REPORT

AIR PERMIT REVISION APPLICATION FOR THE LAKE COGENERATION PLANT

Submitted To: Air Quality Division
Department of Environmental Protection
2600 Blair Stone Road
MS 5000
Tallahassee, FL 32399 USA

Submitted By: Golder Associates Inc.
5100 W. Lemon Street
Suite 208
Tampa, FL 33609 USA

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2 Copies —Caithness Corporation
1 Copy —Golder Associates Inc.

January 2011 **103-89628A**

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January 31, 2011

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AIR REGULATION

Mr. Jonathon Holtom, P.E.
North Permitting Section
Division of Air Resource Management
2600 Blair Stone Road MS 5500
Tallahassee, Florida 32399-2400

RE: APPLICATION FOR AIR PERMIT REVISIONS
LAKE COGENERATION PLANT
FACILITY ID NO. 0694801
Project No.: 0694801-014-AC
0694801-015-AV

Dear Mr. Holtom:

Enclosed please find one original and three copies of an application for concurrent processing of revisions to the current Title V air permit, as well as the underlying air construction permit conditions upon which they were based, for the Lake Cogeneration Plant located in Umatilla, Lake County, Florida. This permit revision application incorporates the provisions of Permit No. 0694801-012-AC, and, therefore, requires changes to conditions of the current Title V Air Operation Permit No. 0694801-011-AV to incorporate these new requirements. Permit No. 0694801-012-AC authorized the installation of oxidation catalyst control systems to the existing two GE LM-6000 combustion turbine units. This application also requests changes to conditions of the current Title V Air Operation Permit No. 0694801-011-AV, which requires concurrent air construction permit processing.

Lake Cogeneration looks forward to working with you on this permitting effort. If you would like to discuss any issues regarding this application, please contact Mr. Tom Grace of Caithness Energy at (917) 472-4593 or me at (813) 287-1717 in Tampa.

Sincerely,

GOLDER ASSOCIATES INC.

Scott Osbourn, PE
Associate and Senior Consultant

Enclosure

Cc: Caroline Shine, DEP Central District Office
Jim Miller, Lake Cogen
Tom Grace, Caithness Corporations

Golder Associates Inc.
5100 W. Lemon Street, Suite 114
Tampa, FL 33609 USA
Tel: (813) 287-1717 Fax: (813) 287-1716 www.golder.com

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PART I

FDEP APPLICATION FOR AIR PERMIT

Department of Environmental Protection

Division of Air Resource Management

APPLICATION FOR AIR PERMIT - LONG FORM

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I. APPLICATION INFORMATION

Air Construction Permit – Use this form to apply for an air construction permit:

- For any required purpose at a facility operating under a federally enforceable state air operation permit (FESOP) or Title V air operation permit;
- For a proposed project subject to prevention of significant deterioration (PSD) review, nonattainment new source review, or maximum achievable control technology (MACT);
- To assume a restriction on the potential emissions of one or more pollutants to escape a requirement such as PSD review, nonattainment new source review, MACT, or Title V; or
- To establish, revise, or renew a plantwide applicability limit (PAL).

Air Operation Permit – Use this form to apply for:

- An initial federally enforceable state air operation permit (FESOP); or
- An initial, revised, or renewal Title V air operation permit.

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: **Lake Cogeneration Ltd.**	
2. Site Name: **Lake Cogeneration**	
3. Facility Identification Number: **0694801**	
4. Facility Location... Street Address or Other Locator: **39001 Golden Gem Dr.** City: **Umatilla** County: **Lake** Zip Code: **32784**	
5. Relocatable Facility? ☐ Yes ☒ No	6. Existing Title V Permitted Facility? ☒ Yes ☐ No

Application Contact

1. Application Contact Name: **Thomas Grace**
2. Application Contact Mailing Address... Organization/Firm: **Caithness Generation Services** Street Address: **565 Fifth Ave., 29th Floor** City: **New York** State: **NY** Zip Code: **10017**
3. Application Contact Telephone Numbers... Telephone: **(917) 472 - 4593** ext. Fax: **(732) 817 - 0101**
4. Application Contact E-mail Address: **tgrace@caithnessenergy.com**

Application Processing Information (DEP Use)

1. Date of Receipt of Application: 2-01-11	3. PSD Number (if applicable):
2. Project Number(s): 0694801-014-AC 0694801-015-AV	4. Siting Number (if applicable):

APPLICATION INFORMATION

Purpose of Application

This application for air permit is being submitted to obtain: (Check one)

Air Construction Permit

☐ Air construction permit.

☐ Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL).

☐ Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL), and separate air construction permit to authorize construction or modification of one or more emissions units covered by the PAL.

Air Operation Permit

☐ Initial Title V air operation permit.

☐ Title V air operation permit revision.

☐ Title V air operation permit renewal.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)

☒ Air construction permit and Title V permit revision, incorporating the proposed project.

☐ Air construction permit and Title V permit renewal, incorporating the proposed project.

Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:

☒ I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

Application Comment

This permit revision application incorporates the provisions of Permit No. 0694801-012-AC, and, therefore, requires changes to conditions of the current Title V Air Operation Permit No. 0694801-011-AV to incorporate these new requirements. Permit No. 0694801-012-AC authorized the installation of oxidation catalyst control systems to the existing two GE LM-6000 combustion turbine units. This application also requests changes to conditions of the current Title V Air Operation Permit No. 0694801-011-AV, which requires concurrent air construction permit processing. The requested revisions are described in CR-FI-C2.

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Processing Fee
003	Combined Cycle Combustion Turbine with Duct Burner	AV02	NA
004	Combined Cycle Combustion Turbine with Duct Burner	AV02	NA

Application Processing Fee

Check one: ☐ Attached - Amount:_____ ☒ Not Applicable

APPLICATION INFORMATION

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name :
2. Owner/Authorized Representative Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Owner/Authorized Representative Telephone Numbers... Telephone: ext. Fax:
4. Owner/Authorized Representative E-mail Address:
5. Owner/Authorized Representative Statement: *I, the undersigned, am the owner or authorized representative of the corporation, partnership, or other legal entity submitting this air permit application. To the best of my knowledge, the statements made in this application are true, accurate and complete, and any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department.* _____ _____ Signature Date

APPLICATION INFORMATION

Application Responsible Official Certification

Complete if applying for an initial, revised, or renewal Title V air operation permit or concurrent processing of an air construction permit and revised or renewal Title V air operation permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."

1. Application Responsible Official Name:
   James Miller, Plant Manager

2. Application Responsible Official Qualification (Check one or more of the following options, as applicable):

   ☒ For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.

   ☐ For a partnership or sole proprietorship, a general partner or the proprietor, respectively.

   ☐ For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.

   ☒ The designated representative at an Acid Rain source or CAIR source.

3. Application Responsible Official Mailing Address...
   Organization/Firm: **Lake Cogeneration Ltd.**
   Street Address: **39001 Golden Gem Dr.**
   City: **Umatilla** State: **Florida** Zip Code: **32784**

4. Application Responsible Official Telephone Numbers...
   Telephone: **(352) 669-3288** ext. Fax: **(352) 669-3188**

5. Application Responsible Official E-mail Address: **jmiller@caithnessenergy.com**

APPLICATION INFORMATION

6. Application Responsible Official Certification:

I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.

Signature Date

1/31/11

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: **Scott H. Osbourn**
   Registration Number: **57557**
2. Professional Engineer Mailing Address...
   Organization/Firm: **Golder Associates Inc.****
   Street Address: **5100 West Lemon St., Suite 208**
   City: **Tampa** State: **FL** Zip Code: **33609**
3. Professional Engineer Telephone Numbers...
   Telephone: **(813) 287-1717** ext. **53304** Fax: **(813) 287-1716**
4. Professional Engineer E-mail Address: **sosbourn@golder.com**
5. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

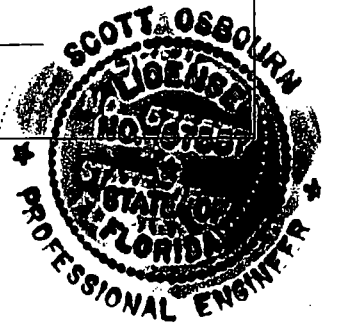
(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.

(4) If the purpose of this application is to obtain an air construction permit (check here ☐, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here ☒, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here ☐, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature Date 1/31/11

(seal)



*** Attach any exception to certification statement.**
**** Board of Professional Engineers Certificate of Authorization # 00001670**

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone **17** East (km) **434.00** North (km) **3198.80**		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) **28° 55' 02"** Longitude (DD/MM/SS) **81° 40' 37"**	
3. Governmental Facility Code: **0**	4. Facility Status Code: **A**	5. Facility Major Group SIC Code: **49**	6. Facility SIC(s): **4931**
7. Facility Comment : **Lake Cogeneration facility consists of two GE LM-5000 combustion turbine units (CTs), each unit equipped with a supplementary fired duct burner (DB) and exhausting through Heat Recovery Steam Generator (HRSG) stacks. The CTs have dual fuel (natural gas and distillate fuel) capability. Permit No. 0694801-012-AC authorized the installation of oxidation catalyst control systems to the existing to CT units.**			

Facility Contact

1. Facility Contact Name: **James Miller, Plant Manager**
2. Facility Contact Mailing Address... Organization/Firm: **Lake Cogeneration Ltd.** Street Address: **39001 Golden Gem Dr.** City: **Umatilla** State: **Florida** Zip Code: **32784**
3. Facility Contact Telephone Numbers: Telephone: **(352) 669-3288** ext. Fax: **(352) 669-3188**
4. Facility Contact E-mail Address: **jmiller@caithnessenergy.com**

Facility Primary Responsible Official

Complete if an "application responsible official" is identified in Section I that is not the facility "primary responsible official."

1. Facility Primary Responsible Official Name:
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Primary Responsible Official Telephone Numbers... Telephone: ( ) - ext. Fax: ( ) -
4. Facility Primary Responsible Official E-mail Address:

Facility Regulatory Classifications

Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a "major source" and a "synthetic minor source."

