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 J. Hayes (Clerk) 8/17/92 (Date)

Copies furnished to:

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

P 062 921 989

Receipt for Certified Mail

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to: Mr. R. W. Neiser, FPC	
Street and No.: 3201-34th Street South	
P.O., State and ZIP Code: St. Petersburg, FL 33733	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$

Postmark or Date
Mailed: 8-17-92
Permit: AC 49-203114
PSD-FL-181

PS Form 3800, June 1991

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt Fee will provide you the signature of the person delivered to and the date of delivery.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. R. W. Neiser
Florida Power Corporation
3201-34th Street South
St. Petersburg, FL 33733

4a. Article Number
P 062 921 989

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery AUG 20 1992

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, November 1990 ☆U.S. GPO: 1991—287-066 **DOMESTIC RETURN RECEIPT**

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_2 emissions will remain as specified in the permit: Distillate fuel oil with a maximum of 0.2% sulfur by weight and 2459 TPY SO_2. 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 SO2 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 Chassahowitxka 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 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.

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.

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.

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;

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).

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:

Percent Average Sulfur Content	% Capacity Factor
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.

SPECIFIC CONDITIONS:

Compliance Determination

8. Compliance with the NO_x, SO_2, CO, PM, PM_{10}, 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_2 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.

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_x standard, measured NO_x emissions at 15 percent oxygen will be adjusted to ISO ambient atmospheric conditions by the following correction factor:

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

where:

NO_x = Emissions of NO_x at 15 percent oxygen and ISO standard ambient conditions.

$NO_{x\,obs}$ = Measured NO_x emission at 15 percent oxygen, ppmv.

P_{ref} = Reference combustor inlet absolute pressure at 101.3 kilopascals (1 atmosphere) ambient pressure.

P_{obs} = Measured combustor inlet absolute pressure at test ambient pressure.

H_{obs} = Specific humidity of ambient air at test.

e = Transcendental constant (2.718).

T_{AMB} = 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 NOx 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.

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 contruction 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

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_x	2369	40
SO_2	4326	40
H_2SO_4 Mist	626	7
PM	159	25
PM_{10}	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

Pollutant	Determination
NO_x	42 ppmvd @ 15% O_2
SO_2 and H_2SO_4	Max 0.5% Sulfur No. 2 fuel oil
PM/PM_{10}	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_X)

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_X 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_x emissions. The SCR process combines vaporized ammonia with NO_x 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_x with a new catalyst. As the catalyst ages, the maximum NO_x reduction will decrease to approximately 86 percent.

The effect of exhaust gas temperature on NO_x reduction depends on the specific catalyst formulation and reactor design. Generally, SCR units can be designed to achieve effective NO_x 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_x 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_x 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_x 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 NO_x is taken into consideration with the total annual cost of $2,190,000, the cost per ton of controlling 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 NO_x combustors (42 ppmv on oil firing). Since the Intercession City facility is capable of limiting 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 NO_x.

Sulfur Dioxide(SO_2) and Sulfuric Acid Mist (H_2SO_4)

The applicant has stated that sulfur dioxide (SO_2) and sulfuric acid mist (H_2SO_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 SO_2/year and 626 tons H_2SO_4 mist per year.

In accordance with the "top down" BACT review approach, only two alternatives exist that would result in more stringent 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 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 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_2 and H_2SO_4 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_2 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_{10})

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_x 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_x emission control is justifiable as BACT for this facility. BACT for SO_2 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_x	42 ppmvd @ 15% O_2	Wet Injection
SO_2	222 lbs/hr/unit	Max. 0.2% sulfur content, by weight, No. 2 fuel oil
PM and PM_{10}	15 lbs/hr/unit	Combustion
CO	54 lbs/hr/unit	Combustion
VOC	5 lbs/hr/unit	Combustion
Arsenic	4.32×10^{-3} lbs/hr/unit	Fuel Quality
Beryllium	2.57×10^{-3} lbs/hr/unit	Fuel Quality
H_2SO_4	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_x	42 ppmvd @ 15% O_2	Wet Injection
SO_2	407 lbs/hr/unit	Max. 0.2% sulfur content, by weight, No. 2 fuel oil

PM and PM_{10}	17 lbs/hr/unit	Combustion
CO	79 lbs/hr/unit	Combustion
VOC	9 lbs/hr/unit	Combustion
Arsenic	7.9×10^{-3} lbs/hr/unit	Fuel Quality
Beryllium	4.7×10^{-3} lbs/hr/unit	Fuel Quality
H_2SO_4	28 lbs/hr/unit	Max 0.2% sulfur content, by weight, No. 2 fuel oil

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:

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

August 17 1992
Date

Approved by:

Carol M. Browner, Secretary
Dept. of Environmental Regulation

August 17 1992
Date

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To:	Location:
To:	Location:
To:	Location:
From:	Date:

Interoffice Memorandum

TO: Carol M. Browner

FROM: Howard L. Rhodes

DATE: August 17, 1992

SUBJ: Approval of Construction Permit AC 49-203114 (PSD-FL-180)
Florida Power Corporation - Intercession City

Attached for your approval and signature is a permit prepared by the Bureau of Air Regulation for the above mentioned company to construct six simple cycle combustion peaking units.

Florida Power Corporation proposes to increase their energy capability at the Intercession City site by operating six new simple cycle combustion turbines (CTs) for a generating capability of 712.6 megawatts (MW). The six combustion turbines will fire No. 2 fuel oil with a maximum of 0.2% sulfur by weight and will operate for a maximum of 3390 hours per year. These CTs are equipped with water injection for nitrogen oxides (NO_x) control. The Intercession City facility has six existing simple cycle combustion turbines with a generating capability of 306 MW.

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.

I recommend your approval and signature.

HLR/TH/plm

Attachments

Florida Power
CORPORATION

RECEIVED
AUG 30 1995
Bureau of
Air Regulation

August 25, 1995

Mr. Al Linero
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Florida Power Corporation
Intercession City Facility
Permit Extension to Accommodate Title V

Dear Mr. Linero:

Due to the extensions of time for submitting Title V applications, the above-referenced facility construction permit (AC 49-203114) requires an extension to accommodate the Title V application due date. The Title V permit application for this source is currently due on January 1, 1996, and DEP has indicated that the application submittal deadline may be extended further, until June 15, 1996. As a consequence, an extension of the construction permit until September 15, 1996 is requested. An extension until September 15, 1996 will allow for any future delays in the Title V application due dates.

If you should have any questions concerning the above, please feel free to contact me at (813) 866-5158.

Sincerely,

Scott H. Osbourn
Senior Environmental Engineer

See AC 01-204652
for response
KS

cc: Clair Fancy, FDEP
Charles Collins, FDEP Central District
Ken Kosky, KBN

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

August 10, 1995

CERTIFIED MAIL RETURN RECEIPT REQUESTED

Mr. W. Jeffrey Pardue, Director
Environmental Services Department H2G
Florida Power Corporation
Post Office Box 14042
St. Petersburg, Florida 33733

Dear Mr. Pardue:

RE: Intercession City-DEP Permit No. AC 49-203114 and PSD-Fl-180
Request to Burn Natural Gas in Units P7 through P11

The Department is in receipt of your April 28, May 31, and July 7, 1995, letters requesting a permit modification to burn natural gas as a supplemental fuel in combustion turbines P7 through P11. The Bureau of Air Regulation has evaluated your request and approves the burning of natural gas for these turbines since there will not be an increase in either lb/hr/unit or tons/yr/unit of the permitted emission rates. Consequently, the following new condition will be added:

SPECIFIC CONDITION No. 1

These emission units are allowed to burn natural gas. Emissions of each pollutant while burning natural gas shall not exceed the following limits:

GE PG7111(EA), 4 units

	lb/hr/unit	tons/yr/unit
PM	7.50	12.71
SO2	2.99	5.06
CO	21.30	36.10
NOx	107.00	181.37 and 25 ppmvd at 15% oxygen
VOC	3.00	5.08
H_2SO_4	0.44	0.75

Mr. W. Jeffrey Pardue
August 10, 1995
Page Two

SIEMENS V84.3, 1 unit

	lb/hr	ton/yr	
PM	**7.5**	**12.71**	
SO2	**4.22**	**7.15**	
CO	**30.9**	**52.37**	
NOx	**149**	**252.56**	**and 25 ppmvd at 15% oxygen**
VOC	**5.3**	**8.98**	
H2SO4	**0.64**	**1.08**	

GE Frame 7EA Units (P7-P10)	**Temp.(F)**	**Heat Input (MMBtu/hr)**
	20	**1,159**
	59	**1,048**
	90	**955**
Siemens Unit (P11)	**20**	**1,609**
	59	**1,477**
	95	**1,355**

Allowable emissions are calculated at 59°F. Annual emissions rates are based on 3390 hours per year.

BACT Determination

The **BACT** determination is hereby revised to include the burning of natural gas at a NOx emission standard of 25 ppmvd at 15%O_2.

It is the Department's understanding that natural gas is available on an interruptible basis at this time. In the future, if natural gas becomes available on a non-interruptible basis, the Department may reassess the BACT and may require stricter NOx control over a reasonable period of time.

A copy of this amendment letter shall be attached to and shall become a part of Air Construction Permit AC49-203114, PSD-FL-180.

Sincerely,

Howard L. Rhodes

Howard L. Rhodes, Director
Division of Air Resources
Management

HLR/th/t

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this **PERMIT AMENDMENT** and all copies were mailed by certified mail before the close of business on 8-11-95 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.

Kim Tober 8-11-95
Clerk Date

Copies to be furnished to:

cc: Charles Collins, CD
Mike Kennedy, FPC

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
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I also wish to receive the following services (for an extra fee):

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Consult postmaster for fee.

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W. Jeffrey Pardue, Director
Fla. Power Corp
PO Box 14042
St. Pete, Fl 33733

4a. Article Number
Z 392 979 024

4b. Service Type
☐ Registered ☐ Insured
☑ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
AUG 17 1995

5. Signature (Addressee)
Brian Williams

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form **3811**, December 1991 ☆U.S. GPO: 1993—352-714 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt

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Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
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UNITED STATES POSTAL SERVICE

PS Form **3800**, March 1993

Sent to W. Jeffrey Pardue	
Street and No. Fla. Power Corp	
P.O., State and ZIP Code St. Pete, Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date AC49-203114 8-11-95 PSD-Fl-180	

AC49-270739

PSD-Fl-180

Final Determination

Florida Power Corporation
Intercession City
AC 49-203114
PSD-FL-180A

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

August 10, 1995

Final Determination
Florida Power Corporation
Intercession City Facility
PSD-FL-180A
AC49-203114

The Permit Amendment for the Florida Power Corporation (FPC) Intercession City facility was distributed on July 17, 1995. The amendment will allow the use of natural gas as a supplemental fuel for electrical peaking units P7 through P11. When using natural gas, actual and allowable emissions will be lower than when burning fuel oil. This permit amendment does not change the intent of the previously issued PSD permit nor does it result in an emissions increase.

The Notice of Intent to Issue was published in the Orlando Sentinel on July 21, 1995. Copies of the permit amendment evaluation were available for inspection at the Department of Environmental Protection's offices in Orlando and Tallahassee.

No comments were submitted during the public notice period.

The final action of the Department is to issue the permit amendment as noted during the public notice period.

Memorandum

Florida Department of
Environmental Protection

TO: Howard L. Rhodes

FROM: Clair Fancy

DATE: August 10, 1995

SUBJECT: Approval of Construction Permit Amendment
Florida Power Corporation - Intercession City
AC 49-203114, PSD-FL-180A

Attached is a letter prepared by the Bureau of Air Regulation that will amend the PSD permit for the Intercession City facility. The amendment will approve the burning of natural gas as a supplemental fuel in combustion turbines P7 through P11.

This permit amendment is not controversial. I recommend your approval and signature.

AAL/th/t

Florida Power
CORPORATION

RECEIVED
AUG 4 1995
Bureau of
Air Regulation

August 1, 1995

Mr. Al Linero, P.E.
Administrator, New Source Review Section
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Dear Mr. Linero:

Re: Intercession City - DEP Permit No. AC49-203114 & PSD-FL-180
Draft Permit Amendment to Burn Natural Gas in Units P7 through P11

Florida Power Corporation (FPC) has received the draft permit referenced above. The Intent to Issue notice was published in the Orlando Sentinel on July 21, 1995. The proof of publication of this public notice is enclosed.

FPC has one comment on the draft permit. While burning natural gas, Units P7 through P10 are able to reach slightly higher heat input levels than while burning No. 2 oil. As given in the permit application, the following heat input levels can be reached by each unit:

GE Frame 7EA Units (P7 - P10)	Temp. (F)	Heat Input (MMBtu/hr)
	20	1,159
	59	1,048
	90	955
Siemens Unit (P11)	20	1,609
	59	1,477
	95	1,355

FPC requests that the heat input values given above be included in the permit amendment as the heat input values that are allowed while burning natural gas. Also, the emission limits given in the draft amendment should be described as the limits while burning natural gas to avoid any potential confusion with the limits for No. 2 oil combustion.

Thank you for your consideration of these comments. FPC would appreciate an expedient issuance of the final permit amendment. Please feel free to contact me at (813) 866-4344 if you have any questions.

Sincerely,

J. Michael Kennedy

J. Michael Kennedy
Manager, Air Programs

Enclosure

cc: Mr. Charles Collins, DEP Central District
Mr. Ken Kosky, P.E., KBN Engineering

The Orlando Sentinel

Published Daily
$199.40

State of Florida } S.S.
COUNTY OF ORANGE

Before the undersigned authority personally appeared Joyce L. Wytrwal, who on oath says that he/she is the Legal Advertising Representative of The Orlando Sentinel, a daily newspaper published at ORLANDO in ORANGE County, Florida; that the attached copy of advertisement, being a STATE OF FLORIDA in the matter of PSD-FL-180A AC49-203114

in the ORANGE Court, was published in said newspaper in the issue; of 07/21/95

Affiant further says that the said Orlando Sentinel is a newspaper published at ORLANDO, in said ORANGE County, Florida, and that the said newspaper has heretofore been continuously published in said ORANGE County, Florida, each Week Day and has been entered as second-class mail matter at the post office in ORLANDO in said ORANGE County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he/she has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Joyce Wytrwal

The foregoing instrument was acknowledged before me this 21 day of July, 1995, by Joyce L. Wytrwal, who is personally known to me and who did take an oath.

(SEAL)

[ ] Produced Identification [ ] Other I.D.

**STATE OF FLORIDA
DEPARTMENT OF
ENVIRONMENTAL
PROTECTION
NOTICE OF INTENT
TO ISSUE PERMIT
AMENDMENT
PSD-FL-180A
AC49-203114**

The Department of Environmental Protection gives notice of its intent to issue an amendment of permit PSD-FL-180 (AC49-203114) to Florida Power Corporation to allow the use of natural gas, an inherently less polluting fuel available on an interruptible basis as a supplemental fuel for electrical Peaking Units P7 through P11 located in Intercession City, Osceola County. When using natural gas, actual and allowable emissions of introgen oxides, sulfur dioxide, and particulate matter will be lower than actual and allowable emissions when burning fuel oil . These benefits are reflected in a revision to the previously-issued Best Available Control Technology (BACT) determination pursuant to Prevention of Significant Deterioration (PSD).

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 32399-2400, within fourteen (14) days of publication of this notice. 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) pursuant to 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 statament 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 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 Notice. Persons whose substantial interests will be affected by any decision of the department with regard to the 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 publication of this notice 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 Florida Administrative Code.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday except legal holidays, at:
Department of Environmental
Bureau of Air Regulation
111 S. Magnolia Drive, Suite 4
Tallahassee, Florida 32301
Department of Environmental Protection
Central District
3319 Maguire Blvd. Suite 232
Orlando, Florida 32803-3767

Any person may send written comments on the proposed action to Administrator, New Source Review Section, at the Department's Tallahassee address. All comments received within 14 days of the publication of this notice will be considered in the Department's final determination.

COR447480 JULY 21, 1995

Department of
Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

July 17, 1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. W. Jeffrey Pardue, Director
Environmental Services Department H2G
Florida Power Corporation
Post Office Box 14042
St. Petersburg, Florida 33733

Dear Mr. Pardue:

Re: Intercession City - Permit Nos. AC 49-203114, PSD-FL-180
Request to Burn Natural Gas in Units P7 through P11

Attached is one copy of the Proposed Permit Amendment, Intent to Issue and the Public Notice of Intent to Issue Permit Amendment (for publication by FPC) for peaking units P7 through P11 at the Intercession City Power Plant.

Please submit any comments you may have concerning the Department's proposed action to Mr. A. A. Linero, P.E., at the above address. If you have any questions, please call Ms. Teresa Heron or Mr. Linero at (904)488-1344.

Sincerely,

AA Linero for

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

CHF/al/t

cc: M. Kennedy, FPC
C. Collins, CD
J. Harper, EPA
J. Bunyak, NPS

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
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- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
W. Jeffrey Pardue, Director
Env. Services Dept H2G
Fla. Power Corp.
P O Box 14042
St. Pete, Fl 33733

4a. Article Number
Z 392 979 059

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
JUL 21 1995

5. Signature (Addressee)
[illegible signature]

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form **3811**, December 1991 ★U.S. GPO: 1993—352-714 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

Z 392 979 059

UNITED STATES POSTAL SERVICE

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

PS Form **3800**, March 1993

Sent to W. Jeff Pardue	
Street and No. Fla. Power Corp.	
P.O., State and ZIP Code St. Pete, Fl 33733	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 7-17-95 AC 49-20314 PSD-FI-180 AC49-270739	

DRAFT

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

August XX, 1995

CERTIFIED MAIL RETURN RECEIPT REQUESTED

Mr. W. Jeffrey Pardue, Director
Environmental Services Department H2G
Florida Power Corporation
Post Office Box 14042
St. Petersburg, Florida 33733

Dear Mr. Pardue:

RE: Intercession City-DEP Permit No. AC 49-203114 and PSD-Fl-180
Request to Burn Natural Gas in Units P7 through P11

The Department is in receipt of your April 28, May 31, and July 7, 1995, letters requesting a permit modification to burn natural gas as a supplemental fuel in combustion turbines P7 through P11. The Bureau of Air Regulation has evaluated your request and approves the burning of natural gas for these turbines since there will not be an increase in either lb/hr/unit or tons/yr/unit of the permitted emission rates. Consequently, the following condition will be added:

SPECIFIC CONDITION No. 1

A new condition, No. 1A, will be added to this permit.

These emission units are allowed to burn natural gas. Emissions of each pollutant shall not exceed the following limits:

GE PG7111(EA), 4 units

	lb/hr/unit	ton/hr/unit	
PM	7.50	12.71	
SO2	2.99	5.06	
CO	21.3	36.10	
NOx	107	181.37	and 25 ppmvd at 15% oxygen
VOC	3.0	5.08	
H_2SO_4	0.44	0.75	

DRAFT

SIEMENS V84.3, 1 unit

	lb/hr	ton/yr	
PM	7.5	12.71	
SO2	4.22	7.15	
CO	30.9	52.37	
NOx	149	252.56	and 25 ppmvd at 15% oxygen
VOC	5.3	8.98	
H2SO4	0.64	1.08	

Allowable emissions are calculated at 59°F. Annual emissions rates are based on 3390 hours per year.

BACT Determination

The **BACT** determination is hereby revised to include the burning of natural gas at an emission standard of 25 ppmvd at 15%O_2.

It is the Department understanding that natural gas is available on an interruptible basis at this time. In the future, if natural gas become available on a non-interruptible basis, the Department may reassess the BACT and may require stricter NOx control over a reasonable period of time.

A copy of this amendment letter shall be attached to and shall become a part of Air Construction Permit AC49-203114, PSD-FL-180.

Sincerely,

Howard L. Rhodes, Director
Division of Air Resources
Management

HLR/th/t

enclosures

cc: Charles Collins, CD
Mike Kennedy, FPC

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

NOTICE OF INTENT TO ISSUE PERMIT AMENDMENT

PSD-FL-180A
AC49-203114

The Department of Environmental Protection gives notice of its intent to issue an amendment of permit PSD-FL-180 (AC49-203114) to Florida Power Corporation to allow the use of natural gas, an inherently less polluting fuel available on an interruptible basis as a supplemental fuel for electrical Peaking Units P7 through P11 located in Intercession City, Osceola County. When using natural gas, actual and allowable emissions of nitrogen oxides, sulfur dioxide, and particulate matter will be lower than actual and allowable emissions when burning fuel oil. These benefits are reflected in a revision to the previously-issued Best Available Control Technology (BACT) determination pursuant to Prevention of Significant Deterioration (PSD).

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 32399-2400, within 14 days of publication of this notice. 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 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 Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application/ request 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 publication of this notice 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, Florida Administrative Code.

The application/request is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Protection
Bureau of Air Regulation
111 S. Magnolia Drive, Suite 4
Tallahassee, Florida 32301

Department of Environmental Protection
Central District
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803-3767

Any person may send written comments on the proposed action to Administrator, New Source Review Section, at the Department's Tallahassee address. All comments received within 14 days of the publication of this notice will be considered in the Department's final determination.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

CERTIFIED MAIL

In the Matter of an
Application for Permit Amendment

DEP File Nos. AC49-203114
PSD-FL-180A
Osceola County

Mr. W. Jeffrey Pardue, Director
Environmental Services Department H2G
Florida Power Corporation
Post Office Box 14042
St. Petersburg, Florida 33733

_______________________________________/

INTENT TO ISSUE

The Department of Environmental Protection gives notice of its intent to issue a permit amendment for a (copy attached) to the applicant's facility as detailed in the application/request specified above and for the reasons stated below.

The applicant, Florida Power Corporation, Inc. applied on April 28, 1995, to the Department of Environmental Protection for an amendment of their current air construction permit previously issued pursuant to Prevention of Significant Deterioration (PSD permit). The request is to allow use of surplus natural gas, an inherently less polluting fuel available on an interruptible basis, as a supplemental fuel for peaking units P7 through P11. When using natural gas, actual and allowable emissions of nitrogen oxides, sulfur dioxide, and particulate matter will be lower than actual and allowable emissions when burning fuel oil. The facility is located in Intercession City, 6525 Osceola-Polk County Line Road, Osceola County Florida.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Chapters 62-212 and 62-4, Florida Administrative Code (F.A.C.). The project is not exempt from permitting procedures. The Department has determined that a permit amendment is required for the proposed change.

Pursuant to Section 403.815, F.S., and Rule 62-103.150, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Notice of Intent to Issue Permit Amendment. The notice shall be published one time only within 30 days in the legal ad section of a newspaper of general circulation in the area affected. For the purpose of this rule, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within seven days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit amendment.

The Department will issue the permit amendment with the attached conditions unless a petition for an administrative proceeding (hearing) is filed pursuant to the provisions of Section 120.57, F.S.

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, 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 32399-2400. Petitions filed by the permit applicant and the parties listed below must be filed within 14 days of receipt of this intent. Petitions filed by other persons must be filed within 14 days of publication of the public notice or within 14 days of their receipt of this intent, whichever first occurs. 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 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 intent. Persons whose substantial interests will be affected by any decision of the Department with regard to the application/request 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 intent 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.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

[signature] for

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

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this **INTENT TO ISSUE PERMIT AMENDMENT** all copies were mailed by certified mail before the close of business on 7-17-95 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.

[signature] 7-17-95
Clerk Date

Copies furnished to:

M. Kennedy, FPC
C. Collins, CD
J. Harper, EPA
J. Bunyak, NPS

Florida Power
CORPORATION

REC D
JUL 1
Bureau of Air Regulation

July 7, 1995

Ms. Teresa Heron
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Dear Ms. Heron:

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

This is in response to Mr. Al Linero's request for additional information regarding the application referenced above. The request was for information on the estimated amount of natural gas that will be available to the Intercession City plant.

Florida Power Corporation (FPC) received from Florida Gas Transmission (FGT) data showing the amount of gas potentially available on a short-term basis by time of year. FGT, however, cannot estimate the annual amount of natural gas that may be available. Since the supply will be interruptible, FGT has indicated to FPC that as little as no gas may be available. The estimated potential amounts available on a short-term basis are as follows:

1) During the period of May through September, which includes the summer peak demand period, from 1,800 to 2,200 MMBtu/hour of natural gas is potentially available on a short-term basis. This is enough gas to operate two of the GE Frame 7EA units (Units P7 through P10) at base load.

2) During the period of October through April, up to 4,000 to 5,000 MMBtu/hour of natural gas is potentially available on a short-term basis. This is enough gas to operate up to four of the GE Frame 7EA units at base load.

Based on FGT's representations, FPC expects to use oil as the primary fuel but will take advantage of natural gas availability when it occurs. The Intercession City units are run mainly during peak load demand periods, which often coincide with peak natural gas demand periods. This and the interruptible nature of the gas supply make it very difficult to estimate total annual gas consumption. One certainty is that the units will pollute less when running on natural gas, resulting in a benefit to the environment.

GENERAL OFFICE: 3201 Thirty-fourth Street South P.O. Box 14042 St. Petersburg, Florida 33733 (813) 866-5151
A Florida Progress Company

Please contact me at (813) 866-4344 if you have any questions or if you need additional information.

Sincerely,

J. Michael Kennedy

J. Michael Kennedy
Manager, Air Programs

cc: C. Collins
Teresa
Cleve
Jewell H. - EPA
John B. - NPS

Florida Power
CORPORATION

May 31, 1995

RECEIVED

JUN 2 1995

Bureau of
Air Regulation

Mr. Al Linero, P.E.
Administrator, New Source Review Section
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Dear Mr. Linero:

Re: Intercession City - DEP Permit No. AC49-203114 & PSD-FL-180
Request to Burn Natural Gas in Units P7 through P11

Florida Power Corporation (FPC) has received your May 19, 1995 letter requesting additional information regarding the submittal referenced above. Each request item is discussed in detail below.

1. Emission Test Results

The emission test results from the past two years for Units P7 through P10 are enclosed. These include the initial compliance tests for these units, performed in late 1993 and early 1994, and the first annual compliance test performed in January 1995. Unit P11, the construction for which is nearing completion, has not yet been tested.

Please note that the initial tests were performed using a NOx limit of 42 ppm corrected to 15% O_2 at ISO conditions. The 1995 tests were performed against a NOx limit of 42 ppm corrected to 15% O_2 only, in accordance with the permit amendment issued to FPC on September 21, 1994.

2. Feasibility of Installing Dry Low-NOx Combustors

Before discussing the feasibility of installing dry low-NOx technology on these units, it is FPC's position that it is inappropriate to consider the retrofit of BACT technology for a non-PSD permit review. Construction on Units P7 through P10 was completed in late 1993 and they have been in operation since that time. Unit P11 is nearing completion. FPC is proposing to use natural gas as a supplemental fuel to No. 2 fuel oil and is proposing to decrease pollutant emissions while burning natural gas. Since emissions will not increase above those permitted for burning oil, the project is not subject to PSD review and the accompanying BACT determination.

In addition, it is FPC's understanding that the BACT determinations resulting in the application of dry low-NOx technology were for combined-cycle units firing primarily natural gas with oil as a back-up fuel. The Intercession City units are simple-cycle peaking units that will remain primarily oil-fired with natural gas used as an interruptible supplemental fuel that is in limited supply.

FPC has received an estimate of the cost to install dry low-NOx control technology on Units P7 through P10 from General Electric, which is the manufacturer. Retrofitting this technology on these units would require a substantial rebuilding of the units, including the combustors and the computer control system. The cost would be approximately $5 million per unit for a total of $20 million for the four units. Since natural gas will be available in a limited, interruptible supply, such an expense would cause FPC to withdraw the request and abandon the use of natural gas at the Intercession City facility.

Siemens, which is the manufacturer of Unit P11, does not yet have a dry low-NOx capability for the V84.3 turbine. A NOx concentration of 25 ppm is the lowest level that this unit can achieve while burning natural gas.

FPC hopes that the information given satisfactorily addresses your questions. FPC wishes to use the limited amount of natural gas which has become available to it. The already-installed water injection control technology will limit NOx emissions to 25 ppm, reducing emissions when compared with those from burning fuel oil, and resulting in a benefit to the environment.

Please feel free to contact me at (813) 866-4344 if you have any questions.

Sincerely,

J. Michael Kennedy

J. Michael Kennedy
Manager, Air Programs

Enclosures

cc: Mr. Charles Collins, DEP Central District
Mr. Ken Kosky, P.E., KBN Engineering

Department of
Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

May 19, 1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Michael Kennedy
Manager, Air Programs
Florida Power Corporation
Post Office Box 14042
St. Petersburg, Florida 33733

Dear Mr. Kennedy:

RE: Intercession City - DEP Permit No. AC49-203114 & PSD-FL-180
Request to Burn Natural Gas as a Supplementary Fuel

The Department is in receipt of your April 28,1995, letter requesting a permit modification to burn natural gas as a supplemental fuel in combustion turbines P7 through P11. Before we can process your request, please submit the following:

1. All NOx emission test results for each unit for the past two (2) years of operation.

2. A discussion of the feasibility of installing dry low NOx combustors to achieve a NOx emissions level less than 25 ppm at a future date (e.g. 15 ppm by 1998/1999). The analysis should include an estimate of cost per ton NOx removed. It should include credits such as savings on steam, revenues from additional operating hours, etc. For reference, BACT determinations for units permitted at the same time as the Intercession project and, which anticipated gas availability, were 42 ppm (oil) and 15 ppm (gas-by 1997/1998).

If you have any questions, please call Ms. Teresa Heron at (904) 488-1344.

Sincerely,
5/19

A. A. Linero, P.E.
Administrator
New Source Review Section

AL/th/t

cc: Charles Collins, Central District
Ken Kosky, KBN

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Michael Kennedy
Mgr. Air Program
Fla. Power Corp.
PO Box 14042
St. Pete, Fl 33733

4a. Article Number
Z 311 902 893

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery MAY 24 1995

5. Signature (Addressee)
Lisa Marle

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form **3811**, December 1991 ☆U.S. GPO: 1993—352-714 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

Z 311 902 893

UNITED STATES POSTAL SERVICE

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

PS Form **3800**, March 1993

Sent to Mike Kennedy	
Street and No. Fl Power Corp	
P.O., State and ZIP Code St. Pete, Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 5-22-95 AC49-203114 PSD-FI-180	

BEST AVAILABLE COPY

Florida Power
CORPORATION

RECEIVED
APR 28 1995
Bureau of
Air Regulation

April 26, 1995

1995 APR 28 PM 1:15

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_2. 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.

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

J. Michael Kennedy
Manager, Air Programs

Enclosures

cc: Mr. Charles Collins, P.E., DEP Central District
J. Heron
J. Harper, EPA
J. Bunyak, NPS
C. Holladay

AC49-270739

Florida Power CORPORATION

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

REMITTANCE ADVICE

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	250.00
					TOTAL	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

Void after 60 days

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

J. V. Smallwood
Treasurer

[redacted]

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:

W. Jeffrey Pardue, C.E.P., Director, Environmental Services Department

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, 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.*

W. JEFFREY PARDUE
5277
CERTIFIED
ENVIRONMENTAL PROFESSIONAL
BOARD

Signature ______ Date 4-26-95

* 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

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:

[x] 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:

[x] 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):

Professional Engineer Certification

1. Professional Engineer Name: **Kennard F. Kosky** Registration Number: **14996**
2. Professional Engineer Mailing Address: Organization/Firm: **KBN Engineering & Applied Sciences, Inc.** Street Address: **6241 NW 23rd Street, Suite 500** City: **Gainesville** State: **FL** Zip Code: **32653-1500**
3. Professional Engineer Telephone Numbers: Telephone: **(904) 336-5600** Fax: **(904) 366-6603**

4. Professional Engineer's Statement:

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

(1) To the best of my knowledge, there is reasonable assurance (a) that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; or (b) for any application for a Title V source air operation permit, that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application;

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

(3) For any application for an air construction permit for one or more proposed new or modified emissions units, the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

Kennard F. Kosky
Signature (seal)

4/22/95
Date

KENNARD F. KOSKY
STATE OF FLORIDA
REGISTERED ENGINEER

* Attach any exception to certification statement.

Application Contact

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

Application Comment

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.

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_2, PM/PM10, NO_x, CO, VOC, H_2SO_4	SO_2, PM/PM10, NO_x, CO, VOC, H_2SO_4
Visible Emissions	Permit	Permit
CEM	NO_x; water-to-fuel ratio	NO_x; water-to-fuel ratio
PSD	SO_2, PM/PM10, NO_2	SO_2, PM/PM10, NO_2

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Name, Location, and Type

1. Facility Owner or Operator: **Florida Power Corporation**			
2. Facility Name: **Intercession City Plant**			
3. Facility Identification Number: **0970014** [ ] Unknown			
4. Facility Location Information: Facility Street Address: **6525 Osceola Polk County Line Road** City: **Intercession City** County: **Osceola** Zip Code: **33848**			
5. Facility UTM Coordinates: Zone: **17** East (km): **446.3** North (km): **3126**			
6. Facility Latitude/Longitude: Latitude (DD/MM/SS): **28/15/38** Longitude: (DD/MM/SS): **81/32/51**			
7. Governmental Facility Code: **O**	8. Facility Status Code: **A**	9. Relocatable Facility? [ ] Yes [x] No	10. Facility Major Group SIC Code: **49**
11. Facility Comment: **The Intercession City Plant consists of 11 combustion turbine peaking units. Six of the turbines are fired with No. 2 distillate fuel having a masimum sulfur content of 0.5%. Five of the turbines are fired with No. 2 distillate fuel having a maximum sulfur content of 0.2%. These 5 turbines are limited to an average annual capacity factor of 33% based on a weighted 12 month rolling average content of 0.2%. The average annual capacity factor may be increased up to 38.7% if the average sulfur content is 0.16% or less. This application is for the installation of natural gas firing in Units 7, 8, 9, 10 and 11.**			

Facility Contact

1. Name and Title of Facility Contact: ,
2. Facility Contact Mailing Address: Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Contact Telephone Numbers: Telephone: Fax:

Facility Regulatory Classifications

1. Small Business Stationary Source? [ ] Yes [x] No [ ] Unknown
2. Title V Source? [x] Yes [ ] No
3. Synthetic Non-Title V Source? [ ] Yes, [x] No
4. Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)? [x] Yes [ ] No
5. Synthetic Minor Source of Pollutants Other than HAPs? [ ] Yes [x] No
6. Major Source of HAPs? [ ] Yes [x] No [ ] Possible
7. Synthetic Minor Source of HAPs? [ ] Yes [x] No
8. One or More Emissions Units Subject to NSPS? [x] Yes [ ] No
9. One or More Emissions Units Subject to NESHAP? [ ] Yes [x] No
10. Title V Source by EPA Designation? [ ] Yes [x] No
11. Facility Regulatory Classifications Comment: **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. 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

Chapter 210	**Stationary Sources -- General Requirements**
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).

Chapter 213	**Operation Permits for Major Sources of Air Pollution**
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).

Chapter 296	**Stationary Sources -- Emission Standards**
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

EPA Part 82 - Protection Of Stratospheric Ozone	
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 eissions 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:
   [ ] Attached, Document ID: ____________________
   [X] Not Applicable [ ] Waiver Requested

2. Facility Plot Plan:
   [ ] Attached, Document ID: ____________________
   [X] Not Applicable [ ] Waiver Requested

3. Process Flow Diagram(s):
   [X] Attached, Document ID(s): IC-FD-3
   [ ] Not Applicable [ ] Waiver Requested

4. Precautions to Prevent Emissions of Unconfined Particulate Matter:
   [ ] Attached, Document ID: ____________________
   [X] Not Applicable

5. Fugitive Emissions Identification:
   [ ] Attached, Document ID: ____________________
   [X] Not Applicable

6. Supplemental Information for Construction Permit Application:
   [X] Attached, Document ID: IC-FD-6
   [ ] Not Applicable

Additional Supplemental Requirements for Category I Applications Only

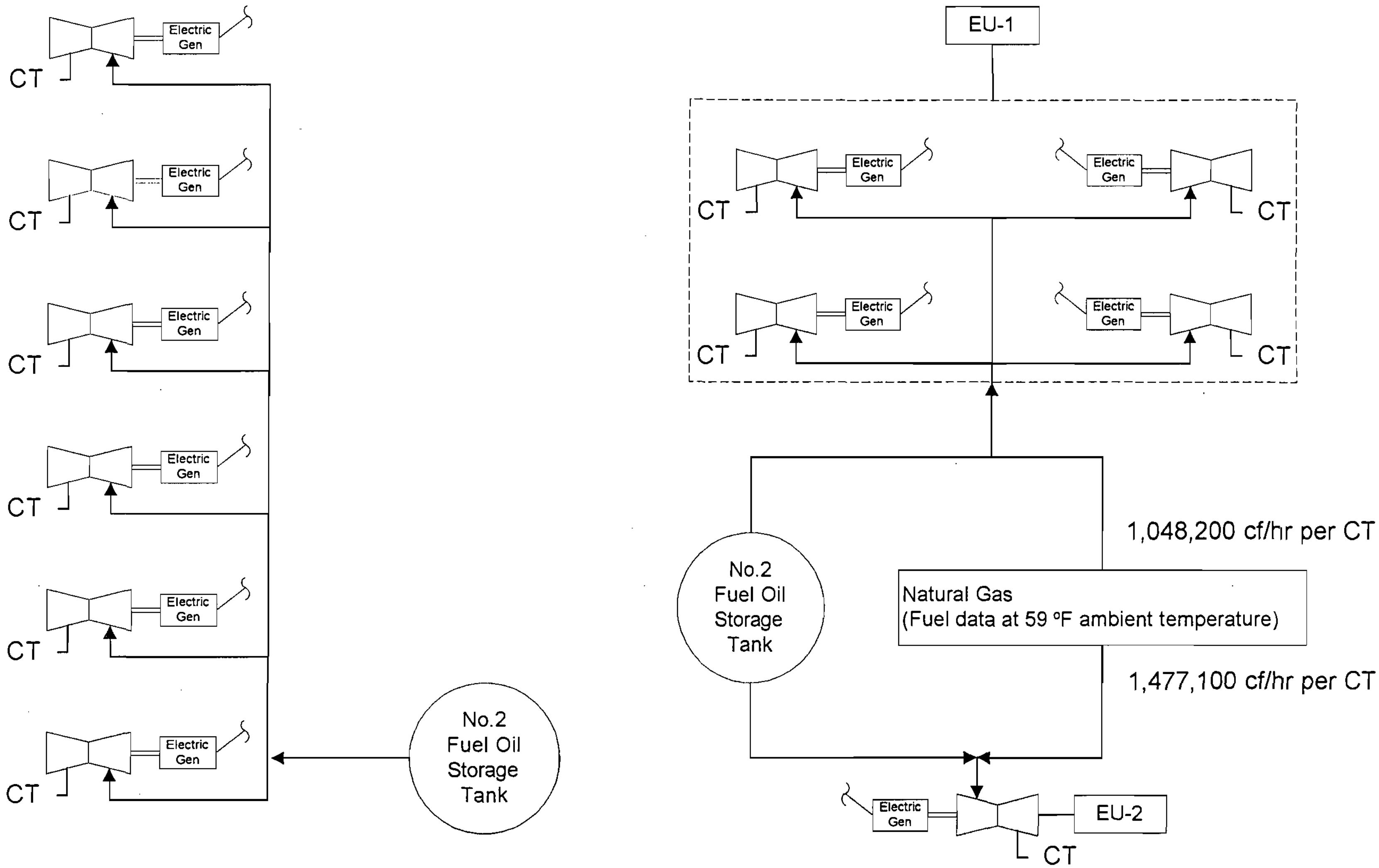
7. List of Insignificant Activities:
   [ ] Attached, Document ID: ____________________
   [X] Not Applicable

8. List of Equipment/Activities Regulated under Title VI:
   [ ] Attached, Document ID: ____________________
   [ ] Equipment/Activities Onsite but Not Required to be Individually Listed
   [X] Not Applicable

9. Alternative Methods of Operation: [ ] Attached, Document ID: ____________ [x] Not Applicable
10. Alternative Modes of Operation (Emissions Trading): [ ] Attached, Document ID: ____________ [x] Not Applicable
11. Enhanced Monitoring Plan: [ ] Attached, Document ID: ____________ [x] Not Applicable
12. Risk Management Plan Verification: [ ] Plan Submitted to Implementing Agency - Verification Attached Attached, Document ID: ____________ [ ] Plan to be Submitted to Implementing Agency by Required Date [x] Not Applicable
13. Compliance Report and Plan [ ] Attached, Document ID: ____________ [x] Not Applicable
14. Compliance Statement (Hard-copy Required) [ ] Attached, Document ID: ____________ [x] Not Applicable

ATTACHMENT

IC-FD-3



Note:
CT = Combustion Turbine
EU = Emission Unit Number

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

ATTACHMENT

IC-FD-6

BEST AVAILABLE COPY

Department of Environmental Protection

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

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

RECEIVED
SEP 28 1994
Environmental Svcs Department

September 21, 1994

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

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_X) emission limit of 57 ppm @ 15% O_2, 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. <u>Incorporation of an ISO NO_X Emission Limit</u>

Your request to amend the construction permit by incorporating an ISO NO_X emission limit of 57 ppm @ 15% O_2 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_X 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_X STD for the subject construction permit was established by the best available control technology (BACT) determination to be an allowable NO_X 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 <u>ISO</u> NO_X emission limit. Also, observed values of NO_X emissions 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. <u>Fuel Bound Nitrogen (FBN)</u>

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_x emissions which exceed a STD. This STD is equal to the allowable NO_x 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_x emission allowance for fuel bound nitrogen (F) as defined in 40 CFR 60.332(a)(3). The applicant was given a NO_x 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_x 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_x 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.

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 submitted to the Central District office no later than 45 days after completion pursuant to F.A.C. Rule 17-2.700(8).

<u>To</u>

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. <u>Attachments to be Incorporated</u>;

- 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

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 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

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 duputy 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.

Charlotte J. Fayes 9/23/94
Clerk Date

Attachment

BEST AVAILABLE COPY

Florida Power Corporation

GE Frame 7EA Combustion Turbines

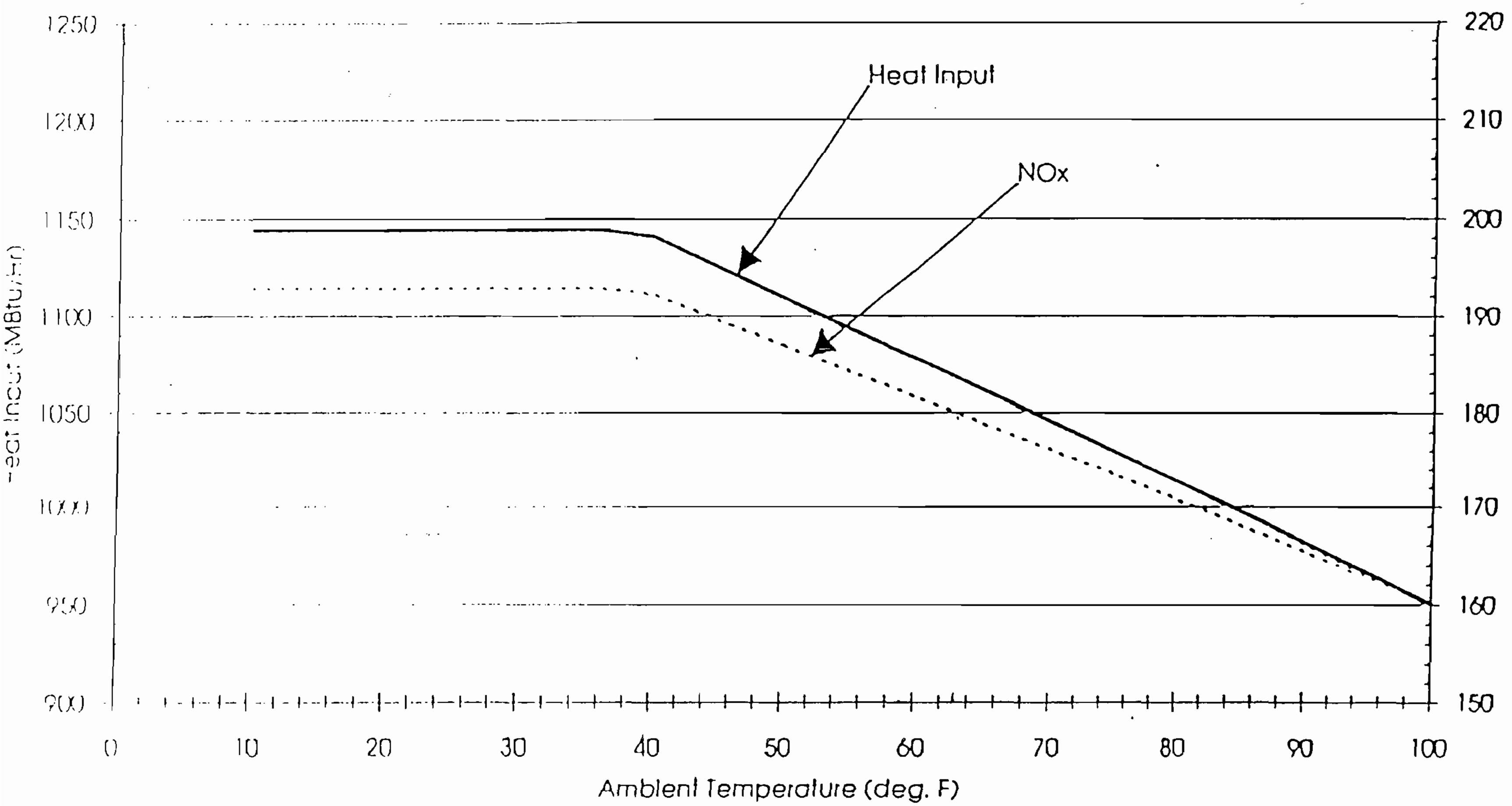


Figure 1L
Florida Power Corporation
Intercession City Facility
Heat Input vs. Ambient Temperature Curve

Department of Environmental Protection

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

Lawton Chiles
Governor

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 Siemmens 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

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.

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 J. Hayes 7/15/94
Clerk Date

Florida Power
CORPORATION

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_2 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.

GENERAL OFFICE: 3201 Thirty-fourth Street South P.O. Box 14042 St. Petersburg, Florida 33733 (813) 866-5151
A Florida Progress Company

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_2 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

Pollutant	Emission Rate
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

FPC 17506 COMB TURB GEN 62.1003
061193
PD-54

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 = ~~20,700 Btu/lb~~, Temperature = 60 F
No. 2 Fuel Oil LHV = ~~18,550 Btu/lb~~, Temperature = 60 F

NO_x 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			43,996	87,998	132,003	176,001	
Auxiliary power, kW			2,495	2,495	2,495	2,495	
Gross heat rate, Btu/kWh (LHV)			14,196	11,147	10,509	9,976	
Exhaust flow, lb/h			2,781,648	2,830,356	2,906,496	3,562,560	
Exhaust temp, F			623	835	1,038	1,022	
Inlet guide vane position, ~~degrees~~			75%	75%	75%	92.1%	
Fuel flow, lb/h			33,998	53,399	75,510	95,583	
Nitrogen oxides, ppmdv @ 15% O_2			42	42	42	42	
Nitrogen oxides, lb/h as NO_2			110	171	241	305	
Carbon monoxide, ppmdv			254	5.0	5.0	5.0	
Carbon monoxide, lb/h			403.6	12.4	17.5	22.1	
Sulfur dioxide, ppmwv			21.9	22.0	22.1	22.1	

FOR INFORMATION ONLY

FPC 18875 COMB. TURB GEN 62.1003
062393
PD-55

Manufacturer: Siemens

Model No./Combustor: V84.3

Combustion system type: ~~Dry NOx~~ Dual Fuel Low NOx

TABLE: B.2- 6

AMBIENT TEMPERATURE/
RELATIVE HUMIDITY: 20 F/60%

BAROMETRIC PRESSURE: ~~14.61 psia~~

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

NO_x 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
Sulfur dioxide, lb/h			136.1	213.8	302.3	382.8	
TSP, lb/h + PM10, lb/h			17.0	17.0	17.0	17.0	
~~PM10, lb/h~~							
Unburned hydrocarbon, ppmwv			6.0	5.0	5.0	5.0	
Unburned hydrocarbon, lb/h			5.5	7.1	10.0	12.7	
Volatile organic compounds, ppmwv			3.2	3.0	3.0	3.0	
Volatile organic compounds, lb/h			2.9	4.3	6.0	7.6	
Oxygen, ~~lb/h~~			18.5	15.8	12.8	12.3	
Nitrogen, ~~lb/h~~ %Wt.			73.7	72.4	70.5	70.2	
Carbon dioxide, ~~lb/h~~			3.9	6.0	8.2	8.5	
Argon, ~~lb/h~~			1.2	1.2	1.1	1.1	
Water, ~~lb/h~~			2.6	4.4	7.1	7.6	
Opacity, %			2.0	0.6	0	0	

FOR INFORMATION ONLY

FPC 17506 COMB TURB GEN 62.1003
061193
PD-54

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: ~~14.61 psia~~

FUEL: Natural Gas LHV = ~~20,700 Btu/lb~~, Temperature = 60 F
No. 2 Fuel Oil LHV = ~~18,550 Btu/lb~~, Temperature = 60 F

NO_x 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, ppmdv @ 15% O_2			42	42	42	42	
Nitrogen oxides, lb/h as NO_2			109.2	171.5	236.5	301	
Carbon monoxide, ppmdv			254	5.0	5.0	5.0	
Carbon monoxide, lb/h			402	12.4	17.1	21.8	
Sulfur dioxide, ppmwv			21.9	22.1	22.1	22.1	

FOR INFORMATION ONLY

FPC 18875 COMB TURB GEN 62.1003
062393
PD-55

Manufacturer: Siemens

Model No./Combustor: V84.3

Combustion system type: ~~Dry NOx~~ Dual Fuel Low NOx

TABLE: 8.2-8

AMBIENT TEMPERATURE/
RELATIVE HUMIDITY: 59F/60%

BAROMETRIC PRESSURE: ~~14.01 psia~~

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

NO_x 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
Sulfur dioxide, lb/h			135.7	214.2	296.6	376.8	
TSP, lb/h + PM10, lb/h			17.0	17.0	17.0	17.0	
~~PM10, lb/h~~							
Unburned hydrocarbon, ppmwv			6.0	5.0	5.0	5.0	
Unburned hydrocarbon, lb/h			5.4	7.1	9.8	12.5	
Volatile organic compounds, ppmwv			3.2	3.0	3.0	3.0	
Volatile organic compounds, lb/h			2.9	4.3	5.9	7.5	
Oxygen, ~~lb/h~~			18.0	15.1	13.1	12.5	
Nitrogen, ~~lb/h~~ %Wt.			73.2	71.9	70.4	69.9	
Carbon dioxide, ~~lb/h~~			4.2	6.5	8.0	8.4	
Argon, ~~lb/h~~			1.2	1.2	1.2	1.2	
Water, ~~lb/h~~			3.3	5.3	7.4	7.9	
Opacity, %			2.0	0.6	0	0	

FOR INFORMATION ONLY

Manufacturer: Siemens

Model No./Combustor: V84.3

Combustion system type: Dual Fuel Low NOx

TABLE: B.2-10

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

BAROMETRIC PRESSURE: ~~[illegible] psia~~

FUEL: Natural Gas LHV = ~~[illegible] Btu/lb~~, Temperature = 60 F
No. 2 Fuel Oil LHV = ~~[illegible] Btu/lb~~, Temperature = 60 F

NO_x CONTROL LEVEL: 42ppm

POWER FACTOR: 0.85 pf

FPC 17506 COMB TURB GEN 62.1003
061193
FD-54

	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			37,729	75,460	113,195	153,861	
Auxiliary power, kW			2,495	2,495	2,495	2,495	
Gross heat rate, Btu/kWh (LHV)			15,749	12,184	11,077	10,445	
Exhaust flow, lb/h			2,414,844	2,459,412	2,756,052	3,368,556	
Exhaust temp, F			746	968	1,055	1,051	
Inlet guide vane position, degrees			75%	75%	82.35%	100%	
Fuel flow, lb/h			32,346	50,051	68,266	87,487	
Nitrogen oxides, ppmdv @ 15% O_2			42	42	42	42	
Nitrogen oxides, lb/h as NO_2			104.0	160.3	218.0	279.2	
Carbon monoxide, ppmdv			254.0	5.0	5.0	5.0	
Carbon monoxide, lb/h			383.0	11.6	15.8	20.2	
Sulfur dioxide, ppmwv			21.9	22.1	22.1	22.1	

FOR INFORMATION ONLY

Manufacturer: Siemens

Model No./Combustor: V84.3

Combustion system type: ~~Dry NOx~~ Dual Fuel Low NOx

TABLE: B.2-10

AMBIENT TEMPERATURE/
RELATIVE HUMIDITY: 90F/60

BAROMETRIC PRESSURE: ~~14.61 psia~~

FUEL: Natural Gas LHV = ~~21,140 Btu/lb~~, Temperature = 60 F
No. 2 Fuel Oil LHV = ~~18,330 Btu/lb~~, Temperature = 60 F

NO_x CONTROL LEVEL: 42ppm

POWER FACTOR: 0.85 pf

FPC 18875 COMB TURB GEN 62.1003
062393
PD-55

	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			129.6	200.4	273.4	350.4	
TSP, lb/h + PM10, lb/h			17.0	17.0	17.0	17.0	
~~PM10, lb/h~~							
Unburned hydrocarbon, ppmwv			6.0	5.0	5.0	5.0	
Unburned hydrocarbon, lb/h			5.2	6.7	9.1	11.6	
Volatile organic compounds, ppmwv			3.2	3.0	3.0	3.0	
Volatile organic compounds, lb/h			2.8	4.0	5.4	7.0	
Oxygen, ~~lb/h~~			17.6	14.9	13.0	17.6	
Nitrogen, ~~lb/h~~			72.3	71.0	69.6	72.3	
Carbon dioxide, ~~lb/h~~			4.3	6.5	7.9	4.3	
Argon, ~~lb/h~~			1.2	1.2	1.2	1.2	
Water, ~~lb/h~~			4.5	6.4	8.4	4.6	
Opacity, %			2.0	0.6	0	0	

FOR INFORMATION ONLY

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_2 is the pollutant which is emitted in the greatest quantities from the Siemens unit as well as the two GE units. Worst-case SO_2 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^3 from the two GE units and 12 ug/m^3 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.

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_2 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_2 was chosen because those emissions will have the highest impact.

Worst-case SO_2 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_2 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

	GE Frame 7FA	Siemens
SO_2 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_2 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:

GE Units	Max. = 23.18 ug/m^3	Distance = 1.577 km
Siemens Unit	Max. = 12.04 ug/m^3	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

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

GE 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
2[illegible]0.	15.95	1	3.0	3.1	1410.3	1409.31	634.90	3735.56	NO
2[illegible]0.	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*LB

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

*** CAVITY CALCULATION - 2 ***
CONC (UG/M**3) = .0000
CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 14.40
CAVITY LENGTH (M) = 8.06
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 **
****

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*** 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

BEST AVAILABLE COPY

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
2[illegible]0.	7.964	1	3.0	3.2	1249.3	1248.32	609.16	3731.28	NO
2[illegible]0.	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	-	3.34×10^{-2}	0.23(b)	Application
Mercury (Hg)	3.0×10^{-6} lbs/MMBtu	3.09×10^{-3}	0.02(b)	Application
Lead (Pb)	8.9×10^{-6} lbs/MMBtu	9.16×10^{-3}	0.06(b)	Application
Inorganic Arsenic	4.2×10^{-6} lbs/MMBtu	4.32×10^{-3}	0.03(b)	BACT
Beryllium (Be)	2.5×10^{-6} lbs/MMBtu	2.57×10^{-3}	0.02(b)	BACT

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)	3.0×10^{-6} lbs/MMBtu	5.66×10^{-3}	0.02(b)	Application
Lead (Pb)	8.9×10^{-6} lbs/MMBtu	1.68×10^{-3}	0.06(b)	Application
Inorganic Arsenic	4.2×10^{-6} lbs/MMBtu	7.9×10^{-3}	0.02(b)	BACT
Beryllium (Be)	2.5×10^{-6} lbs/MMBtu	4.72×10^{-3}	0.02(b)	BACT

<u>TO</u>:

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. <u>Attachment to be Incorporated</u>:

° 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.

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.

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 J. Hayes 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_2 emissions will remain as specified in the permit: Distillate fuel oil with a maximum of 0.2% sulfur by weight and 2459 TPY SO_2. 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 SO2 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 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.

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.

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.

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;

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).

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:

Percent Average Sulfur Content	% Capacity Factor
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_x, SO_2, CO, PM, PM_{10}, 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_2 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.

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_x standard, measured NO_x emissions at 15 percent oxygen will be adjusted to ISO ambient atmospheric conditions by the following correction factor:

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

where:

NO_x = Emissions of NO_x at 15 percent oxygen and ISO standard ambient conditions.

$NO_{x\ obs}$ = Measured NO_x emission at 15 percent oxygen, ppmv.

P_{ref} = Reference combustor inlet absolute pressure at 101.3 kilopascals (1 atmosphere) ambient pressure.

P_{obs} = Measured combustor inlet absolute pressure at test ambient pressure.

H_{obs} = Specific humidity of ambient air at test.

e = Transcendental constant (2.718).

T_{AMB} = 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 NOx 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.

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 contruction 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.

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[a]	Total 4 Units T/yr	Basis
NO_x	42 ppmv at 15% oxygen-dry basis	182	1232[a]	BACT
SO_2	No. 2 fuel oil with 0.2% max. sulfur	222	1283[c]	BACT
PM/PM_{10}	0.01 lb/MMBtu	15	102[b]	BACT
VOC	-	5	34[b]	BACT
CO	25 ppm	54	366[b]	BACT
Sulfuric Acid Mist	No. 2 fuel oil with 0.2% max. sulfur	18	106[c]	BACT
Fluorines (FR)	-	3.34×10^{-2}	0.23[b]	Application
Mercury (Hg)	3.0×10^{-6} lbs/MMBtu	3.09×10^{-3}	0.02[b]	Application
Lead (Pb)	8.9×10^{-6} lbs/MMBtu	9.16×10^{-3}	0.06[b]	Application
Inorganic Arsenic	4.2×10^{-6} lbs/MMBtu	4.32×10^{-3}	0.03[b]	BACT
Beryllium (Be)	2.5×10^{-6} lbs/MMBtu	2.57×10^{-3}	0.02[b]	BACT

(a) Emission rates based on 59°F and 15% O_2 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_2 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[a]	Total 2 Units T/yr	Basis
NO_x	42 ppmv at 15% oxygen-dry basis	334	1132[a]	BACT
SO_2	No. 2 fuel oil with 0.2% max. sulfur	407	1176[c]	BACT
PM/PM_{10}	0.01 lb/MMBtu	17	58[b]	BACT
VOC	-	9	31[b]	BACT
CO	25 ppm	79	268[b]	BACT
Sulfuric Acid Mist	No. 2 fuel oil with 0.2% max. sulfur	28	81[c]	BACT
Fluorines (FR)	-	6.13×10^{-2}	0.20[b]	Application
Mercury (Hg)	3.0×10^{-6} lbs/MMBtu	5.66×10^{-3}	0.02[b]	Application
Lead (Pb)	8.9×10^{-6} lbs/MMBtu	1.68×10^{-2}	0.06[b]	Application
Inorganic Arsenic	4.20×10^{-6} lbs/MMBtu	7.9×10^{-3}	0.02[b]	BACT
Beryllium (Be)	2.5×10^{-6} lbs/MMBtu	4.72×10^{-3}	0.02[b]	BACT

(a) Emission rates based on 59°F and 15% O_2 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_2 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_x	2369	40
SO_2	4326	40
H_2SO_4 Mist	626	7
PM	159	25
PM_{10}	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

Pollutant	Determination
NO_x	42 ppmvd @ 15% O_2
SO_2 and H_2SO_4	Max 0.5% Sulfur No. 2 fuel oil
PM/PM_{10}	Combustion Controls
CO	Combustion Controls
VOC	Combustion Controls
As, Be	Fuel Quality

Source Type Code 3.1

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_X)

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_X 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_x emissions. The SCR process combines vaporized ammonia with NO_x 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_x with a new catalyst. As the catalyst ages, the maximum NO_x reduction will decrease to approximately 86 percent.

The effect of exhaust gas temperature on NO_x reduction depends on the specific catalyst formulation and reactor design. Generally, SCR units can be designed to achieve effective NO_x 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_x 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_x 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_x 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 NO_x is taken into consideration with the total annual cost of $2,190,000, the cost per ton of controlling 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 NO_x combustors (42 ppmv on oil firing). Since the Intercession City facility is capable of limiting 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 NO_x.

Sulfur Dioxide(SO_2) and Sulfuric Acid Mist (H_2SO_4)

The applicant has stated that sulfur dioxide (SO_2) and sulfuric acid mist (H_2SO_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 SO_2/year and 626 tons H_2SO_4 mist per year.

In accordance with the "top down" BACT review approach, only two alternatives exist that would result in more stringent 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 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 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_2 and H_2SO_4 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_2 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_{10})

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_x 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_x emission control is justifiable as BACT for this facility. BACT for SO_2 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_x	42 ppmvd @ 15% O_2	Wet Injection
SO_2	222 lbs/hr/unit	Max. 0.2% sulfur content, by weight, No. 2 fuel oil
PM and PM_{10}	15 lbs/hr/unit	Combustion
CO	54 lbs/hr/unit	Combustion
VOC	5 lbs/hr/unit	Combustion
Arsenic	4.32×10^{-3} lbs/hr/unit	Fuel Quality
Beryllium	2.57×10^{-3} lbs/hr/unit	Fuel Quality
H_2SO_4	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_x	42 ppmvd @ 15% O_2	Wet Injection
SO_2	407 lbs/hr/unit	Max. 0.2% sulfur content, by weight, No. 2 fuel oil

PM and PM_{10}	17 lbs/hr/unit	Combustion
CO	79 lbs/hr/unit	Combustion
VOC	9 lbs/hr/unit	Combustion
Arsenic	7.9×10^{-3} lbs/hr/unit	Fuel Quality
Beryllium	4.7×10^{-3} lbs/hr/unit	Fuel Quality
H_2SO_4	28 lbs/hr/unit	Max 0.2% sulfur content, by weight, No. 2 fuel oil

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:

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

August 17 1992
Date

Approved by:

Carol M. Browner, Secretary
Dept. of Environmental Regulation

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.

[X] 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:

   Combustion turbine peaking units 7, 8, 9, and 10. These units are identical.

2. ARMS Identification Number: [ ] No Corresponding ID [ ] Unknown

   007, 008, 009, 010

3. Emissions Unit Status Code: **A**	4. Acid Rain Unit? [x] Yes [ ] No	5. Emissions Unit Major Group SIC Code: **49**

6. Initial Startup Date (DD-MON-YYYY): **1 Nov 1992**

7. Long-term Reserve Shutdown Date (DD-MON-YYYY):

8. Package Unit:
   Manufacturer: **General Electric** Model Number: **PG 7111EA**

9. Generator Nameplate Rating: **96.3** MW

10. Incinerator Information:

    Dwell Temperature: °F
    Dwell Time: seconds
    Incinerator Afterburner Temperature: °F

11. Emissions Unit Comment:

    The combustion turbines currently burn distillate oil. This application is for installation of natural gas firing. Generator name plate rating at ISO conditions.

Emissions Unit Control Equipment Information

A.

1. Description:

   Water injection

2. Control Device or Method Code: **028**

B.

1. Description:

2. Control Device or Method Code:

C.

1. Description:

2. Control Device or Method Code:

Emissions Unit Operating Capacity

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

Emissions Unit Operating Schedule

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

<u>Rule Applicability Analysis</u> (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

Chapter 210	**Stationary Sources -- General Requirements**
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).

Chapter 296	**Stationary Sources -- Emission Standards**
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.

Chapter 297	**Stationary Sources -- Emission Monitoring**
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.

Chapter 297	Stationary Sources -- Emission Monitoring (cont'd)
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 Stationery Gas Turbines

Part 60 - EPA Regulations on Standards of Performance for New Stationary Sources	
Subpart A — General Provisions	
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.
Subpart GG — Standards of Performance for Stationary Gas Turbines	
60.332	Standard for nitrogen oxides.
60.333	Standard for sulfur dioxide.
60.334	Monitoring of operations.
60.335	Test methods and procedures.

Part 72 - EPA Acid Rain Program Permits	
Subpart A — General Provisions	
72.6	Applicability.
72.9	Standard Requirements.
Subpart B — Designated Representative	
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.
Subpart C — Acid Rain Applications	
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.
Subpart E — Acid Rain Permit Contents	
72.50	General.
72.51	Permit Shield.
Subpart H — Permit Revisions	
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.
Subpart I — Compliance Certification	
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

1. Identification of Point on Plot Plan or Flow Diagram:

   See Attachment IC-FD-3

2. Emission Point Type Code:

   [x] 1 [ ] 2 [ ] 3 [ ] 4

3. Descriptions of Emissions Points Comprising this Emissions Unit:

   Combustion turbine gases exhaust through a single stack per turbine

4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:

5. Discharge Type Code:

   [ ] D [ ] F [ ] H [ ] P
   [ ] R [x] V [ ] W

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): **Natural Gas**	
2. Source Classification Code (SCC): **20100201**	
3. SCC Units: **Million cubic feet**	
4. Maximum Hourly Rate: **1.159**	5. Maximum Annual Rate: **5,844.2**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur: **0.003**	8. Maximum Percent Ash: **0**
9. Million Btu per SCC Unit: **1,000**	
10. Segment Comment: **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).**	

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: SO2	
2. Total Percent Efficiency of Control: %	
3. Primary Control Device Code:	
4. Secondary Control Device Code:	
5. Potential Emissions: 3.31 lbs/hr	8.35 tons/yr
6. Synthetically Limited? [x] Yes [ ] No	
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 ________ to ________ tons/yr	
8. Emission Factor: 1 grain/100 CF Reference: Maximum sulfur content from fuel analysis	
9. Emissions Method Code (check one): [ ] 1 [x] 2 [ ] 3 [ ] 4 [ ] 5	
10. Calculation of Emissions: See Attachment IC1-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 5,576 hours (See Attachment IC1-EUI-10). Potential emissions based on emissions from a single CT.	

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: NOX	
2. Total Percent Efficiency of Control: 80 %	
3. Primary Control Device Code: 028	
4. Secondary Control Device Code:	
5. Potential Emissions: 118 lbs/hr	297.9 tons/yr
6. Synthetically Limited? [x] Yes [ ] No	
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 ______ to ______ tons/yr	
8. Emission Factor: 25 ppmvd @ 15% O2 Reference: Proposed Limit	
9. Emissions Method Code (check one): [ ] 1 [x] 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. Potential emissions based on emissions from a single CT. See Attachment IC-EUI-10.	

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: **25 ppmvd @15% O2**
4. Equivalent Allowable Emissions: **118** lbs/hr **297.9** tons/yr
5. Method of Compliance: **Annual compliance test - EPA Method 20**
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): **See Pollutant Potential/Estimated Emissions, Comment No. 11**

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 20.9 tons/yr
6. Synthetically Limited? [x] Yes [ ] No
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 ______ to ______ tons/yr
8. Emission Factor: 7.5 lb/hr Reference: Vendor
9. Emissions Method Code (check one): [ ] 1 [x] 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 at 20 °F. Annual emissions based on 59 °F and 5,576 hours (See Attachment IC1-EUI-10). Potential emissions for a single CT.

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: **7.5 lb/hr**
4. Equivalent Allowable Emissions: **7.5** lbs/hr **20.9** tons/yr
5. Method of Compliance: **VE; EPA Method 9**
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): **If VE Emissions less than 10 percent then stack test is not required.**

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? [x] Yes [ ] 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 [x] 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.	

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:
   10 ppmvd
4. Equivalent Allowable Emissions: 23.4 lbs/hr 59.5 tons/yr
5. Method of Compliance:
   Annual Compliance Test; EPA Method 10
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):
   See Pollutant Potential/Estimated Emissions, Comment No. 11

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: 3.3 lbs/hr	8.5 tons/yr
6. Synthetically Limited? [ ] Yes [x] No	
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 ________ to ________ tons/yr	
8. Emission Factor: 2.5 ppmvd Reference: Proposed limit	
9. Emissions Method Code (check one): [ ] 1 [x] 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 at 20 °F. Annual emissions based on 59 °F and 5,576 hours (see Attachment IC1-EUI-10) Potential emissions for a single CT.	

Allowable Emissions (Pollutant identification on front page)

A.

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

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: H2SO4	
2. Total Percent Efficiency of Control: %	
3. Primary Control Device Code:	
4. Secondary Control Device Code:	
5. Potential Emissions: 0.49 lbs/hr	1.22 tons/yr
6. Synthetically Limited? [x] Yes [ ] No	
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 ________ to ________ tons/yr	
8. Emission Factor: 1 gr sulfur/100CF and 10% conversion to H2SO4 Reference: Gas Pipeline Data	
9. Emissions Method Code (check one): [ ] 1 [x] 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 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).	

Allowable Emissions (Pollutant identification on front page)

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

Visible Emissions Limitations: Visible Emissions Limitation _____ of 1

1.	Visible Emissions Subtype:
2.	Basis for Allowable Opacity: [ ] Rule [ ] 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: [ ] Rule [ ] 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: [x] Rule [ ] 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: **Continuous monitoring of the water to fuel ratio is required persuant to 40 CFR 60.334. This monitoring is incorporated into the CT control system and recorded on an hourly basis.**

Continuous Monitoring System Continuous Monitor _____ of 1

1. Parameter Code:	
2. CMS Requirement:	[ ] Rule [ ] 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:	

Continuous Monitoring System Continuous Monitor _____ of 1

1. Parameter Code:	
2. CMS Requirement:	[ ] Rule [ ] 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:	

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 persuant 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 Emissons 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.

[x] 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	[x] C	[ ] E	[ ] Unknown
	SO_2	[x] C	[ ] E	[ ] Unknown
	NO_2	[x] C	[ ] E	[ ] Unknown
4.	Baseline Emissions:			
	PM	lbs/hr		tons/yr
	SO_2	lbs/hr		tons/yr
	NO_2			tons/yr
5.	PSD Comment:			
	See Attachment IC1-EUE-10			

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 [x] Attached, Document ID: IC1-EUI-1 [ ] Not Applicable		[ ] Waiver Requested
2.	Fuel Analysis or Specification [x] Attached, Document ID: IC1-EUI-2 [ ] Not Applicable		[ ] Waiver Requested
3.	Detailed Description of Control Equipment [ ] Attached, Document ID: ______ [x] Not Applicable		[ ] Waiver Requested
4.	Description of Stack Sampling Facilities [x] Attached, Document ID: IC1-EUI-4 [ ] Not Applicable		[ ] Waiver Requested
5.	Compliance Test Report [ ] Attached, Document ID: ______ [ ] Previously Submitted, Date: ______		[x] Not Applicable
6.	Procedures for Startup and Shutdown [ ] Attached, Document ID: ______		[x] Not Applicable
7.	Operation and Maintenance Plan [ ] Attached, Document ID: ______		[x] Not Applicable
8.	Supplemental Information for Construction Permit Application [ ] Attached, Document ID: ______		[x] Not Applicable
9.	Other Information Required by Rule or Statute [ ] Attached, Document ID: ______		[x] Not Applicable

Additional Supplemental Requirements for Category I Applications Only

10. Alternative Methods of Operation

[x] Attached, Document ID: IC1-EUI-10 [ ] Not Applicable

11. Alternative Modes of Operation (Emissions Trading)

[ ] Attached, Document ID: ____________ [x] Not Applicable

12. Enhanced Monitoring Plan

[ ] Attached, Document ID: ____________ [x] Not Applicable

13. Identification of Additional Applicable Requirements

[ ] Attached, Document ID: ____________ [x] Not Applicable

14. Acid Rain Permit Application

[ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
Attached, Document ID: ____________

[ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
Attached, Document ID: ____________

[ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
Attached, Document ID: ____________

[ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
Attached, Document ID: ____________

[x] 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
General			
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
CT Exhaust Flow			
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
Natural Gas Consumption (lb/hr) = Heat Input (MMBtu/hr) x 1,000,000 Btu/MMBtu ÷ Fuel Heat Content, LHV (Btu/lb) (cf/hr) = Heat Input (MMBtu/hr) x 1,000,000 Btu/MMBtu ÷ Fuel Heat Content, LHV (Btu/cf)			
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
Volume Flow (acfm) = [(Mass Flow (lb/hr) x 1,545 x (Temp. (°F) + 460°F)] ÷ [Molecular weight x 2116.8] ÷ 60 min/hr			
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
Volume Flow (dscfm) = [(Mass Flow (lb/hr) x 1,545 x (68°F + 460°F)] ÷ [Molecular weight x 2116.8] ÷ 60 min/hr [(1 – Moisture(%)/100)]			
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
CT Stack Data			
Stack Height (ft)	50	50	50
Diameter (ft)	13.8	13.8	13.8
Velocity (ft/sec) = Volume flow (acfm) from CT ÷ [((diameter)^2 ÷ 4) x 3.14159] ÷ 60 sec/min			
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^2

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
Particulate (lb/hr) = Emission rate (lb/hr) from manufacturer			
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
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)	1,159,261	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
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 (%)	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
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 (%)	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
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)	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
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) 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
Arsenic (lb/hr) = Negligible			
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
Beryllium (lb/hr) = Negligible			
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
Fluoride (lb/hr) = Negligible			
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
Hydrogen Chloride (lb/hr) = Negligible			
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
Mercury (lb/hr) = Emission Factor (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu			
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
Radionuclides (lb/hr) = Negligible			
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
Sulfuric Acid Mist (lb/hr) = Fuel consumption (lb/hr) x sulfur content (%) x (Conversion (fraction) of S to H2SO4) x lb H2SO4/lb S			
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
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			
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
Antimony (lb/hr) = Negligible			
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
Barium (lb/hr) = Negligible			
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
Benzene (lb/hr) = Basis (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu			
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
Cadmium (lb/hr) = Negligible			
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
Chromium (lb/hr) = Negligible			
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
Cobalt (lb/hr) = Negligible			
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
Copper (lb/hr) = Negligible			
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
Formaldehyde (lb/hr) = Basis (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu			
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
Manganese (lb/hr) = Negligible			
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

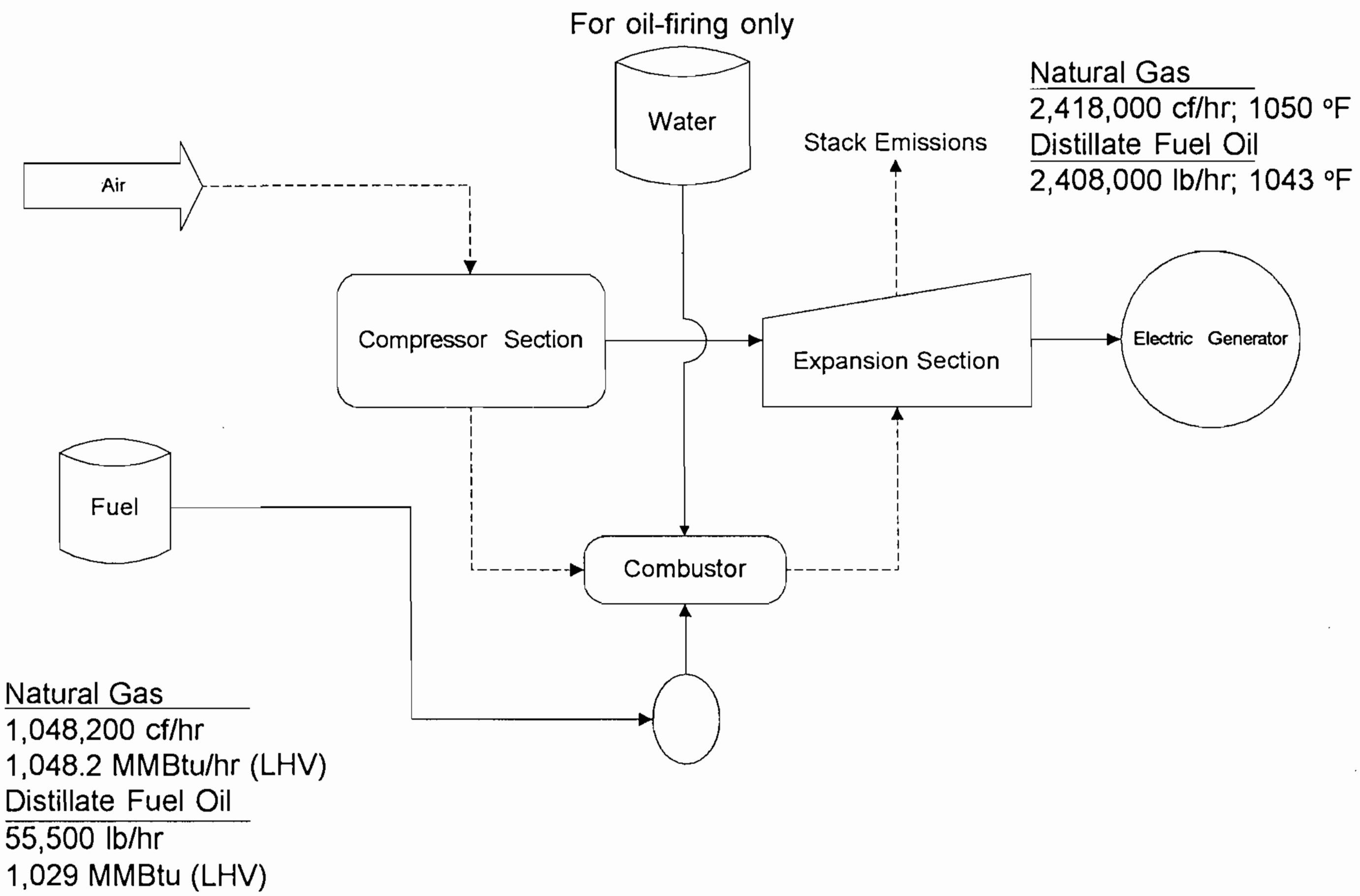
Table NG-GE4. Maximum Emissions of Other Regulated Pollutants for Intercession City, Simple Cycle-
GE PG7111 (EA), Quiet Combustor, Natural Gas, Peak Load

Pollutant	Natural Gas 20 °F	Natural Gas 59 °F	Natural Gas 90 °F
Methane (lb/hr) = Basis (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu			
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
Nickel (lb/hr) = Neglible			
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
Polycyclic Organic Matter (lb/hr) = Emission Factor (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu			
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
Selenium (lb/hr) = Negligible			
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
Toluene (lb/hr) = Basis (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu			
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
Zinc (lb/hr) = Negligible			
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



Note: Data presented for 59 °F ambient temmporature

Flow Diagram of Emission Unit

Process Area: FPC Intercession City Plant	Project #	15106	KBN	*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

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

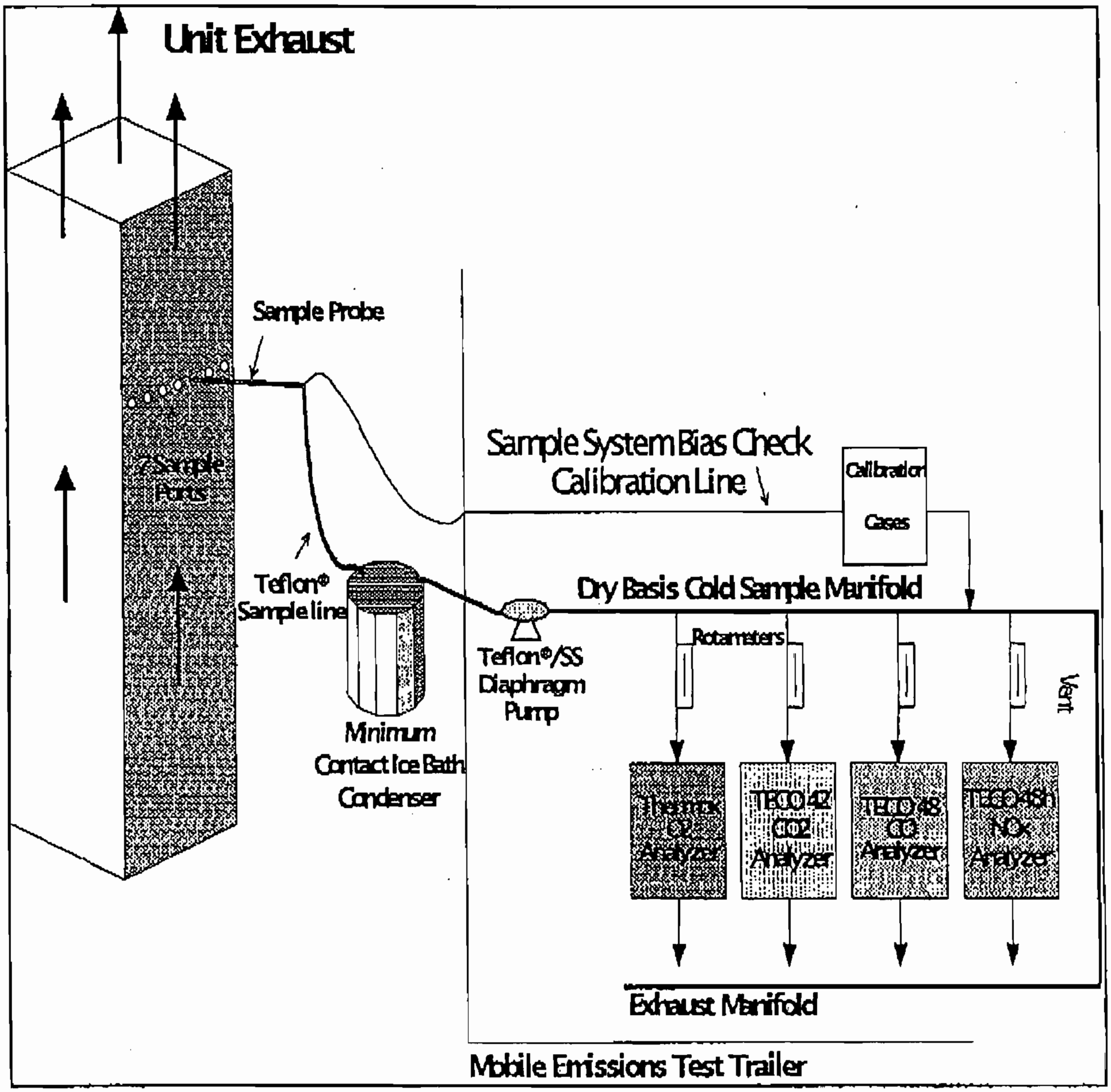
Note: The values listed are "typical" values based upon information supplied to FPC by Florida Gas Transmission (FGT). However, analytical results from grab samples of fuel taken at any given point in time may vary from those listed.

[1] Data from laboratory analysis.

IC1-EUI-4

DESCRIPTION OF STACK SAMPLING FACILITIES

Figure 1
Gaseous Sampling and Analysis Diagram

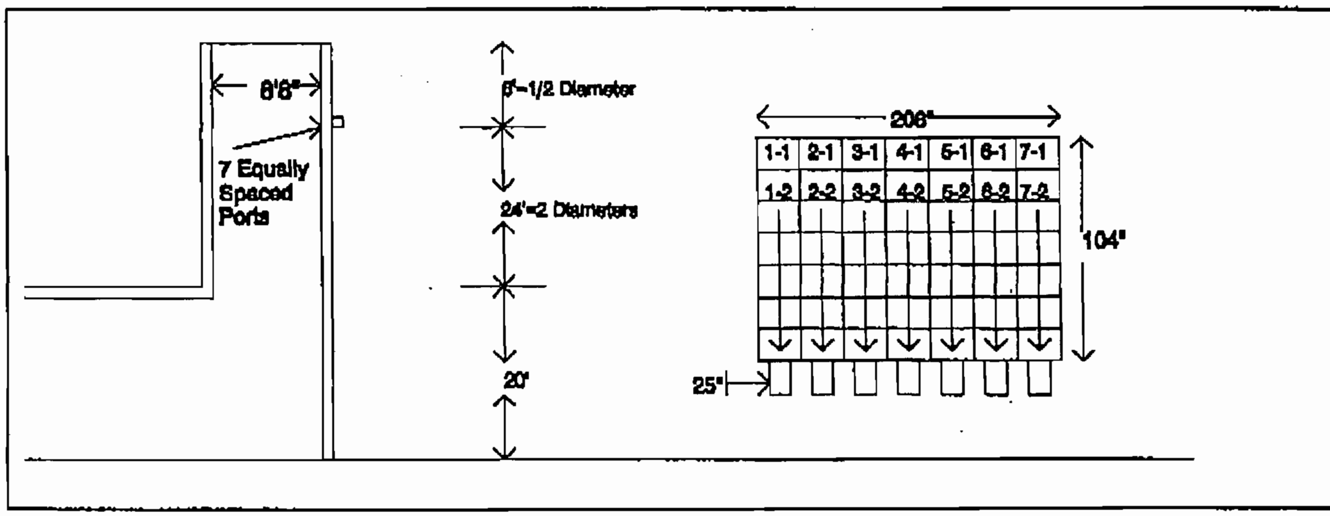


Rectangular Stack Sampling Traverse Point Layout
(EPA Method 1)

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

Calculte Distance from Stack Wall to Traverse Points
(Example for Point No. 2)

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

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:

Hours/CT = 34 ton/year x 2,000 lb/ton x hr/3.0488lb x 1/4CT = 5,576 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_x	1,232	1,192	40
CO	366	238	128
SO_2	1,283	33	1,250
H_2SO_4	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:

[X] 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:

   Combustion turbine peaking unit 11

2. ARMS Identification Number: [ ] No Corresponding ID [x] Unknown

3. Emissions Unit Status Code: A	4. Acid Rain Unit? [x] Yes [ ] No	5. Emissions Unit Major Group SIC Code: 49

6. Initial Startup Date (DD-MON-YYYY):

7. Long-term Reserve Shutdown Date (DD-MON-YYYY):

8. Package Unit:
   Manufacturer: **Siemens** Model Number: **V84.3**

9. Generator Nameplate Rating: **154.3** MW

10. Incinerator Information:
    Dwell Temperature: °F
    Dwell Time: seconds
    Incinerator Afterburner Temperature: °F

11. Emissions Unit Comment:

    Nameplate rating at 59 °F

Emissions Unit Control Equipment Information

A.

1. Description:

   Water injection

2. Control Device or Method Code: **028**

B.

1. Description:

2. Control Device or Method Code:

C.

1. Description:

2. Control Device or Method Code:

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: **Maximum heat input rate based on 20 ° F and low heating value.**		

Emissions Unit Operating Schedule

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

Chapter 210	**Stationary Sources -- General Requirements**
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).

Chapter 296	**Stationary Sources -- Emission Standards**
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.

Chapter 297	**Stationary Sources -- Emission Monitoring**
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.

Chapter 297 Stationary Sources -- Emission Monitoring (cont'd)	
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 Stationery Gas Turbines

Part 60 - EPA Regulations on Standards of Performance for New Stationary Sources	
Subpart A — General Provisions	
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.
Subpart GG — Standards of Performance for Stationary Gas Turbines	
60.332	Standard for nitrogen oxides.
60.333	Standard for sulfur dioxide.
60.334	Monitoring of operations.
60.335	Test methods and procedures.

Part 72 - EPA Acid Rain Program Permits	
Subpart A — General Provisions	
72.6	Applicability.
72.9	Standard Requirements.
Subpart B — Designated Representative	
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.
Subpart C — Acid Rain Applications	
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.
Subpart E — Acid Rain Permit Contents	
72.50	General.
72.51	Permit Shield.
Subpart H — Permit Revisions	
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.
Subpart I — Compliance Certification	
72.90	Annual Compliance Certification Report.

IC2-EUE-10

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

1. Identification of Point on Plot Plan or Flow Diagram:

   See Attachment IC-FD-2

2. Emission Point Type Code:

   [x] 1   [ ] 2   [ ] 3   [ ] 4

3. Descriptions of Emissions Points Comprising this Emissions Unit:

   Combustion turbine gases exhaust through a single stack per turbine

4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:

5. Discharge Type Code:

   [ ] D   [ ] F   [ ] H   [ ] P
   [ ] R   [x] V   [ ] W

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: **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): **Natural Gas**	
2. Source Classification Code (SCC): **20100201**	
3. SCC Units: **Million cubic feet**	
4. Maximum Hourly Rate: **1.609**	5. Maximum Annual Rate: **8,645.5**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur: **0.003**	8. Maximum Percent Ash: **0**
9. Million Btu per SCC Unit: **1,000**	
10. Segment Comment: **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).**	

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: SO_2
2. Total Percent Efficiency of Control: %
3. Primary Control Device Code:
4. Secondary Control Device Code:
5. Potential Emissions: 4.6 lbs/hr 12.4 tons/yr
6. Synthetically Limited? [x] Yes [ ] No
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 ________ to ________ tons/yr
8. Emission Factor: 1 gr sulfur/100CF Reference: Maximum sulfur content from fuel analysis
9. Emissions Method Code (check one): [ ] 1 [x] 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)

A.

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

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: NOX	
2. Total Percent Efficiency of Control: 80 %	
3. Primary Control Device Code: 028	
4. Secondary Control Device Code:	
5. Potential Emissions: 162 lbs/hr	434.9 tons/yr
6. Synthetically Limited? [x] Yes [ ] No	
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 ________ to ________ tons/yr	
8. Emission Factor: 25 ppmvd @ 15% O2 Reference: Proposed Limit	
9. Emissions Method Code (check one): [ ] 1 [x] 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 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)

A.

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

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? [x] Yes [ ] 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).**

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: 7.5 lb/hr	
4. Equivalent Allowable Emissions: 7.5 lbs/hr	21.9 tons/yr
5. Method of Compliance: Annual compliance test - EPA Method 9	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): See Pollutant Potential/Estimated Emissions, Comment No. 11; If VE emissions less than 10 percent source testing is not required.	

