



PERMIT APPLICATION

APPLICATION FOR AIR CONSTRUCTION PERMIT

**Florida Power & Light Company
Martin Power Plant – Units 8A–8D**

Prepared For: Florida Power & Light Company
700 Universe Blvd.
Juno Beach, FL 33408

Submitted By: Golder Associates Inc.
6026 NW 1st Place
Gainesville, FL 32607 USA

Distribution: 4 copies – FDEP
2 copies – FPL
1 copy – Golder Associates Inc.

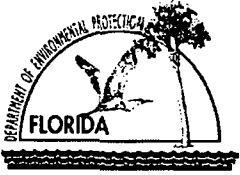
July 2011

113-87621

**A world of
capabilities
delivered locally**



**APPLICATION FOR AIR PERMIT
LONG FORM**



Department of Environmental Protection RECEIVED

Division of Air Resource Management

AUG 01 2011

APPLICATION FOR AIR PERMIT - LONG FORM

BUREAU OF AIR REGULATION

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 (PMR)	
2. Site Name: Martin Power Plant	
3. Facility Identification Number: 0850001	
4. Facility Location... Street Address or Other Locator: 21900 SW Warfield Boulevard City: Indiantown County: Martin Zip Code: 34956	
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: Kevin Washington, Project Manager	
2. Application Contact Mailing Address... Organization/Firm: Florida Power & Light Company – FPL Environmental Services Street Address: 700 Universe Blvd. City: Juno Beach State: FL Zip Code: 33408	
3. Application Contact Telephone Numbers... Telephone: (561) 691-2877 ext. Fax: (561) 691-7049	
4. Application Contact E-mail Address:	

Application Processing Information (DEP Use)

1. Date of Receipt of Application: 8-1-11	3. PSD Number (if applicable):
2. Project Number(s) 0850001 - 026 - 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

Minor source air construction permit application to improve the performance of existing GE7241(7FA.03) gas turbines associated with Units 8A, 8B, 8C, and 8D at the Martin Plant with GE 7FA.04 components.

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Processing Fee
011	Unit 8A - 170 MW gas turbine with gas-fired HRSG	AC1B	
012	Unit 8B - 170 MW gas turbine with gas-fired HRSG	AC1B	
017	Unit 8C - 170 MW gas turbine with gas-fired HRSG	AC1B	
018	Unit 8D - 170 MW gas turbine with gas-fired HRSG	AC1B	

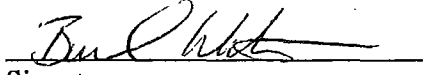
Application Processing Fee

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 : Brad Williams
2. Owner/Authorized Representative Mailing Address... Organization/Firm: Florida Power & Light Company Street Address: 21900 SW Warfield Blvd City: Indiantown State: FL Zip Code: 34956-0176
3. Owner/Authorized Representative Telephone Numbers... Telephone: <u>772-597-7106</u> ext. Fax: <u>772-597-7416</u>
4. Owner/Authorized Representative E-mail Address: <u>David.Williams@fpl.com</u>
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>7/29/11</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:			
2. Application Responsible Official Qualification (Check one or more of the following options, as applicable):			
<input 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:			
Street Address:			
City:		State:	Zip Code:
4. Application Responsible Official Telephone Numbers...			
Telephone:		ext.	Fax:
5. Application Responsible Official E-mail Address:			
6. Application Responsible Official Certification:			
<p>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.</p>			
_____		_____	
Signature		Date	

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: Kennard F. 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. 21156 Fax: (352) 336-6603
4. Professional Engineer E-mail Address: Ken_Kosky@golder.com
5. Professional Engineer Statement: <i>I, the undersigned, hereby certify, except as particularly noted herein*, that:</i> <i>(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and</i> <i>(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.</i> <i>(3) 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> <i>(4) 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> <i>(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here <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>7/24/11</u> 

* 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) 542.68 North (km) 2992.65		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) 27° 3' 25" Longitude (DD/MM/SS) 80° 33' 55"	
3. Governmental Facility Code: 0	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: Willie Welch, Plant Leader: Environmental Specialist
2. Facility Contact Mailing Address... Organization/Firm: FPL Street Address: P.O. Box 176 City: Indiantown State: FL Zip Code: 34956-0176
3. Facility Contact Telephone Numbers: Telephone: 772-597-7311 ext. Fax:
4. Facility Contact E-mail Address: Willie_Welch@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:
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Primary Responsible Official Telephone Numbers... Telephone: () - ext. Fax: () -
4. Facility Primary Responsible Official E-mail Address:

Facility Regulatory Classifications

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

1. <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 checked="" 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 checked="" type="checkbox"/> Major Source of Hazardous Air Pollutants (HAPs)	
7. <input type="checkbox"/> Synthetic Minor Source of HAPs	
8. <input checked="" 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:	

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
PM/PM10/PM2.5	A	N
CO	A	N
VOC	A	N
SO2	A	N
NOx	A	N
HAPS	A	N

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps

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

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

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1.	Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>July, 2008</u>
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) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>July, 2008</u>
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) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>July, 2008</u>

Additional Requirements for Air Construction Permit Applications

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

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for FESOP Applications -- NA

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

Additional Requirements for Title V Air Operation Permit Applications-- NA

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: July, 2008
 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: July, 2008
 Not Applicable (not a CAIR source)

Additional Requirements Comment

[Empty box for Additional Requirements Comment]

EMISSIONS UNIT INFORMATION

Section [1]

Units 8A, 8B, 8C, and 8D Gas Turbines

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]

Units 8A, 8B, 8C, and 8D Gas Turbines

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:

Units 8A – 8D: Four identical gas turbines with heat recovery steam generators

3. Emissions Unit Identification Number:

EU 011 (Unit 8A), EU 012 (Unit 8B), EU 017 (Unit 8C), EU 018 (Unit 8D)

4. Emissions Unit
Status Code:

A

5. Commence
Construction
Date:

6. Initial Startup
Date:

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: **General Electric** Model Number: **PG7241, 7FA.04**

10. Generator Nameplate Rating:

11. Emissions Unit Comment:

4-on-1 combined cycle system consists of four nominal 170 MW GE 7FA.04 gas turbine-electrical generator sets and one nominal 470 MW steam turbine-electrical generator with a total nominal capacity of 1150 MW.
Initial startup dates: 01-NOV-01 (Units 8A and 8B), 30-Jun-04 (Units 8C and 8D)

EMISSIONS UNIT INFORMATION

Section [1]

Units 8A, 8B, 8C, and 8D Gas Turbines

Emissions Unit Control Equipment/Method: Control 1 of 4

1. Control Equipment/Method Description:

Low NOx Burners - Dry low-NOx combustors for firing natural gas

2. Control Device or Method Code: **205**

Emissions Unit Control Equipment/Method: Control 2 of 4

1. Control Equipment/Method Description:

Steam or Water Injection - Steam injection for oil firing

2. Control Device or Method Code: **28**

Emissions Unit Control Equipment/Method: Control 3 of 4

1. Control Equipment/Method Description:

SCR (Selective Catalytic Reduction) - SCR system to reduce NOx emissions when firing gas or oil

2. Control Device or Method Code: **139**

Emissions Unit Control Equipment/Method: Control 4 of 4

1. Control Equipment/Method Description:

Miscellaneous Control Devices- Low sulfur fuels: natural gas and distillate oil

2. Control Device or Method Code: **99**

EMISSIONS UNIT INFORMATION

Section [1]

Units 8A, 8B, 8C, and 8D Gas Turbines

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: Gross power outputs for each turbine - 184.5 MW (NG-firing), 194 MW (Oil-firing)				
3. Maximum Heat Input Rate: 1,841.9 MMBtu/hr (HHV) (NG), 1,998.1 MMBtu/hr (HHV) (oil)				
4. Maximum Incineration Rate: pounds/hr tons/day				
5. Requested Maximum Operating Schedule: <table><tr><td>24 hours/day</td><td>7 days/week</td></tr><tr><td>52 weeks/year</td><td>8,760 hours/year</td></tr></table>	24 hours/day	7 days/week	52 weeks/year	8,760 hours/year
24 hours/day	7 days/week			
52 weeks/year	8,760 hours/year			
6. Operating Capacity/Schedule Comment: Maximum heat input and power outputs are for each turbine at 59 F ambient temperature. Oil firing limited to 500 hr/yr/turbine.				

EMISSIONS UNIT INFORMATION

Section [1]

Units 8A, 8B, 8C, and 8D Gas Turbines

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: 8A-8D HRSG STACK		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: 131 feet	7. Exit Diameter: 19 feet	
8. Exit Temperature: 202°F	9. Actual Volumetric Flow Rate: 1,025,526 acfm	10. Water Vapor: %	
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: 17 East (km): 543.06 North (km): 2997.68		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) 27/3/33 Longitude (DD/MM/SS) 80/33/40	
15. Emission Point Comment: <p>For each turbine:</p> <p>Flow rate (NG-firing, 59 F, baseload) = 3,614,000 lb/hr (GE data) /28.39 (mol wt) x 1545.6 (gas constant) x (460+202) (temperature) /2116.8 ft.lb (pressure) x hr/60 min = 1,025,526 acfm</p> <p>Flow rate (oil-firing, 59 F, baseload) = 3,737,000 lb/hr (GE data) /28.27 (mol wt) x 1545.6 (gas constant) x (460+295) (temperature) /2116.8 ft.lb (pressure) x hr/60 min = 1,214,536 acfm</p>			

EMISSIONS UNIT INFORMATION

Section [1]
 Units 8A, 8B, 8C, and 8D Gas Turbines

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 2

1. Segment Description (Process/Fuel Type): Internal Combustion Engines; Electric Generation; Natural Gas Turbine		
2. Source Classification Code (SCC): 2-01-002-01		3. SCC Units: Million cubic feet burned
4. Maximum Hourly Rate: 7.37	5. Maximum Annual Rate: 64,561.2	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: 1,000 (HHV)
10. Segment Comment: Hourly rate = 1,659.4 MMBtu/hr x 1.11 (HHV/LHV) / 1000 MMBtu/10 ⁶ ft ³ x 4 turbines = 7.37 10 ⁶ ft ³ /hr Annual rate = 7.37 10 ⁶ ft ³ /hr x 8,760 hrs/yr = 64,561.2 10 ⁶ ft ³ /yr		

Segment Description and Rate: Segment 2 of 2

1. Segment Description (Process/Fuel Type): Internal Combustion Engine; Electric Generation; Distillate Oil (Diesel) Turbine		
2. Source Classification Code (SCC): 2-01-001-01		3. SCC Units: Thousand gallons Distillate Oil (Diesel) burned
4. Maximum Hourly Rate: 58.77	5. Maximum Annual Rate: 29,385	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: 0.05	8. Maximum % Ash: 0	9. Million Btu per SCC Unit: 136 (HHV)
10. Segment Comment: Hourly rate = 1,885 MMBtu/hr x 1.06 (HHV/LHV) / 136 MMBtu/10 ³ gal x 4 turbines = 58.77 10 ³ gal/hr Annual rate = 58.77 10 ³ gal/hr x 500 hrs/yr = 29,385 10 ³ gal/yr		

EMISSIONS UNIT INFORMATION

Section [1]

Units 8A, 8B, 8C, and 8D Gas Turbines

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
NOx	205, 28, 139		EL
CO			EL
PM/PM ₁₀ /PM _{2.5}			WP
VOC			EL
SO ₂	99		WP
NH ₃			EL

EMISSIONS UNIT INFORMATION

POLLUTANT DETAIL INFORMATION

Section [1]
Units 8A, 8B, 8C, and 8D Gas Turbines

Page [1] of [6]
Nitrogen Oxide – NO_x

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL/ESTIMATED FUGITIVE 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: NO _x	2. Total Percent Efficiency of Control:		
3. Potential Emissions lb/hour	4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No		
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: Reference:	7. Emissions Method Code:		
8.a. Baseline Actual Emissions (if required): 195.3 tons/year	8.b. Baseline 24-month Period: From: 1/1/2009 To: 12/31/2010		
9.a. Projected Actual Emissions (if required): 200.6 tons/year	9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input checked="" type="checkbox"/> 10 years		
10. Calculation of Emissions: See Table 9 of Part II.			
11. Potential, Fugitive, and Actual Emissions Comment:			

