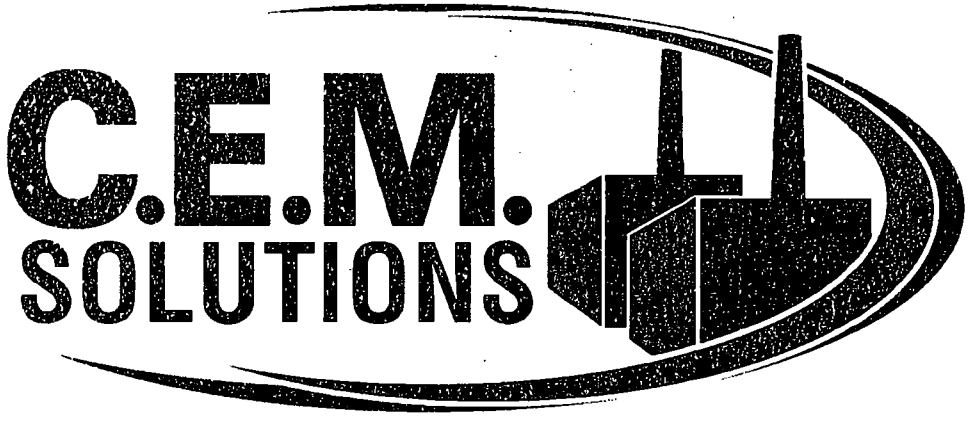
Air Emissions Compliance Test and RATA Report

Completed for:

Orange Cogeneration L.P.
Orange Cogeneration Facility
Auxiliary Boiler (EU -003)

Test Report Number: 20-7044-03-001

Test Completed: April 16, 2014



1183 East Overdrive Circle • Hernando, FL 34442 • (352) 489-4337 • Fax: (352) 489-4801

Air Emissions Compliance Test and RATA Report

Orange Cogeneration L.P.
Orange Cogeneration Facility
Auxiliary Boiler (EU -003)
Bartow, Florida

C.E.M. Solutions Project No. 7044

Testing Completed: April 16, 2014

C.E.M. Solutions, Inc Report Number: 20-7044-03-001

C.E.M. Solutions, Inc.
1183 E. Overdrive Circle
Hernando, Florida 34442
Phone: 352-489-4337

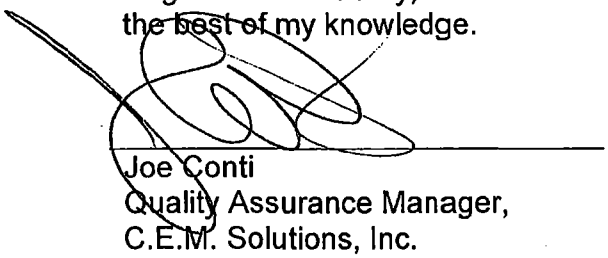
Declaration of Conformance to ASTM D 7036-04: Standard Practice for Competence of Air Emission Testing Bodies

C.E.M. Solutions operates in conformance with the requirements of ASTM D 7036-04: Standard Practice for Competence of Air Emission Testing Bodies through the use of a quality system which incorporates a quality manual, internal audit system, systematic training of personnel and rigorous review of test methods and operating procedures.

Joe Conti
Quality Assurance Manager,
C.E.M. Solutions, Inc.

Statement of Validity

I hereby certify the information and data provided in this emissions test report for tests performed on the auxiliary boiler at the Orange Cogeneration L.P., Orange Cogeneration Facility, conducted on April 16, 2014 are complete and accurate to the best of my knowledge.



Joe Conti
Quality Assurance Manager,
C.E.M. Solutions, Inc.

Project Background

Name of Source Owner:	Orange Cogeneration L.P.
Address of Owner:	1901 Clear Springs Mine Rd. Bartow FL 33830
Source Identification:	Facility ID: 1050231 Emissions Unit: Aux Boiler (EU -003)
Location of Source:	Polk County, Florida
Type of Operation:	SIC Code: 4911
Tests Performed:	Method 9 – Visual Determination of Visible emissions
Test Supervisor (QSTI certified):	Mr. Alex Houseal
Date(s) Tests Conducted:	April 16, 2014: Compliance on Aux. Boiler
Site Test Coordinator:	Mr. Kristen Albritton
State Regulatory Observers:	No Observers Present

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1.0 Introduction

Orange Cogeneration L.P. retained C.E.M. Solutions, Inc. to perform visible emission monitoring on the auxiliary boiler (EU -003). Annual compliance testing was conducted on the auxiliary boiler for visible emissions. The test program and results are presented and discussed in this report.

