



DEC 5 1984

P P S

December 3, 1984

Mr. Hamilton S. Oven
Florida Department of
Environmental Regulation
Twin Towers Office Bldg.
2600 Blair Stone Road
Tallahassee, FL 32301-8241

DER

DEC 10 1984

BAQM

Re: Corrective Action Plan
Big Bend Station - Unit 4
Tampa Electric Company
PA 79-12

Dear Mr. Oven:

Please find attached a copy of the Corrective Action Plan for Pollution Control Equipment for the above-referenced source. This plan is submitted as required in the Florida Department of Environmental Regulation permit #PA 79-12, Conditions of Certification Section I.B.6.

If you should have any questions, please feel free to call.

Sincerely,

A. Spencer Autry
Manager
Environmental Planning

ASA/tb

cc: R. B. Garrity

TABLE 4-8

POLLUTANT EMISSIONS SUMMARY
BIG BEND STATION UNIT 4

<u>Pollutant</u>	<u>Pollutant Emission</u>			<u>Applicable NSPS/SIP Requirement</u>
	<u>lb/hr</u>	<u>lb/MMBtu</u>	<u>% Reduction</u>	
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

*SO₂ emission represents range of sulfur content of raw coals of 3.0 and 6.0 lb/MMBtu.

TABLE 4-7

EPA TEST PROGRAM FOR NO_x REDUCTION

<u>Test No.</u>	<u>Test Condition*</u>	<u>Excess Air</u>	<u>Emission (lb/MMBtu)</u>	
			<u>NO_x**</u>	<u>CO</u>
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° 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 NO₂.

Source: EPA 1975.

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 $\frac{124}{62}$ 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.

system for measuring SO₂ 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

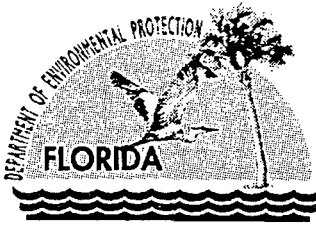
Attachment II

Revised pages to:

VOLUME I

Prevention of Significant Deterioration (PSD)
Application - Tampa Electric Company

(PSD-FL-040)



Jeb Bush
Governor

Department of Environmental Protection

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

David B. Struhs
Secretary

December 28, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Gregory M. Nelson, Manager – Environmental Planning
Tampa Electric Company
6499 U.S. Highway 41 North
Apollo Beach, FL 33572-9200

Re: Tampa Electric Company – Big Bend Plant
Project: Discontinuance of TSP/SO₂ Ambient Monitoring for Unit No. 4
PPS Certification PA79-12 (PSD-FL-040)
ARMS ID No. 0570039

Dear Mr. Nelson:

On August 27, 1999, the Hillsborough County Environmental Protection Commission (HCEPC) received a request from TECO to discontinue the TSP and SO₂ ambient monitoring program at the Big Bend Plant. HCEPC operates the local air pollution control program in Hillsborough County approved by the Department. The ambient monitoring program was originally required during the certification and permitting process for Unit No. 4 (Specific Condition No. I.B.2. in Power Plant Siting Certification No. PA79-12 and Specific Condition No. 6 in Part I of PSD Permit No. PSD-FL-040).

HCEPC and the Department's Bureau of Ambient Monitoring and Mobile Sources have reviewed the request and corresponding ambient monitoring data. With few exceptions, the monitoring data reflects overall compliance with the National Ambient Air Quality Standards for TSP and SO₂. The reviews indicate that the TSP and SO₂ ambient monitoring program has satisfied the original intent and is no longer necessary. Therefore, Specific Condition No. 6 in Part I of PSD Permit No. PSD-FL-040 is revised as follows:

From:

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.

To:

6. The permittee conducted SO₂ ambient monitoring from 1984 through calendar year 1999. The data compiled by these monitors indicate satisfactory compliance with the National Ambient Air Quality Standards for SO₂. The Department determines that the effects of the original modification on ambient air quality have been adequately quantified. Effective January 1, 2000, the permittee may discontinue the ambient monitoring program for SO₂."

