

**Florida  
Power**  
CORPORATION

RECEIVED

APR 28 1995

Bureau of  
Air Regulation

April 26, 1995

Mr. Clair Fancy  
Florida Department of Environmental Protection  
2600 Blair Stone Road  
Tallahassee, FL 32399-2400

Dear Mr. Fancy:

Re: Request for Construction Permit Amendment  
DEP Permit Number AC49-203114 ; PSD-FL-180

Florida Power Corporation (FPC) is submitting a request for an amendment to the permit referenced above. Enclosed are four copies of an application to fire natural gas as a supplemental fuel in Units P7 through P11 at FPC's Intercession City electric generating station. Also enclosed is a check in the amount of \$250.00 for the processing of this amendment request.

FPC has the opportunity to use, on an interruptible basis, natural gas from a pipeline which passes very close to the Intercession City facility. FPC proposes to use natural gas in Units P7 through P11. P7 through P10 are GE Frame 7EA units, and P11 is the Siemens unit that is currently under construction. Because it is an interruptible supply, natural gas will be a supplemental fuel, and the currently permitted No. 2 fuel oil will continue to be the primary fuel for these units.

The installed water injection NOx control technology will limit the NOx concentration in the exhaust from Units P7 through P11 to 25 ppm, corrected to 15% O<sub>2</sub>. Hourly emissions of all air pollutants will be lower while firing natural gas than emissions while firing fuel oil. Although the permitted annual hours of operation are proposed to be increased for natural gas firing, potential annual emissions of all air pollutants will be less than or equal to the currently permitted levels for fuel oil firing. Therefore, the proposed addition of natural gas as a supplemental fuel for Units P7 through P11 at Intercession City will result in a benefit to the environment in the form of lower air pollutant emissions.

Mr. Clair Fancy  
April 26, 1995  
Page Two

Thank you for your consideration of this request. Please contact me at (813) 866-4344 if you have any questions or if you need additional information.

Sincerely,

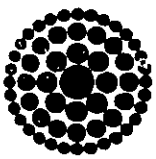


J. Michael Kennedy  
Manager, Air Programs

Enclosures

cc: Mr. Charles Collins, P.E., DEP Central District

*J. Kwon*  
*J. Harper, EPA*  
*J. Bennett, NPS*  
*C. Halladay*



**Florida Power**  
CORPORATION

ACCOUNTS PAYABLE DEPT. B3F  
P. O. BOX 14042  
ST. PETERSBURG, FL 33733-4042  
(813) 866-5257

**REMITTANCE ADVICE**

AC 49-270739

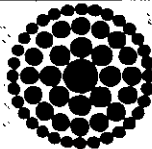
89

CHECK DATE 04/07/95 VENDOR FLA DEPT OF ENVIRONMENTAL VENDOR NO. 278473 CHECK NO. 1724130

INVOICE NO.	DATE	OUR ORDER NO.	VOUCHER	GROSS AMOUNT	DISCOUNT	NET AMOUNT
CK96626	04/03/95		9504198111	250.00	.00 TOTAL	250.00 250.00

THE ATTACHED REMITTANCE IS IN FULL SETTLEMENT OF ACCOUNT AS STATED. IF NOT CORRECT PLEASE RETURN TO ABOVE ADDRESS.

Accounts Payable Department B3F  
P.O. Box 14042  
St. Petersburg, FL 33733-4042



**Florida Power**  
CORPORATION

63-115  
631

DATE 04/07/95 CHECK NO. 1724130

PAY: \$250 DOLLARS AND 00 CENTS

\*\*\*\*\*250.00

SunBank / Mid-Florida

TO  
THE  
ORDER  
OF

FLA DEPT OF ENVIRONMENTAL  
PROTECTION  
2600 BLAIR STONE RD  
TALLAHASSEE FL 32399-2400

Void after 60 days

*J. H. Smallwood*  
Treasurer

⑈ 1001724130⑈ ⑆ 06310115316990032052736⑈

**FPC / INTERCESSION CITY**

**AIR CONSTRUCTION PERMIT  
MODIFICATION TO FIRE  
NATURAL GAS AT  
COMBUSTION TURBINES 7, 8, 9, 10, 11**

# Department of Environmental Protection

## DIVISION OF AIR RESOURCES MANAGEMENT APPLICATION FOR AIR PERMIT - LONG FORM

See Instructions for Form No. 62-210.900(1)

### I. APPLICATION INFORMATION

This section of the Application for Air Permit form provides general information on the scope of this application, the purpose for which this application is being submitted, and the nature of any construction or modification activities proposed as a part of this application. This section also includes information on the owner of the facility (or the responsible official in the case of a Title V source) and the necessary statements for the applicant and professional engineer, where required, to sign and date for formal submittal of the Application for Air Permit to the Department. If the application form is submitted to the Department on diskette, this section of the Application for Air Permit must also be submitted in hard-copy form.

#### Identification of Facility Addressed in This Application

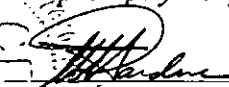
Enter the name of the corporation, business, governmental entity, or individual that has ownership or control of the facility; the facility name, if any; and a brief reference to the facility's physical location. If known, also enter the ARMS or AIRS facility identification number. This information is intended to give a quick reference, on the first page of the application form, to the facility addressed in this application. Elsewhere in the form, numbered data fields are provided for entry of the facility data in computer-input format.

**Florida Power Corporation, Intercession City Plant, Intercession City, Osceola County. This application is for the installation of natural gas firing in Units 7, 8, 9, 10 and 11.**

#### Application Processing Information (DEP Use)

1. Date of Receipt of Application:	
2. Permit Number:	
3. PSD Number (if applicable):	
4. Siting Number (if applicable):	

**Owner/Authorized Representative or Responsible Official**

1. Name and Title of Owner/Authorized Representative or Responsible Official: <b>W. Jeffrey Pardue, C.E.P., Director, Environmental Services Department</b>
2. Owner/Authorized Representative or Responsible Official Mailing Address: Organization/Firm: Florida Power Corporation Street Address: 3201 34th Street South (P.O. Box 14042) City: St. Petersburg State: FL Zip Code: 33711
3. Owner/Authorized Representative or Responsible Official Telephone Numbers: Telephone: (813) 866-4387 Fax: (813) 866-4926
4. Owner/Authorized Representative or Responsible Official Statement: <i>I, the undersigned, am the owner or authorized representative* of the facility (non-Title V source) addressed in this Application for Air Permit or the responsible official, as defined in Chapter 62-213, F.A.C., of the Title V source addressed in this application, whichever is applicable. 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. Further, I agree to operate and maintain the air pollutant emissions units and air pollution control equipment described in this application 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. If the purpose of this application is to obtain an air operation permit or operation permit revision for one or more emissions units which have undergone construction or modification, I 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 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 any permitted source.</i>  Signature _____ Date <u>4-26-95</u>

\* Attach letter of authorization if not currently on file.

**Scope of Application**

This Application for Air Permit addresses the following emissions unit(s) at the facility (or Title V source). An Emissions Unit Information Section (a Section III of the form) must be included for each emissions unit listed.

**Emissions Unit ID / Description of Emissions Unit**

**1 Combustion Turbines Nos. 7, 8, 9 and 10 (GE PG7111 EA)**  
**2 Combustion Turbine No. 11 (Siemens V84.3)**

**Purpose of Application and Category**

Check one (except as otherwise indicated):

**Category I: All Air Operation Permit Applications Subject to Processing Under Chapter 62-213, F.A.C.**

This Application for Air Permit is submitted to obtain:

Initial air operation permit under Chapter 62-213, F.A.C., for an existing facility which is classified as a Title V source.

Initial air operation permit under Chapter 62-213, F.A.C., for a facility which, upon start up of one or more newly constructed or modified emissions units addressed in this application, would become classified as a Title V source.

Current construction permit number: \_\_\_\_\_

Air operation permit renewal under Chapter 62-213, F.A.C., for a Title V source.

Operation permit to be renewed: \_\_\_\_\_

Air operation permit revision for a Title V source to address one or more newly constructed or modified emissions units addressed in this application.

Current construction permit number: \_\_\_\_\_

Operation permit to be renewed: \_\_\_\_\_

Air operation permit revision or administrative correction for a Title V source to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application. Also check Category III.

Operation permit to be revised/corrected: \_\_\_\_\_

\_\_\_\_\_

Air operation permit revision for a Title V source for reasons other than construction or modification of an emissions unit. Give reason for the revision e.g., to comply with a new applicable requirement or to request approval of an "Early Reductions" proposal.

Operation permit to be revised: \_\_\_\_\_

Reason for revision: \_\_\_\_\_

\_\_\_\_\_



**Category II: All Air Construction Permit Applications Subject to Processing Under Rule 62-210.300(2)(b), F.A.C.**

This Application for Air Permit is submitted to obtain:

- Initial air operation permit under Rule 62-210.300(2)(b), F.A.C., for an existing facility seeking classification as a synthetic non-Title V source.

Current operation/construction permit number(s): \_\_\_\_\_  
\_\_\_\_\_

- Renewal air operation permit under Rule 62-210.300(2)(b), F.A.C., for a synthetic non-Title V source.

Operation permit to be renewed: \_\_\_\_\_

- Air operation permit revision for a synthetic non-Title V source. Give reason for revision; e.g.; to address one or more newly constructed or modified emissions units.

Operation permit to be revised: \_\_\_\_\_

Reason for revision: \_\_\_\_\_  
\_\_\_\_\_

**Category III: All Air Construction Permit Applications for All Facilities and Emissions Units.**

This Application for Air Permit is submitted to obtain:

- Air construction permit to construct or modify one or more emissions units within a facility (including any facility classified as a Title V source).

Current operation permit number(s), if any: \_\_\_\_\_  
AC 49-203114

- Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.

Current operation permit number(s): \_\_\_\_\_  
\_\_\_\_\_

- Air construction permit for one or more existing, but unpermitted, emissions units.

**Application Processing Fee**

Check one:

Attached - Amount: \$ \$ 250.00

Not Applicable.

**Construction/Modification Information**

1. Description of Proposed Project or Alterations:

**Installation of natural gas firing for combustion turbine units 7-11. Currently, these units only fire distillate oil.**

2. Projected or Actual Date of Commencement of Construction (DD-MON-YYYY):

3. Projected Date of Completion of Construction (DD-MON-YYYY):



**Application Contact**

1. Name and Title of Application Contact: <b>Mike Kennedy,</b>
2. Application Contact Mailing Address:  Organization/Firm: <b>Florida Power Corporation</b> Street Address: <b>3201 34th St. South (P.O. Box 14042, Zip 33733)</b> City: <b>St. Petersburg</b> State: <b>FL</b> Zip Code: <b>33711</b>
3. Application Contact Telephone Numbers:  Telephone: <b>(813) 866-5158</b> Fax: <b>(813) 866-4926</b>

**Application Comment**

<p><b>See TVAI-1.Att; This application is submitted for an amandment of the construction permit to include natural gas firing. There will be no increase in either lb/hr or tons/year emission rates.</b></p>
---

The application structure is as follows:

Emissions Unit

	Combustion Turbine Peaking Units Nos. 7 through 10	Combustion Turbine Peaking Unit No. 11
General	4 Units	1 Unit
Emission Points	1 Stack per unit	1 Stack per unit
Segments	No. 2 fuel oil	No. 2 fuel oil
Pollutants	SO <sub>2</sub> , PM/PM10, NO <sub>x</sub> , CO, VOC, H <sub>2</sub> SO <sub>4</sub>	SO <sub>2</sub> , PM/PM10, NO <sub>x</sub> , CO, VOC, H <sub>2</sub> SO <sub>4</sub>
Visible Emissions	Permit	Permit
CEM	NO <sub>x</sub> ; water-to- fuel ratio	NO <sub>x</sub> ; water-to- fuel ratio
PSD	SO <sub>2</sub> , PM/PM10, NO <sub>2</sub>	SO <sub>2</sub> , PM/PM10, NO <sub>2</sub>



**Facility Regulatory Classifications**

1. Small Business Stationary Source? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown
2. Title V Source? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
3. Synthetic Non-Title V Source? <input type="checkbox"/> Yes, <input checked="" type="checkbox"/> No
4. Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
5. Synthetic Minor Source of Pollutants Other than HAPs? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
6. Major Source of HAPs? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Possible
7. Synthetic Minor Source of HAPs? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
8. One or More Emissions Units Subject to NSPS? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
9. One or More Emissions Units Subject to NESHAP? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
10. Title V Source by EPA Designation? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
11. Facility Regulatory Classifications Comment:  <b>The combustion turbines No. 7, 8, 9, 10 and 11 are subject to NSPS for stationary gas turbines (40 CFR Part 60, Subpart GG).</b>

**B. FACILITY REGULATIONS**

Depending on the application category, this subsection of the Application for Air Permit form provides either a brief analysis or detailed listing of federal, state, and local regulations applicable to the facility as a whole. (Regulations applicable to individual emissions units within the facility are addressed in Subsection III-B of the form.)

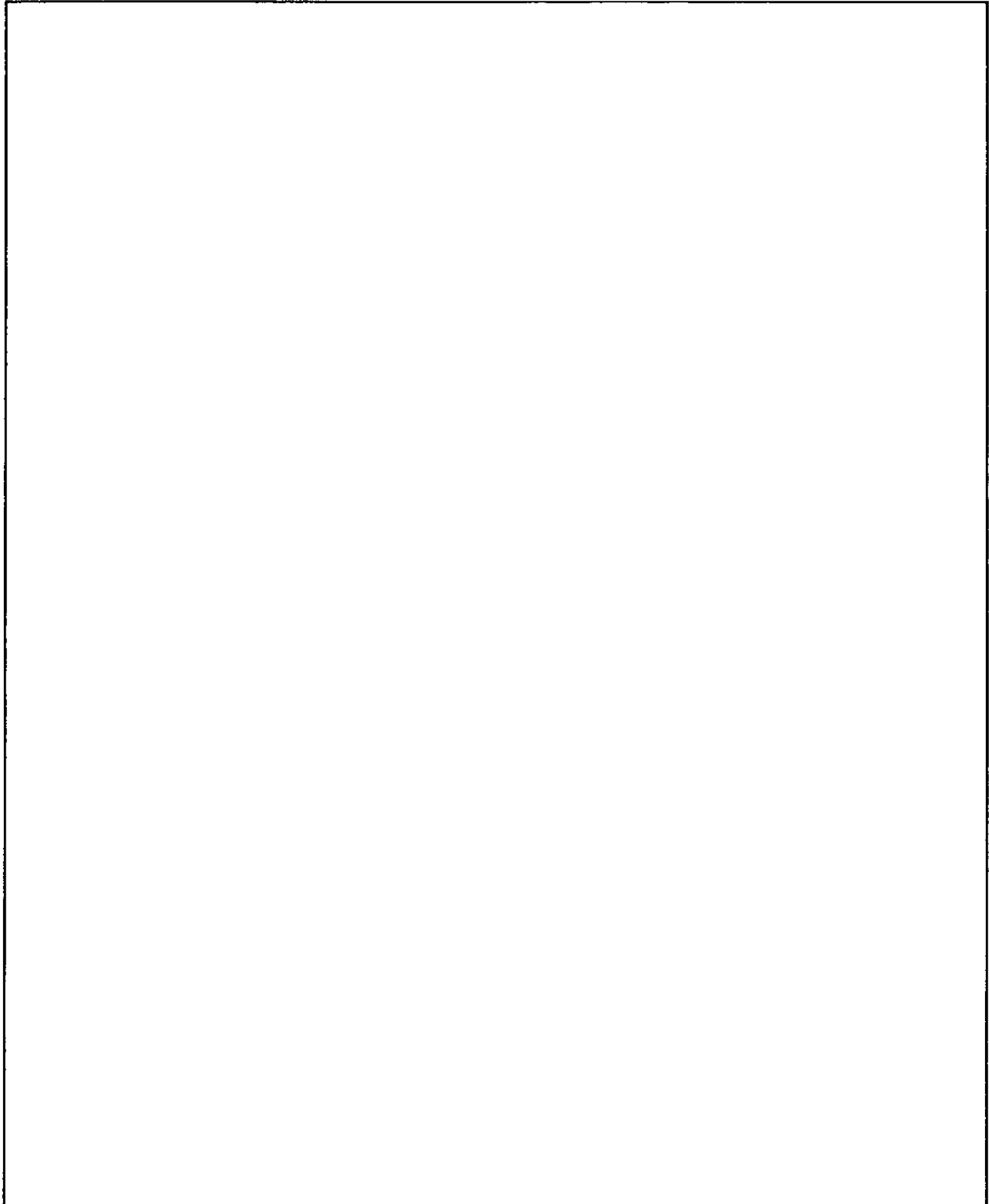
**Rule Applicability Analysis** (Required for Category II applications and Category III applications involving non Title-V sources. See Instructions.)

**Not Applicable**



**List of Applicable Regulations** (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

**See Attached**



Facility Applicable Requirements List

<b>Chapter 210 Stationary Sources -- General Requirements</b>	
62-210.300	Permits Required.
	(1) Air Construction Permits.
	(2) Air Operation Permits.
	(3) Exemptions; (c), (p), (u), (v), (w).
62-210.350	Public Notice and Comment.
	(1) Public Notice of Proposed Agency Action.
	(3) Additional Public Notice Requirements for Facilities Subject to Operation Permits for Title V Sources.
62-210.360	Administrative Permit Corrections.
62-210.370	Reports.
	(3) Annual Operating Report for Air Pollutant Emitting Facility.
62-210.400	Emission Estimates.
	(2) General Provisions.
62-210.900	Forms and Instructions; (1) and (5).

<b>Chapter 213 Operation Permits for Major Sources of Air Pollution</b>	
62-213.205	Annual Operation Licensing Fee; (1), (4), (6).
62-213.210	Permit Application Processing Fee.
62-213.400	Permits and Permit Revisions Required.
62-213.410	Changes Without Permit Revision.
62-213.412	Immediate Implementation Pending Revision Process.
62-213.420	Permit Applications.
62-213.430	Permit Issuance, Renewal, and Revision.
62-213.440	Permit Content.
62-213.450	Permit Review by EPA and Affected States.
62-213.460	Permit Shield.
62-213.900	Forms and Instructions; (1).

<b>Chapter 296 Stationary Sources -- Emission Standards</b>	
62-296.310	General Particulate Emission Limiting Standards.
	(3) Unconfined Emissions of Particulate Matter.
62-296.320	General Pollutant Emission Limiting Standards.
	(1) Volatile Organic Compounds Emissions or Organic Solvents Emissions
	(2) Objectionable Odor Prohibited
62-296.330	Best Available Control Technology (BACT)
	(1) Determination
	(4) Test Methods and Procedures

<b>EPA Part 82 - Protection Of Stratospheric Ozone</b>	
Subpart F - Recycling and Emissions Reduction	
82.166	Reporting and recordkeeping requirements; (k) and (m).

**C. FACILITY POLLUTANT INFORMATION**

This subsection of the Application for Air Permit form allows for the reporting of potential and estimated emissions of selected pollutants on a facility-wide basis. It must be completed for each pollutant for which the applicant proposes to establish a facility-wide emissions cap and for each pollutant for which emissions are not reported at the emissions-unit level.

**Facility Pollutant Information:** Pollutant \_\_\_\_\_ of \_\_\_\_\_

1. Pollutant Emitted:		
2. Estimated Emissions:		(tons/yr)
3. Requested Emissions Cap:	(lb/hr)	(tons/yr)
4. Basis for Emissions Cap Code:		
5. Facility Pollutant Comment:		

**Facility Pollutant Information** Pollutant \_\_\_\_\_ of 0

1. Pollutant Emitted:		
2. Estimated Emissions:		(tons/yr)
3. Requested Emissions Cap:	(lb/hr)	(tons/yr)
4. Basis for Emissions Cap Code:		
5. Facility Pollutant Comment:		

**Facility Pollutant Information:** Pollutant \_\_\_\_\_ of 0

1. Pollutant Emitted:		
2. Estimated Emissions:		(tons/yr)
3. Requested Emissions Cap:	(lb/hr)	(tons/yr)
4. Basis for Emissions Cap Code:		
5. Facility Pollutant Comment:		

**Facility Pollutant Information:** Pollutant \_\_\_\_\_ of 0

1. Pollutant Emitted:		
2. Estimated Emissions:		(tons/yr)
3. Requested Emissions Cap:	(lb/hr)	(tons/yr)
4. Basis for Emissions Cap Code:		
5. Facility Pollutant Comment:		

#### D. FACILITY SUPPLEMENTAL INFORMATION

This subsection of the Application for Air Permit form provides supplemental information related to the facility as a whole. (Supplemental information related to individual emissions units within the facility is provided in Subsection III-I of the form.) Supplemental information must be submitted as an attachment to each copy of the form, in hard-copy or computer-readable form.

##### Supplemental Requirements for All Applications

1. Area Map Showing Facility Location: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable _____ <input type="checkbox"/> Waiver Requested
2. Facility Plot Plan: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable _____ <input type="checkbox"/> Waiver Requested
3. Process Flow Diagram(s): <input checked="" type="checkbox"/> Attached, Document ID(s): <u>IC-FD-3</u> _____ <input type="checkbox"/> Not Applicable _____ <input type="checkbox"/> Waiver Requested
4. Precautions to Prevent Emissions of Unconfined Particulate Matter: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
5. Fugitive Emissions Identification: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
6. Supplemental Information for Construction Permit Application: <input checked="" type="checkbox"/> Attached, Document ID: <u>IC-FD-6</u> _____ <input type="checkbox"/> Not Applicable

##### Additional Supplemental Requirements for Category I Applications Only

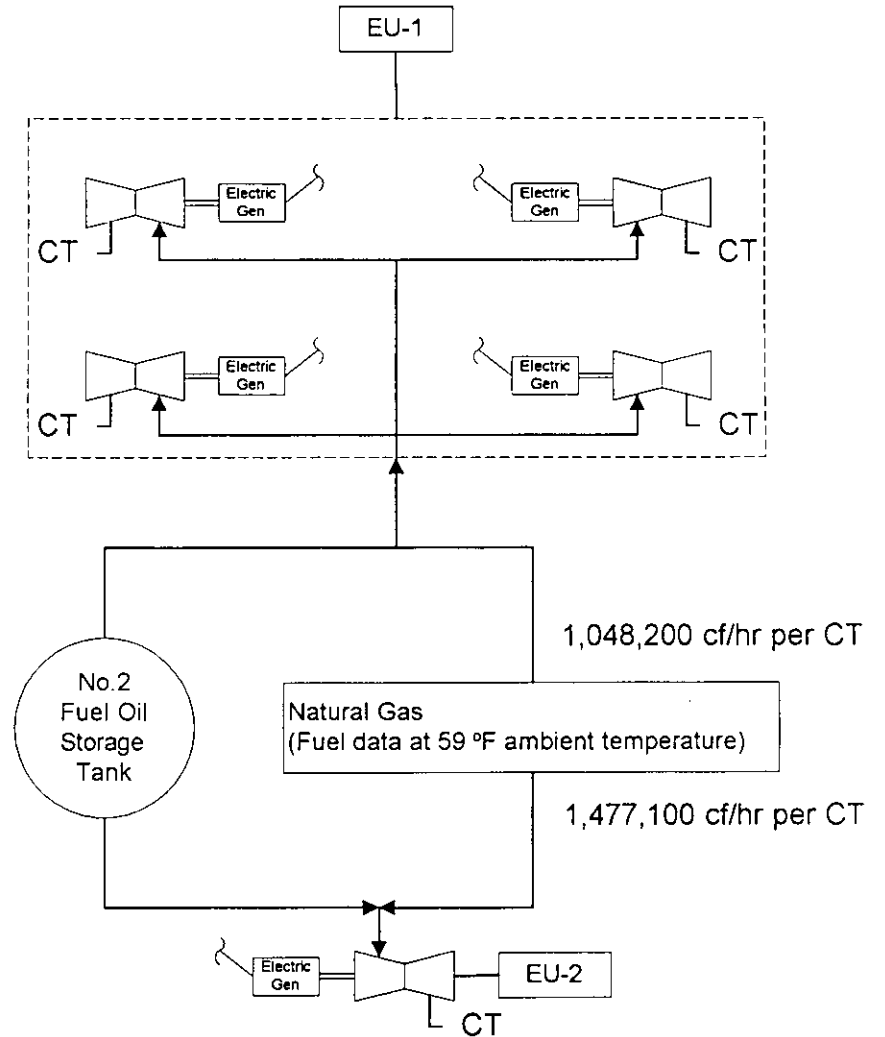
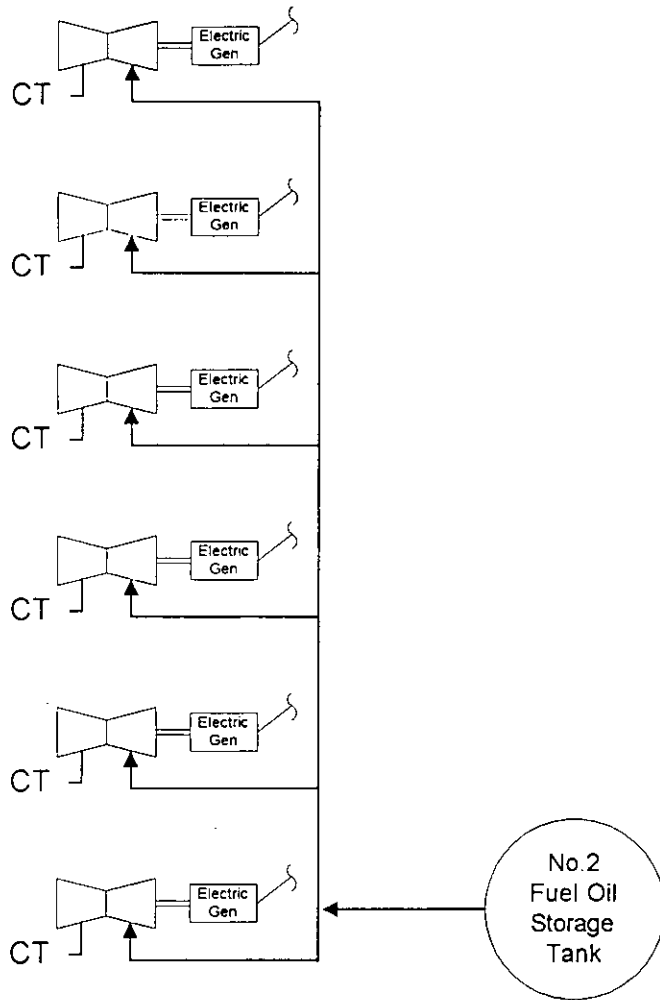
7. List of Insignificant Activities: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
8. List of Equipment/Activities Regulated under Title VI: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Equipment/Activities Onsite but Not Required to be Individually Listed <input checked="" type="checkbox"/> Not Applicable

<p>9. Alternative Methods of Operation:  <input type="checkbox"/> Attached, Document ID: _____  <input checked="" type="checkbox"/> Not Applicable</p>
<p>10. Alternative Modes of Operation (Emissions Trading):  <input type="checkbox"/> Attached, Document ID: _____  <input checked="" type="checkbox"/> Not Applicable</p>
<p>11. Enhanced Monitoring Plan:  <input type="checkbox"/> Attached, Document ID: _____  <input checked="" type="checkbox"/> Not Applicable</p>
<p>12. Risk Management Plan Verification:</p> <p><input type="checkbox"/> Plan Submitted to Implementing Agency - Verification Attached  Attached, Document ID: _____</p> <p><input type="checkbox"/> Plan to be Submitted to Implementing Agency by Required Date</p> <p><input checked="" type="checkbox"/> Not Applicable</p>
<p>13. Compliance Report and Plan  <input type="checkbox"/> Attached, Document ID: _____  <input checked="" type="checkbox"/> Not Applicable</p>
<p>14. Compliance Statement (Hard-copy Required)  <input type="checkbox"/> Attached, Document ID: _____  <input checked="" type="checkbox"/> Not Applicable</p>

**ATTACHMENT**


**IC-FD-3**





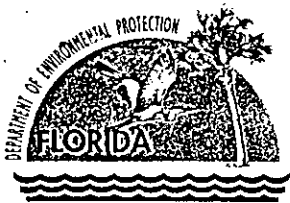
**Note:**

CT = Combustion Turbine  
 EU = Emission Unit Number

Florida Power Corporation		Emission Unit: Overall Plant	 Engineering and Applied Sciences, Inc.
Intercession City		Process Area: Overall Plant	
Project #	15106	File Name: FPCIC3.VSD	
		Revised: 4/21/95 09:50 AM	

**ATTACHMENT**

**IC-FD-6**



# Department of Environmental Protection

Lawton Chiles  
Governor

Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Virginia B. Wetherell  
Secretary

September 21, 1994

RECEIVED

SEP 28 1994

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Environmental Svcs  
Department

Mr. Kent Hedrick  
Supervisor, Air Programs  
Florida Power Corporation  
Post Office Box 14042  
St. Petersburg, Florida 33733

Dear Mr. Hedrick:

RE: Amendment to Construction Permit  
AC 49-203114 [PSD-FL-180(A)]  
Intercession City Facility

The Department has reviewed your request to amend the subject permit by A) incorporating an ISO corrected nitrogen oxide (NO<sub>x</sub>) emission limit of 57 ppm @ 15% O<sub>2</sub>, B) incorporate a fuel bound nitrogen allowance of 6 ppm, and C) clarify language concerning the application of a heat input vs. ambient temperature curve. The Department's determination on these amendment requests are as follows:

**A. Incorporation of an ISO NO<sub>x</sub> Emission Limit**

Your request to amend the construction permit by incorporating an ISO NO<sub>x</sub> emission limit of 57 ppm @ 15% O<sub>2</sub> is denied.

