UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

OCT 1 5 1981

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Heywood A. Turner
Senior Vice President Production
Tampa Electric Company
Post Office Box 111
Tampa, Florida 33601

Re: PSD-FL-040 / Tampa Electric Company
Big Bend Station, Unit 4

Dear Mr. Turner:

The review of your March 1980 application to construct a coal-fired steam electric generating unit (Unit 4) located at Big Bend Station near Ruskin, Florida, has been completed. The construction is subject to rules for the Prevention of Significant Air Deterioration (PSD) contained in 40 C.F.R. §52.21.

We have determined that the construction as described in the application meets all applicable requirements of the PSD regulations. Accordingly, enclosed with this letter is your permit package including a Permit to Construct, Part I: Specific Conditions, and Part II: General Conditions. This authorization to construct is based solely on the requirements of 40 C.F.R. §52.21 and does not apply to other permits issued by this or any other agency.

This final permit decision is subject to appeal under 40 C.F.R. §124.19 by petitioning the Administator of the EPA within 30 days after receipt of this notice of the final permit decision. The petitioner must submit a statement of reasons for the appeal and the Administrator must decide on the petition within a reasonable time period. If the petition is denied, the permit becomes immediately effective. The petitioner may then seek judicial review.

Authority to construct this facility will take effect on the date specified in the permit. The complete analysis which justifies this approval has been fully documented for future reference is necessary. Any questions concerning this approval may be directed to Mr. Richard Schutt, Chief, Permit Processing Section, at 404/881-2017.

Sincerely yours,

James T. Wilburn for

Howard D. Zeller
Acting Director
Enforcement Division

cc: Mr. Steve Smallwood, FL DER

OCT 1981
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Permit No.: PSD-FL-040

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

PERMIT TO CONSTRUCT UNDER THE RULES FOR THE PREVENTION OF SIGNIFICANT DETERIORATION OF AIR QUALITY

Pursuant to and in accordance with the provisions of Part C, Subpart 1 of the Clean Air Act, as amended, 42 U.S.C. § 7470 et seq., and the regulations promulgated thereunder at 40 C.F.R. § 52.21, as amended at 45 Fed. Reg. 52676, 52735-41 (August 7, 1980),

Tampa Electric Company
Post Office Box 111
Tampa, Florida 33601

is hereby authorized to construct/modify a stationary source at the following location:

Big Bend Station, Unit 4
Tampa Electric Company
Ruskin, Florida

UTM Coordinates: 361.6 East, 3075.0 North

Upon completion of this authorized construction and commencement of operation/production, this stationary source shall be operated in accordance with the emission limitations, sampling requirements, monitoring requirements and other conditions set forth in the attached Specific Conditions (Part I) and General Conditions (Part II).

This permit shall become effective on November 14, 1981.

If construction does not commence within 18 months after the effective date of this permit, or if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time this permit shall expire and authorization to construct shall become invalid.

This authorization to construct/modify shall not relieve the owner or operator of the responsibility to comply fully with all applicable provisions of Federal, State, and Local law.

12/15/81
Date Signed

Howard D. Zeller
Acting Director
Enforcement Division

PART I: SPECIFIC CONDITIONS

1. The proposed steam generating station shall be constructed and operated in accordance with the capabilities and specifications of the application including the 417 megawatt net generating capacity and the 4330 MMBtu/hr heat input rate.

2. Emissions shall not exceed the allowable emission limits listed in Table 1 for SO_2, NO_x, PM, and CO.

3. Compliance with the boiler allowable emission limits required in Condition 2 will be demonstrated with performance tests conducted in accordance with the provisions of 40 CFR 60.46a, 48a and 49a, including applicable test methods, sampling procedures, sample volumes, sampling periods, etc. Compliance with opacity limits on the limestone and flyash handling system baghouse, the limestone day silos and the flyash silos will be determined with EPA reference method 9 (Appendix A, 40 CFR 60). These facilities are exempted from mass emission rate compliance tests unless opacity limits are exceeded or the Administrator (or his representative) otherwise determines that such performance testing is required. All facilities will operate within 10 percent of maximum operating capacity during performance tests.

4. The applicant will install and maintain continuous monitoring and recording opacity meter, sulfur dioxide and nitrogen oxide analyzers, oxygen and/or CO_2 analyzer in accordance with the provisions of 40 CFR 60.47a.

5. The following requirements will be met to minimize fugitive emissions of particulate from the coal storage and handling facilities, the limestone storage and handling facilities, haul roads and general plant operations:

   a. All conveyors and conveyor transfer points will be enclosed to preclude PM emissions excepting the coal handling stacker reclaimer, the tail end conveyor feeding the tripper and the barge unloading belt which are exempted for feasibility considerations;

   b. Coal storage piles will be shaped, compacted and oriented to minimize wind erosion;

   c. Water sprays for storage piles, handling equipment etc., including the handling equipment exempted from the conveyor enclosure requirement, will be applied during dry periods and as necessary to all facilities to maintain opacity (determined with reference Method 9) below 20 percent;

   d. The limestone handling receiving hopper, conveyor transfer points and day silos will be maintained at negative pressures with the exhaust vented to a control system(s); and

   e. The flyash handling system (including transfer and silo storage) will be maintained at negative pressures and vented to a control system.

6. The applicant will perform post-construction continuous ambient monitoring of sulfur dioxide emissions in accordance with EPA Region IV policies and procedures and the guidance offered in "Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD), EPA-450/2-78-019, May 1978 and the quality

assurance procedures of 40 CFR 58 Appendix B. Such monitoring will be continued for a period of at least 1 year and until determined by the Administrator (or his representative) that the effects of the modification on ambient air quality have been quantified.

7. The applicant will comply with all requirements and provisions of the New Source Performance Standard for electric utility steam generating units (40 CFR 60 Part Da). In addition, the applicant must comply with the provisions and the requirements of the attached General Conditions.

8. While Tampa Electric Company has complied with the regulations entitling them to this PSD permit (40 CFR 52.21), this does not constitute an environmental endorsement of this permit nor does it in any way prejudge or predetermine the ongoing EIS review.

9. If it is determined through the NPDES permitting process or related EIS review, that cooling towers would be required for the construction and operation of the facility at this location, this permit would be revoked and a complete new application would be required addressing all new emissions and subsequent requirements for this new plant configuration.

10. The applicant must submit to EPA Region IV's Consolidated Permits Branch within five (5) working days after it becomes available, copies of all technical data pertaining to the selected control devices, including formal bids from vendors, guaranteed efficiencies or emission rates. Although the type of control equipment described in the application has been determined by EPA to be adequate, EPA may, upon review of the data, disapprove the application if EPA determines the selected devices to be inadequate to meet the emission limits specified in this conditional approval.

11. The applicant shall maintain records of all coal washing and preparation activities for any coal which is to be fired in Big Bend Unit No. 4. These reports shall be submitted to EPA on a quarterly basis.

1. The permittee shall notify the permitting authority in writing of the beginning of construction of the permitted source within 30 days of such action and the estimated date of start-up of operation.

2. The permittee shall notify the permitting authority in writing of the actual start-up of the permitted source within 30 days of such action and the estimated date of demonstration of compliance as required in the specific conditions.