Derek Kopera was the certified visible emissions evaluator for C.E.M. Solutions, Inc. Kristen Albritton of the Orange Cogeneration L.P. Orange Cogeneration Facility coordinated plant operations throughout the test program. All testing was conducted in accordance with test methods promulgated by the USEPA.

The auxiliary boiler of the Orange Cogeneration Facility was found to be in compliance with permit number 1050231-012-AV. Table 1 summarizes the results of the compliance tests conducted on the auxiliary boiler.

1.1 Errors and Omissions

At the time of testing, the Auxiliary Boiler data acquisition system is one hour behind Eastern Daylight Saving time. The VE observations were conducted from 09:20 to 10:20 Eastern Time, which translates to 08:20 to 09:20 on the plant's operations report located in Appendix A of this document.

Table 1: Summary of Compliance Test
Orange Cogeneration L.P.
Orange Cogeneration Facility
Auxiliary Boiler

Pollutant	Applicable CFR Part	Result	Performance Specification	Pass/ Fail
V.E.	permit	0.0	≤ 15%	Pass

2.0 Facility Description

The Orange Cogeneration Facility consists of two General Electric Model LM6000 Combustion Turbines (Units 1 and 2) each having a nominal generating capacity of 41.4 MW and are capable of firing natural gas. A Zurn Nepco two-drum, bent tube auxiliary boiler is also in operation at the facility.

2.1 Process Equipment

The auxiliary boiler has a maximum heat input of 100 mmBtu/hr firing natural gas. Heat input for the auxiliary boiler is based on the higher heating value (HHV).

The auxiliary boiler emissions are controlled with low NO_X burners. Emissions are exhausted through a 65 foot tall, 3.7 foot diameter stack.

2.2 Regulatory Requirements

The facility is required to conduct annual emissions tests for the following pollutants while operating at 90-100 percent of the heat input curve. Emission testing was conducted to determine the compliance status of the following pollutants:

- Visible emissions in percent

Table 2 summarizes the applicable emissions and CEMS accuracy limits for the auxiliary boiler.

Table 2: Summary of Emissions and CEMS Accuracy Limits
Orange Cogeneration L.P.
Orange Cogeneration Facility
Auxiliary Boiler

Pollutant	Unit	Control Technology	Emission Limit/Performance Specification	Permit Condition
Visual Emission	Aux Boiler	Good Combustion	≤15% for gas[1]	B.5

1 Highest 6 minute block average

3.0 Test Program/Operating Conditions

Emissions tests were completed at the Orange Cogeneration Facility to determine the compliance status of the auxiliary boiler on April 16, 2014.

Unit operating data was collected and provided by facility personnel during the entire test program. Data provided include, but was not limited to:

- Unit Heat Input
- Combustor inlet air temperature
- Fuel flow rate

Table 3 presents the percentage of the maximum heat input, for each Unit, during the V.E. test.

Table 3: Heat Input During Test Program
Orange Cogeneration L.P.
Orange Cogeneration Facility
Auxiliary Boiler

Unit	Calculated Heat Input mmBtu/hr	Maximum Heat Input mmBtu/hr	Percent of Heat Input %
Aux Boiler	81.6	100	81.6%

Unit operating data can be viewed in Appendix A.

4.0 Test Methods

All testing was performed in accordance with methods approved by the USEPA and FDEP. The following discusses the methods, as well as quality assurance and sample handling procedures.

4.1 Determination of Visible Emissions

USEPA Method 9 was utilized to determine visible emissions.

Visible emissions observations were performed by a FDEP certified visible emissions reader. Readings were taken at 15 second intervals and reduced into six minute averages as required by the applicable EPA standard. One-sixty minute visible emission run was performed while each source was operating at maximum capacity.

5.0 Test Results

Summaries of the test results for the VE are discussed below. Supporting VE field data are presented in Appendix B.

5.1 Auxiliary Boiler (EU -003) Visible Emissions

The highest visible emissions observed in any six-minute average on the auxiliary boiler during the one hour test runs was 0.0%, passing the 15% emission limitation.

