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DIVISION OF AIR
RESOURCE MANAGEMENT



FPL

January 23, 2012

Jeff Koerner, P.E.
Department of Environmental Protection
Bureau of Air Regulation
111 South Magnolia Street
Tallahassee, FL 32399

Project No: 0990042-007-AC

**Re: Florida Power & Light Company
Riviera Beach Energy Center Project
DEP File No. 0990042-006-AC
Request for Revising the Process Heaters' Maximum Heat Input; Revising
Emergency Generators' Hours of Operation; and Revising Gas Turbines'
Conditions for Visible and Excess Emissions**

Dear Mr. Koerner:

Florida Power & Light Company (FPL) is requesting a revision to the existing air construction permit for the Riviera Beach Energy Center (RBEC) (Permit No. 0990042-006-AC), issued by the Department on June 10, 2009, to lower the maximum heat input of the fuel gas heaters, adjust the hours of operation requirement for the emergency generators, and revise permit language for the gas turbines to reflect conditions which were identified and incorporated into revisions for the West County Energy Center Air Construction Permit (Permit No. 0990646-002-AC) and Cape Canaveral Energy Center Air Construction Permit (Permit No. 0090006-005-AC).

For the fuel gas heaters (EU 011), FPL intends to install two 9.9 MMBtu/hr heaters in place of the 10 MMBtu/hr heaters originally permitted for the site. The 9.9 MMBtu/hr heaters are not regulated sources under either 40 CFR Part 60 or Part 63 and do not have applicable emission specifications. FPL believes that emission limits for each process heater could be removed from the permit.

For the emergency generators (EU 013), FPL proposes that the hours of operation requirement be adjusted for the diesel generators to conform with 40 CFR 63, Subpart ZZZZ and 40 CFR 60, Subpart III, with a limit on operation for testing and maintenance checks not to exceed 100 hours. FPL proposes unlimited hours of operation for emergency use (Subpart ZZZZ [63.6640(f)]).

For the gas turbines (EU 007- 009), FPL proposes to modify the following conditions:

- A.12 – To include allowable visible emissions for fuel switches;
- A.15 – For excess emissions of NO_x and CO resulting from startup, shutdown, or malfunction;
- A.17– To include Full Speed No Load (FSNL) Trip Tests that are manufacturer required for allowable exclusions of emission data for CEMS data exclusions. FPL must perform the FSNL test following routine replacement of major combustion turbine components to retain manufacturer warranties;
- A.23 – To modify the CO monitoring provisions to allow the use of Part 75 monitoring requirements; and
- A.30 – To clarify excess emission reporting under BACT requirements and the applicable emission specification for these units under 40 CFR part 60 Subpart KKKK.

Attachment 1 includes the suggested changes to the permit that FPL proposes. Attachment 2 includes revisions to the air construction permit applications for the process heaters and emergency generators.

These proposed modifications do not affect the previous emission netting analysis and PSD applicability determination project and will not trigger PSD review.

Thank you for your consideration of this request for the RBEC. If you have any comments or questions regarding the attached, please feel free to contact either Ken Kosky at (352) 336-5600 or me at (561) 691-7518.

Sincerely,
Florida Power & Light Company



Barbara P. Linkiewicz
Director of Environmental Licensing

cc: Cindy Mulkey, DEP Siting Office
Dianne Hughes, DEP Southeast District
Ken Kosky, Golder Associates



Department of Environmental Protection

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Division of Air Resource Management

JAN 25 2012

APPLICATION FOR AIR PERMIT - LONG FORM

DIVISION OF AIR RESOURCE MANAGEMENT

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: Florida Power & Light Company	
2. Site Name: Riviera Beach Energy Center (RBEC)	
3. Facility Identification Number: 0990042	
4. Facility Location... Street Address or Other Locator: 200 - 300 Broadway City: Riviera Beach County: Palm Beach Zip Code: 33404	
5. Relocatable Facility? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6. Existing Title V Permitted Facility? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Application Contact

1. Application Contact Name: Barbara Linkiewicz, Director of Environmental Licensing	
2. Application Contact Mailing Address... Organization/Firm: Florida Power & Light Company Street Address: 700 Universe Blvd. City: Juno Beach State: Florida Zip Code: 33408	
3. Application Contact Telephone Numbers... Telephone: (561) 691-7518 ext. Fax: (561) 691-7070	
4. Application Contact E-mail Address: Barbara.P.Linkiewicz@FPL.com	

Application Processing Information (DEP Use)

1. Date of Receipt of Application: 1-25-12	3. PSD Number (if applicable):
2. Project Number(s): 0990042-087-AC	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 application is for a revision to the existing air construction permit (Permit No. 0990042-006-AC) to request the maximum heat input for the process heater be revised from 10 MMBtu/hr to 9.9 MMBtu/hr, and the annual operating hours for the emergency generators will be revised from 160 hr/yr to 100 hr/yr.

As shown in revised Table 2-9B, these proposed modifications do not affect the previous emission netting analysis and PSD applicability determination project and will not trigger PSD review.

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Processing Fee
11	Fuel Gas Heater	AC1A	
13	Emergency Diesel Generator	AC1A	

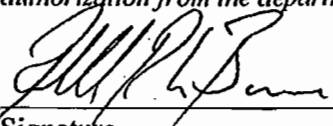
Application Processing Fee

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 : Randall R. LaBauve, Vice President
2. Owner/Authorized Representative Mailing Address... Organization/Firm: Florida Power & Light Company Street Address: 700 Universe Blvd. City: Juno Beach State: FL Zip Code: 33408
3. Owner/Authorized Representative Telephone Numbers... Telephone: (561) 691-7001 ext. Fax: (561) 691-7070
4. Owner/Authorized Representative E-mail Address: Randall.R.LaBauve@FPL.com
5. Owner/Authorized Representative Statement: <i>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.</i>  Signature <u>1/19/2012</u> Date

APPLICATION INFORMATION

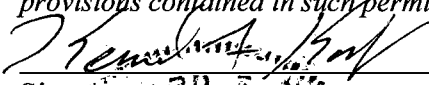
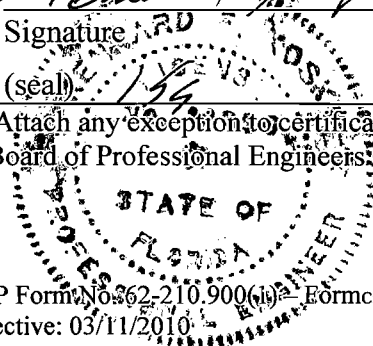
Application Responsible Official Certification

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: <u>Randall R. LaBauve</u>
2. Application Responsible Official Qualification (Check one or more of the following options, as applicable): <input checked="" type="checkbox"/> 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. <input type="checkbox"/> For a partnership or sole proprietorship, a general partner or the proprietor, respectively. <input type="checkbox"/> For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official. <input type="checkbox"/> The designated representative at an Acid Rain source or CAIR source.
3. Application Responsible Official Mailing Address... Organization/Firm: <u>Florida Power & Light Company</u> Street Address: <u>700 Universe Blvd. JES/JB</u> City: <u>Juno Beach</u> State: <u>FL</u> Zip Code: <u>33408</u>
4. Application Responsible Official Telephone Numbers... Telephone: <u>(561) 691-7001</u> ext. Fax: <u>(561) 691-7070</u>
5. Application Responsible Official E-mail Address: <u>Randall.R.LaBauve@fpl.com</u>
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. <u>[Signature]</u> <u>1/23/2012</u> Signature Date

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: Ken Kosky Registration Number: 14996
2. Professional Engineer Mailing Address... Organization/Firm: Golder Associates Inc.** Street Address: 6026 NW 1st Place City: Gainesville State: FL Zip Code: 32607
3. Professional Engineer Telephone Numbers... Telephone: (352) 336-5600 ext. Fax: (352) 336-6603
4. Professional Engineer E-mail Address: kkosky@golder.com
5. Professional Engineer Statement: <i>I, the undersigned, hereby certify, except as particularly noted herein*, that:</i> (1) <i>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</i> (2) <i>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.</i> (3) <i>If the purpose of this application is to obtain a Title V air operation permit (check here <input type="checkbox"/> , 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.</i> (4) <i>If the purpose of this application is to obtain an air construction permit (check here <input checked="" type="checkbox"/> , 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 <input type="checkbox"/> , 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.</i> (5) <i>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 <input type="checkbox"/> , 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.</i>  Signature _____ Date <u>1/19/12</u> (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) 594.2 North (km) 2960.6		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) 26/45/55 Longitude (DD/MM/SS) 80/03/09	
3. Governmental Facility Code: O	4. Facility Status Code: A	5. Facility Major Group SIC Code: 49	6. Facility SIC(s): 4911
7. Facility Comment :			

Facility Contact

1. Facility Contact Name: Mark Lemasney, Plant General Manager
2. Facility Contact Mailing Address... Organization/Firm: Florida Power & Light Company Street Address: 200 - 300 Broadway City: Riviera Beach State: FL Zip Code: 33404
3. Facility Contact Telephone Numbers: Telephone: (321) 433-6257 ext. Fax: ()
4. Facility Contact E-mail Address: Mark.Lemasney@fpl.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: Randall R. LaBauve
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: Florida Power & Light Company Street Address: 700 Universe Blvd. JES/JB City: Juno Beach State: FL Zip Code: 33408
3. Facility Primary Responsible Official Telephone Numbers... Telephone: (561) 691-7001 ext. Fax: (561) 691-7070
4. Facility Primary Responsible Official E-mail Address: Randall.R.LaBauve@fpl.com

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. <input type="checkbox"/> Small Business Stationary Source	<input type="checkbox"/> Unknown
2. <input type="checkbox"/> Synthetic Non-Title V Source	
3. <input checked="" type="checkbox"/> Title V Source	
4. <input type="checkbox"/> Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. <input type="checkbox"/> Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. <input type="checkbox"/> Major Source of Hazardous Air Pollutants (HAPs)	
7. <input type="checkbox"/> Synthetic Minor Source of HAPs	
8. <input type="checkbox"/> One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. <input type="checkbox"/> One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. <input type="checkbox"/> One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. <input type="checkbox"/> Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12. Facility Regulatory Classifications Comment: <p style="text-align: center;">The proposed project is not subject to PSD for any pollutant.</p>	

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
PM	A	N
PM10	A	N
VOC	A	N
SO2	A	N
NOx	A	N
CO	A	N

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

<p>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)</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>2/13/09</u></p>
<p>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)</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>2/13/09</u></p>
<p>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)</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>2/13/09</u></p>

Additional Requirements for Air Construction Permit Applications

<p>1. Area Map Showing Facility Location:</p> <p><input checked="" type="checkbox"/> Attached, Document ID: <u>2/13/09 application</u></p> <p><input type="checkbox"/> Not Applicable (existing permitted facility)</p>
<p>2. Description of Proposed Construction, Modification, or Plantwide Applicability Limit (PAL):</p> <p><input checked="" type="checkbox"/> Attached, Document ID: <u>2/13/09 application</u></p>
<p>3. Rule Applicability Analysis:</p> <p><input checked="" type="checkbox"/> Attached, Document ID: <u>2/13/09 application</u></p>
<p>4. List of Exempt Emissions Units:</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable (no exempt units at facility)</p>
<p>5. Fugitive Emissions Identification:</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable</p>
<p>6. Air Quality Analysis (Rule 62-212.400(7), F.A.C.):</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable</p>
<p>7. Source Impact Analysis (Rule 62-212.400(5), F.A.C.):</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable</p>
<p>8. Air Quality Impact since 1977 (Rule 62-212.400(4)(e), F.A.C.):</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable</p>
<p>9. Additional Impact Analyses (Rules 62-212.400(8) and 62-212.500(4)(e), F.A.C.):</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable</p>
<p>10. Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.):</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable</p>

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for FESOP Applications

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: _____
 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: _____ 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: 6/10/08

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: 1/20/09

Not Applicable (not a CAIR source)

Additional Requirements Comment

Although the "facility" is subject to these additional requirements, the fuel gas heater and emergency generator are not.

EMISSIONS UNIT INFORMATION

Section [1]
Fuel Gas Heater

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for an initial, revised or renewal Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for an air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application - Where this application is used to apply for both an air construction permit and a revised or renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes, and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit addressed in this application that is subject to air construction permitting and for each such emissions unit that is a regulated or unregulated unit for purposes of Title V permitting. (An emissions unit may be exempt from air construction permitting but still be classified as an unregulated unit for Title V purposes.) Emissions units classified as insignificant for Title V purposes are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

EMISSIONS UNIT INFORMATION

**Section [1]
Fuel Gas Heater**

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
Natural Gas Fuel Heater(s)

3. Emissions Unit Identification Number: **3**

4. Emissions Unit Status Code: C	5. Commence Construction Date: 2011	6. Initial Startup Date: 2013	7. Emissions Unit Major Group SIC Code: 49
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8. Federal Program Applicability: (Check all that apply)

Acid Rain Unit

CAIR Unit

9. Package Unit:
Manufacturer: **Hanover Compression Company or equivalent** Model Number:

10. Generator Nameplate Rating: **MW**

11. Emissions Unit Comment:
See Air Permit report with 2/13/09 application. Revising maximum heat input rate from 10 MMBtu/hr to 9.9 MMBtu/hr.

EMISSIONS UNIT INFORMATION

**Section [1]
Fuel Gas Heater**

Emissions Unit Control Equipment/Method: Control 1 of 1

1. Control Equipment/Method Description: Good combustion practices - natural gas-fired.
2. Control Device or Method Code: N/A

Emissions Unit Control Equipment/Method: Control ____ of ____

1. Control Equipment/Method Description:
2. Control Device or Method Code:

Emissions Unit Control Equipment/Method: Control ____ of ____

1. Control Equipment/Method Description:
2. Control Device or Method Code:

Emissions Unit Control Equipment/Method: Control ____ of ____

1. Control Equipment/Method Description:
2. Control Device or Method Code:

EMISSIONS UNIT INFORMATION

Section [1]
Fuel Gas Heater

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:		
2. Maximum Production Rate:		
3. Maximum Heat Input Rate:	9.9 million Btu/hr	
4. Maximum Incineration Rate:	pounds/hr tons/day	
5. Requested Maximum Operating Schedule:	24 hours/day 52 weeks/year	7 days/week 8,760 hours/year
6. Operating Capacity/Schedule Comment:	Revised from 10 MMBtu/hr.	

EMISSIONS UNIT INFORMATION

Section [1]
Fuel Gas Heater

C. EMISSION POINT (STACK/VENT) INFORMATION (Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram:		2. Emission Point Type Code: 1	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:			
5. Discharge Type Code: V	6. Stack Height: 30 feet	7. Exit Diameter: 1.4 feet	
8. Exit Temperature: 500°F	9. Actual Volumetric Flow Rate: 4,901 acfm	10. Water Vapor: %	
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: East (km): North (km):		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: See revised Table 2-6.			