3. Each emission point for which an emission test method is established in this permit shall be tested in order to determine compliance with the emission limitations contained herein within sixty (60) days of achieving the maximum production rate, but in no event later than 180 days after initial start-up of the permitted source. The permittee shall notify the permitting authority of the scheduled date of compliance testing at least thirty (30) days in advance of such test. Compliance test results shall be submitted to the permitting authority within forty-five (45) days after the complete testing. The permittee shall provide (1) sampling ports adequate for test methods applicable to such facility, (2) safe sampling platforms, (3) safe access to sampling platforms, and (4) utilities for sampling and testing equipment.

4. The permittee shall retain records of all information resulting from monitoring activities and information indicating operating parameters as specified in the specific conditions of this permit for a minimum of two (2) years from the date of recording.

5. If, for any reason, the permittee does not comply with or will not be able to comply with the emission limitations specified in this permit, the permittee shall provide the permitting authority with the following information in writing within five (5) days of such conditions:

   (a) Qualitative and quantitative description of noncomplying emission(s),

   (b) cause of noncompliance,

   (c) anticipated time the noncompliance is expected to continue or, if corrected, the duration of the period of noncompliance,

   (d) steps taken by the permittee to reduce and eliminate the noncomplying emission,

   and

   (e) steps taken by the permittee to prevent recurrence of the noncomplying emission.

   Failure to provide the above information when appropriate shall constitute a violation of the terms and conditions of this permit. Submittal of this report does not constitute a waiver of the emission limitations contained within this permit.

6. Any change in the information submitted in the application regarding facility emissions or changes in the quantity or quality of materials processed that will result in new or increased emissions must be reported to the permitting authority. If appropriate, modifications to the permit may then be made by the permitting authority to reflect any necessary changes in the permit conditions. In no case are any new or increased emissions allowed that will cause violation of the emission limitations specified herein.

7. In the event of any change in control or ownership of the source described in the permit, the permittee shall notify the succeeding owner of the existence of this permit by letter and forward a copy of such letter to the permitting authority. Such notification must be given prior to transfer of ownership.

8. The permittee shall allow representatives of the State environmental control agency and/or representatives (including contractors) of the Environmental Protection Agency, upon the presentation of credentials:

   (a) to enter upon the permittee's premises, or other premises under the control of the permittee, where an air pollutant source is located or in which any records are required to be kept under the terms and conditions of the permit;

   (b) to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit, or the Act;

   (c) to inspect at reasonable times any monitoring equipment or monitoring method required in this permit;

   (d) to sample at reasonable times any emission of pollutants;

   and

   (e) to perform at reasonable times an operation and maintenance inspection of the permitted source.

9. All correspondence required to be submitted by this permit to the permitting agency shall be mailed to the:

   Chief, Compliance Branch
   Enforcement Division, EPA Region IV
   345 Courtland Street, NE
   Atlanta, Georgia 30365

10. The conditions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

The emission of any pollutant more frequently or at a level in excess of that authorized by this permit shall constitute a violation of the terms and conditions of this permit.

TABLE 1

ALLOWABLE EMISSION LIMITS

Facility	SO_2		NO_x		PM		CO		
	lb/MMBtu	lb/hour	lb/MMBtu	lb/hr	lb/MMBtu	lb/hr	lb/MMBtu	lb/hr	Opacity
1. Unit 4 Boiler (4330 MMBtu/hr) Continuous Limit					0.03	130	0.014	61	20%[a]
30 Day Rolling Average	0.82	3576	0.6	2598					
2. Limestone and Handling System Baghouse						0.65[b]			5%
3. Limestone Day Silo						0.05[b]			5%
4. Flyash Silos and Handling System						0.2[b]			5%

[a] Not to be exceeded for more than one six minute period per hour and never to exceed 27 percent opacity.

[b] Exempt from compliance testing provided opacity limit is maintained.

Response to Comment on the Revised Preliminary Determination

Tampa Electric Company

PSD-FL-040

Comments were received from one source during the public comment period for Tampa Electric Company's (TECO) proposed electric generating unit (Big Bend Unit 4). The public comment period, which closed on September 2, 1981, was for the Revised Preliminary Determination issued in the Draft Environmental Impact Statement. A summary of the comments received and EPA Region IV responses are as follows:

Comment 1:

The commenter noted that a sentence in the BACT discussion for NO_x and CO referred to a requirement for a flue gas O_2 or CO_2 monitor. They felt it should have been deleted since the monitor requirement had been deleted.

Response 1:

That reference to the flue gas O_2 or CO_2 monitor was included in error. It has been omitted in the Final Determination.

Comment 2:

The commenter questioned the need to "always provide 25% or greater reduction in potential SO_2 emissions" through coal washing and preparation as they understand Condition 11 to require.

Response 2:

Condition 11 requires that "The applicant shall maintain records of all coal washing and preparation activities. . . "; however, in order to prevent any misinterpretation the reference to a minimum potential SO_2 emission removal will be stricken. Condition 11 will remain in the Final Determination but will be reworded for clarity and precision.

Comment 3:

The commenter noted that the potential annual SO_2 emissions in Table I was incorrect.

Response 3:

The correct number of 15,552 tons/yr will be inserted in the Final Determination.

Comments on EPA's Preliminary Determination on
the Big Bend Unit 4 PSD Application

p. E-5

In the discussion of BACT for NO_x and CO, the sentence "An attachment to this preliminary determination summary specifies combustion control requirements to balance the trade-offs between NO_x and CO emissions through the use of a flue gas oxygen or CO_2 monitor." should be deleted since the attachment and requirements have been deleted from the preliminary determination as noted in the response to Comment No. 3 on page E-23.

p. E-14 (Condition No. 11)

The applicant will demonstrate compliance with the NSPS requirements for percent reduction of potential sulfur dioxide emissions by monitoring coal characteristics and flue gas sulfur dioxide content, and through other procedures established in 40 CFR Subpart Da, as discussed on p. E-4. The BACT analysis assumed 25% reduction in potential sulfur dioxide emissions (not sulfur) through coal washing and preparation. This assumption was based on coal washing data indicating 25% reduction is possible. However, should the coal washing and preparation not always provide 25% or greater reduction in potential SO_2 emissions, flexibility has been designed into the control equipment to achieve an overall reduction in potential SO_2 emissions of 90%. For these reasons, Condition No. 11 should be deleted.

p. E-17, Table 1

The potential emissions of SO_2 should be 15,552 tons/hr to reflect the 0.82 lbs. SO_2/MMBTU emission rate.

(Submitted by Mr. Heywood A. Turner at the EIS Public Hearing on August 19, 1981; to be entered into the official record.)

RESPONSE TO COMMENT

TAMPA ELECTRIC COMPANY

(PSD-FL-040)

One letter of comment was received during the public comment period for Tampa Electric Company's (TECO) proposed electric generating unit (Big Bend Unit 4). The Public Notice was published December 31, 1980. Due to a substantial error in the BACT evaluation for the SO_2 emission limit, EPA has decided to issue this revised Preliminary Determination for public comment prior to a Final Determination. A summary of the substantive comments received and EPA Region IV responses are as follow:

Comment 1:

The commenter pointed out that the basis for the SO_2 allowable emission limit included in the Preliminary Determination was in error and that the resulting limit (0.63 lb/MMBtu) was too restrictive.

Response 1:

Following reevaluation of the application and review of the additional information submitted with the comments, EPA concludes that the data in the application was misinterpreted in developing the SO_2 allowable emissions limit in the original Preliminary Determination. In response to the comment, EPA has reevaluated the SO_2 BACT analysis and determined an SO_2 allowable limit (0.82 lb/MMBtu), based on the higher end of a proposed allowable range contained in an addendum to the application.