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? [ ] Yes [x] No	
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 ____ to ____ tons/yr	
8. Emission Factor: 10 ppmvd Reference: Permit limit	
9. Emissions Method Code (check one): [ ] 1 [x] 2 [ ] 3 [ ] 4 [ ] 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).**	

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: **10 ppmvd**
4. Equivalent Allowable Emissions: **33** lbs/hr **90.4** tons/yr
5. Method of Compliance: **Annual compliance test - EPA Method 10**
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): **See Pollutant Potential/Estimated Emissions, Comment No. 11**

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? [ ] Yes [x] 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 [x] 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: **H2SO4**	
2. Total Percent Efficiency of Control: **0** %	
3. Primary Control Device Code:	
4. Secondary Control Device Code:	
5. Potential Emissions: **0.69** lbs/hr	**1.86** tons/yr
6. Synthetically Limited? [ ] Yes [x] No	
7. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 ____ to ____ tons/yr	
8. Emission Factor: Reference:	**Based on fuel sulfur content and 10% conversion to H2SO4**
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).**	

Allowable Emissions (Pollutant identification on front page)

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

Visible Emissions Limitations: Visible Emissions Limitation _____ of 1

1.	Visible Emissions Subtype:
2.	Basis for Allowable Opacity: [ ] Rule [ ] 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: [ ] Rule [ ] 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: [ ] Rule [ ] 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: **Continuous monitoring of the water to fuel ratio is required persuant to 40 CFR 60.334. This monitoring is incorporated into the CT control system and recorded on an hourly basis.**

Continuous Monitoring System Continuous Monitor _____ of 1

1.	Parameter Code:
2.	CMS Requirement: [ ] Rule [ ] 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:

Continuous Monitoring System Continuous Monitor _____ of 1

1.	Parameter Code:
2.	CMS Requirement: [ ] Rule [ ] 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:

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 persuant 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 Emissons 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.

[x] 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	[x] C	[ ] E	[ ] Unknown
	SO_2	[x] C	[ ] E	[ ] Unknown
	NO_2	[x] C	[ ] E	[ ] Unknown
4.	Baseline Emissions:			
	PM	lbs/hr		tons/yr
	SO_2	lbs/hr		tons/yr
	NO_2			tons/yr
5.	PSD Comment:			
	See Attachment IC2-EUE-10			

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 [x] Attached, Document ID: IC2-EUI-1 [ ] Not Applicable		[ ] Waiver Requested
2.	Fuel Analysis or Specification [x] Attached, Document ID: IC2-EUI-2 [ ] Not Applicable		[ ] Waiver Requested
3.	Detailed Description of Control Equipment [ ] Attached, Document ID: ______ [x] Not Applicable		[ ] Waiver Requested
4.	Description of Stack Sampling Facilities [x] Attached, Document ID: IC2-EUI-4 [ ] Not Applicable		[ ] Waiver Requested
5.	Compliance Test Report [ ] Attached, Document ID: ______ [ ] Previously Submitted, Date: ______		[x] Not Applicable
6.	Procedures for Startup and Shutdown [ ] Attached, Document ID: ______		[x] Not Applicable
7.	Operation and Maintenance Plan [ ] Attached, Document ID: ______		[x] Not Applicable
8.	Supplemental Information for Construction Permit Application [ ] Attached, Document ID: ______		[x] Not Applicable
9.	Other Information Required by Rule or Statute [ ] Attached, Document ID: ______		[x] Not Applicable

Additional Supplemental Requirements for Category I Applications Only

10. Alternative Methods of Operation

[x] Attached, Document ID: IC2-EUI-10 [ ] Not Applicable

11. Alternative Modes of Operation (Emissions Trading)

[ ] Attached, Document ID: ____________ [x] Not Applicable

12. Enhanced Monitoring Plan

[ ] Attached, Document ID: ____________ [x] Not Applicable

13. Identification of Additional Applicable Requirements

[ ] Attached, Document ID: ____________ [x] Not Applicable

14. Acid Rain Permit Application

[ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
Attached, Document ID: ____________

[ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
Attached, Document ID: ____________

[ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
Attached, Document ID: ____________

[ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
Attached, Document ID: ____________

[x] 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
General			
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
CT Exhaust Flow			
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
Natural Gas Consumption (lb/hr) = Heat Input (MMBtu/hr) x 1,000,000 Btu/MMBtu ÷ Fuel Heat Content, LHV (Btu/lb) (cf/hr) = Heat Input (MMBtu/hr) x 1,000,000 Btu/MMBtu ÷ Fuel Heat Content, LHV (Btu/cf)			
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
Volume Flow (acfm) = [(Mass Flow (lb/hr) x 1,545 x (Temp. (°F) + 460°F)] ÷ [Molecular weight x 2116.8] ÷ 60 min/hr			
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
Volume Flow (dscfm) = [(Mass Flow (lb/hr) x 1,545 x (68°F + 460°F)] ÷ [Molecular weight x 2116.8] ÷ 60 min/hr [(1 – Moisture(%)/100)]			
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
CT Stack Data			
Stack Height (ft)	75	75	75
Diameter (ft)	19.0	19.0	19.0
Velocity (ft/sec) = Volume flow (acfm) from CT ÷ [((diameter)^2 ÷ 4) x 3.14159] ÷ 60 sec/min			
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)/ft^2

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 H_2SO_4), 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 SO_2/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 SO_2/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% O_2 (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; O_2 = 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
Arsenic (lb/hr) = Negligible			
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
Beryllium (lb/hr) = Negligible			
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
Fluoride (lb/hr) = Negligible			
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
Hydrogen Chloride (lb/hr) = Negligible			
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
Mercury (lb/hr) = Emission Factor (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu			
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
Radionuclides (lb/hr) = Negligible			
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
Sulfuric Acid Mist (lb/hr) = Fuel consumption (lb/hr) x sulfur content (%) x (Conversion (fraction) of S to H2SO4) x lb H2SO4/lb S			
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
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			
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
Antimony (lb/hr) = Negligible			
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
Barium (lb/hr) = Negligible			
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
Benzene (lb/hr) = Basis (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu			
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
Cadmium (lb/hr) = Negligible			
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
Chromium (lb/hr) = Negligible			
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
Cobalt (lb/hr) = Negligible			
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
Copper (lb/hr) = Negligible			
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
Formaldehyde (lb/hr) = Basis (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu			
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
Manganese (lb/hr) = Negligible			
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

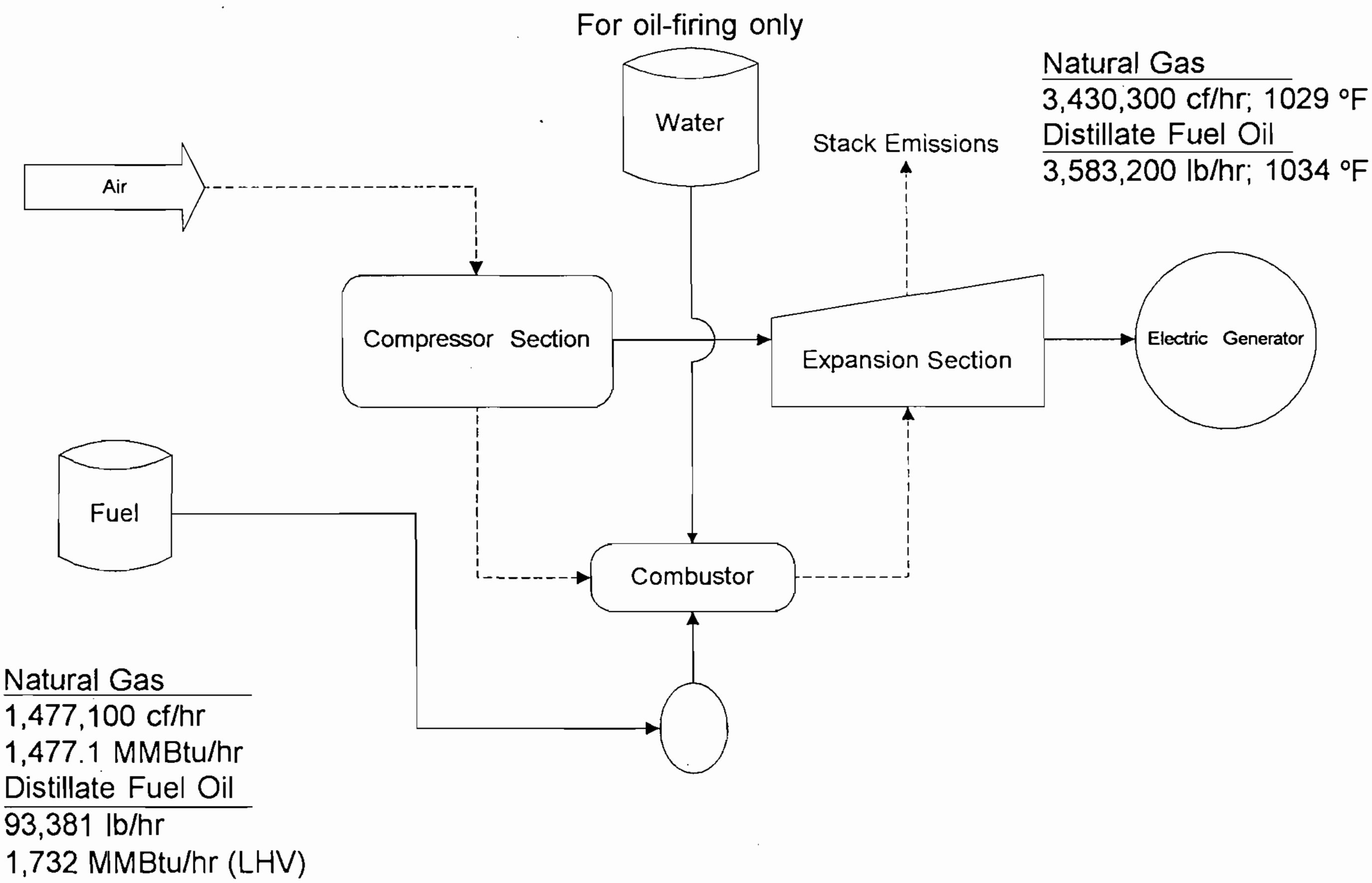
Table NG-S4. Maximum Emissions of Other Regulated Pollutants for Intercession City, Simple Cycle-Siemens V84.3, Natural Gas, Base Load

Pollutant	Natural Gas 20 °F	Natural Gas 59 °F	Natural Gas 95 °F
Methane (lb/hr) = Basis (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu			
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
Nickel (lb/hr) = Neglible			
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
Polycyclic Organic Matter (lb/hr) = Emission Factor (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu			
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
Selenium (lb/hr) = Negligible			
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
Toluene (lb/hr) = Basis (lb/10E+12 Btu) x Heat Input Rate (MMBtu/hr) ÷ 1,000,000 MMBtu/10E+12 Btu			
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
Zinc (lb/hr) = Negligible			
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

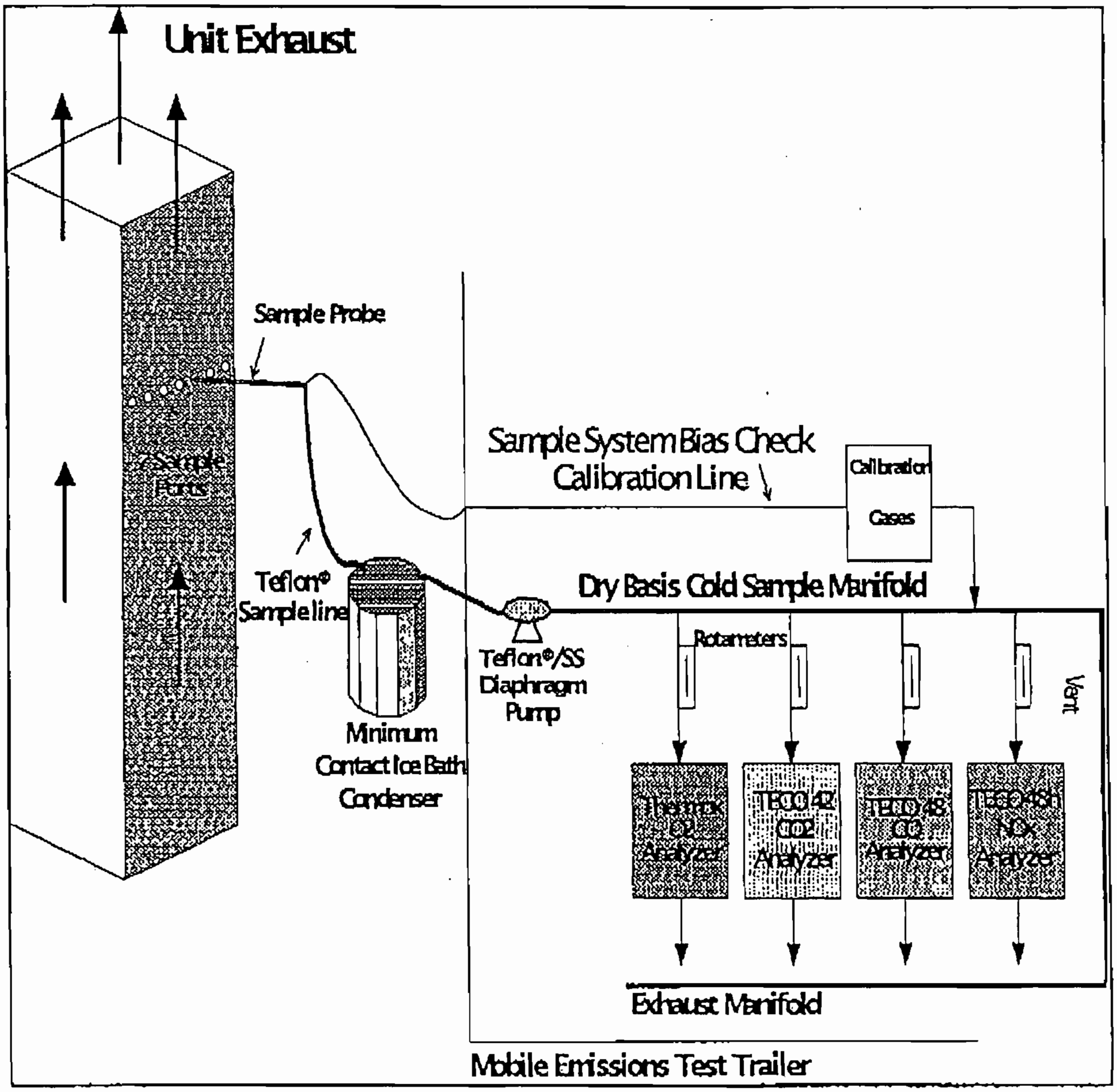
Flow Diagram of Emission Unit

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

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:

Hours/CT = 15.5 ton/year x 2,000 lb/ton x hr/5.296 lb = 5,853 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_x	566	435	131
CO	134	90	44
SO_2	588	12	576
H_2SO_4	40.5	2	38

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

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

January 20, 1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. J. Michael Kennedy
Manager of Air Programs
Florida Power Corporation
Post Office Box 14042
St. Petersburg, Florida 33733

PSD-FL-180E

Dear Mr. Kennedy:

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

The Department has reviewed your January 5, 1995 request to amend the compliance testing requirements of the subject permit. Subsequent to a review of the compliance test results, the Department finds your request to be acceptable and the following will be changed and/or added:

A. Compliance Determination

Specific Condition No. 8 is amended as follows:

From

8. Compliance with the NO_x, SO_2, CO, PM, PM_{10}, 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 3A. 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

<u>To</u>

8. Compliance with the NO_x, SO_2, CO, PM, PM_{10}, 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. **Chapter 62-297, and the ASTM method/procedure contained in 40 CFR 60.17.**

- Method 1 Sample and Velocity Traverses
- Method 2 Volumetric Flow Rate
- Method 3A Gas Analysis
- Method 5 Determination of Particulate Matter Emissions from Stationary Sources
- Method 9 Determination of the Opacity of the Emissions from Stationary Sources
- [1]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
- [2]Method 25A Determination of the Volatile Organic Compounds Emissions from Stationary Sources

1 - No. 2 fuel oil analysis using ASTM D4294-90 may be used in lieu of EPA Reference Method 8 for the determination of H_2SO_4 mist, only if compliance with the permit limit for the sulfur content in the No. 2 fuel oil fired at the facility has been demonstrated.

2 - If compliance with the CO limits in this permit are demonstrated, testing for VOCs using EPA Reference Method 25A is not necessary.

B. <u>Attachments to be Incorporated</u>:

- FPC letter with enclosure received January 6, 1995.
- Mr. Garry Kuberski's FAX received January 11, 1995.
- Mr. Mike Kennedy's FAXs received January 11, 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 (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 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 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

Howard L. Rhodes
Director
Division of Air Resources
Management

HLR/CSL/csl

Attachments

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

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this PERMIT AMENDMENT and all copies were mailed by certified mail before the close of business on 1/24/95 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.

Charlotte J. Hayes 1/24/95
Clerk Date

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. J. Michael Kennedy
Manager of Air programs
Florida Power Corporation
P. O. Box 14042
St. Petersburg, FL 33733

4a. Article Number
P 872 563 671

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
JAN 26 95

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form 3811, December 1991 ☆U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

P 872 563 671

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to Mr. J. Michael Kennedy	
Street and No. P. O. Box 14042 FPC	
P.O., State and ZIP Code St. Petersburg, FL 33733	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date Mailed: 1-24-95 Permit: AC49-203114 PSD-FL-180(A)	

PS Form 3800, JUNE 1991

Memorandum

Florida Department of
Environmental Protection

RECEIVED

JAN 23 1995

Bureau of
Air Regulation

TO: Howard L. Rhodes

FROM: Clair Fancy

DATE: January 20, 1995

SUBJECT: Approval of Construction Permit Amendment
AC 49-203114 [PSD-FL-180(A)]
Intercession City Facility

Attached for your approval and signature is an amendment to the Florida Power Corporation Intercession City facility's construction permit prepared by the Bureau of Air Regulation. The purpose of this amendment is change the testing requirements of the permit for sulfuric acid mist and volatile organic compounds (VOC) emissions. If compliance with the permit limit for carbon monoxide is demonstrated, testing for VOC emissions will not be required. If compliance with the permit limit for the sulfur content in the No. 2 fuel oil is demonstrated, an analysis of the No. 2 fuel oil using ASTM D4294-90, in lieu of an EPA Reference Method 8 test, may be used to demonstrate compliance with the sulfuric acid mist limit in this permit. This amendment will not cause an increase in annual allowable emission limits or result in any equipment change.

This amendment is recommended for your approval and signature.

CF/CSL

Attachment

Florida Power
CORPORATION

January 5, 1995

RECEIVED
JAN 06 1995
Bureau of Air Regulation

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

Florida Power Corporation (FPC) requests an amendment to the construction permit referenced above. A check in the amount of $250.00 is enclosed for the processing of this amendment. The request is discussed in detail below.

FPC operates identical GE Frame 7 turbines at its DeBary and Intercession City generating stations. The DeBary operating permit contains the following test methods for determining compliance with VOC and sulfuric acid mist emission limits:

VOC	Testing not required if compliance with CO limit is shown.
H_2SO_4 mist	Method 8 or fuel analysis using ASTM D4294 and AP 42 factor.

The permit referenced above for Intercession City specifies only Methods 25A and 8 for determination of VOC and sulfuric acid mist, respectively. FPC requests that the language in Specific Condition 8 of the Intercession City permit be changed to the language from the DeBary permit shown above. This change will make compliance testing less difficult and will make the Intercession City permit consistent with the DeBary permit.

Compliance testing at Intercession City is scheduled for the week of January 23, so an expedited review of this request would be greatly appreciated. Mr. Mike Kennedy of my staff has discussed this change with Mr. Charles Collins of DEP's Central District and Mr. Charles Logan of your staff. Mr. Logan is anticipating the review of this request.

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,

J. Michael Kennedy for

W. Jeffrey Pardue, C.E.P.
Director

Enclosure

cc: Mr. Charles Collins, DEP Central District
C. Fogan
C. Holladay
J. Harper, EPA
J. Bunyak, NPS

Florida Power
CORPORATION

David L. Miller
Senior Vice President
Corporate Services

October 21, 1994

TO WHOM IT MAY CONCERN

Subject: Letter of Authorization

Please be advised that W. Jeffrey Pardue, Director, Environmental Services Department, Sharon K. Momberg, Manager of Waste Management Programs, Kent D. Hedrick, Manager of Water Programs, J. Michael Kennedy, Manager of Air Programs, and Patricia Quets, Environmental Project Manager, are authorized to represent Florida Power Corporation in matters relating to necessary permits and reporting documentation required from regulatory authorities in the areas of air, water, power plant site certifications and transmission line certifications, or hazardous and solid materials issues.

Sincerely,

David L. Miller

DLM:bb

Florida Power CORPORATION

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

REMITTANCE ADVICE

CHECK DATE 1/3/95 **VENDOR** FLA DEPT OF ENV PROTECTION **VENDOR NO.** 278473 **CHECK NO.** 1672524

INVOICE NO.	DATE	OUR ORDER NO.	VOUCHER	GROSS AMOUNT	DISCOUNT	NET AMOUNT
CK097514	1/3/95			250.00		250.00
					TOTAL	250.00

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

Florida Power
CORPORATION

RBL 11-8-94
Bruce
for permit file

November 4, 1994

Mr. Charles Collins
Central District
Florida Department of Environmental Protection
3319 Maguire Boulevard, Suite 232
Orlando, FL 32803-3767

Dear Mr. Collins:

Re: Commencement of On-site Construction - Siemens Combustion Turbine
DEP Permit Number AC49-203114

As required by 40 CFR 60, Florida Power Corporation (FPC) is providing the Department of Environmental Protection (DEP) notification of the commencement of on-site construction of the new Siemens combustion turbine at FPC's Intercession City electric generating station. Construction of Unit P11 began on October 17, 1994.

Please feel free to contact me at (813) 866-4344 if you have any questions or if you need additional information.

Sincerely,

J. Michael Kennedy

J. Michael Kennedy
Manager, Air Programs

cc: Mr. John Brown, DEP Tallahassee

Certified Mail

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

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

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

PSD-FL-180D

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_x) emission limit of 57 ppm @ 15% O_2, 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_x Emission Limit

Your request to amend the construction permit by incorporating an ISO NO_x emission limit of 57 ppm @ 15% O_2 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_x 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_x STD for the subject construction permit was established by the best available control technology (BACT) determination to be an allowable NO_x 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_x emission limit. Also, observed values of NO_x emissions 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_x emissions which exceed a STD. This STD is equal to the allowable NO_x 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_x emission allowance for fuel bound nitrogen (F) as defined in 40 CFR 60.332(a)(3). The applicant was given a NO_x 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_x 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_x 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.

C. <u>Manufacturers Heat Input vs. Ambient Temperature Curves</u>

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

<u>From</u>

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).

<u>To</u>

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;

<u>From</u>

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).

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. <u>Attachments to be Incorporated</u>;

- 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

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 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

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 duputy 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.

Charlotte J. Hayes 9/23/94
Clerk Date

Attachment

BEST AVAILABLE COPY

Florida Power Corporation

GE Frame 7EA Combustion Turbines

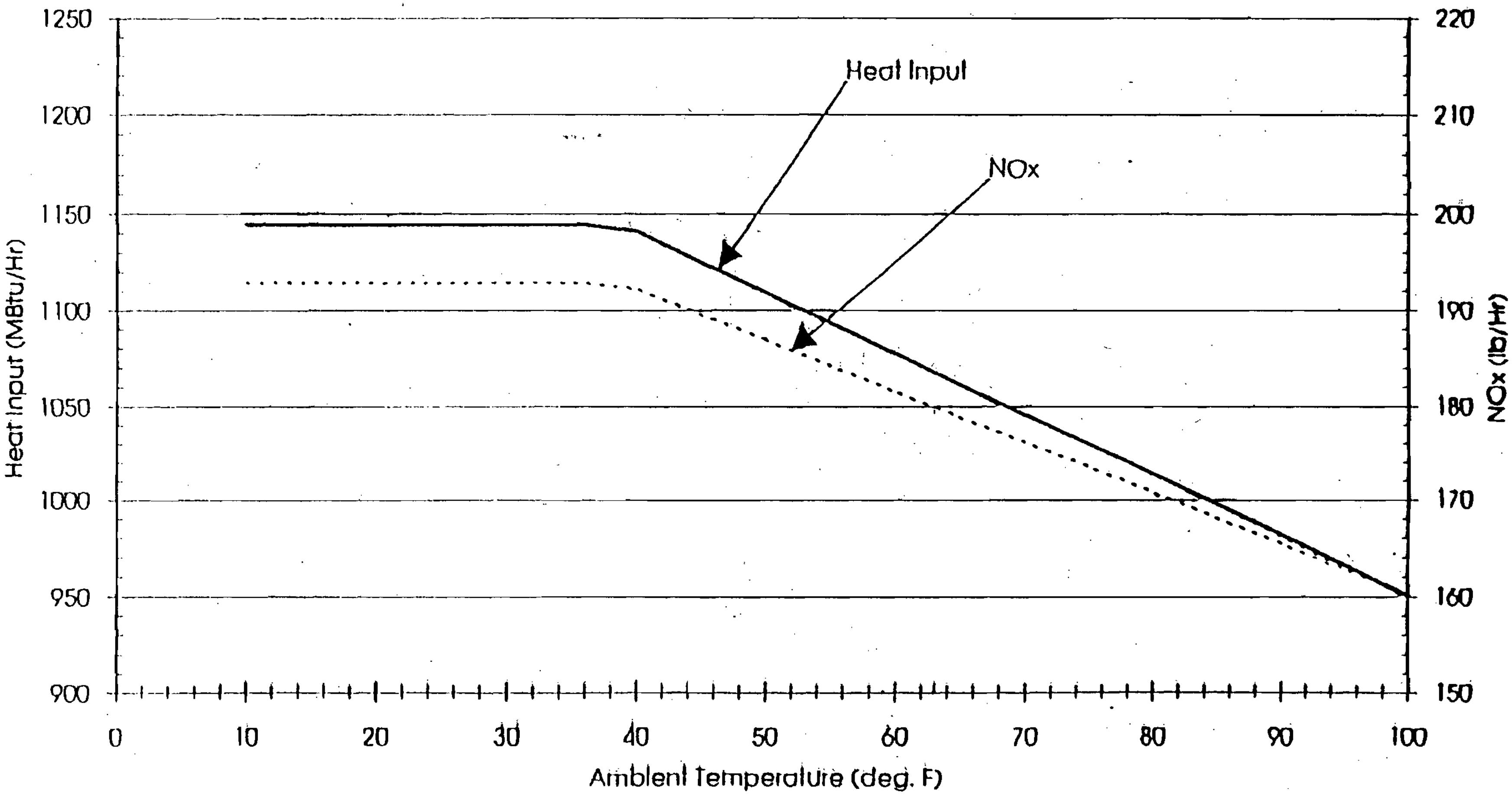


Figure 1L
Florida Power Corporation
Intercession City Facility
Heat Input vs. Ambient Temperature Curve

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Mr. Kent Hedrick
Supervisor, Air Programs
Florida Power Corporation
P. O. Box 14042
St. Petersburg, FL 33733

4a. Article Number
Z 751 859 980

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
SEP 28 1994

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form **3811**, December 1991 ★U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

Z 751 859 980

Receipt for Certified Mail

UNITED STATES POSTAL SERVICE

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Mr. Kent Hedrick, FPC	
Street and No. P. O. Box 14042	
P.O., State and ZIP Code St. Petersburg, FL 33733	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date Mailed: 9-23-94 Permit: AC 49-203114 PSD-FL-180(A)	

PS Form **3800**, March 1993

Florida Department of
Environmental Protection

Memorandum

Bruce

TO : Howard Rhodes

FROM : for Clair Fancy John Brown

DATE : September 21, 1994

SUBJECT: Approval of Construction Permit Amendment
AC 49-203114 [PSD-FL-180(A)]
Intercession City Facility

Attached for your approval and signature is an amendment to the Florida Power Corporation Intercession City Facility construction permit, prepared by the Bureau of Air Regulation. The purpose of this amendment is to clarify language regarding testing requirements and the use of a manufacturer's heat input vs. ambient temperature curve; and, to incorporate the manufacturer's heat input vs. ambient temperature curve into the construction permit. The curve is necessary for correcting heat input during compliance and performance tests. This amendment will not cause an increase in annual allowable emission limits or result in any equipment change.

This amendment is recommended for your approval and signature.

CF/CSL

Attachment

Florida Power
CORPORATION

August 4, 1994

Mr. Charles Collins, P.E.
Central District
Florida Department of Environmental Protection
3319 Maguire Boulevard, Suite 232
Orlando, FL 32803-3767

Dear Mr. Collins:

Re: Initial Startup of New Combustion Turbine at Intercession City
DEP Permit Number AC49-203114

As required by 40 CFR 60, Florida Power Corporation (FPC) is providing the Department of Environmental Protection (DEP) notification of the initial startup of the a new combustion turbine at FPC's Intercession City electric generating station. The initial startup of Unit P11 occurred on July 31, 1995.

Please feel free to contact me at (813) 866-4344 if you have any questions or if you need additional information.

Sincerely,

J. Michael Kennedy

J. Michael Kennedy
Manager, Air Programs

cc: Mr. Al Linero, DEP-Tallahassee

Florida Power
CORPORATION

0005272

July 26, 1994

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

Dear Mr. Fancy:

Re: Construction Permit Amendment Processing Fee

In response to your letter dated July 12, 1994, Florida Power Corporation (FPC) submits the enclosed additional fee payment of $250.00 for the processing of FPC's submittal for construction permit amendments to permit number AC64-191015 (DeBary) and permit number AC49-203114 (Intercession City).

Please contact me at (813) 866-4344 if you have any questions.

RECEIVED
DER - MAIL ROOM
1994 JUL 28 PM 1:47

Sincerely,

J. Michael Kennedy

J. Michael Kennedy
Senior Environmental Specialist

Enclosure

Florida Power CORPORATION

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

REMITTANCE ADVICE

89

CHECK DATE 07/25/94 VENDOR FLA DEPT OF ENVIRONMENTAL VENDOR NO. 278473 CHECK NO. 1656920

INVOICE NO.	DATE	OUR ORDER NO.	VOUCHER	GROSS AMOUNT	DISCOUNT	NET AMOUNT
CK80095	07/19/94		9407193082	250.00	.00	250.00
					TOTAL	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

0005273

63-115
631

DATE 07/25/94 CHECK NO. **1656920**

PAY: $250*DOLLARS AND 00 CENTS $*******250.00

SunBank / Mid-Florida

Void after 60 days

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

Treasurer

[redacted]

File Copy

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

July 27, 1994

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:

Attached please find a corrected page of the Department's July 15, 1994, letter indicating the 171 MW rated capacity for the new combustion turbine. Please discard the incorrect page.

Should you have any questions, please feel free to call Teresa M. Heron at (904) 488-1344.

Sincerely,

Patricia G. Adams

Patricia G. Adams
Planner
Bureau of Air Regulation

/pa

cc: Charles Collins, DEP Central District

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

PSD-Fl-180@

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 Siemmens 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

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

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

4a. Article Number
P 872 563 642

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery JUL 15 1994

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form **3811**, December 1991 ★U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

P 872 563 642

UNITED STATES POSTAL SERVICE

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Mr. W. Jeffrey Pardue, FPC	
Street and No. P.O. Box 14042	
P.O., State and ZIP Code St. Petersburg, FL 33733	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date Mailed: 7-12-94 Permit: AC64-191015 AC49-203114	

PS Form 3800, JUNE 1991

Department of Environmental Protection

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

Lawton Chiles
Governor

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

PSD-Fl-180e

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) 117 MW Siemmens 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

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.

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 J. Hayes   7/15/94
Clerk   Date

IS YOUR RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. W. Jeffrey Pardue
C.E.P. Manager
Florida Power Corporation
P. O. Box 14042
St. Petersburg, FL 33733

4a. Article Number
P 872 563 644

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery JUL 18 1994

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form **3811**, December 1991 ★U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

P 872 563 644

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to Mr. W. Jeffrey Pardue, FPC	
Street and No. P O Box 14042	
P.O., State and ZIP Code St. Petersburg, FL 33733	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date Mailed: 7-15-94 Permit: AC 49-203114	

PS Form **3800**, JUNE 1991

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

July 12, 1994

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. W. Jeffrey Pardue, C.E.P., Manager
Environmental Programs - Energy Supply
Florida Power Corporation
P. O. Box 14042
St. Petersburg, FL 33733

Dear Mr. Pardue:

RE: Florida Power Corporation
Construction Permit Amendments
AC64-191015, PSD-FL-167, DeBary
AC49-203114, PSD-FL-180, Intercession City

The Bureau of Air Regulation received your June 23, 1994, letter concerning the above referenced request, along with a $250 processing fee. Since this request will necessitate two separate department actions, we will need an additional $250 to begin processing the amendments. If you have any questions, please call Patty Adams at (904)488-1344.

Sincerely,

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

CHF/pa

cc: Charles Logan

BEST AVAILABLE COPY

Florida Power
CORPORATION

0004895

June 23, 1994

Mr. John C. Brown, P.E.
Administrator of Permitting
Division of Air Resource Management
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Brown:

Re: Request to Amend DeBary Construction Permit AC 64-191015 PSD-FL-167
Request to Amend Intercession City Construction Permit AC 49-203114 PSD-FL-180

Florida Power Corporation (FPC) requests that the permits referenced above be amended to incorporate an ISO corrected NO_x limit of 57 ppm @ 15% 0_2, a fuel bound nitrogen allowance and clarifying language on the application of a heat input vs. ambient temperature curve. Included in this submission are detailed discussions supporting each of these requested changes. The request to amend these permits is consistent with FPC's understanding of the strategy mutually agreed upon by FDEP and FPC at the meeting held in Tallahassee on February 3, 1994 to resolve outstanding permitting issues at these facilities.

Attachment #1 contains the rationale supporting the addition of a new ISO-corrected NO_x limit of 57 ppm @ 15% 0_2 for these facilities. The current limits of 42 ppm @ 15% O_2 and 182 lb./hour @ 59°F would remain unchanged. This limit would result in no increase in emissions from these sources, therefore, this change would not require a modification of the permits. This change would allow the use of the GE NO_x algorithm to continuously adjust water injection based on ambient temperature and humidity. In addition to NO_x control, this algorithm eliminates the current procedure requiring over-injection of water, thus conserving one of Florida's most valuable resources.

Attachment #2 contains the rationale supporting the use of a fuel bound nitrogen (FBN) allowance in determining allowable NO_x emissions. This allowance was requested in the PSD application for these facilities and FPC is requesting the BACT determination be corrected to allow the use of this FBN allowance. As detailed in Attachment #2, FPC is proposing to use the FBN allowance in the determination of allowable excess emissions as provided in 40 CFR 60.334(c)(1).

Attachment #3 explains FPC's proposal for the use of a heat input vs. ambient temperature curve during compliance testing. FPC is requesting clarifying language be added to the construction permits which incorporates current/proposed FDEP guidance on this issue.

It is FPC's desire to meet with you and your staff at your office in the near future to discuss this submittal and respond to any questions resulting from FDEP's initial review. We will be contacting you during the next several days in order to schedule this meeting.

A check in the amount of $250.00 for the processing of this permit amendment request is attached. Please contact Mike Kennedy at (813)866-4344 or Kent Hedrick at (813)866-4281 if you have any questions or comments.

Sincerely,

W. Jeffrey Pardue, C.E.P., Manager
Environmental Programs - Energy Supply

KDH
Attachments
cc: Mr. Mike Harley, FDEP Tallahassee
Mr. Alexander Alexander, FDEP Central District

Attachment 1

NOx ISO-Corrected Limit

Discussion of Separate ISO-Based NOx Limit

New DeBary and Intercession City Combustion Turbines

1.0 Introduction

Florida Power Corporation (FPC) is proposing to add a separate ISO-based NOx concentration limit of 57 ppm for the new combustion turbines at its DeBary (P7 - P10) and Intercession City (P7 - P10) facilities. The current mass emission limits in lbs./hour and tons/year will not change. In addition, the proposed ISO-based limit is equivalent to the limit of 42 ppm at 15% O_2 given in the BACT determination for both facilities.

2.0 Discussion

The construction permit applications for the new GE Frame 7EA combustion turbines at both the DeBary and Intercession City facilities contained a proposed NOx concentration limit of 42 ppm corrected to 15% O_2. This limitation was adopted as part of the BACT determination for both facilities and incorporated into the construction permits. The BACT determination supersedes the emission limitations established in the federal New Source Performance Standards (NSPS), which are codified at 40 CFR Part 60, Subpart GG.

It was subsequently determined that the BACT limit established for the new GE Frame 7EA combustion turbines is to be corrected to ISO conditions, as reflected in the compliance testing portions of the permits. The ISO correction is contained in the NSPS for combustion turbines. Its original purpose was to ensure that each new source could meet the NSPS limit as if it were tested at ISO conditions. Since the BACT determinations are based on manufacturer's data which is corrected to 15% O_2 only, and the determinations have resulted in limits which are well below the NSPS, FPC believes the use of the ISO correction is not necessary or appropriate. However, FPC is aware that an ISO based NOx limit will be required by FDEP for these turbines and establishment of this requirement is a prerequisite in obtaining FDEP approval to use the GE Mark IV ambient temperature/humidity correction algorithm. This strategy was adopted by FPC, FDEP and USEPA as a mutually agreeable solution to this issue during previous meetings attended by these parties.

Under the warm, humid conditions prevalent in central Florida, this additional correction results in a NOx limit which is several parts per million lower than 42 ppm corrected to 15% O_2, causing the injection of additional water in order to control NOx emissions to a lower level. In addition, the use of the GE Mark IV ambient temperature/humidity correction algorithm, which is an integral part of the NOx control system, was not permitted. This system uses the moisture present in the ambient air to contribute to the water injection. As a result of the inability to use the algorithm as it is designed, additional over-injection of water is occurring at both DeBary and Intercession City.

The water/fuel ratios which result from the two factors described above are as high as 1.3/1 on equipment which is designed for ratios of 0.9/1 to 1.0/1. This additional water use is unfortunate from a water conservation standpoint and causes significant unnecessary wear on the combustion turbines. The additional maintenance and major outage costs that FPC will incur are conservatively estimated to be approximately $4.7 million per unit over the lifetime of the units. This estimate does not include an additional $5 million per unit plus replacement energy costs which would occur as the result of a catastrophic failure. The replacement energy costs would be significant since the failure would occur during a peak demand period. FPC is already observing cracks in the combustors at the DeBary facility, which are occurring after less than a year of operation.

The 42 ppm NOx limit corrected to ISO conditions presents a greater problem for the DeBary and Intercession City units than for other GE Frame 7 units in the state of Florida. Other units use natural gas as the primary fuel with No. 2 oil only as a backup in the event gas is not available. The FPC units use only No. 2 oil for fuel. The over-injection of water which occurs continuously in the FPC units occurs infrequently for short periods of time in other units in Florida, in most cases only for compliance testing. Therefore, the excessive wear as a result of additional water injection does not become evident on the other units.

3.0 Proposed ISO-Based NOx Limit

Because of the reasons discussed above, a separate ISO-based NOx concentration limit for the new combustion turbines at DeBary and Intercession City is justified. The units were designed to use the ambient temperature/humidity correction algorithm for a NOx limit of 42 ppm corrected to 15% O_2. FPC proposes an additional NOx limit to be corrected to ISO conditions while retaining the current limits contained in the BACT determination.

In order to develop an ISO-based equivalent to the limit of 42 ppm at 15% O_2, 42 ppm was used as a basis in the ISO correction equation contained in 40 CFR 60 Subpart GG. A worst-case ISO limit was calculated using temperature and humidity conditions which could reasonably be expected to occur.

For representative temperature and humidity conditions, hourly meteorological ISO-Based NOx Limit observations from the National Weather Service office at the Orlando International Airport were obtained. Data for the years 1991 through 1993 were examined for worst-case combinations of temperature and humidity. (Copies of the meteorological data will be forwarded to the DEP upon request, but are not included with this submittal because there are 1096 pages of data.)

The combination of 85 degrees F. and 100% relative humidity is the worst-case set of ambient conditions which can reasonably be expected to occur at the DeBary and Intercession City plant sites. The following shows the derivation of the proposed ISO-based NOx limit using 42 ppm at 15% O_2 and the worst-case meteorology.

$$NOx_{(ISO)} = (NOx_{(obs)})(P_{(ref)}/P_{(obs)})^{0.5}\, e^{19(H(obs) - 0.00633)}\, (288°K/T_{(amb)})^{1.53}$$

Where:

$NOx_{(ISO)}$ = Emissions of NOx at 15% O_2 and ISO standard conditions

$NOx_{(obs)}$ = NOx emissions at 15% O_2 (= 42 ppm)

$(P_{(ref)}/P_{(obs)})$ = Reference combustor inlet pressure/measured combustor inlet pressure (= approximately 1)

$H_{(obs)}$ = Specific humidity (= 0.027 from psychrometric chart)

$T_{(amb)}$ = Ambient temperature (= 85° F. = 302° K.)

$NOx_{(ISO)}$ = 57.7 ppm when solved using the input given above

FPC requests that a separate ISO-based NOx concentration limit of 57 ppm, corrected to 15% O_2 and ISO conditions, be added to the construction permits for the new combustion turbines at DeBary and Intercession City. The current BACT limits for each GE Frame 7EA unit will not be changed. Compliance will be maintained with these existing limitations. In addition, FPC requests that the ISO-based limit of 57 ppm, corrected to 15% O_2 and ISO conditions, be added to the conditions for the other new units which are contained in the Intercession City construction permit.

Attachment 2

Fuel-Bound Nitrogen Allowance

Discussion of Fuel-Bound Nitrogen Allowance

New DeBary and Intercession City Combustion Turbines

1.0 Introduction

Florida Power Corporation (FPC) is requesting a permit condition allowing for the use of a fuel-bound nitrogen (FBN) allowance for the new combustion turbines at its DeBary and Intercession City peaking facilities. FPC is not requesting a change in the current NO_x emission limits in lb/hr or tons per year. FPC originally requested this provision in the construction permit applications for both facilities. At the time the construction permit was issued, FPC did not have the necessary data to determine the need for this allowance. FPC now has determined, based on test data of FBN concentrations in the fuel being burned at these facilities, this allowance is needed.

2.0 Discussion

The new combustion turbines at these facilities are regulated by the provisions in 40 CFR 60, Subpart GG. This subpart contains language on the use of a fuel-bound nitrogen allowance at 40 CFR 60.332(a) and 60.334(c). FPC referenced this allowance in the construction permit application and indicated it would be needed if the FBN concentration in the fuel being burned at these facilities was higher than the assumed concentration of 0.015 percent.

FPC has collected over 12 months of data on the FBN levels in the fuel at the DeBary facility. These data indicate that the average FBN concentration is 0.023 percent with a range of approximately 0.004 to 0.033 percent. FPC believes this level of FBN is representative of the long term supply of fuel to these facilities.

Discussions were held with the current fuel suppliers for these facilities on the potential to specify an FBN level of 0.015 percent in the fuel contract. Both suppliers indicated that they could not supply a fuel with the current sulfur content and an FBN at or below 0.015 percent. (Please see the attached letters from BP Oil and Coastal Refining and Marketing.) The only supply of fuel that could be guaranteed to this level of FBN would be ultra-low sulfur fuel oil (i.e. 0.05 percent S) and would require special handling in the form of dedicated terminal storage tanks and/or analyzing various terminal bulk supplies of ultra-low sulfur oil to locate acceptable FBN concentrations. FPC has estimated the potential increase in fuel costs above the current cost of fuel for these facilities to be $0.05/gallon. Based on the permitted allowable heat input of the combustion turbines, this represents a potential fuel cost increase of approximately $1,223,000 per year for each combustion turbine. Based on a total of eight combustion turbines, the total potential fuel cost increase is $9,784,000 per year (see attached calculation sheet). FPC's fuel suppliers and contact names are given at the end of this discussion.

3.0 Proposed Fuel-Bound Nitrogen Allowance

Based on the above discussion, the use of an FBN allowance is justified at the DeBary and Intercession City new combustion turbine facilities. FPC requested the FBN allowance in the original construction permit application pending collection of actual FBN concentrations in the fuel and 40 CFR 60 Subpart GG requires the use of an FBN allowance in determining allowable NOx emissions.

FPC is proposing that language be added to the construction permits for DeBary and Intercession City allowing the use of an FBN allowance up to an FBN concentration of 0.030 percent and not exceeding an allowable NO_x ISO-corrected concentration of 57 ppm. This approach would limit the allowance for NO_x emissions to an additional 6 ppm. Using the estimated cost impact of $9,784,000 per year, the potential cost impact of having to purchase fuel with an FBN concentration of 0.015 percent would be $28,277 per ton NO_x removed (see attached calculation sheet). This is not an economically justified alternative.

The FBN allowance would be used to determine allowable excess emissions from each combustion turbine. Current permit requirements include fuel testing for FBN, which would be used to determine the amount of the FBN allowance and identify periods of excess emissions. During a compliance test, a fuel sample would be taken and analyzed to determine the FBN concentration. The allowance would be determined and used to set the water to fuel ratio during the compliance test for unit operation.

During normal operation, the FBN will be monitored and recorded. Anytime the FBN level exceeds 0.015 percent, the period would be included in the quarterly excess emissions report and noted as an allowable exceedance in accordance with the FBN allowance. These exceedances would be allowable up to a limit of 0.030 percent FBN (i.e. 6 ppm NO_x) and not exceeding an ISO corrected NO_x concentration of 57 ppm.

Using the criteria stated above and the regulatory provisions contained in 40 CFR 60.332 and 40 CFR 60.334, FPC proposes the following language be added as a specific condition in the DeBary and Intercession City construction permits:

> During normal unit operation, periods of excess NO_x emissions caused solely by an increase in fuel-bound nitrogen will be allowed. NO_x emissions shall not exceed 57 ppm @ 15 % O2 corrected to ISO conditions in accordance with the fuel-bound nitrogen allowance provided in the following table.

Fuel Bound Nitrogen (percent by weight)	NO_x Allowance (ppm)
N<=0.015	0
0.015<N<=0.030	200(N)

Fuel Oil Supplier Information

Coastal Refining and Marketing, Inc.

Contact: Mr. J. R. Sauls
Telephone: (305) 551-5239

BP Oil

Contact: Mr. William Smith
Telephone: (404) 641-2501

Calculation Sheet

Data

Maximum permitted CT Heat Input @ 59°F = 1029 mmBtu/Hr

Maximum permitted hours of operation = 3328 Hrs/Year (0.38% capacity factor)

Heat content of No. 2 fuel oil = 140,000 Btu/Gal

Incremental fuel cost increase = $0.05/Gal

Maximum allowable NOx emission rate = 182 lb./hr. @ 59°F

Annual Potential Cost Increase

$$1029\frac{mmBtu}{Hr} \; X \; 3328\frac{Hrs}{Yr} \; X \; \frac{Gal}{140{,}000\ Btu} \; X \; \frac{\$0.05}{Gal} \approx \$1{,}223{,}000\ per\ CT$$

$$\frac{\$1{,}223{,}000}{CT} \; X \; 8\ CTs \approx \$9{,}784{,}000\ per\ year$$

$$\frac{6ppm}{42ppm} \; X \; 182\ \frac{lb}{Hr} = 26$$ (Potential NOx emissions controlled by specifying FBN level of 0.015% in fuel contract)

$$26\frac{lb}{Hr} \; X \; 3328\frac{Hr}{Yr} \; X \; \frac{1\,Ton}{2000\,lb} = 43\ \frac{Tons}{Yr} \; X \; 8\ CTs \approx 346\frac{Tons}{Yr}$$

$$\frac{\$9{,}784{,}000}{YR} \; X \; \frac{YR}{346\ Tons} \approx \frac{\$28{,}277}{Ton}$$

BP OIL

BP Oil Company
9010 Rocwell Road, Suite 520
Atlanta, Georgia 30350 1199
1-800-544-3210
(404) 641-2500

May 10, 1994

Mr. Dan Putnam
Florida Power Corp.
3201 Thirty-Fourth St., S.
St. Petersburg, FL 33733

RE: LOW NITROGEN #2 FUEL

Dear Mr. Putnam:

We have historically been able to produce #2 Fuel Oil with a guaranteed Maximum Nitrogen Content of 150 PPM. We were the only oil company, to my knowledge, able to make this guarantee for two reasons: 1, We processed very sweet crude through our refinery; and, 2. We had the ability to blend to this very tight specification. The costs associated with this blending and separate storage were between four and six cents per gallon.

Recent changes in our refining configuration to allow us to process a wider range of crude oils may have jeopardized our ability to provide low nitrogen at any cost. We are presently testing the refinery output and expect to have a much better indication of our ability by May 20th. Until the 20th, I am unable to commit to our ability to supply on a guaranteed basis at any cost.

Sincerely,

W. F. Smith /pg

W. F. Smith
Manager, Direct Fuels South

WFS:PG

cc: S. F. Johnston

Coastal
The Energy People

April 20, 1994

FAX NO. 813-866-4936

Mr. T. D. Putnam
Buyer, Fuel Supply
FLORIDA POWER CORPORATION
P. O. Box 14042
St. Petersburg, FL 33733

Dear Mr. Putnam:

Confirming our recent conversation, in order to supply Florida Power Corporation with No. 2 Fuel Oil having a maximum of 150 PPM of fuel bound nitrogen, Coastal would supply low sulfur No. 2 Fuel Oil 0.05% maximum which is usually below 150 PPM but can be up to 200 PPM.

The additional cost of low sulfur No. 2 oil has been from zero to 6 cents per gallon. Also there would be additional cost for transporting the oil from a terminal farther away which would be approximately 2 cents per gallon more.

If you have any questions or require additional information, please do not hesitate to contract me at (305) 551-5239.

Sincerely,

COASTAL REFINING & MARKETING, INC.

J R Sauls

J. R. Sauls
Director, Utility Sales

Coastal Refining & Marketing, Inc.
A SUBSIDIARY OF THE COASTAL CORPORATION
P O BOX 025500 • MIAMI FL 33102-5500 • 305-551-5200

Attachment 3

Heat Input vs. Ambient Temperature

Discussion of Heat Input vs. Ambient Temperature

New DeBary and Intercession City Combustion Turbines

1.0 Introduction

Florida Power Corporation (FPC) proposes that the Department of Environmental Protection (DEP) incorporate the final guidance on rate of operation during compliance testing for combustion turbines. FPC submits the attached heat input vs. ambient temperature curves, which are based on manufacturer's data of maximum unit performance, for each facility.

2.0 Discussion

The construction permit for the new combustion turbines at Intercession City contains the manufacturer's design heat input for three ambient temperatures, which provides the relationship of ambient temperature vs. heat input. Specific Condition 14 of the permit requires that compliance testing be performed while the units are operating at between 90 and 100% of heat input capacity as adjusted for ambient temperature.

The construction permit for the new combustion turbines at the DeBary facility was issued at an earlier date than that for Intercession City and does not contain the heat input vs. ambient temperature curve. Therefore, compliance testing must be performed while the units are operating at between 90 and 100% of the maximum permitted heat input, regardless of ambient temperature. Initial compliance testing was performed in July, 1993, and the ambient temperature was too high for the units to achieve the required heat input. Therefore, the units have been limited to less than full capacity since that time. Incorporation of the heat input vs. ambient temperature relationship into both the construction and operation permits for the DeBary combustion turbines is extremely important for the economical operation of the units at any ambient temperature in order to provide the electricity FPC customers need at reasonable cost.

3.0 Heat Input vs. Ambient Temperature Curves

FPC submits the attached heat input vs. ambient temperature curve for application to both the DeBary and Intercession City new combustion turbines. For DeBary, FPC requests that the curve be incorporated into the construction permit. FPC will then request that the Central District amend the operating permit accordingly.

For the new GE Frame 7EA combustion turbines at Intercession City, FPC requests that the DEP remove the current specific ambient temperature and heat input references contained in Specific Condition 4.D. The attached curve would then be incorporated into the construction permit, replacing the specific references.

4.0 Heat Input During Compliance Testing

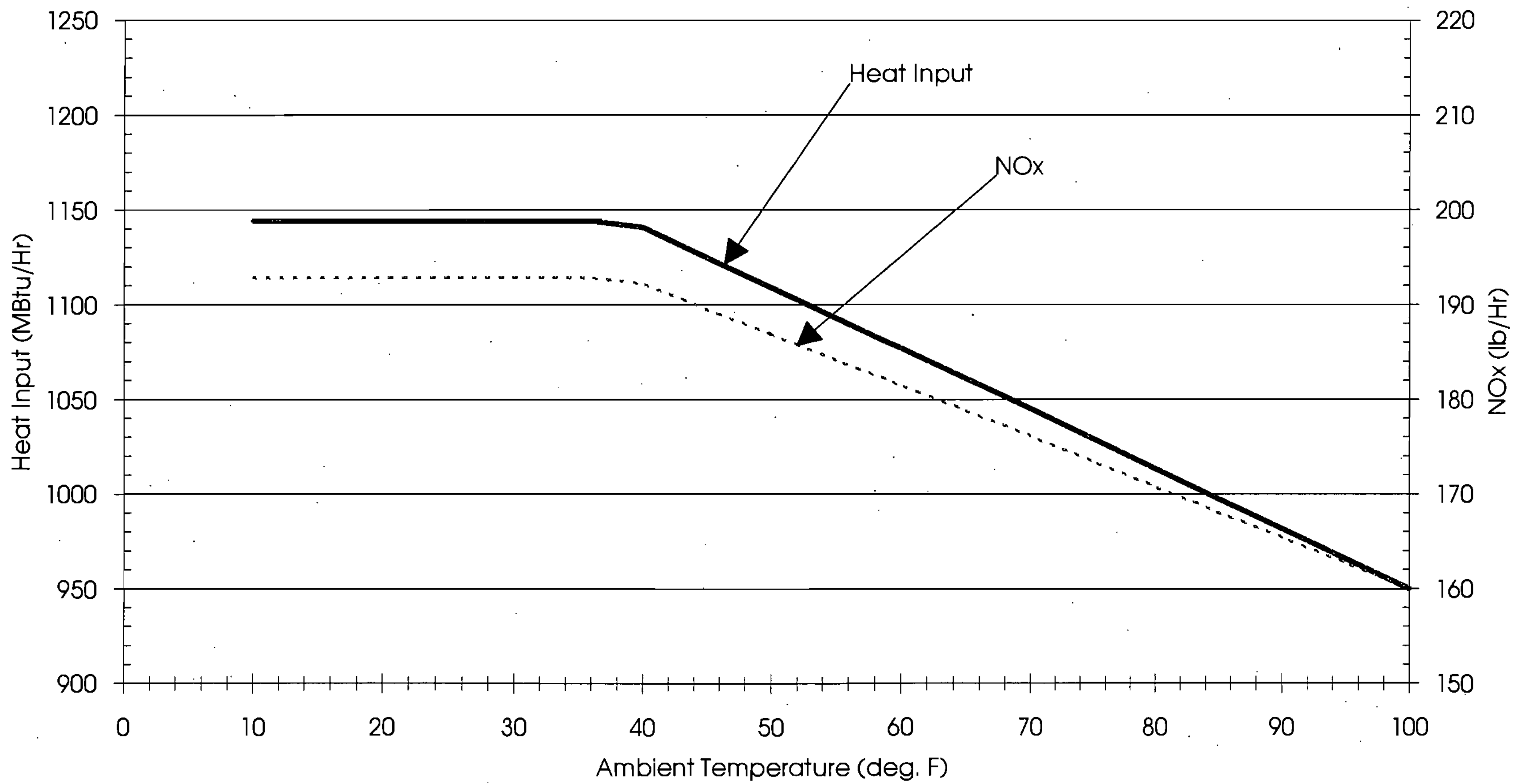
DEP is in the process of developing guidance on the rate of operation during compliance testing for combustion turbines. FPC requests that the final guidance be incorporated into the construction permits for both the DeBary and Intercession City new combustion turbines. In addition, FPC requests that the following language be incorporated into both permits in order to address the potential situation of one or more of the units being unable to achieve the required Heat Input vs. Ambient Temperature percentage of maximum rated heat input as adjusted for ambient temperature during a compliance test. This suggested language is based on the DEP draft guidance dated May 4, 1994, which uses 95% as the required percentage of maximum rated capacity.

> *In the event that a combustion turbine does not achieve 95% of the design 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 during a subsequent compliance test.*

This language accounts for the possible degradation of the units over a period of time while allowing for the continued use of the ambient temperature vs. heat input relationship unique to combustion turbines.

Florida Power Corporation

GE Frame 7EA Combustion Turbines



Note: Curves based on General Electric's (GE's)
expected performance data.

6/10/94

Florida Power CORPORATION

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

REMITTANCE ADVICE

89

CHECK DATE 06/20/94 VENDOR FLA DEPT OF ENVIRONMENTAL VENDOR NO. 278473 CHECK NO. 1646777

INVOICE NO.	DATE	OUR ORDER NO.	VOUCHER	GROSS AMOUNT	DISCOUNT	NET AMOUNT
CK097447	06/13/94		9406176213	250.00	.00	250.00
					TOTAL	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

0004895 [redacted]

DATE 06/20/94 CHECK NO. 1646777

PAY: $250*DOLLARS AND 00 CENTS $*******250.00

SunBank / Mid-Florida

Void after 60 days

TO THE ORDER OF

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

Treasurer

[redacted]

BEST AVAILABLE COPY

0004826

Florida Power
CORPORATION

1994 JUN 23 PM 1:02

June 21, 1994

Mr. John Brown, P.E.
Administrator of Permitting
Division of Air Resources Management
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Dear Mr. Brown:

Re: Processing Fee for Construction Permit Amendment - Intercession City
(Permit Number AC 49-203114 ; PSD-FL-180)

As requested by Ms. Teresa Heron of your staff, Florida Power Corporation submits the enclosed fee payment of $50.00 for the processing of the permit amendment application referenced above, which was dated April 8, 1994.

Please contact me at (813) 866-4344 if you have any questions.

Sincerely,

J. Michael Kennedy

J. Michael Kennedy
Senior Environmental Specialist

Enclosure

cc: Ms. Teresa Heron, DEP - Tallahassee (w/o enclosure)

BEST AVAILABLE COPY

Florida Power
CORPORATION

RECEIVED
APR 14 1994
Bureau of Air Regulation

April 8, 1994

4/29/94
T.H.

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_2 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.

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_2 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

Pollutant	Emission Rate
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 = ~~20,700 Btu/lb~~, Temperature = 60 F
No. 2 Fuel Oil LHV = ~~18,550 Btu/lb~~, Temperature = 60 F

NO_x 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			43,996	87,998	132,003	176,001	
Auxiliary power, kW			2,495	2,495	2,495	2,495	
Gross heat rate, Btu/kWh (LHV)			14,196	11,147	10,509	9,976	
Exhaust flow, lb/h			2,781,648	2,830,356	2,906,496	3,562,560	
Exhaust temp, F			623	835	1,038	1,022	
Inlet guide vane position, ~~degrees~~			75%	75%	75%	92.1%	
Fuel flow, lb/h			33,998	53,399	75,510	95,583	
Nitrogen oxides, ppmdv @ 15% O_2			42	42	42	42	
Nitrogen oxides, lb/h as NO_2			110	171	241	305	
Carbon monoxide, ppmdv			254	5.0	5.0	5.0	
Carbon monoxide, lb/h			403.6	12.4	17.5	22.1	
Sulfur dioxide, ppmwv			21.9	22.0	22.1	22.1	

FPC 17506 COMB TURB GEN 62.1003
061193
PD-54

Manufacturer: Siemens

Model No./Combustor: V84.3

TABLE: B.2- 6

Combustion system type: ~~Dry NOx~~ Dual Fuel Low NOx

AMBIENT TEMPERATURE/
RELATIVE HUMIDITY: 20 F/60%

BAROMETRIC PRESSURE: ~~14.61 psia~~

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

NO_x 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
Sulfur dioxide, lb/h			136.1	213.8	302.3	382.8	
TSP, lb/h + PM10, lb/h			17.0	17.0	17.0	17.0	
~~PM10, lb/h~~							
Unburned hydrocarbon, ppmwv			6.0	5.0	5.0	5.0	
Unburned hydrocarbon, lb/h			5.5	7.1	10.0	12.7	
Volatile organic compounds, ppmwv			3.2	3.0	3.0	3.0	
Volatile organic compounds, lb/h			2.9	4.3	6.0	7.6	
Oxygen, ~~lb/h~~			18.5	15.8	12.8	12.3	
Nitrogen, ~~lb/h~~ %Wt.			73.7	72.4	70.5	70.2	
Carbon dioxide, ~~lb/h~~			3.9	6.0	8.2	8.5	
Argon, ~~lb/h~~			1.2	1.2	1.1	1.1	
Water, ~~lb/h~~			2.6	4.4	7.1	7.6	
Opacity, %			2.0	0.6	0	0	

FPC 18875 COMB TURB GEN 62.1003
062393
PD-55

FOR INFORMATION ONLY

FPC 17506 COMB TURB GEN 62.1003
061193
PD-54

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: ~~14.61 psia~~

FUEL: Natural Gas LHV = ~~20,700 Btu/lb~~, Temperature = 60 F
No. 2 Fuel Oil LHV = ~~18,650 Btu/lb~~, Temperature = 60 F

NO_x 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, ppmdv @ 15% O_2			42	42	42	42	
Nitrogen oxides, lb/h as NO_2			109.2	171.5	236.5	301	
Carbon monoxide, ppmdv			254	5.0	5.0	5.0	
Carbon monoxide, lb/h			402	12.4	17.1	21.8	
Sulfur dioxide, ppmwv			21.9	22.1	22.1	22.1	

FOR INFORMATION ONLY

Manufacturer: Siemens

Model No./Combustor: V84.3

Combustion system type: ~~Dry NOx~~ Dual Fuel Low NOx

TABLE: B.2-8

AMBIENT TEMPERATURE/
RELATIVE HUMIDITY: 59F/60%

BAROMETRIC PRESSURE: ~~14.61 psia~~

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

NO_x 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
Sulfur dioxide, lb/h			135.7	214.2	296.6	376.8	
TSP, lb/h + PM10, lb/h			17.0	17.0	17.0	17.0	
~~PM10, lb/h~~							
Unburned hydrocarbon, ppmwv			6.0	5.0	5.0	5.0	
Unburned hydrocarbon, lb/h			5.4	7.1	9.8	12.5	
Volatile organic compounds, ppmwv			3.2	3.0	3.0	3.0	
Volatile organic compounds, lb/h			2.9	4.3	5.9	7.5	
Oxygen, ~~lb/h~~			18.0	15.1	13.1	12.5	
Nitrogen, ~~lb/h~~ %Wt.			73.2	71.9	70.4	69.9	
Carbon dioxide, ~~lb/h~~			4.2	6.5	8.0	8.4	
Argon, ~~lb/h~~			1.2	1.2	1.2	1.2	
Water, ~~lb/h~~			3.3	5.3	7.4	7.9	
Opacity, %			2.0	0.6	0	0	

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.2-10

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

BAROMETRIC PRESSURE: ~~14.61 psia~~

FUEL: Natural Gas LHV = ~~20,700 Btu/lb~~, Temperature = 60 F
No. 2 Fuel Oil LHV = ~~18,550 Btu/lb~~, Temperature = 60 F

NO_x 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			37,729	75,460	113,195	153,861	
Auxiliary power, kW			2,495	2,495	2,495	2,495	
Gross heat rate, Btu/kWh (LHV)			15,749	12,184	11,077	10,445	
Exhaust flow, lb/h			2,414,844	2,459,412	2,756,052	3,368,556	
Exhaust temp, F			746	968	1,055	1,051	
Inlet guide vane position, ~~degrees~~			75%	75%	82.36%	100%	
Fuel flow, lb/h			32,346	50,051	68,256	87,487	
Nitrogen oxides, ppmdv @ 15% O_2			42	42	42	42	
Nitrogen oxides, lb/h as NO_2			104.0	160.1	218.0	279.2	
Carbon monoxide, ppmdv			254.0	5.0	5.0	5.0	
Carbon monoxide, lb/h			383.0	11.6	15.8	20.2	
Sulfur dioxide, ppmwv			21.9	22.1	22.1	22.1	

FOR INFORMATION ONLY

FPC 17506 COMB TURB GEN 62.1003
061193
PD-54

Manufacturer: Siemens

Model No./Combustor: V84.3

Combustion system type: ~~Dry NOx~~ Dual Fuel Low NOx

TABLE: B.2-10

AMBIENT TEMPERATURE/
RELATIVE HUMIDITY: 90 F/ 60%

BAROMETRIC PRESSURE: ~~14.61 psia~~

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

NO_x 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
Sulfur dioxide, lb/h			129.6	200.4	273.4	350.4	
TSP, lb/h + PM10, lb/h			17.0	17.0	17.0	17.0	
~~PM10, lb/h~~							
Unburned hydrocarbon, ppmwv			6.0	5.0	5.0	5.0	
Unburned hydrocarbon, lb/h			5.2	6.7	9.1	11.6	
Volatile organic compounds, ppmwv			3.2	3.0	3.0	3.0	
Volatile organic compounds, lb/h			2.8	4.0	5.4	7.0	
Oxygen, ~~lb/h~~			17.6	14.9	13.0	17.6	
Nitrogen, ~~lb/h~~			72.3	71.0	69.6	72.3	
Carbon dioxide, ~~lb/h~~			4.3	6.5	7.9	4.3	
Argon, ~~lb/h~~			1.2	1.2	1.2	1.2	
Water, ~~lb/h~~			4.5	6.4	8.4	4.6	
Opacity, %			2.0	0.6	0	0	

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_2 is the pollutant which is emitted in the greatest quantities from the Siemens unit as well as the two GE units. Worst-case SO_2 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^3 from the two GE units and 12 ug/m^3 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.

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_2 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_2 was chosen because those emissions will have the highest impact.

Worst-case SO_2 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_2 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

	GE Frame 7FA	Siemens
SO_2 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_2 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:

GE Units	Max. = 23.18 ug/m^3	Distance = 1.577 km
Siemens Unit	Max. = 12.04 ug/m^3	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 ***

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

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

December 14, 1993

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

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

Dear Mr. Pardue:

RE: Intercession City - DEP Permit No. AC 49-203114, PSD-FL-180

The Department is in receipt of your letter requesting an interpretation of Specific Condition No. 14 of the above mentioned permit. Specific Condition No. 14 reads: "The sources shall operate between 90% and 100% of permitted capacity during the compliance test(s) **as adjusted for ambient temperature."** This request is made due to the fact that that DEP's Central District personnel has indicated that ambient temperature during compliance tests will not be considered.

The Bureau of Air Permitting and Standard agreed with your interpretation that the units will be considered to be in compliance with permitted maximum emission limits if peak load testing is performed while the units are operating between 90% and 100% of permitted capacity as determined by the ambient temperature occurring at the time of testing. Thus, Specific Condition No. 14 will remain as stated in the permit.

If you have any questions, please feel free to call Preston Lewis at (904)488-1344 or write to me at the above address.

Sincerely,

For John C. Brown, Jr., P.E.
Administrator
Air Permitting and Standards

JB/TH/bjb

cc: Alexander Alexander, DEP Central District
Charles Collins, DEP Central District
Jewell Harper, EPA
John Bunyak, NPS
Mike Kennedy, FPC

P 872 562 507

Receipt for Certified Mail

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UNITED STATES POSTAL SERVICE

Sent to Mr. W. Jeffrey Pardue	
Street and No. P. O. Box 14042	
P.O., State and ZIP Code St. Petersburg, FL 33733	
Postage	$
Certified Fee	
Special Delivery Fee	
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Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date Mailed: 12/14/93 AC 49-203114, PSD-FL-180	

PS Form **3800**, JUNE 1991

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I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
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Consult postmaster for fee.

3. Article Addressed to:
Mr. W. Jeffrey Pardue
C.E.P. Manager
Florida Power Corporation
P. O. Box 14042
St. Petersburg, Florida 33733

4a. Article Number
P 872 562 507

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
DEC 16 1993

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form **3811**, December 1991 ★U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

BEST AVAILABLE COPY

Mike Harley

Florida Power
CORPORATION

file

Certified Mail P 627 945 413

December 7, 1993

Mr. Alexander Alexander, P.E.
Director, Central District
Florida Department of Environmental Protection
3319 Maguire Boulevard, Suite 232
Orlando, FL 32803-3767

Dear Mr. Alexander:

Re: Compliance Test Notification for New Combustion Turbines at Intercession City
DEP Permit Number AC49-203114

As required by 40 CFR 60.8 and Specific Condition 14. of the permit referenced above, Florida Power Corporation (FPC) is providing the Department of Environmental Protection (DEP) notification of the commencement of compliance testing of the new combustion turbines at FPC's Intercession City electric generating station which have not yet been tested. Testing of Units P7 and P9 will begin on January 10, 1994.

FPC will perform the tests in accordance with the test protocol which was agreed upon during the pre-test meeting between the Central District and FPC on October 19, 1993. The visible emissions test requirements, which were revised after this meeting, will be followed consistent with the tests performed on Units P8 and P10 in November 1993.

Please feel free to contact me at (813) 866-4344 if you have any questions.

Sincerely,

J. Michael Kennedy

J. Michael Kennedy
Senior Environmental Specialist

cc: Mr. Charles Collins, DEP Central District
Mr. Garry Kuberski, DEP Central District
Mr. John Brown, DEP Tallahassee ✓

RECEIVED
DEC 1 3 1993
Division of Air
Resources Management

Florida Department of
Environmental Protection

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

Lawton Chiles
Governor

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

PSD- FL-180B

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	-	3.34×10^{-2}	0.23(b)	Application
Mercury (Hg)	3.0×10^{-6} lbs/MMBtu	3.09×10^{-3}	0.02(b)	Application
Lead (Pb)	8.9×10^{-6} lbs/MMBtu	9.16×10^{-3}	0.06(b)	Application
Inorganic Arsenic	4.2×10^{-6} lbs/MMBtu	4.32×10^{-3}	0.03(b)	BACT
Beryllium (Be)	2.5×10^{-6} lbs/MMBtu	2.57×10^{-3}	0.02(b)	BACT

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)	3.0×10^{-6} lbs/MMBtu	5.66×10^{-3}	0.02(b)	Application
Lead (Pb)	8.9×10^{-6} lbs/MMBtu	1.68×10^{-3}	0.06(b)	Application
Inorganic Arsenic	4.2×10^{-6} lbs/MMBtu	7.9×10^{-3}	0.02(b)	BACT
Beryllium (Be)	2.5×10^{-6} lbs/MMBtu	4.72×10^{-3}	0.02(b)	BACT

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.

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.

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

P 872 562 498

Receipt for Certified Mail

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Do not use for International Mail
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Sent to Mr. Jeffrey Pardue	
Street and No. P. O. Box 14042	
P.O., State and ZIP Code St. Petersburg, FL 33733	
Postage	$
Certified Fee	
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Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
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Postmark or Date Mailed: 11/19/93 AC 49-203114, PSF-FL-180	

PS Form 3800, JUNE 1991

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- Write "Return Receipt Requested" on the mailpiece below the article number.
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I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

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

4a. Article Number
P 372 562 498

4b. Service Type
☐ Registered ☐ Insured
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☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
NOV 2

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

Thank you for using Return Receipt Service.

PS Form 3811, December 1991 ☆U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

Memorandum

Florida Department of Environmental Protection

TO: Howard L. Rhodes

FROM: Clair Fancy

DATE: November 15, 1993

SUBJ: Approval of an Amendment to Construction Permit
AC 49-203114, PSD-FL-180
Florida Power Corporation: Intercession Facility
Osceola County

Attached for your approval and signature is an amendment to a construction permit prepared by the Bureau of Air Regulation for the above referenced company. The purpose of the amendment is to reflect the method of control for fluorides, Hg, Pb, Be and Inorganic Arsenic in Table 1 and 2 of the BACT and the construction permit. The changes are consistent with the application package associated with this Construction Permit. The facility is located in Osceola County, which is an attainment area for all pollutants.

I recommend your approval and signature.

CF/TH/bb

Attachment

Preston - cy for file
also, send M.H. a cy.

G.D.
~~Jerome~~
done
BB

Florida Power
CORPORATION

RECEIVED
NOV 01 1993
Division of Air
Resources Management

October 28, 1993

Mr. Alexander Alexander, P.E.
Director, Central District
Florida Department of Environmental Protection
3319 Maguire Boulevard, Suite 232
Orlando, FL 32803-3767

Dear Mr. Alexander:

Re: Compliance Testing Update for New Combustion Turbines at Intercession City
DEP Permit Number AC49-203114

On October 5, 1993, Florida Power Corporation (FPC) provided the Department of Environmental Protection (DEP) notification of the commencement of compliance testing of the new combustion turbines at FPC's Intercession City electric generating station. The testing will begin on November 8, 1993. FPC would like to amend the test schedule for two of the four units.

Units P8 and P10, which were initially started in July 1993, will be tested beginning on November 8 as planned. FPC wishes to test Units P7 and P9, which were started in late August and early September, in the December-January time period. Particulate testing, which is to be performed on one of the four new units, will be completed on either P7 or P9. This schedule will help FPC maximize the opportunity to test the units for compliance during the cooler winter months. FPC will notify DEP at least 30 days prior to the commencement of testing on Units P7 and P9. Compliance test reports will be submitted to DEP within the required 180 day period for all four units. This approach has been discussed with Mr. Garry Kuberski and he has given his concurrence.

Please feel free to contact me at (813) 866-4344 if you have any questions.

Sincerely,

J. Michael Kennedy

J. Michael Kennedy
Senior Environmental Specialist

cc: Mr. Charles Collins, DEP Central District
Mr. Garry Kuberski, DEP Central District
Mr. John Brown, DEP Tallahassee

Florida Power
CORPORATION

Teresa,
Is this another modification better include with the attached.

RECEIVED GRL

OCT 28 1993 10/28

Division of Air Resources Management

PS Please copy for Patty-file

October 25, 1993

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: Intercession City - New Combustion Turbines
DEP Permit Number AC49-203114 ; PSD-FL-180

Florida Power Corporation (FPC) requests concurrence from the Department of Environmental Protection (DEP) regarding the language contained in the permit referenced above. Specifically, FPC wishes to obtain concurrence from DEP on FPC's understanding of the specific conditions for compliance testing.

Four GE Frame 7EA combustion turbines have been constructed under AC49-203114 at FPC's Intercession City electric generating station. Compliance testing for these units is scheduled to begin on November 8, 1993. Specific Condition 14 contains the following language regarding unit operation during compliance testing:

> *The sources shall operate between 90% and 100% of permitted capacity during the compliance test(s)* ***as adjusted for ambient temperature.*** (Emphasis added)

The adjustment for ambient temperature is needed because of the unique dependence of unit heat input capacity on ambient temperature, which is associated with combustion turbines. Specific Condition 4(D) reflects this dependence by giving the maximum heat input capacity of the Frame 7EA machines for a range of ambient temperatures. This information originated from manufacturer's performance data, a copy of which is attached in graph form.

It is FPC's interpretation of Specific Condition 14 that the units will be considered by DEP to be in compliance with permitted maximum emission limits if peak load testing is performed while the units are operating between 90% and 100% of permitted capacity as determined by the ambient temperature occurring at the time of testing. Therefore, if compliance is demonstrated under these conditions, then the units will be permitted to operate at capacity throughout the ambient temperature range.

Although the language in Specific Condition 14 seems clear and is consistent with the normal operating characteristics of combustion turbines, staff in DEP's Central District have indicated that ambient temperature during the compliance tests will not be considered. FPC requests that DEP indicate whether FPC's interpretation given above is correct. Since compliance testing will begin on November 8, a prompt reply would be much appreciated.

Please contact Mr. Mike Kennedy at (813) 866-4344 if you have any questions or if you need additional information.

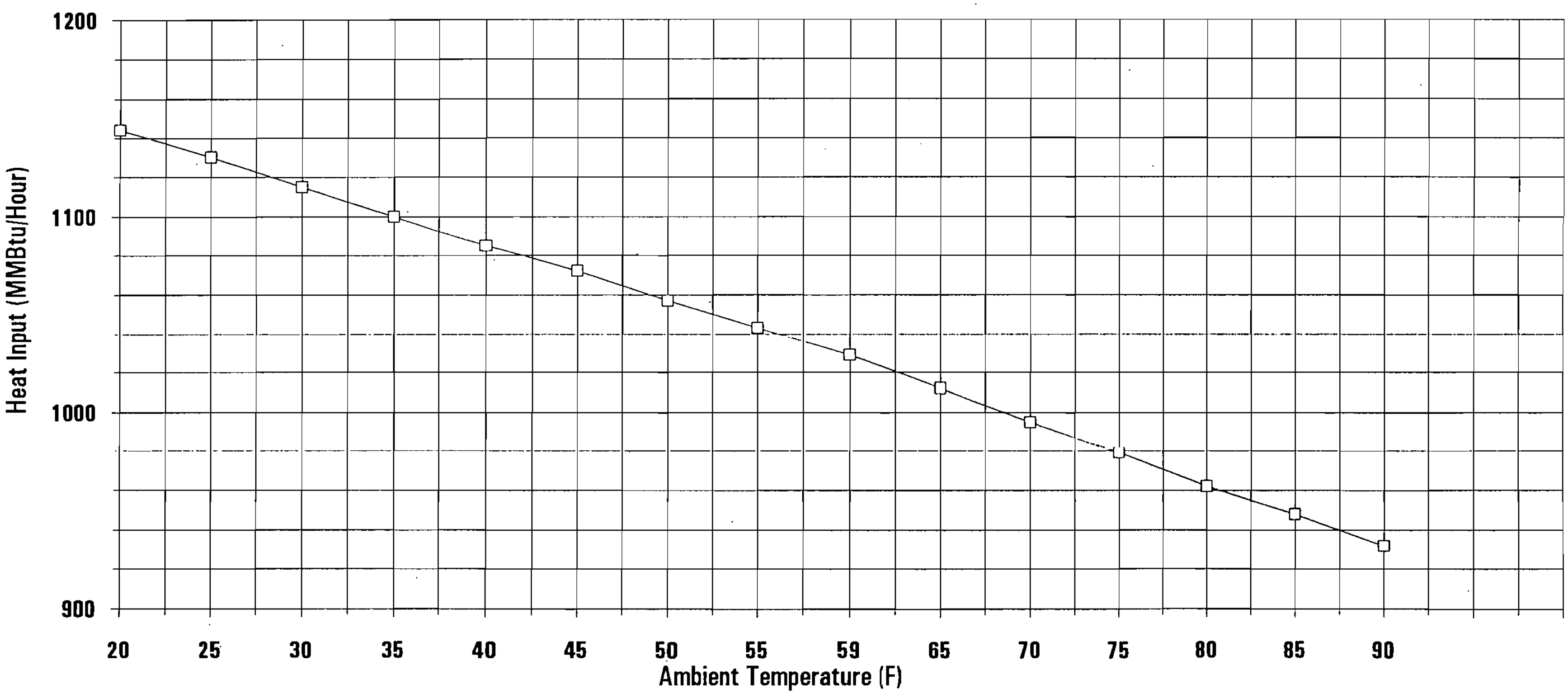
Sincerely,

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

Attachment

cc: Mr. Alexander Alexander, DEP Central District
Mr. Charles Collins, DEP Central District

Intercession City New Peakers - Heat Input vs. Temperature



BEST AVAILABLE COPY

~~input-for-the-tested-operating-temperature.~~ Testing of emissions shall be conducted with the source operating at capacity (maximum heat rate input for the tested operating temperature). Capacity is defined as 90-100% of rated capacity. If it is impracticable to test at capacity, then sources may be tested at less than capacity; in this case subsequent source operation is limited to 110% of the test load until a new test is conducted. Once the unit is so limited, then operation at higher capacities is allowed for no more than fifteen days for purposes of additional compliance testing to regain the rated capacity in the permit, with prior notification to the Department. Annual (A) compliance tests shall be performed on each CT with the fuel(s) used for more than 400 hours in the preceding 12-month period. Tests shall be conducted using EPA reference methods in accordance with 40 CFR 60, Appendix A, as adopted by reference in Rule 17-297, F.A.C.~~, and the requirements of 40 CFR 75.~~

a. Reference Method 5B for PM (I, A, for oil only).

b. Reference Method 8 for sulfuric acid mist (I, for oil only).

c. Reference Method 9 for VE (I, A).

d. Reference Method 10 for CO (I, A).

e. Reference Method 20 for NOx (I, A).

f. Reference Method 18 for VOC (I, A).

g. Trace elements of ~~Lead (Pb),~~ Beryllium (Be) and Arsenic (As) shall be tested (I, for oil only) using EMTIC Interim Test Methods. As an alternative, Method 104 for Beryllium (Be) may be used; or Be and ~~Pb~~ As may be determined from fuel analysis using either Method 7090 or 7091, and sample extraction using Method 3040 as described in the EPA solid waste regulations SW 846.

h. ASTM D ~~2880-71~~ 4294 (or equivalent) for sulfur content of distillate oil (I,A), which can be used for determining SO_2 and H_2SO_4 emissions annually.

i. ASTM D 1072-80, D 3031-81, D 4084-82, or D 3246-81 (or equivalent) for sulfur content of natural gas (I, and A if deemed necessary by DEP).

Other DEP approved methods may be used for compliance testing after prior departmental approval.

2. The maximum sulfur content of the low sulfur fuel oil shall not exceed 0.05 percent by weight. Compliance shall be demonstrated in accordance with the requirements of 40 CFR 60.334 testing for sulfur content of the fuel oil in the storage

10/28/93

XIII. AIR

The construction and operation of Polk County Site (Project) shall be in accordance with all applicable provisions of Chapters 17-210 to 297, F.A.C. The following emission limitations and conditions reflect BACT determinations for the Phase IA - 470 MW (two combined cycle combustion turbines and auxiliary equipment) of generating capacity for which the need has been determined. BACT determinations for the remaining phases will be made upon review of supplemental applications. In addition to the foregoing, the Project shall comply with the following conditions of certification as indicated.

A. General Requirements

1. The maximum heat input to each combustion turbine (CT) shall neither exceed ~~1,573~~ 1,510 MMBtu/hr while firing natural gas, nor ~~1,800~~ 1,730 MMBtu/hr while firing fuel oil (at ~~an ambient temperature of 40°F or greater~~ ISO conditions). Heat ~~input may vary depending on ambient conditions and the CT characteristics. Therefore, performance data will be derived after compliance test and made part of the operating permit.~~ Manufacturer's curves or equations for correction to other ambient conditions shall be provided to DEP at least 90 days before compliance testing.

2. Each of the two CTs in Phase IA may operate continuously, i.e., 8,760 hrs/year.

3. Only natural gas (NG) or low sulfur fuel oil shall be fired in each combustion turbine and the auxiliary boiler. Only low sulfur fuel oil shall be fired in the diesel generator. The maximum sulfur content of the low sulfur fuel oil shall not exceed 0.05 percent, by weight.

4. The maximum heat input to the auxiliary boiler shall not exceed 99 MM Btu/hr when firing NG or No. 2 fuel oil with 0.05 percent maximum sulfur content (by weight). All fuel consumption must be continuously measured and recorded for the auxiliary boiler.

5. The maximum allowable fuel oil consumption for the two turbines is 13,762,806 gallons per year, which is equivalent of an aggregate of 1,000 hours per year of operation at full load.

6. The permittee shall have the option of installing duct module(s) suitable for possible future installation of an oxidation catalysts and/or SCR equipment on each combined cycle generating unit. In the event that the module(s) are not installed in the Heat Recovery System Generator (HRSG) modification cost will not be included in any future economic evaluation to justify a SCR or oxidation catalyst utilization.

Florida Power
CORPORATION

Pathy, give to Teresa with (IF Intercession city) copies to C.L. and D.O. Preston 10/14

Certified Mail P 627 945 285

October 7, 1993

RECEIVED
OCT 14 1993
Division of Air
Resources Management

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: Intercession ?

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

As a result of a conversation between Mr. Mike Kennedy of my staff and Mr. Charles Collins of the Central District of the Department of Environmental Protection (DEP), Florida Power Corporation (FPC) requests an amendment to the construction permit referenced above. This request supplements the modification request which FPC submitted to DEP on July 26, 1993.

On August 11, 1993 DEP granted FPC a permit amendment for the new combustion turbines at the DeBary facility (copy attached). FPC is constructing new combustion turbines, which are identical to the DeBary turbines, at its Intercession City generating station. The DeBary permit amendment changed specific allowable emission limits to a specification to use No. 2 fuel oil as the method of control for compounds such as arsenic and beryllium. As the amendment letter stated, these compounds are fuel constituents over which there is no control. Emission limitations are therefore of little use.

For the Intercession City permit, FPC requests that the emission limitations for arsenic and beryllium contained on page 6 of the BACT determination be changed to a specification of the use of No. 2 fuel oil. This change will make the permit less burdensome and will make it consistent with the DeBary permit. Mr. Collins has given his concurrence with the proposed change.

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

Attachment

cc: Mr. Alexander Alexander, DEP Central District
Mr. Charles Collins, DEP Central District

Florida Department of
Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

October 6, 1993

PSD-Fl-180A

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. W. Jeffrey Pardue, C.E.P. Manager
Environmental Programs
Florida Power Corporation
P.O. Box No. 14042
St. Petersburg, FL 33733

Dear Mr. Pardue:

RE: Florida Power Corporation
Intercession City Facility
Request for Permit Modification
AC 49-203114, PSD-FL-180

The Department is in receipt of your letters dated July 26 and August 19, 1993, requesting modifications and amendments to the above mentioned permit. In reviewing the files for this facility, the Department has noted that most of the wording of the specific conditions of the Intercession City's permit were taken from a Florida Power Corporation's letter dated July 18, 1991, that was signed by Mr. W. W. Vierday. This above mentioned letter was written in a reply to the DeBary's proposed permit specific conditions that are identical to those in the Intercession City permit. The Department is willing to amend and to clarify the Intercession City's permit with your proposed wording. Based on the above, the Department has the following responses to your request:

SPECIFIC CONDITIONS NOS. 8 AND 9:

REQUEST:

Allow EPA test Method 19 instead of Method 2 for the determination of volumetric flow rate.

Delete Method 5 for the determination of particulate matter (PM) emissions.

Use Method 3A instead of Method 3 for gas analysis.

Delete Method 8 for determination of sulfuric acid mist and sulfur dioxide emissions.

RESPONSE:

EPA Method 19 instead of Method 2

The cause of the transient conditions that would prevent the use of EPA Method 2 is not clear. There are several physical changes that could be used to create a measurable steady-state flow condition. These physical changes include the installation of straightening vanes and the extension of the stack with the subsequent relocation of the sampling ports. For almost 20 years, the federal regulations have clearly stated that the optimum sampling location in a duct is usually located at least 8 diameters downstream and 2 diameters upstream of any entrance, exit, bend, or other disturbances. Based on the information presented, we could not evaluate your request. Please contact Ramesh Menon at (904) 488-1344 for further details on the information needed to evaluate this request.

EPA Method 5

These units must demonstrate compliance with the PM standard using either EPA Method 5 or EPA Method 17. Any deviation from the required EPA procedures will require the owner to request and obtain approval of an alternate sampling procedure pursuant to Rule 17-297.620 F.A.C. Specific Condition No. 9 will not be deleted.

EPA Method 8

Method 8 cannot be deleted since sulfuric acid mist emissions are subject to PSD regulations. However, for clarification, Specific Condition No. 8 will be amended as follows:

Compliance Determination

FROM:

8. Compliance with No_x, SO_2, CO, PM, PM_{10}, 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 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.

TO:

8. **Compliance with the allowable emission limits shall be** determined within **60 days after achieving the maximum production rate at which this facility will be operated** (on each unit while operating within 10% of the permitted maximum heat rate input) but not later than 180 days after initial start-up and annually thereafter, by the following reference methods as described in 40 CFR 60, Appendix A (July, 1992 version) and adopted by reference in F.A.C. Rule 17-297.

- Method 1. Sample and Velocity Traverses
- Method 2. Volumetric Flow Rate
- Method **3A**. 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 Mist and Sulfur Dioxide Emissions from Stationary Sources
- Method 10. Determination of the Carbon Monoxide Emissions 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 DEP approved methods may be used for compliance testing after prior Departmental approval.

SPECIFIC CONDITION NO. 13:

REQUEST:

Delete this condition which requires that the compliance test results for NOx be adjusted to ISO conditions since the BACT determination did not specify this requirement.

RESPONSE:

NO_x emissions measured during compliance tests must be adjusted to ISO conditions. Traditionally, BACT determinations for gas turbines conducted by the Department follow the format of the new source performance standard (NSPS), Subpart GG. This NSPS lists the NOx standard as ppmvd at 15% O_2. The standard has to be adjusted to ISO conditions (see NSPS preamble and Test Method Procedures).

You have indicated that the NO_x controls furnished with the GE units compensate for humidity and ambient temperatures such that further correction to ISO conditions is not necessary. However, Specific Condition No. 13 refers to adjustment of the compliance test data. The compliance test data is not processed through the combustion turbine controller. Therefore, the measured gas turbine's NO_x emission concentration levels must be adjusted to ISO conditions as specified in this permit condition.

SPECIFIC CONDITION NO. 15:

REQUEST:

Amend the third sentence in this condition that states: "The water to fuel ratio at which compliance is achieved shall be incorporated into the operation permit and shall be continuously monitored" to the following: "The water to fuel ratio shall be continuously monitored".

RESPONSE:

Federal regulations require the affected sources to be operated at a water-to-fuel ratio that is established during the initial performance test and this ratio is used as an indicator of compliance following the initial test. The ratio should be monitored in accordance with 40 CFR 60.334. This condition will not be changed.

SPECIFIC CONDITION NO. 6:

REQUEST:

Amend the wording of this condition that states: "Any change in the method of operation, equipment, or operating hours shall be submitted to the DEP's Bureau of Air Regulation".