EMISSIONS UNIT INFORMATION

Section [1]
Fuel Gas Heater

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment **1** of **1**

1. Segment Description (Process/Fuel Type): Natural gas		
2. Source Classification Code (SCC):		3. SCC Units: MMscf
4. Maximum Hourly Rate: 0.0094	5. Maximum Annual Rate: 82.2	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: 1,055
10. Segment Comment:		

Segment Description and Rate: Segment ____ of ____

1. Segment Description (Process/Fuel Type):		
2. Source Classification Code (SCC):		3. SCC Units:
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

EMISSIONS UNIT INFORMATION

**Section [1]
Fuel Gas Heater**

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	Fuel quality		
PM10	Fuel quality		
SO2	Fuel quality		
NOx	Fuel quality		
CO	Good combustion		
VOC	Good combustion		

EMISSIONS UNIT INFORMATION

POLLUTANT DETAIL INFORMATION

Section [1]
 Fuel Gas Heater

Page [1] of [6]
 Particulate Matter Total - PM

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
 POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: Particulate Matter Total - PM		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.02 lb/hour 0.08 tons/year		4. Synthetically Limited? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 0.002 lb/MMBtu Reference: Emissions based on AP-42		7. Emissions Method Code:	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: 0.002 lb/MMBtu x 9.9 MMBtu/hr = 0.02 lb/hr 0.02 lb/hr x 8,760 hr / 2,000 lb = 0.08 TPY			
11. Potential, Fugitive, and Actual Emissions Comment:			

EMISSIONS UNIT INFORMATION**POLLUTANT DETAIL INFORMATION**Section [1]
Fuel Gas HeaterPage [1] of [6]
Particulate Matter Total - PM**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
ALLOWABLE EMISSIONS****Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.****Allowable Emissions** Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

EMISSIONS UNIT INFORMATION

POLLUTANT DETAIL INFORMATION

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 Fuel Gas Heater

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 Particulate Matter Total - PM10

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
 POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**
 (Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: Particulate Matter Total - PM10		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.02 lb/hour 0.08 tons/year		4. Synthetically Limited? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 0.002 lb/MMBtu Reference: Emissions based on AP-42		7. Emissions Method Code:	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: 0.002 lb/MMBtu x 9.9 MMBtu/hr = 0.02 lb/hr 0.02 lb/hr x 8,760 hr / 2,000 lb = 0.08 TPY			
11. Potential, Fugitive, and Actual Emissions Comment:			

EMISSIONS UNIT INFORMATIONSection [1]
Fuel Gas Heater**POLLUTANT DETAIL INFORMATION**Page [2] of [6]
Particulate Matter Total - PM10**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
ALLOWABLE EMISSIONS****Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.****Allowable Emissions** Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS
(Optional for unregulated emissions units.)**

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: Sulfur Dioxide - SO2		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.054 lb/hour 0.23 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 2 grains S/100 scf gas Reference: Emissions based on AP-42		7. Emissions Method Code:	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: 2 gr S/100 scf x 64/32 (MW SO2/S) x 1 lb/7,000 gr x 9.384 scf/hr x 1/100 scf = 0.054 lb/hr 0.054 lb/hr x 8,760 hr / 2,000 lb = 0.23 TPY			
11. Potential, Fugitive, and Actual Emissions Comment:			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
ALLOWABLE EMISSIONS**

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS
(Optional for unregulated emissions units.)**

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: Nitrogen Oxides - NOx		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.94 lb/hour 4.1 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 0.095 lb/MMBtu Reference: Emissions based on AP-42		7. Emissions Method Code:	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: 0.095 lb/MMBtu x 9.9 MMBtu/hr = 0.94 lb/hr 0.94 lb/hr x 8,760 hr / 2,000 lb = 4.1 TPY			
11. Potential, Fugitive, and Actual Emissions Comment:			

EMISSIONS UNIT INFORMATION

POLLUTANT DETAIL INFORMATION

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Fuel Gas Heater

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Nitrogen Oxides - NOx

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
ALLOWABLE EMISSIONS**

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

EMISSIONS UNIT INFORMATION**POLLUTANT DETAIL INFORMATION**Section [1]
Fuel Gas HeaterPage [5] of [6]
Carbon Monoxide - CO**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: Carbon Monoxide - CO		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.79 lb/hour 3.5 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 0.08 lb/MMBtu Reference: Emissions based on AP-42		7. Emissions Method Code:	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: 0.08 lb/MMBtu x 9.9 MMBtu/hr = 0.79 lb/hr 0.79 lb/hr x 8,760 hr / 2,000 lb = 3.5 TPY			
11. Potential, Fugitive, and Actual Emissions Comment:			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
ALLOWABLE EMISSIONS**

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

EMISSIONS UNIT INFORMATION

Section [1]
Fuel Gas Heater

POLLUTANT DETAIL INFORMATION

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Volatile Organic Compounds - VOC

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS
(Optional for unregulated emissions units.)**

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: Volatile Organic Compounds - VOC		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.052 lb/hour 0.23 tons/year		4. Synthetically Limited? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 0.005 lb/MMBtu Reference: Emissions based on AP-42		7. Emissions Method Code:	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: 0.005 lb/MMBtu x 9.9 MMBtu/hr = 0.052 lb/hr 0.052 lb/hr x 8,760 hr / 2,000 lb = 0.23 TPY			
11. Potential, Fugitive, and Actual Emissions Comment:			

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Fuel Gas Heater**POLLUTANT DETAIL INFORMATION**Page [6] of [6]
Volatile Organic Compounds - VOC**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
ALLOWABLE EMISSIONS****Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.****Allowable Emissions** Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

EMISSIONS UNIT INFORMATION

Section [1]
Fuel Gas Heater

G. VISIBLE EMISSIONS INFORMATION

Complete Subsection G if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: VE20	2. Basis for Allowable Opacity: <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: 20 % Exceptional Conditions: 100 % Maximum Period of Excess Opacity Allowed: 60 min/hour	
4. Method of Compliance: EPA Method 9	
5. Visible Emissions Comment: FDEP Rule 62-296.320(4)(b)1, F.A.C., requires 20% opacity. Excess emissions provided by Rule 62-210.700(1), F.A.C.	

Visible Emissions Limitation: Visible Emissions Limitation ____ of ____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: <input type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

EMISSIONS UNIT INFORMATION

Section [1]
Fuel Gas Heater

H. CONTINUOUS MONITOR INFORMATION

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor ____ of ____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

Continuous Monitoring System: Continuous Monitor ____ of ____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

EMISSIONS UNIT INFORMATION

**Section [1]
Fuel Gas Heater**

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

<p>1. Process Flow Diagram: (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)</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>2/13/09</u></p>
<p>2. Fuel Analysis or Specification: (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)</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>2/13/09</u></p>
<p>3. Detailed Description of Control Equipment: (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)</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>2/13/09</u></p>
<p>4. Procedures for Startup and Shutdown: (Required for all operation 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)</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____</p> <p><input checked="" type="checkbox"/> Not Applicable (construction application)</p>
<p>5. Operation and Maintenance 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)</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____</p> <p><input checked="" type="checkbox"/> Not Applicable</p>
<p>6. Compliance Demonstration Reports/Records:</p> <p><input type="checkbox"/> Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____</p> <p><input type="checkbox"/> Previously Submitted, Date: _____ Test Date(s)/Pollutant(s) Tested: _____</p> <p><input type="checkbox"/> To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____</p> <p><input checked="" type="checkbox"/> Not Applicable</p> <p>Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.</p>
<p>7. Other Information Required by Rule or Statute:</p> <p><input checked="" type="checkbox"/> Attached, Document ID: <u>2/13/09 application</u> <input type="checkbox"/> Not Applicable</p>

EMISSIONS UNIT INFORMATION

Section [2]

Emergency Diesel Generator

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for an initial, revised or renewal Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for an air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application - Where this application is used to apply for both an air construction permit and a revised or renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes, and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit addressed in this application that is subject to air construction permitting and for each such emissions unit that is a regulated or unregulated unit for purposes of Title V permitting. (An emissions unit may be exempt from air construction permitting but still be classified as an unregulated unit for Title V purposes.) Emissions units classified as insignificant for Title V purposes are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

EMISSIONS UNIT INFORMATION

Section [2]

Emergency Diesel Generator

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)
- The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.
- The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)
- This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).
- This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.
- This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
Emergency Diesel Generator

3. Emissions Unit Identification Number: **4**

4. Emissions Unit Status Code: C	5. Commence Construction Date: 2011	6. Initial Startup Date: 2013	7. Emissions Unit Major Group SIC Code: 49
--	---	---	--

8. Federal Program Applicability: (Check all that apply)
- Acid Rain Unit
- CAIR Unit

9. Package Unit:
Manufacturer: **Caterpillar** Model Number:

10. Generator Nameplate Rating: **2.25 MW**

11. Emissions Unit Comment:
See Air Permit report with 2/13/09 application. Two 2,250-kW emergency generators (or equivalent). Information based on Caterpillar, 2,250-kW Diesel Generator Set.

EMISSIONS UNIT INFORMATION

Section [2]

Emergency Diesel Generator

Emissions Unit Control Equipment/Method: Control 1 of 1

1. Control Equipment/Method Description: Good combustion practices - No. 2 fuel oil-fired.
2. Control Device or Method Code: N/A

Emissions Unit Control Equipment/Method: Control ____ of ____

1. Control Equipment/Method Description:
2. Control Device or Method Code:

Emissions Unit Control Equipment/Method: Control ____ of ____

1. Control Equipment/Method Description:
2. Control Device or Method Code:

Emissions Unit Control Equipment/Method: Control ____ of ____

1. Control Equipment/Method Description:
2. Control Device or Method Code:

EMISSIONS UNIT INFORMATION

Section [2]

Emergency Diesel Generator

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:		
2. Maximum Production Rate:		
3. Maximum Heat Input Rate: 21.01 million Btu/hr		
4. Maximum Incineration Rate:	pounds/hr	
	tons/day	
5. Requested Maximum Operating Schedule:		
	24 hours/day	7 days/week
	52 weeks/year	100 hours/year
6. Operating Capacity/Schedule Comment: The emergency generators will normally be operated 1 to 2 hours per month for testing and maintenance. The emergency generators will meet the requirements of 40 CFR 60, Subpart IIII.		

EMISSIONS UNIT INFORMATION

Section [2]

Emergency Diesel Generator

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram:		2. Emission Point Type Code: 1			
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:					
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:					
5. Discharge Type Code: V		6. Stack Height: 30 feet		7. Exit Diameter: 1 feet	
8. Exit Temperature: 916°F		9. Actual Volumetric Flow Rate: 17,463 acfm		10. Water Vapor: %	
11. Maximum Dry Standard Flow Rate: dscfm			12. Nonstack Emission Point Height: feet		
13. Emission Point UTM Coordinates... Zone: East (km): North (km):			14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)		
15. Emission Point Comment: See revised Table 2-5.					

EMISSIONS UNIT INFORMATION

Section [2]

Emergency Diesel Generator

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): Diesel fuel combustion		
2. Source Classification Code (SCC):		3. SCC Units: 1,000 gallons
4. Maximum Hourly Rate: 0.156	5. Maximum Annual Rate: 15.6	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: 135.1
10. Segment Comment:		

Segment Description and Rate: Segment ____ of ____

1. Segment Description (Process/Fuel Type):		
2. Source Classification Code (SCC):		3. SCC Units:
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

EMISSIONS UNIT INFORMATION

Section [2]

Emergency Diesel Generator

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	Fuel quality		EL
PM10	Fuel quality		EL
SO2	Fuel quality		EL
NOx	Fuel quality		EL
CO	Good combustion		EL
VOC	Good combustion		EL

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**
(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: Particulate Matter Total - PM		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 2.8 lb/hour 0.14 tons/year		4. Synthetically Limited? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 0.4 grams per horsepower-hour (g/hp-hr) Reference: Manufacturer certification		7. Emissions Method Code: 2	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: Emissions are for one generator. See revised Table 2-5.			
11. Potential, Fugitive, and Actual Emissions Comment:			

EMISSIONS UNIT INFORMATION

POLLUTANT DETAIL INFORMATION

Section [2]
Emergency Diesel Generator

Page [1] of [6]
Particulate Matter Total - PM

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
ALLOWABLE EMISSIONS**

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 0.4 g/hp-hr	4. Equivalent Allowable Emissions: 2.8 lb/hour 0.14 tons/year
5. Method of Compliance: Manufacturer certification of Subpart IIII	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

EMISSIONS UNIT INFORMATION

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Emergency Diesel Generator

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Particulate Matter Total - PM10

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS
(Optional for unregulated emissions units.)**

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: Particulate Matter Total - PM10		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 2.8 lb/hour 0.14 tons/year		4. Synthetically Limited? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 0.4 grams per horsepower-hour (g/hp-hr) Reference: Manufacturer certification		7. Emissions Method Code: 2	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: Emissions are for one generator. See revised Table 2-5.			
11. Potential, Fugitive, and Actual Emissions Comment:			

EMISSIONS UNIT INFORMATION

POLLUTANT DETAIL INFORMATION

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Emergency Diesel Generator

Page [2] of [6]
Particulate Matter Total - PM10

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
ALLOWABLE EMISSIONS**

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 0.4 g/hp-hr	4. Equivalent Allowable Emissions: 2.8 lb/hour 0.14 tons/year
5. Method of Compliance: Manufacturer certification of Subpart IIII	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

EMISSIONS UNIT INFORMATION

POLLUTANT DETAIL INFORMATION

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Emergency Diesel Generator

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Sulfur Dioxide - SO2

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS
(Optional for unregulated emissions units.)**

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: Sulfur Dioxide - SO2		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.03 lb/hour 0.002 tons/year		4. Synthetically Limited? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 0.0015% S fuel oil Reference: FPL, 2008.		7. Emissions Method Code: 2	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: Emissions are for one generator. See revised Table 2-5.			
11. Potential, Fugitive, and Actual Emissions Comment:			

EMISSIONS UNIT INFORMATION

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Emergency Diesel Generator

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Sulfur Dioxide - SO2

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
ALLOWABLE EMISSIONS**

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 0.0015% S fuel oil	4. Equivalent Allowable Emissions: 0.03 lb/hour 0.002 tons/year
5. Method of Compliance: Fuel vendor information	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

EMISSIONS UNIT INFORMATION

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Emergency Diesel Generator

Page [4] of [6]
Nitrogen Oxides - NOx

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS
(Optional for unregulated emissions units.)**

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: Nitrogen Oxides - NOx		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 48.7 lb/hour 2.43 tons/year		4. Synthetically Limited? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 6.9 grams per horsepower-hour (g/hp-hr) Reference: Manufacturer certification		7. Emissions Method Code: 2	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: Emissions are for one generator. See revised Table 2-5.			
11. Potential, Fugitive, and Actual Emissions Comment:			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
ALLOWABLE EMISSIONS**

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 6.9 g/hp-hr	4. Equivalent Allowable Emissions: 48.7 lb/hour 2.43 tons/year
5. Method of Compliance: Manufacturer certification of Subpart IIII	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

EMISSIONS UNIT INFORMATION

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Emergency Diesel Generator

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Carbon Monoxide - CO

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: Carbon Monoxide - CO		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 60.0 lb/hour 3.0 tons/year		4. Synthetically Limited? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 8.5 grams per horsepower-hour (g/hp-hr) Reference: Manufacturer certification		7. Emissions Method Code: 2	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: Emissions are for one generator. See revised Table 2-5.			
11. Potential, Fugitive, and Actual Emissions Comment:			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
ALLOWABLE EMISSIONS**

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **1** of **1**

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 8.5 g/hp-hr	4. Equivalent Allowable Emissions: 60.0 lb/hour 3.0 tons/year
5. Method of Compliance: Manufacturer certification of Subpart IIII	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS
(Optional for unregulated emissions units.)**

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: Volatile Organic Compounds - VOC		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 7.1 lb/hour 0.35 tons/year		4. Synthetically Limited? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 1.0 gram per horsepower-hour (g/hp-hr) Reference: Manufacturer certification		7. Emissions Method Code: 2	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: Emissions are for one generator. See revised Table 2-5.			
11. Potential, Fugitive, and Actual Emissions Comment:			

EMISSIONS UNIT INFORMATION

Section [2]

Emergency Diesel Generator

G. VISIBLE EMISSIONS INFORMATION

Complete Subsection G if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation 1 of 2

1. Visible Emissions Subtype: VE20	2. Basis for Allowable Opacity: <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: 20 % Exceptional Conditions: 100 % Maximum Period of Excess Opacity Allowed: 60 min/hour	
4. Method of Compliance: EPA Method 9	
5. Visible Emissions Comment: FDEP Rule 62-296.320(4)(b)1, F.A.C., requires 20% opacity. Excess emissions provided by Rule 62-210.700(1), F.A.C.	

Visible Emissions Limitation: Visible Emissions Limitation 2 of 2

1. Visible Emissions Subtype: VE10	2. Basis for Allowable Opacity: <input type="checkbox"/> Rule <input checked="" type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: 10 % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: EPA Method 9	
5. Visible Emissions Comment: Proposed as emission limit for PM/PM10.	