"More Protection, Less Process"

Printed on recycled paper.

A copy of this letter shall be filed with all current air permits and shall become parts of those permits. This permitting decision is issued pursuant to Chapter 403, Florida Statutes.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the 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 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that 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 such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation is not available in this proceeding.

In addition to the above, a person subject to regulation has a right to apply for a variance from or waiver of the requirements of particular rules, on certain conditions, under Section 120.542 F.S. The relief provided by this state statute applies only to state rules, not statutes, and not to any federal regulatory requirements. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have in relation to the action proposed in this notice of intent.

The application for a variance or waiver is made by filing a petition with the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

May 6, 1985

Mr. James T. Wilburn, Chief
Air Management Branch
USEPA-Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Re: Modification to PSD-FL-040
TECO Big Bend Unit 4

Dear Mr. Wilburn:

This is to acknowledge the receipt of your March 12, 1985 letter requesting a public notice to be published prior to a modification of the above referenced permit.

Tampa Electric Company (TECO) requested that the carbon monoxide (CO) emission limits contained in this permit be changed to correct an error when an incorrect emission factor was used in their application. The correction of this error will result in a theoretical significant increase in the CO emission limits. At your request, we have enclosed a copy of the proof of publication so you can proceed to revise the PSD permit to reflect the emission change for CO.

Should you require any further information, please feel free to contact me.

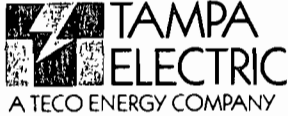
Sincerely,

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/ES/s

cc: Richard Garrity
Iwan Choronenko
Jerry Williams

attachment



DER

MAY 3 1985

BAQM

May 1, 1985

Mr. C.H. Fancy, P.E.
State of Florida
Department of Environmental
Regulation
Bureau of Air Quality
Management
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32301

Re: Proof of Public Notice
Modification to PSD-FL-040
Big Bend Unit #4

Dear Mr. Fancy:

Please find attached a copy of the "Public Notice" for the above referenced source as published in the Tampa Tribune on Saturday, April 20, 1985.

If you have any questions, please call.

Sincerely,

A. Spencer Autry
Manager
Environmental Planning

ASA/jst/024/3

attached

cc: Richard Garrity
Iwan Choronenko

RECEIVED

MAY 01 1985

THE TAMPA TRIBUNE

Published Daily
Tampa, Hillsborough County, Florida

ENVIRONMENTAL
PLANNING

State of Florida }
County of Hillsborough } ss.

Before the undersigned authority personally appeared
G. T. Gleason, who on oath says that he is Controller of The Tampa Tribune, a daily
newspaper published at Tampa in Hillsborough County, Florida; that the attached copy
of advertisement being a

LEGAL NOTICE

PUBLIC NOTICE BY THE TAMPA ELECTRIC
COMPANY REQUESTED THAT THEIR PREVENTION OF
SIGNIFICANT DETERIORATION PERMIT (PSD-FL-040)

was published in said newspaper in the issues of
APRIL 20th, 1985

Affiant further says that the said The Tampa Tribune is a newspaper published at
Tampa, in said Hillsborough County, Florida, and that the said newspaper has
heretofore been continuously published in said Hillsborough County, Florida, each day
and has been entered as second class mail matter at the post office in Tampa, in said
Hillsborough County, Florida, for a period of one year next preceding the first publica-
tion of the attached copy of advertisement; and affiant further says that he 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.

G. T. Gleason

Sworn to and subscribed before me, this 22nd day
of APRIL 1985

Debra Lynne Bouchard
Notary Public, State of Florida

My Commission Expires Jan. 6, 1989
Bonded Thru Troy Fain - Insurance, Inc.