Comment 2:

The commenter was concerned that water spraying of the coal pile and drop points, as proposed in the application, was required during all dry and high wind periods, second that water spraying of the limestone was unnecessarily required, and third that enclosed limestone conveyors need not be exhausted to a control system.

Response 2:

The applicant is required, as specified in Condition 5c. to utilize water sprays during dry periods to maintain opacity of all fugitive sources below 20 percent. Compliance with this condition of approval does not necessarily require water spraying during all dry periods or periods of high wind. Neither does it mandate water spraying of limestone. If the limestone storage pile is enclosed, as specified in the comments, it likely will not require spraying. With respect to the comment on transfer conveyor exhaust, the language of the Preliminary Determination was somewhat misleading. The intent was to require exhaust and control of conveyor transfer points, (as proposed in the application). The matter has been clarified in this Preliminary Determination.

Comment 3:

The commenter feels that use of a flue gas oxygen meter to balance CO and NO_x emissions from a utility boiler is not practical or feasible due to variations in the allowable O_2 range with boiler load and with the properties of the coal being fired.

Response 3:

EPA acknowledges the commenter's concerns here and has therefore revised this permit providing TECO the option of either monitoring for O_2 or CO_2. EPA will consider either choice as being an effective means of balancing NO_x and CO emission tradeoffs in order to satisfy this particular permit requirement.

Comment 4:

The commenter feels that the SO_2 post-construction monitoring requirement is unjustified.

Response 4:

In as much as the proposed new source will be increasing SO_2 emissions into the Big Bend region by as much as 12,000 tons per year and existing ambient air monitoring data at 4 of the 5 stations in the vicinity show concentrations in excess of 50 percent of the SO_2 NAAQS, EPA maintains the post-construction SO_2 monitoring requirement to establish the impact of the new source on existing ambient air quality.

Comment 5:

The commenter objected to the requirement for monitoring of the pH in the FGD system as unreasonable.

Response 5:

Upon reevaluation of the proposed FGD control instrumentation, EPA agrees that redundant scrubber inlet and exit SO_2 analyzers provides sufficient assurance that compliance of the SO_2 emissions limit should be maintained.

Comment 6:

The commenter questioned the requirement to submit a new PSD permit if the design of the system is modified to include brackish water cooling towers.

Response 6:

As stated by Region IV new source review staff in a meeting with TECO regarding the environmental impact statement, the addition of the cooling towers (PM emitting sources) to the proposed construction would necessitate resubmittal of the PSD application. The air quality analysis, particularly with respect to fugitive PM emissions, would be in question. In addition, the modification would be regarded as a significant modification to the plant design proposed for PSD preconstruction review.

Comment 7:

The commenter requested clarification on the degree of detail necessary for FGD system design parameters required for submittal and was concerned about confidentiality of certain materials.

Response 7:

The required submittal is not meant to be exhaustive or time consuming; however, sufficient detail on scrubber and ESP design (liquid/gas flow characteristics, capacity, controls, performance guarantees etc.) should be submitted to allow a determination on whether or not the unit can achieve the required control levels. The application discusses only "generic" control systems. Integral to this discussion is the characteristics of the selected coal. As to confidentially of submitted materials, any such materials contained in the submittal should be clearly marked. Confidential materials will be maintained in a separate locked file and its review will be restricted to the engineer(s) responsible for evaluating system design. Other individuals and the general public will not be afforded direct access to the materials.

This Preliminary Determination takes into consideration the comments and responses discussed previously and additional minor comments included in the same submittal. A copy of the comments received have been appended to the Preliminary Determination and will be placed on display in the same location as the original Preliminary Determination for public information

TECO
TAMPA ELECTRIC COMPANY

POST OFFICE BOX 111 TAMPA, FLORIDA 33601 TELEPHONE (813) 879-4111

January 28, 1981

Mr. Tommie A. Gibbs, Chief
Air Facilities Branch
United States Environmental
Protection Agency
Region IV
345 Courtland Street
Atlanta, Georgia 30308

RE: Tampa Electric Company
Big Bend Station - Unit 4
PSD Application #PSD-FL-040

Dear Mr. Gibbs:

We have reviewed the Big Bend Unit 4 PSD Application Preliminary Determination and are submitting the attached comments. These comments are presented in a format and sequence similar to that of the Preliminary Determination.

As discussed with EPA representatives on January 14, 1981, we are most concerned with the calculated 30 day rolling average SO_2 limitation and specific conditions 5,7 and 8. Our comments with respect to these major items as well as numerous other items are provided within.

Should you have any questions regarding this matter, please contact Mr. Jerry Williams, Manager, Environmental Planning.

Sincerely,

Alex Kaiser
Vice President-Energy Supply

attachment

TAMPA ELECTRIC COMPANY COMMENTS ON THE
PSD - FL - 040 APPLICATION PRELIMINARY DETERMINATION

II. LOCATION

o Page 1

The northern and southern property boundaries are not Big Bend Road and U.S. Highway 41. The site is located west of Highway 41 with plant properties both north and south of Big Bend Road.

III. PROJECT DESCRIPTION

o Page 1

Big Bend Unit 4 will have a net generating capacity of 417 MWe. The gross generating capacity will be 486 MWe. The maximum heat input rate is 4330 million BTU's per hour.

Coal washing facilities at the generating site were not included as part of the application and are not planned for Big Bend Station. The coal will be washed prior to delivery to Big Bend Station.

o Page 2

Due to the as-received moist nature of the limestone to be utilized at Big Bend Station and the rainfall amounts throughout the year, the limestone will be stored within a building.

IV. SOURCE IMPACT ANALYSIS

A. Best Available Control Technology Analysis (BACT)

1. Sulfur Dioxide Emissions Control

o Page 3

Five percent of the potential SO_2 Emissions are expected to remain in the ash.

o Pages 3 and 4

The calculated thirty day rolling average emission limitation of 0.63 lbs./MMBTU was based on fuel F-2B, a fuel utilized in specifying the Flue Gas Desulfurization (FGD) system. As noted on page 4-12 of Volume 2 in the application, the fuel quality analysis presented for fuel F-2B reflected a 25% removal of potential SO_2 emissions due to coal washing.

EPA concluded in the determination that 90% reduction in potential SO_2 emissions resulting from 25% removal by washing, 5% retention in the ash, and 86% removal by the FGD system constituted BACT. However, in calculating the SO_2 limitation based on the 90% removal criteria, EPA failed to recognize the washed condition of the coal. The EPA calculations are as follows:

Uncontrolled SO_2 emissions	6.30 lbs./MMBTU	
Emissions after washing	4.72 lbs./MMBTU	90% Removal
Emissions after 5% ash retention	4.50 lbs./MMBTU	
Emissions after FGD system	0.63 lbs./MMBTU	

EPA began their 90% removal calculations with an uncontrolled SO_2 emission rate of 6.3 lbs.MMBTU which is actually an emission rate <u>after coal washing</u>. Thus, a 25% removal from coal washing was calculated twice. The calculations should have been made as follows:

Uncontrolled SO_2 emissions	8.40 lbs./MMBTU	
Emissions after washing	6.30 lbs./MMBTU	90% Removal
Emissions after 5% ash retention	6.00 lbs./MMBTU	
Emissions after FGD system	0.84 lbs./MMBTU	

The correct emission limitation is 0.84 lbs./MMBTU. The 0.63 lbs./MMBTU calculated by EPA reflects an overall reduction in potential SO_2 emissions of 93%.