The Intercession City facility is subject to 40 CFR 60, Subpart GG, which specifically states that no owner or operator shall emit nitrogen oxides which exceed a specific NO<sub>x</sub> STD (40 CFR 60.332(a)(1)). Pursuant to 40 CFR 60.330 and Rule 62-296.800, Florida Administrative Code (F.A.C.), the NO<sub>x</sub> STD for the subject construction permit was established by the best available control technology (BACT) determination to be an allowable NO<sub>x</sub> emission limit of 42 ppm at 15 percent oxygen and on a dry basis. This limit is an allowable/observed value and no mention is made of an ISO NO<sub>x</sub> emission limit. Also, observed values of NO<sub>x</sub> emissions

Mr. Kent Hedrick  
AC 49-203114 [PSD-FL-180(A)]  
Amendment Request  
September 21, 1994  
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are to be corrected to ISO conditions to meet the requirements of 40 CFR 60.335(c)(2) using the equation in 40 CFR 60.335(c)(1). The ambient temperature and specific humidity variables in this equation could create potential situations which would restrict the operations of the facility beyond the intent of the permit. Your statement in this request that we have not permitted you to utilize the GE Mark IV Algorithm, which is an integral part of and was specifically designed for the GE Frame 7EA combustion turbine to correct the water/fuel ratio for different ambient temperatures/specific humidity, seems to be incorrect. The subject construction permit does not specify nor is the intent of the permit to specify design criteria, but to only specify performance criteria.

**B. Fuel Bound Nitrogen (FBN)**

Your request for an FBN allowance of 6 ppm is denied.

Pursuant to 40 CFR.332(a)(1) and (2), and Rule 62-296.800, F.A.C., no owner or operator subject to the provisions of Subpart GG shall cause to be discharged NO<sub>x</sub> emissions which exceed a STD. This STD is equal to the allowable NO<sub>x</sub> emissions (percent by volume at 15 percent oxygen on a dry basis) and is the sum of two values, one of which is the NO<sub>x</sub> emission allowance for fuel bound nitrogen (F) as defined in 40 CFR 60.332(a)(3). The applicant was given a NO<sub>x</sub> emission allowance (F=0) pursuant to 40 CFR 60.332(a)(3) for fuels having a nitrogen content (N) equal to or less than 0.015 percent by weight. To give the applicant an additional NO<sub>x</sub> emission allowance, 6 ppm as requested, would be a relaxation of a standard established by a BACT determination, which is a federally enforceable standard. To relax a federally enforceable standard or to increase allowable NO<sub>x</sub> emissions would require a modification (40 CFR 60.5, 40 CFR 60.14, Rule 62-210.200(39), F.A.C.). In reference to excess emissions resulting from the nitrogen content of the fuel, pursuant to 40 CFR 60.334(c)(1), the nitrogen content of the fuel is for reporting purposes and is not to be used exclusively for compliance/enforcement purposes.

Mr. Kent Hedrick  
AC 49-203114 [PSD-FL-180(A)]  
Amendment Request  
September 21, 1994  
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**C. Manufacturers Heat Input vs. Ambient Temperature Curves**

- Specific Condition No. 4(D)a,b, and c is amended as follows;

From

- a) The maximum heat input of 1,144 MMBtu/hr/unit at 20°F (peak load).
- b) The maximum heat input of 1,029 MMBtu/hr/unit at 59°F (peak load).
- c) The maximum heat input of 932 MMBtu/hr/unit at 90°F (peak load).

To

- a) The maximum heat input of 1,144 MMBtu/hr/unit at 20°F (peak load). The heat input will be corrected in accordance with Specific Condition No. 14 and the heat input vs. ambient temperature curve in Figure 1L.
- b) Replaced by the heat input vs. ambient temperature curve in Figure 1L, which was developed using actual site specific performance data.
- c) Replaced by the heat input vs. ambient temperature curve in Figure 1L, which was developed using actual site specific performance data.

- Specific Condition No. 14 is amended as follows;

From

Test results will be the average of 3 valid runs. The Central District office will be notified at least 30 days in writing in advance of the compliance test(s) pursuant to 40 CFR 60.8. The sources shall operate between 90% and 100% of permitted capacity during the compliance test(s) as adjusted for ambient temperature. Compliance test results shall be

Mr. Kent Hedrick  
AC 49-203114 [PSD-FL-180(A)]  
Amendment Request  
September 21, 1994  
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submitted to the Central District office no later than 45 days after completion pursuant to F.A.C. Rule 17-2.700(8).

To

Test results will be the average of 3 valid runs. The Department's Central District office will be notified at least 30 days in writing in advance of the compliance test(s) pursuant to 40 CFR 60(8). The sources shall operate between 90% and 100% of permitted capacity during the compliance test(s) as adjusted for ambient temperature using Figure 1L. In the event that a combustion turbine does not achieve 95% of the designed heat input capacity as adjusted for average ambient temperature during a compliance test, the entire heat input vs. ambient temperature curve will be adjusted downward by the increment equal to the difference between the design heat input value and 105% of the value reached during the test. The curve will be automatically adjusted upward upon demonstration of compliance at a higher heat input capacity during a subsequent compliance test. Until compliance is demonstrated at a higher heat input capacity during a subsequent compliance test, the combustion turbine shall not be operated at a heat input capacity greater than the adjusted curve values. In no case shall the maximum permitted heat input capacity of 1144 MMBtu/hr/unit at 20°F (peak load) be exceeded. Compliance test results shall be submitted to the Department's Central District office no later than 45 days after completion pursuant to Rule 62-297.570, F.A.C.

D. Attachments to be Incorporated;

- FPC letter dated June 23, 1994.
- FDEP letter dated July 12, 1994.
- FPC letter dated July 26, 1994.
- Figure 1L, Heat Input vs. Ambient Temperature Curve.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes (F.S.). The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida

Mr. Kent Hedrick  
AC 49-203114 [PSD-FL-180(A)]  
Amendment Request  
September 21, 1994  
Page 5 of 6

32399-2400. Petitions filed by the applicant of the amendment request/application and the parties listed below must be filed within 14 days of receipt of this amendment. Petitions filed by other persons must be filed within 14 days of the amendment issuance or within 14 days of their receipt of this amendment, whichever occurs first. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information:

- (a) The name, address and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
- (b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
- (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
- (d) A statement of the material facts disputed by Petitioner, if any;
- (e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
- (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,
- (g) A statement of the relief sought by petitioner, stating precisely the action the petitioner wants the Department to take with respect to the Department's action or proposed action.

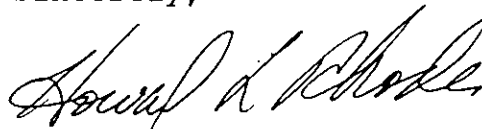
If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this amendment. Persons whose substantial interests will be affected by any decision of the Department with regard to the request/application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of receipt of this amendment

Mr. Kent Hedrick  
AC 49-203114 [PSD-FL-180(A)]  
Amendment Request  
September 21, 1994  
Page 6 of 6

in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

This letter amendment must be attached to the construction permit, No. AC 49-203114, and the federal permit, No. PSD-FL-180(A), and shall become part of the permits.

Sincerely,



Howard L. Rhodes  
Director  
Division of Air Resources  
Management

HLR/CSL

Attachment

cc: A. Zahm, CD  
J. Harper, EPA  
J. Bunyak, NPS

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this AMENDMENT and all copies were mailed by certified mail before the close of business on 9/23/94 to the listed persons.

FILING AND ACKNOWLEDGMENT FILED,  
on this date, pursuant to 120.52(11),  
Florida Statutes, with the designated  
Department Clerk, receipt of which is  
hereby acknowledged.

  
Clerk

9/23/94  
Date



**Attachment**

# Florida Power Corporation

## GE Frame 7EA Combustion Turbines

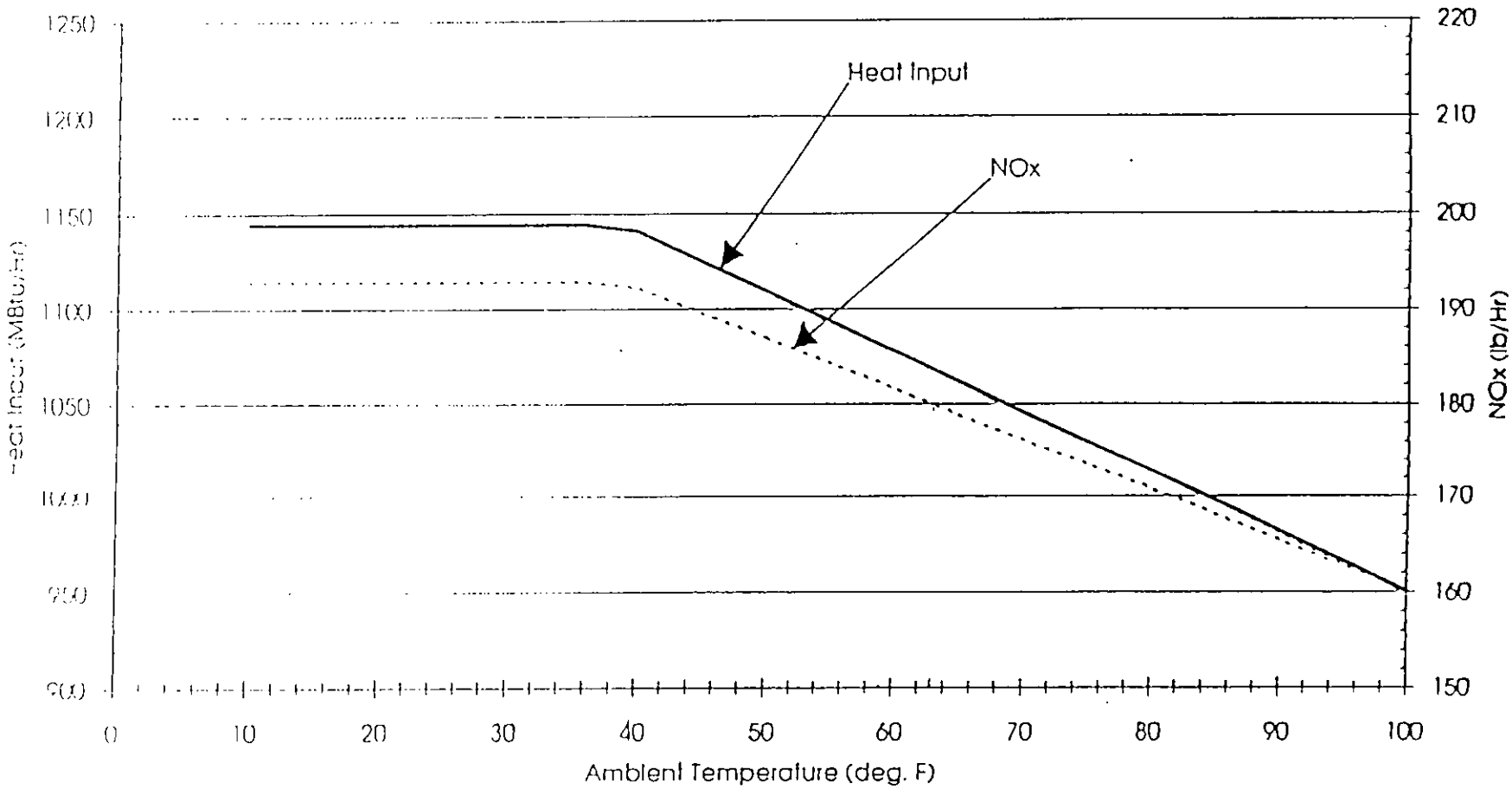
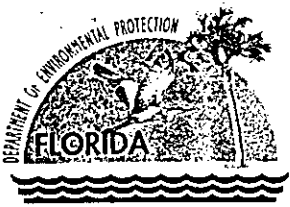


Figure II  
 Florida Power Corporation  
 Intercession City Facility  
 Heat Input vs. Ambient Temperature Curve



# Department of Environmental Protection

Lawton Chiles  
Governor

Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Virginia B. Wetherell  
Secretary

July 15, 1994

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. W. Jeffrey Pardue  
C.E.P. Manager  
Florida Power Corporation  
P.O. Box 14042  
St. Petersburg, Florida 33733

RE: Intercession City - DEP Permit No. AC49-203114  
PSD-FL-180

Dear Mr. Pardue:

The Department is in receipt of your June 21, 1994, letter requesting the following:

- 1) The substitution of one (1) 171 MW Siemens V84.3 combustion turbine for two permitted 185.5 MW (each) GE Frame 7FA combustion turbines.
- 2) The extension of the expiration date to December 31, 1995.
- 3) The increase in hours of operation from 3390 to 4068 hours per year (this request was later dropped by Mr. Mike Kennedy of your staff via a telephone conversation with Ms. Teresa Heron).

The Bureau evaluated your request and approves the following:

- 1) The change in turbine's manufacturer and model.
- 2) The change in the expiration date of this permit:

FROM: December 31, 1994  
TO: December 31, 1995

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the applicant of the amendment request/application and the parties listed below must be filed within 14 days of receipt of this amendment. Petitions filed by other persons must be filed within

Mr. Jeffrey Pardue  
AC49-203114  
July 14, 1994  
Page 2 of 3

14 days of the amendment issuance or within 14 days of their receipt of this amendment, whichever occurs first. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information:

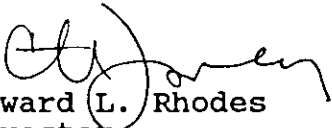
- (a) The name, address and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
- (b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
- (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
- (d) A statement of the material facts disputed by Petitioner, if any;
- (e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
- (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action;
- (g) A statement of the relief sought by petitioner, stating precisely the action the petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this amendment. Persons whose substantial interests will be affected by any decision of the Department with regard to the request/application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of receipt of this amendment in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

Mr. Jeffrey Pardue  
AC49-203114  
July 14, 1994  
Page 3 of 3

A copy of this letter shall be filed with the referenced permits and will become a part of those permits.

Sincerely,

*for*   
Howard L. Rhodes  
Director  
Division of Air Resources  
Management

HLR/TH/bjb

**Attachment to be incorporated:**

Mr. W. Jeffrey Pardue's letter of April 8, 1994

cc: Chuck Collins, CD

**CERTIFICATE OF SERVICE**

The undersigned duly designated deputy clerk hereby certifies that this AMENDMENT and all copies were mailed by certified mail before the close of business on 7/15/94 to the listed persons.

Clerk Stamp

**FILING AND ACKNOWLEDGMENT FILED,**  
on this date, pursuant to  
120.52(11), Florida Statutes,  
with the designated Department  
Clerk, receipt of which is hereby  
acknowledged.

Charlotte E. Hayes  
Clerk

7/15/94  
Date



April 8, 1994

Mr. John Brown, P.E.  
Administrator, Bureau of Air Regulation  
Florida Department of Environmental Protection  
2600 Blair Stone Road  
Tallahassee, FL 32399-2400

Dear Mr. Brown:

Re: Request for Construction Permit Amendment  
DEP Permit Number AC49-203114 ; PSD-FL-180

As provided by the construction permit referenced above, Florida Power Corporation (FPC) is permitted to construct four GE Frame 7EA and two GE Frame 7FA combustion turbines at its Intercession City electric generating station. Initial compliance testing was recently completed on the Frame 7EA units. Construction of the two Frame 7FA combustion turbines has not yet commenced.

FPC requests an amendment to the Intercession City construction permit. FPC has negotiated with a different manufacturer to provide the additional capacity needed at the Intercession City site. FPC proposes to remove the two GE Frame 7FA units (rated at 185.5 MW each at 59°F) from the construction permit and replace them with a single Siemens V84.3 combustion turbine (rated at 171 MW at 59°F). The Siemens unit is quite similar to the GE units in that it is a simple-cycle combustion turbine which uses water injection to control NOx emissions. Based on load rating, it is slightly smaller than each of the GE units, however, and emits lesser amounts of air pollutants.

Attachment 1 contains air pollutant emissions and related data which were provided by the manufacturer for the proposed Siemens unit. Emissions data are given for 25%, 50%, 75%, and 100% of full load at 20, 59, and 90 degrees F. SO<sub>2</sub> emissions are based on the current permitted fuel sulfur limit of 0.2%. Attachments 2 and 3 contain the discussion and results of an air quality modeling analysis which was performed to demonstrate that a substantial net air quality benefit will result from the change from two GE Frame 7FA units to the Siemens combustion turbine.

Mr. John Brown  
April 8, 1994  
Page Two

FPC also requests a twelve month extension to the permit expiration date of December 31, 1994. Construction of the Siemens unit is proposed to commence on August 15, 1994. A twelve month extension will allow sufficient time to complete construction and initial compliance testing prior to the expiration date. It is FPC's position that the BACT determination will be valid for an additional twelve months for this combustion turbine technology.

Since the amendment will result in the permitting and construction of five combustion turbines instead of six, FPC requests a change in the allowed average annual hours of operation per unit contained in Specific Condition 4(A). The total of 20,340 hours of operation results in a new average of 4,068 hours per unit per year for five units. The Siemens unit will comply with all other provisions of the construction permit and its amendments, such as the NOx limit of 42 ppm corrected to 15% O<sub>2</sub> and submittal of heat input vs. ambient temperature and water vs. fuel curves.

Thank you for your consideration of this request. Please contact Mr. Mike Kennedy at (813) 866-4344 if you have any questions or if you need additional information.

Sincerely,



W. Jeffrey Pardue, C.E.P., Manager  
Environmental Programs

Attachments

cc: Mr. Alexander Alexander, DEP Central District

**Attachment 1**  
**Air Pollutant Emissions**



**Siemens Model V84.3 Combustion Turbine****Maximum Air Pollutant Emissions (Lbs./Hour)****100% Load, 20 Degrees F, 0.2% S No. 2 Fuel Oil**

<u>Pollutant</u>	<u>Emission Rate</u>
Nitrogen Oxides	305.0
Sulfur Dioxide	382.8
Particulate Matter	17.0
VOC	7.6
Carbon Monoxide	22.1

**Additional Data Contained on Following Pages**

Manufacturer: Siemens

Model No./Combustor: V84.3

Combustion system type: Dual Fuel Low NOx

TABLE: B.2- 6

AMBIENT TEMPERATURE/  
RELATIVE HUMIDITY: 20 F / 60%

BAROMETRIC PRESSURE: 14.61 psia

FUEL: Natural Gas LHV = 38,700 Btu/lb, Temperature = 60 F  
No. 2 Fuel Oil LHV = 18,560 Btu/lb, Temperature = 60 F

NO<sub>x</sub> CONTROL LEVEL: 42 ppm

POWER FACTOR: 0.85 pf

	<u>Full Speed No Load</u>	<u>Minimum Load</u>	<u>25% of Base Load</u>	<u>50% of Base Load</u>	<u>75% of Base Load</u>	<u>Base Load Rating</u>	<u>Peak Load Rating</u>
Gross output, kW	_____	_____	<u>43,996</u>	<u>87,998</u>	<u>132,003</u>	<u>176,001</u>	_____
Auxiliary power, kW	_____	_____	<u>2,495</u>	<u>2,495</u>	<u>2,495</u>	<u>2,495</u>	_____
Gross heat rate, Btu/kWh (LHV)	_____	_____	<u>14,196</u>	<u>11,147</u>	<u>10,509</u>	<u>9,976</u>	_____
Exhaust flow, lb/h	_____	_____	<u>2,781,648</u>	<u>2,830,356</u>	<u>2,906,496</u>	<u>3,562,560</u>	_____
Exhaust temp, F	_____	_____	<u>623</u>	<u>835</u>	<u>1,038</u>	<u>1,022</u>	_____
Inlet guide vane position, degrees	_____	_____	<u>75%</u>	<u>75%</u>	<u>75%</u>	<u>92.1%</u>	_____
Fuel flow, lb/h	_____	_____	<u>33,998</u>	<u>53,399</u>	<u>75,510</u>	<u>95,583</u>	_____
Nitrogen oxides, ppmv @ 15% O <sub>2</sub>	_____	_____	<u>42</u>	<u>42</u>	<u>42</u>	<u>42</u>	_____
Nitrogen oxides, lb/h as NO <sub>x</sub>	_____	_____	<u>110</u>	<u>171</u>	<u>241</u>	<u>305</u>	_____
Carbon monoxide, ppmv	_____	_____	<u>254</u>	<u>5.0</u>	<u>5.0</u>	<u>5.0</u>	_____
Carbon monoxide, lb/h	_____	_____	<u>403.6</u>	<u>12.4</u>	<u>17.5</u>	<u>22.1</u>	_____
Sulfur dioxide, ppmv	_____	_____	<u>21.9</u>	<u>22.0</u>	<u>22.1</u>	<u>22.1</u>	_____

FPC 17506 COMB TURB GEN 62.1003  
 061193  
 PD-54

FOR INFORMATION ONLY

Manufacturer: Siemens

Model No./Combustor: V84.3

Combustion system type: Dry HC Dual Fuel Low NOX

TABLE: B.2- 6

AMBIENT TEMPERATURE/  
RELATIVE HUMIDITY: 20 F/60%

BAROMETRIC PRESSURE: -14.61 psia

FUEL: Natural Gas LEV = 21,140 Btu/lb; Temperature = 60 F  
No. 2 Fuel Oil LEV = 18,550 Btu/lb; Temperature = 60 F

NO<sub>x</sub> CONTROL LEVEL: 42 ppm

POWER FACTOR: 0.85 pf

	Full Speed No Load	Minimum Load	25% of Base Load	50% of Base Load	75% of Base Load	Base Load Rating	Peak Load Rating
Sulfur dioxide, lb/h			<u>136.1</u>	<u>213.8</u>	<u>302.3</u>	<u>382.8</u>	
TSP, lb/h + PM10, lb/h			<u>17.0</u>	<u>17.0</u>	<u>17.0</u>	<u>17.0</u>	
PM10, -lb/h-							
Unburned hydrocarbon, ppmv			<u>6.0</u>	<u>5.0</u>	<u>5.0</u>	<u>5.0</u>	
Unburned hydrocarbon, lb/h			<u>5.5</u>	<u>7.1</u>	<u>10.0</u>	<u>12.7</u>	
Volatile organic compounds, ppmv			<u>3.2</u>	<u>3.0</u>	<u>3.0</u>	<u>3.0</u>	
Volatile organic compounds, lb/h			<u>2.9</u>	<u>4.3</u>	<u>6.0</u>	<u>7.6</u>	
Oxygen, -lb/h			<u>18.5</u>	<u>15.8</u>	<u>12.8</u>	<u>12.3</u>	
Nitrogen, lb/h- %Wt.			<u>73.7</u>	<u>72.4</u>	<u>70.5</u>	<u>70.2</u>	
Carbon dioxide, lb/h			<u>3.9</u>	<u>6.0</u>	<u>8.2</u>	<u>8.5</u>	
Argon, lb/h-			<u>1.2</u>	<u>1.2</u>	<u>1.1</u>	<u>1.1</u>	
Water, lb/h-			<u>2.6</u>	<u>4.4</u>	<u>7.1</u>	<u>7.6</u>	
Opacity, %			<u>2.0</u>	<u>0.6</u>	<u>0</u>	<u>0</u>	

FOR INFORMATION ONLY

FPC 18875 COMB. TURB GEN 62.1003  
062393  
PD-55

Manufacturer: Siemens

Model No./Combustor: V84.3

Combustion system type: Dual Fuel Low NOx

TABLE: B.2-8

AMBIENT TEMPERATURE/  
RELATIVE HUMIDITY: 59 F/60%

BAROMETRIC PRESSURE: ~~14.51 psia~~

FUEL: Natural Gas LHV = 10,700 Btu/lb, Temperature = 60 F  
No. 2 Fuel Oil LHV = 18,850 Btu/lb, Temperature = 60 F

NO<sub>x</sub> CONTROL LEVEL: 42ppm

POWER FACTOR: 0.85 pf

	Full Speed No Load	Minimum Load	25% of Base Load	50% of Base Load	75% of Base Load	Base Load Rating	Peak Load Rating
Gross output, kW			42,760	85,522	128,287	171,049	
Auxiliary power, kW			2,495	2,495	2,495	2,495	
Gross heat rate, Btu/kWh (LHV)			14,579	11,514	10,606	10,127	
Exhaust flow, lb/h			2,578,716	2,627,892	2,945,736	3,583,224	
Exhaust temp, F			702	934	1,034	1,034	
Inlet guide vane position, degrees			75%	75%	82.4%	100%	
Fuel flow, lb/h			33,934	53,604	74,063	94,298	
Nitrogen oxides, ppm <sub>dv</sub> @ 15% O <sub>2</sub>			42	42	42	42	
Nitrogen oxides, lb/h as NO <sub>x</sub>			109.2	171.5	236.5	301	
Carbon monoxide, ppm <sub>dv</sub>			254	5.0	5.0	5.0	
Carbon monoxide, lb/h			402	12.4	17.1	21.8	
Sulfur dioxide, ppm <sub>dv</sub>			21.9	22.1	22.1	22.1	

FPC 17506 COMB TURB GEN 62.1003  
 061193  
 PD-54

FOR INFORMATION ONLY

Manufacturer: Siemens

Model No./Combustor: VR4.3

Combustion system type: Dry-NO<sub>x</sub> Dual Fuel Low NOx

TABLE: 8.2-B

AMBIENT TEMPERATURE/  
RELATIVE HUMIDITY: 59/60%

BAROMETRIC PRESSURE: 24.01 psia

FUEL: Natural Gas LHV = 23,140 Btu/lb, Temperature = 60 F  
No. 2 Fuel Oil LHV = 18,580 Btu/lb, Temperature = 60 F

NO<sub>x</sub> CONTROL LEVEL: 42 ppm

POWER FACTOR: 0.83 pf

	Full Speed No Load	Minimum Load	25% of Base Load	50% of Base Load	75% of Base Load	Base Load Rating	Peak Load Rating
Sulfur dioxide, lb/h	_____	_____	<u>135.7</u>	<u>214.2</u>	<u>296.6</u>	<u>376.8</u>	_____
TSP, lb/h + PM10, lb/h	_____	_____	<u>17.0</u>	<u>17.0</u>	<u>17.0</u>	<u>17.0</u>	_____
PM10, lb/h	_____	_____	_____	_____	_____	_____	_____
Unburned hydrocarbon, ppmv	_____	_____	<u>6.0</u>	<u>5.0</u>	<u>5.0</u>	<u>5.0</u>	_____
Unburned hydrocarbon, lb/h	_____	_____	<u>5.4</u>	<u>7.1</u>	<u>9.8</u>	<u>12.5</u>	_____
Volatile organic compounds, ppmv	_____	_____	<u>3.2</u>	<u>3.0</u>	<u>3.0</u>	<u>3.0</u>	_____
Volatile organic compounds, lb/h	_____	_____	<u>2.9</u>	<u>4.3</u>	<u>5.9</u>	<u>7.5</u>	_____
Oxygen, lb/h	_____	_____	<u>18.0</u>	<u>15.1</u>	<u>13.1</u>	<u>12.5</u>	_____
Nitrogen, lb/h BWT	_____	_____	<u>73.2</u>	<u>71.9</u>	<u>70.4</u>	<u>69.9</u>	_____
Carbon dioxide, lb/h	_____	_____	<u>4.2</u>	<u>6.5</u>	<u>8.0</u>	<u>8.4</u>	_____
Argon, lb/h	_____	_____	<u>1.2</u>	<u>1.2</u>	<u>1.2</u>	<u>1.2</u>	_____
Water, lb/h	_____	_____	<u>3.3</u>	<u>5.3</u>	<u>7.4</u>	<u>7.9</u>	_____
Opacity, %	_____	_____	<u>2.0</u>	<u>0.6</u>	<u>0</u>	<u>0</u>	_____

