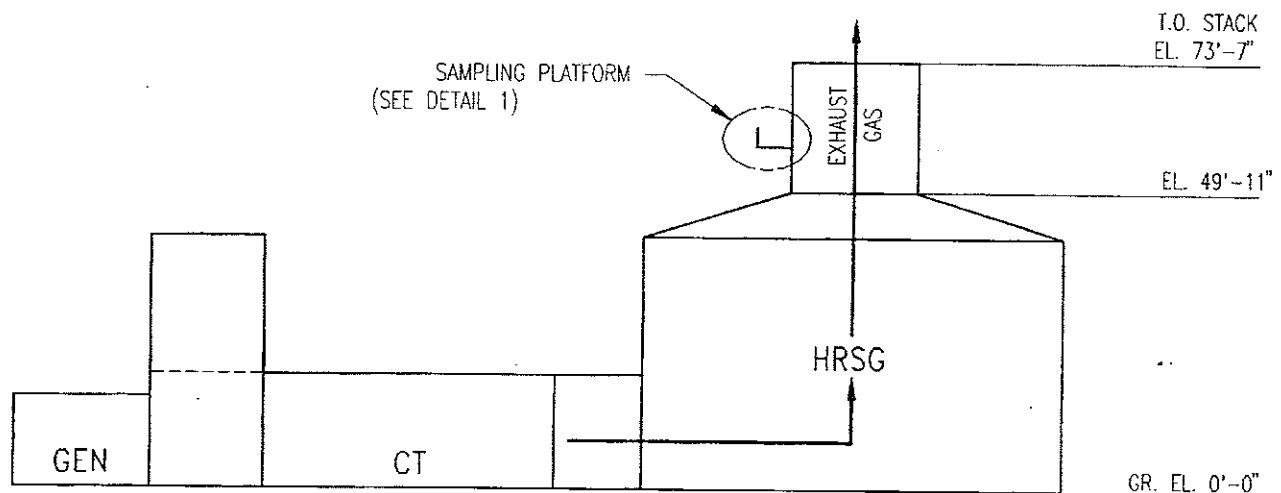
SITE PLAN

NTS



GENERAL ARRANGEMENT
OPERATING FLOOR PLAN

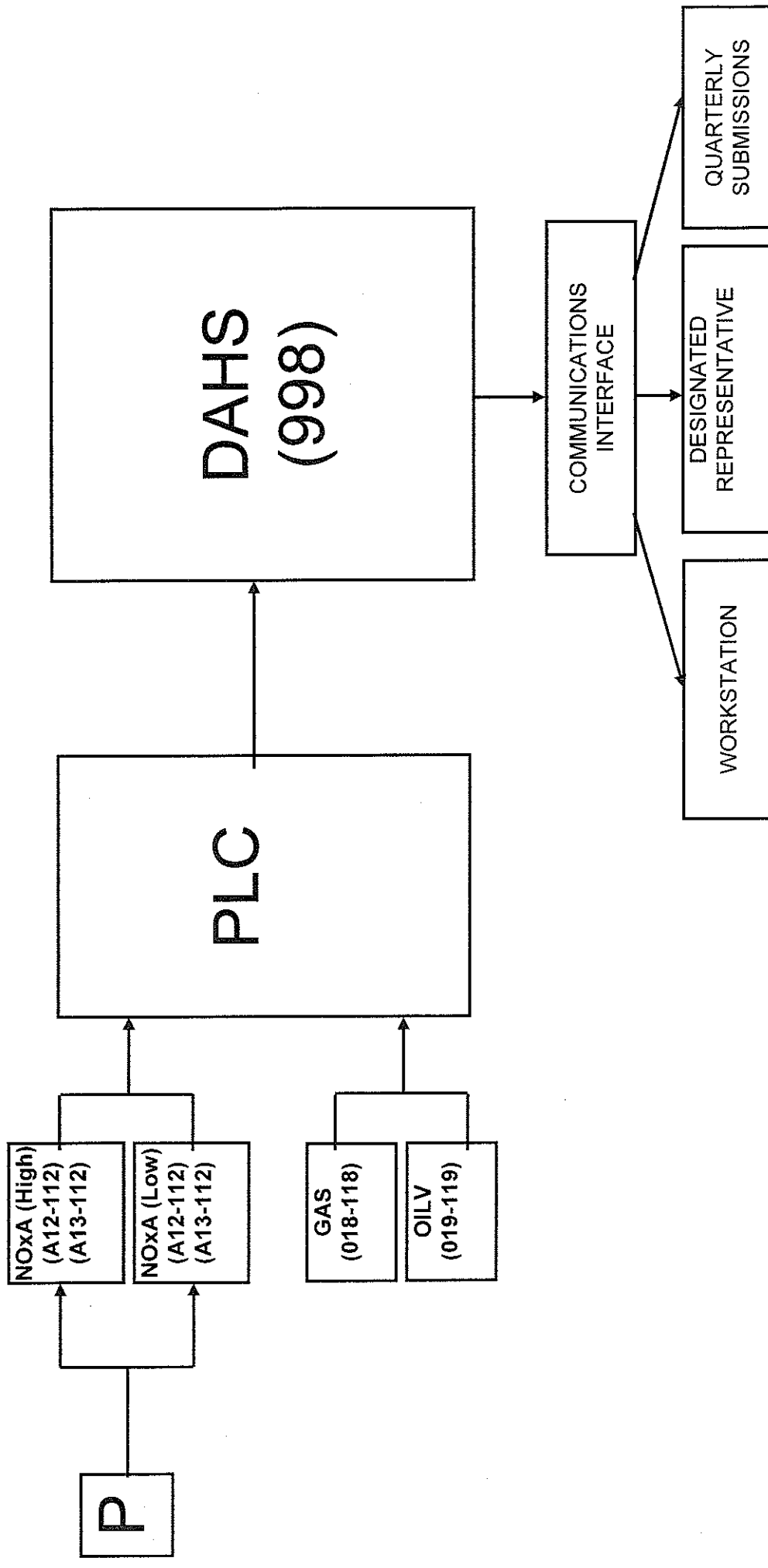
NTS

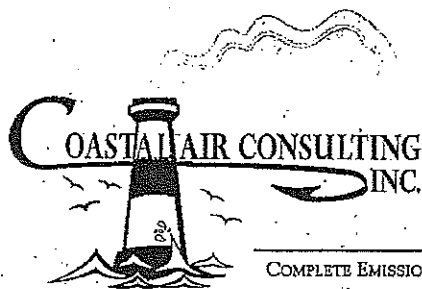


GENERAL ARRANGEMENT
POWER BLOCK SECTION

NTS

ATTACHMENT #3 - DATA INFORMATION FLOW DIAGRAM
PUTNAM PLANT - UNIT 1-2
ORIS CODE: 6246
NADB BOILER I.D. - HRSG12





245 West Ohio Ave. • Suite A • Lake Helen, FL 32744

Phone (386) 451-0169 • coastalair123@aol.com

COMPLETE EMISSIONS TESTING SERVICES • PERMITTING ASSISTANCE • CEMS CERTIFICATION • AMBIENT AIR MONITORING

Emissions Test Report

No. 145-016

FLORIDA POWER & LIGHT COMPANY PUTNAM POWER PLANT

CT 1 - 2

RELATIVE ACCURACY TEST AUDIT

Prepared for:

Florida Power & Light
700 Universe Blvd.
Juno Beach, FL 33408

Prepared by:

Coastal Air Consulting, Inc.
245 West Ohio Ave. Suite A
Lake Helen, FL 32744
(386) 451-0169

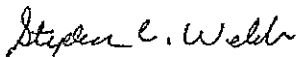
Completed On:

December 20, 2013

STATEMENT OF VALIDITY

All testing activities and results represented herein were conducted and obtained in accordance with the approved EPA protocols listed in 40 CFR Parts 60 & 75. The contents have been reviewed and verified to be true and correct.

Stephen C. Webb



President

Coastal Air Consulting, Inc.
245 West Ohio Ave. Suite A
Lake Helen, FL 32744
(386) 451-0169

PROJECT STATISTICS

Client:	Florida Power & Light Company
Facility:	Putnam Power Plant CT 1 - 2
Location:	392 U S Highway 17 South East Palatka, FL 32131-0308
Type of Process Tested:	Combined Cycle Combustion Turbine
Test Protocols Performed:	Oxygen/Carbon Dioxide-EPA Method 3A Nitrogen Oxide-EPA Method 7E
Source Analyzers: CT 1 - 2	Thermo NOx - 42i-1324258458
Testing Firm:	Coastal Air Consulting, Inc. 245 West Ohio Ave. Suite A Lake Helen, FL 32744
Test Personnel:	Stephen Webb Site Supervisor
Test Date:	December 20, 2013
Client Representative:	Tammy Pratt
Observers:	None

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LETTER OF TRANSMITTAL

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STATEMENT OF VALIDITY

PROJECT STATISTICS

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- 7 Quality Assurance

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1.0 Introduction

Coastal Air Consulting, Inc. (Coastal) was contracted by Florida Power & Light Company (FPL) to determine the relative accuracy of the Continuous Emissions Monitoring System (CEMS) at the Putnam Power Plant CT 1 - 2 in Palatka, FL. The sampling program was conducted on December 20, 2013. The RATA was performed by Coastal personnel, with the assistance of personnel assigned by the Putnam Plant.

2.0 Test Program Summary

A summary of results developed by this testing program is presented in Table 1.

TABLE 1
Relative Accuracy Summary CT 1-2

Parameters	Relative Accuracy	Allowable (Annual)	Bias
NOx (lb/mmBtu)	3.24 %	7.5%	NB

* Low Emitter value = + or - 0.015 lb/mmBtu of the reference value

3.0 Results of Testing

These results indicate that CT 1 - 2 passed the RATA at the time of testing under normal operating conditions.

4.0 Description of Source

FPL Putnam Plant consists of four combustion turbines, each with an associated inlet fogger and heat recovery steam generator equipped with duct burners, an auxiliary boiler and unregulated emissions units. Each combustion turbine is a Westinghouse unit rated at 70 MW generating capacity (at 85 degrees F ambient temperature), with a maximum heat input for natural gas and fuel oil of 968.3 MMBtu/ht and 910.6 MMBtu/hr, respectively. The duct burners for each HRSG are rated at a maximum heat input of 250 MMBtu/hr, and are fired with natural gas and number 2 fuel oil. The auxiliary boiler is manufactured by VA-Power and has a maximum heat input for natural gas and number 2 fuel oil of 16.275 MMBtu/hr and 14.28 MMBtu/hr, respectively.

5.0 Sampling Procedures

EPA testing protocols utilized during this test program include the following;

- EPA Method 3A Gas Analysis for CO₂, O₂, Excess Air and Dry Molecular Weight (Instrumental Analyzer Method)
- EPA Method 7E Determination of Nitrogen Oxides Emissions From Stationary Sources (Instrumental Analyzer Method)

6.0 Operating Conditions

Putnam Plant personnel monitored operating conditions throughout the duration of the sampling program. The combustion turbine CT 1 - 2 was operating at base load during the RATA test runs.

7.0 Quality Assurance Procedures

Quality assurance procedures followed during these testing activities were applied consistent with the requirements outlined by the EPA methods referenced in 40 CFR Parts 60 & 75. Analyzer calibrations, system bias and drift checks were completed before and after each sample run utilizing EPA Protocol 1 calibration gases.

APPENDIX 1

Reference Data

NOx LB/MMBTU RELATIVE ACCURACY

PLANT: FPL-PPN
 UNIT: 1 2
 LOAD: 89.9
 DATE: 12/20/2013

ANALYZER: Thermo
 SERIAL # 42iLS-1324258458

RUN	TIME START	TIME END	REFERENCE METHOD (NOxlb/mmBTU)	CEM RESPONSE (NOxlb/mmBTU)	ARITHMETIC DIFFERENCE	DIFFERENCE SQUARED
1	14:43	15:03	0.359	0.366	-0.007	0.00005
2	15:11	15:31	0.355	0.363	-0.008	0.00006
3	15:40	16:00	0.352	0.362	-0.01	0.00010
4	16:12	16:32	0.334	0.346	-0.012	0.00014
5	16:40	17:00	0.329	0.340	-0.011	0.00012
6	17:10	17:30	0.329	0.335	-0.006	0.00004
7	17:40	18:00	0.327	0.335	-0.008	0.00006
8	18:10	18:30	0.324	0.333	-0.009	0.00008
9	18:40	19:00	0.319	0.331	-0.012	0.00014
			AVERAGE	AVERAGE	SUM OF DIFF.	SUM OF THE SQUARES
			0.3364	0.3457	-0.083	0.000803

**MEAN DIFFERENCE, d (Eq. A-7) -0.0092
 **STANDARD DEVIATION, Sd (Eq. A-8) 0.0022
 **CONFIDENCE COEFFICIENT, |CC| (Eq. A-9) 0.0017

**PERCENT (%) RELATIVE ACCURACY, RA (Eq. A-10) 3.236

**BIAS ADJUSTMENT FACTOR, BAF (Eq. A-12) 1.000

** 40 CFR 75, Appendix A

DATE TESTED: 12/20/2013
Run 1

FLORIDA POWER AND LIGHT CO.
PUTNAM 1GT2
ANALYZER CALIBRATION ERROR

RANGE SETTING	GAS UNITS	CERTIFIED GAS VALUE	ANALYZER VALUE	DIFF PPM	% SPAN	ANALYZER SERIAL #
250	ppm NOx	0.00	0.20	0.2	0.1	42CHL 72772-372
	ppm NOx	95.90	96.00	0.1	0.0	
	ppm NOx	213.00	212.80	-0.2	-0.1	
25	% O2	0.00	0.00	0.0	0.0	1422/B53
	% O2	11.90	11.90	0.0	0.0	
	% O2	22.70	22.50	-0.2	-0.9	
20	% CO2	0.00	0.00	0.0	0.0	PO3048
	% CO2	8.70	8.70	0.0	0.0	
	% CO2	17.10	17.20	0.1	0.6	

SYSTEM BIAS AND SYSTEM DRIFT DATA

GAS UNITS	ANALYZER VALUE	PRETEST CHECK	% SPAN	POSTTEST CHECK	% SPAN	% DRIFT
ppm NOx	0.20	0.20	0.0	0.20	0.0	0.0
ppm NOx	96.00	95.50	-0.2	95.70	-0.1	0.1
% O2	0.00	0.10	0.4	0.10	0.4	0.0
% O2	11.90	11.90	0.0	11.90	0.0	0.0
% CO2	0.00	0.10	0.6	0.10	0.6	0.0
% CO2	8.70	8.71	0.1	8.71	0.1	0.0

UNCORRECTED REFERENCE DATA

Date & Time	NOx PPM	% O2	% CO2
12/20/2013 14:43	86.63	15.12	2.92
12/20/2013 14:44	83.00	15.69	2.99
12/20/2013 14:45	83.88	15.76	3.00
12/20/2013 14:46	84.38	15.78	3.00
12/20/2013 14:47	84.25	15.79	2.99
12/20/2013 14:48	84.00	15.80	2.99
12/20/2013 14:49	83.88	15.81	2.99
12/20/2013 14:50	83.88	15.80	2.97
12/20/2013 14:51	83.88	15.80	2.97
12/20/2013 14:52	83.63	15.80	2.97
12/20/2013 14:53	83.38	15.81	2.97
12/20/2013 14:54	83.38	15.79	2.97
12/20/2013 14:55	83.75	15.79	2.97
12/20/2013 14:56	83.63	15.79	2.98
12/20/2013 14:57	83.13	15.79	2.98
12/20/2013 14:58	83.25	15.79	2.98
12/20/2013 14:59	83.63	15.79	2.98
12/20/2013 15:00	83.88	15.79	2.98
12/20/2013 15:01	84.00	15.79	2.98
12/20/2013 15:02	84.25	15.79	2.98
12/20/2013 15:03	84.38	15.78	2.99
AVERAGE	83.90	15.75	2.98

NOx PPM	84.14
% O2	15.79
% CO2	2.91
LB/MMBTU NOx	0.359

F Factor 1040

Absolute Value
0.359

DATE TESTED: 12/20/2013
Run 2

FLORIDA POWER AND LIGHT CO.
PUTNAM 1GT2
ANALYZER CALIBRATION ERROR

RANGE SETTING	GAS UNITS	CERTIFIED GAS VALUE	ANALYZER VALUE	DIFF PPM	% SPAN	ANALYZER SERIAL #
250	ppm NOx	0.00	0.20	0.2	0.1	42CHL 72772-372
	ppm NOx	95.90	96.00	0.1	0.0	
	ppm NOx	213.00	212.80	-0.2	-0.1	
10	% O2	0.00	0.00	0.0	0.0	1422/B53
	% O2	11.90	11.90	0.0	0.0	
	% O2	22.70	22.50	-0.2	-0.9	
20	% CO2	0.00	0.00	0.0	0.0	PO3048
	% CO2	8.70	8.70	0.0	0.0	
	% CO2	17.10	17.20	0.1	0.6	

SYSTEM BIAS AND SYSTEM DRIFT DATA

GAS UNITS	ANALYZER VALUE	PRETEST CHECK	% SPAN	POSTTEST CHECK	% SPAN	% DRIFT
ppm NOx	0.20	0.20	0.0	0.20	0.0	0.0
ppm NOx	96.00	95.70	-0.1	95.60	-0.2	0.0
% O2	0.00	0.10	0.4	0.10	0.4	0.0
% O2	11.90	11.90	0.0	11.90	0.0	0.0
% CO2	0.00	0.10	0.6	0.10	0.6	0.0
% CO2	8.70	8.71	0.1	8.72	0.1	0.1

UNCORRECTED REFERENCE DATA

Date & Time	NOx PPM	% O2	% CO2
12/20/2013 15:11	84.88	15.79	2.97
12/20/2013 15:12	84.75	15.79	2.97
12/20/2013 15:13	84.75	15.79	2.97
12/20/2013 15:14	84.63	15.79	2.98
12/20/2013 15:15	83.63	15.79	2.98
12/20/2013 15:16	82.63	15.79	2.99
12/20/2013 15:17	82.50	15.78	2.99
12/20/2013 15:18	83.38	15.78	2.99
12/20/2013 15:19	83.75	15.78	2.99
12/20/2013 15:20	83.38	15.78	2.99
12/20/2013 15:21	82.50	15.79	2.99
12/20/2013 15:22	82.88	15.80	2.99
12/20/2013 15:23	82.50	15.81	2.99
12/20/2013 15:24	82.38	15.80	2.99
12/20/2013 15:25	83.25	15.78	3.01
12/20/2013 15:26	83.00	15.78	3.01
12/20/2013 15:27	83.25	15.78	3.01
12/20/2013 15:28	83.00	15.79	3.01
12/20/2013 15:29	82.88	15.79	3.01
12/20/2013 15:30	82.63	15.79	3.01
12/20/2013 15:31	82.38	15.79	3.01
AVERAGE	83.28	15.79	2.99

NOx PPM	83.47
% O2	15.82
% CO2	2.92
LB/MMBTU NOx	0.355

F Factor 1040

Absolute Value
0.355

DATE TESTED: 12/20/2013
Run 3

FLORIDA POWER AND LIGHT CO.
PUTNAM 1GT2
ANALYZER CALIBRATION ERROR

RANGE SETTING	GAS UNITS	CERTIFIED GAS VALUE	ANALYZER VALUE	DIFF PPM	% SPAN	ANALYZER SERIAL #
250	ppm NOx	0.00	0.20	0.2	0.1	42CHL 72772-372
	ppm NOx	95.90	96.00	0.1	0.0	
	ppm NOx	213.00	212.80	-0.2	-0.1	
10	% O2	0.00	0.00	0.0	0.0	1422/B53
	% O2	11.90	11.90	0.0	0.0	
	% O2	22.70	22.50	-0.2	-0.9	
20	% CO2	0.00	0.00	0.0	0.0	PO3048
	% CO2	8.70	8.70	0.0	0.0	
	% CO2	17.10	17.20	0.1	0.6	

SYSTEM BIAS AND SYSTEM DRIFT DATA

GAS UNITS	ANALYZER VALUE	PRETEST CHECK	% SPAN	POSTTEST CHECK	% SPAN	% DRIFT
ppm NOx	0.20	0.20	0.0	0.20	0.0	0.0
ppm NOx	96.00	95.60	-0.2	95.70	-0.1	0.0
% O2	0.00	0.10	0.4	0.10	0.4	0.0
% O2	11.90	11.90	0.0	11.90	0.0	0.0
% CO2	0.00	0.10	0.6	0.10	0.6	0.0
% CO2	8.70	8.72	0.1	8.73	0.2	0.1

