STOEL RIVES LLP
ATTORNEYS AT LAW

980 Ninth Street, Suite 1900
Sacramento, California 95814
main 916 447 0700
fax 916 447 4781
www.stoel.com

JOHN A. MCKINSEY
Direct (916) 319-4746
jamckinsey@stoel.com

June 16, 2008

VIA E-MAIL AND HAND DELIVERY

Mr. Michael Monasmith
Siting Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Re: Carlsbad Energy Center Project (07-AFC-6)
Authority to Construct – Monitoring Plan

Dear Mr. Monasmith:

Applicant Carlsbad Energy Center LLC submits the enclosed monitoring plan for compliance testing and Continuous Emissions Monitoring. Copies of these responses are being sent to all parties identified on the current proof of service list (see attached).

Should you have any questions regarding this submittal, please contact me at (916) 447-0700.

Respectfully submitted,

Stoel Rives LLP

John McKinsey

Enclosures
cc: Proof of Service List (attached)

June 16, 2008

sierra research

1801 J Street
Sacramento, CA 95811
Tel: (916) 444-6666
Fax: (916) 444-8373

Ann Arbor, MI
Tel: (734) 761-6666
Fax: (734) 761-6755

Dr. Steve Moore
Engineering Group
San Diego Air Pollution Control District
10124 Old Grove Road
San Diego, CA 92131

Subject: Application for Authority To Construct for the Proposed Carlsbad Energy Center Project – Monitoring Plan

Dear Dr. Moore:

On behalf of Carlsbad Energy Center LLC, we are pleased to submit the enclosed monitoring plan for compliance testing and Continuous Emissions Monitoring (CEM) system relative accuracy test audits for the new gas turbines proposed as part of the Carlsbad Energy Center Project (CECP). The purpose of the enclosed monitoring plan is to confirm that the location of the compliance test ports and CEM monitoring probe for the 139 foot high stack design will meet SDAPCD requirements. As discussed in the enclosed plan, the locations of the test ports and CEM monitoring probe appear to meet EPA requirements. Please note that the enclosed monitoring plan is not intended to replace or substitute for the detailed compliance test protocol and CEM relative accuracy test audit protocol that will be developed and submitted to the SDAPCD prior to performing the initial tests on the new gas turbines.

If you have any questions regarding this application package, please contact me at (916) 444-6666.

Sincerely,

Tom Andrews
Senior Engineer

Enclosure

cc: Tim Hemig, Carlsbad Energy Center LLC
George L. Piantka, Carlsbad Energy Center LLC
John McKinsey, Stoel
Will Walters, CEC
Michael Monasmith, CEC
CEC Dockets Office (07-AFC-6)

MONITORING PROTOCOL FOR COMPLIANCE TESTING AND CONTINUOUS EMISSIONS MONITORING RELATIVE ACCURACY TESTING FOR NATURAL GAS FIRED TURBINES AT THE CARLSBAD ENERGY CENTER PROJECT

prepared for:

Carlsbad Energy Center LLC

June 2008

Prepared by:

Sierra Research, Inc.
1801 J Street
Sacramento, CA 95811
(916) 444-6666

Monitoring Protocol for Compliance Testing and Continuous Emissions Monitoring Relative Accuracy Testing for Natural Gas Fired Turbines at the Carlsbad Energy Center Project

General Information

Source Owner:	Carlsbad Energy Center LLC
Corporate Contact:	Tim Hemig 1817 Aston Ave, Suite 104 Carlsbad, CA 92008 (760) 710-2144
Test Location:	Carlsbad Energy Center Project 4600 Carlsbad Blvd, Carlsbad, California 92008
Test Site Contact:	Tim Hemig 1817 Aston Ave, Suite 104 Carlsbad, CA 92008 (760) 710-2144
Source Description:	Two Siemens Rapid Response SGT6-5000F Combined Cycle (R2C2) units with Ultra Low Nitrogen oxide (ULN) combustors
Source Test Contractor:	TBD
Contact:	TBD
For Submittal to:	San Diego Air Pollution Control District (SDAPCD) source test group