At the request of EPA, TECO submitted a proposed 30 day rolling average SO_2 emission limitation range of 0.77 to 0.82 lbs./MMBTU. This information was submitted based on data provided by the potential coal suppliers for Big Bend Unit 4. This value range is consistent with and below the above calculated emission limit of 0.84 lbs./MMBTU. EPA, however, rejected the TECO proposal as too high an emission limit and has required the incorrectly calculated emission limit of 0.63 lbs./MMBTU.

2. PARTICULATE MATTER (PM)

o Page 5

It is noted that during dry periods and high winds, water spraying of the coal pile and all drop points is required. It was proposed in the application that water spraying be utilized, for fugitive emissions control during high winds and dry periods. However, these techniques are not necessary control measures during all dry and high wind periods. When weather conditions that may require water spraying for fugitive emissions control are anticipated, arrangements are made for the services of a water tank truck.

The limestone to be utilized by the Unit 4 FGD System will be very moist. To avoid additional moisture from precipitation, the limestone storage pile will be enclosed within a building. Due to the moist, as-received, nature of the limestone, water spraying will not be necessary. The limestone conveyors will be covered or enclosed but venting to a control device is not necessary and has never been proposed. As noted in the application, the rail car/truck unloading facilities and the limestone day silos will be provided with exhaust systems venting to bag filters.

3. NITROGEN OXIDES (NO_x) AND CARBON MONOXIDE (CO)

o Page 5

An attachment to the Preliminary Determination specifies combustion control requirements to balance the tradeoffs between NO_x and CO emissions through the use of a flue gas oxygen monitor. This technique is not considered practical or feasible for a utility boiler. Big Bend Unit 4 and other utility boilers incorporate flue gas oxygen analyzers for proper control of combustion. For a specific design coal, boiler excess oxygen will range from a high value at low operational load to a low value at maximum design capacity. Even these values are fine tuned by the boiler operator for proper steam temperature and are affected by combustion air temperature and other boiler conditions. As the coal (and its carbon content) change, the excess oxygen requirements change over the various load conditions. Therefore, if some maximum excess oxygen value is used for one coal to control NO_x, another coal may still comply with NO_x limits even though the excess oxygen value is higher than the set limit. These values also change at low loads for different coals and boiler conditions and apply in the same manner to CO compliance. During startups, shutdowns and load changes, it would be normal for the excess oxygen to vary outside of the set range while still being in compliance. Note that there will be a continuous monitor for showing compliance with NO_x emission limits. The excess oxygen analyzer is not load dependent; it is used for boiler combustion control and can not be reasonably used for CO and NO_x emission limit control based on some specific coal or operational condition.

A. Air Quality Analysis

1. Increment Analysis

o Page 7

In the last paragraph, third line "... area source has occurred..." should be "... area sources have occurred..."

2. NAAQS Impact

o Page 10

It is noted in the preliminary determination that the applicant proposes and EPA agrees that an adequate demonstration has been made that NAAQS level will not be violated. However, the EPA will require continuous SO_2 monitoring by the applicant to verify the results of the analysis. Guidelines for when post construction monitoring should be required are provided on Page 4, Section 2.1.2 of Ambient Monitoring Guidelines For Prevention of Significant Deterioration (PSD), EPA - 450/4-80-012, November 1980 and are as follows:

2.1.2 Criteria Pollutants -Postconstruction Phase

EPA has discretion in requiring postconstruction monitoring data under section 165 (a)(7) of the Clean Air Act and in general will not require postconstruction monitoring data. However, to require air quality monitoring data implies that the permit granting authority will have valid reasons for the data and, in fact, will use the data after it is collected. Generally, this will be applied to large sources or sources whose impact will threaten the standards or PSD increments. Examples of when a permit granting authority may require postconstruction monitoring data may include:

a. NAAQS are threatened - The postconstruction air quality is projected to be so close to the NAAQS that monitoring is needed to certify attainment or to trigger appropriate SIP related actions if nonattainment results.

b. Source impact is uncertain or unknown - Factors such as complex terrain, fugitive emissions, and other uncertainties in source or emission characteristics result in significant uncertainties about the projected impact of the source or modification. Postconstruction data is justified as a permit condition on the basis that model refinement is necessary to assess the impact of future sources of a similar type and configuration:

It is felt that the Big Bend situation does not fit these guidelines for required postconstruction modeling. The predicted ambient air quality impacts do not threaten NAAQS or PSD increments. The preconstruction ambient air monitoring data provided in the application indicate that the SO_2 ambient air quality in the site vicinity does not approach AAQS except for one reading at a particular station. On May 7, 1977, maximum 24 hour and 3 hour values representing 90% of the respective standard were recorded. However, since that time SO_2 emissions from Big Bend have been reduced by 3.5 tons per hour on a 3-hour average and by 7 tons per hour on a 24-hour average. In addition, the SO_2 ambient air quality data indicate that no other reading exceeded 80% of the standard with the arithmetic mean concentrations not exceeding 30% of the applicable standard. Therefore, based on the EPA guidelines, the ambient air monitoring data, and the Big Bend emission reductions, the requirement for postconstruction monitoring is not justified.

C. Class I Area Impact

o Page 10

In the last paragraph, fourth line, distance is misspelled.

D. Growth Impacts

o Page 11

Based on surveys and previous construction at Big Bend, approximately 90 percent of the construction workers will be hired from within the Tampa area work force.

V. <u>CONCLUSION</u>

o Page 12

#1 As previously noted, Big Bend 4 will have a gross generating capacity of 486 MW_e with a net generating capacity of 417 MW_e. The maximum heat input rate is 4330 MMBTU/HR.

#3 In the last sentence, it is believed <u>opacity</u> should be <u>capacity</u>.

#5 As previously noted, compliance with the condition "Use of Flue Gas Oxygen Meter as BACT for combustion controls" is not considered feasible or pratical.

#6c As previously noted, water spraying will not be provided for limestone handling and storage.

#6d As previously noted, it is unnecessary for the limestone conveyors to be maintained at negative pressures with the exhaust vented to a control system.

#7 While the effluent pH of some FGD systems may provide an indication of SO_2 removal efficiency, such is not the case for the Big Bend Unit 4 system.

The FGD System that Tampa Electric Company has purchased is a limestone based two loop process which produces a gypsum by-product. Control of reagent addition is by an SO_2 mass flow signal. The inlet and outlet SO_2 values are compared, controlling the SO_2 removal efficiency to the setpoint (i.e. 86%) removal. In the two loop process, the first loop operates at a low pH for production of gypsum and some SO_2 removal, while the second loop operates at high pH for dissolution of limestone and the major amount of SO_2 removal. It is possible for the system to meet the required SO_2 removal efficiency while the pH in any one loop is less than it was at some other time for the same overall SO_2 removal. This is because of the two independent loops. While pH is monitored, it is not a direct control value and should not be used as such. Therefore, it is not reasonable to maintain or require a minimum pH value in this system.

#8 As noted, earlier, the need for post construction monitoring is not warranted.

#11 It is not clear why a complete new application would be necessary if cooling towers were required for the facility. The use of cooling towers would have no effect on the information in the application as submitted to date. It would be more reasonable to require that the additional necessary information and analyses due to cooling tower operation be submitted if towers are to be utilized. Then the permitting authority could make the proper changes in the permit conditions. This condition is redundant in light of general condition number 6.

#12 It is not clear as to what detail of technical data is required by the Agency. In addition, formal bids from vendors are considered confidential and are not available for reproduction and distribution.