(SEAL)

PUBLIC NOTICE
On January 30, 1985, the
Tampa Electric Company re-
quested that their Prevention
of Significant Deterioration
permit (PSD-FL-040) for the
coal-fired boiler, Unit 4, at the
Big Bend facility near Ruskin,
Florida, be revised. The re-
quested revision will result in
a projected increase of 271
tons per year of carbon
monoxide.
EPA has reviewed the pro-
posal to increase emissions.
The increase is due to an
error in emissions calculations
for this source and no process
of structural modifications
are involved. The projected
increase in emissions from
272 tons per year to 543 tons
per year of carbon monoxide
will increase the ambient
concentration (8hr
average) to approximately 96
ug/m3. The significant level
for carbon monoxide is 575
ug/m3 and therefore, no
adverse impacts are expected
due to the increase. The best
available control technology
has been determined to be
proper combustion controls
and is not changed in this pro-
posed revision.
Any person may submit
written comments regarding
this proposed permit revision.
All comments must be re-
ceived not later than 30 days
from the date of this notice in
order to be considered. A pub-
lic hearing may be held if suffi-
cient justification is provided
as determined by the Adminis-
trator. Letters should be ad-
dressed to:
Mr. Clair Fancy, P.E.
State of Florida
Department of
Environmental Regulation
Bureau of Air
Quality Management
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301
2111 4/20/85

Department of Environmental Regulation
Routing and Transmittal Slip

To: (Name, Office, Location)

1. *Clair Fancy, Air Regulation, 5505* ^{M.S.}

2. *5/8 Patty: Have we issued changes to PSD permit?*

3. *copy Hillsboro County's SW Dist*

4. *Clair*

Remarks:

Clair - Brian Deal's letter attached
RECEIVED *Patty*

APR 06 1994

Bureau of
 Air Regulation

5/8

Patty

Thanks. That makes it clear. Copy district & county with both documents. maybe a start cover memo would be in order. Keeping those Siting projects in good order needs to be a priority as they are our biggest sources and confusion has occurred in the past.

C. Newman

Clair

From:

done
5/9/94

Date

4/6/94

Phone

921-9682

PA

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.

<p>3. Article Addressed to: ?</p> <p>Patrick Ho Tampa Electric Co. PO Box 111 Tampa, FL 33601-0111</p>	<p>4a. Article Number 2 392 940 695</p>
<p>5. Signature (Addressee)</p>	<p>4b. Service Type</p> <p><input type="checkbox"/> Registered <input type="checkbox"/> Insured</p> <p><input checked="" type="checkbox"/> Certified <input type="checkbox"/> COD</p> <p><input type="checkbox"/> Express Mail <input type="checkbox"/> Return Receipt for Merchandise</p>
<p>6. Signature (Agent) <i>J. Williams</i></p>	<p>7. Date of Delivery DEC 19 1994</p>
<p>PS Form 3811, December 1991</p>	<p>8. Addressee's Address (Only if requested and fee is paid)</p>


Thank you for using Return Receipt Service.

PS Form 3811, December 1991 ☆U.S. GPO: 1983-352-714

DOMESTIC RETURN RECEIPT

Z 392 940 695

Mailed 12-15-94



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

PS Form 3800, March 1993

Sent to	Patrick Ho
Street and No.	Tampa Electric
P.O., State and ZIP Code	PO Box 111
Postage	Tampa FL \$33601-0111
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	



January 30, 1985

Mr. Steve Smallwood
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

RE: Request for Permit Modification
Big Bend Station Unit 4
Tampa Electric Company
PSD-FL-040

Dear Mr. Smallwood:

As you are probably aware, Tampa Electric Company is in the final stages of constructing a 417 MW (net) coal fired electric generating unit at the Big Bend Station in Ruskin, Florida. The commercial operation date for this new unit, Big Bend Unit 4, is expected to be in March of 1985.

In anticipation of our upcoming commercial operation of Unit 4, Tampa Electric Company has been reviewing all permitting associated with the new unit. On reviewing the above referenced Prevention of Significant Deterioration (PSD) permit and associated application documents, a calculation error was identified in the PSD application emissions estimate for carbon monoxide (CO). In the application, an incorrect emission factor from the EPA document Compilation of Air Pollutant Emission Factors, AP-42, was inadvertently used to estimate the CO emissions. The use of the incorrect emission factor lead to an underestimation of the CO emissions by a factor of two. Attachment I contains the calculations for the corrected estimate.