RESPONSE:

This request is acceptable and this condition is changed to: **Any proposed change in equipment, method of operation, or allowable hours of operation shall be submitted to the Department of Environmental Protection for review and approval.**

SPECIFIC CONDITION NO. 10:

REQUEST:

Change the reference in the ASTM method for sulfur dioxide.

RESPONSE:

This reference will be changed as requested. This condition is amended to: Compliance with the SO_2 limit can also be determined by calculations based on fuel analysis by ASTM Method **D4294** for the sulfur content of gaseous fuels.

SPECIFIC CONDITION NO. 23:

REQUEST:

Change the reference to steam injection in this condition.

RESPONSE:

This reference will be changed as requested. This condition will be amended to: Literature on equipment selected shall be submitted to the Department of Environmental Protection as it becomes available. A CT-specific graph of the relationship between NOx emissions and **water** injection and also another graph of ambient temperature and heat input to the CT shall be submitted to DEP's Central District office and the Bureau of Air Regulation.

Mr. Jeffrey Pardue
October 6, 1993
Page 6

FUEL-BOUND NITROGEN (FBN)

The Department has reviewed your requests for an increase of the BACT NO_x limits to allow for an additional 6 ppm based on the fuel bond nitrogen (FBN) allowance which is contained in 40 CFR 60, Subpart GG. This 6 ppm allowance will result in an increase of 264 tons/yr NO_x (44 ton/yr/unit) and will require a revision of the NO_x-BACT. The new revision would require an updated economic and air quality analysis. A similar concern on the DeBary facility has been expressed since so much water is being injected to obtain the 42 ppm NO_x level. However, before changing the No_x emission level on either this facility or DeBary the Department would like to discuss the feasibility and economics of a lower FBN with the fuel manufacturer.

Sincerely,

Howard L. Rhodes
Director
Division of Air Resources
Management

HLR/TH/bjb

cc: Alex Alexander, DEP Central District
J. Harper, EPA
J. Bunyak, NPS
Mike Kennedy, FPC

P 230 524 282

Receipt for Certified Mail

No Insurance Coverage Provided
Do not use for International Mail
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UNITED STATES POSTAL SERVICE

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Postage	$
Certified Fee	
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Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date Mailed: 10/11/93 AC 49-203114, PSD-FL-180	

PS Form 3800, June 1991

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- Print your name and address on the reverse of this form so that we can return this card to you.
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I also wish to receive the following services (for an extra fee):
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3. Article Addressed to:
Mr. W. Jeffrey Pardue, C.E.P.
Environmental Programs
Florida Power Corporation
P. O. Box No. 14042
St. Petersburg, FL 33733

4a. Article Number
P 230 524 282

4b. Service Type
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☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
OCT 13 1993

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form 3811, December 1991 ☆U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

Is your RETURN ADDRESS completed on the reverse side?

Thank you for using Return Receipt Service.

Florida Department of
Environmental Protection

Memorandum

TO: Howard L. Rhodes

FROM: Clair Fancy

DATE: October 6, 1993

SUBJ: Approval of an Amendment to Construction Permit
AC 49-203114 (PSD-FL-180)
Florida Power Corporation: Intercession City Facility
Osceola County

Attached for your approval and signature is an amendment to a construction permit prepared by the Bureau of Air Regulation for the above referenced company. The purpose of the amendment is to clarify some of the wording of the permit's specific conditions. This amendment will not result in an increase in permitted annual emissions of any pollutant subject to the PSD regulations. The facility is located in Osceola County, which is an attainment area for all air pollutants.

I recommend your approval and signature.

CHF/TH/bjb

Florida Power
CORPORATION

Certified Mail P 627 945 283

October 5, 1993

Mr. Alexander Alexander, P.E.
Director, Central District
Florida Department of Environmental Protection
3319 Maguire Boulevard, Suite 232
Orlando, FL 32803-3767

Dear Mr. Alexander:

Re: Compliance Test Notification for New Combustion Turbines at Intercession City
DEP Permit Number AC49-203114

As required by 40 CFR 60.8 and Specific Condition 14. of the permit referenced above, Florida Power Corporation (FPC) is providing the Department of Environmental Protection (DEP) notification of the commencement of compliance testing of the new combustion turbines at FPC's Intercession City electric generating station. The testing will begin on November 8, 1993.

FPC is also submitting a testing protocol to Mr. Charles Collins and Mr. Garry Kuberski with their copies of this letter. A pre-test meeting has been scheduled for 2:30 pm on October 19, 1993 at the Central District office to review the protocol and discuss any questions which may arise. FPC, and as I understand it, the Central District are both awaiting a written response from the Tallahassee DEP office regarding FPC's permit modification request. The test protocol has been written to accomodate either approval or disapproval of the requested test method changes. Hopefully the outcome will be made clearer by the time the October 19 meeting is held. FPC will maintain close contact with the Tallahassee and Central District offices on this issue.

Please feel free to contact me at (813) 866-4344 if you have any questions.

Sincerely,

J. Michael Kennedy

J. Michael Kennedy
Senior Environmental Specialist

cc: Mr. Charles Collins, DEP Central District w/enclosure
Mr. Garry Kuberski, DEP Central District w/enclosure
Mr. John Brown, DEP Tallahassee

Memorandum

Florida Department of
Environmental Protection

Potter
File

TO: Preston Lewis

FROM: Mike Harley MH

DATE: September 15, 1993

SUBJ: Florida Power Corporation, Intercession City - Construction Permit Modification

Teresa Heron asked us to provide comments about the source sampling issues associated with Florida Power Corporation's request for an amendment to the construction permits for the above referenced facility. Our comments are as follows:

1. If the permit review engineer decides it is necessary to limit the particulate emissions from the gas turbines, Florida Power Corporation will have to use either EPA Method 5 or 17 to measure the emissions. EPA Methods 5 and 17 are isokinetic procedures that require the sample to be extracted at a velocity that is equal to the velocity of the gas in the duct. Both particulate methods incorporate EPA Method 2 for the measurement of stack gas velocity as an integral part of the procedure. Any deviation from the required EPA procedures will require the owner to request and obtain approval of an alternate sampling procedure pursuant to Rule 17-297.620, F.A.C.

   The cause of the transient conditions that would prevent the use of EPA Method 2 is not clear. There are several physical changes that could be used to create a measurable steady-state flow condition. These physical changes include the installation of straightening vanes and the extension of the stack with the subsequent relocation of the sampling ports. For almost 20 years, the federal regulations have clearly stated that the optimum sampling location in a duct is usually located at least 8 diameters downstream and 2 diameters upstream of any entrance, exit, bend, or other disturbances. It is the owner's responsibility to design and construct the source so that the emissions of regulated pollutants can be measured with the methods required by the permit. For example, if the owner selects poor sampling locations then it is the owner's responsibility to make the physical changes necessary to correct the problem.

2. In this case, the use of EPA Method 3A in lieu of EPA Method 3 for gas analysis may be approved through a permit amendment.

3. **Both** 40 CFR 60.335 [Subpart GG] **and** the permit require nitrogen oxides emission measurements to be corrected to ISO standard day conditions. The equation to be used for the ISO correction is specified in 40 CFR 60.335(c)(1). Pursuant to 40 CFR 60.335(f)(1), the manufacturer is required to obtain federal approval of any alternate correction factors prior to the initial performance test. The federal regulation requires EPA to publish approval in the Federal Register. Following federal approval, Florida Power Corporation would also be required to obtain approval of an alternate correction factor prior to the compliance test pursuant to Rule 17-297.620, F.A.C.

   Florida Power Corporation's argument that the BACT determination did not include a reference to ISO conditions might have some merit if it could be unmistakably proven that the BACT was based on uncorrected values. However, it would still be necessary for the company to correct the measured concentrations to ISO conditions in order to show that the BACT limitation is not less restrictive than the federal NSPS.

4. Federal regulations require the affected sources to be operated at a water-to-fuel ratio that is at or above the water-to-fuel ratio where compliance was measured. The ratio should be monitored in accordance with 40 CFR 60.335(c)(2).

Please call Ramesh Menon or me if you have any questions.

MH/rm

cc: J. Pennington
J. Brown
T. Heron

Florida Power
CORPORATION

P Fly
File w/permit or cert.

Certified Mail P 627 945 183

September 7, 1993

Mr. Alexander Alexander, P.E.
Director, Central District
Florida Department of Environmental Protection
3319 Maguire Boulevard, Suite 232
Orlando, FL 32803-3767

Dear Mr. Alexander:

Re: Initial Startup of New Combustion Turbine at Intercession City - Unit P9
DEP Permit Number AC49-203114

As required by 40 CFR 60, Florida Power Corporation (FPC) is providing the Department of Environmental Protection (DEP) notification of the initial startup of one of the new combustion turbines at FPC's Intercession City electric generating station. The initial startup of Unit P9 occurred on September 2, 1993.

Please feel free to contact me at (813) 866-4344 if you have any questions or if you need additional information.

Sincerely,

J. Michael Kennedy

J. Michael Kennedy
Senior Environmental Specialist

cc: Mr. Charles Collins, DEP Central District
Mr. John Brown, DEP Tallahassee

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SEP 10 1993
Division of Air
Resources Management

Palty. file

Florida Power
CORPORATION

RECEIVED
SEP 3 1993
Division of Air
Resources Management

Certified Mail P 627 945 182

August 31, 1993

Mr. Alexander Alexander, P.E.
Director, Central District
Florida Department of Environmental Protection
3319 Maguire Boulevard, Suite 232
Orlando, FL 32803-3767

Dear Mr. Alexander:

Re: Initial Startup of New Combustion Turbine at Intercession City
DEP Permit Number AC49-203114

As required by 40 CFR 60, Florida Power Corporation (FPC) is providing the Department of Environmental Protection (DEP) notification of the initial startup of one of the new combustion turbines at FPC's Intercession City electric generating station. The initial startup of Unit P7 occurred on August 19, 1993. FPC will notify your office of the initial startup of Unit P9 within 15 days of its occurrence.

Please feel free to contact me at (813) 866-4344 if you have any questions or if you need additional information.

Sincerely,

J. Michael Kennedy

J. Michael Kennedy
Senior Environmental Specialist

cc: Mr. Charles Collins, DEP Central District
Mr. John Brown, DEP Tallahassee

Florida Power
CORPORATION

August 19, 1993

Mr. Clair Fancy, P.E.
Chief, Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

0000322

Dear Mr. Fancy:

Re: Construction Permit Modification Processing Fee
DEP Permit Number AC49-203114 ; PSD-FL-180

On August 5, 1993 Florida Power Corporation (FPC) your letter requesting a $250.00 processing fee for the above-referenced permit modification submittal. I have enclosed a check for that amount made payable to the Florida Department of Environmental Protection.

Please contact me at (813) 866-4344 if you have any questions.

Sincerely,

J. Michael Kennedy

J. Michael Kennedy
Senior Environmental Specialist

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DER - MAIL ROOM
1993 AUG 23 AM 10: 07

2222

Florida Power CORPORATION

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

REMITTANCE ADVICE

89

CHECK DATE 08/16/93 VENDOR FLA DEPT OF ENVIRONMENTAL VENDOR NO. 272500 CHECK NO. 1560499

INVOICE NO.	DATE	OUR ORDER NO.	VOUCHER	GROSS AMOUNT	DISCOUNT	NET AMOUNT
FL0805250 CK097274	08/05/93		9308136226	250.00	.00	250.00
					TOTAL	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

0000322 [redacted]

DATE 08/16/93 CHECK NO. 1560499

PAY: $250*DOLLARS AND 00 CENTS $*******250.00

Sun Bank of Tampa Bay
Tampa, Florida

Void after 60 days

TO THE ORDER OF

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

Jeffrey N Heinicka
Treasurer

[redacted]

BEST AVAILABLE COPY

Florida Power
CORPORATION

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

REMITTANCE ADVICE

89

CHECK DATE 08/16/93 **VENDOR** FLA DEPT OF ENVIRONMENTAL **VENDOR NO.** 272500 **CHECK NO.** 1560499

INVOICE NO.	DATE	OUR ORDER NO.	VOUCHER	GROSS AMOUNT	DISCOUNT	NET AMOUNT
FL0805250	08/05/93		9308136226	250.00	.00	250.00
CK097274						
					TOTAL	250.00

THE ATTACHED REMITTANCE IS IN FULL SETTLEMENT OF ACCOUNT AS STATED. IF NOT CORRECT PLEASE RETURN TO ABOVE [redacted]ESS.

Florida Department of
Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

August 2, 1993

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. W. Jeffrey Pardue, C.E.P., Manager
Environmental Programs
Florida Power Corporation
P. O. Box No. 14042
St. Petersburg, FL 33733

Dear Mr. Pardue:

RE: Florida Power Corporation
Request for Permit Modification
AC49-203114, PSD-FL-180

The Bureau of Air Regulation received your July 26, 1993, request for the above referenced project. On October 30, 1991, Rule 17-4.050(4)(o), F.A.C., was changed to require a $250 processing fee for a permit amendment; therefore, we will not be able to take action on your request until the fee is received. If you have any questions, please call Patty Adams at (904)488-1344.

Sincerely,

Patricia G. Adams

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

CHF/pa

cc: Teresa Heron

P 230 523 748

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PS Form **3800**, June 1991

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3. Article Addressed to:
Mr. W. Jeffrey Pardue, C.E.P., Mgr.
Environmental Programs
Florida Power Corporation
P. O. Box No. 14042
St. Petersburg, Florida 33733

4a. Article Number
P 230 523 748

4b. Service Type
☐ Registered ☐ Insured
XX Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
AUG 5 1993

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form **3811**, December 1991 ☆U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

Florida Power
CORPORATION

RECEIVED
JUL 30 1993
Division of Air
Resources Management

Certified Mail P 627 945 155

July 26, 1993

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 Modification
DEP Permit Number AC49-203114 ; PSD-FL-180

On August 17, 1992 the Florida Department of Environmental Protection (DEP) issued the above-referenced construction permit to Florida Power Corporation (FPC) for construction of six simple-cycle combustion turbines at its Intercession City electric generating station. Construction of the first four turbines is nearing completion. Emissions compliance testing will be performed in the near future. FPC requests that DEP make the modifications and amendments to the permit which are described below. This request is based on recent experience obtained at FPC's DeBary facility, at which identical turbines have been constructed and tested.

Specific Conditions 8. and 9.

These conditions summarize the compliance test methods to be used. As provided by DEP Rule 17-297.620, FPC requests that EPA Method 19 be specified in place of Method 2 for determination of volumetric flow rate. Because of extremely turbulent flow in the exhaust gas stream of these combustion turbines, the pitot tube system of measurement specified in Method 2 is inaccurate. Method 2 is designed and intended to be used under laminar flow conditions, which do not exist in the exhaust stream from these turbines when operating at peak load. The International Organization for Standardization, in Section 12.2.2.2 of "Measurement of Fluid Flow in Closed Conduits - Velocity Area Method Using Pitot Static Tubes" (ISO 3966), describes the error of the method due to turbulent flow. It states "The error increases with the increasing degree of turbulence of the measured fluid flow and is always positive, i.e. the measured velocity value is always greater than the actual flow velocity."

Method 19 results in a more accurate and precise measurement of the gas flow in cases in which turbulent flow conditions exist. Please refer to the attached report from GE, which is the manufacturer of the turbines for both the DeBary and Intercession City sites.

Since Method 5 also uses a pitot tube for measurement of particulate, it is impossible to perform accurate Method 5 sampling at peak load. Therefore, FPC requests that the requirement to perform Method 5 testing for particulate be removed from the permit, and that particulate compliance be determined by opacity only.

Method 3, which is specified in the permit to be used for gas analysis, is the Orsat analysis method, which is not an instrumental method. Because of this, Method 3 cannot be calibrated against a certified calibration gas. This method is also time consuming and is less accurate than Method 3A, which is an instrumental method. Method 20, which is used for NOx and diluent gas measurements, requires gas measurements by calibrated analyzers. In a letter dated June 30, 1993 from Mr. Howard Rhodes of DEP to Mr. Kent Hedrick, P.E. of FPC, DEP allowed Method 3A to be used for testing at the DeBary facility. FPC requests that the required test method for gas analysis be changed to Method 3A in the Intercession City construction permit.

Method 8 is specified for determination of sulfuric acid emissions, but sulfuric acid emissions testing is not required in the first sentence of Specific Condition 8. FPC requests that the Method 8 specification be deleted from the permit.

<u>Specific Condition 13.</u>

This condition establishes the method by which NOx emissions measured during the compliance tests will be adjusted to ISO ambient atmospheric conditions. The adjustment to ISO conditions is specifically required for testing units which have a NOx limit established under Subpart GG of 40 CFR 60. Since the NOx limit established for the Intercession City turbines is a BACT determination, correction to ISO ambient atmospheric conditions is not required. Because the ISO correction is not part of the BACT determination and associated emission limit, FPC requests that this condition be deleted from the permit.

<u>Specific Condition 15.</u>

The third sentence in this condition states *The water to fuel ratio at which compliance is achieved shall be incorporated into the operation permit and shall be continuously monitored.*

This implies that a single water to fuel ratio will apply. The water to fuel ratio necessary to maintain compliance varies with ambient temperature and humidity. One of the benefits of the automatic controls is that they continuously optimize the ratio by automatically performing the ISO correction and the associated adjustments. FPC requests that the sentence be changed to the following:

> *The water to fuel ratio shall be continuously monitored.*

<u>Specific Condition 6.</u>

This condition states as follows: *Any change in the method of operation, equipment or operating hours shall be submitted to DER's Bureau of Air Regulation.*

The language of this condition is ambiguous. The operating hours will change from year to year, depending on the demand for the units. FPC assumes that the condition is intended to refer to proposed changes in the allowable hours of operation. If this is the case, FPC requests that the language be changed to the following:

> *Any proposed change in equipment, method of operation, or allowable hours of operation shall be submitted to the Department of Environmental Protection for review and approval.*

<u>Specific Condition 10.</u>

ASTM Method D4292 is specified for determining the sulfur content of the fuel oil. This reference should be changed to ASTM D4294.

<u>Specific Condition 23.</u>

The term steam injection is incorrectly stated as the method of NOx emissions control. This should be changed to water injection.

<u>Fuel-Bound Nitrogen</u>

As given in Section II A of the permit application form for the new units, the estimated NOx emissions and the proposed NOx limit of 42 ppm were based on a fuel-bound nitrogen (FBN) content of 0.015% or less. The DeBary facility is encountering FBN which is consistently greater than 0.015% and approaches 0.03%. Because it will be using a similar #2 fuel oil supply, FPC anticipates similar results for Intercession City. On page 5 of the permit application for the Intercession City facility, it was indicated that the typical FBN would be 0.03%. In addition, Section III C of the permit application form contains a footnote stating that an FBN allowance would be requested, if actual FBN levels were greater than 0.015%.

Since water injection has no effect on NOx resulting from FBN, as FBN increases, NOx emissions will increase accordingly. Based on this information, FPC requests that the DEP modify the allowable NOx emissions in the permit to account for the additional FBN. FPC requests that the change be based on the FBN allowance which is contained in 40 CFR 60, Subpart GG. Using this method, the additional FBN above the level of 0.015%, on which the 42 ppm limit is based, would result in an additional 6 ppm of NOx emissions (based on an FBN level of 0.03%), resulting in a total NOx emission limit of 48 ppm. This would be an increase of 26 lbs./hr. and 44 tons/yr. per unit for the four 92.9 MW turbines currently being constructed. This is based on the operation of each unit at peak load for 3390 hr./yr. No other pollutant emissions would increase as a result of the proposed allowance.

Since the relationship between emissions changes and predicted ambient pollutant concentrations in Gaussian air quality dispersion models (such as the ISC model used in the analysis for the new units) is linear, the maximum predicted NO_2 concentrations for the new units can be ratioed accordingly. The maximum predicted NO_2 impact of the six new units, from page 3-14 in the PSD permit application, is 0.34 ug/m^3. The revised maximum concentration resulting from the FBN allowance is (48/42) * 0.34 = 0.39 ug/m^3. This assumes an increase from all six permitted units and is well below the PSD significance level of 1 ug/m^3. Since the predicted maximum ambient NO_2 impact from the new units is less than the significance threshold, no additional modeling analysis is necessary.

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

cc: Mr. Alexander Alexander, DEP Central District
D. Beron
C. Holladay
J. Harper, EPA
J. Bunyak, NPS

EXHAUST GAS FLOW DETERMINATION

GE- PPSD Environmental Engineering has been responsible for conducting emission compliance tests at a significant number of gas turbine installations including more than 30 sites over the past several years. In nearly all cases where GE has directed the testing process, EPA Method 2 (Determination of Stack Gas Velocity and Volumetric Flow Rate- Type S Pitot Tube) has not been used to assess volumetric flow rates. Alternatively, Method 19 which calculates volumetric flow rates stoichiometrically, has been proposed and has generally been accepted in the test protocol. The principle objection to use of Method 2 for simple-cycle gas turbine flow assessments stems from the wide variability of the exhaust gas velocities measured across the plane of the high temperature exhaust stack at the test port locations. This wide variation in velocity tends to skew the statistical flow measurement results (see attached velocity profiles plots taken from similar gas turbine units). Indicated flow values obtained by this test method, in GE's experience, are typically greater than predicted flow values calculated from detailed thermodynamic computer models run at corresponding test operating conditions by as much as +25%. Flow increases on this order if accurate, would produce proportionate increases in the thermal performance characteristics (i.e. output and fuel consumption) which are not observed at test conditions.

Test Method 19 has been successfully used by GE and others in the emission testing industry to more accurately assess gas turbine exhaust flow rates for emission compliance assessments. Consequently GE's test experience to date centers primarily on the use of Method 19 for flow determinations, whereas Method 2 has been utilized for establishing iso-kinetic sampling conditions during particulate test measurements where required. For those installations where regulators have insisted on the use of Method 2 (e.g. state of New Jersey), GE has incorporated both Method 2 and Method 19 within the test protocol due to concerns over measurement accuracy. Under specific Base load test conditions Method 2 flow values have been found to compare within 10% of Method 19 values at some installations, however, these results can be influenced by machine operating load conditions which alters the exhaust velocity profile of the unit. The following table presents a comparison of three different installation sites where comparative flow measurement data was recorded using the above mentioned test methods on similar GE MS7001E gas turbine units operating in a simple cycle configuration. For the New Jersey installations, exhaust flow % differences have been calculated relative to the "inlet airflow method" which GE feels is the most accurate field measurement assessment.

VOLUMETRIC EXHAUST FLOW COMPARISONS FOR GE HEAVY DUTY GAS TURBINE INSTALLATIONS

Site Install.	BASE Load Pt. RUN #	Airflow Method DSCFH x10^6	Method 19 DSCFH x10^6	Percent Differ. %	Method 2 DSCFH x10^6	Percent Differ. %
NJA	1	28.4	30.6	7.7	31.5	10.9
NJA	2	28.6	30.6	7.0	31.6	10.5
NJA	3	29.3	30.9	5.5	32.1	9.6
NJB	1	27.9	29.8	6.8	33.6	20.4
NJB	2	28.4	28.9	1.8	33.7	18.7
NJB	3	28.1	28.7	2.1	33.4	18.9

NOTE: The Airflow Method using Mark IV measurements were used as the basis for the percent difference calculations shown above for the NJ sites.

Site Install.	BASE Load Pt. RUN #	Airflow Method DSCFH x10^6	Method 19 DSCFH x10^6	Percent Differ. %	Method 2 DSCFH x10^6	Percent Differ. %
NYA	1	N/A	27.5	N/A	35.0	27.3
NYA	2	N/A	27.3	N/A	31.8	16.5
NYA	3	N/A	29.9	N/A	34.4	15.1

NOTE: The Method 19 measurements were used as the basis for the percent difference calculations shown above for the NY sites.

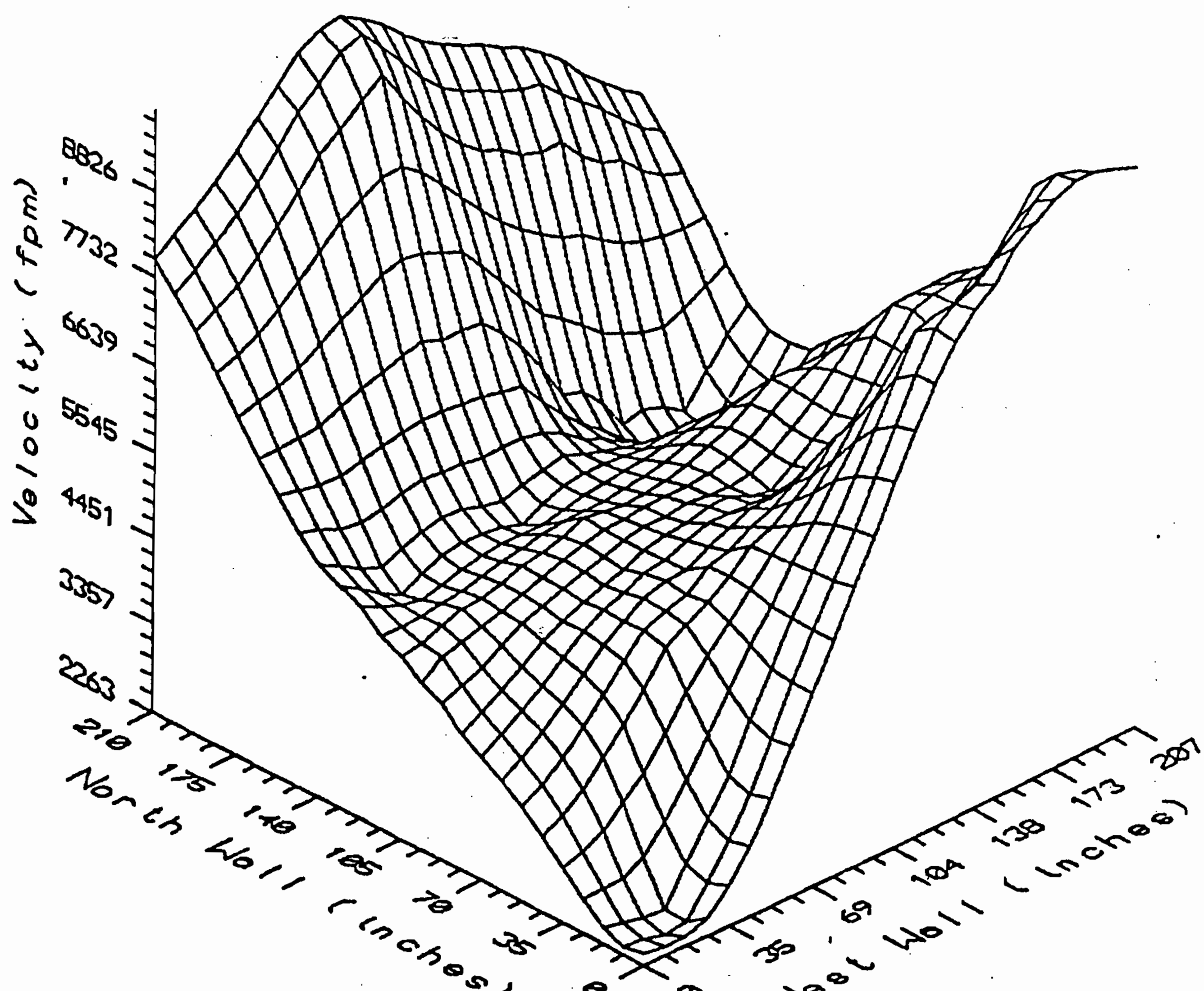
For part load operation, some additional comparisons are shown below which were recorded at the NJ sites.

VOLUMETRIC EXHAUST FLOW COMPARISONS AT PART LOAD OPERATING CONDITIONS

Site Install.	Part Load Pt. RUN #	Airflow Method DSCFH x10^6	Method 19 DSCFH x10^6	Percent Differ. %	Method 2 DSCFH x10^6	Percent Differ. %
NJB	1	28.4	30.0	5.6	31.3	10.2
NJB	2	28.1	29.8	6.1	32.5	15.7
NJB	3	27.9	29.7	6.5	31.4	12.5
NJB	4	27.8	27.9	0.4	32.7	17.6
NJB	5	27.9	27.7	0.0	32.9	17.9
NJB	6	28.2	28.2	0.0	33.0	17.0

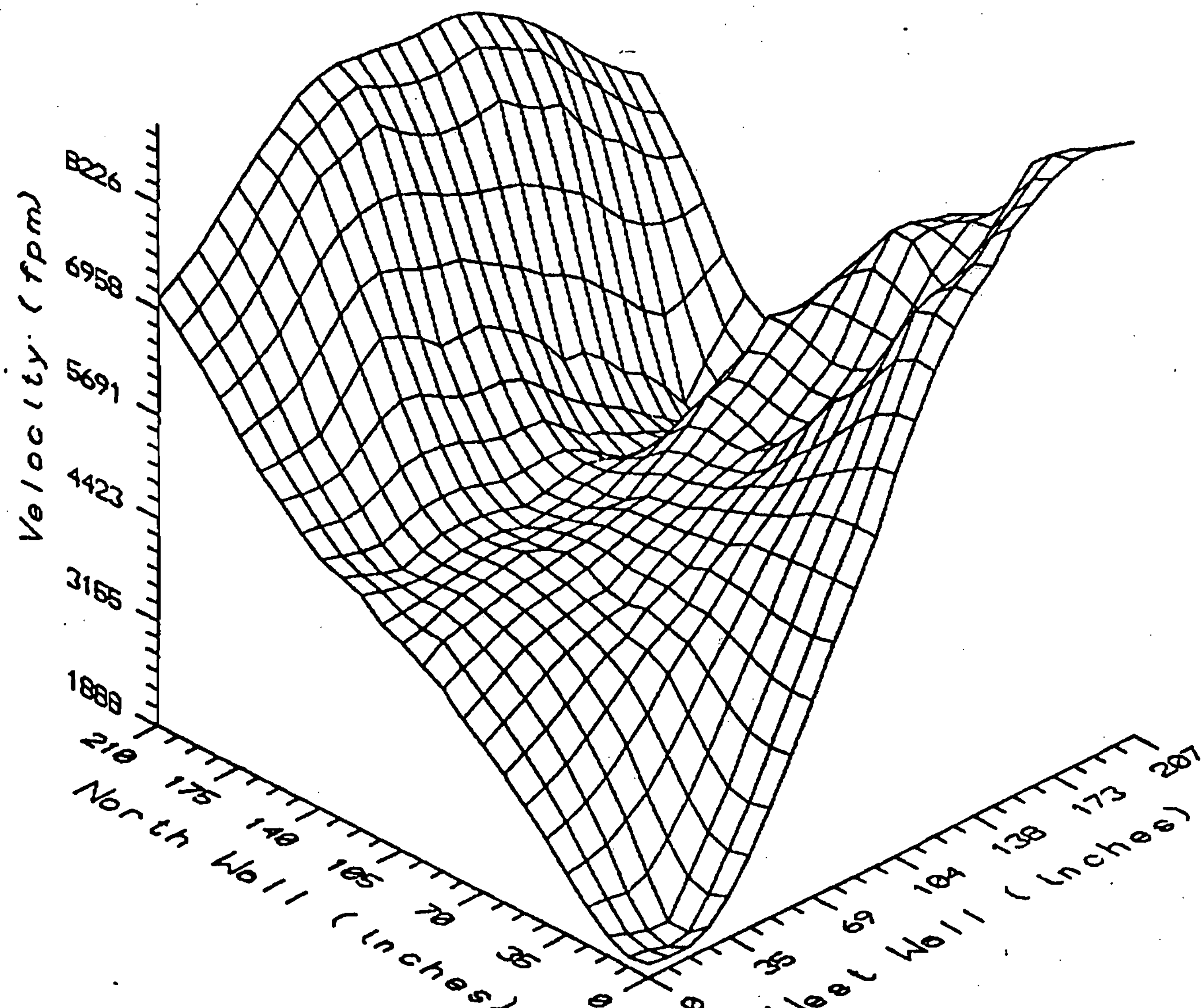
NOTE: The Air Flow measurements were used as the basis for the percent difference calculations shown above for the NJ site. The part load condition for runs 1-3 was approx. 54.4 MW, and 65 MW for runs 4-6.

As shown above, use of the calibrated bellmouth airflow method and US EPA 40 CFR 60 Method 19 provide the most accurate airflow measurements and are GE's preferred methods. Comparisons with US EPA 40 CFR 60 Method 2 show unacceptably high variability.



Peak Load Velocity Profile

4



Base Load Velocity Profile

FUEL BOUND NITROGEN ADJUSTMENT

We note that at DeBary Station, fuel bound nitrogen in distillate is approximately 0.02% which is above the 0.015% used to establish NOx guarantees. To allow for some flexibility in this area, we recommend that permits include a provision to adjust NOx emissions as allowed by EPA 40CFR60, Subpart GG, Section 60.332.

ISO CORRECTIONS

Another common problem we are finding with the air permits from a number of states is the insistance on correcting NOx emissions levels to ISO conditions. The NOx controls furnished with GE units compensate for humidity and ambient temperatures such that further correction to ISO is not required.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

SEP 18 1992

4APT-AEB

Mr. Clair H. Fancy, P.E., Chief
Bureau of Air Regulation
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Florida Power Corporation/Intercession City Facility
(PSD-FL-180)

Dear Mr. Fancy:

This is to acknowledge receipt of your final determination and Prevention of Significant Deterioration (PSD) permit for the above referenced facility's proposed construction, dated August 17, 1992. The facility will consist of six simple-cycle combustion turbines, with an output power of 92.9 megawatts (four turbines) and 185.5 megawatts (two turbines). The turbines will be fired with No. 2 distillate fuel oil. Intercession City will be permitted as a peaking power facility, with an operating limitation of 3390 hours of operation per year for each turbine.

Your determination proposes to limit NO_x emissions through the use of maximum water injection, to limit SO_2 and H_2SO_4 mist emissions through limiting the sulfur content of the No. 2 distillate fuel oil, to limit CO and VOC emissions through the use of efficient combustion, to limit PM/PM_{10} emissions through efficient combustion and the use of clean fuel, and to limit Be and As emissions through fuel quality.

We have reviewed the package as submitted and have no adverse comments. Thank you for the opportunity to review and comment on this package. If you have any questions or comments, please contact Mr. Scott Davis of my staff at (404) 347-5014.

Sincerely yours,

Brian L. Beals, Chief
Source Evaluation Unit
Air Enforcement Branch
Air, Pesticides, and Toxics
Management Division

cc: J. Nelson
C. Holladay
C. Collins, C Dist
B. Mitchell, NPS

RECEIVED

SEP 25 1992

Division of Air
Resources Management

Preston - Fi 8/17
Patti - For file
His changes were
made by me.
Clair

Florida Power CORPORATION
3201 THIRTY FOURTH STREET SOUTH • ST. PETERSBURG, FLORIDA 33711
P.O. BOX 14042 - H2G • ST. PETERSBURG, FLORIDA 33733

FAX COVER LETTER

ENVIRONMENTAL SERVICES DEPARTMENT

DATE: 8/11/92

6 PAGES AND COVER SHEET

TO: Clair Fancy

FAX #: (904) 922-6979

PHONE #: (813) 866-5158

FROM: Scott Osbourn

PROJECT NUMBER:

PLEASE NOTIFY (813) 866-4940 FOR ANY PROBLEMS CONCERNING THE RECEIPT OF THIS FAX.

For your convenience, I have also faxed a copy of our comment letter, highlighting the text of the compromise reached between Preston + myself.

As a matter of principle, FPC has already agreed to a substantial % S reduction (from 0.5% max to 0.2% max) at significant additional cost. We believe the 0.2% S max limit is ~~unprece~~ unprecedented where fuel oil is the primary fuel, as it is at Intercession City.

The two additional paragraphs highlighted (pp 2 of 3 and 3 of 3) serve no useful purpose. FPC will burn the lower S fuel oil if dictated by economics (as previously stated) and the requirement to burn natural gas at a peaking site, where no natural gas capability exists, goes beyond the bounds of a BACT determination.

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 permit 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_2 emissions will remain as specified in the permit: Distillate fuel oil with a maximum of 0.2% sulfur by weight and 2459 TPY SO_2. However, as requested, the economics (cost differentials per gallon for various grades) of this project will be revisited before start up, and if warranted, the BACT determination and permit conditions will be revised.

OK

BEST AVAILABLE COPY

This entire ¶ should be deleted. If you're already revisiting BACT, then why would you re-review your PSD SO2 requirements. Also, its self-evident that if you burn a lower % S fuel oil, you're SO2 emissions will be lower.

delete

Considering the SO_2-BACT revision, it should be noted that if there is an emission increase, this project will have to be reviewed under the Prevention of Significant Deterioration (PSD) requirements for SO_2 before beginning operation. If there is a decrease of emissions resulting from the use of a lower sulfur fuel oil (0.05% S), the conditions of this permit will be changed.

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:

all are CC units, all gas-fired

Mr. Eadie's concerns regarding the sulfur content in the oil are valid. We also believe that new sources should minimize SO_2 emissions when ~~feasible. It is true that recent permit applications~~ (Kissimmee Utilities Authority, Auburndale Power Partners, Central Florida Power) ~~has 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 may have an impact on the availability and economics of requiring fuel oil with a lower sulfur content for future projects.

In addition, ~~as suggested~~, a condition will be added to the permit in the final ~~determination that will require~~ FPC to fire the turbines ~~with natural gas as the primary fuel if~~, and when, it becomes available. Therefore, Specific Condition No. 3 will be modified as follows:

As a matter of company policy, this requirement is unacceptable.

FROM: These sources are allowed to use only No. 2 fuel oil with a 0.2% sulfur content maximum, by weight.

TO: These sources are allowed to use only No. 2 fuel oil with a 0.2% sulfur content maximum, by weight. These sources will be required to burn natural gas as a primary fuel when and if it becomes available.

COMMENT:

Mr. Eadie 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 related wildlife in the wilderness area as an AQRV after the Intent was 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 AC 49-203114 (PSD-FL-180) as proposed in the Technical Evaluation and Preliminary Determination with the changes noted above.

Florida Power
CORPORATION

July 16, 1992

Mr. Preston Lewis
Bureau of Air Regulation
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Rd.
Tallahassee, Florida 32399-2400

Dear Mr. Lewis:

Re: Florida Power Corporation (FPC)
Intercession City Expansion
AC49-203114; PSD-FL-180

This correspondence serves to provide Florida Power Corporation's (FPC) comments on the above-referenced draft permit received by FPC on May 29, 1992 and publicly noticed on June 17, 1992. As you recall, on June 3, 1992, I met with you and Ms. Teresa Heron of your staff to discuss FPC's concerns with the draft permit. Presented herein is additional information that supports our discussions and our recommended changes to the construction permit.

Sulfur Dioxide (SO2) Limitations

FPC is primarily concerned with DER's proposed fuel oil sulfur content limitation of 0.2 percent maximum, by weight. FPC had proposed a limit of 0.5 percent maximum and 0.3 percent annual average. The dispersion modeling analysis performed by FPC was based on the 0.5 percent maximum, as well as other conservative assumptions including the use of the highest combustion turbine (CT) emissions at the 20°F design condition coupled with the lowest exit gas flow rates at 90°F design conditions. The results of these analyses for SO_2 indicated that the maximum predicted SO_2 concentrations were all less than the appropriate AAQS and PSD increments. Due to the fact that compliance was demonstrated with ambient air quality impacts, FPC believes that the Department's SO_2 BACT determination was based solely on economics (e.g., cost-effectiveness).

In response to correspondence received from the Department on October 31, 1991, FPC submitted additional information (dated December 16, 1991) on the cost-effectiveness and annualized costs associated with the consumption of distillate fuel oil containing maximum percent sulfur contents of 0.2, 0.3, and 0.5. As noted in FPC's BACT analysis (page 4-25), the actual average sulfur content of the distillate fuel oil specified by FPC has historically been less than 0.2 percent. FPC has proposed a BACT level of 0.3 percent sulfur (annual average) to be met by fuel management. While the sulfur content of one or more fuel deliveries may approach 0.5 percent, these shipments will be mixed with the oil in the storage tanks which will have to be of lower sulfur content to assure meeting the annual sulfur condition. Therefore, the actual emissions will likely be those calculated using a sulfur content of 0.3 rather than 0.5 percent. Based on the historical data, there would be no air quality benefit (emissions would not be less) by specifying maximum fuel sulfur contents of 0.3 or 0.2 percent; however, there would be considerable additional cost. The Department has determined that the additional cost of requiring 0.2 percent maximum sulfur ($8.45 MM in annualized cost or $1,955/ton removed) is not prohibitive in the context of BACT.

In developing fuel oil cost estimates, both FPC and the Department talked to and received correspondence from the same two vendors-- Coastal Fuels and Steuart Petroleum (correspondence attached). While one letter from Steuart, dated April 29, 1992 seems to indicate that a range of fuel oil sulfur contents (from 0.1 to 0.5 percent max) are readily available, subsequent correspondence (dated June 19, 1992) clarifies that the range was quoted only to indicate that the oil fluctuates within this range. Further, Steuart can only offer and guarantee No. 2 fuel oil with a sulfur content of 0.5 percent max. The letter from Coastal Fuels, dated May 26, 1992, lists cost differentials per gallon for various grades. These were the costs incorporated in FPC's analysis. Coastal did not state that they could supply the lower sulfur oil grades, nor did they include additional tankage and terminalling charges which likely would be required as a condition of supply. Specifically, these additional charges would involve the cost of leasing dedicated fuel oil tankage for a 0.2 percent sulfur fuel if FPC were the only regional customer (estimated to be an additional $500,00 to $700,000 per year). Presently, it is very difficult to predict what the actual cost of a 0.2 percent sulfur requirement might be. At the time of fuel contract negotiations, costs could be lower than those estimated or, if FPC becomes a "captive" customer, they could be significantly higher.

FPC believes that the Department should reconsider their proposed BACT level for SO_2, which incorporates additional costs with no significant environmental benefit, and revise to the level initially proposed by FPC (e.g., 0.5 max and 0.3 annual average). If the Department remains unconvinced, FPC requests that permit language be incorporated so as to require the economics to be revisited at the time of unit startup (or actual fuel oil contract negotiations) and, if warranted, a BACT determination revision. During our meeting on June 3, 1992 you had indicated that such language would be an acceptable compromise. Further, as you recall, if the condition for a 0.2 percent sulfur maximum fuel

Clair, This summarizes the compromise reached between Preston & myself.

oil remains a requirement, the Department would agree to remove the adjustable capacity factor scale (Specific Condition 5) and merely leave the capacity factor limit at 38.7 percent. Previously, the capacity factor adjustment was incorporated into the FPC DeBary permit due to the uncertainty regarding the annual average. Similarly, in Specific Condition 16, the reference to a weighted 12 month rolling average for sulfur content should be deleted.

Permit Expiration Date

The permit expiration date is currently stated as March 31, 1994. As we discussed at our June 3, 1992 meeting, FPC requests an expiration date at least two years subsequent to final permit issuance.

If you should have any questions or comments on the above, please do not hesitate to contact me at (813) 866-5158. Your efforts to expedite the issuance of the final construction permit for this project would be greatly appreciated.

Sincerely,

Scott H. Osbourn
Sr. Environmental Engineer

Enclosure

cc: Clair Fancy, FDER

United States Department of the Interior

FISH AND WILDLIFE SERVICE
75 Spring Street, S.W.
Atlanta, Georgia
30303

TAKE PRIDE IN AMERICA

RECEIVED
JUL 22 1992
Division of Air
Resources Management

July 16, 1992

Mr. C. H. Fancy, P.E.
Chief, Bureau of Air Regulation
Florida Department of
Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Fancy:

We have completed our review of the material that you sent us regarding Florida Power Corporation's (FPC) proposal to add six combustion turbines to their existing Intercession City facility. Intercession City is located approximately 110 km southeast of the Chassahowitzka Wilderness Area (WA), a Class I air quality area administered by the Fish and Wildlife Service. The modification would result in a significant increase in emissions of nitrogen oxides (NO_x), sulfur dioxide (SO_2), particulate matter, volatile organic compounds, beryllium, and sulfuric acid mist. As you know, we are particularly concerned about the potential for new emission sources to cause or contribute to SO_2 increment exceedances at the wilderness area.

Regarding the best available control technology (BACT) analysis, we agree that wet (water or steam) injection is BACT to minimize NO_x emissions from the proposed simple cycle combustion turbines. We also agree that firing a low sulfur fuel represents BACT to minimize SO_2 emissions from combustion turbines. Although we would prefer that FPC fire natural gas rather than fuel oil in the proposed turbines, we understand that natural gas is not currently available at the site.

We appreciate your efforts to lower the maximum sulfur content of the fuel oil from the 0.50 percent proposed by FPC to 0.20 percent. However, recent permit applicants (i.e., Kissimmee Utility Authority, Auburndale Power Partners, Central Florida Power) have proposed to fire oil with a maximum sulfur content of 0.05 percent. Although the results of FPC's modeling analyses indicate that the proposed emission increases at the Intercession City facility would not cause or contribute to an increment exceedance at the wilderness area, given the SO_2 increment situation at Chassahowitzka WA, we believe that new sources in the area should minimize SO_2 emissions as much as possible. Therefore, to be consistent with other recently proposed projects, we recommend that you limit the sulfur content of the oil fired in the proposed Intercession City turbines to 0.05 percent. In addition, we recommend that you include a condition in the final permit that requires FPC to fire the turbines with natural gas as the primary fuel if, and when, it becomes available at the site.

Florida Power Corporation sufficiently addressed potential impacts to vegetation, soils, terrestrial wildlife, and visibility in the wilderness area from the proposed emissions. However, FPC failed to assess the potential effects on fresh-water creeks and related wildlife in the Chassahowitzka WA from acid deposition. Nevertheless, based on the modeling results, we do not anticipate that resources will be adversely affected by emissions from the proposed project.

On a related subject, we recently developed some guidelines for applicants proposing to locate near the Chassahowitzka WA regarding the level of detail that they should dedicate to the Class I biological effects analyses. We propose that applicants follow these guidelines until we have enough information to identify resources at risk or to confirm that air pollution-related effects are not a concern at Chassahowitzka WA. We will keep you informed of our progress in obtaining this information.

First, all applicants should conduct a literature review for potential effects on vegetation, wildlife, soils, and aquatic resources for all pollutants to be emitted in significant amounts. Second, all applicants should model the proposed emissions to determine the expected SO_2 and nitrogen dioxide impacts at the wilderness area. For applicants whose modeled impacts are below our proposed significant impact levels, the literature review will be sufficient. While we still maintain that increment consumption does not relate directly to effects on resources, due to the lack of effects data at Chassahowitzka WA, it seems reasonable to follow this approach until more biological effects information is available. Finally, applicants whose modeled impacts are above the significant impact levels should also model deposition of sulfate and/or nitrate using MESOPUFF II. Applicants can contact our Air Quality office in Denver for guidance on the deposition modeling.

We appreciate your continued cooperation in requiring applicants to adequately assess the impacts of new emissions on the resources in our Class I areas. If you have any further questions regarding our comments on the Intercession City application or the guidelines for biological effects analyses, please contact Ms. Tonnie Maniero of our Air Quality office in Denver at 303/969-2071.

Sincerely yours,

John R. Eadie

John R. Eadie
Acting Regional Director

cc:
Ms. Jewell Harper, Chief
Air Enforcement Branch
Air, Pesticides and Toxic Management Division
U.S. EPA, Region 4
345 Courtland Street, NE.
Atlanta, Georgia 30365

Florida Power
CORPORATION

RECEIVED
JUL 20 1992
Division of Air
Resources Management

July 16, 1992

Mr. Preston Lewis
Bureau of Air Regulation
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Rd.
Tallahassee, Florida 32399-2400

Dear Mr. Lewis:

Re: Florida Power Corporation (FPC)
Intercession City Expansion
AC49-203114; PSD-FL-180

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In response to correspondence received from the Department on October 31, 1991, FPC submitted additional information (dated December 16, 1991) on the cost-effectiveness and annualized costs associated with the consumption of distillate fuel oil containing maximum percent sulfur contents of 0.2, 0.3, and 0.5. As noted in FPC's BACT analysis (page 4-25), the actual average sulfur content of the distillate fuel oil specified by FPC has historically been less than 0.2 percent. FPC has proposed a BACT level of 0.3 percent sulfur (annual average) to be met by fuel management. While the sulfur content of one or more fuel deliveries may approach 0.5 percent, these shipments will be mixed with the oil in the storage tanks which will have to be of lower sulfur content to assure meeting the annual sulfur condition. Therefore, the actual emissions will likely be those calculated using a sulfur content of 0.3 rather than 0.5 percent. Based on the historical data, there would be no air quality benefit (emissions would not be less) by specifying maximum fuel sulfur contents of 0.3 or 0.2 percent; however, there would be considerable additional cost. The Department has determined that the additional cost of requiring 0.2 percent maximum sulfur ($8.45 MM in annualized cost or $1,955/ton removed) is not prohibitive in the context of BACT.

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FPC believes that the Department should reconsider their proposed BACT level for SO_2, which incorporates additional costs with no significant environmental benefit, and revise to the level initially proposed by FPC (e.g., 0.5 max and 0.3 annual average). If the Department remains unconvinced, FPC requests that permit language be incorporated so as to require the economics to be revisited at the time of unit startup (or actual fuel oil contract negotiations) and, if warranted, a BACT determination revision. During our meeting on June 3, 1992 you had indicated that such language would be an acceptable compromise. Further, as you recall, if the condition for a 0.2 percent sulfur maximum fuel oil remains a requirement, the Department would agree to remove the adjustable capacity factor scale (Specific Condition 5) and merely leave the capacity factor limit at 38.7 percent. Previously, the capacity factor adjustment was incorporated into the FPC DeBary permit due to the uncertainty regarding the annual average. Similarly, in Specific Condition 16, the reference to a weighted 12 month rolling average for sulfur content should be deleted.

Permit Expiration Date

The permit expiration date is currently stated as March 31, 1994. As we discussed at our June 3, 1992 meeting, FPC requests an expiration date at least two years subsequent to final permit issuance.

If you should have any questions or comments on the above, please do not hesitate to contact me at (813) 866-5158. Your efforts to expedite the issuance of the final construction permit for this project would be greatly appreciated.

Sincerely,

Scott Osbourn

Scott H. Osbourn
Sr. Environmental Engineer

Enclosure

cc: Clair Fancy, FDER
J. Heron
C. Holladay
C. Collins, C Dist.
J. Harper, EPA
C. Shaver, NPS
CHF/PL

1-800-842-3624
FAX # 904 354-2811 or
904 356-2364

Steuart Agip
STEUART PETROLEUM COMPANY

Telex # 810 827 0273
Easylink # 62788501

June 19, 1992

Mr. Dan Putnam, Jr.
Fuel Engineer
Florida Power Corporation
3201 34th Street, So.
St. Petersburg, FL 33733

Dear Mr. Putnam:

Confirming our conversation of today regarding my letter (copy attached) of April 29, 1992, to Ms. Teresa M. Heron of the Bureau of Air Regulation. This is to clarify the quoted sulfur range of .1 to .5% max.

The .1 - .5% max range was quoted only to indicate that the % sulfur of No. 2 fuel oil fluctuates within this range. Steuart Petroleum Company can only offer and guarantee No. 2 fuel oil with a sulfur content of .5% max.

Please let me know if there are any questions or if we may be of further assistance.

Sincerely,

Keith Hill

Keith Hill
General Manager
Southern Marketing

EKH/hc

cc: Bob Bosman

P.O. BOX 3233 • 6531 EVERGREEN AVENUE • JACKSONVILLE, FLORIDA 32206 • (904) 355-9675

Florida Power
CORPORATION

June 19, 1992

RECEIVED

JUN 24 1992

Division of Air
Resources Management

Mr. Claire Fancy, P.E.
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Dear Mr. Fancy:

Re: Proof of Publication of the Notice of Intent to Issue the Intercession City Construction Air Permit

Pursuant to Section 403.315, Florida Statutes and DER Rule 17-103.150, F.A.C., the Notice of Intent to Issue the Intercession City Construction Air Permit was published June 17, 1992 in the Orlando Sentinel. Enclosed is proof of this publication.

If you have any questions or require any additional information, please contact at (813) 866-5158.

Sincerely,

Scott Osbourn
Sr. Environmental Engineer

Enclosure

cc: J. Aeron
C. Holladay
C. Collins
J. Harper, EPA
C. Shaver, NPS

The Orlando Sentinel

Published Daily
Kissimmee, Osceola County, Florida

ADVERTISING CHARGE $27.22

State of Florida } ss.
COUNTY OF ORANGE

Before the undersigned authority personally appeared CANDACE CODY, who on oath says that she is the Legal Advertising Representative of The Orlando Sentinel, a Daily newspaper published at Kissimmee, in Osceola County, Florida; that the attached copy of advertisement, being a NOTICE OF INTENT in the matter of FOUR 92.9 Mw and TWO 185.5 SIMPLE CYCLE COMBUSTION TURBINES in the ____ Court, was published in said newspaper in the issues of JUNE 17, 1992

Affiant further says that the said The Orlando Sentinel is a newspaper published at Kissimmee, in said Osceola County, Florida, and that the said newspaper has heretofore been continuously published in said Osceola County, Florida, each Week Day and has been entered as second-class mail matter at the post office in Kissimmee in said Osceola County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he/she has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Candace Cody

The foregoing instrument was acknowledged before me this 17 day of JUNE, 19 92, by CANDACE CODY who is personally known to me and who did take an oath.

Juanita Rosado
JUANITA ROSADO

Juanita Rosado
Notary Public, State of Florida
My commission expires June 18, 1994
Commission # CC022902

**STATE OF FLORIDA
DEPARTMENT OF
ENVIRONMENTAL
REGULATION
NOTICE OF INTENT
TO ISSUE PERMIT**

The Department of Environmental Regulation gives notice of its intent to issue a permit to Florida Power Corporation, 3201 34th Street South, St. Petersburg, Florida 33733, to construct four 92.9 MW and two 185.5 simple cycle combustion turbines. A determination of Best Available Control Technology (BACT) was required. The nearest Class I area is the Chassahowitzka National Wilderness Area which is located approximately 110 km away. The Class I sulfur dioxide PSD increment consumed is 19.3 vs. 25 allowable 3-hour average, 4.92 vs. 5 allowable 24-hour average and 0.45 vs. 2 allowable annual average, in micrograms per cubic meter. The Class II sulfur dioxide PSD increment consumed is 63.8 vs. 512 allowable 3-hour average, 17.1 vs. 91 allowable 24-hour average and 1.8 vs. 20 allowable annual average, in micrograms per cubic meter. The Class I particulate matter PSD increment consumed is less than 0.34 vs. 10 allowable 24-hour average and less than 0.02 vs. 5 allowable annual average, in micrograms per cubic meter. The Class I nitrogen dioxide increment consumed is less than 0.34 vs. 2.5 annual average, in micrograms per cubic meter. The maximum predicted increases in ambient concentrations for both particulate matter and nitrogen dioxide are less than significant in the Class II area surrounding the plant, thus no Class II increment consumption was calculated for these pollutants. The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

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 32399-2400, within fourteen (14) days of publication of this notice. 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; and (g) A statement of the relief sought by petitioner, stating precisely the action 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 Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the 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 publication of this notice 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.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday except legal holidays, at:

Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Department of Environmental Regulation
Central District
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803-3767

Any person may send written comments on the proposed action to Mr. Preston Lewis at the Department's Tallahassee address. All comments received within 30 days of the publication of this notice will be considered in the Department's final determination. Further, a public hearing can be requested by any person. Such requests must be submitted within 30 days of this notice.

OSC6F64014 June 17, 1992

FORM NO. AD-263

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

JUN 16 1992

RECEIVED

JUN 22 1992

Division of Air Resources Management

4APT-AEB

Mr. Clair H. Fancy, P.E., Chief
Bureau of Air Regulation
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Florida Power Corporation/Intercession City Facility (PSD-FL-180)

Dear Mr. Fancy:

This is to acknowledge receipt of your preliminary determination and draft Prevention of Significant Deterioration (PSD) permit for the above referenced facility's proposed construction, by your letter dated May 22, 1992. The facility will consist of six simple cycle combustion turbines, with an output power of 92.9 megawatts (four turbines) and 185.5 megawatts (two turbines). The turbines will be fired with No. 2 distillate fuel oil. The facility will be permitted as a peaking power facility, with an operating limitation of 3390 hours of operation per year for each turbine.

Your determination proposes to limit NO_x emissions through the use of maximum water injection, to limit SO_2 and H_2SO_4 emissions through limiting the sulfur content of the No. 2 distillate fuel oil, to limit CO and VOC emissions through the use of efficient combustion, to limit PM/PM_{10} emissions through efficient combustion and the use of clean fuel, and to limit Be and As emissions through fuel quality.

We have reviewed the package as submitted and have no adverse comments. Thank you for the opportunity to review and comment on this package. If you have any questions or comments, please contact Mr. Scott Davis of my staff at (404) 347-5014.

Sincerely yours,

Jewell A. Harper, Chief
Air Enforcement Branch
Air, Pesticides, and Toxics
Management Division

cc: J. Heron
C. Holladay
C. Collins, C Dist.
C. Shaver, NPS
K. Kosky, KBN
CHF/PL

BEST AVAILABLE COPY

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

SOURCE EVALUATION UNIT
AIR ENFORCEMENT BRANCH
FACSIMILE TRANSMISSION SHEET
Fax Number: FTS 257-5207 or 404/347-5207

DATE: JUN 16 1992 NUMBER OF PAGES (Including this sheet) 2

TO: Clair Fancy PHONE: 904 488 1344

ADDRESS: FDER FAX NUMBER: 904 922 6979

FROM: Scott Davis PHONE: (404) 347-5014

If the following pages are received p... call Angela

at FTS 257-5014 or 404/347-5014

SPECIAL INSTRUCTIONS FOR RECEIVER:

cc: J. Heuer
C. Holladay
C. Collins, C. Dist
C. Shaver, NPS
K. Kosky, KBN
CHF/PL

File Intersection City

Coastal
The Energy People

May 26, 1992

Ms. Teresa Heron
Bureau of Air Regulation
Florida Department of
Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Fl. 32399-2400

Dear Ms. Heron,

Per our conversation May 19, 1992, the lowest sulphur content of #6 fuel oil available from Coastal Fuels in Florida is 0.7% maximum.

Coastal's required maximum sulphur content for #2 fuel oil is 0.5%, which is the Florida specification. The additional cost to supply 0.3% is estimated to be $0.01 per gallon and $0.015 per gallon for 0.2% maximum, not including additional tankage and terminalling charges.

These charges would vary depending on volumes.

If you have any additional questions, please do not hesitate to call (813) 722-0593.

Kindest regards,

J R Sauls

J. R. Sauls
Director, Major Accounts

JRS/bks

Coastal Fuels Marketing, Inc.
A SUBSIDIARY OF THE COASTAL CORPORATION
P O BOX 939 • PALMETTO FL 34220

File Inverness City

FLORIDA POWER CORPORATION - Debary Plant

#2 Combustion Turbine Specifications

		ASTM Test Method
Cetane (min.)	40	D-976
Flash Point (min.)	140°F	D-93
Pour Point (max.)	20°F	D-97
Water & Sediment % Volume (max.)	.05%	D-96
Carbon Residue on 10% bottoms (max.)	.25%	D-189
Distillation Points		
90% (min.)	540°F	D-86
90% (max.)	650°F	D-86
Viscosity @ 100°F cs (min.)	2.0	D-88
(max.)	3.6	D-88
Ash wt. % (max.)	.01	D-482
Gravity api (min.)	30	D-287
Sulfur wt. % (max.)	.5	D-4294
Vanadium ppm (max.)	1.5	D-2788
Sodium + Potassium ppm (max.)	2	D-2788
Calcium ppm (max.)	4	D-2788
Lead ppm (max.)	1	D-2788
Btu/gal.		
Higher Heating Value (min.)	135,000	D-240
Lower Heating Value (min.)	not specified	D-240
DuPont Stability (max.)	4	N/A
Oxidation Stability mg/100 ml (max.)	2.5	D-2274
Fuel Bound Nitrogen	not specified	D-3228

TDP/dyt - 05/26/92

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400
Lawton Chiles, Governor
Carol M. Browner, Secretary

May 26, 1992

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. W. W. Vierday
Legal and Governmental Affairs
Florida Power Corporation
3201 34th Street South
St. Petersburg, FL 33733

Dear Mr. Vierday:

RE: Florida Power Corporation
Intercession City Facility
AC 49-203114, PSD-FL-180

Page 2 of 2 of the Notice of Intent to Issue Permit for the above referenced project contained an error concerning the number of days allowed for comments. Please replace that page with the enclosed Page 2 of 2. If you have any questions, please feel free to call me at 904/488-1344.

Sincerely,

Barry D. Andrews

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

CHF/pa

Enclosure

cc: Kennard Kosky, P.E.
Chuck Collins, C District
Jewell Harper, EPA
Chris Shaver, NPS
Julia Thomas, Fish & Wildlife

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 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 Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the 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 publication of this notice 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.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Department of Environmental Regulation
Central District
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803-3767

Any person may send written comments on the proposed action to Mr. Preston Lewis at the Department's Tallahassee address. All comments received within 30 days of the publication of this notice will be considered in the Department's final determination. Further, a public hearing can be requested by any person. Such requests must be submitted within 30 days of this notice.

P 710 058 482

Certified Mail Receipt

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to W W Viirdai	
Street & No. Fla Power Corp	
P.O., State & ZIP Code St. Pete, Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Address of Delivery	
TOTAL Postage & Fees	$
Postmark or Date 5-27-92 AC49-203114 PSD-FL-180	

PS Form 3800, June 1990

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt Fee will provide you the signature of the person delivered to and the date of delivery.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
W.W. Viirdai
Legal & Governmental Affairs
Fla. Power Corp
3201 34th St. S.
St. Petersburg, Fl 33733

4a. Article Number
P 710 058 482

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery MAY 29 1992

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)
[illegible signature]

... RECEIPT

File Copy

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

May 22, 1992

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. W. W. Vierday
Legal and Governmental Affairs
Florida Power Corporation
3201 34th Street South
St. Petersburg, Florida 33733

Dear Mr. Vierday:

Attached is one copy of the Technical Evaluation and Preliminary Determination and proposed permit to construct four 92.9 MW and two 185.5 simple cycle combustion turbines.

Please submit any written comments you wish to have considered concerning the Department's proposed action to Mr. Preston Lewis of the Bureau of Air Regulation.

Sincerely,

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

CHF/TH/plm

Attachments

c: Kennard Kosky, P.E.
Chuck Collins, CD - DER mail
Jewell Harper, EPA
Chris Shaver, NPS
Julia Thomas, Fish & Wildlife
Reading
Teresa Heron
Clive Holladay

5-22-92
Took the Main Post Office RRM

Recycled Paper
Printed with Soy Based Inks

P 710 058 536

Certified Mail Receipt

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to Mr. W. W. Vierday	
Street & No. Legal & Governmental Affairs FL Power Corp.	
P.O., State & ZIP Code 3201 34th Street South St. Petersburg, FL 33733	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Address of Delivery	
TOTAL Postage & Fees	$
Postmark or Date mailed: 5/22/92 AC 49-203114 & PSD-FL-180	

PS Form 3800, June 1990

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece next to the article number.

I also wish to receive the following services (for an extra fee):

1. ☒ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. W. W. Vierday
Legal & Governmental Affairs
Florida Power Corp.
3201 34th Street South
St. Petersburg, FL 33733

4a. Article Number
P 710 058 536

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
5/27/92

5. Signature (Addressee)

6. Signature (Agent)
[signature]

8. Addressee's Address (Only if requested and fee is paid)
3201 34th St. S.
St. Pete 33711

PS Form 3811, October 1990 ☆U.S. GPO: 1990—273-861 **DOMESTIC RETURN RECEIPT**

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

CERTIFIED MAIL

In the Matter of an
Application for Permit by:

DER File No. AC 49-203114
PSD-FL-180
Osceola County

Mr. W. W. Vierday
Florida Power Corporation
3201 34th Street South
St. Petersburg, Florida 33733
______________________________/

INTENT TO ISSUE

The Department of Environmental Regulation gives notice of its intent to issue a permit (copy attached) for the proposed project as detailed in the application specified above, for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

The applicant, Florida Power Corporation, applied on October 3, 1991, to the Department of Environmental Regulation for a permit to construct four 92.9 MW and two 185.5 simple cycle combustion turbines. The facility is located in Intercession City, Osceola County, Florida.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes and Florida Administrative Code (F.A.C.) Chapters 17-2 and 17-4. The project is not exempt from permitting procedures. The Department has determined that a construction permit is required for the proposed work.

Pursuant to Section 403.815, Florida Statutes and Rule 17-103.150, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Notice of Intent to Issue Permit. The notice shall be published one time only within 30 days in the legal ad section of a newspaper of general circulation in the area affected. For the purpose of this rule, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within seven days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit.

The Department will issue the permit with the attached conditions unless a petition for an administrative proceeding (hearing) is filed pursuant to the provisions of Section 120.57, F.S.

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 permit applicant and the parties listed below must be filed within 14 days of receipt of this intent. Petitions filed by other persons must be filed within 14 days of publication of the public notice or within 14 days of their receipt of this intent, whichever first occurs. 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; and
(g) A statement of the relief sought by petitioner, stating precisely the action 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 intent. Persons whose substantial interests will be affected by any decision of the Department with regard to the 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 intent 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.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

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

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this INTENT TO ISSUE and all copies were mailed by certified mail before the close of business on May 22, 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.

Martha Jane Wise 5/22/92
Clerk Date

Copies furnished to:
- Kennard Kosky, P.E.
- Chuck Collins, CD
- Jewell Harper, EPA
- Chris Shaver, NPS
- Julia Thomas, Fish & Wildlife

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
NOTICE OF INTENT TO ISSUE PERMIT

The Department of Environmental Regulation gives notice of its intent to issue a PSD permit to Florida Power Corporation, 3201 34th Street South, St. Petersburg, Florida 33733, to construct four 92.9 MW and two 185.5 simple cycle combustion turbines. A determination of Best Available Control Technology (BACT) was required. The nearest Class I area is the Chassahowitzka National Wilderness Area which is located approximately 110 km away. The Class I sulfur dioxide PSD increment consumed is 19.3 vs. 25 allowable 3-hour average, 4.92 vs. 5 allowable 24-hour average and 0.45 vs. 2 allowable annual average, in micrograms per cubic meter. The Class II sulfur dioxide PSD increment consumed is 63.8 vs. 512 allowable 3-hour average, 17.1 vs. 91 allowable 24-hour average and 1.8 vs. 20 allowable annual average, in micrograms per cubic meter. The Class I particulate matter PSD increment consumed is less than 0.34 vs. 10 allowable 24-hour average and less than 0.02 vs. 5 allowable annual average, in micrograms per cubic meter. The Class I nitrogen dioxide increment consumed is less than 0.34 vs. 2.5 annual average, in micrograms per cubic meter. The maximum predicted increases in ambient concentrations for both particulate matter and nitrogen dioxide are less than significant in the Class II area surrounding the plant, thus no Class II increment consumption was calculated for these pollutants. The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

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, within 14 days of publication of this notice. 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.

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The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Department of Environmental Regulation
Central District
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803-3767

Any person may send written comments on the proposed action to Mr. Preston Lewis at the Department's Tallahassee address. All comments received within 14 days of the publication of this notice will be considered in the Department's final determination.

ATTACHMENTS AVAILABLE UPON REQUEST

Technical Evaluation
and
Preliminary 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

May 22, 1992

SYNOPSIS OF APPLICATION

I. NAME AND ADDRESS OF APPLICANT

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

II. REVIEWING AND PROCESS SCHEDULE

Date of Receipt of Application: October 3, 1991

Completeness Review: Department letters dated October 31, 1991, February 21, 1992, and March 9, 1992.

Response to Incompleteness Letters: Company letter received on December 16, 1991, January 23, 1992, February 10, 1992, March 6, 1992, and March 26, 1992.

Application Completeness Date: March 26, 1992.

III. FACILITY INFORMATION

III.1 **Facility Location**

This facility is located at State Road 532, 3.5 miles west of Intercession City in Osceola County, Florida. The UTM coordinates are Zone 17, 446.3 km East and 3126 km North.

III.2 **Facility Identification Code (SIC)**

Major Group No. 49 - Electric, Gas and Sanitary Services.

Industry Group No. 491 - Combination Electric, Gas and Other Utility Services.

Industry Group No. 4911 - Electric and Other Services Combined.

III.3 **Facility Category**

The Florida Power Corporation in Intercession City is classified as a major emitting facility. The proposed project, combustion turbines (CT) peaking units, will increase this facility's emissions by approximately 2,369 tons per year (TPY) of nitrogen oxides (NO_x); 2,459 TPY of sulfur dioxide (SO_2); 159 TPY of particulate matter (PM); 65 TPY of volatile organic compounds (VOC); 0.034 TPY of beryllium; 0.12 TPY of lead; 0.04 TPY of mercury; and 187 TPY of sulfuric acid mist if operated at 3,390 hours per year and using a maximum of 0.2 percent sulfur by weight (33% capacity factor).

IV. PROJECT DESCRIPTION

The Florida Power Corporation proposes to operate four simple cycle CTs (GE Model PG7111EA) rated at 92.9 MW each for a total of 371.6 MW and two simple cycle CTs (GE Model PG7221FA) rated at 185.5 MW each for a total of 371 MW. The six CTs will be located along side six existing CTs generating 306 MW. The proposed CTs are designed to burn No. 2 fuel oil and are equipped with water injection for NOx control.

V. RULE APPLICABILITY

The proposed project is subject to preconstruction review under the provisions of Chapter 403, Florida Statutes, Chapters 17-2 and 17-4, Florida Administrative Code (F.A.C.), and 40 CFR (July, 1990 version).

The plant is located in an area designated attainment for all criteria pollutants in accordance with F.A.C. Rule 17-2.420.

The proposed project will be reviewed under F.A.C. Rule 17-2.500(5), New Source Review (NSR) for Prevention of Significant Deterioration (PSD), because it will be a major modification to a major facility. This review consists of a determination of Best Available Control Technology (BACT) and unless otherwise exempted, an analysis of the air quality impact of the increased emissions. The review also includes an analysis of the project's impacts on soils, vegetation and visibility; along with air quality impacts resulting from associated commercial, residential and industrial growth.

The sources shall be in compliance with the New Source Performance Standards for Gas Turbines, Subpart GG, Appendix A, which is contained in 40 CFR 60, and is adopted by reference in F.A.C. Rule 17-2.660. The proposed sources shall also comply with applicable provisions of F.A.C Rule 17-2.700, Stack Test Procedures, and F.A.C. Rule 17-2.630, Best Available Control Technology.

VI. SOURCE IMPACT ANALYSIS

VI.1 Emission Limitations

The operation of the simple cycle combustion plant burning No. 2 fuel oil will produce emissions of NO_x, SO_2, CO, sulfuric acid mist, PM, Be, Pb and Hg. The impact of these pollutant emissions are below the Florida ambient air quality standards (AAQS) and/or the acceptable ambient concentration levels (AAC). Table 1 and 2 lists each contaminant and its maximum expected emission rate.

VI.2 **Air Toxics Evaluation**

The operation of the sources will produce emissions of chemical compounds that may be toxic in high concentrations. The emission rates of these chemicals shall not create ambient concentrations greater than the acceptable ambient concentrations (AAC) as shown below. Determination of the AAC for these organic compounds shall be determined by Department approved dispersion modeling or ambient monitoring.

$$AAC = \frac{OEL}{\text{Safety Factor}}$$

Where,

AAC = acceptable ambient concentration

Safety Factor = 50 for category B substances and 8 hrs/day
100 for category A substances and 8 hrs/day
210 for category B substances and 24 hrs/day
420 for category A substances and 24 hrs/day

OEL = Occupational exposure level such as ACGIH, ASHA and NIOSH published standards for toxic materials.

MSDS = Material Safety Data Sheets

VI.3 **Air Quality Analysis**

a. Introduction

The operation of the proposed six combustion peaking turbines will result in emissions increases which are projected to be greater than the PSD significant emission rates for the following pollutants: NO_x, SO_2, PM, PM_{10}, Be, CO, inorganic arsenic, and H_2SO_4 mist. Therefore, the project is subject to the PSD NSR requirements contained in F.A.C. Rule 17-2.500(5) for these pollutants. Part of these requirements is an air quality impact analysis for these pollutants, which includes:

- An analysis of existing air quality;
- A PSD increment analysis (for SO_2, PM, PM_{10}, and NO_x);
- An ambient Air Quality Standards analysis (AAQS);
- An analysis of impacts on soils, vegetation, visibility and growth-related air quality impacts; and,
- A Good Engineering Practice (GEP) stack height determination

The analysis of existing air quality generally relies on preconstruction monitoring data collected in accordance with EPA-approved methods. The PSD increment and AAQS analyses are based on air quality dispersion modeling completed in accordance with EPA guidelines.

Based on these required analyses, the Department has reasonable assurance that the proposed project, as described in this report and subject to the conditions of approval proposed herein, will not cause or contribute to a violation of any PSD increment or ambient air quality standard. A brief description of the modeling methods used and results of the required analyses follow. A more complete description is contained in the permit application on file.

b. Analysis of the Existing Air Quality

Preconstruction ambient air quality monitoring may be required for pollutants subject to PSD review. However, an exemption to the monitoring requirement can be obtained if the maximum air quality impact resulting from the projected emissions increase, as determined through air quality modeling, is less than a pollutant-specific de minimus concentration. The predicted maximum concentration increase for each pollutant subject to PSD (NSR) is given below:

	SO_2	TSP & PM_{10}	NO_x	CO	Be
PSD de minimus Concentra. (ug/m^3)	13	10	14	575	.001
Averaging Time	24-hr	24-hr	Annual	8-hr	24-hr
Maximum Predicted Impact (ug/m^3)	16.1	0.34	0.34	4.2	.000075

There are no monitoring de minumus concentrations for H_2SO_4 mist and inorganic arsenic. As shown above, the predicted impacts for TSP/PM_{10}, NO_x, CO, and Be are all less than the corresponding de minimus concentrations; therefore, no preconstruction monitoring is required for these pollutants. However, since the predicted SO_2 impact is greater than the de minimus concentration, a pre-construction ambient monitoring analysis is required for SO_2. The Department determined that the use of existing FDER air quality monitoring data collected in 1990 from the Winter Park SO_2 monitoring site in Orange County would be appropriate to satisfy the ambient monitoring analysis requirement. Background SO_2 values of 53 ug/m^3, 3-hr average; 28 ug/m^3, 24-hr average; and 4 ug/m^3, annual average, were based on these data. This site is located 4.1 km away from the project.

c. Modeling Method

The EPA-approved Industrial Source Complex Short-Term (ISCST) dispersion model was used by the applicant to predict the impact of the proposed project on the surrounding ambient air. All recommended EPA default options were used. Direction-specific downwash parameters were used because the stacks were less than the good engineering practice (GEP) stack height. Five years of sequential hourly surface and mixing depth data from the

Orlando/Tampa Florida National Weather Service (NWS) station collected during 1982 through 1986 were used in the model. Since five years of data were used, the highest-second-high (HSH) short-term predicted concentrations are compared with the appropriate ambient air quality standards or PSD increments. For the annual averages, the highest predicted yearly average was compared with the standards.

d. Modeling Results

The applicant first evaluated the potential increase in ambient ground-level concentrations associated with the project to determine if these predicted ambient concentration increases would be greater than specified PSD significant impact levels for SO_2, CO, NO_x, PM and PM_{10}. This evaluation was based on the proposed CT units operating at load conditions of 100, 75, 50 and 25 percent. The modeling was performed using the highest emissions at 20°F design condition coupled with the lowest exit gas flow rates at 90°F design condition to maximize predicted impacts. The applicant modeled emissions based on the use of fuel oil with a maximum sulfur content of 0.5%. The BACT determination specifies the use of fuel oil with a maximum sulfur content of 0.2%, thus the modeled results are conservative. The maximum predicted concentrations generally occur for the maximum capacity at 100% operating load. Dispersion modeling was performed with receptors placed along the 36 standard radial directions (10 degrees apart) surrounding the proposed units at the following downwind distances: (1) the first 36 receptors were located at the plant property boundaries with an additional near-field grid of 54 receptors located 400m and 700m from the proposed units off of plant property; (2) subsequent receptors were located at distances of 1.0, 1.3, 1.6, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 7.5, 10.0, 12.5, 15.0, 20.0, 25.0, 30.0, 40.0, and 50.0 km from the facility, all of which are off plant property. The results of this modeling presented below show that the increases in ambient ground-level concentrations for all averaging times are less than the PSD significant impact levels for CO, NO_x, PM and PM_{10}.

	SO_2			NO2	CO		PM and PM_{10}	
Avg. Time	Annual	3-hr	24-hr	Annual	1-hr	8-hr	Ann.	24-hr
PSD Signifi. Level (ug/m^3)	1.0	25.0	5.0	1.0	2000	800	1.0	5.0
Ambient Concen. Increase (ug/m^3)	0.62	71.4	16.1	0.34	11.2	4.2	0.02	0.34

Therefore, further dispersion modeling for comparison with AAQS and PSD increment consumption were not required for CO, NOx, PM and PM_{10}. However, the results also show that the increases in maximum ambient groundlevel concentrations for the 3-hr and 24-hr averaging times for SO_2 were greater than the PSD significant impact levels, thus requiring the applicant to do a full impact analysis for SO_2. The significant impact area for the facility was determined to be greater than 50 km; therefore, all sources within

50 km of the facility were evaluated by the applicant. Screening analyses were performed for predicting maximum SO_2 concentrations for comparison to the PSD Class II increments and the AAQS using the same receptor grid described above. Refined AAQS and PSD Class II analyses were based on modeling the years during which the overall HSH 3-hour, HSH 24-hour, and highest annual concentrations were predicted in the screening analyses. The refined 3-hr and 24-hr modeling was conducted using a receptor grid centered on the receptor which had the HSH 3-hr or 24-hr concentration determined from the screening analysis. These receptors were located at intervals of 100m between the distances considered in the screening phase, along 19 radials spaced at 1-degree increments centered on the radial along which the maximum concentration was predicted. The results of these analyses for SO_2 and comparison with the appropriate standards and increments are summarized in the following tables. The maximum predicted SO_2 concentrations are all less than the appropriate AAQS and PSD increments.

AAQS Analysis (all values in ug/m^3)

Avg. Time	Annual	3-hr	24-hr
Maximum Predicted Concentration	37.7	792	215
Includes Background Value	4	53	28
AAQS	60	1300	260

Cumulative PSD Class II
Increment Analysis (all values in ug/m^3)

Avg. Time	Annual	3-hr	24-hr
Max. Predicted Consumption Concen.	1.80	63.8	17.1
Increment	20	512	91

The impact of this project on the Class I increments for SO_2 in the closest Class I area, the Chassahowitzka National Wilderness Area, which is located approximately 110 km away is shown below:

Cumulative PSD Class I
Increment Analysis (all values in ug/m^3)

Avg. Time	Annual	3-hr	24-hr
Max. Predicted Consumption Concen.	.45	19.3	4.92
Increment	2	25	5

The maximum predicted increment consumptions are all less than the appropriate PSD increments.

Sulfuric acid mist, beryllium, mercury and arsenic are noncriteria pollutants, which means that neither national AAQS nor PSD Significant Impacts have been defined for these pollutants. However, the Department does have a draft Air Toxics Permitting Strategy, which defines no threat levels for these pollutants. The Department and the applicant have used the same modeling procedure described above for the screening analysis to evaluate the maximum increase in ground level concentration of these pollutants for comparison with the no-threat levels. The results of this analysis are shown on the following page:

Avg. Time	H_2SO_4 mist 24-hr	Be Annual	Hg 24-hr	As Annual
No Threat-Level (ug/m^3)	2.4	.0004	.024	.00023
Max. Concen. Increase	2.0	.000005	.00009	.000008

All of these values are less than their respective no-threat levels.

e. Additional Impacts Analysis

A Level-1 screening analysis using the EPA model, VISCREEN was used to determine any potential adverse visibility impacts on the Class I Chassahowitzka National Wilderness Area located about 110 km away. Based on this analysis, the maximum predicted visual impacts due to the proposed project are less than the screening criteria both inside and outside the Class I area. A comprehensive air quality related values (AQRV) analysis for this Class I area was performed by the applicant for not only SO_2 and other criteria pollutants but for numerous non-criteria pollutants that could potentially be emitted by the proposed project. No significant impacts on the Class I area are expected.

In addition, the maximum predicted concentrations from NOx, CO, SO_2, PM and PM_{10} are predicted to be less than the AAQS, including the national secondary standards designed to protect public welfare-related values. As such, no harmful effects on soil and vegetation are expected in the area of the project. Also, the proposed modification will not significantly change employment, population, housing or commercial/industrial development in the area to the extent that a significant air quality impact will result.

VII. CONCLUSION

Based on the information provided by Florida Power Corporation, the Department has reasonable assurance that the proposed installation of the 742.6 MW simple cycle gas turbine system, as described in this evaluation, and subject to the conditions proposed herein, will not cause or contribute to a violation of any air quality standard, PSD increment, or any other technical provision of Chapter 17-2 of the Florida Administrative Code.

PE #41755

PRESTON LEWIS
CERTIFICATE
No. 41755
STATE OF FLORIDA
REGISTERED ENGINEER

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: Mar. 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 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.

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.

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.

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;

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).

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) <u>GE FRAME 7EA</u>
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:

Percent Average Sulfur Content	% Capacity Factor
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.

SPECIFIC CONDITIONS:

Compliance Determination

8. Compliance with the NO_x, SO_2, CO, PM, PM_{10}, 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_2 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.

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_x standard, measured NO_x emissions at 15 percent oxygen will be adjusted to ISO ambient atmospheric conditions by the following correction factor:

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

where:

NO_x = Emissions of NO_x at 15 percent oxygen and ISO standard ambient conditions.

$NO_{x\ obs}$ = Measured NO_x emission at 15 percent oxygen, ppmv.

P_{ref} = Reference combustor inlet absolute pressure at 101.3 kilopascals (1 atmosphere) ambient pressure.

P_{obs} = Measured combustor inlet absolute pressure at test ambient pressure.

H_{obs} = Specific humidity of ambient air at test.

e = Transcendental constant (2.718).

T_{AMB} = 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 15 days in writing in advance of the compliance test(s). 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.

15. A continuous monitoring system shall be installed to monitor and record the fuel consumption on each unit. Water injection shall be utilized for NOx control. The water to fuel ratio at which compliance is achieved shall be incorporated into the permit and shall be continuously monitored. The system shall meet the requirements of 40 CFR Part 60, Subpart GG.

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 contruction 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.

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, 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 ______ day
of ______________, 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[(a)]	Total 4 Units T/yr	Basis
NO_x	42 ppmv at 15% oxygen-dry basis	182	1232[(a)]	BACT
SO_2	No. 2 fuel oil with 0.2% max. sulfur	222	1283[(c)]	BACT
PM/PM_{10}	0.01 lb/MMBtu	15	102[(b)]	BACT
VOC	-	5	34[(b)]	BACT
CO	25 ppm	54	366[(b)]	BACT
Sulfuric Acid Mist	No. 2 fuel oil with 0.2% max. sulfur	18	106[(c)]	BACT
Fluorines (FR)	-	3.34×10^{-2}	0.23[(b)]	Application
Mercury (Hg)	3.0×10^{-6} lbs/MMBtu	3.09×10^{-3}	0.02[(b)]	Application
Lead (Pb)	8.9×10^{-6} lbs/MMBtu	9.16×10^{-3}	0.06[(b)]	Application
Inorganic Arsenic	4.2×10^{-6} lbs/MMBtu	4.32×10^{-3}	0.03[(b)]	BACT
Beryllium (Be)	2.5×10^{-6} lbs/MMBtu	2.57×10^{-3}	0.02[(b)]	BACT

(a) Emission rates based on 59°F and 15% O_2 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_2 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[a]	Total 2 Units T/yr	Basis
NO_x	42 ppmv at 15% oxygen-dry basis	334	1132[a]	BACT
SO_2	No. 2 fuel oil with 0.2% max. sulfur	407	1176[c]	BACT
PM/PM_{10}	0.01 lb/MMBtu	17	58[b]	BACT
VOC	-	9	31[b]	BACT
CO	25 ppm	79	268[b]	BACT
Sulfuric Acid Mist	No. 2 fuel oil with 0.2% max. sulfur	28	81[c]	BACT
Fluorines (FR)	-	6.13×10^{-2}	0.20[b]	Application
Mercury (Hg)	3.0×10^{-6} lbs/MMBtu	5.66×10^{-3}	0.02[b]	Application
Lead (Pb)	8.9×10^{-6} lbs/MMBtu	1.68×10^{-2}	0.06[b]	Application
Inorganic Arsenic	4.20×10^{-6} lbs/MMBtu	7.9×10^{-3}	0.02[b]	BACT
Beryllium (Be)	2.5×10^{-6} lbs/MMBtu	4.72×10^{-3}	0.02[b]	BACT

(a) Emission rates based on 59°F and 15% O_2 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_2 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_x	2369	40
SO_2	4326	40
H_2SO_4 Mist	626	7
PM	159	25
PM_{10}	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

Pollutant	Determination
NO_x	42 ppmvd @ 15% O_2
SO_2 and H_2SO_4	Max 0.5% Sulfur No. 2 fuel oil
PM/PM_{10}	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_x)

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_x 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_x emissions. The SCR process combines vaporized ammonia with NO_x 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_x with a new catalyst. As the catalyst ages, the maximum NO_x reduction will decrease to approximately 86 percent.

The effect of exhaust gas temperature on NO_x reduction depends on the specific catalyst formulation and reactor design. Generally, SCR units can be designed to achieve effective NO_x 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_x 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_x 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_x 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 NO_x is taken into consideration with the total annual cost of $2,190,000, the cost per ton of controlling 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 NO_x combustors (42 ppmv on oil firing). Since the Intercession City facility is capable of limiting 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 NO_x.

Sulfur Dioxide(SO_2) and Sulfuric Acid Mist (H_2SO_4)

The applicant has stated that sulfur dioxide (SO_2) and sulfuric acid mist (H_2SO_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 SO_2/year and 626 tons H_2SO_4 mist per year.

In accordance with the "top down" BACT review approach, only two alternatives exist that would result in more stringent 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 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 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_2 and H_2SO_4 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_2 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_{10})

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_x 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_x emission control is justifiable as BACT for this facility. BACT for SO_2 and sulfuric acid mist is the burning of fuel oil with a maximun sulfur content of 0.2%.

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_x	42 ppmvd @ 15% O_2	Wet Injection
SO_2	222 lbs/hr/unit	Max. 0.2% sulfur content, by weight, No. 2 fuel oil
PM and PM_{10}	15 lbs/hr/unit	Combustion
CO	54 lbs/hr/unit	Combustion
VOC	5 lbs/hr/unit	Combustion
Arsenic	4.32×10^{-3} lbs/hr/unit	Fuel Quality
Beryllium	2.57×10^{-3} lbs/hr/unit	Fuel Quality
H_2SO_4	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_x	42 ppmvd @ 15% O_2	Wet Injection
SO_2	407 lbs/hr/unit	Max. 0.2% sulfur content, by weight, No. 2 fuel oil
PM and PM_{10}	17 lbs/hr/unit	Combustion
CO	79 lbs/hr/unit	Combustion

VOC	9 lbs/hr/unit	Combustion
Arsenic	7.9×10^{-3} lbs/hr/unit	Fuel Quality
Beryllium	4.7×10^{-3} lbs/hr/unit	Fuel Quality
H_2SO_4	28 lbs/hr/unit	Max 0.2% sulfur content, by weight, No. 2 fuel oil

Details of the Analysis May be Obtained by Contacting:

Barry Andrews, P.E., BACT Coordinator
Department of Environmental Regulation
Bureau of Air Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Recommended by:

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

_______________1992
Date

Approved by:

Carol M. Browner, Secretary
Dept. of Environmental Regulation

_______________1992
Date

BEST AVAILABLE COPY

1-800-842-3624
FAX # 904 354-2811 or
904 356-2364

Steuart Agip
STEUART PETROLEUM COMPANY

Telex # 810 827 0273
Easylink # 62788501

April 29, 1992

Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blairstone Road
Tallahassee, Florida 23999

Attn: Ms. Teresa M. Heron

Dear Ms. Heron:

Confirming our conversation and your request, Steuart Petroleum Company has No. 2 fuel oil and No. 6 residual fuel oil available in Jacksonville, Florida as follows:

	No. 2 Fuel Oil	No. 6 Fuel Oil
Sulfur % wt.	.1 - .5 max	2.45 - 3.0 max
Posted selling price 4/29/92	.5735 $/G	13.25 - 13.30 $/B

It is important to note that No. 6 fuel oil sold in Florida is 2.5% max and oil with a higher sulfur is sold into the state of Georgia or to ocean going marine vessels. Also, for specific requirements, No. 6 fuel oil with a sulfur lower than 2.45% can be acquired and made available.

I hope this provides the information you need. Please call me if you have any questions or would like to discuss this information with me.

Sincerely yours,

E. Keith Hill

E. Keith Hill
Southern Marketing Manager

EKH/tdh
c.c.:
Bob Bosman, Marketing Representative

Florida
Power
CORPORATION

March 25, 1992

Mr. C. H. Fancy, Chief
Bureau of Air Regulation
Florida Department of Environmental Regulation
Twin Towers Office Bldg.
2600 Blair Stone Rd.
Tallahassee, Florida 32399-2400

RECEIVED

MAR 26 1992

Division of Air
Resources Management

Attention: Mr. Thomas Rogers

Dear Mr. Fancy:

Re: Osceola County- A.P.
Florida Power Corporation (FPC)
Intercession City
AC 49-203114; PSD-FL-180

This letter serves to transmit Florida Power Corporation's (FPC) air quality related values (AQRV) analysis, conducted at the request of the Florida Department of Environmental Regulation (DER). As you may recall, FPC had originally submitted an air permit application for the above-referenced facility on October 1, 1991. To date, over five months have elapsed and our Intercession City application still has not even been deemed "complete", the first step in DER's permit application review process. FPC had taken the initiative on this project by involving the National Park Service (NPS) in initial discussions and has made every effort to respond to DER and NPS concerns in a timely manner.