FOR INFORMATION ONLY

FPC 18875 COMB TURB GEN 62.1003  
062393  
PD-55

Manufacturer: Siemens  
 Model No./Combustor: VB4.3  
 Combustion system type: Dual Fuel Low NOx

TABLE: 0.2-10

AMBIENT TEMPERATURE/  
 RELATIVE HUMIDITY: 90° F / 60%

BAROMETRIC PRESSURE: 30.0 psia

FUEL: Natural Gas LHV = 10,700 Btu/lb, Temperature = 60 F  
 No. 1 Fuel Oil LHV = 18,400 Btu/lb, Temperature = 60 F

NO<sub>x</sub> CONTROL LEVEL: 42 ppm

POWER FACTOR: 0.85 pf

	Full Speed No Load	Minimum Load	25% of Base Load	50% of Base Load	75% of Base Load	Base Load Rating	Peak Load Rating
Gross output, kW	_____	_____	<u>37,729</u>	<u>75,460</u>	<u>113,195</u>	<u>153,861</u>	_____
Auxiliary power, kW	_____	_____	<u>2,495</u>	<u>2,495</u>	<u>2,495</u>	<u>2,495</u>	_____
Gross heat rate, Btu/kWh (LHV)	_____	_____	<u>15,749</u>	<u>12,184</u>	<u>11,077</u>	<u>10,445</u>	_____
Exhaust flow, lb/h	_____	_____	<u>2,414,844</u>	<u>2,459,412</u>	<u>2,756,052</u>	<u>3,368,556</u>	_____
Exhaust temp, F	_____	_____	<u>746</u>	<u>968</u>	<u>1,055</u>	<u>1,051</u>	_____
Inlet guide vane position, degrees	_____	_____	<u>75%</u>	<u>75%</u>	<u>82.35%</u>	<u>100%</u>	_____
Fuel flow, lb/h	_____	_____	<u>32,346</u>	<u>50,051</u>	<u>68,266</u>	<u>87,487</u>	_____
Nitrogen oxides, ppm <sub>dry</sub> @ 15% O <sub>2</sub>	_____	_____	<u>42</u>	<u>42</u>	<u>42</u>	<u>42</u>	_____
Nitrogen oxides, lb/h as NO <sub>x</sub>	_____	_____	<u>104.0</u>	<u>160.1</u>	<u>218.0</u>	<u>279.2</u>	_____
Carbon dioxide, ppm <sub>dry</sub>	_____	_____	<u>254.0</u>	<u>5.0</u>	<u>5.0</u>	<u>5.0</u>	_____
Carbon monoxide, lb/h	_____	_____	<u>383.0</u>	<u>11.6</u>	<u>15.8</u>	<u>20.2</u>	_____
Sulfur dioxide, ppm <sub>dry</sub>	_____	_____	<u>21.9</u>	<u>22.1</u>	<u>22.1</u>	<u>22.1</u>	_____

FCC 17506 COMB TURB GEN 62.1003  
 061193  
 PD-54

FOR INFORMATION ONLY

TABLE: B.2-10

AMBIENT TEMPERATURE:  
RELATIVE HUMIDITY: 90% / 69

BAROMETRIC PRESSURE: 14.64 psia

FUEL: Natural Gas LHV = 24,140-Btu/lb; Temperature = 60 F  
No. 2 Fuel Oil LHV = 18,550-Btu/lb; Temperature = 60 F

NO<sub>x</sub> CONTROL LEVEL: 42 ppm

POWER FACTOR: 0.85 pf

	Full Speed No Load	Minimum Load	25% of Base Load	50% of Base Load	75% of Base Load	Base Load Rating	Peak Load Rating
Sulfur dioxide, lb/h	_____	_____	<u>129.6</u> <u>17.0</u>	<u>200.4</u> <u>17.0</u>	<u>273.4</u> <u>17.0</u>	<u>350.4</u> <u>17.0</u>	_____
TSP, lb/h + PM10, lb/h	_____	_____	_____	_____	_____	_____	_____
PM10, lb/h	_____	_____	_____	_____	_____	_____	_____
Unburned hydrocarbon, ppmv	_____	_____	<u>6.0</u>	<u>5.0</u>	<u>5.0</u>	<u>5.0</u>	_____
Unburned hydrocarbon, lb/h	_____	_____	<u>5.2</u>	<u>6.7</u>	<u>9.1</u>	<u>11.6</u>	_____
Volatile organic compounds, ppmv	_____	_____	<u>3.2</u>	<u>3.0</u>	<u>3.0</u>	<u>3.0</u>	_____
Volatile organic compounds, lb/h	_____	_____	<u>2.8</u>	<u>4.0</u>	<u>5.4</u>	<u>7.0</u>	_____
Oxygen, lb/h	_____	_____	<u>17.6</u>	<u>14.9</u>	<u>13.0</u>	<u>17.6</u>	_____
Nitrogen, lb/h	_____	_____	<u>72.3</u>	<u>71.0</u>	<u>69.6</u>	<u>72.3</u>	_____
Carbon dioxide, lb/h	_____	_____	<u>4.3</u>	<u>6.5</u>	<u>7.9</u>	<u>4.3</u>	_____
Argon, lb/h	_____	_____	<u>1.2</u>	<u>1.2</u>	<u>1.2</u>	<u>1.2</u>	_____
Water, lb/h	_____	_____	<u>4.5</u>	<u>6.4</u>	<u>8.4</u>	<u>4.6</u>	_____
Opacity, %	_____	_____	<u>2.0</u>	<u>0.6</u>	<u>0</u>	<u>0</u>	_____

Manufacturer: Siemens

Model No./Combustor: V84.3

Combustion system type: Dry NG, Dual Fuel Low NOx

FOR INFORMATION ONLY

FPC 18875 COMB TURB GEN 62.1003  
 062393  
 PD-55

## **Attachment 2**

# **Air Quality Modeling Analysis**



## Air Quality Modeling Comparison

### Two GE Frame 7FA Units vs. Proposed Siemens Unit

#### 1.0 Introduction

Florida Power Corporation (FPC) is proposing to construct a single Siemens V84.3 combustion turbine in place of two GE Frame 7FA units at its Intercession City site. In order to assess the impact that the proposed change will have on air quality, a modeling analysis which compared the maximum ambient concentrations resulting from each of the two scenarios was performed.

#### 2.0 Summary

The two GE Frame 7FA units would have emitted more than twice the amount of air pollutants than the proposed Siemens combustion turbine will emit. In addition, the Siemens unit will have a somewhat taller and narrower stack, so it is intuitive that the proposed unit will have a lesser impact on air quality. A modeling analysis using the latest version of EPA's SCREEN model was performed in order to confirm this conclusion.

SO<sub>2</sub> is the pollutant which is emitted in the greatest quantities from the Siemens unit as well as the two GE units. Worst-case SO<sub>2</sub> emissions reflecting maximum load conditions at 20 deg. F were input to the SCREEN2 model. Building dimensions were also input in order to assess the potential for building downwash of the plume.

The resulting maximum predicted concentrations were a total of approximately 23 ug/m<sup>3</sup> from the two GE units and 12 ug/m<sup>3</sup> from the Siemens unit. Therefore, the installation of the Siemens combustion turbine will result in a net air quality benefit when compared to the installation of the two GE units.

#### 3.0 Methodology

In order to compare the maximum ambient air impacts from the proposed Siemens unit with those from the two GE units, the most recent version of EPA's SCREEN model was used. The SCREEN2 model was run using the full range of worst-case meteorology contained in the model. In addition, the following options were input:

- o Flat terrain
- o Ground-level concentrations (receptor height = 0)
- o Rural dispersion coefficients
- o Building wake effects

The total emissions from the two GE units were input as a single source in order to more easily determine their aggregate impact. The proposed Siemens unit was run separately, and the resulting predicted concentrations compared.

If the predicted maximum impacts from the Siemens combustion turbine are less than those from the two GE units which it is replacing, then a net benefit will result from the installation of the Siemens unit and no further analysis is necessary.

Siemens Modeling Analysis  
Page Two

#### 4.0 Air Pollutant Emissions, Stack Parameters, and Building Dimensions

Because both the GE units and the Siemens combustion turbine will use only No. 2 oil as fuel, SO<sub>2</sub> is the pollutant which will be emitted in the greatest quantities. Although this analysis is a relative impact comparison which would be valid using emissions of any stable air pollutant as input, SO<sub>2</sub> was chosen because those emissions will have the highest impact.

Worst-case SO<sub>2</sub> emissions occur at a temperature of 20 degrees F. Emissions from the GE units were obtained from the Intercession City construction permit application documentation which was submitted to the DEP on October 1, 1991. SO<sub>2</sub> emissions from the proposed Siemens unit are given in Attachment 1 and were obtained from the manufacturer. These emissions represent a maximum fuel sulfur content of 0.2% as required in the current construction permit. Emissions data input to the model are given in Table 1.

Stack and effluent data (stack dimensions, exit temperature, exit velocity) for the GE units were obtained from the construction permit application and were provided by the manufacturer for the Siemens combustion turbine. The stack parameters used in the modeling analysis are shown in Table 1.

To assess the potential for aerodynamic plume downwash due to building wake effects, the building downwash option contained in the model was used. The building dimensions input represent the building containing the combustion turbine and are given in Table 1.

Table 1  
SCREEN2 Model Input

	<u>GE Frame 7FA</u>	<u>Siemens</u>
SO <sub>2</sub> Emissions (g/s)	110.6*	48.3
Stack Height (m)	15.2	22.9
Stack Diameter (m)	7.0	5.8
Exit Velocity (m/s)	32.1	41.0
Exit Temp. (K)	881	823
Building Height (m)	11.8	11.8
Building Width (m)	7.1	7.1
Building Length (m)	18.0	18.0

\* Represents maximum SO<sub>2</sub> emissions from two GE units.

#### 5.0 Modeling Results

The SCREEN2 model output for each of the two analyses is provided in Attachment 3. The maximum predicted concentrations and their distances downwind are as follows:

Siemens Modeling Analysis  
Page Three

GE Units	Max. = 23.18 ug/m <sup>3</sup>	Distance = 1.577 km
Siemens Unit	Max. = 12.04 ug/m <sup>3</sup>	Distance = 1.488 km

In addition, no building downwash effects were predicted to occur. As expected, the construction of the Siemens combustion turbine in place of the two GE Frame 7FA units will result in a lower impact on the surrounding air quality.

**Attachment 3**  
**SCREEN2 Model Output**

03/21/94  
09:28:45

\*\*\* SCREEN2 MODEL RUN \*\*\*  
\* VERSION DATED 92245 \*\*\*

SE Frame 7FA Units With Building Dimensions - 20 deg. F Emissions

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT  
EMISSION RATE (G/S) = 110.600  
STACK HEIGHT (M) = 15.2000  
STK INSIDE DIAM (M) = 7.0000  
STK EXIT VELOCITY (M/S) = 32.1000  
STK GAS EXIT TEMP (K) = 881.0000  
AMBIENT AIR TEMP (K) = 293.0000  
RECEPTOR HEIGHT (M) = .0000  
URBAN/RURAL OPTION = RURAL  
BUILDING HEIGHT (M) = 11.8000  
MIN HORIZ BLDG DIM (M) = 7.1000  
MAX HORIZ BLDG DIM (M) = 18.0000

BUOY. FLUX = 2573.603 M\*\*4/S\*\*3; MOM. FLUX = 4197.956 M\*\*4/S\*\*2.

\*\*\* FULL METEOROLOGY \*\*\*

\*\*\*\*\*  
\*\*\* SCREEN AUTOMATED DISTANCES \*\*\*  
\*\*\*\*\*

\*\*\* TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES \*\*\*

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	4198.5	4197.54	12.76	12.76	NO
100.	4.171	6	1.0	1.3	10000.0	328.23	89.53	89.47	NO
200.	4.197	6	1.0	1.3	10000.0	328.23	89.77	89.53	NO
300.	4.228	6	1.0	1.3	10000.0	328.23	90.14	89.61	NO
400.	4.265	6	1.0	1.3	10000.0	328.23	90.63	89.71	NO
500.	4.305	6	1.0	1.3	10000.0	328.23	91.22	89.83	NO
600.	4.349	6	1.0	1.3	10000.0	328.23	91.92	89.96	NO
700.	4.396	6	1.0	1.3	10000.0	328.23	92.72	90.10	NO
800.	4.434	6	1.0	1.3	10000.0	328.23	93.61	90.23	NO
900.	4.471	6	1.0	1.3	10000.0	328.23	94.58	90.37	NO
1000.	4.509	6	1.0	1.3	10000.0	328.23	95.64	90.52	NO
1100.	7.415	1	3.0	3.1	1410.3	1409.31	313.40	595.86	NO
1200.	13.08	1	3.0	3.1	1410.3	1409.31	335.40	705.77	NO
1300.	18.03	1	3.0	3.1	1410.3	1409.31	357.05	826.90	NO
1400.	21.31	1	3.0	3.1	1410.3	1409.31	378.36	959.32	NO
1500.	22.88	1	3.0	3.1	1410.3	1409.31	399.38	1103.08	NO
1600.	23.16	1	3.0	3.1	1410.3	1409.31	420.13	1258.27	NO
1700.	22.69	1	3.0	3.1	1410.3	1409.31	440.63	1424.93	NO
1800.	21.90	1	3.0	3.1	1410.3	1409.31	460.89	1603.12	NO
1900.	21.04	1	3.0	3.1	1410.3	1409.31	480.94	1792.92	NO
2000.	20.22	1	3.0	3.1	1410.3	1409.31	500.79	1994.37	NO
2100.	19.46	1	3.0	3.1	1410.3	1409.31	520.44	2207.53	NO
2200.	18.76	1	3.0	3.1	1410.3	1409.31	539.91	2432.46	NO
2300.	18.11	1	3.0	3.1	1410.3	1409.31	559.22	2669.22	NO

2400.	17.51	1	3.0	3.1	1410.3	1409.31	578.36	2917.86	NO
2500.	16.95	1	3.0	3.1	1410.3	1409.31	597.35	3178.43	NO
2600.	16.44	1	3.0	3.1	1410.3	1409.31	616.20	3450.98	NO
2700.	15.95	1	3.0	3.1	1410.3	1409.31	634.90	3735.56	NO
2800.	15.56	1	3.0	3.1	1410.3	1409.31	650.69	4031.78	NO
2900.	15.27	1	3.0	3.1	1410.3	1409.31	663.38	4339.71	NO
3000.	14.98	1	3.0	3.1	1410.3	1409.31	676.15	4659.93	NO
3500.	13.67	1	3.0	3.1	1410.3	1409.31	740.85	5000.00	NO
4000.	12.56	1	3.0	3.1	1410.3	1409.31	806.55	5000.00	NO
4500.	11.60	1	3.0	3.1	1410.3	1409.31	872.77	5000.00	NO
5000.	10.78	1	3.0	3.1	1410.3	1409.31	939.20	5000.00	NO
5500.	10.07	1	3.0	3.1	1410.3	1409.31	1005.65	5000.00	NO
6000.	10.10	2	3.5	3.6	1211.2	1210.15	826.33	851.84	NO
6500.	10.18	2	3.5	3.6	1211.2	1210.15	876.26	917.91	NO
7000.	10.08	2	3.5	3.6	1211.2	1210.15	926.16	985.27	NO
7500.	9.863	2	3.5	3.6	1211.2	1210.15	975.97	1053.74	NO
8000.	9.572	2	3.5	3.6	1211.2	1210.15	1025.65	1123.19	NO
8500.	9.245	2	3.5	3.6	1211.2	1210.15	1075.17	1193.51	NO
9000.	8.906	2	3.5	3.6	1211.2	1210.15	1124.52	1264.60	NO
9500.	8.570	2	3.5	3.6	1211.2	1210.15	1173.68	1336.40	NO
10000.	8.758	5	5.0	5.8	10000.0	242.04	412.05	102.24	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:  
 1577. 23.18 1 3.0 3.1 1410.3 1409.31 415.18 1219.98 NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)  
 DWASH=NO MEANS NO BUILDING DOWNWASH USED  
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED  
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED  
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3\*LE

*** CAVITY CALCULATION - 1 ***	*** CAVITY CALCULATION - 2 ***
CONC (UG/M**3) = .0000	CONC (UG/M**3) = .0000
CRIT WS @10M (M/S) = 99.99	CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99	CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99	DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 20.44	CAVITY HT (M) = 14.40
CAVITY LENGTH (M) = 32.44	CAVITY LENGTH (M) = 8.06
ALONGWIND DIM (M) = 7.10	ALONGWIND DIM (M) = 18.00

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

\*\*\*\*\*  
 \*\*\* SUMMARY OF SCREEN MODEL RESULTS \*\*\*  
 \*\*\*\*\*

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	23.18	1577.	0.

\*\*\*\*\*  
 \*\* REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS \*\*  
 \*\*\*\*\*

03/21/94  
09:34:15

\*\*\* SCREEN2 MODEL RUN \*\*\*  
\* VERSION DATED 92245 \*\*\*

Siemens Unit With Building Dimensions - 20 deg. F Emissions

SIMPLE TERRAIN INPUTS:

```

SOURCE TYPE           =          POINT
EMISSION RATE (G/S)  =         48.3000
STACK HEIGHT (M)     =         22.9000
STK INSIDE DIAM (M)  =          5.8000
STK EXIT VELOCITY (M/S) =        41.0000
STK GAS EXIT TEMP (K) =        823.0000
AMBIENT AIR TEMP (K) =        293.0000
RECEPTOR HEIGHT (M) =           .0000
URBAN/RURAL OPTION   =          RURAL
BUILDING HEIGHT (M)  =         11.8000
MIN HORIZ BLDG DIM (M) =         7.1000
MAX HORIZ BLDG DIM (M) =        18.0000
    
```

BUOY. FLUX = 2177.484 M\*\*4/S\*\*3; MOM. FLUX = 5033.053 M\*\*4/S\*\*2.

\*\*\* FULL METEOROLOGY \*\*\*

\*\*\*\*\*  
\*\*\* SCREEN AUTOMATED DISTANCES \*\*\*  
\*\*\*\*\*

\*\*\* TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES \*\*\*

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.1	3700.2	3699.17	13.45	13.45	NO
100.	1.200	6	1.0	1.6	10000.0	297.53	78.57	78.50	NO
200.	1.211	6	1.0	1.6	10000.0	297.53	78.85	78.57	NO
300.	1.224	6	1.0	1.6	10000.0	297.53	79.27	78.67	NO
400.	1.239	6	1.0	1.6	10000.0	297.53	79.82	78.78	NO
500.	1.256	6	1.0	1.6	10000.0	297.53	80.50	78.91	NO
600.	1.275	6	1.0	1.6	10000.0	297.53	81.29	79.06	NO
700.	1.296	6	1.0	1.6	10000.0	297.53	82.19	79.22	NO
800.	1.312	6	1.0	1.6	10000.0	297.53	83.19	79.38	NO
900.	1.329	6	1.0	1.6	10000.0	297.53	84.29	79.53	NO
1000.	2.754	1	3.0	3.2	1249.3	1248.32	279.81	490.63	NO
1100.	5.767	1	3.0	3.2	1249.3	1248.32	301.61	589.74	NO
1200.	8.699	1	3.0	3.2	1249.3	1248.32	323.03	699.98	NO
1300.	10.76	1	3.0	3.2	1249.3	1248.32	344.12	821.40	NO
1400.	11.80	1	3.0	3.2	1249.3	1248.32	364.90	954.09	NO
1500.	12.03	1	3.0	3.2	1249.3	1248.32	385.41	1098.10	NO
1600.	11.79	1	3.0	3.2	1249.3	1248.32	405.66	1253.51	NO
1700.	11.36	1	3.0	3.2	1249.3	1248.32	425.67	1420.37	NO
1800.	10.88	1	3.0	3.2	1249.3	1248.32	445.46	1598.75	NO
1900.	10.43	1	3.0	3.2	1249.3	1248.32	465.05	1788.72	NO
2000.	10.01	1	3.0	3.2	1249.3	1248.32	484.45	1990.33	NO
2100.	9.632	1	3.0	3.2	1249.3	1248.32	503.67	2203.64	NO
2200.	9.281	1	3.0	3.2	1249.3	1248.32	522.71	2428.70	NO
2300.	8.958	1	3.0	3.2	1249.3	1248.32	541.60	2665.59	NO

2400.	8.658	1	3.0	3.2	1249.3	1248.32	560.34	2914.34	NO
2500.	8.380	1	3.0	3.2	1249.3	1248.32	578.93	3175.02	NO
2600.	8.140	1	3.0	3.2	1249.3	1248.32	596.04	3447.44	NO
2700.	7.964	1	3.0	3.2	1249.3	1248.32	609.16	3731.28	NO
2800.	7.795	1	3.0	3.2	1249.3	1248.32	622.36	4027.31	NO
2900.	7.633	1	3.0	3.2	1249.3	1248.32	635.61	4335.56	NO
3000.	7.476	1	3.0	3.2	1249.3	1248.32	648.92	4656.06	NO
3500.	6.775	1	3.0	3.2	1249.3	1248.32	716.09	5000.00	NO
4000.	6.189	1	3.0	3.2	1249.3	1248.32	783.87	5000.00	NO
4500.	5.695	1	3.0	3.2	1249.3	1248.32	851.85	5000.00	NO
5000.	5.274	1	3.0	3.2	1249.3	1248.32	919.80	5000.00	NO
5500.	4.937	2	3.5	3.7	1120.0	1073.26	759.17	770.24	NO
6000.	5.000	2	3.5	3.7	1120.0	1073.26	810.13	836.14	NO
6500.	4.956	2	3.5	3.7	1120.0	1073.26	861.01	903.36	NO
7000.	4.842	2	3.5	3.7	1120.0	1073.26	911.74	971.73	NO
7500.	4.686	2	3.5	3.7	1120.0	1073.26	962.29	1041.09	NO
8000.	4.545	2	3.0	3.2	1249.3	1248.32	1028.58	1125.86	NO
8500.	4.403	2	3.0	3.2	1249.3	1248.32	1077.97	1196.02	NO
9000.	4.250	2	3.0	3.2	1249.3	1248.32	1127.19	1266.98	NO
9500.	4.096	2	3.0	3.2	1249.3	1248.32	1176.24	1338.65	NO
10000.	3.945	2	3.0	3.2	1249.3	1248.32	1225.11	1410.98	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:  
 1488. 12.04 1 3.0 3.2 1249.3 1248.32 382.76 1078.74 NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)  
 DWASH=NO MEANS NO BUILDING DOWNWASH USED  
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED  
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED  
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3\*LB

*** CAVITY CALCULATION - 1 ***	*** CAVITY CALCULATION - 2 ***
CONC (UG/M**3) = .0000	CONC (UG/M**3) = .0000
CRIT WS @10M (M/S) = 99.99	CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99	CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99	DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 20.44	CAVITY HT (M) = 14.40
CAVITY LENGTH (M) = 32.44	CAVITY LENGTH (M) = 8.06
ALONGWIND DIM (M) = 7.10	ALONGWIND DIM (M) = 18.00

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

\*\*\*\*\*  
 \*\*\* SUMMARY OF SCREEN MODEL RESULTS \*\*\*  
 \*\*\*\*\*

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	12.04	1488.	0.

\*\*\*\*\*  
 \*\* REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS \*\*  
 \*\*\*\*\*





# Florida Department of Environmental Protection

Lawton Chiles  
Governor

Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Virginia B. Wetherell  
Secretary

November 15, 1993

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Jeffrey Pardue  
C.E.P., Manager  
Florida Power Corporation  
Post Office Box 14042  
St. Petersburg, FL 33733

**RECEIVED**

NOV 22 1993

Environmental Svcs  
Department

Dear Mr. Pardue:

RE: Florida Power Corporation  
Amendment to Construction Permit  
AC 49-203114 (PSD-FL-180)  
Intercession Facility

The Department has determined that the above permit should be amended to specify No. 2 Fuel Oil, rather than a numerical value, as the control strategy for Fluorides, Mercury, Lead, Inorganic Arsenic and Beryllium. Because of the inherent nature of the combustion process, these constituents in the fuel oil will be emitted after firing. Consequently, specifying the type of fuel oil (i.e., No. 2 fuel oil) is sufficient to control the emissions of the various constituents. Specifying No. 2 fuel oil is recognized to be BACT for Mercury, Arsenic and Beryllium. Therefore, the following will be changed and/or added:

A. Specific Condition No. 1

FROM:

Table 1  
Allowable Emission Limits  
92.9 MW Simply Cycle Combustion Turbines

Pollutant	Standard Oil Firing	Each Unit lb/hr	Total T/yr	Bases
Fluorides	-	$3.34 \times 10^{-2}$	0.23(b)	Application
Mercury (Hg)	$3.0 \times 10^{-6}$ lbs/MMBtu	$3.09 \times 10^{-3}$	0.02(b)	Application
Lead (Pb)	$8.9 \times 10^{-6}$ lbs/MMBtu	$9.16 \times 10^{-3}$	0.06(b)	Application
Inorganic Arsenic	$4.2 \times 10^{-6}$ lbs/MMBtu	$4.32 \times 10^{-3}$	0.03(b)	BACT
Beryllium (Be)	$2.5 \times 10^{-6}$ lbs/MMBtu	$2.57 \times 10^{-3}$	0.02(b)	BACT

Mr. Jeffrey Pardue  
 AC 49-203114  
 Permit Amendment  
 November 15, 1993  
 Page 2 of 5

TO:

Table 1-A  
 Emission Control  
 92.9 MW Simply Cycle Combustion Turbines

Pollutant	Method of Control	Basis
Fluorides	No. 2 Fuel Oil(a)	(b)
Mercury (Hg)	No. 2 Fuel Oil(a)	(b)
Lead (Pb)	No. 2 Fuel Oil(a)	(b)
Inorganic Arsenic	No. 2 Fuel Oil(a)	BACT
Beryllium(Be)	No. 2 Fuel Oil(a)	BACT

- (a) The No. 2 Fuel Oil's sulfur content, by weight, shall not exceed a maximum sulfur content of 0.2%.
- (b) Since this pollutant is an inherent constituent in distillate fuel oil, it will be regulated by specifying that only No. 2 Fuel Oil be fired at this facility.

and

FROM:

Table 2  
 Allowable Emission Limits  
 185.5 MW Simply Cycle Combustion Turbines

Pollutant	Standard Oil Firing	Each Unit lb/hr	Total 2 Units T/yr	Bases
Fluorides	-	6.13	0.20(b)	Application
Mercury (Hg)	3.0 x 10 <sup>-6</sup> lbs/MMBtu	5.66 x 10 <sup>-3</sup>	0.02(b)	Application
Lead (Pb)	8.9 x 10 <sup>-6</sup> lbs/MMBtu	1.68 x 10 <sup>-3</sup>	0.06(b)	Application
Inorganic Arsenic	4.2 x 10 <sup>-6</sup> lbs/MMBtu	7.9 x 10 <sup>-3</sup>	0.02(b)	BACT
Beryllium (Be)	2.5 x 10 <sup>-6</sup> lbs/MMBtu	4.72 x 10 <sup>-3</sup>	0.02(b)	BACT

Mr. Jeffrey Pardue  
AC 49-203114  
Permit Amendment  
November 15, 1993  
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TO:

Table 2-A  
Emission Control  
185.5 MW Simply Cycle Combustion Turbines

Pollutant	Method of Control	Basis
Fluorides	No. 2 Fuel Oil(a)	(b)
Mercury(Hg)	No. 2 Fuel Oil(a)	(b)
Lead(Pb)	No. 2 Fuel Oil(a)	(b)
Inorganic Arsenic	No. 2 Fuel Oil(a)	BACT
Beryllium(Be)	No. 2 Fuel Oil(a)	BACT

- (a) The No. 2 Fuel Oil's sulfur content, by weight, shall not exceed a maximum sulfur content of 0.2%.
- (b) Since this pollutant is an inherent constituent in distillate fuel oil, it will be regulated by specifying that only No. 2 Fuel Oil be fired at this facility.