EMISSIONS UNIT INFORMATION

Section [1]
Units 8A, 8B, 8C, and 8D Gas Turbines

POLLUTANT DETAIL INFORMATION

Page [1] of [6]
Nitrogen Oxide – NO_x

**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 5

1. Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 2.5 ppmvd @ 15% O2	4. Equivalent Allowable Emissions: 24.0 lb/hour tons/year
5. Method of Compliance: Stack test using EPA Method 7E or 20	
6. Allowable Emissions Comment (Description of Operating Method): NG-firing combined-cycle operation with duct firing. Emissions rates are for each turbine. Duct burner emission rate = (23.6 – 16.3) lb/hr (permit No. 0850001-0210-AV) = 7.3 lb/hr Rate after turbine improvement = 16.7 lb/hr (GE data) + 7.3 lb/hr = 24.0 lb/hr	

Allowable Emissions Allowable Emissions 2 of 5

1. Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 2.5 ppmvd @ 15% O2	4. Equivalent Allowable Emissions: 16.7 lb/hour tons/year
5. Method of Compliance: Stack test using EPA Method 7E or 20	
6. Allowable Emissions Comment (Description of Operating Method): NG-firing combined-cycle operation without duct firing. Emissions rates are for each turbine. Rate after turbine improvement = 16.7 lb/hr (GE data)	

Allowable Emissions Allowable Emissions 3 of 5

1. Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 10 ppmvd @ 15% O2	4. Equivalent Allowable Emissions: 78.6 lb/hour tons/year
5. Method of Compliance: Stack test using EPA Method 7E or 20	
6. Allowable Emissions Comment (Description of Operating Method): Oil-firing combined-cycle operation without duct firing. Emissions rates are for each turbine. Rate after turbine improvement = 78.6 lb/hr (GE data)	

EMISSIONS UNIT INFORMATION

Section [1]
Units 8A, 8B, 8C, and 8D Gas Turbines

POLLUTANT DETAIL INFORMATION

Page [1] of [6]
Nitrogen Oxide – NO_x

**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 4 of 5

1. Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 2.5 ppmvd @ 15% O₂	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: CEM data	
6. Allowable Emissions Comment (Description of Operating Method): 24-Hour average standard during NG-firing combined-cycle operation.	

Allowable Emissions Allowable Emissions 5 of 5

1. Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 10 ppmvd @ 15% O₂	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: CEM data	
6. Allowable Emissions Comment (Description of Operating Method): 24-Hour average standard during oil-firing combined-cycle operation.	

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]
Units 8A, 8B, 8C, and 8D Gas Turbines

Page [2] of [6]
Carbon Monoxide – CO

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL/ESTIMATED FUGITIVE 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: CO		2. Total Percent Efficiency of Control:	
3. Potential Emissions lb/hour		tons/year	4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: Reference:		7. Emissions Method Code:	
8.a. Baseline Actual Emissions (if required): 82.75 tons/year		8.b. Baseline 24-month Period: From: 1/1/2006 To: 12/31/2007	
9.a. Projected Actual Emissions (if required): 84.87 tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input checked="" type="checkbox"/> 10 years	
10. Calculation of Emissions: See Table 9 of Part II.			
11. Potential, Fugitive, and Actual Emissions Comment:			

EMISSIONS UNIT INFORMATION

POLLUTANT DETAIL INFORMATION

Section [1]
Units 8A, 8B, 8C, and 8D Gas Turbines

Page [2] of [6]
Carbon Monoxide – CO

**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 4

1. Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 7.4 ppmvd @ 15% O2	4. Equivalent Allowable Emissions: 27.5 lb/hour tons/year
5. Method of Compliance: Stack test using EPA Method 10	
6. Allowable Emissions Comment (Description of Operating Method): NG-firing combined-cycle operation. Emissions rates are for each turbine.	

Allowable Emissions Allowable Emissions 2 of 4

1. Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 10 ppmvd @ 15% O2	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: CEM Data	
6. Allowable Emissions Comment (Description of Operating Method): NG-firing combined-cycle operation. Emissions rates are for each turbine. 24-Hour average block average.	

Allowable Emissions Allowable Emissions 3 of 4

1. Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 14.4 ppmvd @ 15% O2	4. Equivalent Allowable Emissions: 64.7 lb/hour tons/year
5. Method of Compliance: Stack test using EPA Method 10	
6. Allowable Emissions Comment (Description of Operating Method): Oil-firing combined-cycle operation. Emissions rates are for each turbine.	

EMISSIONS UNIT INFORMATION

Section [1]
Units 8A, 8B, 8C, and 8D Gas Turbines

POLLUTANT DETAIL INFORMATION

Page [2] of [6]
Carbon Monoxide – CO

**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 4 of 4

1. Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 15 ppmvd @ 15% O2	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: CEM data	
6. Allowable Emissions Comment (Description of Operating Method): Oil-firing combined-cycle operation. Emissions rates are for each turbine. 24-Hour average block average.	

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]
Units 8A, 8B, 8C, and 8D Gas Turbines

Page [3] of [6]
VOC

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL/ESTIMATED FUGITIVE 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: VOC		2. Total Percent Efficiency of Control:	
3. Potential Emissions lb/hour		4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: Reference:		7. Emissions Method Code:	
8.a. Baseline Actual Emissions (if required): 44.72 tons/year		8.b. Baseline 24-month Period: From: 1/1/2007 To: 12/31/2008	
9.a. Projected Actual Emissions (if required): 45.78 tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input checked="" type="checkbox"/> 10 years	
10. Calculation of Emissions: See Table 9 of Part II.			
11. Potential, Fugitive, and Actual Emissions Comment:			

EMISSIONS UNIT INFORMATION

POLLUTANT DETAIL INFORMATION

Section [1]
Units 8A, 8B, 8C, and 8D Gas Turbines

Page [3] of [6]
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 1 of 3

1. Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 4 ppmvd @ 15% O2	4. Equivalent Allowable Emissions: 10.5 lb/hour tons/year
5. Method of Compliance: Stack test using EPA Methods 25A or 18	
6. Allowable Emissions Comment (Description of Operating Method): NG-firing combined-cycle operation with duct burner. Emissions rates are for each turbine.	

Allowable Emissions Allowable Emissions 2 of 3

1. Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 1.3 ppmvd @ 15% O2	4. Equivalent Allowable Emissions: 2.8 lb/hour tons/year
5. Method of Compliance: Stack test using EPA Methods 25A or 18	
6. Allowable Emissions Comment (Description of Operating Method): NG-firing combined-cycle operation. Emissions rates are for each turbine.	

Allowable Emissions Allowable Emissions 3 of 3

1. Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 2.5 ppmvd @ 15% O2	4. Equivalent Allowable Emissions: 6 lb/hour tons/year
5. Method of Compliance: Stack test using EPA Methods 25A or 18	
6. Allowable Emissions Comment (Description of Operating Method): Oil-firing combined-cycle operation. Emissions rates are for each turbine.	

EMISSIONS UNIT INFORMATION

POLLUTANT DETAIL INFORMATION

Section [1]
Units 8A, 8B, 8C, and 8D Gas Turbines

Page [4] of [6]
PM/PM10

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL/ESTIMATED FUGITIVE 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: PM/PM10		2. Total Percent Efficiency of Control:	
3. Potential Emissions lb/hour		4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: Reference:		7. Emissions Method Code:	
8.a. Baseline Actual Emissions (if required): 40.33 tons/year		8.b. Baseline 24-month Period: From: 1/1/2007 To: 12/31/2008	
9.a. Projected Actual Emissions (if required): 41.27 tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input checked="" type="checkbox"/> 10 years	
10. Calculation of Emissions: See Table 9 of Part II.			
11. Potential, Fugitive, and Actual Emissions Comment:			

EMISSIONS UNIT INFORMATION

POLLUTANT DETAIL INFORMATION

Section [1]
Units 8A, 8B, 8C, and 8D Gas Turbines

Page [4] of [6]
PM/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):	

EMISSIONS UNIT INFORMATION

POLLUTANT DETAIL INFORMATION

Section [1]
Units 8A, 8B, 8C, and 8D Gas Turbines

Page [5] of [6]
Sulfur Dioxide – SO2

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL/ESTIMATED FUGITIVE 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: SO2		2. Total Percent Efficiency of Control:	
3. Potential Emissions lb/hour		tons/year	4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: Reference:		7. Emissions Method Code:	
8.a. Baseline Actual Emissions (if required): 14.68 tons/year		8.b. Baseline 24-month Period: From: 1/1/2007 To: 12/31/2008	
9.a. Projected Actual Emissions (if required): 15.06 tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input checked="" type="checkbox"/> 10 years	
10. Calculation of Emissions: See Table 9 of Part II.			
11. Potential, Fugitive, and Actual Emissions Comment:			

EMISSIONS UNIT INFORMATION

POLLUTANT DETAIL INFORMATION

Section [1]
Units 8A, 8B, 8C, and 8D Gas Turbines

Page [5] of [6]
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 _ 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]
Units 8A, 8B, 8C, and 8D Gas Turbines

Page [6] of [6]
Ammonia – NH3

**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: 5 ppmvd @ 15% O2	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: Stack test using EPA Method CTC-027	
6. Allowable Emissions Comment (Description of Operating Method): NG- or oil-firing	

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]
 Units 8A, 8B, 8C, and 8D Gas Turbines

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: VE10	2. Basis for Allowable Opacity: <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: 10 % Exceptional Conditions: 20 % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: EPA Method 9	
5. Visible Emissions Comment: During startup, shutdown, and malfunction, visible emissions in excess of 10% are authorized by Rule 62-210.400 for up to ten, 6-minute averaging periods per 24 hr period.	

Visible Emissions Limitation: Visible Emissions Limitation of

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: Visible emissions limited to 10% opacity for each 6-minute block average. Title V permit No. 0850001-021-AV.	

EMISSIONS UNIT INFORMATION

Section [1]
 Units 8A, 8B, 8C, and 8D Gas Turbines

H. CONTINUOUS MONITOR INFORMATION

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

Continuous Monitoring System: Continuous Monitor 1 of 6

1. Parameter Code: O2 - Oxygen	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: SERVOMEX Model Number: 1420C Serial Number: 8A:2847/8B:2848/8C:2849/8D:2850	
5. Installation Date: 8A:24-MAY-05/8B:26-MAY-05/8C: 01-APR-05/8D:01-APR-05	6. Performance Specification Test Date: 8A:24-MAY-05/8B:26-MAY-05/8C: 01-APR-05/8D:01-APR-05
7. Continuous Monitor Comment: Unit 8-A: Final cert. test performed on May 24, 2005 Unit 8-B: Final cert. test performed May 26, 2005 Unit 8-C:NA Unit 8-D:NA	

Continuous Monitoring System: Continuous Monitor 2 of 6

1. Parameter Code: EM - EMISSION	2. Pollutant(s): CO
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: THERMO FISHER Model Number: 48 Serial Number: 8A: 0335003682/ 8B:0335003683/ 8C:0335003684/ 8D:0335003685	
5. Installation Date: 8A: 22-MAY-05/ 8B: 26-MAY-05/ 8C: 23-MAY-05/ 8D: 27-MAY-05	6. Performance Specification Test Date: 8A: 22-MAY-05/ 8B: 26-MAY-05/ 8C: 23-MAY-05/ 8D: 27-MAY-05
7. Continuous Monitor Comment: Unit 8-A:CO CEMS; RN: Unit 8-B: CO CEMS; final cert. test performed May 26, 2005 Unit 8-C: CO CEMS:final cert. test performed May 23, 2005 Unit 8-D: CO CEMS:final cert. test performed May 27, 2005	

EMISSIONS UNIT INFORMATION

Section [1]
Units 8A, 8B, 8C, and 8D Gas Turbines

H. CONTINUOUS MONITOR INFORMATION

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

Continuous Monitoring System: Continuous Monitor 3 of 6

1. Parameter Code: EM - EMISSION	2. Pollutant(s): NOX
3. CMS Requirement: <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other	
4. Monitor Information... Manufacturer: TEI Model Number: 42C Serial Number: 8A: 0334203347/8B: 0334203348/ 8C: 0334203349/ 8D: 0335103532	
5. Installation Date: 8A: 24-MAY-05/8B: 26-MAY-05/ 8C: 01-APR-05 /8D: 01-APR-05	6. Performance Specification Test Date:
7. Continuous Monitor Comment: RN: new NOx monitor. NSPS and Acid rain requirements.	