At the request of the Florida DER, FPC has asked KBN Engineering and Applied Sciences, Inc. (KBN) to conduct an air quality related values (AQRV) analysis more comprehensive in scope than the analysis that was submitted on January 22, 1992. As you recall, FPC had previously submitted an AQRV analysis for the worst case pollutant (SO_2), in accordance with previous DER guidance.

At the request of DER and the National Park Service (NPS), FPC has attempted to conduct an AQRV analysis for not only SO_2 and other criteria pollutants, but for numerous non-criteria pollutants that could potentially be emitted from the proposed Intercession City combustion turbine units. This analysis was undertaken by FPC to address Class I area concerns, in spite of the fact that no guidance currently exists concerning how to conduct an AQRV analysis of this scope. FPC requests that our submittal be viewed in this context and that DER deem the above-referenced application complete.

If you should have any questions or require clarification concerning this submittal, please contact me at (813) 866-4387.

Sincerely,

W. Jeffrey Pardue, Manager
Environmental Programs - Regulatory

Enclosure

cc: Ken Kosky, KBN
J. Ideryn
C. Holladay
A. Zahm, C Dist
G. Harper, EPA
C. Shaver, NPS
CHF/BA/PL

AIR QUALITY RELATED VALUE ANALYSIS FOR THE PROPOSED MODIFICATION TO FLORIDA POWER CORPORATION'S INTERCESSION CITY FACILITY

At the request of Florida Power Corporation (FPC), an air quality-related value (AQRV) analysis was conducted to assess the potential risk to AQRVs of the Chassahowitzka National Wilderness Refuge (NWR) due to the proposed modification at the Intercession City facility. Potential air quality impacts of the proposed modifications were predicted at the Prevention of Significant Deterioration (PSD) Class I area of the Chassahowitzka NWR. The U.S. Department of the Interior in 1978 administratively defined AQRVs to be:

> All those values possessed by an area except those that are not affected by changes in air quality and include all those assets of an area whose vitality, significance, or integrity is dependent in some way upon the air environment. These values include visibility and those scenic, cultural, biological, and recreational resources of an area that are affected by air quality.
>
> Important attributes of an area are those values or assets that make an area significant as a national monument, preserve, or primitive area. They are the assets that are to be preserved if the area is to achieve the purposes for which it was set aside (Federal Register 1978).

Except for visibility, AQRVs have not been specifically defined. However, odor, soil, flora, fauna, cultural resources, geological features, water, and climate generally have been identified by land managers as AQRVs. Since specific AQRVs have not been defined for Chassahowitzka National Wilderness Area, this AQRV analysis involved evaluating air quality effects to general vegetation and wildlife. A screening approach was used which compared the maximum predicted exposure of air pollutants of concern to lowest observed effect levels for vegetation and wildlife. In conducting the assessment, both airborne exposure and indirect exposure to vegetation were evaluated. For wildlife, the effects of airborne exposure were evaluated. Maximum concentrations and depositions were predicted using the Industrial Source Complex Short Term (ISCST) model and 5 years of surface and upper air meteorological data collected by the National Weather Service in Tampa and Ruskin, respectively.

AIRBORNE EXPOSURE: VEGETATION

The gaseous concentrations ($\mu g/m^3$) of nitrogen dioxide, particulate matter, carbon monoxide, fluorine, sulfuric acid mist, polycyclic organic matter, formaldehyde, and chlorine were used in the determination of impacts on vegetation. These compounds are believed to interact predominantly with foliage and this is considered the major route of entry into plants. In this assessment, 100 percent of the compound of interest was assumed to interact with the vegetation. The maximum concentrations predicted for the proposed sources for the 1-hour, 3-hour, 8-hour, 24-hour, and annual averaging periods are presented in Table 1.

Nitrogen dioxide

Nitrogen dioxide (NO_2) is the second largest emission from the proposed plant addition. This compound can injure plant tissue with symptoms usually appearing as irregular white to brown collapsed lesions between the leaf veins and near the margins. Conversely, non-injurious levels of NO_2 can be absorbed by plants, enzymatically transformed into ammonia, and incorporated into plant constituents such as amino acids (12).

Plant damage can occur through either acute (short-term, high concentration) or chronic (long-term, relatively low concentration) exposure. For plants that have been determined to be more sensitive to NO_2 exposure than others, acute (1, 4, 8 hours) exposure caused 5 percent predicted foliar injury at concentrations ranging from 3,800 to 15,000 $\mu g/m^3$ (7). Chronic exposure of selected plants (some considered NO_2-sensitive) to NO_2 concentrations of 2,000 to 4,000 $\mu g/m^3$ for 213 to 1,900 hours caused reductions in yield of up to 37 percent and some chlorosis (17).

By comparison of published toxicity values for NO_2 exposure to short term (i.e., 1-, 3-, and 8-hour averaging times) and long-term (annual averaging time) modeled concentrations, the possibility of plant damage in the preserve can be examined for both acute and chronic exposure situations, respectively. The 1-, 3-, and 8-hour estimated NO_2 concentrations at the point of maximum impact are 12.3, 6.3, and 3.4 $\mu g/m^3$, respectively. These concentrations are approximately $2x10^{-4}$ to $3x10^{-3}$ of the levels that could potentially injure 5 percent of the plant foliage. For a chronic exposure, the annual estimated NO_2 concentration at the point of maximum impact in the preserve (0.09 $\mu g/m^3$) is $2x10^{-5}$ to $4x10^{-5}$ of the levels that caused minimal yield loss and chlorosis in plant tissue.

Table 1. Predicted Air Quality Impacts for the Proposed Gas Turbines at FPC's Intercession City Facility Used to Address AQRVs at Chassahowitzka Class I Area

Constituent	Units	Proposed Maximum Emissions			Averaging Period	Predicted Impacts (ug/m3)		
		4 EA GTs	2 FA GTs	Total		4 EA GTs	2 FA GTs	Total
Generic (SO2)	TPY	2.51E+03	2.23E+03	4.74E+03	Annual	0.10	0.063	0.16
	lb/hr	2.47E+03	2.19E+03	4.66E+03	24-hour	2.64	1.20	3.8
	lb/hr	2.47E+03	2.19E+03	4.66E+03	8-Hour	6.74	3.59	10.3
	lb/hr	2.47E+03	2.19E+03	4.66E+03	3-Hour	11.0	8.11	19.1
	lb/hr	2.47E+03	2.19E+03	4.66E+03	1-Hour	22.3	15.0	37.3
Particulate Matter	TPY	1.02E+02	5.76E+01	1.59E+02	Annual	4.01E-03	1.63E-03	5.64E-03
	lb/hr	6.00E+01	3.40E+01	9.40E+01	24-hour	6.42E-02	1.86E-02	8.28E-02
	lb/hr	6.00E+01	3.40E+01	9.40E+01	8-Hour	1.64E-01	5.57E-02	2.20E-01
	lb/hr	6.00E+01	3.40E+01	9.40E+01	3-Hour	2.68E-01	1.26E-01	3.94E-01
	lb/hr	6.00E+01	3.40E+01	9.40E+01	1-Hour	5.41E-01	2.33E-01	7.74E-01
Nitrogen Dioxide	TPY	1.38E+03	1.22E+03	2.60E+03	Annual	5.43E-02	3.45E-02	8.87E-02
	lb/hr	8.12E+02	7.19E+02	1.53E+03	24-hour	8.68E-01	3.94E-01	1.26E+00
	lb/hr	8.12E+02	7.19E+02	1.53E+03	8-Hour	2.22E+00	1.18E+00	3.40E+00
	lb/hr	8.12E+02	7.19E+02	1.53E+03	3-Hour	3.63E+00	2.66E+00	6.29E+00
	lb/hr	8.12E+02	7.19E+02	1.53E+03	1-Hour	7.32E+00	4.94E+00	1.23E+01
Carbon Monoxide	TPY	3.99E+02	2.87E+02	6.86E+02	Annual	1.58E-02	8.11E-03	2.39E-02
	lb/hr	2.36E+02	1.69E+02	4.05E+02	24-hour	2.52E-01	9.27E-02	3.45E-01
	lb/hr	2.36E+02	1.69E+02	4.05E+02	8-Hour	6.44E-01	2.77E-01	9.21E-01
	lb/hr	2.36E+02	1.69E+02	4.05E+02	3-Hour	1.05E+00	6.26E-01	1.68E+00
	lb/hr	2.36E+02	1.69E+02	4.05E+02	1-Hour	2.12E+00	1.16E+00	3.29E+00
Fluoride	TPY	2.52E-01	2.24E-01	4.76E-01	Annual	9.95E-06	6.33E-06	1.63E-05
	lb/hr	1.49E-01	1.32E-01	2.81E-01	24-hour	1.59E-04	7.23E-05	2.31E-04
	lb/hr	1.49E-01	1.32E-01	2.81E-01	8-Hour	4.06E-04	2.16E-04	6.23E-04
	lb/hr	1.49E-01	1.32E-01	2.81E-01	3-Hour	6.65E-04	4.89E-04	1.15E-03
	lb/hr	1.49E-01	1.32E-01	2.81E-01	1-Hour	1.34E-03	9.06E-04	2.25E-03
Sulfuric Acid Mist	TPY	5.21E+02	1.70E+02	6.91E+02	Annual	2.05E-02	4.82E-03	2.54E-02
	lb/hr	3.07E+02	1.01E+02	4.08E+02	24-hour	3.29E-01	5.51E-02	3.84E-01
	lb/hr	3.07E+02	1.01E+02	4.08E+02	8-Hour	8.39E-01	1.65E-01	1.00E+00
	lb/hr	3.07E+02	1.01E+02	4.08E+02	3-Hour	1.37E+00	3.72E-01	1.75E+00
	lb/hr	3.07E+02	1.01E+02	4.08E+02	1-Hour	2.77E+00	6.90E-01	3.46E+00
Polyclic Organic Matter	TPY	2.16E-03	1.92E-03	4.08E-03	Annual	8.53E-08	5.43E-08	1.40E-07
	lb/hr	1.28E-03	1.13E-03	2.41E-03	24-hour	1.37E-06	6.21E-07	1.99E-06
	lb/hr	1.28E-03	1.13E-03	2.41E-03	8-Hour	3.49E-06	1.86E-06	5.34E-06
	lb/hr	1.28E-03	1.13E-03	2.41E-03	3-Hour	5.70E-06	4.20E-06	9.90E-06
	lb/hr	1.28E-03	1.13E-03	2.41E-03	1-Hour	1.15E-05	7.78E-06	1.93E-05
Formaldehyde	TPY	3.14E+00	2.79E+00	5.93E+00	Annual	1.24E-04	7.89E-05	2.03E-04
	lb/hr	1.85E+00	1.65E+00	3.50E+00	24-hour	1.98E-03	9.01E-04	2.88E-03
	lb/hr	1.85E+00	1.65E+00	3.50E+00	8-Hour	5.06E-03	2.70E-03	7.76E-03
	lb/hr	1.85E+00	1.65E+00	3.50E+00	3-Hour	8.28E-03	6.09E-03	1.44E-02
	lb/hr	1.85E+00	1.65E+00	3.50E+00	1-Hour	1.67E-02	1.13E-02	2.80E-02
Chlorine	TPY	2.09E-01	1.86E-01	3.95E-01	Annual	8.24E-06	5.25E-06	1.35E-05
	lb/hr	1.23E-01	1.10E-01	2.33E-01	24-hour	1.32E-04	6.00E-05	1.92E-04
	lb/hr	1.23E-01	1.10E-01	2.33E-01	8-Hour	3.37E-04	1.80E-04	5.16E-04
	lb/hr	1.23E-01	1.10E-01	2.33E-01	3-Hour	5.51E-04	4.06E-04	9.56E-04
	lb/hr	1.23E-01	1.10E-01	2.33E-01	1-Hour	1.11E-03	7.52E-04	1.86E-03

Note: Annual emissions, TPY, and impacts are based on 3,390 hours of operation for each turbine.

Although it has been shown that simultaneous exposure to SO_2 and NO_2 results in synergistic plant injury (3), the magnitude of this response is generally only 3 to 4 times greater than either gas alone and usually occurs at unnaturally high levels of each gas. Therefore, the concentrations are still $8x10^{-5}$ to 0.01 of the levels that potentially cause plant injury for either an acute or chronic exposure.

Particulate matter

Although information pertaining to the effects of particulate matter on plants is scarce, baseline concentrations are available (11). Ten species of native Indian plants were exposed to levels of particulate matter that ranged from 210 to 366 $\mu g/m^3$ for an 8-hour averaging period. Damage in the form of a higher leaf area/dry weight ratio was observed at varying degrees for most plants tested. Concentrations of particulate matter lower than 163 $\mu g/m^3$ did not appear to be injurious to the tested plants.

By comparison of published toxicity values for particulate matter exposure (i.e., 8-hour averaging time) concentrations, the possibility of plant damage in the preserve can be determined. The maximum predicted 8-hour particulate matter concentration is 0.22 $\mu g/m^3$. This concentration is approximately $6x10^{-4}$ to $1x10^{-3}$ of the values that affected plant foliage.

Carbon monoxide

As with particulate matter, information pertaining to the effects of carbon monoxide on plants is scarce. The main effect of carbon monoxide presence is a reduction in carbon fixation by plants. Carbon monoxide at a concentration of 5.7 $\mu g/m^3$ decreased the amount of carbon fixation in oleander and bean plants (5).

By comparison of published effect values for carbon monoxide exposure, the possibility of plant damage in the preserve can be determined. The maximum predicted 1-hour carbon monoxide concentration of 3.29 $\mu g/m^3$ is 0.58 of the value that depressed photosynthesis in laboratory studies. However, it is important to note that the effect of carbon monoxide is reversible. The amount of damage sustained at this level (if any) for one hour would have negligible effects over an entire growing season. The annual concentration of 0.0239 $\mu g/m^3$ reflects a more realistic, yet conservative, carbon monoxide level. This concentration is $4x10^{-3}$ of the value which depressed photosynthesis.

Fluoride

Fluoride is a reactive halide that often becomes volatile in the form of hydrofluoric acid (HF). Hydrofluoric acid is more phytotoxic than NO_2 or SO_2; however, this compound will be emitted at a much lower rate than either of these other two gases. Symptoms of damage generally consist of leaf-margin necrosis and interveinal chlorosis which occurs from the reaction of the halogen with cellular constituents (16). Generally, fluoride can cause injury in many susceptible species of plants (e.g. gladiolus) at concentrations of 1.0 $\mu g/m^3$ (2). MacLean et al. (10) fumigated six types of citrus with HF at two concentrations for 2 different time periods. When Hamlin orange was subjected to 750 $\mu g/m^3$ HF for 2 hours, 20 percent of the orange trees demonstrated slight tip and marginal necrosis. When the same type trees were treated with 20,000 $\mu g/m^3$ HF for 4 hours, complete defoliation occurred. By using the maximum predicted 1-hour fluoride concentration of 0.0023 $\mu g/m^3$ and assuming that all fluoride is transformed into HF, it is apparent that the predicted concentrations will be $1x10^{-7}$ to $2x10^{-3}$ of the values causing phytotoxicity.

A chronic study assessing the impacts of HF was conducted by fumigating valencia oranges for 5 months at concentrations between 5 and 12.5 $\mu g/m^3$. The tree leaves demonstrated slight to severe chlorosis as the amount of HF increased (4). The predicted annual concentration of 0.000016 $\mu g/m^3$ (transformed to HF) is $1x10^{-6}$ to $3x10^{-6}$ of the values causing phytotoxic effects.

<u>Chlorine</u>

Chlorine is another reactive halide that often becomes volatile in the form of hydrochloric acid (HCl) and injury symptoms are similar to those of HF damage. Tomato plants treated for 2 to 3 hours at a HCl concentration of 780 $\mu g/m^3$ demonstrated no visible injury symptoms. However, when the concentrations were raised to 1,500 and 3,400 $\mu g/m^3$, slight and severe injury was exhibited, respectively (16). Alfalfa and radishes that were treated with 250 $\mu g/m^3$ HCl for 2 hours demonstrated signs of injury (16). Using the maximum 1-hour concentration of 0.0019 $\mu g/m^3$ (transformed to HCl), the predicted concentration is $6x10^{-7}$ to $1x10^{-6}$ of the values producing phytotoxic symptoms.

<u>Polycyclic organic matter (POM) and formaldehyde</u>

With the exception of ethylene, little information exists that examines the effects of gaseous organic compounds on plant growth. Ethylene is produced naturally by plants and is responsible for many of the responses a plant produces as it ages and enters the reproductive stage of development. Ethylene is also produced by the combustion of organic material such as agricultural and industrial waste. Losses due to ethylene have been documented in a cotton field when levels of ethylene rose to above 7,500 $\mu g/m^3$. Lemons are affected by ethylene concentrations as low as 62 to 125 $\mu g/m^3$, at which point epinastic symptoms are observed (15).

By using the maximum predicted concentration of 62 $\mu g/m^3$ as a basis for risk assessment for the group of organic gases, an estimate of the impact of this group of compounds can be constructed. The maximum 1-hour concentrations of polycyclic organic matter and formaldehyde of 0.00002 and 0.03 $\mu g/m^3$, respectively, are in the range of $3x10^{-7}$ to $5x10^{-4}$ of the values causing injury.

Sulfuric acid mist

The maximum 1-hour sulfuric acid mist concentration is predicted to be 3.46 $\mu g/m^3$, which is approximately 1.4 parts per billion (ppb). Although literature pertaining to the effects of sulfuric acid on terrestrial vegetation could not be obtained, effects on aquatic macrophytes were acquired.

In a study in which the aquatic plants, hydrilla, naiad, and vallisneria were exposed to concentrations of 27 or 80 ppm of sulfuric acid, mild burning was observed around the base of the plants which came into contact with undiluted acid. In jars in which these same concentrations of acid were added homogeneously (i.e., mixed before plant exposure), no plant damage was observed (13). Because aquatic plants have a poorly developed (if existing) cuticle, they serve to indicate phytotoxicity to a greater extent than terrestrial plants. The potential phytotoxic assessment in this case is therefore more conservative than using terrestrial plant information. The maximum 1-hour concentration of 1.4 ppb in the Class I area is $2x10^{-5}$ to $5x10^{-5}$ of the values that caused either mild burning or no effects at all on aquatic vegetation.

SOIL DEPOSITED EXPOSURE: VEGETATION

The annual deposition concentrations (g/m^2) of lead, arsenic, beryllium, mercury, manganese, nickel, cadmium, chromium, copper, vanadium, selenium, antimony, barium, cobalt, and zinc were assumed to partition into the soil (bulk density of 1.25 g/cc) to a depth of 10 cm. From this soil concentration, it was assumed that equal partitioning would ensue into dry plant matter. These values are considered to be quite conservative due to the assumption that all of the elements would be 100 percent available for plant uptake and would be internalized in plant tissue at a concentration equal to that of the soil.

Maximum depositions were predicted using the ISCST model using particle size distribution for boilers firing distillate oil as presented in EPA's document, Compilation of Air Pollutant Emission Factors, AP-42, September 1991. This distribution assumes that more than 50 percent of the particles have a diameter of 10 μm or more. For the proposed sources (combustion turbines), it is likely that less than 10 percent of the particles will have diameters of 10 μm or more. Therefore, the deposition calculations provide conservative estimates of material deposited to the Class I area. The maximum depositions to the Class I area due to the proposed sources are presented in Table 2.

Antimony

Studies in which 27 trees were analyzed for antimony indicated an internal antimony concentration between 7 and 50 $\mu g/g$ in stem ash without evidence of phytotoxicity (6). The annual amount of 1.5×10^{-6} $\mu g/g$ predicted to be absorbed by vegetation is 3.0×10^{-8} to 2.2×10^{-7} of the values that caused no phytotoxicity.

Arsenic

Naturally occurring levels of arsenic in plants range from 0.01 to 5.0 $\mu g/g$ (14). A concentration of 5 to 20 $\mu g/g$ in plants is considered excessive (6). The annual amount of 2.9×10^{-7} $\mu g/g$ predicted to be absorbed by vegetation is 1.5×10^{-8} to 5.8×10^{-8} of the values that are considered excessive.

Table 2. Predicted Deposition Values for the Proposed Gas Turbines at FPC's Intercession City Facility Used to Address AQRVs at Chassahowitzka Class I Area

Constituent	Units	Proposed Maximum Emissions			Averaging Period	Units	Maximum Predicted Deposition		
		4 EA GTs	2 FA GTs	Total			4 EA GTs	2 FA GTs	Total
Generic (SO2)	TPY	2.51E+03	2.23E+03	4.74E+03	Annual	g/m2	1.60E-03	1.20E-03	2.80E-03
						ug/g	1.28E-02	9.60E-03	2.24E-02
Antimony	TPY	1.70E-01	1.51E-01	3.20E-01	Annual	g/m2	1.08E-07	8.11E-08	1.89E-07
						ug/g	8.63E-07	6.49E-07	1.51E-06
Arsenic	TPY	3.26E-02	2.90E-02	6.16E-02	Annual	g/m2	2.08E-08	1.56E-08	3.64E-08
						ug/g	1.66E-07	1.25E-07	2.91E-07
Barium	TPY	1.51E-01	1.35E-01	2.86E-01	Annual	g/m2	9.63E-08	7.25E-08	1.69E-07
						ug/g	7.70E-07	5.80E-07	1.35E-06
Beryllium	TPY	1.94E-02	1.72E-02	3.66E-02	Annual	g/m2	1.23E-08	9.28E-09	2.16E-08
						ug/g	9.88E-08	7.42E-08	1.73E-07
Cadmium	TPY	8.14E-02	7.22E-02	1.54E-01	Annual	g/m2	5.18E-08	3.89E-08	9.07E-08
						ug/g	4.14E-07	3.11E-07	7.26E-07
Chromium	TPY	3.69E-01	3.27E-01	6.96E-01	Annual	g/m2	2.35E-07	1.76E-07	4.11E-07
						ug/g	1.88E-06	1.41E-06	3.29E-06
Cobalt	TPY	7.05E-02	6.24E-02	1.33E-01	Annual	g/m2	4.49E-08	3.36E-08	7.85E-08
						ug/g	3.59E-07	2.69E-07	6.28E-07
Copper	TPY	2.17E+00	1.93E+00	4.10E+00	Annual	g/m2	1.38E-06	1.04E-06	2.42E-06
						ug/g	1.11E-05	8.31E-06	1.94E-05
Lead	TPY	6.92E-02	6.14E-02	1.31E-01	Annual	g/m2	4.40E-08	3.30E-08	7.71E-08
						ug/g	3.52E-07	2.64E-07	6.17E-07
Manganese	TPY	5.00E-02	4.44E-02	9.44E-02	Annual	g/m2	3.18E-08	2.39E-08	5.57E-08
						ug/g	2.55E-07	1.91E-07	4.46E-07
Mercury	TPY	2.33E-02	2.07E-02	4.39E-02	Annual	g/m2	1.48E-08	1.11E-08	2.59E-08
						ug/g	1.18E-07	8.91E-08	2.08E-07
Nickel	TPY	1.32E+00	1.17E+00	2.49E+00	Annual	g/m2	8.42E-07	6.30E-07	1.47E-06
						ug/g	6.73E-06	5.04E-06	1.18E-05
Selenium	TPY	1.82E-01	1.62E-01	3.44E-01	Annual	g/m2	1.16E-07	8.71E-08	2.03E-07
						ug/g	9.29E-07	6.97E-07	1.63E-06
Vanadium	TPY	5.41E-01	4.81E-01	1.02E+00	Annual	g/m2	3.45E-07	2.59E-07	6.04E-07
						ug/g	2.76E-06	2.07E-06	4.83E-06
Zinc	TPY	5.30E+00	4.71E+00	1.00E+01	Annual	g/m2	3.38E-06	2.54E-06	5.91E-06
						ug/g	2.70E-05	2.03E-05	4.73E-05

Note: Annual emissions, TPY, and impacts are based on 3,390 hours of operation for each turbine.
Deposition values, ug/g, assume constituents deposited in 125 kg of soil.

Barium

Naturally occurring levels of barium in plants range from 7.5 to 165 $\mu g/g$ (9). The annual amount of $1.4x10^{-6}$ $\mu g/g$ predicted to be absorbed by vegetation is $8.2x10^{-9}$ to $1.8x10^{-7}$ of the values at which no phytotoxic observations were noted.

Beryllium

Toxicity of plants has been reported at concentrations of 2 $\mu g/g$ in liquid culture (6). The annual amount of $1.7x10^{-7}$ $\mu g/g$ predicted to be absorbed by vegetation is $8.6x10^{-8}$ of the value at which retardation of growth occurred.

Cadmium

Cadmium is a relatively rare element that resides in nature at levels of 0.15 to 0.2 $\mu g/g$. Generally, 3 to 5 $\mu g/g$ retards the growth of plants (6). The annual amount of $7.3x10^{-7}$ $\mu g/g$ predicted to be absorbed by vegetation is $1.5x10^{-7}$ to $2.4x10^{-7}$ of the values at which retardation of growth occurred.

Chromium

A soil concentration of 1,370 to 2,740 $\mu g/g$ chromium was reported to cause chlorosis in citrus (6), but liquid cultures that contained 150 $\mu g/g$ were toxic to citrus seedlings. The annual amount of $3.3x10^{-6}$ $\mu g/g$ predicted to be absorbed by vegetation is $2.2x10^{-8}$ of the value at which toxic symptoms were observed.

Cobalt

Plant concentrations as high as 2,000 to 10,000 $\mu g/g$ cobalt have been detected in leaves of persimmon and ash, respectively (6). Cobalt was reported to cause chlorosis and stunting in a variety of plants at levels from 6 to 142 $\mu g/g$ in soils (1). The annual amount of $6.3x10^{-7}$ $\mu g/g$ predicted to be absorbed by vegetation is $4.4x10^{-9}$ to $1.1x10^{-7}$ of the values at which toxic symptoms were observed.

Copper

Copper is an essential element for plant growth. Very few instances of toxicity have been reported, and copper deficiency is more often a problem than toxicity. Citrus seedlings that were exposed to approximately 150 $\mu g/g$ of copper demonstrated appreciable chlorosis (6). The annual amount of $1.9x10^{-5}$ $\mu g/g$ predicted to be absorbed by vegetation is $1.3x10^{-7}$ of the value at which toxic symptoms were observed.

Lead

Naturally occurring levels of lead in plants range from 0.1 to 10 $\mu g/g$ with an average of 2.0 $\mu g/g$ (8). A lead soil concentration of 30 to 100 $\mu g/g$ generally retards the growth of plants (6). The annual amount of 6.2×10^{-7} $\mu g/g$ predicted to be absorbed by vegetation is 6.2×10^{-9} to 2.1×10^{-8} of the values at which growth retardation was observed.

Manganese

Manganese is another element that is essential for plant growth. However, toxicity does occur at elevated levels and a generally toxic concentration of manganese is reported to be greater than 400 to 500 $\mu g/g$ (6). The annual amount of 4.5×10^{-7} $\mu g/g$ predicted to be absorbed by vegetation is 1.1×10^{-9} of the level at which toxicity was observed.

Mercury

Although mercury compounds are toxic to bacteria and fungi, higher plants are relatively resistant to mercury poisoning. Tea plants growing above mercury-rich deposits contained as much as 3.5 $\mu g/g$ without showing signs of toxicity. Apparently healthy spanish moss plants collected had a mercury content of 0.5 $\mu g/g$ (6). From the few studies available on the effects of mercury on plants, it seems as if mercury is not concentrated to a great extent (6). The annual amount of 2.1×10^{-7} $\mu g/g$ predicted to be absorbed by vegetation is 5.9×10^{-8} to 4.1×10^{-7} of the values at which no signs of toxicity were observed.

Nickel

The general range of excessive or toxic amounts of nickel in most plant species varies from 10 to 100 ppm (8). The annual amount of 1.2×10^{-5} $\mu g/g$ predicted to be absorbed by vegetation is 1.2×10^{-8} to 1.2×10^{-7} times the values at which growth retardation was observed.

Selenium

No recorded instances of naturally occurring selenium damage have been documented to date (6). Plants absorb and accumulate selenium, but the general responses of these plants vary over such a wide range of concentrations, that a level considered toxic to plants is hard determine (6). Concentrations of selenium in plants are known to range from 3 to 4,190 $\mu g/g$. The annual amount of $1.6x10^{-6}$ $\mu g/g$ predicted to be absorbed by vegetation is $3.9x10^{-9}$ to $5.4x10^{-7}$ of the concentration at which no effects have been observed.

Vanadium

Plants absorb and accumulate vanadium differentially, with concentrations in various plants ranging from 20 to 700 $\mu g/g$ (6). However, phytotoxic responses were observed in some plants grown in soils at a concentration of 140 $\mu g/g$ (1). The annual amount of $4.8x10^{-6}$ $\mu g/g$ predicted to be absorbed by vegetation is $3.5x10^{-8}$ of the value at which phytotoxicity occurred.

Zinc

Zinc is another element that is essential for plant growth. However, toxicity does occur at elevated levels and a generally toxic concentration of zinc is reported to be greater than 300 $\mu g/g$ (5). The annual amount of $4.7x10^{-5}$ $\mu g/g$ predicted to be absorbed by vegetation is $1.6x10^{-7}$ of the value at which toxicity was observed.

In summary, the phytotoxic effects from proposed plant emissions are expected to be minimal. Safety factors as great as 10 million have been demonstrated in this assessment. It is important to note that the elements were modeled with the assumption that 100 percent was available for plant uptake which is rarely the case in a natural ecosystem.

AIRBORNE EXPOSURE: WILDLIFE

A wide range of physiological and ecological effects to fauna has been reported for gaseous and particulate pollutants (18,19). The most severe of these effects have been observed at concentrations above the secondary ambient air quality standards. Physiological and behavioral effects have been observed in experimental animals at or below these standards. No observable effects to fauna are expected at concentrations below the values reported in Table 3.

Table 3. Examples of Reported Effects of Air Pollutants at Concentrations Below National Secondary Ambient Air Quality Standards

Pollutant	Reported Effect	Concentration ($\mu g/m^3$)	Exposure
Sulfur Dioxide	Respiratory stress in guinea pigs	427 to 854	1 hour
	Respiratory stress in rats	267	7 hours/day; 5 day/week for 10 weeks
	Decreased abundance in deer mice	13-157	continually for 5 months
Nitrogen Dioxide[a,b]	Respiratory stress on mice	1,917	3 hours
	Respiratory stress in guinea pigs	96 to 958	8 hours per day for 122 days
Particulates[c]	Respiratory stress, reduced respiratory disease defenses	120 PbO_3	continually for 2 months
	Decreased respiratory disease defenses in rats, same with hamsters	100 $NiCl_2$	2 hours

[a] Gardner and Graham, 1976. In Proc. 16th Annual Harford Biol. Symp. p. 1-21.
[b] Trzeciak et al., 1977. Environ. Res. 14:87-91.
[c] Newman and Schreiber, 1988. Env. Tox. Chem. 7:381-390.

The major air quality risk to wildlife in the United States is from continuous exposure to pollutants above the National Ambient Air Quality Standards. This occurs in non-attainment areas, e.g., Los Angeles Basin. Risks to wildlife also may occur for wildlife living in the vicinity of an emission source which experiences frequent upset or episodic conditions that occur because of malfunctioning of equipment, unique meteorological conditions, or during startup (19). Under these conditions, chronic effects (e.g., particulate contamination) or acute effects (e.g., injury to health) have been observed (18).

For impacts on wildlife, the lowest threshold values of NO_x and particulates reported to cause physiological changes are shown in Table 3. These values are several orders of magnitude larger than predicted concentrations. No significant effects on terrestrial wildlife AQRVs from NO_x and particulates are expected. These results are considered indicative of the risk of other air pollutants predicted to be emitted from the facility.

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400
Lawton Chiles, Governor
Carol M. Browner, Secretary

March 9, 1992

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. R. W. Neiser, Senior Vice President
Legal and Governmental Affairs
Florida Power Corporation
3201 34th Street South
St. Petersburg, Florida 33733

Dear Mr. Neiser:

RE: PSD-FL-180, AC 49-203114

The Department acknowledges receipt of your letters dated January 23 and February 10, 1992. As explained in our February 21, 1992 letter, your application for the Intercession City facility remains incomplete.

Should you have any questions on this matter, please contact Teresa Heron (review engineer) or Cleve Holladay (meteorologist) at the above address or at (904) 488-1344.

Sincerely,

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

CHF/TH/plm
cc: C. Collins, C Dist.
K. Kosky, KBN
J. Harper, EPA
C. Shaver, NPS

P 832 538 788

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PS Form 3800, June 1990

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- Complete items 3, and 4a & b.
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Mr. R. W. Neiser, Sr. Vice Pres.
Legal and Governmental Affairs
Florida Power Corp.
3201 34th Street South
St. Petersburg, FL 33733

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MAR 20 1992

Division of Air Resources Management

Ms. Teresa Heron
Bureau of Air Regulation
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Subject: Osceola County - A.P.
Intercession City Combustion Turbines
AC 49-203114, PSD-FL-180

Dear Ms. Heron:

This correspondence clarifies the statement on page 2-1 of the report that requests an average operation of 3,390 hours per year for the six CT's (i.e., an average capacity factor of 38.7 percent) but would allow any one CT to operate up to 8,760 hours per year. Such a condition was included in permit for Florida Power Corporation's DeBary CT project (AC64-191015, PSD-FL-167). Specific Condition No. 4 restricted the maximum hourly heat input and the fuel use for each CT, and restricted the 6 CTs to a maximum annual fuel usage equivalent to 3,390 hours per year. This condition allows any one CT to operate more than 3,390 hours per year as long as the cumulative operation of the 6 CTs would not exceed the maximum annual fuel usage. This provides operational flexibility to operate the 6 CTs as required up to a plant capacity factor of 38.7 percent and would limit total SO_2 emissions.

For the Intercession City Project, a similar condition is requested. The condition requested for the 4 GE Frame EA machines are:

4. The permitted materials and utilization rates for the simple cycle gas turbines shall not exceed: (a) a maximum heat input of 1,144.3 MM Btu/hr/unit at 20°F. (b) a maximum No. 2 fuel oil consumption of 8,698 gallons/hr/unit or 106,120,560 gallons/year for 4 CTs. (c) SO_2 emissions for the 4 CTs shall not exceed 2,257 tons per year. (d) the maximum capacity factor for the 4 CTs shall not exceed 38.7 percent.

The condition requested for the 2 GE Frame FA machines are:

4. The permitted materials and utilization rates for the simple cycle gas turbines shall not exceed: (a) a maximum heat input of 2,032 MM Btu/hr/unit at 20°F. (b) a maximum No. 2 fuel oil consumption of 15,452 gallons/hr/unit or 97,238,760 gallons/year for 2 CTs. (c) SO_2 emissions for the 2 CTs shall not exceed 2,068 tons per year. (d) the maximum capacity factor for the 2 CTs shall not exceed 38.7 percent.

91015A1/12

KBN ENGINEERING AND APPLIED SCIENCES, INC.
1034 Northwest 57th Street Gainesville, Florida 32605 904/331-9000 FAX: 904/332-4189

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KBN

91015/kfk/mlb

KBN ENGINEERING AND APPLIED SCIENCES, INC.
1034 Northwest 57th Street Gainesville, Florida 32605

MAR 18 '92

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Patty:
file
I have a copy

Ms. Teresa Heron
Bureau of Air Regulation
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

KBN

Please note that the maximum fuel use is based on 20°F operating condition while the annual average fuel use is based on 59°F operating condition. The latter is an appropriate annual operating condition and was the basis for the same condition in the DeBary permit.

Please call if you have any questions.

Sincerely,

Kennard F Kosky

Kennard F. Kosky, P.E.
President and Principal Engineer

cc: S. Osborne

KFK/mlb

cc: J. Heron
C. Holladay
A. Zahm, C. Dist.
J. Harper, EPA
C. Shaver, NPS

Florida Department of Environmental Regulation
Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400
Lawton Chiles, Governor — Carol M. Browner, Secretary

February 21, 1991 — should be 1992

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. R. W. Neiser, Senior Vice-President
Legal and Governmental Affairs
Florida Power Corporation
3201 34th Street South
St. Petersburg, FL 33733

Dear Mr. Neiser:

RE: PSD-FL-180, AC 49-203114

The Department has reviewed your January 23, 1992 response to our October 31, 1991 letter requesting additional information. The Department also received additional PSD increment modeling on February 10, 1992. This letter is responding only to the information submitted on January 23.

Based on our review of that information, the Department has determined that the air quality related values (AQRV) analysis is incomplete. The AQRV analysis was only performed for sulfur dioxide, but should have at least included the impacts of all PSD significant pollutants that are to be emitted by the project. Additionally, the National Park Service (NPS) has informed the Department verbally that the AQRV analysis should include not only PSD significant impacts but also the impacts of all pollutants, including toxics, that are to be emitted by the project. We are enclosing the most recent NPS response to the Department concerning a proposed project located near a Class I area for your information. If you have any questions, please contact Cleve Holladay at the above address or at (904)488-1344.

Sincerely,

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

CHF/CH/pa
Enclosure
cc: K. Kosky, P.E.
C. Collins, C. District
J. Harper, EPA
C. Shaver, NPS

P 832 538 780

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PS Form **3800**, June 1990

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3. Article Addressed to:
Mr. R. W. Neiser
Sr. Vice-President
Florida Power Corp.
3201 34th Street South
St. Petersburg, FL 33733

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PS Form 3811, November 1990 ☆U.S. GPO: 1991—287-066 **DOMESTIC RETURN RECEIPT**

United States Department of the Interior
NATIONAL PARK SERVICE
SOUTHEAST REGIONAL OFFICE
75 Spring Street, S.W.
Atlanta, Georgia 30303

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:

N3615 (SER-ODN)

RECEIVED
FEB 21 1992
Division of Air Resources Management

FEB 20 1992

Mr. C.H. Fancy, P.E., Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Fancy:

We have reviewed the Indiantown Cogeneration, L.P. (Indiantown) Electric Power Plant Site Technical Evaluation and Preliminary Determination Document regarding a proposed cogeneration facility near Indiantown, Florida. The Indiantown facility will be a major source of nitrogen oxides (NO_x), carbon monoxide, particulate matter, and sulfur dioxide (SO_2), and will be located approximately 145 km north of Everglades NP, a Class I air quality area administered by the National Park Service. We have the following comments regarding the Technical Evaluation and Preliminary Determination Document.

We agree that the use of a baghouse to control particulate matter emissions, and a high efficiency (95 percent) spray dryer absorber to remove SO_2 represents the best available control technology for the proposed boiler. For NO_x control, Indiantown proposes to use advanced combustion controls, low-NO_x burners, and selective non-catalytic reduction (SNCR), resulting in a NO_x limit of 0.17 pounds per million Btu (lb/MMBtu).

We understand that Indiantown's proposed NO_x controls are the same as those proposed by Keystone Cogeneration Systems (Keystone) in Gloucester County, New Jersey. The Keystone permit allows an initial maximum NO_x rate of 0.17 lb/MMBtu, but also includes a condition that requires Keystone to design and optimize the SNCR system to achieve a NO_x emission rate of less than 0.10 lb/MMBtu. Another condition in the Keystone permit states that at the end of the first 2-year operating period, the 0.17 lb/MMBtu limit shall be revised downward to reflect the rate that is demonstrated to be consistently achieved by the SNCR system. We recommend that if Indiantown does install the SNCR system, they be required to meet similar conditions as those in the Keystone permit.

As you know, EPA-Region 4 recently revised the PSD permit for Orlando Utilities Stanton Unit 2. The permit now requires Orlando Utilities to install a Selective Catalytic Reduction (SCR) system on Unit 2 to reduce NO_x emissions. The SCR system is to be designed to achieve a NO_x emission rate of less than 0.10 lb/MMBtu. Similarly, in December 1990, the New Jersey Department of Environmental Protection granted a permit to Chambers Cogeneration that requires a SCR system designed to meet a 0.10 lb/MMBtu limit. Finally, the Virginia Department of Air Pollution Control recently issued draft permits for two coal-fired cogeneration facilities that require SCR to control NO_x emissions (Hadson Power and Cogentrix-Dinwiddie). Given the recent developments in the SCR technology and the fact that other permitting authorities are now requiring SCR for coal-fired boilers, we ask that you require Indiantown to reconsider SCR for their proposed boiler as well.

Indiantown used the EPA ISCST model for the cumulative Class I increment analysis and included a total of 23 increment-consuming sources. The results of this analysis show that once in 1983 and once again in 1984, the 3-hour and 24-hour Class I SO_2 increments were exceeded (highest concentrations of 30.5 micrograms per cubic meter (ug/m^3) and 6.0 ug/m^3, respectively). However, the high second-high concentrations during these episodes were below the allowable increment. Therefore, the class I increments for both the 3-hour and 24-hour averaging periods are exceeded, but not yet violated. The high second-high concentration for 1983 data was 4.8 ug/m^3, which is 96 percent of the class I increment of 5 ug/m^3. As you may know, if a proposed source will cause or contribute to a Class I increment violation, the applicant will need to ask us to certify that there will be no adverse impacts to Class I area resources before the project can be permitted.

Indiantown only reported the high and high-second-high concentrations per year for our review. In the future, if the applicant is modeling with the ISCST model, we ask that they provide us with the "Max 50" table so that we can know more about the location and magnitude of impacts at other receptors in the park. In addition, Indiantown's total ambient analysis was overly conservative because they modeled all PSD and existing sources, and then added those concentrations to monitored ambient background levels. A more realistic total ambient impacts analysis for Class I areas is performed by modeling the proposed source and any newly permitted, but not yet operating, source and adding these impacts to the ambient background concentrations.

Indiantown performed a visibility analysis using the EPA model VISCREEN. The proposed project passed the Level I VISCREEN test, indicating that the proposed emissions would have low potential for visibility impairment due to plume impacts in Everglades NP.

In our review of the Florida Power and Light Technical Evaluation and Preliminary Determination Document (May 1991) we identified our concerns with the effects emissions from the proposed facility may have on the air quality related values (AQRVs) at Everglades NP. We also have the same general concerns with the Indiantown project. The Indiantown Technical Evaluation and Preliminary Determination Document states that the predicted emissions from the proposed project, including a background concentration, will be below the State's Ambient Air Quality Standards including the secondary National Ambient Air Quality Standards (NAAQS), which were designed to protect vegetation from the adverse impacts of air pollutants. The document states that this project is not expected to have a harmful impact on soils and vegetation. We wish to again clarify that there are documented effects below the NAAQS, and that compliance with the NAAQS does not ensure that there will be no negative impacts. The secondary NAAQS are based primarily on effects on cash crops and may not reflect a level of protection for all AQRVs such as native vegetation found in Class I areas. In addition, the secondary NAAQS are national levels set to protect against effects due to multiple and diverse sources and may not provide adequate protection for sensitive species found in only one area of the country, nor do they address synergistic effects of multiple pollutants. Therefore, there may be instances, and ongoing studies are confirming this, where adverse effects to AQRVs can occur at levels below the NAAQS.

The location of Everglades NP at the southern tip of the Florida peninsula allows for a unique ecosystem whose native communities reflect both temperate and subtropical influences. Studies have shown that fertilization can decrease the frost hardiness of certain plant species. We are concerned that the nitrates resulting from emissions would favor more frost tolerant species, thereby causing major shifts in community composition and structure. For example, South Florida slash pine (Pinus elliotti var. densa) is a major constituent of the upland park community, and is the predominant canopy tree species. The slash pines in the park grow on a limestone-derived soil, and they are most likely nitrogen limited. Fertilization by anthropogenic nitrogen could cause the pines to continue growing into the winter, increasing the likelihood of frost damage. Over time, the slash pines could be replaced by a tree species that is less responsive to fertilization.

We are also concerned about the roles that nitrogen oxides and volatile organic compounds play as ozone precursors. Fumigation studies conducted in chambers have shown that slash pine seedlings are particularly sensitive to chronic ozone concentrations below the NAAQS. The seedlings showed reductions in root growth even before visible foliar injury was observed. We have not yet duplicated the experiment in the field to determine if current ozone levels in Everglades NP induce the same degree of growth reductions as were observed in the chambers.

Lichens and bryophytes are common in the park, and due to their unique morphology, are particularly sensitive to air pollutants such as sulfur dioxide. The nitrates in acid rain may also be harmful to bryophytes, particularly to tank bryophytes which accumulate rainwater in a cup-shaped basin formed by overlapping leaves. Two species of epiphytes found in the park, Tillandsia flexuosa, a bromeliad, and Epidendrum nocturnum, an orchid, are considered threatened under the Preservation of Native Flora of Florida Act. The sensitivity of these two threatened species to air pollutants is not known at this time.

Nitrogen oxide and sulfur dioxide emissions may lead to the acidification of the huge wetland system that comprises much of the park. Acidification leads to changes in the flora and fauna of an aquatic ecosystem.

Finally, we are concerned about the high levels of mercury that have been found in the federally endangered Florida panther and other animals in the park. It is not known at this time what the source of the mercury is, but we encourage you to limit mercury emissions in the vicinity of the park until the source can be identified and remedial action taken.

If you have any questions regarding this matter, please contact Dee Morse of our Air Quality Division in Denver at 303-969-2071.

Sincerely,

C. W. Ogle

FOR
James W. Coleman, Jr.
Regional Director
Southeast Region

B. Andrews
M. Flewett
J. Rogers
J. Goldman, SE Dist.
B. Sorrentino, PG+E/Bechtel
R. Owen

Florida Power
CORPORATION

RECEIVED
JAN 23 1992
Bureau of
Air Regulation

January 22, 1992

Mr. C. H. Fancy, P.E., Chief
Bureau of Air Regulation
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Fancy:

Re: Osceola County - A.P.
Florida Power Corporation
Intercession City
AC49-203114; PSD-FL-180

This correspondence completes the information requested in your letter of October 31, 1991, concerning this project. Information about the best available control technology (BACT) analysis, general description of the proposed turbines, and impact analysis of air toxic compounds were presented in my letter of December 16, 1991. This submittal addresses the impact of this project on the Chassahowitzka National Wilderness Area (NWA) concerning the prevention of significant deterioration (PSD) Class I increment consumption of sulfur dioxide (SO_2) concentrations and air quality related values (AQRV).

At the request of Florida Power Corporation (FPC), KBN Engineering and Applied Sciences, Inc. (KBN) has performed an air quality modeling analysis to determine the maximum PSD increment consumption of SO_2 concentrations at the PSD Class I area of the Chassahowitzka NWA. This analysis included modeling with the Industrial Source Complex Short-Term (ISCST) model using the SO_2 emissions from FPC's proposed project at Intercession City with a revised inventory of other increment consuming major and minor sources. Based on the use of the revised inventory, the maximum concentrations are predicted to comply with the PSD Class I increments with the ISCST model. Therefore, the potential use of the MESOPUFF II model, which has been proposed for this project, is not warranted at this time.

KBN has also performed an AQRV analysis related to the potential impacts of the proposed project on vegetation, soils, wildlife, and visibility in the Class I area. The predicted increase in SO_2 concentrations reported herein represent no threat to vegetation, soils, wildlife, and visibility in the Class I area. Air concentrations are predicted to be below those which have been shown to damage SO_2-sensitive plants. Soil deposition of SO_2 would be expected to have little effect on the pH or sulfur content of the soil present in the preserve area.

Attachment 1 to this letter presents the approaches, methods, and results of the PSD increment consumption and AQRV analyses. Attachment 2 contains the data (e.g., construction or operating permit) to support the revised emission inventory.

Enclosed are the paper and disk copies of the ISCST model runs. If you have any questions concerning this analysis, please contact me at your earliest convenience.

Sincerely,

W W Vierday

W. W. Vierday, Manager
Environmental Programs - Licensing

Enclosures

cc: K. F. Kosky (KBN)

pag/JAG.Fancy.Let

cc: J. Heron
C. Holladay, C. Dist.
A. Zahm,
J. Harper, EPA
C. Shaver, NPS

ATTACHMENT 1

Prevention of Significant Deterioration (PSD) Class I Increment Consumption and Air Quality Related Values (AQRV) Analyses of the Proposed Combustion Turbines at the Florida Power Corporation's (FPC) Intercession City Facility

1.0 INTRODUCTION

KBN Engineering and Applied Sciences, Inc. (KBN) has performed air quality analyses to determine the impact of sulfur dioxide (SO_2) concentrations on the Chassahowitzka National Wilderness Area (NWA) due to emissions of the proposed combustion turbines at Florida Power Corporation's (FPC) Intercession Facility. The following sections present the approaches, methods, and results of the respective Prevention of Significant Deterioration (PSD) Class I increment consumption and air quality related values (AQRV) analyses.

2.0 PREVENTION OF SIGNIFICANT DETERIORATION CLASS I INCREMENT ANALYSIS

An air quality modeling analysis was performed to determine the maximum SO_2 PSD Class I increment consumption at the Chassahowitzka PSD Class I area. This analysis included modeling with the Industrial Source Complex Short-Term (ISCST) model using the SO_2 emissions from FPC's proposed project at Intercession City with a revised inventory of other increment consuming major and minor sources. Based on the use of the revised inventory, the maximum concentrations are predicted to comply with the PSD Class I increments with the ISCST model. Therefore, the potential use of the MESOPUFF II model, which has been proposed for this project, is not warranted at this time.

The original modeling inventory of PSD increment affecting sources considered in the analysis is presented in Table 1. This inventory was provided to KBN by the Florida Department of Environmental Regulation (FDER). Several modifications have been made to this inventory which are based on updated information made available to KBN. These modifications, shown in Table 2, are as follows:

1. Florida Crushed Stone--the operating temperature and emissions were updated based on information in the final order modifying the conditions for certification.
2. TECO Big Bend Unit 4--stack height, stack diameter, exit gas velocity, and UTM coordinates were updated based on recent information provided by TECO.

3. TECO Big Bend Units 1 and 2--these units share a common stack, therefore, their exit gas volumes were combined. Temperature, exit gas velocity, and UTM coordinates were updated based on information provided by TECO.
4. Dixie Lime and Stone Company--these sources were removed from the inventory since all source permits were canceled in December 1988.
5. Dairy Service Corporation--these sources were removed from the inventory since the permit was originally issued before the minor source baseline date.
6. Asphalt Pavers--the current source in the inventory was identified as Asphalt Pavers No. 4. The Deltona plant from the original inventory is now known as Asphalt Pavers No. 3. The source and emission data have been updated for both units. Updated operating data were based on stack tests performed by Koogler and Associates (Koogler), Gainesville, Florida. Also, the Asphalt Pavers No. 4 unit was assumed to operate for 12 hours each day, 6 a.m. to 6 p.m.
7. Chemical Lime Boilers 1 and 2--These sources were removed from the inventory since the boilers were never permitted for this site.
8. Agrico--this source was added to the inventory since it is currently undergoing permit review by Florida Department of Environmental Regulation (FDER). The PSD Class I increment consumption analysis was performed with and without this facility considered in the modeling.

Documentation for these updates is provided in Attachment 2.

In addition to these updates, minor sources from Sumter, Citrus, Hernando, and Pasco Counties were added to the inventory and also are presented in Table 2. The inventory of minor sources and some support documentation was originally provided to KBN by Koogler. The construction and/or operating permits for most of these sources were obtained by KBN from FDER Southwest District Office in Tampa, and reviewed to determine consistency with data obtained from Koogler. If the stack and operating data from the current construction or operating permit did not match those provided by Koogler, information from the permit was used in the modeling analysis (see Attachment 2 for copies of permits).

For asphalt batch units, the SO_2 emissions were reduced by 50 percent due to SO_2 attenuation by adsorption on the alkaline aggregate. This emission reduction is based on stack tests performed by Koogler which demonstrated that the measured SO_2 emissions from the stack tests were more than 50 percent lower than the potential SO_2 emissions calculated from fuel use and known sulfur content in the fuel. Also, emission factors for a conventional asphaltic concrete plant, presented in the U.S. Environmental Protection Agency (EPA) document, "Compilation of Air Pollutant Emission Factors", AP-42, September 1990, indicate that the SO_2 may be reduced 50 percent due to adsorption. Therefore, the emission rates used in the modeling for Asphalt Pavers No. 3, Asphalt Pavers No. 4, Oman Construction, Overstreet Paving, and Couch Construction (Odessa and Zephyrhills) are 50 percent of the emission rates presented in the permits that were calculated from fuel use data.

SO_2 impacts were predicted using the ISCST model at 13 discrete receptors surrounding the PSD Class I area. These receptors were used by FDER and previously submitted for the FPC DeBary project. The impacts were predicted using a 5-year meteorological record (1982 through 1986) of surface and mixing height data from the National Weather Service (NWS) stations in Orlando and Ruskin, respectively.

Maximum predicted impacts for the 5 years of meteorological data are presented in Table 3. The results are presented which include and exclude the Agrico facility from the emission inventory. The overall highest, second-highest 3- and 24-hour impacts due to all sources, including Agrico, are predicted to be 19.3 micrograms per cubic meter ($\mu g/m^3$) and 4.87 $\mu g/m^3$, respectively. The overall maximum annual average concentration is predicted to be 0.37 $\mu g/m^3$. The overall highest, second-highest 3- and 24-hour impacts due to all sources, excluding Agrico, are predicted to be 19.3 $\mu g/m^3$ and 4.72 $\mu g/m^3$, respectively. The overall maximum annual average concentration is predicted to be 0.36 $\mu g/m^3$. These impacts are below the SO_2 PSD Class I increment values.

3.0 <u>AIR QUALITY RELATED VALUE ANALYSIS</u>

3.1 POTENTIAL IMPACTS ON VEGETATION

The Chassahowitzka NWA is characterized by vegetation which includes flatwoods, brackish-water, marine, and halophytic terrestrial species. Predominant tree species are slash pine, laurel oak, sweetgum, and palm. Other plants in the preserve include needlegrass rush, seashore saltgrass, marsh hay, and red mangrove.

SO_2 concentrations at elevated levels have long been known to cause injury to plants. Acute SO_2 injury usually develops within a few hours or days of exposure and symptoms include marginal, flecked, and/or intercoastal necrotic areas which appear water-soaked and dullish green initially. This injury generally occurs to younger leaves. Chronic injury usually is evident by signs of chlorosis, bronzing, premature senescence, reduced growth and possible tissue necrosis (EPA, 1982). Phytotoxic symptoms demonstrated by plants can occur as low as 88 $\mu g/m^3$ (USDHEW, 1971). However, this occurs with the more primitive plants (i.e., mosses, ferns, lichens).

Many studies have been conducted to determine the effects of high concentration, short-term SO_2 exposure on natural community vegetation. Sensitive plants include ragweed, legumes, blackberry, southern pine, and red and black oak. These species are injured by exposure to 3-hour SO_2 concentrations from 790 to 1,570 $\mu g/m^3$. Intermediate plants include locust and sweetgum. These species are injured by exposure to 3-hour SO_2 concentrations from 1,570 to 2,100 $\mu g/m^3$. Resistant species (injured at concentrations above 2,100 $\mu g/m^3$ for 3 hours) include white oak and dogwood (EPA, 1982).

A study of native Floridian species (Woltz and Howe, 1981) demonstrated that cypress, slash pine, live oak, and mangrove exposed to 1,300 $\mu g/m^3$ SO_2 for 8 hours were not visibly damaged. This supports the levels cited by other researchers on the effects of SO_2 on vegetation. A corroborative study (McLaughlin and Lee, 1974) demonstrated that approximately 20 percent of a cross-section of plants ranging from sensitive to tolerant were visibly injured at 3-hour SO_2 concentrations of 920 $\mu g/m^3$.

In order to assess the total air quality impacts at the Class I area that can be compared to the reported effects levels, the predicted impacts due to the PSD increment affecting sources were added to background concentrations applicable to the 3-hour, 24-hour, and annual averaging periods. The background concentrations are assumed to be representative of impacts from sources not modeled and available from existing ambient monitoring data. In this analysis, ambient data collected in 1990 from a monitoring station (Station No. 0580-005-J02) located about 20 kilometers (km) from the Class I area were used to represent background concentrations. The annual concentration of 7 $\mu g/m^3$ and second-highest 3-hour and 24-hour concentrations of 248 and 53 $\mu g/m^3$, respectively, were assumed to represent background concentrations.

By adding the maximum predicted 3-hour SO_2 concentration of 19.3 $\mu g/m^3$ to the assumed background SO_2 concentration of 248 $\mu g/m^3$, a maximum total SO_2 concentration of 267 $\mu g/m^3$ would be expected in the Class I area. By comparing this concentration to those causing injury to native species, the SO_2-sensitive species (or more tolerant species) would not be damaged by the maximum predicted concentrations. By comparison with concentrations that cause plant injury, the maximum predicted SO_2 concentration of 248 $\mu g/m^3$ is approximately 31 percent of the most conservative concentration (i.e., 790 $\mu g/m^3$) that causes injury to SO_2-sensitive species.

The maximum total 24-hour and annual SO_2 concentrations of 58 and 7.4 $\mu g/m^3$, respectively, that would be predicted within the Class I area represent levels which are lower than those known to cause damage to test species. Jack pine seedlings exposed to SO_2 concentrations from 470 to 520 $\mu g/m^3$ for 24 hours demonstrated inhibition of foliar lipid synthesis; however, this inhibition was reversible (Malhotra and Kahn, 1978). Black oak exposed to 1,310 $\mu g/m^3$ SO_2 for 24 hours a day for 1 week demonstrated a 48 percent reduction in photosynthesis (Carlson, 1979). By comparison of these levels, it is apparent that the maximum predicted 24-hour concentrations are well below the concentrations that cause damage in SO_2-sensitive plants. The maximum annual concentration of 0.4 $\mu g/m^3$ due to the PSD sources adds slightly to the background levels and poses a minimal threat to area vegetation.

3.2 POTENTIAL IMPACTS ON SOILS

The majority of the soil in the Class I area is classified as Weekiwachee--Durbin muck. This is an euic, hyperthermic typic sufihemist that is characterized by high levels of sulfur and organic matter. This soil is flooded daily with the advent of high tide and the pH ranges between 6.1 and 7.8. The upper level of this soil may contain as much as 4 percent sulfur (USDA, 1991).

The greatest threat to soils from increased SO_2 deposition is a decrease in pH or an increase of sulfur to levels considered unnatural or potentially toxic. Although ground deposition was not calculated, it is evident that the amount of SO_2 deposited would be inconsequential in light of the inherent sulfur content. The regular flooding of these soils by the Gulf of Mexico regulates the pH and any rise in acidity in the soil would be buffered by this activity.

3.3 POTENTIAL IMPACTS ON WILDLIFE

The predicted SO_2 concentrations are well below the lowest observed effects levels in animals (Newman and Schreiber, 1988). Given these conditions, the proposed source's emissions poses no risk to wildlife. Because predicted levels are below those known to cause effect to vegetation, there is also no risk.

3.4 VISIBILITY IMPAIRMENT ANALYSIS

A visibility impairment analysis was performed to determine the potential adverse plume visibility effects of the proposed turbines' emissions on the Class I area. The analysis was based on using the screening approach suggested in the "Workbook for Plume Visual Impact Screening and Analysis (EPA, 1988), which has been computerized by EPA in a program called the VISCREEN model. The VISCREEN model is currently recommended for use by EPA to assess visual plume impacts in regulatory applications. The model can be applied in successive levels of screening (i.e., Levels 1, 2, and 3). If the Level-1 screening calculations demonstrate that during worst-case meteorological conditions a plume is imperceptible or, if perceptible, is not likely to be considered objectionable (i.e., "adverse" or "significant" in the language of the EPA PSD and visibility regulations), further analysis of plume visual impact would not be required as part of the air quality review of the source.

For this analysis, a Level-1 screening analysis was performed. The input parameters and results of the proposed turbines' potential visibility impairment at the Class I area are presented in Table 4. The emission rates are based on the maximum short-term emission rates for each turbine. The other parameters input to the model were based upon default values given in the Workbook and incorporated in the computer model. As shown in Table 4, the proposed emissions are calculated to be below the Level-1 visibility screening criteria. As a result, it is unlikely that emissions from the proposed turbines will cause adverse visibility impairment in the Class I area of the Chassahowitzka National Wilderness Area.

4.0 REFERENCES

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Malhotra, S.S. and A.A. Kahn. 1978. Effect of Sulfur Dioxide Fumigation on Lipid Biosynthesis in Pine Needles. Phytochemistry 17:241-244.

McLaughlin, S.B. and N.T. Lee. 1974. Botanical Studies in the Vicinity of the Widows Creek Steam Plant. Review of Air Pollution Effects Studies, 1952-1972, and Results of 1973 Surveys. Internal Report I-EB-74-1, TVA.

Newman, J.R., and Schreiber, 1988. Air Pollution and Wildlife Toxicology. Environmental Toxicology and Chemistry 7:381-390.

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United States Environmental Protection Agency. 1982. Air Quality Criteria for Particulate Matter and Sulfur Oxides. Vol. 3.

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Woltz, S.S. and T.K. Howe. 1981. Effects of Coal Burning Emissions on Florida Agriculture. In: The Impact of Increased Coal Use in Florida. Interdisciplinary Center for Aeronomy and (other) Atmospheric Sciences. University of Florida, Gainesville, Florida.

Table 1. Summary of SO2 PSD Emission Sources and Associated Stack and Operating Data as Provided by FDER

ISCST Source Number	Source Description	UTM Coordinates (m) East	UTM Coordinates (m) North	Stack Data (m) Height	Stack Data (m) Diameter	Operating Data Temperature (K)	Operating Data Velocity (m/sec)	SO2 Emission Rate (g/s)
99002	FPC/DeBary Prop.Turbines at 20F	467500	3197200	15.2	4.21	819.8	56.21	466.4
99005	FPC/Int.City Prop 7EA Turbines	446300	3126000	15.2	4.21	819.8	56.21	310.9
99008	FPC/Int.City Prop 7FA Turbines	446300	3126000	15.2	7.04	880.8	32.07	276.1
1	Florida Crushed Stone Kiln	360008	3162398	97.6	4.88	381.2	13.71	121.6
6	CF Ind. Baseline C	388000	3116000	60.3	2.44	353.0	16.40	-50.4
7	CF Ind. Proposed C	388000	3116000	60.3	2.44	353.0	17.77	54.6
9	CF Ind. Baseline D	388000	3116000	60.3	2.44	353.0	16.40	-50.4
10	CF Ind. Proposed D	388000	3116000	60.3	2.44	353.0	17.77	54.6
22	Florida Mining & Materials	356200	3169900	27.4	4.88	470.2	7.48	1.45
30	TECO Big Bend- Unit 4	361500	3075000	150.3	7.36	342.2	20.10	654.7
31	TECO Big Bend- Unit 1 (24-hr)	361600	3075000	149.4	7.32	405.0	13.71	-1218
32	TECO Big Bend- Unit 2 (24-hr)	361600	3075000	149.4	7.32	405.0	12.80	-1218
33	TECO Big Bend- Unit 3 (24-hr)	361600	3075000	149.4	7.32	410.0	14.33	-1218
40	Pasco County RRF	347100	3139200	83.8	3.05	394.3	15.70	14.1
50	DLS Kiln 2	397200	3182600	21.4	1.41	391.2	12.70	1.3
51	DLS Lime Dryer	397200	3182600	9.3	1.21	329.2	13.00	7.5
52	DLS Kiln 1	397200	3182600	21.1	1.21	391.2	13.70	1.3
61	Evans Packing	383300	3135800	12.3	0.4	466.2	9.20	0.2
70	Asphalt Pavers	361400	3168400	8.5	1.21	366.2	17.10	7.4
81	Dairy Service- boiler	364200	3158300	9.3	0.6	477.2	10.60	4.7
82	Dairy Service- dryer	364200	3158300	18.4	0.8	336.2	12.50	4.7
83	Deltona	359800	3164000	7.6	1.81	347.2	5.00	1.4
89	Chem Lime boilers 1 & 2	359400	3162300	19	0.5	314.2	11.30	0.2
90	Lakeland Utilities CT	409185	3102754	30.5	5.79	783.2	28.22	29.11
91	IMC SAP #1,2,3 Baseline	396600	3078900	61	2.6	350.0	14.28	-170.1
92	IMC SAP #1,2,3 Projected	396600	3078900	61	2.6	350.0	15.31	182.85
93	IMC SAP #4,5 Projected	396600	3078900	60.7	2.6	350.0	15.31	121.9
94	IMC DAP	396600	3078900	36.6	1.83	319.1	20.15	5.54
101	Pasco Co. Cogeneration Facil.	385600	3139000	30.5	3.35	384.3	17.13	5.04
102	Lake Co. Cogeneration Facil.	434000	3198800	30.5	3.35	384.3	17.13	5.04

Table 2. Summary of SO2 Emission Source Stack and Operating Data Used in the Modeling Analysis (Metric Units)

ISCST Source Number	Source Description	UTM Coordinates(m) East	UTM Coordinates(m) North	Stack Data (m) Height	Stack Data (m) Diameter	Operating Data Temperature (K)	Operating Data Velocity (m/sec)	Modeled Emissions (g/sec)
99002	FPC/Debary Prop Turbines	467500.	3197200.	15.2	4.21	819.8	56.21	466.40
99005	FPC/Int. City Prop Turbines	446300.	3126000.	15.2	4.21	819.8	56.21	310.90
99008	FPC/Int. City Prop Turbines	446300.	3126000.	15.2	7.04	880.8	32.07	276.10
1	Florida Crushed Stone CPL	360008.	3162398.	97.6	4.88	442.0	23.23	98.40
6	CF Ind. Baseline C	388000.	3116000.	60.3	2.44	353.0	16.40	-50.40
7	CF Ind. Proposed C	388000.	3116000.	60.3	2.44	353.0	17.77	54.60
9	CF Ind. Baseline D	388000.	3116000.	60.3	2.44	353.0	16.40	-50.40
10	CF Ind. Proposed D	388000.	3116000.	60.3	2.44	353.0	17.77	54.60
22	Florida Mining & Materials	356200.	3169900.	27.4	4.88	470.2	7.48	1.45
30	TECO Big Bend- Unit 4	361900.	3075000.	149.4	7.32	342.2	19.81	654.70
31	TECO Big Bend- Units 1&2	361900.	3075000.	149.4	7.32	422.0	28.65	-2436.00
33	TECO Big Bend- Unit 3	361900.	3075000.	149.4	7.32	418.0	14.33	-1218.00
40	Pasco County RRF	347100.	3139200.	83.8	3.05	394.3	15.70	14.10
61	Evans Packing	383300.	3135800.	12.3	0.40	466.2	9.20	0.20
70	Asphalt Pavers No. 4	361400.	3168400.	8.5	1.08	357.4	10.95	2.25
71	Asphalt Pavers No. 3	359900.	3162400.	12.2	1.37	377.0	10.58	2.25
90	Lakeland Utilities CT	409185.	3102754.	30.5	5.79	783.2	28.22	29.11
91	IMC SAP #1,2,3 Baseline	396600.	3078900.	61.0	2.60	350.0	14.28	-170.10
92	IMC SAP #1,2,3 Projected	396600.	3078900.	61.0	2.60	350.0	15.31	182.85
93	IMC SAP #4,5 Projected	396600.	3078900.	60.7	2.60	350.0	15.31	121.90
94	IMC DAP	396600.	3078900.	36.6	1.83	319.1	20.15	5.54
101	Proposed Pasco Co. Cogen.	385600.	3139000.	30.5	3.35	384.3	17.13	5.04
102	Proposed Lake Co. Cogen.	434000.	3198800.	30.5	3.35	384.3	17.13	5.04
250	FDOC Boiler #3	382200.	3166100.	9.1	0.61	478.0	4.57	2.99
260	E. R. Jahna (lime dryer)	386700.	3155800.	10.7	1.83	327.0	8.99	0.82
270	Oman Const (asphalt)	359800.	3164900.	7.6	1.83	347.0	6.29	2.09
280	Dris Paving (asphalt)	340600.	3119200.	12.2	3.05	339.0	6.47	0.23
290	Overstreet Pav. (asphalt)	355900.	3143700.	9.1	1.30	408.0	16.00	3.67
300	New Port Richey Hosp Blr#1	331200.	3124500.	11.0	0.31	544.0	3.88	0.06
310	New Port Richey Hosp Blr#2	331200.	3124500.	11.0	0.31	544.0	3.88	0.03
320	Hosp Corp of Am Boiler #1	333400.	3141000.	11.0	0.31	533.0	4.00	0.08
330	Hosp Corp of Am Boiler #2	333400.	3141000.	11.0	0.31	533.0	4.00	0.08
340	Couch Const-Odessa (asphalt)	340700.	3119500.	9.1	1.40	436.0	22.30	7.25
350	Couch Const-Zephyrhills (asphalt)	390300.	3129400.	6.1	1.38	422.0	21.00	3.54
400	Agrico Baseline	407500.	3071300.	45.7	1.60	350.0	26.40	-75.60
410	Agrico Proposed	407500.	3071300.	45.7	1.60	350.0	39.06	113.50

OUC Stanton 1
OUC Stanton 2

Table 3. Maximum Predicted SO2 Concentrations from the Screening Analysis for Comparison to PSD Class I Increments

Averaging Period	Maximum Concentration ($\mu g/m^3$)	Receptor Location (UTM) East (km)	Receptor Location (UTM) North (km)	Period Julian Day	Period Hour Ending	Period Year
>> Including Agrico Source <<						
3-Hour*	19.3	341.1	3183.4	107	21	1982
	18.0	342.0	3174.0	251	21	1983
	19.3	343.7	3178.3	140	24	1984
	18.1	342.4	3180.6	242	3	1985
	18.7	341.1	3183.4	298	21	1986
24-Hour*	4.29	343.7	3178.3	92	24	1982
	4.61	342.0	3174.0	104	24	1983
	4.34	342.0	3174.0	144	24	1984
	4.13	339.0	3183.4	252	24	1985
	4.87	342.0	3174.0	343	24	1986
Annual	0.31	343.7	3178.3	-	-	1982
	0.18	331.5	3183.4	-	-	1983
	0.37	342.0	3174.0	-	-	1984
	0.20	340.3	3165.7	-	-	1985
	0.26	342.0	3174.0	-	-	1986
>> Excluding Agrico Source <<						
3-Hour*	19.3	341.1	3183.4	107	21	1982
	18.0	342.0	3174.0	251	21	1983
	19.3	343.7	3178.3	140	24	1984
	18.1	342.4	3180.6	242	3	1985
	18.7	341.1	3183.4	298	21	1986
24-Hour*	4.27	343.7	3178.3	92	24	1982
	4.59	342.0	3174.0	104	24	1983
	4.34	342.0	3174.0	144	24	1984
	4.11	339.0	3183.4	252	24	1985
	4.72	342.0	3174.0	343	24	1986
Annual	0.29	343.7	3178.3	-	-	1982
	0.17	331.5	3183.4	-	-	1983
	0.36	342.0	3174.0	-	-	1984
	0.18	340.3	3165.7	-	-	1985
	0.25	342.0	3174.0	-	-	1986

Note: - = Not applicable.
$\mu g/m^3$ = micrograms per cubic meter.
km = kilometers.

* Highest, second-highest concentrations predicted for this averaging period.

Table 4. Visual Effects Screening Analysis for the Proposed Combustion Turbines at the FPC Intercession City on the Chassahowitzka PSD Class I Area (Output from the VISCREEN Model)

Visual Effects Analysis: Level-1 Screening

Input Emissions for

Particulates	94.00	LB /HR
NOx (as NO2)	1531.00	LB /HR
Primary NO2	.00	LB /HR
Soot	.00	LB /HR
Primary SO4	407.76	LB /HR

**** Default Particle Characteristics Assumed

Transport Scenario Specifications:

Background Ozone:	.04	ppm
Background Visual Range:	25.00	km
Source-Observer Distance:	113.00	km
Min. Source-Class I Distance:	113.00	km
Max. Source-Class I Distance:	133.00	km
Plume-Source-Observer Angle:	11.25	degrees

Stability: 6

Wind Speed: 1.00 m/s

R E S U L T S

Asterisks (*) indicate plume impacts that exceed screening criteria

Maximum Visual Impacts INSIDE Class I Area

Screening Criteria ARE NOT Exceeded

					Delta E		Contrast	
Backgrnd	Theta	Azi	Distance	Alpha	Crit	Plume	Crit	Plume
SKY	10.	84.	113.0	84.	2.00	.116	.05	.001
SKY	140.	84.	113.0	84.	2.00	.080	.05	-.004
TERRAIN	10.	84.	113.0	84.	2.00	.038	.05	.000
TERRAIN	140.	84.	113.0	84.	2.00	.011	.05	.000

Maximum Visual Impacts OUTSIDE Class I Area

Screening Criteria ARE NOT Exceeded

					Delta E		Contrast	
Backgrnd	Theta	Azi	Distance	Alpha	Crit	Plume	Crit	Plume
SKY	10.	75.	109.4	94.	2.00	.120	.05	.001
SKY	140.	75.	109.4	94.	2.00	.083	.05	-.004
TERRAIN	10.	65.	105.4	104.	2.00	.055	.05	.000
TERRAIN	140.	65.	105.4	104.	2.00	.015	.05	.000

ATTACHMENT 2

Support Material for Revised SO_2 Emission Inventory

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

IN RE:

FLORIDA CRUSHED STONE COMPANY
PROPOSED BROOKSVILLE POWER PLANT
MODIFICATION OF TERMS AND
CONDITIONS OF CERTIFICATION
NO. PA 82-17
HERNANDO COUNTY

OGC FILE NO: 84-0674

CPL EMISSION LIMITS

FINAL ORDER MODIFYING
CONDITIONS OF CERTIFICATION

The Florida Department of Environmental Regulation, after notice and opportunity for hearing, modifies the conditions of certification for the Florida Crushed Stone Power Plant pursuant to Section 403.516(1), Florida Statutes, and Section XXV of the General Conditions of Certification, which delegated modifications of emission limitation conditions to the Department.

1. On August 9, 1984, Florida Crushed Stone Company submitted a letter to the Department requesting modification of the existing Conditions of Certification for its proposed Brooksville Power Plant to allow construction of a fluidized bed lime kiln in conjunction with the power boiler to reduce sulfur oxide emissions.

2. On April 19, 1985, a Notice of Request for Modification of Power Plant Certification was published in the Florida Administrative Weekly with a provision that a party to the certification proceeding would have until June 3, 1985 in which to respond to the requested modification by petitioning for an administrative hearing. All other parties were given until 14 days from the date of publication for file such a petition. No petition was filed and no hearing was requested. Therefore, the Department adopts the proposed agency action referenced in the Notice as final.

3. After review of the request and existing data, the Department grants relief to Florida Crushed Stone Company by making the following modifications to the conditions of certification.

a. Condition I.A. shall be changed to read:

A. Emission Limitations

1. Stack emissions from the power plant boiler only or power boiler and lime plant shall not exceed the following site specific limitations when burning coal:

a. SO_2 - 1.2 lb. per million Btu heat input, maximum two-hour average, and ~~915~~ 770 lb. per hour, maximum three-hour average.

b. NO_x - 0.7 lb. per million Btu heat input, averaging time per Rule 17-2.700, FAC, not to exceed 846 lb/hr.

c. Particulates - 0.03 lb. per million Btu heat input, averaging time per Rule 17-2.700, FAC.

d. Visible emissions - 20% opacity, 6-minute average, except for one 6-minute period per hour of not more than 27% opacity.

2. Stack emission from the combined cement plant, lime plant and power plant boiler shall not exceed the following site specific limitations:

a. SO_2 - 1.2 lb. per million Btu heat input, maximum two-hour average, and ~~965~~ 781 lb. per hour, maximum three-hour average.

b. NO_x - 0.7 lb. per million Btu heat input plus 2.9 lb. per ton of kiln feed (dry basis), averaging time per Rule 17-2.700, FAC, not to exceed 1205 lb/hr.

b. Condition I.A.5. shall be changed to read:

5. Particulate emissions from bag filter exhausts from the coal and fly ash handling systems (excluding those facilities covered by Condition I.A.4.c. above) shall be limited to 0.02 gr/acf. Emissions from lime and limestone handling and storage handling facilities shall not exceed 0.015 gr/acf. A visible

CPL EMISSION LIMITS

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TABLE 3

SUMMARY OF STACK GAS FLOW
AND STACK GAS MOISTURE MEASUREMENTS

FLA. CRUSHED STONE
C/P/L/ STACK
OCT. 14-16, 1991

DATE	TIME	Stack Gas Flow Rate (SCFMD)	Stack Gas Temperature (Deg F)	Stack Gas Moisture (%)	Particulate Matter Conc. (gr/dscf)	Particulate Matter Emission Rate (Lbs/Hr)
10/14/91	0942	557461	308.0	8.6	0.0000	0.00
10/15/91	1015	544236	363.0	6.0	0.0000	0.00
10/16/91	0750	606389	339.0	5.1	0.0000	0.00
Average		569362	336.7	6.6	0.0000	0.00

K

MESOPTS4
11/11/91

Table 4. Summary of SO2 PSD Emission Sources and Associated Stack and Operating Data to be Used in the Modeling Analysis

ISCST Source Number	Source Description	UTM Coordinates (m)		Stack Data (m)		Operating Data		SO2 Emission Rate (g/s)	
		East	North	Height	Diameter	Temperature (K)	Velocity (m/sec)		
992 ~~99002~~	FPC/DeBary Prop.Turbines at 20F	467500	3197200	15.2	4.21	819.8	56.21	466.4	
995 ~~99005~~	FPC/Int.City Prop 7EA Turbines	446300	3126000	15.2	4.21	819.8	56.21	310.9	
998 ~~99008~~	FPC/Int.City Prop 7FA Turbines	446300	3126000	15.2	7.04	880.8	32.07	276.1	
1	Florida Crushed Stone ~~Kiln~~ CPL	360008	3162398	97.6	4.88	~~381.2~~ 442.3	~~13.71~~ 23.23	~~121.6~~ 98.4	
6	CF Ind. Baseline C	388000	3116000	60.5	2.44	353.0	16.40	-50.4	check
7	CF Ind. Proposed C	388000	3116000	60.5	2.44	353.0	17.77	54.6	check
9	CF Ind. Baseline D	388000	3116000	60.5	2.44	353.0	16.40	-50.4	check
10	CF Ind. Proposed D	388000	3116000	60.5	2.44	353.0	17.77	54.6	OK
22	Florida Mining & Materials	356200	3169900	27.4	4.88	470.2	7.48	1.45	
30	TECO Big Bend- Unit 4	361500	3075000	150.3	7.36	342.2	20.10	654.7	
31	TECO Big Bend- Unit 1 (24-hr)	361600	3075000	149.4	7.32	405.0	13.71	-1218	
32	TECO Big Bend- Unit 2 (24-hr)	361600	3075000	149.4	7.32	405.0	12.80	-1218	
33	TECO Big Bend- Unit 3 (24-hr)	361600	3075000	149.4	7.32	410.0	14.33	-1218	
40	Pasco County RRF	347100	3139200	83.8	3.05	394.3	15.70	14.1	
~~50~~	~~DLS Kiln 2~~	~~397200~~	~~3182600~~	~~21.4~~	~~1.41~~	~~391.2~~	~~12.70~~	~~1.3~~	Permits Expired
~~51~~	~~DLS Lime Dryer~~	~~397200~~	~~3182600~~	~~9.3~~	~~1.21~~	~~329.2~~	~~13.00~~	~~7.5~~	Permits Expired
~~52~~	~~DLS Kiln 1~~	~~397200~~	~~3182600~~	~~21.1~~	~~1.21~~	~~391.2~~	~~13.70~~	~~1.3~~	Permits Expired
61	Evans Packing	383300	3135800	12.3	0.4	466.2	9.20	0.2	
70	Asphalt Pavers No 4	361400	3168400	8.5	~~1.21~~ 1.08	~~366.2~~ 357.4	~~17.10~~ 10.95	2.25 ~~7.4~~	Fla Rock
~~81~~	~~Dairy Service- boiler~~	~~364200~~	~~3158300~~	~~9.3~~	~~0.6~~	~~477.2~~	~~10.60~~	~~4.7~~	
~~82~~	~~Dairy Service- dryer~~	~~364200~~	~~3158300~~	~~18.4~~	~~0.8~~	~~336.2~~	~~12.50~~	~~4.7~~	
83	~~Daytona~~ Asphalt Pavers No 3	359800 (9)	3164800 (24)	~~7.6~~ 12.2	~~1.81~~ 1.37	~~347.2~~ 372.0	~~5.00~~ 10.58	2.25 ~~1.4~~	FCS
~~89~~	~~Chem Lime boilers 1 & 2~~	~~359400~~	~~3162300~~	~~19~~	~~0.5~~	~~314.2~~	~~11.30~~	~~0.2~~	
90	Lakeland Utilities CT	409185	3102754	30.5	5.79	783.2	28.22	29.11	
91	IMC SAP #1,2,3 Baseline	396600	3078900	61	2.6	350.0	14.28	-170.1	check
92	IMC SAP #1,2,3 Projected	396600	3078900	61	2.6	350.0	15.31	182.85	check
93	IMC SAP #4,5 Projected	396600	3078900	60.7	2.6	350.0	15.31	121.9	check
94	IMC DAP	396600	3078900	36.6	1.83	319.1	20.15	5.54	
101	Pasco Co. Cogeneration Facil.	385600	3139000	30.5	3.35	384.3	17.13	5.04	
102	Lake Co. Cogeneration Facil.	434000	3198800	30.5	3.35	384.3	17.13	5.04	
110	Agrico Baseline	407500	3071300	45.73	1.60	350.0	26.40	-75.6	check
111	Agrico Proposed	407500	3071300	45.73	1.60	350.0	39.26	+113.5	check

Sources 50-52 - Dixie Lime & Stone - plant not operating; permits expired 2-3 years ago

Sources 81-82 - Now Inter Floridana - dryer and boiler permitted in 1968; no modifications since that time

Source 89 - Chemical Lime - There was a lime calciner at this site but never boilers. The calciner has been retired. ~~with~~ All calcining is now done at Source ~~I~~

Source 83 - Now Asphalt Pavers plant No. 3

BEST AVAILABLE COPY

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7601 HIGHWAY 301 NORTH
TAMPA, FLORIDA 33610

DEPARTMENT OF ENVIRONMENTAL REGULATION · STATE OF FLORIDA

BOB GRA
GOVER

JACOB D. V.
SECRET.

DAVID PUCH
DISTRICT MANA

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

SOUTHWEST DISTRICT

APPLICANT:

Dixie Lime & Stone Company
P.O. Drawer 217
Sumterville, Fla. 33585

PERMIT/CERTIFICATION NO. AO60-24513

COUNTY: Sumter

PROJECT: Limestone Dr

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2, Florida Administrative Code. The above named applicant, hereinafter called Permittee, is hereby authorize perform the work or operate the facility shown on the approved drawing(s), plans, documents, and specifications attached hereto made a part hereof and specifically described as follows:

For the operation of a 8' x 32' limestone dryer with a process input rate of 100 TPH of limestone fired with #5 fuel oil. Emissions are controlled by a multicone separator followed by a wet venturi scrubber. Located at: north of S.R. 470, 1 mile east of U.S. 301, Sumterville, Sumter County. UTM: 17 East 397.2 North 3182.6

Replaces Permit NO: AO60-2303 NEDS NO: 0001 Point ID: 05

Expires: January 2, 1985

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions:, and as such are l ing upon the permittee and enforceable pursuant to the authority of Section 403.161(1), Florida Statutes. Permittee is hereby pl

BEST AVAILABLE COPY

DIXIE LIME AND STONE COMPANY

Subsidiary of M.J. Stavola Industries, Inc.

Put on Inactive. 10/10/88 GEC

AIR 020
40TPA60 [illegible]

October 3, 1988

Mr. W.C. Thomas
District Air Engineer
Department of Environmental Regulation
4520 Oak Fair Blvd.
Tampa, FL 33610-9544

Dear Mr. Thomas:

On February 22, 1988, Dixie Lime and Stone Company notified your office that the lime kilns were still temporarily shut down.

At this time they are shut down permanently and we wish to cancel all of our existing air permits. We have attached a list of these permits for your convenience.

Sincerely,

DIXIE LIME AND STONE COMPANY

Mel Keever
President

Attach.

MK/ch

OCT 06 1988

SOUTH WEST DISTRICT
TAMPA

K

Florida Department of Environmental Regulation

Southwest District • 4520 Oak Fair Boulevard • Tampa, Florida 33610-7347 • 813-623-5561

Bob Martinez, Governor | Dale Twachtmann, Secretary | John Shearer, Assistant Secretary
Richard Garrity, Deputy Assistant Secretary

December 9, 1988

Mr. Mel Keever
President
Dixie Lime & Stone Company
Post Office Drawer 1209
Anthony, Florida 32617

Dear Mr. Keever:

Re: Sumter County - AP
Cancellation of Air Permits

In accordance with your letter of October 3, 1988, all the following listed permits at your facility are hereby cancelled.

A060-85091 - No. 1 Kiln Exhaust Baghouse
A060-87268 - No. 2 Kiln Exhaust Baghouse
A060-111649- Lime Cooler Recuperator
A060-73993 - "A" Screening Dust Collector
A060-73992 - "B" Screening Dust Collector
A060-112662- Lime Loadout and Scavenger System w/Baghouse
A060-112664- Lime Crusher Material Handling System w/Baghouse
A060-85089 - Coal Grinding System
A060-85089 - No. 1 Lime Kiln Fine Coal Handling System
A060-85090 - No. 2 Lime Kiln Fine Coal Handling System
A060-109685- No. 1 Kiln Product Scavenger System
A060-109686- No. 2 Kiln Product Scavenger System

Thank you for your cooperation in this matter.

Sincerely,

J. Harry Kerns

J. Harry Kerns, P.E.
District Air Engineer

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

POST OFFICE BOX 9205
500 EAST CENTRAL AVENUE
WINTER HAVEN, FLORIDA 33880

JOSEPH W. LANDERS JR.
SECRETARY

Oct. 30,1975
Hernando AP
Dairy Service Corp.

Bert E. Roper, Pres.,
Dairy Service Corp.,
P. O. Box 607,
Brooksville, Fla. 33512

Existing (Pre-baseline) Sources

Dear Sir:

Pursuant to your recent application, please find enclosed a permit (No.AC27-2901) dated 10-30-75 to construct/ ~~xxxxxxx~~ the subject pollution source.

This permit will expire on Jan. 1,1976, and will be subject to the conditions, requirements, and restrictions checked or indicated otherwise in the attached sheet construction ~~xoperation~~ Permit Conditions."

This permit is ussued under the authority of Florida Statute 403.061(16). The time limits imposed herein are a condition to this permit and are enforceable under Florida Statute 403.161. You are hereby placed on Notice that the Department will review this permit before the scheduled date of expiry and will seek court action for violation of the conditions and requirements of this permit.

You have ten days from the date of receipt hereof within which to seek a review of the conditions and requirements contained in this permit. Failure to file a written request to review or modify the conditions or requirements contained in this permit shall be deemed a waiver of any objections thereto.

Your continued cooperation in this matter is appreciated and in future communication please refer to your permit number.

Yours very truly,

J. H. Kerns, PE
Chief of Permitting

JHK/JLT/bbe
cc: Ralph W. Cook, PE.

BEST AVAILABLE COPY

RECEIVED

MAY 22 1972

DEPT. OF A.W.P.C.
WEST CENTRAL REGION
WINTER HAVEN

This permit expires on 11-30-74

STATE OF FLORIDA

DEPARTMENT OF AIR AND WATER POLLUTION CONTROL

OPERATION PERMIT

FOR Dairy Service Corporation
P. O. Box 607
Brooksville, Florida 33512

PERMIT NO. AO-27-388 DATE 5-12-72

PURSUANT TO THE PROVISIONS OF SECTION 403.061 (16) OF CHAPTER 403 FLORIDA STATUTES AND CHAPTER 17-4 FLORIDA ADMINISTRATIVE CODE, THIS PERMIT IS ISSUED TO:
Mr. Bert Roper, President

FOR THE OPERATION OF THE FOLLOWING:
Fossil Fuel Steam Generator: 500 H. P., #6 Fuel oil without Controls.

LOCATED AT: (UTM:7364400E, 3158250N) South Main St.
Brooksville, Hernando Co., Florida

IN ACCORDANCE WITH THE APPLICATION DATED 3-1-71

AND IN CONFORMITY WITH THE STATEMENTS AND SUPPORTING DATA ENTERED THEREIN, ALL OF WHICH ARE FILED WITH THE DEPARTMENT AND ARE CONSIDERED A PART OF THIS PERMIT.

THIS PERMIT SHALL BE EFFECTIVE FROM THE DATE OF ITS ISSUANCE UNTIL REVOKED OR SURRENDERED* AND SHALL BE SUBJECT TO ALL LAWS OF THE STATE AND THE RULES AND REGULATIONS OF THE DEPARTMENT. *or 11-30-74, whichever is earlier.

W. E. Ginne, Acting Chief
~~XXXXXXXXXXXXXXXX~~
BUREAU OF PERMITTING

VINCENT D. PATTON
EXECUTIVE DIRECTOR

FORM 1-1

NEDS 10 1740 052 0001

PARTICULATE MATTER
EMISSION MEASUREMENTS

ASPHALT PLANT NO. 3

ASPHALT PAVERS, INC.
BROOKSVILLE, FLORIDA

Permit No. A027-134775
(Expires August 27, 1992)

March 3, 1990

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 N.W. 13TH STREET
GAINESVILLE, FLORIDA 32609
(904) 377-5822

KOOGLER & ASSOCIATES

1.0 INTRODUCTION

Asphalt Pavers, Inc. owns and operates two asphalt batch plants near Brooksville, Florida. This report describes emission measurements conducted on the No. 3 plant on March 3, 1990. At Plant No. 3, aggregate is fed into a rotary dryer where it is dried and heated, then mixed with asphaltic cement in a batching tower.