UNCORRECTED REFERENCE DATA

Date & Time	NOx PPM	% O2	% CO2
12/20/2013 15:40	83.88	15.78	3.01
12/20/2013 15:41	84.13	15.78	3.02
12/20/2013 15:42	83.50	15.80	3.00
12/20/2013 15:43	82.50	15.82	2.99
12/20/2013 15:44	82.63	15.82	2.99
12/20/2013 15:45	82.63	15.81	2.99
12/20/2013 15:46	82.75	15.81	2.99
12/20/2013 15:47	82.50	15.81	2.99
12/20/2013 15:48	82.25	15.81	2.99
12/20/2013 15:49	82.25	15.81	2.99
12/20/2013 15:50	82.25	15.81	2.98
12/20/2013 15:51	82.25	15.81	2.99
12/20/2013 15:52	82.38	15.81	2.98
12/20/2013 15:53	82.25	15.81	2.98
12/20/2013 15:54	81.88	15.81	2.99
12/20/2013 15:55	82.00	15.82	2.98
12/20/2013 15:56	82.38	15.82	2.98
12/20/2013 15:57	82.38	15.82	2.98
12/20/2013 15:58	82.38	15.82	2.98
12/20/2013 15:59	82.38	15.82	2.98
12/20/2013 16:00	82.38	15.81	2.99
AVERAGE	82.57	15.81	2.99

NOx PPM	82.75
% O2	15.84
% CO2	2.92
LB/MMBTU NOx	0.352

F Factor 1040

Absolute Value
0.352

DATE TESTED: 12/20/2013
Run 4

FLORIDA POWER AND LIGHT CO.
PUTNAM 1GT2
ANALYZER CALIBRATION ERROR

RANGE SETTING	GAS UNITS	CERTIFIED		DIFF PPM	% SPAN	ANALYZER SERIAL #
		GAS VALUE	ANALYZER VALUE			
250	ppm NOx	0.00	0.20	0.2	0.1	42CHL 72772-372
	ppm NOx	95.90	96.00	0.1	0.0	
	ppm NOx	213.00	212.80	-0.2	-0.1	
10	% O2	0.00	0.00	0.0	0.0	1422/B53
	% O2	11.90	11.90	0.0	0.0	
	% O2	22.70	22.50	-0.2	-0.9	
20	% CO2	0.00	0.00	0.0	0.0	PO3048
	% CO2	8.70	8.70	0.0	0.0	
	% CO2	17.10	17.20	0.1	0.6	

SYSTEM BIAS AND SYSTEM DRIFT DATA

GAS UNITS	ANALYZER VALUE	PRETEST CHECK	% SPAN	POSTTEST CHECK	% SPAN	% DRIFT
ppm NOx	0.20	0.20	0.0	0.30	0.0	0.0
ppm NOx	96.00	95.70	-0.1	95.50	-0.2	-0.1
% O2	0.00	0.10	0.4	0.10	0.4	0.0
% O2	11.90	11.90	0.0	11.90	0.0	0.0
% CO2	0.00	0.10	0.6	0.10	0.6	0.0
% CO2	8.70	8.73	0.2	8.74	0.2	0.1

UNCORRECTED REFERENCE DATA

Date & Time	NOx PPM	% O2	% CO2
12/20/2013 16:12	78.88	15.83	3.04
12/20/2013 16:13	79.25	15.84	3.03
12/20/2013 16:14	79.25	15.83	3.04
12/20/2013 16:15	79.50	15.84	3.04
12/20/2013 16:16	79.38	15.84	3.03
12/20/2013 16:17	79.13	15.86	3.03
12/20/2013 16:18	78.75	15.87	3.01
12/20/2013 16:19	78.38	15.86	3.01
12/20/2013 16:20	78.38	15.86	3.01
12/20/2013 16:21	78.63	15.84	3.03
12/20/2013 16:22	79.50	15.83	3.03
12/20/2013 16:23	79.75	15.84	3.02
12/20/2013 16:24	79.25	15.86	3.01
12/20/2013 16:25	78.63	15.87	3.00
12/20/2013 16:26	78.25	15.87	3.00
12/20/2013 16:27	78.25	15.88	2.99
12/20/2013 16:28	78.00	15.86	3.00
12/20/2013 16:29	78.25	15.86	3.00
12/20/2013 16:30	78.25	15.86	2.99
12/20/2013 16:31	78.25	15.86	2.99
12/20/2013 16:32	78.25	15.86	2.99
AVERAGE	78.77	15.85	3.01

NOx PPM	78.97
% O2	15.89
% CO2	2.94
LB/MMBTU NOx	0.334

F Factor 1040

Absolute Value
0.334

DATE TESTED: 12/20/2013
Run 5

FLORIDA POWER AND LIGHT CO.
PUTNAM 1GT2
ANALYZER CALIBRATION ERROR

RANGE SETTING	GAS UNITS	CERTIFIED GAS VALUE	ANALYZER VALUE	DIFF PPM	% SPAN	ANALYZER SERIAL #
250	ppm NOx	0.00	0.20	0.2	0.1	42CHL 72772-372
	ppm NOx	95.90	96.00	0.1	0.0	
	ppm NOx	213.00	212.80	-0.2	-0.1	
10	% O2	0.00	0.00	0.0	0.0	1422/B53
	% O2	11.90	11.90	0.0	0.0	
	% O2	22.70	22.50	-0.2	-0.9	
20	% CO2	0.00	0.00	0.0	0.0	PO3048
	% CO2	8.70	8.70	0.0	0.0	
	% CO2	17.10	17.20	0.1	0.6	

SYSTEM BIAS AND SYSTEM DRIFT DATA

GAS UNITS	ANALYZER VALUE	PRETEST CHECK	% SPAN	POSTTEST CHECK	% SPAN	% DRIFT
ppm NOx	0.20	0.30	0.0	0.40	0.1	0.0
ppm NOx	96.00	95.50	-0.2	95.60	-0.2	0.0
% O2	0.00	0.10	0.4	0.10	0.4	0.0
% O2	11.90	11.90	0.0	11.90	0.0	0.0
% CO2	0.00	0.10	0.6	0.10	0.6	0.0
% CO2	8.70	8.74	0.2	8.75	0.3	0.1

UNCORRECTED REFERENCE DATA

Date & Time	NOx PPM	% O2	% CO2
12/20/2013 16:40	77.25	15.84	2.99
12/20/2013 16:41	77.00	15.86	2.99
12/20/2013 16:42	76.88	15.86	2.99
12/20/2013 16:43	76.88	15.86	2.99
12/20/2013 16:44	77.00	15.86	3.00
12/20/2013 16:45	77.25	15.84	3.01
12/20/2013 16:46	77.63	15.86	2.99
12/20/2013 16:47	77.25	15.86	2.99
12/20/2013 16:48	77.38	15.86	3.00
12/20/2013 16:49	77.38	15.87	3.00
12/20/2013 16:50	77.25	15.87	3.00
12/20/2013 16:51	77.25	15.88	2.99
12/20/2013 16:52	77.38	15.88	3.00
12/20/2013 16:53	77.25	15.88	2.99
12/20/2013 16:54	77.25	15.87	3.00
12/20/2013 16:55	77.25	15.87	3.00
12/20/2013 16:56	77.38	15.88	3.00
12/20/2013 16:57	77.00	15.88	3.00
12/20/2013 16:58	76.75	15.89	2.99
12/20/2013 16:59	76.38	15.91	2.99
12/20/2013 17:00	75.75	15.89	2.99
AVERAGE	77.08	15.87	3.00

NOx PPM	77.30
% O2	15.90
% CO2	2.91
LB/MMBTU NOx	0.329

F Factor 1040

Absolute Value
0.329

DATE TESTED: 12/20/2013
Run 6

FLORIDA POWER AND LIGHT CO.
PUTNAM 1GT2
ANALYZER CALIBRATION ERROR

RANGE SETTING	GAS UNITS	CERTIFIED GAS VALUE	ANALYZER VALUE	DIFF PPM	% SPAN	ANALYZER SERIAL #
250	ppm NOx	0.00	0.20	0.2	0.1	42CHL 72772-372
	ppm NOx	95.90	96.00	0.1	0.0	
	ppm NOx	213.00	212.80	-0.2	-0.1	
10	% O2	0.00	0.00	0.0	0.0	1422/B53
	% O2	11.90	11.90	0.0	0.0	
	% O2	22.70	22.50	-0.2	-0.9	
20	% CO2	0.00	0.00	0.0	0.0	PO3048
	% CO2	8.70	8.70	0.0	0.0	
	% CO2	17.10	17.20	0.1	0.6	

SYSTEM BIAS AND SYSTEM DRIFT DATA

GAS UNITS	ANALYZER VALUE	PRETEST CHECK	% SPAN	POSTTEST CHECK	% SPAN	% DRIFT
ppm NOx	0.20	0.40	0.1	0.50	0.1	0.0
ppm NOx	96.00	95.60	-0.2	95.70	-0.1	0.0
% O2	0.00	0.10	0.4	0.10	0.4	0.0
% O2	11.90	11.90	0.0	11.90	0.0	0.0
% CO2	0.00	0.10	0.6	0.10	0.6	0.0
% CO2	8.70	8.75	0.3	8.76	0.3	0.1

UNCORRECTED REFERENCE DATA

Date & Time	NOx PPM	% O2	% CO2
12/20/2013 17:10	77.00	15.86	3.00
12/20/2013 17:11	76.88	15.86	2.99
12/20/2013 17:12	77.00	15.87	2.99
12/20/2013 17:13	76.75	15.86	2.99
12/20/2013 17:14	76.75	15.86	2.99
12/20/2013 17:15	76.88	15.86	2.99
12/20/2013 17:16	77.13	15.86	2.99
12/20/2013 17:17	77.00	15.86	2.99
12/20/2013 17:18	76.88	15.86	2.99
12/20/2013 17:19	76.88	15.86	2.99
12/20/2013 17:20	76.88	15.87	2.98
12/20/2013 17:21	76.50	15.87	2.98
12/20/2013 17:22	76.75	15.86	2.99
12/20/2013 17:23	76.88	15.86	2.98
12/20/2013 17:24	76.88	15.86	2.98
12/20/2013 17:25	76.88	15.86	2.98
12/20/2013 17:26	76.88	15.86	2.98
12/20/2013 17:27	76.88	15.86	2.99
12/20/2013 17:28	76.88	15.86	2.99
12/20/2013 17:29	76.88	15.86	2.98
12/20/2013 17:30	76.88	15.86	2.98
AVERAGE	76.87	15.86	2.99

NOx PPM	76.98
% O2	15.89
% CO2	2.90
LB/MMBTU NOx	0.329

F Factor 1040

Absolute Value
0.329

DATE TESTED: 12/20/2013
Run 7

FLORIDA POWER AND LIGHT CO.
PUTNAM 1GT2
ANALYZER CALIBRATION ERROR

RANGE SETTING	GAS UNITS	CERTIFIED GAS VALUE	ANALYZER VALUE	DIFF PPM	% SPAN	ANALYZER SERIAL #
250	ppm NOx	0.00	0.20	0.2	0.1	42CHL 72772-372
	ppm NOx	95.90	96.00	0.1	0.0	
	ppm NOx	213.00	212.80	-0.2	-0.1	
10	% O2	0.00	0.00	0.0	0.0	1422/B53
	% O2	11.90	11.90	0.0	0.0	
	% O2	22.70	22.50	-0.2	-0.9	
20	% CO2	0.00	0.00	0.0	0.0	PO3048
	% CO2	8.70	8.70	0.0	0.0	
	% CO2	17.10	17.20	0.1	0.6	

SYSTEM BIAS AND SYSTEM DRIFT DATA

GAS UNITS	ANALYZER VALUE	PRETEST CHECK	% SPAN	POSTTEST CHECK	% SPAN	% DRIFT
ppm NOx	0.20	0.50	0.1	0.40	0.1	0.0
ppm NOx	96.00	95.70	-0.1	95.70	-0.1	0.0
% O2	0.00	0.10	0.4	0.10	0.4	0.0
% O2	11.90	11.90	0.0	11.90	0.0	0.0
% CO2	0.00	0.10	0.6	0.10	0.6	0.0
% CO2	8.70	8.76	0.3	8.75	0.3	-0.1

UNCORRECTED REFERENCE DATA

Date & Time	NOx PPM	% O2	% CO2
12/20/2013 17:40	76.50	15.87	2.98
12/20/2013 17:41	76.50	15.86	2.98
12/20/2013 17:42	76.50	15.86	2.99
12/20/2013 17:43	76.88	15.84	2.99
12/20/2013 17:44	77.00	15.85	2.99
12/20/2013 17:45	76.88	15.84	3.00
12/20/2013 17:46	77.25	15.84	3.00
12/20/2013 17:47	77.13	15.86	2.99
12/20/2013 17:48	76.75	15.86	2.99
12/20/2013 17:49	76.38	15.87	2.99
12/20/2013 17:50	76.38	15.87	2.99
12/20/2013 17:51	76.38	15.87	2.99
12/20/2013 17:52	76.38	15.87	2.99
12/20/2013 17:53	76.38	15.86	2.99
12/20/2013 17:54	76.38	15.86	2.99
12/20/2013 17:55	76.38	15.86	2.99
12/20/2013 17:56	76.38	15.87	2.99
12/20/2013 17:57	76.25	15.87	2.99
12/20/2013 17:58	76.00	15.88	2.99
12/20/2013 17:59	75.88	15.87	2.99
12/20/2013 18:00	76.13	15.86	3.00
AVERAGE	76.51	15.86	2.99

NOx PPM	76.57
% O2	15.89
% CO2	2.91
LB/MMBTU NOx	0.327

F Factor 1040

Absolute Value
0.327

DATE TESTED: 12/20/2013
Run 8

FLORIDA POWER AND LIGHT CO.
PUTNAM 1GT2
ANALYZER CALIBRATION ERROR

RANGE SETTING	GAS UNITS	CERTIFIED GAS VALUE	ANALYZER VALUE	DIFF PPM	% SPAN	ANALYZER SERIAL #
250	ppm NOx	0.00	0.20	0.2	0.1	42CHL 72772-372
	ppm NOx	95.90	46.80	-49.1	-23.1	
	ppm NOx	213.00	212.80	-0.2	-0.1	
10	% O2	0.00	0.00	0.0	0.0	1422/B53
	% O2	11.90	11.90	0.0	0.0	
	% O2	22.70	22.50	-0.2	-0.9	
20	% CO2	0.00	0.00	0.0	0.0	PO3048
	% CO2	8.70	8.70	0.0	0.0	
	% CO2	17.10	17.20	0.1	0.6	

SYSTEM BIAS AND SYSTEM DRIFT DATA

GAS UNITS	ANALYZER VALUE	PRETEST CHECK	% SPAN	POSTTEST CHECK	% SPAN	% DRIFT
ppm NOx	0.20	0.40	0.1	0.30	0.0	0.0
ppm NOx	96.00	95.70	-0.1	95.60	-0.2	0.0
% O2	0.00	0.10	0.4	0.10	0.4	0.0
% O2	11.90	11.90	0.0	11.90	0.0	0.0
% CO2	0.00	0.10	0.6	0.10	0.6	0.0
% CO2	8.70	8.75	0.3	8.75	0.3	0.0

UNCORRECTED REFERENCE DATA

Date & Time	NOx PPM	% O2	% CO2
12/20/2013 18:10	76.38	15.85	3.01
12/20/2013 18:11	76.38	15.86	3.01
12/20/2013 18:12	75.88	15.86	3.00
12/20/2013 18:13	75.88	15.86	3.00
12/20/2013 18:14	76.13	15.86	3.00
12/20/2013 18:15	76.13	15.86	3.00
12/20/2013 18:16	76.25	15.86	3.00
12/20/2013 18:17	76.25	15.86	3.00
12/20/2013 18:18	76.25	15.86	3.00
12/20/2013 18:19	76.38	15.85	3.01
12/20/2013 18:20	76.38	15.86	3.00
12/20/2013 18:21	76.00	15.86	2.99
12/20/2013 18:22	75.88	15.86	3.00
12/20/2013 18:23	75.88	15.86	2.99
12/20/2013 18:24	75.88	15.86	3.00
12/20/2013 18:25	75.88	15.86	3.00
12/20/2013 18:26	75.88	15.86	3.00
12/20/2013 18:27	75.88	15.86	2.99
12/20/2013 18:28	75.88	15.86	3.00
12/20/2013 18:29	75.88	15.86	2.99
12/20/2013 18:30	75.88	15.86	2.99
AVERAGE	76.05	15.86	3.00

NOx PPM	76.18
% O2	15.89
% CO2	2.92
LB/MMBTU NOx	0.324

F Factor 1040

Absolute Value
0.324

DATE TESTED: 12/20/2013
Run 9

FLORIDA POWER AND LIGHT CO.
PUTNAM 1GT2
ANALYZER CALIBRATION ERROR

RANGE SETTING	GAS UNITS	CERTIFIED GAS VALUE	ANALYZER VALUE	DIFF PPM	% SPAN	ANALYZER SERIAL #
250	ppm NOx	0.00	0.20	0.2	0.1	42CHL 72772-372
	ppm NOx	95.90	96.00	0.1	0.0	
	ppm NOx	213.00	212.80	-0.2	-0.1	
10	% O2	0.00	0.00	0.0	0.0	1422/B53
	% O2	11.90	11.90	0.0	0.0	
	% O2	22.70	22.50	-0.2	-0.9	
20	% CO2	0.00	0.00	0.0	0.0	PO3048
	% CO2	8.70	8.70	0.0	0.0	
	% CO2	17.10	17.20	0.1	0.6	

SYSTEM BIAS AND SYSTEM DRIFT DATA

GAS UNITS	ANALYZER VALUE	PRETEST CHECK	% SPAN	POSTTEST CHECK	% SPAN	% DRIFT
ppm NOx	0.20	0.30	0.0	0.30	0.0	0.0
ppm NOx	96.00	95.60	-0.2	95.60	-0.2	0.0
% O2	0.00	0.10	0.4	0.10	0.4	0.0
% O2	11.90	11.90	0.0	11.90	0.0	0.0
% CO2	0.00	0.10	0.6	0.10	0.6	0.0
% CO2	8.70	8.75	0.3	8.74	0.2	-0.1

UNCORRECTED REFERENCE DATA

Date & Time	NOx PPM	% O2	% CO2
12/20/2013 18:40	74.88	15.86	3.00
12/20/2013 18:41	74.88	15.86	2.99
12/20/2013 18:42	74.88	15.86	3.00
12/20/2013 18:43	74.88	15.86	3.00
12/20/2013 18:44	74.88	15.87	3.01
12/20/2013 18:45	74.88	15.87	2.99
12/20/2013 18:46	74.88	15.87	3.00
12/20/2013 18:47	74.88	15.86	3.01
12/20/2013 18:48	74.88	15.86	3.01
12/20/2013 18:49	75.00	15.86	3.01
12/20/2013 18:50	75.00	15.86	3.01
12/20/2013 18:51	74.88	15.85	3.01
12/20/2013 18:52	75.50	15.84	3.01
12/20/2013 18:53	75.50	15.86	3.01
12/20/2013 18:54	75.00	15.86	3.00
12/20/2013 18:55	74.88	15.87	2.99
12/20/2013 18:56	74.88	15.86	3.00
12/20/2013 18:57	74.88	15.86	3.00
12/20/2013 18:58	74.50	15.86	3.00
12/20/2013 18:59	74.63	15.85	3.00
12/20/2013 19:00	74.75	15.84	3.01
AVERAGE	74.92	15.86	3.00

NOx PPM	75.09
% O2	15.89
% CO2	2.92
LB/MMBTU NOx	0.319

F Factor 1040

Absolute Value
0.319

PUTNAM 1GT2					
3 Point Traverse Port	Point	Nox Ave	ppm ave	Date & Time	NOx PPM
1	85	2.7		12/20/2013 14:28	86.25
				12/20/2013 14:29	86.21
				12/20/2013 14:30	85.69
				12/20/2013 14:31	85.35
2	84	0.6		12/20/2013 14:32	84.98
				12/20/2013 14:33	84.52
				12/20/2013 14:34	84.83
				12/20/2013 14:35	85.02
3	85	0.1		12/20/2013 14:36	85.73
				12/20/2013 14:37	85.45
				12/20/2013 14:38	84.86
				12/20/2013 14:39	85.02
Mean Average		85			
Probe Markings: 40", 76" & 1'					
Allowable: + or - 0.5 ppm or 5.					