GENERAL CONDITIONS

#1 & #2

The definitions of start of construction and start of operation are not clear. It is assumed that start of construction is the physical placement of facilities. Start of operation is assumed to mean the beginning of steady on-line commercial operation.

#8a This condition should include the wording ..."at reasonable times....", similar to items 8(b) through 8(e).

ATTACHMENT - "Use of flue gas oxygen meter as BACT for combustion controls"

As previously noted, this procedure is not practical or feasible and as written may constitute non-compliance when, in fact, all emission limitations are met.

Table 1 For the pollutant CO the potential emissions should be 267 Tons/Year.

Table 5 As previously noted the 30 day rolling average SO_2 emission limitation was calculated incorrectly.
In Item 2, flyash should not be included. The flyash handling system and flyash silos are vented to the same bag house. Flyash handling is included in the Item 4 emission rate of 0.2 lb./HR.

system for measuring SO_2 emissions will be installed, calibrated, maintained, and operated at a point downstream of the FGD system.

4.3 Oxides of Nitrogen

The emission of NO_x from the combustion system will be minimized by the design of the burners and boiler to be provided by CE. The tangentially-fired boiler has been demonstrated to be capable of limiting NO_x formation to 0.6 lb/MMBtu, the NSPS, when firing bituminous coal. The EPA cites several CE boilers in operation that are able to meet the NSPS, although these boilers are neither designed nor guaranteed to have an NO_x emission at these levels.

The formation of thermally produced NO_x is inhibited in the CE boiler by the off-stoichiometric combustion, that is, operating the burners at a fuel-rich mixture. Off-stoichiometric combustion can be accomplished by two techniques: biased-firing and two-staged combustion. The former technique consists of operating selected burners at fuel-rich mixtures and others at lean mixtures. Initial combustion then occurs in a reducing atmosphere, followed by complete combustion after substantial heat loss. The resultant lower flame temperatures inhibit the formation of thermal NO_x. The latter technique, two-staged combustion, is accomplished by diverting a portion of the combustion air to over-fire air ports located above the burners. The same fuel-rich combustion occurs with the attendant heat loss, followed by complete mixing and combustion above the primary combustion zone. Although CE has incorporated over-fire air ports in the boiler design to maintain NO_x concentrations at the NSPS, operation of these ports has been found to be unnecessary below 90% MCR. Two-stage combustion will thus be used should monitoring indicate that the NO_x emissions may exceed standards. The NO_x emission limitation is equivalent to an emission rate of 2,598 lb/hr.

The EPA sponsored a test program, performed by CE, at the Alabama Power Company's Barry Station #2. This program assessed the effects of modifications in boiler operation and design on the emission of

NO_x. Included in the modifications were variations in excess air, biased-firing, over-fire air, burner tilt, and water-wall slagging. The results of this program that are applicable to Unit 4 boiler operation are summarized in Table 4-7. Note that all tests demonstrated boiler compliance with the NSPS for NO_x, with the exception of that test with no modifications and water-wall slagging.

Compliance with the NSPS for NO_x will be demonstrated in accordance with Section 60.48a, Subpart Da, and by procedures prescribed in Method 19, Appendix A, 40 CFR 60. A continuous monitoring system for measuring NO_x emissions will be installed, calibrated, maintained, and operated at a point downstream of the economizer outlet.

4.4 Carbon Monoxide

The only significant source of CO is the Unit 4 steam generator. CE does not include monitoring of combustibles in the design of their boilers because CO emissions are expected to be negligible. The recording of combustibles, however, may be included in the specification of the combustion air control system. Using the emission factor from the EPA document Compilation of Air Pollution Emission Factors, AP-42, the CO emission rate will be approximately ~~62~~ 124 lb/hr based on Coal F-1A and boiler performance data. This factor represents a consensus mean emission from both boilers of older and more recent design. The EPA test on the Alabama Power Company's Barry Station #2 demonstrates that CO emissions typically range from 0.016 to 0.022 lb/MMBtu, which is equivalent to 70 to 95 lb/hr (see Table 4-7). These data then generally support the AP-42 emission factor, which is used to estimate the CO emission rate.

4.5 Summary

The emission of pollutants from the proposed Unit 4 steam generator is summarized in Table 4-8. The applicable NSPS for electric utility facilities are also presented for direct comparison.

TABLE 4-7

EPA TEST PROGRAM FOR NO_x REDUCTION

Test No.	Test Condition*	Excess Air	Emission (lb/MMBtu) NO_x**	CO
1	No modification	22.7	0.58	0.022
2	No modification; WW slagging	26.0	0.68	0.024
3	BF	24.2	0.33	0.019
4	OFA	25.4	0.55	0.016
5	OFA; WW slagging	25.9	0.50	0.016
6	OFA; -5° burner tilt	25.9	0.39	0.016
7	OFA; $+19^{\circ}$ burner tilt	25.1	0.43	0.023
8	Optimum conditions	27.4	0.39	0.018

*WW = water-wall; BF = biased-firing; OFA = over-fire air.

**As NO_2.

Source: EPA 1975.

TABLE 4-8

POLLUTANT EMISSIONS SUMMARY

BIG BEND STATION UNIT 4

Pollutant	Pollutant Emission lb/hr	lb/MMBtu	% Reduction	Applicable NSPS/SIP Requirement
PM	129.9	0.03	99.7	0.03 lb/MMBtu
NO_x	2,598.	0.60	65.0	0.60 lb/MMBtu
SO_2*	2,592.-5,184.	0.60-1.2	90.0	90% reduction
CO	124 ~~62.~~	0.029 ~~0.014~~	NA	NA

*SO_2 emission represents range of sulfur content of raw coals of 3.0 and 6.0 lb/MMBtu.

Historic
BaseCase

PLANT NAME Gannon

UTILITY	Tampa Electric Company	NAME PLATE CAP. Mw	1,270.38
COUNTY	Hillsborough	ANN. GENERATION Mwh	
TOWN	Tampa	HEAT RATE MM Btu/h	
LONG/LAT GRW		CONSTRUCTION DATE	
LONG/LAT UTM		ON-LINE DATE	
AQCR REG.		RETIREMENT DATE	
RIVER BASIN		No. UNITS	

UNIT DATA

	1	2	3	4	5	6
STATUS						
FIRING CAPAB.						
FUEL	Oil	Oil	Oil	Oil	Coal	Coal
UNIT CAPACITY Mw	125	125	179.52	187.5	239.36	414
UNIT FACTOR						
HEAT RATE MM Btu/h						
FUEL CONS. #/h	201 bbl	201 bbl	258 bbl	307 bbl	93.4t	151.4t
BOILER MFGR.	B&W	B&W	B&W	B&W	Rily	Rily
SO2 CONTROL	None	None	None	None	None	None
TYPE						
EFFICIENCY						
PARTIC. CONTROL						
TYPE	ESP	ESP	ESP	ESP	ESP	ESP
EFFICIENCY	86.8	91.0	85.4	80.2	97.2	99.84
FLYASH REINJECT	No	No	No	No	Yes	Yes
(lb/hr) MASS EMISSION RT	354	354	220.2	174.7	291	183

STACK DATA

		1	2	3	4	5	6
HEIGHT	ft	306	306	306	306	306	306
DIAMETER	ft	10	10	10.6	9.6	15	18.4
EXIT VEL.	ft/s	79	79	74.1	53.8	64.1	76.9
EXIT TMP.	°F	309	309	300	329	288	292