Monitoring Protocol for
Compliance Testing and Continuous Emissions Monitoring
Relative Accuracy Testing for Natural Gas Fired Turbines
at the Carlsbad Energy Center Project

Table of Contents

1. INTRODUCTION

Carlsbad Energy Center LLC will be required to conduct compliance testing and Relative Accuracy Test Audits (RATA) of the Continuous Emissions Monitoring System (CEMS) that will be installed on the two Siemens Rapid Response SGT6-5000F Combined Cycle (R2C2) natural gas fired combustion turbine units that are being proposed as part of the Carlsbad Energy Center Project (CECP).

The test programs for the two proposed combustion turbine units will include the following two distinct elements:

- CEMS RATA Tests
- Emissions Compliance Tests

CEMS RATA Tests – RATA tests will be performed on the two proposed combustion turbines; listed below are the parameters that will be measured during these tests.

- Oxides of Nitrogen (NOx)
  - Concentration (ppmv @ 15% O_2, dry)
  - Emission Rate (lb/hr)
- Carbon Monoxide (CO)
  - Concentration (ppmv @ 15% O_2, dry)
  - Emission Rate (lb/hr)
- Oxygen (O_2)
  - Concentration (ppmv @ 15% O_2, dry)

Compliance Tests – Compliance tests will also be performed on the two proposed combustion turbines to determine compliance with the concentration and/or mass emission limits that will be included in the SDAPCD permit and California Energy Commission Conditions of Certification for the project. The following concentrations and mass emission rates will be measured during these tests:

- NOx, in ppmv @ 15% O_2 and lbs/hr;
- CO, in ppmv @ 15% O_2 and lbs/hr;
- Ammonia Slip (NH_3), in ppmv @ 15% O_2;
- Volatile Organic Compounds (VOC) as non-methane organics, in ppmv @ 15% O_2 and lbs/hr; and
- Particulate Matter $\leq$ 10 microns (PM_{10}), lbs/hr.

1.1 Unit Description

The Carlsbad Energy Center Project (CECP) will consist of two power blocks. Each power block will include a combustion turbine generator (CTG) equipped with Ultra Low Nitrogen oxide (ULN) combustors; a heat recovery steam generator (HRSG); a condensing steam turbine generator (STG); an air-cooled fin-fan cooler; and associated support equipment.

A selective catalytic reduction (SCR) and an oxidative catalyst will also be installed on each CTG/HRSG system to control emissions. Exhaust gases from the CTG/HRSG systems will be vented to the atmosphere via dedicated exhaust stacks.

The units will be equipped with CEMS that will measure O_2, NOx, and CO concentrations. The systems will be extractive types with heated lines extending from the CEMS probes to the sample conditioning units and gas analyzers.

1.2 Process Operation During RATAs/Compliance Tests

Each unit will be operating at approximately full load during the RATA and compliance tests. Typical process conditions that will be recorded during the tests will include the following:

1. Hours of operation (hours);
2. Natural gas flow rate (scfh);
3. Exhaust gas temperature (F);
4. Power output (MW);
5. Ambient Temperature;
6. Humidity; and
7. Barometric Pressure.

1.3 Sample Locations

Each unit will have a dedicated exhaust stack through which products of combustion will exit to the atmosphere. The compliance test sample ports and CEMS probe locations are expected to meet SDAPCD and EPA specifications. The following is a description of the compliance test sample port and CEMS probe locations:

- Total Stack Height 139.0 ft from stack base
- Stack Diameter: 21.3 ft inside diameter
- No. of Sample Ports: 4 each
- Port Diameter: 6 inch
- Compliance Test Sample Port Location

Downstream:	127.9 ft from stack base (42.6 ft from top of HRSG duct)	2.0 diameter
Upstream:	11.10 ft from stack top	> 0.5 diameter

- CEMS Probe Location

Downstream:	128.4 ft from stack base	
	(43.1 ft from top of HRSG duct)	> 2.0 diameter
Upstream:	10.65 ft from stack top	0.5 diameter

