

PSD-FL-0014
FPC SUWANNEE
LIVE OAK

Final Determination

Review of a Proposed Air Pollution Source Pursuant to Environmental
Protection Agency Rules for the Prevention of Significant Deterioration (PSD)

40 CFR 52.21

Suwannee River Power Plant

Four Gas Turbine Peaking Units

Florida Power Corporation, St. Petersburg, Florida

U.S. Environmental Protection Agency
345 Courtland Street, N.E.
Atlanta, Georgia 30308

I. Introduction

The Florida Power Corporation has applied to the U.S. Environmental Protection Agency to construct four 63 megawatt oil-fired gas turbine peaking units at its Suwannee River Power Plant located in Suwannee County midway between the towns of Live Oak and Madison and on U.S. 90. The proposed construction is subject to review under 40 CFR 52.21, Regulations for the Prevention of Significant Deterioration (PSD). Under these regulations, a modification to a source of air pollution in any one of 28 specified categories which will increase the emission potential of that source by more than 100 tons per year of any pollutant, is subject to review for each of those pollutants. One of these categories is fossil fuel-fired steam electric plants of more than 250 million BTU per hour heat input, of which the Suwannee Plant is one.

Paragraph (c) of the PSD regulations requires, in part, that EPA issue a Preliminary Determination whether the source should be approved, approved with conditions, or disapproved. On April 27, 1979, EPA made a Preliminary Determination that the proposed source could be approved with conditions. The Preliminary Determination was advertized for public comment in three local newspapers and placed on display at the Suwannee County Courthouse. The only comment received was from the applicant, regarding the restriction on yearly hours of operations.

After verbal discussion with Mr. W. W. Vierday, EPA determined that the applicant had further reviewed this condition and no longer objected to it. However, Mr. Vierday requested that the log required by Condition 6 be a monthly log (rather than hourly or daily) since the new units would be equipped with integrating meters measuring both hours of operation and fuel usage. This request has been granted, and Condition 6 is modified accordingly. All other conditions remain the same as those in the Preliminary Determination. It is the decision of EPA that the source should be approved with conditions. The conditions are included to insure that the applicant complies with emission control techniques and emission limits which are a part of the application. The conditions of approval follow on the next page.

Conditions for Florida Power Corporation's Proposed Suwannee
Park Peaking Units (Gas Turbines)

As required pursuant to 40 CFR 52.21(d)(2)(ii), a review was conducted to determine if the proposed peaking units would apply the best available control technology. Based on this review, it was determined that the applicant (Florida Power Corporation) must meet emission limits and other requirements as specified by the U.S. Environmental Protection Agency's Standard of Performance for Stationary Gas Turbines proposed on October 3, 1977 (40 CFR 60, Subpart GG).

Condition I. Standards for Nitrogen Oxides

On and after the date on which the performance test required to be conducted by 40 CFR 60.8 is completed, the applicant shall not cause to be discharged into the atmosphere

(1) From any gas turbine with a heat rate at peak load of less than or equal to 14.4 kilojoules per watt hour, based on the lower heating value of the fuel fired, any gases which contain nitrogen oxides in excess of:

$$STD = 0.0075 \frac{14.4}{Y} + F$$

where:

STD = allowable NO_x emission (percent by volume at 15 percent oxygen and on a dry basis).

Y = manufacturer's rated heat rate at peak load (kilojoules per watt hour).

F = NO_x emission allowance for fuel-bound nitrogen as defined in part (3) of this paragraph.

(2) F shall be defined according to the nitrogen content of the fuel as follows:

Fuel-bound nitrogen (percent by weight)	F (NO _x by volume)
N < 0.015	0
0.015 < N < 0.1	0.04(N)
0.1 < N < 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).

Condition 2. Standard for Sulfur Dioxide

(a) On and after the date on which the performance test required to be conducted by 40 CFR 60.8 is completed, the applicant shall not cause to be discharged into the atmosphere from any stationary gas turbine any gases which contain sulfur dioxide in excess of a 0.015 percent by volume at 15 percent oxygen and on a dry basis.

(b) The sulfur content of the fuel fired by the gas turbine may be used to determine compliance with paragraph (a) of this section. Under such circumstances, on and after the date on which the performance test required to be conducted by 40 CFR 60.8 is completed, the applicant shall not burn in any stationary gas turbine any fuel which contains sulfur in excess of 0.8 percent by weight.

Condition 3. Monitoring of Operations

(a) If water injection is used to control NO_x emissions, the applicant shall install and operate a continuous monitoring system to monitor and record the fuel consumption and the ratio of water to fuel being fired in the turbine. This system shall be accurate to within [±] 5.0 percent and shall be approved by the Administrator.

← 3%
0.5
H₂O/
fuel
by wt.

(b) The applicant shall record daily the sulfur content, nitrogen content, and lower heating value of the fuel being fired in the gas turbine.