EMISSIONS UNIT INFORMATION

Section [2]

Emergency Diesel Generator

H. CONTINUOUS MONITOR INFORMATION

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor ____ of ____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

Continuous Monitoring System: Continuous Monitor ____ of ____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

EMISSIONS UNIT INFORMATION

Section [2]

Emergency Diesel Generator

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram: (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) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>2/13/09</u>
2. Fuel Analysis or Specification: (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) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>2/13/09</u>
3. Detailed Description of Control Equipment: (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) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>2/13/09</u>
4. Procedures for Startup and Shutdown: (Required for all operation 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) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____ <input checked="" type="checkbox"/> Not Applicable (construction application)
5. Operation and Maintenance 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) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____ <input checked="" type="checkbox"/> Not Applicable
6. Compliance Demonstration Reports/Records: <input type="checkbox"/> Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> Previously Submitted, Date: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____ <input checked="" type="checkbox"/> Not Applicable Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.
7. Other Information Required by Rule or Statute: <input checked="" type="checkbox"/> Attached, Document ID: <u>2/13/09 application</u> <input type="checkbox"/> Not Applicable

EMISSIONS UNIT INFORMATION

Section [2]

Emergency Diesel Generator

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)): <input checked="checked" type="checkbox"/> Attached, Document ID: <u>2/13/09 application</u> <input type="checkbox"/> Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="checked" type="checkbox"/> Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only) <input type="checkbox"/> Attached, Document ID: _____ <input checked="checked" type="checkbox"/> Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements: <input type="checkbox"/> Attached, Document ID: _____
2. Compliance Assurance Monitoring: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
3. Alternative Methods of Operation: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
4. Alternative Modes of Operation (Emissions Trading): <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable

Additional Requirements Comment

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ATTACHMENT 1

FPL Comments for AC Permit Modification Riviera Beach Energy Center Project DEP File No. 0990042-006-AC

Emission Unit Description (page 2 of 24)

FPL suggests the facility description be modified as follows:

ID	Emission Unit Description
007	Unit 5A – one nominal 265 MW CTG with supplementary-fired HRSG
008	Unit 5B – one nominal 265 MW CTG with supplementary-fired HRSG
009	Unit 5C – one nominal 265 MW CTG with supplementary-fired HRSG
010	One nominal 85,000 pounds per hour (lb/hr) auxiliary boiler (99.8 mmBtu/hr)
011	Two nominal 40 9.9 mmBtu/hr natural gas-fired process heaters (one is a spare)
012	Seven nominal 1,340 horsepower (hp) natural gas compressors
013	Two nominal 2,250 kilowatts (kW) liquid fueled emergency generators
014	One nominal 300-hp emergency diesel fire pump engine and 500 gallon fuel oil storage tank
015	One temporary 110 mmBtu/hr natural gas-fueled boiler to be used only during construction
016	One nominal 6.3 million gallon distillate fuel oil storage tank

Emission Unit 007 – 009 (Gas Turbines 5A, 5B, 5C)

Excess Emissions

A.12 Alternate Visible Emission Standard

FPL proposes to modify condition 12 to include allowable visible emissions for fuel switches as follows:

12. Alternate Visible Emissions Standard: Visible emissions due to startups, shutdowns, fuel switches and malfunctions shall not exceed 10% opacity except for up to ten, 6-minute averaging periods during a calendar day, which shall not exceed 20% opacity. [Applicant Request and Rule 62-4.070(3), F.A.C.]

A.15 Excess Emission Allowed

FPL proposes to modify condition 15 in a manner consistent with its WCEC Air Construction permit as follows:

15. Excess Emissions Allowed: As specified in this condition, excess emissions resulting from startup, shutdown, fuel switching and documented malfunctions are allowed provided that operators employ the best operational practices to minimize the amount and duration of emissions during such incidents. ~~For each CTG/HRSG system, NOX and CO emission data exclusions resulting from startup, shutdown, or documented malfunctions shall not exceed two hours in any 24-hour period except for the specific cases listed below. For each gas turbine/HRSG System, excess emissions of NOx and CO resulting from startup, shutdown, or malfunction shall be excluded from CEMS data in any 24-hour period (“any 24-hour period” means a calendar day, midnight to midnight) for the following conditions (These conditions are considered separate events and each event may occur independently within any 24 hour period): A “documented malfunction” means a malfunction that is documented within one working day of detection by contacting the Compliance Authority by telephone, facsimile transmittal, or electronic mail.~~

- a. STG/HRSG System Cold Startup: Steam Turbine Cold Startup: For cold startup of the steam turbine system, NOX and CO emission data exclusions for any CTG/HRSG system shall not exceed eight (8) hours in any 24-hour period. A cold "startup of the steam turbine system" is defined as startup of the 3-on-1 combined cycle system following a shutdown of the steam turbine lasting at least 48 hours. For cold startup of the steam turbine, excluded emissions from any gas turbine/HRSG system shall not exceed eight hours in any 24-hour period. A cold "startup of the steam turbine" is defined as startup of the 3-on-1 combined cycle system following a shutdown of the steam turbine lasting at least 48 hours.

{Permitting note: During a cold startup of the STG system steam turbine, each CTG gas turbine/HRSG system is sequentially brought on line at low load to gradually increase the temperature of the STG steam-electrical turbine and prevent thermal metal fatigue. Note that shutdowns and documented malfunctions are separately regulated in accordance with the requirements of this condition.}

- b. Shutdown Steam Turbine System Shutdown Combined Cycle Operation: For shutdown of steam turbine system, NOX and CO emission data exclusions for any CTG/HRSG system shall not exceed three (3) hours in any 24-hour period. For shutdown of the combined cycle operation, excluded emissions from any gas turbine/HRSG system shall not exceed three hours in any 24-hour period.
- c. CTG/HRSG System Cold Startup Gas Turbine/HRSG System Cold Startup: For cold startup of a CTG gas turbine/HRSG system, NOX and CO emission data exclusions excluded emissions shall not exceed four (4) hours in any 24-hour period. "Cold startup of a CTG/HRSG gas turbine/HRSG system" is defined as a startup after the pressure in the high-pressure (HP) steam drum falls below 450 pounds per square inch gauge (psig) for at least a one-hour period.
- d. Fuel Switching: For fuel switching, NOX and CO emission data exclusions shall not exceed two (2) hours in any 24-hour period. For fuel switching, excluded emissions shall not exceed 2 hours in any 24-hour period for each fuel switch and no more than four hours in any 24-hour period for any gas turbine/HRSG system.
- e. Gas Turbine/HRSG System Warm Startup: For warm startup of a gas turbine/HRSG system, excluded emissions shall not exceed two hours in any 24-hour period. "Warm startup of a gas turbine/HRSG system" is defined as a startup after the pressure in the high-pressure (HP) steam drum is above 450 psig.
- f. Gas Turbine/HRSG System Shutdown: For shutdown of the gas turbine/HRSG operation, excluded emissions from any gas turbine/HRSG system shall not exceed two hours in any 24-hour period.
- g. Documented Malfunction: For the gas turbine/HRSG system, excess emissions of NOx and CO resulting from documented malfunctions shall not exceed two hours in any 24-hour period. A "documented malfunction" means a malfunction that is documented within one working day of detection by contacting the Compliance Authority by telephone, facsimile transmittal, or electronic mail.

A.17 DLN Tuning

FPL proposes to amend condition 17 to include Full Speed No Load Trip Tests that are manufacturer required for allowable exclusions of emission data for CEMS data exclusions. FPL must perform the FSNL test following routine replacement of major combustion turbine components to retain manufacturer warranties. FPL suggests that the current language of the first part of the condition be modified as follows:

17. DLN Tuning: CEMS data collected during initial or other major DLN tuning sessions and during manufacturer required Full Speed No Load (FSNL) trip tests may be excluded by the permittee from the CEMS compliance demonstration provided the tuning session is performed in accordance with the manufacturer's specifications. A "major tuning session" may occur after completion of initial construction, a major repair, or

other similar circumstances. Prior to performing any major tuning session, where the intent is to exclude data from the CEMS compliance demonstration, the permittee shall provide the Compliance Authority with an advance notice of at least ~~7 days~~ one working (business) day that details the activity and proposed tuning schedule. The notice may be by telephone, facsimile transmittal, or electronic mail.
[Design; Rule 62-4.070(3), F.A.C.]

A.23 Continuous Emission Monitoring Systems (CEMS).

FPL requests modification to the CO monitoring provisions to allow the use of Part 75 monitoring requirements. FPL proposes to modify the existing requirement as follows:

- a. *CO Monitors:* CO Monitors: The CO monitors shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 4 or 4A within 60 calendar days of achieving permitted capacity as defined in Rule 62- 297.310(2), F.A.C., but no later than 180 calendar days after initial startup. Quality assurance procedures shall conform to the requirements of 40 CFR 60, Appendix F, or 40 CFR Part 75, and the Data Assessment Report in Section 7 shall be made each calendar quarter, and reported semiannually to the Compliance Authority. The RATA tests required for the CO monitor shall be performed using EPA Method 10 in Appendix A of 40 CFR 60 and shall be based on a continuous sampling train. The CO monitor span values shall be set appropriately considering the allowable methods of operation and corresponding emission standards.

A.30 Excess Emission Reporting

FPL proposes to clarify excess emission reporting under BACT requirements and the applicable emission specification for these units under 40 CFR part 60 Subpart KKKK by modifying the section as follows:

- a. *Malfunction Notification:* If emissions in excess of a standard (subject to the specified averaging period) occur due to malfunction, the permittee shall notify the Compliance Authority within (1) working day of: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. In addition, the Department may request a written summary report of the incident.
- b. *SIP Quarterly Permit Limits Excess Emissions Report:* Within 30 days following the end of each calendar-quarter, the permittee shall submit a report to the Compliance Authority summarizing periods of CO and NOX emissions in excess of the BACT permit emission standards, and the amounts of authorized data excluded following the NSPS-format in Figure XSE attached to this permit. 40 CFR 60.7(e), Subpart A. Periods of startup, shutdown, ~~and malfunction,~~ fuel switching and tuning shall be monitored, ~~recorded and~~ recorded at all times ~~reported as excess emissions when emission levels exceed the standards specified in this permit.~~ In addition, the report shall summarize the CEMS systems monitor availability for the previous quarter.
- c. *NSPS Semi-Annual Excess Emissions Reports:* For purposes of reporting emissions in excess of NSPS Subpart KKKK, excess emissions from the CTG are defined as: a specified averaging period over which either the NOX emissions are ~~higher than the applicable emission limit in 40 CFR 60.4320~~ greater than 15 ppm at 15% O₂ on a 30-day rolling average while firing natural gas and greater than 42 ppm at 15% O₂ on a 30-day rolling average while firing ultra low sulfur distillate; or the total sulfur content of the fuel being combusted in the affected facility exceeds the limit specified in 60.4330. Within thirty (30) days following each calendar semi-annual period, the permittee shall submit a report on any periods of excess emissions that occurred during the previous semi-annual period to the Compliance Authority.

Emission Unit 011 (Process Heaters)

FPL believes that emission limits for each process heater could be removed from the permit. FPL intends to install two 9.9 MMBtu/Hr heaters in place of the 10 mmBtu/hr heaters originally permitted for the site. The 9.9 mmBtu/hr heaters are not regulated sources under either 40 CFR Part 60 or Part 63 and do not have applicable emission specifications. FPL understands that the department may impose BACT limits on major sources, or major modifications, under the PSD requirements of 62-212.400 but recommends the Department remove the condition from the permit. FPL suggests the department modify the permit as follows:

ID	Emission Unit Description
011	Two nominal 10 9.9 mmBtu/hr natural gas-fired process heaters (one is a spare)

3. ~~NSPS Subpart De Applicability: Each process heater is subject to all applicable requirements of 40 CFR 60, Subpart De which applies to Small Industrial, Commercial, or Institutional Boiler. Specifically, each emission unit shall comply with 40 CFR 60.48c Reporting and Recordkeeping Requirements. [40 CFR 60, NSPS Subpart De Standards of Performance for Small Industrial Commercial Institutional Steam Generating Units, attached as Appendix De].~~
4. ~~Emission Limits: Each natural gas fired process heater shall comply with the following emission limits.~~

NO _x	CO	VOC, SO ₂ , PM/PM ₁₀
0.095 lb/mmBtu	0.08 lb/mmBtu	2 gr S/100 SCF natural gas spec and 10% Opacity

[Applicant request; Rule 62 4.070(3), F.A.C.]

{Permitting note: There are no Subpart De emission standards for gas fired process heaters fueled by natural gas.}

5. ~~Testing Requirements: Each unit shall be stack tested to demonstrate initial compliance with the emission standards for CO, NOX and visible emissions. The tests shall be conducted within 60 days after achieving the maximum production rate at which the unit will be operated, but not later than 180 days after the initial startup. As an alternative, a Manufacturer certification of emissions characteristics of the purchased model that are at least as stringent as the emission limits values can be used to fulfill this requirement. [Rule 62-297.310(7)(a)1, F.A.C.]~~

~~Test Methods: Any required tests shall be performed in accordance with the following reference methods:~~

Method	Description of Method and Comments
7E	Determination of Nitrogen Oxide Emissions from Stationary Sources
9	Visual Determination of the Opacity of Emissions from Stationary Sources
10	Determination of Carbon Monoxide Emissions from Stationary Sources

6. ~~Notification, Recordkeeping and Reporting Requirements: The permittee shall maintain records of the amount of natural gas used in the process heaters. and shall comply with the notification, recordkeeping and reporting requirements pursuant to 40 CFR 60.48c and 40 CFR 60.7. These records shall be submitted to the Compliance Authority on an annual basis or upon request. [Rule 62 4.070(3), F.A.C.; 40 CFR 60, Subparts A and De]~~

Emission Unit 013 (Emergency Generators)

Two nominal 2,250 kilowatts (kW) liquid fueled emergency generators

FPL proposes that the hours of operation requirement for the diesel generators conform to 40 CFR 63, Subpart ZZZZ and 40 CFR 60, Subpart IIII with a limit on operation for testing and maintenance checks not to exceed 100 hours and unlimited operation for the emergency use. FPL suggests the requirement be reworded as follows:

2. Hours of Operation and Fuel Specifications: The hours of operation shall not exceed ~~160 hours per year per generator.~~ 100 hours per year for each engine for the purpose of maintenance checks and readiness testing with unlimited operation for emergency use.

FIGURE XSE

QUARTERLY EXCESS EMISSIONS AND MONITORING REPORT FOR SIP-ONLY STANDARDS FPL

Company: _____ Plant Name: _____

Address: _____

Emissions Unit ID No. _____ Description: _____

Pollutant (check one): CO NOx Emission Limitation: _____

Reporting period: Q1 (Jan. - March) Q2 (April - June) Q3 (July - Sept.) Q4 (Oct. - Dec.)

Year: _____

Monitor Manufacturer: _____

Model No.: _____

Date of Latest CEMS Certification or Audit: _____

Total emissions unit operating time in reporting period: _____ hours

Excluded Emission Data Summary ¹	CEMS Performance Summary ^{1,5}
<p>1. Duration of excluded emissions due to:</p> <p>a. ST Cold Startup²..... _____</p> <p>b. GT/HRSG Cold Startup²..... _____</p> <p>c. GT/HRSG Warm Startup²..... _____</p> <p>d. Shutdown..... _____</p> <p>e. Fuel Switching..... _____</p> <p>f. Documented Malfunction..... _____</p> <p>g. Tuning..... _____</p> <p>h. Total Authorized Data Excluded..... _____</p> <p>2. Total duration of excluded emissions x (100%) / [Total source operating time]..... _____%</p> <p>3. Number of Compliance Averages > Limit³..... _____</p>	<p>1. CEMS downtime due to:</p> <p>a. Monitor equipment malfunctions..... _____</p> <p>b. Non-Monitor equipment malfunctions..... _____</p> <p>c. Quality assurance calibration..... _____</p> <p>d. Other known causes..... _____</p> <p>e. Unknown causes..... _____</p> <p>2. Total CEMS Downtime..... _____</p> <p>3. Total CEMS Downtime x (100%) / [Total source operating time]..... _____%⁴</p>

¹ For the reporting period, record all times in hours.

² "ST" means steam turbine. "GT/HRSG" means gas turbine/heat recovery steam generator.

³ If an exceedance occurs after excluding data as authorized by permit, identify the number of non-compliant averages for the quarter. In addition, provide the hour-by-hour data for each non-compliant average and describe the circumstances causing the exceedance and the corrective actions taken.

⁴ If the total CEMS downtime is 5% or greater of the total operating time, the permittee shall also submit a report identifying the problems with maintaining a monitor availability of at least 95% and the corrective actions planned for the next quarter.

⁵ On a separate page, describe any changes in the CEMS, process equipment or control equipment since the last quarterly report.

I certify that the information contained in this report is true, accurate, and complete.

Name: _____

Title: _____

Signature: _____ Date: _____

**TABLE 2-5 (REVISED JANUARY 2012)
PERFORMANCE AND EMISSION DATA FOR THE EMERGENCY GENERATORS**

Parameter	Emergency Generator
<u>Performance</u>	
Number of Units	2
Rating (kW)	2,250
Rating (hp)	3,200
Fuel	Diesel
Fuel Heat content (Btu/lb) (HHV)	19,300
Fuel density (lb/gal)	7.0
Heat input (MMBtu/hr) (HHV)	21.01
Fuel usage (gallons/hr)	155.5
Maximum operation (hours)	100
Maximum fuel usage (gallons/yr)	15,550
<u>Stack Parameters (typical)</u>	
Diameter (ft)	1.0
Height (ft)	30
Temperature (°F)	916
Flow (acfm)	17,463
<u>Emissions</u>	
SO ₂ - Basis (%S)	0.0015%
Conversion of S to SO ₂	100
Molecular weight SO ₂ / S (64/32)	2
Emission rate (lb/hr)	0.03
(tpy)- one unit	0.002
(tpy)- total units	0.003
NO _x - Basis (g/hp-hr)	6.9
Emission rate (lb/hr)	48.7
(tpy)- one unit	2.43
(tpy)- total units	4.87
CO - Basis (g/hp-hr)	8.5
Emission rate (lb/hr)	60.0
(tpy)- one unit	3.00
(tpy)- total units	6.00
VOC - Basis (g/hp-hr)	1.0
Emission rate (lb/hr)	7.1
(tpy)- one unit	0.35
(tpy)- total units	0.71
PM/PM ₁₀ - Basis (g/hp-hr)	0.4
Emission rate (lb/hr)	2.8
(tpy)- one unit	0.14
(tpy)- total units	0.28

Sources: FPL, 2012; Golder, 2012.