Provided as Attachment 1 is a diagram showing the stack dimensions, compliance test sample ports, and CEMS probe locations. As shown on this diagram, the most significant source of exhaust flow turbulence will be the penetration of the HRSG duct into the exhaust stack. The CEMS probe and compliance test sample ports will be located at least 2.0 diameters downstream of this location. Although the CEMS probe and compliance test sample ports will be located just over 1.0 diameter downstream of the top of the damper blades, the damper is only a minor source of exhaust flow turbulence. The elevation of the CEMS probe will also be approximately 0.5 foot higher than the elevation of the four compliance test sample ports, to prevent the sampling probes from interfering with one another.

The compliance test sample port locations will meet the minimum requirements of U.S. EPA Method 1 of two stack diameters downstream and one-half stack diameter upstream of major flow disturbances (40 CFR 60, Appendix A, Method 1, Section 1.2). In addition, the CEMS probe location will meet the requirements of U.S. EPA Performance Specification 2 of two stack diameters downstream of the nearest control device and one-half stack diameter upstream of the stack exit (40 CFR, Appendix B, Performance Specification 2, Section 8.1.2).

2. TEST DESCRIPTION

2.1 Stratification Test

CEMS RATA Tests – The Stratification Test procedure in 40 CFR Part 60, Appendix B, Performance Specification 2 will be used to determine the stratification of the stack exhaust during the testing program. A maximum of 12 traverse points will be used to determine the stratification of the exhaust in the stack. As described in 40 CFR Part 60, Performance Specification 2, Section 8.1.3.2, if the concentration at each individual traverse point differs by more than ± 10 percent from the arithmetic average concentration of all traverse points, the long reference method measurement line will be used during the tests (three traverse points at 16.7%, 50.0%, and 83.3% of measurement line); if the concentration at each individual traverse point differs by no more than ± 10 percent from the arithmetic average concentration of all traverse points, the short reference method measurement line will be used during the tests (three traverse points at 0.4, 1.2, and 2.0 meters from stack wall).

The current plan for the gas turbine CEMS is to use a single-hole probe. If the level of stratification in the exhaust stack is found to be at levels significantly affecting RATA results, the single-hole probe will be replaced with a multi-hole probe design.

Compliance Tests – The Stratification Test procedure in 40 CFR Part 60, Method 7E, Section 8.1 will be used to determine the stratification of the exhaust during the testing program. A maximum of 12 traverse points will be used to determine the stratification of the exhaust in the stack. If the results of the stratification test show that the concentration at each individual traverse point differs by no more than ± 5.0 percent from the arithmetic average concentration for all traverse points, a single reference method measurement point located at least 1.0 meter from the stack wall will be used for that pollutant and/or diluent gas. If the concentration at each individual traverse points differs by no more than ± 10 percent from the arithmetic average concentration for all traverse points, the three traverse points will be used (three traverse points at 0.4, 1.2, and 2.0 meters from stack wall). If the concentration at each individual traverse point differs by more than ± 10 percent from the arithmetic average concentration for all traverse points, 12 traverse points will be used during the test.

2.2 Cyclonic Flow Test

Since the exhaust flow rates for the non-particulate test methods and CEMS will be determined based on EPA 40 CFR 60, Appendix A, F-Factor calculation methods, cyclonic flow is only an issue for particulate compliance testing. For the particulate

compliance testing, the cyclonic flow test procedure in 40 CFR Part 60, Method 1, Section 11.4 will be used to determine whether cyclonic flow is present at the sample port location. This test will employ 24 traverse points located per EPA Method 1 layout specifications. At each traverse point, an S-type pitot tube will be used to measure the exhaust flow angle (by rotating the pitot tube and recording the flow angle). If the average of the measurements taken at all the traverse points is less than 20 degrees, cyclonic flow is not considered significant and normal particulate sampling procedures will be used for the tests. If the average is greater than 20 degrees, cyclonic flow is considered significant and alternative measurement procedures will be used for the tests. One such alternative measurement procedure is the use of a directional flow-sensing probe. This alternative method is discussed in 40 CFR, Part 60, Appendix A, Method 1, Section 11.5.1.