Koogler & Associates, Environmental Services of Gainesville, Florida, conducted particulate matter emission measurements and visible emissions observations on the No. 3 plant, in accordance with EPA Methods 5 and 9 as described in 40CFR60, Appendix A. The purpose of the testing was to demonstrate compliance with the emission limiting requirement of Air Operating Permit No. A027-134775.

Prior to the test date, the Southwest District office of the Florida Department of Environmental Regulation (FDER) in Tampa, Florida was notified of the test schedules and testing methods. No representative of that office was at the plant site to witness test procedures or plant operations.

During the test period on March 3, 1990, the plant was operating at an average production rate of 100.3 tons per hour, as determined by plant personnel. This was the highest attainable production rate due to the high moisture content of the aggregate. The permitted rate for the plant is 150

2.0 PROCESS DESCRIPTION

The No. 3 asphalt batching plant operated by Asphalt Pavers, Inc. is a typical batch plant. The plant consists of an aggregate feed system, a rotary dryer for drying and heating the aggregate, a set of screens for removing oversized aggregate and a batching tower where the aggregate and asphaltic cement are mixed prior to being loaded into trucks. During the test period, the dryer was being fired with used oil at the rate of approximately 2.5 gallons per ton of product. The fuel analysis is included in the Appendix of this report.

Particulate matter emissions result from dust that is carried from the rotary dryer by combustion air and dust from the screens. The particulate matter from both sources is collected in a negative air system and passed through a mechanical dust collector. The particulate matter removed in this collector is returned to the batching tower as fines. The gas stream leaving the mechanical dust collector passes through a baghouse for further particulate matter control before it is exhausted to the atmosphere.

TABLE 1

SUMMARY OF SOURCE EMISSION TEST DATA

ASPHALT PAVERS
NO.3 PLANT BROOKSVILLE
MARCH 3, 1990

Run No.	Process Weight Rate (Tons/Hr)	Stack Gas Flow Rate (SCFMD)	Stack Gas Temperature (Deg F)	Stack Gas Moisture (%)	Particulate Matter Conc. (gr/dscf)	Particulate Matter Emission Rate (Lbs/Hr)
1	102.0	21936	199.0	9.7	0.0247	4.64
2	101.0	19860	197.2	9.8	0.0185	3.14
3	98.0	19126	197.5	10.7	0.0265	4.35
Average	100.3	20307	197.9	10.0	0.0232	4.04

Allowable Particulate Matter Emission Rate (Chapter 17-2, Florida Administrative Code) 0.04 GR/SCF

28114 acfm

PARTICULATE MATTER
EMISSION MEASUREMENTS

ASPHALT PLANT NO. 3

ASPHALT PAVERS, INC.
BROOKSVILLE, FLORIDA

Permit No. A027-134775
(Expires August 27, 1992)

July 18 and September 7, 1989

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 N.W. 13TH STREET
GAINESVILLE, FLORIDA 32609
(904) 377-5822

KOOGLER & ASSOCIATES

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1.0 INTRODUCTION

Asphalt Pavers, Inc. owns and operates two asphalt batch plants near Brooksville, Florida. At Plant No. 3, aggregate is fed into a rotary dryer where it is dried and heated, then mixed with asphaltic cement in a batching tower.

On July 18 and September 7, 1989, Koogler & Associates, Environmental Services of Gainesville, Florida, conducted particulate matter emission measurements and visible emissions observations on the No. 3 plant, in accordance with EPA Methods 5 and 9 as described in 40CFR60, Appendix A. The purpose of the testing was to demonstrate compliance with the emission limiting requirement of Air Operating Permit No. A027-134775.

Prior to the test dates, the Southwest District office of the Florida Department of Environmental Regulation (FDER) in Tampa, Florida was notified of the test schedules and testing methods. Mr. Mirza Baig of that office was at the plant site during the September 7, 1989 test to witness test procedures and plant operations.

During the test periods on both July 18 and September 7, 1989, the plant was operating at an average production rate of 100 tons per hour as determined by plant personnel. This was the highest attainable production rate due to the high moisture content of the aggregate. The permitted rate for the plant is 150 tons per hour. The maximum allowable particulate

2.0 PROCESS DESCRIPTION

The No. 3 asphalt batching plant operated by Asphalt Pavers, Inc. is a typical batch plant. The plant consists of an aggregate feed system, a rotary dryer for drying and heating the aggregate, a set of screens for removing oversized aggregate and a batching tower where the aggregate and asphaltic cement are mixed prior to being loaded into trucks. During the test period, the dryer was being fired with used oil at the rate of approximately 2.5 gallons per ton of product. The fuel analysis is included in the ~~Appendix of~~ this report.

Particulate matter emissions result from dust that is carried from the rotary dryer by combustion air and dust from the screens. The particulate matter from both sources is collected in a negative air system and passed through a mechanical dust collector. The particulate matter removed in this collector is returned to the batching tower as fines. The gas stream leaving the mechanical dust collector passes through a baghouse for further particulate matter control before it is exhausted to the atmosphere.

TABLE 2

SUMMARY OF SOURCE EMISSION TEST DATA

ASPHALT PAVERS / BROOKSVILLE,FLA.
NO.3 PLANT
SEPTEMBER 7,1989

Run No.	Process Weight Rate (Tons/Hr)	Stack Gas Flow Rate (SCFMD)	Stack Gas Temperature (Deg F)	Stack Gas Moisture (%)	Particulate Matter Conc. (gr/dscf)	Particulate Matter Emission Rate (Lbs/Hr)
1	100.0	22819	232.9	16.2	0.0851	16.65
2	100.0	22657	230.7	17.3	0.0665	12.92
3	100.0	23041	239.3	18.0	0.0777	15.34
Average	100.0	22839	234.3	17.2	0.0764	14.97

Allowable Particulate Matter Emission Rate 0.04 (gr/dscf)

36271 acfm

Table 1

SUMMARY OF PARTICULATE MATTER EMISSIONS

ASPHALT PAVERS NO. 3 PLANT
BROOKSVILLE
7/18/89

Run No.	Process Weight Rate (Tons/Hr)	Stack Gas Flow Rate (SCFMD)	Stack Gas Temperature (Deg F)	Stack Gas Moisture (%)	Particulate Matter Conc. (gr/dscf)	Particulate Matter Emission Rate (Lbs/Hr)
1	100.0	21181	216.4	19.0	.1277	23.24
2	100.0	22058	228.6	19.4	.0849	16.10
3	100.0	22541	224.3	19.2	.1443	27.94
Avg	100.0	21926	223.1	19.2	.1190	22.43

Allowable Particulate Matter Emission Rate = .04 (gr/dscf)

35107 acfm

PARTICULATE MATTER
EMISSION MEASUREMENTS

ASPHALT PLANT NO. 4

ASPHALT PAVERS, INC.
BROOKSVILLE, FLORIDA

Permit No. A027-140282
(Expires February 2, 1993)

September 8, 1989

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 N.W. 13TH STREET
GAINESVILLE, FLORIDA 32609
(904) 377-5822

Note - in 1990 the plant was used to process contaminated soil at a throughput rate <100 tph and at a fuel use rate lower than reported herein

KOOGLER & ASSOCIATES

1.0 INTRODUCTION

Asphalt Pavers, Inc. owns and operates two asphalt batch plants near Brooksville, Florida. At Plant No. 4, aggregate is fed into a rotary dryer where it is dried and heated, then mixed with asphaltic cement in a batching tower.

On September 8, 1989, Koogler & Associates, Environmental Services of Gainesville, Florida, conducted particulate matter emission measurements and visible emissions observations on the baghouse serving the aggregate dryer of Plant No. 4, in accordance with EPA Methods 5 and 9 as described in 40CFR60, Appendix A. The purpose of the testing was to demonstrate compliance with the emission limiting requirement of Air Operating Permit No. A027-140282.

Prior to the test date, the Southwest District office of the Florida Department of Environmental Regulation (FDER) in Tampa, Florida was notified of the test schedule and testing methods. Mr. Mirza Baig of that office was at the plant site during testing to witness test procedures and plant operations.

During the period of testing, the plant was operating at an average production rate of 100 tons per hour, as determined by plant personnel. The maximum allowable particulate matter concentration permitted in the stack gas by the New Source Performance Standards is 0.04 grains per dry standard cubic foot. Visible emissions are limited to 20 percent opacity.

2.0 PROCESS DESCRIPTION

The No. 4 asphalt batching plant operated by Asphalt Pavers, Inc. is a typical batch plant. The plant consists of an aggregate feed system, a rotary dryer for drying and heating the aggregate, a set of screens for removing oversized aggregate and a batching tower where the aggregate and asphaltic cement are mixed prior to being loaded into trucks. During the test period, the dryer was being fired with used oil at the rate of approximately 2.5 gallons per ton of product. The fuel analysis is included in the Appendix of this report.

Particulate matter emissions result from dust that is carried from the rotary dryer by combustion air and dust from the screens. The particulate matter from both sources is collected in a negative air system and passed through a mechanical dust collector. The particulate matter removed in this collector is returned to the batching tower as fines. The gas stream leaving the mechanical dust collector passes through a baghouse for further particulate matter control before it is exhausted to the atmosphere.

TABLE 1

SUMMARY OF SOURCE EMISSION TEST DATA

ASPHALT PAVERS / BROOKSVILLE,FLA.
NO.4 PLANT
SEPTEMBER 8,1989

Run No.	Process Weight Rate (Tons/Hr)	Stack Gas Flow Rate (SCFMD)	Stack Gas Temperature (Deg F)	Stack Gas Moisture (%)	Particulate Matter Conc. (gr/dscf)	Particulate Matter Emission Rate (Lbs/Hr)
1	100.0	14079	185.4	18.3	0.0045	0.55
2	100.0	13823	181.2	20.1	0.0026	0.31
3	100.0	14759	185.8	17.8	0.0018	0.22
Average	100.0	14220	184.1	18.7	0.0030	0.36

Allowable Particulate Matter Emission Rate 0.04 (gr/dscf)

21337 acfm

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TABLE 8.1-5. EMISSION FACTORS FOR SELECTED GASEOUS POLLUTANTS FROM A CONVENTIONAL ASPHALTIC CONCRETE PLANT STACK[a]

Material emitted[b]	Emission Factor Rating	Emission factor[c]	
		g/Mg	lb/ton
Sulfur oxides (as SO_2)[d,e]	C	146S	0.292S
Nitrogen oxides (as NO_2)[f]	D	18	0.036
Volatile organic compounds[f]	D	14	0.028
Carbon monoxide[f]	D	19	0.038
Polycyclic organic material[f]	D	0.013	0.000026
Aldehydes[f]	D	10	0.02
Formaldehyde	D	0.075	0.00015
2-Methylpropanal (isobutyraldehyde)	D	0.65	0.0013
1-Butanal (n-butyraldehyde)	D	1.2	0.0024
3-Methylbutanal (isovaleraldehyde)	D	8.0	0.016

[a] Reference 16.
[b] Particulates, carbon monoxide, polycyclics, trace metals and hydrogen sulfide were observed in the mixer emissions at concentrations that were small relative to stack concentrations.
[c] Expressed as g/Mg and lb/ton of asphaltic concrete produced.
[d] Mean source test results of a 400 plant survey.
[e] Reference 21. S = % sulfur in fuel. SO_2 may be attenuated 50% by adsorption on alkaline aggregate.
[f] Based on limited test data from the single asphaltic concrete plant described in Table 8.1-6.

This has been confirmed several times in Florida

AP-42 Section

Documentation of SO_2 sorption in Asphalt plants

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PARTICULATE MATTER AND SULFUR DIOXIDE EMISSION MEASUREMENTS AND VISIBLE EMISSIONS OBSERVATIONS REPORT

ASPHALT BATCH PLANT

PAN AMERICAN CONSTRUCTION COMPANY
MIAMI, FLORIDA

FDER Permit A013-153329

DERM Permit AP-0472-88A

October 23, 1991

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 N.W. 13TH STREET
GAINESVILLE, FLORIDA 32609
(904) 377-5822

KOOGLER & ASSOCIATES

During the test period, the plant was operating at an average production rate of 171 tons per hour. The particulate matter concentration in the stack gas averaged 0.0068 grains per dry standard cubic foot, the measured emission rate of sulfur dioxide averaged 0.10 pounds per hour, or less than 0.01 pounds per million BTU heat input. Visible emissions observations were conducted for a period of 30 minutes. During this period, no visible emissions were detected.

Based on the above data, it can be concluded that during the period of testing on October 23, 1991, the asphalt batch plant was operating in compliance with the emission limiting standards set forth by the Florida Department of Environmental Regulation in Permit A013-153329 and by Dade County in Permit AP-0472-88A.

Potential SO_2 emissions:

Fuel Use = 171 tph × 3.1 gal oil / ton

= 530 gal/hr

× 8.0 lb/gal

= 4240 lb fuel/hr

% S in fuel oil

Potential SO_2 = (4240 lb fuel/hr) $\left(0.004 \times 2 \frac{\text{lb } SO_2}{\text{lb fuel}}\right)$

= 33.9 lb/hr

Measured SO_2 emissions:

= 0.10 lb/hr

SO_2 Sorption

= (33.9 − 0.1)/33.9 >> 50%

KOOGLER & ASSOCIATES

2.0 PROCESS DESCRIPTION

The asphalt batch plant owned and operated by Pan American Construction Company is permitted to operate at a production rate of 195 tons per hour. The plant is a typical asphalt batch plant, consisting of an aggregate feed system, an oil-fired rotary dryer for drying and heating the aggregate, a set of screens for removing oversized aggregates and a pug mill to mix the heated aggregate and the liquid asphalt cement. During the test period, the dryer was fired with used oil at the rate of 3.1 gallons per ton of product. The fuel analysis, supplied by Precision Petroleum Labs, Inc., showed a sulfur content of 0.40 percent and a heating value of 144921 BTU per gallon. A density of 8.0 pounds per gallon was estimated, based on previous measurements.

Particulate matter emissions result from dust that is carried from the rotary dryer by the combustion gases and from dust generated at the screens. Dust from both of these sources is collected in a negative air system and passed through a mechanical dust collector. The particulate matter removed in this collector is returned to the batching tower as fines to be used in the process. The gas stream leaving the mechanical dust collector passes through a Standard Havens baghouse and is then exhausted to the atmosphere through a 36-inch by 54-inch stack.

The process weight rate of the plant was determined by plant personnel by weighing the material produced during the time of testing.

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PRECISION PETROLEUM LABS, INC.

CERTIFICATE OF ANALYSIS

INVOICE NO: 1252

P.O. NO:

LAB REF. NO: 9110-10

PRODUCT I.D.: NO. 5 BURNER FUEL

DATE RECEIVED: 10-4-91

AUTHORIZED BY: LEE SOWELL

TOTAL HALOGEN, PPM UOP-588	70.0
ORGANIC HALOGEN, PPM UOP-588	2.1
INORGANIC HALOGEN, PPM	67.9
GRAVITY API @ 60° F D-287	25.5
HEAT OF COMBUSTION BTU/GAL D-240	144,921
VISCOSITY SUS @ 100° F D-445	340.0
FLASH POINT, PMCC D-93	195°F
PCB'S, PPM	LESS THAN 1.0
SULFUR, WEIGHT% D-4294	0.40
HEAVY METALS BY TOXICITY, MG/LIT	
ARSENIC EPA-206.2	LESS THAN 0.01
CADMIUM EPA-213.1	LESS THAN 0.10
CHROMIUM EPA-218.1	0.15
LEAD EPA-239.1	1.82

DANIEL ZABIHI
LAB MANAGER

TABLE 2

SUMMARY OF SULFUR DIOXIDE EMISSION MEASUREMENTS

PLANT : PAN AMERICN / MEDLEY, FLA.
BATCH PLANT   DATE : 10/23/91

Std. Temp. : 68 DEG. F
F-Factor : dscf/MMBtu

Run No.	Vm(std), dscf	lb/dscf	lb/MMBtu	ppm	ppm @3.0 %O2	lb/hr
1A	47.674	1.11E-07		0.67	1.96	0.18
1B						
Run Average	47.674	1.11E-07		0.67	1.96	0.18
2A	39.973	0.00E+00				0.00
2B						
Run Average	39.973	0.00E+00		0.00	0.00	0.00
3A	43.930	8.04E-08		0.48	1.35	0.12
3B						
Run Average	43.930	8.04E-08		0.48	1.35	0.12
Test Average	43.859	6.38E-08		0.38	1.11	0.10

Allowable Sulfur Dioxide Emission Rate = 0.55 LB/MMBTU

FACILITY ID: 40TPA600004

FACILITY INFORMATION RECORD

```
                  *****     FACILITY INFORMATION     *****
  STATUS: A = ACTIVE    DATE OF PERMANENT SHUTDOWN: .. / .. / ..    # OF SRC: 002
   OWNER: SUMTER CORRECTIONAL INST                        OWNER CODE: . = ........
NAME/LOC: ........................................         ZIP CODE: .....
    CITY: BUSHNELL                      CITY CODE: ....    MAJOR FAC: N (Y OR N)
    TYPE: 99 = OTHER                                     TABLE 500-1: . (Y OR N)
UTM ZONE: 17  EAST: 382 . 2  (KM)    NORTH: 3166 . 1  (KM)
LATITUDE: 28 : 37 : 02               LONGITUDE: 82 : 12 : 30
     CDS: . = ...    VOC: . = ...    FINAL COMPLIANCE DATE: ../../..
 COMMENT: .............................................................

        *****    OWNER/AUTHORIZED REPRESENTATIVE INFORMATION     *****
    NAME: C O LANGSTON                                   (LAST NAME FIRST)
ORG/FIRM: ........................................
 ADDRESS: P O BOX 667                             CITY: BUSHNELL
   STATE: FL ZIP CODE: 33513 - ....              PHONE: ( ... ) ... - ....
 CONTACT: .........................              PHONE: ( ... ) ... - ....
```

FACILITY SOURCE ID: 40TPA60000401

SOURCE INFORMATION RECORD

***** CONSTRUCTION PERMIT/PPS INFORMATION *****
PERMIT #: .... - .... PPS #: .... FEE PAID: ...... (PERMIT ONLY)
DATE ISSUED: .. / .. / .. DATE EXPIRES: .. / .. / ..
APP COMPLETE: .. / .. / ..

***** OPERATION PERMIT INFORMATION *****
PERMIT #: A060 - -19856 FEE PAID: ...... AOR REQUIRED: . (Y OR N)
DATE ISSUED: 07 / 30 / 79 DATE EXPIRES: 07 / 18 / 84

***** SOURCE DESCRIPTION/TRACKING INFORMATION *****
DESCRIPTION: BOILER #1 USING #5 FUEL OIL
STATUS: A = ACTIVE # OF SCC: 001 # OF POLLUTANT: 004 MAJOR SRC: . (Y OR N)
INITIAL CONSTRUCTION DATE: .. / .. / .. TYPE: .. = ...
SIC: 3273 = READY-MIX CONCRETE
NSPS: ... NESHAP: ... 111D: ... PSD: ... NAA/NSR: ... RACT: ...
COMMENT: 250 HP, 1.55% SULFUR
....
START UP DATE: .. / .. / .. SHUT DOWN DATE: .. / .. / ..

SOURCE SCHEDULE/RATE RECORD

***** OPERATING SCHEDULE INFORMATION *****
TYPICAL OPERATING SCHEDULE: 24 (HR/DAY) 7 (DAY/WK) 24 (WK/YR)
TYPICAL % OPERATING BY SEASON: 25 (DJF) 25 (MAM) 25 (JJA) 25 (SON)
PERMITTED OPERATING SCHEDULE: .. (HR/DAY) . (DAY/WK) .. (WK/YR) .... (HR/YR)
AOR YR: 86 OPERATING SCHEDULE: 24 (HR/DAY) 7 (DAY/WK) 52 (WK/YR) 8736 (HR/YR)

***** OPERATING RATE INFORMATION *****
MAX PROCESS RATE: .... UNITS: OTHER
MAX PRODUCTION RATE: .... UNITS: OTHER

SOURCE EMISSION POINT RECORD

***** EMISSION POINT INFORMATION *****
EMISSION POINT TYPE: . = ...
STACK HEIGHT: 030 (FT) EXIT DIA: 02 . 0 (FT) EXIT TEMP: 0400 (F)
ACTUAL VOLUME FLOW RATE: 0003000 (ACFM) DRY STANDARD FLOW RATE: .... (DSCFM)
EXIT VEL: 0015 (FT/SEC) NONSTK EMIS HT: 0000 (FT) BLDG HT: .... WD: .... (FT)
POINT UTM: EAST: ... . .. (KM) NORTH: .... (KM) GEP STK HT: ... (FT)
COMMENT: ....

***** CONTROL EQUIPMENT INFORMATION *****
CONTROL A: ....
CONTROL B: ....
CAPITAL COST: A $ .... B $ .... TOTAL OPER COST $ .... AOR YR: 86

FDOC Boiler # 3 - PSD

Could Not find Stack Params

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

SOUTHWEST DISTRICT

7601 HIGHWAY 301 NORTH
TAMPA, FLORIDA 33610-9544

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

RICHARD D. GARRITY, PH.D.
DISTRICT MANAGER

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Fossil Fuel Steam Generator [X] New[1] [ ] Existing[1]

APPLICATION TYPE: [ ] Construction [X] Operation [ ] Modification

COMPANY NAME: D.C., Sumter Correctional Institution COUNTY: Sumter

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) No. 3 Boiler

SOURCE LOCATION: Street SR 476-B City Bushnell, FL 323513

UTM: East 382.2 Approx. North 3166.1 Approx.

Latitude 28 ° 37 ' 10 "N Longitude 82 ° 12 ' 27 "W

APPLICANT NAME AND TITLE: Bill Thurber, Assistant Secretary, OMB

APPLICANT ADDRESS: Florida Dept. of Corrections; 1311 Winewood Blvd.; Tallahassee, FL 32399-2500

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of the FL Dept. of Corrections

I certify that the statements made in this application for a boiler operating permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization Signed: Bill Thurber

Bill Thurber, Assistant Secretary, OMB
Name and Title (Please Type)

Date: 04/06/87 Telephone No. SC: 278-3800
904/488-3800

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that

[1] See Florida Administrative Code Rule 17-2.100(57) and (104)

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the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed Siddhartha P. Kamath

Siddhartha P. Kamath
Name (Please Type)

Siddhartha P. Kamath
4/3/87

Florida Dept. of Corrections
Company Name (Please Type)

1311 Winewood Blvd.; Tallahassee, FL 32399-2500
Mailing Address (Please Type)

lorida Registration No. 31122 Date: 04/06/87 Telephone No. SC: 277-1330
904/487-1330

SECTION II: GENERAL PROJECT INFORMATION

. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

No. 3 Steam Boiler, Nominal 250 HP

Continental Boiler; Model: F122A-250C

Constructed in 1974 SN: 7410-6G23A

Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction N/A Completion of Construction N/A

Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

Not Applicable

Boiler to be run on No. 5 oil with maximum two (2) percent sulfur

Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

None previously issued

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable: N/A

Description	Contaminants Type	Contaminants % Wt	Utilization Rate - lbs/hr	Relate to Flow Diagram

B. Process Rate, if applicable: (See Section V, Item 1) N/A

1. Total Process Input Rate (lbs/hr): N/A

2. Product Weight (lbs/hr): ____________

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1] Maximum lbs/hr	Emission[1] Actual T/yr	Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission lbs/yr	Potential[4] Emission T/yr	Relate to Flow Diagram
SO_2	N/A		20% Opacity,	N/A	23.67	43.05	
Particulate	N/A		40% Opacity	N/A	0.75	1.37	
CO	N/A		for 2 Min.	N/A	0.38	0.69	
NOX	N/A		in one hr.	N/A	9.05	16.45	
VOC	N/A			N/A	0.02	0.04	

See Section V, Item 2.

Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

Calculated from operating rate and applicable standard.

Emission, if source operated without control (See Section V, Item 3).

 12-27-91 KBN

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/~~CONSTRUCT~~ AIR POLLUTION SOURCES

SOURCE TYPE: Limerock Dryer [ ] New[1] [XX] Existing[1]

APPLICATION TYPE: [ ] Construction [X] Operation [ ] Modification

COMPANY NAME: E.R. Jahna Industries, Inc. COUNTY: Hernando

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) Limerock Dryer

SOURCE LOCATION: Street 0.7 mi E. of US 301 on SR 50, then N. 1.5 mi. City Hernando County

UTM: East 386.7 km North 3155.8 km

Latitude ___° ___' ___"N Longitude ___° ___' ___"W

APPLICANT NAME AND TITLE: Marc von Hahmann, General Manager

APPLICANT ADDRESS: E.R. Jahna Industries, Mills Mine, P.O. Drawer 840, Lake Wales, Florida 33859-0840

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of E.R. Jahna Industries

I certify that the statements made in this application for a Operation Permit permit are true, correct and complete to the best of my knowledge and belief. Further I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: [signature]

E. R. Jahna, III, Vice President
Name and Title (Please Type)

MILLS MINE # 904/583-3080

Date: 10/13/87 Telephone No. 813/676-9431

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that

1 See Florida Administrative Code Rule 17-2.100(57) and (104)

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed Robert A. Baker

Robert A. Baker, P.E.
Name (Please Type)

KOOGLER & ASSOCIATES, Environmental Services
Company Name (Please Type)

2603 NE 17th Terrace, Gainesville, Florida 32609
Mailing Address (Please Type)

Florida Registration No. 21118 Date: 9/17/87 Telephone No. 904-377-5822

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Rotary drum aggregate dryer is used to dry washed limestone screenings (1/8 inch) which is used as fertilizer filler. Dryer is fired with No. 2 fuel oil at a rate of 300 gal/hr. Particulate matter emissions are controlled with a Simplicity scrubber to 0.04 gr/dscf.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction January 15, 1981 Completion of Construction February 15, 1981

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

$125,000 H & B Cyclone Collector

$110,000 Simplicity Scrubber with venturi section

Costs include fans, pumps, foundations and structure.

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

AC27-53944

AO27-57847 - Expired 7/23/87

E. Requested permitted equipment operating time: hrs/day 8; days/wk 5; wks/yr 52;

if power plant, hrs/yr_____; if seasonal, describe:_____

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? NO

   a. If yes, has "offset" been applied? --

   b. If yes, has "Lowest Achievable Emission Rate" been applied? --

   c. If yes, list non-attainment pollutants. _____

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. NO

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. NO

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? NO

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? NO

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? NO

   a. If yes, for what pollutants?_____

   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Limestone Screenings	dust	1.0%	300,000 dry	1

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 326,000 lb/hr @ 8% moisture (Design Capacity)

2. Product Weight (lbs/hr): 300,000 lb/hr dry

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary) NOTE: The dryer's maximum production rat is 100 TPH, as per recent stack test; normal production rate is approximately 70 TPH.

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
Part. Matter	1.2*	1.2*	BACT	13.5**	270.0	281	2
SO2	6.5 50%	6.8	BACT	6.5	13.0	13.5	2
NOx	6.0	6.2	BACT	6.0	6.0	6.2	2

*NOTE: See attached stack test report (8/3/87) for current particulate emissions data.

[1] See Section V, Item 2.

[2] Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3] Calculated from operating rate and applicable standard.

[4] Emission, if source operated without control (See Section V, Item 3).

** Applicant agrees to a 0.04 gr/dscf emission limitation for particulates.

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
H & B	Part. Matter	50%	99+% 20 um	Estimate
Simplicity Scrubber	Part. Matter	90%	99% 5 um	Estimate

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
No 2 oil	269	300	41.9

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis:

Percent Sulfur: 0.3 Percent Ash: 0.1

Density: 7.2 lbs/gal Typical Percent Nitrogen: Nil

Heat Capacity: 19,400 BTU/lb 139,680 BTU/gal

Other Fuel Contaminants (which may cause air pollution): None

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average N/A Maximum

G. Indicate liquid or solid wastes generated and method of disposal.

Solids from scrubber are settled in on-site 3.5 acre pond with depth of 50 feet. Water from this pond is recirculated through the scrubber.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 35 ft. Stack Diameter: 6.0 ft.

Gas Flow Rate: 50,000* (Design) ACFM 39,400 DSCFM Gas Exit Temperature: 130 °F.

Water Vapor Content: 12 % Velocity: 29.5 FPS

See attached stack test report for current flow data.

SECTION IV: INCINERATOR INFORMATION

(NOT APPLICABLE)

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Patholog-ical)	Type V (Liq.& Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Inciner-ated							
Uncon-trolled (lbs/hr)							

Description of Waste ____________________

Total Weight Incinerated (lbs/hr) __________ Design Capacity (lbs/hr) __________

Approximate Number of Hours of Operation per day ______ day/wk ______ wks/yr. ______

Manufacturer ____________________

Date Constructed __________ Model No. __________

	Volume (ft)^3	Heat Release (BTU/hr)	Fuel Type	Fuel BTU/hr	Temperature (°F)
Primary Chamber					
Secondary Chamber					

Stack Height: ______ ft. Stack Diamter: ______ Stack Temp. ______

Gas Flow Rate: ______ ACFM ______ DSCFM* Velocity: ______ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) ______

12-27-91 KBN

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

DER Form #	
Form Title	
Effective Date	
DER Application No.	(Filled in by DER)

A027-182271

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOUTHWEST DISTRICT TAMPA

SOURCE TYPE: Asphalt Batch Plant [ ] New[1] [x] Existing[1]

APPLICATION TYPE: [ ] Construction [x] Operation [ ] Modification

COMPANY NAME: Oman Construction Compnay COUNTY: Hernando

Identify the specific emission point source(s) addressed in this application (i.e. Lime
Astec Model PFM-327 Flo-Mix Drum Mix Asphalt Plant with a Venturi Wet Scrubber System.

SOURCE LOCATION: Street Camp Mine Road CR 485 (1.8 miles north of Yontz Road) City Brooksville

UTM: East 17-359.8 North 3164.9

Latitude 28 ° 36 ' 23 "N Longitude 82 ° 26 ' 01 "W

APPLICANT NAME AND TITLE: Mr. Joseph Kanaday, Sr., Vice President

APPLICANT ADDRESS: P.O. Box 3038, Spring Hill, FL 34606

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Oman Construction Co.

I certify that the statements made in this application for an operation permit are true, correct and complete to the best of my knowledge and belief. Furthe I agree to maintain and operate the pollution control source and pollution cont facilities in such a manner as to comply with the provision of Chapter 403, Flor Statutes, and all the rules and regulations of the department and revisions thereof. also understand that a permit, if granted by the department, will be non-transferat and I will promptly notify the department upon sale or legal transfer of the permit establishment.

*Attach letter of authorization
(See back)

Signed: [signature]

Mr. Joseph Kanaday, Sr., Vice President
Name and Title (Please Type)

Date: 6.11.90 Telephone No. (904) 596-2130

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project ha been designed/examined by me and found to be in conformity with modern engineeri principles applicable to the treatment and disposal of pollutants characterized in t permit application. There is reasonable assurance, in my professional judgment, th

1 See Florida Administrative Code Rule 17-2.100(57) and (104)

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed [signature]

Mr. Thomas E. Brumagin, P.E.
Name (Please Type)

Central Florida Testing Laboratories, Inc.
Company Name (Please Type)

1400 Starkey Road, Largo, FL 34641
Mailing Address (Please Type)

Florida Registration No. 31063 Date: 5/30/90 Telephone No. (813) 581-7019

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary. This project consists of operating an 80 tph Astec Model PFM-327 drum mix asphalt plant on a 6 acre tract of land located on the east side of Camp Mine Road on Florida Crushed Stone's property northwest of Brooksville, Florida. This plant was originally constructed by Deltona Corporation in Collier County in 1975. The plant operated in Collier County through August of 1976 when it was moved to a site in Volusia County. In May 1977, the plant was moved by Deltona Corp. to its present site on Camp Mine Road in Hernando County. In May 1983, this plant was sold to W.L. Cobb Constructing Company who was subsequently bought out by the present plant owners, Oman Construction in November 1984. Oman operated the plant until February 1988 under permit number A027-96210 when the plant was shut down due to lack of business. This application is to renew the previous operation permit for the plant which expired on January 1, 1990. This facility will operate in compliance with all FDER rules and regulations.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction N/A - Existing Completion of Construction ____

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

High Pressure Venturi Wet Scrubber	$35,000.00
Effluent Settling Ponds	$1,500.00

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

A027-96210 issued 02-25-85 expired 01-01-90 A027-65852 issued 05-11-83 expired 12-05-84

A027-22374 issued 12-12-79 expired 12-05-84 A027-2904 issued 05-23-77 expired 05-23-79

A064-2415 issued 09-08-76 expired 09-01-81 A011-2171 issued 06-22-76 expired 06-22-81

AC11-2171 issued 01-13-75 expired 04-13-76

E. Requested permitted equipment operating time: hrs/day 10 ; days/wk 5 ; wks/yr 52 ;

if power plant, hrs/yr 2600; if seasonal, describe: ______

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? No

   a. If yes, has "offset" been applied? ______

   b. If yes, has "Lowest Achievable Emission Rate" been applied? ______

   c. If yes, list non-attainment pollutants. ______

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. However, existing source Yes

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. No

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? No

5. Do "National Emission Standarda for Hazardous Air Pollutants" (NESHAP) apply to this source? No

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? No

   a. If yes, for what pollutants? ______

   b. If yea, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants Type	Contaminants % Wt	Utilization Rate - lbs/hr	Relate to Flow Diagram
Limerock and Limerock Screenings	-200 mesh	3.0	119,040	A
Sand	-200 mesh	0.5	29,760	A
Liquid Asphalt Cement	None	0	11,200	H

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 160,000 lb/hr

2. Product Weight (lbs/hr): 80 tons per hour as asphaltic concrete

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Emission Rates are totals for facility.

Name of Contaminant	Emission[1] Maximum lbs/hr	Emission[1] Actual T/yr	Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission	Potential[4] Emission lbs/hr	Potential[4] Emission T/yr	Relate to Flow Diagram
Particulate	7.68	10.11	Bact	0.04 grains/dscf	392.08	509.83	P
Sulfur Oxides	33.18	47.46	Visible Emissions	20% Opacity	33.18	47.46	P
Carbon Monoxide	2.79	3.94			2.79	3.94	P
Hydrocarbons	0.14	0.20			0.14	0.20	P
Nitrogen Oxides	10.99	15.52			11.99	15.52	P

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard.

[4]Emission, if source operated without control (See Section V, Item 3).

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
Astec Model VD-40	Particulate	99%	+1 Micron	Previous Stack
Venturi Wet Scrubber System				Tests

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Virgin No. 2 fuel oil (diesel)			
Asphalt Plant Burner	400 gal/hr	510 gal/hr	70 MBtu
Plant Generators & Hot Oil Heaters	29 gal/hr	42 gal/hr	5.75 MBtu/hr

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis:

Percent Sulfur: 0.50 max Percent Ash: Negligible

Density: 7.15 lbs/gal Typical Percent Nitrogen: Negligible

Heat Capacity: 19,161 BTU/lb 137,000 BTU/gal

Other Fuel Contaminants (which may cause air pollution): ____________________

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average ____________ Maximum ____________

G. Indicate liquid or solid wastes generated and method of disposal.

No liquid or solid wastes are generated in this process. Scrubber water is sent to settling ponds where the fines settle out. The water is then reused and pumped back to the scrubber. Fines cleaned out of the settling ponds are used as fill material or re-used in the asphalt mix.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 25 ft. Stack Diameter: 6 ft.

Gas Flow Rate: 35,000 ACFM 22,176 DSCFM Gas Exit Temperature: 165 °F.

Water Vapor Content: 25 % Velocity: 13.1 FPS

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Patholog-ical)	Type V (Liq.& Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Inciner-ated							
Uncon-trolled (lbs/hr)							

Description of Waste ______

Total Weight Incinerated (lbs/hr) ______ Design Capacity (lbs/hr) ______

Approximate Number of Hours of Operation per day ______ day/wk ______ wks/yr. ______

Manufacturer ______

Date Constructed ______ Model No. ______

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: ______ ft. Stack Diamter: ______ Stack Temp. ______

Gas Flow Rate: ______ ACFM ______ DSCFM* Velocity: ______ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) ______

BEST AVAILABLE COPY

5-14-81 JB
A051-43168

Permit was renewed with No mods.

86 mod beyond

'90 S changed

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

SOUTHWEST DISTRICT
TAMPA

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Turbulent Mass Asphalt Plant [x] New[1] [ ] Existing[1]

APPLICATION TYPE: [ ] Construction [X] Operation [ ] Modification

COMPANY NAME: Overstreet Paving Company COUNTY: Pasco

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) 200 ton/hr Cedar Rapids Asphalt Plant w/Griffith Environmental Baghouse

SOURCE LOCATION: Street U.S. 41 South City Masaryktown

UTM: East 17-355.9 North 3143.7

Latitude 28 ° 24 ' 48 "N Longitude 82 ° 28 ' 15 "W

APPLICANT NAME AND TITLE: Mr. Thomas E. Overstreet, President

APPLICANT ADDRESS: 1390 Donegan Road Largo, FL 33540

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Overstreet Paving Company

I certify that the statements made in this application for a Operation permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: Thomas E. Overstreet

Mr. Thomas E. Overstreet, President
Name and Title (Please Type)

Date: 5-9-81 Telephone No. (813) 585-4786

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed: George C. Sinn

Mr. George C. Sinn, Jr. P.E.
Name (Please Type)

(Affix Seal)

Central Florida Testing Laboratories, Inc.
Company Name (Please Type)

1400 Starkey Road Largo, FL 33540
Mailing Address (Please Type)

Florida Registration No. 16911 Date: 5-9-81 Telephone No. (813) 581-7019

[1]See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

This project consists of a 200 ton/hr Cedar Rapids Turbulent Mass Asphalt Plant located on a 25 acre tract of land in Northern Pasco County. See Process Description. This facility complies with all D.E.R. Rules & Regulations.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction ________________ Completion of Construction ________________

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

Griffith Environmental, Inc.	
Model JA - 1040 D Baghouse	$ 135,000
Paving Drive Areas & Soil Cementing Stockpile Area	60,000
Retention Faciliites Fuel & Asphalt Spillage	10,000

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

AC 51-30598 Issued 10-08-80 Expires 04-01-81

Letter of Extention to 06-01-81

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? _____ Yes __X__ No

F. Normal equipment operating time: hrs/day 10; days/wk 5; wks/yr 52; if power plant, hrs/yr _____;

if seasonal, describe: Not seasonal, but weather dependent

Normal Operating Hours: 7:00 a.m. to 5:00 p.m.

G. If this is a new source or major modification, answer the following questions. (Yes or No)

See Construction Permit No. AC 51-30598 Application

1. Is this source in a non-attainment area for a particular pollutant? No
   a. If yes, has "offset" been applied? ________
   b. If yes, has "Lowest Achievable Emission Rate" been applied? ________
   c. If yes, list non-attainment pollutants. ________
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes
3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI and VII. Yes
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? Yes
5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Limerock & Screenings	Dust	5	297,600	A
Sand	Dust	1	74,400	A
Liquid Asphalt	None	0	28,000	H

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 400,000 lb/hr
2. Product Weight (lbs/hr): 400,000 lb/hr as Hot Asphaltic Concrete Mix

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission[1]		Allowed Emission[2] Rate per Ch. 17-2, F.A.C.	Allowable[3] Emission ~~lbs/hr~~ (grains/dscf)	Potential Emission[4]		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Particulate	5.36	7.0	New Source Standard	0.04	980	1274	M
Sulfur Dioxide	58.2	75.7			58.2	75.7	M
Carbon Monoxide	1.6	2.1			1.6	2.1	M
Hydrocarbons	1.2	1.6			1.2	1.6	M
Nitrogen Oxide	32.0	41.6			32.0	41.6	M
Aldehydes	0.8	1.0			0.8	1.0	M

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency (Percent)	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec. V, It[5]
Griffith Baghouse	Particulate	99.9	+1 micron	Design &
Model JA - 1040 D				Test Data
Serial Number				

[1] See Section V, Item 2.

[2] Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. – 0.1 pounds per million BTU heat input)

[3] Calculated from operating rate and applicable standard

[4] Emission, if source operated without control (See Section V, Item 3)

[5] If Applicable

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
No. 6 Fuel Oil	400 gal	565 gal	160 MBTU/hr
0.9 % Maximum Sulfur			

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis:

Percent Sulfur: 0.9 Percent Ash: 0.02

Density: 8.088 lbs/gal Typical Percent Nitrogen: ______

Heat Capacity: 19,040 BTU/lb 154,000 BTU/gal

Other Fuel Contaminants (which may cause air pollution): ______

F. If applicable, indicate the percent of fuel used for space heating. Annual Average ______ Maximum ______

G. Indicate liquid or solid wastes generated and method of disposal.

No liquid or solid wastes generated from this process.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 30 ft. Rectanglar Stack ~~Stack Diameter~~: 3.25 x 4.41 ft.

Gas Flow Rate: 45,188 ACFM Gas Exit Temperature: 275 °F.

Water Vapor Content: 22.7 % Velocity: 52.5 FPS

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs/hr Incinerated							

Description of Waste ______

Total Weight Incinerated (lbs/hr) ______ Design Capacity (lbs/hr) ______

Approximate Number of Hours of Operation per day ______ days/week ______

Manufacturer ______

Date Constructed ______ Model No. ______

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TESTED • APPROVED CFTL CENTRAL FLORIDA TESTING LABORATORIES

OVERSTREET PAVING COMPANY

CEDARAPIDS DRUM MIX ASPHALT PLANT

ANNUAL PARTICULATE EMISSIONS TEST

CALCULATION OF FUEL CONSUMPTION & SO_2 EMISSIONS

DATE	TIME		Depth to Fuel in Tank (inches)		Amount of Fuel in Tank (gallons)		Total Asphalt Produced (tons)	
	Start	Stop	Start	Stop	Start	Stop	Start	Stop
05-02-90	7:30 am		31		16,544		127.88	
05-02-90		1:30 pm		36½		13,676		1221.44

AVERAGE FUEL CONSUMPTION

$$F_{c\ Avg.} = \frac{(16544 - 13676)\ \text{gallons}}{(1221.44 - 127.88)\ \text{tons}} = 2.623\ \text{gal/ton}$$

Run No. 1 $\quad F_c = 194.4$ ton/hr (2.623 gal/ton) = 509.9 gal/hr

Run No. 2 $\quad F_c = 193.7$ ton/hr (2.623 gal/ton) = 508.1 gal/hr

Run No. 3 $\quad F_c = 191.0$ ton/hr (2.623 gal/ton) = 501.0 gal/hr

SULFUR DIOXIDE EMISSIONS

$$E_{SO_2} = \frac{0.0046\ \text{lb-S/lb fuel}\ (7.176\ \text{lb fuel/gal})(64\ \text{gm/gm-mole}\ SO_2)}{(32\ \text{gm/gm-mole}\ O_2)} \left[\text{Q Fuel}\right]$$

$$E_{SO_2} = 6.601\ (10^{-2})\ \text{lb-S/gal}\ \left[\text{Q Fuel}\right]$$

Run No. 1 $\quad E_{SO_2} = 6.601\ (10^{-2})$ lb-S/gal (509.9 gal/hr) = 33.66 lb/hr

Run No. 2 $\quad E_{SO_2} = 6.601\ (10^{-2})$ lb-S/gal (508.1 gal/hr) = 33.54 lb/hr

Run No. 3 $\quad E_{SO_2} = 6.601\ (10^{-2})$ lb-S/gal (501.0 gal/hr) = 33.08 lb/hr

× 50% SO_2 Sorption

= 16.7 lb/hr

Overstreet Paving Company, Inc.

Cedarapids Turbulent Mass Asphalt Plant

Annual Emissions Compliance Test

Calculations of Fuel Consumption & SO_2 Emissions

DATE	RUN No.	Time Start	Time Stop	Total Fuel Consumed (gal)	Total Asphalt Produced (tons)
05-09-91	1	7:56 am	9:17 am	690.1	272
05-09-91	2	10:31 am	11:48 am	655.4	257
05-09-91	3	12:50 pm	2:05 pm	640.0	264

FUEL CONSUMPTION

Run No. 1
$$F_c = \frac{\text{690.1 gal. fuel consumed}}{\text{1 hour 21 minutes}} = \text{511.2 gal/hr}$$

Run No. 2
$$F_c = \frac{\text{655.4 gal. fuel consumed}}{\text{1 hour 17 minutes}} = \text{510.7 gal/hr}$$

Run No. 3
$$F_c = \frac{\text{640.0 gal. fuel consumed}}{\text{1 hour 15 minutes}} = \text{512.0 gal/hr}$$

MAXIMUM SULFUR DIOXIDE EMISSIONS

$$E_{SO_2} = \frac{\text{0.0037 LB S/1b fuel (7.453 lb-fuel/gal)(64 gm/gm-mole } SO_2)}{\text{32 gm/gm-mole } O_2} \text{ [Q Fuel]}$$

$$E_{SO_2} = 5.5152(10^{-2})\text{lb-S/gal [Q fuel]}$$

Run No. 1 $E_{SO_2} = 5.5152(10^{-2})\text{lb-S/gal (511.2 gal/hr)} = \text{28.19 lb/hr}$

Run No. 2 $E_{SO_2} = 5.5152(10^{-2})\text{lb-S/gal (510.7 gal/hr)} = \text{28.17 lb/hr}$

Run No. 3 $E_{SO_2} = 5.5152(10^{-2})\text{lb-S/gal (512.0 gal/hr)} = \text{28.24 lb/hr}$

× 50% SO_2 Sorption
= 14.1 lb/hr

6-26-79 AB
AC 51-21364

(16)

D.E.R.
JUN 26 1979
SOUTHWEST DISTRICT
TAMPA

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT
AIR POLLUTION SOURCES

SOURCE TYPE: Hot Water Boiler #1 (X) New[1] ( ) Existing[1]

APPLICATION TYPE: (X) Construction ( ) Operation ( ) Modification

COMPANY NAME: Community Hospital, New Port Richey COUNTY: Pasco Brown

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) Hot Water Boiler

SOURCE LOCATION: Street 205 High Street City New Port Richey

UTM: East +4 North Quebec

Latitude 28 ° 14 ' 14 "N Longitude 82 ° 43 ' 12 "W

APPLICANT NAME AND TITLE Andrew Oravec, Jr., Administrator

APPLICANT ADDRESS Community Hospital, 205 High Street, New Port Richey, Florida 33552

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Hospital Corporation of America

I certify that the statements made in this application for a Construction permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

Signed: Howard C. Stauffer

Howard C. Stauffer, Asst. V.P., Envir. Serv.
Name and Title (Please Type)

*Attach letter of authorization Date: 6/15/79 Telephone No. 615-868-4515

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed: TC Seckman

Thomas C. Seckman
Name (Please Type)

(Affix Seal)

Smith Seckman Reid, Inc.
Company Name (Please Type)

2135 Blakemore Avenue
Nashville, Tennessee 37212
Mailing Address (Please Type)

Florida Registration No. 14140 Date: 6/15/79 Telephone No. 615-383-1113

[1]See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

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SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Addition of approximately 100 beds and Office Area to existing Hospital

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction April, 1979 Completion of Construction February, 1980

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

About $10,000 each plus installation cost

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

None for this construction project

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? ___ Yes X No

F. Normal equipment operating time: hrs/day 24; days/wk 7; wks/yr 52; if power plant, hrs/yr ______; if seasonal, describe:

G. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? No
   a. If yes, has "offset" been applied? ______
   b. If yes, has "Lowest Achievable Emission Rate" been applied? ______
   c. If yes, list non-attainment pollutants. ______
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. No
3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI & VII. No
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? No
5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants Type	% Wt	Utilization Rate - lbs/hr	Relate to Flow Diagram
NONE				NONE

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): N/A

2. Product Weight (lbs/hr): N/A

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission[1] Maximum lbs/hr	Emission[1] Actual T/yr	Allowed Emission[2] Rate per Ch. 17-2, F.A.C.	Allowable[3] Emission lbs/hr	Potential[4] Emission lbs/hr	Potential[4] Emission T/yr	Relate to Flow Diagram
SO_2	~~.28~~	~~.497~~	N/A	N/A	N/A	N/A	N/A
Note (1)	.46 max	2.0 max					

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec.V, It5)
Bryan Flexible Tube Hot Water Boiler - Model	SO_2	80% based on	N/A	Manufacturers
CL-150W-WT-FDGO		manufacturers		Data
Note (2)		data		
For #1 Boiler (2nd Form	for #2 Boiler)			

[1] See Section V, Item 2.
[2] Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E.(1), F.A.C. -- 0.1 pounds per million BTU heat input)
[3] Calculated from operating rate and applicable standard
[4] Emission, if source operated without control (See Section V, Item 3)
[5] If Applicable

Notes:

(1) Based on #2 fuel oil @ .3%/1b @ 7.18 lbs/gal @ 140,000 BTU/gal.

(2) Only one boiler at a time will be in service. There is a 100% standby.

$\frac{24 \times 7 \times 52 \times .46}{2000}$ 2 T/yr SO_2

$.006 \times 7.18 \times 10.7 = .46$ lbs SO_2 / hr

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E. Fuels

Type (Be Specific)	Consumption* avg/hr	max./hr	Maximum Heat Input (MMBTU/hr)
#2 Fuel Oil	4.5 gph	10.7 gal/hr	1.5

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis:

Percent Sulfur: .3%/lb Percent Ash: ______

Density: 7.21 lbs/gal Typical Percent Nitrogen: ______

Heat Capacity: 19,500 BTU/lb 140,000 BTU/gal

Other Fuel Contaminants (which may cause air pollution): ______

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average 35% Maximum 45%

G. Indicate liquid or solid wastes generated and method of disposal.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 36 ft. Stack Diameter: 1.0 ft.

Gas Flow Rate: 600 (#2 Oil) ACFM Gas Exit Temperature: 520 ^{o}F at 80^{o}F ambient

Water Vapor Content: 8 % Velocity: 14 FPS

45 HP

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(16)

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT
AIR POLLUTION SOURCES

SOURCE TYPE: Hot Water Boiler #2 (X) New[1] ( ) Existing[1]

APPLICATION TYPE: (X) Construction ( ) Operation ( ) Modification

COMPANY NAME Community Hospital, New Port Richey COUNTY: Pasco

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) Hot Water Boiler

SOURCE LOCATION: Street 205 High Street City New Port Richey

UTM: East +4 North - Quebec

Latitude 28 ° 14 ' 14 "N Longitude 82 ° 43 ' 12 "W

APPLICANT NAME AND TITLE Andrew Oravec, Jr., Administrator

APPLICANT ADDRESS Community Hospital, 205 High Street, New Port Richey, Florida 33552

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Hospital Corporation of America

I certify that the statements made in this application for a Construction permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

Signed: Howard C. Stauffer

Howard C. Stauffer, Asst. V.P., Envir. Serv.
Name and Title (Please Type)

*Attach letter of authorization Date: 6/15/79 Telephone No. 615-868-4515

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed: TC Seckman

Thomas C. Seckman
Name (Please Type)

(Affix Seal)

Smith Seckman Reid, Inc.
Company Name (Please Type)

2135 Blakemore Avenue
Nashville, Tennessee 37212
Mailing Address (Please Type)

Florida Registration No. 14140 Date: 6/15/79 Telephone No. 615-383-1113

[1] See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

~~615-327-5491~~ 327-9551 — HCA 1 Park Plaza Nash 37203

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Addition of approximately 100 beds and office area to existing hospital.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction April, 1979 Completion of Construction February, 1980

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

About $10,000 each plus installation cost

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

None for this construction project

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? ___Yes XX No

F. Normal equipment operating time: hrs/day 24; days/wk 7; wks/yr 52; if power plant, hrs/yr ______; if seasonal, describe:

G. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? No
   a. If yes, has "offset" been applied? ______
   b. If yes, has "Lowest Achievable Emission Rate" been applied? ______
   c. If yes, list non-attainment pollutants.
   ______
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. No
3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI & VII. No
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? No
5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES
(Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants Type	Contaminants % Wt	Utilization Rate - lbs/hr	Relate to Flow Diagram
NONE				NONE

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): N/A

2. Product Weight (lbs/hr): N/A

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission[1] Maximum lbs/hr	Emission[1] Actual T/yr	Allowed Emission[2] Rate per Ch. 17-2, F.A.C.	Allowable[3] Emission lbs/hr	Potential[4] Emission lbs/hr	Potential[4] Emission T/yr	Relate to Flow Diagram
SO_2	.23	.497	N/A	N/A	N/A	N/A	N/A
Note (1)							

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec.V,It5)
Bryan Flexible Tube Hot Water Boiler - Model	SO_2	80% based on	N/A	Manufacturers'
CL-150W-WT-FDGO		Manufacturers'		Data
Note (2)		data		
For #2 Boiler (1st Form	for #1 Boiler)			

[1]See Section V, Item 2.
[2]Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E.(1), F.A.C. -- 0.1 pounds per million BTU heat input)
[3]Calculated from operating rate and applicable standard
[4]Emission, if source operated without control (See Section V, Item 3)
[5]If Applicable

Notes :

(1) Based on #2 fuel oil @ .3%/lb @ 7.18 lbs/gal @ 140,000 BTU/gal.

(2) Only one boiler at a time will be in service. There is a 100% standby.

E. Fuels

Type (Be Specific)	Consumption* avg/hr	max./hr	Maximum Heat Input (MMBTU/hr)
#2 Fuel Oil	4.5 gph	10.7 gal/hr	1.5

*Units Natural Gas,MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis:

Percent Sulfur: .3%/lb Percent Ash: ____

Density: 7.21 lbs/gal Typical Percent Nitrogen: ____

Heat Capacity: 19,500 BTU/lb 140,000 BTU/gal

Other Fuel Contaminants (which may cause air pollution): ____

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average 35% Maximum 45%

G. Indicate liquid or solid wastes generated and method of disposal.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 36 ft. Stack Diameter: 1.0 ft.

Gas Flow Rate: 600 (#2 Oil) ACFM Gas Exit Temperature: 520 °F at 80°F ambient

Water Vapor Content: 8 % Velocity: 14 FPS

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12-27-91 KEN

Florida Department of Environmental Regulation

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

DER Form #	
Form Title	
Effective Date	
DER Application No.	(Filled in by DER)

D.E.R. JUL 16 1991 Southwest District Tampa

A051-200111

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Drum Mix Asphalt Plant [ ] New[1] [x] Existing[1]

APPLICATION TYPE: [ ] Construction [x] Operation [x] Modification

COMPANY NAME: Couch Construction Company **COUNTY:** Pasco

Identify the specific emission point source(s) addressed in this application (i.e. Lime 300 ton/hr Standard Havens Drum Mix Asphalt Plant Controlled by a baghouse control system

SOURCE LOCATION: Street 1400 County Road City Odessa

UTM: East 17-340.7 North 3119.5

Latitude 28 • 11 ' 35 "N Longitude 82 • 37 ' 16 "W

APPLICANT NAME AND TITLE: Mr. R.L. Sollie, Vice President

APPLICANT ADDRESS: P.O. Box 16546, Tampa, FL 33617

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Couch Construction Company

I certify that the statements made in this application for a modification to operation permit are true, correct and complete to the best of my knowledge and belief. Furth I agree to maintain and operate the pollution control source and pollution cont facilities in such a manner as to comply with the provision of Chapter 403, Flor Statutes, and all the rules and regulations of the department and revisions thereof. also understand that a permit, if granted by the department, will be non-transfera and I will promptly notify the department upon sale or legal transfer of the permit establishment.

*Attach letter of authorization

Signed: R L Sollie

Mr. R.L. Sollie, Vice President
Name and Title (Please Type)

Date: 7-15-91 Telephone No. (813) 985-9002

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project h been designed/examined by me and found to be in conformity with modern engineer principles applicable to the treatment and disposal of pollutants characterized in permit application. There is reasonable assurance, in my professional judgment, t

[1] See Florida Administrative Code Rule 17-2.100(57) and (104)

Oil Heater: 10 5½ 52

E. Requested permitted equipment operating time: hrs/day 6 ; days/wk 5½ ; wks/yr 52 ;

2860

if power plant, hrs/yr 1716 ; if seasonal, describe: plant not seasonal, but it is weather dependent. Normal daily operating hours: 7:00 am until 1:00 pm

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? No

   a. If yes, has "offset" been applied? ______

   b. If yes, has "Lowest Achievable Emission Rate" been applied? ______

   c. If yes, list non-attainment pollutants. ______

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. No

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? Yes

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? No

   a. If yes, for what pollutants? ______

   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants Type	Contaminants % Wt	Utilization Rate - lbs/hr	Relate to Flow Diagram
Limerock and Limerock Screenings	-200 mesh	3.0	315,569	A
Sand	-200 mesh	0.5	118,329	A
Reclaimed Asphaltic Concrete	-200 mesh	2.0	139,514	R, B
Liquid Asphalt	None	0.0	26,588	H

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 600,000 lbs/hr
2. Product Weight (lbs/hr): 600,000 lbs/hr or 300 tph as Hot Mix Asphaltic Concrete

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Note: Potential Emissions (T/yr) - based on hours of operation for plant and oil heater

Name of Contaminant	Emission[1] Maximum lbs/hr	Emission[1] Actual T/yr	Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission lbs/hr	Potential[4] Emission T/yr	Relate to Flow Diagram
Particulate	7.3	6.31	NSPS	0.04 grains/dscf	1470.0	1261.3	M
Sulfur Oxides	114.73	98.3		20% opacity	114.73	98.3	M
Carbon Monoxides	4.31	3.68			4.31	3.68	M
Hydrocarbons	0.893	0.77			0.893	0.77	M
Nitrogen Oxides	57.28	49.06			57.28	49.06	M

[1] See Section V, Item 2.

[2] Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3] Calculated from operating rate and applicable standard.

[4] Emission, if source operated without control (See Section V, Item 3).

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 30.0 ft. Stack Diameter: 5' x 3.33 60 x 40 in. ft.

Gas Flow Rate: 73,000 ACFM 34,370 DSCFM Gas Exit Temperature: 325 °F.

Water Vapor Content: 30.0 % Velocity: 73.0 FPS

Cloth Area: 17,280 sq. ft. Bag Type: 14 oz. Nomex Air to Cloth Ratio: 4.3 to 1

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq.& Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Incinerated							
Uncontrolled (lbs/hr)							

Description of Waste ______

Total Weight Incinerated (lbs/hr) ______ Design Capacity (lbs/hr) ______

Approximate Number of Hours of Operation per day ______ day/wk ______ wks/yr. ______

Manufacturer ______

Date Constructed ______ Model No. ______

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: ______ ft. Stack Diamter: ______ Stack Temp. ______

Gas Flow Rate: ______ ACFM ______ DSCFM* Velocity: ______ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) ______

BEST AVAILABLE COPY

Florida Department of Environmental Regulation

Southwest District • 4520 Oak Fair Boulevard • Tampa, Florida 33610-7347

Lawton Chiles, Governor 813-623-5561 Carol M. Browner, Secretary

PERMITTEE:
Couch Construction Company
P.O. Box 16546
Tampa, Florida 33617

PERMIT/CERTIFICATION
Permit No: AO51-196059
County: Pasco
Expiration Date: 08/12/96
Project: Drum Mix Asphalt Plant

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

For operation of a "BCE" 300 ton per hour drum mix asphalt plant (trade name: Turbulent Mass Asphalt Plant) with a "BCE 400" baghouse. The dryer is fired with natural gas only. The maximum heat input rate is 100.0 million Btu per hour. Particulate matter emissions are controlled by a 66,000 ACFM "BCE 400" baghouse. The raw material utilized in the plant may be 100% virgin or may include up to 33% recycled asphalt.

Location: U.S. 98, 3.5 miles north of S.R. 54, Zephyrhills, FL.

UTM: 17-390.3 E 3129.4 N NEDS NO: 0066 Point ID: 01

Replaces Permit No.: AC51-185110

BEST AVAILABLE COPY

12-27-91 CBN

permit A051-196059 issued 8-12-91
Zephyrhills - Wheelcoagler got his stack params.

Florida Department of Environmental Regulation

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

DER Form #
Form Title
Effective Date
DER Application No. (Filled in by DER)

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Drum Mix Asphalt Plant [x] New[1] [ ] Existing[1] AC51-185110

APPLICATION TYPE: [x] Construction [ ] Operation [ ] Modification

COMPANY NAME: Couch Construction Company COUNTY: ~~Polk~~ Pasco

Identify the specific emission point source(s) addressed in this application (i.e. Lime

BCE 300 tph Drum Mix Asphalt Plant with BCE 400 Baghouse

SOURCE LOCATION: Street ~~S.R. 471 and U.S. 98 North~~ City ~~Providence~~

UTM: East ~~17 396.4~~ 390.3 North ~~3124.8~~ 3129.4

Latitude ~~28 ° 14 ' 46 "N~~ Longitude ~~82 ° 03 ' 20 "W~~

APPLICANT NAME AND TITLE: Mr. R. L. Sollie, Vice President

APPLICANT ADDRESS: P.O. Box 16546, Tampa, FL 33617

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Couch Const. Co.

I certify that the statements made in this application for a construction permit are true, correct and complete to the best of my knowledge and belief. Further I agree to maintain and operate the pollution control source and pollution contro facilities in such a manner as to comply with the provision of Chapter 403, Florid Statutes, and all the rules and regulations of the department and revisions thereof. also understand that a permit, if granted by the department, will be non-transferabl and I will promptly notify the department upon sale or legal transfer of the permitte establishment.

*Attach letter of authorization

Signed: RL Sollie

Mr. R. L. Sollie, Vice President
Name and Title (Please Type)

Date: 8/14/90 Telephone No. (813) 985-9002

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that

[1] See Florida Administrative Code Rule 17-2.100(57) and (104)

DER Form 17-1.202(1)
Effective October 31, 1982

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed ______________________

Thomas E. Brumagin, P.E.
Name (Please Type)

Central Florida Testing Laboratories, Inc.
Company Name (Please Type)

1400 Starkey Road, Largo, FL 34641
Mailing Address (Please Type)

Florida Registration No. 31063 Date: 8/14/90 Telephone No. (813) 581-7019

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

This project consists of constructing a BCE 300 tph drum mix asphalt plant at the intersection of S.R. 471 and U.S. Highway 98 in Polk County. This plant was formerly permitted and operated by Hardaway Company at Miami International Airport under FDER Permit No. AC13-155353. This facility will comply with all FDER rules and regulations.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction November 1990 Completion of Construction March 1991

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

BCE 400 baghouse $282,000.00

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

AC13-155353 issued 12-02-88 expired 11-30-89

E. Requested permitted equipment operating time: hrs/day 10 ; days/wk 6 ; wks/yr 52 ; if power plant, hrs/yr 3120; if seasonal, describe:

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? No

   a. If yes, has "offset" been applied?

   b. If yes, has "Lowest Achievable Emission Rate" been applied?

   c. If yes, list non-attainment pollutants.

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. No

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? Yes

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? No

   a. If yes, for what pollutants?

   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Limerock and Limerock Screenings	-200 mesh	3.0	287,040	A
Sand	-200 mesh	0.5	71,760	A
Recycled Asphalt	-200 mesh	2.0	193,200	RB
Liquid Asphalt	None	0	48,000	II

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 600,000 lbs/hr

2. Product Weight (lbs/hr): 300 tons/hr asphaltic cement

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
Particulate	10.29	16.2	NSPS	0.04 grain/dscf	1,470	2,293	M
Sulfur Oxide	56.21	92.0			56.21	92.0	M
Carbon Monoxide	3.99	6.5			3.99	6.5	M
Hydrocarbons	0.20	0.3			0.20	0.3	M
Nitrogen Oxide	15.80	25.9			15.80	25.9	M

[1] See Section V, Item 2.

[2] Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3] Calculated from operating rate and applicable standard.

[4] Emission, if source operated without control (See Section V, Item 3).

inerators)

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
BCE 400 baghouse	Particulate	99.5	+1 micron	Design and Test
				Data

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
No. 2 Fuel Oil	600	750	105.6

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis:

Percent Sulfur: ≤ 0.50 Percent Ash: Negligible

Density: 7.13 lbs/gal Typical Percent Nitrogen: Negligible

Heat Capacity: 19,635 BTU/lb 140,000 BTU/gal

Other Fuel Contaminants (which may cause air pollution):

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average None Maximum None

G. Indicate liquid or solid wastes generated and method of disposal.

No liquid or solid wastes are generated in this process. Dust captured in the baghouse is removed by screw conveyor and returned to the asphalt mix in the mixing drum.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 20 ft. Rectangular Stack: 4' x 4' 48" x 48"

Gas Flow Rate: 66,000 ACFM 29,817 DSCFM Gas Exit Temperature: 300 °F.

Water Vapor Content: 35 % Velocity: 68.8 FPS

Air to Cloth Ratio: 5.7 : 1 Square ft of Cloth: $11{,}580\ ft^3$ Filter Material: nomex

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Patholog-ical)	Type V (Liq.& Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Inciner-ated							
Uncon-trolled (lbs/hr)							

Description of Waste ______

Total Weight Incinerated (lbs/hr) ______ Design Capacity (lbs/hr) ______

Approximate Number of Hours of Operation per day ______ day/wk ______ wks/yr. ______

Manufacturer ______

Date Constructed ______ Model No. ______

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: ______ ft. Stack Diamter: ______ Stack Temp. ______

Gas Flow Rate: ______ ACFM ______ DSCFM* Velocity: ______ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) ______

BEST AVAILABLE COPY

TESTED • APPROVED
CFTL
CENTRAL FLORIDA TESTING LABORATORIES

Couch Construction Company - Pasco
~~Standard Havens Drum Mix Asphalt~~ Plant
Annual Particulate Emissions Compliance Test
Calculation of Sulfur Dioxide Emissions

DATE	RUN NO.	TIME		TOTAL TONS PRODUCED	TOTAL GALLONS FUEL CONSUMED	FUEL CONSUMPTION (gal/ton)
		START	STOP			
10/17 1990	1	7:30 am	8:45 am	0.0 363.0	0.0 862.1	2.37
10/22	2	6:15 am	7:45 am	0.0 420.0	0.0 987.4	2.35
10/22	3	8:25 am	9:30 am	428.0 756.0	1006.8 1796.0	2.41

SULFUR DIOXIDE EMISSIONS

$$E_{SO_2} = \frac{0.0025 \text{ LB S/lb-fuel } (7.141 \text{ lb-fuel/gal})(64\text{gm/gm-mole } SO_2)}{(32 \text{ gm/gm-mole } O_2)}$$

$$E_{SO_2} = 3.5705(10^{-2}) \text{ lb-S/gal}$$

un No. 1 $E_{SO_2} = 3.5705(10^{-2})\text{lb-S/gal}(2.37 \text{ gla/ton})(290.4 \text{ ton/hr}) = 24.57 \text{ lb/hr}$

un No. 2 $E_{SO_2} = 3.5705(10^{-2})\text{lb-S/gal}(2.35 \text{ gal/ton})(280.0 \text{ ton/hr}) = 23.49 \text{ lb/hr}$

un No. 3 $E_{SO_2} = 3.5705(10^{-2})\text{lb-S/gal}(2.41 \text{ gal/ton})(302.8 \text{ ton/hr}) = 26.06 \text{ lb/hr}$

× 50% Sorptio

= 12.41 l

= 1.56 g/s

#2 - plant - Actual SO2 Emissions

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

October 31, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. R. W. Neiser, Senior Vice-President
Legal and Governmental Affairs
Florida Power Corporation
3201 34th Street South
St. Petersburg, Florida 33733

Dear Mr. Neiser:

Re: PSD-FL-180, AC 49-203114

The Department has received your application for a permit to construct six (6) simple cycle turbines at your facility in Intercession City, Osceola County, Florida. Based on our initial review of your proposal, we have determined that additional information is needed in order to continue to process this application. Please complete the application by supplying the information requested below.

BACT Analysis

Evaluate and compare the economic alternatives ($/tons removed) and the environmental benefits (tons removed/grade oil, tons/yr, lbs/hr) associated with the consumption of No. 2 fuel oil with different grades of sulfur content (0.1%, 0.2%, avg 0.3% and max 0.5%).

The BACT analysis for NO_x should be expanded in order to evaluate the economic impacts of the different alternatives presented. The analysis should include a complete explanation of the procedure used for assessing the economic impacts, any supporting data, and an itemization and explanation of all costs. Please submit a chart showing the above data and the comparison of cost on the basis of dollars per ton of NO_x removed for each one of the alternatives presented. In addition, compare the environmental, economic, and technical feasibility of using water or steam injection with an improved low NO_x burner design.

General

Page 4-14 of the Control Technology review section indicates that "the combustion chamber design includes water injection using the GE quiet combustor for the Frame 7EA machines." Will this design be used for the two (2) Frame 7FA turbines? If not, explain the design considered.

Page 2-1 of the Project Description. Does this proposed project consist of six (6) simple cycle CT peaking units of one (1) unit each, or two (2) units each? Please explain. Clarify if existing operation comprise six (6) or twelve (12) simple cycle turbines?

What is the efficiency of each turbine (Frame EA and Frame FA)?

Calculate Y for each turbine model under the different scenarios proposed. (Refer to NSPS, Subpart GG).

DER Form 17-1.202(1)

Page 5 of 12. There is a discrepancy between the heat input listed on this page and the heat input listed in Table A-1 and A-16 (100% peak load and 59°C). Which one is correct?

Page 6 of 12. What are the stack arrangements? Submit a flow diagram showing the arrangements.

Appendix A

Calculate the emissions rates for all applicable pollutants from the GE Frame 7FA turbine at different loads (75%, 50%, and 25%).

Show basis of calculation and equivalence in lbs/MMBtu emission rate for each one of the pollutants considered in this project.

Air Quality Analysis

1. Please evaluate the impact of this project on the Class I Chassahowitka National Wilderness Area. This evaluation should include an SO_2 PSD Class I increment analysis and an air quality related values analysis (AQRV). The AQRV analysis includes impacts to visibility, soils, vegetation, and wildlife.

2. Please perform an air toxics analysis for all toxic pollutants proposed to be emitted by burning fuel oil. This analysis should include modeling to determine predicted impacts which can then be compared to the appropriate no threat levels. This analysis should also include impacts due to sulfuric acid mist and arsenic.

Please send the requested information to Teresa Heron at the above address. The processing of your application will continue as soon as this information is received.

Sincerely,

Barry D. Andrews

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

CHF/TH/plm

cc: Ken Kosky, P.E.
Jewell Harper, EPA
Chris Shaver, NPS

P 617 884 184

Certified Mail Receipt
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to R. W. Neiser	
Street & No. Legal & Gov'tl Affairs	
P.O., State & ZIP Code Fla. Power Corp	
Postage St. Pete	$ Fl
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Address of Delivery	
TOTAL Postage & Fees	$
Postmark or Date 11-1-91 PSD-FI-180 AC 49-205114	

PS Form **3800**, June 1990

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece next to the article number.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. R. W. Neiser, S. V. P.
Legal & Gov'tl Affairs
Fla. Power Corp.
3201 34th St. South
St. Petersburg, Fl 33733

4a. Article Number
P 617 884 184

4b. Service Type
☐ Registered ☐ Insured
☑ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
11/5/91

5. Signature (Addressee)

6. Signature (Agent)
[signature]

8. Addressee's Address (Only if requested and fee is paid)

PS Form **3811**, October 1990 ☆U.S. GPO: 1990—273-861 **DOMESTIC RETURN RECEIPT**

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

October 9, 1991

Ms. Jewell A. Harper, Chief
Air Enforcement Branch
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30308

Dear Ms. Harper:

RE: Florida Power Corporation
Intercession City, Osceola County
PSD-FL-180

Enclosed for your review and comment is the above referenced PSD permit application. If you have any comments or questions, please contact Teresa Heron or Cleve Holladay at the above address or at (904)488-1344.

Sincerely,

Patricia G. Adams

Patricia G. Adams
Planner
Bureau of Air Regulation

/pa

Enclosure

KBN

Letter of Transmittal

Date: October 7, 1991

Project No.: 91015

To: Clair Fancy
Florida Department of Environmental Regulation
2600 Blair Stone Road, Room 338
Tallahassee, FL 32399-2400

RECEIVED
OCT 7 1991
Bureau of
Air Regulation

Re: Application to Operate/Construct Air Pollution Sources

The following items are being sent to you: ☒ *with this letter* ☐ *under separate cover*

Copies	*Description*
3	Signed and sealed copies of above-referenced document
1	Summary of Modeling Output Files, plus disk copy

These are transmitted:

☒ *As requested* ☐ *For approval*

☐ *For review* ☐ *For your information*

☐ *For review and comment* ☐

Remarks:

Sender: Kennard F. Kosky/ djk

Copy to: Bob McCann

KBN ENGINEERING AND APPLIED SCIENCES, INC.
1034 Northwest 57th Street Gainesville, Florida 32605 904/331-9000 FAX: 904/332-4189

AF1/LOT1 (07/91)

Florida Power
CORPORATION

RECEIVED
DER - MAIL ROOM
1991 OCT -3 PM 1: 27

RECEIVED
OCT 3 1991
Bureau of
Air Regulation

October 1, 1991

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

Dear Mr. Fancy:

RE: Intercession City Construction Air Permit Application

Enclosed please find four copies of the Intercession City Construction Air Permit Application with modeling computer disk included for your review. Also enclosed is a check for the application fee of five thousand dollars ($5,000.00).

Florida Power Corporation is proposing to locate six simple cycle combustion turbines at the existing Intercession City facility site. Four of the combustion turbines have a generating capability of 92.9 megawatts (MW) at an ambient temperature of 59 degrees Fahrenheit (°F). At the same reference temperature, the remaining two combustion turbines have a generating capability of 185.5 MW.

The peak data provided in the application for the two General Electric Frame 7FA Machines is estimated. Actual peak data is not available at this time.

Design specifications and emissions data are provided in the application. If you have any questions during the review process, please contact me at (813) 866-4511.

Sincerely,

W W Vierday

W. W. Vierday
Environmental & Licensing

cc: K. Kosky
J. J. Murphy

as:TJC.Fancy.Ltr

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

Florida Power
CORPORATION

DATE 10/01/91

CHECK NO. 1333706

[redacted]

PAY: $5*THOUSAND DOLLARS AND 00/100-------------------------- $********5,000.00

NCNB National Bank of Florida
Tampa, Florida

Void after 60 days

TO THE ORDER OF

FLORIDA DEPARTMENT OF ENVIRONMENTAL
REGULATION
2600 BLAIR STONE ROAD
TALLAHASSEE, FL 32301

G. N. Johnson

[redacted]

#5,000pd.
10-3-91
Dept.# 180706

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

AC 49-203114
PSD-FL-180

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Electric Generating Station [X] New[1] [ ] Existing[1]

APPLICATION TYPE: [X] Construction [ ] Operation [ ] Modification

COMPANY NAME: Florida Power Corporation COUNTY: Osceola

Identify the specific emission point source(s) addressed in this application (i.e., Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired)
4 Simple Cycle Combustion Turbines GE Frame 7EA

SOURCE LOCATION: Street State Road 532, 3.5 miles west of Intercession City City Intercession City

UTM: East 446.3 km North 3126.0 km

Latitude 28 ° 15 ' 37.5 "N Longitude 81 ° 32 ' 47.6 "W

APPLICANT NAME AND TITLE: R.W. Neiser, Senior Vice President, Legal and Governmental Affairs

APPLICANT ADDRESS: 3201 34th Street South, St. Petersburg, FL 33733

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Florida Power Corporation

I certify that the statements made in this application for an air construction permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: R. W. Neiser

R.W. Neiser, Senior Vice President, Legal and Governmental Affairs
Name and Title (Please Type)

Date: 9/25/91 Telephone No. (813) 866-5784

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been ~~designed~~/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgement, that

[1]See Florida Administration Code Rule 17-2.100(57) and (104)

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed ______________________

Kennard F. Kosky
Name (Please Type)

KBN Engineering and Applied Sciences, Inc.
Company Name (Please Type)

1034 N.W. 57th Street, Gainesville, FL
Mailing Address (Please Type)

Florida Registration No. 14996 Date: 9-23-91 Telephone No. (904) 331-9000

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Four simple-cycle combustion turbines, peaking units designed to burn No. 2 fuel oil. Each combustion turbine is a GE model PG7111EA, equipped with water injection for NO_x control to 42 PPMVD at 15% oxygen with fuel-bound nitrogen content less than 0.015%. Each unit is site-rated at 92.9 MW (at 59°F) for a total site rating of 371.6 MW.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction July 1992 Completion of Construction December 1993

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

See attached Table 4-4 in PSD application

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

A049-176549 Turbine Peaking Unit Nos. 1 through 6

E. Requested permitted equipment operating time: hrs/day 24; days/wk 7; wks/yr 52;
If power plant, hrs/yr 3,390; if seasonal, describe: ______

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? No
   a. If yes, has "offset" been applied? ______
   b. If yes, has "Lowest Achievable Emission Rate" been applied? ______
   c. If yes, list non-attainment pollutants. ______
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes
3. Does the State "Prevention of Significant Deterioration" (PSD) requirement apply to this source? If yes, see Sections VI and VII. Yes
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? Yes
5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? No
   a. If yes, for what pollutants? ______
   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Water	N/A	N/A		See Figure 2-1 in
Annual Avg.*			90 x 10^6 gallons	PSD Application
Peak Daily**			0.74 x 10^6 gallons	

*Based on 4 CTG units operating 3,390 hrs/yr at peak load and 59°F.
**Based on 4 CTG units operating at peak load and 20F.

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): N/A
2. Product Weight (lbs/hr): N/A

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
PM	15	25.4	NA	NA	15	25.4	See
SO_2	555	564[5]	0.8% sulfur	888	555	564[5]	Figure
NO_x[6]	182	308	92 ppmvd	399.6	182	308	2-1 in
CO	54	91.5	NA	NA	54	91.5	PSD
VOC	5	8.5	NA	NA	5	8.5	app.

See also Table A-1 through A-5; data shown based on one CT at ISO conditions and 3,390 hours/year operation.

[1]See Section V, Item 2.
[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input).
[3]Calculated from operating rate and applicable standard.
[4]Emission, if source operated with control (See Section V, Item 3).
[5]Annual potential emissions using 0.3% sulfur.
[6]Does not include allowance for fuel-bound nitrogen (FBN); if FBN exceeds 0.015%, the allowance under 40 CFR Part 60 Subpart GG is requested (see Table 4-1).

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
Gas Turbine Water		Controlled		
Injection (GE PG7111EA)	NO_x	to 42 PPMVD @ 15% O_2	N/A	N/A
Quiet Combustor				

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
No. 2 Distillate Oil			
+ Per CT Unit	7,826*	8,698**	1,144**
+ For 4 CT Units	31,304*	34,792**	4,576**

+Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.
*Based on CT operation at peak load and 59F. **Based on CT operation at peak load and and 20F.

Fuel Analysis:

Percent Sulfur: 0.5 WT % Max; 0.3 WT % Average Percent Ash: 0.01 WT % Max

Density: 7.09 lbs/gal Typical Percent Nitrogen: 0.03 WT%

Heat Capacity: 18,550 (LHV) BTU/lb 131,520 (LHV) BTU/gal

Other Fuel Contaminants (which may cause air pollution): None

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average N/A Maximum N/A

G. Indicate liquid or solid wastes generated and method of disposal.

1. Water treatment system wastewater will be neutralized before disposal to an existing municipal wastewater disposal line.
2. Oily wastes will be collected in an oil/water separator, with the oil pumped out periodically for off-site disposal. Water from oil/water separator will be disposed to an existing municipal wastewater disposal line.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):*

Stack Height: 50 ft. Stack Diameter: 8'-8" x 17'-4" (13.8 effective) ft.

Gas Flow Rate: 1,551,317 ACFM 544,974 DSCFM Gas Exit Temperature: 1,043 °F.

Water Vapor Content: 6.09 % Velocity: 172.1 FPS

*See Tables A-1 through A-20 in PSD application; data provided above for ISO conditions.

SECTION IV: INCINERATOR INFORMATION
Not Applicable

Type of Waste	Type O (Plastics)	Type II (Rubbish)	Type III (Refuse)	Type IV (Garbage)	Type IV (Pathological)	Type V (Liq. & Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Incinerated							
Uncontrolled (lbs/hr)							

Description of Waste ______

Total Weight Incinerated (lbs/hr) ______ Design Capacity (lbs/hr) ______

Approximate Number of Hours of Operation per day ______ day/wk ______ wks/yr. ______

Manufacturer ______

Date Constructed ______ Model No. ______

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: ______ ft. Stack Diameter: ______ Stack Temp. ______

Gas Flow Rate: ______ ACFM ______ DSCFM* Velocity: ______ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control devices: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) ______

Brief description of operating characteristics of control devices: ________________

____

____

____

____

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

____

____

____

____

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]
   Not Applicable
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods, 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.
   See Tables A-1 through A-20 in PSD application.
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).
   Manufacturer data sheets and emission factors; See Tables A-1 through A-20.
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.)
   Water injection; see Tables A-1, A-6, A-11, and A-16 in PSD application.
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency).
   Manufacturers' guarantees form the basis of emission estimates; see Tables A-1 through A-20 in PSD application.
6. An 8 ½" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.
   See Figure 2-1 in PSD application.
7. An 8 ½" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Examples: Copy of relevant portion of USGS topographic map).
   See Figure 1-1 in PSD application.
8. An 8 ½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.
   See Figure 1-1 in PSD application.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

[X] Yes [ ] No

Contaminant	Rate or Concentration
NO_x	92 ppmvd corrected to 15% O_2 (when corrected
	for heat rate)
SO_2	0.8% sulfur fuel

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy)

[X] Yes [ ] No

Contaminant	Rate or Concentration
See Section 4.0 in PSD	
application	

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration
See Section 4.0 in PSD application	

D. Describe the existing control and treatment technology (if any). (See PSD application)

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:

*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: ft.

b. Diameter ft.

c. Flow Rate: ACFM

d. Temperature: °F.

e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary). See Section 4.0 in PSD application.

1.

a. Control Devices:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

3.

a. Control Device: b. Operating Principles:

c. Efficiency:[1] d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy:[2] h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

4.

a. Control Device: b. Operating Principles:

c. Efficiency:[1] d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy:[2] h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected: See Section 4.0 in PSD application.

1. Control Device: 2. Efficiency:[1]

3. Capital Cost: 4. Useful Life:

5. Operating Cost: 6. Energy:[2]

7. Maintenance Cost: 8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

[1]Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

See Section 5.0 in PSD application

A. Company Monitored Data

1. ________ no. sites ________ TSP ________ ( ) SO^{2*} ________ Wind spd/dir

Period of Monitoring ____/____/____ to ____/____/____
month day year month day year

Other data recorded ____________________

Attach all data or statistical summaries to this application.

*Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [ ] Yes [ ] No

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling
See Section 6.1 in PSD application

1. ______ Year(s) of data from ______ / ______ / ______ to ______ / ______ / ______
month day year month day year

2. Surface data obtained from (location) ______

3. Upper air (mixing height) data obtained from (location) ______

4. Stability wind rose (STAR) data obtained from (location) ______

C. Computer Models Used
See Section 6.1 in PSD application

1. ______ Modified? If yes, attach description.

2. ______ Modified? If yes, attach description.

3. ______ Modified? If yes, attach description.

4. ______ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data
See Section 6.1 in PSD application

Pollutant	Emission Rate
TSP	______ grams/sec
SO^2	______ grams/sec

E. Emission Data Used in Modeling
See Section 6.1 in PSD application
Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.
See PSD application

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e, jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.
See Section 4.0 in PSD application

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.
See Section 4.0 in PSD application

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Electric Generating Station [X] New[1] [ ] Existing[1]

APPLICATION TYPE: [X] Construction [ ] Operation [ ] Modification

COMPANY NAME: Florida Power Corporation COUNTY: Osceola

Identify the specific emission point source(s) addressed in this application (i.e., Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired)
2 Simple Cycle Combustion Turbines GE Frame 7FA

SOURCE LOCATION: Street State Road 532, 3.5 miles west of Intercession City City Intercession City

UTM: East 446.3 km North 3126.0 km

Latitude 28 ° 15 ' 37.5 "N Longitude 81 ° 32 ' 47.6 "W

APPLICANT NAME AND TITLE: R.W. Neiser, Senior Vice President, Legal and Governmental Affairs

APPLICANT ADDRESS: 3201 34th Street South, St. Petersburg, FL 33733

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Florida Power Corporation

I certify that the statements made in this application for an air construction permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: R.W. Neiser

R.W. Neiser, Senior Vice President, Legal and Governmental Affairs
Name and Title (Please Type)

Date: 9/25/91 Telephone No. (813) 866-5784

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been ~~designed~~/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgement, that

[1]See Florida Administration Code Rule 17-2.100(57) and (104)

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed Kennard F. Kosky

Kennard F. Kosky
Name (Please Type)

KBN Engineering and Applied Sciences, Inc.
Company Name (Please Type)

1034 N.W. 57th Street, Gainesville, FL
Mailing Address (Please Type)

Florida Registration No. 14996 Date: 9-23-91 Telephone No. (904) 331-9000

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Two simple-cycle combustion turbines, peaking units designed to burn No. 2 fuel oil. Each combustion turbine is a GE model PG7221FA, equipped with water injection for NO_x control to 42 PPMVD at 15% oxygen with fuel-bound nitrogen content less than 0.015%. Each unit is site-rated at 185.5 MW (at 59°F) for a total rating of 371 MW.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction October 1993 Completion of Construction October 1994

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

See attached Table 4-4 in PSD application

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

A049-176549 Turbine Peaking Unit Nos. 1 through 6

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ;
If power plant, hrs/yr 3,390; if seasonal, describe: ______

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? No
   a. If yes, has "offset" been applied? ______
   b. If yes, has "Lowest Achievable Emission Rate" been applied? ______
   c. If yes, list non-attainment pollutants. ______
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes
3. Does the State "Prevention of Significant Deterioration" (PSD) requirement apply to this source? If yes, see Sections VI and VII. Yes
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? Yes
5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? No

   a. If yes, for what pollutants? ______
   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Water	N/A	N/A		
Annual Avg.*			119 x 10^6 gallons	See Figure 2-1 in
Peak Daily**			0.95 x 10^6 gallons	PSD Application

*Based on 2 CTG units operating 3,390 hrs/yr at peak load and 59°F.
**Based on 2 CTG units operating at peak load and 20F.

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): N/A
2. Product Weight (lbs/hr): N/A

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
PM	17	28.8	NA	NA	17	28.8	See
SO_2	1,017	1,034[5]	0.8% sulfur	1,627	1,017	1,034[5]	Figure
NO_x[6]	334	566	101 ppmvd	803	334	566	2-1 in
CO	79	134	NA	NA	79	134	PSD
VOC	9	15.3	NA	NA	9	15.3	app.

See also Table A-21 through A-25; data shown based on one CT at ISO conditions and 3,390 hours/year operation

[1]See Section V, Item 2.
[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input).
[3]Calculated from operating rate and applicable standard.
[4]Emission, if source operated with control (See Section V, Item 3).
[5]Annual potential emissions using 0.3% sulfur maximum presented.
[6]Does not include allowance for fuel-bound nitrogen (FBN); if FBN exceeds 0.015%, the allowance under 40 CFR Part 60 Subpart GG is requested (see Table 4-1).

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
Gas Turbine Water		Controlled		
Injection (GE PG7221FA)	NO_x	to 42 PPMVD @ 15% O_2	N/A	N/A

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
No. 2 Distillate Oil			
+ Per CT Unit	14,342*	15,452**	2,032**
+ For 2 CT Units	28,684*	30,904**	4,064**

+Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.
*Based on CT operation at peak load and 59F. **Based on CT operation at peak load and and 20F.

Fuel Analysis:

Percent Sulfur: 0.5 WT % Max; 0.3 WT % Average Percent Ash: 0.01 WT % Max

Density: 7.09 lbs/gal Typical Percent Nitrogen: 0.03 WT%

Heat Capacity: 18,550 (LHV) BTU/lb 131,520 (LHV) BTU/gal

Other Fuel Contaminants (which may cause air pollution): None

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average N/A Maximum N/A

G. Indicate liquid or solid wastes generated and method of disposal.

1. Water treatment system wastewater will be neutralized before disposal to an existing municipal wastewater disposal line.
2. Oily wastes will be collected in an oil/water separator, with the oil pumped out periodically for off-site disposal. Water from oil/water separator will be disposed to an existing municipal wastewater disposal line

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):*

Stack Height: 50 ft. Stack Diameter: 420 ft² rectangular (23.1 effective) ft.

Gas Flow Rate: 2,533,579 ACFM 829,530 DSCFM Gas Exit Temperature: 1,153 °F.

Water Vapor Content: 12.44 % Velocity: 100.5 FPS

*See Tables A-21 through A-25 in PSD application; data provided above for ISO conditions.

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type O (Plastics)	Type II (Rubbish)	Type III (Refuse)	Type IV (Garbage)	Type IV (Pathological)	Type V (Liq. & Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Incinerated							
Uncontrolled (lbs/hr)							

Description of Waste ______

Total Weight Incinerated (lbs/hr) ______ Design Capacity (lbs/hr) ______

Approximate Number of Hours of Operation per day ______ day/wk ______ wks/yr. ______

Manufacturer ______

Date Constructed ______ Model No. ______

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: ______ ft. Stack Diameter: ______ Stack Temp. ______

Gas Flow Rate: ______ ACFM ______ DSCFM* Velocity: ______ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control devices: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) ______

Brief description of operating characteristics of control devices: ______________

____

____

____

____

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

____

____

____

____

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]
   Not Applicable
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods, 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.
   See Tables A-21 through A-24 in PSD application.
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).
   Manufacturer data sheets and emission factors; See Tables A-1 through A-20.
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.)
   Water injection; see Table A-21 in PSD application.
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency).
   Manufacturers' guarantees form the basis of emission estimates; see Table A-21 in PSD application.
6. An 8 ½" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.
   See Figure 2-1 in PSD application.
7. An 8 ½" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Examples: Copy of relevant portion of USGS topographic map).
   See Figure 1-1 in PSD application.
8. An 8 ½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.
   See Figure 1-1 in PSD application.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

[X] Yes [ ] No

Contaminant	Rate or Concentration
NO_x	101 ppmvd corrected to 15% O_2 (when corrected
	for heat rate)
SO_2	0.8% sulfur fuel

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy)

[X] Yes [ ] No

Contaminant	Rate or Concentration
See Section 4.0 in PSD	
application	

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration
See Section 4.0 in PSD application	

D. Describe the existing control and treatment technology (if any). (See PSD application)

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:

*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: ft.

b. Diameter ft.

c. Flow Rate: ACFM

d. Temperature: °F.

e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary). See Section 4.0 in PSD application.