Appendix A: Plant Operations Data

ORANGE COGEN

BARTOW, FL

Aux Boiler Hourly Operations Report

April 16, 2014 - Hour 8

Minute	Gas Flow klb/hr	Heat Input mmBtu/hr	Ambient Temp °F
08:00	3.373	66.6	54.0
08:01	3.419	67.5	54.1
08:02	3.433	67.8	54.0
08:03	3.419	67.5	54.0
08:04	3.422	67.6	54.1
08:05	3.510	69.3	54.1
08:06	3.640	71.9	54.1
08:07	3.788	74.8	54.2
08:08	3.839	75.8	54.1
08:09	3.861	76.2	54.1
08:10	3.848	76.0	54.2
08:11	3.814	75.4	54.2
08:12	3.775	74.6	54.3
08:13	3.731	73.8	54.2
08:14	3.820	75.5	54.2
08:15	3.905	77.2	54.2
08:16	3.929	77.7	54.2
08:17	3.884	76.7	54.3
08:18	3.867	76.5	54.4
08:19	3.873	76.5	54.4
08:20	3.900	77.0	54.4
08:21	3.919	77.4	54.4
08:22	3.915	77.3	54.4
08:23	3.854	76.1	54.5
08:24	3.799	75.0	54.5
08:25	3.767	74.3	54.6
08:26	3.767	74.3	54.5
08:27	3.774	74.5	54.6
08:28	3.777	74.5	54.8
08:29	3.781	74.6	54.7
08:30	3.854	76.1	54.8
08:31	3.983	78.6	54.9
08:32	4.106	81.1	54.9
08:33	4.184	82.6	54.9
08:34	4.224	83.5	55.0
08:35	4.220	83.5	55.0
08:36	4.194	83.0	55.1
08:37	4.174	82.6	55.1
08:38	4.163	82.4	55.2
08:39	4.161	82.4	55.2
08:40	4.178	82.5	55.1
08:41	4.190	82.8	55.3
08:42	4.197	82.9	55.3
08:43	4.191	82.8	55.3
08:44	4.177	82.5	55.3
08:45	4.169	82.3	55.3
08:46	4.168	82.3	55.3
08:47	4.166	82.3	55.4
08:48	4.173	82.4	55.4
08:49	4.170	82.4	55.4
08:50	4.167	82.3	55.4
08:51	4.185	82.7	55.5
08:52	4.198	82.9	55.4
08:53	4.207	83.1	55.5
08:54	4.212	83.2	55.5
08:55	4.214	83.2	55.6
08:56	4.214	83.2	55.7
08:57	4.212	83.2	55.7
08:58	4.215	83.3	55.8
08:59	4.230	83.5	55.7
Average			54.8
Total	3.958	78.1	

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Aux Boiler Hourly Operations Report

April 16, 2014 - Hour 9

Minute	Gas Flow klb/hr	Heat Input mmBtu/hr	Ambient Temp °F
09:00	4.233	83.5	55.8
09:01	4.223	83.4	55.9
09:02	4.215	83.3	55.9
09:03	4.200	83.0	56.0
09:04	4.201	83.0	56.0
09:05	4.197	82.9	56.1
09:06	4.192	82.8	56.1
09:07	4.200	83.0	56.2
09:08	4.201	83.0	56.3
09:09	4.211	83.2	56.3
09:10	4.224	83.4	56.4
09:11	4.228	83.5	56.4
09:12	4.234	83.5	56.5
09:13	4.227	83.5	56.6
09:14	4.223	83.4	56.6
09:15	4.223	83.4	56.7
09:16	4.224	83.4	56.8
09:17	4.236	83.6	56.8
09:18	4.252	84.1	56.9
09:19	4.269	84.4	57.1
09:20	4.308	85.0	57.2
09:21	4.350	86.0	57.3
09:22	4.334	85.5	57.3
09:23	4.138	81.7	57.4
09:24	3.956	78.1	57.5
09:25	3.896	76.9	57.6
09:26	3.870	76.4	57.6
09:27	3.887	76.7	57.7
09:28	3.883	76.7	57.7
09:29	3.848	76.0	57.8
09:30	3.795	74.9	58.0
09:31	3.750	74.0	58.0
09:32	3.733	73.7	58.0
09:33	3.726	73.5	58.1
09:34	3.728	73.6	58.1
09:35	3.709	73.2	58.3
09:36	3.717	73.3	58.3
09:37	3.715	73.3	58.4
09:38	3.719	73.4	58.4
09:39	3.719	73.4	58.5
09:40	3.720	73.4	58.4
09:41	3.743	73.9	58.4
09:42	3.757	74.1	58.5
09:43	3.782	74.8	58.6
09:44	3.802	75.2	58.7
09:45	3.795	75.0	58.7
09:46	3.744	74.0	58.9
09:47	3.711	73.4	58.8
09:48	3.681	72.8	58.9
09:49	3.667	72.5	59.1
09:50	3.689	72.8	59.0
09:51	3.702	73.0	59.1
09:52	3.731	73.6	59.1
09:53	3.728	73.6	59.2
09:54	3.744	73.9	59.3
09:55	3.745	73.9	59.3
09:56	3.731	73.6	59.4
09:57	3.737	73.7	59.4
09:58	3.723	73.5	59.3
09:59	3.750	74.0	59.4
Average			57.7
Total	3.948	77.9	