APPENDIX 2 PLANT DATA

Average Values Report

Generated: 12/20/2013 15:39

Company: Florida Power & Light FPL
 Plant:
 City/St.: FL
 Source: stack2

Period Start: 12/20/2013 14:43
 Period End: 12/20/2013 15:03
 Validation Type: 1/1 min
 Averaging Period: 1 min
 Type: Block Avg

Period Start:	Average CO2 %	Average 2NOx ppm	Average 2MW MW	Average 2NOx#M #/M
12/20/2013 14:43	2.74	80.6	90.4	0.365
12/20/2013 14:44	2.74	79.2	90.6	0.359
12/20/2013 14:45	2.75	81.0	90.1	0.366
12/20/2013 14:46	2.74	81.6	90.3	0.370
12/20/2013 14:47	2.73	81.3	90.2	0.370
12/20/2013 14:48	2.73	80.9	90.2	0.368
12/20/2013 14:49	2.73	80.6	90.2	0.367
12/20/2013 14:50	2.73	80.6	90.2	0.367
12/20/2013 14:51	2.73	80.6	90.4	0.367
12/20/2013 14:52	2.73	80.5	90.1	0.365
12/20/2013 14:53	2.74	80.2	89.9	0.363
12/20/2013 14:54	2.74	80.1	90.4	0.363
12/20/2013 14:55	2.74	80.6	90.0	0.365
12/20/2013 14:56	2.74	80.6	90.9	0.365
12/20/2013 14:57	2.74	79.9	90.1	0.362
12/20/2013 14:58	2.74	80.1	90.5	0.363
12/20/2013 14:59	2.74	80.5	90.4	0.365
12/20/2013 15:00	2.74	80.9	89.8	0.367
12/20/2013 15:01	2.74	80.7	90.4	0.366
12/20/2013 15:02	2.73	81.2	90.5	0.369
12/20/2013 15:03	2.74	81.0	90.5	0.367
Daily Average*	2.74	80.6	90.3	0.366
Maximum*	2.75	81.6	90.9	0.370
12/20/2013	12/20/2013	12/20/2013	12/20/2013	12/20/2013
Minimum*	14:45	14:46	14:56	14:47
12/20/2013	12/20/2013	12/20/2013	12/20/2013	12/20/2013
15:02	14:44	15:00	14:44	14:44

* Does not include Invalid Averaging Periods ("N/A")

Babcock & Wilcox Power Generation Group NetDAHS®

Version 46.0

Average Values Report

Generated: 12/20/2013 15:41

Company: Florida Power & Light PER 2

Plant:

City/St: , FL

Source: stack2

Period Start: 12/20/2013 15:11

Period End: 12/20/2013 15:31

Validation Type: 1/1 min

Averaging Period: 1 min

Type: Block Avg

Period Start:	Average CO2 %	Average 2NOx ppm	Average 2MW MW	Average 2NOx#M #/M
12/20/2013 15:11	2.73	81.3	90.2	0.370
12/20/2013 15:12	2.73	81.1	90.2	0.369
12/20/2013 15:13	2.73	81.2	90.1	0.369
12/20/2013 15:14	2.74	81.3	90.2	0.368
12/20/2013 15:15	2.73	80.2	90.6	0.365
12/20/2013 15:16	2.73	79.3	90.4	0.361
12/20/2013 15:17	2.74	79.1	90.6	0.358
12/20/2013 15:18	2.74	80.4	90.4	0.364
12/20/2013 15:19	2.75	80.7	90.3	0.364
12/20/2013 15:20	2.75	80.5	90.4	0.363
12/20/2013 15:21	2.74	79.4	89.8	0.360
12/20/2013 15:22	2.74	80.2	89.9	0.363
12/20/2013 15:23	2.73	79.5	90.1	0.362
12/20/2013 15:24	2.74	79.4	90.1	0.360
12/20/2013 15:25	2.74	80.4	90.4	0.364
12/20/2013 15:26	2.74	80.1	90.5	0.363
12/20/2013 15:27	2.74	80.2	90.2	0.363
12/20/2013 15:28	2.75	80.1	90.4	0.362
12/20/2013 15:29	2.75	80.0	90.2	0.361
12/20/2013 15:30	2.74	79.7	90.4	0.361
12/20/2013 15:31	2.74	79.4	89.8	0.360
Daily Average*	2.74	80.2	90.2	0.363
Maximum*	2.75	81.3	90.6	0.370
	12/20/2013	12/20/2013	12/20/2013	12/20/2013
	15:29	15:14	15:17	15:11
Minimum*	2.73	79.1	89.8	0.358
	12/20/2013	12/20/2013	12/20/2013	12/20/2013
	15:23	15:17	15:31	15:17

* Does not include Invalid Averaging Periods ("N/A")

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Average Values Report
Generated: 12/20/2013 16:17

Company: Florida Power & Light FPL
Plant:
City/St.: FL
Source: stack2

Period Start: 12/20/2013 15:40
Period End: 12/20/2013 16:00
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Period Start:	Average 2CO2 %	Average 2NOx ppm	Average 2MW MW	Average 2NOx#M #/M
12/20/2013 15:40	2.75	81.1	91.1	0.366
12/20/2013 15:41	2.75	81.7	90.7	0.369
12/20/2013 15:42	2.74	80.5	90.6	0.365
12/20/2013 15:43	2.73	79.5	89.9	0.362
12/20/2013 15:44	2.73	79.8	90.1	0.363
12/20/2013 15:45	2.74	79.8	90.1	0.362
12/20/2013 15:46	2.74	79.8	90.2	0.362
12/20/2013 15:47	2.74	79.7	90.5	0.361
12/20/2013 15:48	2.73	79.6	90.1	0.362
12/20/2013 15:49	2.73	79.4	90.8	0.361
12/20/2013 15:50	2.73	79.4	90.2	0.361
12/20/2013 15:51	2.74	79.5	90.1	0.360
12/20/2013 15:52	2.73	79.6	89.9	0.362
12/20/2013 15:53	2.73	79.4	90.0	0.361
12/20/2013 15:54	2.74	79.2	90.3	0.359
12/20/2013 15:55	2.73	79.3	90.3	0.361
12/20/2013 15:56	2.73	79.6	90.3	0.362
12/20/2013 15:57	2.74	79.9	89.9	0.362
12/20/2013 15:58	2.73	79.7	90.1	0.363
12/20/2013 15:59	2.73	79.5	90.2	0.362
12/20/2013 16:00	2.73	79.2	90.0	0.360
Daily Average*	2.74	79.8	90.3	0.362
Maximum*	2.75	81.7	91.1	0.369
12/20/2013	15:41	15:41	15:40	12/20/2013
Minimum*	2.73	79.2	89.9	15:41
12/20/2013	16:00	16:00	15:57	12/20/2013
				15:54

* Does not include Invalid Averaging Periods ("N/A")

Average Values Report
Generated: 12/20/2013 17:09

Period Start: 12/20/2013 16:12
Period End: 12/20/2013 16:32
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Company: Florida Power & Light
Plant:
City/St.: FL
Source: stack2

Period Start:	Average CO2 %	Average 2NOx ppm	Average 2MW MW	Average 2NOx#M #/M
12/20/2013 16:12	2.74	76.8	90.6	0.348
12/20/2013 16:13	2.73	76.8	90.4	0.349
12/20/2013 16:14	2.74	76.6	90.5	0.347
12/20/2013 16:15	2.75	76.9	90.3	0.347
12/20/2013 16:16	2.75	76.9	90.2	0.347
12/20/2013 16:17	2.74	76.5	89.8	0.347
12/20/2013 16:18	2.73	76.1	90.1	0.346
12/20/2013 16:19	2.73	75.9	90.3	0.345
12/20/2013 16:20	2.73	75.9	90.8	0.345
12/20/2013 16:21	2.75	76.2	91.3	0.344
12/20/2013 16:22	2.75	77.0	90.7	0.348
12/20/2013 16:23	2.74	77.0	90.6	0.349
12/20/2013 16:24	2.73	76.3	90.1	0.347
12/20/2013 16:25	2.73	76.0	90.0	0.346
12/20/2013 16:26	2.73	75.7	89.7	0.344
12/20/2013 16:27	2.72	75.6	89.9	0.345
12/20/2013 16:28	2.73	75.2	89.9	0.342
12/20/2013 16:29	2.72	75.5	89.7	0.345
12/20/2013 16:30	2.73	75.4	89.9	0.343
12/20/2013 16:31	2.73	75.4	90.1	0.343
12/20/2013 16:32	2.74	75.4	90.1	0.342
Daily Average*	2.74	76.1	90.2	0.346
Maximum*	2.75	77.0	91.3	0.349
12/20/2013	12/20/2013	12/20/2013	12/20/2013	12/20/2013
16:22	16:23	16:21	16:23	16:23
Minimum*	2.72	75.2	89.7	0.342
12/20/2013	12/20/2013	12/20/2013	12/20/2013	12/20/2013
16:29	16:28	16:29	16:29	16:32

* Does not include Invalid Averaging Periods ("N/A")

Average Values Report

Generated: 12/20/2013 17:10

Period Start: 12/20/2013 16:40
 Period End: 12/20/2013 17:00
 Validation Type: 1/1 min
 Averaging Period: 1 min
 Type: Block Avg

Company: Florida Power & Light FPL
 Plant:
 City/St: , FL
 Source: stack2

Period Start:	Average 2CO2 %	Average 2NOx ppm	Average 2MW MW	Average 2NOx#M #/M
12/20/2013 16:40	2.74	75.1	89.8	0.340
12/20/2013 16:41	2.73	75.0	89.6	0.341
12/20/2013 16:42	2.73	74.8	89.9	0.340
12/20/2013 16:43	2.73	74.6	89.5	0.339
12/20/2013 16:44	2.73	74.7	90.4	0.340
12/20/2013 16:45	2.75	75.1	89.8	0.339
12/20/2013 16:46	2.74	75.3	89.9	0.341
12/20/2013 16:47	2.73	74.9	90.0	0.341
12/20/2013 16:48	2.73	74.9	89.8	0.341
12/20/2013 16:49	2.72	74.8	90.2	0.341
12/20/2013 16:50	2.73	74.7	89.5	0.340
12/20/2013 16:51	2.72	74.6	89.6	0.341
12/20/2013 16:52	2.72	74.5	89.9	0.340
12/20/2013 16:53	2.72	74.5	89.7	0.340
12/20/2013 16:54	2.73	74.5	89.9	0.339
12/20/2013 16:55	2.73	74.7	89.2	0.340
12/20/2013 16:56	2.73	74.6	89.5	0.339
12/20/2013 16:57	2.73	74.5	89.1	0.339
12/20/2013 16:58	2.72	74.2	88.7	0.339
12/20/2013 16:59	2.71	73.5	88.8	0.337
12/20/2013 17:00	2.72	73.3	89.2	0.335
Daily Average*	2.73	74.6	89.6	0.340
Maximum*	2.75	75.3	90.4	0.341
12/20/2013	16:45	16:46	16:44	16:51
Minimum*	2.71	73.3	88.7	0.335
12/20/2013	16:59	17:00	16:58	17:00

* Does not include Invalid Averaging Periods ("N/A")

Babcock & Wilcox Power Generation Group NetDAHS®

Average Values Report

Generated: 12/20/2013 18:07

Company: Florida Power & Light FPL

Plant:

City/St.: FL

Source: stack2

Period Start: 12/20/2013 17:10
Period End: 12/20/2013 17:30
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Period Start:	Average 2CO2 %	Average 2NOx ppm	Average 2MW MW	Average 2NOx#M #/M
12/20/2013 17:10	2.74	74.3	90.2	0.337
12/20/2013 17:11	2.73	74.1	89.9	0.337
12/20/2013 17:12	2.73	74.1	89.5	0.337
12/20/2013 17:13	2.73	74.0	89.9	0.337
12/20/2013 17:14	2.73	74.1	89.6	0.337
12/20/2013 17:15	2.74	74.0	89.8	0.335
12/20/2013 17:16	2.75	74.1	89.6	0.335
12/20/2013 17:17	2.74	74.1	89.7	0.336
12/20/2013 17:18	2.74	74.0	89.5	0.335
12/20/2013 17:19	2.75	74.0	89.7	0.334
12/20/2013 17:20	2.73	73.8	90.0	0.336
12/20/2013 17:21	2.73	73.6	89.7	0.335
12/20/2013 17:22	2.74	73.9	89.5	0.335
12/20/2013 17:23	2.74	74.0	89.7	0.335
12/20/2013 17:24	2.74	73.9	89.7	0.335
12/20/2013 17:25	2.74	73.9	89.6	0.335
12/20/2013 17:26	2.73	73.9	90.1	0.336
12/20/2013 17:27	2.74	73.8	89.6	0.334
12/20/2013 17:28	2.75	73.9	89.7	0.334
12/20/2013 17:29	2.74	74.0	89.6	0.335
12/20/2013 17:30	2.73	73.7	89.7	0.335
Daily Average*	2.74	74.0	89.7	0.335
Maximum*	2.75	74.3	90.2	0.337
Minimum*	12/20/2013 17:28	12/20/2013 17:10	12/20/2013 17:14	12/20/2013 17:14
	17:28	17:10	17:10	17:14
	2.73	73.6	89.5	0.334
	12/20/2013 17:30	12/20/2013 17:21	12/20/2013 17:22	12/20/2013 17:28
	17:30	17:21	17:22	17:28

* Does not include Invalid Averaging Periods (*N/A*)

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Version 46.0

Babcock & Wilcox Power Generation Group NetDAHS®

Average Values Report

Generated: 12/20/2013 18:09

Company: Florida Power & Light FPL 4

Plant:

City/St.: FL

Source: stack2

Period Start: 12/20/2013 17:40
 Period End: 12/20/2013 18:00
 Validation Type: 1/1 min
 Averaging Period: 1 min
 Type: Block Avg

Period Start:	Average 2CO2 %	Average 2NOx ppm	Average 2MW MW	Average 2NOx#M #/M
12/20/2013 17:40	2.73	73.5	89.6	0.334
12/20/2013 17:41	2.72	73.5	89.8	0.336
12/20/2013 17:42	2.73	73.4	89.9	0.334
12/20/2013 17:43	2.74	73.9	89.9	0.335
12/20/2013 17:44	2.73	74.1	90.2	0.337
12/20/2013 17:45	2.74	73.7	89.8	0.334
12/20/2013 17:46	2.74	74.3	89.9	0.337
12/20/2013 17:47	2.73	74.2	89.6	0.338
12/20/2013 17:48	2.73	73.8	89.6	0.336
12/20/2013 17:49	2.73	73.5	89.5	0.334
12/20/2013 17:50	2.73	73.4	89.6	0.334
12/20/2013 17:51	2.72	73.5	89.5	0.336
12/20/2013 17:52	2.72	73.4	89.4	0.335
12/20/2013 17:53	2.72	73.3	89.9	0.335
12/20/2013 17:54	2.72	73.4	89.4	0.334
12/20/2013 17:55	2.73	73.3	89.7	0.333
12/20/2013 17:56	2.73	73.3	89.0	0.333
12/20/2013 17:57	2.73	73.3	88.7	0.333
12/20/2013 17:58	2.72	73.1	89.4	0.334
12/20/2013 17:59	2.73	72.9	89.6	0.332
12/20/2013 18:00	2.74	73.3	88.8	0.332
Daily Average*	2.73	73.5	89.6	0.335
Maximum*	2.74	74.3	90.2	0.338
	12/20/2013	12/20/2013	12/20/2013	12/20/2013
	18:00	17:46	17:44	17:47
Minimum*	2.72	72.9	88.7	0.332
	12/20/2013	12/20/2013	12/20/2013	12/20/2013
	17:58	17:59	17:57	18:00

* Does not include Invalid Averaging Periods ("N/A")

Babcock & Wilcox Power Generation Group NetDAHS®

Average Values Report

Generated: 12/20/2013 18:42

Period Start: 12/20/2013 18:10
 Period End: 12/20/2013 18:30
 Validation Type: 1/1 min
 Averaging Period: 1 min
 Type: Block Avg

Company: Florida Power & Light
 Plant:
 City/St.: , FL
 Source: stack2

Period Start:	Average 2CO2 %	Average 2NOx ppm	Average 2MW MW	Average 2NOx#M #/M
12/20/2013 18:10	2.73	73.2	89.3	0.333
12/20/2013 18:11	2.73	73.3	89.3	0.333
12/20/2013 18:12	2.73	73.2	89.8	0.333
12/20/2013 18:13	2.73	73.1	89.6	0.333
12/20/2013 18:14	2.73	73.3	89.2	0.333
12/20/2013 18:15	2.73	73.4	89.3	0.334
12/20/2013 18:16	2.74	73.3	89.3	0.332
12/20/2013 18:17	2.73	73.2	90.0	0.333
12/20/2013 18:18	2.74	73.2	89.4	0.332
12/20/2013 18:19	2.75	73.5	89.8	0.332
12/20/2013 18:20	2.74	73.5	89.3	0.333
12/20/2013 18:21	2.73	73.3	89.5	0.333
12/20/2013 18:22	2.73	73.3	89.5	0.333
12/20/2013 18:23	2.73	73.1	89.6	0.333
12/20/2013 18:24	2.73	73.1	89.6	0.333
12/20/2013 18:25	2.73	73.2	89.4	0.333
12/20/2013 18:26	2.73	73.2	89.4	0.333
12/20/2013 18:27	2.73	73.1	89.6	0.333
12/20/2013 18:28	2.73	73.0	89.6	0.332
12/20/2013 18:29	2.73	73.0	89.5	0.332
12/20/2013 18:30	2.73	73.0	89.3	0.332
Daily Average*	2.73	73.2	89.5	0.333
Maximum*	2.75	73.5	90.0	0.334
12/20/2013	18:19	12/20/2013	12/20/2013	12/20/2013
Minimum*	2.73	73.0	89.2	0.332
12/20/2013	18:30	12/20/2013	12/20/2013	12/20/2013
		18:30	18:14	18:30

* Does not include Invalid Averaging Periods ("N/A")

Babcock & Wilcox Power Generation Group NetDAHS®

Average Values Report

Generated: 12/20/2013 19:04

Company: Florida Power & Light FPL :

Plant:

City/St: , FL

Source: stack2

Period Start: 12/20/2013 18:40
 Period End: 12/20/2013 19:00
 Validation Type: 1/1 min
 Averaging Period: 1 min
 Type: Block Avg

Period Start:	Average 2CO2 %	Average 2NOx ppm	Average 2MW MW	Average 2NOx#M #/M
12/20/2013 18:40	2.73	72.9	89.1	0.332
12/20/2013 18:41	2.73	72.8	89.4	0.331
12/20/2013 18:42	2.73	72.8	89.3	0.331
12/20/2013 18:43	2.73	72.7	89.2	0.331
12/20/2013 18:44	2.73	72.8	89.3	0.331
12/20/2013 18:45	2.72	72.8	89.2	0.332
12/20/2013 18:46	2.73	72.4	89.2	0.329
12/20/2013 18:47	2.73	72.6	89.4	0.330
12/20/2013 18:48	2.73	72.6	89.4	0.330
12/20/2013 18:49	2.73	72.7	89.2	0.331
12/20/2013 18:50	2.73	72.7	90.0	0.331
12/20/2013 18:51	2.74	72.7	89.6	0.329
12/20/2013 18:52	2.75	73.4	89.4	0.331
12/20/2013 18:53	2.74	73.2	89.4	0.332
12/20/2013 18:54	2.73	72.8	89.3	0.331
12/20/2013 18:55	2.73	72.6	88.9	0.330
12/20/2013 18:56	2.73	72.6	89.3	0.330
12/20/2013 18:57	2.73	72.6	88.9	0.330
12/20/2013 18:58	2.73	72.5	88.9	0.330
12/20/2013 18:59	2.73	72.6	89.4	0.330
12/20/2013 19:00	2.73	72.6	89.1	0.330
Daily Average*	2.73	72.7	89.3	0.331
Maximum*	2.75	73.4	90.0	0.332
12/20/2013	18:52	12/20/2013	12/20/2013	12/20/2013
Minimum*	2.72	18:52	18:50	18:53
12/20/2013	18:45	12/20/2013	12/20/2013	12/20/2013
		18:46	18:58	18:51

* Does not include Invalid Averaging Periods (N/A)