1.

a. Control Devices:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

3.

a. Control Device: | b. Operating Principles:

c. Efficiency:[1] | d. Capital Cost:

e. Useful Life: | f. Operating Cost:

g. Energy:[2] | h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

4.

a. Control Device: | b. Operating Principles:

c. Efficiency:[1] | d. Capital Cost:

e. Useful Life: | f. Operating Cost:

g. Energy:[2] | h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected: See Section 4.0 in PSD application.

1. Control Device: | 2. Efficiency:[1]

3. Capital Cost: | 4. Useful Life:

5. Operating Cost: | 6. Energy:[2]

7. Maintenance Cost: | 8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City: | (4) State:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

[1]Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

See Section 5.0 in PSD application

A. Company Monitored Data

1. ___________ no. sites ___________ TSP __________( ) SO^{2*} ______________ Wind spd/dir

Period of Monitoring ________/____/______ to ____________/____/________
month day year month day year

Other data recorded ____

Attach all data or statistical summaries to this application.

*Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [ ] Yes [ ] No

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling
See Section 6.1 in PSD application

1. ______ Year(s) of data from ______/____/______ to ______/____/______
month day year month day year

2. Surface data obtained from (location)________________

3. Upper air (mixing height) data obtained from (location) ________________

4. Stability wind rose (STAR) data obtained from (location) ________________

C. Computer Models Used
See Section 6.1 in PSD application

1. ________________ Modified? If yes, attach description.

2. ________________ Modified? If yes, attach description.

3. ________________ Modified? If yes, attach description.

4. ________________ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data
See Section 6.1 in PSD application

Pollutant	Emission Rate
TSP	________________ grams/sec
SO^2	________________ grams/sec

E. Emission Data Used in Modeling
See Section 6.1 in PSD application
Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.
See PSD application

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e, jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.
See Section 4.0 in PSD application

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.
See Section 4.0 in PSD application

PREVENTION OF SIGNIFICANT DETERIORATION PERMIT APPLICATION FOR THE PROPOSED SIMPLE CYCLE COMBUSTION TURBINES FPC INTERCESSION CITY FACILITY

Prepared For:

Florida Power Corporation
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Prepared By:

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1034 NW 57th Street
Gainesville, Florida 32605

September 1991
91015C1

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ACRONYMS AND ABBREVIATIONS
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AAQS	Ambient Air Quality Standards
ABB	Asea Brown Brovei
acfm	actual cubic feet per minute
As	arsenic
BACT	best available control technology
Be	beryllium
10^6 Btu/hr	million British thermal units per hour
Btu/kWh	British thermal units per kilowatt hour
CAA	Clean Air Act
CFR	Code of Federal Regulations
CO	carbon monoxide
CT	combustion turbine
EPA	U.S. Environmental Protection Agency
EPRI	Electric Power Research Institute
°F	degrees Fahrenheit
F.A.C.	Florida Administrative Code
FBN	fuel-bound nitrogen
FDER	Florida Department of Environmental Regulation
FGD	flue gas desulfurization
FPC	Florida Power Corporation
FPL	Florida Power & Light Company
ft	foot/feet
GEP	good engineering practice
gr/scf	grains per standard cubic feet
H_2SO_4	sulfuric acid
Hg	mercury
HRSG	heat recovery steam generators
HSH	highest, second highest
ISC	Industrial Source Complex
ISCST	Industrial Source Complex Short-Term
KBN	KBN Engineering and Applied Sciences, Inc.
km	kilometer
LAER	lowest achievable emission rate
lb/hr	pounds per hour
m	meter
MW/hr	megawatts per hour
MW	monitor well
NH_3	ammonia
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NSCR	nonselective catalytic reduction

ACRONYMS AND ABBREVIATIONS
(Page 2 of 2)

NSPS	New Source Performance Standards
NWS	National Weather Service
PM(TSP)	total suspended particulate matter
PM10	particulate matter less than or equal to 10 micrometers
ppm	parts per million
ppmvd	parts per million volume, dry
PSD	prevention of significant deterioration
SCR	selective catalytic reduction
SIP	Site Implementation Plan
SNCR	selective noncatalytic reduction
SO_2	sulfuric dioxide
SO_3	sulfuric trioxide
TPH	tons per hour
TPY	tons per year
UNAMAP	Users Network for Applied Modeling of Air Pollution
VOC	volatile organic compound

1.0 INTRODUCTION

Florida Power Corporation (FPC) is proposing to locate 712.6 megawatts (MW) of simple cycle combustion turbines (CTs) at its existing Intercession City facility site. The Intercession City site is located in Osceola County about 3.5 miles west of Intercession City (Figure 1-1). The project will consist of six simple cycle CTs. Four CTs will have a generating capability of 92.9 MW at an ambient temperature of 59 degrees Fahrenheit (°F), and two CTs will have a generating capability of 185.5 MW. The six CTs needed to generate up to 742.6 MW will be located adjacent to six existing CTs, which have a name plate generating capacity of 340.2 MW (Figure 1-2).

KBN Engineering and Applied Sciences, Inc. (KBN), has been contracted by FPC to provide air permitting services for the Intercession City expansion. Initially, preliminary analyses were performed to determine compliance with prevention of significant deterioration (PSD) increments and preconstruction de minimis monitoring levels for the proposed plant only. A full PSD review was then performed to determine whether significant air quality deterioration will result from the proposed facility and other PSD increment consuming sources and to determine compliance with ambient air quality standards (AAQS). The PSD review included control technology review, source impact analysis, air quality analysis (monitoring), and additional impact analyses.

The existing Intercession City plant is considered to be an existing major facility because emissions of regulated pollutants exceed 250 tons per year (TPY). PSD review is required for any pollutant for which the net increase in emissions exceeds the PSD significant emission rates which would constitute a major modification. The potential emissions from the proposed project will exceed the PSD significant emission rates for the following regulated pollutants: sulfur dioxide (SO_2), particulate matter as total suspended particulate [PM(TSP)], particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM10), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfuric acid (H_2SO_4) mist, beryllium (Be), and arsenic (As). Therefore, the project is subject to PSD review for these pollutants.

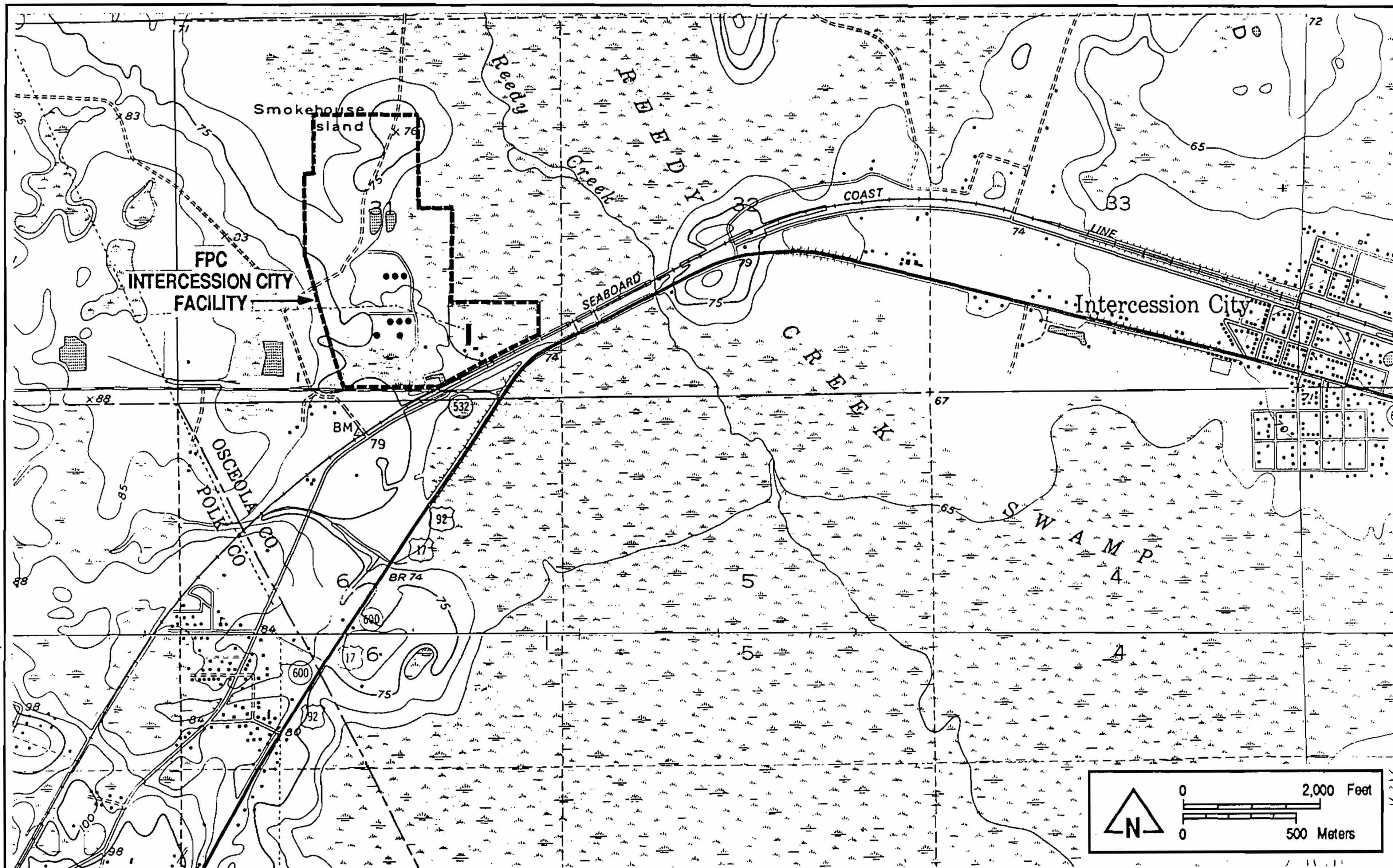

Figure 1-1 LOCATION OF THE FPC INTERCESSION CITY FACILITY

KBN

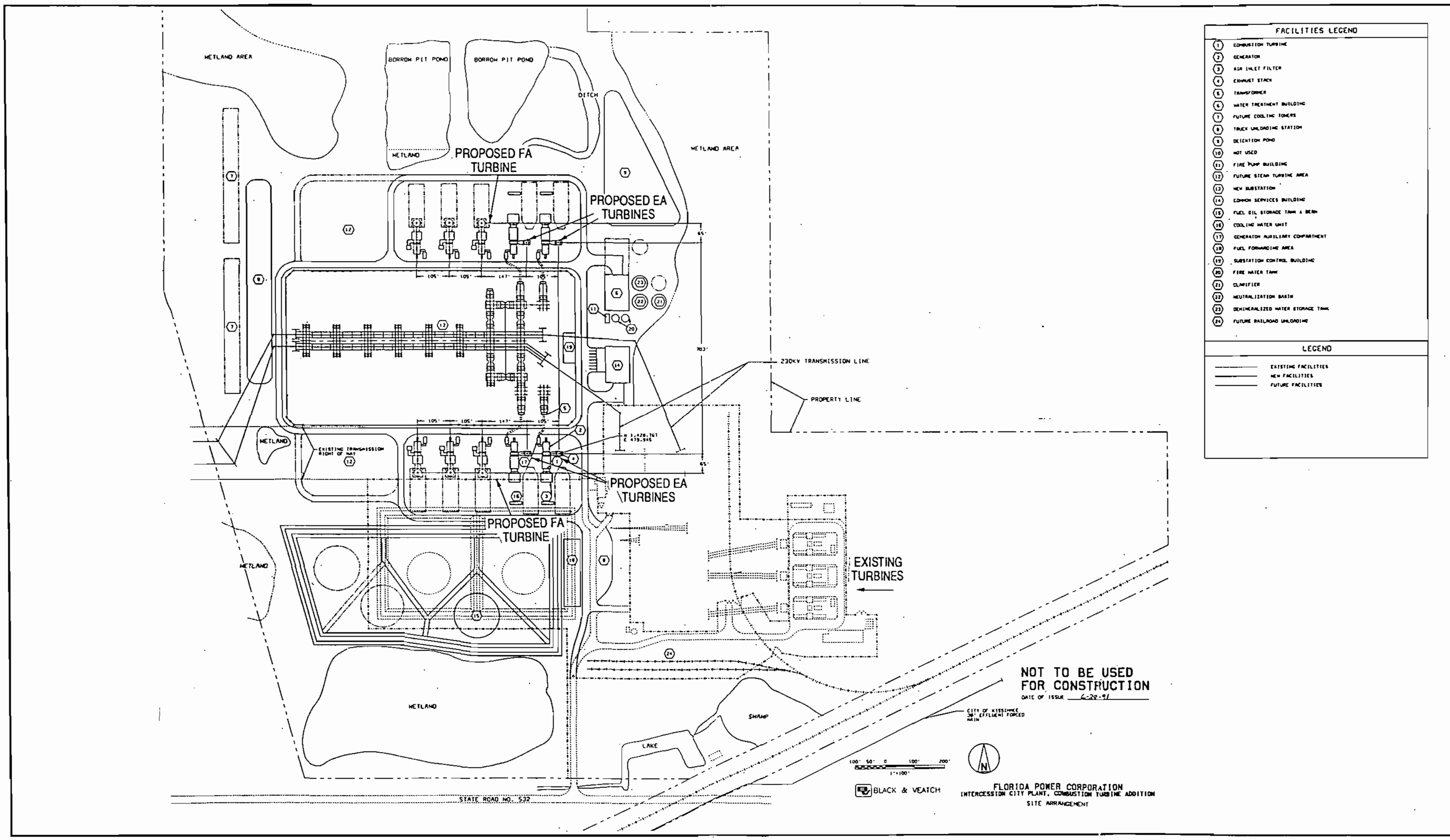

Figure 1-2 SITE PLAN OF THE EXISTING TURBINES AND PROPOSED TURBINES

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This report is presented in eight sections. Descriptions of the existing operation and proposed project are given in Section 2.0. The air quality review requirements and applicability of the project to the PSD and nonattainment regulations are presented in Section 3.0. The control technology review for the CTs applicable under the U.S. Environmental Protection Agency's (EPA's) current top-down approach is discussed in Section 4.0. The air quality monitoring data, including the use of existing air quality monitoring data to satisfy the PSD preconstruction monitoring requirements, are given in Section 5.0. The air source impact analysis approach is presented in Section 6.0. The results of the air quality analyses are summarized in Section 7.0. Additional impact analyses associated with the project's impacts on vegetation, soils, and associated growth are discussed in Section 8.0.

2.0 EXISTING OPERATION AND PROJECT DESCRIPTION

2.1 EXISTING OPERATION

The existing facility consists of six combustion turbine peaking units. Each unit consists of two gas turbines having a maximum permitted heat input rate of 708 million British thermal units per hour (10^6 Btu/hr) with 51 megawatt per hour (MW/hr) output and is fired with No. 2 fuel oil. The maximum sulfur content in the fuel oil fired in the turbines is 0.5 percent. The combustion unit descriptions and emission factors for these sources are presented in Table 2-1. The stack, operating, and emission data for these sources are given in Table 2-2.

2.2 PROJECT DESCRIPTION

The proposed project will consist of six simple-cycle CT peaking units designed to burn No. 2 distillate fuel oil and natural gas. The Intercession City site currently does not have natural gas firing capability. However, the new CTs can be modified to burn natural gas so that future gas capability can be accommodated. The operating and emission data for oil firing were used to assess impacts and evaluate best available control technology (BACT) because emissions with this fuel are higher than those for natural gas and distillate oil is currently planned as the primary fuel.

Four CTs (GE Frame 7EA machines) are of conventional design and will have a generating capability of 92.9 MW at 59°F for a total rating of 371.6 MW (see Figure 2-1). Two CTs (GE Frame 7FA) are of the advanced design and will have a generating capability of 185.5 MW at 59°F, for a total rating of 371 MW. The total generating capability of the six CTs will be 742.6 MW. Design information and operating parameters for an individual CT when firing distillate oil at ambient temperatures of 20, 59, and 90°F are presented in Appendix A. Information is also provided for the EA type CTs operating at 100, 75, 50, and 25 percent load. The annual emissions presented in Appendix A are based on 8,760 hours of operation per year. The average requested operational time for all new CT units is 3,390 hours per year with the condition that any one CT may operate for 8,760 hours per year. The No. 2 fuel oil used in the proposed CTs will have a maximum sulfur content specification of 0.5 percent with an annual average sulfur content of 0.3 percent.

Table 2-1. Combustion Unit Descriptions and Emission Factors for Existing Sources at FPC's Intercession City Facility

Unit	Fuel	Heat Input Rate (10^6 Btu/hr)	Maximum Fuel Use	Emission Factors: Units	PM	SO_2	NO_2	CO	VOC
CT Units	No. 2 oil	708	5,166 gal/hr	lb/10^6 Btu[b]	0.0365	0.511	0.495	0.112	0.0406
No. 1 through No. 6				lb/10^3 gal	5	70 [a]	67.8	15.4	5.57

Note: Heat content for No. 2 fuel oil is assumed to be approximately 137,000 Btu/gal.

Btu = British thermal units.
Btu/gal = British thermal units per gallon.
CO = carbon monoxide.
gal/hr = gallons per hour.
lb/10^6 Btu = pounds per million British thermal units.
lb/10^3 gal = pounds per thousand gallons.
NO_2 = nitrogen dioxide.
PM = particulate matter.
SO_2 = sulfur dioxide.
VOC = volatile organic compound.

[a] Based on emission factor of 140 x S, where S is the sulfur content, assumed to be 0.5 percent.
[b] This value is calculated based on the heat content of the fuel oil.

Table 2-2. Stack, Operating, and Emission Data for Existing Sources at FPC's Intercession City Facility

Parameter	Units	Gas Turbines
Relative x,y Location[a]		
Units 1 and 2	ft	1,070; -230
	m	326.1; -70.1
Units 3 and 4	ft	1,070; -335
	m	326.1; -102.1
Units 5 and 6	ft	1,070; -440
	m	326.1; -134.1
Stack Data		
Height	ft	20
	m	6.1
Diameter	ft	14.6 [b]
	m	3.96
Operating Data		
Temperature	°F	760
	K	677
Velocity	ft/sec	175
	m/sec	53.3
Total Emission Data		
PM	lb/hr	155.0
	g/sec	19.5
SO_2	lb/hr	2,169.7
	g/sec	273.4
NO_2	lb/hr	2,101.5
	g/sec	264.8
CO	lb/hr	477.3
	g/sec	60.1
VOC	lb/hr	172.6
	g/sec	21.8

[a] Relative to the location of proposed Unit No. 5. Stacks for existing CT units are colocated halfway between each pair for modeling purposes.
[b] Effective diameter based on the area of a rectangular vent with length and width dimensions of 14 and 12 ft, respectively.

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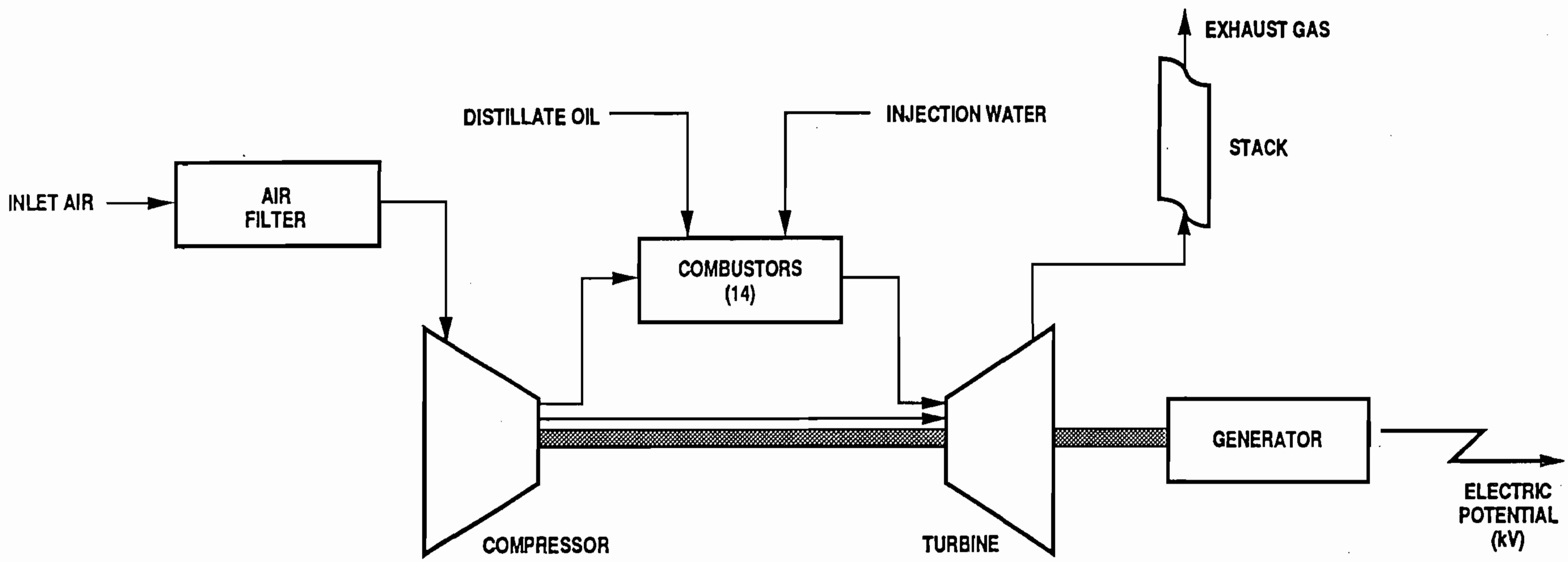

COMBUSTION TURBINE GENERATOR

Figure 2-1 COMBUSTION TURBINE FLOW DIAGRAM

KBN

The maximum emissions from the CTs occur at the lowest design temperature of 20°F, while the lowest exit gas flow rates occur at the highest design temperature of 90°F. In order to provide a conservative estimate of impacts (i.e., higher than expected), modeling was performed using the highest emissions at the 20°F design condition coupled with the lowest exit gas flow rates at 90°F design condition. The stack, operating, and SO_2 emission data for the CTs are given in Table 2-3.

Table 2-3. Stack, Operating, and Emission Data for the Proposed Combustion Turbines Used in the Dispersion Modeling Analysis

Parameter	Type of Combustion Turbine	
	Frame 7EA	Frame 7FA
Heat Input, 10^6 Btu/hr[a]	1,144.3	2,032.2
Stack Height, ft (m)	50 (15.2)	50 (15.2)
Stack Diameter, ft (m)	13.8 (4.22)	23.1 (7.04)
Stack Gas Velocity		
ft/sec (m/sec)[b]	161.5 (49.2)	94.9 (28.9)
Stack Gas Exit Temperature		
°F (K)[b]	1,065 (847)	1,184 (913)
SO_2 Emission Rate, lb/hr (g/s)		
Each Turbine[a]	616.9 (77.7)	1,095.5 (138.0)

Note: The stacks were located at the relative x,y (m) values of: 76.8, 19.8; 44.8, 19.8; 0, 0; 76.8, 234.1; 44.8, 234.1; and 0, 253.9.

[a] Operating data at ambient temperature of 20°F; SO_2 emission rate based on 0.5 percent fuel oil.

[b] Operating data at ambient temperature of 90°F.

3.0 AIR QUALITY REVIEW REQUIREMENTS AND APPLICABILITY

The following discussion pertains to the federal and state air regulatory requirements and their applicability to the Intercession City project. These regulations must be satisfied before the proposed simple-cycle turbines can begin operation.

3.1 NATIONAL AND STATE AAQS

The existing applicable national and Florida AAQS are presented in Table 3-1. Primary national AAQS were promulgated to protect the public health, and secondary national AAQS were promulgated to protect the public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air. Areas of the country in violation of AAQS are designated as nonattainment areas, and new sources to be located in or near these areas may be subject to more stringent air permitting requirements.

3.2 PSD REQUIREMENTS

3.2.1 GENERAL REQUIREMENTS

Under federal and State of Florida PSD review requirements, all major new or modified sources of air pollutants regulated under the Clean Air Act (CAA) must be reviewed and a preconstruction permit issued. Florida's State Implementation Plan (SIP), which contains PSD regulations, has been approved by EPA, and therefore PSD approval authority has been granted to the Florida Department of Environmental Regulation (FDER).

A "major facility" is defined as any one of 28 named source categories which has the potential to emit 100 TPY or more, or any other stationary facility which has the potential to emit 250 TPY or more of any pollutant regulated under CAA. "Potential to emit" means the capability, at maximum design capacity, to emit a pollutant after the application of control equipment. A "major modification" is defined under PSD regulations as a change at an existing major facility which increases emissions by greater than significant amounts. PSD significant emission rates are shown in Table 3-2.

PSD review is used to determine whether significant air quality deterioration will result from the new or modified facility. Federal PSD requirements are contained in 40 CFR 52.21, Prevention

Table 3-1. National and State AAQS, Allowable PSD Increments, and Significance Levels ($\mu g/m^3$)

		AAQS					
		National		State			Significant
		Primary	Secondary	of	PSD Increments		Impact
Pollutant	Averaging Time	Standard	Standard	Florida	Class I	Class II	Levels
Particulate Matter (TSP)	Annual Geometric Mean	NA	NA	NA	5	19	1
	24-Hour Maximum [a]	NA	NA	NA	10	37	5
Particulate Matter (PM10)	Annual Arithmetic Mean	50	50	50	4 [c]	17 [c]	1
	24-Hour Maximum [b]	150	150	150	8 [c]	30 [c]	5
Sulfur Dioxide	Annual Arithmetic Mean	80	NA	60	2	20	1
	24-Hour Maximum [b]	365	NA	260	5	91	5
	3-Hour Maximum [b]	NA	1,300	1,300	25	512	25
Carbon Monoxide	8-Hour Maximum [b]	10,000	10,000	10,000	NA	NA	500
	1-Hour Maximum [b]	40,000	40,000	40,000	NA	NA	2,000
Nitrogen Dioxide	Annual Arithmetic Mean	100	100	100	2.5	25	1
Ozone	1-Hour Maximum [d]	235	235	235	NA	NA	NA
Lead	Calendar Quarter Arithmetic Mean	1.5	1.5	1.5	NA	NA	NA

[a] Maximum concentration not to be exceeded more than once per year.
[b] Achieved when the expected number of exceedances per year is less than 1.
[c] Proposed October 5, 1989.
[d] Achieved when the expected number of days per year with concentrations above the standard is less than 1.

Note: Particulate matter (TSP) = total suspended particulate matter.
Particulate matter (PM10) = particulate matter with aerodynamic diameter less than or equal to 10 micrometers.
NA = Not applicable, i.e., no standard exists.

Sources: Federal Register, Vol. 43, No. 118, June 19, 1978.
40 CFR 50.
40 CFR 52.21.
Chapter 17-2.400, F.A.C.

Table 3-2. PSD Significant Emission Rates and De Minimis Monitoring Concentrations

Pollutant	Regulated Under	Significant Emission Rate (TPY)	De Minimis Monitoring Concentration ($\mu g/m^3$)
Sulfur Dioxide	NAAQS, NSPS	40	13, 24-hour
Particulate Matter (TSP)	NAAQS, NSPS	25	10, 24-hour
Particulate Matter (PM10)	NAAQS	15	10, 24-hour
Nitrogen Oxides	NAAQS, NSPS	40	14, annual
Carbon Monoxide	NAAQS, NSPS	100	575, 8-hour
Volatile Organic Compounds (Ozone)	NAAQS, NSPS	40	100 TPY[a]
Lead	NAAQS	0.6	0.1, 3-month
Sulfuric Acid Mist	NSPS	7	NM
Total Fluorides	NSPS	3	0.25, 24-hour
Total Reduced Sulfur	NSPS	10	10, 1-hour
Reduced Sulfur Compounds	NSPS	10	10, 1-hour
Hydrogen Sulfide	NSPS	10	0.2, 1-hour
Asbestos	NESHAP	0.007	NM
Beryllium	NESHAP	0.0004	0.001, 24-hour
Mercury	NESHAP	0.1	0.25, 24-hour
Vinyl Chloride	NESHAP	1	15, 24-hour
Benzene	NESHAP	b	NM
Radionuclides	NESHAP	b	NM
Inorganic Arsenic	NESHAP	b	NM

[a] No de minimis concentration; an increase in VOC emissions of 100 TPY or more will require monitoring analysis for ozone.
[b] Any emission rate of these pollutants.

Note: Ambient monitoring requirements for any pollutant may be exempted if the impact of the increase in emissions is below de minimis monitoring concentrations.

NAAQS = National Ambient Air Quality Standards.
NM = No ambient measurement method.
NSPS = New Source Performance Standards.
NESHAP = National Emission Standards for Hazardous Air Pollutants.
$\mu g/m^3$ = micrograms per cubic meter.

Sources: 40 CFR 52.21.
Chapter 17-2, F.A.C.

of Significant Deterioration of Air Quality. The State of Florida has adopted PSD regulations that are essentially identical to federal regulations [Chapter 17-2.510, Florida Administrative Code (F.A.C.)]. Major facilities and major modifications are required to undergo the following analysis related to PSD for each pollutant emitted in significant amounts:

1. Control technology review,
2. Source impact analysis,
3. Air quality analysis (monitoring),
4. Source information, and
5. Additional impact analyses.

In addition to these analyses, a new facility must also be reviewed with respect to Good Engineering Practice (GEP) stack height regulations. Discussions concerning each of these requirements are presented in the following sections.

3.2.2 INCREMENTS/CLASSIFICATIONS

In promulgating the 1977 CAA Amendments, Congress specified that certain increases above an air quality baseline concentration level of SO_2 and PM(TSP) concentrations would constitute significant deterioration. The magnitude of the allowable increment depends on the classification of the area in which a new source (or modification) will be located or have an impact. Three classifications were designated based on criteria established in the CAA Amendments. Initially, Congress promulgated areas as Class I (international parks, national wilderness areas, and memorial parks larger than 5,000 acres, and national parks larger than 6,000 acres) or as Class II (all areas not designated as Class I). No Class III areas, which would be allowed greater deterioration than Class II areas, were designated. EPA then promulgated as regulations the requirements for classifications and area designations.

On October 17, 1988, EPA promulgated regulations to prevent significant deterioration due to emissions of nitrogen oxides (NO_x) and established PSD increments for NO_2 concentrations. The EPA class designations and allowable PSD increments are presented in Table 3-1. FDER has adopted the EPA class designations and allowable PSD increments for SO_2, PM(TSP), and NO_2 increments.

The term "baseline concentration" evolves from federal and state PSD regulations and refers to a concentration level corresponding to a specified baseline date and certain additional baseline sources. By definition, in the PSD regulations as amended August 7, 1980, baseline concentration means the ambient concentration level that exists in the baseline area at the time of the applicable baseline date. A baseline concentration is determined for each pollutant for which a baseline date is established and includes:

1. The actual emissions representative of facilities in existence on the applicable baseline date; and
2. The allowable emissions of major stationary facilities that commenced construction before January 6, 1975, for SO_2 and PM(TSP) concentrations, or February 8, 1988, for NO_2 concentrations, but that were not in operation by the applicable baseline date.

The following emissions are not included in the baseline concentration and therefore affect PSD increment consumption:

1. Actual emissions from any major stationary facility on which construction commenced after January 6, 1975, for SO_2 and PM(TSP) concentrations, and after February 8, 1988, for NO_2 concentrations; and
2. Actual emission increases and decreases at any stationary facility occurring after the baseline date.

In reference to the baseline concentration, the term "baseline date" actually includes three different dates:

1. The major facility baseline date, which is January 6, 1975, in the cases of SO_2 and PM(TSP), and February 8, 1988, in the case of NO_2.
2. The minor facility baseline date, which is the earliest date after the trigger date on which a major stationary facility or major modification subject to PSD regulations submits a complete PSD application.
3. The trigger date, which is August 7, 1977, for SO_2 and PM(TSP), and February 8, 1988, for NO_2.

The minor source baseline date for SO_2 and PM(TSP) has been set as December 27, 1977, for the entire State of Florida (Chapter 17-2.450, F.A.C.). The minor source baseline date for NO_2 has been set as March 28, 1988.

3.2.3 CONTROL TECHNOLOGY REVIEW

The control technology review requirements of the federal and state PSD regulations require that all applicable federal and state emission limiting standards be met and that BACT be applied to control emissions from the source [Chapter 17-2.500(5)(c), F.A.C]. The BACT requirements are applicable to all regulated pollutants for which the increase in emissions from the facility or modification exceeds the significant emission rate (see Table 3-2).

BACT is defined in Chapter 17-2.100(25), F.A.C., as:

> An emissions limitation, including a visible emission standard, 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 (including fuel cleaning or treatment or innovative fuel combustion techniques) for control of such pollutant. If the Department determines that technological or economic limitations on the application of measurement methodology to a particular part of a source or facility would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emissions reductions achievable by implementation of such design, equipment, work practice, or operation.

The requirements for BACT were promulgated within the framework of PSD in the 1977 amendments of the CAA [Public Law 95-95; Part C, Section 165(a)(4)]. The primary purpose of BACT is to optimize consumption of PSD air quality increments and thereby enlarge the potential for future economic growth without significantly degrading air quality (EPA, 1978; 1980). Guidelines for the evaluation of BACT can be found in EPA's Guidelines for Determining Best Available Control Technology (BACT), (EPA, 1978) and in the PSD Workshop Manual (EPA, 1980). These guidelines were promulgated by EPA to provide a consistent approach to BACT and to ensure that the impacts of alternative emission control systems are measured by the same set of parameters. In addition, through implementation of these guidelines, BACT in one area may not be identical to BACT in another area. According to EPA (1980), "BACT analyses for the same types of emissions unit and the same pollutants in different locations or situations may determine that different control strategies should be applied to the different sites, depending on site-specific factors. Therefore, BACT analyses must be conducted on a case-by-case basis."

The BACT requirements are intended to ensure that the control systems incorporated in the design of a proposed facility reflect the latest in control technologies used in a particular industry and take into consideration existing and future air quality in the vicinity of the proposed facility. BACT must, as a minimum, demonstrate compliance with New Source Performance Standards (NSPS) for a source (if applicable). An evaluation of the air pollution control techniques and systems, including a cost-benefit analysis of alternative control technologies capable of achieving a higher degree of emission reduction than the proposed control technology, is required. The cost-benefit analysis requires the documentation of the materials, energy, and economic penalties associated with the proposed and alternative control systems, as well as the environmental benefits derived from these systems. A decision on BACT is to be based on sound judgment, balancing environmental benefits with energy, economic, and other impacts (EPA, 1978).

Historically, a "bottom-up" approach consistent with the BACT Guidelines and PSD Workshop Manual has been used. With this approach, an initial control level, which is usually NSPS, is evaluated against successively more stringent controls until a BACT level is selected. However, EPA developed a concern that the bottom-up approach was not providing the level of BACT decisions originally intended. As a result, in December 1987, the EPA Assistant Administrator for Air and Radiation mandated changes in the implementation of the PSD program including the adoption of a new "top-down" approach to BACT decision making.

The top-down BACT approach essentially starts with the most stringent (or top) technology and emissions limit that have been applied elsewhere to the same or a similar source category. The applicant must next provide a basis for rejecting this technology in favor of the next most stringent technology or propose to use it. Rejection of control alternatives may be based on technical or economic infeasibility. Such decisions are made on the basis of physical differences (e.g., fuel type), locational differences (e.g., availability of water), or significant differences that may exist in the environmental, economic, or energy impacts. The differences between the proposed facility and the facility on which the control technique was applied previously must be justified. Recently, EPA issued a draft guidance document on the top-down approach entitled Top-Down Best Available Control Technology Guidance Document (EPA, 1990).

3.2.4 AIR QUALITY MONITORING REQUIREMENTS

In accordance with requirements of 40 Code of Federal Regulations (CFR) 52.21(m) and Chapter 17-2.500(f), F.A.C, any application for a PSD permit must contain an analysis of continuous ambient air quality data in the area affected by the proposed major stationary facility or major modification. For a new major facility, the affected pollutants are those that the facility potentially would emit in significant amounts. For a major modification, the pollutants are those for which the net emissions increase exceeds the significant emission rate (see Table 3-2).

Ambient air monitoring for a period of up to 1 year is generally appropriate to satisfy the PSD monitoring requirements. A minimum of 4 months of data is required. Existing data from the vicinity of the proposed source may be utilized if the data meet certain quality assurance requirements; otherwise, additional data may need to be gathered. Guidance in designing a PSD monitoring network is provided in EPA's Ambient Monitoring Guidelines for Prevention of Significant Deterioration (EPA, 1987a).

The regulations include an exemption which excludes or limits the pollutants for which an air quality analysis must be conducted. This exemption states that FDER may exempt a proposed major stationary facility or major modification from the monitoring requirements with respect to a particular pollutant if the emissions increase of the pollutant from the facility or modification would cause, in any area, air quality impacts less than the de minimis levels presented in Table 3-2 [Chapter 17-2.500(3)(e), F.A.C.].

3.2.5 SOURCE IMPACT ANALYSIS

A source impact analysis must be performed for a proposed major source subject to PSD for each pollutant for which the increase in emissions exceeds the significant emission rate (Table 3-2). The PSD regulations specifically provide for the use of atmospheric dispersion models in performing impact analyses, estimating baseline and future air quality levels, and determining compliance with AAQS and allowable PSD increments. Designated EPA models normally must be used in performing the impact analysis. Specific applications for other than EPA-approved models require EPA's consultation and prior approval. Guidance for the use and application of dispersion models is presented in the EPA publication Guideline on Air Quality Models (Revised) (EPA, 1987b). The source impact analysis for criteria pollutants may be limited to only the new or modified source if the net increase in impacts due to the new or modified source is below significance levels, as presented in Table 3-1.

Various lengths of record for meteorological data can be utilized for impact analysis. A 5-year period can be used with corresponding evaluation of highest, second-highest short-term concentrations for comparison to AAQS or PSD increments. The term "highest, second-highest" (HSH) refers to the highest of the second-highest concentrations at all receptors (i.e., the highest concentration at each receptor is discarded). The second-highest concentration is significant because short-term AAQS specify that the standard should not be exceeded at any location more than once a year. If less than 5 years of meteorological data are used in the modeling analysis, the highest concentration at each receptor normally must be used for comparison to air quality standards.

3.2.6 ADDITIONAL IMPACT ANALYSIS

In addition to air quality impact analyses, federal and State of Florida PSD regulations require analyses of the impairment to visibility and the impacts on soils and vegetation that would occur as a result of the proposed source [40 CFR 52.21; Chapter 17-2.500(5)(e), F.A.C.]. These analyses are to be conducted primarily for PSD Class I areas. Impacts due to general commercial, residential, industrial, and other growth associated with the source must also be addressed. These analyses are required for each pollutant emitted in significant amounts (Table 3-2).

3.2.7 GOOD ENGINEERING PRACTICE STACK HEIGHT

The 1977 CAA Amendments require that the degree of emission limitation required for control of any pollutant not be affected by a stack height that exceeds GEP or any other dispersion technique. On July 8, 1985, EPA promulgated final stack height regulations (EPA, 1985a). Identical regulations have been adopted by FDER [Chapter 17-2.270, F.A.C.]. GEP stack height is defined as the highest of:

1. 65 meters (m), or

2. A height established by applying the formula:

$$Hg = H + 1.5L$$

where: Hg = GEP stack height,

H = Height of the structure or nearby structure, and

L = Lesser dimension (height or projected width) of nearby structure(s), or

3. A height demonstrated by a fluid model or field study.

"Nearby" is defined as a distance up to five times the lesser of the height or width dimensions of a structure or terrain feature, but not greater than 0.8 kilometers (km). Although GEP stack height regulations require that the stack height used in modeling for determining compliance with AAQS and PSD increments not exceed the GEP stack height, the actual stack height may be greater.

The stack height regulations also allow increased GEP stack height beyond that resulting from the above formula in cases where plume impaction occurs. Plume impaction is defined as concentrations measured or predicted to occur when the plume interacts with elevated terrain. Elevated terrain is defined as terrain which exceeds the height calculated by the GEP stack height formula.

3.3 NONATTAINMENT RULES

Based on the current nonattainment provisions (Chapter 17-2.510, F.A.C.), all major new facilities and modifications to existing major facilities located in a nonattainment area must undergo nonattainment review. A new major facility is required to undergo this review if the proposed pieces of equipment have the potential to emit 100 TPY or more of the nonattainment pollutant. A major modification at a major facility is required to undergo review if it results in a significant net emission increase of 40 TPY or more of the nonattainment pollutant or the modification is major (i.e., 100 TPY or more).

For major facilities or major modifications that locate in an attainment or unclassifiable area, the nonattainment review procedures apply if the source or modification is located within the area of influence of a nonattainment area. The area of influence is defined as an area which is outside the boundary of a nonattainment area but within the locus of all points that are 50 km outside the boundary of the nonattainment area. Based on Chapter 17-2.510(2)(a)2.a, F.A.C., all volatile organic compound (VOC) sources that are located within an area of influence are exempt from the provisions of new source review for nonattainment areas. Sources that emit other nonattainment pollutants and are located within the area of influence are subject to nonattainment review unless the maximum allowable emissions from the proposed source do not have a significant impact within the nonattainment area.

3.4 SOURCE APPLICABILITY

3.4.1 AREA CLASSIFICATION

The Intercession City Plant is located in Osceola County, which has been designated by EPA and FDER as an attainment area for all criteria pollutants. Osceola County and surrounding counties are designated as PSD Class II areas for SO_2, PM(TSP), and NO_2. The Intercession City site is located more than 100 km from any PSD Class I area. The nearest Class I areas to the site are the Everglades National Park and Chassahowitzka National Wildlife Refuge, which are approximately 280 km and 120 km, respectively, from the plant site.

3.4.2 PSD REVIEW

3.4.2.1 Pollutant Applicability

The existing Intercession City Plant is considered to be an existing major facility because emissions of regulated pollutants exceed 250 TPY (refer to Table 2-2); therefore, PSD review is required for any pollutant for which the net increase in emissions exceeds the PSD significant emission rates presented in Table 3-2 (i.e., major modification). As shown, potential emissions from the proposed project will exceed the PSD significant emission rates for the following regulated pollutants: SO_2, PM(TSP), PM10, NO_2, CO, H_2SO_4 mist, Be, and inorganic As. Therefore, the project is subject to PSD review for these pollutants.

3.4.2.2 Ambient Monitoring

Based upon the net increase in emissions from the proposed project, presented in Table 3-3, a PSD preconstruction ambient monitoring analysis is required for SO_2, PM(TSP), PM10, NO_2, CO, sulfuric acid mist, Be, and As. However, if the net increase in impact of a pollutant is less than the de minimis monitoring concentration, then an exemption from the preconstruction ambient monitoring requirement may be granted for that pollutant. In addition, if an acceptable ambient monitoring method for the pollutant has not been established by EPA, monitoring is not required.

If preconstruction monitoring data are required to be submitted, data collected at or near the project site can be submitted based on existing air quality data (e.g., FDER) or the collection of on-site data.

Maximum predicted impacts due to the net increase associated with the proposed project are presented in Table 3-4 for pollutants requiring PSD review. The methodology used to predict maximum impacts and the impact analysis results are presented in Sections 6.0 and 7.0. As shown in Table 3-4, the maximum net increase in impact is below the respective de minimis monitoring concentration for all pollutants except sulfur dioxide. There is no acceptable ambient monitoring method for sulfuric acid mist and As; therefore, monitoring is not required for these pollutants.

In January 1991, FPC submitted a preliminary air quality impact assessment of the proposed simple-cycle CTs to FDER in response to the potential SO_2 monitoring requirement. The assessment described the maximum predicted impacts due to the turbines and recommended the use of existing FDER air quality monitoring data that would be appropriate to satisfy PSD preconstruction monitoring requirements. In June 1991, FDER determined that data collected at the recommended monitoring site was acceptable for satisfying this requirement (see Appendix B).

3.4.2.3 GEP Stack Height Impact Analysis

The GEP stack height regulations allow any stack to be at least 65 m high. The proposed stacks for the proposed turbines will be 50 feet (ft) in height (15.2 m) and, therefore, do not exceed the GEP stack height. The potential for downwash of the units' emissions due to nearby structures is discussed in Section 6.0, Air Quality Modeling Approach.

Table 3-3. Net Increase in Emissions Due to the Intercession City Project Compared to the PSD Significant Emission Rates

Pollutant	Emissions (TPY) Potential Emissions From Proposed Turbines	Significant Emission Rate	PSD Review
Sulfur Dioxide	4,325[b]	40	Yes
Particulate Matter (TSP)	159	25	Yes
Particulate Matter (PM10)	159	15	Yes
Nitrogen Dioxide	2,369	40	Yes
Carbon Monoxide	633	100	Yes
Volatile Organic Compounds	65	NA	No
Lead	0.12	0.6	No
Sulfuric Acid Mist	626	7	Yes
Total Fluorides	0.44	3	No
Total Reduced Sulfur[a]	NEG	10	No
Reduced Sulfur Compounds[a]	NEG	10	No
Hydrogen Sulfide[a]	NEG	10	No
Asbestos[a]	NEG	0.007	No
Beryllium	0.034	0.0004	Yes
Mercury	0.04	0.1	No
Vinyl Chloride[a]	NEG	1	No
Benzene[a]	NEG	0	No
Radionuclides[a]	NEG	0	No
Inorganic Arsenic	0.054	0	Yes

Note: NEG = Negligible.
All calculations based on 59°F peak load condition and 3,390 hours of operation.

[a]Emissions of these pollutants considered not to have any emission rate increase.
[b]Based on average sulfur content specification of 0.3 percent in fuel oil.

Table 3-4. Predicted Net Increase In Impacts Due to the Intercession City Project Compared to PSD De Minimis Monitoring Concentrations

	Concentration ($\mu g/m^3$)	
Pollutant	Predicted Net Increase In Impacts[a]	De Minimis Monitoring Concentration
Sulfur Dioxide	16.1	13, 24-hour
Particulate Matter (TSP)	0.34	10, 24-hour
Particulate Matter (PM10)	0.34	10, 24-hour
Nitrogen Dioxide	0.34[b]	14, annual
Carbon Monoxide	4.2	575, 8-hour
Beryllium	0.000075	0.001, 24-hour
Sulfuric Acid Mist	NA	NM
Inorganic Arsenic	NA	NM

Note: NA = Not applicable.
NM = No acceptable ambient measurement method has been developed and, therefore, de minimis levels have not been established by EPA.

[a] Based on maximum emissions at 100-percent load and 100-percent capacity factor. Impacts reported are highest concentrations.

[b] If fuel-bound nitrogen content was 0.25 percent (i.e., NO_x emission rate of 92 ppm) the maximum annual concentration is predicted to be 0.74 $\mu g/m^3$.

3.4.3 NONATTAINMENT REVIEW

The Intercession City plant is located in Osceola County, which is classified as an attainment area for all criteria pollutants. The plant is also located more than 50 km from any nonattainment area. Therefore, nonattainment requirements are not applicable.

4.0 CONTROL TECHNOLOGY REVIEW

4.1 APPLICABILITY

The control technology review requirements of the PSD regulations are applicable to emissions of SO_2, PM(TSP), PM10, NO_x, CO, H_2SO_4 mist, Be, Hg, and inorganic As (see Section 3.0). This section presents the applicable NSPS and the proposed BACT for these pollutants. The approach to BACT analyses is based on the regulatory definitions of BACT, as well as EPA's current policy guidance requiring the top-down approach.

4.2 NEW SOURCE PERFORMANCE STANDARDS

The applicable NSPS for gas turbines are codified in 40 CFR 60, Subpart GG. These regulations apply to:

1. "Electric utility stationary gas turbines" with a heat input at peak load of greater than 100 x 10^6 Btu/hr [40 CFR 60.332 (b)];
2. "Stationary gas turbines" with a heat input at peak load between 10 and 100 x 10^6 Btu/hr [40 CFR 60.332 (c)]; or
3. "Stationary gas turbines" with a manufacturer's rate base load at ISO conditions of 30 MW or less [40 CFR 60.332 (d)].

The electric utility stationary gas turbine provisions apply to stationary gas turbines constructed for the purpose of supplying more than one-third of its potential electric output capacity to any utility power distribution system for sale [40 CFR 60.331 (q)]. The requirements for electric utility stationary gas turbines are applicable to the project and are the most stringent provision of the NSPS. These requirements are summarized in Table 4-1 and were considered in the BACT analysis.

As noted from Table 4-1, the NSPS NO_x emission limit can be adjusted upward to allow for fuel-bound nitrogen. For a fuel-bound nitrogen concentration of 0.015 percent or less, no increase in the NSPS is provided; for a fuel-bound nitrogen concentration of 0.06 percent, the NSPS is increased by 0.0024 percent or 24 parts per million (ppm).

Table 4-1. Federal NSPS For Electric Utility Stationary Gas Turbines

Pollutant	Emission Limitation[a]
Sulfur Dioxide	Maximum of 0.015 percent by volume at 15 percent oxygen on a dry basis or sulfur in fuel no greater than 0.8 percent by weight
Nitrogen Oxides [b]	0.0075 percent by volume (75 ppm) at 15 percent O_2 on a dry basis adjusted for heat rate and fuel nitrogen

[a] Applicable to electric utility gas turbines with a heat input at peak load of greater than 100×10^6 Btu/hr.

[b] Standard is multiplied by 14.4/Y; where Y is the manufacturer's rated heat rate in kilojoules per watt at rated load or actual measured heat rate based on the lower heating value of fuel measured at actual peak load; Y cannot be greater than 14.4. Standard is adjusted upward (additive) by the percent of nitrogen in the fuel:

Fuel-bound nitrogen (percent by weight)	Allowed Increase NO_x percent by volume
$N \leq 0.015$	0
$0.015 < N \leq 0.1$	0.04(N)
$0.1 < N \leq 0.25$	0.004+0.0067(N-0.1)
$N > 0.25$	0.005

where: N = the nitrogen content of the fuel (percent by weight).

Source: 40 CFR 60, Subpart GG.

For the Intercession City CTs, the NSPS emission limit would be 92 ppm corrected to 15 percent oxygen at a fuel-bound nitrogen content of 0.015 percent for the Frame 7EA machines and 101 ppm corrected for the Frame 7FA machines.

4.3 BEST AVAILABLE CONTROL TECHNOLOGY

4.3.1 NITROGEN OXIDES

4.3.1.1 Identification of NO_x Control Technologies for CTs

NO_x emissions from combustion of fossil fuels consist of thermal NO_x and fuel-bound NO_x. Thermal NO_x is formed from the reaction of oxygen and nitrogen in the combustion air at combustion temperatures. Formation of thermal NO_x depends on the flame temperature, residence time, combustion pressure, and air-to-fuel ratios in the primary combustion zone. The design and operation of the combustion chamber dictates these conditions. Fuel-bound NO_x is created by the oxidation of volatilized nitrogen in the fuel. Nitrogen content in the fuel is the primary factor in its formation.

Table 4-2 presents a listing of the lowest achievable emission rates/best available control technology (LAER/BACT) decisions for gas turbines made by state environmental agencies and EPA regional offices. This table was developed from the information contained in the LAER/BACT clearinghouse documents (EPA, 1985b, 1986, 1987c, 1988c, 1989) and by contacting state agencies, such as the California Air Control Board, the South Coast Air Quality Management District, the New Jersey Department of Environmental Protection, and the Rhode Island Department of Environmental Management.

The most stringent NO_x controls for CTs established as LAER/BACT by state agencies are selective catalytic reduction (SCR) with wet injection and wet injection alone. When SCR has been employed, wet injection is used initially to reduce NO_x emissions. SCR has been installed or permitted in about 132 projects. The majority of these projects (more than 90 percent) are cogeneration facilities with capacities of 50 MW or less. About 83 percent (i.e., 109) of the projects have been in California. Of these 109 projects that have either installed SCR or have been permitted with SCR, 43 percent have been in the Southern California NO_2 nonattainment

Table 4-2. LAER/BACT Decisions For Gas Turbines (Page 1 of 5)

Company Name	State	Unit Description	Capacity (Size)	Date of Permit	Emission Limit	Emission Control
Virginia Power	VA	GE turbine	$1,875 \times 10^6$ BTU/hr	4/88	NO_x 42 ppmvd at 15% O_2 (gas) NO_x 77 ppmvd at 18% O_2 (fuel oil)	Steam injection with maximization NSPS Subpart GG
Trunkline LNG	LA	Gas turbine	147,102 scf/hr	5/87	NO_x 59 lb/hr	
Wichita Falls E. I., I.	TX	Gas turbine	20 MW	6/86	NO_x 684 TPY CO 420 TPY	Steam injection
Merck Sharp and Pohme	PA	Turbine	310×10^6 Btu/hr	5/88	NO_x 42 ppm at 15% O_2	Steam injection
California Dept. of Corr.	CA	Gas turbine	5.1 MW	12/86	NO_x 38 ppmv at 15% O_2	1 to 1 H_2O injection
City of Santa Clara	CA	Gas turbine		1/87	NO_x 42 ppmvd at 15% O_2	Water injection
Combined Energy Resources	CA	Cogeneration Fac.	27 MW	3/87	NO_x 199 lb/day	SCR unit, duct burner, H_2O injection, low NO_x design
Double 'C' Limited	CA	Gas turbine	25 MW	11/86	NO_x 194 lb/day	H_2O injection and SCR 95.80 efficiency
Kern Front Limited	CA	Gas turbine	25 MW	11/86	NO_x 194 lb/day 4.5 ppmvd at 15% O_2	H_2O injection and SCR 95.80 efficiency
Midway - Sunset Project	CA	Gas turbine	973×10^6 Btu/hr	1/87	NO_x 113.4 lb/hr 16.31 ppmv	H_2O injection, 73% efficiency
O'Brien Energy Systems	CA	Gas turbine	359.5×10^6 Btu/day	12/86	NO_x 30.3 lb/hr 15 ppmvd at 15% O_2	Duct burner, H_2O injection and scrubber
PG and E, Station T	CA	GE gas turbine	396×10^6 Btu/hr	8/86	NO_x 25 ppm at 15% O_2 63 lb/hr	Steam injection at steam/fuel ratio of 1.7/1, 75% efficiency
Sierra LTD.	CA	GE gas turbine	$11.34 \times 10^6 ft^3$/day		NO_x 4.04 lb/hr	Scrubber and CO catalytic converter
Sycamore Cogeneration Co.	CA	Gas turbine	75 MW	3/87	CO 10 ppmv at 15% O_2 3 hr average	CO oxidizing catalyst combustion control

Table 4-2. LAER/BACT Decisions For Gas Turbines (Page 2 of 5)

Company Name	State	Unit Description	Capacity (Size)	Date of Permit	Emission Limit	Emission Control
U.S. Borax and Chemical Corp.	CA	Gas turbine	45 MW	2/87	NO_x 40 lb/hr 25 ppm at 15% O_2 Dry CO 23 lb/hr	Scrubber Proper combustion techniques
Western Power System, Inc	CA	GE gas turbine	26.5 MW	3/86	NO_x 9 ppmvd at 15% O_2	H_2O injection, SCR 80% efficiency
Calcogen, Cal Polytechic	CA	Gas turbine	21.4 MW	4/84	NO_x 42 ppm at 15% O_2	H_2O injection, 70% efficiency
Greenleaf Power Co.	CA	GE gas turbine	35.62 MW	4/85	NO_x 42 ppm at 15% O_2 91 lb/hr CO 20.41 lb/hr 0.016 lb/10^6 Btu	H_2O injection Good Engineering Practices Steam injection 95.86 efficiency
Greenleaf Power Co.	CA	Duct Burner	63.7x10^6 Btu/hr	4/85	NO_x 0.1 lb/10^6 Btu 6.4 lb/hr CO 0.12 lb/10^6 Btu 7.6 lb/hr	Low NO_x design
OLS Energy	CA	GE gas turbine	256x10^6 Btu/hr	1/86	NO_x 9 ppmvd at 15% O_2	H_2O injection and scrubber 80% efficiency for scrubber
Ciba Giegy Corp.	NJ	Gas turbine	3 MW	1/85	NO_x 11.06 lb/hr CO 9.4 lb/hr	SIP, H_2O injection, 55% efficiency
Energy Reserve, Inc.	CA	Gas turbine	322.5x10^6 Btu/hr	10/85	NO_x 185.4 lb/day	H_2O injection, SCR 92.5% efficiency
Gilroy Energy Co.	CA	Gas turbine	60 MW	8/85	NO_x 25 ppmvd at 15% O_2	Steam injection, quiet combustor
		Auxiliary boiler	90x10^6 Btu/hr		NO_x 40 ppmvd at 3% O_2	Low NO_x burners
Kern Energy Corp.	CA	Gas turbine	8.8x10^6 ft^3/day	4/86	NO_x 8.29 lb/hr 0.023 lb/10^6 Btu	Scrubber with NH_3 reduction agent Steam injection and low NO_x configuration exhaust duct burner 87% efficiency
Moran Power, Inc.	CA	Gas turbine	8.0x10^6 ft^3/day	4/86	NO_x 8.29 lb/hr 0.023 lb/10^6 Btu	Scrubber with NH_3 reduction agent Steam injection and low NO_x configuration exhaust duct burner

Table 4-2. LAER/BACT Decisions For Gas Turbines (Page 3 of 5)

Company Name	State	Unit Description	Capacity (Size)	Date of Permit	Emission Limit	Emission Control
						87% efficiency
Northern California Power	CA	GE gas turbine	25.8 MW	4/85	NO_x 75 ppm	H_2O injection
Shell California Production	CA	Gas turbine	22 MW	4/85	NO_x 42 ppm at 15% O_2 35 lb/hr CO 10 ppmv at 15% O_2 22 lb/hr	H_2O injection Proper combustion
Southeast Energy, Inc.	CA	Gas turbine	$8.0x10^6$ ft^3/day	4/86	NO_x 8.29 lb/hr 0.023 lb/10^6 Btu	Scrubber with NH_3 reduction agent Steam injection and low NO_x configuration exhaust duct burner 87% efficiency
Sunlaw/Industrial Park	CA	Gas turbine	$412.3x10^6$ Btu/hr	6/85	NO_x 9 ppmvd at 15% O_2	Scrubber and steam injection, 80% efficiency
Union Cogeneration	CA	Gas turbine with Duct burner	16 MW	1/86	NO_x 25 ppmv at 15% O_2	H_2O injection and scrubber
Willamette Industries	CA	GE gas turbine	$230x10^6$ Btu/hr	4/85	NO_x 15 ppmvd at 15% O_2	H_2O injection with SCR 92% efficiency
Witco Chemical Corp.	CA	Gas turbine	$350x10^6$ Btu/hr	12/84	NO_x 0.18 lb/10^6 Btu oil 0.20 lb/10^6 Btu gas	
		Duct burner	$111.6x10^6$ Btu/hr		NO_x 0.12 lb/10^6 Btu	Gas firing only
AES Placerita, Inc.	CA	Turbine and Recovery Boiler	$519x10^6$ Btu/hr	3/86	NO_x 629 lb/day 7 ppmvd at 15% O_2 CO 103 lb/day 2 ppmvd at 15% O_2	H_2O injection, SCR 80% efficiency
AES Placerita, Inc.	CA	Turbine and Recovery Boiler	$530x10^6$ Btu/hr	7/87	NO_x 340 lb/day 9 ppmvd at 15% O_2	Steam injection, SCR
AES Placerita, Inc.	CA	Gas turbine	$530x10^6$ Btu/hr	7/87	NO_x 289 lb/day 9 ppmvd at 15% O_2	Steam injection, SCR
Alaska Electrical Generation	AK	Gas turbine	80 MW	3/87	NO_x 75 ppmvd at 15% O_2 CO 109 lb/scf fuel	H_2O injection

Table 4-2. LAER/BACT Decisions For Gas Turbines (Page 4 of 5)

Company Name	State	Unit Description	Capacity (Size)	Date of Permit	Emission Limit	Emission Control
Alaska Electrical Generation	AK	Gas turbine	38 MW	3/85	NO_x 75 ppm at 15% O_2	H_2O injection
BAF Energy	CA	Turbine, Generator	887.2x10^6 Btu/hr	7/87	NO_x 9 ppm at 15% O_2 30.1 lb/hr	Steam injection, scrubber 80% efficiency
BAF Energy	CA	Auxiliary Boiler	150x10^6 Btu/hr	10/87	NO_x 17.4 lb/day 40 ppmvd at 3% O_2 CO 63.6 lb/day 0.018 lb/10^6 Btu	Flue gas recirculation Low NO_x burners Oxidation catalyst
Champion International Corp.	TX	Gas turbine	30.6 MW (1,342x10^6 Btu/hr)	3/85	NO_x 720.34 TPY CO 70.08 TPY	Low NO_x burners
Cogen Technologies	NJ	GE gas turbines	40 MW	6/87	NO_x 9.6 ppmvd at 15% O_2 CO 50 ppmvd at 15% O_2	H_2O injection and SCR, 95% efficiency
Combined Energy Resources	CA	Gas turbine	2 MW	2/88	NO_x 199 lb/hr	H_2O injection and scrubber, 81% efficiency
Formosa Plastic Corp.	TX	GE gas turbine	38.4 MW	5/86	NO_x 640 TPY CO 32.4 TPY	Steam injection
Midland Cogeneration Venture	MI	Turbine Duct burner	984.2x10^6 Btu/hr 249x10^6 Btu/hr	2/88	NO_x 42 ppmv at 15% O_2 CO 26 lb/hr NO_x 0.1 lb/10^6 Btu	Steam injection Turbine design Burner design
Pacific Gas Transmission	OR	Gas turbine	14,000 HP	5/87	NO_x 154 ppm 50 lb/hr CO 6 lb/hr 25 TPY	Combustion control
Power Development Co.	CA	Gas turbine	49x10^6 Btu/hr	6/87	NO_x 36 lb/day 9 ppmvd at 15% O_2	Scrubber and H_2O injection
San Joaquin Cogen Limited	CA	Gas turbine	48.6 MW	6/87	NO_x 250 lb/day 6 ppmvd at 15% O_2 CO 1326 lb/day 55 ppmvd at 15% O_2	Scrubber and H_2O injection 76% efficiency Combustion controls
United Airlines	CA	Gas turbine-Cogeneration	21 MW	12/85	NO_x 15 ppmvd at 15% O_2	SCR and steam injection Oil limited to 500 hours operation

Table 4-2. LAER/BACT Decisions For Gas Turbines (Page 5 of 5)

Company Name	State	Unit Description	Capacity (Size)	Date of Permit	Emission Limit	Emission Control
TBG/Grumman	NY	Gas turbine	16 MW	3/88	NO_x 75 ppm + NSPS Corr. 0.2 lb/10^6 Btu CO 0.181 lb/10^6 Btu	H_2O injection and combustion controls CO catalyst
Texas Gas Transmission Corp.	KY	Gas turbine	14,300 HP	2/88	NO_x 0.015% by Volume	
Orlando Utilities Commission	FL	Gas turbine	4 x 445x10^6 Btu/hr	9/88	NO_x 42 ppmvd Gas 65 ppmvd Oil CO 10 ppmvd	Steam injection Good combustion
Anheuser-Busch	FL	Gas turbine	95.7x10^6 Btu/hr	4/87	NO_x 0.1 lb/10^6 Btu	
Ocean State Power	RI	Combined Cycle	500 MW	1/89	NO_x 9 ppmvd at 15% O_2 (Natural Gas) NO_x 42 ppmvd at 15% O_2 (fuel oil) CO 25 ppmvd at 15% O_2	SCR and steam injection
Pawtucket Power	RI	Cogeneration-Gas turbine	58 MW	2/89	NO_x 9 ppmvd at 15% O_2 (natural gas) NO_x 18 ppmvd at 15% O_2 (fuel oil) CO 23 ppmvd at 15% O_2	SCR and steam injection
Cogen Technologies	NJ	Gas turbine	55 MW	3/87	NO_x 9 ppmvd at 15% O_2 (natural gas) NO_x 14 ppmvd at 15% O_2 (fuel oil) CO 8 ppm; 20 ppm NH_3	SCR and wet injection

area where SCR was required not as BACT but as LAER, a more stringent requirement. LAER is distinctly different from BACT in that there is no consideration of economic, energy, or environmental impacts; if a control technology has previously been installed, it must be required as LAER. LAER is defined as follows:

> Lowest achievable emission rate means, for any source, the more stringent rate of emissions based on the following: (i) The most stringent emissions limitation which is contained in the implementation plan of any State of such class or category of stationary source, unless the owner or operator of the proposed stationary source demonstrates that such limitations are not achievable; or (ii) The most stringent emissions limitation which is achieved in practice by such class or category of stationary source. This limitation, when applied to a modification, means the lowest achievable emissions rate for the new or modified emissions units within the stationary source. In no event shall the application of this term permit a proposed new modified stationary source to emit any pollutant in excess of the amount allowable under applicable new source standards of performance (40 CFR 51 Appendix S. II, A.18).

As noted from the discussion contained in Section 3.2.3, there are distinct regulatory and policy differences between LAER and BACT.

All the projects in California have natural gas as the primary fuel, and only 15 of the SCR applications in California have distillate fuel as backup.

The remaining projects with SCR (i.e., 23 projects) are located in the eastern United States. These projects are located in Vermont, Massachusetts, Connecticut, New Jersey, New York, Rhode Island, and Virginia. A majority of these projects are cogenerators or independent power producers. The size of these projects ranges from 22 MW to 450 MW, with 87 percent less than 100 MW in size. While almost all of the facilities have distillate oil as backup fuel, distillate oil is generally restricted by permit to 1,000 hours per CT or less.

Reported and permitted NO_x removal efficiencies of SCR range from 40 to 80 percent. The most stringent emission limiting standards associated with SCR are approximately 9 ppm for natural gas firing. However, two facilities have reported emission limits of about 4.5 ppm. These emission limits were clearly determined to be LAER on CTs using water injection with uncontrolled NO_x levels below 42 ppm. For fuel oil firing, permitted NO_x emission limits with SCR have ranged from 14 ppm to 42 ppm. SCR has not been installed or permitted on simple-cycle CTs.

Wet injection is the primary method of reducing NO_x emissions from CTs. This method of control was first mandated by the NSPS to reduce NO_x levels to 75 parts per million by volume, dry (ppmvd) (corrected to 15 percent O_2 and heat rate). Development of improved wet injection combustors reduced NO_x concentrations to 25 ppmvd and 42 ppmvd (corrected to 15 percent O_2) when burning natural gas and fuel oil, respectively. Recently, CT manufacturers have developed dry low NO_x combustors that can reduce NO_x concentrations to 25 ppmvd (corrected to 15 percent O_2) when firing natural gas.

In Florida, a majority of the most recent PSD permits and BACT determinations for simple-cycle gas turbines have required wet injection for NO_x control. The emission limits included in these permits and BACT determinations were 42 ppm and 65 ppm (corrected to 15 percent O_2, dry conditions), respectively, for natural gas and fuel oil firing. In November 1990, FDER determined that a CT using a dry low NO_x combustor to reduce NO_x concentrations to 25 ppmvd when firing natural gas was BACT. The corresponding BACT emission limit for distillate oil firing was 65 ppmvd using wet injection.

4.3.1.2 <u>Technology Description and Feasibility</u>

<u>Selective Catalytic Reduction (SCR)</u>--SCR uses ammonia (NH_3) to react with NO_x in the gas stream in the presence of a catalyst. NH_3, which is diluted with air to about 5 percent by volume, is introduced into the gas stream at reaction temperatures between 570°F and 750°F. The reactions are as follows:

$$4NH_3 + 4NO + O_2 = 4N_2 + 6H_2O$$

$$4NH_3 + 2NO_2 + O_2 = 3N_2 + 6H_2O$$

SCR operating experience, as applied to gas turbines, consists primarily of baseload natural-gas-fired installations either of cogeneration or combined-cycle configuration; no simple-cycle facilities have SCR. Exhaust gas temperatures of simple-cycle CTs are generally in the range of 1,000°F, which exceeds the optimum range for SCR. All current SCR applications have the catalyst placed in the heat recovery steam generators (HRSG) to achieve proper reaction conditions. This allows a relatively constant temperature for the reaction of NH_3 and NO_x on the catalyst surface.

The use of SCR has been limited to facilities that burn natural gas or small amounts of fuel oil since SCR catalysts are contaminated by sulfur-containing fuels (i.e., fuel oil). For most fuel oil burning facilities, catalyst operation is discontinued, or the exhaust bypasses the SCR system. While the operating experience has not been extensive, certain cost, technical, and environmental considerations have surfaced. These considerations are summarized in Table 4-3. Experience at the United Airlines cogeneration facility using Jet A fuel oil found catalyst contamination after 2,500 hours of operation. For this facility, the catalyst has been replaced three times and the recommended duration of operation by the manufacturer is now 500 hours.

As presented in Table 4-3, ammonium bisulfate is formed by the reaction of NH_3 and sulfur trioxide (SO_3). Ammonium bisulfate can be corrosive and could cause damage to the HRSG surfaces that follow the catalyst, as well as to the stack. Corrosion protection for these areas would be required.

Zeolite catalysts, which are reported to be capable of operating in temperature ranges from 600°F to 950°F, have been available commercially only recently. Their application with SCR primarily has been limited to internal combustion engines. Optimum performance of an SCR system using a zeolite catalyst is reported to range from about 800°F to 900°F. 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 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. Moreover, since zeolite catalysts have not been operated continuously in combustion exhausts greater than 900°F, the cooling system would have to reduce turbine exhaust temperatures about 200°F, i.e., to around 800°F.

Attemperation systems are neither commercially available nor have they been applied, even at a pilot stage, to SCR systems associated with simple-cycle CTs. Three types of potential attemperation systems include water sprays, air dilution, and indirect heat exchangers. The application of water sprays and air dilution would require sufficient distribution and mixing volume to assure uniform temperature throughout the catalyst. This would be extremely difficult to achieve in the size of CTs proposed because of their large and turbulent flowrate [greater than

Table 4-3. Cost, Technical, and Environmental Considerations of SCR Utilized on Combustion Turbines (Page 2 of 2)

Consideration	Description
ENVIRONMENTAL:	
Ammonia Slip	NH_3 slip, or NH_3 that passes unreacted through the catalyst and into the atmosphere, can occur if: 1) too much ammonia is added, 2) the flow distribution is not uniform, 3) the velocity is not within the optimum range, or the proper temperature is not maintained.
Ammonia Bisulfate	Ammonium bisulfate salts can lead to increased corrosion. These salts usually occur when firing fuel oil. These compounds are emitted as particulates.
N_2O and Nitrosoamines formation	The mechanism under which these compounds form is not totally understood. Secondary impacts can occur.

Table 4-3. Cost, Technical, and Environmental Considerations of SCR Utilized on Combustion Turbines (Page 1 of 2)

Consideration	Description
COST:	
Catalyst Replacement	Catalyst life varies depending on the application. Cost ranges from 20 to 40 percent of total capital cost and is the dominant annual cost factor.
Ammonia	Ratio of at least 1:1 NH_3 to NO_x generally needed to obtain high removal efficiencies. Special storage and handling equipment required.
Space Requirements	For new installations, space in the catalyst is needed for replacement layers. Additional space is also required for catalyst maintenance and replacement.
Backup Equipment	Reliability requirements necessitate redundant systems such as ammonia control and vaporization equipment.
Catalyst Back Pressure Heat Rate Reduction	Addition of catalyst creates back pressure on the turbine which reduces overall heat rate.
TECHNICAL:	
Ammonia Flow Distribution	NH_3 must be uniformly distributed in the exhaust stream to assure optimum mixing with NO_x prior to reaching the catalyst.
Temperature	The narrow temperature range that SCR systems operate within, i.e., about 100°F, must be maintained even during load changes. Operational problems could occur if this range is not maintained. HRSG duct firing requires careful monitoring.
Ammonia Control System	Quantity of NH_3 introduced must be carefully controlled. With too little NH_3, the desired control efficiency is not reached; with too much NH_3, NH_3 emissions (referred to as slip) occur.
Flow Control	The velocity through the catalyst must be within a range to assure satisfactory residence time.

1,500,000 actual cubic feet per minute (acfm)]. If the temperature was not uniform, the catalyst would be irreversibly damaged in areas where the exhaust temperatures approach 1,000°F. In addition, at temperatures above 950°F, the ammonia injected to achieve the NO_x reduction could itself be oxidized to NO_x, the pollutant it was intended to remove. Indirect heat exchanges could reduce temperatures but have not been developed for this application. Application of any attemperation technique would require research and development that is beyond that considered appropriate by EPA regulations and guidelines.

Wet Injection--The injection of water or steam in the combustion zone of CTs reduces the flame temperature with a corresponding decrease of NO_x emissions. The amount of NO_x reduction possible depends on the combustor design and the water-to-fuel ratio employed. An increase in the water-to-fuel ratio will cause a concomitant decrease in NO_x emissions until flame instability occurs. At this point, operation of the CT becomes inefficient and unreliable, and significant increases in products of incomplete combustion will occur (i.e., CO and VOC emissions).

For the CTs being considered for the Intercession City site, the combustion chamber design includes water injection using the GE "quiet combustor" for the Frame 7EA machines. This multiple-nozzle combustor was developed to increase the amount of steam or water injected into the combustion zone while reducing the dynamic pressure oscillations. High dynamic pressure oscillations in standard combustors lead to reduced combustor life. The first endurance test of a quiet combustor was at Houston Light and Power Company's Wharton Station in the early 1980s. In the late 1980s, the first production units were installed in California. The lowest NO_x emission level guaranteed by GE for the quiet combustor is 42 ppmvd (corrected to 15 percent O_2) when firing fuel oil and 25 ppmvd (corrected to 15 percent O_2) when firing natural gas. The amount of water injected, or measured by the water-to-fuel ratio, is 1:1 for the quiet combustor. With advancements made in water injection with the quiet combustor, GE has been able to guarantee an NO_x emission of 42 ppmvd (corrected to 15 percent O_2) when firing fuel oil. The water-to-fuel ratio for controlling NO_x is 1.3:1 for the advanced CT.

Dry Low NO_x Combustor--In the last several years, CT manufacturers have offered and installed machines with dry low NO_x combustors. These combustors, which are offered on machines manufactured by GE, Kraftwork Union, and Asea Brown Boveri (ABB), can achieve NO_x concentrations of 25 ppmvd or less when firing natural gas. Thermal NO_x formation is inhibited by using combustion techniques where the natural gas and combustion air are premixed prior to ignition. However, when firing oil, NO_x emissions are controlled only through water or steam injection to exhaust concentrations of 65 ppmvd. Since distillate oil is the primary fuel for the Intercession City CTs, the use of the dry low NO_x combustor for the project will have no advantage in reducing NO_x concentrations.

<u>NO_XOUT Process</u>--The NO_xOUT process originated from the initial research by the Electric Power Research Institute (EPRI) in 1976 on the use of urea to reduce NO_x. EPRI licensed the proprietary process to Fuel Tech, Inc., for commercialization. In the NO_xOUT process, aqueous urea is injected into the flue gas stream ideally within a temperature range of 1,600°F to 1,900°F. In the presence of oxygen, the following reaction results:

$$CO(NH_2)_2 + 2NO + 1/2\ O_2 \rightarrow 2N_2 + CO_2 + 2H_2O$$

The amount of urea required is most cost effective when the treatment rate is 0.5 to 2 moles of urea per mole of NO_x. In addition to the original EPRI urea patents, Fuel Tech claims to have a number of proprietary catalysts capable of expanding the effective temperature range of the reaction to between 1,000°F and 1,950°F. Advantages of the system are as follows:

1. Low capital and operating costs due to utilization of urea injection, and
2. The proprietary catalysts used are nontoxic and nonhazardous, thus eliminating potential disposal problems.

Disadvantages of the system are as follows:

1. Formation of ammonia from excess urea treatment rates and/or improper use of reagent catalysts; and
2. SO_3, if present, will react with ammonia created from the urea to form ammonium bisulfate, potentially plugging the cold end equipment downstream.

Commercial application of the NO_xOUT system is limited to three reported cases:

1. Trial demonstration on a 62.5-ton-per-hour (TPH) stoker-fired wood waste boiler with 60 to 65 percent NO_x reduction,
2. A 600 x 10^6 Btu CO boiler with 60 to 70 percent NO_x reduction, and
3. A 75 MW pulverized coal-fired unit with 65 percent NO_x reduction.

The NO_xOUT system has not been demonstrated on any stationary internal combustion engine.

The NO_xOUT process is not technically feasible for the proposed lean-burn engine due to the high application temperature of 1,000°F to 1,950°F. The exhaust gas temperature of the CT is about 1,000°F. Raising the exhaust temperature the required amount essentially would require installation of a heater. This would be economically prohibitive and would result in an increase in fuel consumption, an increase in the volume of gases that must be treated by the control system, and an increase in uncontrolled air emissions, including NO_x.

<u>Thermal DeNO$_x$</u>--Thermal DeNO$_x$ is Exxon Research and Engineering Company's patented process for NO_x reduction. The process is a high temperature selective noncatalytic reduction (SNCR) of NO_x using ammonia as the reducing agent. Thermal DeNO$_x$ requires the exhaust gas temperature to be above 1,800°F. However, use of ammonia plus hydrogen lowers the temperature requirement to about 1,000°F. For some applications, this must be achieved by additional firing in the exhaust stream prior to ammonia injection.

The only known commercial applications of Thermal DeNO$_x$ are on heavy industrial boilers, large furnaces, and incinerators that consistently produce exhaust gas temperatures above 1,800°F. There are no known applications on or experience with CTs. Temperatures of 1,800°F require alloy materials constructed with very large size piping and components since the exhaust gas volume would be increased by several times. As with the NO_xOUT process, high capital, operating, and maintenance costs are expected because of construction-specified material, an additional duct burner system, and fuel consumption. Uncontrolled emissions would increase because of the additional fuel burning.

Thus, the Thermal $DeNO_x$ process will not be considered for the proposed project because it is technically infeasible because of its high application temperature. The exhaust gas temperature of a lean-burn engine is typically about 1,000°F; the cost to raise the exhaust gas to such a high temperature is prohibitively expensive.

Nonselective Catalytic Reduction--Certain manufacturers, such as Engelhard, market a nonselective catalytic reduction system (NSCR) for NO_x control on reciprocating engines. The NSCR process requires a low oxygen content in the exhaust gas stream and high temperature (700°F to 1,400°F) in order to be effective. CTs have the required temperature but also high oxygen levels (greater than 12 percent) and, therefore, cannot use the NSCR process. As a result, NSCR is not a technically feasible add-on NO_x control device for CTs.

Summary of Technically Feasible NO_x Control Methods--The available information suggests that SCR with wet injection is technically infeasible for simple-cycle operation. SCR with wet injection has not been applied to simple-cycle CTs.

A technical evaluation of tail gas controls (i.e., SCR, NO_xOUT, Thermal $DENO_x$, and NSCR) indicates that these processes have not been applied to simple-cycle CTs and are technically infeasible for the project due to process constraints (e.g., temperature). Dry low NO_x combustors are inappropriate for the project since distillate oil is the primary fuel and natural gas will not be used initially.

Wet injection is a technically feasible alternative for the Intercession City CTs. The application of this technology has the following limitations:

1. Wet injection can be accomplished until a condition of maximum moisturization occurs; this design condition occurs at 42 ppm with fuel oil.
2. Wet injection will not reduce substantially NO_x formation caused by fuel-bound nitrogen. Any emission-limiting requirements must account for this effect.
3. Wet injection will increase the emissions of CO and VOC. Emissions are dependent on the water-to-fuel ratio.

For the BACT analysis, wet injection capable of achieving NO_x emission levels to 42 ppm when firing fuel oil (corrected to 15 percent O_2 dry conditions) was assumed. These emission levels are the most stringent being established as BACT for simple-cycle CTs.

4.3.1.3 Impact Analysis

A BACT determination requires an analysis of the economic, environmental, and energy impacts of the proposed and alternative control technologies [see 40 CFR 52.21(b)(12), Chapter 17-2.100(25), F.A.C., and Chapter 17-2.500(5)(c), F.A.C.]. The analysis must, by definition, be specific to the project, i.e., case-by-case. The BACT analysis was performed for wet injection at an emission rate of 42 ppmvd corrected to 15 percent O_2 when firing oil.

Economic--The estimated total capital and annualized capital cost for the proposed CT is presented in Table 4-4.

Environmental--The maximum predicted impacts of the alternative technologies are all considerably below the PSD increment for NO_x of 25 $\mu g/m^3$, annual average, and the AAQS for NO_x of 100 $\mu g/m^3$.

Energy--The use of the quiet combustor will affect energy production in two ways. First, the heat rate will increase about 1 percent (at ISO conditions) compared to an emission of 65 ppmvd, corrected to 15 percent O_2, which requires more fuel to generate the same amount of power. This energy penalty will be about 500 British thermal units per kilowatt hour (Btu/kWh).

Second, water injection will increase power by about 5 percent, for a net power benefit of about 5 MW for the Frame 7EA machines and 8.5 MW for the Frame 7FA machines. Since the primary purpose of the Intercession City project is to provide peaking power, the benefit of increased power offsets the increased heat rate.

Table 4-4. Capital and Annualized Capital Costs for Combustors and Water Injection Equipment[a]

Cost Category	Capital Costs[b] ($1,000)
Combustion Turbine Generators (6)	
Multi-Nozzle Combustors	2,400
Water Injection Skid and On-base Water Injection Equipment	2,800
Foundations	500
Water Treatment Building	500
Site Improvements	100
Water Storage and Piping Systems	1,600
Water Treatment Equipment	4,700
Electrical and Control Systems	1,300
Miscellaneous	700
TOTAL DIRECT COST	14,600
Annualized Capital Cost (at 10 percent over 20 years)	1,714

[a] Based on preliminary engineering design concepts for four GE Frame EA and two GE Frame 7F combustion turbine units.
[b] Excludes any applicable taxes.

Sources: Black & Veatch, 1991, GE letter dated August 14, 1991.
KBN, 1991.

4.3.1.4 Proposed BACT and Rationale

The proposed BACT for the Intercession City CTs is wet injection. The proposed NO_x emissions levels using wet injection are 42 ppmvd (corrected) when firing fuel oil and 25 ppmvd (corrected) when firing natural gas. This control technology is proposed for the following reasons:

1. SCR was rejected based on technical infeasibility. SCR has not been applied to or demonstrated on simple-cycle CTs.
2. The proposed BACT of wet injection provides the least costly control alternative and results in low environmental impacts (less than 1 percent of the allowable PSD increments and less than 1 percent of the AAQS for NO_x). Wet injection at the proposed emissions levels has been adopted previously in BACT determinations. In addition, the CT manufacturer (i.e., GE) has been willing to guarantee this level of NO_x emissions.

The proposed BACT emission level should also account for fuel-bound nitrogen (FBN) content greater than 0.015 percent since there is no practicable means for reducing NO_x at higher FBN levels. The allowance specified in the NSPS for FBN levels greater than 0.015 percent is requested.

4.3.2 CARBON MONOXIDE (CO)

4.3.2.1 Emission Control Hierarchy

CO emissions are a result of incomplete or partial combustion of fossil fuel. Combustion design and catalytic oxidation are the control alternatives that are viable for the project.

Combustion design is the more common control technique used in CTs. Sufficient time, temperature, and turbulence is required within the combustion zone to maximize combustion efficiency and minimize the emissions of CO. Combustion efficiency is dependent upon combustor design. When wet NO_x control systems are employed, the amount of water or steam injected in the combustion zone also affects combustion efficiency. For the CTs being evaluated and with wet injection NO_x control, CO emissions range from 25 ppm to 35 ppm, corrected to dry conditions.

Catalytic oxidation is a post-combustion control that has been employed in CO nonattainment areas where regulations have required CO emission levels to be less than those associated with wet injection. These installations have been required to use LAER technology and typically have CO limits in the 10 ppm range (corrected to dry conditions).

4.3.2.2 Technology Description

In an oxidation catalyst control system, CO emissions are reduced by allowing unburned CO to react with oxygen at the surface of a precious metal catalyst such as platinum. Combustion of CO starts at about 300°F, with efficiencies above 90 percent occurring at temperatures above 600°F. Catalytic oxidation occurs at temperatures 50 percent lower than that of thermal oxidation, which reduces the amount of thermal energy required. For CTs, the oxidation catalyst can be located directly after the CT. Catalyst size depends upon the exhaust flow, temperature, and desired efficiency. The existing oxidation catalyst applications have primarily been limited to smaller cogeneration facilities burning natural gas.

Oxidation catalysts have not been used on fuel-oil-fired CTs or combined cycle facilities. The use of sulfur-containing fuels in an oxidation catalyst system would result in an increase of SO_3 emissions and concomitant corrosive effects to the stack. In addition, trace metals in the fuel could result in catalyst poisoning during prolonged periods of operation.

Since the units likely will require numerous startups, variations in exhaust conditions will influence catalyst life and performance. Very little technical data exist to demonstrate the effect of such cycling.

The lack of demonstrated operation with oil firing suggests rejection of catalytic oxidation as a technically feasible alternative. However, the advent of a second generation catalyst suggests that an oxidation catalyst could be used.

Combustion design is dependent upon the manufacturer's operating specifications, which include the air-to-fuel ratio and the amount of water injected. The CTs proposed for the project have designs to optimize combustion efficiency and minimize CO emissions. Installations with an oxidation catalyst and combustion controls generally have controlled CO levels of 10 ppm as LAER and BACT.

For the Intercession City CTs, the following alternatives were evaluated for natural gas firing or BACT:

1. Oxidation catalyst at 10 ppmvd; maximum CO emissions are 654 TPY (59°F).
2. Combustion controls at 25 ppmvd; maximum emissions are 1,635 TPY (59°F).

4.3.2.3 Impact Analysis

Economic--The estimated annualized cost of a CO oxidation catalyst is $7,171,965 (Table 4-5), with a cost effectiveness of $7,310/ton of CO removed. The cost effectiveness is based on CT emissions of 25 ppmvd. No costs are associated with combustion techniques since they are inherent in the design.

Environmental--The air quality impacts of both oxidation catalyst control and combustion design control techniques are below the significant impact levels for CO. Therefore, no significant environmental benefit would be realized by the installation of a CO catalyst.

Energy--An energy penalty would result from the pressure drop across the catalyst bed. A pressure drop of about 2 inches water gauge would be expected. At a catalyst back pressure of about 2 inches, an energy penalty of about 12,500,000 kWh/yr would result at 100 percent load. This energy penalty is sufficient to supply the electrical needs of about 1,000 residential customers over a year. Fuel oil usage would effectively increase by about 1,030,000 gallons/year.

4.3.2.4 Proposed BACT and Rationale

Combustion design is proposed as BACT as a result of the technical and economic consequences of using catalytic oxidation on CTs. Catalytic oxidation is considered infeasible and unreasonable for the following reasons:

Table 4-5. Capital and Annualized Cost for Oxidation Catalyst

Cost Component	Cost ($)	Basis
I. CAPITAL COSTS		
A. DIRECT:		
1. Associated Equipment for Catalyst	1,239,583	Manufacturer's Estimate - $1,750 per lb/sec mass flow
2. Exhaust Stack Modification	900,000	Engineering Estimate - $150,000/CT
3. Installation	2,290,972	25% of Equipment Costs (I.A.1. & 2., and II.A.)
B. INDIRECT:		
1. Engineering & Supervision	687,292	7.5% of Equipment Costs (I.A.1. & 2., and II.A.)
2. Construction and Field Expense	916,389	10% of Equipment Costs (I.A.1. & 2., and II.A.)
3. Construction Contractor Fee	458,194	5% of Equipment Costs (I.A.1. & 2., and II.A.)
4. Startup & Testing	183,278	2% of Equipment Costs (I.A.1. & 2., and II.A.)
5. Contingency	1,668,927	25% of Direct and Indirect Capital Costs (I.A, and I.B.1-4)
6. AFUDC	1,844,273	12% of Direct and Indirect Capital Costs, and Recurring Capital Costs (I.A., I.B.1.-4 and II.A.)
TOTAL CAPITAL COSTS	10,188,908	Sum of Direct and Indirect Capital Costs
ANNUALIZED CAPITAL COSTS	1,196,786	Capital Recovery of 10% over 20 years
II. RECURRING CAPITAL COSTS		
A. Catalyst	7,024,306	Manufacturer's Estimate - $1,750 per lb/sec mass flow
B. Contingency	1,756,076	25% of Recurring Capital Costs (II.A)
TOTAL RECURRING CAPITAL COSTS	8,780,382	Sum of Recurring Capital Costs
ANNUALIZED RECURRING CAPITAL COSTS	3,530,722	Capital Recovery of 10% over 20 years
III. OPERATING & MAINTENANCE COSTS		
A. DIRECT:		
1. Labor - Operator & Supervisor	10,525	8 hours/week, 52 weeks/year, $22/hour and 15% supervisor cost
2. Maintenance	94,846	0.5% of Total and Recurring Capital Costs
3. Inventory Cost	137,512	Capital Carrying cost (10% over 20 years) for catalyst for 1 CT
B. ENERGY COSTS		
1. Heat Rate Penalty	1,023,630	0.2% heat rate penalty. $7.71/million Btu fuel cost
2. MW Loss Penalty	85,507	0.2% MW loss; $60,000/MW replacement assumed
3. Fuel Escalation Costs	270,443	Fuel escalation of 3% over inflation; annualized over 20 years
C. INDIRECT:		
1. Overhead	63,223	60% of Labor and Maintenance Costs (III.A.1. and 2.)
2. Property Taxes	189,693	1% of Total and Recurring Capital Cost
3. Insurance	189,693	1% of Total and Recurring Capital Cost
4. Administration	379,386	2% of Total and Recurring Capital Cost
ANNUALIZED CAPITAL COSTS	1,196,786	
ANNUALIZED RECURRING CAPITAL COSTS	3,530,722	
OPERATING AND MAINTENANCE COSTS	2,444,457	
TOTAL ANNUALIZED COSTS	7,171,965	Sum of Operating and Maintenance and Annualized Capital Costs

Note: All calculations using machine performance were based on 59°F conditions and 8,760 hours/year operation. Assumptions based on percentage of costs were adapted from EPA OAQPS Control Cost Manual (1990).