ORANGE COGEN

BARTOW, FL

Aux Boiler Hourly Operations Report

April 16, 2014 - Hour 10

Minute	Gas Flow klb/hr	Heat Input mmBtu/hr	Ambient Temp °F
10:00	3.824	75.5	59.3
10:01	3.879	76.6	59.3
10:02	3.924	77.5	59.2
10:03	3.946	77.9	59.3
10:04	3.997	78.9	59.3
10:05	4.075	80.5	59.4
10:06	4.153	82.0	59.6
10:07	4.057	80.1	59.5
10:08	3.795	74.9	59.6
10:09	3.463	68.4	59.5
10:10	3.243	64.0	59.6
10:11	3.107	61.3	59.5
10:12	2.329	46.0	59.5
10:13	1.637	32.3	59.6
10:14	1.314	26.0	59.7
10:15	1.063	21.0	59.7
10:16	0.711	14.1	59.9
10:17	0.381	7.5	59.9
10:18	Down	Down	60.1
10:19	Down	Down	59.9
10:20	Down	Down	59.9
10:21	Down	Down	59.9
10:22	Down	Down	59.9
10:23	Down	Down	59.9
10:24	Down	Down	60.1
10:25	Down	Down	60.1
10:26	Down	Down	60.2
10:27	Down	Down	60.3
10:28	Down	Down	60.4
10:29	Down	Down	60.4
10:30	Down	Down	60.4
10:31	Down	Down	60.5
10:32	Down	Down	60.5
10:33	Down	Down	60.6
10:34	Down	Down	60.8
10:35	Down	Down	60.8
10:36	Down	Down	60.7
10:37	Down	Down	60.8
10:38	Down	Down	60.8
10:39	Down	Down	60.9
10:40	Down	Down	60.9
10:41	Down	Down	61.1
10:42	Down	Down	61.0
10:43	Down	Down	61.0
10:44	Down	Down	61.1
10:45	Down	Down	61.1
10:46	Down	Down	61.2
10:47	Down	Down	61.5
10:48	Down	Down	61.5
10:49	Down	Down	61.4
10:50	Down	Down	61.5
10:51	Down	Down	61.7
10:52	Down	Down	61.7
10:53	Down	Down	61.6
10:54	Down	Down	61.6
10:55	Down	Down	61.7
10:56	Down	Down	61.9
10:57	Down	Down	62.0
10:58	Down	Down	62.1
10:59	Down	Down	62.3
Average			60.5
Total	0.882	17.7	

Appendix B: Method 9 Support Data

VE Field Documentation
VE Observers Certificate

RECORD OF VISUAL DETERMINATION OF OPACITY

SOURCE/PROCESS INFORMATION

FACILITY NAME: Orange CoGen
SOURCE NAME: Auxiliary Boiler (003) | PERMIT NUMBER: 1050231-010-AV
LOCATION ADDRESS: 1901 Clear Spring Rd
CITY: Boston | STATE: FL | ZIP: 33830
UNIT LOAD: base | HEAT INPUT: tbd
CONTROL EQUIPMENT | OPERATING MODE: Normal
FUEL TYPE/RATE: Natural Gas | PERMITTED RATE
DESCRIBE EMISSION POINT: circular grey stack
HEIGHT ABOVE GROUND LEVEL: 50 FT | HEIGHT OF OBSERVATION POINT: 0 FT