1. ☐ Small Business Stationary Source	☐ Unknown
2. ☐ Synthetic Non-Title V Source	
3. ☒ Title V Source	
4. ☒ Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. ☐ Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. ☐ Major Source of Hazardous Air Pollutants (HAPs)	
7. ☐ Synthetic Minor Source of HAPs	
8. ☒ One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. ☐ One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. ☐One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. ☐ Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12. Facility Regulatory Classifications Comment:	

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
PM/PM_{10}	A	N
CO	A	N
VOC	A	N
SO_2	A	N
NO_x	A	N

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps

1. Pollutant Subject to Emissions Cap	2. Facility-Wide Cap [Y or N]? (all units)	3. Emissions Unit ID's Under Cap (if not all units)	4. Hourly Cap (lb/hr)	5. Annual Cap (ton/yr)	6. Basis for Emissions Cap

7. Facility-Wide or Multi-Unit Emissions Cap Comment:

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1.	Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☐ Attached, Document ID: _____ ☒ Previously Submitted, Date: **December 2006**
2.	Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☐ Attached, Document ID: _____ ☒ Previously Submitted, Date: **December 2006**
3.	Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☐ Attached, Document ID: _____ ☒ Previously Submitted, Date: **December 2006**

Additional Requirements for Air Construction Permit Applications -- NA

1.	Area Map Showing Facility Location: ☐ Attached, Document ID:_____ ☐ Not Applicable (existing permitted facility)
2.	Description of Proposed Construction, Modification, or Plantwide Applicability Limit (PAL): ☐ Attached, Document ID:
3.	Rule Applicability Analysis: ☐ Attached, Document ID:_
4.	List of Exempt Emissions Units: ☐ Attached, Document ID:_____ ☐ Not Applicable (no exempt units at facility)
5.	Fugitive Emissions Identification: ☐ Attached, Document ID:_____ ☐ Not Applicable
6.	Air Quality Analysis (Rule 62-212.400(7), F.A.C.): ☐ Attached, Document ID:_____ ☐ Not Applicable
7.	Source Impact Analysis (Rule 62-212.400(5), F.A.C.): ☐ Attached, Document ID:_____ ☐ Not Applicable
8.	Air Quality Impact since 1977 (Rule 62-212.400(4)(e), F.A.C.): ☐ Attached, Document ID:_____ ☐ Not Applicable
9.	Additional Impact Analyses (Rules 62-212.400(8) and 62-212.500(4)(e), F.A.C.): ☐ Attached, Document ID:_____ ☐ Not Applicable
10.	Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.): ☐ Attached, Document ID:_____ ☐ Not Applicable

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for FESOP Applications -- NA

1. List of Exempt Emissions Units:
   ☐ Attached, Document ID:_____ ☐ Not Applicable (no exempt units at facility)

Additional Requirements for Title V Air Operation Permit Applications

1. List of Insignificant Activities: (Required for initial/renewal applications only)
   ☐ Attached, Document ID:_____ ☒ Not Applicable (revision application)

2. Identification of Applicable Requirements: (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought)
   ☒ Attached, Document ID: LC-FI-C1
   ☐ Not Applicable (revision application with no change in applicable requirements)

3. Compliance Report and Plan: (Required for all initial/revision/renewal applications)
   ☐ Attached, Document ID:_____
   Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.

4. List of Equipment/Activities Regulated under Title VI: (If applicable, required for initial/renewal applications only)
   ☐ Attached, Document ID:_____
   ☐ Equipment/Activities Onsite but Not Required to be Individually Listed
   ☒ Not Applicable

5. Verification of Risk Management Plan Submission to EPA: (If applicable, required for initial/renewal applications only)
   ☐ Attached, Document ID:_____ ☒ Not Applicable

6. Requested Changes to Current Title V Air Operation Permit:
   ☒ Attached, Document ID: CR-FI-C2 ☐ Not Applicable

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Facilities Subject to Acid Rain, CAIR, or Hg Budget Program

1. Acid Rain Program Forms:

   Acid Rain Part Application (DEP Form No. 62-210.900(1)(a)):
   ☐ Attached, Document ID: ☐ Previously Submitted, Date:_____
   ☒ Not Applicable (not an Acid Rain source)

   Phase II NO_X Averaging Plan (DEP Form No. 62-210.900(1)(a)1.):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☒ Not Applicable

   New Unit Exemption (DEP Form No. 62-210.900(1)(a)2.):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☒ Not Applicable

2. CAIR Part (DEP Form No. 62-210.900(1)(b)):
   ☐ Attached, Document ID: ☒ Previously Submitted, Date: **May 22, 2008**
   ☐ Not Applicable (not a CAIR source)

Additional Requirements Comment

Attachment CR-FI-C3: CAM Plan

Attachment CR-FI-C4: Compliance Demonstration Reports/Records

PART II

APPLICATION REPORT

INTRODUCTION

This permit revision application incorporates the provisions of Permit No. 0694801-012-AC, and, therefore, requires changes to conditions of the current Title V Air Operation Permit No. 0694801-011-AV to incorporate these new requirements. Permit No. 0694801-012-AC authorized the installation of oxidation catalyst control systems to the existing two GE LM-6000 combustion turbine units. This application also requests changes to conditions of the current Title V Air Operation Permit No. 0694801-011-AV, which requires concurrent air construction permit processing.

PROJECT DESCRIPTION

Permit No. 0694801-012-AC authorized the installation of an oxidation catalyst in the HRSG associated with each of the two CTs. Carbon Monoxide (CO) is controlled or reduced by the use of a catalytic oxidation system, which is effectively a passive control system. The catalyst (stainless steel foil coated with calcined alumina with platinum metal) enhances the chemical reaction between oxygen and carbon monoxide and forms carbon dioxide as the end product. This reaction generally provides for emission control in the range of 50 to 70%, depending on the exhaust gas temperature. The catalyst normally operates at a temperature around 700° F with corresponding CO removal efficiencies of approximately 70%. This system is designed and certified by the manufacturer to operate while the plant is burning either natural gas or new No. 2 diesel fuel oil.

A plant operator occupies the plant control room 24 hours per day, which allows the plant personnel to monitor two key catalyst operating parameters. Namely, catalyst inlet temperature and pressure drop across the catalyst bed. A high temperature alarm is proposed to alert the operator if the catalyst inlet temperature becomes excessive to protect the bed from thermal damage, and a high-pressure alarm sounds if the pressure drop across the catalyst bed becomes excessive. The pressure reading serves two purposes: to ensure that there is airflow across the bed, thus verifying that the system is operating, and to alert the plant operator if a possible plugging or fouling has occurred. Please see Attachment LC-FI-C3 for a copy of the CO control Compliance Assurance Monitoring (CAM) plan.

REQUESTED PERMIT CHANGES

This Title V Operation Permit Revision application also requests changes to conditions of the current Title V Air Operation Permit No. 0694801-011-AV, please see Attachment LC-FI-C2 for a list of requested changes.

Attachment LC-FI-C4 provides a summary list of previously submitted compliance demonstration reports/records.

ATTACHMENT LC-FI-CI

IDENTIFICATION OF APPLICABLE REQUIREMENTS

ATTACHMENT LC-FI-C1
Identification of Applicable Requirements

In addition to the requirements identified in the TV Core List (Effective: 03/01/02), the following emission unit specific requirements are:

- 40 CFR 60 Subpart KKKK – Standards of Performance for Stationary Combustion Turbines ;
- 40 CFR 60 Subpart A – General Provisions;
- 40 CFR 60 Appendix A – Test Methods;
- Chapter 403 F.S.;
- Chapter 62-204 – Air Pollution Control – General Provisions; and
- Title V Conditions – Appendix TV-6

Title V Core List Effective: 03/01/02

[**Note:** The Title V Core List is meant to simplify the completion of the "List of Applicable Regulations" for DEP Form No. 62-210.900(1), Application for Air Permit - Long Form. The Title V Core List is a list of rules to which all Title V Sources are presumptively subject. The Title V Core List may be referenced in its entirety, or with specific exceptions. The Department may periodically update the Title V Core List.]

Federal: ***(description)***

40 CFR 61, Subpart M: NESHAP for Asbestos.

40 CFR 82: Protection of Stratospheric Ozone.
40 CFR 82, Subpart B: Servicing of Motor Vehicle Air Conditioners (MVAC).
40 CFR 82, Subpart F: Recycling and Emissions Reduction.

State: ***(description)***

CHAPTER 62-4, F.A.C.: PERMITS, effective 06-01-01

62-4.030, F.A.C.: General Prohibition.
62-4.040, F.A.C.: Exemptions.
62-4.050, F.A.C.: Procedure to Obtain Permits; Application.
62-4.060, F.A.C.: Consultation.
62-4.070, F.A.C.: Standards for Issuing or Denying Permits; Issuance; Denial.
62-4.080, F.A.C.: Modification of Permit Conditions.
62-4.090, F.A.C.: Renewals.
62-4.100, F.A.C.: Suspension and Revocation.
62-4.110, F.A.C.: Financial Responsibility.
62-4.120, F.A.C.: Transfer of Permits.
62-4.130, F.A.C.: Plant Operation - Problems.
62-4.150, F.A.C.: Review.
62-4.160, F.A.C.: Permit Conditions.
62-4.210, F.A.C.: Construction Permits.
62-4.220, F.A.C.: Operation Permit for New Sources.

CHAPTER 62-210, F.A.C.: STATIONARY SOURCES - GENERAL REQUIREMENTS, effective 06-21-01

62-210.300, F.A.C.: Permits Required.
62-210.300(1), F.A.C.: Air Construction Permits.
62-210.300(2), F.A.C.: Air Operation Permits.
62-210.300(3), F.A.C.: Exemptions.
62-210.300(5), F.A.C.: Notification of Startup.
62-210.300(6), F.A.C.: Emissions Unit Reclassification.
62-210.300(7), F.A.C.: Transfer of Air Permits.