APPENDIX 3 QUALITY ASSURANCE



LIQUID TECHNOLOGY CORPORATION
"INDUSTRY LEADER IN SPECIALTY GASES"

Certificate of Analysis

<u>Customer</u>	<u>Coastal Air Consulting (Deland, FL)</u>
<u>Date</u>	<u>December 09, 2013</u>
<u>Delivery Receipt</u>	<u>DR-49522</u>
<u>Product:</u>	<u>Nitrogen, CEMS Grade</u>
<u>Lot Number:</u>	<u>LTM063-PG</u>

Mixture Specifications

<u>Cylinder Number</u>	<u>CC-165548</u>
------------------------	------------------

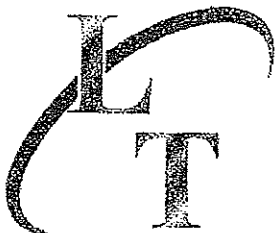
<u>Components</u>	<u>Requested</u>	<u>Actual</u>
Moisture	2.0 ppm	< 2.0 ppm
Hydrocarbons	0.1 ppm	< 0.1 ppm
Oxygen	1.0 ppm	< 1.0 ppm
Carbon Monoxide	1.0 ppm	< 1.0 ppm
Carbon Dioxide	1.0 ppm	< 1.0 ppm

Cylinder Data

Cylinder Valve:	CGA 580
Cylinder Volume:	140 Cubic Feet
Cylinder Pressure:	2000 psig, 70°F
Expiration Date:	December 09, 2016

Certified by:

Cole Dylewski



LIQUID TECHNOLOGY CORPORATION

"INDUSTRY LEADER IN SPECIALTY GASES"

Certificate of Analysis - EPA PROTOCOL GAS -

Customer Coastal Air Consulting (Deland, FL)
Date June 06, 2013
Delivery Receipt DR-47266
Gas Standard 90-99 ppm NO, 90-99 ppm SO₂, 90-99 ppm CO/Nitrogen - EPA PROTOCOL
Final Analysis Date June 05, 2013
Expiration Date June 05, 2021 ✓

Components Nitric Oxide, Sulfur Dioxide, Carbon Monoxide
Balance Gas Nitrogen

Analytical Data:

EPA Protocol, Section No. 2.2, Procedure G-1

DO NOT USE BELOW 100 psig

Reported Concentrations

Nitric Oxide: 95.9 ppm +/- 0.22 ppm ✓
Sulfur Dioxide: 95.9 ppm +/- 0.91 ppm ✓
Carbon Monoxide: 96.4 ppm +/- 0.30 ppm ✓

Nitrogen: Balance

Total Oxides of Nitrogen: 95.9 ppm

** Total NOX for Reference Use Only **

Reference Standards:

SRM/GMIS:	GMIS	GMIS	GMIS
Cylinder Number:	EB-0016743	EB-0014653	EB-0015851
Concentration:	96.72 ppm NO/Nitrogen	103.89 ppm SO ₂ /N ₂	104.90 ppm CO/Nitrogen
Expiration Date:	01/12/14	12/01/14	10/21/14

Certification Instrumentation

Component:	Nitric Oxide	Sulfur Dioxide	Carbon Monoxide
Make/Model:	Nicolet 6700	Nicolet 6700	Nicolet 6700
Serial Number:	APW1100563	APW1100563	APW1100563
Principal of Measurement:	FTIR	FTIR	FTIR
Last Calibration:	May 28, 2013	May 28, 2013	May 28, 2013

Cylinder Data

Cylinder Serial Number: CC-79645 ✓
Cylinder Volume: 135 Cubic Feet
Cylinder Outlet: CGA 660
Cylinder Pressure: 1925 psig, 70°F

Analytical Uncertainty and NIST Traceability are in compliance with EPA-600/R-12/531.

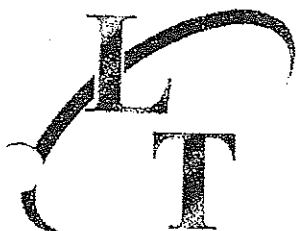
Certified by:

David Scott

PGVP Vendor ID: E12013 ✓

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"INDUSTRY LEADER IN SPECIALTY GASES"

Certificate of Analysis - EPA PROTOCOL GAS -

Customer Coastal Air Consulting (Deland, FL)
Date November 07, 2013
Delivery Receipt DR-49129
Gas Standard 185-225 ppm NO, 185-225 ppm SO₂, 185-225 ppm CO/Nitrogen - EPA PROTOCOL
Final Analysis Date November 07, 2013
Expiration Date November 07, 2021

Components Nitric Oxide, Sulfur Dioxide, Carbon Monoxide
Balance Gas Nitrogen

Analytical Data:

EPA Protocol, Section No. 2.2, Procedure G-1

DO NOT USE BELOW 100 psig

Reported Concentrations

Nitric Oxide: 213 ppm +/- 1.0 ppm
Sulfur Dioxide: 212 ppm +/- 1.7 ppm
Carbon Monoxide: 213 ppm +/- 1.0 ppm
Nitrogen: Balance

Total Oxides of Nitrogen: 213 ppm

** Total NOX for Reference Use Only **

Reference Standards:

SRM/GMIS:	GMIS	GMIS/GMIS	GMIS
Cylinder Number:	ND-45515	CC-54548/CC-251490	CC-185111
Concentration:	245.26 ppm NO/Nitrogen	102.43 ppm SO ₂ /507.88 ppm SO ₂	257.47 ppm CO/Nitrogen
Expiration Date:	08/23/20	04/12/14 - 04/12/14	10/22/14

Certification Instrumentation

Component:	Nitric Oxide	Sulfur Dioxide	Carbon Monoxide
Make/Model:	Nicolet 6700	Nicolet 6700	Nicolet 6700
Serial Number:	APW1100563	APW1100563	APW1100563
Principal of Measurement:	FTIR	FTIR	FTIR
Last Calibration:	October 23, 2013	October 23, 2013	October 16, 2013

Cylinder Data

Cylinder Serial Number: EB-0051448
Cylinder Volume: 136 Cubic Feet
Cylinder Outlet: CGA 660
Cylinder Pressure: 1950 psig, 70°F
Analytical Uncertainty and NIST Traceability are in compliance with EPA-600/R-12/531.

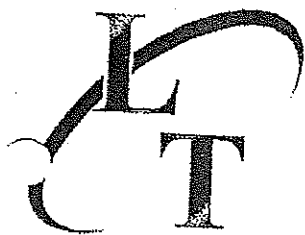
Certified by:

Cole Dylewski

PGVP Vendor ID: E12013

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"INDUSTRY LEADER IN SPECIALTY GASES"

Certificate of Analysis
- EPA PROTOCOL GAS -

<u>Customer</u>	<u>Coastal Air Consulting (Deland, FL)</u>
<u>Date</u>	<u>September 27, 2013</u>
<u>Delivery Receipt</u>	<u>DR-48499</u>
<u>Gas Standard</u>	<u>8.00 - 10.0% CO₂, 11.0 - 13.0% Oxygen/Nitrogen - EPA PROTOCOL</u>
<u>Final Analysis Date</u>	<u>September 23, 2013</u>
<u>Expiration Date</u>	<u>September 23, 2021</u> ✓
<u>Component</u>	<u>Carbon Dioxide, Oxygen</u>
<u>Balance Gas</u>	<u>Nitrogen</u>

Analytical Data:

EPA Protocol, Section No. 2.2, Procedure G-1

DO NOT USE BELOW 100 psig

Reported Concentrations
Carbon Dioxide: 8.70% +/- 0.08% ✓
Oxygen: 11.9% +/- 0.10% ✓
Nitrogen: Balance

Reference Standards:

SRM/GMIS:	GMIS/GMIS	GMIS
Cylinder Number:	EB-0026839/CC-185129	CC-231332
Concentration:	6.847% CO ₂ /13.92% CO ₂	9.97% Oxygen/Nitrogen
Expiration Date:	10/03/20 - 06/24/14	04/06/14

Certification Instrumentation

Component:	Carbon Dioxide	Oxygen
Make/Model:	Nicolet 6700	Servomex 244a
Serial Number:	APW1200289	1847
Principal of Measurement:	FTIR	Paramagnetic
Last Calibration:	September 05, 2013	September 18, 2013

Cylinder Data

Cylinder Serial Number:	CC-233289	✓	Cylinder Outlet:	CGA 590
Cylinder Volume:	136 Cubic Feet		Cylinder Pressure:	1925 psig, 70°F

Analytical Uncertainty and NIST Traceability are in compliance with EPA-600/R-12/531.

Certified by:

David Scott

PGVP Vendor ID: E12013 ✓



LIQUID TECHNOLOGY CORPORATION

"INDUSTRY LEADER IN SPECIALTY GASES"

Certificate of Analysis - EPA PROTOCOL GAS -

Customer Coastal Air Consulting (Deland, FL)
Date November 01, 2011
Delivery Receipt DR-39306
Gas Standard 17.0-18.0% CO₂, 22.0-23.0% Oxygen/Nitrogen - EPA PROTOCOL
Final Analysis Date November 01, 2011
Expiration Date November 01, 2014 ✓

Component Carbon Dioxide, Oxygen
Balance Gas Nitrogen

Analytical Data: DO NOT USE BELOW 150 psig
EPA Protocol, Section No. 2.2, Procedure G-1

Reported Concentrations
Carbon Dioxide: 17.1% +/- 0.17% ✓
Oxygen: 22.7% +/- 0.22% ✓
Nitrogen: Balance

Reference Standards:

SRM/GMIS:	GMIS/GMIS	GMIS
Cylinder Number:	CC-252091/CC-184404	CC-159090
Concentration:	15.816% CO ₂ /19.87% CO ₂	20.72% Oxygen/Nitrogen
Expiration Date:	02/04/13 - 02/04/13	05/06/12

Certification Instrumentation

Component:	Carbon Dioxide	Oxygen
Make/Model:	Horiba - VIA 510	Servomex 244a
Serial Number:	SN075GSF	1847
Principal of Measurement:	NDIR	Paramagnetic
Last Calibration:	October 10, 2011	October 09, 2011

Cylinder Data

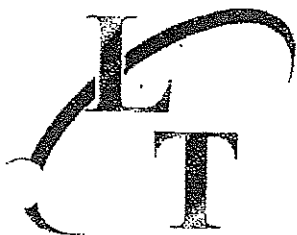
Cylinder Serial Number: CC-159134 ✓
Cylinder Volume: 140 Cubic Feet
Cylinder Outlet: CGA 590
Cylinder Pressure: 2000 psig, 70°F
Analytical Uncertainty and NIST Traceability are in compliance with EPA-600/R-97/121.

Certified by:

Adam Strickland

PGVP Vendor ID: E12011 ✓

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LIQUID TECHNOLOGY CORPORATION

"INDUSTRY LEADER IN SPECIALTY GASES"

Certificate of Analysis
- EPA PROTOCOL GAS -
** Recertification **

<u>Customer</u>	<u>Coastal Air Consulting (Deland, FL)</u>
<u>Date</u>	<u>November 14, 2013</u>
<u>Delivery Receipt</u>	<u>DR-49187</u>
<u>Gas Standard</u>	<u>45.0 ppm Nitrogen Dioxide/Air - EPA PROTOCOL</u>
<u>Final Analysis Date</u>	<u>November 12, 2013</u>
<u>Expiration Date</u>	<u>November 12, 2016</u>

<u>Cylinder Data</u>	
Cylinder Serial Number:	<u>EB-0026837</u>
Cylinder Volume:	<u>70 Cubic Feet</u>
Expiration Date:	<u>November 12, 2016</u>

DO NOT USE BELOW 150 psig

Cylinder Outlet:	<u>CGA 660</u>
Cylinder Pressure:	<u>1000 psig, 70°F</u>

Analytical Data
EPA Protocol, Section No. 2.2, Procedure G-1

- Replicate Concentrations -
Nitrogen Dioxide: 45.2 ppm +/- 0.44 ppm *NO2 for converter check*
Air: Balance

<u>Reference Standard(s):</u>	
SRM/GMIS:	GMIS
Cylinder Number:	CC-185381
Concentration:	50.584 ppm NO2/Nitrogen
Expiration Date:	04/21/15

<u>Certification Instrumentation</u>	
Component:	Nitrogen Dioxide
Make/Model:	Horiba - CLA 510
Serial Number:	43331870031
Principal of Measurement:	Chemiluminescence
Last Calibration:	October 10, 2013

Analytical uncertainty and NIST Traceability are in compliance with EPA-600/R-12/531.

Certified by:

Cole Dylewski

Cole Dylewski

PGVP Vendor ID: E12013

Original Data:	44.3 ppm NO2/Air (November 01, 2011)
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LIQUID TECHNOLOGY CORPORATION

"INDUSTRY LEADER IN SPECIALTY GASES"

Certificate of Analysis - EPA PROTOCOL GAS -

Customer Coastal Air Consulting (Deland, FL)
Date September 27, 2013
Delivery Receipt DR-48499
Gas Standard 47.0 ppm NO, 47.0 ppm SO₂, 47.0 ppm CO/Nitrogen - EPA PROTOCOL
Final Analysis Date September 27, 2013
Expiration Date September 27, 2016

Components Nitric Oxide, Sulfur Dioxide, Carbon Monoxide
Balance Gas Nitrogen

Analytical Data:
EPA Protocol, Section No. 2.2, Procedure G-1

DO NOT USE BELOW 100 psig

Reported Concentrations

Nitric Oxide: 46.4 ppm +/- 0.46 ppm ✓ *converter check*
Sulfur Dioxide: 48.3 ppm +/- 0.48 ppm
Carbon Monoxide: 47.5 ppm +/- 0.40 ppm

Nitrogen: Balance

Total Oxides of Nitrogen: 46.5 ppm

** Total NOX for Reference Use Only **

Reference Standards:

SRM/GMIS:	GMIS	GMIS	GMIS
Cylinder Number:	EB-0016740	EB-0014698	EB-0017129
Concentration:	49.69 ppm NO/Nitrogen	50.67 ppm SO ₂	50.81 ppm CO/Nitrogen
Expiration Date:	07/08/14	11/01/16	10/20/14

Certification Instrumentation

Component:	Nitric Oxide	Sulfur Dioxide	Carbon Monoxide
Make/Model:	Nicolet 6700	Nicolet 6700	Nicolet 6700
Serial Number:	APW1100563	APW1100563	APW1100563
Principal of Measurement:	FTIR	FTIR	FTIR
Last Calibration:	September 26, 2013	September 26, 2013	September 19, 2013

Cylinder Data

Cylinder Serial Number: CC-159097 Cylinder Outlet: CGA 660
Cylinder Volume: 133 Cubic Feet Cylinder Pressure: 1900 psig, 70°F
Analytical Uncertainty and NIST Traceability are in compliance with EPA-600/R-12/531.

Certified by:

David Scott

PGVP Vendor ID: E12013

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COASTAL AIR CONSULTING, INC.

Unit: C7H1

Date: 12-20-13

SYSTEM RESPONSE TIME

C71-1

Train 1	
Analyzer Type: <u>Thermo</u>	Gas Concentration.: <u>~95 PPM</u>
Serial Number: <u>42CHL-72772-372</u>	Span Gas Range: <u>0-250</u>
Test Method: <u>7E</u>	Train Length: <u>~100'</u>
<u>Upscale Response</u>	<u>Downscale Response</u>
1. <u>86</u> seconds	1. <u>87</u> seconds
2. <u>87</u> seconds	2. <u>85</u> seconds
3. <u>85</u> seconds	3. <u>86</u> seconds
Avg. <u>85</u> seconds	Avg. <u>86</u> seconds
SYSTEM RESPONSE TIME: <u>86</u> SECONDS (slower average time)	

C71-2

Train 2	
Analyzer Type: <u>Thermo</u>	Gas Concentration.: <u>~95 PPM</u>
Serial Number: <u>42CHL-72772-372</u>	Span Gas Range: <u>0-250</u>
Test Method: <u>7E</u>	Train Length: <u>~100'</u>
<u>Upscale Response</u>	<u>Downscale Response</u>
1. <u>86</u> seconds	1. <u>88</u> seconds
2. <u>87</u> seconds	2. <u>87</u> seconds
3. <u>87</u> seconds	3. <u>87</u> seconds
Avg. <u>87</u> seconds	Avg. <u>87</u> seconds
SYSTEM RESPONSE TIME: <u>87</u> SECONDS (slower average time)	

Method 20 procedure:

With a stable zero reading on the analyzer, switch to stack and time until stable. Record this as the upscale response and repeat twice again. With a stable high cal gas reading, switch to stack and time until stable. Record this as the downscale response and repeat twice again.

Methods 6c and 7e procedure:

The response time is determined by switching between the zero and the upscale cal gas and noting the longer time it takes to achieve a stable reading.

Method 10 procedure:

The time to achieve 90% response after an increase (rise time) or decrease (fall time) in the inlet concentration.

Method 25a procedure:

The time from a step change in pollutant at the inlet to the measurement system until 95% of the final value is displayed on the recorder.

COASTAL AIR CONSULTING, INC.

Plant: FPL / PPN
Unit: GT'S 1-1, 1-2 & 2-1

Test Date: 12/20 & 23/2013
Check Date: 12/19/2013

NO₂ to NO Converter Efficiency Check

Analyzer : Thermo 42C HL		NO2 Audit Gas Value (Cv):		45.2
Serial Number: 72772-372		NO Calibration Gas Value:		46.4
Method: 7E				
<u>Date & Time</u>	<u>NOx ppm</u>			
12/19/2013 10:33	0.00	zero gas	NO2 to NO Conversion Efficiency Test using Equation 7E-7	
12/19/2013 10:38	46.10	span gas		
		$\text{Eff NO}_2 = \frac{C_{\text{Dir}}}{C_v} \times 100$		
12/19/2013 10:42	44.50			
12/19/2013 10:43	44.30			
		Eff NO2 = 98.2		
AVERAGE	44.40	(C Dir)		

Method 7E NO₂ to NO Conversion Efficiency Test

8.2.4.1. Introduce NO₂ converter efficiency gas 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 to NO conversion efficiency, calculated according to Equation 7E-7, must be greater than or equal to 90 percent.

Eff NO₂ = NO₂ to NO converter efficiency, percent.

C_{Dir} = Measured concentration of a calibration gas when introduced in direct calibration mode, ppmv.

C_v = Manufacturer certified concentration of a calibration gas, ppmv.