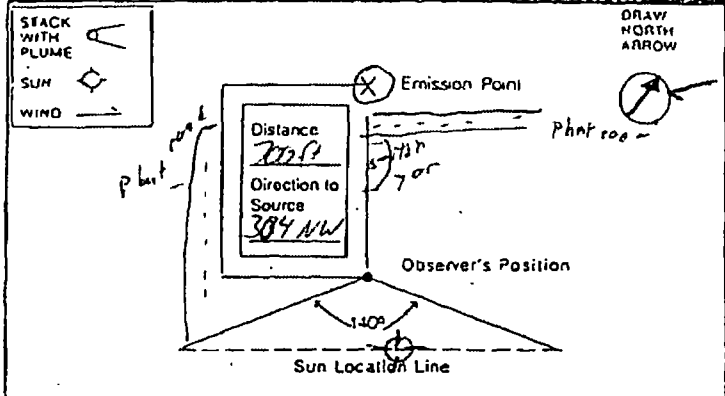
EMISSIONS DESCRIPTION

DESCRIBE EMISSIONS
START: Clear Stack heat trace | END: Clear heat trace
PLUME COLOR: clear | PLUME TYPE: coning
WATER DROPLETS PRESENT: ☐ Yes ☒ No | IF YES, IS PLUME: ☒ Attached ☐ Detached

METEOROLOGICAL INFORMATION

BACKGROUND
START: blue sky | END: sky | BACKGROUND COLOR: START: blue | END: blue
SKY CONDITIONS – CLOUD COVER
START: clear | END: clear | AMBIENT TEMPERATURE: START: 54 | END: 57
WIND SPEED
START: 9-12mph | END: 9-12mph | WIND DIRECTION: START: NNE | END: NNE

OBSERVATION DATA: SITE DIAGRAM



SUMMARY OF AVERAGE OPACITY

SET NUMBER	TIME START	TIME END	OPACITY SUM	OPACITY AVERAGE

COMPLIANCE INFORMATION

RANGE OF OPACITY READINGS: MAXIMUM 0 | MINIMUM 0
HIGHEST 6 MINUTE AVERAGE: 0.0
COMMENTS:

OBSERVER: D. Kopera | DATE: 4/16/14
OBSERVER'S SIGNATURE:
QUALIFIED EVALUATION NUMBER: 118882 | EXPIRATION DATE: 8/7/2014

OBSERVATION RECORD

DATE: 4/16/14

HOUR	MINUTE	STACK A 0	STACK A 15	STACK A 30	STACK A 45	STACK B 0	STACK B 15	STACK B 30	STACK B 45
920	0	0	0	0	0				
921	1	0	0	0	0				
922	2	0	0	0	0				
923	3	0	0	0	0				
924	4	0	0	0	0				
925	5	0	0	0	0				
	6	0	0	0	0				
	7	0	0	0	0				
	8	0	0	0	0				
	9	0	0	0	0				
930	10	0	0	0	0				
	11	0	0	0	0				
	12	0	0	0	0				
	13	0	0	0	0				
	14	0	0	0	0				
935	15	0	0	0	0				
	16	0	0	0	0				
	17	0	0	0	0				
	18	0	0	0	0				
	19	0	0	0	0				
940	20	0	0	0	0				
	21	0	0	0	0				
	22	0	0	0	0				
	23	0	0	0	0				
	24	0	0	0	0				
945	25	0	0	0	0				
	26	0	0	0	0				
	27	0	0	0	0				
	28	0	0	0	0				
	29	0	0	0	0				
950	30	0	0	0	0				
	31	0	0	0	0				
	32	0	0	0	0				
	33	0	0	0	0				
	34	0	0	0	0				
955	35	0	0	0	0				
	36	0	0	0	0				
	37	0	0	0	0				
	38	0	0	0	0				
	39	0	0	0	0				
1000	40	0	0	0	0				
	41	0	0	0	0				
	42	0	0	0	0				
	43	0	0	0	0				
	44	0	0	0	0				
1005	45	0	0	0	0				
	46	0	0	0	0				
	47	0	0	0	0				
	48	0	0	0	0				
	49	0	0	0	0				
1010	50	0	0	0	0				
	51	0	0	0	0				
	52	0	0	0	0				
	53	0	0	0	0				
	54	0	0	0	0				
1015	55	0	0	0	0				
1016	56	0	0	0	0				
1017	57	0	0	0	0				
1018	58	0	0	0	0				
1019	59	0	0	0	0				

VISIBLE EMISSIONS EVALUATOR

Derek Kopera

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

418682
Certificate #

KOP804755
Student ID Number

2/5/2014
Date of Certification

Orlando, FL
Location

8/7/2014
Certification Expiration Date

TMPF11
Last Lecture

Marty Hughes
Director of Training