Continuous Monitoring System: Continuous Monitor 4 of 6

1. Parameter Code: FLOW - Volumetric flow rate	2. Pollutant(s):
3. CMS Requirement: <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other	
4. Monitor Information... Manufacturer: ROSEMONT Model Number: 3095 Serial Number: 8A: 94712/8B: 0061608/ 8C: 0091278/ 8D: 94709	
5. Installation Date: 8A:24-MAY-05/8B:26-MAY-05/ 8C:23-MAY-05/ 8D:27-MAY-05	6. Performance Specification Test Date: 8A:24-MAY-05/8B:26-MAY-05/ 8C:23-MAY-05/ 8D:27-MAY-05
7. Continuous Monitor Comment: Natural Gas Fuel Flow Unit 8A-CT through Unit 8D-CT	

EMISSIONS UNIT INFORMATION

Section [1]
 Units 8A, 8B, 8C, and 8D Gas Turbines

H. CONTINUOUS MONITOR INFORMATION

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

Continuous Monitoring System: Continuous Monitor 5 of 6

1. Parameter Code: FLOW - Volumetric flow rate	2. Pollutant(s): NOX
3. CMS Requirement:	<input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: ROSEMONT Model Number: 3095 Serial Number: 8A: 0061609/8B: 0061608/ 8C: 94711/ 8D: 0091277	
5. Installation Date: 8A:24-MAY-05/8B:26-MAY-05/ 8C:23-MAY-05/8D: 27-MAY-05	6. Performance Specification Test Date: 8A:24-MAY-05/8B:26-MAY-05/ 8C:23-MAY-05/8D: 27-MAY-05
7. Continuous Monitor Comment: Natural Gas Fuel Flow Unit 8A-CT through Unit 8D-CT	

Continuous Monitoring System: Continuous Monitor 6 of 6

1. Parameter Code: FLOW - Volumetric flow rate	2. Pollutant(s):
3. CMS Requirement:	<input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: MICROMOTION Model Number: CMF300M Serial Number: 8A:7401495/1102920/ 8B:7401479/1102921/ 8C: 7161429/496733/ 8D:7159777/496668	
5. Installation Date: 8A:24-MAY-05/8B:26-MAY-05/ 8C:23-MAY-05/8D: 27-MAY-05	6. Performance Specification Test Date: 8A:24-MAY-05/8B:26-MAY-05/ 8C:23-MAY-05/8D: 27-MAY-05
7. Continuous Monitor Comment: Distillate Oil Flow Unit 8A-CT through Unit 8D-CT	

EMISSIONS UNIT INFORMATION

Section [1]

Units 8A, 8B, 8C, and 8D Gas Turbines

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 July, 2008
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 July, 2008
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 July, 2008
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 checked="" type="checkbox"/> Previously Submitted, Date July, 2008 <input 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 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 type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

EMISSIONS UNIT INFORMATION
Section [1]
Units 8A, 8B, 8C, and 8D Gas Turbines

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 type="checkbox"/> Attached, Document ID: _____ <input checked="" 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="" 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="" type="checkbox"/> Not Applicable

Additional Requirements for Title V Air Operation Permit Applications – N/A

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

Additional Requirements Comment

PART II

PART II
APPLICATION FOR MINOR SOURCE AIR CONSTRUCTION PERMIT
FOR IMPROVING MARTIN UNITS 8A, 8B, 8C, AND 8D
(EU IDS 011, 012, 017, AND 018)

EXECUTIVE SUMMARY

Florida Power & Light Company (FPL) is seeking authorization from the Florida Department of Environmental Protection (FDEP) to improve the performance of the General Electric (GE) Model PG7241 gas turbines (7FA.03) associated with Units 8A through 8D (EU IDs 011, 012, 017, and 018) at the FPL Martin Plant. The purpose of the project is to improve the performance of the GE Model PG7241 turbines with 7FA.04 components. The components being replaced are typically those requiring routine replacement due to normal operation. However, replacing the 7FA.03 components with 7FA.04 components results in higher efficiency and provides approximately a 5-percent increase in output power per turbine (3-percent for combined-cycle operation of Unit 8) with an approximate 2-percent decrease in heat rate (heat input/output power) per turbine (1-percent for combined-cycle operation).

The 7FA.04 components have a projected design heat input capacity approximately 2-percent higher than the 7FA.03. As a result, there will be an expected increase in the design fuel flow for the units compared to same turbine inlet temperature based on manufacturer information. In addition, hourly emissions of air pollutants regulated under FDEP and federal Prevention of Significant Deterioration (PSD) program that are directly related to fuel, such as sulfur dioxide (SO₂), sulfuric acid mist (SAM), and particulate matter (PM), including PM with aerodynamic diameter equal to or less than 10 or 2.5 microns (PM₁₀/PM_{2.5}), will also potentially increase. Based on GE data for the 7FA.04 components, there will be no increase in hourly mass emissions of carbon monoxide (CO) or volatile organic compounds (VOCs), and a small increase in the hourly mass emission rate of nitrogen oxides (NO_x), which will be negated by the downstream SCR. Based on the current actual-to-projected actual annual emissions test, the turbine improvement project will not result in a net increase of any regulated pollutant, nor of greenhouse gases (GHGs) regulated under the Tailoring Rule, above the PSD significant emission rates.

INTRODUCTION

The Martin Plant is located 7 miles north of Indiantown on State Road 710 in Martin County, Florida. The facility is currently operating under Title V Permit No. 0850001-021-AV.

Golder Associates Inc. (Golder) was contracted to prepare and submit the necessary air permit application seeking authorization for the turbine energy improvements and assist with any FDEP questions and additional information requests. This air permit application consists of the appropriate application form [Part I; DEP Form 62-210.900(1)], a technical description of the project, rule applicability

for the project, and emissions calculations demonstrating that the proposed project will not result in a significant net emissions increase.

Martin Unit 8's four gas turbines are permitted to fire natural gas and distillate fuel oil. The current design heat input rates for the turbines are 1553.0 and 1743.0 million British thermal units per hour (MMBtu/hr) for natural gas and distillate fuel oil, respectively [75 degrees Fahrenheit (°F) ambient temperature, PSD permit application dated January 2002]. There will be no change in the type of permitted fuels as a result of the project. The design heat input rates for natural gas-firing and fuel oil-firing will increase by 32 MMBtu/hr (2 percent) and 35 MMBtu/hr (2 percent), respectively, based on GE data on 7FA.04 turbines at 75°F ambient temperature. Data from the National Climatic Data Center (NCDC) indicates the 30-year (1971 to 2000) average temperature for West Palm Beach is 75.4°F (median 75.0°F). As a result, GE data for an ambient temperature of 75°F represent annual operating conditions and were used in the calculation.

The current permitted emissions limits for the Unit 8 gas turbines are listed in Condition No. E.8 of Title V permit No. 0850001-021-AV. The improved 7FA.04 model turbines will guarantee the same concentration-base emissions limits for NO_x, CO, and VOC. There will also be no increase in hourly mass emission rates for CO and VOC. However, the potential hourly mass emission rate of NO_x will increase by 0.4 pound per hour (lb/hr) (at 59°F) for natural gas-firing and 2.6 lb/hr for oil-firing.

There are currently no mass based emissions limits for SO₂, SAM, or PM/PM₁₀/PM_{2.5}. Since emissions of these pollutants are directly proportional to fuel flow and the proposed project will increase the design fuel flow capacity of the turbines, the potential hourly mass emission rates of these pollutants will also increase. Due to the improved efficiency and higher output of the energy improvements, potential emissions of all pollutants will decrease on a per megawatt-hour (MW-hr) basis.

There are currently no post-combustion control technologies for emissions of CO, VOC, SO₂, SAM, or PM/PM₁₀/PM_{2.5}. Emissions of NO_x are controlled by Dry Low-NO_x (DLN) combustion technology and a selective catalytic reduction (SCR) system. The proposed energy improvements will rely on the same existing control technologies.

PROJECT DESCRIPTION

Martin Unit 8 consists of four gas turbine electrical generator sets, which include GE Model PG7241 turbines/generators, heat recovery steam generators, and a steam electric generator. The proposed project will replace component parts normally associated with maintenance outages for the GE PG7241, 7FA.03 turbine with 7FA.04 components, which offer greater output and greater efficiency without sacrificing reliability, availability, or operational flexibility. The 7FA.04 components will increase the output

power by approximately 5 percent (baseload with natural gas-firing at 59°F). As a result of the greater output, mass emission rates of all criteria pollutants will decrease on a per MW-hr basis.

The project will include installation of new hot gas path components, new combustion liners and flow sleeves, and new control software to increase firing temperature. The advanced gas path of 7FA.04 uses less air for cooling the parts. As a result, more air is available for combustion and power generation. The turbines will remain equipped with the DLN 2.6 combustion system, which is GE's latest evolution of Dry Low-NO_x combustion technology.

RULE APPLICABILITY

PSD/New Source Review (NSR)

Under Federal and State of Florida PSD review requirements, all major new or modified sources of air pollutants regulated under the Clean Air Act (CAA) must be reviewed and a pre-construction permit issued. The U.S. Environmental Protection Agency (EPA) has approved Florida's State Implementation Plan (SIP), which contains PSD regulations. The applicable PSD rules in Florida are found in Rule 62-212.400, Florida Administrative Code (F.A.C.).

A "major facility" is defined as any 1 of 28 named source categories that have the potential to emit 100 tons per year (TPY) or more, or any other stationary facility that has the potential to emit 250 TPY or more, of any pollutant regulated under the CAA. "Potential to emit" means the capability, at maximum design capacity, to emit a pollutant after the application of control equipment. Once a new source is determined to be a "major facility" for a particular pollutant, any pollutant emitted in amounts greater than the PSD significant emission rates is subject to PSD review.

The Martin Plant is an existing major facility under PSD rules. For an existing major facility for which a project is proposed, the project is subject to PSD review if the net increase in emissions due to the project is greater than the PSD significant emission rates for any applicable pollutant. A "modification" is defined in FDEP Rule 62-210.200(205), F.A.C., as "any physical change in, change in the method of operation of, or addition to a facility which would result in an increase in the actual emissions of any pollutant subject to regulation under the [Clean Air] Act, including any not previously emitted, from any emission unit or facility". Because there is a physical change and the hourly mass emission rates will potentially increase, the project is a potential modification as defined in Rules 62-210.200 and 62-212.400 (PSD), F.A.C.

To demonstrate that the proposed project is not a major modification under the Department's PSD rules, an emissions comparison between baseline actual emissions and projected actual emissions was conducted pursuant to FDEP Rule 62-212.400(2)(1), F.A.C., for Martin Unit 8 (Units 8A, 8B, 8C, and 8D). The baseline, or current, actual emissions are the emissions over a consecutive 24-month period within

the 5 years immediately preceding the date that a complete application is submitted. The use of different consecutive 24-month periods for each pollutant is allowed. Projected actual emissions are maximum annual rate, in tons per year, at which the existing emission unit is projected to emit a PSD pollutant in any of the 5 years following the date the unit resumes regular operation.

Table 1 presents the actual annual heat inputs from different fuels reported in the Annual Operating Reports (AORs) for the period 2006 through 2010. This table also presents the total actual heat input from all fuels for Units 8A through 8D, as well as the actual operating hours for each unit.

Table 2 summarizes the annual emissions reported in the AORs for each calendar year in the period 2006 through 2010. The carbon dioxide (CO₂) emission rates in Table 2 were obtained from EPA's Acid Rain database.