**TABLE 2-6 (REVISED JANUARY 2012)
PERFORMANCE, STACK PARAMETERS, AND EMISSIONS
FOR THE NATURAL GAS FUEL HEATER**

Parameter	Natural Gas Heater
Performance^a	
Fuel Usage (scf/hr-gas)	9,384
Heat Input (MMBtu/hr-HHV)	9.9
Hours per Year	8,760
Maximum Fuel Usage (MMscf/yr)	82.2
Number of Units	1
Stack Parameters (typical)	
Diameter (ft)	1.42
Height (ft)	30
Temperature (°F)	500
Velocity (ft/sec)	51.6
Flow (acfm)	4,901
Emissions	
SO ₂ -Basis (grains S/100 scf-gas) ^b	2
(lb/hr)	0.054
(lb/MMBtu)	0.0054
(tpy) - one unit	0.23
(tpy) - total units	0.23
NO _x - (lb/MMscf) ^c	100
(lb/hr)	0.94
(lb/MMBtu)	0.095
(tpy) - one unit	4.1
(tpy) - total units	4.1
CO - (lb/MMscf) ^c	84
(lb/hr)	0.79
(lb/MMBtu)	0.080
(tpy) - one unit	3.45
(tpy) - total units	3.45
VOC - (lb/MMscf) ^c	5.5
(lb/hr)	0.052
(lb/MMBtu)	0.005
(tpy) - one unit	0.23
(tpy) - total units	0.23
PM/PM10 - (lb/MMscf) ^d	1.9
(lb/hr)	0.02
(lb/MMBtu)	0.002
(tpy) - one unit	0.08
(tpy) - total units	0.08

Note: Project will also have spare heater.

^a Based on 10 MMBtu/hr (HHV) indirect gas heaters from Hanover Compression Company or equivalent.

^b Typical maximum for natural gas.

^c EPA, AP-42 Table 1.4-1 using small boilers < 100 MMBtu.hr and Table 1.4-2.

^d EPA, AP-42 Table 1.4-2 Filterable PM.

TABLE 2-9B (REVISED JANUARY 2012)
SUMMARY OF MAXIMUM POTENTIAL ANNUAL EMISSIONS FOR THE RBEC CONVERSION PROJECT, SIEMENS H CTS

Pollutant	RBEC Conversion Project Maximum Potential Annual Emissions (TPY)							Netting Calculations		PSD Significant Emission Rate (TPY)
	3			7	Fuel Oil		TOTAL	Maximum 2-Year Average from Existing Units ^a (TPY)	Change (TPY)	
	CTs/HRSGs with Duct Burners ^b	2 Emergency Generators	1 Natural Gas Heater		Gas Compressors	Storage Tank				
SO ₂	201	0.003	0.23	1.74	NA	0.00014	203	10,999	-10,796	40
PM	185	0.28	0.08	3.10	NA	0.011	189	889	-700	25
PM ₁₀	185	0.28	0.08	3.10	NA	0.011	189	889	-700	15
NO _x	358	4.9	4.11	135.9	NA	0.18	503	3,752	-3,250	40
CO	511	6.0	3.45	8.6	NA	0.069	529	560	-30.4	100
VOC (as methane)	77.1	0.71	0.23	14.0	2.80	0.026	94.9	59.4	35.6	40
Sulfuric Acid Mist	40.9	Neg.	Neg.	Neg.	NA	Neg.	40.9	489	-448	7
Lead	0.050	Neg.	Neg.	Neg.	NA	Neg.	0.050	0.12	-0.066	0.6

^a Based on actual emissions from Annual Operating Reports from 2003-2007.

^b Based on oil-firing for: 1,000 hours per CT/HRSG.

Note: Neg.= negligible; NA= not applicable

Source: Golder, 2012.

**TABLE A-1-SH
DESIGN INFORMATION AND STACK PARAMETERS FOR THE CONVERSION PROJECT
SIEMENS H CT, DRY LOW NO_x COMBUSTOR, NATURAL GAS, BASE LOAD**

Parameter	CT Only Turbine Inlet Temperature				CT with Duct Burner Turbine Inlet Temperature			
	35 °F	59 °F	75 °F	95 °F	35 °F w/DB	59 °F w/DB	75 °F w/DB	95 °F w/DB
Combustion Turbine Performance								
Heat Input (MMBtu/hr, LHV)	2,421	2,320	2,230	2,137	2,421	2,320	2,230	2,137
(MMBtu/hr, HHV)	2,689	2,577	2,477	2,374	2,689	2,577	2,477	2,374
Evaporative Cooler	Off	On	On	On	Off	On	On	On
Relative Humidity (%)	60	60	60	50	60	60	60	50
Fuel heating value (Btu/lb, LHV)	21,511	21,511	21,511	21,511	21,511	21,511	21,511	21,511
(Btu/lb, HHV)	23,893	23,893	23,893	23,893	23,893	23,893	23,893	23,893
(HHV/LHV)	1.111	1.111	1.111	1.111	1.111	1.111	1.111	1.111
Steam Flow (lb/hr)	NA	NA	NA	NA	NA	NA	NA	NA
Duct Burner (DB)								
Heat input (MMBtu/hr, HHV)	0	0	0	0	475	475	475	475
(MMBtu/hr, LHV)	0	0	0	0	427.6	427.6	427.6	427.6
CT/DB Exhaust Flow								
Mass Flow (lb/hr)- provided	4,969,000	4,769,000	4,595,000	4,403,000	4,989,629.2	4,789,629	4,615,629	4,423,630
Temperature (°F) - provided	1120.8	1138.7	1151.4	1168.0	1,121	1,139	1,151	1,168
Moisture (% Vol.)	8.36	9.14	9.88	11.03	9.70	10.52	11.31	12.50
Oxygen (% Vol.)	12.05	11.92	11.80	11.59	10.55	10.36	10.19	9.92
Molecular Weight	28.41	28.32	28.23	28.11	28.32	28.23	28.15	28.02
Volume flow (acfm) - calculated	3,371,551	3,282,606	3,197,670	3,109,381	3,395,582	3,306,909	3,221,846	3,134,129
Fuel Usage								
Fuel usage (lb/hr) = Heat Input (MMBtu/hr) x 1,000,000 Btu/MMBtu [Fuel Heat Content, Btu/lb (LHV)]								
Heat input (MMBtu/hr, LHV)	2,421	2,320	2,230	2,137	2,421	2,320	2,230	2,137
Heat content (Btu/lb, LHV)	21,511	21,511	21,511	21,511	21,511	21,511	21,511	21,511
Fuel usage (lb/hr)- provided	112,537	107,877	103,660	99,362	112,537	107,877	103,660	99,362
- calculated	112,543	107,856	103,671	99,360	112,543	107,856	103,671	99,360
Heat content (Btu/cf, LHV)- assumed	918	918	918	918	918	918	918	918
Fuel density (lb/ft ³)	0.0427	0.0427	0.0427	0.0427	0.0427	0.0427	0.0427	0.0427
Fuel usage (cf/hr)- calculated	2,637,019	2,527,824	2,429,009	2,328,296	2,637,019	2,527,824	2,429,009	2,328,296
Fuel Usage - Duct Burner Only								
Fuel usage (lb/hr)- calculated	0	0	0	0	19,880	19,880	19,880	19,880
Fuel usage (cf/hr)- calculated	0	0	0	0	465,844	465,844	465,844	465,844
HRSG Stack								
HRSG - Stack Height (feet)	149	149	149	149	149	149	149	149
Diameter (feet)	22	22	22	22	22	22	22	22
HRSG Stack Flow Conditions								
Velocity (ft/sec) = Volume flow (acfm) / [((diameter) ² /4) x 3.14159] / 60 sec/min								
Mass flow (lb/hr)	4,969,000	4,769,000	4,595,000	4,403,000	4,989,629	4,789,629	4,615,629	4,423,630
HRSG Stack Temperature (°F)	196	195	195	195	186	185	185	184
Molecular weight	28.41	28.32	28.23	28.11	28.32	28.23	28.15	28.02
Volume flow (acfm)	1,399,125	1,344,704	1,299,388	1,251,392	1,387,188	1,333,147	1,288,818	1,239,598
Diameter (feet)	22	22	22	22	22	22	22	22
Velocity (ft/sec)- calculated	61.3	59.0	57.0	54.9	60.8	58.5	56.5	54.3

Note: Universal gas constant = 1,545.4 ft-lb(force)/°R; atmospheric pressure = 2,112.5 lb(force)/ft² (@14.67 psia).
Source: Siemens, 2008, CT Performance Data; Golder, 2008.

**TABLE A-2-SH
MAXIMUM EMISSIONS FOR CRITERIA POLLUTANTS FOR THE CONVERSION PROJECT
SIEMENS H CT, DRY LOW NO_x COMBUSTOR, NATURAL GAS, BASE LOAD**

Parameter	CT Only Turbine Inlet Temperature				CT with Duct Burner Turbine Inlet Temperature			
	35 °F	59 °F	75 °F	95 °F	35 °F w/DB	59 °F w/DB	75 °F w/DB	95 °F w/DB
Particulate from CT, DB, and HRSG								
Total PM ₁₀ = PM ₁₀ (front half) + PM ₁₀ [(NH ₄) ₂ SO ₄] in HRSG only (back-half)								
a. PM ₁₀ (front half) (lb/hr)								
CT- provided	9.4	9.0	8.6	8.2	9.4	9.0	8.6	8.2
DB (lb/hr) - calculated	0.0	0.0	0.0	0.0	2.4	2.4	2.4	2.4
Total CT/DB emission rate (lb/hr)	9.4	9.0	8.6	8.2	11.8	11.4	11.0	10.6
b. PM ₁₀ [(NH ₄) ₂ SO ₄] from HRSG only (back half) = Sulfur trioxide from conversion of SO ₂ converts to ammonium sulfate (= PM ₁₀)								
Particulate from conversion of SO ₂ = SO ₂ emissions (lb/hr) x conversion of SO ₂ to SO ₃ in CT and in SCR x lb SO ₃ /lb SO ₂ x conversion of SO ₃ to (NH ₄) ₂ SO ₄ x lb (NH ₄) ₂ SO ₄ /lb SO ₃								
CT SO ₂ emission rate (lb/hr)- calculated	15.1	14.4	13.9	13.3	15.1	14.4	13.9	13.3
Conversion (%) from SO ₂ to SO ₃ in CT	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
DB SO ₂ emission rate (lb/hr)- calculated	--	--	--	--	2.7	2.7	2.7	2.7
Conversion (%) from SO ₂ to SO ₃ in DB	--	--	--	--	20.0	20.0	20.0	20.0
Remaining SO ₂ (lb/hr) after conversion - calculated	13.6	13.0	12.5	12.0	15.7	15.1	14.6	14.1
Conversion (%) from SO ₂ to SO ₃ in SCR	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
MW SO ₃ /SO ₂ (80/64)	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Conversion (%) from SO ₃ to (NH ₄) ₂ (SO ₄)	100	100	100	100	100	100	100	100
MW (NH ₄) ₂ SO ₄ /SO ₃ (132/80)	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
HRSG Particulate as (NH ₄) ₂ (SO ₄) (lb/hr)- calculated	3.95	3.78	3.64	3.48	5.18	5.01	4.87	4.71
Total HRSG stack emission rate (lb/hr) [a + b] - provided	13.0	13.0	12.0	11.0				
-calculated	13.3	12.8	12.2	11.7	17.0	16.4	15.8	15.3
- maximum	13.3	13.0	12.2	11.7	17.0	16.4	15.8	15.3
(lb/mmBtu, HHV)	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur Dioxide								
SO ₂ (lb/hr) = Natural gas (scf/hr) x sulfur content (gr/100 scf) x 1 lb/7000 gr x (lb SO ₂ /lb S)/100								
Fuel use (cf/hr)	2,637,019	2,527,824	2,429,009	2,328,296	3,102,863	2,993,668	2,894,853	2,794,141
Sulfur content (grains/ 100 cf)	2	2	2	2	2	2	2	2
lb SO ₂ /lb S (64/32)	2	2	2	2	2	2	2	2
HRSG stack emission rate (lb/hr) - calculated	15.1	14.4	13.9	13.3	17.7	17.1	16.5	16.0
Nitrogen Oxides								
Oxygen (% dry)(O ₂ dry) = Oxygen (%) / [1 - Moisture (%)]								
NO _x (ppmv actual) = NO _x (ppmd @ 15%O ₂) x [(20.9 - O ₂ dry)/(20.9 - 15)] x [1 - Moisture(%)/100]								
NO _x (lb/hr) = NO _x (ppm actual) x Volume flow (acfm) x 46 (mole. wgt NO _x) x 2112.5 lb/ft ² (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr								
Basis, ppm actual- calculated	30.1	30.0	29.8	29.7	34.0	34.0	34.0	34.0
CT/DB, ppmvd @ 15% O ₂ - provided	25	25	25	25	24.1	24.1	24.0	24.0
Moisture (%)	8.36	9.14	9.88	11.03	9.70	10.52	11.31	12.50
Oxygen (%)	12.05	11.92	11.8	11.59	10.55	10.36	10.19	9.92
Oxygen (%) dry	13.15	13.12	13.09	13.03	11.68	11.58	11.49	11.34
Turbine Flow (acfm)	3,371,551	3,282,606	3,197,670	3,109,381	3,395,582	3,306,909	3,221,846	3,134,129
Turbine Flow (acfm), dry	3,089,689	2,982,576	2,881,740	2,766,416	3,066,240	2,958,861	2,857,517	2,742,267
Turbine Exhaust Temperature (°F)	1,121	1,139	1,151	1,168	1,121	1,139	1,151	1,168
CT/DB emission rate (lb/hr) - calculated	242.2	232.1	223.2	213.9	275.4	265.3	256.4	247.1
CT/DB Emission rate (lb/hr) - provided	250.0	239.0	230.0	220.0	283.3	272.3	263.3	253.3
HRSG Stack emission rate, ppmvd @ 15% O ₂	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
HRSG stack emission rate (lb/hr) - calculated	20.0	19.1	18.4	17.6	23.5	22.6	21.9	21.1
(Max. CT/DB calculated/provided)								
Carbon Monoxide								
Oxygen (% dry)(O ₂ dry) = Oxygen (%) / [1 - Moisture (%)]								
CO (ppmv wet or actual) = CO (ppmv @ 15%O ₂) x [(20.9 - O ₂ dry)/(20.9 - 15)] x [1 - Moisture(%)/100]								
CO (lb/hr) = CO (ppm actual) x Volume flow (acfm) x 28 (mole. wgt CO) x 2112.5 lb/ft ² (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr								
Basis, ppm actual- calculated	6.02	5.99	5.96	5.94	9.8	9.9	10.1	10.2
Basis, ppmvd @ 15% O ₂ - provided	5.00	5.00	5.00	5.00	7.0	7.0	7.1	7.2
Moisture (%)	8.36	9.14	9.88	11.03	9.70	10.52	11.31	12.50
Oxygen (%)	12.05	11.92	11.80	11.59	10.55	10.36	10.19	9.92
Oxygen (%) dry	13.15	13.12	13.09	13.03	11.68	11.58	11.49	11.34
Turbine Flow (acfm)	3,371,551	3,282,606	3,197,670	3,109,381	3,395,582	3,306,909	3,221,846	3,134,129
Turbine Flow (acfm), dry	3,089,689	2,982,576	2,881,740	2,766,416	3,066,240	2,958,861	2,857,517	2,742,267
Turbine Exhaust Temperature (°F)	1,121	1,139	1,151	1,168	1,121	1,139	1,151	1,168
CT/DB emission rate (lb/hr) - calculated	29.5	28.3	27.2	26.0	48.5	47.3	46.2	45.0
CT/DB Emission rate (lb/hr) - provided	30.0	29.0	28.0	27.0	49.0	48.0	47.0	46.0
HRSG Stack emission rate, ppmvd @ 15% O ₂ - provided	5.0	5.0	5.0	5.0	7.0	7.0	7.1	7.2
HRSG Stack emission rate (lb/hr) - calculated	30.0	29.0	28.0	27.0	49.0	48.0	47.0	46.0
(Max. CT/DB calculated/provided)								
Volatile Organic Compounds								
Oxygen (% dry)(O ₂ dry) = Oxygen (%) / [1 - Moisture (%)]								
VOC (ppmv wet or actual) = VOC (ppmv @ 15%O ₂) x [(20.9 - O ₂ dry)/(20.9 - 15)] x [1 - Moisture(%)/100]								
VOC (lb/hr) = VOC (ppm actual) x Volume flow (acfm) x 16 (mole. wgt CH ₄) x 2112.5 lb/ft ² (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr								
Basis, ppm actual- calculated	1.81	1.80	1.79	1.78	2.6	2.7	2.7	2.7
Basis, ppmvd @ 15% O ₂ - provided	1.50	1.50	1.50	1.50	1.9	1.9	1.9	1.9
Moisture (%)	8.36	9.14	9.88	11.03	9.70	10.52	11.31	12.50
Oxygen (%) wet	12.05	11.92	11.80	11.59	10.55	10.36	10.19	9.92
Oxygen (%) dry	13.15	13.12	13.09	13.03	11.68	11.58	11.49	11.34
Turbine Flow (acfm)	3,371,551	3,282,606	3,197,670	3,109,381	3,395,582	3,306,909	3,221,846	3,134,129
Turbine Flow (acfm), dry	3,089,689	2,982,576	2,881,740	2,766,416	3,066,240	2,958,861	2,857,517	2,742,267
Turbine Exhaust Temperature (°F)	1,121	1,139	1,151	1,168	1,121	1,139	1,151	1,168
CT/DB emission rate (lb/hr) - calculated	5.05	4.84	4.66	4.46	7.43	7.22	7.03	6.84
CT/DB Emission rate (lb/hr) - provided	0.00	0.00	0.00	0.00	2.38	2.38	2.38	2.38
not used	7.00	6.70	6.50	6.20				
HRSG Stack emission rate, ppmvd @ 15% O ₂ - provided	1.5	1.5	1.5	1.5	1.9	1.9	1.9	1.9
HRSG Stack emission rate (lb/hr) - calculated	5.1	4.84	4.7	4.5	7.4	7.2	7.0	6.8
(Max. CT/DB calculated/provided)								
Sulfuric Acid Mist								
Sulfuric Acid Mist (lb/hr) = SO ₂ emission (lb/hr) x Conversion to H ₂ SO ₄ (% by weight)/100								
CT SO ₂ emission rate (lb/hr) - calculated	15.1	14.4	13.9	13.3	15.1	14.4	13.9	13.3
CT Conversion to H ₂ SO ₄ (% by weight) - provided	10	10	10	10	10	10	10	10
DB SO ₂ emission rate (lb/hr) - provided	0	0	0	0	2.7	2.7	2.7	2.7
DB Conversion to H ₂ SO ₄ (%) - provided	20	20	20	20	20	20	20	20
SCR SO ₂ (lb/hr)(remaining SO ₂ after conversion) - calc	13.6	13.0	12.5	12.0	15.7	15.1	14.6	14.1
SCR Conversion to H ₂ SO ₄ (% by weight) - provided	3	3	3	3	3	3	3	3
HRSG Stack emission rate (lb/hr)	2.93	2.81	2.70	2.59	3.84	3.72	3.61	3.50
Lead								
Lead (lb/hr) = NA								
Emission Rate Basis	NA	NA	NA	NA	NA	NA	NA	NA
Emission rate (lb/hr)	NA	NA	NA	NA	NA	NA	NA	NA