B. Attachment to be Incorporated:

° Mr. Jeffrey Pardue's letter dated October 7, 1993.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the applicant of the amendment request/application and the parties listed below must be filed within 14 days of receipt of this amendment. Petitions filed by other persons must be filed within 14 days of the amendment issuance or within 14 days of their receipt of this amendment, whichever occurs first. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

Mr. Jeffrey Pardue  
AC 49-203114  
Permit Amendment  
November 15, 1993  
Page 4 of 5

The Petition shall contain the following information:

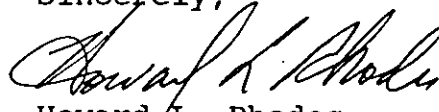
- (a) The name, address and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
- (b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
- (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
- (d) A statement of the material facts disputed by Petitioner, if any;
- (e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
- (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action;
- (g) A statement of the relief sought by petitioner, stating precisely the action the petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this amendment. Persons whose substantial interests will be affected by any decision of the Department with regard to the request/application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of receipt of this amendment in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

Mr. Jeffrey Pardue  
AC 49-203114  
Permit Amendment  
November 15, 1993  
Page 5 of 5

This letter amendment must be attached to Construction Permit, No. AC 49-203114 (PSD-FL-180), and shall become part of the permit.

Sincerely,



Howard L. Rhodes  
Director  
Division of Air Resources  
Management

HLR/TH/bjb

Attachment

cc: A. Zahm, CD  
J. Harper, EPA  
J. Bunyak, NPS

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION  
NOTICE OF PERMIT

In the matter of an  
Application for Permit by:

DER File No. AC 49-203114  
PSD-FL-181  
Osceola County

Mr. R. W. Neiser  
Florida Power Corporation  
3201-34th Street North  
St. Petersburg, FL 33733

Enclosed is Permit Number AC 49-203114 to construct six simple cycle combustion turbines at Florida Power Corporation's Intercession City Electric Generating Station in Osceola County, Florida. This permit is issued pursuant to Section(s) 403, Florida Statutes.

Any party to this Order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this Notice is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL REGULATION

*C. H. Fancy*  
C. H. Fancy, P.E., Chief  
Bureau of Air Regulation  
2600 Blair Stone Road  
Tallahassee, FL 32399-2400  
904-488-1344

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT and all copies were mailed before the close of business on August 17, 1992 to the listed persons.

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED,  
on this date, pursuant to  
§120.52(11), Florida Statutes,  
with the designated Department  
Clerk, receipt of which is hereby  
acknowledged.

*Charlotte Harper*      8/17/92  
(Clerk)                      (Date)

Copies furnished to:

- Kennard Kosky, P.E.
- Charles Collins, Central District
- Jewell Harper, EPA
- Chris Shaver, NPS

Final Determination

Florida Power Corporation  
Intercession City Facility  
Intercession City, Osceola County, Florida

Six Simple Cycle Combustion Turbines  
(Four 92.9 MW & Two 185.5 MW)

Permit Number: AC 49-203114  
PSD-FL-180

Department of Environmental Regulation  
Division of Air Resources Management  
Bureau of Air Regulation

August 17, 1992

## FINAL DETERMINATION

The Technical Evaluation and Preliminary Determination for the permit to construct six simple cycle combustion peaking units at Florida Power Corporation's (FPC) Intercession City Electric Generating Station in Intercession City, Osceola County, Florida, was distributed on May 22, 1992. The Notice of Intent to Issue was published in the Orlando Sentinel on June 17, 1992. Copies of the evaluation were available for public inspection at the Department's offices in Orlando and Tallahassee.

FPC's applications for permits to construct six simple cycle combustion peaking units (with a combined capacity of 371 MW) at their Intercession City Electric Generating Station have been reviewed by the Bureau of Air Regulation in Tallahassee.

No adverse comments were submitted by the U.S. Environmental Protection Agency (EPA) in their letter dated June 16, 1992.

Comments were received from Mr. Scott H. Osbourn, Senior Environmental Engineer for FPC, and Mr. John R. Eadie, Acting Regional Director of the U. S. Fish and Wildlife Service.

The Bureau has considered Mr. Osbourn's and Mr. Eadie's comments and has addressed them as follows:

**Florida Power Corporation 's letter dated July 16, 1992.**

### COMMENT:

Mr. Osbourn's concerns are regarding the economics (cost differentials per gallon for various grades) of using No. 2 fuel oil with a maximum of 0.2% sulfur by weight vs No. 2 fuel oil with a 0.3% sulfur average and a maximum of 0.5% sulfur on an annual basis. Initially, Mr. Osbourn requested that Specific Condition No.5 be deleted, the expiration date of the permit changed, and Specific Condition No. 16 be modified. However, on July 24, 1992, Mr. Osbourn withdrew his requests for changes to Specific Conditions Nos. 5 and 16, via a telephone conversation with Mr. Preston Lewis, Permitting Supervisor.

### RESPONSE:

The Department has evaluated Mr. Osbourn's comments and concluded that the BACT determination for this project is justifiable and should not be changed. The limitations for sulfur content and SO<sub>2</sub> emissions will remain as specified in the permit: Distillate fuel oil with a maximum of 0.2% sulfur by weight and 2459 TPY SO<sub>2</sub>. However, as requested, the economics (cost differentials per gallon for various grades) of this project will be revisited before startup, and if warranted, the BACT determination and permit conditions will be revised.



As requested, the expiration date of this permit will be changed to December 31, 1994.

**U.S. Fish and Wildlife Service's letter dated July 16, 1992.**

**COMMENTS:**

Mr. Eadie's comments are regarding the sulfur content in the oil and the air quality analyses. He recommended to lower the sulfur content of the No. 2 fuel oil to 0.05% S (by weight) maximum.

**RESPONSE:**

Mr. Eadie's concerns regarding the sulfur content in the oil are valid. We also believe that new sources should minimize SO<sub>2</sub> emissions when feasible. It is true that recent permit applications (Kissimmee Utilities Authority, Auburndale Power Partners; and Central Florida Power) have proposed to fire oil with a maximum sulfur content of 0.05%, but it should be pointed out that they are using fuel oil as a supplementary fuel. However, in this case, it is not economically feasible to require fuel oil with a 0.05 % maximum sulfur content since fuel oil is the primary and only fuel at the site. Section 211(i)(1) of the Clean Air Act, Sulfur Content Requirements For Diesel Fuel, states: "Effective October 1, 1993, no person shall manufacture, sell, supply, offer for sale or supply, dispense, transport, or introduce into commerce motor vehicle diesel fuel which contains a concentration of sulfur in excess of 0.05% (by weight) or which fails to meet a cetane index minimum of 40..". Although this regulation is not applicable to stationary sources, and we will continue evaluating sources in a BACT case-by-case basis, it will have an impact on the availability and economics of requiring fuel oil with a lower sulfur content for future projects.

**COMMENT:**

Mr. Eadie's comments on the potential impacts to the Chassahowitzka Wilderness Area.

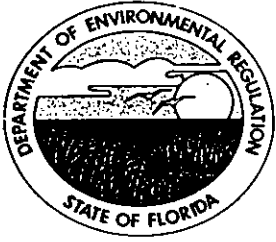
**RESPONSE:**

When the Department released its Intent to Issue this permit, we believed the applicant had sufficiently addressed all of the potential impacts to the air quality related values (AQRVs) (such as vegetation, soils, terrestrial wildlife and visibility) in the Chassahowitzka Wilderness Area. The Fish and Wildlife Service (FWS) identified potential effects on fresh water creeks and

Final Determination  
AC 49-203114 (PSD-FL-180)  
Page 3 of 3

related wildlife in the wilderness area as an AQVR after the Intent wsa released. However, the Department agrees with the FWS that, based on modeling results, we do not anticipate that these resources will be adversely affected by emissions from the proposed project. In addition, the Department will require future applicants to address impacts to these aquatic resources.

The final action of the Department will be to issue construction permit, No. AC 49-203114 (PSD-FL-180), as proposed in the Technical Evaluation and Preliminary Determination, with the above changes incorporated.



# Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

**PERMITTEE:**  
Florida Power Corporation  
Intercession City Facility  
3201 34th Street South  
St. Petersburg, Florida 33733

Permit Number: AC 49-203114  
PSD-FL-180  
Expiration Date: Dec. 31, 1994  
County: Osceola  
Latitude/Longitude: 28°15'37"N  
81°32'47.6"W  
Project: Four 92.9 MW and Two  
185.5 MW Simple Cycle Gas  
Turbines

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For four 92.9 MW and two 185.5 MW simple cycle combustion turbines (CTs) with maximum heat input of 1,029 MMBtu/hr/unit and 1,886.3 MMBtu/hr/unit, respectively, at 59°F (oil) to be located at the Intercession facility in Intercession City, Florida. The turbines are to be GE PG7111FA and GE PG7111EA equipped with wet injection. The UTM coordinates are Zone 17, 446.3 km East and 3126 km North.

The sources shall be constructed in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Attachments are listed below:

1. Florida Power Corporation (FPC) application received October 3, 1992.
2. Department's letter dated October 31, 1991.
3. FPC's letter received December 16, 1991.
4. FPC's letter received January 23, 1992.
5. FPC's letter received February 10, 1992.
6. Department's letter dated February 21, 1992.
7. FPC's letter dated March 5, 1992.
8. Department's letter dated March 9, 1992.
9. FPC's letter dated March 25, 1992.

PERMITTEE:  
Florida Power Corporation  
Intercession City Facility

Permit Number: AC 49-203114  
PSD-FL-180  
Expiration Date: December 31, 1994

**GENERAL CONDITIONS:**

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

PERMITTEE:  
Florida Power Corporation  
Intercession City Facility

Permit Number: AC 49-203114  
PSD-FL-180  
Expiration Date: December 31, 1994

**GENERAL CONDITIONS:**

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

- a. Have access to and copy any records that must be kept under the conditions of the permit;
- b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
- c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

- a. a description of and cause of non-compliance; and
- b. the period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

PERMITTEE:  
Florida Power Corporation  
Intercession City Facility

Permit Number: AC 49-203114  
PSD-FL-180  
Expiration Date: December 31, 1994

GENERAL CONDITIONS:

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-30.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. This permit also constitutes:

- (x) Determination of Best Available Control Technology (BACT)
- (x) Determination of Prevention of Significant Deterioration (PSD)
- (x) Compliance with New Source Performance Standards (NSPS)

14. The permittee shall comply with the following:

- a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
- b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
- c. Records of monitoring information shall include:
  - the date, exact place, and time of sampling or measurements;

PERMITTEE:  
Florida Power Corporation  
Intercession City Facility

Permit Number: AC 49-203114  
PSD-FL-180  
Expiration Date: December 31, 1994

**GENERAL CONDITIONS:**

- the person responsible for performing the sampling or measurements;
- the dates analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

**SPECIFIC CONDITIONS:**

Emission Limits

1. The maximum allowable emissions from these sources shall not exceed the emission rates listed in Table 1 (92.9 MW combustion turbines) and Table 2 (185.5 MW combustion turbines).
2. Visible emissions shall not exceed 20% opacity except at full load in which case visible emissions shall not exceed 10% opacity.

Operating Rates

3. These sources are allowed to use only No. 2 fuel oil with a 0.2% sulfur content maximum, by weight.
4. The permitted materials and utilization rates for the simple cycle gas turbines shall not exceed:
  - (A) The average maximum capacity factor shall be limited to 38.7% (3,390 hours per year operating time).
  - (B) Total hours of operation for the six turbines shall not exceed 20,340 unit hours per year. Unit hour per year shall be determined by adding the hrs/yr operation of each of the six units.
  - (C) GE FRAME 7FA
    - a) The maximum heat input of 2,032 MMBtu/hr/unit at 20°F (peak load):

PERMITTEE:  
Florida Power Corporation  
Intercession City Facility

Permit Number: AC 49-203114  
PSD-FL-180  
Expiration Date: December 31, 1994

**SPECIFIC CONDITIONS:**

- b) The maximum heat input of 1,886 MMBtu/hr/unit at 59°F (peak load).
- c) The maximum heat input of 1,708 MMBtu/hr/unit at 90°F (peak load).
- d) Maximum No. 2 fuel oil consumption shall not exceed 14,342 gal/hr/unit (at 59°F) or 97,238,760 gal/yr based on 59°F or the prorated consumption based on the tables in the application to construct these units.

(D) GE FRAME 7EA

- a) The maximum heat input of 1,144 MMBtu/hr/unit at 20°F (peak load).
- b) The maximum heat input of 1,029 MMBtu/hr/unit at 59°F (peak load).
- c) The maximum heat input of 932 MMBtu/hr/unit at 90°F (peak load).
- d) Maximum No. 2 fuel oil consumption shall not exceed 7,826 gal/hr/unit or 106,120,560 gal/yr based on 59°F or the prorated consumption based on the tables in the application to construct these units.

5. The capacity factor for these turbines shall be limited to 33% based on a weighted 12 month rolling maximum sulfur content of 0.2%. However, if the weighted rolling average sulfur content of the fuel oil is less than 0.2%, the capacity factor may be adjusted using the following table:

<u>Percent Average Sulfur Content</u>	<u>% Capacity Factor</u>
0.2 - 0.195	33.0
0.19 - 0.185	34.4
0.18 - 0.175	35.8
0.17 - 0.165	37.2
0.16 - or less	38.7

6. Any change in the method of operation, equipment or operating hours shall be submitted to DER's Bureau of Air Regulation.

7. Any other operating parameters established during compliance testing and/or inspection that will ensure the proper operation of this facility may be included in the operating permit.



PERMITTEE:  
Florida Power Corporation  
Intercession City Facility

Permit Number: AC 49-203114  
PSD-FL-180  
Expiration Date: December 31, 1994

**SPECIFIC CONDITIONS:**

Compliance Determination

8. Compliance with the NO<sub>x</sub>, SO<sub>2</sub>, CO, PM, PM<sub>10</sub>, and VOC standards shall be determined (on each unit while operating within 10% of the permitted maximum heat rate input) within 180 days of initial operation and annually thereafter, by the following reference methods as described in 40 CFR 60, Appendix A (July, 1991 version) and adopted by reference in F.A.C. Rule 17-2.700.

- Method 1. Sample and Velocity Traverses
- Method 2. Volumetric Flow Rate
- Method 3. Gas Analysis
- Method 5. Determination of Particulate Matter Emissions from Stationary Sources
- Method 9. Determination of the Opacity of the Emissions from Stationary Sources
- Method 8. Determination of the Sulfuric Acid of the Emissions from Stationary Sources
- Method 10. Determination of the Carbon Monoxide Emission from Stationary Sources
- Method 20. Determination of Nitrogen Oxides, Sulfur Dioxide, and Diluent Emissions from Stationary Gas Turbines
- Method 25A. Determination of the Volatile Organic Compounds Emissions from Stationary Sources

Other DER approved methods may be used for compliance testing after prior Departmental approval.

9. Method 5 must be performed on one combustion turbine (each type) to determine the initial compliance status of the unit. Thereafter, the opacity emissions test may be used unless 10% opacity is exceeded at peak load.

10. Compliance with the SO<sub>2</sub> emission limit can also be determined by calculations based on fuel analysis using ASTM D4292 for the sulfur content of liquid fuels.

11. Trace elements of Beryllium (Be) shall be tested during initial compliance test using EMTIC Interim Test Method. As an alternative, Method 104 may be used; or Be may be determined from fuel sample analysis using either Method 7090 or 7091, and sample extraction using Method 3040 as described in the EPA solid waste regulations SW 846.

PERMITTEE:  
Florida Power Corporation  
Intercession City Facility

Permit Number: AC 49-203114  
PSD-FL-180  
Expiration Date: December 31, 1994

**SPECIFIC CONDITIONS:**

12. Mercury (Hg) shall be tested during initial compliance test using EPA Method 101 (40 CFR 61, Appendix B) or fuel sampling analysis using methods acceptable to the Department.

13. During performance tests, to determine compliance with the proposed NO<sub>x</sub> standard, measured NO<sub>x</sub> emissions at 15 percent oxygen will be adjusted to ISO ambient atmospheric conditions by the following correction factor:

$$NO_x = (NO_x \text{ obs}) \left( \frac{P_{\text{ref}}}{P_{\text{obs}}} \right)^{0.5} e^{19 (H_{\text{obs}} - 0.00633)} \left( \frac{288^\circ\text{K}}{T_{\text{AMB}}} \right)^{1.53}$$

where:

NO<sub>x</sub> = Emissions of NO<sub>x</sub> at 15 percent oxygen and ISO standard ambient conditions.

NO<sub>x</sub> obs = Measured NO<sub>x</sub> emission at 15 percent oxygen, ppmv.

P<sub>ref</sub> = Reference combustor inlet absolute pressure at 101.3 kilopascals (1 atmosphere) ambient pressure.

P<sub>obs</sub> = Measured combustor inlet absolute pressure at test ambient pressure.

H<sub>obs</sub> = Specific humidity of ambient air at test.

e = Transcendental constant (2.718).

T<sub>AMB</sub> = Temperature of ambient air at test.

14. Test results will be the average of 3 valid runs. The Central District office will be notified at least 30 days in writing in advance of the compliance test(s) pursuant to 40 CFR 60.8. The sources shall operate between 90% and 100% of permitted capacity during the compliance test(s) as adjusted for ambient temperature. Compliance test results shall be submitted to the Central District office no later than 45 days after completion pursuant to F.A.C. Rule 17-2.700(8).

15. A continuous monitoring system shall be installed to monitor and record the fuel consumption on each unit. Water injection shall be utilized for NO<sub>x</sub> control. The water to fuel ratio at which compliance is achieved shall be incorporated into the operation permit and shall be continuously monitored. The system shall meet the requirements of 40 CFR Part 60, Subpart GG.

PERMITTEE:  
Florida Power Corporation  
Intercession City Facility

Permit Number: AC 49-203114  
PSD-FL-180  
Expiration Date: December 31, 1994

**SPECIFIC CONDITIONS:**

16. Sulfur, nitrogen content and lower heating value of the fuel being fired in the combustion turbines shall be based on a weighted 12 month rolling average from fuel delivery receipts. The records of fuel oil usage shall be kept by the company for a two-year period for regulatory agency inspection purposes. For sulfur dioxide, periods of excess emissions shall be reported if the fuel being fired in the gas turbine exceeds 0.2 percent.

Rule Requirements

17. This source shall comply with all applicable provisions of Chapter 403, Florida Statutes, Chapters 17-2 and 17-4, Florida Administrative Code and 40 CFR (July, 1990 version).

18. The sources shall comply with all requirements of 40 CFR 60, Subpart GG, and F.A.C. Rule 17-2.660(2)(a), Standards of Performance for Stationary Gas Turbines.

19. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting requirements and regulations (F.A.C. Rule 17-2.210(1)).

20. The sources shall comply with F.A.C. Rule 17-2.700, Stationary Point Source Emission Test Procedures.

21. If construction does not commence within 18 months of issuance of this permit, then the permittee shall obtain from DER a review and, if necessary, a modification of the control technology and allowable emissions for the unit(s) on which construction has not commenced (40 CFR 52.21(r)(2)).

22. Quarterly excess emission reports, in accordance with the July 1, 1991 version of 40 CFR 60.7 and 60.334 shall be submitted to DER's Central District office.

23. Literature on equipment selected shall be submitted as it becomes available. A CT-specific graph of the relationship between NOx emissions and steam injection and also another of ambient temperature and heat inputs to the CT shall be submitted to DER's Central District office and the Bureau of Air Regulation.

24. Stack sampling facilities shall be provided for each of the stacks.

25. Construction period fugitive dust emissions shall be minimized by covering or watering dust generation areas.

PERMITTEE:  
Florida Power Corporation  
Intercession City Facility

Permit Number: AC 49-203114  
PSD-FL-180  
Expiration Date: December 31, 1994

**SPECIFIC CONDITIONS:**

26. Pursuant to F.A.C. Rule 17-2.210(2), Air Operating Permits, the permittee is required to submit annual reports on the actual operating rates and emissions from this facility. These reports shall include, but are not limited to the following: sulfur and nitrogen contents and the lower heating value of the fuel being fired; fuel usage, hours of operation, air emissions limits, etc. Annual reports shall be sent to the Department's Central District office by March 1 of each calendar year.

27. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit (F.A.C. Rule 17-4.090).

28. An application for an operation permit must be submitted to the Central District office at least 90 days prior to the expiration date of this construction permit. To properly apply for an operation permit, the applicant shall submit the appropriate application form, fee, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit (F.A.C. Rules 17-4.055 and 17-4.220).

Issued this 17th day  
of August, 1992

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL REGULATION



Carol M. Browner  
Secretary

TABLE 1  
ALLOWABLE EMISSION LIMITS  
92.9 MW Simple Cycle GE Frame EA Combustion Turbine

Pollutant	Standard Oil Firing	Each Unit lb/hr <sup>(a)</sup>	Total 4 Units T/yr	Basis
NO <sub>x</sub>	42 ppmv at 15% oxygen-dry basis	182	1232 <sup>(a)</sup>	BACT
SO <sub>2</sub>	No. 2 fuel oil with 0.2% max. sulfur	222	1283 <sup>(c)</sup>	BACT
PM/PM <sub>10</sub>	0.01 lb/MMBtu	15	102 <sup>(b)</sup>	BACT
VOC	-	5	34 <sup>(b)</sup>	BACT
CO	25 ppm	54	366 <sup>(b)</sup>	BACT
Sulfuric Acid Mist	No. 2 fuel oil with 0.2% max. sulfur	18	106 <sup>(c)</sup>	BACT
Fluorines (FR)	-	3.34 x 10 <sup>-2</sup>	0.23 <sup>(b)</sup>	Application
Mercury (Hg)	3.0 x 10 <sup>-6</sup> lbs/MMBtu	3.09 x 10 <sup>-3</sup>	0.02 <sup>(b)</sup>	Application
Lead (Pb)	8.9 x 10 <sup>-6</sup> lbs/MMBtu	9.16 x 10 <sup>-3</sup>	0.06 <sup>(b)</sup>	Application
Inorganic Arsenic	4.2 x 10 <sup>-6</sup> lbs/MMBtu	4.32 x 10 <sup>-3</sup>	0.03 <sup>(b)</sup>	BACT
Beryllium (Be)	2.5 x 10 <sup>-6</sup> lbs/MMBtu	2.57 x 10 <sup>-3</sup>	0.02 <sup>(b)</sup>	BACT

(a) Emission rates based on 59°F and 15% O<sub>2</sub> at peak load.

(b) Equivalent to 3,390 hours per year at peak load (38.7% capacity factor) and 59°F.

(c) Total TPY for SO<sub>2</sub> assumes 33% capacity factor and fuel with a maximum sulfur content of 0.2%. Refer to Specific Condition No. 5 for listed capacity factors vs. sulfur content in oil.

TABLE 2  
ALLOWABLE EMISSION LIMITS  
185.5 MW Simple Cycle GE Frame FA Combustion Turbine

Pollutant	Standard Oil Firing	Each Unit lb/hr <sup>(a)</sup>	Total 2 Units T/yr	Basis
NO <sub>x</sub>	42 ppmv at 15% oxygen-dry basis	334	1132 <sup>(a)</sup>	BACT
SO <sub>2</sub>	No. 2 fuel oil with 0.2% max. sulfur	407	1176 <sup>(c)</sup>	BACT
PM/PM <sub>10</sub>	0.01 lb/MMBtu	17	58 <sup>(b)</sup>	BACT
VOC	-	9	31 <sup>(b)</sup>	BACT
CO	25 ppm	79	268 <sup>(b)</sup>	BACT
Sulfuric Acid Mist	No. 2 fuel oil with 0.2% max. sulfur	28	81 <sup>(c)</sup>	BACT
Fluorines (FR)	-	$6.13 \times 10^{-2}$	0.20 <sup>(b)</sup>	Application
Mercury (Hg)	$3.0 \times 10^{-6}$ lbs/MMBtu	$5.66 \times 10^{-3}$	0.02 <sup>(b)</sup>	Application
Lead (Pb)	$8.9 \times 10^{-6}$ lbs/MMBtu	$1.68 \times 10^{-2}$	0.06 <sup>(b)</sup>	Application
Inorganic Arsenic	$4.20 \times 10^{-6}$ lbs/MMBtu	$7.9 \times 10^{-3}$	0.02 <sup>(b)</sup>	BACT
Beryllium (Be)	$2.5 \times 10^{-6}$ lbs/MMBtu	$4.72 \times 10^{-3}$	0.02 <sup>(b)</sup>	BACT

(a) Emission rates based on 59°F and 15% O<sub>2</sub> at peak load.

(b) Equivalent to 3,390 hours per year at peak load (38.7% capacity factor) and 59°F.

(c) Total TPY for SO<sub>2</sub> assumes 33% capacity factor and fuel with a maximum sulfur content of 0.2%. Refer to Specific Condition No. 5 for listed capacity factors vs. sulfur content in oil.

Best Available Control Technology (BACT) Determination  
 Florida Power Corporation  
 Intercession City Facility  
 Osceola County

The applicant proposes to operate six No. 2 fuel oil fired simple cycle combustion turbines with an output power of 92.9 MW (4 turbines) and 185.5 MW (2 turbines) to be used for peaking power at their facility in Osceola County, Florida.

The applicant states that the maximum heat input will be 1,029 MMBtu/hr and 1,886 MMBtu/hr for each turbine type (Frame EA and Frame FA, respectively). The applicant has indicated the maximum annual tonnage of regulated pollutants based on sea level conditions at 59°F and 38.7% capacity (3,390 hours/year) to be as follows:

Pollutant	Potential Emissions (tons/yr)	PSD Significant Emission Rate (tons/yr)
NO <sub>x</sub>	2369	40
SO <sub>2</sub>	4326	40
H <sub>2</sub> SO <sub>4</sub> Mist	626	7
PM	159	25
PM <sub>10</sub>	159	15
CO	633	100
VOC	65	40
Be	0.034	0.0004
Hg	0.04	0.1
Pb	0.12	0.6
As	0.054	0

Florida Administrative Code Rule 17-2.500(2)(f)(3) requires a BACT review for all regulated pollutants emitted in an amount equal to or greater than the significant emission rates listed in the previous table.

Date of Receipt of a BACT Application

October 3, 1991

BACT Determination Requested by the Applicant

<u>Pollutant</u>	<u>Determination</u>
NO <sub>x</sub>	42 ppmvd @ 15% O <sub>2</sub>
SO <sub>2</sub> and H <sub>2</sub> SO <sub>4</sub>	Max 0.5% Sulfur No. 2 fuel oil
PM/PM <sub>10</sub>	Combustion Controls
CO	Combustion Controls
VOC	Combustion Controls
As, Be	Fuel Quality

## BACT Determination Procedure

In accordance with Florida Administrative Code Chapter 17-2, Air Pollution, this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account: energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that in making the BACT determination the Department shall give consideration to:

- (a) Any Environmental Protection Agency determination of Best Available Control Technology pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).
- (b) All scientific, engineering, and technical material and other information available to the Department.
- (c) The emission limiting standards or BACT determinations of any other state.
- (d) The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine for the emission source in question the most stringent control available for a similar or identical source or source category. If it is shown that this level of control is technically or economically infeasible for the source in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

## BACT Pollutants Analysis

### **Nitrogen Oxides (NO<sub>x</sub>)**

The applicant has stated that BACT for nitrogen oxides will be met by using wet injection necessary to limit emissions to 42 ppmvd corrected to 15% oxygen for No. 2 fuel oil firing.

A review of the EPA's BACT/LAER Clearinghouse indicates that the lowest NO<sub>x</sub> emission limit established to date for a combustion turbine is 4.5 ppmvd at 15% percent oxygen. This level of control was accomplished through the use of water injection and a selective catalytic reduction (SCR) system.

Selective catalytic reduction is a post-combustion method for



control of NO<sub>x</sub> emissions. The SCR process combines vaporized ammonia with NO<sub>x</sub> in the presence of a catalyst to form nitrogen and water. The vaporized ammonia is injected into the exhaust gases prior to passage through the catalyst bed. The SCR process can achieve up to 90% reduction of NO<sub>x</sub> with a new catalyst. As the catalyst ages, the maximum NO<sub>x</sub> reduction will decrease to approximately 86 percent.

The effect of exhaust gas temperature on NO<sub>x</sub> reduction depends on the specific catalyst formulation and reactor design. Generally, SCR units can be designed to achieve effective NO<sub>x</sub> control over a 100-300°F operating window within the bounds of 450-800°F, although recently developed zeolite-based catalysts are claimed to be capable of operating at temperatures as high as 950°.

Most commercial SCR systems operate over a temperature range of about 600-750°F. At levels above and below this window, the specific catalyst formulation will not be effective and NO<sub>x</sub> reduction will decrease. Operating at high temperatures can permanently damage the catalyst through sintering of surfaces.

Increased water vapor content in the exhaust gas (as would result from water or steam injection in the gas turbine combustor) can shift the operating temperature window of the SCR reactor to slightly higher levels.