Since emissions of nitrous oxide (N₂O) and methane (CH₄) were not reported in the AORs, they were calculated based on the actual annual heat input and emission factors from Title 40, Part 98 of the Code of Federal Regulations (40 CFR 98), Subpart C. These emissions are summarized in Table 3, which also shows the CO₂ equivalent (CO₂e) rates for these pollutants.

Table 4 presents the average emissions for each consecutive 2-year period based on the calendar year emissions in Tables 2 and 3. The annual average emissions for each consecutive 2-year period are consistent with the definition of baseline actual emissions for fossil fuel-fired steam electric generating units.

The actual hourly emission rates were calculated based on the reported annual emission rates and operating hours in the AORs, which are summarized in Table 5.

The actual emission factors in pounds per million British thermal units heat input (lb/MMBtu) were calculated in Table 6 for each calendar year in the period 2006 through 2010. The factors are calculated by dividing the total annual emissions by the total annual heat input, which includes both natural gas- and fuel oil-firing.

The projected increases in annual emissions for each turbine are presented in Table 7. The emission increases are calculated based on the maximum actual emission factors (lb/MMBtu) for each pollutant shown in Table 6 and the maximum annual increase in design heat input rate. The maximum annual increase in design heat input rate was calculated using the hourly increase in design heat input rate for each fuel at 75°F ambient temperature and projected operating hours for each fuel. The calculation considers the projected annual operating hours of 7,763.5 hours per year (hr/yr), which is the highest two-year average projected dispatch hours for Unit 8 for the period 2011 to 2015. Projected oil-firing was assumed to be equal to the highest oil-firing that occurred during the baseline period.

Table 8 presents the projected annual emissions, which were calculated by adding the projected annual increase in emissions from Table 7 to the baseline emissions. The baseline emissions are based on maximum 2-year average emissions from Table 4.

Table 9 compares baseline actual emissions and projected actual emissions for Units 8A, 8B, 8C, and 8D. The baseline 2-year average emissions from Table 4 and the projected actual emissions from Table 8 are used to calculate the increase in emissions as a result of the project. These increases are the same as the increases calculated in Table 7. The projected annual emissions increases were based on an operation of 7,763.5 hr/yr, which is the projected demand in electrical generation. The energy improvements do not change the dispatch order for Martin Unit 8 but rather slightly increase the energy output while improving the heat rate. Any difference between the hours of operation associated with the baseline actual emissions and hours associated with projected actual emissions are a result of the growth in projected demand. Pursuant to Rule 62-210.200(249)(c), F.A.C., any emissions associated with the demand growth are excluded from the definition of projected actual emissions.

The projected increase in GHG emissions as total CO₂e is also shown in Table 9. As shown, the projected increase in all regulated pollutants including GHGs is less than the PSD significant emission rates in the EPA Tailoring Rule. As a result, the proposed project is not subject to PSD review. A minor source air construction permit application is applicable to the project.

While there is a slight project increase in GHG emissions, there is an overall reduction in heat rate (Btu/kWh) that reduces the amount of emissions for each megawatt-hour (MWh) generated. For example, there is an approximate 1 percent decrease in heat rate as a result of the project. As shown in Table 8, the baseline actual CO₂e emissions are approximately 2.9 million tons/year. With a 1 percent reduction in heat rate for the project, the CO₂e emissions for the same amount of generation as 2008-2009 would be approximately 29,000 tons lower. Since the proposed project will increase power output, on a lb CO₂e/MWh basis, Martin Unit 8 will have less CO₂e emissions than it currently does. The output based emissions for other air emissions will also decrease on a lb/MWh basis.

NSPS

Martin Units 8A through 8D are currently subject to 40 CFR 60 Subpart GG, Standard of Performance for Stationary Gas Turbines. For the purpose of New Source Performance Standards (NSPS) applicability, 40 CFR 60.14 defines modification as any physical or operational change to an existing facility that results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies. 40 CFR 60.14 also states that the emission rate shall be expressed as kilograms per hour (kg/hr). NO_x and SO₂ are regulated under NSPS for Stationary Gas Turbines. Since the hourly emission rates for these pollutants may potentially increase, the proposed project is a potential modification according to the rules for NSPS. As a result, the improved Unit 8 turbines may be subject to 40 CFR 60 Subpart KKKK,

the revised Standard of Performance for Stationary Combustion Turbines, which applies to stationary combustion turbines with a heat input at peak load equal to greater than 10 MMBtu/hr that commence construction, modification, or reconstruction after February 18, 2005.

However, Units 8A and 8B were operated for several years in simple cycle mode at higher emission rates than the 7FA.04 since SCR has been added to control NO_x emissions. Moreover, Martin Unit 8 was approved with several operating modes that could produce higher or equivalent emissions as the 7FA.04 project. In addition, after the energy improvement, the turbines will comply with the same concentration-based NO_x emissions standards they are currently subject to, which are 2.5 parts per million, dry volume basis, at 15-percent oxygen (ppmvd @ 15% O₂) for natural gas-firing, and 10 ppmvd @ 15% O₂ for fuel oil-firing, during combined-cycle operation.

NSPS Subpart KKKK limits NO_x emissions to 15 ppmvd @ 15% O₂ for natural gas-firing and 42 ppmvd @ 15% O₂ for fuel oil-firing for turbines with heat input rate greater than 850 MMBtu/hr (high heating value). NSPS Subpart KKKK also limits NO_x emissions to 0.43 pound per megawatt-hour (lb/MWh) for natural gas-firing and 1.3 lb/MWh for fuel oil-firing. Based on the current design gross power output of the CT of 172.4 megawatts (MW) and 180.4 MW at 59°F ambient temperature for natural gas and fuel oil-firing, respectively, output-based current emissions limits are 0.095 lb/MWh for natural gas-firing and 0.42 lb/MWh for fuel oil-firing (using 16.3 lb/hr for natural gas-firing and 76 lb/hr for fuel oil-firing). After the improvement, these emission rates will be 0.091 lb/MWh for natural gas-firing and 0.41 lb/MWh for fuel oil-firing. This improvement does not consider combined cycle operation that would reduce output based emissions even lower than the CT-only comparison shown above.

Finally, the 7FA.04 improvement decreases the exhaust mass flow of the combustion turbine slightly. As a result, there is not expected to be any increase in kg/hr emissions of NO_x based on the use of SCR.

For these reasons, it is believed no increase in kg/hr NO_x emissions will occur from the project. It is proposed that the first quarter of CEMs data be reviewed to determine if an increase has occurred. In any event, the 7FA.04 project will comply with, and be much less than, the emission limiting standards of Subpart KKKK for NO_x.

NSPS Subpart KKKK limits SO₂ emissions by limiting the sulfur in the fuel (0.06 lb/MMBtu) or based on the output (0.9 lb/MWh). Based on AOR data for the period 2006 – 2010, the current actual maximum SO₂ emission rate is 0.0007 lb/MMBtu. The potential heat input rate for the turbines will increase by approximately 2 percent. SO₂ emissions are directly proportional to heat input for the same sulfur content of fuel and the lb/MMBtu rate is expected to remain the same. Since natural gas is the primary fuel, the amount of sulfur will vary slightly. As a result, the projected minor increase in heat input may not increase emissions based on the normal variability of sulfur in natural gas. Indeed, Section 60.14(2) of 40 CFR 60 recognizes the potential for statistical variability in determining an increase in kg/hr (i.e., Appendix C of

40 CFR 60). For this reason, the first quarter of sulfur content data will be reviewed to determine if an increase in kg/hr SO₂ emissions has occurred. In any event, the 7FA.04 project will comply with the emission limiting standards of Subpart KKKK for SO₂.

PROPOSED CHANGES TO EXISTING PERMIT CONDITIONS

The Martin Plant is currently operating under Title V air operating permit No. 0850001-021-AV. Condition No. E.8 of Title V permit lists the emissions limitations and standards for Units 8A through 8D. NO_x, CO, and VOC are the three pollutants with concentration-based and mass emissions limits, which are based on GE performance data for baseload operation at 59°F ambient temperature. Based on GE data, the improved turbines will achieve the same concentration-based emissions and same mass emission rates for CO and VOC. Therefore, FPL is requesting no change to the existing emissions limits for CO and VOC, and the same concentration-based limits for NO_x. Based on GE data, the mass emission rate potential for NO_x will slightly increase. The proposed mass emissions limits for NO_x at a turbine inlet temperature of 59°F are presented below:

Fuel	Method of Operation	Current	Proposed
Natural gas-firing	Combined-cycle	16.3 lb/hr	16.7 lb/hr
	Combined-cycle with duct firing	23.6 lb/hr	24.0 lb/hr
Oil-firing	Combined-cycle	76.0 lb/hr	78.6 lb/hr

The proposed rates are based on GE performance data for 7FA.04 improvement at 59°F ambient temperature. The GE data sheets for the 7FA.03 and 7FA.04 are presented in Appendix C. It should be noted that the mass emissions are used only for comparison with annual emissions tests. Compliance is based on 2.5 ppmvd and 10 ppmvd corrected to 15 percent oxygen for natural gas and oil respectively. As a result, actual hourly emissions on a kg/hr are not expected to increase.

FPL also requests that the gas turbine heat input rates in permit No. 0850001-021-AV be revised to 1,659.4 MMBtu/hr (LHV) for gas-firing and 1,885 MMBtu/hr (LHV) for oil-firing at the compressor inlet air temperature of 59°F.

TABLES

Table 1. Martin Unit 8 Annual Heat Inputs, 2006 - 2010

Year	Heat Input from Distillate Oil (Diesel) (MMBtu/yr)					Heat Input from Natural Gas (MMBtu/yr)					Total Actual Heat Input (MMBtu/yr)				
	Unit 8A	Unit 8B	Unit 8C	Unit 8D	Total	Unit 8A	Unit 8B	Unit 8C	Unit 8D	Total	Unit 8A	Unit 8B	Unit 8C	Unit 8D	Total
2010	54,612	30,782	9,927	3,970	99,292	10,597,000	11,148,000	10,870,000	9,884,000	42,499,000	10,651,612	11,178,782	10,879,927	9,887,970	42,598,292
2009	0	794	0	794	1,588	9,062,000	10,495,000	10,182,000	10,335,000	40,074,000	9,062,000	10,495,794	10,182,000	10,335,794	40,075,588
2008	1,037	1,296	3,803	2,506	8,642	13,177,000	12,621,000	11,533,000	11,961,000	49,292,000	13,178,037	12,622,296	11,536,803	11,963,506	49,300,642
2007	771	2,713	14,326	20,912	38,722	11,440,000	13,038,000	11,871,000	12,110,000	48,459,000	11,440,771	13,040,713	11,885,326	12,130,912	48,497,722
2006	0	5,312	0	2,388	7,700	11,909,000	8,982,000	12,101,000	12,240,000	45,232,000	11,909,000	8,987,312	12,101,000	12,242,388	45,239,700

Year	Distillate Oil Operating Hours (hr/yr)					Natural Gas Operating Hours (hr/yr)					Total Actual Operating Hours (hr/yr)				
	Unit 8A	Unit 8B	Unit 8C	Unit 8D	Total	Unit 8A	Unit 8B	Unit 8C	Unit 8D	Total	Unit 8A	Unit 8B	Unit 8C	Unit 8D	Total
2010	74	42	13	5	134	6,809	7,151	6,961	6,448	27,369	6,883	7,193	6,974	6,453	27,503
2009	0	1	0	1	2	5,730	6,637	6,563	6,602	25,532	5,730	6,638	6,563	6,603	25,534
2008	4	5	15	10	34	8,215	7,886	7,321	7,528	30,950	8,219	7,891	7,336	7,538	30,984
2007	1	3	17	25	46	7,167	8,118	7,446	7,580	30,311	7,168	8,121	7,463	7,605	30,357
2006	0	9	0	4	13	7,571	5,709	7,533	7,589	28,402	7,571	5,718	7,533	7,593	28,415

Note: All values are based on annual operating reports for the period 2006 - 2010.