Note: ppmvd= parts per million, volume dry; O₂= oxygen.

Source: Siemens, 2008; CT Performance Data; Golder, 2008.

TABLE A-3-SH
DESIGN INFORMATION AND STACK PARAMETERS
FOR THE CONVERSION PROJECT
SIEMENS H CT, DRY LOW NO_x COMBUSTOR, NATURAL GAS, 75% LOAD

Parameter	Turbine Inlet Temperature			
	35 °F	59 °F	75 °F	95 °F
Combustion Turbine Performance				
Heat Input (MMBtu/hr, LHV)	1,946	1,828	1,745	1,640
(MMBtu/hr, HHV)	2,161	2,030	1,938	1,822
Relative Humidity (%)	60	60	60	50
Fuel heating value (Btu/lb, LHV)	21,511	21,511	21,511	21,511
(Btu/lb, HHV)	23,893	23,893	23,893	23,893
(HHV/LHV)	1.111	1.111	1.111	1.111
CT Exhaust Flow				
Mass flow (lb/hr)- provided	4,067,000	3,887,500	3,753,000	3,575,000
Temperature (°F) - provided	1,149.1	1,160.6	1,168.5	1,180.7
Moisture (% Vol.)	8.22	8.65	9.27	10.13
Oxygen (% Vol.)	12.21	12.25	12.21	12.15
Molecular Weight	28.42	28.36	28.29	28.19
Volume flow (acfm) - calculated	2,807,747	2,708,602	2,634,236	2,536,737
Fuel Usage				
Fuel usage (lb/hr) = Heat Input (MMBtu/hr) x 1,000,000 Btu/MMBtu [Fuel Heat Content, Btu/lb (LHV)]				
Heat input (MMBtu/hr, LHV)	1,946	1,828	1,745	1,640
Heat content (Btu/lb, LHV)	21,511	21,511	21,511	21,511
Fuel usage (lb/hr)- provided	90,449	84,967	81,126	76,250
- calculated	90,445	84,962	81,112	76,257
Heat content (Btu/cf, LHV)- assumed	918	918	918	918
Fuel density (lb/ft ³)	0.0427	0.0427	0.0427	0.0427
Fuel usage (cf/hr)- calculated	2,119,443	1,990,986	1,900,982	1,786,725
HRSG Stack				
HRSG - Stack Height (feet)	149	149	149	149
Diameter (feet)	22	22	22	22
HRSG Stack Flow Conditions				
Velocity (ft/sec) = Volume flow (acfm) / [((diameter) ² / 4) x 3.14159] / 60 sec/min				
Mass flow (lb/hr)	4,067,000	3,887,500	3,753,000	3,575,000
HRSG Stack Temperature (°F)	184	185	186	187
Molecular weight	28.42	28.36	28.29	28.19
Volume flow (acfm)	1,123,727	1,078,059	1,044,959	1,000,347
Diameter (feet)	22	22	22	22
Velocity (ft/sec)- calculated	49.3	47.3	45.8	43.9

Note: Universal gas constant = 1,545.4 ft-lb(force)/°R; atmospheric pressure = 2,112.5 lb(force)/ft² (@14.67 psia).

Source: Siemens, 2008; CT Performance Data; Golder, 2008.

TABLE A-5-SH
DESIGN INFORMATION AND STACK PARAMETERS
FOR THE CONVERSION PROJECT
SIEMENS H CT, DRY LOW NO_x COMBUSTOR, DISTILLATE OIL, BASE LOAD

Parameter	Turbine Inlet Temperature			
	35 °F	59 °F	75 °F	95 °F
Combustion Turbine Performance				
Heat Input (MMBtu/hr, LHV)	2,420	2,268	2,162	2,028
(MMBtu/hr, HHV)	2,565	2,404	2,292	2,150
Relative Humidity (%)	60	60	60	50
Fuel heating value (Btu/lb, LHV)	18,387	18,387	18,387	18,387
(Btu/lb, HHV)	19,490	19,490	19,490	19,490
(HHV/LHV)	1.060	1.060	1.060	1.060
CT Exhaust Flow				
Mass Flow (lb/hr)- provided	5,090,824	4,814,396	4,613,552	4,350,270
Temperature (°F) - provided	1,071.0	1,092.0	1,106.0	1,127.0
Moisture (% Vol.)	7.97	8.46	9.12	10.02
Oxygen (% Vol.)	11.91	11.88	11.80	11.68
Molecular Weight	28.66	28.59	28.52	28.42
Volume flow (acfm) - calculated	3,315,909	3,186,273	3,088,451	2,962,342
Fuel Usage				
Fuel usage (lb/hr) = Heat Input (MMBtu/hr) x 1,000,000 Btu/MMBtu (Fuel Heat Content, Btu/lb (LHV))				
Heat input (MMBtu/hr, LHV)	2,420	2,268	2,162	2,028
Heat content (Btu/lb, LHV)	18,387	18,387	18,387	18,387
Fuel usage (lb/hr)- provided	131,600	123,371	117,608	110,306
- calculated	131,615	123,348	117,583	110,295
HRSG Stack				
HRSG - Stack Height (feet)	149	149	149	149
Diameter (feet)	22	22	22	22
HRSG Stack Flow Conditions				
Velocity (ft/sec) = Volume flow (acfm) / [((diameter) ² / 4) x 3.14159] / 60 sec/min				
Mass flow (lb/hr) - provided	5,090,824	4,814,396	4,613,552	4,350,270
HRSG Stack Temperature (°F)	359	357	355	354
Molecular weight	28.66	28.59	28.52	28.42
Volume flow (acfm)	1,773,827	1,677,310	1,607,335	1,519,437
Diameter (feet)	22	22	22	22
Velocity (ft/sec)- calculated	77.8	73.5	70.5	66.6

Note: Universal gas constant = 1,545.4 ft-lb(force)/°R; atmospheric pressure = 2,112.5 lb(force)/ft² (@14.67 psia).
Source: Siemens, 2008; CT Performance Data; Golder, 2008.

**TABLE A-6-SH
MAXIMUM EMISSIONS FOR CRITERIA POLLUTANTS FOR THE CONVERSION PROJECT
SIEMENS H CT, DRY LOW NO_x COMBUSTOR, DISTILLATE OIL, BASE LOAD**

Parameter	Turbine Inlet Temperature			
	35 °F	59 °F	75 °F	95 °F
Particulate from CT and SCR				
Total PM ₁₀ = PM ₁₀ (front half) + PM ₁₀ [(NH ₄) ₂ SO ₄] in HRSG only (back-half)				
a. PM ₁₀ (front half) (lb/hr)	not avail.			
Particulate from CT- provided				
b. PM ₁₀ ((NH ₄) ₂ SO ₄) from HRSG only (back half) = Sulfur trioxide from conversion of SO ₂ converts to ammonium sulfate (= PM ₁₀)				
Particulate from conversion of SO ₂ = SO ₂ emissions (lb/hr) x conversion of SO ₂ to SO ₃ in CT and in SCR x lb SO ₃ /lb SO ₂ x conversion of SO ₃ to (NH ₄) ₂ SO ₄ x lb (NH ₄) ₂ SO ₄ /lb SO ₃				
SO ₂ emission rate (lb/hr)- calculated	3.9	3.7	3.5	3.3
Conversion (%) from SO ₂ to SO ₃	10.0	10.0	10.0	10.0
Remaining SO ₂ (lb/hr) in CT after conversion - calculated	3.6	3.3	3.2	3.0
Conversion (%) from SO ₂ to SO ₃ in SCR	3.0	3.0	3.0	3.0
MW SO ₃ /SO ₂ (80/64)	1.3	1.3	1.3	1.3
Conversion (%) from SO ₃ to (NH ₄) ₂ (SO ₄)	100	100	100	100
MW (NH ₄) ₂ SO ₄ /SO ₃ (132/80)	1.7	1.7	1.7	1.7
HRSG Particulate as (NH ₄) ₂ (SO ₄) (lb/hr)- calculated	1.03	0.97	0.92	0.87
Total HRSG stack emission rate (lb/hr) [a + b] - provided	30.0	30.0	30.0	30.0
-calculated				
- maximum				
(lb/mmBtu, HHV)	NA	NA	NA	NA
Sulfur Dioxide				
$SO_2 \text{ (lb/hr)} = \text{Fuel oil (lb/hr)} \times \text{sulfur content (\% weight)} \times (\text{lb } SO_2 / \text{lb S}) / 100$				
Fuel oil Sulfur Content	0.0015%	0.0015%	0.0015%	0.0015%
Fuel oil use (lb/hr)	131,600	123,371	117,608	110,306
lb SO ₂ / lb S (64/32)	2	2	2	2
HRSG Stack emission rate (lb/hr)- calculated	3.9	3.7	3.5	3.3
Nitrogen Oxides				
$Oxygen \text{ (\% dry)} (O_2 \text{ dry}) = Oxygen \text{ (\%)} / [1 - Moisture \text{ (\%)}]$				
$NO_x \text{ (ppm actual)} = NO_x \text{ (ppmd @ 15\% } O_2) \times [(20.9 - O_2 \text{ dry}) / (20.9 - 15)] \times [1 - Moisture \text{ (\%)} / 100]$				
$NO_x \text{ (lb/hr)} = NO_x \text{ (ppm actual)} \times Volume \text{ flow (acfm)} \times 46 \text{ (mole. wgt } NO_x) \times 2112.5 \text{ lb/ft}^2 \text{ (pressure)} / [1545.4 \text{ (gas constant, R)} \times Actual \text{ Temp. (}^\circ R)] \times 60 \text{ min/hr}$				
Basis, ppm actual- calculated	52.1	51.6	51.2	50.7
CT/DB, ppmvd @ 15% O ₂	42	42	42	42
Moisture (%)	7.97	8.46	9.12	10.02
Oxygen (%)	11.91	11.88	11.80	11.68
Oxygen (%) dry	12.94	12.98	12.98	12.98
Turbine Flow (acfm)	3,315,909	3,186,273	3,088,451	2,962,342
Turbine Flow (acfm), dry	3,051,631	2,916,714	2,806,784	2,665,515
Turbine Exhaust Temperature (°F)	1,071	1,092	1,106	1,127
CT Emission rate (lb/hr) - calculated	426.0	399.9	381.0	357.2
CT emission rate (lb/hr) - provided	448.0	420.0	400.0	375.0
HRSG Stack emission rate, ppmvd @ 15% O ₂ - provided	8	8	8	8
HRSG Stack emission rate (lb/hr) - calculated	85.3	80.0	76.2	71.4
(Max. CT/DB calculated/provided)				
Carbon Monoxide				
$Oxygen \text{ (\% dry)} (O_2 \text{ dry}) = Oxygen \text{ (\%)} / [1 - Moisture \text{ (\%)}]$				
$CO \text{ (ppmv wet or actual)} = CO \text{ (ppmv @ 15\% } O_2) \times [(20.9 - O_2 \text{ dry}) / (20.9 - 15)] \times [1 - Moisture \text{ (\%)} / 100]$				
$CO \text{ (lb/hr)} = CO \text{ (ppm actual)} \times Volume \text{ flow (acfm)} \times 28 \text{ (mole. wgt } CO) \times 2112.5 \text{ lb/ft}^2 \text{ (pressure)} / [1545.4 \text{ (gas constant, R)} \times Actual \text{ Temp. (}^\circ R)] \times 60 \text{ min/hr}$				
Basis, ppm actual- calculated	12.4	12.3	12.2	12.1
Basis, ppmvd @ 15% O ₂ - provided	10	10	10	10
Moisture (%)	7.97	8.46	9.12	10.02
Oxygen (%)	11.91	11.88	11.80	11.68
Oxygen (%) dry	12.94	12.98	12.98	12.98
Turbine Flow (acfm)	3,315,909	3,186,273	3,088,451	2,962,342
Turbine Flow (acfm), dry	3,051,631	2,916,714	2,806,784	2,665,515
Turbine Exhaust Temperature (°F)	1,071	1,092	1,106	1,127
HRSG Exhaust Temperature (°F)	359	357	355	354
CT Emission rate (lb/hr) - calculated	61.7	58.0	55.2	51.8
CT emission rate (lb/hr) - provided	65.0	61.0	58.0	54.0
HRSG Stack emission rate, ppmvd @ 15% O ₂	10.0	10.0	10.0	10.0
HRSG Stack emission rate (lb/hr) - calculated	65.0	61.0	58.0	54.0
(Max. CT/DB calculated/provided)				
Volatile Organic Compounds				
$Oxygen \text{ (\% dry)} (O_2 \text{ dry}) = Oxygen \text{ (\%)} / [1 - Moisture \text{ (\%)}]$				
$VOC \text{ (ppmv wet or actual)} = VOC \text{ (ppmv @ 15\% } O_2) \times [(20.9 - O_2 \text{ dry}) / (20.9 - 15)] \times [1 - Moisture \text{ (\%)} / 100]$				
$VOC \text{ (lb/hr)} = VOC \text{ (ppm actual)} \times Volume \text{ flow (acfm)} \times 16 \text{ (mole. wgt } CH_4) \times 2112.5 \text{ lb/ft}^2 \text{ (pressure)} / [1545.4 \text{ (gas constant, R)} \times Actual \text{ Temp. (}^\circ R)] \times 60 \text{ min/hr}$				
Basis, ppm actual- calculated	2.5	2.5	2.4	2.4
Basis, ppmvd @ 15% O ₂ - provided	2.0	2.0	2.0	2.0
Moisture (%)	7.97	8.46	9.12	10.02
Oxygen (%)	11.91	11.88	11.80	11.68
Oxygen (%) dry	12.94	12.98	12.98	12.98
Turbine Flow (acfm)	3,315,909	3,186,273	3,088,451	2,962,342
Turbine Flow (acfm), dry	3,051,631	2,916,714	2,806,784	2,665,515
Turbine Exhaust Temperature (°F)	1,071	1,092	1,106	1,127
CT Emission rate (lb/hr) - calculated	7.1	6.6	6.3	5.9
CT emission rate (lb/hr) - provided	7.4	7.0	6.6	6.2
HRSG Stack emission rate, ppmvd @ 15% O ₂	2.0	2.0	2.0	2.0
HRSG Stack emission rate (lb/hr) - calculated	7.4	7.0	6.6	6.2
(Max. CT/DB calculated/provided)				
Sulfuric Acid Mist				
$Sulfuric \text{ Acid Mist (lb/hr)} = SO_2 \text{ emission (lb/hr)} \times Conversion \text{ to } H_2SO_4 \text{ (\% by weight)} / 100$				
CT SO ₂ emission rate (lb/hr) - calculated	3.9	3.7	3.5	3.3
CT Conversion to H ₂ SO ₄ (% by weight) - provided	10	10	10	10
DB SO ₂ emission rate (lb/hr) - provided	0	0	0	0
DB Conversion to H ₂ SO ₄ (% by weight) - provided	20	20	20	20
SCR SO ₂ emission rate (lb/hr) - calculated (remaining SO ₂ after conversion)	3.6	3.3	3.2	3.0
SCR Conversion to H ₂ SO ₄ (% by weight) - provided	3	3	3	3
HRSG Stack emission rate (lb/hr)- calculated	0.77	0.72	0.69	0.64
- provided				
Lead				
$Lead \text{ (lb/hr)} = Basis \text{ (lb/10}^{12} \text{ Btu)} \times Heat \text{ Input (MMBtu/hr)} / 1,000,000 \text{ MMBtu/10}^{12} \text{ Btu}$				
Emission Rate Basis (lb/10 ¹² Btu)	14	14	14	14
Heat Input (MMBtu/hr, HHV)	2,565	2,404	2,292	2,150
HRSG Stack emission rate (lb/hr)- calculated	0.0359	0.0337	0.0321	0.0301

Note: ppmvd= parts per million, volume dry; O₂= oxygen.
Source: Siemens, 2008; CT Performance Data; Golder, 2008.