(c) For the purpose of reports required under 40 CFR 60.7(c), periods of excess emissions that shall be reported are defined as follows:

(1) Nitrogen oxides. Any one-hour period during which the average water-to-fuel ratio, as measured by the continuous monitoring system, falls below the water-to-fuel ratio determined to demonstrate compliance with 40 CFR 60.332 by the performance test required in 40 CFR 60.8. Each report shall include the average water-to-fuel ratio, average fuel consumption, ambient conditions and nitrogen content of the fuel during the period of excess emissions, and the graphs or figures developed under 40 CFR 60.335(a).

(2) Sulfur dioxide. Any daily period during which the sulfur content of the fuel being fired in the gas turbine exceeds 0.8 percent.

Condition 4. Stack Testing

(a) Within sixty (60) days after achieving the maximum production rate at which the source will be operated, but no later than 180 days after initial startup, the applicant shall conduct or cause to be conducted, performance test(s) and furnish the Administrator with a written report of the results of such performance test(s). The results of the performance test(s) shall be submitted to the Administrator within thirty (30) days of the completion of said testing.

(b) Nitrogen oxide and sulfur dioxide performance tests shall be conducted and data reduced in accordance with methods and procedures approved by the Administrator.

(c) The applicant shall provide the Administrator thirty (30) days prior notice of the date of the performance test(s) to afford the opportunity to have an observer present.

(d) All required continuous monitoring systems shall be installed, calibrated, and operating when the performance test(s) are conducted.

(e) The applicant shall provide performance test reports which comply with criteria more fully described in 40 CFR 60, Appendix A.

Condition 5. NO_x Emission Control System

The applicant must submit technical data to the Administrator within ten (10) working days after it becomes available pertaining to the selected NO_x emissions control system. These data would include, but not be limited to, a copy of the formal bid from the successful bidder, guaranteed efficiency or emission rate, and major design parameters such as water/fuel ratio. If "dry" control techniques are to be used, to control NO_x emissions, the applicant must submit test data and other appropriate information for existing similarly sized gas turbines (i.e., approximately 63 MW) to show that dry control techniques are capable of achieving emission limits given in Condition 1 above. The Administrator, upon review of these data, may revoke or modify this application if evaluation of these data is different from data in the application in such a way that it would cause the control system to be inadequate to meet the emission limits specified above.

Condition 6. The turbines shall not operate more than 1500 hours per year. A log shall be kept at the plant, showing hours of operation and the amount of fuel used. This log will be available for inspection at the plant at any time.

II. Background

On March 21, 1978, Florida Power Corporation submitted a letter and attachments to EPA to apply under the PSD regulations to construct four combustion turbines at the Suwannee Power Plant. On August 5, 1978, further information was submitted which completed the application. The proposed construction is subject to EPA Regulations for the Prevention of Significant Air Quality Deterioration promulgated on June 19, 1978.

III. Review Requirements

The pollutants for which potential emissions are greater than 100 tons per year, and therefore subject to review, are sulfur dioxide, nitrogen oxides and carbon monoxide. Review of control technology and ambient impacts is required.

Certain portions of the PSD review may not be required if the proposed modification is subject to EPA's interpretative ruling, or if the source is a nonprofit health or education institution, or if the source has previously received approval under PSD and is only relocating. None of these exemptions applies in this case.

Other exemptions can apply to control technology review and ambient impact review. For control technology review, if allowable emissions of any pollutant are less than 50 tons per year, 1000 pounds per day and 100 pounds per hour, or if a modification is made to an existing facility and the emissions are offset by reductions elsewhere, review may not be required. None of these exemptions applies.

For ambient impact review and monitoring requirements, other exemptions are provided for. In addition to the allowable emission threshold, there are exemptions for temporary sources and for sources whose net emissions, after considering decreases, do not increase. None of these exemptions apply to the proposed turbines.

The one exemption which does apply is for air quality monitoring. Since a complete application was submitted before August 7, 1978, no preconstruction monitoring is required.

A. Control Technology Review

The applicant is required to install best available control technology (BACT) for each pollutant, taking into account energy, environmental and economic impacts and other costs. EPA concludes that the systems proposed by the applicant represents BACT for SO₂ and nitrogen oxides. There is currently no applicable technology for reduction of carbon monoxide beyond what is accomplished in the combustion chamber.

L. Sulfur Dioxide

The applicant has proposed to burn 0.5% sulfur distillate fuel oil. At the time the application was submitted, EPA had proposed a revision to the New Source Performance Standards (40 CFR 60) for stationary gas turbines. Part of this revision includes a requirement for burning no fuel which contains sulfur in excess of 0.8 percent by weight. This requirement is considered BACT, and is included as a condition of approval.

2. Nitrogen Oxides

The applicant has proposed to limit nitrogen oxide emissions to 75 ppm (adjusted for heat rate and fuel-bound nitrogen) by water injection. At the time the application was submitted, EPA had proposed a revision to the New Source Performance Standards (40 CFR 60) for stationary gas turbines. Part of this revision includes a requirement to limit nitrogen oxide emissions to 75 ppm. This requirement represents BACT and is included as a condition of approval.