Table 2. Annual Emissions Reported in 2006-2010 Annual Operating Reports and Acid Rain Database

Year	Pollutant	Unit 8A (tons)	Unit 8B (tons)	Unit 8C (tons)	Unit 8D (tons)	Total (tons)
2010	NO _x	50.7	55.5	44.0	56.3	206.5
	CO	8.3	8.8	7.0	7.4	31.6
	SO ₂	4.0	4.2	3.5	2.9	14.6
	VOC	12.2	8.3	10.9	8.7	40.1
	PM	9.3	6.7	10.5	9.7	36.2
	PM ₁₀	9.3	6.7	10.5	9.7	36.2
	SAM ^a	--	--	--	--	2.2
	CO ₂	636,019.2	666,923.3	635,894.2	575,660.3	2,514,497.0
2009	NO _x	37.1	45.9	51.3	49.7	184.0
	CO	10.0	11.8	9.5	7.1	38.5
	SO ₂	2.8	3.1	3.1	3.1	12.1
	VOC	10.2	7.7	10.3	10.2	38.3
	PM	7.8	6.2	9.8	9.9	33.7
	PM ₁₀	7.8	6.2	9.8	9.9	33.7
	SAM ^a	--	--	--	--	1.9
	CO ₂	556,410.7	632,342.5	610,752.2	618,290.4	2,417,795.8
2008	NO _x	50.9	47.5	42.7	43.4	184.4
	CO	8.6	22.9	11.7	4.5	47.8
	SO ₂	4.0	3.8	3.5	3.6	14.8
	VOC	14.6	9.1	11.5	10.2	45.4
	PM	11.1	7.3	11.0	11.3	40.8
	PM ₁₀	11.1	7.3	11.0	11.3	40.8
	SAM ^a	--	--	--	--	2.3
	CO ₂	795,197.6	758,839.6	679,345.5	715,962.5	2,949,345.2
2007	NO _x	42.9	52.3	46.9	39.0	181.2
	CO	17.6	20.7	21.2	19.7	79.2
	SO ₂	3.4	3.9	3.6	3.7	14.6
	VOC	12.8	9.4	11.7	10.2	44.1
	PM	9.7	7.6	11.2	11.4	39.9
	PM ₁₀	9.7	7.6	11.2	11.4	39.9
	SAM ^a	--	--	--	--	2.2
	CO ₂	686,292.3	784,504.3	695,854.4	715,596.7	2,882,247.7
2006	NO _x	44.7	36.1	44.9	42.3	168.0
	CO	22.5	19.2	22.6	22.0	86.3
	SO ₂	3.6	2.8	3.6	3.7	13.7
	VOC	13.5	6.6	11.8	10.2	42.1
	PM	10.3	5.3	11.3	11.4	38.3
	PM ₁₀	10.3	5.3	11.3	11.4	38.3
	SAM ^a	--	--	--	--	2.1
	CO ₂	733,125.6	554,400.8	716,984.7	721,620.6	2,726,131.6

^a Not reported in AORs - based on assuming 10% of SO₂ converts to SO₃, all of which converts to SAM.

Source: Annual Operating Report (AOR) for Martin Power Plant, 2006 - 2010; EPA's Acid Rain database.

**Table 3. Actual Annual Emissions of N₂O and CH₄ for the Period 2006 - 2010
Unit 8 CT Improvement Project**

Unit	Actual Annual Heat Input ^a (MMBtu/yr)	N ₂ O Emissions				CH ₄ Emissions			
		Emission Factor ^b (lb/MMBtu)	Annual Emissions		CO ₂ e ^c Rate (TPY)	Emission Factor ^b (lb/MMBtu)	Annual Emissions		CO ₂ e ^c Rate (TPY)
			(lb/yr)	(TPY)			(lb/yr)	(TPY)	
<u>Oil-Firing</u>									
2010	99,292	1.32E-03	131.3	0.066	20.4	6.6E-03	656.5	0.328	6.9
2009	1,588	1.32E-03	2.1	0.001	0.3	6.6E-03	10.5	0.005	0.1
2008	8,642	1.32E-03	11.4	0.006	1.8	6.6E-03	57.1	0.029	0.6
2007	38,722	1.32E-03	51.2	0.026	7.9	6.6E-03	256.0	0.128	2.7
2006	7,700	1.32E-03	10.2	0.005	1.6	6.6E-03	50.9	0.025	0.5
<u>Natural Gas-Firing</u>									
2010	42,499,000	2.20E-04	9,366.8	4.7	1,451.9	2.2E-03	93,667.8	46.8	983.5
2009	40,074,000	2.20E-04	8,832.3	4.4	1,369.0	2.2E-03	88,323.1	44.2	927.4
2008	49,292,000	2.20E-04	10,864.0	5.4	1,683.9	2.2E-03	108,639.6	54.3	1,140.7
2007	48,459,000	2.20E-04	10,680.4	5.3	1,655.5	2.2E-03	106,803.6	53.4	1,121.4
2006	45,232,000	2.20E-04	9,969.1	5.0	1,545.2	2.2E-03	99,691.3	49.8	1,046.8
<u>Total</u>									
2010	--	--	--	4.7	1,472.2	--	--	47.2	990.4
2009	--	--	--	4.4	1,369.3	--	--	44.2	927.5
2008	--	--	--	5.4	1,685.7	--	--	54.3	1,141.3
2007	--	--	--	5.4	1,663.4	--	--	53.5	1,124.1
2006	--	--	--	5.0	1,546.8	--	--	49.9	1,047.3

^a Based on AOR data - see Table 1.

^b Table C-2, Subpart C, 40 CFR 98. Emission factors in kg/MMBtu were converted to lb/MMBtu by multiplying by 2.204.

^c N₂O and CH₄ are multiplied by a factor of 310 and 21, respectively, to determine CO₂ equivalence.

Table 4. Annual Average Emissions for Martin Unit 8 for Each Consecutive Two-Year Period, 2006-2010

Pollutant	2010-2009 (tons)	2009-2008 (tons)	2008-2007 (tons)	2007-2006 (tons)
NO _x	195.3	184.2	182.8	174.6
CO	35.0	43.1	63.5	82.8
SO ₂	13.3	13.4	14.7	14.1
VOC	39.2	41.8	44.7	43.1
PM	34.9	37.2	40.3	39.1
PM ₁₀	34.9	37.2	40.3	39.1
PM _{2.5} ^a	34.9	0.0	40.3	39.1
SAM ^b	2.0	2.1	2.2	2.2
CO ₂	2,466,146.4	2,683,570.5	2,915,796.5	2,804,189.7
N ₂ O ^c (CO ₂ e)	1,420.8	1,527.5	1,674.5	1,605.1
CH ₄ ^c (CO ₂ e)	959.0	1,034.4	1,132.7	1,085.7

^a Assuming equal to PM₁₀ emissions.

^b Not reported in AORs - based on assuming 10% of SO₂ converts to SO₃, all of which converts to SAM.

^c Calculated based on actual annual heat input - see Table 3.

Source: Annual Operating Report (AOR) for Martin Power Plant, 2006 - 2010; EPA's Acid Rain database.

Table 5. Actual Hourly Emission Rates, FPL Martin Units 8A, 8B, 8C, and 8D (EU IDs 011, 012, 017, and 018)

Pollutant	Year	Annual Emissions ^a (tons)				Operating Hours ^a				Hourly Emission Rates (lb/hr)				Maximum Rate (lb/hr)
		Unit 8A	Unit 8B	Unit 8C	Unit 8D	Unit 8A	Unit 8B	Unit 8C	Unit 8D	Unit 8A	Unit 8B	Unit 8C	Unit 8D	
NO _x	2010	50.7	55.5	44.0	56.3	6,883	7,193	6,974	6,453	14.7	15.4	12.6	17.4	17.4
	2009	37.1	45.9	51.3	49.7	5,730	6,638	6,563	6,603	12.9	13.8	15.6	15.1	
	2008	50.9	47.5	42.7	43.4	8,219	7,891	7,336	7,538	12.4	12.0	11.6	11.5	
	2007	42.9	52.3	46.9	39.0	7,168	8,121	7,463	7,605	12.0	12.9	12.6	10.3	
	2006	44.7	36.1	44.9	42.3	7,571	5,718	7,533	7,593	11.8	12.6	11.9	11.1	
										Maximum =	14.7	15.4	15.6	
CO	2010	8.3	8.8	7.0	7.4	6,883	7,193	6,974	6,453	2.4	2.5	2.0	2.3	6.7
	2009	10.0	11.8	9.5	7.1	5,730	6,638	6,563	6,603	3.5	3.6	2.9	2.1	
	2008	8.6	22.9	11.7	4.5	8,219	7,891	7,336	7,538	2.1	5.8	3.2	1.2	
	2007	17.6	20.7	21.2	19.7	7,168	8,121	7,463	7,605	4.9	5.1	5.7	5.2	
	2006	22.5	19.2	22.6	22.0	7,571	5,718	7,533	7,593	5.9	6.7	6.0	5.8	
										Maximum =	5.9	6.7	6.0	
VOC	2010	12.2	8.3	10.9	8.7	6,883	7,193	6,974	6,453	3.5	2.3	3.1	2.7	3.6
	2009	10.2	7.7	10.3	10.2	5,730	6,638	6,563	6,603	3.6	2.3	3.1	3.1	
	2008	14.6	9.1	11.5	10.2	8,219	7,891	7,336	7,538	3.6	2.3	3.1	2.7	
	2007	12.8	9.4	11.7	10.2	7,168	8,121	7,463	7,605	3.6	2.3	3.1	2.7	
	2006	13.5	6.6	11.8	10.2	7,571	5,718	7,533	7,593	3.6	2.3	3.1	2.7	
										Maximum =	3.6	2.3	3.1	
SO ₂	2010	4.0	4.2	3.5	2.9	6,883	7,193	6,974	6,453	1.2	1.2	1.0	0.9	1.2
	2009	2.8	3.1	3.1	3.1	5,730	6,638	6,563	6,603	1.0	0.9	0.9	0.9	
	2008	4.0	3.8	3.5	3.6	8,219	7,891	7,336	7,538	1.0	1.0	0.9	1.0	
	2007	3.4	3.9	3.6	3.7	7,168	8,121	7,463	7,605	1.0	1.0	1.0	1.0	
	2006	3.6	2.8	3.6	3.7	7,571	5,718	7,533	7,593	0.9	1.0	1.0	1.0	
										Maximum =	1.2	1.2	1.0	
PM/PM ₁₀ /PM _{2.5}	2010	9.3	6.7	10.5	8.7	6,883	7,193	6,974	6,453	2.7	1.9	3.0	2.7	3.0
	2009	7.8	6.2	9.8	9.9	5,730	6,638	6,563	6,603	2.7	1.9	3.0	3.0	
	2008	11.1	7.3	11.0	11.3	8,219	7,891	7,336	7,538	2.7	1.9	3.0	3.0	
	2007	9.7	7.6	11.2	11.4	7,168	8,121	7,463	7,605	2.7	1.9	3.0	3.0	
	2006	10.3	5.3	11.3	11.4	7,571	5,718	7,533	7,593	2.7	1.9	3.0	3.0	
										Maximum =	2.7	1.9	3.0	

^a Reported in AORs for the period 2006 - 2010.