The exhaust temperatures of the proposed CTs for the Intercession City site are expected to be in excess of 1,000°F. At temperatures of 1,000°F and above, the zeolite catalyst (reported to operate within -600°F to 950°F) will be irreparably damaged. Therefore, application of an SCR system using a zeolite catalyst on a simple-cycle operation is technically infeasible without exhaust gas cooling. Attemperation systems are neither commercially available nor have they been applied, even at a pilot stage, to SCR systems associated with simple-cycle CTs.

Consequently, the applicant has rejected using SCR because of technical infeasibility, economic and environmental impact. In addition, controlling NO<sub>x</sub> emissions with SCR, the applicant has identified the following limitations: (a) reduced power output, (b) ammonia slip, and (c) disposal of hazardous waste generated (spent catalyst). The applicant was unable to find similar combustion turbines firing fuel oil and equipped with SCR, and states several supporting reasons for their decision in Table 4-3 of the application.

Economic analysis review of an application for a similar combustion turbine, included levelized cost for SCR of \$2,190,000. Assuming that the lowered ammonia injection ratio strategy was used to control NO<sub>x</sub> emissions by 65%, the SCR would control 201 tons (.65 x 308 tons/year) for the 92.9 MW turbine and 367 tons (.65 x 566 tons/year). This reduction (201 and 367 tons/year) assumes an operating rate of 3,390 hours/year/unit. When this

reduction of  $\text{NO}_x$  is taken into consideration with the total annual cost of \$2,190,000, the cost per ton of controlling  $\text{NO}_x$  is \$10,890 and \$5,967 for the 92.9 MW and 185.5 MW units, respectively.

Several BACT determinations have established a 25% capacity factor as an operating limit due to the increase in nitrogen oxides emissions that results from the burning of oil as compared to natural gas. In some cases, turbines (using natural gas as a primary fuel) have been allowed to operate above the 25% capacity factor limitation on oil (generally 33%) provided that they use low  $\text{NO}_x$  combustors (42 ppmv on oil firing). Since the Intercession City facility is capable of limiting  $\text{NO}_x$  emissions to 42ppmv using wet injection and can only use oil, it is reasonable to allow the capacity factor to range from 33 to 38.7%. Hence, the technology proposed, wet injection, with a maximum capacity factor of 38.7% is accepted by the Department as BACT for  $\text{NO}_x$ .

#### Sulfur Dioxide( $\text{SO}_2$ ) and Sulfuric Acid Mist ( $\text{H}_2\text{SO}_4$ )

The applicant has stated that sulfur dioxide ( $\text{SO}_2$ ) and sulfuric acid mist ( $\text{H}_2\text{SO}_4$ ) emissions when firing fuel oil will be controlled by lowering the operating time to 3390 hour/year per unit and the fuel oil sulfur content to a maximum of 0.5 % by weight, and an average of 0.3%. This will result in an annual emission rate of 4,326 tons  $\text{SO}_2$ /year and 626 tons  $\text{H}_2\text{SO}_4$  mist per year.

In accordance with the "top down" BACT review approach, only two alternatives exist that would result in more stringent  $\text{SO}_2$  emissions. These include the use of a lower sulfur content fuel oil or the use of wet lime or limestone-based scrubbers, otherwise known as flue gas desulfurization (FGD).

In developing the NSPS for stationary gas turbines, EPA recognized that FGD technology was inappropriate to apply to these combustion units. EPA acknowledged in the preamble of the proposed NSPS that "Due to the high volumes of exhaust gases, the cost of flue gas desulfurization (FGD) to control  $\text{SO}_2$  emissions from stationary gas turbines is considered unreasonable."(23). EPA reinforced this point when, later on in the preamble, they stated that "FGD... would cost about two to three times as much as the gas turbine."(23). The economic impact of applying FGD today would be no different.

Furthermore, the application of FGD would have negative environmental and energy impacts. Sludge would be generated that would have to be disposed of properly, and there would be increased utility (electricity and water) costs associated with the operation of a FGD system. The capital cost alone of a system designed for 90% removal would require debt services cost of \$30,000+/tons  $\text{SO}_2$  removed. Finally, there is no information in the open literature to indicate that FGD has ever been applied to stationary gas turbines burning distillate oil.

The elimination of flue gas controls as a BACT option then leaves the use of low sulfur fuel oils as the next option to be investigated. Area available distillate fuel oil has a sulfur content in the range of 0.1% - 0.5% by weight. As already mentioned, several BACT determinations nationwide have established a 25% capacity factor as an operating time limit for turbines using gas as a primary fuel and oil as a supplemental fuel. Those facilities that have been permitted to operate above the 25% capacity factor limitation had a maximum sulfur content ranging from 0.20 to 0.25 percent.

The Intercession City facility's proposed simple cycle turbines will be allowed to operate from 33 to 37.8% capacity factor provided that the maximum sulfur content will not exceed 0.2%. This would result in a SO<sub>2</sub> and H<sub>2</sub>SO<sub>4</sub> mist reduction of 1867 tons/year [4326 (proposed) - 2459 (allowable)] and 439 tons/yr [626 (proposed) - 187 (allowable)] while operating at a 33% capacity factor.

The applicant's cost analysis presented showed that the cost effectiveness of using 0.2% sulfur maximum in the oil instead of 0.5% sulfur maximum is \$1,995/ton SO<sub>2</sub> removed. The Department believes that this cost of \$1,995/ton removed is reasonable as BACT for this proposed project.

#### **Carbon Monoxide (CO) and Volatile Organic Compounds (VOC)**

Combustion design is proposed as BACT as a result of the technical infeasibility and economic impact of using catalytic oxidation on fuel-oil-fired CTs. Catalytic oxidation has not been demonstrated on a continuous basis when using fuel oil and a cost effectiveness of \$7,099/ton removed will have an economic impact on this facility. The Department is in agreement with the applicant's proposal, therefore, BACT for this facility's gas turbines is combustion design as proposed.

#### **Particulate Matter (PM/PM<sub>10</sub>)**

The design of the CTs ensures that particulate emissions will be minimized by combustion control and the use of clean fuels. The maximum particulate emissions from the CTs when burning fuel oil will be lower concentration than that normally specified for fabric filter designs (0.01 grains/scf). The Department accepts the applicant's proposed control for particulate matter.

#### **Toxic Pollutants (As, Be)**

The Department agrees with the applicant's rationale that there are no feasible methods to control beryllium and arsenic except by limiting the inherent quality of the fuel.

Although the emissions of these toxic pollutants could be controlled by particulate control devices, such as a baghouse or

scrubber, the amount of emission reductions would not warrant the added expense. As this is the case, the Department does not believe that the BACT determination would be affected by the emissions of these pollutants.

BACT Determination by DER

Based on the information presented by the applicant and the studies conducted, the Department believes that the use of SCR for NO<sub>x</sub> control is not justifiable as BACT. Since these units are intended for peaking service and have operating hours limited to 3,390 hrs/yr/unit, wet injection for NO<sub>x</sub> emission control is justifiable as BACT for this facility. BACT for SO<sub>2</sub> and sulfuric acid mist is the burning of fuel oil with a maximum sulfur content of 0.2%. The economics of the 0.2% maximum sulfur limit will be revised at the time of startup (or actual fuel oil contract negotiation) and if warranted, a BACT determination revision.

As this is the case, the BACT emission limitations are established as follows for the 92.9 MW combustion turbines.

Pollutant	Emission Limit	Method of Control
NO <sub>x</sub>	42 ppmvd @ 15% O <sub>2</sub>	Wet Injection
SO <sub>2</sub>	222 lbs/hr/unit	Max. 0.2% sulfur content, by weight, No. 2 fuel oil
PM and PM <sub>10</sub>	15 lbs/hr/unit	Combustion
CO	54 lbs/hr/unit	Combustion
VOC	5 lbs/hr/unit	Combustion
Arsenic	4.32 x 10 <sup>-3</sup> lbs/hr/unit	Fuel Quality
Beryllium	2.57 x 10 <sup>-3</sup> lbs/hr/unit	Fuel Quality
H <sub>2</sub> SO <sub>4</sub>	18 lbs/hr/unit	Max. 0.2% sulfur content, by weight, No. 2 fuel oil

and as follows for the 185.5 MW combustion turbines:

Pollutant	Emission Limit	Method of Control
NO <sub>x</sub>	42 ppmvd @ 15% O <sub>2</sub>	Wet Injection
SO <sub>2</sub>	407 lbs/hr/unit	Max. 0.2% sulfur content, by weight, No. 2 fuel oil

PM and PM <sub>10</sub>	17 lbs/hr/unit	Combustion
CO	79 lbs/hr/unit	Combustion
VOC	9 lbs/hr/unit	Combustion
Arsenic	7.9 x 10 <sup>-3</sup> lbs/hr/unit	Fuel Quality
Beryllium	4.7 x 10 <sup>-3</sup> lbs/hr/unit	Fuel Quality
H <sub>2</sub> SO <sub>4</sub>	28 lbs/hr/unit	Max 0.2% sulfur content, by weight, No. 2 fuel oil

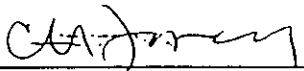
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Details of the Analysis May be Obtained by Contacting:

Preston Lewis, P.E., Permit Supervisor  
 Department of Environmental Regulation  
 Bureau of Air Regulation  
 Twin Towers Office Building  
 2600 Blair Stone Road  
 Tallahassee, Florida 32399-2400

Recommended by:

Approved by:



C. H. Fancy, P.E., Chief  
 Bureau of Air Regulation



Carol M. Browner, Secretary  
 Dept. of Environmental Regulation

August 17 1992  
 Date

August 17 1992  
 Date

Emissions Unit Information Section 1 of 2**III. EMISSIONS UNIT INFORMATION**

A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

**A. GENERAL EMISSIONS UNIT INFORMATION**

This subsection of the Application for Air Permit form provides general information on the emissions unit addressed in this Emissions Unit Information Section, including information on the type, control equipment, operating capacity, and operating schedule of the emissions unit..

**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, an individually-regulated emission point (stack or vent) serving a single process or production unit, or activity, which also has other individually-regulated emission points.
- This Emissions Unit Information Section addresses, as a single emissions unit, a collectively-regulated 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.

**Emissions Unit Description and Status**

1. Description of Emissions Unit Addressed in This Section: <b>Combustion turbine peaking units 7, 8, 9, and 10. These units are identical.</b>		
2. ARMS Identification Number: <input type="checkbox"/> No Corresponding ID <input type="checkbox"/> Unknown <b>007, 008, 009, 010</b>		
3. Emissions Unit Status Code: <b>A</b>	4. Acid Rain Unit? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. Emissions Unit Major Group SIC Code: <b>49</b>
6. Initial Startup Date (DD-MON-YYYY): <b>1 Nov 1992</b>		
7. Long-term Reserve Shutdown Date (DD-MON-YYYY):		
8. Package Unit: Manufacturer: <b>General Electric</b>	Model Number: <b>PG 7111EA</b>	
9. Generator Nameplate Rating:	<b>96.3</b>	<b>MW</b>
10. Incinerator Information: Dwell Temperature: °F Dwell Time: seconds Incinerator Afterburner Temperature: °F		
11. Emissions Unit Comment: <b>The combustion turbines currently burn distillate oil. This application is for installation of natural gas firing. Generator name plate rating at ISO conditions.</b>		

**Emissions Unit Control Equipment Information**

**A.**

<p>1. Description:</p> <p><b>Water injection</b></p> <p>2. Control Device or Method Code: <b>028</b></p>
--

**B.**

<p>1. Description:</p> <p>2. Control Device or Method Code:</p>
---

**C.**

<p>1. Description:</p> <p>2. Control Device or Method Code:</p>
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**Emissions Unit Operating Capacity**

1. Maximum Heat Input Rate:	<b>1,159.3</b> mmBtu/hr
2. Maximum Incineration Rate:	
	lbs/hr    tons/day
3. Maximum Process or Throughput Rate:	
4. Maximum Production Rate:	
5. Operating Capacity Comment:	<b>Maximum heat input rate based on permit limit at 20 °F and low heating value (LVH).</b>

**Emissions Unit Operating Schedule**

1. Requested Maximum Operating Schedule:	
	hours/day,    days/week,
	weeks/yr <b>8760</b> hours/yr

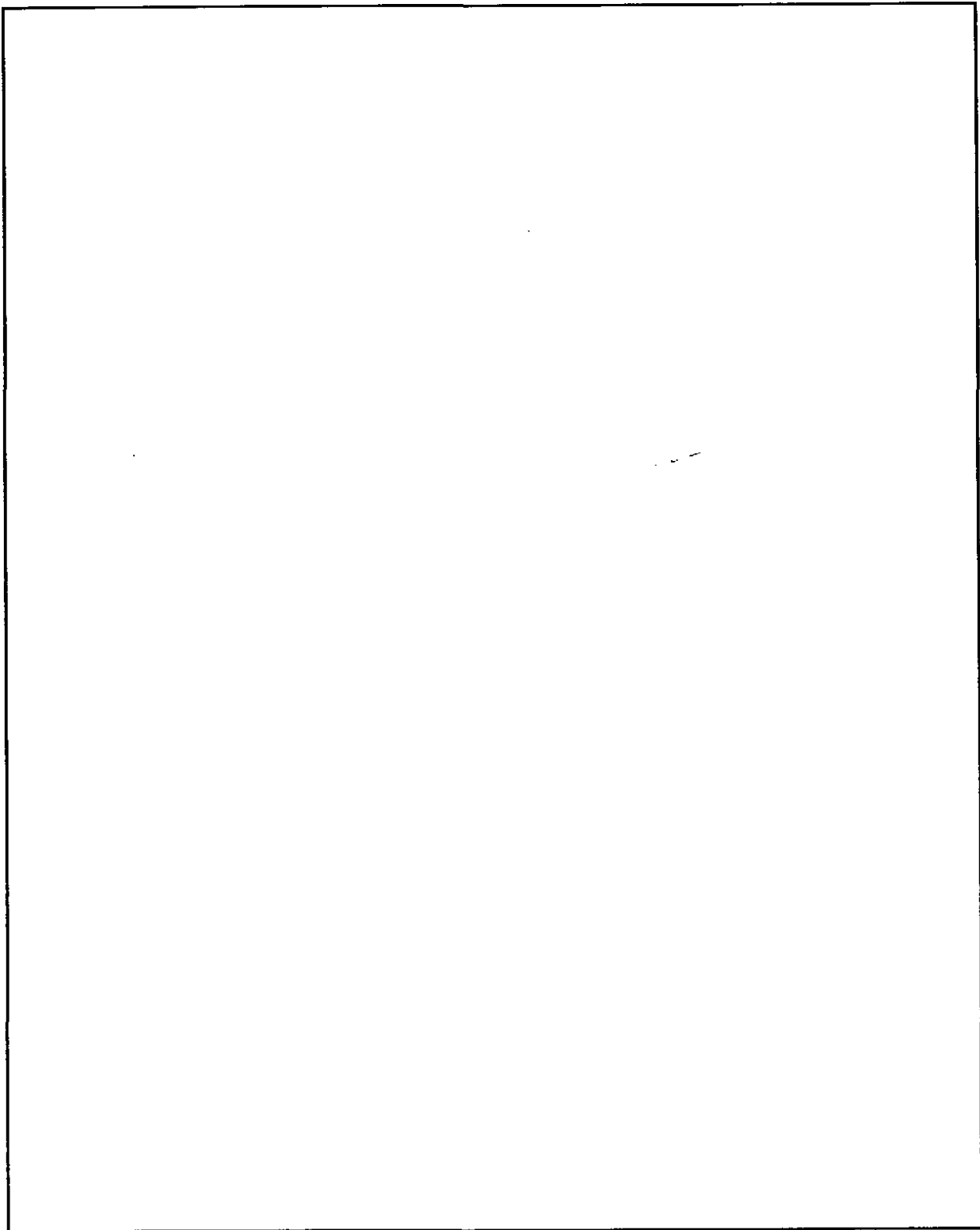
**B. EMISSIONS UNIT REGULATIONS**

Depending on the application category, this subsection of the Application for Air Permit form provides either a brief analysis or detailed listing of all federal, state, and local regulations applicable to the emissions unit addressed in this Emissions Unit Information Section.

**Rule Applicability Analysis** (Required for Category II Applications and Category III applications involving non Title-V sources. See Instructions.)

**Not Applicable**

**List of Applicable Regulations** (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.) **See Attached**



Emission Unit 001 Combustion Turbine Applicable Requirement List

<b>Chapter 210 Stationary Sources -- General Requirements</b>	
62-210.300	Permits Required.
	(1) Air Construction Permits.
62-210.600	Enhanced Monitoring (Reserved).
62-210.650	Circumvention.
62-210.700	Excess Emissions; (1).

<b>Chapter 296 Stationary Sources -- Emission Standards</b>	
62-296.800	Standards of Performance for New Stationary Sources (NSPS).
	(3) General Provisions Adopted.
	(a) The following Standards of Performance for New Stationary Sources contained in 40 CFR 60, revised as of July 1, 1993, or later as specifically indicated.
	37. 40 CFR 60.330 Subpart GG, Stationary Gas Turbines.
	(4) Appendices Adopted. The following appendices of 40 CFR Part 60, revised as of July 1, 1993 or later as specifically indicated, are adopted and incorporated by reference.
	(a) 40 CFR 60 Appendix A, Test Methods, are adopted by reference.
	(b) 40 CFR 60 Appendix B, Performance Specifications.
	(e) 40 CFR 60 Appendix F, Quality Assurance Procedures.

<b>Chapter 297 Stationary Sources -- Emission Monitoring</b>	
62-297.310	General Test Requirements.
62-297.330	Applicable Test Procedures.
62-297.340	Frequency of Compliance Tests.
	(1) General.
62-297.345	Stack Sampling Facilities Provided by the Owner of an Emissions Unit.
	(1) Permanent Test Facilities.
	(3) Test Facilities.

<b>Chapter 297 Stationary Sources -- Emission Monitoring (cont'd)</b>	
62-297.350	Determination of Process Variables.
62-297.401	EPA Test Procedures
	(20) EPA Method 20 - Determination of Nitrogen Oxides, Sulfur Dioxide, and Diluent Emissions from Stationary Gas Turbines

<b>Part 60 - EPA Regulations on Standards of Performance for New Stationary Sources</b>	
<b>Subpart A — General Provisions</b>	
60.7	Notification and record keeping.
60.8	Performance tests.
60.11	Compliance with standards and maintenance requirements.
60.12	Circumvention.
60.13	Monitoring requirements.
<b>Subpart GG — Standards of Performance for Stationary Gas Turbines</b>	
60.332	Standard for nitrogen oxides.
60.333	Standard for sulfur dioxide.
60.334	Monitoring of operations.
60.335	Test methods and procedures.

<b>Part 72 - EPA Acid Rain Program Permits</b>	
<b>Subpart A — General Provisions</b>	
72.6	Applicability.
72.9	Standard Requirements.
<b>Subpart B — Designated Representative</b>	
72.20	Authorization and Responsibilities of the Designated Representative.
72.21	Submissions.
72.22	Alternate Designated Representative.
72.23	Changing the Designated Representative, Alternate Designated Representative; Changes in the Owners and Operators.
72.24	Certificate of Representation.
72.25	Objections.
<b>Subpart C — Acid Rain Applications</b>	
72.30	Requirements to Apply.
72.31	Information Requirements for Acid Rain Permit Applications.
72.32	Permit Applications Shield and Binding Effect of Permit Application.
72.33	Identification of Dispatch System.
<b>Subpart E — Acid Rain Permit Contents</b>	
72.50	General.
72.51	Permit Shield.
<b>Subpart H — Permit Revisions</b>	
72.80	General.
72.81	Permit Modifications.
72.82	Fast-Track Modifications.
72.83	Administrative Permit Amendment.
72.84	Automatic Permit Amendment.
72.85	Permit Reopenings.
<b>Subpart I — Compliance Certification</b>	
72.90	Annual Compliance Certification Report.

**C. EMISSION POINT (STACK/VENT) INFORMATION**

This subsection of the application for Air Permit form provides information about the emission point associated with the emissions unit addressed in this Emissions Unit Information Section. An emission point is typically a stack or vent but can be any identifiable location at which air pollutants, including fugitive emissions, are discharged into the atmosphere.

**Emission Point Description and Type**

<p>1. Identification of Point on Plot Plan or Flow Diagram:</p> <p style="margin-left: 40px;">See Attachment IC-FD-3</p>
<p>2. Emission Point Type Code:</p> <p style="margin-left: 40px;"> <input checked="" type="checkbox"/> 1                      <input type="checkbox"/> 2                      <input type="checkbox"/> 3                      <input type="checkbox"/> 4             </p>
<p>3. Descriptions of Emissions Points Comprising this Emissions Unit:</p> <p style="margin-left: 40px;">Combustion turbine gases exhaust through a single stack per turbine</p>
<p>4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:</p>    
<p>5. Discharge Type Code:</p> <p style="margin-left: 40px;"> <input type="checkbox"/> D                      <input type="checkbox"/> F                      <input type="checkbox"/> H                      <input type="checkbox"/> P  <input type="checkbox"/> R                      <input checked="" type="checkbox"/> V                      <input type="checkbox"/> W             </p>

6. Stack Height:	50	ft
7. Exit Diameter:	13.75	ft
8. Exit Temperature:	1,050	°F
9. Actual Volumetric Flow Rate:	1,586,172	acfm
10. Percent Water Vapor:		%
11. Maximum Dry Standard Flow Rate:		dscfm
12. Nonstack Emission Point Height:		ft
13. Emission Point UTM Coordinates:		
Zone:	East (km):	North (km):
14. Emission Point Comment:		
Exit temperature and flow rate given for ambient temperature of 59 °F.		



**D. SEGMENT (PROCESS/FUEL) INFORMATION**

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of segment data (Fields 1-10) must be completed for each segment required to be reported and for each alternative operating method or mode (emissions trading scenario) under Chapter 62-213, F.A.C., for which the maximum hourly or annual segment-related rate would vary. A segment is a material handling, process, fuel burning, volatile organic liquid storage, production, or other such operation to which emissions of the unit are directly related. See instructions for further details on this subsection of the Application for Air Permit.

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

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode): <b>Natural Gas</b>	
2. Source Classification Code (SCC): <b>20100201</b>	
3. SCC Units: <b>Million cubic feet</b>	
4. Maximum Hourly Rate: <b>1.159</b>	5. Maximum Annual Rate: <b>5,844.2</b>
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur: <b>0.003</b>	8. Maximum Percent Ash: <b>0</b>
9. Million Btu per SCC Unit: <b>1,000</b>	
10. Segment Comment: <b>Maximum hourly and annual rates for one turbine. Annual rate based on 5,576 hours (to be equivalent to oil firing) (See Attachment IC-EUI-10). Million Btu per SCC unit based on low heating value (LHV).</b>	

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

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

**E. POLLUTANT INFORMATION**

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

**Pollutant Potential/Estimated Emissions:** Pollutant  1  of  6

1. Pollutant Emitted:	<b>SO2</b>	
2. Total Percent Efficiency of Control:	%	
3. Primary Control Device Code:		
4. Secondary Control Device Code:		
5. Potential Emissions:	<b>3.31 lbs/hr</b>	<b>8.35 tons/yr</b>
6. Synthetically Limited?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
7. Range of Estimated Fugitive/Other Emissions:	[ ] 1    [ ] 2    [ ] 3    _____ to _____ tons/yr	
8. Emission Factor:	<b>1 grain/100 CF</b>	
Reference:	<b>Maximum sulfur content from fuel analysis</b>	
9. Emissions Method Code (check one):	[ ] 1 <input checked="" type="checkbox"/> 2    [ ] 3    [ ] 4    [ ] 5	
10. Calculation of Emissions:	<b>See Attachment IC1-EUE-10</b>	
11. Pollutant Potential/Estimated Emissions Comment:	<b>Maximum hourly emissions based on ambient temperature of 20 °F. Annual emissions based on 59 °F and 5,576 hours (See Attachment IC1-EUI-10). Potential emissions based on emissions from a single CT.</b>	

**Emissions Unit Information Section  1  of  2   
Allowable Emissions (Pollutant identification on front page)**

**A.**

1. Basis for Allowable Emissions Code: Other		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
1	grain/100 CF	Natural Gas
4. Equivalent Allowable Emissions:	3.31 lbs/hr	8.35 tons/yr
5. Method of Compliance: Fuel analysis from supplier		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

**B.**

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

**E. POLLUTANT INFORMATION**

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

**Pollutant Potential/Estimated Emissions:** Pollutant 2 of 6

1. Pollutant Emitted:	<b>NOX</b>	
2. Total Percent Efficiency of Control:	<b>80</b>	<b>%</b>
3. Primary Control Device Code:	<b>028</b>	
4. Secondary Control Device Code:		
5. Potential Emissions:	<b>118 lbs/hr</b>	<b>297.9 tons/yr</b>
6. Synthetically Limited?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
7. Range of Estimated Fugitive/Other Emissions:		
	[ ] 1    [ ] 2    [ ] 3    _____ to _____ tons/yr	
8. Emission Factor:	<b>25 ppmvd</b>	<b>@ 15% O2</b>
Reference:	<b>Proposed Limit</b>	
9. Emissions Method Code (check one):		
	[ ] 1 <input checked="" type="checkbox"/> 2    [ ] 3    [ ] 4    [ ] 5	
10. Calculation of Emissions:		
	<b>See Attachment IC1-EUE-10</b>	
11. Pollutant Potential/Estimated Emissions Comment:		
	<b>1. Maximum hourly emissions based on ambient temperature of 20 °F. Annual emissions based on 59 °F and 5,576 hours. Potential emissions based on emissions from a single CT. See Attachment IC-EUI-10.</b>	

Emissions Unit Information Section 1 of 2  
**Allowable Emissions (Pollutant identification on front page)**

CTs #7,8,9&10

**A.**

1. Basis for Allowable Emissions Code: <b>Other</b>		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units: <b>25 ppmvd @15% O2</b>		
4. Equivalent Allowable Emissions:	<b>118 lbs/hr</b>	<b>297.9 tons/yr</b>
5. Method of Compliance: <b>Annual compliance test - EPA Method 20</b>		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): <b>See Pollutant Potential/Estimated Emissions, Comment No. 11</b>		

**B.**

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

**E. POLLUTANT INFORMATION**

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

**Pollutant Potential/Estimated Emissions:** Pollutant 3 of 6

1. Pollutant Emitted: <b>PM</b>		
2. Total Percent Efficiency of Control:		<b>%</b>
3. Primary Control Device Code:		
4. Secondary Control Device Code:		
5. Potential Emissions:	<b>7.5 lbs/hr</b>	<b>20.9 tons/yr</b>
6. Synthetically Limited? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
7. Range of Estimated Fugitive/Other Emissions:		
[ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr		
8. Emission Factor:		<b>7.5 lb/hr</b>
Reference: <b>Vendor</b>		
9. Emissions Method Code (check one):		
[ ] 1 <input checked="" type="checkbox"/> 2 [ ] 3 [ ] 4 [ ] 5		
10. Calculation of Emissions:		
<b>See Attachment IC1-EUE-10</b>		
11. Pollutant Potential/Estimated Emissions Comment:		
<b>1. Maximum hourly emissions based on ambient temperature at 20 °F. Annual emissions based on 59 °F and 5,576 hours (See Attachment IC1-EUI-10). Potential emissions for a single CT.</b>		

A.

1. Basis for Allowable Emissions Code: <b>Other</b>		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units: <b>7.5 lb/hr</b>		
4. Equivalent Allowable Emissions:	<b>7.5 lbs/hr</b>	<b>20.9 tons/yr</b>
5. Method of Compliance: <b>VE; EPA Method 9</b>		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): <b>If VE Emissions less than 10 percent then stack test is not required.</b>		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		



**E. POLLUTANT INFORMATION**

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

**Pollutant Potential/Estimated Emissions:** Pollutant 4 of 6

1. Pollutant Emitted:	CO	
2. Total Percent Efficiency of Control:	%	
3. Primary Control Device Code:		
4. Secondary Control Device Code:		
5. Potential Emissions:	23.4 lbs/hr	59.5 tons/yr
6. Synthetically Limited?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
7. Range of Estimated Fugitive/Other Emissions:	[ ] 1    [ ] 2    [ ] 3    _____ to _____ tons/yr	
8. Emission Factor:	10 ppmvd	
Reference:	Proposed limit	
9. Emissions Method Code (check one):	[ ] 1 <input checked="" type="checkbox"/> 2    [ ] 3    [ ] 4    [ ] 5	
10. Calculation of Emissions:	See Attachment IC1-EUE-10	
11. Pollutant Potential/Estimated Emissions Comment:	1. Maximum hourly emissions based on ambient temperature of 20 °F. Annual emissions based on 59 °F and 5,576 hours (See Attachment IC1-EUI-10). Potential emissions based on each CT.	