1. Catalytic oxidation has not been demonstrated on a continuous basis when using fuel oil; and
2. The economic impacts are significant (i.e., an annualized cost of almost $63 million, with a cost effectiveness of over $7,310/ton of CO removed).

4.3.3 SULFUR DIOXIDE (SO_2)

4.3.3.1 Emission Control Hierarchy

Sulfur dioxide (SO_2) emissions are a result of the oxidation of sulfur in fossil fuel and can be minimized by reducing the sulfur content in fuel or through applying post-combustion removal techniques. For CTs, the use of low sulfur fuels is the only demonstrated control technology determined to be technically feasible. Post-combustion techniques, such as flue gas desulfurization (FGD), have not been applied to CTs.

FGD systems have been applied to oil- and coal-fired steam electric power plants. However, the relative gas volume for such facilities is significantly less than that for CTs (i.e., about 2 to 3 times), and the resultant SO_2 concentration is considerably higher. While the former factor will influence the cost of FGD, the latter poses significant technological constraints to removing SO_2. As a result, FGD is not feasible for application to CTs.

The BACT/LAER clearinghouse documents (EPA, 1985b, 1986, 1987c, and 1988c) show that fuel sulfur contents from 0.8 percent to less than 0.2 percent have been specified as BACT for CTs. The lowest sulfur-containing fuels were required in California and New Jersey, where LAER decisions dictated more stringent standards. Furthermore, such requirements generally limited fuel oil use for backup or emergency purposes only.

In Florida, CTs have been permitted recently with sulfur limitations of 0.2 and 0.3 percent annual average and 0.5 percent maximum. These facilities include the Florida Power and Light Company (FPL) Lauderdale Repowering Project, the Hardee Power Station, and the FPL Martin project. However, the primary fuel for these facilities was natural gas.

For the proposed CTs, the only technically feasible control technology for SO_2 is low sulfur fuel use. The use of natural gas will minimize SO_2 emissions but is not available at the site. SO_2 emissions from distillate fuel can be minimized by specification of a lower sulfur content fuel. A maximum sulfur content of 0.3 percent was selected as the top-down BACT level since it is near the lowest of the average sulfur contents permitted by FDER in mid-1990.

4.3.3.2 Technology Description

The No. 2 fuel oil used in the proposed CTs will have a maximum sulfur content specification of 0.5 percent but an average sulfur content of 0.3 percent. For the purposes of this analysis, the maximum sulfur content of 0.5 percent was assumed.

4.3.3.3 Impact Analysis

Economic--Based on a previous analysis for the DeBary CT project, the cost effectiveness of using 0.3 percent sulfur oil instead of 0.5 percent sulfur fuel oil was $790. This was calculated assuming an initial difference of 0.62 percent between a specification of 0.5 percent and 0.3 percent oil and a fuel escalation rate of 3 percent over inflation. However, the weighted average sulfur content for No. 2 fuel oil received at Intercession City over the past 7 years has been 0.2 percent. Therefore, the same environmental benefit would result from specifying a maximum sulfur content of 0.5 percent with an average of 0.3 percent but without the costs.

Environmental--Based upon use of 0.5 percent sulfur fuel oil, the maximum SO_2 impacts of the proposed turbines alone will be less than 7 percent of the AAQS for SO_2, and less than 18 percent of the allowable PSD Class II increments. As a result, significant air quality benefits will not occur by reducing fuel sulfur content below that in No.. 2 fuel oil.

Energy--No substantial energy penalties are expected to result from using No. 2 fuel oil with different sulfur contents.

4.3.3.4 Proposed BACT and Rationale

The proposed BACT for the proposed turbines is the use of No. 2 fuel oil with a maximum sulfur content of 0.5 percent with an average of 0.3 percent. The selection of this control alternative is based upon the following:

1. Requiring a maximum sulfur content of 0.5 percent and an average of 0.3 percent would result in the same overall environmental benefit as requiring 0.3 percent sulfur maximum but without the added costs.
2. No. 2 fuel oil is the primary fuel for the CTs and, therefore, any requirement for specifying a lower maximum sulfur content would have a direct economic impact on their use.
3. Fuel management practices to reduce the maximum sulfur content to 0.3 percent or less (as required by some recent BACT determinations) can be achieved by specifying an average annual sulfur dioxide emission limit of 0.3 percent, based on 3,390 hours of operation per year.
4. The location of the Intercession City site (i.e., distance from primary fuel delivery ports) makes fuel management impractical to achieve an annual average sulfur content of 0.3 percent. There are no sufficient tanks at the sites to store and mix various sulfur content distillate oils.
5. There is no significant environmental benefit in specifying fuel oil of 0.3 percent sulfur content maximum.

4.3.4 PARTICULATE EMISSIONS/PM10

The emission of particulates from the CTs is a result of incomplete combustion and trace solids in the fuel (particularly fuel oil) and in the injected water or steam used for NO_x control. The design of the CTs ensures that particulate emissions will be minimized by combustion controls and the use of clean fuels. A review of EPA's BACT/LAER Clearinghouse Documents did not reveal any post-combustion particulate control technologies being used on oil- or gas-fueled CTs. The No. 2 (i.e. distillate) fuel oil to be used in the CTs will contain only trace quantities of particulate (i.e., typically about 0.05 percent ash or less in fuel oil). Therefore, the use of clean fuel and combustion design is the proposed BACT for PM(TSP) and PM10.

The maximum particulate emissions from the CTs when burning fuel oil will be a lower concentration than that normally specified for fabric filter designs; i.e., the grain loading associated with the maximum particulate emissions [about 15 pounds per hour (lb/hr)] is less than 0.01 grains per standard cubic foot (gr/scf), which is a typical design specification for a baghouse. This further demonstrates that no further particulate controls are necessary for the proposed project.

4.3.5 OTHER REGULATED AND NONREGULATED POLLUTANT EMISSIONS

The PSD source applicability analysis shows that PSD significant emission levels are exceeded for H_2SO_4 mist, Be, and As, requiring PSD review (including BACT) for these pollutants.

There are no technically feasible methods for controlling the emissions of these pollutants from CTs, other than the inherent quality of the fuel (see Sections 4.3.3 and 4.3.4). Sulfuric acid mist emissions are a direct function of the sulfur content of the fuel. Levels of trace metals in No. 2 distillate oil are limited by fuel oil specifications. Low sulfur No. 2 distillate oil represents BACT for these pollutants.

For the nonregulated pollutants, most of which are trace metals, none of the control technologies evaluated for other pollutants (i.e., oxidation catalyst) would reduce such emissions and low sulfur distillate oil represents BACT because of its inherent low metals content.

5.0 AIR QUALITY MONITORING DATA

5.1 PSD PRECONSTRUCTION

The CAA requires that an air quality analysis be conducted for each pollutant subject to regulation under the act before a major stationary source or major modification is constructed. This analysis may be performed by the use of modeling and/or monitoring the air quality. The use of monitoring data refers to either the use of representative air quality data from existing monitoring stations or establishing a monitoring network to monitor existing air quality. Monitoring must be conducted for a period up to 1 year prior to submission of a construction permit application. In addition to establishing existing air quality, the air quality data are useful for determining background concentrations (i.e., concentrations from sources not considered in the modeling). The background concentrations can be added to the concentrations predicted for the sources considered in the modeling to estimate total air quality impacts. These total concentrations are then evaluated to determine compliance with the AAQS.

For the criteria pollutants, continuous air quality monitoring data must be used to establish existing air quality concentrations in the vicinity of the proposed source or modification. However, preconstruction monitoring data will generally not be required if the ambient air quality concentration before construction is less than the de minimis impact monitoring concentrations (refer to Table 3-2 for de minimis impact levels). Also, if the maximum predicted impact of the source or modification is less than the de minimis impact monitoring concentrations, the source would generally be exempt from preconstruction monitoring.

For noncriteria pollutants, EPA recommends that an analysis based on air quality modeling generally should be used instead of monitoring data. The permit-granting authority has discretion in requiring preconstruction monitoring data when:

1. The state has an air quality standard for the noncriteria pollutant and emissions from the source or modification pose a threat to the standard;
2. The reliability of emission data used as input to modeling existing sources is highly questionable; or

3. Air quality models have not been validated or may be suspect for certain situations, such as complex terrain or building downwash conditions.

However, if the maximum concentrations from the major source or major modification are predicted to be above the significant monitoring concentrations, EPA recommends that an EPA-approved measurement method be available before a permit-granting authority requires preconstruction monitoring.

EPA's Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD) (EPA, 1987a) sets forth guidelines for preconstruction monitoring. The guidelines allow the use of existing air quality data in lieu of additional air monitoring, if the existing data are representative. The criteria used in determining the representativeness of data are monitor location, quality of data, and currentness of data.

For the first criterion, monitor location, the existing monitoring data should be representative of three types of areas:

1. The location(s) of maximum concentration increase from the proposed source or modification;
2. The location(s) of the maximum air pollutant concentration from existing sources; and
3. The location(s) of the maximum impact area, i.e., where the maximum pollutant concentration would hypothetically occur based on the combined effect of existing sources and the proposed new source or modification.

Basically, the locations and size of the three types of areas are determined through the application of air quality models. The areas of maximum concentration or maximum combined impact vary in size and are influenced by factors such as the size and relative distribution of ground level and elevated sources, the averaging times of concern, and the distances between impact areas and contributing sources.

For the second criteria, data quality, the monitoring data should be of similar quality as would be obtained if the applicant were monitoring according to PSD requirements. As a minimum, this would mean:

1. Use of continuous instrumentation,
2. Production of quality control records that indicate the instruments' operations and performances,
3. Operation of the instruments to satisfy quality assurance requirements, and
4. Data recovery of at least 80 percent of the data possible during the monitoring effort.

For the third criteria, currentness of data, the monitoring data must have been collected within a 3-year period preceding the submittal of permit application and must still be representative of current conditions.

5.2 PROJECT MONITORING APPLICABILITY

As determined by the source applicability analysis described in Section 3.4, an ambient monitoring analysis is required by PSD regulations for SO_2, NO_2, PM (TSP), PM10, CO, H_2SO_4 mist, Be, and inorganic As emissions. Although H_2SO_4 mist, Be, and inorganic As are required to undergo air quality analyses, these pollutants may be exempt from monitoring requirements because no acceptable monitoring techniques have been established. The maximum predicted impacts from the proposed turbines are less than de minimis levels for NO_2, PM, and CO. Therefore, preconstruction monitoring is not required for those pollutants for this project. The maximum predicted impact for SO_2 exceeded the de minimis level for that pollutant.

In January 1991, FPC submitted to FDER a preliminary air quality impact assessment of the proposed simple-cycle CTs. The assessment described the maximum predicted impacts due to the turbines based on preliminary design information and recommended the use of existing FDER air quality monitoring data that would be appropriate to satisfy PSD preconstruction monitoring requirements. In June 1991, FDER determined that data collected at the recommended site in Orange County was acceptable for satisfying this requirement (see Appendix B). The monitoring site's identification number and location relative to the Intercession City plant are given in

Table 5-1. A summary of the SO_2 data recorded at this monitoring site from 1988 through January 1990 is presented in Table 5-2.

The monitoring site is operated by FDER and meets all quality assurance requirements. As shown in Table 5-2, all data recoveries have exceeded the requirement of 80 percent recovery. Because the data have been gathered within the last 3 years, the data are considered to be representative of current conditions.

5.3 BACKGROUND CONCENTRATIONS

Background SO_2 concentrations must be estimated to account for sources which are not explicitly included in the atmospheric dispersion modeling analysis. The available ambient SO_2 data presented in Table 5-2 were used for this purpose, based on the latest full year of data (i.e., 1990). For the short-term averaging times, the second-highest 3- and 24-hour average concentrations of 53 and 28 $\mu g/m^3$, respectively, were used as background concentrations. For the annual averaging time, the annual average concentration of 4 $\mu g/m^3$ was used.

Table 5-1. SO_2 Monitoring Site Used to Satisfy PSD Preconstruction Monitoring Requirements for the FPC Intercession City Project

Site No.	Site Address	UTM Coordinates (km) Zone	North	East	Relative Location from Intercession City Facility[a] Direction (Degrees)	Distance (km)
4900-002-G01	Lake Isle Estates Winter Park, Osceola County	17	3,162.5	464.5	27	40.8

[a]UTM coordinates of the Intercession City facility are 446.3 km east and 3,126.0 km north.

Table 5-2. SO_2 Monitoring Data (1988 to 1990) for the Monitor Located in Winter Park, Orange County

			Measured Concentration ($\mu g/m^3$)				
		Hours of	3-Hour		24-Hour		
Site No.	Year	Observation/Data Collection (%)	Highest	Second Highest	Highest	Second Highest	Annual
0930-001-F02	1988	8,600/98.2	66	58	30	26	6
	1989	8,571/97.8	55	42	19	19	8
	1990	8,564/97.8	62	53	33	28	4

[a]State of Florida AAQS are as follows: 3-hour = 1,300 $\mu g/m^3$
24-hour = 260 $\mu g/m^3$
Annual = 60 $\mu g/m^3$

6.0 AIR QUALITY MODELING APPROACH

6.1 ANALYSIS APPROACH AND ASSUMPTIONS

6.1.1 GENERAL MODELING APPROACH

The general modeling approach followed EPA and FDER modeling guidelines for determining compliance with AAQS and PSD increments. In general, when model predictions are used to determine compliance with AAQS and PSD increments, current policies stipulate that the highest annual average and HSH short-term (i.e., 24 hours or less) concentrations be compared to the applicable standard when 5 years of meteorological data are used. The HSH concentration is calculated for a receptor field by:

1. Eliminating the highest concentration predicted at each receptor,
2. Identifying the second-highest concentration at each receptor, and
3. Selecting the highest concentration among these second-highest concentrations.

This approach is consistent with the air quality standards, which permit a short-term average concentration to be exceeded once per year at each receptor.

To develop the maximum short-term concentrations for the facility, the general modeling approach was divided into screening and refined phases to reduce the computation time required to perform the modeling analysis. The basic difference between the two phases is the receptor grid used when predicting concentrations.

Concentrations for the screening phase were predicted using a coarse receptor grid and a 5-year meteorological record. After a final list of maximum short-term concentrations was developed, the refined phase of the analysis was conducted by predicting concentrations for a refined receptor grid centered on the receptor at which the HSH concentration from the screening phase was produced. The air dispersion model was then executed for the entire year during which HSH concentrations were predicted. This approach was used to ensure that valid HSH concentrations were obtained. More detailed descriptions of the emission inventory and receptor grids used in the screening and refined phases of the analysis are presented in the following sections.

6.1.2 MODEL SELECTION

The selection of the appropriate air dispersion model was based on its ability to simulate impacts in areas surrounding the Intercession City Plant site. Within 50 km of the site, the terrain can be described as simple, i.e., flat to gently rolling. As defined in the EPA modeling guidelines, simple terrain is considered to be an area where the terrain features are all lower in elevation than the top of the stack(s) under evaluation. Therefore, a simple terrain model was selected to predict maximum ground-level concentrations.

The Industrial Source Complex (ISC) dispersion model (EPA, 1990) was selected to evaluate the pollutant emissions from the proposed units and other modeled sources. This model is contained in EPA's User's Network for Applied Modeling of Air Pollution (UNAMAP), Version 6 (EPA, 1988a). The ISC model is applicable to sources located in either flat or rolling terrain where terrain heights do not exceed stack heights.

The ISC model consists of two sets of computer codes which are used to calculate short- and long-term ground level concentrations. The main differences between the two codes are the input format of the meteorological data and the method of estimating the plume's horizontal dispersion.

The first model code, the ISC short-term (ISCST) model, is an extended version of the single-source (CRSTER) model (EPA, 1977). The ISCST model is designed to calculate hourly concentrations based on hourly meteorological parameters (i.e., wind direction, wind speed, atmospheric stability, ambient temperature, and mixing heights). The hourly concentrations are processed into non-overlapping, short-term and annual averaging periods. For example, a 24-hour average concentration is based on twenty-four 1-hour averages calculated from midnight to midnight of each day. For each short-term averaging period selected, the highest and second-highest average concentrations are calculated for each receptor. As an option, a table of the 50 highest concentrations over the entire field of receptors can be produced.

The second model code within the ISC model is the ISC long-term (ISCLT) model. The ISCLT model uses joint frequencies of wind direction, wind speed, and atmospheric stability to calculate seasonal and/or annual average ground-level concentrations. Because the input wind directions are for 16 sectors, with each sector defined as 22.5 degrees, the model calculates concentrations by assuming that the pollutant is uniformly distributed in the horizontal plane within a 22.5-degree sector.

In this analysis, the ISCST model was used to calculate both short-term and annual average concentrations because these concentrations are readily obtainable from the model output. Major features of the ISCST model are presented in Table 6-1. Concentrations due to stack and volume sources are calculated by the ISCST model using the steady-state Gaussian plume equation for a continuous source. The area source equation in the ISCST model is based on the equation for a continuous and finite crosswind line source. The ISC model has rural and urban options which affect the wind speed profile exponent law, dispersion rates, and mixing-height formulations used in calculating ground-level concentrations. The criteria used to determine when the rural or urban mode is appropriate are based on land use near the proposed plant's surroundings (Auer, 1978). If the land use is classified as heavy industrial, light-moderate industrial, commercial, or compact residential for more than 50 percent of the area within a 3-km radius circle centered on the proposed source, the urban option should be selected. Otherwise, the rural option is more appropriate.

For modeling analyses that will undergo regulatory review, such as PSD permit applications, the following model features are recommended by EPA (1987a) and are referred to as the regulatory options in the ISCST model:

1. Final plume rise at all receptor locations,
2. Stack-tip downwash,
3. Buoyancy-induced dispersion,
4. Default wind speed profile coefficients for rural or urban option,
5. Default vertical potential temperature gradients,
6. Calm wind processing, and
7. Reducing calculated SO_2 concentrations in urban areas by using a decay half-life of 4 hours (i.e., reduce the SO_2 concentration emitted by 50 percent for every 4 hours of plume travel time).

Table 6-1. Major Features of the ISCST Model

ISCST Model Features
• Polar or Cartesian coordinate systems for receptor locations
• Rural or one of three urban options which affect wind speed profile exponent, dispersion rates, and mixing height calculations
• Plume rise due to momentum and buoyancy as a function of downwind distance for stack emissions (Briggs, 1969, 1971, 1972, and 1975)
• Procedures suggested by Huber and Snyder (1976); Huber (1977); and Schulmann and Hanna (1986) and Schulmann and Scire (1980) for evaluating building wake effects
• Procedures suggested by Briggs (1974) for evaluating stack-tip downwash
• Separation of multiple point sources
• Consideration of the effects of gravitational settling and dry deposition on ambient particulate concentrations
• Capability of simulating point, line, volume and area sources
• Capability to calculate dry deposition
• Variation with height of wind speed (wind speed-profile exponent law)
• Concentration estimates for 1-hour to annual average
• Terrain-adjustment procedures for elevated terrain including a terrain truncation algorithm
• Receptors located above local terrain, i.e., "flagpole" receptors
• Consideration of time-dependent exponential decay of pollutants
• The method of Pasquill (1976) to account for buoyancy-induced dispersion
• A regulatory default option to set various model options and parameters to EPA recommended values (see text for regulatory options used)
• Procedure for calm-wind processing
• Wind speed less than 1 m/s is set to 1 m/s

Source: EPA, 1990a.

In this analysis, the EPA regulatory options were used to address maximum impacts. Based on a review of the land use around the facility and discussions with FDER, the rural mode was selected due to the lack of residential, industrial, and commercial development within 3 km of the Intercession City Plant site.

6.2 METEOROLOGICAL DATA

Meteorological data used in the ISCST model to determine air quality impacts consisted of a concurrent 5-year period of hourly surface weather observations and twice-daily upper air soundings from the National Weather Service (NWS) stations at Orlando International Airport and Ruskin, respectively. The 5-year period of meteorological data was from 1982 through 1986. The NWS station in Orlando, located approximately 35 km to the north-northeast of the site, was selected for use in the study because it is the closest primary weather station to the study area considered to have meteorological data representative of the project site. This station has surrounding topographical features similar to the project site and the most readily available and complete database.

The surface observations included wind direction, wind speed, temperature, cloud cover, and cloud ceiling height. The wind speed, cloud cover, and cloud ceiling values were used in the ISCST meteorological preprocessor program to determine atmospheric stability using the Turner stability scheme. Based on the temperature measurements at morning and afternoon, mixing heights were calculated from the radiosonde data at Ruskin using the Holzworth approach (Holzworth, 1972). The Ruskin station is located about 100 km to the southwest of the site. Hourly mixing heights were derived from the morning and afternoon mixing heights using the interpolation method developed by EPA (Holzworth, 1972). The hourly surface data and mixing heights were used to develop a sequential series of hourly meteorological data (i.e., wind direction, wind speed, temperature, stability, and mixing heights). Because the observed hourly wind directions at the NWS stations are classified into one of thirty-six 10-degree sectors, the wind directions were randomized within each sector to account for the expected variability in air flow. These calculations were performed using the EPA RAMMET meteorological preprocessor program.

6.3 EMISSION INVENTORY

Stack operating parameters and air emission rates for the proposed simple-cycle CTs were presented in Section 2.0. To determine the load that would produce the highest impacts, a modeling analysis was performed that predicted concentrations for six Frame 7EA turbines operating at 25, 50, 75, and 100 percent of maximum capacity. Modeling six Frame 7EA turbines would provide a worst-case estimate for a load analysis since the larger Frame FA machines have higher exhaust flow rates and temperatures and proportionally smaller emissions than the Frame EA turbines. For each load, the highest emissions and lowest flow rate were selected from the range of operational data that were dependent upon the temperature.

The existing sources consist of six CT peaking units. Stack parameters and maximum air emission rates for these sources were presented in Section 2.0.

Modeling of the proposed turbines demonstrated that the facility's impacts are above the significant impact levels for SO_2 at a distance greater than 50 km from the Intercession City Plant site. Therefore, the emission inventories for SO_2 sources were developed from available databases.

In October 1989, FDER supplied KBN with printouts of the facilities within a 100 km square centered on the site (UTM coordinates: east 446.3 km, north 3,126.0 km). FDER also provided KBN with AIR 10 reports for Osceola, Polk, and Orange counties. Using this information, supplemented with data from permits, PSD applications, and previous modeling analyses, the SO_2 emitting facilities within 50 km of the location of the site were identified.

Facilities located within 50 km of the Intercession City Plant site with SO_2 emissions greater than 25 TPY are presented in Table 6-2. The facilities within 10 km of the Intercession City Plant were included explicitly in the modeling analysis. Facilities located within 10 to 40 km of the Intercession City Plant with SO_2 emissions greater than 200 TPY and facilities located within 40 to 50 km of the plant with SO_2 emissions greater than 400 TPY also were modeled explicitly.

Table 6-2. Inventory of SO_2 Emitting Facilities (>25 TPY) Within 50 km of the FPC Intercession City Plant

APIS Number	Facility	UTM Coordinates (km) East	UTM Coordinates (km) North	Relative Location to FPC Intercession City Facility[a] X (km)	Y (km)	Distance (km)	Direction (degrees)	Maximum Allowable SO_2 Emissions (TPY)[b]	Facility To Be Modeled?
0 - 10 km									
40TPA530014	Standard Sand and Silica Co.	441.5	3118.2	-4.8	-7.8	9.2	212	279	Yes
10 - 40 km									
30ORG480109	Reedy Creek Energy Services	442.0	3139.0	-4.3	13.0	13.7	342	173	No
30ORL490001	Kissimee Electric Utilities	460.1	3129.3	13.8	3.3	14.2	77	1,730	Yes
30ORG480110	Reedy Creek Energy Services	443.1	3144.3	-3.2	18.3	18.6	350	551	Yes
40TPA530061	Holly Hill Fruit Products	441.0	3115.4	-5.3	-10.6	11.9	207	398	Yes
30ORG480130	Macasphalt	461.8	3141.9	15.5	15.9	22.2	44	35	No
30ORG480127	AT+T Information Systems	459.7	3146.6	13.4	20.6	24.6	33	219	Yes
30ORL490035	Alad Construction Company	433.0	3152.9	-13.3	26.9	30.0	334	249	Yes
40TPA530144	John Carlo Florida	426.2	3104.1	-20.1	-21.9	29.7	223	33	No
30ORL350009	Sloan Construction	431.6	3152.6	-14.7	26.6	30.4	331	112	No
30ORG480138	AT&T Technologies, Inc.	459.3	3153.6	13.0	27.6	30.5	25	64	No
30ORG480048	American Asphalt Inc.	444.8	3158.2	-1.5	32.2	32.2	357	53	No
30ORG480097	National Linen Service	462.2	3155.6	15.9	29.6	33.6	28	355	Yes
30ORG480053	Winter Garden Citrus	443.8	3159.6	-2.5	33.6	33.7	356	145	No
30ORL350050	Sloan Construction	432.7	3159.6	-13.6	33.6	36.2	338	96	No
30ORG480063	Florida Hospital	463.8	3160.7	17.5	34.7	38.9	27	66	No
40TPA530002	Citrus World	441.0	3087.3	-5.3	-38.7	39.1	188	597	Yes
40TPA530037	Adams Packing Association	421.7	3104.2	-24.6	-21.8	32.9	228	40	No
40TPA530082	Macasphalt	423.1	3101.5	-23.2	-24.5	33.7	223	48	No
40TPA530086	Bordo Citrus Products Company	427.8	3097.5	-18.5	-28.5	34.0	213	60	No
40 - 50 km									
40TPA530001	Alcoma Packing	451.6	3085.5	5.3	-40.5	40.8	173	327	No
40TPA530167	Tricil Recovery Services	422.7	3091.9	-23.6	-34.1	41.5	215	240	No
30ORG480088	Ralston Purina Co.	451.1	3167.7	4.8	41.7	42.0	7	54	No
40TPA530004	Lakeland City Power-McIntosh	409.2	3106.2	-37.1	-19.8	42.1	242	30,176	Yes
30ORG480156	Rogers Group, Inc.	455.8	3167.1	9.5	41.1	42.2	13	164	No
40TPA530003	Lakeland City Power-Larsen	409.0	3106.2	-37.3	-19.8	42.2	242	3,474	Yes
30ORG480014	FPC-Rio Pinar	475.2	3156.8	28.9	30.8	42.2	43	1,092	Yes
30ORG480137	OUC-Stanton Energy Center	483.5	3150.6	37.2	24.6	44.6	57	41,304	Yes
30ORL350001	B. W. Canning Company	416.2	3159.6	-30.1	33.6	45.1	318	117	No

[a] The UTM Coordinates of FPC Intercession City facility are 446.3 km East and 3126.0 km North.

[b] Based on APIS data, permit information, operating reports, or previous modeling analysis.

Table 6-3. Summary of SO_2 Emission Sources Used in the Modeling Analysis

Source Name	Model ID	Emissions lb/hr	(g/s)	Stack Height ft	(m)	Velocity fps	(mps)	Temperature °F	(K)	Stack Diameter ft	(m)
Standard Sand and Silica Co.	1002	33.9	4.27	30	9.14	87	26.52	172	351	1.4	0.43
	1004	64.0	8.06	85	25.91	29	8.84	107	315	4.0	1.22
Kissimmee Electric Utilities	99401[a]	396.0	49.90	60	18.29	65	19.81	300	422	12.0	3.66
Reedy Creek Energy Services	91101[a]	7.7	0.97	120	36.58	30	9.14	425	491	4.5	1.37
	1102	118	14.87	65	19.81	51	15.54	285	414	11.2	3.41
Holly Hill Fruit Products	903	90.9	11.45	59	17.98	62	18.90	160	344	2.8	0.85
AT+T Information Systems	1201	50	6.30	35	10.67	107	32.61	700	644	3.3	1.01
Alad Construction Company	501	43	5.42	30	9.14	37	11.28	150	339	3.8	1.16
National Linen Service	201	76.8	9.68	120	36.58	28	8.53	500	533	4.0	1.22
Citrus World	601	200	25.20	75	22.86	35	10.67	121	323	3.2	0.98
Lakeland City Power-McIntosh	801	2708.9	341.32	150	45.72	78	23.77	295	419	9.0	2.74
	806	4180.9	526.79	250	76.20	107	32.61	170	350	16.0	4.88
Lakeland City Power-Larsen	701	917.0	115.54	165	50.29	18	5.49	320	433	10.0	3.05
FPC-Rio Pinar101	249	31.37	41	12.50	63	19.20	960	789	12.1	3.69	
OUC-Stanton Energy Center	99301[a]	9430	1188.18	550	167.64	83	25.30	325	436	19.0	5.79

[a] PSD increment consuming source.

The stack, operating, and emission data for those sources considered in the modeling are presented in Table 6-3. PSD increment-affecting sources are noted and were used in the PSD modeling analysis.

6.4 RECEPTOR LOCATIONS

As discussed in Section 6.1, the general modeling approach considered screening and refined phases to address compliance with maximum allowable PSD Class II increments and AAQS. In the ISCST modeling, concentrations were predicted for the screening phase using several receptor grids. The locations of the receptors were based on identifying the areas in which maximum concentrations are predicted due to the proposed units.

A description of the receptor locations for determining compliance with PSD increments and AAQS is as follows:

1. 558 receptors (AAQS analyses) and 594 receptors (PSD Class II analyses) located in a radial grid centered on the proposed units. These receptors were classified into two main groups:
   a. Plant boundary and near-field receptors, and
   b. General grid receptors.
2. For both the AAQS and PSD Class II analysis, 90 receptors were used for a plant boundary and near-field grid. The grid for the plant boundary receptors consisted of 36 receptors. The near-field grid consisted of 54 receptors located 400 and 700 m from the proposed stack, off of plant property. These receptors are presented in Table 6-4.
3. For the AAQS analyses, the general grid receptors consisted of 468 receptors located at distances of 1,000; 1,300; 1,600; 2,000; 2,500; 3,000; 3,500; 4,000; 5,000; 7,500; 10,000; 12,500; and 15,000 m along 36 radials with each radial spaced at 10-degree increments.
4. For the PSD Class II analyses, 504 receptors located at distances of 1,000; 1,300; 1,600; 2,000; 2,500; 3,000; 3,500; 4,000; 5,000; 7,500; 10,000; 15,000; 20,000; and 25,000 m along 36 radials with each radial spaced at 10-degree increments. The grid for the PSD Class II analysis was extended in order to capture the maximum

Table 6-4. Plant Property Receptors Used in the Screening Analysis

Direction (degrees)	Distance (m)	Direction (degrees)	Distance (m)
10	468 and 700	190	310, 400, and 700
20	472 and 700	200	320, 400, and 700
30	505 and 700	210	331, 400, and 700
40	409 and 700	220	293, 400, and 700
50	353, 400, and 700	230	270, 400, and 700
60	319, 400, and 700	240	258, 400, and 700
70	300, 400, and 700	250	254, 400, and 700
80	293, 400, and 700	260	254, 400, and 700
90	655 and 700	270	259, 400, and 700
100	558 and 700	280	272, 400, and 700
110	471 and 700	290	296, 400, and 700
120	419 and 700	300	337, 400, and 700
130	387 and 700	310	388 and 700
140	371, 400, and 700	320	452 and 700
150	340, 400, and 700	330	561 and 700
160	319, 400, and 700	340	734
170	309, 400, and 700	350	869
180	308, 400, and 700	360	866

Note: Direction and distance are relative to a point centered on the south frame 7FA unit stack. First distance shown represents the minimum distance to plant property within the 10-degree sector.

concentration as a result of the interaction between the proposed units and the OUC Stanton facility.

5. To determine the proposed sources' impacts and significant impact area, a grid similar to that used in the PSD Class II analyses was expanded to include 30,000-; 40,000-; and 50,000-meter distances.

After the screening modeling was completed, refined short-term modeling was conducted using a receptor grid centered on the receptor which had the highest, second-highest short-term concentrations from the screening analysis. The receptors were located at intervals of 100 m between the distances considered in the screening phase, along 19 radials spaced at 1-degree increments, centered on the radial along which the maximum concentration was produced. For example, if the maximum concentration was produced along the 90-degree radial at a distance of 1.6 km, the refined receptor grid would consist of receptors at the following locations:

Directions (degrees)	Distance (km)
81, 82, 83, 84, 85, 86, 87, 88, 89,	1.4, 1.5, 1.6, 1.7,
90, 91, 92, 93, 94, 95, 96, 97, 98, 99	1.8, and 1.9 per direction

To ensure that a valid HSH concentration was calculated, concentrations were predicted using the refined grid for the entire year that produced the HSH concentrations from the screening receptor grid.

In general, refined modeling analysis was not performed for the annual averaging period, because the spatial distribution of annual average concentrations are not expected to vary significantly from those produced from the screening analysis. However, in predicting impacts as a result of the proposed units only for comparison to significant impact levels, the overall highest predicted annual concentration was refined.

6.5 BACKGROUND CONCENTRATIONS

Background concentrations used in the air quality impact analysis are discussed in Section 5.0. The SO_2 background concentrations used in the AAQS analysis were 53 $\mu g/m^3$, 28 $\mu g/m^3$ and 4 $\mu g/m^3$ for averaging times of 3-hour, 24-hour and annual, respectively.

6.6 BUILDING DOWNWASH EFFECTS

Based on the building dimensions associated with buildings and structures planned at the Intercession City Plant, the stacks for the proposed turbines will be less than GEP. In addition, the stacks for the existing turbines are below GEP height based upon the existing turbine buildings and structures. Therefore, the potential for building downwash to occur was considered in the modeling analysis.

The procedures used for addressing the effects of building downwash are those recommended in the ISC Dispersion Model User's Guide. The building height, length, and width are input to the model, which uses these parameters to modify the dispersion parameters. For short stacks (i.e., physical stack height is less than $H_b + 0.5\ L_b$, where H_b is the building height and L_b is the lesser of the building height or projected width), the Schulman and Scire (1980) method is used. If this method is used, then direction-specific building dimensions are input for H_b and L_b for 36 radial directions, with each direction representing a 10 degree sector. The features of the Schulman and Scire method are as follows:

1. Reduced plume rise as a result of initial plume dilution,
2. Enhanced plume spread as a linear function of the effective plume height, and
3. Specification of building dimensions as a function of wind direction.

For cases where the physical stack is greater than $H_b + 0.5\ L_b$ but less than GEP, the Huber-Snyder (1976) method is used. For this method, the ISCST model calculates the area of the building using the length and width, assumes the area is representative of a circle, and then calculates a building width by determining the diameter of the circle. If a specific width is to be modeled, then the value input to the model must be adjusted according to the following formula:

$$M_w^2 = \frac{\pi W^2}{4} \tag{1}$$

$$M_w = 0.886W$$

where: M_w = Input to the model to produce a building width of W used in the dispersion calculation.
W = The actual building width.

The building dimensions considered in the modeling analysis are presented in Table 6-5. In the case of both the existing and proposed CT units, the turbine structure was the dominant building of influence. For the two FA units, the adjacent EA unit building was the dominant structure.

Table 6-5. Building Dimensions Used in ISCST Modeling Analysis To Address Potential Building Wake Effects

Source	Associated Building	Actual Building Dimensions (m)			Projected Width[a] (m)	Modeled Building Dimensions (m)	
		Length	Width	Height		Length, Width	Height
FPC–Existing Turbines No. 1 to No. 6	Turbine Structure	37.2	8.2	3.05	38.1	38.1	3.05
FPC–Proposed CTs (Frame 7EA and Frame 7FA)	Proposed Structure	18.0	7.1	11.8	19.3	19.3	11.8

[a]Diagonal of actual building dimensions.

7.0 AIR QUALITY MODELING RESULTS

7.1 PROPOSED UNITS ONLY

A summary of the maximum concentrations caused by six Frame 7EA CT units operating at load conditions of 100, 75, 50, and 25 percent of capacity is presented in Table 7-1. The results are presented for SO_2 concentrations and it is assumed that the stacks are colocated. Also, for operating load, the modeling was performed using the highest emissions at 20°F design condition coupled with the lowest exit gas flow rates at 95°F design condition to maximize predicted impacts. The modeling analysis confirmed that the maximum concentrations generally occur for the maximum capacity at 100-percent operating load as shown in Table 7-1. Therefore, the proposed units (i.e., four Frame 7EA units and two Frame 7FA units) were modeled at this load condition in all subsequent modeling analyses.

A summary of the maximum predicted screening and refined impacts for the five pertinent averaging times due to four colocated Frame 7EA and two collocated Frame 7FA units at the SO_2 emission rate are presented in Tables 7-2 and 7-3. Based on these results, a summary of the maximum predicted impacts of regulated pollutants caused by the proposed units only is presented in Table 7-4. For all subsequent PSD increment and AAQS modeling analyses, the proposed stacks were modeled at separate locations.

The maximum predicted 3-hour, 24-hour, and annual SO_2 concentrations due to the proposed CT units only are 71.4, 16.1, and 0.62 $\mu g/m^3$, respectively. The maximum 3-hour and 24-hour impacts are above the significance levels established by EPA and FDER and, therefore, further modeling analysis is required for SO_2 to demonstrate compliance with PSD increments and AAQS.

The maximum predicted 24-hour and annual average PM(TSP) concentrations due to the units only are 0.34 and 0.02 $\mu g/m^3$, respectively. Maximum PM10 impacts are assumed to be identical to the PM(TSP) impacts. Since these maximum concentrations are below the significance levels

Table 7-1. Maximum SO_2 Concentrations Predicted for Six Proposed Frame 7EA CTs at Various Operating Load Conditions (Page 1 of 2)

Averaging Period/ Year	Maximum Concentration ($\mu g/m^3$) for Operating Load (percent) 100	75	50	25
1-Hour				
1982	147	137	123	93.1
1983	150	144	125	88.9
1984	154	166	145	114
1985	150	144	116	84.2
1986	146	135	103	91.2
3-Hour				
1982	69.5	61.9	55.9	45.7
1983	54.8	56.6	44.6	36.7
1984	72.9	70.3	65.9	54.9
1985	62.5	53.2	51.6	37.2
1986	75.0	55.4	46.3	37.8
8-Hour				
1982	29.9	28.1	32.8	25.7
1983	46.7	42.1	38.1	31.5
1984	36.4	30.9	27.0	25.3
1985	30.8	27.4	32.2	23.5
1986	37.2	33.7	30.8	24.4
24-Hour				
1982	14.7	13.3	12.2	10.0
1983	14.6	13.1	11.9	9.90
1984	14.0	13.7	11.2	9.60
1985	14.8	13.0	11.7	10.5
1986	14.5	13.3	12.1	10.1

Table 7-1. Maximum SO_2 Concentrations Predicted for Six Proposed Frame 7EA CTs at Various Operating Load Conditions (Page 2 of 2)

Averaging Period/ Year	Maximum Concentration ($\mu g/m^3$) for Operating Load (percent) 100	75	50	25
Annual				
1982	0.97	0.92	0.87	0.76
1983	0.75	0.74	0.69	0.59
1984	1.06	1.02	0.96	0.83
1985	0.91	0.89	0.83	0.71
1986	0.86	0.83	0.79	0.69

Note: These results are based on the colocation of all six stacks. All concentrations presented are the highest predicted.

Table 7-2. Maximum Predicted SO_2 Concentrations from the Screening Analysis for the Proposed Project at Maximum Load

Averaging Period	Maximum Concentration ($\mu g/m^3$)	Receptor Location Direction (°)	Receptor Location Distance (km)	Period Julian Day	Period Hour Ending	Period Year
1-Hour	109	350	1.6	206	14	1982
	116	180	1.6	188	13	1983
	123	70	1.6	257	13	1984
	122	320	1.6	193	12	1985
	127	140	1.6	213	12	1986
3-Hour	71.4	180	15.0	311	6	1982
	57.4	310	15.0	64	3	1983
	68.2	200	20.0	278	6	1984
	58.0	110	15.0	355	21	1985
	67.0	10	1.6	159	15	1986
8-Hour	30.2	180	15.0	311	8	1982
	47.0	300	20.0	361	24	1983
	30.1	200	15.0	71	8	1984
	32.4	240	20.0	50	24	1985
	36.4	70	15.0	111	24	1986
24-Hour	14.8	180	15.0	311	24	1982
	14.6	300	20.0	361	24	1983
	13.3	260	7.5	132	24	1984
	15.5	240	10.0	50	24	1985
	13.3	170	20.0	338	24	1986
Annual	0.94	220	15.0	—	—	1982
	0.74	310	7.5	—	—	1983
	1.03	240	10.0	—	—	1984
	0.86	240	10.0	—	—	1985
	0.84	240	10.0	—	—	1986

Note: All concentrations reported are highest values. All impacts are based on a maximum of 0.5 percent sulfur in fuel oil.

Table 7-3. Maximum Predicted SO_2 Concentrations from the Refinement Analysis for the Proposed Project

Averaging Period	Maximum Concentration ($\mu g/m^3$)	Receptor Location: Direction (°)	Receptor Location: Distance (km)	Period: Julian Day	Period: Hour Ending	Period: Year
1-Hour	129	142	1.5	213	12	1986
3-Hour	71.4	180	15.0	311	6	1982
8-Hour	47.6	301	18.4	361	24	1983
24-Hour	16.1	239	14.0	50	24	1985
Annual	1.03	240	11.1	—	—	1984

Note: All impacts are based on a maximum of 0.5 percent sulfur in fuel oil.

Table 7-4. Summary of Maximum Pollutant Concentrations Due to the Proposed Project

Pollutant	Averaging Period	Maximum Predicted Concentrations ($\mu g/m^3$)[a]	Location Direction (°)	Location Distance (km)	Significance Impact Level ($\mu g/m^3$)	De Minimis Monitoring Level ($\mu g/m^3$)
Sulfur Dioxide[b]	3-hour	71.4	180	15.0	25	NA
	24-hour	16.1	239	14.0	5	13
	Annual	0.62	240	11.1	1	NA
Particulate Matter (TSP)	24-hour	0.34	239	14.0	5	10
	Annual	0.02	240	11.1	1	NA
Particulate Matter (PM10)	24-hour	0.34	239	14.0	5	10
	Annual	0.02	240	11.1	1	NA
Nitrogen Dioxide	Annual	0.34	240	11.1	1	14
Carbon Monoxide	1-hour	11.2	142	1.5	2,000	NA
	8-hour	4.2	301	18.4	500	575
Beryllium	24-hour	0.000075	239	14.0	NA	0.25

Note: These results are based on the colocation of each stack. Each stack was modeled at its true location for the PSD and AAQS analyses.

NA = Not applicable.
$\mu g/m^3$ = micrograms per cubic meter.

[a] Based upon four Frame 7EA CTs and two Frame 7FA CTs operating at maximum load. Highest concentrations are reported.
[b] The 3- and 24-hour concentrations are based on 0.5 percent sulfur content in fuel oil. The annual concentrations are based on an average 0.3 percent sulfur in fuel oil.

for these pollutants, no further modeling analysis is necessary. The maximum predicted annual NO_2 concentration due to the units only is 0.34 $\mu g/m^3$. Because this level of impact is below the significance level, no further modeling analysis was performed.

The maximum predicted 1- and 8-hour average CO concentrations due to the units only are 11.2 and 4.2 $\mu g/m^3$, respectively. These maximum impacts are less than the CO significance impact levels. Because the maximum predicted impacts due to the proposed units are less than the CO significance levels, additional modeling is not required for this pollutant.

The maximum 24-hour Be concentration due to the units only is predicted to be 0.000075 $\mu g/m^3$. No significance level has been established for Be, but a de minimis monitoring concentration has been set at 0.25 $\mu g/m^3$, 24-hour average. Since the predicted impacts due to the units only are well below the de minimis, no further modeling analysis was conducted.

7.2 PSD CLASS II INCREMENT ANALYSIS

Maximum SO_2 concentrations predicted from the screening analysis for comparison to the PSD Class II increments are presented in Table 7-5. Based upon these results, the refined analysis was based on modeling the year during which the overall highest, second-highest 3-hour and 24-hour SO_2 concentrations were predicted in the screening analysis. In addition, any other year that produced an overall highest, second-highest concentration that was within ten percent of this maximum concentration also was refined. As stated earlier, a refined analysis for annual average concentrations was not performed. A summary of the maximum SO_2 PSD Class II increment consumption concentrations predicted in the refined analysis is presented in Table 7-6.

The maximum 3-hour average SO_2 PSD increment consumption from the refined analysis is predicted to be 63.8 $\mu g/m^3$, which is 12 percent of the maximum allowable PSD Class II increment of 512 $\mu g/m^3$, not to be exceeded more than once per year. The proposed project contributed 100 percent to this value.

Table 7-5. Maximum Predicted SO_2 Concentrations from the Screening Analysis for Comparison to PSD Class II Increments

Averaging Period	Maximum Concentration ($\mu g/m^3$)	Receptor Location[a] Direction (°)	Receptor Location[a] Distance (km)	Period Julian Day	Period Hour Ending	Period Year
3-Hour[b]	62	180	15.0	68	6	1982
	53	260	15.0	211	3	1983
	57	240	20.0	265	24	1984
	58	240	20.0	50	21	1985
	52	240	15.0	173	21	1986
24-Hour[b]	15.4	180	20.0	313	24	1982
	12.5	260	7.5	117	24	1983
	15.1	240	15.0	267	24	1984
	14.8	240	25.0	239	24	1985
	13.7	240	20.0	333	24	1986
Annual[c]	1.80	90	10.0	—	—	1982
	1.60	60	15.0	—	—	1983
	1.48	240	10.0	—	—	1984
	1.64	80	10.0	—	—	1985
	1.57	70	10.0	—	—	1986

Note: Based on six CTs operating at maximum load and firing fuel oil with 0.5 percent sulfur content.

— = Not applicable.
$\mu g/m^3$ = micrograms per cubic meter.

[a] Relative to the location of the proposed CT units.
[b] Highest, second-highest concentrations predicted for this averaging period.
[c] Based on an average of 0.3 percent sulfur in fuel oil for the proposed FPC Intercession City units.

Table 7-6. Maximum Predicted SO_2 Concentrations from the Refined Analysis for Comparison to PSD Class II Increments

Averaging Period	Maximum Concentration ($\mu g/m^3$)	Receptor Location[a] Direction (°)	Receptor Location[a] Distance (km)	Period Julian Day	Period Hour Ending	Period Year	PSD Class II Increment
SO_2 Concentrations							
3-Hour[b]	63.8	181	15.0	311	6	1982	512
24-Hour[b]	17.1	241	14.9	267	24	1984	91
Annual[c]	1.80	90	10.0	—	—	1982	20

Note: Based on six CTs operating at maximum load and firing fuel oil with 0.5 percent sulfur content.

— = Not applicable.
$\mu g/m^3$ = micrograms per cubic meter.

[a] Relative to the location of the proposed CT units.
[b] Highest, second-highest concentrations predicted for this averaging period.
[c] Based on an average of 0.3 percent sulfur in fuel oil for the FPC Intercession City units.

The maximum 24-hour average SO_2 PSD Class II increment consumption is predicted to be 17.1 $\mu g/m^3$, which is 19 percent of the maximum allowable PSD Class II increment of 91 $\mu g/m^3$, not to be exceeded more than once per year. The proposed project contributed 12.1 $\mu g/m^3$ to this total, while OUC Stanton contributed 4.5 $\mu g/m^3$.

The maximum annual average SO_2 PSD increment consumption is predicted to be 1.80 $\mu g/m^3$, which is 9 percent of the maximum allowable PSD Class II increment of 20 $\mu g/m^3$. The proposed project contributed 0.35 $\mu g/m^3$ to this value, while OUC Stanton contributed 0.80 $\mu g/m^3$.

7.3 AAQS ANALYSIS

The maximum 3-hour, 24-hour, and annual average total SO_2 concentrations predicted from the screening analysis are presented in Table 7-7. The total concentrations were determined from the impacts of the modeled sources added to the background concentration (refer to Section 5.0). These results show that the maximum SO_2 concentrations due to all sources are below the AAQS for all averaging periods.

Similar to the PSD Class II increment analysis, the refined AAQS analysis was based on modeling the year during which the overall HSH 3-hour and 24-hour concentrations were predicted in the screening analysis and any other years that produced a highest, second-highest concentration within ten percent of this maximum. The maximum SO_2 concentrations predicted in the refined analysis are presented in Table 7-8.

The maximum 3-hour average SO_2 concentration due to all sources from the refined analysis is predicted to be 541 $\mu g/m^3$, which is 42 percent of the AAQS of 1,300 $\mu g/m^3$, not to be exceeded more than once per year. The project contributed 0 percent of this maximum 3-hour average concentration.

Table 7-7. Maximum Predicted Total SO_2 Concentrations from the Screening Analysis for Comparison to AAQS

Averaging Period	Concentration ($\mu g/m^3$) Total	Total Due To Modeled Sources	Background	Receptor Location[a] Direction (°)	Distance (km)	Period Julian Day	Hour Ending	Year
3-Hour[b]	261	208	53	210	10.0	125	9	1982
	253	200	53	210	10.0	289	9	1983
	247	194	53	210	10.0	138	24	1984
	255	202	53	210	10.0	35	24	1985
	252	199	53	210	10.0	360	12	1986
24-Hour[b]	93	65	28	210	10.0	343	24	1982
	91	63	28	210	10.0	1	24	1983
	86	58	28	210	10.0	138	24	1984
	79	51	28	210	10.0	65	24	1985
	87	59	28	210	10.0	39	24	1986
Annual[c]	16.0	12.0	4	210	10.0	—	—	1982
	15.1	11.1	4	210	10.0	—	—	1983
	14.2	10.2	4	210	10.0	—	—	1984
	13.9	9.9	4	210	12.5	—	—	1985
	15.1	11.1	4	210	10.0	—	—	1986

Note: Based on six CTs operating at maximum load and firing fuel oil with 0.5 percent sulfur content.

— = Not applicable.
$\mu g/m^3$ = micrograms per cubic meter.

[a] Relative to the location of the proposed CT units.
[b] Highest, second-highest concentrations predicted for this averaging period.
[c] Based on an average of 0.3 percent sulfur in fuel oil for the proposed FPC Intercession City units.

Table 7-8. Maximum Predicted SO_2 Concentrations from the Refined Analysis for Comparison to AAQS

Averaging Period	Concentration ($\mu g/m^3$) Total	Total due to Modeled Sources	Total due to Background	Receptor Location[a] Direction (°)	Receptor Location[a] Distance (km)	Period Julian Day	Period Hour Ending	Period Year	AAQS
SO_2 Concentrations									
3-Hour[b]	541	488	53	213	9.1	149	12	1986	1,300
24-Hour[b]	173	145	28	213	9.5	88	24	1982	260
Annual[c]	16.0	12.0	4	210	10.0	—	—	1982	60

Note: Based on six CTs operating at maximum load and firing fuel oil with 0.5 percent sulfur content.

— = Not applicable.
$\mu g/m^3$ = micrograms per cubic meter for the proposed FPC Intercession City Units.

[a] Relative to the location of the proposed CT units.
[b] Highest, second-highest concentrations predicted for this averaging period.
[c] Based on an average of 0.3 percent sulfur in fuel oil for the proposed FPC Intercession City units.

The maximum 24-hour average SO_2 concentration due to all sources is predicted to be 173 $\mu g/m^3$, which is 66 percent of the AAQS of 260 $\mu g/m^3$, not to be exceeded more than once per year. The project contributed less than 1 percent of this maximum 24-hour average concentration.

The maximum annual average SO_2 concentration due to all sources is predicted to be 16.0 $\mu g/m^3$, which is 27 percent of the AAQS of 60 $\mu g/m^3$. The project contributed less than 5 percent to the maximum concentration.

8.0 ADDITIONAL IMPACT ANALYSIS

8.1 IMPACTS UPON VEGETATION

The response of vegetation to atmospheric pollutants is influenced by the concentration of the pollutant, duration of the exposure and the frequency of exposures. The pattern of pollutant exposure expected from the facility is that of a few episodes of relatively high ground-level concentration which occur during certain meteorological conditions interspersed with long periods of extremely low ground-level concentrations. If there are any effects of stack emissions on plants, they will be from the short-term higher doses. A dose is the product of the concentration of the pollutant and the duration of the exposure. The impact of the proposed CT units on regional vegetation was assessed by comparing pollutant doses that are predicted from modeling with threshold doses reported from the scientific literature which could adversely affect plant species typical of those present in the region.

8.1.1 SULFUR DIOXIDE

The maximum total 3-hour average SO_2 concentration (i.e., impacts due to all modeled sources added to a background concentration) is predicted to be 541 $\mu g/m^3$ (see Table 7-8). This concentration is predicted to occur about 9.1 km south-southwest of the stacks and represents the concentration that would occur during the worst-case meteorological conditions of the modeled five years. The maximum 3-hour average ground-level concentration predicted for the other 4 years are 98 percent or less of the maximum concentration. Concentrations decrease with distance beyond the location of the maximum concentration.

The maximum total predicted 24-hour average SO_2 concentration is 173 $\mu g/m^3$ (see Table 7-8) and is located approximately 9.5 km to the south-southwest of the stacks. The maximum total predicated annual SO_2 concentration is 16.0 $\mu g/m^3$ (see Table 7-8). This concentration is predicted to occur 10.0 km to the south-southwest of the stacks.

These concentrations and averaging times can be compared with SO_2 doses known to adversely affect plant species (see Table 8-1). The expected doses from the proposed project combined with background sources are much lower than doses known to cause a detrimental effect on vegetation.

Table 8-1. Sulfur Dioxide Doses Reported to Affect Plant Species Similar to Vegetation in the Region of the Intercession City Plant

Species	Dose and Effect	Reference
Strawberry	1,040 $\mu g/m^3$ for 6 hours per day for 3 days had no affect on growth	Rajput et al., 1977
Citrus	2,080 $\mu g/m^3$ for 23 days with 10 day interruption reduced leaf area	Matsushima and Brewer, 1972
Ryegrass	42 $\mu g/m^3$ for 26 weeks or 367 $\mu g/m^3$ for 131 days reduced dry weight	Bell et al., 1979; Ayazaloo and Bell, 1981
Tomato	1,258 $\mu g/m^3$ for 5 hours per day, for 57 days, reduced growth	Kohut et al., 1983
Duckweed	390 $\mu g/m^3$ for 6 weeks reduced growth	Fankhauser et al., 1976
Lichens (Parmotrema and Ramalina spp.)	400 $\mu g/m^3$ 6 hours per week for 10 weeks reduced CO_2 uptake and biomass gain of Ramalina, not Parmotrema	Hart et al., 1988
Bald Cypress	1,300 and 2,600 $\mu g/m^3$ for 48 hours. Only 2,600 $\mu g/m^3$ reduced leaf area.	Shanklin and Kozlowski, 1985
Green Ash	210 $\mu g/m^3$ for 4 hours per day, 5 days per week for 6 weeks reduced growth	Chappelka et al., 1988

8.1.2 OTHER POLLUTANTS

Predicted impacts of other regulated pollutants are less than the significant impact levels (see Table 7-2). As a result, no impacts are expected to occur to vegetation as a result of the proposed emissions of other regulated pollutants.

8.2 IMPACTS TO SOILS

SO_2 that reaches the soil by deposition from the air is converted by physical and biotic processes to sulfates. (Particulates have no affect on soils at the levels predicted.) The effects can be beneficial to plants if sulfates in native soils are less than plant requirements for optimum growth. However, sulfates can also increase acidity of unbuffered soils, causing adverse effects due to changes in nutrient availability and cycling. The predicted concentrations of SO_2 from stack emissions are not expected to have a significant adverse effect on soils in the vicinity because:

1. The predicted concentrations are low; and
2. Fertilizer and ground limestone is generally applied to lands being used for crops, pasture, and citrus.

Therefore, the facility is not expected to have a significant adverse impact on regional vegetation or soils.

8.3 IMPACTS DUE TO ADDITIONAL GROWTH

A limited number of additional personnel may be added to the current plant personnel complement. These additional personnel are expected to have an insignificant effect on the residential, commercial, and industrial growth in Osceola County.

Fuel oil will be delivered by truck to the facility in the same manner as residual oil. The rail line will be activated for delivery of additional fuel oil. No additional significant impacts are expected to occur because of these activities.

Therefore, no air quality related impacts associated with residential, commercial, and industrial growth are anticipated.

8.4 IMPACTS TO VISIBILITY

The Intercession City plant is located more than 100 km from a Class I area; pursuant to Chapter 17-2.500(5)(d)1.e., F.A.C., a visibility impact analysis is not required.

REFERENCES
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APPENDIX A

DESIGN INFORMATION OF OPERATING, STACK, AND POLLUTANT EMISSION DATA FOR THE PROPOSED COMBUSTION TURBINES, INCLUDING EMISSION FACTORS

The emissions calculations of all regulated and nonregulated pollutants were calculated using both manufacturer's data and EPA emission factors. The design information and emissions are presented in Tables A-1 through A-25 of this appendix. These tables were generated using a computerized spreadsheet (i.e., Lotus 1-2-3). Tables A-1 through A-5 have been annotated to show the columns (i.e., A ,B, C and D) and rows (i.e., 1, 2, 3, ...) in the spreadsheet. Attachment A presents a printout of all the calculations made in the spreadsheet along with the basis for the calculation. The calculations, as well as text comments, are listed alpha-numerically in ascending order. For example, in Table A-1 column D row 12 is listed as A:D12 on the calculation page and the data input is 82740; as noted, this data was provided by General Electric (GE). Attachment B presents a copy of the relevant EPA emission factors.

The annual emissions listed in the attached tables are based on 8,760 hr/yr operation. These emissions were used in the annual modeling analysis. However, the annual emissions requested in the application were based on 3,390 hr/yr (see page 4 of 12 of the application).

Table A-1. Design Information and Stack Parameters for Florida Power Corporation Intercession City CT Project (CT Performance Data For Fuel Oil at Peak Load[a])

Data A	GE PG 7111EA No.2 Oil at 20°F B	GE PG 7111EA No.2 Oil at 59°F C	GE PG 7111EA No.2 Oil at 90°F D
<u>General</u>			
Power (kW)	104,890.0	92,890.0	82,740.0
Heat Rate (Btu/kWh)	10,910.0	11,080.0	11,260.0
Heat Input (10^6 Btu/hr)	1,144.3	1,029.2	931.7
Fuel Oil (lb/hr)	61,690.0	55,483.6	50,223.8
<u>Fuel</u>			
Heat Content--Oil(LHV)	18,550.0	18,550.0	18,550.0
Percent Sulfur	0.5	0.5	0.5
<u>CT Exhaust</u>			
Volume Flow (acfm)	1,662,283	1,551,317	1,455,469
Volume Flow (scfm)	594,638	544,974	503,926
Mass Flow (lb/hr)	2,633,000	2,408,000	2,218,000
Temperature (°F)	1,016	1,043	1,065
Moisture (% vol)	9.16	9.60	10.66
Moisture (% mass)	5.80	6.09	6.79
Oxygen (% vol)	12.29	12.33	12.25
Oxygen (% mass)	13.83	13.90	13.87
Molecular Weight	28.44	28.38	28.27
Water Injected (lb/hr)	64,190	55,510	43,130
Diameter (ft)	13.8	13.8	13.8
Velocity (ft/sec)	184.4	172.1	161.5

Note: Data from GE combustion turbine performance and emission guarantees.

[a] Represents maximum fuel usage, electrical output, and emission condition; base load values are slightly lower than those presented herein.

Table A-2. Maximum Criteria Pollutant Emissions for Florida Power Corporation Intercession City CT Project (Fuel Oil at Peak Load)

Pollutant A	GE PG 7111EA No.2 Oil at 20°F B	GE PG 7111EA No.2 Oil at 59°F C	GE PG 7111EA No.2 Oil at 90°F D
Particulate			
Basis	15 lb/hr	15 lb/hr	15 lb/hr
lb/hr	15.0	15.0	15.0
TPY	65.7	65.7	65.7
Sulfur Dioxide			
Basis	0.5% Sulfur	0.5% Sulfur	0.5% Sulfur
lb/hr	616.90	554.84	502.24
TPY	1,621.2[d]	1,458.1[d]	1,319.9[d]
Nitrogen Oxides			
Basis (Thermal NO_x)	42 ppm[a]	42 ppm[a]	42 ppm[a]
lb/hr	202.9	182.4	164.9
TPY	888.8	799.0	722.2
ppm[b]	42.0	42.0	42.0
Carbon Monoxide			
Basis	25 ppm[c]	25 ppm[c]	25 ppm[c]
lb/hr	58.9	53.7	49.1
TPY	257.8	235.2	214.9
ppm	25.0	25.0	25.0
VOCs			
Basis	5.0 lb/hr	5.0 lb/hr	4.5 lb/hr
lb/hr	5.00	5.00	4.50
TPY	21.9	21.9	19.7
Lead			
Basis	EPA(1988)	EPA(1988)	EPA(1988)
lb/hr	1.02×10^{-2}	9.16×10^{-3}	8.29×10^{-3}
TPY	4.46×10^{-2}	4.01×10^{-2}	3.63×10^{-2}

[a] Corrected to 15% O_2 dry conditions; GE guarantee.
[b] Does not include an allowance of fuel-bound nitrogen of 0.015 percent or greater.
[c] Corrected to dry conditions; GE guarantee.
[d] Annual emissions based on 0.3 percent sulfur.

Table A-3. Maximum Other Regulated Pollutant Emissions for Florida Power Corporation Intercession City CT Project (Fuel Oil at Peak Load)

Pollutant A	GE PG 7111EA No.2 Oil at 20°F B	GE PG 7111EA No.2 Oil at 59°F C	GE PG 7111EA No.2 Oil at 90°F D	
Arsenic				
lb/hr	4.81×10^{-3}	4.32×10^{-3}	3.91×10^{-3}	103
TPY	2.11×10^{-2}	1.89×10^{-2}	1.71×10^{-2}	104
Beryllium				
lb/hr	2.86×10^{-3}	2.57×10^{-3}	2.33×10^{-3}	106
TPY	1.25×10^{-2}	1.13×10^{-2}	1.02×10^{-2}	107
Mercury				
lb/hr	3.43×10^{-3}	3.09×10^{-3}	2.79×10^{-3}	109
TPY	1.50×10^{-2}	1.35×10^{-2}	1.22×10^{-2}	110
Fluorine				
lb/hr	3.72×10^{-2}	3.34×10^{-2}	3.03×10^{-2}	112
TPY	1.63×10^{-1}	1.47×10^{-1}	1.33×10^{-1}	113
Sulfuric acid				
lb/hr	76.8	69.1	62.5	115
TPY	336.5	302.6	273.9	116

Sources: EPA, 1988; EPA, 1980.

Table A-4. Maximum Nonregulated Pollutant Emissions for Florida Power Corporation Intercession City CT Project (Fuel Oil at Peak Load)

Pollutant A	Gas Turbine No.2 Oil at 40°F B	Gas Turbine No.2 Oil at 59°F C	Gas Turbine No.2 Oil at 90°F D	
Manganese				
lb/hr	7.37×10^{-3}	6.63×10^{-3}	6.00×10^{-3}	133
TPY	3.23×10^{-2}	2.90×10^{-2}	2.63×10^{-2}	134
Nickel				
lb/hr	1.95×10^{-1}	1.75×10^{-1}	1.58×10^{-1}	136
TPY	8.52×10^{-1}	7.66×10^{-1}	6.94×10^{-1}	137
Cadmium				
lb/hr	1.20×10^{-2}	1.08×10^{-2}	9.78×10^{-3}	139
TPY	5.26×10^{-2}	4.73×10^{-2}	4.28×10^{-2}	140
Chromium				
lb/hr	5.44×10^{-2}	4.89×10^{-2}	4.43×10^{-2}	142
TPY	2.38×10^{-1}	2.14×10^{-1}	1.94×10^{-1}	143
Copper				
lb/hr	3.20×10^{-1}	2.88×10^{-1}	2.61×10^{-1}	145
TPY	1.40	1.26	1.14	146
Vanadium				
lb/hr	7.98×10^{-2}	7.18×10^{-2}	6.50×10^{-2}	148
TPY	3.49×10^{-1}	3.14×10^{-1}	2.85×10^{-1}	149
Selenium				
lb/hr	2.69×10^{-2}	2.42×10^{-2}	2.19×10^{-2}	151
TPY	1.18×10^{-1}	1.06×10^{-1}	9.58×10^{-2}	152
Polycyclic Organic Matter				
lb/hr	3.19×10^{-4}	2.87×10^{-4}	2.60×10^{-4}	154
TPY	1.40×10^{-3}	1.26×10^{-3}	1.14×10^{-3}	155
Formaldehyde				
lb/hr	4.63×10^{-1}	4.17×10^{-1}	3.77×10^{-1}	157
TPY	2.03	1.83	1.65	158

Source: EPA, 1988.

Table A-5. Maximum Emissions for Additional Nonregulated Pollutants for Florida Power Corporation Intercession City CT Project (Fuel Oil at Peak Load)

Pollutant A	Gas Turbine No.2 Oil at 40°F B	Gas Turbine No.2 Oil at 59°F C	Gas Turbine No.2 Oil at 90°F D	
Antimony				
lb/hr	$2.50x10^{-2}$	$2.25x10^{-2}$	$2.04x10^{-2}$	170
TPY	$1.09x10^{-1}$	$9.85x10^{-2}$	$8.91x10^{-2}$	171
Barium				
lb/hr	$2.23x10^{-2}$	$2.01x10^{-2}$	$1.82x10^{-2}$	173
TPY	$9.78x10^{-2}$	$8.80x10^{-2}$	$7.97x10^{-2}$	174
Colbalt				
lb/hr	$1.04x10^{-2}$	$9.33x10^{-3}$	$8.44x10^{-3}$	176
TPY	$4.54x10^{-2}$	$4.09x10^{-2}$	$3.70x10^{-2}$	177
Zinc				
lb/hr	$7.82x10^{-1}$	$7.03x10^{-1}$	$6.37x10^{-1}$	179
TPY	3.42	3.08	2.79	180
Chlorine[a]				
lb/hr	$3.08x10^{-2}$	$2.77x10^{-2}$	$2.51x10^{-2}$	182
TPY	$1.35x10^{-1}$	$1.22x10^{-1}$	$1.10x10^{-1}$	183

[a]Assumes 0.5 ppm in fuel oil.

Source: EPA, 1979.