APPENDIX 4 SAMPLE CALCULATIONS

SAMPLE EQUATIONS FOR CEMS RELATIVE ACCURACY TEST AUDITS

CALCULATIONS FOR FLUE GAS VOLUME AND MOISTURE

Time	Dry Gas Meter Ft ³	Pitot ΔP In. H ₂ O	Orifice ΔH In. H ₂ O	Dry Gas Temp. °F In Out	Flue Gas Static Pressure In. H ₂ O	Stack Temp. °F
T	V _m	Δp	ΔH	TMI TMO	P _g	t _s

1. P_{bar} = Barometric Pressure (in. Hg)
2. TT = Net Sampling Time (minutes)
3. V_m = V_m Final - V_m Initial = Sample Gas Volume (Ft³)
4. T_m = Average Dry Gas Temperature at Meter (°F)

$$T_m = \frac{Avg. TMI + Avg. TMO}{2}$$

5. Δp = Velocity head of stack gas (in. H₂O)
6. ΔH = Average Orifice Pressure Drop (in. H₂O)
7. Volume of dry gas sampled at standard conditions^a (DSCF)

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

8. V_{lc} = Total Water Collected = gm H₂O Silica gel + ml Imp. H₂O = ml
9. Volume of water vapor at standard conditions^b (SCF)

$$V_{w(std)} = 0.0471(V_{lc}) = SCF$$

10. Percent moisture in flue gas

$$\% M = \frac{100(V_{w(std)})}{V_{m(std)} + V_{w(std)}}$$

11. Mole fraction of water vapor in flue gas

$$B_{ws} = \frac{\% M}{100}$$

12. Molecular Weight of dry flue gas

$$M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO)$$

13. Molecular weight of wet flue gas

$$M_s = M_d(1 - B_{ws}) + 18(B_{ws})$$

14. A = Cross-sectional area of stack (Ft²)

$$\frac{\pi r^2}{144}$$

15. P_s = Flue gas pressure (in, Hg)

$$P_s = P_{bar} + P_g$$

NOTE: $P_g(Hg) = \frac{P_g(in.H_2O)}{13.6}$

16. T_s = Absolute stack temperature (°R)

$$T_s = 460 + t_s$$

17. Flue velocity at stack conditions (FT/SEC)

$$V_s = (K_p)(C_p) \left[(\sqrt{\Delta p})_{avg} \right] \sqrt{\frac{T_s(avg)}{P_s * M_s}}$$

C_p = pitot tube coefficient

K_p = pitot tube constant = 85.49ft/sec

18. Flue gas volumetric flow rate at standard conditions^b (SCFM)

$$Q_s = (V_s)(A) \left(\frac{528}{T_s(\text{avg.})} \right) \left(\frac{P_s}{29.92} \right) (60)$$

19. Flue gas volumetric flow rate at standard conditions^c (DSCFM)

$$Q_{sd} = (1 - B_{ws})(V_s)(A) \left(\frac{528}{T_s(\text{avg.})} \right) \left(\frac{P_s}{29.92} \right) (60)$$

20. Flue gas volumetric flow rate at stack conditions (ACFM)

$$Q_a = (V_s)(A)(60)$$

NOTES:

^aDry standard cubic feet at 68°F, 29.92 in. Hg

^bStandard conditions at 68°F, 29.92 in. Hg

^cDry standard cubic feet per minute at 68°F, 29.92 in. Hg

F-FACTOR DETERMINATION

THE WET F-FACTOR (F_w):

Includes all components of combustion

$$F_w = \frac{10^6 \text{ Btu / mmBtu} [5.57(\%H) + 1.53(\%C) + 0.57(\%S) + 0.14(\%N) - 0.46(\%O_2) + 0.21(\%H_2O)]}{GCV_{wet}}$$

THE DRY F-FACTOR (F_d):

Includes all components of combustion less water

$$F_d = \frac{10^6 \text{ Btu / mmBtu} [3.64(\%H) + 1.53(\%C) + 0.57(\%S) + 0.14(\%N) - 0.46(\%O_2)]}{GCV_{dry}}$$

THE CARBON F-FACTOR (F_c):

Includes only Carbon Dioxide

$$F_c = \frac{10^6 \text{ Btu / mmBtu} [0.321(\%C)]}{GCV_{dry}}$$

References for the above equations (i.e. %H, %C, %N, %S, %O₂) can be found in 40 CFR Part 60, Appendix A, Method 19.

LBS/MMBTU CALCULATIONS USING THE F-FACTOR

1. EMISSION RATE $E(\text{lb}/\text{mmbtu})$, O_2 based

$$E(\text{lb}/\text{mmbtu}) = C \times F_d \left(\frac{20.9}{20.9 - \%O_2} \right)$$

Where:

$C(\text{lb}/\text{dscf})$ = Pollutant concentration (ppm) x conversion factor.

Conversion Factors:

$$\text{NOx} = 1.194 \times 10^{-7}$$

$$\text{SO}_2 = 1.660 \times 10^{-7}$$

$$\text{CO} = 7.274 \times 10^{-8}$$

$$\text{C}_3\text{H}_8 = 1.145 \times 10^{-7}$$

$F_d(\text{dscf}/\text{mmbtu})$ = "F" Factor for fuel type, (Ref. EPA Method 19)

$$F_d(\text{Coal}) = 9780$$

$$F_d(\text{Gas}) = 8710$$

$$F_d(\text{Oil}) = 9190$$

2. EMISSION RATE $E(\text{lb}/\text{mmbtu})$, CO_2 based

$$E(\text{lb}/\text{mmbtu}) = C \times F_c \left(\frac{100}{\%CO_2} \right)$$

Where:

$C(\text{lb}/\text{dscf})$ = Pollutant concentration (ppm) x conversion factor.

Conversion Factors:

$$\text{NOx} = 1.194 \times 10^{-7}$$

$$\text{SO}_2 = 1.660 \times 10^{-7}$$

$$\text{CO} = 7.274 \times 10^{-8}$$

$$\text{C}_3\text{H}_8 = 1.145 \times 10^{-7}$$

$F_c(\text{dscf}/\text{mmbtu})$ = "F" Factor for fuel type, (Ref. EPA Method 19)

$$F_c(\text{Coal}) = 1800$$

$$F_c(\text{Gas}) = 1040$$

$$F_c(\text{Oil}) = 1420$$

CALCULATION FOR GAS CONCENTRATION

GAS CONCENTRATION (C_{gas})

$$C_{gas} = (\bar{C} - C_0) \left(\frac{C_{ma}}{C_m - C_0} \right)$$

- C_{gas} = Effluent gas concentration, ppm
 $\bar{C}$ = Average gas concentration indicated by gas analyzer, dry basis, ppm
 C_0 = Average of initial and final system calibration bias check responses for the zero gas, ppm
 C_m = Average of initial and final system calibration bias check responses for the upscale calibration gas, ppm
 C_{ma} = Actual concentration of the upscale calibration gas, ppm

GAS CONCENTRATION @ 15% O_2 ($C_{gas @ 15\% O_2}$)

$$C_{gas @ 15\% O_2} = C_{gas} * ((20.9-15)/(20.9-\%O_2))$$

GAS CONCENTRATION @ 7% O_2 ($C_{gas @ 7\% O_2}$)

$$C_{gas @ 7\% O_2} = C_{gas} * ((20.9-7)/(20.9-\%O_2))$$

CALCULATION OF RELATIVE ACCURACY

ARITHMETIC MEAN (OF THE DIFFERENCE, {d}, OF A DATA SET)

$$\bar{d} = \frac{1}{n} \sum_{i=1}^n d_i$$

Where n = Number of data points.

ALGEBRAIC SUM (OF THE INDIVIDUAL DIFFERENCES, {d_i})

$$\sum_{i=1}^n d_i$$

STANDARD DEVIATION, S_d

$$S_d = \sqrt{\frac{\sum_{i=1}^n d_i^2 - \frac{\left(\sum_{i=1}^n d_i\right)^2}{n}}{n-1}}$$

CONFIDENCE COEFFICIENT, CC

$$CC = t_{0.975} \frac{S_d}{\sqrt{n}}$$

For 9 tests $t_{0.975} = 2.306$

For 10 tests $t_{0.975} = 2.262$

For 11 tests $t_{0.975} = 2.228$

For 12 tests $t_{0.975} = 2.201$

RELATIVE ACCURACY, RA

$$RA = \frac{|\bar{d}| + |CC|}{RM} \times 100$$

APPENDIX 5 FIGURES

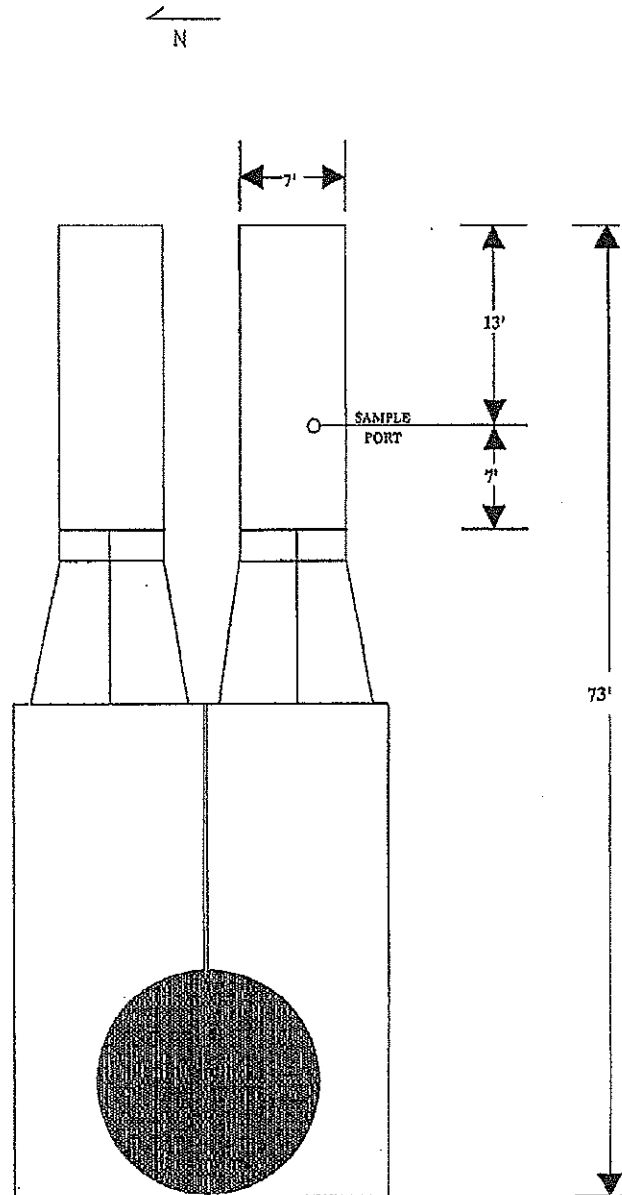
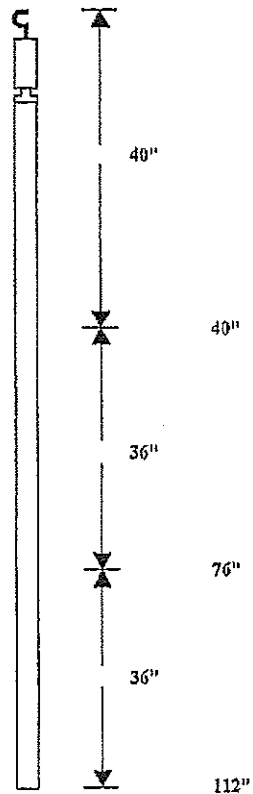
FLORIDA POWER & LIGHT CO.
PUTNAM PLANT

STACK SPECIFICATIONS

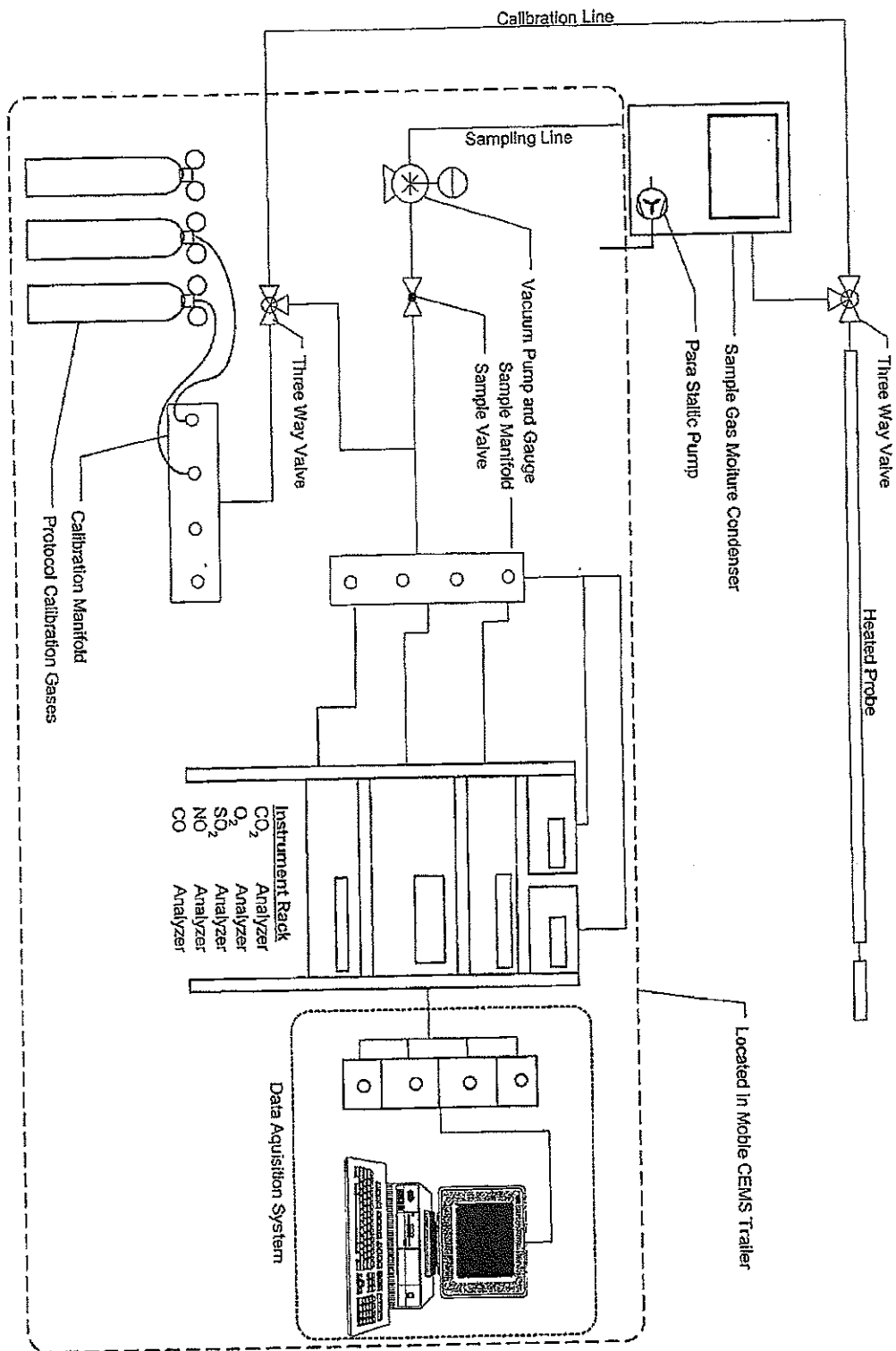
STACK DEPTH: 12 ft.
SAMPLING PORT DEPTH: 4 in.
No. OF PORTS: 1
No. OF POINTS PER TRAVERSE: 3
TOTAL No. OF POINTS: 3
SAMPLING TIME PER POINT: 7 min.
TOTAL SAMPLING TIME: 21 min.
NOTE: DRAWING IS NOT TO SCALE

TYPICAL STACK DIAGRAM

PROBE DIAGRAM

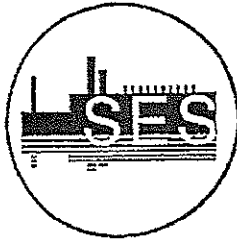


FILE: STACKPPN



DRAWN BY R F Cobb		TITLE EPA Instrumental Sample Train	Coastal Air Consulting, Inc 1531 Wyngate Drive, Deland FL (386) 943-9241 Fax (386) 943 9212
DATE 4/15/02	SCALE NONE	DESCRIPTION Sample Train Schematic	

APPENDIX 6
QSTI



Source Evaluation Society

P. O. Box 12124
Research Triangle Park
North Carolina 27709

May 1, 2012

Stephen C. Webb
Coastal Air Consulting
1531 Wyngate Dr.
DeLand, FL 32724

Subject: Qualified Source Tester Application No. 2012-670
Qualification Notice - Manual Gas Volume Measurements and
Isokinetic Particulate Sampling Methods
- Manual Gaseous Pollutants Source Sampling Methods
- Gaseous Pollutants Instrumental Sampling Methods
- Hazardous Metals Measurement Sampling Methods

Dear Mr. Webb:

It is my pleasure to inform you that you have satisfied the requirements of the Source Evaluation Society Qualified Source Test Individual program for group exam(s) listed above. As a member of the successful candidates in this SES program, you should be proud of this distinction within the source emissions testing community. I am confident that you will continue to uphold the standards of technical excellence and ethical conduct embodied in the SES mission statement.

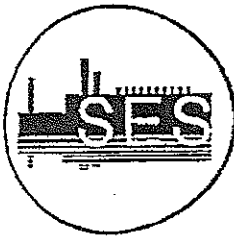
The enclosed Qualification Notice(s) and SES identification card are your permanent record of this achievement. This status is valid for the period shown on the Qualification Notices.

Congratulations on your achievement and I wish you continued success in your future endeavors. Please see attached a permission letter if you wish to have your information posted on the SES web site.

Sincerely yours,

Peter R. Westlin
SES QSTI/QSTO Review Committee Chairman

cc: Roy Owens, SES QSTI/QSTO Review Board Member
Glenn England, SES QSTI/QSTO Review Board Member
C. David Bagwell, SES QSTI/QSTO Review Board Member
Karen D. Kajiya-Mills, SES QSTI/QSTO Review Board Member
Peter S. Pakalnis, SES QSTI/QSTO Review Board Member
Gail Westlin, SES QSTI/QSTO Review Committee Administrator



Source Evaluation Society

P. O. Box 12124
Research Triangle Park
North Carolina 27709

An idea was introduced at the 2006 SSSAAP conference to list those individuals who have received their QSTI qualification approvals on the SES web site. The SES Board of Directors determined that individuals would have to approve in writing before making public such information. The QSTI Committee would like your permission to post the information shown below on the SES web site for public view. This information will be provided on the website as a link to an Excel spreadsheet. Your information will be listed as below or with any changes you indicate:

Name	Stephen C. Webb		
Company	Coastal Air Consulting		
City/State/Zip:	DeLand, FL 32724		
Contact Info.:	Coastalair123@aol.com		
Any Addit. Info:	qstiprogram@gmail.com		
Passed:	Group 1	Exam Date: 5/5/11	Valid From - To: 2012/05/01 to 2017/04/30
	Group 2	Exam Date: 5/5/11	Valid From - To: 2012/05/01 to 2017/04/30
	Group 3	Exam Date: 5/6/11	Valid From - To: 2012/05/01 to 2017/04/30
	Group 4	Exam Date: 5/6/11	Valid From - To: 2012/05/01 to 2017/04/30
QSTI Certificate #:	2012-670		

You may view the current spreadsheet format at the SES website at www.sesnews.org. If you agree to your name and information being posted, please sign below and fax this page to Gail Westlin at 919-572-2203 or email to gail_westlin@yahoo.com. Also, if you wish to have your contact information listed other than your email address, please note any changes above (e.g., an address, telephone or a cell phone number, etc.). Any further changes or additions will need to be made in writing and emailed to Gail Westlin at gail_westlin@yahoo.com. If you have any questions concerning this matter, please contact the SES QSTI/QSTO Review Committee Chairman, Peter Westlin, at westlin.peter@epa.gov or myself.

Thank you,

Gail Westlin
SES QSTI/QSTO Review Committee Administrator

I give the SES QSTI/QSTO Review Committee approval to have my name and information as outlined above to be posted on the SES web site. Any changes have been noted above. This approval extends to any future exams for which I receive a QSTI or QSTO Qualification Approval(s).

Signature: _____ Date: _____

NEW. DO YOU APPROVE SES RELEASING INFORMATION, UPON REQUEST, ABOUT WHETHER YOU HAVE PASSED A METHOD GROUP EXAM? (The information released will be if you passed an exam and the date of the exam. This information is in support of ASTM D-7036-D.) YES ☐ NO ☐ IF YOU AGREE, PLEASE SIGN BELOW.

Signature: _____ Date: _____

SOURCE EVALUATION SOCIETY



Qualified Source Testing Individual

LET IT BE KNOWN THAT

STEPHEN C. WEBB

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED
EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES
ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

**MANUAL GAS VOLUME MEASUREMENTS AND ISOKINETIC PARTICULATE
SAMPLING METHODS**

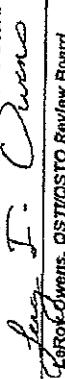
ISSUED THIS 1st DAY OF MAY 2012 AND EFFECTIVE UNTIL APRIL 30TH, 2017



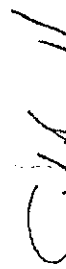
Peter R. Westlin, QST/QSTO Review Board



Peter S. Pakalnis, QST/QSTO Review Board



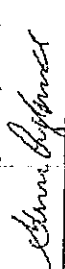
Gary J. Owens, QST/QSTO Review Board



C. David Bagwell, QST/QSTO Review Board



Karen D. Kellogg-Mills, QST/QSTO Review Board

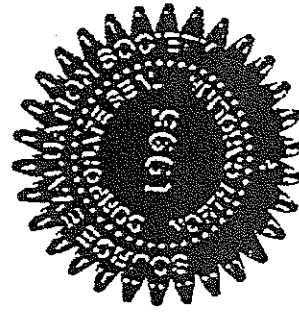


Glenn C. England, QST/QSTO Review Board

APPLICATION

NO.