62-210.350, F.A.C.: Public Notice and Comment.
62-210.350(1), F.A.C.: Public Notice of Proposed Agency Action.
62-210.350(2), F.A.C.: Additional Public Notice Requirements for Emissions Units Subject to Prevention of Significant Deterioration or Nonattainment-Area Preconstruction Review.
62-210.350(3), F.A.C.: Additional Public Notice Requirements for Sources Subject to Operation Permits for Title V Sources.

62-210.360, F.A.C.: Administrative Permit Corrections.
62-210.370(3), F.A.C.: Annual Operating Report for Air Pollutant Emitting Facility.
62-210.400, F.A.C.: Emission Estimates.
62-210.650, F.A.C.: Circumvention.
62-210.700, F.A.C.: Excess Emissions.

62-210.900, F.A.C.: Forms and Instructions.
62-210.900(1), F.A.C.: Application for Air Permit – Title V Source, Form and Instructions.
62-210.900(5), F.A.C.: Annual Operating Report for Air Pollutant Emitting Facility, Form and Instructions.
62-210.900(7), F.A.C.: Application for Transfer of Air Permit – Title V and Non-Title V Source.

CHAPTER 62-212, F.A.C.: STATIONARY SOURCES - PRECONSTRUCTION REVIEW, effective 08-17-00

CHAPTER 62-213, F.A.C.: OPERATION PERMITS FOR MAJOR SOURCES OF AIR POLLUTION, effective 04-16-01

62-213.205, F.A.C.: Annual Emissions Fee.
62-213.400, F.A.C.: Permits and Permit Revisions Required.
62-213.410, F.A.C.: Changes Without Permit Revision.
62-213.412, F.A.C.: Immediate Implementation Pending Revision Process.
62-213.415, F.A.C.: Trading of Emissions Within a Source.
62-213.420, F.A.C.: Permit Applications.
62-213.430, F.A.C.: Permit Issuance, Renewal, and Revision.
62-213.440, F.A.C.: Permit Content.
62-213.450, F.A.C.: Permit Review by EPA and Affected States
62-213.460, F.A.C.: Permit Shield.

62-213.900, F.A.C.: Forms and Instructions.
62-213.900(1), F.A.C.: Major Air Pollution Source Annual Emissions Fee Form.
62-213.900(7), F.A.C.: Statement of Compliance Form.

CHAPTER 62-296, F.A.C.: STATIONARY SOURCES - EMISSION STANDARDS, effective 03-02-99

62-296.320(4)(c), F.A.C.: Unconfined Emissions of Particulate Matter.

62-296.320(2), F.A.C.: Objectionable Odor Prohibited.

CHAPTER 62-297, F.A.C.: STATIONARY SOURCES - EMISSIONS MONITORING, effective 03-02-99

62-297.310, F.A.C.: General Test Requirements.
62-297.330, F.A.C.: Applicable Test Procedures.
62-297.340, F.A.C.: Frequency of Compliance Tests.
62-297.345, F.A.C.: Stack Sampling Facilities Provided by the Owner of an Emissions Unit.
62-297.350, F.A.C.: Determination of Process Variables.
62-297.570, F.A.C.: Test Report.
62-297.620, F.A.C.: Exceptions and Approval of Alternate Procedures and Requirements.

Miscellaneous:

CHAPTER 28-106, F.A.C.: Decisions Determining Substantial Interests
CHAPTER 62-110, F.A.C.: Exception to the Uniform Rules of Procedure, effective 07-01-98
CHAPTER 62-256, F.A.C.: Open Burning and Frost Protection Fires, effective 11-30-94
CHAPTER 62-257, F.A.C.: Asbestos Notification and Fee, effective 02-09-99
CHAPTER 62-281, F.A.C.: Motor Vehicle Air Conditioning Refrigerant Recovery and Recycling, effective 09-10-96

Florida Department of Environmental Protection
Bob Martinez Center
2600 Blairstone Road
Tallahassee, Florida 32399-2400

Charlie Crist
Governor
Jeff Kottkamp
Lt. Governor
Michael W. Sole
Secretary

PERMITTEE

Lake Cogeneration, Ltd.
39001 Golden Gem Drive
Umatilla, Florida 32784

Authorized Representative:
James Miller, Plant Manager

Air Permit No. 0694801-012-AC
Permit Expires: June 1, 2011
Lake Cogeneration Facility
Minor Source Air Construction Permit
Installation of Oxidation Catalyst
Control Systems

PROJECT AND LOCATION

This permit authorizes the installation of oxidation catalyst control systems to the existing two General Electric (GE) LM-6000 combustion turbine units. The proposed work will be conducted at the Lake Cogeneration Facility, which is a combined cycle combustion turbine cogeneration plant (Standard Industrial Classification No. 4931). The facility is located in Lake County at 39001 Golden Gem Drive in Umatilla, Florida. The UTM coordinates are Zone 17, 434.00 km East, and 3198.80 km North.

STATEMENT OF BASIS

This air pollution construction permit is issued under the provisions of: Chapter 403 of the Florida Statutes (F.S.) and Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). The permittee is authorized to conduct the proposed work in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department. The Lake Cogeneration Facility is subject to the preconstruction review requirements for major stationary sources in Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality. However, this project is only subject to the general preconstruction review requirements in Rule 62-212.300, F.A.C. Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of this permit.

CONTENTS

Executed in Tallahassee, Florida

Joseph Kahn, Director
Division of Air Resource Management

(Date)

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Final Air Permit package (including the Final Determination and Final Permit with Appendices) was sent by electronic mail, or a link to these documents made available electronically on a publicly accessible server, with received receipt requested before the close of business on _____ to the persons listed below.

James Miller, Lake Cogeneration Facility: jmiller@caithnessenergy.com
Thomas Grace, Caithness Energy: tgrace@caithness.com
Scott Osbourn, Golder Associates: sosbourn@golder.com
Kathy Forney, EPA Region 4: forney.kathleen@epa.gov
Heather Abrams, EPA Region 4: abrams.heather@epa.gov
Ana M. Oquendo, EPA Region 4: oquendo.ana@epa.gov
Caroline Shine, DEP CD: caroline.shine@dep.state.fl.us
Vickie Gibson, DEP BAR Reading File: victoria.gibson@dep.state.fl.us

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.

_____ _____
(Clerk) (Date)

FACILITY AND PROJECT DESCRIPTION

Existing Facility

Lake Cogeneration, Ltd. owns the Lake Cogeneration Facility, which is a combined cycle combustion turbine (CT) cogeneration plant. The facility consists of two GE LM-6000 CT units. Each unit is equipped with an inlet chiller and supplementary fired duct burner and exhausts through a Heat Recovery Steam Generator (HRSG) stack. Natural gas is the primary fuel fired in the CT, with distillate oil used as a restricted alternate fuel.

In 2007, a spray intercooling (SPRINT) system was installed on each of the CT. A continuous emission monitoring system (CEMS) for monitoring and reporting NO_X emissions was also installed on each unit. The facility consists of the emission units given below.

Facility ID No. 0694801

ID No.	Emission Unit Description
002	Fuel Oil Tank
003	Combined Cycle Combustion Turbine with Duct Burner
004	Combined Cycle Combustion Turbine with Duct Burner

Proposed Project

The proposed project authorizes the installation of an oxidation catalyst system in the HRSG associated with each of the two CT units. The oxidation catalyst system is used to control or reduce carbon monoxide (CO) emissions. The catalyst (stainless steel foil coated with calcined alumina with platinum metal) enhances the chemical reaction between oxygen and CO and forms carbon dioxide. This project generally provides for emission control of CO in the range of 50 to 70%. The project will also result in an emission reduction of volatile organic compounds (VOC). This project will modify the following emissions units.

Facility ID No. 0694801

ID No.	Emission Unit Description
003	Combined Cycle Combustion Turbine with Duct Burner
004	Combined Cycle Combustion Turbine with Duct Burner

FACILITY REGULATORY CLASSIFICATION

- The facility is not a major source of hazardous air pollutants (HAP).
- The facility has no units subject to the acid rain provisions of the Clean Air Act (CAA).
- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is a major stationary source in accordance with Rule 62-212.400(PSD), F.A.C.

SECTION 2. ADMINISTRATIVE REQUIREMENTS

1. Permitting Authority: The permitting authority for this project is the Bureau of Air Regulation, Division of Air Resource Management, Florida Department of Environmental Protection (Department). The Bureau of Air Regulation's mailing address is 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400. All documents related to applications for permits to operate an emissions unit shall be submitted to the Air Resource Section of the Department's Central District Office at 3319 Maguire Boulevard, Suite 232, Orlando, FL 32803-3767.

2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Air Resources Section of the Department's Central District Office at 3319 Maguire Boulevard, Suite 232, Orlando, FL 32803-3767.

3. Appendices: The following Appendices are attached as part of this permit:

   a. Appendix A. Citation Formats and Glossary of Common Terms;

   b. Appendix B. General Conditions;

   c. Appendix C. Common Conditions; and

   d. Appendix D. Common Testing Requirements.

4. Applicable Regulations, Forms and Application Procedures: Unless otherwise specified in this permit, the construction and operation of the subject emissions units shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; and Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296 and 62-297, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations.

5. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]

6. Modifications: The permittee shall notify the Compliance Authority upon commencement of construction. No new emissions unit shall be constructed and no existing emissions unit shall be modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]

7. Application for Title V Permit: This permit authorizes construction of the permitted emissions units and initial operation to determine compliance with Department rules. A Title V air operation permit is required for regular operation of the permitted emissions unit. The permittee shall apply for a Title V air operation permit at least 90 days prior to expiration of this permit, but no later than 180 days after commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the Department's Central District Office at 3319 Maguire Boulevard, Suite 232, Orlando, FL 32803-3767. [Rules 62-4.030, 62-4.050, 62-4.220 and Chapter 62-213, F.A.C.]