Table 6. Martin Unit 8 Actual Emissions as a Function of Heat Input, 2006 - 2010

Year	Actual Annual Heat Input (MMBtu/yr) ^a					Total Actual Emissions (TPY) ^b							Emissions per Unit Heat Input ^c (lb/MMBtu)						
	Unit 8A	Unit 8B	Unit 8C	Unit 8D	Total	NO _x	CO	VOC	SO ₂	PM/PM ₁₀	SAM	CO ₂	NO _x	CO	VOC	SO ₂	PM/PM ₁₀	SAM	CO ₂
2010	10,651,612	11,178,782	10,879,927	9,887,970	42,598,292	206.5	31.6	40.1	14.6	36.2	2.2	2,514,497.0	0.0097	0.0015	0.0019	0.0007	0.0017	0.0001	118.1
2009	9,062,000	10,495,794	10,182,000	10,335,794	40,075,588	184.0	38.5	38.3	12.1	33.7	1.9	2,417,795.8	0.0092	0.0019	0.0019	0.0006	0.0017	0.0001	120.7
2008	13,178,037	12,622,296	11,536,803	11,963,506	49,300,642	184.4	47.8	45.4	14.8	40.8	2.3	2,949,345.2	0.0075	0.0019	0.0018	0.0006	0.0017	0.0001	119.6
2007	11,440,771	13,040,713	11,885,326	12,130,912	48,497,722	181.2	79.2	44.1	14.6	39.9	2.2	2,882,247.7	0.0075	0.0033	0.0018	0.0006	0.0016	0.0001	118.9
2006	11,909,000	8,987,312	12,101,000	12,242,388	45,239,700	168.0	86.3	42.1	13.7	38.3	2.1	2,726,131.6	0.0074	0.0038	0.0019	0.0006	0.0017	0.0001	120.5
												Maximum =	0.0097	0.0038	0.0019	0.0007	0.0017	0.0001	120.7

^a Based on AOR data, see Table 1.

^b Based on AOR data, see Table 2.

^c Total actual emissions divided by total heat input.

Table 7. Projected Increase in Annual Emissions for Each CT, FPL Martin Units 8A, 8B, 8C, and 8D (EU IDs 011, 012, 017, and 018)

Pollutant	Emission Factor ^a (lb/MMBtu)	Current Design Heat Input ^b (MMMBtu/hr, HHV)		Future Design Heat Input ^c (MMMBtu/hr, HHV)		Max Increase in Design Heat Input (MMBtu/hr, HHV)		Projected Operating Hours (hr/yr)		Annual Increase in Design Heat Input (MMMBtu/yr)	Increase in Annual Emissions (TPY)
		NG-Firing	Oil-Firing	NG-Firing	Oil-Firing	NG-Firing	Oil-Firing	NG-Firing	Oil-Firing ^d		
NO _x	0.0097	1,723.8	1,847.6	1,759.6	1,884.5	35.7	37.0	7,731	33.5	277,541.4	1.3
CO	0.0038	1,723.8	1,847.6	1,759.6	1,884.5	35.7	37.0	7,731	33.5	277,541.4	0.5
SO ₂	0.0007	1,723.8	1,847.6	1,759.6	1,884.5	35.7	37.0	7,731	33.5	277,541.4	0.1
VOC	0.0019	1,723.8	1,847.6	1,759.6	1,884.5	35.7	37.0	7,731	33.5	277,541.4	0.3
PM	0.0017	1,723.8	1,847.6	1,759.6	1,884.5	35.7	37.0	7,731	33.5	277,541.4	0.2
PM ₁₀	0.0017	1,723.8	1,847.6	1,759.6	1,884.5	35.7	37.0	7,731	33.5	277,541.4	0.2
PM _{2.5}	0.0017	1,723.8	1,847.6	1,759.6	1,884.5	35.7	37.0	7,731	33.5	277,541.4	0.2
SAM	0.000105	1,723.8	1,847.6	1,759.6	1,884.5	35.7	37.0	7,731	33.5	277,541.4	0.015
GHGs											
CO ₂	120.7	1,723.8	1,847.6	1,759.6	1,884.5	35.7	37.0	7,731	33.5	277,541.4	16,744.3
N ₂ O	2.20E-04	1,723.8	1,847.6	1,759.6	1,884.5	35.7	37.0	7,731	33.5	277,541.4	0.03
CH ₄	2.20E-03	1,723.8	1,847.6	1,759.6	1,884.5	35.7	37.0	7,731	33.5	277,541.4	0.3

^a Maximum actual emission factor for the period 2006-2010 - see Table 6.

^b Based on GE data for 7FA.03 turbines at 75 F. Heat input rate at HHV = Heat input rate (LHV) x 1.11 (for natural gas) or 1.06 (for fuel oil).

^c Based on GE data for improved 7FA.04 turbines, at 75°F.

^d Highest annual average fuel usage during baseline actual period.

**Table 8. Projected Annual and Hourly Emissions for Martin Unit 8
GE 7FA.04 Improvements**

Pollutant	Baseline (Maximum 2-Year Average Actual) Emissions ^a (TPY)	Projected Increase for One CT ^b (TPY)	Projected Increase for Four CTs ^b (TPY)	Projected Annual Emissions (TPY)
NO _x	195.25	1.35	5.4	200.63
CO	82.75	0.53	2.1	84.87
SO ₂	14.68	0.10	0.38	15.06
VOC	44.72	0.27	1.1	45.78
PM	40.33	0.24	0.94	41.27
PM ₁₀	40.33	0.24	0.94	41.27
PM _{2.5}	40.33	0.24	0.94	41.27
SAM	2.25	0.015	0.06	2.31
CO ₂	2,915,796.45	16,744.32	66,977.3	2,982,773.7
N ₂ O (CO ₂ e)	1,674.54	9.48	37.9	1,712.5
CH ₄ (CO ₂ e)	1,132.72	6.42	25.7	1,158.4

^a Maximum 2-Year average emissions - see Table 4.

^b Projected increase in emissions due to the project - see Table 7.

**Table 9. PSD Applicability - Martin Unit 8
GE 7FA.04 Improvements**

Pollutant	Baseline (Maximum 2-Year Average Actual) Emissions ^a (TPY)	Projected Actual Emissions ^b (TPY)	Increase/Decrease in Annual Emissions ^c (TPY)	PSD Significant Emission Rates (TPY)
NO _x	195.25	200.63	5.4	40
CO	82.75	84.87	2.1	100
SO ₂	14.68	15.06	0.4	40
VOC	44.72	45.78	1.1	40
PM	40.33	41.27	0.94	25
PM ₁₀	40.33	41.27	0.94	15
PM _{2.5}	40.33	41.27	0.94	10
SAM	2.25	2.31	0.06	7
<u>GHGs</u>				
CO ₂	2,915,796.45	2,982,773.73	66977.3 ^d	
N ₂ O (CO ₂ e)	1,674.54	1,712.46	37.9	
CH ₄ (CO ₂ e)	1,132.72	1,158.41	25.7	
Total GHGs (CO ₂ e)	2,918,603.7	2,985,644.6	67,040.9	75,000

^a Maximum 2-Year average emissions - see Tables 4.

^b Projected actual annual emissions for Martin Unit 8 - see Table 8.

^c Projected actual emissions minus baseline actual emissions.

^d Does not take into account heat rate.

APPENDIX A
DATA FROM ANNUAL OPERATING REPORTS

**Martin Power Plant
Summary of AOR Data for Unit 8 (EU IDs 011, 012, 017, 018)**

Emission Unit 011

Unit 8A - 170 MW gas turbine w/ gas-fired HRSG Tons/year

2010	Distillate Oil (Diesel) TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.252725	50.4473	50.700025	6883
CO	0.09398	8.20485	8.29883	
SO2	3.99761	0.002387	3.999997	
VOC	0.05143	12.12	12.17143	
PM	0.0962	9.2262	9.3224	
PM10	0.0962	9.2262	9.3224	
Formaldehyde (H095)	0.000056	0.003762	0.003818	
NH3	0.281093	48.2164	48.497493	
HAPs				

Unit 8A - 170 MW gas turbine w/ gas-fired HRSG

2009	Distillate Oil (Diesel) TPY	Natural Gas TPY	Total TPY	Hours
NOx	0	37.1	37.1	5730
CO	0	10.0275	10.0275	
SO2	0	2.8	2.8	
VOC	0	10.1994	10.1994	
PM	0	7.76415	7.76415	
PM10	0	7.76415	7.76415	
Formaldehyde	0	0.003217	0.003217	
NH3	0	41.2321	41.2321	
HAPs				

Unit 8A - 170 MW gas turbine w/ gas-fired HRSG

2008	Distillate Oil (Diesel) TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.12792	50.7311	50.85902	8219
CO	0.00508	8.62995	8.63503	
SO2	0.000877	3.9531	3.953977	
VOC	0.00278	14.6227	14.62548	
PM	0.0052	11.1313	11.1365	
PM10	0.0052	11.1313	11.1365	
Formaldehyde	0.000001	0.004678	0.004679	
NH3	0.005338	59.9554	59.960738	
HAPs	0	0.86	0.86	

Unit 8A - 170 MW gas turbine w/ gas-fired HRSG

2007	Distillate Oil (Diesel) TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.03198	42.9008	42.93278	7168
CO	0.00127	17.5616	17.56287	
SO2	0.000652	3.432	3.432652	
VOC	0.000695	12.7573	12.757995	
PM	0.0013	9.71129	9.71259	
PM10	0.0013	9.71129	9.71259	
Formaldehyde	0.000001	0.004061	0.004062	
NH3	0.003969	52.052	52.055969	
HAPs				

Unit 8A - 170 MW gas turbine w/ gas-fired HRSG

2006	Distillate Oil (Diesel) TPY	Natural Gas TPY	Total TPY	Hours
NOx	0	44.7446	44.7446	7571
CO	0	22.4859	22.4859	
SO2	0	3.5727	3.5727	
VOC	0	13.4764	13.4764	
PM	0	10.2587	10.2587	
PM10	0	10.2587	10.2587	
Formaldehyde	0	0.004228	0.004228	
NH3	0	54.186	54.186	
HAPs				

Emission Unit 012

Unit 8B - 170 MW gas turbine w/ gas-fired HRSG

2010	Distillate Oil (Diesel) TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.158275	55.3417	55.49998	7193
CO	0.05334	8.75998	8.81332	
SO2	4.19749	0.002513	4.200003	
VOC	0.01974	8.25941	8.27915	
PM	0.063	6.65043	6.71343	
PM10	0.063	6.65043	6.71343	
Formaldehyde (H095)	0.000032	0.003958	0.00399	
NH3	0.158437	50.7234	50.88184	
HAPs				

Unit 8B - 170 MW gas turbine w/ gas-fired HRSG

2009	Distillate Oil (Diesel) TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.000963	45.899	45.89996	6638
CO	0.00127	11.847	11.84827	
SO2	3.09814	0.00186	3.1	
VOC	0.00047	7.66574	7.66621	
PM	0.0015	6.17241	6.17391	
PM10	0.0015	6.17241	6.17391	
Formaldehyde	0.000001	0.003726	0.003727	
NH3	0.004087	47.7523	47.75639	
HAPs				

Unit 8B - 170 MW gas turbine w/ gas-fired HRSG

2008	Distillate Oil (Diesel) TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.1742	47.3302	47.5044	7891
CO	0.00635	22.8694	22.87575	
SO2	0.001096	3.7863	3.787396	
VOC	0.00235	9.10833	9.11068	
PM	0.0075	7.33398	7.34148	
PM10	0.0075	7.33398	7.34148	
Formaldehyde	0.000001	0.00448	0.004481	
NH3	0.006672	57.4256	57.43227	
HAPs	0	0.82	0.82	

Unit 8B - 170 MW gas turbine w/ gas-fired HRSG

2007	Distillate Oil (Diesel) TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.10452	52.1521	52.25662	8121
CO	0.00381	20.7009	20.70471	
SO2	0.002294	3.9114	3.913694	
VOC	0.00141	9.37629	9.3777	
PM	0.0045	7.54974	7.55424	
PM10	0.0045	7.54974	7.55424	
Formaldehyde	0.000003	0.004628	0.004631	
NH3	0.013965	59.3229	59.33687	
HAPs				

Unit 8B - 170 MW gas turbine w/ gas-fired HRSG

2006	Distillate Oil (Diesel) TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.31356	35.7383	36.05186	5718
CO	0.01143	19.1822	19.19363	
SO2	0.089838	2.6946	2.784438	
VOC	0.00423	6.5939	6.59813	
PM	0.0135	5.30937	5.32287	
PM10	0.0135	5.30937	5.32287	
Formaldehyde	0.000005	0.003189	0.003194	
NH3	0.027342	40.8681	40.89544	
HAPs				

Martin Power Plant
Summary of AOR Data for Unit 8 (EU IDs 011, 012, 017, 018)