2012-670



SOURCE EVALUATION SOCIETY



Qualified Source Testing Individual

LET IT BE KNOWN THAT

STEPHEN C. WEBB

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED
EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES
ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

MANUAL GASEOUS POLLUTANTS SOURCE SAMPLING METHODS

ISSUED THIS 1st DAY OF MAY 2012 AND EFFECTIVE UNTIL APRIL 30TH, 2017

Peter R. Westlin, QST/QSTO Review Board

Peter S. Pakalnis, QST/QSTO Review Board

Greg I. Owens, QST/QSTO Review Board

C. David Bagwell, QST/QSTO Review Board

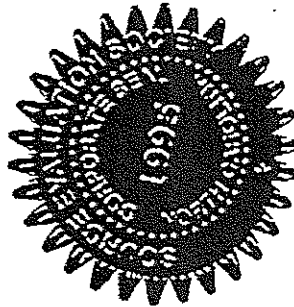
Karen D. Kelling-Mills, QST/QSTO Review Board

Glenn C. England, QST/QSTO Review Board

APPLICATION

NO.

2012-670



SOURCE EVALUATION SOCIETY



Qualified Source Testing Individual

LET IT BE KNOWN THAT

STEPHEN C. WEBB

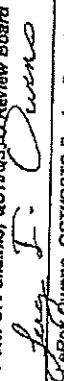
HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED
EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES
ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

GASEOUS POLLUTANTS INSTRUMENTAL SAMPLING METHODS

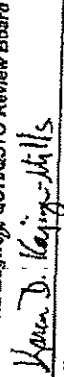
ISSUED THIS 1st DAY OF MAY 2012 AND EFFECTIVE UNTIL APRIL 30th, 2017

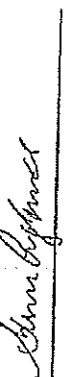

Peter R. Westlin, QSTIQSTO Review Board


Peter S. Pakalnis, QSTIQSTO Review Board

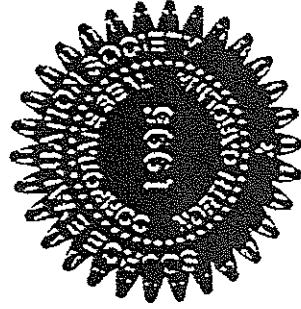

Leroy Owens, QSTIQSTO Review Board


C. David Bagwey, QSTIQSTO Review Board


Karen D. Kajiya-Mills, QSTIQSTO Review Board


Glenn C. England, QSTIQSTO Review Board

APPLICATION
NO.
2012-670



SOURCE EVALUATION SOCIETY



Qualified Source Testing Individual

LET IT BE KNOWN THAT

STEPHEN C. WEBB

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED
EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES
ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

HAZARDOUS METALS MEASUREMENT SAMPLING METHODS

ISSUED THIS 1st DAY OF MAY 2012 AND EFFECTIVE UNTIL APRIL 30TH, 2017

Peter R. Westlin, QST/QSTO Review Board

Peter S. Pikelinis, QST/QSTO Review Board

Roger Owens, QST/QSTO Review Board

C. David Bagwey, QST/QSTO Review Board

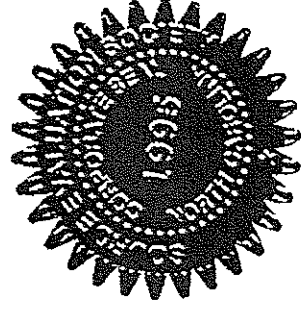
Karen D. Keigwin-Hills, QST/QSTO Review Board

Glenn C. England, QST/QSTO Review Board

APPLICATION

NO.

2012-670





Inter-Office Correspondence

To: **Tammy Pratt**

From: **John Schwartz**

Subject: **NOx / CO2 Linearity Check
3rd Quarter 2013
Putnam Power Plant**

Date: **1/13/14**

Department: **GPA - JB**

The Production Assurance Emission Test Group conducted the NOx & CO2 Linearity check at Putnam Power Plant unit 1-1/2-2 on November 21st, 2013. EPA Methods according to 40 CFR 75 Appendix A were used for accuracy determination.

A summary of the pertinent data and condition assessment of the CEM shelter is attached. Please file this report with your required CEMS documents. This report has a five-year retention requirement.

If you need any additional information please contact me at 579-7177.

A handwritten signature in black ink, appearing to read "John Schwartz", is written above the printed name.

**John Schwartz
Florida Power & Light
Emission Technician**

Plant PPA

Unit 1-1/2-2

Date 11/21/13

CT CEMS Condition Assessment Worksheet

	YES	NO
1. Was the control room notified prior to performing audit?	☒	☐
Comments _____		
2. Sample probe filter vacuum < - 7 in. HG?	☒	☐
Comments _____		
3. NOx and O2 analyzer sample pressure set at 3 psi?	☒	☐
Comments _____		
4. O2 analyzer calibration pressure at 15 psi?	☒	☐
Comments _____		
5. NOx sample flow rate at 1.8 LPM?	☒	☐
Comments _____		
6. O2 sample flow rate at 1.0 LPM?	☒	☐
Comments _____		
7. Calibration flow at 6 LPM?	☒	☐
Comments _____		
8. Are Span gas cylinders data entered correctly into the Netdahs?	☒	☐
Comments _____		
9. Are Span gas cylinders properly secured and pressures > 250 psi?	☒	☐
Comments _____		
10. Is plant calibration Zero/Span gas expired?	☐	☒
Comments _____		
11. Calibration span gas values (O2 & NOx) within analyzer range (85 to 90%)?	☒	☐
Comments _____		
12. Is the Zero/Span gas certification of analysis available?	☒	☐
Comments _____		
13. Does the Zero calibration gas meet Part 72 requirements? (CO<0.5ppm, CO2<1ppm, NOx<0.1ppm, SO2<0.1ppm, THC<0.1ppm)	☒	☐
Comments _____		

14. Are any alarm or out-of-control conditions shown on the DAHS summary screen?

☐☒

Comments _____

15. Overall, is the outside of shed in good condition, inside free of dirt, debris and trash?

☒☐

Comments _____

16. Is shed free of ozone odor?

☒☐

Comments _____

17. On completion of LA, is regulator set between 18-20 psi (PFM) or 20-30 psi (PSN)?

☒☐

Comments _____

**FLORIDA POWER & LIGHT
CONTINUOUS EMISSION MONITORS
LINEARITY CHECK WORKSHEET**

Plant PPN 1-1
Unit 1-1 (Low Range)

Date 11/21/2013 Quarter 4th 2013
Technician M. Crosby

NOx ANALYZER
Manufacturer <u>TECO</u>
Serial # <u>42C-77257-385</u>
Span Setting <u>0 - 100 ppm</u>
Component ID <u>A02</u>
Monitoring Sys. ID <u>102</u>
Unit/Stack ID <u>PPN 1-1</u>

	Time (EST)	Reference Value	Monitor Value	PPM Difference	Linearity Error	PROTOCOL 1 TANK SERIAL #	Pass/ Fail
Low	1545	50.00	51.90	1.90	5%		
	1615	50.00	50.60	0.60		ALM009787	
	1641	50.00	50.90	0.90	2.3		PASS
Mid	1555	111.00	109.70	-1.30			
	1625	111.00	110.20	-0.80		ALM055501	
	1651	111.00	109.00	-2.00	1.2		PASS
High	1605	165.90	161.20	-4.70			
	1633	165.90	162.20	-3.70		CC162690	
	1701	165.90	162.10	-3.80	2.5		PASS

CO2 ANALYZER
Manufacturer <u>Cal Inst.</u>
Serial # <u>U08067</u>
Span Setting <u>0 - 10 %</u>
Component ID <u>A03</u>
Monitoring Sys. ID <u>102</u>
Unit/Stack ID <u>PPN 1-1</u>

	Time (EST)	Reference Value	Monitor Value	PPM Difference	Linearity Error	PROTOCOL 1 TANK SERIAL #	Pass/ Fail
Low	1545	2.52	2.63	0.11	5%		ALT
	1615	2.52	2.65	0.13		ALM009787	
	1641	2.52	2.67	0.15	5.2		0.13
Mid	1555	5.44	5.58	0.14			
	1625	5.44	5.61	0.17		ALM055501	
	1651	5.44	5.60	0.16	2.9		PASS
High	1605	8.51	8.66	0.15			
	1633	8.51	8.68	0.17		CC162690	
	1701	8.51	8.65	0.14	1.8		PASS

**FLORIDA POWER & LIGHT
CONTINUOUS EMISSION MONITORS
LINEARITY CHECK WORKSHEET**

Plant PPN
Unit 1-1 (High Range)

Date 11/21/2013 Quarter 4th 2013
Technician M. Crosby

NOx
ANALYZER
Manufacturer <u>TECO</u>
Serial # <u>42C-77282-385</u>
Span Setting <u>0 - 500 ppm</u>
Component ID <u>A02</u>
Monitoring Sys. ID <u>102</u>
Unit/Stack ID <u>PFL4-1</u>

	Time (EST)	Reference Value	Monitor Value	PPM Difference	Linearity Error	PROTOCOL 1 TANK SERIAL #	Pass/ Fail
Low	1716	125.90	126.90	1.00	5%		
	1744	125.90	128.80	2.90		ALM047577	
	1810	125.90	128.70	2.80	1.8		PASS
Mid	1724	277.00	278.40	1.40			
	1752	277.00	279.10	2.10		CC217297	
	1818	277.00	279.00	2.00	0.7		PASS
High	1734	427.00	428.10	1.10			
	1800	427.00	428.00	1.00		ALM021880	
	1826	427.00	428.20	1.20	0.3		PASS

**FLORIDA POWER & LIGHT
CONTINUOUS EMISSION MONITORS
LINEARITY CHECK WORKSHEET**

Plant PPN
Unit 1-2 (Low Range)

Date 11/21/2013 Quarter 4th 2013
Technician M. Crosby

NOx ANALYZER
Manufacturer <u>TECO</u>
Serial # <u>42C-77260-385</u>
Span Setting <u>0 - 100 ppm</u>
Component ID <u>A12</u>
Monitoring Sys. ID <u>112</u>
Unit/Stack ID <u>PPN 1-2</u>

	Time (EST)	Reference Value	Monitor Value	PPM Difference	Linearity Error	PROTOCOL 1 TANK SERIAL #	Pass/ Fail
Low	1545	50.00	51.80	1.80	5%		
	1615	50.00	50.90	0.90		ALM009787	
	1641	50.00	51.10	1.10	2.5		PASS
Mid	1555	111.00	109.00	-2.00			
	1625	111.00	109.40	-1.60		ALM055501	
	1651	111.00	108.70	-2.30	1.8		PASS
High	1605	165.90	160.80	-5.10			
	1633	165.90	162.10	-3.80		CC162690	
	1701	165.90	162.10	-3.80	2.6		PASS

CO2 ANALYZER
Manufacturer <u>Cal Inst.</u>
Serial # <u>U09066</u>
Span Setting <u>0 - 10 %</u>
Component ID <u>A13</u>
Monitoring Sys. ID <u>112</u>
Unit/Stack ID <u>PPN 1-2</u>

	Time (EST)	Reference Value	Monitor Value	PPM Difference	Linearity Error	PROTOCOL 1 TANK SERIAL #	Pass/ Fail
Low	1545	2.52	2.60	0.08	5%		
	1615	2.52	2.63	0.11		ALM009787	
	1641	2.52	2.66	0.14	4.4		PASS
Mid	1555	5.44	5.51	0.07			
	1625	5.44	5.56	0.12		ALM055501	
	1651	5.44	5.55	0.11	1.8		PASS
High	1605	8.51	8.59	0.08			
	1633	8.51	8.58	0.07		CC162690	
	1701	8.51	8.56	0.05	0.8		PASS

**FLORIDA POWER & LIGHT
CONTINUOUS EMISSION MONITORS
LINEARITY CHECK WORKSHEET**

Plant PPN
Unit 1-2 (High Range)

Date 11/21/2013 Quarter 4th 2013
Technician M. Crosby

NOx
ANALYZER
Manufacturer TECO
Serial # 42C-77263-385
Span Setting 0 - 500 ppm
Component ID A12
Monitoring Sys. ID 112
Unit/Stack ID PFL4-2

	Time (EST)	Reference Value	Monitor Value	PPM Difference	Linearity Error	PROTOCOL 1 TANK SERIAL #	Pass/ Fail
Low	1716	125.90	127.00	1.10	5%		
	1744	125.90	129.20	3.30		ALM047577	
	1155	125.90	129.10	3.20	2.0		PASS
Mid	1724	277.00	278.00	1.00			
	1752	277.00	278.30	1.30		CC217297	
	1818	277.00	278.90	1.90	0.5		PASS
High	1734	427.00	427.70	0.70			
	1800	427.00	427.70	0.70		ALM021880	
	1826	427.00	428.30	1.30	0.2		PASS

**FLORIDA POWER & LIGHT
CONTINUOUS EMISSION MONITORS
LINEARITY CHECK WORKSHEET**

Plant PPN
Unit 2-1 (High Range)

Date 11/21/2013 Quarter 4th 2013
Technician M. Crosby

NOx ANALYZER
Manufacturer TECO
Serial # 42C-77264-385
Span Setting 0 - 500 ppm
Component ID A02
Monitoring Sys. ID 102
Unit/Stack ID PFL5-1

	Time (EST)	Reference Value	Monitor Value	PPM Difference	Linearity Error	PROTOCOL 1 TANK SERIAL #	Pass/ Fail
Low	1716	125.90	128.80	2.90	5%		
	1744	125.90	130.80	4.90		ALM047577	
	1810	125.90	131.00	5.10	3.4		PASS
Mid	1724	277.00	280.90	3.90			
	1752	277.00	281.90	4.90		CC217297	
	1818	277.00	282.50	5.50	1.7		PASS
High	1734	427.00	430.60	3.60			
	1800	427.00	431.60	4.60		ALM021880	
	1826	427.00	433.00	6.00	1.1		PASS

**FLORIDA POWER & LIGHT
CONTINUOUS EMISSION MONITORS
LINEARITY CHECK WORKSHEET**

Plant PPN
Unit 2-1(Low Range)

Date 11/21/2013 Quarter 4th 2013
Technician M. Crosby

NOx ANALYZER
Manufacturer <u>TECO</u>
Serial # <u>42C-77257-385</u>
Span Setting <u>0 - 100 ppm</u>
Component ID <u>A02</u>
Monitoring Sys. ID <u>102</u>
Unit/Stack ID <u>PPN 2-1</u>

	Time (EST)	Reference Value	Monitor Value	PPM Difference	Linearity Error	PROTOCOL 1 TANK SERIAL #	Pass/ Fail
Low	1545	50.00	51.80	1.80	5%		
	1615	50.00	51.30	1.30		ALM009787	
	1641	50.00	51.60	1.60	3.1		PASS
Mid	1555	111.00	108.50	-2.50			
	1625	111.00	110.00	-1.00		ALM055501	
	1651	111.00	109.40	-1.60	1.5		PASS
High	1605	165.90	159.20	-6.70			
	1633	165.90	162.10	-3.80		CC162690	
	1701	165.90	162.10	-3.80	2.9		PASS

CO2 ANALYZER
Manufacturer <u>Cal Inst.</u>
Serial # <u>U08067</u>
Span Setting <u>0 - 10 %</u>
Component ID <u>A03</u>
Monitoring Sys. ID <u>102</u>
Unit/Stack ID <u>PPN 2-1</u>

	Time (EST)	Reference Value	Monitor Value	PPM Difference	Linearity Error	PROTOCOL 1 TANK SERIAL #	Pass/ Fail
Low	1545	2.52	2.60	0.08	5%		
	1615	2.52	2.62	0.10		ALM009787	
	1641	2.52	2.65	0.13	4.1		PASS
Mid	1555	5.44	5.46	0.02			
	1625	5.44	5.49	0.05		ALM055501	
	1651	5.44	5.49	0.05	0.7		PASS
High	1605	8.51	8.45	-0.06			
	1633	8.51	8.45	-0.06		CC162690	
	1701	8.51	8.43	-0.08	0.8		PASS

**FLORIDA POWER & LIGHT
CONTINUOUS EMISSION MONITORS
LINEARITY CHECK WORKSHEET**

Plant PPN
Unit 2-2 (Low Range)

Date 11/21/2013 Quarter 4th 2013
Technician M. Crosby

NOx
ANALYZER
Manufacturer <u>TECO</u>
Serial # <u>42C-77257-385</u>
Span Setting <u>0 - 100 ppm</u>
Component ID <u>A12</u>
Monitoring Sys. ID <u>112</u>
Unit/Stack ID <u>PPN 2-2</u>

	Time (EST)	Reference Value	Monitor Value	PPM Difference	Linearity Error	PROTOCOL 1 TANK SERIAL #	Pass/Fail
Low	1545	50.00	51.80	1.80	5%	ALM009787	PASS
	1615	50.00	50.90	0.90			
	1641	50.00	51.00	1.00	2.5		
Mid	1555	111.00	109.20	-1.80	1.5	ALM055501	PASS
	1625	111.00	109.70	-1.30			
	1651	111.00	109.00	-2.00			
High	1605	165.90	161.40	-4.50	2.2	CC162590	PASS
	1633	165.90	162.80	-3.10			
	1701	165.90	162.70	-3.20			

CO2
ANALYZER
Manufacturer <u>Cal Inst.</u>
Serial # <u>U08067</u>
Span Setting <u>0 - 10 %</u>
Component ID <u>A13</u>
Monitoring Sys. ID <u>112</u>
Unit/Stack ID <u>PPN 2-2</u>

	Time (EST)	Reference Value	Monitor Value	PPM Difference	Linearity Error	PROTOCOL 1 TANK SERIAL #	Pass/Fail
Low	1545	2.52	2.64	0.12	5%	ALM009787	ALT
	1615	2.52	2.68	0.16			
	1641	2.52	2.69	0.17	6.0		
Mid	1555	5.44	5.55	0.11	2.3	ALM055501	PASS
	1625	5.44	5.58	0.14			
	1651	5.44	5.57	0.13			
High	1605	8.51	8.60	0.09	1.0	CC162590	PASS
	1633	8.51	8.59	0.08			
	1701	8.51	8.59	0.08			

**FLORIDA POWER & LIGHT
CONTINUOUS EMISSION MONITORS
LINEARITY CHECK WORKSHEET**

Plant PPN
Unit 2-2 (High Range)

Date 11/21/2013 Quarter 4th 2013
Technician M. Crosby

NOx
ANALYZER
Manufacturer <u>TECO</u>
Serial # <u>42C-77281-385</u>
Span Setting <u>0 - 500 ppm</u>
Component ID <u>A12</u>
Monitoring Sys. ID <u>112</u>
Unit/Stack ID <u>PFL5-2</u>

	Time (EST)	Reference Value	Monitor Value	PPM Difference	Linearity Error	PROTOCOL 1 TANK SERIAL #	Pass/ Fail
Low	1716	125.90	129.30	3.40	5%		
	1744	125.90	131.40	5.50		ALM047577	
	1810	125.90	131.40	5.50	3.8		PASS
Mid	1724	277.00	283.30	6.30			
	1752	277.00	283.60	6.60		CC217297	
	1818	277.00	284.00	7.00	2.4		PASS
High	1734	427.00	435.10	8.10			
	1800	427.00	435.60	8.60		ALM021880	
	1826	427.00	436.40	9.40	2.0		PASS

**AIR LIQUIDE**Air Liquide America
Specialty Gases LLC**Scott****RATA CLASS***Dual-Analyzed Calibration Standard*

6141 EASTON ROAD, BLDG 1, PLUMSTEADVILLE, PA 18949-0310

Phone: 800-331-4953

Fax: 215-766-7226

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

Assay Laboratory - PGVP Vendor ID: A12013

AIR LIQUIDE AMERICA SPECIALTY GASES LLC
6141 EASTON ROAD, BLDG 1
PLUMSTEADVILLE, PA 18949-0310P.O. No.: CEM-6035
Document #: 50359355-001

Customer

FLORIDA P&L-MARTIN PLT-PO#-CEM ONLY

21900 SW WARFIELD BLVD
INDIAN TOWN FL 34956
US**ANALYTICAL INFORMATION****Gas Type : CO₂, NO, BALN**This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards;
Procedure G-1; September, 1997.Cylinder Number: ALM009787
Cylinder Pressure***: 1909 PSIG

Certification Date: 23Apr2013

Exp. Date: 24Apr2021
Batch No: PLU0183415

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY**	TRACEABILITY
NITRIC OXIDE	50.0 PPM	+/- 1%	Direct NIST and VSL
CARBON DIOXIDE	2.52 %	+/- 1%	Direct NIST and VSL
NITROGEN - OXYGEN FREE	BALANCE		
TOTAL OXIDES OF NITROGEN	50.2 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 1683	24Jan2016	KAL004281	51.08 PPM	NITRIC OXIDE
VTRM 2622	01Jun2013	K021249	1.981 %	CARBON DIOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR//000928781	12Apr2013	FTIR
FTIR//000928781	05Apr2013	FTIR