ANNUAL EMISSIONS

PARTICULATES (t/y)	890
SOx (t/y)	38,500
NOx (t/y)	27,200

FUEL DATA

	OIL	COAL
% SULFUR	0.95	1.3
% ASH		10.1
HEAT CONTENT	150,083 Btu/gal	12,174 Btu/lb

WATER SUPPLY

	COOLING	BOILER	ASH TRANSPORT
SOURCE	Tampa Bay		
MINIMUM 7-Q-10	NA		
TYPE SYSTEM	OTS		
INTAKE cfs	1235		
DISCHARGE cfs	1235		
CONSUMPTION cfs	0		
DISCH. POINT			
DISCH. PH			
DISCH. SS ppm			
DELTA T			
HEAT REJECTION (Btu x 10^9)/h			

ASH/ASH POND DATA

FLY ASH t/y	170,700	POND AREA	
BOTTOM ASH t/y	116,100	ORIG. VOLUME ft^3	
TOTAL ASH t/y	286,800	ORIG. CAPAC. t ash	
SLUDGE t/y		REMAINING VOL. ft^3	
POND CONST. DATE		REMAINING CAPAC. t ash	
POND TYPE		FILL DATE	

COAL STORAGE

BASAL AREA ft^2		STORAGE CAPAC. t	
HEIGHT ft		SUPPLY days	

PERMIT DATA

SIP PERMIT
- PARTICULATE EMISSION STANDARD (lbs/MMBtu) 0.10
- ALLOWABLE SO_2 EMISSION (lbs/MM Btu) 1.1 (oil) 2.4 (Coal)

NPDES
- PERMIT NUMBER
- EFFECTIVE DATE
- REISSUE DATE
- EXPIRATION DATE
- RECEIVING WATER

OUTFALL PERMIT LIMITATIONS

SERIAL No.	TYPE	FLOW MGD	Cl mg/l	HEAT REJ. MM Btu/h	PH	TSS lbs/day ave.	TSS lbs/day max.	TOT Fe mg/l	TOT Cu mg/l

PLANT NAME Scholz

UTILITY	Gulf Power Company	NAME PLATE CAP. Mw	98
COUNTY	Jackson	ANN. GENERATION Mwh	
TOWN	Chattahoochee	HEAT RATE MM Btu/h	
LONG/LAT GRW		CONSTRUCTION DATE	
LONG/LAT UTM		ON-LINE DATE	
AQCR REG.		RETIREMENT DATE	
RIVER BASIN		No. UNITS	

UNIT DATA

	1	2	3	4	5	6
STATUS						
FIRING CAPAB.						
FUEL						
UNIT CAPACITY Mw	49	49				
UNIT FACTOR						
HEAT RATE MM Btu/h	488	488				
FUEL CONS. #/h	19.6t	19.6t				
BOILER MFGR.	B&W	B&W				
SO2 CONTROL						
TYPE						
EFFICIENCY						
PARTIC. CONTROL						
TYPE	ESP	ESP				
EFFICIENCY	99.5%	99.5%				
FLYASH REINJECT						
(lb/hr) MASS EMISSION RT	14	14				
Particulates (lb/MMBtu)	0.014	0.043				

STACK DATA

	1	2	3	4	5	6
HEIGHT ft	150					
DIAMETER ft	13.5					
EXIT VEL. ft/s	40.4					
EXIT TMP. °F	326					

ANNUAL EMISSIONS

PARTICULATES(t/y)	80
SOx (t/y)	980
NOx (t/y)	1,840

FUEL DATA

	OIL	COAL
% SULFUR		2.4
% ASH		11.2
HEAT CONTENT	Btu/gal	12,442 Btu/lb

WATER SUPPLY

	COOLING	BOILER	ASH TRANSPORT
SOURCE	Apalachicola River		
MINIMUM 7-Q-10	5,500		
TYPE SYSTEM			
INTAKE cfs	155.86		
DISCHARGE cfs	155.86		
CONSUMPTION cfs	0		
DISCH. POINT			
DISCH. PH			
DISCH. SS ppm			
DELTA T			
HEAT REJECTION ($Btu \times 10^9$)/h			

ASH/ASH POND DATA

FLY ASH t/y	16,000	POND AREA	
BOTTOM ASH t/y	6,900	ORIG. VOLUME ft^3	
TOTAL ASH t/y	22,900	ORIG. CAPAC. t ash	
SLUDGE t/y		REMAINING VOL. ft^3	
POND CONST. DATE		REMAINING CAPAC. t ash	
POND TYPE		FILL DATE	

COAL STORAGE

BASAL AREA ft^2		STORAGE CAPAC. t	
HEIGHT ft		SUPPLY days	

PERMIT DATA

SIP PERMIT

PARTICULATE EMISSION STANDARD (lbs/MMBtu) 0.10

ALLOWABLE SO_2 EMISSION (lbs/MM Btu) 6.17

NPDES

PERMIT NUMBER FL 000 2283

EFFECTIVE DATE

REISSUE DATE

EXPIRATION DATE

RECEIVING WATER

OUTFALL PERMIT LIMITATIONS

SERIAL No.	TYPE	FLOW MGD	Cl mg/l	HEAT REJ. MM Btu/h	PH	TSS lbs/day ave.	TSS lbs/day max.	TOT Fe mg/l	TOT Cu mg/l

PLANT NAME McIntosh

UTILITY	City of Lakeland	NAME PLATE CAP. Mw	547.7
COUNTY	Polk	ANN. GENERATION Mwh	
TOWN	Lakeland	HEAT RATE MM Btu/h	
LONG/LAT GRW		CONSTRUCTION DATE	
LONG/LAT UTM		ON-LINE DATE	
AQCR REG.		RETIREMENT DATE	
RIVER BASIN		No. UNITS	3

UNIT DATA

	1	2	3	4	5	6
STATUS						
FIRING CAPAB.						
FUEL	Oil/Gas	Oil	C/O/R			
UNIT CAPACITY Mw	100	115	333			
UNIT FACTOR						
HEAT RATE MM Btu/h	957	1237	3127			
FUEL CONS. #/h	154 bbl	199 bbl	130 3t			
BOILER MFGR.	Riley	B&W	B&W			
SO2 CONTROL	None	None				
TYPE			Limestone Absorp.			
EFFICIENCY			80%			
PARTIC. CONTROL	None	None				
TYPE						
EFFICIENCY			99.63			
FLYASH REINJECT			No			
MASS EMISSION RT						

STACK DATA

		1	2	3	4	5	6
HEIGHT	ft	150	156.5				
DIAMETER	ft	9	11				
EXIT VEL.	ft/s	76.5	57.6				
EXIT TMP.	°F	280	265				

ANNUAL EMISSIONS

PARTICULATES (t/y)	860
SOx (t/y)	19,600
NOx (t/y)	10,000

FUEL DATA

	OIL	COAL
% SULFUR	2.36/0.74	1.8 - 3.0
% ASH		
HEAT CONTENT	148,000 Btu/gal	11,500 Btu/lb

WATER SUPPLY

	COOLING	BOILER	ASH TRANSPORT
SOURCE	Lake Parker		
MINIMUM 7-Q-10	178		
TYPE SYSTEM			
INTAKE cfs	167.6		
DISCHARGE cfs	165.7		
CONSUMPTION cfs	1.9		
DISCH. POINT			
DISCH. PH			
DISCH. SS ppm			
DELTA T			
HEAT REJECTION ($Btu \times 10^9$)/h			