Emission Unit 017

Unit 8C - 170 MW gas turbine w/ gas-fired HRSG

	Distillate Oil		Total TPY
	(Diesel) TPY	Natural Gas TPY	
2010			
NOx	0.040836	43.9592	44.00004
CO	0.014365	7.03061	7.044975
SO2	3.4979	0.002098	3.499998
VOC	0.015925	10.894	10.90993
PM	0.0195	10.4415	10.461
PM10	0.0195	10.4415	10.461
Formaldehyde	0.00001	0.003859	0.003869
NH3	0.051097	49.4585	49.5096
HAPs			

Hours
6974

Unit 8C - 170 MW gas turbine w/ gas-fired HRSG

	Distillate Oil		Total TPY
	(Diesel) TPY	Natural Gas TPY	
2009			
NOx	0	51.3	51.3
CO	0	9.51635	9.51635
SO2	0	3.1	3.1
VOC	0	10.2711	10.2711
PM	0	9.8445	9.8445
PM10	0	9.8445	9.8445
Formaldehyde	0	0.003615	0.003615
NH3	0	46.3281	46.3281
HAPs			

Hours
6563

Unit 8C - 170 MW gas turbine w/ gas-fired HRSG

	Distillate Oil		Total TPY
	(Diesel) TPY	Natural Gas TPY	
2008			
NOx	0.556875	42.0944	42.65128
CO	0.016575	11.7136	11.73018
SO2	0.003215	3.4599	3.463115
VOC	0.018375	11.4574	11.47578
PM	0.0225	10.9815	11.004
PM10	0.0225	10.9815	11.004
Formaldehyde	0.000004	0.004094	0.004098
NH3	0.019572	52.4752	52.49477
HAPs	0	0.75	0.75

Hours
7336

Unit 8C - 170 MW gas turbine w/ gas-fired HRSG

	Distillate Oil		Total TPY
	(Diesel) TPY	Natural Gas TPY	
2007			
NOx	0.631125	46.2983	46.92943
CO	0.018785	21.2211	21.23989
SO2	0.012114	3.5613	3.573414
VOC	0.020825	11.653	11.67383
PM	0.0255	11.169	11.1945
PM10	0.0255	11.169	11.1945
Formaldehyde	0.000015	0.004214	0.004229
NH3	0.073735	54.0131	54.08684
HAPs			

Hours
7463

Unit 8C - 170 MW gas turbine w/ gas-fired HRSG

	Distillate Oil		Total TPY
	(Diesel) TPY	Natural Gas TPY	
2006			
NOx	0	44.9343	44.9343
CO	0	22.5613	22.5613
SO2	0	3.6303	3.6303
VOC	0	11.7891	11.7891
PM	0	11.2995	11.2995
PM10	0	11.2995	11.2995
Formaldehyde	0	0.004296	0.004296
NH3	0	55.0596	55.0596
HAPs			

Hours
7533

Emission Unit 018

Unit 8D - 170 MW gas turbine w/ gas-fired HRSG

	Distillate Oil (Diesel)		Total TPY
	TPY	Natural Gas TPY	
2010			
NOx	0.02041	56.2796	56.30001
CO	0.001225	7.4152	7.416425
SO2	2.89826	0.001739	2.899999
VOC	0.001825	8.7048	8.706625
PM	0.0075	9.672	9.6795
PM10	0.0075	9.672	9.6795
Formaldehyde	0.000004	0.003509	0.003513
NH3	0.020433	44.9722	44.992633
HAPs			

Hours
6453

206.5
31.57355
14.6
40.06713
36.17633
36.17633
0.01519
193.8816
0

Unit 8D - 170 MW gas turbine w/ gas-fired HRSG

	Distillate Oil (Diesel)		Total TPY
	TPY	Natural Gas TPY	
2009			
NOx	0.00095	49.6991	49.70005
CO	0.000245	7.06414	7.064385
SO2	3.09814	0.00186	3.1
VOC	0.000365	10.1628	10.163165
PM	0.0015	9.903	9.9045
PM10	0.0015	9.903	9.9045
Formaldehyde	0.000001	0.003669	0.00367
NH3	0.004087	47.0243	47.028387
HAPs			

Hours
6603

184
38.45651
12.1
38.29988
33.68706
33.68706
0.014229
182.345
0

Unit 8D - 170 MW gas turbine w/ gas-fired HRSG

	Distillate Oil (Diesel)		Total TPY
	TPY	Natural Gas TPY	
2008			
NOx	0.357	43.0589	43.4159
CO	0.00245	4.5168	4.51925
SO2	0.002119	3.5883	3.590419
VOC	0.00365	10.1628	10.16645
PM	0.015	11.292	11.307
PM10	0.015	11.292	11.307
Formaldehyde	0.000003	0.004246	0.004249
NH3	0.0129	54.4226	54.4355
HAPs	0	0.78	0.78

Hours
7538

184.4306
47.76021
14.79491
45.37839
40.78898
40.78898
0.017507
224.3233
3.21

Unit 8D - 170 MW gas turbine w/ gas-fired HRSG

	Distillate Oil (Diesel)		Total TPY
	TPY	Natural Gas TPY	
2007			
NOx	0.8925	38.1454	39.0379
CO	0.006125	19.708	19.714125
SO2	0.017683	3.633	3.650683
VOC	0.009125	10.233	10.242125
PM	0.0375	11.37	11.4075
PM10	0.0375	11.37	11.4075
Formaldehyde	0.000022	0.004299	0.004321
NH3	0.107633	55.1005	55.208133
HAPs			

Hours
7605

181.1567
79.22159
14.57044
44.05165
39.86883
39.86883
0.017243
220.6878
0

Unit 8D - 170 MW gas turbine w/ gas-fired HRSG

	Distillate Oil (Diesel)		Total TPY
	TPY	Natural Gas TPY	
2006			
NOx	0.1428	42.1569	42.2997
CO	0.00098	22.046	22.04698
SO2	0.040388	3.672	3.712388
VOC	0.00146	10.2452	10.24666
PM	0.006	11.3835	11.3895
PM10	0.006	11.3835	11.3895
Formaldehyde	0.000002	0.004345	0.004347
NH3	0.012292	55.692	55.704292
HAPs			

Hours
7593

168.0305
86.28781
13.69983
42.11029
38.27057
38.27057
0.016065
205.8453
0

Martin Power Plant
Summary of AOR Data for Unit 8 (EU IDs 011, 012, 017, 018)

Fuel Usage	Fuel Heat Content		Heat Input per Year		Total MMBtu/yr			
	Distillate Oil (Diesel) 1000 gal/yr	Natural Gas MMt3/yr	Distillate Oil (Diesel) MMBtu/1000 gal	Natural Gas MMBtu/MMt3		Distillate Oil (Diesel) MMBtu/yr	Natural Gas MMBtu/yr	
Unit 8A - 170 MW gas turbine w/ gas-fired HRSG								
2010	401.562	10597	2010	136	1000	54612.432	10597000	10651612.43
2009	0	9062	2009	136	1000	0	9062000	9062000
2008	7.626	13177	2008	136	1000	1037.136	13177000	13178037.14
2007	5.67	11440	2007	136	1000	771.12	11440000	11440771.12
2006	0	11909	2006	136	1000	0	11909000	11909000
Unit 8B - 170 MW gas turbine w/ gas-fired HRSG								
2010	226.338	11148	2010	136	1000	30781.968	11148000	11178781.97
2009	5.838	10495	2009	136	1000	793.968	10495000	10495793.97
2008	9.532	12621	2008	136	1000	1296.352	12621000	12622296.35
2007	19.95	13038	2007	136	1000	2713.2	13038000	13040713.2
2006	39.06	8982	2006	136	1000	5312.16	8982000	8987312.16
Unit 8C - 170 MW gas turbine w/ gas-fired HRSG								
2010	72.996	10870	2010	136	1000	9927.456	10870000	10879927.46
2009	0	10182	2009	136	1000	0	10182000	10182000
2008	27.96	11533	2008	136	1000	3802.56	11533000	11536802.56
2007	105.336	11871	2007	136	1000	14325.696	11871000	11885325.7
2006	0	12101	2006	136	1000	0	12101000	12101000
Unit 8D - 170 MW gas turbine w/ gas-fired HRSG								
2010	29.19	9884	2010	136	1000	3969.84	9884000	9887969.84
2009	5.838	10335	2009	136	1000	793.968	10335000	10335793.97
2008	18.428	11961	2008	136	1000	2506.208	11961000	11963506.21
2007	153.762	12110	2007	136	1000	20911.632	12110000	12130911.63
2006	17.56	12240	2006	136	1000	2388.16	12240000	12242388.16

APPENDIX B
ACID RAIN DATA

**Appendix B
CEM Reports from Acid Rain Database
Annual Reports**

STATE	FACILITY_ NAME	ORISPL_ CODE	UNITID	OP_YEAR	ASSOC_ STACKS	PRG_CODE	SUM_OP MONTHS_ TIME	NUM_ MONTHS_ REPORTE	GLOAD	SO2_MASS	NOX_RATE	NOX_MASS	CO2_MASS	HEAT_ INPUT	UNIT_TYPE_ INFO	PRIMARY_FUEL_INFO	SECONDARY_ FUEL_INFO	CAPACITY_ INPUT
FL	Martin	6043	PMR8A	2006	ARP		7538.36	12	1104971.44	3.701	0.0097	52.212	733125.626	12336229.8	Combined cycle	Pipeline Natural Gas	Diesel Oil	2306
FL	Martin	6043	PMR8B	2006	ARP		5768.78	12	824913.71	2.952	0.0096	38.459	554400.753	9326527.86	Combined cycle	Pipeline Natural Gas	Diesel Oil	2306
FL	Martin	6043	PMR8C	2006	ARP		7514.85	12	1119891.76	3.619	0.0092	51.504	716984.667	12064684.9	Combined cycle	Pipeline Natural Gas	Diesel Oil	2306
FL	Martin	6043	PMR8D	2006	ARP		7541.62	12	1122584.79	3.653	0.01	49.999	721620.559	12142174.2	Combined cycle	Pipeline Natural Gas	Diesel Oil	2306
							28363.61		4172361.7			192.174						
FL	Martin	6043	PMR8A	2007	ARP		7071.03	12	1022357.3	3.464	0.0103	50.27	686292.322	11548179.1	Combined cycle	Pipeline Natural Gas	Diesel Oil	2306
FL	Martin	6043	PMR8B	2007	ARP		8035.55	12	1164249.85	3.961	0.0088	54.071	784504.259	13200758.7	Combined cycle	Pipeline Natural Gas	Diesel Oil	2306
FL	Martin	6043	PMR8C	2007	ARP		7320.38	12	1080799.76	3.928	0.0125	55.221	695854.447	11702905.2	Combined cycle	Pipeline Natural Gas	Diesel Oil	2306
FL	Martin	6043	PMR8D	2007	ARP		7484.49	12	1103652.15	3.927	0.011	50.024	715596.671	12036770.5	Combined cycle	Pipeline Natural Gas	Diesel Oil	2306
							29911.45		4371059.06			209.586						
FL	Martin	6043	PMR8A	2008	ARP		8204.08	12	1183151.2	4.053	0.0091	56.239	795197.573	13380734.3	Combined cycle	Pipeline Natural Gas	Diesel Oil	2306
FL	Martin	6043	PMR8B	2008	ARP		7858.73	12	1130589.33	3.847	0.0094	51.396	758839.582	12768728.6	Combined cycle	Pipeline Natural Gas	Diesel Oil	2306
FL	Martin	6043	PMR8C	2008	ARP		7205.36	12	1046044.28	3.712	0.0155	57.694	679345.542	11430524.9	Combined cycle	Pipeline Natural Gas	Diesel Oil	2306
FL	Martin	6043	PMR8D	2008	ARP		7446.03	12	1107093.99	3.803	0.013	54.789	715962.505	12046795.6	Combined cycle	Pipeline Natural Gas	Diesel Oil	2306
							30714.2		4466858.8			220.118						
FL	Martin	6043	PMR8A	2009	ARP		5712.47	12	825010.31	2.809	0.0092	37.078	556410.732	9362648.39	Combined cycle	Pipeline Natural Gas	Diesel Oil	2306
FL	Martin	6043	PMR8B	2009	ARP		6614.32	12	950840.51	3.193	0.0099	45.959	632342.502	10640377	Combined cycle	Pipeline Natural Gas	Diesel Oil	2306
FL	Martin	6043	PMR8C	2009	ARP		6419.12	12	942657.4	3.083	0.0162	51.274	610752.154	10277023.9	Combined cycle	Pipeline Natural Gas	Diesel Oil	2306
FL	Martin	6043	PMR8D	2009	ARP		6515.53	12	958306.24	3.126	0.0143	49.644	618290.443	10403869.4	Combined cycle	Pipeline Natural Gas	Diesel Oil	2306
							25261.44		3676814.46			183.955						
FL	Martin	6043	PMR8A	2010	ARP		6749.97	12	954125.93	3.898	0.0143	50.705	636019.184	10691986.2	Combined cycle	Pipeline Natural Gas	Diesel Oil	2306
FL	Martin	6043	PMR8B	2010	ARP		7102.66	12	1013717.47	4.185	0.0138	55.613	666923.312	11214111.3	Combined cycle	Pipeline Natural Gas	Diesel Oil	2306
FL	Martin	6043	PMR8C	2010	ARP		6914.77	12	982355.8	3.523	0.0105	44.02	635894.208	10699557.9	Combined cycle	Pipeline Natural Gas	Diesel Oil	2306
FL	Martin	6043	PMR8D	2010	ARP		6305.63	12	886575.92	2.923	0.0183	56.253	575660.304	9686390.34	Combined cycle	Pipeline Natural Gas	Diesel Oil	2306
							27073.03		3836775.12			206.591						