Emissions Unit Information Section 1 of 2  
**Allowable Emissions (Pollutant identification on front page)**

CTs #7,8,9&10

A.

1. Basis for Allowable Emissions Code: <b>Other</b>		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units: <b>10 ppmvd</b>		
4. Equivalent Allowable Emissions:	<b>23.4 lbs/hr</b>	<b>59.5 tons/yr</b>
5. Method of Compliance: <b>Annual Compliance Test; EPA Method 10</b>		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): <b>See Pollutant Potential/Estimated Emissions, Comment No. 11</b>		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

**E. POLLUTANT INFORMATION**

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

**Pollutant Potential/Estimated Emissions:** Pollutant 5 of 6

1. Pollutant Emitted:	<b>VOC</b>	
2. Total Percent Efficiency of Control:	%	
3. Primary Control Device Code:		
4. Secondary Control Device Code:		
5. Potential Emissions:	<b>3.3 lbs/hr</b>	<b>8.5 tons/yr</b>
6. Synthetically Limited?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
7. Range of Estimated Fugitive/Other Emissions:	[ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr	
8. Emission Factor:	<b>2.5 ppmvd</b>	
Reference:	<b>Proposed limit</b>	
9. Emissions Method Code (check one):	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	
10. Calculation of Emissions:	<b>See Attachment IC1-EUE-10</b>	
11. Pollutant Potential/Estimated Emissions Comment:	<p><b>1. Maximum hourly emissions based on ambient temperature at 20 °F. Annual emissions based on 59 °F and 5,576 hours (see Attachment IC1-EUI-10) Potential emissions for a single CT.</b></p>	

Emissions Unit Information Section 1 of 2  
**Allowable Emissions (Pollutant identification on front page)**

CTs #7,8,9&10

A.

1. Basis for Allowable Emissions Code: <b>Permit</b>		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	<b>3.3 lbs/hr</b>	<b>8.5 tons/yr</b>
5. Method of Compliance: <b>Annual compliance test; EPA Method 25A</b>		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): <b>See Pollutant Potential/Estimated Emissions, Comment No. 11</b>		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

**E. POLLUTANT INFORMATION**

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

**Pollutant Potential/Estimated Emissions:** Pollutant  6  of  6

1. Pollutant Emitted:	<b>H2SO4</b>	
2. Total Percent Efficiency of Control:	%	
3. Primary Control Device Code:		
4. Secondary Control Device Code:		
5. Potential Emissions:	<b>0.49 lbs/hr</b>	<b>1.22 tons/yr</b>
6. Synthetically Limited?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
7. Range of Estimated Fugitive/Other Emissions:	[ ] 1    [ ] 2    [ ] 3    _____ to _____ tons/yr	
8. Emission Factor:	<b>1 gr sulfur/100CF and 10% conversion to H2SO4</b>	
Reference:	<b>Gas Pipeline Data</b>	
9. Emissions Method Code (check one):	[ ] 1 <input checked="" type="checkbox"/> 2    [ ] 3    [ ] 4    [ ] 5	
10. Calculation of Emissions:	<b>See Attachment IC1-EUE-10</b>	
11. Pollutant Potential/Estimated Emissions Comment:	<p><b>1. Maximum hourly emissions based on 1 grain sulfur/100 CF and ambient temperature of 20 °F. Annual emissions based on 59 °F, and 5,576 hours (See Attachment IC1-EUI-10).</b></p>	

Emissions Unit Information Section 1 of 2  
Allowable Emissions (Pollutant identification on front page)

CTs #7,8,9&10

A.

1. Basis for Allowable Emissions Code: NA		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

**F. VISIBLE EMISSIONS INFORMATION**

This subsection of the Application for Air Permit form must be completed for only those emissions units which are subject to a visible emissions limitation. The intent of this subsection of the form is to identify each activity associated with the emissions unit addressed in this section for which a separate opacity limitation would be applicable. Visible emission subtype codes for each such activity are listed in the instructions for Field 1. Most emissions units will be subject to a "subtype VE" limit only.

**Visible Emissions Limitations:** Visible Emissions Limitation 1 of 1

1.	Visible Emissions Subtype:	<b>VE</b>
2.	Basis for Allowable Opacity:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
3.	Requested Allowable Opacity	
	Normal Conditions:	<b>10 %</b> Exceptional Conditions: <b>20 %</b>
	Maximum Period of Excess Opacity Allowed:	min/hour
4.	Method of Compliance:	<b>EPA Method 9</b>
5.	Visible Emissions Comment:	<b>Visible emission limit under normal conditions at full load; exceptional conditions are specified for other loads. Annual Compliance Test, EPA Method 9.</b>

**Visible Emissions Limitations:** Visible Emissions Limitation      of 1

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

**Visible Emissions Limitations:** Visible Emissions Limitation      of 1

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



**G. CONTINUOUS MONITOR INFORMATION**

This subsection of the Application for Air Permit form must be completed for only those emissions units which are required by rule or permit to install and operate one or more continuous emission, opacity, flow, or other type monitors. A separate set of continuous monitor information (fields 1-6) must be completed for each monitoring system required.

**Continuous Monitoring System** Continuous Monitor 1 of 1

1. Parameter Code:	<b>NOX</b>
2. CMS Requirement:	<input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
3. Monitor Information:	
Monitor Manufacturer:	
Model Number:	Serial Number:
4. Installation Date (DD-MON-YYYY):	
5. Performance Specification Test Date (DD-MON-YYYY):	
6. Continuous Monitor Comment:	<b>Continuous monitoring of the water to fuel ratio is required pursuant to 40 CFR 60.334. This monitoring is incorporated into the CT control system and recorded on an hourly basis.</b>



**H. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION**

This subsection of the Application for Air Permit form must be completed for all applications, not just those undergoing prevention-of-significant-deterioration (PSD) review pursuant to Rule 62-212.400, F.A.C. The intent of this subsection is to make a preliminary determination as to whether the emissions unit addressed in this Emissions Unit Information Section consumes PSD increment. PSD increment is consumed (or expanded) as a result of emission increases (decreases) occurring after pollutant-specific baseline dates. Pollutants for which baseline dates have been established are sulfur dioxide, particulate matter, and nitrogen dioxide.

**PSD Increment Consumption Determination**

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

If the emissions unit addressed in this section emits particulate matter or sulfur dioxide, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for particulate matter or sulfur dioxide. Check the first statement, if any, that applies and skip remaining statements.

- [ X ] The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.
- [ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and the emissions unit consumes increment.
- [ ] The facility addressed in this application is classified as an EPA major source and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and the emissions unit consumes increment.
- [ ] For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- [ ] None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

2. Increment Consuming for Nitrogen Dioxide?

If the emissions unit addressed in this section emits nitrogen oxides, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for nitrogen dioxide. Check first statement, if any, that applies and skip remaining statements.

- The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.
- The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and the source consumes increment.
- The facility addressed in this application is classified as an EPA major source and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and the source consumes increment.
- For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and the emissions unit consumes increment.
- None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

3.	Increment Consuming/Expanding Code:			
	PM	<input checked="" type="checkbox"/> C	<input type="checkbox"/> E	<input type="checkbox"/> Unknown
	SO <sub>2</sub>	<input checked="" type="checkbox"/> C	<input type="checkbox"/> E	<input type="checkbox"/> Unknown
	NO <sub>2</sub>	<input checked="" type="checkbox"/> C	<input type="checkbox"/> E	<input type="checkbox"/> Unknown
4.	Baseline Emissions:			
	PM	lbs/hr		tons/yr
	SO <sub>2</sub>	lbs/hr		tons/yr
	NO <sub>2</sub>			tons/yr
5.	PSD Comment:			
	<b>See Attachment IC1-EUE-10</b>			

**I. EMISSIONS UNIT SUPPLEMENTAL INFORMATION**

This subsection of the Application for Air Permit form provides supplemental information related to the emissions unit addressed in this Emissions Unit Information Section. Supplemental information must be submitted as an attachment to each copy of the form, in hard-copy or computer-readable form.

**Supplemental Requirements for All Applications**

1. Process Flow Diagram	<input checked="" type="checkbox"/> Attached, Document ID: <u>IC1-EUI-1</u>	<input type="checkbox"/> Waiver Requested
	<input type="checkbox"/> Not Applicable	
2. Fuel Analysis or Specification	<input checked="" type="checkbox"/> Attached, Document ID: <u>IC1-EUI-2</u>	<input type="checkbox"/> Waiver Requested
	<input type="checkbox"/> Not Applicable	
3. Detailed Description of Control Equipment	<input type="checkbox"/> Attached, Document ID: _____	<input type="checkbox"/> Waiver Requested
	<input checked="" type="checkbox"/> Not Applicable	
4. Description of Stack Sampling Facilities	<input checked="" type="checkbox"/> Attached, Document ID: <u>IC1-EUI-4</u>	<input type="checkbox"/> Waiver Requested
	<input type="checkbox"/> Not Applicable	
5. Compliance Test Report	<input type="checkbox"/> Attached, Document ID: _____	<input checked="" type="checkbox"/> Not Applicable
	<input type="checkbox"/> Previously Submitted, Date: _____	
6. Procedures for Startup and Shutdown	<input type="checkbox"/> Attached, Document ID: _____	<input checked="" type="checkbox"/> Not Applicable
7. Operation and Maintenance Plan	<input type="checkbox"/> Attached, Document ID: _____	<input checked="" type="checkbox"/> Not Applicable
8. Supplemental Information for Construction Permit Application	<input type="checkbox"/> Attached, Document ID: _____	<input checked="" type="checkbox"/> Not Applicable
9. Other Information Required by Rule or Statute	<input type="checkbox"/> Attached, Document ID: _____	<input checked="" type="checkbox"/> Not Applicable

**Additional Supplemental Requirements for Category I Applications Only**

10. Alternative Methods of Operation <input checked="" type="checkbox"/> Attached, Document ID: <u>IC1-EUI-10</u> <input type="checkbox"/> Not Applicable
11. Alternative Modes of Operation (Emissions Trading) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
12. Enhanced Monitoring Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
13. Identification of Additional Applicable Requirements <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
14. Acid Rain Permit Application  <input type="checkbox"/> Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID: _____  <input type="checkbox"/> Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID: _____  <input type="checkbox"/> New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID: _____  <input type="checkbox"/> Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID: _____  <input checked="" type="checkbox"/> Not Applicable

**IC1-EUE-10**

**CALCULATION OF EMISSIONS (METHODS)**

Table NG-GE1. Design Information and Stack Parameters for Intercession City, Simple Cycle-  
GE PG7111(EA), Quiet Combustor, Natural Gas, Peak Load

Data	Natural Gas 20 °F	Natural Gas 59 °F	Natural Gas 90 °F
<b>General</b>			
Power (kW)	108,140.0	96,250.0	86,260.0
Estimated Heat Rate (Btu/kwh, LHV)	10,720.0	10,890.0	11,070.0
Heat Input (MMBtu/hr, LHV)	1,159.3	1,048.2	954.9
Water Flow (lb/hr)	62,750	56,480	46,760
Hours of Operation	5,576	5,576	5,576
<b>CT Exhaust Flow</b>			
Mass Flow (lb/hr)	2,641,000	2,418,000	2,230,000
Temperature (oF)	1,023	1,050	1,072
Moisture (% Vol.)	11.17	11.73	12.96
Oxygen (% Vol.)	12.12	12.10	11.96
Molecular Weight	28.07	28.00	27.86
<b>Natural Gas Consumption (lb/hr) = Heat Input (MMBtu/hr) x 1,000,000 Btu/MMBtu ÷ Fuel Heat Content, LHV (Btu/lb)</b>			
<b>(cf/hr) = Heat Input (MMBtu/hr) x 1,000,000 Btu/MMBtu ÷ Fuel Heat Content, LHV (Btu/cf)</b>			
Heat Input (MMBtu/hr, LHV)	1,159.3	1,048.2	954.9
Heat Content (Btu/lb, LHV)	21,515	21,515	21,515
Natural Gas (lb/hr)	53,882	48,718	44,383
Heat Content, LHV (Btu/cf)	1,000	1,000	1,000
Natural Gas (cf/hr)	1,159,261	1,048,163	954,898
(million cf/yr)	6,463.7	5,844.2	5,324.2
<b>Volume Flow (acfm) = [(Mass Flow (lb/hr) x 1,545 x (Temp. (°F) + 460°F)] ÷ [Molecular weight x 2116.8] ÷ 60 min/hr</b>			
Mass Flow (lb/hr)	2,641,000	2,418,000	2,230,000
Temperature (°F)	1,023	1,050	1,072
Molecular Weight	28.07	28.00	27.86
Volume Flow (acfm)	1,697,479	1,586,172	1,491,454
<b>Volume Flow (dscfm) = [(Mass Flow (lb/hr) x 1,545 x (68°F + 460°F)] ÷ [Molecular weight x 2116.8] ÷ 60 min/hr</b>			
<b>[(1 - Moisture(%)/100)]</b>			
Mass Flow (lb/hr)	2,641,000	2,418,000	2,230,000
Temperature (°F)	68	68	68
Molecular Weight	28.07	28.00	27.86
Moisture (% Vol.)	11.17	11.73	12.96
Volume Flow (dscfm)	536,855	489,576	447,408
<b>CT Stack Data</b>			
Stack Height (ft)	50	50	50
Diameter (ft)	13.8	13.8	13.8
<b>Velocity (ft/sec) = Volume flow (acfm) from CT ÷ [((diameter)<sup>2</sup> ÷ 4) x 3.14159] ÷ 60 sec/min</b>			
Volume Flow (acfm) from CT	1,697,479	1,586,172	1,491,454
Diameter (ft)	13.8	13.8	13.8
Velocity (ft/sec)	189.1	176.7	166.2
[Velocity (ft/sec) w/o 5% flow margin]	180.1	168.3	158.3

Note: Universal gas constant = 1,545 ft-lb(force)/°R; atmospheric pressure = 2,116.8 lb(force)/ft<sup>2</sup>

Source: GE, 1995.



Table NG-GE2. Maximum Emissions for Criteria Pollutants for Intercession City, Simple Cycle-  
GE PG7111(EA), Quiet Combustor, Natural Gas, Peak Load

Pollutant	Natural Gas 20 °F	Natural Gas 59 °F	Natural Gas 90 °F
Hours of Operation	5,576	5,576	5,576
<b>Particulate (lb/hr) = Emission rate (lb/hr) from manufacturer</b>			
Basis (including H2SO4), lb/hr	7.5	7.5	7.5
lb/hr	7.5	7.5	7.5
TPY- 1 Unit	20.9	20.9	20.9
- 4 Units	83.6	83.6	83.6
<b>Sulfur Dioxide (lb/hr) = Natural gas (cf/hr) x sulfur content(gr/100 cf) x 1 lb/7000 gr x (lb SO2/lb S) + 100</b>			
Natural Gas (cf/hr)	1,159,261	1,048,163	954,898
Basis, gr/100 cf	1.0	1.0	1.0
lb SO2/lb S (64/32)	2.0	2.0	2.0
lb/hr	3.31	2.99	2.73
TPY- 1 Unit	9.23	8.35	7.61
- 4 Units	36.9	33.4	30.4
<b>Nitrogen Oxides (lb/hr) = NOx(ppm) x {[20.9 x (1 - Moisture%/100)] - Oxygen(%)} x 2116.8 x Volume flow (acfm) x 46 (mole. wgt NOx) x 60 min/hr ÷ [1545 x (CT temp.(°F) + 460°F) x 5.9 x 1,000,000 (adj. for ppm)]</b>			
Basis, ppmvd @15% O2 (1)	25	25	25
Moisture (%)	11.17	11.73	12.96
Oxygen (%)	12.12	12.1	11.96
Volume Flow (acfm)	1,697,479	1,586,172	1,491,454
Temperature (°F)	1,023	1,050	1,072
lb/hr	118	107	97
TPY- 1 Unit	329.6	297.9	271.0
- 4 Units	1318.2	1191.6	1084.0
<b>Carbon Monoxide (lb/hr) = CO(ppm) x [1 - Moisture%/100] x 2116.8 lb/ft2 x Volume flow (acfm) x 28 (mole. wgt CO) x 60 min/hr ÷ [1545 x (CT temp.(°F) + 460°F) x 1,000,000 (adj. for ppm)]</b>			
Basis, ppmvd (1)	10	10	10
Moisture (%)	11.17	11.73	12.96
Volume Flow (acfm)	1,697,479	1,586,172	1,491,454
Temperature (°F)	1,023	1,050	1,072
lb/hr	23.4	21.3	19.5
TPY- 1 Unit	65.2	59.5	54.4
- 4 Units	261.0	238.0	217.5
<b>VOCs (lb/hr) = VOC(ppm) x [1 - Moisture%/100] x 2116.8 lb/ft2 x Volume flow (acfm) x 16 (mole. wgt as methane) x 60 min/hr ÷ [1545 x (CT temp.(°F) + 460°F) x 1,000,000 (adj. for ppm)]</b>			
Basis, ppmvd (1)	2.5	2.5	2.5
Moisture (%)	11.17	11.73	12.96
Volume Flow (acfm)	1,697,479	1,586,172	1,491,454
Temperature (°F)	1,023	1,050	1,072
lb/hr	3.3	3.0	2.8
TPY- 1 Unit	9.32	8.50	7.77
- 4 Units	37.3	34.0	31.1
<b>Lead (lb/hr) = Negligible</b>			
Basis, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA

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

Source: (1) GE, 1995

Table NG-GE3. Maximum Emissions of NSPS/NESHAP Pollutants for Intercession City, Simple Cycle-  
GE PG7111 (EA), Quiet Combustor, Natural Gas, Peak Load

Pollutant	Natural Gas 20 °F	Natural Gas 59 °F	Natural Gas 90 °F
Hours of Operation	5,576	5,576	5,576
<b>Arsenic (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Beryllium (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Fluoride (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Hydrogen Chloride (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Mercury (lb/hr) = Emission Factor (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) + 1,000,000 MMBtu/10E+12 Btu</b>			
Basis (1)	EPRI	EPRI	EPRI
Emission factor, lb/10E+12 Btu	8.00E-04	8.00E-04	8.00E-04
HIR (MMBtu/hr)	1,159	1,048	955
lb/hr	9.27E-07	8.39E-07	7.64E-07
TPY - 1 Unit	2.59E-06	2.34E-06	2.13E-06
- 4 Units	1.03E-05	9.35E-06	8.52E-06
<b>Radionuclides (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Sulfuric Acid Mist (lb/hr) = Fuel consumption (lb/hr) x sulfur content (%) x (Conversion (fraction) of S to H2SO4) x lb H2SO4/lb S</b>			
Fuel consumption (lb/hr)	53,882	48,718	44,383
Sulfur Content (gr/100 cf)	1.0	1.0	1.0
Fuel density (lb/scf)	0.0486	0.0486	0.0486
Sulfur content (%) (a)	0.00294	0.00294	0.00294
lb H2SO4/lb S (98/32)	3.06	3.06	3.06
CT Exhaust - % S Conversion to H2SO4	10	10	10
lb/hr	0.49	0.44	0.40
TPY - 1 Unit	1.35	1.22	1.11
- 4 Units	5.41E+00	4.89E+00	4.46E+00
<b>Dioxins/Furans (2,3,7,8-TCDD Equivalents) (lb/hr) = Emission Factor (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu</b>			
Basis (1)	EPRI	EPRI	EPRI
Emission factor, lb/10E+12 Btu	1.20E-06	1.20E-06	1.20E-06
HIR (MMBtu/hr)	1,159	1,048	955
lb/hr	1.39E-09	1.26E-09	1.15E-09
TPY - 1 Unit	3.88E-09	3.51E-09	3.19E-09
- 4 Units	1.55E-08	1.40E-08	1.28E-08

Source: (1) EPRI, 1994

(a) Sulfur content (%) = [sulfur content (gr/100 cf) x 1 lb/7,000 gr ÷ fuel density (lb/scf)] x 100

Table NG-GE4. Maximum Emissions of Other Regulated Pollutants for Intercession City, Simple Cycle-  
GE PG7111(EA), Quiet Combustor, Natural Gas, Peak Load

Pollutant	Natural Gas 20 °F	Natural Gas 59 °F	Natural Gas 90 °F
Hours of Operation	5,576	5,576	5,576
<b>Antimony (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Barium (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Benzene (lb/hr) = Basis (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu</b>			
Basis (1)	EPRI	EPRI	EPRI
Emission factor, lb/10E+12 Btu	0.8	0.8	0.8
HIR (MMBtu/hr)	1,159	1,048	955
lb/hr	9.27E-04	8.39E-04	7.64E-04
TPY	2.59E-03	2.34E-03	2.13E-03
<b>Cadmium (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Chromium (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Cobalt (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Copper (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Formaldehyde (lb/hr) = Basis (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu</b>			
Basis (1)	EPRI	EPRI	EPRI
Emission factor, lb/10E+12 Btu	34	34	34
HIR (MMBtu/hr)	1,159	1,048	955
lb/hr	3.94E-02	3.56E-02	3.25E-02
TPY	1.10E-01	9.94E-02	9.05E-02
<b>Manganese (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA

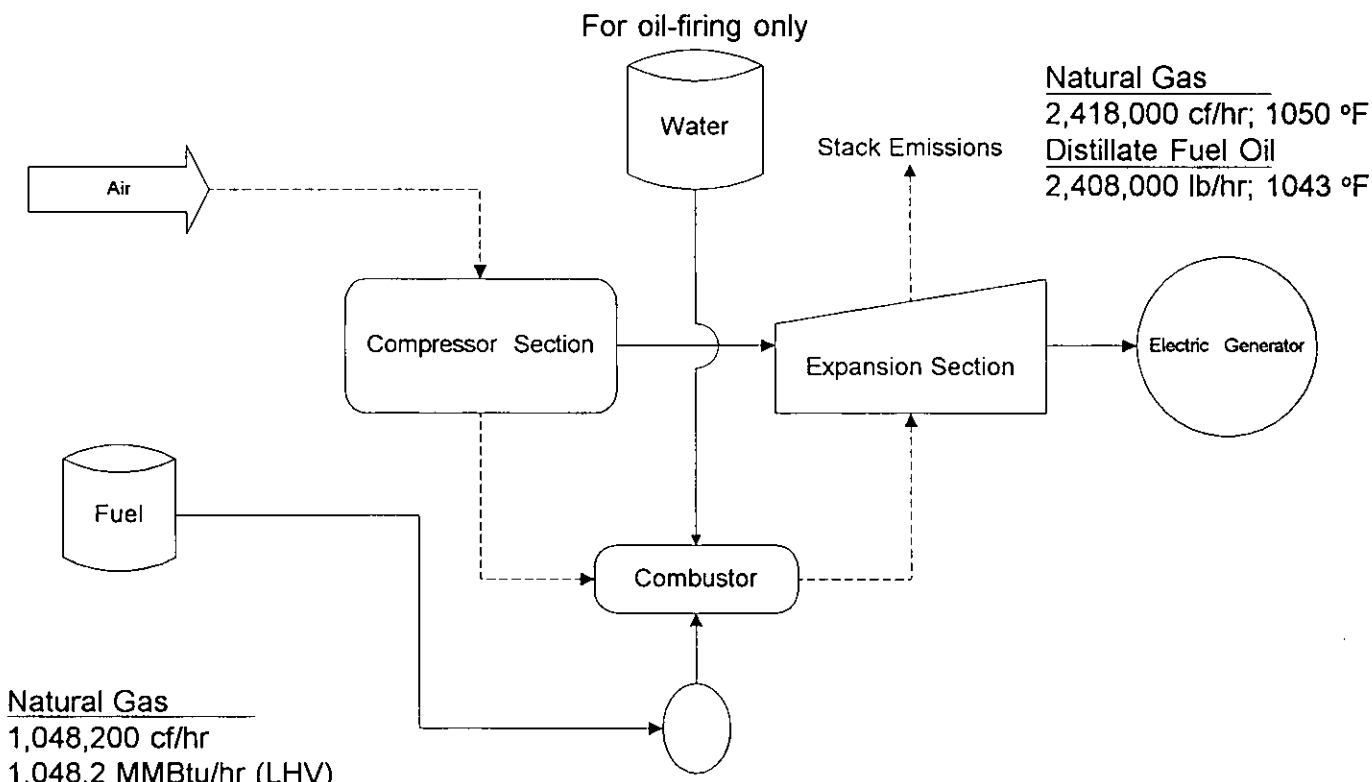
Table NG-GE4. Maximum Emissions of Other Regulated Pollutants for Intercession City, Simple Cycle--  
GE PG7111(EA), Quiet Combustor, Natural Gas, Peak Load

Pollutant	Natural Gas 20 °F	Natural Gas 59 °F	Natural Gas 90 °F
<b>Methane (lb/hr) = Basis (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu</b>			
Basis (2)	AP-42	AP-42	AP-42
Emission factor, lb/10E+12 Btu	0.29	0.29	0.29
HIR (MMBtu/hr)	1,159	1,048	955
lb/hr	3.36E-04	3.04E-04	2.77E-04
TPY	9.37E-04	8.47E-04	7.72E-04
<b>Nickel (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Polycyclic Organic Matter (lb/hr) = Emission Factor (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu</b>			
Basis (3)	EPA	EPA	EPA
Emission factor, lb/10E+12 Btu	1.113	1.113	1.113
HIR (MMBtu/hr)	1,159	1,048	955
lb/hr	1.29E-03	1.17E-03	1.06E-03
TPY	3.60E-03	3.25E-03	2.96E-03
<b>Selenium (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Toluene (lb/hr) = Basis (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu</b>			
Basis (1)	EPRI	EPRI	EPRI
Emission factor, lb/10E+12 Btu	10	10	10
HIR (MMBtu/hr)	1,159	1,048	955
lb/hr	1.16E-02	1.05E-02	9.55E-03
TPY	3.23E-02	2.92E-02	2.66E-02
<b>Zinc (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA

Source: (1) EPPI, 1994  
(2) EPA, 1993  
(3) EPA, 1990

**IC1-EUI-1**


**PROCESS FLOW DIAGRAM**



Natural Gas  
 1,048,200 cf/hr  
 1,048.2 MMBtu/hr (LHV)  
Distillate Fuel Oil  
 55,500 lb/hr  
 1,029 MMBtu (LHV)

Note: Data presented for 59 °F ambient temperature

Flow Diagram of Emission Unit

Process Area: FPC Intercession City Plant	Project # 15106		File Name: FPCICB.VSD
Emission Unit: Combustion Turbine No. 7, 8, 9, 10	Revised: 4/21/95 10:56 AM		Engineering and Applied Sciences, Inc.

**IC1-EUI-2**

**FUEL ANALYSIS OR SPECIFICATION**

Attachment IC1-EUI-2

Fuel Analysis

Natural Gas Analysis

<u>Parameter</u>	<u>Typical Value</u>	<u>Max Value</u>
Relative density	0.58 (compared to air)	
heat content	950 - 1,124 Btu/cu ft	
% sulfur	0.43 grain/CF <sup>1</sup>	1 grain/100 CF
% nitrogen	0.8% by volume	
% ash	negligible	

Note: The values listed are "typical" values based upon information supplied to FPC by Florida Gas Transmission (FGT). However, analytical results from grab samples of fuel taken at any given point in time may vary from those listed.