2.3 Test Procedures

CEMS RATA Tests – A minimum of nine RATA runs will be performed with each unit operating at approximately full load. These nine runs will be used to calculate the Relative Accuracy for the NOx, CO, and O_2 analyzers. Testing will consist of using a reference CEMS for NOx (EPA Method 7E), CO (EPA Method 10), and O_2 (EPA Method 3A). In addition, samples of natural gas will be collected during the source test and analyzed for carbon (C), hydrogen (H), oxygen (O_2), sulfur (S), and heating value (in Btu). These data will be used to determine exhaust gas pollutant mass emissions rates (lb/hr) in accordance with F-Factor calculation methods specified in 40 CFR, Part 60, Appendix A.

Compliance Tests – Testing will consist of three test runs using a reference CEMS for NOx (SDAPCD Method 100), CO (SDAPCD Method 100), and O_2 (SDAPCD Method 100). Additional testing will consist of triplicate PM_{10} (EPA Method 201A/202 front half and back half)*; triplicate VOC (EPA Method TO-12), and triplicate ammonia slip (BAAQMD ST-1B) test runs. Natural gas sulfur content and heating value will be determined utilizing ASTM D3246 and ASTM 1945. These tests will be performed with the tested unit operating at approximately maximum capacity.

* Alternative PM test methods may be proposed based on approved test methods in effect at that time.

Attachment 1

Stack Dimension Drawing

Exhaust Stack Diagram CECP

Stack dimensions

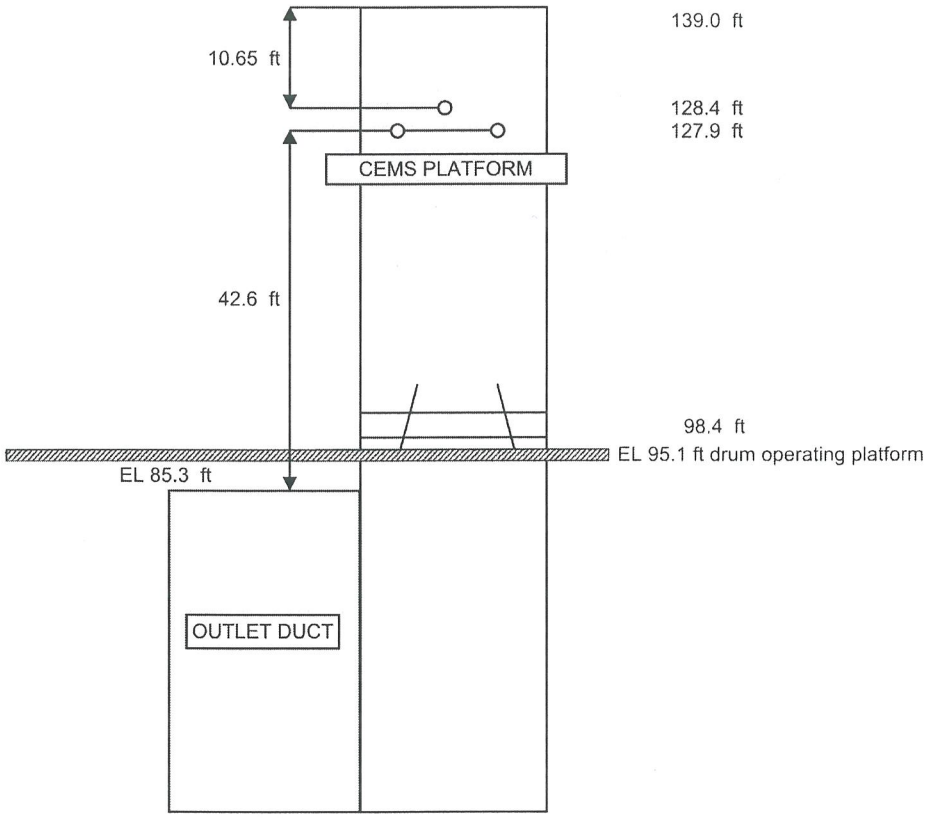
Stack outlet elevation		139 ft
Stack diam		21.3 ft