As seen in Attachment I, the CO emission rate is expected to be approximately 124 lb/hr and 0.029 lb/MMbtu.

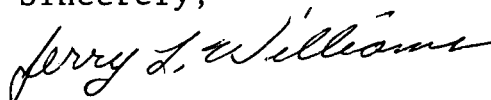
DER
FEB 4 1985
BAQM

Mr. Steve Smallwood
January 30, 1985
Page Two

Tampa Electric Company requests a modification of the CO limits listed in Table 1 of permit number PSD-FL-040 to reflect the corrected estimate. Attachment II contains the corrected pages to our PSD application.

If you should have any questions please feel free to call me.

Sincerely,



Jerry L. Williams
Director
Environmental

JLW/jbj/047/1

Attachment

cc: Dr. Richard Garrity (DER)

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION)	Initial
<i>Clair Fancey</i>	Date
2.	Initial
<i>Bill T. [Signature]</i>	Date
3.	Initial
<i>Ed Svec</i>	Date
4.	Initial
	Date

REMARKS:

If Steve needs to see this, send it back up.
Judy
If he's correct, we need to prepare something for EPA to change their permit.
Clair

INFORMATION

Review & Return

Review & File

Initial & Forward

DISPOSITION

Review & Respond

Prepare Response

For My Signature

For Your Signature

Let's Discuss

Set Up Meeting

Investigate & Report

Initial & Forward

Distribute

Concurrence

For Processing

Initial & Return

FROM:

Steve Smallwood

DATE *2-4-85*

PHONE

CARBON MONOXIDE (CO) EMISSIONS ESTIMATE
BIG BEND STATION UNIT 4
PSD-FL-040

Fuel input rate at 100% load = 413,000 $\frac{\text{lbs coal}}{\text{hour}}$

Heat input rate at 100% load = 4330 $\frac{\text{MMbtu}}{\text{hour}}$

CO emission factor = 0.6 $\frac{\text{lbs CO}^*}{\text{ton coal}}$

$$\begin{aligned} \text{(a)} \quad & 413,000 \frac{\text{lbs coal}}{\text{hour}} \times \frac{1}{2000} \frac{\text{tons coal}}{\text{lbs coal}} \times 0.6 \frac{\text{lbs CO}^{**}}{\text{ton coal}} \\ & = 123.9 \frac{\text{lbs CO}}{\text{hour}} \end{aligned}$$

$$\text{(b)} \quad 123.9 \frac{\text{lbs CO}}{\text{hour}} \times \frac{1}{4330} \frac{\text{hour}}{\text{MMbtu}} = 0.0286 \frac{\text{lbs CO}}{\text{MMbtu}}$$

* Compilation of Air Pollutant Emission Factors, AP-42. See Table 1.1-1. attached.

** In the previously submitted and approved PSD application an emission factor of 0.3 $\frac{\text{KgCO}}{\text{Mg Coal}}$ was mistakenly used as 0.3 $\frac{\text{lb CO}}{\text{Ton Coal}}$. See Table 1.1-1. attached.