TABLE A-7-SH
DESIGN INFORMATION AND STACK PARAMETERS
FOR THE CONVERSION PROJECT
SIEMENS H CT, DRY LOW NO_x COMBUSTOR, DISTILLATE OIL, 75% LOAD

Parameter	Turbine Inlet Temperature			
	35 °F	59 °F	75 °F	95 °F
Combustion Turbine Performance				
Heat Input (MMBtu/hr, LHV)	1,979	1,857	1,772	1,664
(MMBtu/hr, HHV)	2,098	1,968	1,878	1,764
Relative Humidity (%)	60	60	60	50
Fuel heating value (Btu/lb, LHV)	18,387	18,387	18,387	18,387
(Btu/lb, HHV)	19,490	19,490	19,490	19,490
(HHV/LHV)	1.060	1.060	1.060	1.060
CT Exhaust Flow				
Mass Flow (lb/hr)- provided	4,102,785	3,920,619	3,786,372	3,606,773
Temperature (°F) - provided	1,126	1,136	1,143	1,154
Moisture (% Vol.)	7.78	8.2	8.81	9.66
Oxygen (% Vol.)	11.93	11.99	11.97	11.92
Molecular Weight	28.68	28.62	28.54	28.44
Volume flow (acfm) - calculated	2,766,557	2,666,078	2,592,584	2,495,524
Fuel Usage				
Fuel usage (lb/hr) = Heat Input (MMBtu/hr) x 1,000,000 Btu/MMBtu [Fuel Heat Content, Btu/lb (LHV)]				
Heat input (MMBtu/hr, LHV)	1,979	1,857	1,772	1,664
Heat content (Btu/lb, LHV)	18,387	18,387	18,387	18,387
Fuel usage (lb/hr)- provided	107,635	100,987	96,398	90,522
- calculated	107,630	100,995	96,372	90,499
HRSO Stack				
HRSO - Stack Height (feet)	149	149	149	149
Diameter (feet)	22	22	22	22
HRSO Stack Flow Conditions				
Velocity (ft/sec) = Volume flow (acfm) / [((diameter) ² / 4) x 3.14159] / 60 sec/min				
Mass flow (lb/hr)	4,102,785	3,920,619	3,786,372	3,606,773
HRSO Stack Temperature (°F)	350	348	346	345
Molecular weight	28.68	28.62	28.54	28.44
Volume flow (acfm)	1,412,933	1,349,744	1,303,570	1,244,669
Diameter (feet)	22	22	22	22
Velocity (ft/sec)- calculated	61.9	59.2	57.2	54.6
Velocity (ft/sec)- provided	55	53	52	50

Note: Universal gas constant = 1,545.4 ft-lb(force)/°R; atmospheric pressure = 2,112.5 lb(force)/ft² (@14.67 psia).

Source: Siemens, 2008; CT Performance Data; Golder, 2008.

**TABLE A-8-SH
MAXIMUM EMISSIONS FOR CRITERIA POLLUTANTS FOR THE CONVERSION PROJECT
SIEMENS H CT, DRY LOW NO₂ COMBUSTOR, DISTILLATE OIL, 75% LOAD**

Parameter	Turbine Inlet Temperature			
	35 °F	59 °F	75 °F	95 °F
Particulate from CT and SCR				
Total PM ₁₀ = PM ₁₀ (front half) + PM ₁₀ [(NH ₄) ₂ SO ₄] in HRSG only (back-half)				
a. PM ₁₀ (front half) (lb/hr)				
<i>Particulate from CT- provided</i>	0.0	0.0	0.0	0.0
b. PM ₁₀ [(NH ₄) ₂ SO ₄] from HRSG only (back half) = Sulfur trioxide from conversion of SO ₂ converts to ammonium sulfate (= PM ₁₀)				
<i>Particulate from conversion of SO₂ = SO₂ emissions (lb/hr) x conversion of SO₂ to SO₃ in CT and in SCR x lb SO₃/lb SO₂ x conversion of SO₃ to (NH₄)₂SO₄ x lb (NH₄)₂SO₄/lb SO₃</i>				
SO ₂ emission rate (lb/hr)- calculated	3.2	3.0	2.9	2.7
Conversion (%) from SO ₂ to SO ₃ in CT	10.0	10.0	10.0	10.0
Remaining SO ₂ (lb/hr) in CT after conversion - calculated	2.9	2.7	2.6	2.4
Conversion (%) from SO ₂ to SO ₃ in SCR	3.0	3.0	3.0	3.0
MW SO ₃ /SO ₂ (80/64)	1.3	1.3	1.3	1.3
Conversion (%) from SO ₃ to (NH ₄) ₂ (SO ₄)	100	100	100	100
MW (NH ₄) ₂ SO ₄ /SO ₃ (132/80)	1.7	1.7	1.7	1.7
HRSG Particulate as (NH ₄) ₂ (SO ₄) (lb/hr)- calculated	0.85	0.79	0.76	0.71
Total HRSG stack emission rate (lb/hr) [a + b] - provided	30.0	30.0	30.0	30.0
-calculated	0.8	0.8	0.8	0.7
- maximum	30.0	30.0	30.0	30.0
(lb/mmBtu, HHV)	NA	NA	NA	NA
Sulfur Dioxide				
<i>SO₂ (lb/hr) = Fuel oil (lb/hr) x sulfur content(% weight) x (lb SO₂ /lb S) /100</i>				
Fuel oil Sulfur Content	0.0015%	0.0015%	0.0015%	0.0015%
Fuel oil use (lb/hr)	107,635	100,987	96,398	90,522
lb SO ₂ / lb S (64/32)	2	2	2	2
HRSG Stack emission rate (lb/hr)- calculated	3.2	3.0	2.9	2.7
Nitrogen Oxides				
<i>Oxygen (% dry)(O₂ dry) = Oxygen (%) / [1 - Moisture (%)]</i>				
<i>NO_x (ppm actual) = NO_x (ppmd @ 15%O₂) x [(20.9 - O₂ dry) / (20.9 - 15)] x [1 - Moisture(%)/100]</i>				
<i>NO_x (lb/hr) = NO_x (ppm actual) x Volume flow (acfm) x 46 (mole. wgt NO_x) x 2112.5 lb/ft³ (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr</i>				
Basis, ppm actual- calculated	52.3	51.2	50.5	49.6
CT/DB, ppmvd @ 15% O ₂	42	42	42	42
Moisture (%)	7.78	8.2	8.81	9.66
Oxygen (%)	11.93	11.99	11.97	11.92
Oxygen (%) dry	12.94	13.06	13.13	13.19
Turbine Flow (acfm)	2,766,557	2,666,078	2,592,584	2,495,524
Turbine Flow (acfm), dry	2,551,319	2,447,460	2,364,178	2,254,456
Turbine Exhaust Temperature (°F)	1,126	1,136	1,143	1,154
CT emission rate (lb/hr)	344.1	322.9	307.9	289.1
CT emission rate (lb/hr)(provided)	363.0	340.0	325.0	305.0
HRSG Stack, ppmvd @ 15% O ₂ - provided	8.0	8.0	8.0	8.0
HRSG Stack emission rate (lb/hr)- calculated (Max. CT/DB calculated/provided)	69.1	64.8	61.9	58.1
Carbon Monoxide				
<i>Oxygen (% dry)(O₂ dry) = Oxygen (%) / [1 - Moisture (%)]</i>				
<i>CO (ppmv wet or actual) = CO (ppmvd @ 15%O₂) x [(20.9 - O₂ dry) / (20.9 - 15)] x [1 - Moisture(%)/100]</i>				
<i>CO (lb/hr) = CO (ppm actual) x Volume flow (acfm) x 28 (mole. wgt CO) x 2112.5 lb/ft³ (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr</i>				
Basis, ppm actual- calculated	12.4	12.2	12.0	11.8
Basis, ppmvd @ 15% O ₂ - provided	10	10	10	10
Moisture (%)	7.78	8.2	8.81	9.66
Oxygen (%)	11.93	11.99	11.97	11.92
Oxygen (%) dry	12.94	13.06	13.13	13.19
Turbine Flow (acfm)	2,766,557	2,666,078	2,592,584	2,495,524
Turbine Flow (acfm), dry	2,551,319	2,447,460	2,364,178	2,254,456
Turbine Exhaust Temperature (°F)	1,126	1,136	1,143	1,154
HRSG Exhaust Temperature (°F)	350	348	346	345
CT emission rate (lb/hr)	49.9	46.8	44.6	41.9
CT emission rate (lb/hr)(provided)	53.0	49.0	47.0	44.0
HRSG Stack, ppmvd @ 15% O ₂ - provided	10.0	10.0	10.0	10.0
HRSG Stack emission rate (lb/hr)- calculated (Max. CT/DB calculated/provided)	53.0	49.0	47.0	44.0
Volatile Organic Compounds				
<i>Oxygen (% dry)(O₂ dry) = Oxygen (%) / [1 - Moisture (%)]</i>				
<i>VOC (ppmv wet or actual) = VOC (ppmvd @ 15%O₂) x [(20.9 - O₂ dry) / (20.9 - 15)] x [1 - Moisture(%)/100]</i>				
<i>VOC (lb/hr) = VOC (ppm actual) x Volume flow (acfm) x 16 (mole. wgt CH₄) x 2112.5 lb/ft³ (pressure) / [1545.4 (gas constant, R) x Actual Temp. (°R)] x 60 min/hr</i>				
Basis, ppm actual- calculated	2.5	2.4	2.4	2.4
Basis, ppmvd @ 15% O ₂ - provided	2.0	2.0	2.0	2.0
Moisture (%)	7.78	8.20	8.81	9.66
Oxygen (%)	11.93	11.99	11.97	11.92
Oxygen (%) dry	12.94	13.06	13.13	13.19
Turbine Flow (acfm)	2,766,557	2,666,078	2,592,584	2,495,524
Turbine Flow (acfm), dry	2,551,319	2,447,460	2,364,178	2,254,456
Turbine Exhaust Temperature (°F)	1,126	1,136	1,143	1,154
HRSG Exhaust Temperature (°F)	350	348	346	345
CT emission rate (lb/hr) (calculated)	5.7	5.3	5.1	4.8
CT emission rate (lb/hr)(provided)	6.0	5.6	5.4	5.1
HRSG Stack, ppmvd @ 15% O ₂ - provided	2.0	2.0	2.0	2.0
HRSG Stack emission rate (lb/hr)- calculated (Max. CT/DB calculated/provided)	6.00	5.60	5.40	5.10
Sulfuric Acid Mist				
<i>Sulfuric Acid Mist (lb/hr) = SO₂ emission (lb/hr) x Conversion to H₂SO₄ (% by weight) / 100</i>				
CT SO ₂ emission rate (lb/hr) - provided	3.2	3.0	2.9	2.7
CT Conversion to H ₂ SO ₄ (% by weight) - provided	10	10	10	10
DB SO ₂ emission rate (lb/hr) - provided	0	0	0	0
DB Conversion to H ₂ SO ₄ (%) - provided	20	20	20	20
SCR SO ₂ emission rate (lb/hr) - calculated (remaining SO ₂ after conversion)	2.9	2.7	2.6	2.4
SCR Conversion to H ₂ SO ₄ (% by weight) - provided	3	3	3	3
HRSG Stack emission rate (lb/hr)- calculated	0.63	0.59	0.56	0.53
Lead				
<i>Lead (lb/hr) = Basis (lb/10¹² Btu) x Heat Input (MMBtu/hr) / 1,000,000 MMBtu/10¹² Btu</i>				
Emission Rate Basis (lb/10 ¹² Btu)	14	14	14	14
Heat Input (MMBtu/hr, HHV)	2,098	1,968	1,878	1,764
HRSG Stack emission rate (lb/hr)- calculated	0.0294	0.0276	0.0263	0.0247

Note: ppmvd= parts per million, volume dry; O₂= oxygen.
Source: Siemens, 2008; CT Performance Data; Golder, 2008.

**TABLE A-9-SH
REGULATED AND HAZARDOUS AIR POLLUTANT EMISSION FACTORS AND EMISSIONS
FOR THE CONVERSION PROJECT
SIEMENS H CT, DRY LOW NO_x COMBUSTOR, NATURAL GAS, BASE LOAD**

Parameter	Emission Rate (lb/hr) firing Natural Gas for Operating Conditions of Base Load (1)		Natural Gas Maximum Annual Gas	
	59 °F	59 °F w/DB	Compressors 1 CT/HRSG	59 °F 3 CTs/HRSGs
Ambient Temperature (°F):	59 °F	59 °F w/DB		
HIR (MMBtu/hr):	2,577	3,052		
Sulfuric acid mist	2.10	3.72	11.5	34.6
<u>HAPs (Section 112(b) of Clean Air Act)</u>				
1,3-Butadiene	0.001108	0.001312	0.005	0.015
Acetaldehyde	0.1031	0.1221	0.479	1.437
Acrolein	0.0165	0.0195	0.077	0.230
Benzene	0.0309	0.0366	0.144	0.431
Ethylbenzene	0.0825	0.0977	0.383	1.149
Formaldehyde	0.551	0.654	2.562	7.686
Naphthalene	0.00335	0.00397	0.016	0.047
Polycyclic Aromatic Hydrocarbons (PAH) (3)	0.00567	0.00671	0.026	0.079
Propylene Oxide	0.0747	0.0885	0.347	1.041
Toluene	0.0850	0.1007	0.395	1.185
Xylene	0.165	0.195	0.766	2.298
Antimony	0.0	0.0	0.0	0.00
Arsenic	0.0	0.0	0.0	0.00
Beryllium	0.0	0.0	0.0	0.00
Cadmium	0.0	0.0	0.0	0.00
Chromium	0.0	0.0	0.0	0.00
Lead	0.0	0.0	0.0	0.00
Manganese	0.0	0.0	0.0	0.00
Mercury	0.0	0.0	0.0	3.59E-05
Nickel	0.0	0.0	0.0	0.00
Selenium	0.0	0.0	0.0	0.00
HAPs (Total)	1.119	1.327	5.20	15.6

(1) Emissions based on the following emission factors and conversion factors for firing natural gas:

<u>Emission Factors</u>	<u>Value</u>	<u>Reference</u>
Sulfuric acid mist	10 %	Conversion of SO ₂ to SO ₃ in gas turbine
1,3-Butadiene (a)	0.43 lb/10 ¹² Btu	AP-42, Table 3.1-3. EPA 2000
Acetaldehyde	40 lb/10 ¹² Btu	AP-42, Table 3.1-3. EPA 2000
Acrolein	6.4 lb/10 ¹² Btu	AP-42, Table 3.1-3. EPA 2000
Benzene	12 lb/10 ¹² Btu	AP-42, Table 3.1-3. EPA 2000
Ethylbenzene	32 lb/10 ¹² Btu	AP-42, Table 3.1-3. EPA 2000
Formaldehyde	0.091 ppmvd @15% O ₂	(see Table 9a)
Naphthalene	1.3 lb/10 ¹² Btu	AP-42, Table 3.1-3. EPA 2000
Polycyclic Aromatic Hydrocarbons (PAH)	2.2 lb/10 ¹² Btu	AP-42, Table 3.1-3. EPA 2000
Propylene Oxide (a)	29 lb/10 ¹² Btu	AP-42, Table 3.1-3. EPA 2000
Toluene	33 lb/10 ¹² Btu	AP-42, Table 3.1-3. EPA 2000. Database
Xylene	64 lb/10 ¹² Btu	AP-42, Table 3.1-3. EPA 2000
Antimony	0.00E+00	
Arsenic	0.00E+00	
Beryllium	0.00E+00	
Cadmium	0.00E+00	
Chromium	0.00E+00	
Lead	0.00E+00	
Manganese	0.00E+00	
Mercury	1.00E-03	
Nickel	0.00E+00	
Selenium	0.00E+00	

(a) Based on 1/2 the detection limit; expected emissions are lower.