ANALYZER READINGS

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

First Triad Analysis**NITRIC OXIDE**

Date: 16Apr2013 Response Unit: PPM

Z1 = -0.04598 R1 = 50.93932 T1 = 49.72871
R2 = 50.94829 Z2 = 0.00508 T2 = 49.97945
Z3 = 0.05727 T3 = 49.98433 R3 = 51.15660
Avg. Concentration: 49.98 PPM**Second Triad Analysis**

Date: 23Apr2013 Response Unit: PPM

Z1 = -0.02228 R1 = 50.81367 T1 = 49.94285
R2 = 51.11142 Z2 = 0.04669 T2 = 50.00216
Z3 = 0.10309 T3 = 50.17814 R3 = 51.34905
Avg. Concentration: 50.03 PPM**Calibration Curve**Concentration = A + Bx + Cx² + Dx³ + Ex⁴
r = 9.99995E-1
Constants: A = 0.00000E+0
B = 9.94179E-1 C = 1.04000E-4
D = 0.00000E+0 E = 0.00000E+0**CARBON DIOXIDE**

Date: 16Apr2013

Z1 = 0.00000 R1 = 0.00000 T1 = 0.00000
R2 = 0.00000 Z2 = 0.00000 T2 = 0.00000
Z3 = 0.00000 T3 = 0.00000 R3 = 0.00000
Avg. Concentration: 0.000

Date: 23Apr2013 Response Unit: %

Z1 = 0.00005 R1 = 1.98007 T1 = 2.51544
R2 = 1.98273 Z2 = 0.00139 T2 = 2.51768
Z3 = 0.00271 T3 = 2.52085 R3 = 1.98297
Avg. Concentration: 2.517 %Concentration = A + Bx + Cx² + Dx³ + Ex⁴
r = 9.99986E-1
Constants: A = 0.00000E+0
B = 9.14718E-1 C = 1.18580E-2
D = 1.00000E-6 E = 0.00000E+0

APPROVED BY:

Michael A. Kuhns

**AIR LIQUIDE**Air Liquide America
Specialty Gases LLC**Scott****RATA CLASS***Dual-Analyzed Calibration Standard*

6141 EASTON ROAD, BLDG 1, PLUMSTEADVILLE, PA 18949-0310

Phone: 800-331-4953

Fax: 215-766-7226

CERTIFICATE OF ACCURACY: Interference Free™ Multi-Component EPA Protocol GasAssay Laboratory - PGVP Vendor ID: A12013AIR LIQUIDE AMERICA SPECIALTY GASES LLC
6141 EASTON ROAD, BLDG 1
PLUMSTEADVILLE, PA 18949-0310P.O. No.: CEM-6035
Document #: 50359355-002Customer

FLORIDA P&L-MARTIN PLT-PO#-CEM ONLY

21900 SW WARFIELD BLVD
INDIANTOWN FL 34966
US**ANALYTICAL INFORMATION****Gas Type : CO₂,NO,BALN**

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

Cylinder Number: ALM055501
Cylinder Pressure***: 1936 PSIG

Certification Date: 23Apr2013

Exp. Date: 24Apr2021
Batch No: PLU0183538

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY**	TRACEABILITY
NITRIC OXIDE	111.0 PPM	+/- 1%	Direct NIST and VSL
CARBON DIOXIDE	5.44 %	+/- 1%	Direct NIST and VSL
NITROGEN - OXYGEN FREE	BALANCE		
TOTAL OXIDES OF NITROGEN	111.3 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 1684	22Jul2017	KAL003789	97.60 PPM	NITRIC OXIDE
NTRM 2000	01Jun2013	K026613	5.006 %	CARBON DIOXIDE

INSTRUMENTATIONINSTRUMENT/MODEL/SERIAL#FTIR//000928781
FTIR//000928781DATE LAST CALIBRATED12Apr2013
05Apr2013ANALYTICAL PRINCIPLEFTIR
FTIR**ANALYZER READINGS**

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

First Triad Analysis**NITRIC OXIDE**

Date: 18Apr2013 Response Unit: PPM

Z1 = -0.19394 R1 = 96.78066 T1 = 110.0391
R2 = 96.99540 Z2 = -0.04826 T2 = 110.5841
Z3 = 0.15300 T3 = 110.5722 R3 = 97.01015
Avg. Concentration: 111.1 PPM**Second Triad Analysis**

Date: 23Apr2013 Response Unit: PPM

Z1 = -0.06013 R1 = 97.08241 T1 = 110.3803
R2 = 97.22222 Z2 = 0.29407 T2 = 110.3625
Z3 = 0.36922 T3 = 110.5288 R3 = 97.25808
Avg. Concentration: 110.9 PPM**Calibration Curve**Concentration = A + Bx + Cx² + Dx³ + Ex⁴
r = 9.99999E-1Constants: A = 0.00000E+0
B = 9.88844E-1 C = 4.60000E-5
D = 0.00000E+0 E = 0.00000E+0**CARBON DIOXIDE**

Date: 18Apr2013 Response Unit: %

Z1 = -0.00102 R1 = 5.00111 T1 = 5.43543
R2 = 5.01094 Z2 = -0.00055 T2 = 5.43978
Z3 = 0.00012 T3 = 5.44217 R3 = 5.01384
Avg. Concentration: 5.436 %Concentration = A + Bx + Cx² + Dx³ + Ex⁴
r = 9.99996E-1Constants: A = 0.00000E+0
B = 9.14718E-1 C = 1.18560E-2
D = 1.00000E-6 E = 0.00000E+0

APPROVED BY:

Michael A. Kuhns



Air Liquide America
Specialty Gases LLC



RATA CLASS

Dual-Analyzed Calibration Standard

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

Assay Laboratory - PGVP Vendor ID: A12013

AIR LIQUIDE AMERICA SPECIALTY GASES LLC
6141 EASTON ROAD, BLDG 1
PLUMSTEADVILLE, PA 18949-0310

P.O. No.: REPLENISHMENT
Document #: 50179756-002

Customer

FLORIDA POWER & LIGHT - PUTNAM PLANT
MIKE MITCHELL
392 US HIGHWAY 17 SOUTH
EAST PALATKA FL 32131
US

ANALYTICAL INFORMATION

Gas Type : CO₂, NO, BALN

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

Cylinder Number: CC162690
Cylinder Pressure***: 2015 PSIG

Certification Date: 17Apr2013

Exp. Date: 18Apr2021
Batch No: PLU0181940

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY**	TRACEABILITY
CARBON DIOXIDE	8.51 %	+/- 1%	Direct NIST and VSL
NITRIC OXIDE	165.9 PPM	+/- 1%	Direct NIST and VSL
NITROGEN - OXYGEN FREE	BALANCE		
TOTAL OXIDES OF NITROGEN	167.2 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 1675 B	05Jan2013	K001453	13.94 %	CARBON DIOXIDE
NTRM 1685	04Jan2013	KAL004405	242.0 PPM	NITRIC OXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR/000928781	05Apr2013	FTIR
FTIR/000928781	12Apr2013	FTIR

ANALYZER READINGS

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

First Triad Analysis

CARBON DIOXIDE

Date: 10Apr2013 Response Unit: %

Z1 = -0.00227 R1 = 13.82690 T1 = 8.44995
R2 = 13.84768 Z2 = 0.00097 T2 = 8.45249
Z3 = 0.00629 T3 = 8.45263 R3 = 13.86228
Avg. Concentration: 8.508 %

Second Triad Analysis

NITRIC OXIDE

Date: 10Apr2013 Response Unit: PPM

Z1 = -0.35384 R1 = 240.4669 T1 = 164.6101
R2 = 240.5530 Z2 = 0.02351 T2 = 165.1154
Z3 = 0.42148 T3 = 165.1685 R3 = 240.7913
Avg. Concentration: 165.9 PPM

Date: 17Apr2013 Response Unit: PPM

Z1 = -0.14362 R1 = 241.0129 T1 = 165.2264
R2 = 241.1529 Z2 = -0.06252 T2 = 165.3676
Z3 = 0.00413 T3 = 165.5182 R3 = 241.1743
Avg. Concentration: 166.0 PPM

Calibration Curve

Concentration = A + Bx + Cx² + Dx³ + Ex⁴
r = 9.99999E-1

Constants: A = 0.00000E+0
B = 9.14718E-1 C = 1.18560E-2
D = 1.00000E-6 E = 0.00000E+0

Concentration = A + Bx + Cx² + Dx³ + Ex⁴
r = 9.99999E-1

Constants: A = 0.00000E+0
B = 9.88844E-1 C = 4.60000E-5
D = 0.00000E+0 E = 0.00000E+0

APPROVED BY:

Michael A. Kuhns

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Specialty Gases LLC**Scott****RATA CLASS***Dual-Analyzed Calibration Standard*

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CERTIFICATE OF ACCURACY: EPA Protocol GasAssay Laboratory - PGVP Vendor ID: A12013AIR LIQUIDE AMERICA SPECIALTY GASES LLC
6141 EASTON ROAD, BLDG 1
PLUMSTEADVILLE, PA 18949-0310

P.O. No.: CEM-6035

Document #: 50359355-003

Customer

FLORIDA P&L-MARTIN PLT-PO#-CEM ONLY

21900 SW WARFIELD BLVD
INDIANTOWN FL 34956
US**ANALYTICAL INFORMATION****Gas Type : NO,BALN**This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards;
Procedure G-1; September, 1997.

Cylinder Number: ALM047577

Certification Date: 22Apr2013

Exp. Date: 23Apr2021

Cylinder Pressure***: 1919 PSIG

Batch No: PLU0183401

COMPONENT**CERTIFIED CONCENTRATION (Moles)****ACCURACY******TRACEABILITY**

NITRIC OXIDE

125.9

PPM

+/- 1%

Direct NIST and VSL

NITROGEN - OXYGEN FREE

BALANCE

TOTAL OXIDES OF NITROGEN

126.1

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 STANDARDTYPE/SRM NO.EXPIRATION DATECYLINDER NUMBERCONCENTRATIONCOMPONENT

NTRM 1684

22Jul2017

KAL003769

97.60 PPM

NITRIC OXIDE

INSTRUMENTATIONINSTRUMENT/MODEL/SERIAL#DATE LAST CALIBRATEDANALYTICAL PRINCIPLE

FTIR//000928781

12Apr2013

FTIR

ANALYZER READINGS

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

First Triad Analysis**Second Triad Analysis****Calibration Curve****NITRIC OXIDE**

Date: 15Apr2013 Response Unit:PPM

Z1=0.00031 R1=97.25758 T1=125.2984

R2=97.33088 Z2=0.03016 T2=125.3101

Z3=0.14409 T3=125.4641 R3=97.36953

Avg. Concentration: 125.7 PPM

Date: 22Apr2013 Response Unit: PPM

Z1=-0.16088 R1=96.95466 T1=125.0259

R2=97.01153 Z2=-0.08310 T2=125.4024

Z3=-0.06259 T3=125.5067 R3=97.03058

Avg. Concentration: 126.0 PPM

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

Constants: A = 0.00000E+0

B = 9.53354E-1 C = 1.76000E-4

D = 0.00000E+0 E = 0.00000E+0

APPROVED BY:

Michael A. Kuhns

**AIR LIQUIDE**Air Liquide America
Specialty Gases LLC**Scott****RATA CLASS***Dual-Analyzed Calibration Standard*

6141 EASTON ROAD, BLDG 1, PLUMSTEADVILLE, PA 18949-0310

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CERTIFICATE OF ACCURACY: EPA Protocol GasAssay Laboratory - PGVP Vendor ID: A12013AIR LIQUIDE AMERICA SPECIALTY GASES LLC
6141 EASTON ROAD, BLDG 1
PLUMSTEADVILLE, PA 18949-0310

P.O. No.: CEM-6036

Document #: 50359355-004

Customer

FLORIDA P&L-MARTIN PLT-PO#-CEM ONLY

21900 SW WARFIELD BLVD
INDIANTOWN FL 34956
US**ANALYTICAL INFORMATION****Gas Type : NO₂BALN**

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

Cylinder Number: CC217297
Cylinder Pressure***: 1936 PSIG

Certification Date: 23Apr2013

Exp. Date: 24Apr2021
Batch No: PLU0183414

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY**	TRACEABILITY
NITRIC OXIDE	277 PPM	+/- 1%	Direct NIST and VSL
NITROGEN - OXYGEN FREE	BALANCE		
TOTAL OXIDES OF NITROGEN	278. 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 1685	04Jan2018	KAL004405	242.0 PPM	NITRIC OXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR/000928781	12Apr2013	FTIR

ANALYZER READINGS

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

First Triad Analysis**NITRIC OXIDE**

Date: 16Apr2013 Response Unit: PPM

Z1=0.10680 R1=241.5445 T1=276.9844

R2=241.7840 Z2=0.47466 T2=277.0008

Z3=0.56745 T3=277.2036 R3=241.9612

Avg. Concentration: 277.3 PPM

Second Triad Analysis

Date: 23Apr2013 Response Unit: PPM

Z1=0.02557 R1=241.0485 T1=278.4724

R2=241.4547 Z2=0.10969 T2=277.0924

Z3=0.19606 T3=277.1010 R3=241.8460

Avg. Concentration: 277.5 PPM

Calibration CurveConcentration = A + Bx + Cx² + Dx³ + Ex⁴
r = 9.99999E-1Constants: A = 0.00000E+0
B = 9.88844E-1 C = 4.60000E-5
D = 0.00000E+0 E = 0.00000E+0

APPROVED BY:

Michael A. Kuhns

**AIR LIQUIDE**Air Liquide America
Specialty Gases LLC**RATA CLASS***Dual-Analyzed Calibration Standard*

6141 EASTON ROAD, BLDG 1, PLUMSTEADVILLE, PA 18949-0310

Phone: 800-331-4953

Fax: 215-766-7226

CERTIFICATE OF ACCURACY: EPA Protocol GasAssay Laboratory - PQVP Vendor ID: A12013AIR LIQUIDE AMERICA SPECIALTY GASES LLC
6141 EASTON ROAD, BLDG 1
PLUMSTEADVILLE, PA 18949-0310P.O. No.: 06-05-2013
Document #: 60964839-002
Folio #: 425PPM NO/BAL N2CustomerFLORIDA POWER & LIGHT - PUTNAM PLANT
MIKE MITCHELL
392 US HIGHWAY 17 SOUTH
EAST PALATKA FL 32131
US**ANALYTICAL INFORMATION****Gas Type : NO₂BALN**

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

Cylinder Number: ALM021880
Cylinder Pressure***: 1958 PSIG

Certification Date: 19Jun2013

Exp. Date: 20Jun2021
Batch No: PLU0198747**COMPONENT****CERTIFIED CONCENTRATION (Moles)****ACCURACY******TRACEABILITY**NITRIC OXIDE
NITROGEN - OXYGEN FREE427 PPM
BALANCE

+/- 1%

Direct NIST and VSL

TOTAL OXIDES OF NITROGEN

428 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 1688	26Mar2016	KAL003523	490.0 PPM	NITRIC OXIDE

INSTRUMENTATIONINSTRUMENT/MODEL/SERIAL#
FTIR//000928781DATE LAST CALIBRATED
17Jun2013ANALYTICAL PRINCIPLE
FTIR**ANALYZER READINGS**

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

First Triad Analysis**Second Triad Analysis****Calibration Curve****NITRIC OXIDE**

Date: 11Jun2013 Response Unit: PPM

Z1=-0.22368 R1=491.0015 T1=427.8518

R2=491.4463 Z2=-0.06546 T2=427.9924

Z3=0.03121 T3=428.9663 R3=491.6648

Avg. Concentration: 427.0 PPM

Date: 19Jun2013 Response Unit: PPM

Z1=0.05542 R1=491.9407 T1=428.1238

R2=491.9870 Z2=0.06296 T2=428.7148

Z3=0.65726 T3=429.2492 R3=492.1278

Avg. Concentration: 428.9 PPM

Concentration = A + Bx + Cx² + Dx³ + Ex⁴

r = 9.99998E-1

Constants: A = 0.00000E+0

B = 9.85798E-1 C = 4.20000E-5

D = 0.00000E+0 E = 0.00000E+0

APPROVED BY:

Michael A. Kuhns

**Putnam Plant
Seven Day Calibration Error Test**

Plant Putnam
Unit 1GT2
Oris Code _____

Parameter NOx
Instrument Span 0-200 PPM
Serial # 1324258458 42i-LS

Level	Date	Calibration Time	Reference/Cylinder value	Monitor value	Calibration Error	Adjustment made ? up/down/none	New monitor value
zero					Calibrate monitors, begin test; collect and calculate drift in 24 hours. (see 40 CFR 75, App. A, sec. 6.3)		
span							
zero	12/5/13	09:55	ALM 043164 0 PPM	-0.3	-0.2%	—	—
span	12/5/13	09:55	162.690 165.9 PPM	165.9	0.0%	—	—
zero	12/6/13	09:55		-0.3	-0.2%	—	—
span	12/6/13	09:55		165.3	165.9	—	—
zero	12/7/13	11:18		-0.4	-0.2%	—	—
span	12/7/13	11:18		161.8	-2.1%	—	—
zero	12/8/13	10:17		-0.4	-0.2%	—	—
span	12/8/13	10:17		161.6	-2.2%	—	—
zero	12/9/13	09:55		-0.3	-0.2%	—	—
span	12/9/13	09:55		161.7	-2.1%	—	—
zero	12/10/13	09:55		-0.3	-0.2%	—	—
span	12/10/13	09:55		160.9	-2.5%	Adj ↑	165.9
zero	12/11/13	09:55		-0.4	-0.2%	—	—
span	12/11/13	09:55	✓	166	165.9	—	—

Calibration Error = |Reference value - monitor value|

For NOx, the calibration error is acceptable if < 2.5%. (25.0 ppm)

Shipped 6141 EASTON ROAD, BLDG 1 PO BOX 310
From: PLUMSTEADVILLE PA 18949-0310
Phone: 800-331-4953 Fax: 215-766-7226
C E R T I F I C A T E O F A N A L Y S I S

FLORIDA POWER & LIGHT - PUTNAM PLANT DOCUMENT#: 50954839 -001
MIKE MITCHELL PO#: 06-05-2013
392 US HIGHWAY 17 SOUTH ITEM #: P841-30AL
EAST PALATKA FL 32131 DATE: 17Jun2013
US

CYLINDER #: ALM043164
FILL PRESSURE: 2000 PSIG PRODUCT EXPIRATION: 21Jun2018

PURE MATERIAL: NITROGEN CAS# 7727-37-9
GRADE: ACID RAIN CEM 0
PURITY: 99.9995%

IMPURITY		MAXIMUM CONCENTRATIONS	ACTUAL CONCENTRATIONS
SOX		0.1 PPM	< 0.1 PPM
NOX		0.1 PPM	< 0.1 PPM
CO		0.5 PPM	< 0.5 PPM
CO2		1 PPM	< 1 PPM
THC		0.1 PPM	< 0.1 PPM
H2O		2 PPM	< 2 PPM
O2		0.5 PPM	< 0.5 PPM

Received
8-14-13
CIRC III

In Service
11/12/13
CIRC III

Removed
from
service
1-25-14
1/2/14

62749

LOT # : PLJ0202868

ANALYST: 
STEVEN A BANKOWSKI

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

Assay Laboratory - PSVP Vendor ID: A12013

AIR LIQUIDE AMERICA SPECIALTY GASES LLC
6141 EASTON ROAD, BLDG 1
PLUMSTEADVILLE, PA 18949-0310

Customer

P.O. No.: REPLENISHMENT
Document #: 50179756-002

FLORIDA POWER & LIGHT - PUTNAM PLANT

MIKE MITCHELL
392 US HIGHWAY 17 SOUTH
EAST PALATKA FL 32131
US

ANALYTICAL INFORMATION

Gas Type : CO2,NO,BALN

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

Cylinder Number: CC162690

Certification Date: 17Apr2013

Exp. Date: 18Apr2021

Batch No: PLU0181940

COMPONENT

CARBON DIOXIDE

NITRIC OXIDE

NITROGEN - OXYGEN FREE

CERTIFIED CONCENTRATION (Moles)