A. Combustion Turbine Units (EU-003 and -004)

Emissions Units 003 and 004
Description: Each unit consists of a GE Model LM-6000 CT, HRSG with duct firing, chiller system, and SPRINT spray inter-cooling. Steam generated in the HRSG is directed to a common steam turbine-electrical generator (STG), which is rated at 26.5 megawatts (MW). *Fuel*: Each unit fires pipeline natural gas as the primary fuel and distillate oil as a restricted alternate fuel. *Capacity*: At a turbine inlet temperature of 51°F, the maximum heat input rate from gas firing based on the lower heating value (LHV) is: 423 million British thermal units (MMBtu) per hour without SPRINT, which produces approximately 45 MW; or 450 MMBtu per hour with SPRINT, which produces approximately 52 MW. *Nitrogen Oxides (NO_X) Controls*: A water injection system is used to reduce NO_X emissions. The water-to-fuel ratio is monitored continuously and adjusted by the automatic control system based on load conditions. *Carbon Monoxide (CO) Controls*: This project adds an oxidation catalyst system to each CT unit to reduce CO and VOC emissions. *Stack Parameters*: The stack is a maximum of 11 feet in diameter and at least 100 feet tall. At base load conditions and a compressor inlet temperature of 51°F, exhaust gas exits the stack at approximately 250 °F with a volumetric flow rate of approximately 320,253 actual cubic feet per minute (acfm). *CEMS*: Each unit is equipped with a CEMS to monitor NO_X emissions.

EQUIPMENT

1. Oxidation Catalyst System: The permittee shall install an EmeraChem (or equivalent) oxidation catalyst system in the HRSG of each CT unit. The catalyst, which is stainless steel foil coated with calcined alumina with platinum metal, enhances the chemical reaction between oxygen and CO. The use of this oxidation catalyst system generally provides for an emission reduction of CO in the range of 50% to 70%, depending on the exhaust gas temperature. [Application No. 0694801-012-AC]

EMISSION LIMITS AND PERFORMANCE STANDARDS

{Permitting Note: This project adds an oxidation catalyst system to each CT unit. There are no changes to any permitted capacities, operational restrictions or emission standards in any previously issued air construction or Title V permits.}

TESTING REQUIREMENTS

2. Initial Compliance Tests: Each unit shall be tested to demonstrate initial compliance with the CO emissions standards specified in the Title V air operation permit. The initial tests shall be conducted within 60 days after completing construction of the oxidation catalyst project and achieving maximum production capacity, but not later than 180 days after initial operation of the unit with the oxidation catalyst. Satisfactory test results may be used to demonstrate annual compliance required by the Title V air operation permit for the year that the initial compliance test took place. [Rules 62-4.070(3) and 62-297.310(7)(a)1, F.A.C.]

3. Test Notifications: At least 15 days prior to the date on which each required test is to begin, the permittee shall notify the Compliance Authority of the date, time, and place of each test. The notification shall also include the name and phone number of the contact person who will be responsible for coordinating and having the tests conducted. Tests shall be conducted in accordance with the applicable requirements specified in Appendix D (Common Testing Requirements) of this permit. [Rule 62-297.310(7)(a)9, F.A.C.]

4. Test Methods: Required tests shall be performed in accordance with the following reference methods.

Method	Description of Method and Comments
10	Determination of Carbon Monoxide Emissions from Stationary Sources (The method shall be based on a continuous sampling train.)
19	Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxides Emission Rates (Optional F-factor method may be used to determine flow rate and gas analysis to calculate mass emissions in lieu of Methods 1-4.)

The above methods are described in Appendix A of 40 CFR 60 and are adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Rules 62-204.800 and Appendix A of 40 CFR 60]

RECORDS AND REPORTS

5. Test Reports: The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Appendix D (Common Testing Requirements) of this permit. For each test run, the report shall also indicate load (MW), the heat input rate (MMBtu per hour), fuel firing rate, NO_X emissions monitored by the CEMS, ambient temperature (°F), turbine inlet temperature (°F), and water-to-fuel ratio. [Rule 62-297.310(8), F.A.C.]

6. Testing Capacity: The permittee shall conduct compliance testing of emissions with each CT operating at capacity. Capacity is defined as 90-100 percent of the manufacturer's rated heat input achievable for the average compressor inlet conditions during the test. If it is impracticable to test at capacity, then each CT may be tested at less than capacity. In such cases, the entire curve or table shall be adjusted downward by the increment that reflects the reduced rate of operation at which compliance was demonstrated. This increment is equal to the difference between the manufacturer's heat input or fuel usage value and 110 percent of the value reached during the test. In this case, the data and calculations necessary to demonstrate the heat input or fuel usage rate correction shall be submitted to the department with the compliance test report. Procedures for these tests shall meet all applicable requirements (i.e., testing time frequency, minimum compliance duration, etc.) as given in Appendix D of this permit. [Rule 62-4.070(3), F.A.C.]

NOTIFICATIONS

7. Construction Notifications: Within 15 days of completing construction, the permittee shall notify the Compliance Authority that construction has been completed. The notification shall include an updated proposed schedule of activities through the initial shakedown period and initial testing. [Rule 62-4.070(3), F.A.C.]

ATTACHMENT LC-FI-C2

REQUESTED PERMIT CHANGES

ATTACHMENT LC-FI-C2
Requested Changes to Current Title V Air Operation Permit

A summary of the requested revisions is as follows:

- Revision in the nominal MW ratings of the facilities;
  - Page 2, subsection A – Change from 52MW to 48 MW
- Revise to reference the allowable permit limits to 51 F and delete the references to ISO conditions;
  - Page 6, section A1 (d) – Remove reference to ISO conditions (remove "at 51F or 429 MMBtu/hr/CT when corrected to International Organization for Standardization (ISO) conditions.")
  - Page 7, Table 1 – Remove limits for "@59F"
- Revise to remove the distinction between the normal operating mode and the SPRINT mode:
- Revise the annual test scheduling to be consistent with a FY basis; and
  - Page 13, section A24 – Change from the July 15 requirement to fiscal year requirement.
- Finally, it is requested that a footnote be added to the CO emission limits in Condition A.6of the current TV permit, indicating that the limits are corrected to 15 percent O2. This is consistent with other similar BACT determinations for CO and may have been implied in the current permit, although not specifically addressed.

ATTACHMENT LC-FI-C3

CAM PLAN

COMPLIANCE ASSURANCE MONITORING PLAN
(CAM PLAN)
for

CARBON MONOXIDE

Lake Cogeneration Plant

Caithness Corporations
Lake County, Florida

January 2011

I. EMISSION UNITS REQUIRING CAM PLANS

A. CAM Rule Applicability Definition

This permit revision application requests incorporation of the provisions of Permit No. 0694801-012-AC, and, therefore, requires changes to conditions of the current Title V Air Operation Permit No. 0694801-011-AV to incorporate these provisions. As a result of the instillation of oxidation catalyst control systems for carbon monoxide (CO) control, a Compliance Assurance Monitoring (CAM) plan has been developed, since the CT units are not equipped with CO CEMS as a continuous compliance determination method.

As part of the Title V renewal/revision process, EPA, through regulations adopted in Title 40, Part 64 of the Code of Federal Regulations (40 CFR 64), is requiring submittal of Compliance Assurance Monitoring (CAM) Plans. This regulation has been incorporated by reference by FDEP in Rule 62-204.800 and implemented in Rule 62-213.440.

CAM plans are required for all Title V permitted emission units using control devices to meet federally enforceable emission limits or standards with pre-control emissions greater than "major" source thresholds. The term "major" is defined as in the Title V Regulations (40 CFR 70), but applied on a source-by-source basis. However, there are some specific exemptions to the applicability of the CAM Rule.

B. Emissions Units Requiring CAM Plans

A review of emission units at Lake Cogeneration Plant was conducted to determine the applicability of the CAM Rule. This evaluation process resulted in a determination that both CTs (DEP Emission Unit ID Nos. 003, and 004) are subject to the CAM requirements for CO. Specific exemptions to the applicability of the CAM Rule were also considered in this evaluation.

Combined Cycle Combustion Turbines/ Duct Burner (E.U. ID No. 003 and 004)

The Lake Cogeneration facility consists of two GE LM-6000 combustion turbine units (CTs), each unit equipped with an inlet chiller and a supplementary fired duct burner (DB) and exhausting through Heat Recovery Steam Generator (HRSG) stacks. The CTs have dual fuel (natural gas and distillate fuel) capability. Both CTs recently underwent a SPRay INTercooling (SPRINT) upgrade for enhanced efficiency. Permit No. 0694801-012-AC authorized the installation of an oxidation catalyst in the HRSG associated with each of the two CTs.

II. CAM PLAN FOR CARBON MONOXIDE EMISSIONS

A. Control Technology

CO is controlled or reduced by the use of a catalytic oxidation system, which is effectively a passive control system. The catalyst (stainless steel foil coated with calcined alumina with platinum metal) enhances the chemical reaction between oxygen and carbon monoxide and forms carbon dioxide as the end product. This reaction generally provides for emission control in the range of 50 to 70%, depending on the exhaust gas temperature. The catalyst normally operates at a temperature around 700° F with corresponding CO removal efficiencies of approximately 70%. This system is designed and certified by the manufacturer to operate while the plant is burning either natural gas or new No. 2 diesel fuel oil.

A plant operator occupies the plant control room 24 hours per day, which allows the plant personnel to monitor two key catalyst operating parameters. Namely, catalyst inlet temperature and pressure drop across the catalyst bed. A high temperature alarm is proposed to alert the operator if the catalyst inlet temperature becomes excessive to protect the bed from thermal damage, and a high-pressure alarm sounds if the pressure drop across the catalyst bed becomes excessive. The pressure reading serves two purposes: to ensure that there is airflow across the bed, thus verifying that the system is operating, and to alert the plant operator if a possible plugging or fouling has occurred.

B. Monitoring Approach

The key elements of the monitoring approach are presented in Table 1. The selected performance indicators are catalyst inlet temperature, pressure drop across the catalyst bed, and annual analysis of a catalyst test plug. The plant operator manually logs the temperature and the pressure drop once a day, monitors the alarms, and takes action if the readings are outside the allowable operating range. The test plug is analyzed annually to enable the catalyst manufacture to certify the condition of the catalyst.