(2) Annual emissions based on ambient temperature of 59 °F firing natural gas for following hours:

5880 CT
2880 CT/DB

(3) Assumed to be representative of Polycyclic Organic Matter (POM) emissions, a regulated HAP.

TABLE A-9a-SH
MAXIMUM FORMALDEHYDE EMISSIONS
FOR THE CONVERSION PROJECT
SIEMENS H CT, DRY LOW NO_x COMBUSTOR, NATURAL GAS, BASE LOAD

Parameter	CT Only			
	Turbine Inlet Temperature			
	35 °F	59 °F	59 °F w/DB	95 °F
Formaldehyde (CH ₂ O) MW =	30			Gas Compressors
$CH_2O \text{ (lb/hr)} = CH_2O \text{ (ppm actual)} \times \text{Volume flow (acfm)} \times 30 \text{ (mole. wgt } CH_2O) \times 2116.8 \text{ lb/ft}^2 \text{ (pressure)} /$ $[1545.7 \text{ (gas constant, R)} \times \text{Actual Temp. (}^\circ\text{R)}] \times 60 \text{ min/hr}$ $CH_2O \text{ (ppm actual)} = CH_2O \text{ (ppmd @ 15\%O}_2) \times [(20.9 - O_2 \text{ dry}) / (20.9 - 15)] \times [1 - \text{Moisture}(\%) / 100]$ $\text{Oxygen (\%, dry)}(O_2 \text{ dry}) = \text{Oxygen (\%)} / [1 - \text{Moisture}(\%)]$				
Basis, ppm actual- calculated	0.110	0.109	0.129	0.108
CT, ppmvd @15% O ₂	0.091	0.091	0.091	0.091
Moisture (%)	8.36	9.14	10.52	11.03
Oxygen (%)	12.05	11.92	10.36	11.59
Oxygen (%) dry	13.15	13.12	11.58	13.03
Exhaust Flow (acfm)	1,399,125	1,344,704	1,333,147	1,251,392
Exhaust Temperature (°F)	196	195	185	195
CT Emission rate (lb/hr)	0.575	0.551	0.654	0.508
CT Emission rate (lb/10 ¹² Btu) (HHV)	213.8	213.8	254.0	213.9

Note: ppmvd= parts per million, volume dry; O₂= oxygen.
Source: Siemens, 2008; CT Performance Data; Golder, 2008.

**TABLE A-10-SH
REGULATED AND HAZARDOUS AIR POLLUTANT EMISSION FACTORS AND EMISSIONS
FOR THE CONVERSION PROJECT, SIEMENS H CT**

Parameter	Emission Rate (lb/hr)	Maximum Annual Emissions (TPY)			Emission Rate (lb/hr)		Maximum Annual Emissions (TPY)		
	Distillate Fuel Oil (1)	Gas			Natural Gas (4)		Natural Gas and Fuel Oil (5)		
	Base Load	Compressors			Base Load				
Ambient Temperature (°F):	59 °F								
HIR (MMBtu/hr):	2,404	3 CT/HRSGs (500 hrs on oil)	3 CT/HRSGs (1,000 hrs on oil)	3 CT/HRSGs (1,500 hrs on oil)	1 CT/HRSGs (CT Only)	1 CT/HRSGs (CT + DB)	3 CT/HRSGs (500 hrs on oil)	3 CT/HRSGs (1,000 hrs on oil)	3 CT/HRSGs (1,500 hrs on oil)
Sulfuric acid mist	0.72	0.54	1.08	1.62	2.10	3.72	33.6	32.5	31.5
HAPs (Section 112(b) of Clean Air Act)									
1,3-Butadiene	0.0385	0.029	0.058	0.087	0.001	0.001	0.043	0.071	0.099
Acetaldehyde	0.00	0.00	0.00	0.00	0.103	0.122	1.359	1.282	1.205
Acrolein	0.00	0.00	0.00	0.00	0.016	0.020	0.217	0.205	0.193
Benzene	0.132	0.099	0.198	0.298	0.031	0.037	0.507	0.583	0.659
Ethylbenzene	0.00	0.00	0.00	0.00	0.082	0.098	1.087	1.026	0.964
Formaldehyde	0.565	0.424	0.848	1.271	0.551	0.654	7.697	7.707	7.718
Naphthalene	0.0841	0.063	0.126	0.189	0.003	0.004	0.107	0.168	0.228
Polycyclic Aromatic Hydrocarbons (PAH) (3)	0.0962	0.072	0.144	0.216	0.006	0.007	0.147	0.215	0.283
Propylene Oxide	0.00	0.00	0.00	0.00	0.075	0.089	0.985	0.929	0.873
Toluene	0.00	0.00	0.00	0.00	0.085	0.101	1.121	1.058	0.994
Xylene	0.00	0.00	0.00	0.00	0.165	0.195	2.175	2.051	1.927
Antimony	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arsenic	0.0264	0.020	0.040	0.060	0.00	0.00	0.020	0.040	0.060
Beryllium	0.000745	0.0006	0.001	0.002	0.00	0.00	0.00	0.00	0.00
Cadmium	0.01154	0.0087	0.017	0.026	0.00	0.00	0.009	0.017	0.026
Chromium	0.0264	0.020	0.040	0.060	0.00	0.00	0.020	0.040	0.060
Lead	0.0337	0.025	0.050	0.076	0.00	0.00	0.025	0.050	0.076
Manganese	1.90	1.424	2.849	4.273	0.00	0.00	1.42	2.85	4.27
Mercury	0.00288	0.0022	0.004	0.006	0.00	0.00	0.00	0.00	0.01
Nickel	0.01106	0.0083	0.017	0.025	0.00	0.00	0.008	0.017	0.025
Selenium	0.0601	0.045	0.090	0.135	0.00	0.00	0.045	0.090	0.135
HAPs (Total)	2.99	2.24	4.48	6.72	1.1	1.3	17.0	18.4	19.8

(1) Emissions based on the following emission factors and conversion factors for firing distillate fuel oil:

Emission Factors	Value	Reference
Sulfuric acid mist	5	%; Conversion of SO ₂ to SO ₃ in gas turbine
1,3-Butadiene	(a) 16	lb/10 ¹² Btu; AP-42, Table 3.1-4. EPA 2000
Acetaldehyde	0.0	
Acrolein	0.0	
Benzene	55	lb/10 ¹² Btu; AP-42, Table 3.1-4. EPA 2000
Ethylbenzene	0.0	
Formaldehyde	0.091	ppmvd @15% O ₂ (see Table 10a)
Naphthalene	35	lb/10 ¹² Btu; AP-42, Table 3.1-4. EPA 2000
Polycyclic Aromatic Hydrocarbons (PAH)	40	lb/10 ¹² Btu; AP-42, Table 3.1-4. EPA 2000
Propylene Oxide	0.0	
Toluene	0.0	
Xylene	0.0	
Antimony	0.0	
Arsenic	(a) 11	lb/10 ¹² Btu; AP-42, Table 3.1-5. EPA 2000
Beryllium	(a) 0.31	lb/10 ¹² Btu; AP-42, Table 3.1-5. EPA 2000
Cadmium	4.8	lb/10 ¹² Btu; AP-42, Table 3.1-5. EPA 2000
Chromium	11	lb/10 ¹² Btu; AP-42, Table 3.1-5. EPA 2000
Lead	14	lb/10 ¹² Btu; AP-42, Table 3.1-5. EPA 2000
Manganese	790	lb/10 ¹² Btu; AP-42, Table 3.1-5. EPA 2000
Mercury	1.2	lb/10 ¹² Btu; AP-42, Table 3.1-5. EPA 2000
Nickel	(a) 4.6	lb/10 ¹² Btu; AP-42, Table 3.1-5. EPA 2000
Selenium	(a) 25	lb/10 ¹² Btu; AP-42, Table 3.1-5. EPA 2000

(a) Based on 1/2 the detection limit; expected emissions are lower.

	500 hours	1,000 hours	1,500 hours
(2) Annual emissions based on ambient temperature of 59 °F and firing fuel oil at base load for :			
(3) Assumed to be representative of Polycyclic Organic Matter (POM) emissions, a regulated HAP.			
(4) Natural gas firing emission rates based on Table A-9.			
(5) Maximum total annual emissions based on the following combination of operating hours:			
Oil firing at base load for :	500 hours	1,000 hours	1,500 hours
Natural gas at base load for :	5,380 hours	4,880 hours	4,380 hours
Natural gas with duct firing at base load for :	2,880 hours	2,880 hours	2,880 hours

**TABLE A-10a-SH
MAXIMUM FORMALDEHYDE EMISSIONS
FOR THE CONVERSION PROJECT
SIEMENS H CT, DRY LOW NO_x COMBUSTOR, DISTILLATE OIL, BASE LOAD**

Parameter	CT Only Turbine Inlet Temperature			
	35 °F	59 °F	75 °F	95 °F
Formaldehyde (CH ₂ O) MW =	30			Gas Compressors
$CH_2O \text{ (lb/hr)} = CH_2O \text{ (ppm actual)} \times \text{Volume flow (acfm)} \times 30 \text{ (mole. wgt } CH_2O) \times 2116.8 \text{ lb/ft}^2 \text{ (pressure)} / [1545.7 \text{ (gas constant, R)} \times \text{Actual Temp. (}^\circ\text{R)}] \times 60 \text{ min/hr}$				
$CH_2O \text{ (ppm actual)} = CH_2O \text{ (ppmd @ 15\%O}_2) \times [(20.9 - O_2 \text{ dry}) / (20.9 - 15)] \times [1 - \text{Moisture}(\%) / 100]$				
$\text{Oxygen } (\%, \text{ dry}) / (O_2 \text{ dry}) = \text{Oxygen } (\%) / [1 - \text{Moisture } (\%)]$				
Basis, ppmvw - calculated	0.113	0.112	0.111	0.110
CT, ppmvd @15% O ₂	0.091	0.091	0.091	0.091
Moisture (%)	7.97	8.46	9.12	10.02
Oxygen (%)	11.91	11.88	11.80	11.68
Oxygen (%) dry	12.94	12.98	12.98	12.98
Exhaust Flow (acfm)	1,773,827	1,677,310	1,607,335	1,519,437
Exhaust Temperature (°F)	359	357	355	354
CT Emission rate (lb/hr)	0.602	0.565	0.538	0.505
CT Emission rate (lb/10 ¹² Btu) (HHV)	234.7	235.0	234.9	234.8

Note: ppmvd= parts per million, volume dry; O₂= oxygen.

Source: Siemens, 2008; CT Performance Data; Golder, 2008.

**TABLE 2-1B
STACK, OPERATING, AND EMISSION DATA FOR THE COMBUSTION TURBINES/HRSGS AND DUCT
BURNERS -NATURAL GAS COMBUSTION, SIEMENS H CT**

Parameter	Operating and Emission Data ^a for Ambient Temperature							
	Combustion Turbine/ HRSG				Combustion Turbine/ HRSG/ Duct Burner			
	35 °F	59 °F	75 °F	95 °F	35 °F	59 °F	75 °F	95 °F
<u>CT/HRSG Stack Data (feet)</u>								
Height	149	149	149	149	149	149	149	149
Diameter	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
<u>100 Percent Load</u>								
Temperature (°F)	196	195	195	195	186	185	185	184
Velocity (ft/sec)	61.3	59.0	57.0	54.9	60.8	58.5	56.5	54.3
<u>Maximum Hourly Emissions per CT</u>								
SO ₂ lb/hr	15.1	14.4	13.9	13.3	17.7	17.1	16.5	16.0
PM/PM ₁₀ lb/hr	13.3	13.0	12.2	11.7	17.0	16.4	15.8	15.3
NO _x lb/hr	20.0	19.1	18.4	17.6	23.5	22.6	21.9	21.1
CO lb/hr	30.0	29.0	28.0	27.0	49.0	48.0	47.0	46.0
VOC (as methane) lb/hr	5.1	4.8	4.7	4.5	7.4	7.2	7.0	6.8
Sulfuric Acid Mist lb/hr	2.9	2.8	2.7	2.6	3.8	3.7	3.6	3.5
<u>75 Percent Load</u>								
Temperature (°F)	184	185	186	187	NA	NA	NA	NA
Velocity (ft/sec)	49.3	47.3	45.8	43.9	NA	NA	NA	NA
<u>Maximum Hourly Emissions per CT</u>								
SO ₂ lb/hr	12.1	11.4	10.9	10.2	NA	NA	NA	NA
PM/PM ₁₀ lb/hr	11.0	11.0	9.9	9.4	NA	NA	NA	NA
NO _x lb/hr	16.1	15.0	14.4	13.5	NA	NA	NA	NA
CO lb/hr	49.0	46.0	44.0	41.0	NA	NA	NA	NA
VOC (as methane) lb/hr	4.1	3.8	3.6	3.4	NA	NA	NA	NA
Sulfuric Acid Mist lb/hr	2.36	2.21	2.11	1.99	NA	NA	NA	NA

^a Refer to Appendix A for detailed information on basis of pollutant emission rates and operating data. Duct firing is assumed for 100% operating load. No duct firing is assumed for loads less than 100%.

Source: Siemens, 2008; CT Performance Data; Golder, 2008.

**TABLE 2-2B
STACK, OPERATING, AND EMISSION DATA FOR
THE COMBUSTION TURBINES/HRSGS -
ULTRA LOW-SULFUR LIGHT OIL COMBUSTION, SIEMENS H CT**

Parameter	Operating and Emission Data ^a for Ambient Temperature Combustion Turbine/ HRSG				
	35 °F	59 °F	75 °F	95 °F	
<u>CT/HRSG Stack Data (feet)</u>					
Height	149	149	149	149	
Diameter	22	22	22	22	
<u>100 Percent Load</u>					
Temperature (°F)	359	357	355	354	
Velocity (ft/sec)	77.8	73.5	70.5	66.6	
<u>Maximum Hourly Emissions per CT</u>					
SO ₂	lb/hr	3.9	3.7	3.5	3.3
PM/PM ₁₀	lb/hr	0.0	0.0	0.0	0.0
NO _x	lb/hr	85.3	80.0	76.2	71.4
CO	lb/hr	65.0	61.0	58.0	54.0
VOC (as methane)	lb/hr	7.4	7.0	6.6	6.2
Lead	lb/hr	0.036	0.034	0.032	0.030
Sulfuric Acid Mist	lb/hr	0.77	0.72	0.69	0.64
<u>75 Percent Load</u>					
Temperature (°F)	350	348	346	345	
Velocity (ft/sec)	61.9	59.2	57.2	54.6	
<u>Maximum Hourly Emissions per CT</u>					
SO ₂	lb/hr	3.2	3.0	2.9	2.7
PM/PM ₁₀	lb/hr	30.0	30.0	30.0	30.0
NO _x	lb/hr	69.1	64.8	61.9	58.1
CO	lb/hr	53.0	49.0	47.0	44.0
VOC (as methane)	lb/hr	6.0	5.6	5.4	5.1
Lead	lb/hr	0.029	0.028	0.026	0.025
Sulfuric Acid Mist	lb/hr	0.63	0.59	0.56	0.53

^a Refer to Appendix A for detailed information on basis of pollutant emission rates and operating data.

Source: Siemens, 2008; CT Performance Data; Golder, 2008.