%

PPM

BALANCE

ACCURACY**

+/- 1%

+/- 1%

TRACEABILITY

Direct NIST and VSL

Direct NIST and VSL

Reference Value Only

TOTAL OXIDES OF NITROGEN

157.2

PPM

*** 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

NTRM 1875 B

JTRM 1685

05Jan2018

04Jan2018

CYLINDER NUMBER

K001453

KAL004405

CONCENTRATION

13.94 %

242.0 PPM

COMPONENT

CARBON DIOXIDE

NITRIC OXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#

FTIR/000928781

FTIR/000928781

DATE LAST CALIBRATED

05Apr2013

12Apr2013

ANALYTICAL PRINCIPLE

FTIR

FTIR

ANALYZER READINGS

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

First Triad Analysis

CARBON DIOXIDE

Date: 10Apr2013 Response Unit: %

Z1 = -0.00227 R1 = 13.82690 T1 = 8.44395

R2 = 13.84768 Z2 = 0.00097 T2 = 8.46248

Z3 = 0.00628 T3 = 8.45263 R3 = 13.86228

Avg. Concentration: 8.508 %

NITRIC OXIDE

Date: 10Apr2013 Response Unit: PPM

Z1 = -0.35384 R1 = 240.4869 T1 = 164.6101

R2 = 240.5530 Z2 = 0.02351 T2 = 165.1154

Z3 = 0.42148 T3 = 165.1685 R3 = 240.7913

Avg. Concentration: 165.9 PPM

Second Triad Analysis

Calibration Curve

Concentration = A + Bx + Cx2 + Dx3 + Ex4

r = 9.99998E-1

Constants: A = 0.00000E+0

B = 9.14718E-1

C = 1.18580E-2

D = 1.00000E-6

E = 0.00000E+0

Concentration = A + Bx + Cx2 + Dx3 + Ex4

r = 9.99998E-1

Constants: A = 0.00000E+0

B = 9.38844E-1

C = 4.50000E-5

D = 0.00000E+0

E = 0.00000E+0

Received 6-5-13
Is Service 10/16/13
Removed from Service 12/11/13
7 200#
ARC TH

APPROVED BY: Michael A. Kuhns

Michael A. Kuhns



ECMPS Client Tool

Version 1.0 2013 Q3

QA/Cert Test Detail Report

January 31, 2014 12:41 PM

Facility Name: Putnam

Facility Details

Facility ID (ORISPL): 6246

State: FL

County: Putnam

Unit/Stack/Pipe ID: HRS12

7-Day Calibration

Component ID: B12

Component Type: NOX

Test Completion: 12/11/2013 10:14

Test Number: 7DAY-Q42013-B12-60 Reason for Test: RECERT

Reported Test Results: PASSED

Span Scale Level: High

EPA Calculated Result: PASSED

Evaluation Status: No Errors

Submission Status: Data loaded on EPA Host System

Submission Date/Time: 01/31/2014 11:49:00 AM

Injection Date/Time	Gas Level	Reference Value	Reference Value % of Span	Measured Value	Reported		Recalculated	
					Results	APS	Results	APS
12/05/2013 09	ZERO	0.000	0	-0.300	0.10		0.10	
12/05/2013 10	HIGH	427.000	85.4	428.400	0.30		0.30	
12/06/2013 09	ZERO	0.000	0	-0.300	0.10		0.10	
12/06/2013 10	HIGH	427.000	85.4	427.300	0.10		0.10	
12/07/2013 11	ZERO	0.000	0	-0.300	0.10		0.10	
12/07/2013 11	HIGH	427.000	85.4	421.300	1.10		1.10	
12/08/2013 10	ZERO	0.000	0	-0.300	0.10		0.10	
12/08/2013 10	HIGH	427.000	85.4	421.100	1.20		1.20	
12/09/2013 09	ZERO	0.000	0	0.000	0.00		0.00	
12/09/2013 10	HIGH	427.000	85.4	420.100	1.40		1.40	
12/10/2013 09	ZERO	0.000	0	-0.300	0.10		0.10	
12/10/2013 10	HIGH	427.000	85.4	419.100	1.60		1.60	
12/11/2013 09	ZERO	0.000	0	-0.300	0.10		0.10	
12/11/2013 10	HIGH	427.000	85.4	427.700	0.10		0.10	

Additional Information:

No comment.

*Performance Spec: CE <= 2.5% of Span Alternate Performance Spec: |R-A| <= 5 ppm (Appendix A & 3.1)

Facility Name: Putnam
Facility ID (ORISPL): 6246

Unit/Stack/Pipe ID: HRSG12

Linearity Check

Component ID: A12 Component Type: NOX Test Completion: 11/21/2013 18:26

Test Number: LINE-Q42013-A12-1 Reason for Test: QA Reported Test Results: PASSED

Span Scale Level: High Span Value: 500.000 EPA Calculated Result: PASSED

Evaluation Status: Informational Message Submission Status: Data loaded on EPA Host System

Grace period Tested? Submission Date/Time: 01/08/2014 4:01:00 PM

Protocol Gas Data:

Gas Level Code	Gas Type Code	Vendor Identifier	Cylinder Identifier	Expiration Date
Low	CO2,NO,BALN	A12013	ALM047577	04/24/2021
High	NO,BALN	A12013	ALM021880	06/20/2021
Mid	NO,BALN	A12013	CC217297	04/24/2021

Summary Statistics:

	High		Mid		Low	
	Reported	Recalculated	Reported	Recalculated	Reported	Recalculated
Reference Value	427.000	427.000	277.000	277.000	125.900	125.900
Mass CEM Value	427.900	427.900	278.400	278.400	128.433	128.433
Alt. Perf. Indicator						
Results	0.2	0.2	0.5	0.5	2.0	2.0

Injection Statistics:

QA/Cert Test Detail Report

January 31, 2014 12:41 PM

Facility Name: Putnam
Facility ID (ORISPL): 6246

Date	Gas Level	Measured Value	Reference Value	Reference Value as % of Span
11/21/2013 18:02	HIGH	427.700	427.000	85.4%
11/21/2013 17:34	HIGH	427.700	427.000	85.4%
11/21/2013 18:26	HIGH	428.300	427.000	85.4%
11/21/2013 17:52	MID	278.300	277.000	55.4%
11/21/2013 18:18	MID	278.900	277.000	55.4%
11/21/2013 17:24	MID	278.000	277.000	55.4%
11/21/2013 17:44	LOW	129.200	125.900	25.2%
11/21/2013 18:10	LOW	129.100	125.900	25.2%
11/21/2013 17:16	LOW	127.000	125.900	25.2%

Additional Information:

No comment.

*Performance Spec: LE <= 5.0% of Reference Value; Alternate Performance Spec: [R-A] <= 5ppm (Appendix A & 3.2)

Unit/Stack/Pipe ID: HRSG12

Linearity Check

Component ID: A13
Test Number: LINE-Q42013-A13-3
Span Scale Level: High
Evaluation Status: Informational Message
Grace period Tested?

Component Type: CO2
Reason for Test: RECERT
Span Value: 10.000

Test Completion: 11/01/2013 17:01
Reported Test Results: PASSED
EPA Calculated Result: PASSED

Submission Status: Data loaded on EPA Host System
Submission Date/Time: 01/08/2014 4:01:00 PM

Protocol Gas Data:

Gas Level Code	Gas Type Code	Vendor Identifier	Cylinder Identifier	Expiration Date
High	CO2,NO,BALN	A12013	CC162690	04/18/2021
Mid	CO2,NO,BALN	A12013	ALM055501	04/24/2021
Low	CO2,NO,BALN	A12013	ALM009787	04/24/2021

Summary Statistics:

QA/Cert Test Detail Report

January 31, 2014 12:41 PM

Facility Name: Putnam
Facility ID (ORISPL): 6246

	High		Mid		Low	
	Reported	Recalculated	Reported	Recalculated	Reported	Recalculated
Reference Value	8.510	8.510	5.440	5.440	2.520	2.520
Mass CEM Value	8.577	8.577	5.540	5.540	2.630	2.630
Alt. Perf. Indicator						
Results	0.8	0.8	1.8	1.8	4.4	4.4

Injection Statistics:

Date	Gas Level	Measured Value	Reference Value	Reference Value as % of Span
11/01/2013 16:15	LOW	2.630	2.520	25.2%
11/01/2013 16:41	LOW	2.660	2.520	25.2%
11/01/2013 15:45	LOW	2.600	2.520	25.2%
11/01/2013 15:50	MID	5.510	5.440	54.4%
11/01/2013 16:25	MID	5.560	5.440	54.4%
11/01/2013 16:51	MID	5.550	5.440	54.4%
11/01/2013 17:01	HIGH	8.560	8.510	85.1%
11/01/2013 16:33	HIGH	8.580	8.510	85.1%
11/01/2013 15:55	HIGH	8.590	8.510	85.1%

Additional Information:

No comment.

*Performance Spec: LE <= 5.0% of Reference Value; Alternate Performance Spec: |R-A| <= 5ppm (Appendix A & 3.2)

Unit/Stack/Pipe ID: HRS12

Linearity Check

Component ID: A12 Component Type: NOX Test Completion: 11/21/2013 17:01

Test Number: LINE-Q42013-A12-2 Reason for Test: QA Reported Test Results: PASSED

Span Scale Level: Low Span Value: 200.000 EPA Calculated Result: PASSED

Evaluation Status: Informational Message Submission Status: Data loaded on EPA Host System

Grace period Tested? Submission Date/Time: 01/08/2014 4:01:00 PM

Protocol Gas Data:

Gas Level Code	Gas Type Code	Vendor Identifier	Cylinder Identifier	Expiration Date
High	CO2,NO,BALN	A12013	CC162690	04/18/2021

QA/Cert Test Detail Report

January 31, 2014 12:41 PM

Facility Name: Putnam
Facility ID (ORISPL): 6246

Mid	CO2,NO,BALN	A12013	ALM055501	04/24/2021
Low	CO2,NO,BALN	A12013	ALMO09787	04/24/2021

Summary Statistics:

	High			Mid		Low	
	Reported	Recalculated	Measured	Reported	Recalculated	Reported	Recalculated
Reference Value	165.900	165.900		111.000	111.000	50.000	50.000
Mass CEM Value	161.667	161.667		109.267	109.267	51.267	51.267
Alt. Perf. Indicator							
Results	2.6	2.6		1.6	1.6	2.5	2.5

Injection Statistics:

Date	Gas Level	Measured Value	Reference Value	Reference Value as % of Span
11/21/2013 15:55	MID	109.000	111.000	55.5%
11/21/2013 16:25	MID	109.400	111.000	55.5%
11/21/2013 16:51	MID	109.400	111.000	55.5%
11/21/2013 16:41	LOW	51.100	50.000	25.0%
11/21/2013 16:15	LOW	50.900	50.000	25.0%
11/21/2013 15:45	LOW	51.800	50.000	25.0%
11/21/2013 17:01	HIGH	162.100	165.900	83.0%
11/21/2013 16:05	HIGH	160.800	165.900	83.0%
11/21/2013 16:33	HIGH	162.100	165.900	83.0%

Additional Information:

No comment.

*Performance Spec: LE <= 5.0% of Reference Value; Alternate Performance Spec: |R-A| <= 5ppm (Appendix A & 3.2)

Unit/Stack/Pipe ID: HRS12

Linearity Check

Component ID: B12

Test Number: LINE-Q42013-B12-1

Span Scale Level: High

Evaluation Status: No Errors

Grace period Tested?

Test Completion: 11/21/2013 18:26

Reported Test Results: PASSED

EPA Calculated Result: PASSED

Submission Status: Data loaded on EPA Host System

Submission Date/Time: 01/31/2014 11:49:00 AM

QA/Cert Test Detail Report

January 31, 2014 12:41 PM

Facility Name: Putnam
Facility ID (ORISPL): 6246

Protocol Gas Data:

Gas Level Code	Gas Type Code	Vendor Identifier	Cylinder Identifier	Expiration Date
Low	CO2,NO,BALN	A12013	ALM047577	04/24/2021
High	NO,BALN	A12013	ALM021880	06/20/2021
Mid	NO,BALN	A12013	CC217297	04/24/2021

Summary Statistics:

	High		Mid		Low	
	Reported	Recalculated	Reported	Recalculated	Reported	Recalculated
Reference Value	427.000	427.000	277.000	277.000	125.900	125.900
Mass CEM Value	427.900	427.900	278.400	278.400	128.433	128.433
Alt. Perf. Indicator						
Results	0.2	0.2	0.5	0.5	2.0	2.0

Injection Statistics:

Date	Gas Level	Measured Value	Reference Value	Reference Value as % of Span
11/21/2013 17:52	MID	278.300	277.000	55.4%
11/21/2013 18:18	MID	278.900	277.000	55.4%
11/21/2013 17:24	MID	278.000	277.000	55.4%
11/21/2013 17:44	LOW	129.200	125.900	25.2%
11/21/2013 18:10	LOW	129.100	125.900	25.2%
11/21/2013 17:16	LOW	127.000	125.900	25.2%
11/21/2013 17:34	HIGH	427.700	427.000	85.4%
11/21/2013 18:02	HIGH	427.700	427.000	85.4%
11/21/2013 18:26	HIGH	428.300	427.000	85.4%

Additional Information:

No comment.

*Performance Spec: LE <= 5.0% of Reference Value; Alternate Performance Spec: |R-A| <= 5ppm (Appendix A & 3.2)

Unit/Stack/Pipe ID: HRS12

Linearity Check

QA/Cert Test Detail Report

January 31, 2014 12:41 PM

Facility Name: Putnam

Facility ID (ORISPL): 6246

Component ID: B12
 Component Type: NOX
 Test Number: LINE-Q42013-B12-2
 Reason for Test: RECERT
 Span Scale Level: Low
 Span Value: 200.000

Test Completion: 11/21/2013 17:01

Reported Test Results: PASSED

EPA Calculated Result: PASSED

Evaluation Status: No Errors

Submission Status: Data loaded on EPA Host System

Submission Date/Time: 01/31/2014 11:49:00 AM

Grace period Tested?

Protocol Gas Data:

Gas Level Code	Gas Type Code	Vendor Identifier	Cylinder Identifier	Expiration Date
High	CO2,NO,BALN	A12013	CC162690	04/18/2021
Mid	CO2,NO,BALN	A12013	ALM055501	04/24/2021
Low	CO2,NO,BALN	A12013	ALM009787	04/24/2021

Summary Statistics:

	High		Mid		Low	
	Reported	Recalculated	Reported	Recalculated	Reported	Recalculated
Reference Value	165.900	165.900	111.000	111.000	50.000	50.000
Mass CEM Value	161.667	161.667	109.267	109.267	51.267	51.267
Alt. Perf. Indicator						
Results	2.6	2.6	1.6	1.6	2.5	2.5

Injection Statistics:

Date	Gas Level	Measured Value	Reference Value	Reference Value as % of Span
11/21/2013 15:55	MID	109.000	111.000	55.5%
11/21/2013 16:25	MID	109.400	111.000	55.5%
11/21/2013 16:51	MID	109.400	111.000	55.5%
11/21/2013 16:33	HIGH	162.100	165.900	83.0%
11/21/2013 17:01	HIGH	162.100	165.900	83.0%
11/21/2013 16:05	HIGH	160.800	165.900	83.0%
11/21/2013 15:45	LOW	51.800	50.000	25.0%
11/21/2013 16:15	LOW	50.900	50.000	25.0%
11/21/2013 16:41	LOW	51.100	50.000	25.0%

Additional Information:

No comment.

Facility Name: Putnam
Facility ID (ORISPL): 6246

*Performance Spec: LE <= 5.0% of Reference Value; Alternate Performance Spec: [R-A] <= 5ppm (Appendix A & 3.2)

Unit/Stack/Pipe ID: HRSG12

Relative Accuracy Test

System ID: 112 System Parameter: NOX
Test Number: RATA-Q42013-112-1 Reason for Test: QA
of Op. Levels: 1 Grace Period Test?
Evaluation Status: No Errors
Submission Status: Data loaded on EPA Host System
Submission Date: 01/31/2014 11:49:00 AM
Test Completion: 12/20/2013 19:00
Reported Test Results: PASSED
EPA Calculated Result: PASSED
Reported BAF: 1.000
EPA Calculated BAF: 1.000
RATA Frequency: 4QTRS

Air Emissions Testing Data

QI Name: Steve, Webb C AETB Name: Coastal Air Consulting Inc.
Exam Date: 05/01/2012 AETB Phone Number: 386-451-0169
Provider Name: Eastern Technical Associates (ETA) AETB Email: Coastalair123@aol.com
Provider Email: Sherri@smokeschool.com

Protocol Gas Data:

Gas Level Code	Gas Type Code	Vendor Identifier	Cylinder Identifier	Expiration Date
High	CO,NO,SO2,BALN	E12013	CC-165576	04/02/2021
Mid	CO,NO,SO2,BALN	E12013	CC-79645	06/05/2021
High	CO2,O2,BALN	E12011	CC-159134	11/01/2014
Mid	CO2,O2,BALN	E12013	CC-233289	09/23/2021
Low	ZERO			

Operating Level: High
Reference Method Used: 7E,3A: NOX RM 7E and CO2/O2 RM 3A
Summary Statistics:

	Reported	Recalculated	Reported	Recalculated
Mean of Monitoring System	0.346	0.346	Relative Accuracy	3.24
Mean of Reference Method Values	0.336	0.336	Bias Adjustment Factor	1.000
Mean of Difference	-0.009	-0.009	APS Indicator	
Standard Deviation of Difference	0.002	0.002	T-Value	2.306

QA/Cert Test Detail Report

Facility Name: Putnam
Facility ID (ORISPL): 6246

January 31, 2014 12:41 PM

Confidence Coefficient	0.002	0.002	Gross Unit Load or Velocity	89	90
------------------------	-------	-------	-----------------------------	----	----

Run Data:

Run	Start Date	End Date	Run Status	Monitoring System Value	Reference Method Value	Gross Load or Velocity
1	12/20/2013 14:43	12/20/2013 15:03	RUNUSED	0.366	0.359	90
2	12/20/2013 15:11	12/20/2013 15:31	RUNUSED	0.363	0.355	90
3	12/20/2013 15:40	12/20/2013 16:00	RUNUSED	0.362	0.352	90
4	12/20/2013 16:12	12/20/2013 16:32	RUNUSED	0.346	0.334	90
5	12/20/2013 16:40	12/20/2013 17:00	RUNUSED	0.340	0.329	90
6	12/20/2013 17:10	12/20/2013 17:30	RUNUSED	0.335	0.329	90
7	12/20/2013 17:40	12/20/2013 18:00	RUNUSED	0.335	0.327	90
8	12/20/2013 18:10	12/20/2013 18:30	RUNUSED	0.333	0.324	89
9	12/20/2013 18:40	12/20/2013 19:00	RUNUSED	0.331	0.319	89

Additional Information:

No comment.

*Performance Spec: RA <= 10% or Mean Difference <= +/- 2.0fps:
Reduced Frequency Spec: RA <= 7.5% or Mean Difference +/- 1.5 fps (Appendix A & 3.3.4)

Unit/Stack/Pipe ID: HRS12

Transmitter Transducer Test

Component ID: 018
Test Number: FFAT-Q42013-018-11
Evaluation Status: No Errors

Component Type: GFFM
Reason for Test: QA

Test Completion: 11/27/2013 12:00
Reported Test Results: PASSED
EPA Calculated Result: PASSED

Submission Status: Data loaded on EPA Host System
Submission Date/Time: 01/31/2014 11:49:00 AM

High Level Accuracy	High Level Accuracy Specification	Mid Level Accuracy	Mid Level Accuracy Specification	Low Level Accuracy	Low Level Accuracy Specification
0.9	ACT	0.2	ACT	0.2	ACT

Additional Information:

No comment.



ECMPS Client Tool

Version 1.0 2013 Q3

QA/Cert Events Printout Report

January 31, 2014 12:43 PM

Facility Name: Putnam

Facility Details

Facility ID (ORISPL): 6246
State: FL
County: Putnam

QA Certification Events Details

Unit/Stack Identifier	Event Code	Event Date/Hour	System ID / Type	Component ID / Type	Required Tests	Conditional Data Begin Date/Hour	Last Test Completed Date/Hour	Submitted?
HRSG12	100	11/20/2013 14	112/NOX	A13/CO2	11	11/20/2013 15	12/20/2013 12	Already Submitted
				B12/NOX	11	11/20/2013 15	12/20/2013 12	Already Submitted

Event Codes: 100 - Permanent Gas Analyzer Replacement (Like-kind Analyzer)
Required Test Codes: 11 - Normal Load RATA, 7-day Calibration Error Test Linearity Check