ASH/ASH POND DATA

FLY ASH t/y		POND AREA	
BOTTOM ASH t/y		ORIG. VOLUME ft^3	
TOTAL ASH t/y	109,800	ORIG. CAPAC. t ash	
SLUDGE t/y	271,500	REMAINING VOL. ft^3	
POND CONST. DATE		REMAINING CAPAC. t ash	
POND TYPE		FILL DATE	

COAL STORAGE

BASAL AREA ft^2		STORAGE CAPAC. t	
HEIGHT ft		SUPPLY days	

PERMIT DATA

SIP PERMIT

PARTICULATE EMISSION STANDARD (lbs/MMBtu) ______

ALLOWABLE SO_2 EMISSION (lbs/MM Btu) ______

NPDES

PERMIT NUMBER ______

EFFECTIVE DATE ______

REISSUE DATE ______

EXPIRATION DATE ______

RECEIVING WATER ______

OUTFALL PERMIT LIMITATIONS

SERIAL No.	TYPE	FLOW MGD	Cl mg/l	HEAT REJ. MM Btu/h	PH	TSS lbs/day ave.	TSS lbs/day max.	TOT Fe mg/l	TOT Cu mg/l

PLANT NAME Deerhaven

UTILITY	Gainesville Regional Utilities	NAME PLATE CAP. Mw	316
COUNTY	Alachua	ANN. GENERATION Mwh	
TOWN	Gainesville	HEAT RATE MM Btu/h	
LONG/LAT GRW		CONSTRUCTION DATE	
LONG/LAT UTM		ON-LINE DATE	
AQCR REG.		RETIREMENT DATE	
RIVER BASIN		No. UNITS	2

UNIT DATA

	1	2	3	4	5	6
STATUS						
FIRING CAPAB.						
FUEL	Oil	Coal				
UNIT CAPACITY Mw	75	235				
UNIT FACTOR						
HEAT RATE MM Btu/h						
FUEL CONS. #/h	157 bbl	96 t				
BOILER MFGR.	B&W	Rily				
SO2 CONTROL						
TYPE						
EFFICIENCY						
PARTIC. CONTROL						
TYPE		ESP				
EFFICIENCY		99.5				
FLYASH REINJECT	No					
MASS EMISSION RT						

STACK DATA

	1	2	3	4	5	6
HEIGHT ft	300	350				
DIAMETER ft	11	17.75				
EXIT VEL. ft/s	43.95	50				
EXIT TMP. °F	261	275				

ANNUAL EMISSIONS

PARTICULATES (t/y)	613
SOx (t/y)	6790
NOx (t/y)	2430

FUEL DATA

	OIL	COAL
% SULFUR	2.2	0.72
% ASH		8
HEAT CONTENT	151,593 Btu/gal	12,000 Btu/lb

WATER SUPPLY

	COOLING	BOILER	ASH TRANSPORT
SOURCE	Floridan Aquifer		
MINIMUM 7-Q-10			
TYPE SYSTEM			
INTAKE cfs	5.9		
DISCHARGE cfs			
CONSUMPTION cfs			
DISCH. POINT			
DISCH. PH			
DISCH. SS ppm			
DELTA T			
HEAT REJECTION (Btu x 10^9)/h	1.84		

ASH/ASH POND DATA

FLY ASH t/y		POND AREA	
BOTTOM ASH t/y		ORIG. VOLUME ft^3	
TOTAL ASH t/y	42,700	ORIG. CAPAC. t ash	
SLUDGE t/y		REMAINING VOL. ft^3	
POND CONST. DATE		REMAINING CAPAC. t ash	
POND TYPE		FILL DATE	

COAL STORAGE

BASAL AREA ~~ft^2~~	11.3 acres	STORAGE CAPAC. t	
HEIGHT ft	20	SUPPLY days	90

PERMIT DATA

SIP PERMIT
- PARTICULATE EMISSION STANDARD (lbs/MMBtu) 0.1
- ALLOWABLE SO_2 EMISSION (lbs/MM Btu) 2.75

NPDES
- PERMIT NUMBER
- EFFECTIVE DATE
- REISSUE DATE
- EXPIRATION DATE
- RECEIVING WATER

OUTFALL PERMIT LIMITATIONS

SERIAL No.	TYPE	FLOW MGD	Cl mg/l	HEAT REJ. MM Btu/h	PH	TSS lbs/day ave.	TSS lbs/day max.	TOT Fe mg/l	TOT Cu mg/l

PLANT NAME Big Bend

UTILITY	TECO	NAME PLATE CAP. Mw	1336.5
COUNTY	Hillsborough	ANN. GENERATION Mwh	
TOWN	Ruskin	HEAT RATE MM Btu/h	
LONG/LAT GRW		CONSTRUCTION DATE	
LONG/LAT UTM		ON-LINE DATE	
AQCR REG.		RETIREMENT DATE	
RIVER BASIN		No. UNITS	4

UNIT DATA

	1	2	3	4	5	6
STATUS						
FIRING CAPAB.						
FUEL	Coal	Coal	Coal	Coal		
UNIT CAPACITY Mw	445.5	445.5	445.5	417		
UNIT FACTOR						
HEAT RATE MM Btu/h	4,184	4,180	4,367	4,740		
FUEL CONS. #/h	182.3	182.1	190.3	206.5		
BOILER MFGR.	Rily	Rily	Rily	CE		
SO2 CONTROL	None	None	None	Yes		
TYPE				Double Loop		
EFFICIENCY				90%		
PARTIC. CONTROL	ESP	ESP	ESP	ESP		
TYPE						
EFFICIENCY	99.6%	99.8%	99.7%	99%		
FLYASH REINJECT	Yes	Yes	Yes	No		
(lb/hr) MASS EMISSION RT Particulates (lb/MMBtu)	504	219	361.5	5196		

STACK DATA

	1	2	3	4	5	6
HEIGHT ft	490	490				
DIAMETER ft	24	24				
EXIT VEL. ft/s	94	68				
EXIT TMP. °F	301	292				

ANNUAL EMISSIONS

PARTICULATES (t/y) 1,000
SOx (t/y) 112,100
NOx (t/y) ~~8,064,400~~ 35,700

FUEL DATA

	OIL	COAL
% SULFUR		2.2
% ASH		10.4
HEAT CONTENT	Btu/gal	11,475 Btu/lb

WATER SUPPLY

	COOLING	BOILER	ASH TRANSPORT
SOURCE	Hillsborough Bay		
MINIMUM 7-Q-10	NA		
TYPE SYSTEM			
INTAKE cfs	1306		
DISCHARGE cfs	1306		
CONSUMPTION cfs	0		
DISCH. POINT			
DISCH. PH			
DISCH. SS ppm			
DELTA T			
HEAT REJECTION (Btu x 10^9)/h			

ASH/ASH POND DATA

FLY ASH t/y	352,600	POND AREA	
BOTTOM ASH t/y	118,200	ORIG. VOLUME ft^3	
TOTAL ASH t/y		ORIG. CAPAC. t ash	
SLUDGE t/y		REMAINING VOL. ft^3	
POND CONST. DATE		REMAINING CAPAC. t ash	
POND TYPE		FILL DATE	

COAL STORAGE

BASAL AREA ft^2		STORAGE CAPAC. t	
HEIGHT ft		SUPPLY days	

PERMIT DATA

SIP PERMIT

PARTICULATE EMISSION STANDARD (lbs/MMBtu) 0.1

ALLOWABLE SO_2 EMISSION (lbs/MM Btu) 6.5

NPDES

PERMIT NUMBER

EFFECTIVE DATE

REISSUE DATE

EXPIRATION DATE

RECEIVING WATER

OUTFALL PERMIT LIMITATIONS

SERIAL No.	TYPE	FLOW MGD	Cl mg/l	HEAT REJ. MM Btu/h	PH	TSS lbs/day ave.	TSS lbs/day max.	TOT Fe mg/l	TOT Cu mg/l