TABLE 1. MONITORING APPROACH

	Indicator No. 1	Indicator No. 2
I. Indicator	Catalyst inlet temperature and pressure differential	Annual test plug analysis.
Measurement Approach	Thermocouples Pressure sensors	A test plug of the catalytic material is removed for the manufacturer's laboratory analysis.
II. Indicator Range	Maximum Temperature: 1,250°F (677°C) Maximum Pressure Difference: 3" water column (w.c.)	Manufacturer certifies whether or not the catalyst is within operating specifications.
QIP Threshold (optional)	An excursion is defined as rising above 1,250°F (677°C), or rising above 3" w.c, during normal operations.	
III. Performance Criteria A. Data Representativeness	The thermocouples are located at the inlet face of the catalyst bed. The pressure sensors are located on the inlet and outlet faces of the catalyst bed.	A representative sample is removed from the catalyst bed in accordance with manufacturer's operational instructions.
B. Verification of Operational Status	Plant control room operators monitor the alarm system 24 hours/day and records data once per day.	Manufacturer certified condition of catalyst after initial installation and annually thereafter.
C. QA/QC Practices and Criteria	Annually testing/calibration of the temperature and pressure sensor transmitters.	NA
D. Monitoring Frequency	Daily	Annual
Data Collection Procedures	Temperature and pressure readings are recorded daily.	Test plugs are removed when the plant is shut down for annual maintenance.
Averaging Period	NA (monitoring data does not correspond to actual emissions rate.)	NA

ATTACHMENT LC-FI-C4

COMPLIANCE DEMONSTRATION REPORTS/NOTIFICATIONS

ATTACHMENT LC-FI-C4
Compliance Demonstration Reports/Records

Lake Cogeneration Plant Permit No. 0694801-012-AC			
Permit Condition	**Description**	**Method or means used to determine compliance**	**Compliant/ non-compliant**
Section 2 Administrative Requirements			
7.	The permittee shall apply for a Title V air operation permit at least 90 days prior to expiration date (June 1, 2011) of this construction permit, but no later than 180 days after commencing operations of the oxidation catalyst systems.	Compliance testing conducted August 17, 2010.	In compliance
Section 3 Emissions Unit Specific Conditions			
1	The permittee shall install an EmeraChem (or equivalent) oxidation catalyst system in the HRSG of each CT unit.		In compliance
2	Each unit shall be tested to demonstrate initial compliance with the CO emissions standards specified in the Title V air operation permit. The initial tests shall be conducted within 60 days after completing construction of the oxidation catalyst project and achieving maximum production capacity, but not later than 180 days after initial operation of the unit with the oxidation catalyst.	CO CT NG Test Results: Attachment A CO DB NG Test Results: Attachment A CO CT & NG Combined Results: Attachment A	In compliance
3	At least 15 days prior to the date on which each required test is to begin, the permittee shall notify the Compliance Authority of the date, time, and place of each test.	CO CT NG Test Notification CO CT DFO Test Notification CO DB NG Test Notification	In compliance
4	The permittee shall conduct compliance testing of emissions with each CT operating at capacity.	CO CT NG Test Report: Attachment A CO DB NG Test Report: Attachment A	In compliance
5	Within 15-day of completing construction, the permittee shall notify the Compliance Authority that construction has been completed.	Construction completion letter	In compliance

ATTACHMENT A

COMPLIANCE TEST REPORTS

Air Emissions Compliance Test Report

Completed for:

Lake Cogeneration Ltd.
Lake Cogeneration Facility
Combustion Turbine Units 1 and 2
(EU -003 and -004)

Test Report Number: 20-4237-0102-001

Test Completed: August 17, 2010

C.E.M. SOLUTIONS

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

Air Emissions Compliance Test Report

Lake Cogeneration Ltd.
Lake Cogeneration Facility
Combustion Turbine Units 1 and 2 (EU -003 and -004)
Umatilla, Florida

C.E.M. Solutions Project No. 4237

Testing Completed: August 17, 2010

C.E.M. Solutions, Inc Report Number: 20-4237-0102-001

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

Statement of Validity

I hereby certify the information and data provided in this emissions test report for tests performed at the Lake Cogeneration Facility, on August 17, 2010, 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:	Lake Cogeneration Ltd.
Address of Owner:	39001 Golden Gem Drive Umatilla, Florida 32784
Source Identification:	Facility ID: 0694801 Emissions Unit: 1 (EU -003) and 2 (EU -004)
Location of Source:	Lake County, Florida
Type of Operation:	SIC Code: 4911
Tests Performed:	Method 1 – Traverse Points Method 3A – Determination of Oxygen and Carbon Dioxide Method 7E – Determination of Nitrogen Oxides Method 9 – Visible Determination of Visible Emissions Method 10 – Determination of Carbon Monoxide Method 19 – Determination of Nitrogen Oxide Emissions Rates
Test Supervisor:	Mr. Robert Douglas
Date(s) Tests Conducted:	August 17, 2010: RATA and Compliance on Units 1 and 2
Site Test Coordinator:	Mr. Allan Oliver
State Regulatory Observers:	No observers present

C.E.M. Solutions, Inc Test Personnel

Project Field Manager:	Mr. Robert Douglas
Test Technicians:	Mr. Chris Harrell Mr. Josh Cooper

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Appendices

1.0 Introduction

Lake Cogeneration Ltd. retained C.E.M. Solutions, Inc. to perform source emissions testing and Relative Accuracy Test Audits (RATA) on the combustion turbine (CT) Unit 1 (EU -003) and Unit 2 (EU -004) located at its facility in Umatilla, Florida.

The test program was conducted in order to evaluate the compliance status of the CT's exhaust, while firing pipeline natural gas, in respect to the United States Environmental Protection Agency (USEPA) Standards of Performance for Stationary Turbines (Title 40 of the Code of Federal Regulations, Part 60, Subpart GG) and the Florida Department of Environmental Protection (FDEP) permit number 0694801-011-AV. The test program and results are presented and discussed in this report. Also, RATA tests were conducted in order to evaluate the accuracy of the Unit 1 and 2 CEMS in accordance with the United States Environmental Protection Agency (USEPA) requirements in the Code of Federal Regulations, Title 40, Part 75, Appendix B, and Section 2.3.1 and Title 40, Part 60, Appendix F, Section 5.1.3.

Mr. Allan Oliver of Lake Cogeneration Facility coordinated plant operations throughout the test program. All testing was conducted in accordance with test methods promulgated by the USEPA.

The Lake CT was found to be in compliance with permit number 0694801-011-AV while operating at over 90% capacity. The results of the test program are summarized in Table 1.

Table 1: Summary of Compliance Test
Lake Cogeneration Facility
Units 1 and 2

Unit Number	Emission	Result	Status
Unit 1CT	NO_X lbs/mmBtu Part 75 RATA	0.006lb/mmbtu	PASS
	NO_X ppm @ 15% O_2 Part 60 RATA	8.3%	PASS
	CO (CT only)	18.7 ppmvd, 17.4 lb/hr	PASS
	CO (CT & DB)	15.7 lb/hr	PASS
	V.E. % (CT only)	0.0 %	PASS
	V.E. % (CT & DB)	0.0 %	PASS
Unit 1 DB	NO_X	0.4 lb/hr, 0.009 lb/mmBtu	PASS
	CO	0.0 lb/hr 0.000 lb/mmBtu	PASS
Unit 2 CT	NO_X lbs/mmBtu Part 75 RATA	0.006 lb/mmbtu	PASS
	NO_X ppm @ 15% O_2 Part 60 RATA	7.8%	PASS
	CO (CT only)	5.9 ppmvd, 5.4 lb/hr	PASS
	CO (CT & DB)	6.3 lb/hr	PASS
	V.E. % (CT only)	0.0 %	PASS
	V.E. % (CT & DB)	0.0 %	PASS
Unit 2 DB	NO_X	0.5 lb/hr, 0.010 lb/mmBtu	PASS
	CO	1.0 lb/hr 0.019 lb/mmBtu	PASS

2.0 Facility Description

The CT Units 1 and 2 are each 52.0 MW, combined cycle combustion turbines with duct burners that exhaust through a heat recovery steam generator (HRSG).

2.1 Process Equipment

Units 1 and 2 each have a maximum heat input rating of 450 mmBtu/hr while firing natural gas. Calculations are based on the low heating value (LHV) of each fuel to each unit.

Control measures and equipment consists of water injection. The combustion turbines incorporate a heat recovery steam generator. Emissions are exhausted through separate 150 ft. stacks, having inner diameters of 11 ft.

2.2 Regulatory Requirements

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

- NO_X (demonstrated by CEMS Relative Accuracy Test Audit)
- CO in ppmvd and pounds per hour
- Visible Emissions in percent

In accordance with permit condition A.10, ongoing NO_X compliance is determined by the Continuous Emissions Monitoring System (CEMS) located on the CT Unit 2 stack. The CEMS was also evaluated during the test program to determine monitoring accuracy.

Table 2 summarizes the applicable emissions and CEMS accuracy limits for the CT unit.

Table 2: Summary of Emissions and CEMS Accuracy Limits
Lake Cogeneration Facility
Units 1 and 2

Pollutant	Unit	Control Technology	Emission Limit, Performance Specification	Permit Condition
NO_X lb/mmBtu	CT 1 & 2	Water Injection	RA ≤ 7.5% of average RM value or ± 0.015 lb/mmBtu	Part 75
NO_X ppm @ 15% O_2	CT 1 & 2	Water Injection	RA ≤ 20% of average RM	A.6
NO_X	DB 1 & 2	Water Injection	0.1 lb/mmBtu, 18.0 lb/hr	A.6
CO	CT 1 & 2	Good Combustion	≤ 28ppmvd, 56.0 lb/hr (CT) 92.0 lb/hr (CT & DB)	A.6
CO	DB 1 & 2	Good Combustion	0.2 lb/mmBtu, 36.0 lb/hr	A.6
Visible Emissions	CT 1 & 2	Good Combustion	≤10%	A.5

3.0 Test Program/Operating Conditions

Emissions tests were completed on CT Units 1and 2 at the Lake Cogeneration Facility to determine the compliance status of the natural gas fired turbines on August 17, 2010.