TABLE 1.1-1. EMISSION FACTORS FOR EXTERNAL BITUMINOUS AND SUBBITUMINOUS COAL COMBUSTION^a

Firing Configuration	Particulate ^b		Sulfur Oxides ^c		Nitrogen Oxides ^d		Carbon Monoxide ^e		Nonmethane VOC ^{e,f}		Methane ^e	
	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton
Pulverized coal fired												
Dry bottom	5A	10A	19.5S(17.5S)	39S(35S)	10.5(7.5) ^g	21(15) ^g	0.3	0.6	0.04	0.07	0.015	0.03
Wet bottom	3.5A ^h	7A ^h	19.5S(17.5S)	39S(35S)	17	34	0.3	0.6	0.04	0.07	0.015	0.03
Cyclone furnace	1A ^h	2A ^h	19.5S(17.5S)	39S(35S)	18.5	37	0.3	0.6	0.04	0.07	0.015	0.03
Spreader stoker												
Uncontrolled	30 ⁱ	60 ⁱ	19.5S(17.5S)	39S(35S)	7	14	2.5	5	0.04	0.07	0.015	0.03
After multiple cyclone												
With flyash reinjection from multiple cyclone	8.5	17	19.5S(17.5S)	39S(35S)	7	14	2.5	5	0.04	0.07	0.015	0.03
No flyash reinjection from multiple cyclone	6	12	19.5S(17.5S)	39S(35S)	7	14	2.5	5	0.04	0.07	0.015	0.03
Overfeed stoker ^j												
Uncontrolled	8 ^k	16 ^k	19.5S(17.5S)	39S(35S)	3.25	7.5	3	6	0.04	0.07	0.015	0.03
After multiple cyclone	4.5	9	19.5S(17.5S)	39S(35S)	3.25	7.5	3	6	0.04	0.07	0.015	0.03
Underfeed stoker												
Uncontrolled	7.5 ^l	15 ^l	15.5S	31S	4.75	9.5	5.5	11	0.65	1.3	0.4	0.8
After multiple cyclone	5.5	11	15.5S	31S	4.75	9.5	5.5	11	0.65	1.3	0.4	0.8
Handfired units	7.5	15	15.5S	31S	1.5	3	45	90	5	10	4	8

^a Factors represent uncontrolled emissions unless otherwise specified and should be applied to coal consumption as fired.

^b Based on EPA Method 5 (front half catch) as described in Reference 12. Where particulate is expressed in terms of the coal ash content (A), the factor is determined by multiplying the weight % ash content of the coal (as fired) by the numerical value preceding the "A". For example, if a coal having 8% ash is fired in a dry bottom unit, the particulate emission factor would be 5 x 6 or 40 kg/Mg (80 lb/ton). On average, the "condensable" material collected in the back half catch of EPA Method 5 is less than 5% of the front half, or "filterable", catch for pulverized coal and cyclone furnaces; about 10% for spreader stokers; about 15% for other stokers; and about 50% for handfired units (References 6, 19, and 49).

^c Expressed as SO₂, including SO₂, SO₃ and gaseous sulfates. The factors in parentheses should be used to estimate gaseous sulfur oxide emissions for subbituminous coal. In all cases, "S" is the weight % sulfur content of the coal as fired. See Footnote b for an example calculation. On average for bituminous coal, 97% of the fuel sulfur is emitted as SO₂, whereas only about 0.7% of the fuel sulfur is emitted as SO₃ and gaseous sulfate. An equally small percent of the fuel sulfur is emitted as particulate sulfate (References 9, 13). Small quantities of sulfur are also retained in the bottom ash. With subbituminous coal, generally about 10% more fuel sulfur is retained in the bottom ash and particulate, because of the more alkaline nature of the coal ash. Conversion to gaseous sulfate appears to be about the same as for bituminous coal.

^d Expressed as NO₂. Generally, 95 - 99 volume % of the nitrogen oxides present in combustion exhaust will be in the form of NO, the rest being NO₂ (Reference 11). To express these factors as NO, multiply by a factor of 0.66. All factors represent emissions at baseline operation (i.e., 60 - 110% load and no NO_x control measures, as discussed in the text).

^e Nominal values achievable under normal operating conditions. Values one or two orders of magnitude higher can occur when combustion is not complete.

^f Nonmethane volatile organic compounds (VOC), expressed as C₂ to C₁₆ n-alkane equivalents (Reference 58). Because limited data on NMVOC were available to distinguish the effects of firing configuration, all data were averaged collectively to develop a single average for pulverized coal units, cyclones, spreader and overfeed stokers.