Code requirement

Application code	40CFR60	
Min. distance from top	0.50 x Dia	
		10.65 ft
Min. distance from last disturbance	2.00 x Dia	42.6 ft

Elevations levels

- Top of stack	139.0 ft
- CEMS probe	128.4 ft
- Test sample ports	127.9 ft
- top stack damper flap	105.0 ft
- Stack damper	98.4 ft
- Drum operating platform	95.1 ft
- lowest level of flow bend	85.3 ft



BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

Application for Certification for the ***CARLSBAD ENERGY CENTER PROJECT***	**Docket No. 07-AFC-6** **PROOF OF SERVICE** **(As of 03/19/2008)**

DECLARATION OF SERVICE

I, Elizabeth Hecox, declare that on June 16, 2008, I deposited in the United States mail at Sacramento, California with first-class postage thereon fully paid and addressed to those identified below ***OR*** transmitted via electronic mail consistent with the requirements of the California Code of Regulations, Title 20, sections 1209, 1209.5, and 1210 the following documents:

CARLSBAD ENERGY CENTER PROJECT (07-AFC-6) MONITORING PLAN FOR COMPLIANCE TESTING AND CONTINUOUS EMISSIONS MONITORING

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 07-AFC-6
1516 Ninth Street, MS-14
Sacramento, CA 95814-5512
docket@energy.state.ca.us

JAMES D. BOYD
Commissioner and Presiding Member
jboyd@energy.state.ca.us

KAREN DOUGLAS
Commissioner and Associate Member
kldougla@energy.state.ca.us

DICK RATLIFF
Staff Counsel
dratliff@energy.state.ca.us

Public Advisor's Office
pao@energy.state.ca.us

PAUL KRAMER
Hearing Officer
pkramer@energy.state.ca.us

MIKE MONASMITH
Siting Project Manager
mmonasmi@energy.state.ca.us

INTERESTED AGENCIES
Larry Tobias
Ca. Independent System Operator
151 Blue Ravine Road
Folsom, CA 95630
LTobias@caiso.com

Electricity Oversight Board
770 L Street, Suite 1250
Sacramento, CA 95814
esaltmarsh@eob.ca.gov

INTERESTED AGENCIES CONT'D.
City of Carlsbad
Joseph Garuba, Municipals Project Manager
Ron Ball, Esq., City Attorney
1200 Carlsbad Village Drive
Carlsbad, CA 92008
jgaru@ci.carlsbad.ca.us
rball@ci.carlsbad.ca.us

Allan J. Thompson
Attorney for City of Carlsbad
21 "C" Orinda Way #314
Orinda, CA 94563
allanori@comcast.net

APPLICANT
David Lloyd
Carlsbad Energy Center, LLC
1817 Aston Avenue, Suite 104
Carlsbad, CA 92008
David.Lloyd@nrgenergy.com

Tim Hemig, Vice President
Carlsbad Energy Center, LLC
1817 Aston Avenue, Suite 104
Carlsbad, CA 92008
Tim.Hemig@nrgenergy.com

COUNSEL FOR APPLICANT
John A. McKinsey
Stoel Rives LLP
980 Ninth Street, Ste. 1900
Sacramento, CA 95814
jamckinsey@stoel.com

APPLICANT'S CONSULTANTS
Robert Mason, Project Manager
CH2M Hill, Inc.
3 Hutton Centre Drive, Ste. 200
Santa Ana, CA 92707
Robert.Mason@ch2m.com

Megan Sebra
CH2M Hill, Inc.
2485 Natomas Park Drive, Ste. 600
Sacramento, CA 95833
Megan.Sebra@ch2m.com

INTERVENORS
California Unions For Reliable Energy (CURE)
Suma Peesapati
Marc D. Joseph
Adams Broadwell Joeseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080
speesapati@adamsbroadwell.com

I declare under penalty of perjury that the foregoing is true and correct.

Elizabeth Hecox