NO_X, CO, and visible emissions testing was performed concurrently with 40CFR, Part 60 Relative Accuracy Testing on CT Units 1and 2 at base load while firing natural gas.

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

- Unit Generation (MW)
- Combustor inlet air temperature
- Fuel flow rate
- Heat Input in mmbtu/hour

During testing at the high load level, the Unit 1 CT operated at 425.8 mmBtu/hr, 94.6% of the maximum heat input of 450 mmBtu/hr. Unit 2 operated at 427.3 mmBtu/hr, 94.9% of the maximum heat input of 450 mmBtu/hr.

CT 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 Instrument Analyzer Procedures

NO_X and CO reference method (RM) data was determined using instrument analyzer procedures. In addition, diluent gas concentrations of oxygen (O_2) were also measured via instrumental methods.

NO_X RM data was determined using instrument analyzer procedures as well. NO_X EPA Method 7E was used for a Relative Accuracy Test Audit (RATA) on the Unit 1 and 2 CEMS NO_X analyzers.

Mathematical equations used to determine calculated emissions standards are located in Appendix B.

Table 3 summarizes the EPA methods and instrumentation:

Table 3: Summary of EPA Instrument Reference Methods
Lake Cogeneration Facility
Units 1 and 2

Pollutant	Unit	EPA Method	Instrument	Serial Number
NO_X	1	7E	TEI Model 42CHL	42CHL-59277-322
O_2	1	3A	Servomex 1440	1420D/3379
CO	1	10	TEI Model 48C	48C-74094-375
NO_X	2	7E	TEI Model 42CHL	42CHL-74122-375
O_2	2	3A	Servomex 1440	1420C/2784
CO	2	10	TEI Model 48C	48C-68844-361

All reference method analyzers used meet or exceed applicable performance specifications detailed in the appropriate method.

Gas samples were continuously extracted from the stack by a gas sample probe. Samples were then transported to a gas sample conditioner via a heated sample line operating at 250°F or above. The gas sample conditioner lowers the dew point of the sample gas to approximately 5°C through minimum interference heat exchangers. The dry, cool sample is then sent to the gas analyzers, located in the environmentally controlled test trailer for analysis by the reference method analyzers.

Instrument outputs were recorded continuously with a Windows compatible personal computer, compiled into 15 second averages, and stored in a database for future reference.

Instrument ranges and calibration gases were chosen in accordance with each pollutant's applicable EPA method. Instrument ranges and calibration gases used are shown in Table 4:

Table 4: Reference Method Calibration Span and Calibration Gases Used
Lake Cogeneration Facility
Units 1 and 2

Pollutant	Test Location	Calibration Span	Calibration Gases[a]
NO_X	Units 1 & 2	45.64 ppm	0.0 ppm NO 19.82 ppm NO 45.64 ppm NO
O_2	Units 1 & 2	20.44 %	0.0 % O_2 10.34 % O_2 20.44 % O_2
CO	Units 1 & 2	45.55 ppm	0.0 ppm CO 19.81 ppm CO 45.55 ppm CO

[a] Concentrations of NO, CO and O_2 are in a balance of purified nitrogen (N_2). All analyzers were zeroed with ultra high purity N_2. All calibration gases have been certified to NIST traceable standards.

Calibration gas Certificates of Analysis can be found in Appendix C.

4.1.1 Sampling Location/Traverse Points/Test Run Duration

Units 1and 2 exhaust stack inner diameter, at the sample location, is 11 feet (132 inches). The emissions sampling location on Units 1 and 2 is 45 feet downstream from the nearest flow disturbance and 11 feet from the stack exhaust. A diagram of the sample location can be viewed in Appendix C.

A 12 point gaseous stratification test was completed during Run 1 of the RATA test. It was conducted in accordance with 40CFR, Part 75, Appendix A, Section 6.5.6.1. The points were located at 4.4% (5.8"), 14.6% (19.3") and 29.6% (39.1") of the inner stack diameter and were sampled from 4 ports. Traverse test results are located in Appendix D.

Units 1 and 2 both meet the single sample point criteria and a single reference method measurement point was used during the remainder of the test program. The sample location was no less than 1.0 meter from the stack wall along one of

the measurement lines used in the stratification test in accordance with 40CFR, Part 75, Appendix A, Section 6.5.6(b)(4).

Run 1 (stratification test run) was 37 minutes in duration. Runs 2 through 9 were 21 minutes in duration. Three (3) test runs were conducted with the duct burners on. These runs were 1 hour in duration.

4.1.2 Quality Assurance/Quality Control Procedures

All sampling, analytical, and Quality Assurance/Quality Control (QA/QC) procedures outlined in the EPA methods were followed. All test equipment was calibrated before or during use in the field. Interference checks, response time checks, and NO_2 to NO converter checks were performed on each instrumental analyzer, as applicable, before field use. In the field, each analyzer and the entire instrument measurement system was checked for system bias before and following each test run using the calibration gases listed in Table 4.

Appendix E contains the QA/QC checks.

4.2 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 emissions run was performed as required in permit condition A.13 while the unit was operating at maximum capacity.

5.0 Test Results

The test program results are presented below. The CT Unit 1 and 2 NO_X CEMS RATAs are summarized in Tables 5 through 7 and tables 9 through 11. Tables 8 and 12 summarize the compliance test results for NO_X, CO and Visible Emissions. Supporting RM CO and NO_X field data, fuel analysis reports, and calculated values are presented in Appendix F. The RATA CEMS data is located in Appendix A.

5.1 Unit 1 (EU-003)

5.1.1 Nitrogen Oxides (NO_X)

The difference between the Unit 1 NO_X lb/mmBtu CEMS and the Reference method was 0.006 lb/mmbtu, passing the Part 75 alternative annual performance specification of ≤0.015 lb/mmbtu. Unit 1 NO_X-diluent CEMS passed the BAF test. A BAF of 1.000 has been assigned to the Unit 1 NO_X lb/mmBtu CEMS.

The Unit 1 NO_X ppm @ 15% O_2 CEMS relative accuracy was 8.3% passing the Part 60 annual performance specification of ≤ 20.0 % RA.

The three-run average NO_X emission for the duct burner was calculated to be 0.4 lb/hr and 0.009 lb/mmBtu, passing the 18.0 lb/hr and 0.100 lb/mmBtu permit limitation.

5.1.2 Carbon Monoxide (CO)

The average of the three (3) carbon monoxide (CO) test runs on Unit 1 while the duct burners were OFF was 18.7 ppmvd, passing the permit limitation of 28 ppmvd. The average CO lb/hr during duct burner OFF operation was 17.4 lb/hr, passing the permit limitation of 56.0 lb/hr.

The average CO lb/hr during duct burner ON operation was 15.8 lb/hr, passing the permit limitation of 92.0 lb/hr.

The three-run average CO emission for the Unit 1 duct burner was calculated to be 0.0 lb/hr and 0.000 lb/mmBtu, passing the 36.0 lb/hr and 0.200 lb/mmBtu permit limitation.

5.1.3 Visible Emissions

The highest visible emissions observed in any six-minute average on Unit 1 during the 60 minute test runs conducted during duct burner on and duct burner off operation was 0.0%, passing the 10% emission limitation.

5.2 Unit 2 (EU-004)

5.2.1 Nitrogen Oxides (NO_X)

The difference between the Unit 2 NO_X lb/mmBtu CEMS and the Reference method was 0.006 lb/mmbtu, passing the Part 75 alternative annual performance specification of ≤0.015 lb/mmbtu. Unit 2 NO_X-diluent CEMS passed the BAF test. A BAF of 1.000 has been assigned to the Unit 2 NO_X lb/mmBtu CEMS.

The Unit 2 NO_X ppm @ 15% O_2 CEMS relative accuracy was 7.8% passing the Part 60 annual performance specification of ≤ 20.0 % RA.

The three-run average NO_X emission for the duct burner was calculated to be 0.5 lb/hr and 0.010 lb/mmBtu, passing the 18.0 lb/hr and 0.100 lb/mmBtu permit limitation.

5.2.2 Carbon Monoxide (CO)

The average of the three (3) carbon monoxide (CO) test runs on Unit 2 while the duct burners were OFF was 5.9 ppmvd, passing the permit limitation of 28 ppmvd. The average CO lb/hr during duct burner OFF operation was 5.4 lb/hr, passing the permit limitation of 56.0 lb/hr.

The average CO lb/hr during duct burner ON operation was 6.3 lb/hr, passing the permit limitation of 92.0 lb/hr.

The three-run average CO emission for the Unit 2 duct burner was calculated to be 1.0 lb/hr and 0.019 lb/mmBtu, passing the 36.0 lb/hr and 0.200 lb/mmBtu permit limitation.

5.2.3 Visible Emissions

The highest visible emissions observed in any six-minute average on Unit 2 during the 60 minute test runs conducted during duct burner on and duct burner off operation was 0.0%, passing the 10% emission limitation.