^g Parenthetic value is for tangentially fired boilers.

^h Uncontrolled particulate emissions, when no flyash reinjection is employed. When a control device is installed, and collected flyash is reinjected to the boiler, particulate from the boiler reaching the control equipment can increase by up to a factor of two.

ⁱ Accounts for flyash settling in an economizer, air heater or breeching upstream of a control device or stack. (Particulate directly at the boiler outlet typically will be twice this level.) This factor should be applied even when flyash is reinjected to the boiler from boiler, air heater or economizer dust hoppers.

^j Includes traveling grate, vibrating grate and chain grate stokers.

^k Accounts for flyash settling in the breeching or stack base. Particulate loadings directly at the boiler outlet typically can be 50% higher.

^l Accounts for flyash settling in the breeching downstream of the boiler outlet.

The petition must specify the following information: (a) The name, address, and telephone number of the petitioner; (b) The name, address, and telephone number of the attorney or qualified representative of the petitioner, if any; (c) Each rule or portion of a rule from which a variance or waiver is requested; (d) The citation to the statute underlying (implemented by) the rule identified in (c) above; (e) The type of action requested; (f) The specific facts that would justify a variance or waiver for the petitioner; (g) The reason why the variance or waiver would serve the purposes of the underlying statute (implemented by the rule); and (h) A statement whether the variance or waiver is permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

The Department will grant a variance or waiver when the petition demonstrates both that the application of the rule would create a substantial hardship or violate principles of fairness, as each of those terms is defined in Section 120.542(2) F.S., and that the purpose of the underlying statute will be or has been achieved by other means by the petitioner.

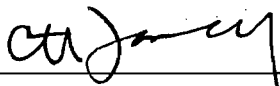
Persons subject to regulation pursuant to any federally delegated or approved air program should be aware that Florida is specifically not authorized to issue variances or waivers from any requirements of any such federally delegated or approved program. The requirements of the program remain fully enforceable by the Administrator of the EPA and by any person under the Clean Air Act unless and until the Administrator separately approves any variance or waiver in accordance with the procedures of the federal program.

This permitting decision is final and effective on the date filed with the clerk of the Department unless a petition is filed in accordance with the above paragraphs or unless a request for extension of time in which to file a petition is filed within the time specified for filing a petition pursuant to Rule 62-110.106, F.A.C., and the petition conforms to the content requirements of Rules 28-106.201 and 28-106.301, F.A.C. Upon timely filing of a petition or a request for extension of time, this order will not be effective until further order of the Department.

Any party to this permitting decision (order) has the right to seek judicial review of it under section 120.68 of the Florida Statutes, by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel, Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000, 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 must be filed within thirty days after this order is filed with the clerk of the Department.

If you have any questions regarding this letter, please contact me or Jeff Koerner at 850/488-0114.

Executed in Tallahassee, Florida.



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

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this permit modification was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 12-28-99 to the person(s) listed:

Gregory M Nelson TECO*
Jamie Hunter, TECO
Buck Oven, PPS Office
Mr. Gregg Worley, EPA Region 4

Mr. Jerry Kissel, Southwest District Office DEP
Mr. Jerry Campbell, HCEPC
Mr. Sterlin Woodward, HCEPC
Mr. John Bunyak, NPS

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

Hari Ober
(Clerk)

12-28-99
(Date)



TAMPA ELECTRIC

December 27, 1999

Mr. Clair Fancy
Florida Department of Environmental Protection
111 South Magnolia Drive, Suite 4
Tallahassee, Florida 32399-2400

Via FedEx
Airbill No. 7910 2686 5209

Re: Tampa Electric Company
Big Bend Unit #4's TSP and SO₂ Ambient Monitoring Program
Permit Fee

RECEIVED

DEC 28 1999

BUREAU OF AIR REGULATION

Dear Mr. Fancy:

0570039-007-FL
PSD-FL-040

Enclosed is the check for the \$250.00 permit fee as described in the December 22, 1999 letter from Gregory M. Nelson. This permit fee is provided for the minor technical change to PSD-FL-040 to reflect the completion of the requirements of Condition #6.