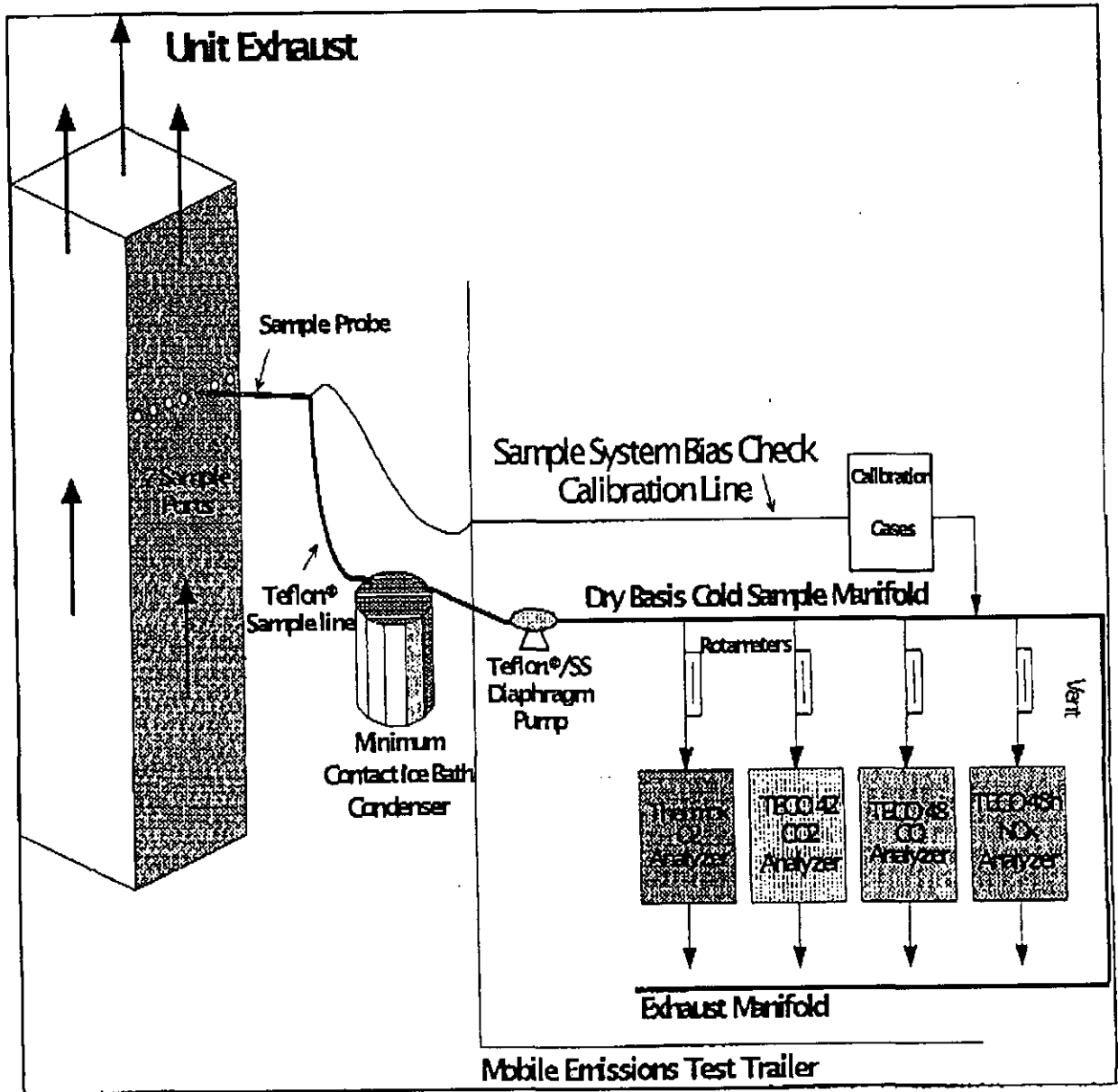
<sup>1</sup> Data from laboratory analysis.



**IC1-EUI-4**

**DESCRIPTION OF STACK SAMPLING FACILITIES**

### Figure 1 Gaseous Sampling and Analysis Diagram

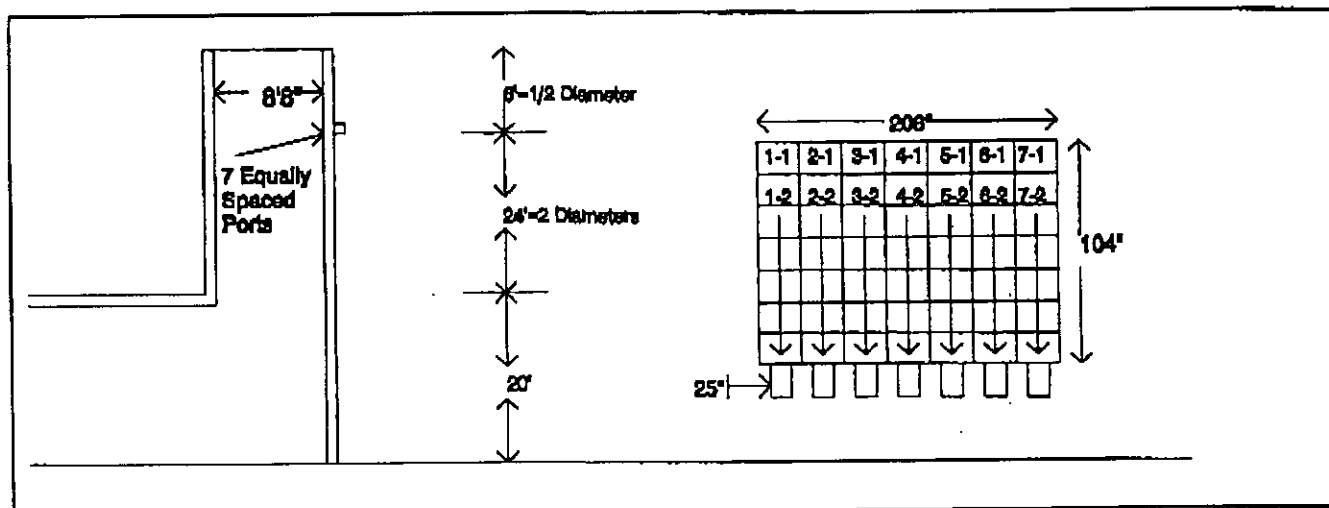


### Rectangular Stack Sampling Traverse Point Layout (EPA Method 1)

**Intercession City Power Station**

Date: \_\_\_\_\_ Port + Stack ID: 129 in.  
 Plant: Florida Power Corporation Port Extension (Ref. Pt.) 25 in.  
 Source: P-7,8,9,10 Stack ID: 104 in.  
 Technician(s) \_\_\_\_\_ Stack Area 150.2 ft.<sup>2</sup>.  
 Stack Length (L) 104 in. Total Req'd Trav. Pts (P) 49  
 Stack Width (W) 208 in. No. of Traverse Pts. 7 /dimen.  
 No. of Traverse Pts. 7 /port

**Stack Diagram** (Side View showing major unit components, dimensions and nearest upstream & downstream flow disturbances. Top view showing length, width, and sample ports.



Calculate the Equivalent Diameter of Rectangular Stack

$$De = \frac{2 \times L \times W}{(L + W)} \quad 140 \text{ in.} = \frac{2 \times (104 \text{ in.}) \times (208 \text{ in.})}{((104 \text{ in.}) + (208 \text{ in.}))}$$

Calculate Distance from Stack Wall to Traverse Points

(Example for Point No. 2)

$$\text{Distance} = \frac{L \times 1.5}{P} \quad 22.3 \text{ in.} \approx \frac{(104 \text{ in.}) \times 1.5}{7}$$

Point No.	Length Factor	Distance from Ref. Point (inches)	Distance Sample Pt. to Probe Tip
1	0.5	7.4	32.4
2	1.5	22.3	47.3
3	2.5	37.1	62.1
4	3.5	52.0	77.0
5	4.5	66.9	91.9
6	5.5	81.7	106.7
7	6.5	96.6	121.6

**IC-EUI-10**

**ALTERNATIVE METHODS OF OPERATION**

**ATTACHMENT IC1-EUI-10  
ALTERNATE METHODS OF OPERATION  
COMBUSTION TURBINE UNITS 7, 8, 9 AND 10**

The Florida Power Corporation Intercession City Plant received authorization from the Florida Department of Environmental Protection (FDEP) to construct four General Electric (GE) Model PG7111EA combustion turbines (CT) (see AC 49-203114). These combustion turbines were rated at 92.9 MW (ISO conditions) and authorized to fire low sulfur distillate oil. The CTs have been installed and been operated since 1992. This application is to obtain authorization to install natural gas firing which the CTs were designed for and capable of accommodating. The operation of the CTs on either distillate oil or natural gas would be limited so that there are no annual emission increases for any air pollutant. That is, the annual tons per year authorized of the 4 CTs would remain as stated in Specific Condition 1. of the Construction Permit but would include short term emission limits as requested in this application.

The potential emissions for natural gas firing (i.e., 100% natural gas firing) were calculated based on the most restrictive ton/year emission limit for any pollutant when firing distillate oil. Since the hourly emissions for natural gas firing are all less than those authorized for distillate oil firing (see Pollutant Information and Attachment IC1-EUE-10 Calculation of Emissions), the maximum annual hours of operating the CTs on natural gas were calculated using the hourly emissions of any pollutant that produced an equivalent annual emission as distillate oil. The most restrictive limit in the permit is for VOCs at 34 tons/year. The amount of hours operated at full load per CT was calculated as follows:

$$\text{Hours/CT} = 34 \text{ ton/year} \times 2,000 \text{ lb/ton} \times \text{hr}/3.0488\text{lb} \times 1/4\text{CT} = 5,576 \text{ hrs/yr}$$

For the other pollutants, the potential annual emissions for natural gas firing (assuming natural gas is used exclusively) would be less than currently authorized for distillate oil firing. The emission decreases are listed below:

Pollutant	Oil Firing (tons/year)	Gas Firing (tons/year)	Decrease (tons/year)
PM	102	84	18
NO <sub>x</sub>	1,232	1,192	40
CO	366	238	128
SO <sub>2</sub>	1,283	33	1,250
H <sub>2</sub> SO <sub>4</sub>	106	5	101

Thus, there will be a potential 1,537 tons/year, or about 50 percent decrease in emissions when using natural gas.

Emissions Unit Information Section 2 of 2

### III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

#### A. GENERAL EMISSIONS UNIT INFORMATION

This subsection of the Application for Air Permit form provides general information on the emissions unit addressed in this Emissions Unit Information Section, including information on the type, control equipment, operating capacity, and operating schedule of the emissions unit..

##### 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, an individually-regulated emission point (stack or vent) serving a single process or production unit, or activity, which also has other individually-regulated emission points.
- ] This Emissions Unit Information Section addresses, as a single emissions unit, a collectively-regulated 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.

**Emissions Unit Description and Status**

1. Description of Emissions Unit Addressed in This Section:  <b>Combustion turbine peaking unit 11</b>		
2. ARMS Identification Number: <input type="checkbox"/> No Corresponding ID <input checked="" type="checkbox"/> Unknown		
3. Emissions Unit Status Code: <b>A</b>	4. Acid Rain Unit? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. Emissions Unit Major Group SIC Code: <b>49</b>
6. Initial Startup Date (DD-MON-YYYY):		
7. Long-term Reserve Shutdown Date (DD-MON-YYYY):		
8. Package Unit: Manufacturer: <b>Siemens</b>	Model Number: <b>V84.3</b>	
9. Generator Nameplate Rating:	<b>154.3</b>	<b>MW</b>
10. Incinerator Information:		
	Dwell Temperature:	°F
	Dwell Time:	seconds
	Incinerator Afterburner Temperature:	°F
11. Emissions Unit Comment:  <b>Nameplate rating at 59 °F</b>		



**Emissions Unit Control Equipment Information**

**A.**

<p>1. Description:</p> <p><b>Water injection</b></p> <p>2. Control Device or Method Code: <b>028</b></p>
--

**B.**

<p>1. Description:</p> <p>2. Control Device or Method Code:</p>
---

**C.**

<p>1. Description:</p> <p>2. Control Device or Method Code:</p>
---

**Emissions Unit Operating Capacity**

1. Maximum Heat Input Rate:	1,609.3	mmBtu/hr
2. Maximum Incineration Rate:		
	lbs/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate:		
5. Operating Capacity Comment:	<p><b>Maximum heat input rate based on 20 ° F and low heating value.</b></p>	

**Emissions Unit Operating Schedule**

1. Requested Maximum Operating Schedule:		
	hours/day,	days/week,
	weeks/yr	<b>8760</b> hours/yr

**B. EMISSIONS UNIT REGULATIONS**

Depending on the application category, this subsection of the Application for Air Permit form provides either a brief analysis or detailed listing of all federal, state, and local regulations applicable to the emissions unit addressed in this Emissions Unit Information Section.

**Rule Applicability Analysis** (Required for Category II Applications and Category III applications involving non Title-V sources. See Instructions.)

**Not Applicable**

**List of Applicable Regulations** (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

**See Attached**

Emission 002 Unit Combustion Turbine Applicable Requirement List

<b>Chapter 210 Stationary Sources -- General Requirements</b>	
62-210.300	Permits Required.
	(1) Air Construction Permits.
62-210.600	Enhanced Monitoring (Reserved).
62-210.650	Circumvention.
62-210.700	Excess Emissions; (1).

<b>Chapter 296 Stationary Sources -- Emission Standards</b>	
62-296.800	Standards of Performance for New Stationary Sources (NSPS).
	(3) General Provisions Adopted.
	(a) The following Standards of Performance for New Stationary Sources contained in 40 CFR 60, revised as of July 1, 1993, or later as specifically indicated.
	37. 40 CFR 60.330 Subpart GG, Stationary Gas Turbines.
	(4) Appendices Adopted. The following appendices of 40 CFR Part 60, revised as of July 1, 1993 or later as specifically indicated, are adopted and incorporated by reference.
	(a) 40 CFR 60 Appendix A, Test Methods, are adopted by reference.
	(b) 40 CFR 60 Appendix B, Performance Specifications.
	(e) 40 CFR 60 Appendix F, Quality Assurance Procedures.

<b>Chapter 297 Stationary Sources -- Emission Monitoring</b>	
62-297.310	General Test Requirements.
62-297.330	Applicable Test Procedures.
62-297.340	Frequency of Compliance Tests.
	(1) General.
62-297.345	Stack Sampling Facilities Provided by the Owner of an Emissions Unit.
	(1) Permanent Test Facilities.
	(3) Test Facilities.

<b>Chapter 297 Stationary Sources -- Emission Monitoring (cont'd)</b>	
62-297.350	Determination of Process Variables.
62-297.401	EPA Test Procedures
	(20) EPA Method 20 - Determination of Nitrogen Oxides, Sulfur Dioxide, and Diluent Emissions from Stationary Gas Turbines

<b>Part 60 - EPA Regulations on Standards of Performance for New Stationary Sources</b>	
<b>Subpart A -- General Provisions</b>	
60.7	Notification and record keeping.
60.8	Performance tests.
60.11	Compliance with standards and maintenance requirements.
60.12	Circumvention.
60.13	Monitoring requirements.
<b>Subpart GG -- Standards of Performance for Stationary Gas Turbines</b>	
60.332	Standard for nitrogen oxides.
60.333	Standard for sulfur dioxide.
60.334	Monitoring of operations.
60.335	Test methods and procedures.

<b>Part 72 - EPA Acid Rain Program Permits</b>	
<b>Subpart A — General Provisions</b>	
72.6	Applicability.
72.9	Standard Requirements.
<b>Subpart B — Designated Representative</b>	
72.20	Authorization and Responsibilities of the Designated Representative.
72.21	Submissions.
72.22	Alternate Designated Representative.
72.23	Changing the Designated Representative, Alternate Designated Representative; Changes in the Owners and Operators.
72.24	Certificate of Representation.
72.25	Objections.
<b>Subpart C — Acid Rain Applications</b>	
72.30	Requirements to Apply.
72.31	Information Requirements for Acid Rain Permit Applications.
72.32	Permit Applications Shield and Binding Effect of Permit Application.
72.33	Identification of Dispatch System.
<b>Subpart E — Acid Rain Permit Contents</b>	
72.50	General.
72.51	Permit Shield.
<b>Subpart H — Permit Revisions</b>	
72.80	General.
72.81	Permit Modifications.
72.82	Fast-Track Modifications.
72.83	Administrative Permit Amendment.
72.84	Automatic Permit Amendment.
72.85	Permit Reopenings.
<b>Subpart I — Compliance Certification</b>	
72.90	Annual Compliance Certification Report.

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**CALCULATION OF EMISSIONS (METHODS)**



**C. EMISSION POINT (STACK/VENT) INFORMATION**

This subsection of the application for Air Permit form provides information about the emission point associated with the emissions unit addressed in this Emissions Unit Information Section. An emission point is typically a stack or vent but can be any identifiable location at which air pollutants, including fugitive emissions, are discharged into the atmosphere.

**Emission Point Description and Type**

<p>1. Identification of Point on Plot Plan or Flow Diagram:</p> <p style="margin-left: 40px;">See Attachment IC-FD-2</p>
<p>2. Emission Point Type Code:</p> <p style="margin-left: 40px;"> <input checked="" type="checkbox"/> 1                      <input type="checkbox"/> 2                      <input type="checkbox"/> 3                      <input type="checkbox"/> 4             </p>
<p>3. Descriptions of Emissions Points Comprising this Emissions Unit:</p> <p style="margin-left: 40px; text-align: center;"> <b>Combustion turbine gases exhaust through a single stack per turbine</b> </p>
<p>4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:</p>    
<p>5. Discharge Type Code:</p> <p style="margin-left: 40px;"> <input type="checkbox"/> D                      <input type="checkbox"/> F                      <input type="checkbox"/> H                      <input type="checkbox"/> P  <input type="checkbox"/> R                      <input checked="" type="checkbox"/> V                      <input type="checkbox"/> W             </p>

6. Stack Height:	75	ft
7. Exit Diameter:	19	ft
8. Exit Temperature:	1,029	°F
9. Actual Volumetric Flow Rate:	2,195,232	acfm
10. Percent Water Vapor:		%
11. Maximum Dry Standard Flow Rate:		dscfm
12. Nonstack Emission Point Height:		ft
13. Emission Point UTM Coordinates:		
Zone:	East (km):	North (km):
14. Emission Point Comment:		
<p><b>Exit temperature and flow rate given for ambient temperature of 59 °F.</b></p>		

**D. SEGMENT (PROCESS/FUEL) INFORMATION**

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of segment data (Fields 1-10) must be completed for each segment required to be reported and for each alternative operating method or mode (emissions trading scenario) under Chapter 62-213, F.A.C., for which the maximum hourly or annual segment-related rate would vary. A segment is a material handling, process, fuel burning, volatile organic liquid storage, production, or other such operation to which emissions of the unit are directly related. See instructions for further details on this subsection of the Application for Air Permit.

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

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode): <b>Natural Gas</b>	
2. Source Classification Code (SCC): <b>20100201</b>	
3. SCC Units: <b>Million cubic feet</b>	
4. Maximum Hourly Rate: <b>1.609</b>	5. Maximum Annual Rate: <b>8,645.5</b>
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur: <b>0.003</b>	8. Maximum Percent Ash: <b>0</b>
9. Million Btu per SCC Unit: <b>1,000</b>	
10. Segment Comment: <b>Maximum hourly and annual rates for one turbine. Annual rate based on 5,853 hours per year operation. (See Attachment IC2-EUI-10). Million Btu per SCC unit based on low heating value (LHV).</b>	

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

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

**E. POLLUTANT INFORMATION**

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

**Pollutant Potential/Estimated Emissions:** Pollutant 1 of 6

1. Pollutant Emitted:	<b>SO<sub>2</sub></b>	
2. Total Percent Efficiency of Control:	%	
3. Primary Control Device Code:		
4. Secondary Control Device Code:		
5. Potential Emissions:	<b>4.6 lbs/hr</b>	<b>12.4 tons/yr</b>
6. Synthetically Limited?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
7. Range of Estimated Fugitive/Other Emissions:	[ ] 1    [ ] 2    [ ] 3    _____ to _____ tons/yr	
8. Emission Factor:	<b>1 gr sulfur/100CF</b>	
	Reference: <b>Maximum sulfur content from fuel analysis</b>	
9. Emissions Method Code (check one):	[ ] 1 <input checked="" type="checkbox"/> 2    [ ] 3    [ ] 4    [ ] 5	
10. Calculation of Emissions:	<b>See Attachment IC2-EUE-10</b>	
11. Pollutant Potential/Estimated Emissions Comment:	<b>Maximum hourly emissions based on ambient temperature of 20 °F. Annual emissions based on 59 °F and 5,853 hours (See Attachment IC2-EUI-10)</b>	

Emissions Unit Information Section  2  of  2   
Allowable Emissions (Pollutant identification on front page)

A.

1. Basis for Allowable Emissions Code: <b>Other</b>		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units: <b>1 grain sulfur/100cf                      Natural gas</b>		
4. Equivalent Allowable Emissions:	<b>4.6 lbs/hr</b>	<b>12.4 tons/yr</b>
5. Method of Compliance: <b>Fuel analysis from supplier</b>		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): <b>See Pollutant Potential/Estimated Emissions comment No. 11</b>		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

**E. POLLUTANT INFORMATION**

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

**Pollutant Potential/Estimated Emissions:** Pollutant 2 of 6

1. Pollutant Emitted:	<b>NOX</b>	
2. Total Percent Efficiency of Control:	<b>80</b>	<b>%</b>
3. Primary Control Device Code:	<b>028</b>	
4. Secondary Control Device Code:		
5. Potential Emissions:	<b>162 lbs/hr</b>	<b>434.9 tons/yr</b>
6. Synthetically Limited?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
7. Range of Estimated Fugitive/Other Emissions:	[ ] 1    [ ] 2    [ ] 3    _____ to _____ tons/yr	
8. Emission Factor:	<b>25 ppmvd</b>	<b>@ 15% O2</b>
Reference:	<b>Proposed Limit</b>	
9. Emissions Method Code (check one):	[ ] 1 <input checked="" type="checkbox"/> 2    [ ] 3    [ ] 4    [ ] 5	
10. Calculation of Emissions:	<b>See Attachment IC2-EUE-10</b>	
11. Pollutant Potential/Estimated Emissions Comment:	<b>1. Maximum hourly emissions based on ambient temperature of 20 °F. Annual emissions based on 59 °F and 5,853 hours. (See Attachment IC2-EUI-10).</b>	

Emissions Unit Information Section  2  of  2   
Allowable Emissions (Pollutant identification on front page)

A.

1. Basis for Allowable Emissions Code: <b>Other</b>		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units: <b>25 ppmvd @ 15% O2</b>		
4. Equivalent Allowable Emissions:	<b>149 lbs/hr</b>	<b>434.9 tons/yr</b>
5. Method of Compliance: <b>Annual compliance test - EPA Method 20</b>		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): <b>See Pollutant Potential/Estimated Emissions, Comment No. 11</b>		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		



**E. POLLUTANT INFORMATION**

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

**Pollutant Potential/Estimated Emissions:** Pollutant 3 of 6

1. Pollutant Emitted:	PM	
2. Total Percent Efficiency of Control:	%	
3. Primary Control Device Code:		
4. Secondary Control Device Code:		
5. Potential Emissions:	7.5 lbs/hr	21.9 tons/yr
6. Synthetically Limited?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
7. Range of Estimated Fugitive/Other Emissions:	[ ] 1    [ ] 2    [ ] 3    _____ to _____ tons/yr	
8. Emission Factor:	7.5 lb/hr	
Reference:	Permit limit - vendor guarantee	
9. Emissions Method Code (check one):	[ ] 1    [ ] 2    [ ] 3    [ ] 4    [ ] 5	
10. Calculation of Emissions:	See Attachment IC2-EUE-10	
11. Pollutant Potential/Estimated Emissions Comment:	Maximum hourly emissions based on ambient temperature of 20 °F. Annual emissions based on 59 °F and 5,853 hours (See Attachment IC2-EUI-10).	

Emissions Unit Information Section 2 of 2  
**Allowable Emissions (Pollutant identification on front page)**

CT #11

A.

1. Basis for Allowable Emissions Code: <b>Other</b>		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units: <b>7.5 lb/hr</b>		
4. Equivalent Allowable Emissions:	<b>7.5 lbs/hr</b>	<b>21.9 tons/yr</b>
5. Method of Compliance: <b>Annual compliance test - EPA Method 9</b>		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): <b>See Pollutant Potential/Estimated Emissions, Comment No. 11; If VE emissions less than 10 percent source testing is not required.</b>		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

**E. POLLUTANT INFORMATION**

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

**Pollutant Potential/Estimated Emissions:** Pollutant  4  of  6

1. Pollutant Emitted:	CO	
2. Total Percent Efficiency of Control:	%	
3. Primary Control Device Code:		
4. Secondary Control Device Code:		
5. Potential Emissions:	33 lbs/hr	90.4 tons/yr
6. Synthetically Limited?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
7. Range of Estimated Fugitive/Other Emissions:	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 _____ to _____ tons/yr	
8. Emission Factor:	10 ppmvd	
Reference:	Permit limit	
9. Emissions Method Code (check one):	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	
10. Calculation of Emissions:	See Attachment IC-7-EUE-10	
11. Pollutant Potential/Estimated Emissions Comment:	1. Maximum hourly emissions based on ambient temperature of 20 ° F. Annual emissions based on 59 ° F and 5,853 hours (See Attachment IC2-EUI-10).	

Emissions Unit Information Section 2 of 2  
**Allowable Emissions (Pollutant identification on front page)**

CT #11

A.

1. Basis for Allowable Emissions Code: <b>Other</b>		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units: <b>10 ppmvd</b>		
4. Equivalent Allowable Emissions:	<b>33 lbs/hr</b>	<b>90.4 tons/yr</b>
5. Method of Compliance: <b>Annual compliance test - EPA Method 10</b>		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): <b>See Pollutant Potential/Estimated Emissions, Comment No. 11</b>		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

## E. POLLUTANT INFORMATION

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

**Pollutant Potential/Estimated Emissions:** Pollutant 5 of 6

1. Pollutant Emitted:	VOC	
2. Total Percent Efficiency of Control:	%	
3. Primary Control Device Code:		
4. Secondary Control Device Code:		
5. Potential Emissions:	5.7 lbs/hr	15.5 tons/yr
6. Synthetically Limited?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
7. Range of Estimated Fugitive/Other Emissions:	[ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr	
8. Emission Factor:	3 ppmvd	
Reference:	Proposed limit	
9. Emissions Method Code (check one):	[ ] 1 [ <input checked="" type="checkbox"/> ] 2 [ ] 3 [ ] 4 [ ] 5	
10. Calculation of Emissions:	See Attachment IC2-EUE-10.	
11. Pollutant Potential/Estimated Emissions Comment:	1. Maximum hourly emissions based on ambient temperature at 20 ° F. Annual emissions based on 59 ° F and 5,853 hours (See Attachment IC2-EUI-10).	

**E. POLLUTANT INFORMATION**

For the emissions unit addressed in this Emissions Unit Information Section, a separate set of pollutant information must be completed for each pollutant required to be reported. See instructions for further details on this subsection of the Application for Air Permit.

**Pollutant Potential/Estimated Emissions:** Pollutant 6 of 6

1. Pollutant Emitted:	<b>H2SO4</b>	
2. Total Percent Efficiency of Control:	<b>0</b>	<b>%</b>
3. Primary Control Device Code:		
4. Secondary Control Device Code:		
5. Potential Emissions:	<b>0.69 lbs/hr</b>	<b>1.86 tons/yr</b>
6. Synthetically Limited?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
7. Range of Estimated Fugitive/Other Emissions:		
	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 _____ to _____ tons/yr	
8. Emission Factor:	<b>Based on fuel sulfur content and 10% conversion to H2SO4</b>	
Reference:		
9. Emissions Method Code (check one):		
	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	
10. Calculation of Emissions:		
	<b>See Attachment IC2-EUE-10.</b>	
11. Pollutant Potential/Estimated Emissions Comment:		
	<b>Maximum hourly emissions based on ambient temperature of 20 °F. Annual emissions based on 59 °F and 5,853 hours (See Attachment IC2-EUI-10).</b>	

Emissions Unit Information Section 2 of 2  
Allowable Emissions (Pollutant identification on front page)

CT #11

A.

1. Basis for Allowable Emissions Code: NA		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

B.

1. Basis for Allowable Emissions Code:		
2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units:		
4. Equivalent Allowable Emissions:	lbs/hr	tons/yr
5. Method of Compliance:		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):		

**F. VISIBLE EMISSIONS INFORMATION**

This subsection of the Application for Air Permit form must be completed for only those emissions units which are subject to a visible emissions limitation. The intent of this subsection of the form is to identify each activity associated with the emissions unit addressed in this section for which a separate opacity limitation would be applicable. Visible emission subtype codes for each such activity are listed in the instructions for Field 1. Most emissions units will be subject to a "subtype VE" limit only.

**Visible Emissions Limitations:** Visible Emissions Limitation 1 of 1

1.	Visible Emissions Subtype:	<b>VE</b>
2.	Basis for Allowable Opacity:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
3.	Requested Allowable Opacity	
	Normal Conditions:	<b>10 %</b> Exceptional Conditions: <b>20 %</b>
	Maximum Period of Excess Opacity Allowed:	min/hour
4.	Method of Compliance:	<b>EPA Method 9</b>
5.	Visible Emissions Comment:	<b>Visible emission limit under normal conditions at full load; exceptional conditions are specified for other loads. Annual compliance test, EPA Method 9.</b>



**Visible Emissions Limitations:** Visible Emissions Limitation        of 1

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

**Visible Emissions Limitations:** Visible Emissions Limitation        of 1

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

## G. CONTINUOUS MONITOR INFORMATION

This subsection of the Application for Air Permit form must be completed for only those emissions units which are required by rule or permit to install and operate one or more continuous emission, opacity, flow, or other type monitors. A separate set of continuous monitor information (fields 1-6) must be completed for each monitoring system required.