ATTACHMENT A

TO

APPENDIX A

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A:A1: [W24] 'Table A-1.  Design Information and Stack Parameters for Florida Power Corporation
A:A2: [W24] '            Corporation -De Bary CT Project  (CT Performance Data For
A:A3: [W24] '            Fuel Oil at 100% Load)
A:A4: [W24] \_
A:B4: [W15] \_
A:C4: [W15] \_
A:D4: [W15] \_
A:B6: [W15] ^GE PG 7111EA
A:C6: [W15] ^GE PG 7111EA
A:D6: [W15] ^GE PG 7111EA
A:B7: [W15] ^No.2 Oil
A:C7: [W15] ^No.2 Oil
A:D7: [W15] ^No.2 Oil
A:A8: [W24] ^Data
A:B8: [W15] ^@ 20oF
A:C8: [W15] ^@ 59oF
A:D8: [W15] ^@ 90oF
A:A9: [W24] \_
A:B9: [W15] \_
A:C9: [W15] \_
A:D9: [W15] \_
A:A11: [W24] ^General:
A:A12: [W24] 'Power (kW)
A:B12: (,1) [W15] 104890 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . From GE
A:C12: (,1) [W15] 92890
A:D12: (,1) [W15] 82740
A:A13: [W24] 'Heat Rate (Btu/kwh)
A:B13: (,1) [W15] 10910 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . From GE
A:C13: (,1) [W15] 11080
A:D13: (,1) [W15] 11260
A:A14: [W24] 'Heat Input (mmBtu/hr)
A:B14: (,1) [W15] (B12*B13/1000000) . . . . . . . . . . . . . . . . . . . . . . . . . . . . Power * Heat Rate
A:C14: (,1) [W15] (C12*C13/1000000)
A:D14: (,1) [W15] (D12*D13/1000000)
A:A15: [W24] 'Fuel Oil (lb/hr)
A:B15: (,1) [W15] +B14*10^6/(B18) . . . . . . . . . . . . . . . . . . . . . . . . Heat Input ÷ Heat Content
A:C15: (,1) [W15] +C14*10^6/(C18)
A:D15: (,1) [W15] +D14*10^6/(D18)
A:A17: [W24] ^Fuel:
A:A18: [W24] 'Heat Content -Oil(LHV)
A:B18: (,1) [W15] 18550 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Fuel Oil Specification
A:C18: (,1) [W15] 18550
A:D18: (,1) [W15] 18550
A:A19: [W24] '% Sulfur
A:B19: (,1) [W15] 0.5 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Maximum % Sulfur
A:C19: (,1) [W15] 0.5
A:D19: (,1) [W15] 0.5
A:A21: [W24] ^CT Exhaust:
A:A22: [W24] 'Volume Flow (acfm)
A:B22: (,0) [W15] (B24*1545*(460+B25)/(B30*2116.8*60)) . . . . . . . . . . . . . . . . . . . . . . See Note A
A:C22: (,0) [W15] (C24*1545*(460+C25)/(C30*2116.8*60))
A:D22: (,0) [W15] (D24*1545*(460+D25)/(D30*2116.8*60))
A:A23: [W24] 'Volume Flow (scfm)
A:B23: (,0) [W15] (B24*1545*(460+68)/(B30*2116.8*60)) . . . . . . . . . . . . . . . . . . . . . . See Note A
A:C23: (,0) [W15] (C24*1545*(460+68)/(C30*2116.8*60))
A:D23: (,0) [W15] (D24*1545*(460+68)/(D30*2116.8*60))
A:A24: [W24] 'Mass Flow (lb/hr)
A:B24: (,0) [W15] 2633000 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . From GE
A:C24: (,0) [W15] 2408000
A:D24: (,0) [W15] 2218000
A:A25: [W24] 'Temperature (oF)
A:B25: (,0) [W15] 1016 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . From GE
A:C25: (,0) [W15] 1043
A:D25: (,0) [W15] 1065
A:A26: [W24] 'Moisture (% vol)
A:B26: (F2) [W15] ((B27*B24/100*1545/18*(B25+460)/2116.8/60)/B22)*100 . . . . . . . . . . . . . . See Note B
A:C26: (F2) [W15] ((C27*C24/100*1545/18*(C25+460)/2116.8/60)/C22)*100
A:D26: (F2) [W15] ((D27*D24/100*1545/18*(D25+460)/2116.8/60)/D22)*100
A:A27: [W24] 'Moisture (% mass)
A:B27: (F2) [W15] 5.8 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . From GE
A:C27: (F2) [W15] 6.09
A:D27: (F2) [W15] 6.79
A:A28: [W24] 'Oxygen (% vol)
A:B28: (F2) [W15] ((B29*B24/100*1545/32*(B25+460)/2116.8/60)/B22)*100 . . . . . . . . . . . . . . See Note C
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A:C28: (F2) [W15] ((C29*C24/100*1545/32*(C25+460)/2116.8/60)/C22)*100
A:D28: (F2) [W15] ((D29*D24/100*1545/32*(D25+460)/2116.8/60)/D22)*100
A:A29: [W24] 'Oxygen (% mass)
A:B29: (F2) [W15] 13.83 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . From GE
A:C29: (F2) [W15] 13.9
A:D29: (F2) [W15] 13.87
A:A30: [W24] 'Molecular Weight
A:B30: [W15] 28.44 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . From GE
A:C30: [W15] 28.38
A:D30: [W15] 28.27
A:A31: [W24] 'Water Injected (lb/hr)
A:B31: (,0) [W15] 64190 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . From GE
A:C31: (,0) [W15] 55510
A:D31: (,0) [W15] 43130
A:A32: [W24] 'Diameter (ft)
A:B32: (,1) [W15] 13.83 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . From GE
A:C32: (,1) [W15] 13.83
A:D32: (,1) [W15] 13.83
A:A33: [W24] 'Velocity (ft/sec)
A:B33: (,1) [W15] (B22/60/(B32^2*3.14159/4)) . . . . . . . . . . . . . . . . . . . . . . . . . Volume ÷ Flow
A:C33: (,1) [W15] (C22/60/(C32^2*3.14159/4))
A:D33: (,1) [W15] (D22/60/(D32^2*3.14159/4))
A:A35: [W24] \_
A:B35: [W15] \_
A:C35: [W15] \_
A:D35: [W15] \_
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A:A45: [W24] 'Table A-2.  Maximum Criteria Pollutant Emissions for Florida Power
A:A46: [W24] '            Corporation -De Bary CT Project (Fuel Oil at 100% Load)
A:A47: [W24] \_
A:B47: [W15] \_
A:C47: [W15] \_
A:D47: [W15] \_
A:B49: [W15] ^GE PG 7111EA
A:C49: [W15] ^GE PG 7111EA
A:D49: [W15] ^GE PG 7111EA
A:B50: [W15] ^No.2 Oil
A:C50: [W15] ^No.2 Oil
A:D50: [W15] ^No.2 Oil
A:A51: [W24] ^Pollutant
A:B51: [W15] ^@ 20oF
A:C51: [W15] ^@ 59oF
A:D51: [W15] ^@ 90oF
A:A52: [W24] \_
A:B52: [W15] \_
A:C52: [W15] \_
A:D52: [W15] \_
A:A54: [W24] 'Particulate:
A:A55: [W24] '  Basis
A:B55: (,1) [W15] "15 lb/hr . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .  From GE
A:C55: (,1) [W15] "15 lb/hr
A:D55: (,1) [W15] "15 lb/hr
A:A56: [W24] '  lb/hr
A:B56: (,1) [W15] 15
A:C56: (,1) [W15] 15
A:D56: (,1) [W15] 15
A:A57: [W24] '  TPY
A:B57: (,1) [W15] (B56*8760/2000) . . . . . . . . . . . . . . . . . . . . . . . . .  Emissions * 8760 Hours/Year ÷ 2000 lb/ton
A:C57: (,1) [W15] (C56*8760/2000)
A:D57: (,1) [W15] (D56*8760/2000)
A:A59: [W24] 'Sulfur Dioxide:
A:A60: [W24] '  Basis
A:B60: (,1) [W15] "0.5 % Sulfur
A:C60: (,1) [W15] "0.5 % Sulfur
A:D60: (,1) [W15] "0.5 % Sulfur
A:A61: [W24] '  lb/hr
A:B61: (F2) [W15] (B15*0.005*2) . . . . . . . . . . . . . . . . . . . . . . . . . .  Fuel Used * Sulfur Content * 2 lb SO2/lb S
A:C61: (F2) [W15] (C15*0.005*2)
A:D61: (F2) [W15] (D15*0.005*2)
A:A62: [W24] '  TPY
A:B62: (,1) [W15] (B61*8760/2000)*0.3/0.5
A:C62: (,1) [W15] (C61*8760/2000)*0.3/0.5
A:D62: (,1) [W15] (D61*8760/2000)*0.3/0.5
A:A64: [W24] 'Nitrogen Oxides:
A:A65: [W24] '  Basis (Thermal NOx)
A:B65: (,1) [W15] "42 ppm* . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .  From GE
A:C65: (,1) [W15] "42 ppm*
A:D65: (,1) [W15] "42 ppm*
A:A66: [W24] '  lb/hr
A:B66: (,1) [W15] (B68/5.9*(20.9*(1-$B$26/100)-$B$28)*$B$22*2116.8*46*60/(1545*(460+$B$25)*1000000))  . . . . . . . .  See Note D
A:C66: (,1) [W15] (C68/5.9*(20.9*(1-C26/100)-C28)*C22*2116.8*46*60/(1545*(460+C25)*1000000))
A:D66: (,1) [W15] (D68/5.9*(20.9*(1-D26/100)-D28)*D22*2116.8*46*60/(1545*(460+D25)*1000000))
A:A67: [W24] '  TPY
A:B67: (,1) [W15] (B66*8760/2000)
A:C67: (,1) [W15] (C66*8760/2000)
A:D67: (,1) [W15] (D66*8760/2000)
A:A68: [W24] '  ppm
A:B68: (,1) [W15] 42
A:C68: (,1) [W15] 42
A:D68: (,1) [W15] 42
A:A70: [W24] 'Carbon Monoxide:
A:A71: [W24] '  Basis
A:B71: (,1) [W15] "25 ppm+  . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .  From GE
A:C71: (,1) [W15] "25 ppm+
A:D71: (,1) [W15] "25 ppm+
A:A72: [W24] '  lb/hr
A:B72: (,1) [W15] (B74*(1-B26/100)*B22*2116.8*28*60/(1545*(460+B25)*1000000)) . . . . . . . . . . . . . . . . . . .  See Note E
A:C72: (,1) [W15] (C74*(1-C26/100)*C22*2116.8*28*60/(1545*(460+C25)*1000000))
A:D72: (,1) [W15] (D74*(1-D26/100)*D22*2116.8*28*60/(1545*(460+D25)*1000000))
A:A73: [W24] '  TPY
A:B73: (,1) [W15] (B72*8760/2000)
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A:C73: (,1) [W15] (C72*8760/2000)
A:D73: (,1) [W15] (D72*8760/2000)
A:A74: [W24] '  ppm
A:B74: (,1) [W15] 25 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . From GE
A:C74: (,1) [W15] 25
A:D74: (,1) [W15] 25
A:A76: [W24] 'VOC's:
A:A77: [W24] '  Basis
A:B77: (,1) [W15] "5.0 lb/hr
A:C77: (,1) [W15] "5.0 lb/hr
A:D77: (,1) [W15] "4.5 lb/hr
A:A78: [W24] '  lb/hr
A:B78: (F2) [W15] 5
A:C78: (F2) [W15] 5
A:D78: (F2) [W15] 4.5
A:A79: [W24] '  TPY
A:B79: (,1) [W15] (B78*8760/2000)
A:C79: (,1) [W15] (C78*8760/2000)
A:D79: (,1) [W15] (D78*8760/2000)
A:A81: [W24] 'Lead:
A:A82: [W24] '  Basis
A:B82: [W15] "EPA(1988)
A:C82: [W15] "EPA(1988)
A:D82: [W15] "EPA(1988)
A:A83: [W24] '  lb/hr
A:B83: (S2) [W15] (B14*8.9/1000000) . . . . . .  From EPA 1988, Attached; See Page 4-156, attached; Heat Input * Emission Factor
A:C83: (S2) [W15] (C14*8.9/1000000)
A:D83: (S2) [W15] (D14*8.9/1000000)
A:A84: [W24] '  TPY
A:B84: (S2) [W15] (B83*8760/2000)
A:C84: (S2) [W15] (C83*8760/2000)
A:D84: (S2) [W15] (D83*8760/2000)
A:A85: [W24] \_
A:B85: [W15] \_
A:C85: [W15] \_
A:D85: [W15] \_
A:A87: [W24] '* corrected to 15% O2 dry conditions
A:A88: [W24] '+ corrected to dry conditions
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A:A93: [W24] 'Table A-3.  Maximum Other Regulated Pollutant Emissions for Florida
A:A94: [W24] '            Power Corporation -De Bary CT Project (Fuel Oil at 100%
A:A95: [W24] '            Load)
A:A96: [W24] \_
A:B96: [W15] \_
A:C96: [W15] \_
A:D96: [W15] \_
A:A98: [W24] ^Pollutant
A:B98: [W15] ^GE PG 7111EA
A:C98: [W15] ^GE PG 7111EA
A:D98: [W15] ^GE PG 7111EA
A:B99: [W15] ^No.2 Oil
A:C99: [W15] ^No.2 Oil
A:D99: [W15] ^No.2 Oil
A:B100: [W15] ^@ 20oF
A:C100: [W15] ^@ 59oF
A:D100: [W15] ^@ 90oF
A:A101: [W24] \_
A:B101: [W15] \_
A:C101: [W15] \_
A:D101: [W15] \_
A:A103: [W24] '  As (lb/hr)
A:B103: (S2) [W15] (B14*4.2/1000000)  . . . . . . . . . .  From EPA 1988; See Page 4-158, Attached; Heat Input * Emission Factor
A:C103: (S2) [W15] (C14*4.2/1000000)
A:D103: (S2) [W15] (D14*4.2/1000000)
A:A104: [W24] '     (TPY)
A:B104: (S2) [W15] (B103*8760/2000)
A:C104: (S2) [W15] (C103*8760/2000)
A:D104: (S2) [W15] (D103*8760/2000)
A:A106: [W24] '  Be (lb/hr)
A:B106: (S2) [W15] (B14*2.5/1000000)  . . . . . . . . . . . . . . . . . . . . . . .  From EPA 1988; See Page 4-159, Attached
A:C106: (S2) [W15] (C14*2.5/1000000)
A:D106: (S2) [W15] (D14*2.5/1000000)
A:A107: [W24] '     (TPY)
A:B107: (S2) [W15] (B106*8760/2000)
A:C107: (S2) [W15] (C106*8760/2000)
A:D107: (S2) [W15] (D106*8760/2000)
A:A109: [W24] '  Hg (lb/hr)
A:B109: (S2) [W15] (B14*3/1000000)  . . . . . . . . . . . . . . . . . . . . . . . .  From EPA 1988; See Page 4-157, Attached
A:C109: (S2) [W15] (C14*3/1000000)
A:D109: (S2) [W15] (D14*3/1000000)
A:A110: [W24] '     (TPY)
A:B110: (S2) [W15] (B109*8760/2000)
A:C110: (S2) [W15] (C109*8760/2000)
A:D110: (S2) [W15] (D109*8760/2000)
A:A112: [W24] '  F (lb/hr)
A:B112: (S2) [W15] (B14*32.5/1000000) . . . . . . . . . . . . . . . From EPA 1981, Attached; 2.324 pg/J * 14 pg/J = 32.5 lb/10^6 Btu
A:C112: (S2) [W15] (C14*32.5/1000000)
A:D112: (S2) [W15] (D14*32.5/1000000)
A:A113: [W24] '     (TPY)
A:B113: (S2) [W15] (B112*8760/2000)
A:C113: (S2) [W15] (C112*8760/2000)
A:D113: (S2) [W15] (D112*8760/2000)
A:A115: [W24] '  H2SO4 (lb/hr)
A:B115: (F1) [W15] (B15*0.005*3.06*0.08139) . . . . . . . . . . . . . . . . . .  Fuel * % S * MW_H2SO4/MW_S * 0.0814 (% H2SO4 Formed)
A:C115: (F1) [W15] (C15*0.005*3.06*0.08139)
A:D115: (F1) [W15] (D15*0.005*3.06*0.08139)
A:A116: [W24] '     (TPY)
A:B116: (F1) [W15] (B115*8760/2000)
A:C116: (F1) [W15] (C115*8760/2000)
A:D116: (F1) [W15] (D115*8760/2000)
A:A118: [W24] \_
A:B118: [W15] \_
A:C118: [W15] \_
A:D118: [W15] \_
A:A120: [W24] 'Sources: EPA, 1988; EPA, 1980
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A:A123: [W24] 'Table A-4.  Maximum Non-Regulated Pollutant Emissions for Florida
A:A124: [W24] '            Power Corporation -De Bary CT Project (Fuel Oil at 100%
A:A125: [W24] '            Load)
A:A126: [W24] \_
A:B126: [W15] \_
A:C126: [W15] \_
A:D126: [W15] \_
A:A128: [W24] ^Pollutant
A:B128: [W15] ^Gas Turbine
A:C128: [W15] ^Gas Turbine
A:D128: [W15] ^Gas Turbine
A:B129: [W15] ^No.2 Oil
A:C129: [W15] ^No.2 Oil
A:D129: [W15] ^No.2 Oil
A:B130: [W15] ^@ 40oF
A:C130: [W15] ^@ 59oF
A:D130: [W15] ^@ 90oF
A:A131: [W24] \_
A:B131: [W15] \_
A:C131: [W15] \_
A:D131: [W15] \_
A:A133: [W24] '  Manganese (lb/hr)
A:B133: (S2) [W15] (B14*6.44/1000000) . . . . . . . . . . . . . . . . . . . . . . . . .  From EPA 1988; See Page 4-156
A:C133: (S2) [W15] (C14*6.44/1000000)
A:D133: (S2) [W15] (D14*6.44/1000000)
A:A134: [W24] '     (TPY)
A:B134: (S2) [W15] (B133*8760/2000)
A:C134: (S2) [W15] (C133*8760/2000)
A:D134: (S2) [W15] (D133*8760/2000)
A:A136: [W24] '  Nickel (lb/hr)
A:B136: (S2) [W15] (B14*170/1000000)  . . . . . . . . . . . . . . . . . . . . . .  From EPA 1988; See Page 4-158, Attached
A:C136: (S2) [W15] (C14*170/1000000)
A:D136: (S2) [W15] (D14*170/1000000)
A:A137: [W24] '     (TPY)
A:B137: (S2) [W15] (B136*8760/2000)
A:C137: (S2) [W15] (C136*8760/2000)
A:D137: (S2) [W15] (D136*8760/2000)
A:A139: [W24] '  Cadmium (lb/hr)
A:B139: (S2) [W15] (B14*10.5/1000000) . . . . . . . . . . . . . . . . . . . . . .  From EPA 1988; See Page 4-159, Attached
A:C139: (S2) [W15] (C14*10.5/1000000)
A:D139: (S2) [W15] (D14*10.5/1000000)
A:A140: [W24] '    (TPY)
A:B140: (S2) [W15] (B139*8760/2000)
A:C140: (S2) [W15] (C139*8760/2000)
A:D140: (S2) [W15] (D139*8760/2000)
A:A142: [W24] '  Chromium (lb/hr)
A:B142: (S2) [W15] (B14*47.5/1000000) . . . . . . . . . . . . . . . . . . . . . .  From EPA 1988; See Page 4-160, Attached
A:C142: (S2) [W15] (C14*47.5/1000000)
A:D142: (S2) [W15] (D14*47.5/1000000)
A:A143: [W24] '    (TPY)
A:B143: (S2) [W15] (B142*8760/2000)
A:C143: (S2) [W15] (C142*8760/2000)
A:D143: (S2) [W15] (D142*8760/2000)
A:A145: [W24] '  Copper (lb/hr)
A:B145: (S2) [W15] (B14*280/1000000)  . . . . . . . . . . . . . . . . . . . . . .  From EPA 1988; See Page 4-161, Attached
A:C145: (S2) [W15] (C14*280/1000000)
A:D145: (S2) [W15] (D14*280/1000000)
A:A146: [W24] '    (TPY)
A:B146: (S2) [W15] (B145*8760/2000)
A:C146: (S2) [W15] (C145*8760/2000)
A:D146: (S2) [W15] (D145*8760/2000)
A:A148: [W24] '  Vanadium (lb/hr)
A:B148: (S2) [W15] (B14*30*2.324/1000000) . . . . . . . . . . . From EPA 1988; See Page 4-162, Atached; 2.324 pg/J = 1 lb/10^6 Btu
A:C148: (S2) [W15] (C14*30*2.324/1000000)
A:D148: (S2) [W15] (D14*30*2.324/1000000)
A:A149: [W24] '     (TPY)
A:B149: (S2) [W15] (B148*8760/2000)
A:C149: (S2) [W15] (C148*8760/2000)
A:D149: (S2) [W15] (D148*8760/2000)
A:A151: [W24] '  Selenium (lb/hr)
A:B151: (S2) [W15] (B14*10.1*2.324/1000000) . . . . . . . . . . . . . . . . . . . . .  From EPA 1988; See Page 4-162
A:C151: (S2) [W15] (C14*10.1*2.324/1000000)
A:D151: (S2) [W15] (D14*10.1*2.324/1000000)
A:A152: [W24] '    (TPY)
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A:B152: (S2) [W15] (B151*8760/2000)
A:C152: (S2) [W15] (C151*8760/2000)
A:D152: (S2) [W15] (D151*8760/2000)
A:A154: [W24] '  POM (lb/hr)
A:B154: (S2) [W15] ($B$14*0.12*2.324/1000000) . . . . . . . . . . . . . . . . . . . . . .  From EPA 1988; See Page 4-161, Attached
A:C154: (S2) [W15] ($C$14*0.12*2.324/1000000)
A:D154: (S2) [W15] ($D$14*0.12*2.324/1000000)
A:A155: [W24] '     (TPY)
A:B155: (S2) [W15] (B154*8760/2000)
A:C155: (S2) [W15] (C154*8760/2000)
A:D155: (S2) [W15] (D154*8760/2000)
A:A157: [W24] '  Formaldehyde (lb/hr)
A:B157: (S2) [W15] ($B$14*405/1000000)  . . . . . . . . . . . . . . . . . . . . . . . . .  From EPA 1988; See Page 4-156, Attached
A:C157: (S2) [W15] ($C$14*405/1000000)
A:D157: (S2) [W15] ($D$14*405/1000000)
A:A158: [W24] '     (TPY)
A:B158: (S2) [W15] (B157*8760/2000)
A:C158: (S2) [W15] (C157*8760/2000)
A:D158: (S2) [W15] (D157*8760/2000)
A:A159: [W24] \_
A:B159: [W15] \_
A:C159: [W15] \_
A:D159: [W15] \_
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A:A160: [W24] 'Table A-5.  Maximum Emissions for Additional Non-Regulated Pollutant
A:A161: [W24] '            for Florida Power Corporation  -De Bary CT Project (Fuel
A:A162: [W24] '            Oil at 100% Load)
A:A163: [W24] \_
A:B163: [W15] \_
A:C163: [W15] \_
A:D163: [W15] \_
A:A165: [W24] ^Pollutant
A:B165: [W15] ^Gas Turbine
A:C165: [W15] ^Gas Turbine
A:D165: [W15] ^Gas Turbine
A:B166: [W15] ^No.2 Oil
A:C166: [W15] ^No.2 Oil
A:D166: [W15] ^No.2 Oil
A:B167: [W15] ^@ 40oF
A:C167: [W15] ^@ 59oF
A:D167: [W15] ^@ 90oF
A:A168: [W24] \_
A:B168: [W15] \_
A:C168: [W15] \_
A:D168: [W15] \_
A:A170: [W24] '  Antimony (lb/hr)
A:B170: (S2) [W15] ($B$14*9.4*2.324/1000000) . . . . . . . . . . . . . . . . . . . . . .   From EPA 1979; See Page 137, Attached
A:C170: (S2) [W15] ($C$14*9.4*2.324/1000000)
A:D170: (S2) [W15] ($D$14*9.4*2.324/1000000)
A:A171: [W24] '    (TPY)
A:B171: (S2) [W15] (B170*8760/2000)
A:C171: (S2) [W15] (C170*8760/2000)
A:D171: (S2) [W15] (D170*8760/2000)
A:A173: [W24] '  Barium (lb/hr)
A:B173: (S2) [W15] ($B$14*8.4*2.324/1000000) . . . . . . . . . . . . . . . . . . . . . .   From EPA 1979; See Page 137, Attached
A:C173: (S2) [W15] ($C$14*8.4*2.324/1000000)
A:D173: (S2) [W15] ($D$14*8.4*2.324/1000000)
A:A174: [W24] '    (TPY)
A:B174: (S2) [W15] (B173*8760/2000)
A:C174: (S2) [W15] (C173*8760/2000)
A:D174: (S2) [W15] (D173*8760/2000)
A:A176: [W24] '  Colbalt (lb/hr)
A:B176: (S2) [W15] ($B$14*3.9*2.324/1000000) . . . . . . . . . . . . . . . . . . . . . .   From EPA 1979; See Page 137, Attached
A:C176: (S2) [W15] ($C$14*3.9*2.324/1000000)
A:D176: (S2) [W15] ($D$14*3.9*2.324/1000000)
A:A177: [W24] '    (TPY)
A:B177: (S2) [W15] (B176*8760/2000)
A:C177: (S2) [W15] (C176*8760/2000)
A:D177: (S2) [W15] (D176*8760/2000)
A:A179: [W24] '  Zinc (lb/hr)
A:B179: (S2) [W15] ($B$14*294*2.324/1000000) . . . . . . . . . . . . . . . . . . . . . .   From EPA 1979; See Page 137, Attached
A:C179: (S2) [W15] ($C$14*294*2.324/1000000)
A:D179: (S2) [W15] ($D$14*294*2.324/1000000)
A:A180: [W24] '    (TPY)
A:B180: (S2) [W15] (B179*8760/2000)
A:C180: (S2) [W15] (C179*8760/2000)
A:D180: (S2) [W15] (D179*8760/2000)
A:A182: [W24] '  Chlorine (lb/hr) +
A:B182: (S2) [W15] (B15*0.5/1000000)
A:C182: (S2) [W15] (C15*0.5/1000000)
A:D182: (S2) [W15] (D15*0.5/1000000)
A:A183: [W24] '    (TPY)
A:B183: (S2) [W15] (B182*8760/2000)
A:C183: (S2) [W15] (C182*8760/2000)
A:D183: (S2) [W15] (D182*8760/2000)
A:A184: [W24] \_
A:B184: [W15] \_
A:C184: [W15] \_
A:D184: [W15] \_
A:A186: [W24] 'Source: EPA, 1979
A:A187: [W24] '  + Assumes 0.5 ppm in fuel oil.
A:A189: [W24] ^Notes:
A:A190: [W24] '1. Emission calculation based on manufacturer guarentee or estimate.
A:A191: [W24] '2. Emission calculation based on AP-42 Table 1.4-1.
A:A192: [W24] '3. Emission calculation based on NSPS.
A:A193: [W24] '4. Emission calculation based on proposed BACT.
A:A194: [W24] '5. Emission calculation for Hg based on EPA (1980), Table 4-3.
A:A195: [W24] '6. Emission calculations for As, F, Hg, and Pb are based on EPA (1981b),
A:A196: [W24] '   Table 61; for Be EPA (1981a), Table 46; and for H2SO4 AP-42, Table 1.3-1.
```

NOTE A

Volume is calculated based on ideal gas law:

$PV = mRT/M$

where:
- P = pressure = 2116.8 lb/ft^2
- m = mass flow of gas (lb/hr)
- R = universal gas constant = 1545
- M = molecular weight of gas
- T = temperature (K)

Example: $V = mRT/(MP)$ @ 90°F, peak load
$= 2,218,000 * 1,545 * (460 + 1,065) / 28.27 / 2,116.8 / 60$
$= 1,455,469\ ft^3/min$

NOTE B

% moisture as volume is calculated from % mass using ideal gas law:

$V_{H2O} = m_{H2O}RT/(M_{H2O}P)$

$\%H_2O$ by volume = V_{H2O} / V_{TOTAL}

Example calculation @ 90°F peak load

$V_{H2O} = (6.79/100 * 2,218,000) * 1,545 * (460 + 1,065) / 18 / 2,116.8 / 60$
$= 155,212\ ft^3/min$

$\%H_2O$ by volume = V_{H2O} / V_{TOTAL} = 155,212 / 1,455,469
= 0.1066 = 10.66%

NOTE C

$\%O_2$ by volume calculated the same way as $\%H_2O$ by volume, except % mass of O_2 and the molecular weight of O_2 are used in calculation.

NOTE D

NO_x is calculated by correcting to 15% O_2 dry conditions using ideal gas law and moisture and O_2 conditions.

Oxygen correction:

$$V_{NOx\ (15\%)} = \frac{V_{NOx\ Dry} * 5.9}{20.9 - \%O_{2\ Dry}}$$

$$V_{NOx\ Dry} = V_{NOx\ (15\%)}\ (20.9 - \%O_{2\ Dry})\ /\ 5.9$$

$$\%O_{2\ Dry} = \%O_{2\ Act}\ /\ (1 - \%H_2O)\ ;\ \%O_{2\ Act} = \%O_{2\ Dry}\ (1 - \%H_2O)$$

$$V_{NOx\ Act} = V_{NOx\ Dry}\ (1 - \%H_2O)$$

Substituting:

$$V_{NOx\ Act} = V_{NOx\ 15\%}\ (20.9 - \%O_{2\ Dry})\ (1 - \%H_2O)\ /\ 5.9$$

$$= V_{NOx\ (15\%)}\ [20.9 - (\%O_{2\ Act}\ /\ (1 - \%H_2O))]\ (1 - \%H_2O)\ /\ 5.9$$

$$= V_{NOx\ (15\%)}\ [20.9\ (1 - \%H_2O) - \%O_2)\ /\ 5.9$$

$$m_{NOx} = \frac{PVM_{NOx}}{RT} = V_{NOx\ (15\%)}\ [20.9\ (1 - \%H_2O) - \%O_2) * P * M_{NOx}\ /\ (RT * 5.9)$$

Example calculation at 90°F peak load

$$m_{NOx} = 42 * 1,455,469\ [20.9\ (1 - 0.1066) - 12.25] * 2,116.8 * 46 * 60 * 1/10^6\ /\ [(460 + 1,065) * 1,545 * 5.9]$$

$$= 164.9\ \text{lb/hr}$$

NOTE E

Same as D except only moisture correction is used:

$$V_{CO\ Act} = V_{CO\ Dry}\ (1 - \%H_2O)$$

$$m_{CO} = PV_{CO\ Act}M_{CO}\ /\ RT$$
$$= PV_{CO\ Dry}\ (1 - \%H_2O)\ M_{CO}\ /\ RT$$

Example @ 90°F peak load

$$m_{CO} = 25 * 1,455,469 * (1 - 0.1066) * 2,116.8 * 28 * 60\ /\ [1,545 * (460 + 1,065) * 10^6]$$

$$= 49.1\ \text{lb/hr}$$

ATTACHMENT B

TO

APPENDIX A

EPA-450/2-88-006
October 1988

Toxic Air Pollutant Emission Factors—A Compilation For Selected Air Toxic Compounds And Sources

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October 1988

INDUSTRIAL PROCESS	SIC CODE	EMISSION SOURCE	SCC	POLLUTANT	CAS NUMBER	EMISSION FACTOR	NOTES	REFERENCE
Nonylphenol production	2869	General	301	Phenol	108952	8.0 x 10E-4 lb/lb used	From engineering estimates	13
Nonylphenol production	2869	Fugitive	301	Phenol	108952	1.9 x 10E-4 lb/lb used	From engineering estimates	13
Nonylphenol production	2869	Storage	407084	Phenol	108952	1.0 x 10E-5 lb/lb used	From engineering estimates	13
Normal superphosphate production	2574	Curing building	30102806	Fluoride	16984488	3.8 lb/ton P2O5	Uncontrolled	97
Normal superphosphate production	2874	Mixer and den	30102805	Fluoride	16984488	0.2 lb/ton P2O5	Wet scrubber (97%)	97
Oil and coal combustion	49	Stack - particulate	102	Polychlorinated dibenzo-p-dioxins		68 ng/g	No penta homologue included, one location, TCDD detection = 20 ng/g	119
Oil and coal combustion	49	Stack - particulate	102	Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	1746016	Not detectable	One location, detection limit = 10 ng/g	119
Oil combustion		Oil-fired boiler or furnace, util/commerc/industr/residential	1	Formaldehyde	50000	405 lb/10E12 Btu	Uncontrolled, based on emissions testing	36
Oil combustion		Industrial, commercial, and residential boilers	1	Lead	7439921	8.9 lb/10E12 Btu	Uncontrolled, calculated based on engineering judgement, assumed use distillate oil	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Manganese	7439965	26 lb/10E12 Btu	Uncontrolled, calculated based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Manganese	7439965	11.96 lb/10E12 Btu	Controlled with multiclone, calculated based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Manganese	7439965	5.72 lb/10E12 Btu	Controlled with ESP, calculated based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Manganese	7439965	2.86 lb/10E12 Btu	Controlled with scrubber, calculated based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Manganese	7439965	14 lb/10E12 Btu	Controlled with scrubber, calculated based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residenti	1	Manganese	7439965	6.44 lb/10E12 Btu	Controlled with multiclone, calculated based on engineering	36

INDUSTRIAL PROCESS	SIC CODE	EMISSION SOURCE	SCC	POLLUTANT	CAS NUMBER	EMISSION FACTOR	NOTES	REFERENCE
		al					judgement	
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Manganese	7439965	3.08 lb/10E12 Btu	Controlled with ESP, calculated based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Manganese	7439965	1,54 lb/10E12 Btu	Controlled with scrubber, calculated based on engineering judgement	36
Oil combustion		Residual oil-fired boiler, util/commerc/industr/residential	1	Mercury	7439976	3.2 lb/10E12 Btu	Uncontrolled, based on engineering judgement	36
Oil combustion		Residual oil-fired boiler, util/commerc/industr/residential	1	Mercury	7439976	3.2 lb/10E12 Btu	Controlled by multiclone, based on engineering judgement	36
Oil combustion		Residual oil-fired boiler, util/commerc/industr/residential	1	Mercury	7439976	2.4 lb/10E12 Btu	Controlled by ESP, based on engineering judgement	36
Oil combustion		Residual oil-fired boiler, util/commerc/industr/residential	1	Mercury	7439976	0.83 lb/10E12 Btu	Controlled by scrubber, based on engineering judgement	36
Oil combustion		Distillate oil-fired boiler, util/commerc/industr/residential	1	Mercury	7439976	3.0 lb/10E12 Btu	Uncontrolled, based on engineering judgement	36
Oil combustion		Distillate oil-fired boiler, util/commerc/industr/residential	1	Mercury	7439976	3.0 lb/10E12 Btu	Controlled by multiclone, based on engineering judgement	36
Oil combustion		Distillate oil-fired boiler, util/commerc/industr/residential	1	Mercury	7439976	2.25 lb/10E12 Btu	Controlled by ESP, based on engineering judgement	36
Oil combustion		Distillate oil-fired boiler, util/commerc/industr/residential	1	Mercury	7439976	0.78 lb/10E12 Btu	Controlled by scrubber, based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Nickel	7440020	1260 lb/10E12 Btu	Uncontrolled, based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residenti	1	Nickel	7440020	642.6 lb/10E12 Btu	Controlled by multiclone, based on engineering judgement	36

INDUSTRIAL PROCESS	SIC CODE	EMISSION SOURCE	SCC	POLLUTANT	CAS NUMBER	EMISSION FACTOR	NOTES	REFERENCE
		al						
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Nickel	7440020	352.8 lb/10E12 Btu	Controlled by ESP, based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Nickel	7440020	50.4 lb/10E12 Btu	Controlled by scrubber, based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Nickel	7440020	170 lb/10E12 Btu	Uncontrolled, based on engineering judgement	36
Oil combustion		Distillete oil-fired boilers, util/commerc/industr/residential	1	Nickel	7440020	86.7 lb/10E12 Btu	Controlled by multiclone, based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Nickel	7440020	47.6 lb/10E12 Btu	Controlled by ESP, based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Nickel	7440020	6.8 lb/10E12 Btu	Controlled by scrubber, based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Arsenic	7440382	19 lb/10E12 Btu	Uncontrolled, calculated based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Arsenic	7440382	4.2 lb/10E12 Btu	Uncontrolled, calculated based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Arsenic	7440382	2.06 lb/10E12 Btu	Controlled with multiclone, calculated based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Arsenic	7440382	0.50 lb/10E12 Btu	Controlled with ESP, calculated based on engineering judgement	36
Oil combustion		Distillete oil-fired boilers, util/commerc/industr/residential	1	Arsenic	7440382	0.42 lb/10E12 Btu	Controlled with scrubber, calculated based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residenti	1	Arsenic	7440382	9.31 lb/10E12 Btu	Controlled with multiclone, calculated based on engineering	36

INDUSTRIAL PROCESS	SIC CODE	EMISSION SOURCE	SCC	POLLUTANT	CAS NUMBER	EMISSION FACTOR	NOTES	REFERENCE
		al					judgement	
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Arsenic	7440382	2.28 lb/10E12 Btu	Controlled with ESP, calculated based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Arsenic	7440382	1.90 lb/10E12 Btu	Controlled with scrubber, calculated based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Beryllium	7440417	4.2 lb/10E12 Btu	Uncontrolled, calculated based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Beryllium	7440417	2.5 lb/10E12 Btu	Uncontrolled, calculated based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Beryllium	7440417	1.58 lb/10E12 Btu	Controlled with multiclone, calculated based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Beryllium	7440417	0.35 lb/10E12 Btu	Controlled with ESP, calculated based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Beryllium	7440417	0.15 lb/10E12 Btu	Controlled with scrubber, calculated based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Beryllium	7440417	2.65 lb/10E12 Btu	Controlled with multiclone, calculated based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Beryllium	7440417	0.59 lb/10E12 Btu	Controlled with ESP, calculated based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Beryllium	7440417	0.25 lb/10E12 Btu	Controlled with scrubber, calculated based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Cadmium	7440439	15.7 lb/10E12 Btu	Uncontrolled, calculated based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residenti	1	Cadmium	7440439	10.5 lb/10E12 Btu	Uncontrolled, calculated based on engineering judgement	36

INDUSTRIAL PROCESS	SIC CODE	EMISSION SOURCE	SCC	POLLUTANT	CAS NUMBER	EMISSION FACTOR	NOTES	REFERENCE
		al						
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Cadmium	7440439	7.45 lb/10E12 Btu	Controlled with multiclone, calculated based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Cadmium	7440439	1.58 lb/10E12 Btu	Controlled with ESP, calculated based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Cadmium	7440439	0.63 lb/10E12 Btu	Controlled with scrubber, calculated based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Cadmium	7440439	46.86 lb/10E12 Btu	Controlled with multiclone, calculated based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Cadmium	7440439	9.90 lb/10E12 Btu	Controlled with ESP, calculated based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Cadmium	7440439	3.96 lb/10E12 Btu	Controlled with scrubber, calculated based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Chromium	7440473	21 lb/10E12 Btu	Uncontrolled, calculated based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Chromium	7440473	47.5 lb/10E12 Btu	Uncontrolled, calculated based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Chromium	7440473	27.8 lb/10E12 Btu	Controlled with multiclone, calculated based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Chromium	7440473	13.92 lb/10E12 Btu	Controlled with ESP, calculated based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Chromium	7440473	3.84 lb/10E12 Btu	Controlled with scrubber, calculated based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residenti	1	Chromium	7440473	12.18 lb/10E12 Btu	Controlled with multiclone, calculated based on engineering	36

INDUSTRIAL PROCESS	SIC CODE	EMISSION SOURCE	SCC	POLLUTANT	CAS NUMBER	EMISSION FACTOR	NOTES	REFERENCE
		al					judgement	
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Chromium	7440473	6.09 lb/10E12 Btu	Controlled with ESP, calculated based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Chromium	7440473	1.68 lb/10E12 Btu	Controlled with scrubber, calculated based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Copper	7440508	278 lb/10E12 Btu	Uncontrolled, calculated based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Copper	7440508	280 lb/10E12 Btu	Uncontrolled, calculated based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Copper	7440508	165.2 lb/10E12 Btu	Controlled with multiclone, calculated based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Copper	7440508	42 lb/10E12 Btu	Controlled with ESP, calculated based on engineering judgement	36
Oil combustion		Distillate oil-fired boilers, util/commerc/industr/residential	1	Copper	7440508	25.2 lb/10E12 Btu	Controlled with scrubber, calculated based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Copper	7440508	165.2 lb/10E12 Btu	Controlled with multiclone, calculated based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Copper	7440508	42.0 lb/10E12 Btu	Controlled with ESP, calculated based on engineering judgement	36
Oil combustion		Residual oil-fired boilers, util/commerc/industr/residential	1	Copper	7440508	25.2 lb/10E12 Btu	Controlled with scrubber, calculated based on engineering judgement	36
Oil combustion		Utility boilers	101004	Lead	7439921	28 lb/10E12 Btu	Uncontrolled, calculated based on engineering judgement, assumed use residual oil	36
Oil combustion		Distillate watertube boilers	10300501	POM		<0.12 pg/J heat input	Uncontrolled	114

INDUSTRIAL PROCESS	SIC CODE	EMISSION SOURCE	SCC	POLLUTANT	CAS NUMBER	EMISSION FACTOR	NOTES	REFERENCE
Oil combustion		Scotch marine boilers, distillate oil	10300501	POM		17.7 pg/J	Uncontrolled	114
Oil combustion		Cast iron sectional boilers, distillate oil	10300501	POM		<14.9 pg/J	Uncontrolled, home heating application	114
Oil combustion		Hot air furnace, distillate oil	10300501	POM		<0.14 pg/J	Uncontrolled, same reference also lists <15.4 for same boiler/fuel type	114
Oil combustion	49	Boiler flue gas	1	Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	1746016	Not detectable	Low ash, 2% sulfur oil, sampled after heat exch., before ESP, 2378-TCDD detec. limit=<4.2-<7.9 ng/m3	119
Oil combustion	49	Flue gas	1	Tetrachlorodibenzofuran, 2,3,7,8-	51207319	Not detectable	Low ash, 2% sulfur oil, sampled after heat exch., before ESP, 2378-TCDD detec. limit=<0.67-<1.3ng/m3	119
Oil combustion, commercial		Residual oil-fired tangential furnaces	103004	Vanadium	7440622	3660 pg/J	Uncontrolled, based on reported emissions and engineering judgement	54
Oil combustion, commercial		Residual oil-fired wall furnaces	103004	Vanadium	7440622	3660 pg/J	Uncontrolled, based on reported emissions and engineering judgement	54
Oil combustion, commercial		Tangential furnace, residual oil	103004	Selenium	7782492	10.1 pg/J	Uncontrolled, based on reported emissions date and engineering judgement	54
Oil combustion, commercial		Wall furnace, residual oil	103004	Selenium	7782492	10.1 pg/J	Uncontrolled, based on reported emissions data and engineering judgement	54
Oil combustion, commercial		Scotch marine boilers, residual oil	10300401	POM		0.95 pg/J heat input	Uncontrolled, represents benzo(a)pyrene only	114
Oil combustion, commercial		Distillate oil-fired tangential furnaces	103005	Vanadium	7440622	30.0 pg/J	Uncontrolled, based on reported emissions data and engineering judgement	54
Oil combustion, commercial		Distillate oil-fired wall furnaces	103005	Vanadium	7440622	30.0 pg/J	Uncontrolled, based on reported emissions data and engineering judgement	54
Oil combustion, commercial		Tangential furnace, distillate oil	103005	Selenium	7782492	10.1 pg/J	Uncontrolled, based on reported emissions data and engineering judgement	54

INDUSTRIAL PROCESS	SIC CODE	EMISSION SOURCE	SCC	POLLUTANT	CAS NUMBER	EMISSION FACTOR	NOTES	REFERENCE
Oil combustion, commercial		Wall furnace, distillate oil	103005	Selenium	7782492	10.1 pg/J	Uncontrolled, based on reported emissions data and engineering judgement	54
Oil combustion, industrial		Tangential furnaces	102	Vanadium	7440622	260 pg/J	Controlled by scrubber, based on reported emissions and engineering judgement	54
Oil combustion, industrial		Tangential furnaces	102	Vanadium	7440622	1300 pg/J	Uncontrolled, based on reported emissions and engineering judgement	54
Oil combustion, industrial		Wall furnaces	102	Vanadium	7440622	260 pg/J	Controlled by scrubber, based on reported emissions and engineering judgement	54
Oil combustion, industrial		Wall furnaces	102	Vanadium	7440622	1300 pg/J	Uncontrolled, based on reported emissions and engineering judgement	54
Oil combustion, industrial		Tangential furnace	102	Selenium	7782492	2.0 pg/J	Controlled by scrubber, based on reported emissions data and engineering judgement	54
Oil combustion, industrial		Tangential furnace	102	Selenium	7782492	10.1 pg/J	Uncontrolled, based on reported emissions data and engineering judgement	54
Oil combustion, industrial		Wall furnace	102	Selenium	7782492	2.0 pg/J	Controlled by scrubber, based on reported emissions data and engineering judgement	54
Oil combustion, industrial		Wall furnace	102	Selenium	7782492	10.1 pg/J	Uncontrolled, based on reported emissions data and engineering judgement	54
Oil combustion, industrial		Steam atomized watertube, residual oil	10200401	POM		2.3 pg/J heat input	Uncontrolled, represents mostly particulate POM	114
Oil combustion, industrial		Watertube, residual oil	10200401	POM		0.63 pg/J heat input	Uncontrolled, represents both gaseous and particulate POM	114
Oil combustion, residential		Distillate oil-fired boilers		Vanadium	7440622	10.1 pg/J	Uncontrolled, based on reported emissions data and engineering judgement	54
Oil combustion, residential		Distillate oil-fired furnaces		Selenium	7782492	2.9 pg/J	Uncontrolled, based on reported emissions data and engineering judgement	54

INDUSTRIAL PROCESS	SIC CODE	EMISSION SOURCE	SCC	POLLUTANT	CAS NUMBER	EMISSION FACTOR	NOTES	REFERENCE
Oil combustion, utility		Wall-fired, residual oil	10100401	POM		3.9 pg/J heat input	Uncontrolled, ave. of 4 values ranging from 0.45-12.3 pg/J, represents gaseous & particulate POM	114
Oil combustion, utility		Face-fired, residual oil	10100401	POM		0.37 pg/J heat input	Uncontrolled, represents both gaseous and particulate POM	114
Oil combustion, utility		Tangential-fired, residual oil	10100404	POM		2.5 pg/J heat input	Cyclone controls, represents both gaseous and particulate POM	114
Oil combustion, utility	4911	Residual oil-fired tangential furnaces	101004	Vanadium	7440622	303 pg/J	Controlled by ESP, based on reported emissions and engineering judgement	54
Oil combustion, utility	4911	Residual oil-fired tangential furnaces	101004	Vanadium	7440622	1516 pg/J	Uncontrolled, based on reported emissions and engineering judgement	54
Oil combustion, utility	4911	Residual oil-fired wall furnaces	101004	Vanadium	7440622	303 pg/J	Controlled by ESP, based on reported emissions and engineering judgement	54
Oil combustion, utility	4911	Residual oil-fired wall furnaces	101004	Vanadium	7440622	1516 pg/J	Uncontrolled, based on reported emissions and engineering judgement	54
Oil combustion, utility	4911	Tangential, residual oil	101004	Selenium	7782492	2.0 pg/J	Controlled by ESP, based on reported emissions data and engineering judgement	54
Oil combustion, utility	4911	Tangential, residual oil	101004	Selenium	7782492	10.1 pg/J	Uncontrolled, based on reported emissions data and engineering judgement	54
Oil combustion, utility	4911	Wall furnace, residual oil	101004	Selenium	7782492	2.0 pg/J	Controlled by ESP, based on reported emissions data and engineering judgement	54
Oil combustion, utility	4911	Wall furnace, residual oil	101004	Selenium	7782492	10.1 pg/J	Uncontrolled, based on reported emissions data and engineering judgement	54
Oil shale retorting	1311	Modified in situ retort		POM		3.3 g/hr	Based on offgas concentration and flow rate	114
Oil shale retorting	2911	Entire process		Mercury	7439976	2.2 x 10E-4 lbs/barrel oil produced	Includes Hg compound form, assumes fac. using 13,000 tons/day raw shale to prod. 12,000 bbl/day oil	40

PB81-225559

Emissions Assessment of Conventional Stationary Combustion Systems: Volume V: Industrial Combustion Sources

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Prepared for

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1981

TABLE 61. COMPARISON OF EXISTING TRACE ELEMENT EMISSION FACTOR DATA WITH RESULTS OF CURRENT STUDY OF OIL-FIRED INDUSTRIAL COMBUSTION SOURCES, pg/J

Element	Distillate oil-fired boilers			Residual oil-fired boilers			
		Existing data			Existing data		
	Current study	Ref. 42	Ref. 43	Current study	Ref. 42	Ref. 21	Ref. 28
Aluminum (Al)	178	15	250	177	156	87	132
Arsenic (As)	3.5	1.3	1.5	1.2	9.1	18	12
Barium (Ba)	1.2	8.4	16	3.3	9.5	29	31
Calcium (Ca)	75	845	450	229	780	320	1428
Cadmium (Cd)	1.3	2.5	11	0.66	0.2	52	6.9
Cobalt (Co)	3.8	2.3	1.0	11	23	50	10
Chromium (Cr)	24	36	29	29	50	30	21
Copper (Cu)	37	205	160	10	93	64	350
Fluorine (F)	—	14	—	—	1.0	2.7	149
Iron (Fe)	363	545	140	83	379	411	453
Mercury (Hg)	—	1.7	1.2	—	1.9	0.9	1.5
Potassium (K)	85	60	230	261	213	777	392
Lithium (Li)	0.5	1.5	1.2	1.1	1.0	1.4	1.7
Magnesium (Mg)	42	40	210	24	111	297	2384
Nickel (Ni)	255	112	290	728	804	964	433
Lead (Pb)	24	48	42	2	7	80	34
Antimony (Sb)	—	1.7	5.7	—	21	10	25
Silicon (Si)	735	173	—	8655	1610	400	595
Vanadium (V)	195	30	2.9	366	250	3656	714
Zinc (Zn)	42	40	110	33	46	29	66

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U.S. DEPARTMENT OF COMMERCE
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Emission Assessment of Conventional Stationary Combustion Systems; Volume II Internal Combustion Sources

TRW, Inc, Redondo Beach, CA

Prepared for

Industrial Environmental Research Lab, Research Triangle Park, NC

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TABLE 52. COMPARISON OF TRACE ELEMENT EMISSION FACTORS FOR DISTILLATE OIL-FUELED GAS TURBINES AND DISTILLATE OIL ENGINES

Trace Element	Mean Emission Factor, pg/J	
	Distillate Oil Fueled Gas Turbine	Distillate Oil Reciprocating Engine
Aluminum	64	66
Antimony	9.4	12
Arsenic	2.1	2.2
Barium	8.4	14
Beryllium	0.14	0.03
Boron	28	11
Bromine	1.8	4.0
Cadmium	1.8	3.1
Calcium	330	237
Chromium	20	26
Cobalt	3.9	5.7
Copper	578	453
Iron	256	325
Lead	25	26
Magnesium	100	44
Manganese	145	16
Mercury	0.39	0.13
Molybdenum	3.6	12.5
Nickel	526	564
Phosphorus	127	97
Potassium	185	179
Selenium	2.3	2.1
Silicon	575	301
Sodium	590	1625
Tin	35	9.1
Vanadium	1.9	0.95
Zinc	294	178

Table A-6. Design Information and Stack Parameters for Florida Power Corporation Intercession City CT Project (CT Performance Data For Fuel Oil at 75% Load)

Data	GE PG 7111EA No.2 Oil at 20°F	GE PG 7111EA No.2 Oil at 59°F	GE PG 7111EA No.2 Oil at 90°F
General			
Power (kW)	72,580.0	64,010.0	56,700.0
Heat Rate (Btu/kWh)	11,110.0	11,450.0	11,820.0
Heat Input (10^6 Btu/hr)	806.4	732.9	670.2
Fuel Oil (lb/hr)	43,469.7	39,510.2	36,129.1
Fuel			
Heat Content--Oil(LHV)	18,550.0	18,550.0	18,550.0
Percent Sulfur	0.5	0.5	0.5
CT Exhaust			
Volume Flow (acfm)	1,356,805	1,282,418	1,220,251
Volume Flow (scfm)	579,606	532,324	494,469
Mass Flow (lb/hr)	2,589,000	2,372,000	2,191,000
Temperature (°F)	776	812	843
Moisture (% vol)	5.71	6.36	7.78
Moisture (% mass)	3.58	4.00	4.92
Oxygen (% vol)	14.94	14.85	14.64
Oxygen (% mass)	16.66	16.60	16.46
Molecular Weight	28.69	28.62	28.46
Water Injected (lb/hr)	29,770	26,320	19,980
Diameter (ft)	13.8	13.8	13.8
Velocity (ft/sec)	150.5	142.3	135.4

Note: Data from GE combustion turbine performance and emission guarantees.

Table A-7. Maximum Criteria Pollutant Emissions for Florida Power Corporation Intercession City CT Project (Fuel Oil at 75% Load)

Pollutant	GE PG 7111EA No.2 Oil at 20°F	GE PG 7111EA No.2 Oil at 59°F	GE PG 7111EA No.2 Oil at 90°F
Particulate			
Basis	—	—	—
lb/hr	15.0	15.0	15.0
TPY	65.7	65.7	65.7
Sulfur Dioxide			
Basis	0.5% Sulfur	0.5% Sulfur	0.5% Sulfur
lb/hr	434.70	395.10	361.29
TPY	1,142.4[d]	1,038.3[d]	949.5[d]
Nitrogen Oxides			
Basis (Thermal NO_x)	42 ppm[a]	42 ppm[a]	42 ppm[a]
lb/hr	141.0	128.2	116.8
TPY	617.5	561.6	511.8
ppm[b]	42.0	42.0	42.0
Carbon Monoxide			
Basis	25 ppm[c]	25 ppm[c]	25 ppm[c]
lb/hr	59.6	54.3	49.7
TPY	260.9	237.9	217.7
ppm	25.0	25.0	25.0
VOCs			
Basis	5.0 lb/hr	4.5 lb/hr	4.5 lb/hr
lb/hr	5.00	4.50	4.50
TPY	21.9	19.7	19.7
Lead			
Basis	EPA(1988)	EPA(1988)	EPA(1988)
lb/hr	7.18×10^{-3}	6.52×10^{-3}	5.96×10^{-3}
TPY	3.14×10^{-2}	2.86×10^{-2}	2.61×10^{-2}

[a]Corrected to 15% O_2 dry conditions.
[b]Does not include an allowance for fuel-bound nitrogen of 0.015 percent or greater.
[c]Corrected to dry conditions.
[d]Annual emissions based on 0.3 percent sulfur.

Table A-8. Maximum Other Regulated Pollutant Emissions for Florida Power Corporation Intercession City CT Project (Fuel Oil at 75% Load)

Pollutant	GE PG 7111EA No.2 Oil at 20°F	GE PG 7111EA No.2 Oil at 59°F	GE PG 7111EA No.2 Oil at 90°F
Arsenic			
lb/hr	3.39×10^{-3}	3.08×10^{-3}	2.81×10^{-3}
TPY	1.48×10^{-2}	1.35×10^{-2}	1.23×10^{-2}
Beryllium			
lb/hr	2.02×10^{-3}	1.83×10^{-3}	1.68×10^{-3}
TPY	8.83×10^{-3}	8.03×10^{-3}	7.34×10^{-3}
Mercury			
lb/hr	2.42×10^{-3}	2.20×10^{-3}	2.01×10^{-3}
TPY	1.06×10^{-2}	9.63×10^{-3}	8.81×10^{-3}
Fluorine			
lb/hr	2.62×10^{-2}	2.38×10^{-2}	2.18×10^{-2}
TPY	1.15×10^{-1}	1.04×10^{-1}	9.54×10^{-2}
Sulfuric acid			
lb/hr	54.1	49.2	45.0
TPY	237.1	215.5	197.1

Sources: EPA, 1988; EPA, 1980.

Table A-9. Maximum Nonregulated Pollutant Emissions for Florida Power Corporation Intercession City CT Project (Fuel Oil at 75% Load)

Pollutant	Gas Turbine No.2 Oil at 40°F	Gas Turbine No.2 Oil at 59°F	Gas Turbine No.2 Oil at 90°F
Manganese			
lb/hr	5.19×10^{-3}	4.72×10^{-3}	4.32×10^{-3}
TPY	2.27×10^{-2}	2.07×10^{-2}	1.89×10^{-2}
Nickel			
lb/hr	1.37×10^{-1}	1.25×10^{-1}	1.14×10^{-1}
TPY	6.00×10^{-1}	5.46×10^{-1}	4.99×10^{-1}
Cadmium			
lb/hr	8.47×10^{-3}	7.70×10^{-3}	7.04×10^{-3}
TPY	3.71×10^{-2}	3.37×10^{-2}	3.08×10^{-2}
Chromium			
lb/hr	3.83×10^{-2}	3.48×10^{-2}	3.18×10^{-2}
TPY	1.68×10^{-1}	1.52×10^{-1}	1.39×10^{-1}
Copper			
lb/hr	2.26×10^{-1}	2.05×10^{-1}	1.88×10^{-1}
TPY	9.89×10^{-1}	8.99×10^{-1}	8.22×10^{-1}
Vanadium			
lb/hr	5.62×10^{-2}	5.11×10^{-2}	4.67×10^{-2}
TPY	2.46×10^{-1}	2.24×10^{-1}	2.05×10^{-1}
Selenium			
lb/hr	1.89×10^{-2}	1.72×10^{-2}	1.57×10^{-2}
TPY	8.29×10^{-2}	7.54×10^{-2}	6.89×10^{-2}
Polycyclic Organic Matter			
lb/hr	2.25×10^{-4}	2.04×10^{-4}	1.87×10^{-4}
TPY	9.85×10^{-4}	8.95×10^{-4}	8.19×10^{-4}
Formaldehyde			
lb/hr	3.27×10^{-1}	2.97×10^{-1}	2.71×10^{-1}
TPY	1.43	1.30	1.19

Source: EPA, 1988.

Table A-10. Maximum Emissions for Additional Nonregulated Pollutants for Florida Power Corporation Intercession City CT Project (Fuel Oil at 75% Load)

Pollutant	Gas Turbine No.2 Oil at 40°F	Gas Turbine No.2 Oil at 59°F	Gas Turbine No.2 Oil at 90°F
Antimony			
lb/hr	$1.76x10^{-2}$	$1.60x10^{-2}$	$1.46x10^{-2}$
TPY	$7.72x10^{-2}$	$7.01x10^{-2}$	$6.41x10^{-2}$
Barium			
lb/hr	$1.57x10^{-2}$	$1.43x10^{-2}$	$1.31x10^{-2}$
TPY	$6.89x10^{-2}$	$6.27x10^{-2}$	$5.73x10^{-2}$
Colbalt			
lb/hr	$7.31x10^{-3}$	$6.64x10^{-3}$	$6.07x10^{-3}$
TPY	$3.20x10^{-2}$	$2.91x10^{-2}$	$2.66x10^{-2}$
Zinc			
lb/hr	$5.51x10^{-1}$	$5.01x10^{-1}$	$4.58x10^{-1}$
TPY	2.41	2.19	2.01
Chlorine[a]			
lb/hr	$2.17x10^{-2}$	$1.98x10^{-2}$	$1.81x10^{-2}$
TPY	$9.52x10^{-2}$	$8.65x10^{-2}$	$7.91x10^{-2}$

[a]Assumes 0.5 ppm in fuel oil.

Source: EPA, 1979.

Table A-11. Design Information and Stack Parameters for Florida Power Corporation Intercession City CT Project (CT Performance Data For Fuel Oil at 50% Load)

Data	GE PG 7111EA No.2 Oil at 20°F	GE PG 7111EA No.2 Oil at 59°F	GE PG 7111EA No.2 Oil at 90°F
General			
Power (kW)	48,380.0	42,670.0	37,810.0
Heat Rate (Btu/kWh)	12,260.0	12,720.0	13,270.0
Heat Input (10^6 Btu/hr)	593.1	542.8	501.7
Fuel Oil (lb/hr)	31,975.1	29,259.4	27,047.9
Fuel			
Heat Content--Oil(LHV)	18,550.0	18,550.0	18,550.0
Percent Sulfur	0.5	0.5	0.5
CT Exhaust			
Volume Flow (acfm)	1,060,216	1,031,868	1,012,939
Volume Flow (scfm)	463,789	448,417	438,028
Mass Flow (lb/hr)	2,076,000	2,003,000	1,945,000
Temperature (°F)	747	755	761
Moisture (% vol)	4.87	5.34	6.67
Moisture (% mass)	3.05	3.35	4.21
Oxygen (% vol)	15.55	15.69	15.63
Oxygen (% mass)	17.31	17.50	17.54
Molecular Weight	28.75	28.69	28.52
Water Injected (lb/hr)	17,280	14,940	10,910
Diameter (ft)	14.5	14.5	14.5
Velocity (ft/sec)	107.3	104.4	102.5

Note: Data from GE combustion turbine performance and emission guarantees.

Table A-12. Maximum Criteria Pollutant Emissions for Florida Power Corporation Intercession City CT Project (Fuel Oil at 50% Load)

Pollutant	GE PG 7111EA No.2 Oil at 20°F	GE PG 7111EA No.2 Oil at 59°F	GE PG 7111EA No.2 Oil at 90°F
Particulate			
Basis	—	—	—
lb/hr	15.0	15.0	15.0
TPY	65.7	65.7	65.7
Sulfur Dioxide			
Basis	0.5% Sulfur	0.5% Sulfur	0.5% Sulfur
lb/hr	319.75	292.59	270.48
TPY	840.3[d]	769.0[d]	710.8[d]
Nitrogen Oxides			
Basis (Thermal NO_x)	42 ppm[a]	42 ppm[a]	42 ppm[a]
lb/hr	102.4	93.6	86.5
TPY	448.4	410.0	378.9
ppm[b]	42.0	42.0	42.0
Carbon Monoxide			
Basis	36 ppm[c]	40 ppm[c]	28 ppm[c]
lb/hr	69.2	74.0	49.9
TPY	303.3	324.2	218.6
ppm	36.0	40.0	28.0
VOCs			
Basis	6.5 lb/hr	5.5 lb/hr	5.0 lb/hr
lb/hr	6.50	5.50	5.00
TPY	28.5	24.1	21.9
Lead			
Basis	EPA(1988)	EPA(1988)	EPA(1988)
lb/hr	5.28×10^{-3}	4.83×10^{-3}	4.47×10^{-3}
TPY	2.31×10^{-2}	2.12×10^{-2}	1.96×10^{-2}

[a]Corrected to 15% O_2 dry conditions.
[b]Does not include an allowance for fuel-bound nitrogen of 0.015 percent or greater.
[c]Corrected to dry conditions.
[d]Annual emissions based on 0.3 percent sulfur.

Table A-13. Maximum Other Regulated Pollutant Emissions for Florida Power Corporation Intercession City CT Project (Fuel Oil at 50% Load)

Pollutant	GE PG 7111EA No.2 Oil at 20°F	GE PG 7111EA No.2 Oil at 59°F	GE PG 7111EA No.2 Oil at 90°F
Arsenic			
lb/hr	2.49×10^{-3}	2.28×10^{-3}	2.11×10^{-3}
TPY	1.09×10^{-2}	9.98×10^{-3}	9.23×10^{-3}
Beryllium			
lb/hr	1.48×10^{-3}	1.36×10^{-3}	1.25×10^{-3}
TPY	6.49×10^{-3}	5.94×10^{-3}	5.49×10^{-3}
Mercury			
lb/hr	1.78×10^{-3}	1.63×10^{-3}	1.51×10^{-3}
TPY	7.79×10^{-3}	7.13×10^{-3}	6.59×10^{-3}
Fluorine			
lb/hr	1.93×10^{-2}	1.76×10^{-2}	1.63×10^{-2}
TPY	8.44×10^{-2}	7.73×10^{-2}	7.14×10^{-2}
Sulfuric acid			
lb/hr	39.8	36.4	33.7
TPY	174.4	159.6	147.5

Sources: EPA, 1988; EPA, 1980.

Table A-14. Maximum Nonregulated Pollutant Emissions for Florida Power Corporation Intercession City CT Project (Fuel Oil at 50% Load)

Pollutant	Gas Turbine No.2 Oil at 40°F	Gas Turbine No.2 Oil at 59°F	Gas Turbine No.2 Oil at 90°F
Manganese			
lb/hr	3.82×10^{-3}	3.50×10^{-3}	3.23×10^{-3}
TPY	1.67×10^{-2}	1.53×10^{-2}	1.42×10^{-2}
Nickel			
lb/hr	1.01×10^{-1}	9.23×10^{-2}	8.53×10^{-2}
TPY	4.42×10^{-1}	4.04×10^{-1}	3.74×10^{-1}
Cadmium			
lb/hr	6.23×10^{-3}	5.70×10^{-3}	5.27×10^{-3}
TPY	2.73×10^{-2}	2.50×10^{-2}	2.31×10^{-2}
Chromium			
lb/hr	2.82×10^{-2}	2.58×10^{-2}	2.38×10^{-2}
TPY	1.23×10^{-1}	1.13×10^{-1}	1.04×10^{-1}
Copper			
lb/hr	1.66×10^{-1}	1.52×10^{-1}	1.40×10^{-1}
TPY	7.27×10^{-1}	6.66×10^{-1}	6.15×10^{-1}
Vanadium			
lb/hr	4.14×10^{-2}	3.78×10^{-2}	3.50×10^{-2}
TPY	1.81×10^{-1}	1.66×10^{-1}	1.53×10^{-1}
Selenium			
lb/hr	1.39×10^{-2}	1.27×10^{-2}	1.18×10^{-2}
TPY	6.10×10^{-2}	5.58×10^{-2}	5.16×10^{-2}
Polycyclic Organic Matter			
lb/hr	1.65×10^{-4}	1.51×10^{-4}	1.40×10^{-4}
TPY	7.25×10^{-4}	6.63×10^{-4}	6.13×10^{-4}
Formaldehyde			
lb/hr	2.40×10^{-1}	2.20×10^{-1}	2.03×10^{-1}
TPY	1.05	9.63×10^{-1}	8.90×10^{-1}

Source: EPA, 1988.

Table A-15. Maximum Emissions for Additional Nonregulated Pollutants for Florida Power Corporation Intercession City CT Project (Fuel Oil at 50% Load)

Pollutant	Gas Turbine No.2 Oil at 40°F	Gas Turbine No.2 Oil at 59°F	Gas Turbine No.2 Oil at 90°F
Antimony			
lb/hr	1.30×10^{-2}	1.19×10^{-2}	1.10×10^{-2}
TPY	5.68×10^{-2}	5.19×10^{-2}	4.80×10^{-2}
Barium			
lb/hr	1.16×10^{-2}	1.06×10^{-2}	9.79×10^{-3}
TPY	5.07×10^{-2}	4.64×10^{-2}	4.29×10^{-2}
Colbalt			
lb/hr	5.38×10^{-3}	4.92×10^{-3}	4.55×10^{-3}
TPY	2.35×10^{-2}	2.15×10^{-2}	1.99×10^{-2}
Zinc			
lb/hr	4.05×10^{-1}	3.71×10^{-1}	3.43×10^{-1}
TPY	1.78	1.62	1.50
Chlorine[a]			
lb/hr	1.60×10^{-2}	1.46×10^{-2}	1.35×10^{-2}
TPY	7.00×10^{-2}	6.41×10^{-2}	5.92×10^{-2}

[a]Assumes 0.5 ppm in fuel oil.

Source: EPA, 1979.

Table A-16. Design Information and Stack Parameters for Florida Power Corporation Intercession City CT Project (CT Performance Data For Fuel Oil at 25% Load)

Data	GE PG 7111EA No.2 Oil at 20°F	GE PG 7111EA No.2 Oil at 59°F	GE PG 7111EA No.2 Oil at 90°F
General			
Power (kW)	24,150.0	21,330.0	18,880.0
Heat Rate (Btu/kWh)	16,550.0	17,590.0	18,800.0
Heat Input (10^6 Btu/hr)	399.7	375.2	354.9
Fuel Oil (lb/hr)	21,546.2	20,226.1	19,134.4
Fuel			
Heat Content--Oil(LHV)	18,550.0	18,550.0	18,550.0
Percent Sulfur	0.5	0.5	0.5
CT Exhaust			
Volume Flow (acfm)	896,548	878,492	860,936
Volume Flow (scfm)	456,487	429,087	405,870
Mass Flow (lb/hr)	2,049,000	1,920,000	1,806,000
Temperature (°F)	577	621	660
Moisture (% vol)	3.12	3.90	5.57
Moisture (% mass)	1.95	2.44	3.51
Oxygen (% vol)	17.32	17.15	16.82
Oxygen (% mass)	19.22	19.10	18.83
Molecular Weight	28.83	28.74	28.58
Water Injected (lb/hr)	8,390	7,700	5,580
Diameter (ft)	14.5	14.5	14.5
Velocity (ft/sec)	90.7	88.9	87.1

Note: Data from GE combustion turbine performance and emission guarantees.

Table A-17. Maximum Criteria Pollutant Emissions for Florida Power Corporation Intercession City CT Project (Fuel Oil at 25% Load)

Pollutant	GE PG 7111EA No.2 Oil at 20°F	GE PG 7111EA No.2 Oil at 59°F	GE PG 7111EA No.2 Oil at 90°F
Particulate			
Basis	—	—	—
lb/hr	15.0	15.0	15.0
TPY	65.7	65.7	65.7
Sulfur Dioxide			
Basis	0.5% Sulfur	0.5% Sulfur	0.5% Sulfur
lb/hr	215.46	202.26	191.34
TPY	566.2[d]	531.5[d]	502.9[d]
Nitrogen Oxides			
Basis (Thermal NO_x)	42 ppm[a]	42 ppm[a]	42 ppm[a]
lb/hr	68.2	64.1	60.4
TPY	298.8	280.9	264.4
ppm[b]	42.0	42.0	42.0
Carbon Monoxide			
Basis	60 ppm[c]	60 ppm[c]	48 ppm[c]
lb/hr	115.7	107.9	80.2
TPY	506.6	472.4	351.3
ppm	60.0	60.0	48.0
VOCs			
Basis	7.0 lb/hr	6.0 lb/hr	6.0 lb/hr
lb/hr	7.00	6.00	6.00
TPY	30.7	26.3	26.3
Lead			
Basis	EPA(1988)	EPA(1988)	EPA(1988)
lb/hr	3.56×10^{-3}	3.34×10^{-3}	3.16×10^{-3}
TPY	1.56×10^{-2}	1.46×10^{-2}	1.38×10^{-2}

[a]Corrected to 15% O_2 dry conditions.
[b]Does not include an allowance for fuel-bound nitrogen of 0.015 percent or greater.
[c]Corrected to dry conditions.
[d]Annual emissions based on 0.3 percent sulfur.

Table A-18. Maximum Other Regulated Pollutant Emissions for Florida Power Corporation Intercession City CT Project (Fuel Oil at 25% Load)

Pollutant	GE PG 7111EA No.2 Oil at 20°F	GE PG 7111EA No.2 Oil at 59°F	GE PG 7111EA No.2 Oil at 90°F
Arsenic			
lb/hr	1.68×10^{-3}	1.58×10^{-3}	1.49×10^{-3}
TPY	7.35×10^{-3}	6.90×10^{-3}	6.53×10^{-3}
Beryllium			
lb/hr	9.99×10^{-4}	9.38×10^{-4}	8.87×10^{-4}
TPY	4.38×10^{-3}	4.11×10^{-3}	3.89×10^{-3}
Mercury			
lb/hr	1.20×10^{-3}	1.13×10^{-3}	1.06×10^{-3}
TPY	5.25×10^{-3}	4.93×10^{-3}	4.66×10^{-3}
Fluoride			
lb/hr	1.30×10^{-2}	1.22×10^{-2}	1.15×10^{-2}
TPY	5.69×10^{-2}	5.34×10^{-2}	5.05×10^{-2}
Sulfuric acid			
lb/hr	26.8	25.2	23.8
TPY	117.5	110.3	104.4

Sources: EPA, 1988; EPA, 1980.

Table A-19. Maximum Nonregulated Pollutant Emissions for Florida Power Corporation Intercession City CT Project (Fuel Oil at 25% Load)

Pollutant	Gas Turbine No.2 Oil at 40°F	Gas Turbine No.2 Oil at 59°F	Gas Turbine No.2 Oil at 90°F
Manganese			
lb/hr	2.57×10^{-3}	2.42×10^{-3}	2.29×10^{-3}
TPY	1.13×10^{-2}	1.06×10^{-2}	1.00×10^{-2}
Nickel			
lb/hr	6.79×10^{-2}	6.38×10^{-2}	6.03×10^{-2}
TPY	2.98×10^{-1}	2.79×10^{-1}	2.64×10^{-1}
Cadmium			
lb/hr	4.20×10^{-3}	3.94×10^{-3}	3.73×10^{-3}
TPY	1.84×10^{-2}	1.73×10^{-2}	1.63×10^{-2}
Chromium			
lb/hr	1.90×10^{-2}	1.78×10^{-2}	1.69×10^{-2}
TPY	8.32×10^{-2}	7.81×10^{-2}	7.38×10^{-2}
Copper			
lb/hr	1.12×10^{-1}	1.05×10^{-1}	9.94×10^{-2}
TPY	4.90×10^{-1}	4.60×10^{-1}	4.35×10^{-1}
Vanadium			
lb/hr	2.79×10^{-2}	2.62×10^{-2}	2.47×10^{-2}
TPY	1.22×10^{-1}	1.15×10^{-1}	1.08×10^{-1}
Selenium			
lb/hr	9.38×10^{-3}	8.81×10^{-3}	8.33×10^{-3}
TPY	4.11×10^{-2}	3.86×10^{-2}	3.65×10^{-2}
Polycyclic Organic Matter			
lb/hr	1.11×10^{-4}	1.05×10^{-4}	9.90×10^{-5}
TPY	4.88×10^{-4}	4.58×10^{-4}	4.34×10^{-4}
Formaldehyde			
lb/hr	1.62×10^{-1}	1.52×10^{-1}	1.44×10^{-1}
TPY	7.09×10^{-1}	6.66×10^{-1}	6.30×10^{-1}

Source: EPA, 1988.

Table A-20. Maximum Emissions for Additional Nonregulated Pollutants for Florida Power Corporation Intercession City CT Project (Fuel Oil at 25% Load)

Pollutant	Gas Turbine No.2 Oil at 40°F	Gas Turbine No.2 Oil at 59°F	Gas Turbine No.2 Oil at 90°F
Antimony			
lb/hr	8.73×10^{-3}	8.20×10^{-3}	7.75×10^{-3}
TPY	3.82×10^{-2}	3.59×10^{-2}	3.40×10^{-2}
Barium			
lb/hr	7.80×10^{-3}	7.32×10^{-3}	6.93×10^{-3}
TPY	3.42×10^{-2}	3.21×10^{-2}	3.03×10^{-2}
Colbalt			
lb/hr	3.62×10^{-3}	3.40×10^{-3}	3.22×10^{-3}
TPY	1.59×10^{-2}	1.49×10^{-2}	1.41×10^{-2}
Zinc			
lb/hr	2.73×10^{-1}	2.56×10^{-1}	2.43×10^{-1}
TPY	1.20	1.12	1.06
Chlorine[a]			
lb/hr	1.08×10^{-2}	1.01×10^{-2}	9.57×10^{-3}
TPY	4.72×10^{-2}	4.43×10^{-2}	4.19×10^{-2}

[a]Assumes 0.5 ppm in fuel oil.

Source: EPA, 1979.

Table A-21. Design Information and Stack Parameters for Florida Power Corporation Intercession City CT Project - GE Frame 7FA Fuel Oil Firing (CT Performance Data for Fuel Oil at Peak Load)

Data	Gas Turbine No.2 Oil @ 20°F	Gas Turbine No.2 Oil @ 59°F	Gas Turbine No.2 Oil @ 90°F
General			
Power (kW)	200,106.4	185,504.0	163,553.0
Heat Rate-LHV (Btu/kWh)	10,155.6	10,168.3	10,441.7
Heat Input (10^6Btu/hr)	2,032.2	1,886.3	1,707.8
Fuel Oil (lb/hr)	109,552.4	101,684.9	92,063.4
Fuel			
Heat Content - Oil(LHV)	18,550 Btu/lb	18,550 Btu/lb	18,550 Btu/lb
Percent Sulfur	0.5	0.5	0.5
CT Exhaust			
Volume Flow (acfm)	2,652,007	2,533,579	2,392,476
Volume Flow (scfm)	882,998	829,530	768,430
Mass Flow (lb/hr)	3,779,928	3,547,243	3,276,378
Temperature (oF)	1,126	1,153	1,184
Diameter (ft)	23.1	23.1	23.1
Velocity (ft/sec)	105.2	100.5	94.9
Height (ft)	50.0	50.0	50.0
Moisture (%)	12.08	12.44	13.22
Oxygen (%)	10.38	10.40	10.42
Molecular Weight	27.50	27.47	27.39
Water Injected (lb/hr)	164,653	146,191	117,423

Table A-22. Maximum Criteria Pollutant Emissions for Florida Power Corporation Intercession City CT Project - GE Frame 7FA Fuel Oil Firing (Fuel Oil at Peak Load)

Pollutant	Gas Turbine No.2 Oil @ 20°F	Gas Turbine No.2 Oil @ 59°F	Gas Turbine No.2 Oil @ 90°F
Particulate			
Basis			
lb/hr	17.0	17.0	17.0
TPY	74.5	74.5	74.5
Sulfur Dioxide			
Basis	0.5 % Sulfur	0.5 % Sulfur	0.5 % Sulfur
lb/hr	1095.52	1016.85	920.63
TPY	2,879.0[c]	2,672.3[c]	2,419.4[c]
Nitrogen Oxides			
Basis	42 ppm[a]	42 ppm[a]	42 ppm[a]
lb/hr	359.7	334.0	302.3
TPY	1,575.6	1,463.0	1,324.0
ppm	42.0	42.0	42.0
Carbon Monoxide			
Basis	25 ppm[b]	25 ppm[b]	25 ppm[b]
lb/hr	84.6	79.2	72.7
TPY	370.6	346.7	318.3
ppm	25.0	25.0	25.0
VOCs			
Basis	5 ppm[b]	5 ppm[b]	5 ppm[b]
lb/hr	9.67	9.05	8.31
TPY	42.4	39.6	36.4
ppm	5.0	5.0	5.0
Lead			
Basis	EPA(1988)	EPA(1988)	EPA(1988)
lb/hr	1.81E-02	1.68E-02	1.52E-02
TPY	7.92E-02	7.35E-02	6.66E-02

[a] Corrected to 15% O_2 dry conditions.
[b] Corrected to dry conditions.
[c] Annual emissions based on 0.3 percent sulfur.

Table A-23. Maximum Other Regulated Pollutant Emissions for Florida Power Corporation Intercession City CT Project - GE Frame 7FA Fuel Oil Firing (Fuel Oil at Peak Load)

Pollutant	Gas Turbine No.2 Oil @ 20°F	Gas Turbine No.2 Oil @ 59°F	Gas Turbine No.2 Oil @ 90°F
Arsenic			
(lb/hr)	8.54E-03	7.92E-03	7.17E-03
(TPY)	3.74E-02	3.47E-02	3.14E-02
Beryllium			
(lb/hr)	5.08E-03	4.72E-03	4.27E-03
(TPY)	2.23E-02	2.07E-02	1.87E-02
Mercury			
(lb/hr)	6.10E-03	5.66E-03	5.12E-03
(TPY)	2.67E-02	2.48E-02	2.24E-02
Fluorine			
(lb/hr)	6.60E-02	6.13E-02	5.55E-02
(TPY)	2.89E-01	2.69E-01	2.43E-01
Sulfuric Acid			
(lb/hr)	50.28	46.67	42.26
(TPY)	2.20E+02	2.04E+02	1.85E+02

Sources: EPA, 1988; EPA, 1980.

Table A-24. Maximum Nonregulated Pollutant Emissions for Florida Power Corporation Intercession City CT Project - GE Frame 7FA Fuel Oil Firing (Fuel Oil at Peak Load)

Pollutant	Gas Turbine No.2 Oil @ 20°F	Gas Turbine No.2 Oil @ 59°F	Gas Turbine No.2 Oil @ 90°F
Manganese			
(lb/hr)	1.31E-02	1.21E-02	1.10E-02
(TPY)	5.73E-02	5.32E-02	4.82E-02
Nickel			
(lb/hr)	3.45E-01	3.21E-01	2.90E-01
(TPY)	1.51E+00	1.40E+00	1.27E+00
Cadmium			
(lb/hr)	2.13E-02	1.98E-02	1.79E-02
(TPY)	9.35E-02	8.67E-02	7.85E-02
Chromium			
(lb/hr)	9.65E-02	8.96E-02	8.11E-02
(TPY)	4.23E-01	3.92E-01	3.55E-01
Copper			
(lb/hr)	5.69E-01	5.28E-01	4.78E-01
(TPY)	2.49E+00	2.31E+00	2.09E+00
Vanadium			
(lb/hr)	1.42E-01	1.32E-01	1.19E-01
(TPY)	6.21E-01	5.76E-01	5.22E-01
Selenium			
(lb/hr)	4.77E-02	4.43E-02	4.01E-02
(TPY)	2.09E-01	1.94E-01	1.76E-01
Polycyclic Organic Matter			
(lb/hr)	5.67E-04	5.26E-04	4.76E-04
(TPY)	2.48E-03	2.30E-03	2.09E-03
Formaldehyde			
(lb/hr)	8.23E-01	7.64E-01	6.92E-01
(TPY)	3.60E+00	3.35E+00	3.03E+00

Source: EPA, 1988.

Table A-25. Maximum Emissions for Additional Nonregulated Pollutants for Florida Power Corporation Intercession City CT Project-GE Frame 7FA Fuel Oil Firing (Fuel Oil at Peak Load)

Pollutant	Gas Turbine No.2 Oil at 40°F	Gas Turbine No.2 Oil at 59°F	Gas Turbine No.2 Oil at 90°F
Antimony			
lb/hr	4.44×10^{-2}	4.12×10^{-2}	3.73×10^{-2}
TPY	1.94×10^{-2}	1.80×10^{-2}	1.63×10^{-2}
Barium			
lb/hr	3.97×10^{-2}	3.68×10^{-2}	3.33×10^{-3}
TPY	1.74×10^{-2}	1.61×10^{-2}	1.46×10^{-2}
Colbalt			
lb/hr	1.84×10^{-3}	1.71×10^{-3}	1.55×10^{-3}
TPY	8.07×10^{-2}	7.49×10^{-2}	6.78×10^{-2}
Zinc			
lb/hr	1.39×10^{-1}	1.29×10^{-1}	1.17×10^{-1}
TPY	6.08	5.64	5.11
Chlorine[a]			
lb/hr	5.48×10^{-2}	5.08×10^{-2}	4.60×10^{-2}
TPY	2.41×10^{-1}	2.23×10^{-1}	2.02×10^{-1}

[a]Assumes 0.5 ppm in fuel oil.

Source: EPA, 1979.

APPENDIX B

REVIEW OF PSD PRECONSTRUCTION MONITORING REQUIREMENT BY THE FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

June 14, 1991

Ms. Teresa Compton
Florida Power Corporation
General Office P. O. Box 14042
St. Petersburg, Florida 33733

Re: Intercession City Facility - Preconstruction Monitoring Review

Dear Ms. Compton:

I have reviewed your request to use data from the Winter Park SO_2 monitoring site (4900-002-G01) to satisfy the preconstruction monitoring requirements of the PSD regulations for your proposed project. Based on my review, you may use data collected from this site to satisfy the monitoring requirements. Please use data collected during 1990 and the following values for representing the applicable background concentrations: 53 ug/m^3, 3-hour average; 28 ug/m^3, 24-hour average; and 4 ug/m^3, annual average. If you have any questions, please call me at 904-488-1344.

Sincerely,

Cleve Holladay

Cleve Holladay
Meteorologist
Bureau of Air Regulation

CH/plm

c: Ken Kosky, KBN

BEST AVAILABLE COPY

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
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- Complete items 3, and 4a & b.
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- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
W. Jeffrey Pardue, Director
Fla. Power Corp
PO Box 14042
St. Pete, Fl 33733

4a. Article Number
Z 392 979 024

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
AUG 17 1995

5. Signature (Addressee)
Brian Williams

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form **3811**, December 1991 ☆U.S. GPO: 1993—352-714 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt

Z 392 979 024

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

PS Form 3800, March 1993

Sent to W. Jeffrey Pardue	
Street and No. Fla. Power Corp	
P.O., State and ZIP Code St. Pete, Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date AC49-203114 8-11-95 PSD-Fl-180	

AC49-270739

PSD-Fl-180F

The Orlando Sentinel

Published Daily
$199.40

State of Florida } S.S.
COUNTY OF ORANGE

Before the undersigned authority personally appeared Joyce L. Wytrwal, who on oath says that he/she is the Legal Advertising Representative of The Orlando Sentinel, a daily newspaper published at ORLANDO in ORANGE County, Florida; that the attached copy of advertisement, being a STATE OF FLORIDA in the matter of PSD-FL-180A AC49-203114

in the ORANGE Court, was published in said newspaper in the issue; of 07/21/95

Affiant further says that the said Orlando Sentinel is a newspaper published at ORLANDO, in said ORANGE County, Florida, and that the said newspaper has heretofore been continuously published in said ORANGE County, Florida, each Week Day and has been entered as second-class mail matter at the post office in ORLANDO in said ORANGE County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he/she has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Joyce Wytrwal

The foregoing instrument was acknowledged before me this 21 day of July, 1995, by Joyce L. Wytrwal, who is personally known to me and who did take an oath.

Juanita Rosado

(SEAL)

JUANITA ROSADO
My Comm Exp. 7/13/98
Bonded By Service Ins
No. CC392006

NOTARY PUBLIC STATE OF FLORIDA

[ ] Personally Known [ ] Other I. D.

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION NOTICE OF INTENT TO ISSUE PERMIT AMENDMENT PSD-FL-180A AC49-203114

The Department of Environmental Protection gives notice of its intent to issue an amendment of permit PSD-FL-180 (AC49-203114) to Florida Power Corporation to allow the use of natural gas, an inherently less polluting fuel available on an interruptible basis as a supplemental fuel for electrical Peaking Units P7 through P11 located in Intercession City, Osceola County. When using natural gas, actual and allowable emissions of introgen oxides, sulfur dioxide, and particulate matter will be lower than actual and allowable emissions when burning fuel oil . These benefits are reflected in a revision to the previously-issued Best Available Control Technology (BACT) determination pursuant to Prevention of Significant Deterioration (PSD).

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 32399-2400, within fourteen (14) days of publication of this notice. 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) pursuant to 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 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 Notice. Persons whose substantial interests will be affected by any decision of the department with regard to the 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 publication of this notice 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 Florida Administrative Code.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday except legal holidays, at:
Department of Environmental
Bureau of Air Regulation
111 S. Magnolia Drive, Suite 4
Tallahassee, Florida 32301
Department of Environmental Protection
Central District
3319 Maguire Blvd. Suite 232
Orlando, Florida 32803-3767

Any person may send written comments on the proposed action to Administrator, New Source Review Section, at the Department's Tallahassee address. All comments received within 14 days of the publication of this notice will be considered in the Department's final determination.

COR447480 JULY 21,1995

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- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
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- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
W. Jeffrey Pardue, Director
Env. Services Dept H2G
Fla. Power Corp.
PO Box 14042
St. Pete, Fl 33733

4a. Article Number
Z 392 979 059

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
JUL 21 1995

5. Signature (Addressee)
[signature]

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form **3811**, December 1991 ☆U.S. GPO: 1993—352-714 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

Z 392 979 059

UNITED STATES POSTAL SERVICE

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to W. Jeff Pardue	
Street and No. Fla. Power Corp.	
P.O., State and ZIP Code St. Pete, Fl 33733	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 7-17-95 AC 49-20314 PSD-FI-180 AC49-270739	

PS Form 3800, March 1993

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
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- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Michael Kennedy
Mgr. Air Program
Fla. Power Corp.
PO Box 14042
St. Pete, Fl 33733

4a. Article Number
Z 311 902 893

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery MAY 24 1995

5. Signature (Addressee)
Lisa Marle

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form **3811**, December 1991 ☆U.S. GPO: 1993—352-714 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

Z 311 902 893

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

PS Form **3800**, March 1993

Sent to Mike Kennedy	
Street and No. Fl Power Corp	
P.O., State and ZIP Code St. Pete, Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 5-22-95 AC49-203114 PSD-FI-180	

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. J. Michael Kennedy
Manager of Air programs
Florida Power Corporation
P. O. Box 14042
St. Petersburg, FL 33733

4a. Article Number
P 872 563 671

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
JAN 26 95

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form **3811**, December 1991 ☆U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

P 872 563 671

Receipt for Certified Mail

UNITED STATES POSTAL SERVICE

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Mr. J. Michael Kennedy	
Street and No. P. O. Box 14042 FPC	
P.O., State and ZIP Code St. Petersburg, FL 33733	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date Mailed: 1-24-95 Permit: AC49-203114 PSD-FL-180(A)	

PS Form **3800**, JUNE 1991

Florida Power
CORPORATION

David L. Miller
Senior Vice President
Corporate Services

October 21, 1994

TO WHOM IT MAY CONCERN

Subject: Letter of Authorization

Please be advised that W. Jeffrey Pardue, Director, Environmental Services Department, Sharon K. Momberg, Manager of Waste Management Programs, Kent D. Hedrick, Manager of Water Programs, J. Michael Kennedy, Manager of Air Programs, and Patricia Quets, Environmental Project Manager, are authorized to represent Florida Power Corporation in matters relating to necessary permits and reporting documentation required from regulatory authorities in the areas of air, water, power plant site certifications and transmission line certifications, or hazardous and solid materials issues.

Sincerely,

David L. Miller

DLM:bb

Florida Power CORPORATION

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

REMITTANCE ADVICE

CHECK DATE 1/3/95 **VENDOR** FLA DEPT OF ENV PROTECTION **VENDOR NO.** 278473 **CHECK NO.** 1672524

INVOICE NO.	DATE	OUR ORDER NO.	VOUCHER	GROSS AMOUNT	DISCOUNT	NET AMOUNT
CK097514	1/3/95			250.00		250.00
					TOTAL	250.00

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

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Mr. Kent Hedrick
Supervisor, Air Programs
Florida Power Corporation
P. O. Box 14042
St. Petersburg, FL 33733

4a. Article Number
Z 751 859 980

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
SEP 28 1994

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form **3811**, December 1991 ☆U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

Z 751 859 980

UNITED STATES POSTAL SERVICE

Receipt for Certified Mail

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Mr. Kent Hedrick, FPC	
Street and No. P. O. Box 14042	
P.O., State and ZIP Code St. Petersburg, FL 33733	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$

Postmark or Date

Mailed: 9-23-94
Permit: AC 49-203114
PSD-FL-180(A)

PS Form **3800**, March 1993

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
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- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

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

4a. Article Number
P 872 563 642

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery JUL 15 1994

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form **3811**, December 1991 ☆U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

P 872 563 642

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to Mr. W. Jeffrey Pardue, FPC	
Street and No. P.O. Box 14042	
P.O., State and ZIP Code St. Petersburg, FL 33733	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date Mailed: 7-12-94 Permit: AC64-191015 AC49-203114	

PS Form **3800**, JUNE 1991

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

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

4a. Article Number
P 872 563 644

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery JUL 18 1994

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form **3811**, December 1991 ☆U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

P 872 563 644

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to Mr. W. Jeffrey Pardue, FPC	
Street and No. P O Box 14042	
P.O., State and ZIP Code St. Petersburg, FL 33733	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date Mailed: 7-15-94 Permit: AC 49-203114	

PS Form 3800, JUNE 1991

P 872 562 507

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Mr. W. Jeffrey Pardue	
Street and No. P. O. Box 14042	
P.O., State and ZIP Code St. Petersburg, FL 33733	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date Mailed: 12/14/93 AC 49-203114, PSD-FL-180	

PS Form **3800**, JUNE 1991

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. W. Jeffrey Pardue
C.E.P. Manager
Florida Power Corporation
P. O. Box 14042
St. Petersburg, Florida 33733

4a. Article Number
P 872 562 507

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
DEC 16 1993

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form **3811**, December 1991 ☆U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

BEST AVAILABLE COPY

P 872 562 498

Receipt for Certified Mail

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Mr. Jeffrey Pardue	
Street and No. P. O. Box 14042	
P.O., State and ZIP Code St. Petersburg, FL 33733	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date Mailed: 11/19/93 AC 49-203114, PSF-FL-180	

PS Form **3800**, JUNE 1991

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

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

4a. Article Number
P 372 562 498

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
NOV 22

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form **3811**, December 1991 ☆U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

P 230 524 282

Receipt for Certified Mail

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to Mr. W. Jeffrey Pardue	
Street and No. P. O. Box No. 14042	
P.O., State and ZIP Code St. Petersburg, FL 33733	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date Mailed: 10/11/93 AC 49-203114, PSD-FL-180	

PS Form 3800, June 1991

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. W. Jeffrey Pardue, C.E.P.
Environmental Programs
Florida Power Corporation
P. O. Box No. 14042
St. Petersburg, FL 33733

4a. Article Number
P 230 524 282

4b. Service Type
- ☐ Registered
- ☐ Insured
- ☒ Certified
- ☐ COD
- ☐ Express Mail
- ☐ Return Receipt for Merchandise

7. Date of Delivery
OCT 13 1993

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991 ☆U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

Florida Power CORPORATION

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

REMITTANCE ADVICE

89

CHECK DATE 08/16/93 VENDOR FLA DEPT OF ENVIRONMENTAL VENDOR NO. 272500 CHECK NO. 1560499

INVOICE NO.	DATE	OUR ORDER NO.	VOUCHER	GROSS AMOUNT	DISCOUNT	NET AMOUNT
FL0805250 CK097274	08/05/93		9308136226	250.00	.00	250.00
					TOTAL	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

63-656
631

0000322

DATE 08/16/93 CHECK NO. 1560499

PAY: $250*DOLLARS AND 00 CENTS $*******250.00

Sun Bank of Tampa Bay
Tampa, Florida

Void after 60 days

TO THE ORDER OF

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

Jeffrey N Heinicka

Treasurer

[redacted]

Florida Power
CORPORATION

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

REMITTANCE ADVICE

89

CHECK DATE 08/16/93 VENDOR FLA DEPT OF ENVIRONMENTAL VENDOR NO. 272500 CHECK NO. 1560499

INVOICE NO.	DATE	OUR ORDER NO.	VOUCHER	GROSS AMOUNT	DISCOUNT	NET AMOUNT
FL0805250	08/05/93		9308136226	250.00	.00	250.00
CK097274						
					TOTAL	250.00

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

P 230 523 748

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to W. Jeffrey Pardue, C.E.P.	
Street and No. P. O. Box 14042	
P.O., State and ZIP Code St. Petersburg, FL 33733	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date Mailed: 8-3-93 Permit: AC49-203114	

PS Form 3800, June 1991

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. W. Jeffrey Pardue, C.E.P., Mgr.
Environmental Programs
Florida Power Corporation
P. O. Box No. 14042
St. Petersburg, Florida 33733

4a. Article Number
P 230 523 748

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
AUG 5 1993

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form 3811, December 1991 ☆U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

P 062 921 989

Receipt for Certified Mail

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Mr. R. W. Neiser, FPC	
Street and No. 3201-34th Street South	
P.O., State and ZIP Code St. Petersburg, FL 33733	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date Mailed: 8-17-92 Permit: AC 49-203114 PSD-FL-181	

PS Form **3800**, June 1991

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- *Write "Return Receipt Requested" on the mailpiece below the article number.*
- The Return Receipt Fee will provide you the signature of the person delivered to and the date of delivery.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. R. W. Neiser
Florida Power Corporation
3201-34th Street South
St. Petersburg, FL 33733

4a. Article Number
P 062 921 989

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery AUG 20 1992

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form **3811**, November 1990 ☆U.S. GPO: 1991—287-066 **DOMESTIC RETURN RECEIPT**

BEST AVAILABLE COPY

P 710 058 482

Certified Mail Receipt

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to W W Viverday	
Street & No. Fla Power Corp	
P.O., State & ZIP Code St. Pete, Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Address of Delivery	
TOTAL Postage & Fees	$
Postmark or Date 5-27-92 AC49-203114 P50-FL-180	

PS Form **3800**, June 1990

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt Fee will provide you the signature of the person delivered to and the date of delivery.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
W.W. Viverday
Legal & Governmental Affairs
Fla. Power Corp
3201 34th St. S.
St. Petersburg, Fl 33733

4a. Article Number
P 710 058 482

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery MAY 29 1992

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

RECEIPT

P 710 058 536

Certified Mail Receipt
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to Mr. W. W. Vierday	
Street & No. Legal & Governmental Affairs FL Power Corp.	
P.O., State & ZIP Code 3201 34th Street South St. Petersburg, FL 33733	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Address of Delivery	
TOTAL Postage & Fees	$
Postmark or Date mailed: 5/22/92 AC 49-203114 & PSD-FL-180	

PS Form **3800**, June 1990

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece next to the article number.

I also wish to receive the following services (for an extra fee):
1. ☒ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. W. W. Vierday
Legal & Governmental Affairs
Florida Power Corp.
3201 34th Street South
St. Petersburg, FL 33733

4a. Article Number
P 710 058 536

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
5/27/92

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)
3201 34th St. S.
St. Pete 33711

PS Form **3811**, October 1990 ☆U.S. GPO: 1990—273-861 **DOMESTIC RETURN RECEIPT**

P 832 538 788

Certified Mail Receipt
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to Mr. R. W. Neiser, FPC	
Street & No. 3201 34th Street South	
P.O., State & ZIP Code St. Petersburg, FL 33733	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Address of Delivery	
TOTAL Postage & Fees	$
Postmark or Date Mailed: 3-10-92 Permit: AG 49-203114 PSD-FL-180	

PS Form **3800**, June 1990

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt Fee will provide you the signature of the person delivered to and the date of delivery.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. R. W. Neiser, Sr. Vice Pres.
Legal and Governmental Affairs
Florida Power Corp.
3201 34th Street South
St. Petersburg, FL 33733

4a. Article Number
P 832 538 788

4b. Service Type
☐ Registered ☐ Insured
XX Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
MAR 12 1992

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form **3811**, November 1990 ☆U.S. GPO: 1991—287-066 **DOMESTIC RETURN RECEIPT**

March 6, 1991 — should be 1992

RECEIVED
MAR 20 1992
Division of Air
Resources Management

Ms. Teresa Heron
Bureau of Air Regulation
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Subject: Osceola County - A.P.
Intercession City Combustion Turbines
AC 49-203114, PSD-FL-180

Dear Ms. Heron:

This correspondence clarifies the statement on page 2-1 of the report that requests an average operation of 3,390 hours per year for the six CT's (i.e., an average capacity factor of 38.7 percent) but would allow any one CT to operate up to 8,760 hours per year. Such a condition was included in permit for Florida Power Corporation's DeBary CT project (AC64-191015, PSD-FL-167). Specific Condition No. 4 restricted the maximum hourly heat input and the fuel use for each CT, and restricted the 6 CTs to a maximum annual fuel usage equivalent to 3,390 hours per year. This condition allows any one CT to operate more than 3,390 hours per year as long as the cumulative operation of the 6 CTs would not exceed the maximum annual fuel usage. This provides operational flexibility to operate the 6 CTs as required up to a plant capacity factor of 38.7 percent and would limit total SO_2 emissions.

For the Intercession City Project, a similar condition is requested. The condition requested for the 4 GE Frame EA machines are:

4. The permitted materials and utilization rates for the simple cycle gas turbines shall not exceed: (a) a maximum heat input of 1,144.3 MM Btu/hr/unit at 20°F. (b) a maximum No. 2 fuel oil consumption of 8,698 gallons/hr/unit or 106,120,560 gallons/year for 4 CTs. (c) SO_2 emissions for the 4 CTs shall not exceed 2,257 tons per year. (d) the maximum capacity factor for the 4 CTs shall not exceed 38.7 percent.

The condition requested for the 2 GE Frame FA machines are:

4. The permitted materials and utilization rates for the simple cycle gas turbines shall not exceed: (a) a maximum heat input of 2,032 MM Btu/hr/unit at 20°F. (b) a maximum No. 2 fuel oil consumption of 15,452 gallons/hr/unit or 97,238,760 gallons/year for 2 CTs. (c) SO_2 emissions for the 2 CTs shall not exceed 2,068 tons per year. (d) the maximum capacity factor for the 2 CTs shall not exceed 38.7 percent.

KBN ENGINEERING AND APPLIED SCIENCES, INC.
1034 Northwest 57th Street Gainesville, Florida 32605 904/331-9000 FAX: 904/332-4189

KBN

91015/kfk/mlb

KBN ENGINEERING AND APPLIED SCIENCES, INC.
1034 Northwest 57th Street Gainesville, Florida 32605

GAINESVILLE FL MAR 18'92

U.S. POSTAGE 0.29 METER 2564719

Patty:
file
I have a copy

Ms. Teresa Heron
Bureau of Air Regulation
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

P 832 538 780

Certified Mail Receipt
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to Mr. R. W. Neiser, FPC	
Street & No. 3201 34th Street South	
P.O., State & ZIP Code St. Petersburg, FL 33733	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Address of Delivery	
TOTAL Postage & Fees	$
Postmark or Date Mailed: 2-21-92 Permit: AC 49-203114	

PS Form 3800, June 1990

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt Fee will provide you the signature of the person delivered to and the date of delivery.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. R. W. Neiser
Sr. Vice-President
Florida Power Corp.
3201 34th Street South
St. Petersburg, FL 33733

4a. Article Number
P 832 538 780

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
FEB 24 1992

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, November 1990 ☆U.S. GPO: 1991—287-066 **DOMESTIC RETURN RECEIPT**

P 617 884 184

Certified Mail Receipt

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to R. W. Neiser	
Street & No. Legal & Gov't Affairs	
P.O., State & ZIP Code Fla. Power Corp	
Postage St. Pete	$ Fl
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Address of Delivery	
TOTAL Postage & Fees	$

Postmark or Date 11-1-91
PSD-F1-180
AC 49-203114

PS Form 3800, June 1990

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece next to the article number.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. R.W. Neiser, S.V.P.
Legal & Gov't Affairs
Fla. Power Corp.
3201 34th St. South
St. Petersburg, Fl 33733

4a. Article Number
P 617 884 184

4b. Service Type
☐ Registered ☐ Insured
☑ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
5

8. Addressee's Address (Only if requested and fee is paid)

5. Signature (Addressee)

6. Signature (Agent)
[signature]

PS Form 3811, October 1990 ☆U.S. GPO: 1990—273-861 DOMESTIC RETURN RECEIPT

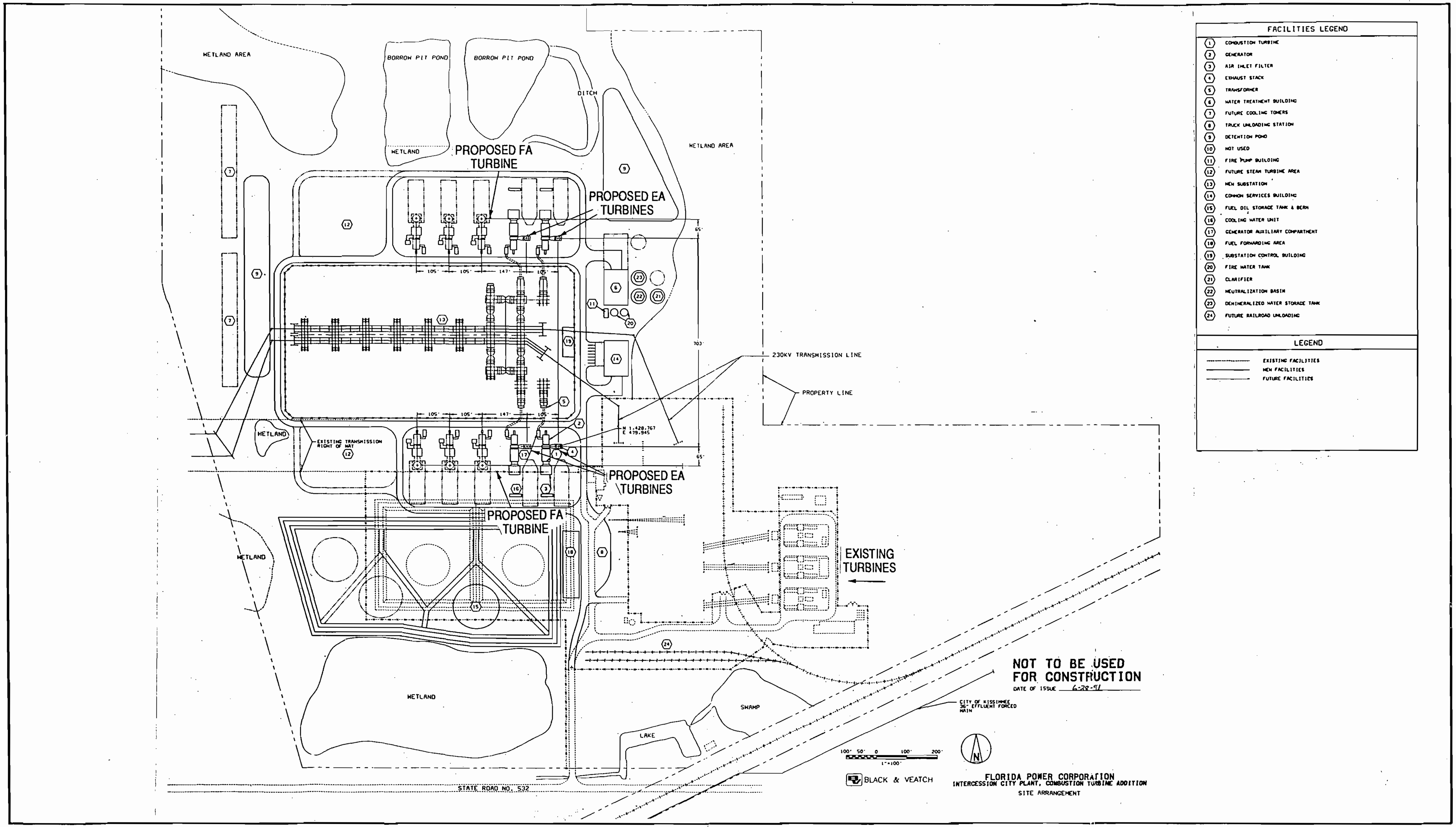

Figure 1-2 SITE PLAN OF THE EXISTING TURBINES AND PROPOSED TURBINES

KBN

PSD-FL-180 PERMITTING HISTORY

Company Name: Florida Power Corporation **Facility ID No.: 0970014**
Plant Name: Intercession City Power Plant

PSD Permit History (for tracking purposes):

Permit No.	Issue Date	PERMITTING ACTION DESCRIPTION
PSD-FL-180	8/17/92	Permit issued to construct/install six (6) combustion turbines. Oil fired. Peaking Units.
PSD-FL-180A	10/6/93	Permit modification to clarify wording of certain specific conditions. Refer to specific conditions.
PSD-FL-180B	11/15/93	Permit modification to specify No.2 fuel oil rather than numerical values as control for emissions from metals.
PSD-FL-180C	7/15/94	Modification for the substitution of a new 117 MW Siemmens V84.3 CT for two permitted 185.5 MW GE Frame 7FA CTs
PSD-FL-180D	9/23/94	Modification to clarification of language concerning heat input vs temperature curve and a request to incorporate fuel bound NOx & ISO NOx emission limit.
PSD-FL-180E	1/24/95	Modification of Specific Condition No. 8.
PSD-FL-180F	8/11/95	Modification to allow the burning of natural gas as a supplemental fuel for Units P7 to P11.
PSD-Fl-180G	12/16/97	Amendment to include EPA Custom Fuel Monitoring Schedule
PSD-Fl-180H 0970014-002AC	5/17/99	Modification to install inlet foggers in four 93 MW natural gas and fuel fired GE PG 7111EA CTs.

Appendix H-1, Permit History/ID Number Changes

Florida Power Corporation
Intercession City

Facility ID No.: 0970014-001-AV

Permit History (for tracking purposes):

E.U. ID No	Description	Permit No.	Issue Date	Expiration Date	Extended Date	Revised Date(s)
-001	Combustion Turbine Peaking Unit #1	AO49-176549	07/20/90	01/15/96		
-001	Combustion Turbine Peaking Unit #2	AO49-176549	07/20/90	01/15/96		
-001	Combustion Turbine Peaking Unit #3	AO49-176549	07/20/90	01/15/96		
-001	Combustion Turbine Peaking Unit #4	AO49-176549	07/20/90	01/15/96		
-001	Combustion Turbine Peaking Unit #5	AO49-176549	07/20/90	01/15/96		
-001	Combustion Turbine Peaking Unit #6	AO49-176549	07/20/90	01/15/96		
-002	92.9 MW Simple Cycle Gas CT	AC49-203114/	08/17/92	12/31/95		10/06/93
-002	92.9 MW Simple Cycle Gas CT	PSD-FL-180				11/15/93
-002	92.9 MW Simple Cycle Gas CT					07/15/94
-002	185.5 MW Simple Cycle Gas CT					01/20/95
-003	185.5 MW Simple Cycle Gas CT					

(if applicable) ID Number Changes (for tracking purposes):
From: **Facility ID No.:** 30ORL4900014
To: **Facility ID No.:** 0970014

Notes:
1 - AO permit(s) automatic extension(s) in Rule 62-210.300(2)(a)3.a., F.A.C., effective 03/21/96.
2 - AC permit(s) automatic extension(s) in Rule 62-213.420(1)(a)4., F.A.C., effective 03/20/96.
{Rule 62-213.420(1)(b)2., F.A.C., effective 03/20/96, allows Title V Sources to operate under existing valid permits}

Detail | **Events** | **Facility** | **perMitted EU** | **Help** | **eXit**

Permitting Application

Permit #:**0970014-001-AV** PATS: Issue:**31-DEC-1997** Expire:**31-DEC-2002**

Project #/Name	Owner/Company	Type/Sub	Receive
001/INTERCESSION CITY PLANT	**FLORIDA POWER CORPORTATION**	**AV /00**	**14-JUN-1996**
002/FPC-INTERCESSION CITY	FLORIDA POWER CORPORTATION	AC /1D	24-FEB-1999
003/FPC-INTERCESSION CITY PLA	FLORIDA POWER CORPORTATION	AC /1A	25-MAY-1999
004/FPC-INTERCESSION CITY T5	FLORIDA POWER CORPORTATION	AV /02	27-DEC-1999
/FLORIDA POWER/INTERCESSIO	FLORIDA POWER CORPORTATION	AO /99	25-FEB-1985
/FLORIDA POWER/INTERCESSIO	FLORIDA POWER CORPORTATION	AO /00	20-FEB-1990
/FLORIDA POWER/INTERCESSIO	FLORIDA POWER CORPORTATION	AC /1A	03-OCT-1991
/INTERCESSION CITY #1 AC49	FLORIDA POWER CORPORTATION	AC /M1	28-APR-1995
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Your query has retrieved 8 records.

Count: *8 <Replace>

→ P 5/13

Check Sheet

Company Name: Florida Power ~~Light~~
Permit Number: AC 49-203114
PSD Number:
County: PSDFL-180
Permit Engineer:
Others involved:

Cross Ref
AC01-264652,
PSDFL-181

Application:

- [x] Initial Application
- [x] Incompleteness Letters
- [x] Responses
- [ ] Final Application (if applicable)
- [ ] Waiver of Department Action
- [ ] Department Response
- [ ] Other

Intent:

- [x] Intent to Issue
- [x] Notice to Public
- [x] Technical Evaluation
- [x] BACT Determination
- [x] Unsigned Permit
- [ ] Correspondence with:
  - [x] EPA
  - [ ] Park Services
  - [ ] County
  - [ ] Other
- [x] Proof of Publication
- [ ] Petitions - (Related to extensions, hearings, etc.)
- [ ] Other

Final Determination:

- [x] Final Determination
- [x] Signed Permit
- [x] BACT Determination
- [ ] Other

Post Permit Correspondence:

- [ ] Extensions
- [x] Amendments/Modifications
- [x] Response from EPA
- [ ] Response from County
- [ ] Response from Park Services
- [x] Other