Thank you for your assistance in this matter. If you should have any questions, please feel free to call Jamie Hunter or me at (813) 641-5033.

Sincerely,

Patrick L. Shell
Engineer
Environmental Planning

EP\gm\PLS137

c: Mr. Buck Oven, FDEP - Tallahassee
Mr. Jeff Koerner, FDEP - Tallahassee

TECO PRODUCTION SERVICES

PETTY CASH
6944 U.S. HWY. 41 N.
APOLLO BEACH, FL 33572
PH. 813-671-3361

472

Dec. 27, 19 99

63-469/631
31

PAY TO THE
ORDER OF

FDEP

\$ 250.00

Two hundred fifty and no/100

DOLLARS

 Security features
on the reverse
of this check

Barnett

040-031
203 Apollo Beach Boulevard
Apollo Beach, Florida 33572

FOR BB Permit Mod - Pat Shell

Nancy E. Foley





FACSIMILE TRANSMITTAL SHEET

ENVIRONMENTAL PLANNING

813/641-5036

813/641-5081 FAX

DATE: 12/22/99

FOR IMMEDIATE DELIVERY

TO: JEFF KOERNER

COMPANY: FDEP

NUMBER OF PAGES (Including cover page): 2

FROM: PATRICK SHELL

COMMENTS:



TAMPA ELECTRIC

December 22, 1999

Mr. Clair Fancy
Florida Department of Environmental Protection
111 South Magnolia Drive, Suite 4
Tallahassee, Florida 32399-2400

Via Facsimile and FedEx
Airbill No. 7918 1370 4136

**Re: Tampa Electric Company
Big Bend Unit #4's TSP and SO₂ Ambient Monitoring Program
Request for Minor Permit Modification**

Dear Mr. Fancy:

This letter is provided as follow up to our request to the Environmental Protection Commission of Hillsborough County to discontinue TSP and SO₂ monitoring as provided by Part I, Condition #6 of PSD-FL-040. Tampa Electric is requesting a minor technical change to PSD-FL-040 to reflect the completion of the requirements of Condition #6. Tampa Electric will follow this letter with a check for \$250.00 under separate cover as required by Chapter 62-4.050 FAC by December 28, 1999.

Thank you for your assistance in this matter. If you should have any questions, please feel free to call Jamie Hunter or me at (813) 641-5033.

Sincerely,

A handwritten signature in black ink, appearing to read "Gregory M. Nelson".

Gregory M. Nelson, P.E.
Manager
Environmental Planning

EPgmPLS136

c: Mr. Buck Oven, FDEP - Tallahassee
Mr. Jeff Koerner, FDEP - Tallahassee

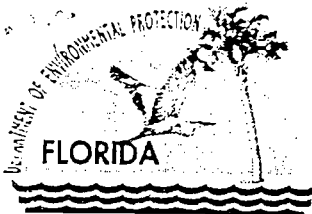
TAMPA ELECTRIC COMPANY
P. O. BOX 111 TAMPA, FL 33601-0111

AN EQUAL OPPORTUNITY COMPANY
[HTTP://WWW.TAMPAELECTRIC.COM](http://www.tampaelectric.com)

(813) 228-4111

CUSTOMER SERVICE:
HILLSBOROUGH COUNTY (813) 223-0800
OUTSIDE HILLSBOROUGH COUNTY 1 (888) 223-0800

Handwritten note:



Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

December 13, 1999

Mr. Sterlin Woodard, P.E.
Air Management Division
Environmental Protection Commission
of Hillsborough County
1410 North 21 Street
Tampa, Florida 33605

Re: TECO Big Bend Unit #4's TSP and SO₂ Ambient Monitoring Program
(PA79-12 and PSD-FL-040)

Dear Mr. Woodard:

Thank you for reviewing Tampa Electric Company's (TECO's) request to discontinue the TSP and SO₂ Ambient Monitoring Program for the Big Bend Unit #4. Your comments, dated November 15, 1999, are appreciated.