**TABLE 2-3B
SUMMARY OF MAXIMUM POTENTIAL ANNUAL EMISSIONS FOR
THE CTS/HRSG, SIEMENS H CTS**

Pollutant	Maximum Hourly Emissions (lb/hr) ^a			Maximum Emissions (TPY)					
	Combined Cycle (CC)			Operating Scenario	Operating Hours				
	Fuel:	NG	NG		Oil	CC/ NG 100 % Load	CC/ DB /NG100 % Load	CC/ OIL 100 % Load ^b	TOTAL
Temp & Load:	59 °F, 100%	59 °F, 100%	59 °F, 100%		8,760	7,760	5,880	4,880	5,280
		w/DB			0	1,000	2,880	2,880	2,480
					0	0	0	1,000	1,000
					8,760	8,760	8,760	8,760	8,760
One Combustion Turbine									
SO ₂	14.4	17.1	3.7		63.3	64.6	67.1	61.7	61.2
PM/PM ₁₀	13.0	16.4	0.0		56.9	58.6	61.8	55.3	54.6
NO _x	19.1	22.6	80.0		83.7	85.5	88.8	119.2	118.5
CO	29.0	48.0	61.0		127.0	136.5	154.4	170.4	166.6
VOC (as methane)	4.8	7.2	7.0		21.2	22.4	24.6	25.7	25.2
Sulfuric Acid Mist	2.8	3.7	0.7		12.3	12.8	13.6	12.6	12.4
HAPs	1.12	1.33	2.99		4.9	5.0	5.2	6.1	6.1
Lead	0.00	0.00	0.034		0.0	0.0	0.0	0.017	0.017
Three Combustion Turbines									
SO ₂	43.3	51.3	11		190	194	201	185	184
PM/PM ₁₀	39.0	49.2	0		170.8	175.9	185.5	166	164
NO _x	57.4	67.9	240		251	257	266	358	356
CO	87.0	144	183		381	410	463	511	500
VOC (as methane)	14.5	21.7	21.0		63.6	67.2	73.9	77.1	75.7
Sulfuric Acid Mist	8.4	11.2	2.2		36.9	38.3	40.9	37.7	37.2
HAPs	3.36	3.98	8.96		14.70	15.01	15.60	18.4	18.3
Lead	0.00	0.00	0.101		0.000	0.000	0.000	0.050	0.050

^a Based on 59 °F ambient inlet air temperature .

^b Based on oil-firing up to 1,000 hours (maximum).

Sources: Siemens, 2008; Golder, 2008.

TABLE 2-7

SUMMARY OF MAXIMUM POTENTIAL ANNUAL EMISSIONS FOR THE CONVERSIONS PROJECT

1,000 HR OIL

SIEMENS H CT

Pollutant	Maximum Potential Annual Emissions (tons/year)					PCC			PRV		PSD Significant Emission Rate (tons/year)
	3 CTs/HRSGs with Duct Burners	Auxiliary Boiler ^a	2 Emergency Generators	1 Natural Gas Heater	TOTAL	Maximum 2-Year Average (tons/year)	3 Compressor Engine(s) Change (tons/year)	Change (tons/year)	Maximum 2-Year Average (tons/year)	Change (tons/year)	
SO ₂	201	0.14	0.003	0.23	202	11,140	1.17	-10,937	10,999	-10,797	40
PM	185	0.17	0.28	0.08	186	918	0.032	-732	889	-703	25
PM ₁₀	185	0.17	0.28	0.08	186	918	0.032	-732	889	-703	15
NO _x	358	1.25	4.87	4.11	368	7,725	96.0	-7,261	3,752	-3,384	40
CO	511	2.00	6.00	3.45	523	703	68.6	-112	560	-37	100
VOC (as methane)	77.1	0.13	0.71	0.23	78.2	68.4	24.8	34.6	59.4	18.8	40
Sulfuric Acid Mist	40.9	0	NA	NA	40.9						7
Lead	0.050	0	NA	NA	0.05	0.113	0.0	-0.062	0.12	-0.07	0.6

Source: Golder, 2008.

a An auxiliary boiler is only required to supply steam to the CTs during startup.

TABLE 2-7

SUMMARY OF MAXIMUM POTENTIAL ANNUAL EMISSIONS FOR THE CONVERSIONS PROJECT

1,500 HR OIL

SIEMENS H CT

Pollutant	Maximum Potential Annual Emissions (tons/year)					PCC			PRV		PSD Significant Emission Rate (tons/year)
	3 CTs/HRSGs with Duct Burners		2 Emergency Generators	1 Natural Gas Heater	TOTAL	Maximum 2-Year Average (tons/year)	3 Compressor Engine(s) (tons/year)	Change (tons/year)	Maximum 2-Year Average (tons/year)	Change (tons/year)	
	Auxiliary Boiler ^a										
SO ₂	201	0.14	0.003	0.23	202	11,140	1.17	-10,937	10,999	-10,797	40
PM	185	0.17	0.28	0.08	186	918	0.032	-732	889	-703	25
PM ₁₀	185	0.17	0.28	0.08	186	918	0.032	-732	889	-703	15
NO _x	403	1.25	4.87	4.11	414	7,725	96.0	-7,216	3,752	-3,339	40
CO	535	2.00	6.00	3.45	547	703	68.6	-88	560	-13	100
VOC (as methane)	79	0.13	0.71	0.23	79.8	68.4	24.8	36.2	59.4	20.5	40
Sulfuric Acid Mist	40.9	0	NA	NA	40.9						7
Lead	0.076	0	NA	NA	0.08	0.113		-0.037	0.12	-0.04	0.6

Source: Golder, 2008.

a An auxiliary boiler is only required to supply steam to the CTs during startup.

**TABLE 4.4.1-1B
STACK, OPERATING, AND EMISSION DATA FOR
THE COMBUSTION TURBINES/HRSGS AND DUCT BURNERS
FOR RBEC OPERATION - NATURAL GAS COMBUSTION, SIEMENS H CT**

Parameter	Operating and Emission Data ^a for Ambient Temperature							
	Combustion Turbine/ HRSG				Combustion Turbine/ HRSG/ Duct Burner			
	35 °F	59 °F	75 °F	95 °F	35 °F	59 °F	75 °F	95 °F
CT/HRSG Stack Data (feet)								
Height	149	149	149	149	149	149	149	149
Diameter	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
100 Percent Load								
Temperature (°F)	196	195	195	195	186	185	185	184
Velocity (ft/sec)	61.3	59.0	57.0	54.9	60.8	58.5	56.5	54.3
Maximum Hourly Emissions per Unit								
SO ₂ lb/hr	15.1	14.4	13.9	13.3	17.7	17.1	16.5	16.0
PM/PM ₁₀ lb/hr	13.3	13.0	12.2	11.7	17.0	16.4	15.8	15.3
NO _x lb/hr	20.0	19.1	18.4	17.6	23.5	22.6	21.9	21.1
CO lb/hr	30.0	29.0	28.0	27.0	49.0	48.0	47.0	46.0
VOC (as methane) lb/hr	5.1	4.8	4.7	4.5	7.4	7.2	7.0	6.8
Sulfuric Acid Mist lb/hr	2.9	2.8	2.7	2.6	3.8	3.7	3.6	3.5
75 Percent Load								
Temperature (°F)	184	185	186	187	NA	NA	NA	NA
Velocity (ft/sec)	49.3	47.3	45.8	43.9	NA	NA	NA	NA
Maximum Hourly Emissions per Unit								
SO ₂ lb/hr	12.1	11.4	10.9	10.2	NA	NA	NA	NA
PM/PM ₁₀ lb/hr	11.0	11.0	9.9	9.4	NA	NA	NA	NA
NO _x lb/hr	16.1	15.0	14.4	13.5	NA	NA	NA	NA
CO lb/hr	49.0	46.0	44.0	41.0	NA	NA	NA	NA
VOC (as methane) lb/hr	4.1	3.8	3.6	3.4	NA	NA	NA	NA
Sulfuric Acid Mist lb/hr	2.36	2.21	2.11	1.99	NA	NA	NA	NA

^a Refer to Appendix 10.2.5, Subappendix A for detailed information on basis of pollutant emission rates and operating data. Duct firing is assumed for 100% operating load. No duct firing is assumed for loads less than 100%.

Source: Siemens, 2008; CT Performance Data; Golder, 2008.

**TABLE 4.4.1-2B
STACK, OPERATING, AND EMISSION DATA FOR
THE COMBUSTION TURBINES/HRSGS FOR RBEC OPERATION -
ULTRA LOW SULFUR LIGHT OIL COMBUSTION, SIEMENS H CT**

Parameter	Operating and Emission Data ^a for Ambient Temperature Combustion Turbine/ HRSG				
	35 °F	59 °F	75 °F	95 °F	
<u>CT/HRSG Stack Data (feet)</u>					
Height	149	149	149	149	
Diameter	22	22	22	22	
<u>100 Percent Load</u>					
Temperature (°F)	359	357	355	354	
Velocity (ft/sec)	77.8	73.5	70.5	66.6	
<u>Maximum Hourly Emissions per Unit</u>					
SO ₂	lb/hr	3.9	3.7	3.5	3.3
PM/PM ₁₀	lb/hr	0.0	0.0	0.0	0.0
NO _x	lb/hr	85.3	80.0	76.2	71.4
CO	lb/hr	65.0	61.0	58.0	54.0
VOC (as methane)	lb/hr	7.4	7.0	6.6	6.2
Lead	lb/hr	0.036	0.034	0.032	0.030
Sulfuric Acid Mist	lb/hr	0.77	0.72	0.69	0.64
<u>75 Percent Load</u>					
Temperature (°F)	350	348	346	345	
Velocity (ft/sec)	61.9	59.2	57.2	54.6	
<u>Maximum Hourly Emissions per Unit</u>					
SO ₂	lb/hr	3.2	3.0	2.9	2.7
PM/PM ₁₀	lb/hr	30.0	30.0	30.0	30.0
NO _x	lb/hr	69.1	64.8	61.9	58.1
CO	lb/hr	53.0	49.0	47.0	44.0
VOC (as methane)	lb/hr	6.0	5.6	5.4	5.1
Lead	lb/hr	0.029	0.028	0.026	0.025
Sulfuric Acid Mist	lb/hr	0.63	0.59	0.56	0.53

^a Refer to Appendix 10.2.5, Subappendix A for detailed information on basis of pollutant emission rates and operating data.

Source: Siemens, 2008; CT Performance Data; Golder, 2008.

**TABLE 4.4.1-3B
SUMMARY OF MAXIMUM POTENTIAL ANNUAL EMISSIONS FOR RBEC OPERATION, SIEMENS H CT**

Pollutant	RBEC Conversion Project Maximum Potential Annual Emissions (TPY)							Netting Calculations		PSD Significant Emission Rate (TPY)
	3	2	1	7	Fuel Oil	Fire Pump Engine	TOTAL	Maximum 2-Year Average from Existing Units ^a (TPY)	Change (TPY)	
	CTs/HRSGs with Duct Burners ^b	Emergency Generators	Natural Gas Heater	Gas Compressors	Storage Tank					
SO ₂	201	0.003	0.23	1.74	NA	0.00014	203	10,999	-10,796	40
PM	185	0.28	0.08	3.10	NA	0.011	189	889	-700	25
PM ₁₀	185	0.28	0.08	3.10	NA	0.011	189	889	-700	15
NO _x	358	4.9	4.11	135.9	NA	0.18	503	3,752	-3,250	40
CO	511	6.0	3.45	8.6	NA	0.069	529	560	-30.4	100
VOC (as methane)	77.1	0.71	0.23	14.0	2.80	0.026	94.9	59.4	35.6	40
Sulfuric Acid Mist	40.9	Neg.	Neg.	Neg.	NA	Neg.	40.9	489	-448	7
Lead	0.050	Neg.	Neg.	Neg.	NA	Neg.	0.050	0.12	-0.066	0.6

Source: Golder, 2008.

^a Based on actual emissions from Annual Operating Reports from 2003-2007.

^b Based on oil-firing for 1,000 hours.

Note: Neg.= negligible; NA= not applicable

**TABLE 2-5 (REVISED JANUARY 2012)
PERFORMANCE AND EMISSION DATA FOR THE EMERGENCY GENERATORS**

Parameter	Emergency Generator
<u>Performance</u>	
Number of Units	2
Rating (kW)	2,250
Rating (hp)	3,200
Fuel	Diesel
Fuel Heat content (Btu/lb) (HHV)	19,300
Fuel density (lb/gal)	7.0
Heat input (MMBtu/hr) (HHV)	21.01
Fuel usage (gallons/hr)	155.5
Maximum operation (hours)	100
Maximum fuel usage (gallons/yr)	15,550
<u>Stack Parameters (typical)</u>	
Diameter (ft)	1.0
Height (ft)	30
Temperature (°F)	916
Flow (acfm)	17,463
<u>Emissions</u>	
SO ₂ -	
Basis (%S)	0.0015%
Conversion of S to SO ₂	100
Molecular weight SO ₂ / S (64/32)	2
Emission rate (lb/hr)	0.03
(tpy)- one unit	0.002
(tpy)- total units	0.003
NO _x -	
Basis (g/hp-hr)	6.9
Emission rate (lb/hr)	48.7
(tpy)- one unit	2.43
(tpy)- total units	4.87
CO -	
Basis (g/hp-hr)	8.5
Emission rate (lb/hr)	60.0
(tpy)- one unit	3.00
(tpy)- total units	6.00
VOC -	
Basis (g/hp-hr)	1.0
Emission rate (lb/hr)	7.1
(tpy)- one unit	0.35
(tpy)- total units	0.71
PM/PM ₁₀ -	
Basis (g/hp-hr)	0.4
Emission rate (lb/hr)	2.8
(tpy)- one unit	0.14
(tpy)- total units	0.28

Sources: FPL, 2012; Golder, 2012.

**TABLE 2-6 (REVISED JANUARY 2012)
PERFORMANCE, STACK PARAMETERS, AND EMISSIONS
FOR THE NATURAL GAS FUEL HEATER**

Parameter	Natural Gas Heater
<u>Performance^a</u>	
Fuel Usage (scf/hr-gas)	9,384
Heat Input (MMBtu/hr-HHV)	9.9
Hours per Year	8,760
Maximum Fuel Usage (MMscf/yr)	82.2
Number of Units	1
<u>Stack Parameters (typical)</u>	
Diameter (ft)	1.42
Height (ft)	30
Temperature (°F)	500
Velocity (ft/sec)	51.6
Flow (acfm)	4,901
<u>Emissions</u>	
SO ₂ -Basis (grains S/100 scf-gas) ^b	2
(lb/hr)	0.054
(lb/MMBtu)	0.0054
(tpy) - one unit	0.23
(tpy) - total units	0.23
NO _x - (lb/MMscf) ^c	100
(lb/hr)	0.94
(lb/MMBtu)	0.095
(tpy) - one unit	4.1
(tpy) - total units	4.1
CO - (lb/MMscf) ^c	84
(lb/hr)	0.79
(lb/MMBtu)	0.080
(tpy) - one unit	3.45
(tpy) - total units	3.45
VOC - (lb/MMscf) ^c	5.5
(lb/hr)	0.052
(lb/MMBtu)	0.005
(tpy) - one unit	0.23
(tpy) - total units	0.23
PM/PM10 - (lb/MMscf) ^d	1.9
(lb/hr)	0.02
(lb/MMBtu)	0.002
(tpy) - one unit	0.08
(tpy) - total units	0.08

Note: Project will also have spare heater.

^a Based on 10 MMBtu/hr (HHV) indirect gas heaters from Hanover Compression Company or equivalent.

^b Typical maximum for natural gas.

^c EPA, AP-42 Table 1.4-1 using small boilers < 100 MMBtu.hr and Table 1.4-2.

^d EPA, AP-42 Table 1.4-2 Filterable PM.

TABLE 2-9B (REVISED JANUARY 2012)
SUMMARY OF MAXIMUM POTENTIAL ANNUAL EMISSIONS FOR THE RBEC CONVERSION PROJECT, SIEMENS H CTS

Pollutant	RBEC Conversion Project Maximum Potential Annual Emissions (TPY)							Netting Calculations		PSD Significant Emission Rate (TPY)
	3	2	1	7	Fuel Oil	TOTAL	Maximum 2-Year Average from Existing Units ^a (TPY)	Change (TPY)		
	CTs/HRSGs with Duct Burners ^b	Emergency Generators	Natural Gas Heater	Gas Compressors	Storage Tank				Fire Pump Engine	
SO ₂	201	0.003	0.23	1.74	NA	0.00014	203	10,999	-10,796	40
PM	185	0.28	0.08	3.10	NA	0.011	189	889	-700	25
PM ₁₀	185	0.28	0.08	3.10	NA	0.011	189	889	-700	15
NO _x	358	4.9	4.11	135.9	NA	0.18	503	3,752	-3,250	40
CO	511	6.0	3.45	8.6	NA	0.069	529	560	-30.4	100
VOC (as methane)	77.1	0.71	0.23	14.0	2.80	0.026	94.9	59.4	35.6	40
Sulfuric Acid Mist	40.9	Neg.	Neg.	Neg.	NA	Neg.	40.9	489	-448	7
Lead	0.050	Neg.	Neg.	Neg.	NA	Neg.	0.050	0.12	-0.066	0.6

^a Based on actual emissions from Annual Operating Reports from 2003-2007.

^b Based on oil-firing for: 1,000 hours per CT/HRSG.

Note: Neg.= negligible; NA= not applicable

Source: Golder, 2012.