PLANT NAME Crist

UTILITY	Gulf Power Company	NAME PLATE CAP. Mw	1229
COUNTY	Escambia	ANN. GENERATION Mwh	
TOWN	Pensacola	HEAT RATE MM Btu/h	
LONG/LAT GRW		CONSTRUCTION DATE	
LONG/LAT UTM		ON-LINE DATE	
AQCR REG.		RETIREMENT DATE	
RIVER BASIN		No. UNITS	7

UNIT DATA

	1	2	3	4	5	6	7
STATUS							
FIRING CAPAB.							
FUEL	Gas/Oil	Gas/Oil	Gas/Oil	Coal/Gas	Coal/Gas	Coal/Gas	Coal
UNIT CAPACITY Mw	28.125	28.125	37.5	93.75	93.75	370	578
UNIT FACTOR							
HEAT RATE MM Btu/h				755	755	2,938	4,632
FUEL CONS. #/h	320MCF	320MCF	440MCF	32.1 T	32.15 T	125 T	197.1 T
BOILER MFGR.	Rily	Rily	Rily	CE	CE	FW	FW
SO2 CONTROL	None	None	None	None	None	None	None
TYPE							
EFFICIENCY							
PARTIC. CONTROL	None	None	None	Yes	Yes	Yes	Yes
TYPE				ESP	ESP	ESP	ESP
EFFICIENCY				99.1	99.1	98.0	98.2
FLYASH REINJECT				No	No	No	No
(lb/hr) MASS EMISSION RT				88.3	88.3	430	544
Particulates (lb/MMBtu)				0.027	0.037	0.072	0.087

STACK DATA

		1	2				
HEIGHT	ft	450	450				
DIAMETER	ft	18	23.2				
EXIT VEL.	ft/s	52.6	97.4				
EXIT TMP.	°F	289	268				

ANNUAL EMISSIONS

PARTICULATES (t/y)	2,150
SOx (t/y)	78,400
NOx (t/y)	1,432,400

FUEL DATA

	OIL	COAL
% SULFUR	1.5	2.5
% ASH		10.9
HEAT CONTENT	146,429 Btu/gal	11,777 Btu/lb

WATER SUPPLY

	COOLING	BOILER	ASH TRANSPORT
SOURCE	Escambia River		
MINIMUM 7-Q-10	760		
TYPE SYSTEM			
INTAKE cfs	347.56		
DISCHARGE cfs	340.75		
CONSUMPTION cfs	6.81		
DISCH. POINT			
DISCH. PH			
DISCH. SS ppm			
DELTA T			
HEAT REJECTION (Btu x 10^9)/h			

ASH/ASH POND DATA

FLY ASH t/y	117,400	POND AREA	
BOTTOM ASH t/y	51,300	ORIG. VOLUME ft^3	
TOTAL ASH t/y	168,700	ORIG. CAPAC. t ash	
SLUDGE t/y		REMAINING VOL. ft^3	
POND CONST. DATE		REMAINING CAPAC. t ash	
POND TYPE		FILL DATE	

COAL STORAGE

BASAL AREA ft^2		STORAGE CAPAC. t	
HEIGHT ft		SUPPLY days	

PERMIT DATA

SIP PERMIT
- PARTICULATE EMISSION STANDARD (lbs/MMBtu) 0.10
- ALLOWABLE SO_2 EMISSION (lbs/MM Btu) 5.9

NPDES
- PERMIT NUMBER FL 000 2275
- EFFECTIVE DATE
- REISSUE DATE
- EXPIRATION DATE
- RECEIVING WATER

OUTFALL PERMIT LIMITATIONS

SERIAL No.	TYPE	FLOW MGD	Cl mg/l	HEAT REJ. MM Btu/h	PH	TSS lbs/day ave.	TSS lbs/day max.	TOT Fe mg/l	TOT Cu mg/l

PLANT NAME Smith

UTILITY	Gulf Power Company	NAME PLATE CAP. Mw	~~804~~ 380
COUNTY	Bay	ANN. GENERATION Mwh	
TOWN	Lynn Haven	HEAT RATE MM Btu/h	
LONG/LAT GRW		CONSTRUCTION DATE	
LONG/LAT UTM		ON-LINE DATE	
AQCR REG.		RETIREMENT DATE	
RIVER BASIN		No. UNITS	2

UNIT DATA

	1	2	3	4	5	6
STATUS						
FIRING CAPAB.						
FUEL						
UNIT CAPACITY Mw	149.6	190.4				
UNIT FACTOR						
HEAT RATE MM Btu/h	1,320	1,670				
FUEL CONS. #/h	56.4t	71.3				
BOILER MFGR.	CE	CE				
SO2 CONTROL	None	None				
TYPE						
EFFICIENCY						
PARTIC. CONTROL						
TYPE	ESP	ESP				
EFFICIENCY	99.1	99.1				
FLYASH REINJECT						
(lb/hr) MASS EMISSION RT	155.7	207.4				
Particulates (lb/MMBtu)	0.012	0.048				

STACK DATA

HEIGHT ft	200					
DIAMETER ft	18					
EXIT VEL. ft/s	64.5					
EXIT TMP. °F	263					

ANNUAL EMISSIONS

PARTICULATES (t/y)	900
SOx (t/y)	1,400
NOx (t/y)	9,000

FUEL DATA

	OIL	COAL
% SULFUR	0.4	0.7
% ASH		12.7
HEAT CONTENT	140,500 Btu/gal	11,709 Btu/lb

WATER SUPPLY

	COOLING	BOILER	ASH TRANSPORT
SOURCE	North Bay		
MINIMUM 7-Q-10	NA		
TYPE SYSTEM			
INTAKE cfs	409.4		
DISCHARGE cfs	409.4		
CONSUMPTION cfs	0		
DISCH. POINT			
DISCH. PH			
DISCH. SS ppm			
DELTA T			
HEAT REJECTION (Btu x 10^9)/h			

ASH/ASH POND DATA

FLY ASH t/y	87,900	POND AREA	
BOTTOM ASH t/y	38,100	ORIG. VOLUME ft^3	
TOTAL ASH t/y	126,000	ORIG. CAPAC. t ash	
SLUDGE t/y		REMAINING VOL. ft^3	
POND CONST. DATE		REMAINING CAPAC. t ash	
POND TYPE		FILL DATE	

COAL STORAGE

BASAL AREA ft^2		STORAGE CAPAC. t	
HEIGHT ft		SUPPLY days	

PERMIT DATA

SIP PERMIT
- PARTICULATE EMISSION STANDARD (lbs/MMBtu) 0.10
- ALLOWABLE SO_2 EMISSION (lbs/MM Btu) 6.17

NPDES
- PERMIT NUMBER FL 000 2267
- EFFECTIVE DATE
- REISSUE DATE
- EXPIRATION DATE
- RECEIVING WATER

OUTFALL PERMIT LIMITATIONS

SERIAL No.	TYPE	FLOW MGD	Cl mg/l	HEAT REJ. MM Btu/h	PH	TSS lbs/day ave.	TSS lbs/day max.	TOT Fe mg/l	TOT Cu mg/l