APPENDIX C
MANUFACTURER DATA

**Appendix C
FPL MARTIN
ESTIMATED PERFORMANCE 7FA.03**

Load Condition		BASE	BASE	BASE	BASE	Peaking	BASE
Inlet Loss	in H2O	3.04	3.04	3.04	3.04	3.04	3.04
Exhaust Pressure Loss	in H2O	12.36	11.45	10.62	9.49	11.56	12.42
Ambient Temperature	°F	35	59	75	95	59	59
Ambient Relative Humidity	%	60	60	60	60	60	60
Evap. Cooler Status		None	None	None	None	None	None
Evap. Cooler Effectiveness	%						
Fuel Type		Cust Gas	Cust Gas	Cust Gas	Cust Gas	Cust Gas	Liquid
Fuel LHV	BTU/lb	20,835	20835	20,835	20835	20835	18387
Fuel Temperature	°F	365	365.00	365	365.00	365.00	59.00
Output	kW	185,386.00	175,988.00	166,529.00	152,343.00	180,631.00	188,491.00
Heat Rate (LHV)	BTU/kWh	9,093.00	9,202.00	9,326.00	9,567.00	9,176.00	9,978.00
Heat Cons. (LHV)	MMBTU/hr	1,685.70	1619.4	1,553.00	1457.4	1657.5	1880.8
Exhaust Flow	x10 ³ lb/hr	3,794.00	3,629.00	3,483.00	3,278.00	3,630.00	3,799.00
Exhaust Temperature	°F	1,086.00	1,114.00	1,131.00	1,151.00	1,134.00	1,090.00
Exhaust MolWt	lb/lbmol	28.47	28.41	28.33	28.17	28.4	28.24
Exhaust Energy	MMBTU/hr	1025.9	991.4	957.6	910.9	1013.2	1034.2
Water / Steam Flow	lb/hr						152,895

EMISSIONS

NOx	ppmvd	9.00	9.00	9.00	9.00	14.00	42.00
NOx Correction O2 Value	% O2	15.00	15.00	15.00	15.00	15.00	15.00
NOx as NO2	lb/hr	61.02	58.63	56.21	52.77	93.28	326.75
CO	ppmvd	9.00	9.00	9.00	9.00	9.00	20.00
CO	lb/hr	31.04	29.56	28.23	26.30	29.53	66.36
UHC	ppmvw	7.00	7.00	7.00	7.00	7.00	7.00
UHC	lb/hr	15.21	14.49	13.84	12.89	14.47	14.63
VOC	ppmvw	1.40	1.40	1.40	1.40	1.40	3.50
VOC	lb/hr	3.00	2.90	2.80	2.60	2.90	7.50
SO2	ppmvw						11.29
SO2	lb/hr						97.18
SO3	ppmvw						0.59
SO3	lb/hr						5.11
Sulfur Mist	lb/hr						10.23
Fuel Sulfur	Wt%						0.05 Wt%
Particulates	lb/hr	9.00	9.00	9.00	9.00	9.00	17.00
Particulate Basis		Front	Front	Front	Front	Front	Front

EXHAUST ANALYSIS

Argon	%VOL	0.89	0.89	0.88	0.87	0.89	0.84
Nitrogen	%VOL	74.94	74.49	73.94	72.77	74.42	70.72
Oxygen	%VOL	12.77	12.63	12.51	12.26	12.45	10.96
Carbon Dioxide	%VOL	3.78	3.78	3.77	3.74	3.87	5.53
Water	%VOL	7.62	8.21	8.91	10.36	8.38	11.95
CO2	lb/hr	221705.74	212498.68	203988.18	191560.95	217740.58	327409.96

SITE CONDITIONS

Elevation	Feet	0.00	0.00	0.00	0.00	0.00	0.00
Site Pressure	psia	14.70	14.70	14.70	14.70	14.70	14.70
Exhaust Loss	in H2O	11.30	11.30	11.30	11.30	11.30	11.30
Relative Humidity	%	60.00	60.00	60.00	60.00	60.00	60.00
Application		H2Gen	H2Gen	H2Gen	H2Gen	H2Gen	H2Gen
Power Factor (lag)		0.80	0.80	0.80	0.80	0.80	0.80
Combustion System		DLN9	DLN9	DLN9	DLN9	DLN9	DLN9

**Appendix C
FPL MARTIN
ESTIMATED PERFORMANCE 7FA.04**

Load Condition		BASE	BASE	BASE	BASE	Peaking	BASE
Inlet Loss	in H2O	3.04	3.04	3.04	3.04	3.04	3.04
Exhaust Pressure Loss	in H2O	12.54	11.58	10.72	9.59	11.66	12.25
Ambient Temperature	°F	35	59	75	95	59	59
Ambient Relative Humidity	%	60	60	60	60	60	60
Evap. Cooler Status		None	None	None	None	None	None
Evap. Cooler Effectiveness	%						
Fuel Type		Cust Gas	Cust Gas	Cust Gas	Cust Gas	Cust Gas	Liquid
Fuel LHV	BTU/lb	20,835	20835	20,835	20835	20835	18387
Fuel Temperature	°F	365	365.00	365	365.00	365.00	80.00
Output	kW	194,537.00	184,510.00	173,970.00	160,194.00	187,731.00	194,010.00
Heat Rate (LHV)	BTU/kWh	8,913.00	8,993.00	9,112.00	9,318.00	8,981.00	9,716.00
Heat Cons. (LHV)	MMBTU/hr	1,733.90	1659.4	1,585.20	1492.7	1686.1	1885
Exhaust Flow	x10 ³ lb/hr	3,780.00	3,614.00	3,469.00	3,266.00	3,616.00	3,737.00
Exhaust Temperature	°F	1,105.00	1,128.00	1,141.00	1,163.00	1,143.00	1,104.00
Exhaust MolWt	lb/lbmol	28.46	28.39	28.32	28.15	28.39	28.27
Exhaust Energy	MMBTU/hr	1043.4	1002.9	965	920.1	1018.4	1031.6
Water / Steam Flow	lb/hr						144530

EMISSIONS

NOx	ppmvd	9.00	9.00	9.00	9.00	15.00	42.00
NOx Correction O2 Value	% O2	15.00	15.00	15.00	15.00	15.00	15.00
NOx as NO2	lb/hr	62.92	60.23	57.53	54.17	101.99	330.26
CO	ppmvd	9.00	9.00	9.00	9.00	9.00	20.00
CO	lb/hr	30.85	29.39	28.07	26.15	29.36	65.19
UHC	ppmw	7.00	7.00	7.00	7.00	7.00	7.00
UHC	lb/hr	15.29	14.57	13.91	12.96	14.55	14.54
VOC	ppmw	1.40	1.40	1.40	1.40	1.40	3.50
VOC	lb/hr	3.00	2.90	2.70	2.60	2.90	7.40
SO2	ppmw						11.51
SO2	lb/hr						97.39
SO3	ppmw						0.61
SO3	lb/hr						5.13
Sulfur Mist	lb/hr						10.25
Fuel Sulfur	Wt%						0.05
Particulates	lb/hr	9.00	9.00	9.00	9.00	9.00	17.00
Particulate Basis		Front	Front	Front	Front	Front	Front

EXHAUST ANALYSIS

Argon	%VOL	0.89	0.89	0.88	0.87	0.89	0.84
Nitrogen	%VOL	74.85	74.40	73.86	72.69	74.36	70.89
Oxygen	%VOL	12.49	12.38	12.29	12.02	12.25	10.83
Carbon Dioxide	%VOL	3.90	3.90	3.87	3.85	3.96	5.65
Water	%VOL	7.87	8.43	9.10	10.57	8.55	11.79
CO2	lb/hr	227985.15	218501.84	208636.79	196534.35	221993.27	330492.55

SITE CONDITIONS

Elevation	Feet	0.00	0.00	0.00	0.00	0.00	0.00
Site Pressure	psia	14.70	14.70	14.70	14.70	14.70	14.70
Exhaust Loss	in H2O	11.30	11.30	11.30	11.30	11.30	11.30
Relative Humidity	%	60.00	60.00	60.00	60.00	60.00	60.00
Application		H2Gen	H2Gen	H2Gen	H2Gen	H2Gen	H2Gen
Power Factor (lag)		0.80	0.80	0.80	0.80	0.80	0.80
Combustion System		DLN9	DLN9	DLN9	DLN9	DLN9	DLN9

At Golder Associates we strive to be the most respected global group of companies specializing in ground engineering and environmental services. Employee owned since our formation in 1960, we have created a unique culture with pride in ownership, resulting in long-term organizational stability. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees now operating from offices located throughout Africa, Asia, Australasia, Europe, North America and South America.

Africa	+ 27 11 254 4800
Asia	+ 852 2562 3658
Australasia	+ 61 3 8862 3500
Europe	+ 356 21 42 30 20
North America	+ 1 800 275 3281
South America	+ 55 21 3095 9500

solutions@golder.com
www.golder.com

Golder Associates Inc.
6026 NW 1st Place
Gainesville, FL 32607 USA
(352) 336-5600 - Phone
(352) 336-6603 - Fax





Golder Associates

RECEIVED

AUG 01 2011

DIVISION OF AIR
RESOURCE MANAGEMENT

TRANSMITTAL

Date: July 29, 2011

Project No.: 113-87621

To: Jeff Koerner

Company: FDEP

From: Sal Mohammad

Address: 2600 Blair Stone Road
MS #5505

cc: Kevin Washington

Tallahassee, FL 32399

RE: APPLICATION FOR AC PERMIT – MARTIN POWER PLANT UNIT 8

Federal Express (priority, standard, 2-day, 3-day)

U.S. Mail

UPS

Courier

DHL

Hand Delivery

Email _____

Other _____

Quantity	Item	Description
4	Bound copies	Application For AC Permit Martin Power Plant Unit 8

Notes:

Please find attached a minor source application to improve the performance of existing gas turbines at Units 8A – 8D of the FPL Martin Plant.

Please advise us if enclosures are not as described.

ACKNOWLEDGEMENT REQUIRED:

Yes No

Y:\Projects\2011\113-87621 FPL Martin Unit 8\Final\T072911_621.docx

Golder Associates Inc.
6026 NW 1st Place
Gainesville, FL 32607 USA

Tel: (352) 336-5600 Fax: (352) 336-6603 www.golder.com

Golder Associates: Operations in Africa, Asia, Australasia, Europe, North America and South America

Golder, Golder Associates and the GA globe design are trademarks of Golder Associates Corporation