Table 5: Unit 1 NO_x lbs/mmBtu Relative Accuracy Test Audit Summary
Lake Cogeneration Facility

Relative Accuracy Determination

Test Performed For:
Caithness
Lake Cogeneration Facility
Unit 1
RATA
Date:8/17/10

Test Performed By:
C.E.M. Solutions, Inc.
1183 E. Overdrive Circle
Hernando, FL 34442
Ph: 352-489-4337

Run Number	Date of Run	Start Time	Stop Time	Unit Load MW	NO_X RM lbs/mmBtu	CEM lbs/mmBtu	Difference Like lbs/mmBtu
Run 1	17-Aug	6:13:00	6:50:00	48	0.080	0.085	-0.005
Run 2	17-Aug	7:36:00	7:57:00	48	0.084	0.088	-0.004
Run 3	17-Aug	8:13:00	8:34:00	48	0.082	0.088	-0.006
Run 4	17-Aug	8:50:00	9:11:00	48	0.082	0.088	-0.006
Run 5	17-Aug	9:27:00	9:48:00	48	0.082	0.088	-0.006
Run 6	17-Aug	10:04:00	10:25:00	48	0.081	0.088	-0.007
Run 7	17-Aug	10:41:00	11:02:00	48	0.081	0.088	-0.007
Run 8	17-Aug	11:18:00	11:39:00	48	0.081	0.088	-0.007
Run 9	17-Aug	11:55:00	12:16:00	48	0.082	0.088	-0.006
		Average:		48	0.082	0.088	-0.006 lbs/mmBtu

Bias Test (pass/fail): Passed
Bias Adjustment Factor: 1.000
Method of RA Determination: Part 75, Low Emitter

Standard Deviation:	0.0010
Confidence Coefficient:	0.0008
T-Factor:	2.306
Number of runs Reported:	9
Relative Accuracy:	**0.006**
Maximum RA	0.02
RA Status	**Passed**

Note:
All ppm values are corrected to lbs/mmBtu NO_X using RM O2 and CEM O2 as diluents

Table 6: Unit 1 NO_x ppm @ 15% O_2 Relative Accuracy Test Audit Summary

Relative Accuracy Determination

Test Performed For:
Caithness
Lake Cogeneration Facility
Unit 1
RATA
Date:8/17/10

Test Performed By:
C.E.M. Solutions, Inc.
1183 E. Overdrive Circle
Hernando, FL 34442
Ph: 352-489-4337

Run Number	Date of Run	Start Time	Stop Time	Unit Load MW	NO_X RM (Dry) ppm@15% O2	NO_X CEM (Dry) ppm@15% O2	Difference ppm@15% O2
Run 1	17-Aug	6:13:00	6:50:00	48	21.8	23.0	-1.2
Run 2	17-Aug	7:36:00	7:57:00	48	22.7	24.0	-1.3
Run 3	17-Aug	8:13:00	8:34:00	48	22.3	24.0	-1.7
Run 4	17-Aug	8:50:00	9:11:00	48	22.2	24.0	-1.8
Run 5	17-Aug	9:27:00	9:48:00	48	22.3	24.0	-1.7
Run 6	17-Aug	10:04:00	10:25:00	48	22.1	24.0	-1.9
Run 7	17-Aug	10:41:00	11:02:00	48	22.1	24.0	-1.9
Run 8	17-Aug	11:18:00	11:39:00	48	22.1	24.0	-1.9
Run 9	17-Aug	11:55:00	12:16:00	48	22.3	24.0	-1.7
		Average:		48	22.2	23.9	-1.6 ppm

Method of RA Determination: Average RM Value

Note:
All ppm values are corrected to 15 % O2
using RM O2 and CEM O2 as diluents

Standard Deviation:	0.2461
Confidence Coefficient:	0.1892
T-Factor:	2.306
Number of runs Reported:	9
Applicable Standard:	0.0 ppm
Relative Accuracy:	**8.3 %**
Maximum RA	20.0 %
RA Status	**Passed**

Table 7: Unit 1 O_2 Relative Accuracy Test Audit Summary

Relative Accuracy Determination

Test Performed For:
Caithness
Lake Cogeneration Facility
Unit 1
RATA
Date:8/17/10

Test Performed By:
C.E.M. Solutions, Inc.
1183 E. Overdrive Circle
Hernando, FL 34442
Ph: 352-489-4337

Run Number	Date of Run	Start Time	Stop Time	Unit Load MW	O2 RM DRY % V/V	O_2 CEM DRY % V/V	O_2 Difference Like % V/V
Run 1	17-Aug	6:13:00	6:50:00	48	14.1	14.2	-0.1
Run 2	17-Aug	7:36:00	7:57:00	48	14.2	14.3	-0.1
Run 3	17-Aug	8:13:00	8:34:00	48	14.2	14.3	-0.1
Run 4	17-Aug	8:50:00	9:11:00	48	14.2	14.3	-0.1
Run 5	17-Aug	9:27:00	9:48:00	48	14.2	14.3	-0.1
Run 6	17-Aug	10:04:00	10:25:00	48	14.2	14.3	-0.1
Run 7	17-Aug	10:41:00	11:02:00	48	14.2	14.3	-0.1
Run 8	17-Aug	11:18:00	11:39:00	48	14.2	14.3	-0.1
Run 9	17-Aug	11:55:00	12:16:00	48	14.2	14.3	-0.1
		Average:		48	14.2 %	14.3 %	-0.1 %

Standard Deviation:	0.0205
Confidence Coefficient:	0.0157
T-Factor:	2.306
Number of runs Reported:	9
Relative Accuracy:	**0.1**
Maximum RA	1.0
RA Status	**Passed**

Method of RA Determination: Part 75, 1% Volume Difference

Table 8: Unit 1 Compliance Test Results Summary
Lake Cogeneration Facility

Unit 1 DB OFF (CT Only) Run Data

Run Number	Units	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Run 8	Run 9	Average	Standard
Date of Run	2010	17-Aug	17-Aug	17-Aug	17-Aug	17-Aug	17-Aug	17-Aug	17-Aug	17-Aug		
Start Time		6:30:00	7:36:00	8:13:00	8:50:00	9:27:00	10:04:00	10:41:00	11:18:00	11:55:00		
Stop Time		6:50:00	7:57:00	8:34:00	0:21:00	0:21:00	0:21:00	11:02:00	11:39:00	12:16:00		
Unit Load	MW	47.90	47.70	47.70	47.70	47.70	47.80	47.90	48.00	47.90	47.8	
Fuel Flow	Cu-Ft/Hr	462840	459060	458940	460140	461100	462060	463440	464280	463500	461707	
Fuel Heat Value	Btu/Cu-Ft	922.2	922.2	922.2	922.2	922.2	922.2	922.2	922.2	922.2	922.2	
Heat Input	mmBtu/Hr	426.8	423.3	423.2	424.3	425.2	426.1	427.4	428.2	427.4	425.8	
NO_x / O_2	Lbs/mmBtu	0.080	0.084	0.082	0.082	0.082	0.081	0.081	0.081	0.082	0.082	
NO_x / O_2	ppm@15% O2	21.8	22.7	22.3	22.2	22.3	22.1	22.1	22.1	22.3	22.2	
NO_x / O_2	Lbs/Hr	34.1	35.6	34.7	34.8	34.9	34.5	34.6	34.7	35.1	34.8	
CO	ppmvd	19.7	18.0	18.1	18.4	18.4	18.8	18.8	19.2	18.8	18.7	
CO / O_2	Lbs/mmBtu	0.038	0.036	0.036	0.036	0.036	0.037	0.037	0.038	0.037	0.037	
CO / O_2	Lbs/Hr	16.2	15.2	15.2	15.3	15.3	15.8	15.8	16.3	15.8	15.7	

Compliance Run Data CT Only			1			2			3			
Heat Input	mmBtu/Hr		424.5			425.2			427.7		425.8	
NOX	ppm @15% O2		22.3			22.2			22.2		22.2	25.0
NOX	lbs/mmBtu		0.082			0.082			0.081		0.082	
NOX	lbs/Hr		34.8			34.7			34.8		34.8	85.5
CO	ppm, dry		18.6			18.5			18.9		18.7	28.0
CO	lbs/mmBtu		0.037			0.036			0.037		0.037	
CO CT Only	lbs/Hr		15.6			15.5			16.0		15.7	56.0
V.E. Start Time			7:20									
V.E. End Time			8:20									
V.E.	%		0.0								0.0	10.0

Unit 1 DB ON (CT + DB) Run Data												
Run Number	Units		Run 1			Run 2			Run 3			
Date of Run	2010		17-Aug			17-Aug			17-Aug			
Start Time			15:41:00			16:58:00			18:16:00			
Stop Time			16:41:00			17:58:00			19:16:00			
Heat Input CT	mmBtu/Hr		424.5			425.2			427.7			
Heat Input DB	mmBtu/Hr		47			47			46			
Total Heat Input	mmBtu/Hr		472			473			474			
NOX	ppm @15% O2		20.6			20.1			20.3		20.3	25.0
NOX	lbs/mmBtu		0.076			0.074			0.075			
NOX	lbs/Hr		35.9			35.0			35.5		35.5	103.5
CO CT and DB	ppm, dry		16.3			17.6			17.1			
CO CT and DB	lbs/mmBtu		0.029			0.031			0.031			
CO CT and DB	lbs/Hr		13.7			14.7			14.7		14.3	92
CO DB Only	mmBtu/Hr		0.000			0.000			0.000			
NOx CT and DB	ppm, dry		26.2			25.6			25.5			
NOx CT and DB	lbs/mmBtu		0.076			0.074			0.075			
NOx CT and DB	lbs/Hr		35.85			34.98			35.52			
NOx DB Only	mmBtu/Hr		0.000			0.000			0.000			
V.E. Start Time			15:45									
V.E. End Time			16:45									
V.E.	%		0.0								0.0	10.0

Unit 1 Duct Burner Only (CT - DB) Calculations												
NO_x (CT + DB)	lb/hr		39.3			38.3			38.9		38.8	
NO_x (CT)	lb/hr		38.5			38.4			38.5		38.5	
NO_x (DB)	lb/hr		0.8			0.0			0.4		0.4	18.0
NO_x (DB)	lb/mmBtu		0.017			0.000			0.009		0.009	0.100
CO (CT + DB)	lb/hr		15.0			16.1			16.1		15.8	
CO (CT)	lb/hr		17.2			17.1			17.7		17.3	
CO (DB)	lb/hr		0.0			0.0			0.0		0.0	36.0
CO (DB)*	lb/mmBtu		0.000			0.000			0.000		0.000	0.200

* CO (DB) / DB Heat Input = lb/mmbtu

Table 9: Unit 2 NO_x lbs/mmBtu Relative Accuracy Test Audit Summary
Lake Cogeneration Facility

Relative Accuracy Determination

Test Performed For:
Caithness
Lake Cogeneration Facility
Unit 2
RATA
Date:8/17/10

Test Performed By:
C.E.M. Solutions, Inc.
1183 E. Overdrive Circle
Hernando, FL 34442
Ph: 352-489-4337