B. Applicability of NSPS

As of this date, EPA has proposed revisions to the New Source Performance Standards for stationary gas turbines. Any future promulgation which applies to stationary gas turbines and is more stringent than any condition of approval, will supercede the conditions of approval.

C. Impact Review

The PSD regulations require the following air quality impacts to be assessed by the applicant:

- 1) National Ambient Air Quality Standards (NAAQS)
- 2) PSD increments
- 3) Visibility, soils and vegetation
- 4) Impacts due to growth caused by proposed source

All of these impacts were assessed by the applicant. Air quality modelling showed no violations of the NAAQS with all sources in the area of the Suwannee in operation. Likewise, the PSD increment analysis showed no violations with the four turbines operating at maximum load.

The maximum predicted ambient concentrations with the proposed turbines in operation are presented in the following table:

Scenario	Concentrations (ug/m ³)		
	Sulfur Dioxide		
	Annual Average	24-Hour Maximum	3-Hour Maximum
Maximum Predicted 1981 Concentration in vicinity of Suwannee River Plant	10	184	851
State of Florida Standards	60	260	1300
Federal Secondary Standards	--	--	1300
Federal Primary Standards	80	365	--

The maximum consumption of the Class II PSD increments caused by proposed turbines are presented in the following table:

<u>Increment</u>	<u>Pollutant</u>
Annual	10%
24-Hour	11%
3-Hour	10%

Impacts on visibility, soils and vegetation and on air quality due to growth were judged to be minimal.

The closest Class I area is Okefenokee National Wildlife Refuge in Georgia, about 75 KM to the east-northeast from the plant site.

The maximum consumption of the Class I PSD increments caused by the proposed turbines are presented in the following table:

<u>Increment</u>	<u>Pollutant</u>
Annual	10%
24-Hour	40%
3-Hour	56%



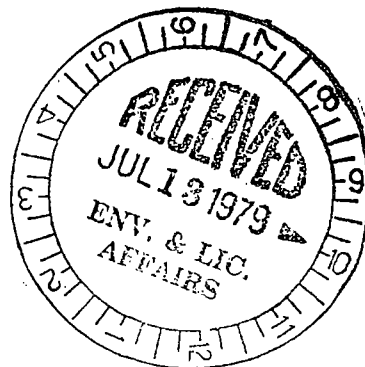
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30308

REF: 4AH-AP

Mr. W. W. Vierday
Manager
Licensing Affairs
Florida Power Corporation
3201 Thirty-Fourth Street South
P.O. Box 14042
St. Petersburg, Florida 33733



Dear Mr. Vierday:

Review of your August 5, 1978, application to construct four combustion turbines at your Suwannee Power Plant has been completed. The construction is subject to rules for the Prevention of Significant Air Quality Deterioration (PSD), contained in 40 CFR 52.21.

We have determined that the construction as described in the application meets all applicable requirements of the PSD regulations, subject to the conditions in the final determination (enclosed). EPA made a Preliminary Determination concerning the proposed construction, and published a request for public comment on May 5, 1979. The only comments received were from you. Authority to Construct a stationary source is hereby issued for the facility described above, subject to the conditions in the final determination. This Authority to Construct is based solely on the requirements at 40 CFR 52.21, the federal regulations governing significant deterioration of air quality. It does not apply to NPDES or other permits issued by this agency or permits issued by other agencies. Information regarding EPA permitting requirements can be provided if you contact Mr. Joe Franzmathes, Director, Office of Program Integration and Operations, at 404/881-4727. Additionally, construction covered by this Authority to Construct must commence within 18 months from the receipt of this letter.

The United States Court of Appeals for the District of Columbia Circuit issued a ruling in the case of Alabama Power v. Costle which has significant impact on the EPA prevention of significant deterioration (PSD) program and permits issued thereunder. Although the court has stayed its decision pending resolution of petitions for reconsideration, it is probable that the final decision will require modification of the PSD regulations and could affect permits issued under the existing program. Examples of potential impact areas include the scope of the best available control technology requirement (BACT), source applicability, the amount of increment available (baseline definition), and the extent of preconstruction monitoring that a source may be required to perform. The applicant is hereby advised that this permit may be subject to reevaluation as a result of the terms of the final court decision and its ultimate effect.

Please be advised that a violation of any condition issued as part of this approval, as well as any construction which proceeds in material variance with information submitted in your application, will be subject to enforcement action.

Authority to Construct will take effect on the date of this letter. The complete analysis which justifies this approval has been fully documented for future reference, if necessary. Any questions concerning this approval may be directed to Mr. Ray Cunningham, Chief, Air Strategy Development Section (404/881-3286).

Sincerely yours,



Thomas W. Devine, Director
Air & Hazardous Materials Division

Enclosure

cc: Dr. J.P. Subramani, Chief
Bureau of Air Quality Management
Fla. Department of Environmental Regulation