Continuous Monitoring System Continuous Monitor 1 of 1

1. Parameter Code:	NOX
2. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
3. Monitor Information:	
Monitor Manufacturer:	
Model Number:	Serial Number:
4. Installation Date (DD-MON-YYYY):	
5. Performance Specification Test Date (DD-MON-YYYY):	
6. Continuous Monitor Comment:	<b>Continuous monitoring of the water to fuel ratio is required pursuant to 40 CFR 60.334. This monitoring is incorporated into the CT control system and recorded on an hourly basis.</b>

**Continuous Monitoring System** Continuous Monitor       of  1

1. Parameter Code:
2. CMS Requirement: <input type="checkbox"/> Rule <input type="checkbox"/> Other
3. Monitor Information: Monitor Manufacturer: Model Number: <span style="float: right;">Serial Number:</span>
4. Installation Date (DD-MON-YYYY):
5. Performance Specification Test Date (DD-MON-YYYY):
6. Continuous Monitor Comment:

**Continuous Monitoring System** Continuous Monitor       of  1

1. Parameter Code:
2. CMS Requirement: <input type="checkbox"/> Rule <input type="checkbox"/> Other
3. Monitor Information: Monitor Manufacturer: Model Number: <span style="float: right;">Serial Number:</span>
4. Installation Date (DD-MON-YYYY):
5. Performance Specification Test Date (DD-MON-YYYY):
6. Continuous Monitor Comment:

**H. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION**

This subsection of the Application for Air Permit form must be completed for all applications, not just those undergoing prevention-of-significant-deterioration (PSD) review pursuant to Rule 62-212.400, F.A.C. The intent of this subsection is to make a preliminary determination as to whether the emissions unit addressed in this Emissions Unit Information Section consumes PSD increment. PSD increment is consumed (or expanded) as a result of emission increases (decreases) occurring after pollutant-specific baseline dates. Pollutants for which baseline dates have been established are sulfur dioxide, particulate matter, and nitrogen dioxide.

**PSD Increment Consumption Determination****1. Increment Consuming for Particulate Matter or Sulfur Dioxide?**

If the emissions unit addressed in this section emits particulate matter or sulfur dioxide, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for particulate matter or sulfur dioxide. Check the first statement, if any, that applies and skip remaining statements.

- [ X ] The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.
- [ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and the emissions unit consumes increment.
- [ ] The facility addressed in this application is classified as an EPA major source and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and the emissions unit consumes increment.
- [ ] For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- [ ] None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

2. Increment Consuming for Nitrogen Dioxide?

If the emissions unit addressed in this section emits nitrogen oxides, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for nitrogen dioxide. Check first statement, if any, that applies and skip remaining statements.

- ] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.
  
- ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and the source consumes increment.
  
- ] The facility addressed in this application is classified as an EPA major source and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and the source consumes increment.
  
- ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and the emissions unit consumes increment.
  
- ] None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

3.	Increment Consuming/Expanding Code:			
	PM	<input checked="" type="checkbox"/> C	<input type="checkbox"/> E	<input type="checkbox"/> Unknown
	SO <sub>2</sub>	<input checked="" type="checkbox"/> C	<input type="checkbox"/> E	<input type="checkbox"/> Unknown
	NO <sub>2</sub>	<input checked="" type="checkbox"/> C	<input type="checkbox"/> E	<input type="checkbox"/> Unknown
4.	Baseline Emissions:			
	PM	lbs/hr		tons/yr
	SO <sub>2</sub>	lbs/hr		tons/yr
	NO <sub>2</sub>			tons/yr
5.	PSD Comment:			
	<b>See Attachment IC2-EUE-10</b>			

**I. EMISSIONS UNIT SUPPLEMENTAL INFORMATION**

This subsection of the Application for Air Permit form provides supplemental information related to the emissions unit addressed in this Emissions Unit Information Section. Supplemental information must be submitted as an attachment to each copy of the form, in hard-copy or computer-readable form.

**Supplemental Requirements for All Applications**

1.	Process Flow Diagram	<input checked="" type="checkbox"/> Attached, Document ID: <u>IC2-EUI-1</u>	<input type="checkbox"/> Waiver Requested
		<input type="checkbox"/> Not Applicable	
2.	Fuel Analysis or Specification	<input checked="" type="checkbox"/> Attached, Document ID: <u>IC2-EUI-2</u>	<input type="checkbox"/> Waiver Requested
		<input type="checkbox"/> Not Applicable	
3.	Detailed Description of Control Equipment	<input type="checkbox"/> Attached, Document ID: _____	<input type="checkbox"/> Waiver Requested
		<input checked="" type="checkbox"/> Not Applicable	
4.	Description of Stack Sampling Facilities	<input checked="" type="checkbox"/> Attached, Document ID: <u>IC2-EUI-4</u>	<input type="checkbox"/> Waiver Requested
		<input type="checkbox"/> Not Applicable	
5.	Compliance Test Report	<input type="checkbox"/> Attached, Document ID: _____	<input checked="" type="checkbox"/> Not Applicable
		<input type="checkbox"/> Previously Submitted, Date: _____	
6.	Procedures for Startup and Shutdown	<input type="checkbox"/> Attached, Document ID: _____	<input checked="" type="checkbox"/> Not Applicable
7.	Operation and Maintenance Plan	<input type="checkbox"/> Attached, Document ID: _____	<input checked="" type="checkbox"/> Not Applicable
8.	Supplemental Information for Construction Permit Application	<input type="checkbox"/> Attached, Document ID: _____	<input checked="" type="checkbox"/> Not Applicable
9.	Other Information Required by Rule or Statute	<input type="checkbox"/> Attached, Document ID: _____	<input checked="" type="checkbox"/> Not Applicable

**Additional Supplemental Requirements for Category I Applications Only**

10. Alternative Methods of Operation <input checked="" type="checkbox"/> Attached, Document ID: <u>IC2-EUI-10</u> <input type="checkbox"/> Not Applicable
11. Alternative Modes of Operation (Emissions Trading) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
12. Enhanced Monitoring Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
13. Identification of Additional Applicable Requirements <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
14. Acid Rain Permit Application  <input type="checkbox"/> Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID: _____  <input type="checkbox"/> Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID: _____  <input type="checkbox"/> New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID: _____  <input type="checkbox"/> Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID: _____  <input checked="" type="checkbox"/> Not Applicable

**IC2-EUE-10**

**CALCULATION OF EMISSIONS (METHODS)**



Table NG-S1. Design Information and Stack Parameters for Intercession City, Simple Cycle--  
Siemens V84.3, Natural Gas, Base Load

Data	Natural Gas 20 °F	Natural Gas 59 °F	Natural Gas 95 °F
<b>General</b>			
Power (kW)	171,715.0	154,284.0	135,850.0
Estimated Heat Rate (Btu/kwh, LHV)	9,372.0	9,574.0	9,977.0
Heat Input (MMBtu/hr, LHV)	1,609.3	1,477.1	1,355.4
Water Flow (lb/hr)			
Hours of Operation	5,853	5,853	5,853
<b>CT Exhaust Flow</b>			
Mass Flow (lb/hr)	3,651,732	3,430,332	3,190,644
Temperature (oF)	1,014	1,029	1,052
Moisture (% Vol.)	8.35	8.96	11.06
Oxygen (% Vol.)	12.69	12.74	12.45
Molecular Weight	28.40	28.30	28.07
<b>Natural Gas Consumption (lb/hr) = Heat Input (MMBtu/hr) x 1,000,000 Btu/MMBtu + Fuel Heat Content, LHV (Btu/lb)</b>			
<b>(cf/hr) = Heat Input (MMBtu/hr) x 1,000,000 Btu/MMBtu + Fuel Heat Content, LHV (Btu/cf)</b>			
Heat Input (MMBtu/hr, LHV)	1,609.3	1,477.1	1,355.4
Heat Content (Btu/lb, LHV)	20,938	20,938	20,938
Natural Gas (lb/hr)	76,861	70,547	64,733
Heat Content, LHV (Btu/cf)	1,000	1,000	1,000
Natural Gas (cf/hr)	1,609,313	1,477,115	1,355,375
(million cf/yr)	9,419.3	8,645.5	7,933.0
<b>Volume Flow (acfm) = [(Mass Flow (lb/hr) x 1,545 x (Temp. (°F) + 460°F)] ÷ [Molecular weight x 2116.8] ÷ 60 min/hr</b>			
Mass Flow (lb/hr)	3,651,732	3,430,332	3,190,644
Temperature (°F)	1,014	1,029	1,052
Molecular Weight	28.40	28.30	28.07
Volume Flow (acfm)	2,305,555	2,195,232	2,091,041
<b>Volume Flow (dscfm) = [(Mass Flow (lb/hr) x 1,545 x (68°F + 460°F)] ÷ [Molecular weight x 2116.8] + 60 min/hr</b>			
<b>[(1 - Moisture(%)/100)]</b>			
Mass Flow (lb/hr)	3,651,732	3,430,332	3,190,644
Temperature (°F)	68	68	68
Molecular Weight	28.40	28.30	28.07
Moisture (% Vol.)	8.35	8.96	11.06
Volume Flow (dscfm)	756,870	708,722	649,442
<b>CT Stack Data</b>			
Stack Height (ft)	75	75	75
Diameter (ft)	19.0	19.0	19.0
<b>Velocity (ft/sec) = Volume flow (acfm) from CT ÷ [((diameter)² ÷ 4) x 3.14159] ÷ 60 sec/min</b>			
Volume Flow (acfm) from CT	2,305,555	2,195,232	2,091,041
Diameter (ft)	19.0	19.0	19.0
Velocity (ft/sec)	135.5	129.0	122.9

Note: Universal gas constant= 1,545 ft-lb(force)/°R; atmospheric pressure= 2,116.8 lb(force)/ft²

Source: Siemens, 1995.

Table NG-S2. Maximum Emissions for Criteria Pollutants for Intercession City, Simple Cycle -  
Siemens V84.3, Natural Gas, Base Load

Pollutant	Natural Gas 20 °F	Natural Gas 59 °F	Natural Gas 95 °F
Hours of Operation	5,853	5,853	5,853
Particulate (lb/hr) = Emission rate (lb/hr) from manufacturer			
Basis (including H2SO4), lb/hr	7.5	7.5	5.0
lb/hr	7.5	7.5	5.0
TPY	21.9	21.9	14.6
Sulfur Dioxide (lb/hr) = Natural gas (cf/hr) x sulfur content(gr/100 cf) x 1 lb/7000 gr x (lb SO2/lb S) ÷ 100			
Natural Gas (cf/hr)	1,609,313	1,477,115	1,355,375
Basis, gr/100 cf	1.0	1.0	1.0
lb SO2/lb S (64/32)	2.0	2.0	2.0
lb/hr	4.60	4.22	3.87
TPY	13.5	12.4	11.3
Nitrogen Oxides (lb/hr) = NOx(ppm) x {[20.9 x (1 - Moisture%)/100] - Oxygen(%)} x 2116.8 x Volume flow (acfm) x 46 (mole. wgt NOx) x 60 min/hr ÷ [1545 x (CT temp.(°F) + 460°F) x 5.9 x 1,000,000 (adj. for ppm)]			
Basis, ppmvd @15% O2 (1)	25	25	25
Moisture (%)	8.35	8.96	11.06
Oxygen (%)	12.69	12.74	12.45
Volume Flow (acfm)	2,305,555	2,195,232	2,091,041
Temperature (°F)	1,014	1,029	1,052
lb/hr	162	149	136
TPY	474.0	434.9	397.8
Carbon Monoxide (lb/hr) = CO(ppm) x [1 - Moisture%/100] x 2116.8 lb/ft2 x Volume flow (acfm) x 28 (mole. wgt CO) x 60 min/hr ÷ [1545 x (CT temp.(°F) + 460°F) x 1,000,000 (adj. for ppm)]			
Basis, ppmvd (1)	10	10	10
Moisture (%)	8.35	8.96	11.06
Volume Flow (acfm)	2,305,555	2,195,232	2,091,041
Temperature (°F)	1,014	1,029	1,052
lb/hr	33.0	30.9 <<	28.3
TPY	96.6	90.4	82.9
VOCs (lb/hr) = VOC(ppm) x [1 - Moisture%/100] x 2116.8 lb/ft2 x Volume flow (acfm) x 16 (mole. wgt as methane) x 60 min/hr ÷ [1545 x (CT temp.(°F) + 460°F) x 1,000,000 (adj. for ppm)]			
Basis, ppmvd (1)	3.0	3.0	3.0
Moisture (%)	8.35	8.96	11.06
Volume Flow (acfm)	2,305,555	2,195,232	2,091,041
Temperature (°F)	1,014	1,029	1,052
lb/hr	5.7	5.3 <<	4.9
TPY	16.55	15.50	14.20
Lead (lb/hr) = Negligible			
Basis, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA

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

Source: (1) Siemens, 1995

Table NG-S3. Maximum Emissions of NSPS/NESHAP Pollutants for Intercession City, Simple Cycle--  
Siemens V84.3, Natural Gas, Base Load

Pollutant	Natural Gas 20 °F	Natural Gas 59 °F	Natural Gas 95 °F
Hours of Operation	5,853	5,853	5,853
<b>Arsenic (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Beryllium (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Fluoride (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Hydrogen Chloride (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Mercury (lb/hr) = Emission Factor (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu</b>			
Basis (1)	EPRI	EPRI	EPRI
Emission factor, lb/10E+12 Btu	8.00E-04	8.00E-04	8.00E-04
HIR (MMBtu/hr)	1,609	1,477	1,355
lb/hr	1.29E-06	1.18E-06	1.08E-06
TPY	3.77E-06	3.46E-06	3.17E-06
<b>Radionuclides (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Sulfuric Acid Mist (lb/hr) = Fuel consumption (lb/hr) x sulfur content (%) x (Conversion (fraction) of S to H2SO4) x lb H2SO4/lb S</b>			
Fuel consumption (lb/hr)	76,861	70,547	64,733
Sulfur Content (gr/100 cf)	1.0	1.0	1.0
Fuel density (lb/scf)	0.0486	0.0486	0.0486
Sulfur content (%) (a)	0.00294	0.00294	0.00294
lb H2SO4/lb S (98/32)	3.06	3.06	3.06
CT Exhaust-- % S Conversion to H2SO4	10	10	10
lb/hr	0.69	0.64	0.58
TPY	2.02	1.86	1.71
<b>Dioxins/Furans (2,3,7,8-TCDD Equivalents) (lb/hr) = Emission Factor (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu</b>			
Basis (1)	EPRI	EPRI	EPRI
Emission factor, lb/10E+12 Btu	1.20E-06	1.20E-06	1.20E-06
HIR (MMBtu/hr)	1,609	1,477	1,355
lb/hr	1.93E-09	1.77E-09	1.63E-09
TPY	5.65E-09	5.19E-09	4.76E-09

Source: (1) EPRI, 1994

(a) Sulfur content (%) = [sulfur content (gr/100 cf) x 1 lb/7,000 gr ÷ fuel density (lb/scf)] x 100

Table NG-S4. Maximum Emissions of Other Regulated Pollutants for Intercession City, Simple Cycle—  
Siemens V84.3, Natural Gas, Base Load

Pollutant	Natural Gas 20 °F	Natural Gas 59 °F	Natural Gas 95 °F
Hours of Operation	5,853	5,853	5,853
<b>Antimony (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Barium (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Benzene (lb/hr) = Basis (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu</b>			
Basis (1)	EPRI	EPRI	EPRI
Emission factor, lb/10E+12 Btu	0.8	0.8	0.8
HIR (MMBtu/hr)	1,609	1,477	1,355
lb/hr	1.29E-03	1.18E-03	1.08E-03
TPY	3.77E-03	3.46E-03	3.17E-03
<b>Cadmium (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Chromium (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Cobalt (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Copper (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Formaldehyde (lb/hr) = Basis (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu</b>			
Basis (1)	EPRI	EPRI	EPRI
Emission factor, lb/10E+12 Btu	34	34	34
HIR (MMBtu/hr)	1,609	1,477	1,355
lb/hr	5.47E-02	5.02E-02	4.61E-02
TPY	1.60E-01	1.47E-01	1.35E-01
<b>Manganese (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA

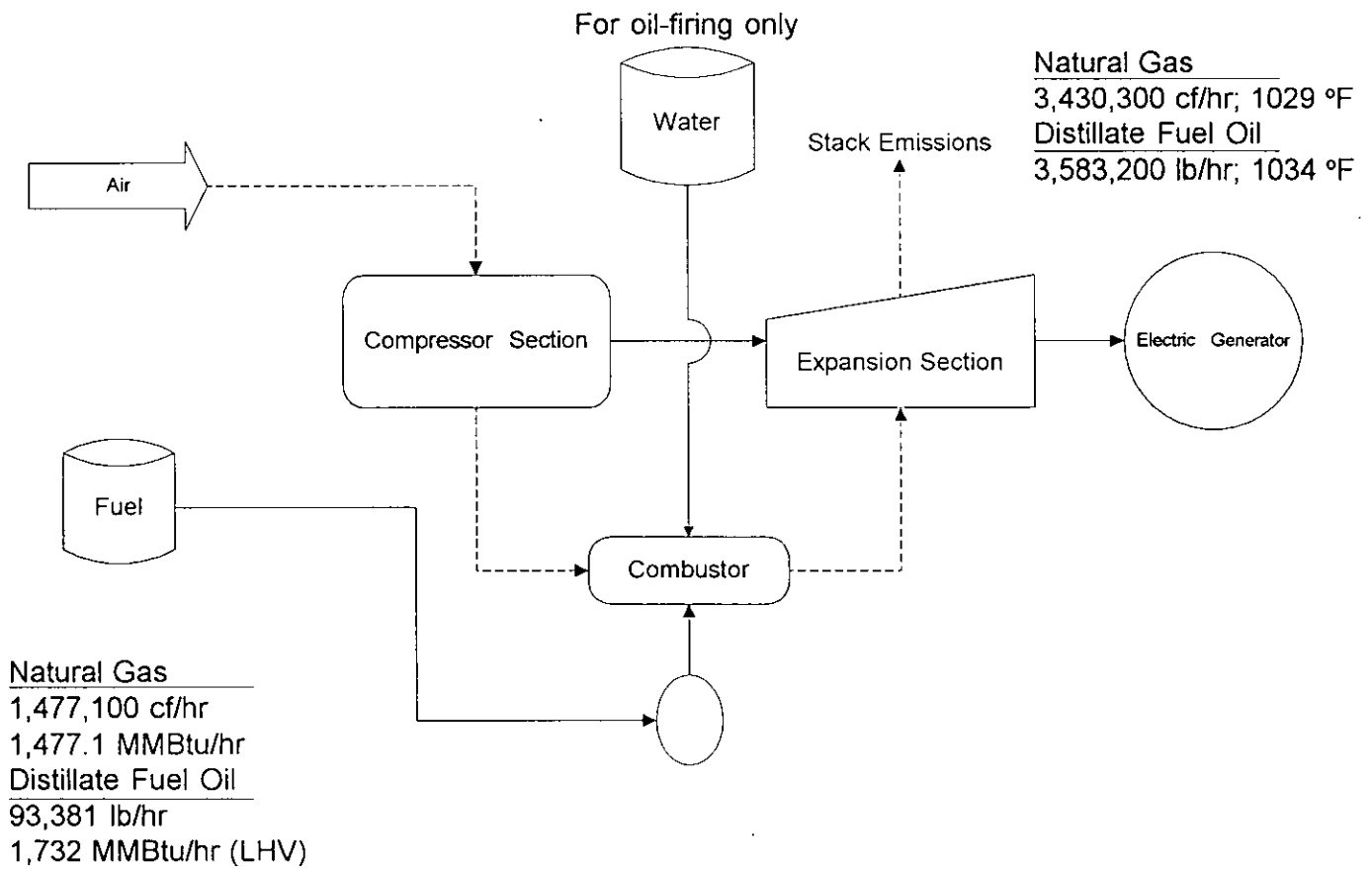
Table NG-S4. Maximum Emissions of Other Regulated Pollutants for Intercession City, Simple Cycle -  
Siemens V84.3, Natural Gas, Base Load

Pollutant	Natural Gas 20 °F	Natural Gas 59 °F	Natural Gas 95 °F
<b>Methane (lb/hr) = Basis (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu</b>			
Basis (2)	AP-42	AP-42	AP-42
Emission factor, lb/10E+12 Btu	0.29	0.29	0.29
HIR (MMBtu/hr)	1,609	1,477	1,355
lb/hr	4.67E-04	4.28E-04	3.93E-04
TPY	1.37E-03	1.25E-03	1.15E-03
<b>Nickel (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Polycyclic Organic Matter (lb/hr) = Emission Factor (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu</b>			
Basis (3)	EPA	EPA	EPA
Emission factor, lb/10E+12 Btu	1.113	1.113	1.113
HIR (MMBtu/hr)	1,609	1,477	1,355
lb/hr	1.79E-03	1.64E-03	1.51E-03
TPY	5.24E-03	4.81E-03	4.41E-03
<b>Selenium (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA
<b>Toluene (lb/hr) = Basis (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu</b>			
Basis (1)	EPRI	EPRI	EPRI
Emission factor, lb/10E+12 Btu	10	10	10
HIR (MMBtu/hr)	1,609	1,477	1,355
lb/hr	1.61E-02	1.48E-02	1.36E-02
TPY	4.71E-02	4.32E-02	3.97E-02
<b>Zinc (lb/hr) = Negligible</b>			
Basis			
Emission factor, lb/10E+12 Btu	NA	NA	NA
HIR (MMBtu/hr)	NA	NA	NA
lb/hr	NA	NA	NA
TPY	NA	NA	NA

Source: (1) EPPI, 1994  
(2) EPA, 1993  
(3) EPA, 1990


**IC2-EUI-1**

**PROCESS FLOW DIAGRAM**



Note: Data presented for 59 °F ambient temperature

Flow Diagram of Emission Unit

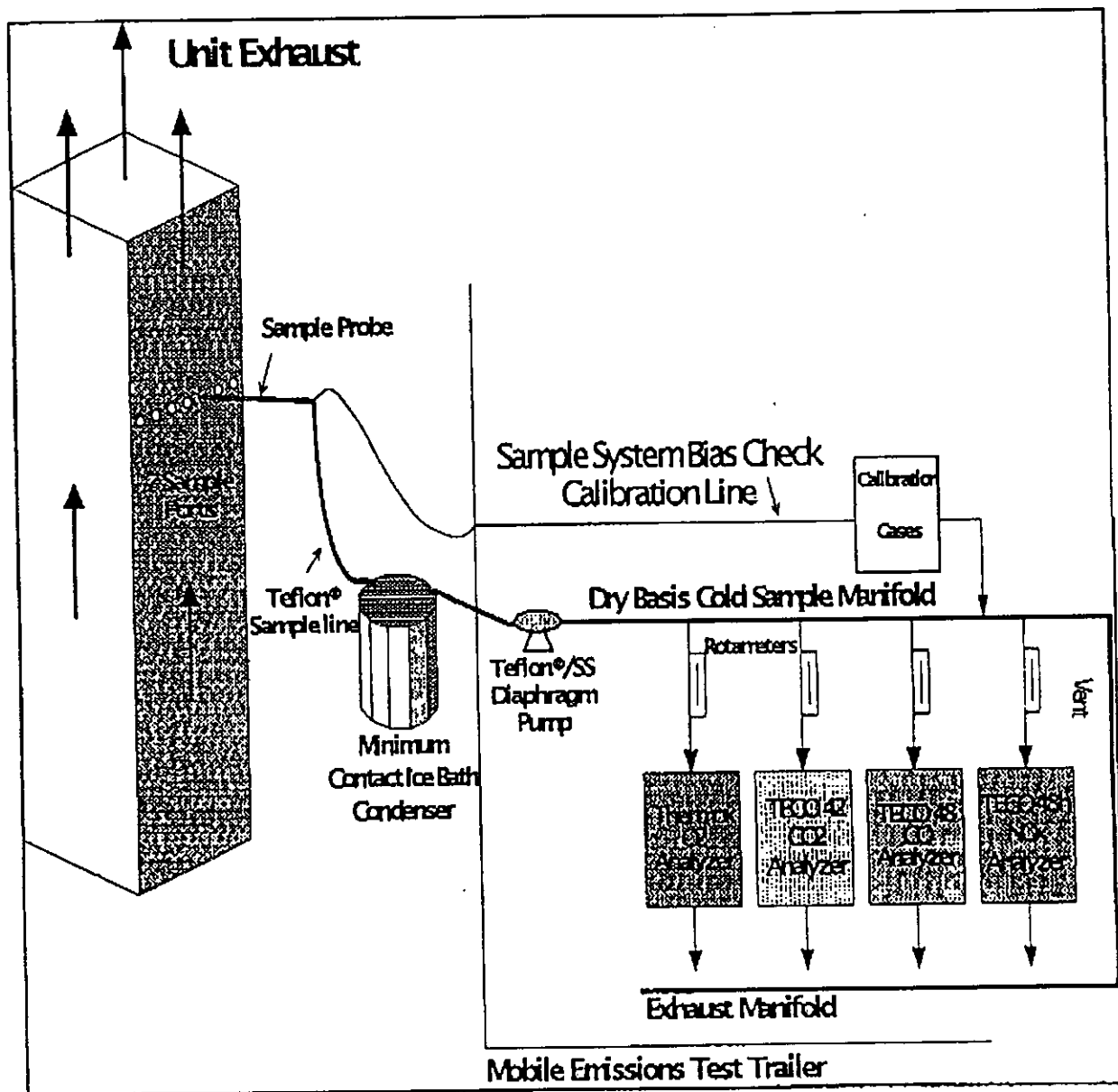
Process Area: FPC Intercession City Plant	Project # 15106	 <b>KBN</b> Engineering and Applied Sciences, Inc.	File Name: FPCICA.VSD
Emission Unit: Combustion Turbine No. 11	Revised: 4/21/95 11:12 AM		

**IC2-EUI-4**

**DESCRIPTION OF STACK SAMPLING FACILITIES**



Figure 1  
Gaseous Sampling and Analysis Diagram



**IC2-EUI-10**

**ALTERNATIVE METHODS OF OPERATION**

**ATTACHMENT IC2-EUI-10**  
**ALTERNATE METHODS OF OPERATION**  
**COMBUSTION TURBINE UNIT 11**

The Florida Power Corporation Intercession City Plant received authorization from the Florida Department of Environmental Protection (FDEP) to construct a Siemens Model V84 combustion turbine (CT) (see AC 49-203114 and FDEP correspondence dated July 14, 1994). This combustion turbine was rated at 171 MW (ISO conditions) and authorized to fire low sulfur distillate oil. The CT is currently being installed. This application is to obtain authorization to install natural gas firing which the CT was designed for and capable of accommodating. The operation of the CT on either distillate oil or natural gas would be limited so that there are no annual emission increases for any air pollutant. That is, the annual tons per year authorized of the CT would remain as stated in Specific Condition 1. of the Construction Permit but would include short term emission limits as requested in this application.

The potential emissions for natural gas firing (i.e., 100% natural gas firing) were calculated based on the most restrictive ton/year emission limit for any pollutant when firing distillate oil. Since the hourly emissions for natural gas firing are all less than those authorized for distillate oil firing (see Pollutant Information and Attachment IC2-EUE-10 Calculation of Emissions), the maximum annual hours of operating the CT on natural gas were calculated using the hourly emissions of any pollutant that produced an equivalent annual emission as distillate oil. The most restrictive limit in the permit is for VOCs at 15.5 tons/year/CT. (Note that the Siemens CT replaced two turbines contained in the original construction permit. Therefore, the annual emissions affected by this application are one-half of those authorized in the original construction permit). The amount of hours operated at full load was calculated as follows:

$$\text{Hours/CT} = 15.5 \text{ ton/year} \times 2,000 \text{ lb/ton} \times \text{hr}/5.296 \text{ lb} = 5,853 \text{ hrs/yr}$$

For the other pollutants, the potential annual emissions for natural gas firing (assuming natural gas is used exclusively) would be less than currently authorized for distillate oil firing. The emission decreases are listed below:

Pollutant	Oil Firing (tons/year)	Gas Firing (tons/year)	Decrease (tons/year)
PM	29	22	7
NO <sub>x</sub>	566	435	131
CO	134	90	44
SO <sub>2</sub>	588	12	576
H <sub>2</sub> SO <sub>4</sub>	40.5	2	38

Thus, there will be a potential 796 tons/year, or about 59 percent decrease in emissions when using natural gas.