Run Number	Date of Run	Start Time	Stop Time	Unit Load MW	NO_X RM lbs/mmBtu	CEM lbs/mmBtu	Difference Like lbs/mmBtu
Run 1	17-Aug	6:13:00	6:50:00	49	0.082	0.085	-0.003
Run 2	17-Aug	7:36:00	7:57:00	49	0.081	0.087	-0.006
Run 3	17-Aug	8:13:00	8:34:00	49	0.081	0.087	-0.006
Run 4	17-Aug	8:50:00	9:11:00	49	0.081	0.087	-0.006
Run 5	17-Aug	9:27:00	9:48:00	49	0.081	0.087	-0.006
Run 6	17-Aug	10:04:00	10:25:00	49	0.080	0.087	-0.007
Run 7	17-Aug	10:41:00	11:02:00	49	0.081	0.087	-0.006
Run 8	17-Aug	11:18:00	11:39:00	49	0.080	0.086	-0.006
Run 9	17-Aug	11:55:00	12:16:00	49	0.081	0.087	-0.006
		Average:		49	0.081	0.087	-0.006 lbs/mmBtu

Bias Test (pass/fail): Passed
Bias Adjustment Factor: 1.000
Method of RA Determination: Part 75, Low Emitter

Standard Deviation:	0.0011
Confidence Coefficient:	0.0008
T-Factor:	2.306
Number of runs Reported:	9
Relative Accuracy:	**0.006**
Maximum RA	0.02
RA Status	**Passed**

Note:
All ppm values are corrected to lbs/mmBtu NO_X using RM O2 and CEM O2 as diluents

Table 10: Unit 2 NO_x ppm @ 15% O_2 Relative Accuracy Test Audit Summary

Relative Accuracy Determination

Test Performed For:
Caithness
Lake Cogeneration Facility
Unit 2
RATA
Date:8/17/10

Test Performed By:
C.E.M. Solutions, Inc.
1183 E. Overdrive Circle
Hernando, FL 34442
Ph: 352-489-4337

Run Number	Date of Run	Start Time	Stop Time	Unit Load MW	NO_X RM (Dry) ppm@15% O2	NO_X CEM (Dry) ppm@15% O2	Difference ppm@15% O2
Run 1	17-Aug	6:13:00	6:50:00	49	22.3	23.0	-0.7
Run 2	17-Aug	7:36:00	7:57:00	49	22.1	23.5	-1.4
Run 3	17-Aug	8:13:00	8:34:00	49	22.0	23.5	-1.5
Run 4	17-Aug	8:50:00	9:11:00	49	21.9	23.5	-1.6
Run 5	17-Aug	9:27:00	9:48:00	49	22.0	23.5	-1.5
Run 6	17-Aug	10:04:00	10:25:00	49	21.8	23.5	-1.7
Run 7	17-Aug	10:41:00	11:02:00	49	21.9	23.5	-1.6
Run 8	17-Aug	11:18:00	11:39:00	49	21.7	23.5	-1.8
Run 9	17-Aug	11:55:00	12:16:00	49	21.9	23.5	-1.6
		Average:		49	22.0	23.4	-1.5 ppm

Standard Deviation:	0.3103
Confidence Coefficient:	0.2385
T-Factor:	2.306
Number of runs Reported:	9
Applicable Standard:	0.0 ppm
Relative Accuracy:	**7.8 %**
Maximum RA	20.0 %
RA Status	**Passed**

Method of RA Determination: Average RM Value

Note:
All ppm values are corrected to 15 % O2
using RM O2 and CEM O2 as diluents

Table 11: Unit 2 O_2 Relative Accuracy Test Audit Summary

Relative Accuracy Determination

Test Performed For:
Caithness
Lake Cogeneration Facility
Unit 2
RATA
Date:8/17/10

Test Performed By:
C.E.M. Solutions, Inc.
1183 E. Overdrive Circle
Hernando, FL 34442
Ph: 352-489-4337

Run Number	Date of Run	Start Time	Stop Time	Unit Load MW	O2 RM DRY % V/V	O_2 CEM DRY % V/V	O_2 Difference Like % V/V
Run 1	17-Aug	6:13:00	6:50:00	49	14.0	14.1	-0.1
Run 2	17-Aug	7:36:00	7:57:00	49	14.0	14.1	-0.1
Run 3	17-Aug	8:13:00	8:34:00	49	14.0	14.1	-0.1
Run 4	17-Aug	8:50:00	9:11:00	49	14.0	14.1	-0.1
Run 5	17-Aug	9:27:00	9:48:00	49	14.0	14.1	-0.1
Run 6	17-Aug	10:04:00	10:25:00	49	14.0	14.1	-0.1
Run 7	17-Aug	10:41:00	11:02:00	49	14.0	14.1	-0.1
Run 8	17-Aug	11:18:00	11:39:00	49	14.0	14.1	-0.1
Run 9	17-Aug	11:55:00	12:16:00	49	14.0	14.1	-0.1
		Average:		49	14.0 %	14.1 %	-0.1 %

Method of RA Determination: Part 75, 1% Volume Difference

Standard Deviation:	0.0130
Confidence Coefficient:	0.0100
T-Factor:	2.306
Number of runs Reported:	9
Relative Accuracy:	**0.1**
Maximum RA	1.0
RA Status	**Passed**

Table 12: Unit 2 Compliance Test Results Summary
Lake Cogeneration Facility

Unit 2 DB OFF (CT Only) Run Data												
Run Number	Units	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Run 8	Run 9	Average	Standard
Date of Run	2010	17-Aug	17-Aug	17-Aug	17-Aug	17-Aug	17-Aug	17-Aug	17-Aug	17-Aug		
Start Time		6:30:00	7:36:00	8:13:00	8:50:00	9:27:00	10:04:00	10:41:00	11:18:00	11:55:00		
Stop Time		6:50:00	7:57:00	8:34:00	0:21:00	0:21:00	0:21:00	11:02:00	11:39:00	12:16:00		
Unit Load	MW	48.7	48.6	48.5	48.6	48.6	48.7	48.8	48.9	48.8	48.7	
Fuel Flow	Cu-Ft/Hr	461400	461520	461460	462420	463260	463920	465240	465840	464880	463327	
Fuel Heat Value	Btu/Cu-Ft	922.2	922.2	922.2	922.2	922.2	922.2	922.2	922.2	922.2	922.2	
Heat Input	mmBtu/Hr	425.5	425.6	425.6	426.4	427.2	427.8	429.0	429.6	428.7	427.3	
NO_X / O_2	Lbs/mmBtu	0.082	0.081	0.081	0.081	0.081	0.080	0.081	0.080	0.081	0.081	
NO_X / O_2	ppm@15% O2	22.3	22.1	22.0	21.9	22.0	21.8	21.9	21.7	21.9	22.0	
NO_X / O_2	Lbs/Hr	34.89	34.47	34.47	34.54	34.60	34.23	34.75	34.37	34.73	34.6	
CO	ppmvd	6.1	5.9	5.9	6.0	6.0	5.9	5.8	5.9	5.9	5.9	
CO / O_2	Lbs/mmBtu	0.012	0.011	0.011	0.012	0.012	0.011	0.011	0.011	0.011	0.011	
CO / O_2	Lbs/Hr	5.1	4.7	4.7	5.1	5.1	4.7	4.7	4.7	4.7	4.8	
Compliance Run Data CT Only			1			2			3			
Heat Input	mmBtu/Hr		425.6			427.2			429.1		427.3	
NOX	ppm @15% O2		22.1			21.9			21.8		22.0	25.0
NOX	lbs/mmBtu		0.081			0.081			0.081		0.081	
NOX	lbs/Hr		34.6			34.5			34.6		34.6	85.5
CO	ppm, dry		6.0			6.0			5.9		5.9	28.0
CO	lbs/mmBtu		0.011			0.012			0.011		0.011	
CO CT Only	lbs/Hr		4.8			5.0			4.7		4.8	56.0
V.E. Start Time			7:20									
V.E. End Time			8:20									
V.E.	%		0.0								0.0	10.0
Unit 2 DB ON (CT + DB) Run Data												
Run Number	Units		Run 1			Run 2			Run 3			
Date of Run	2010		17-Aug			17-Aug			17-Aug			
Start Time			14:13:00			15:41:00			16:58:00			
Stop Time			15:13:00			16:41:00			17:58:00			
Heat Input CT	mmBtu/Hr		425.6			427.2			429.1			
Heat Input DB	mmBtu/Hr		51			52			49			
Total Heat Input	mmBtu/Hr		477			479			478			
NOX	ppm @15% O2		20.0			20.0			20.0		20.0	25.0
NOX	lbs/mmBtu		0.074			0.074			0.074			
NOX	lbs/Hr		35.3			35.5			35.4		35.4	103.5
CO CT and DB	ppm, dry		6.7			6.7			6.8			
CO CT and DB	lbs/mmBtu		0.012			0.012			0.012			
CO CT and DB	lbs/Hr		5.7			5.8			5.7		5.7	92
CO DB Only	mmBtu/Hr		0.000			0.000			0.000			
NOx CT and DB	ppm, dry		26.1			26.1			26.1			
NOx CT and DB	lbs/mmBtu		0.074			0.074			0.074			
NOx CT and DB	lbs/Hr		35.27			35.47			35.39			
NOx DB Only	mmBtu/Hr		0.000			0.000			0.000			
V.E. Start Time			15:45									
V.E. End Time			16:45									
V.E.	%		0.0								0.0	10.0
Unit 2 Duct Burner Only (CT - DB) Calculations												
NO_X (CT + DB)	lb/hr		38.7			38.9			38.9		38.8	
NO_X (CT)	lb/hr		38.3			38.1			38.3		38.2	
NO_X (DB)	lb/hr		0.4			0.8			0.6		0.6	18.0
NO_X (DB)	lb/mmBtu		0.008			0.016			0.011		0.012	0.100
CO (CT + DB)	lb/hr		6.3			6.3			6.3		6.3	
CO (CT)	lb/hr		5.3			5.5			5.2		5.3	
CO (DB)	lb/hr		1.0			0.8			1.1		1.0	36.0
CO (DB)*	lb/mmBtu		0.020			0.015			0.022		0.019	0.200

* CO (DB) / DB Heat Input = lb/mmbtu