Ms. Dotty Diltz, Chief of the Bureau of Ambient Monitoring and Mobile Sources, has notified Mr. Buck Oven, P.E. Administrator of the Office of Siting Coordination, that she has agreed to the discontinuance of this monitoring. Mr. Oven is in the process of removing this requirement from the Conditions of Certification for Big Bend Unit #4 and hopes to have this accomplished during the first quarter of 2000. However, Mr. Oven is of the opinion that the Conditions of Certification currently allow the Department to discontinue the monitoring whenever we are satisfied it is no longer necessary. As Ms. Diltz has made this decision, TECO may discontinue the monitoring immediately.

We will not be requiring re-modeling using the new Units #1&2 common stack.

Sincerely,

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

CHF/clp

c: Dotty Diltz
Buck Oven

COMMISSION

PAT FRANK
CHRIS HART
JIM NORMAN
JAN PLATT
THOMAS SCOTT
RONDA STORMS
BEN WACKSMAN

EXECUTIVE DIRECTOR

ROGER P. STEWART



ADMINISTRATIVE OFFICES, LEGAL &
WATER MANAGEMENT DIVISION
1900 - 9TH AVENUE
TAMPA, FLORIDA 33605
TELEPHONE (813) 272-5960
FAX (813) 272-5157

AIR MANAGEMENT DIVISION
TELEPHONE (813) 272-5530

WASTE MANAGEMENT DIVISION
TELEPHONE (813) 272-5788

WETLANDS MANAGEMENT DIVISION
TELEPHONE (813) 272-7104

MEMORANDUM

RECEIVED

NOV 17 1999

DATE: November 15, 1999

BUREAU OF AIR REGULATION

TO: Clair Fancy, P.E.

FROM: Sterlin Woodard, P.E.

SUBJECT: TECO Big Bend Unit #4's TSP and SO₂ Ambient Monitoring Program
(PA79-12 and PSD-FI-040)

We have reviewed TECO's request, which we received on August 27, 1999, and have no objections to the TSP and SO₂ Ambient Monitoring program being discontinued. Both the Conditions of Certification (Specific Condition No. I.B.2.), and PSD-FI-040 (Part I, Specific Condition No. 6) requires that the facility operate and maintain SO₂ monitors. However, the Conditions of Certification specifies that TECO operate two TSP monitors and two SO₂ monitors. They have maintained and operated these monitors since 1984. However, Specific Condition No. 6 of the PSD Permit only requires that the SO₂ monitors be operated for at least a year, and until the Administrator determines that the effects of the modification on air quality have been quantified. It appears that the whole intent of the ambient monitoring program was to quantify the effects of the modification, even though the pre-construction modeling showed there would be little impact.

We have reviewed TECO's proposal, and the ambient data that is referenced agrees with the information in our files. Except for the one exceedance of the 3-hour NAAQS for SO₂ in 1985, there have been no recorded exceedances at these monitoring sites. On the other hand, in 1995 and 1996, our own monitors recorded elevated SO₂ levels in the area that were near the 24-hour standard on two separate days. However, since that time, the trend has been downward, and the levels are well within the Standards. We agree that the Acid Rain regulations have resulted in significant reductions in SO₂ from the entire Big Bend facility (down by over 50,000 TPY from 1990 levels), and that the pending completion of construction of the Big Bend #1, 2 scrubber will result in even further reductions. Even though we were not able to verify the results of TECO's statistical analysis, the wealth of historical information supports their assertion that the SO₂ levels will more than likely continue to remain well below the NAAQS. It is, therefore, our opinion that the SO₂ ambient monitors may no longer be necessary, and have no objections to TECO discontinuing their use.

Clair Fancy
Memorandum
November 15, 1999
Page 2

Because of the fact that the TSP NAAQS has been repealed, and replaced with newer Particulate Matter, PM10 and PM2.5 standards, we have no objections to TECO also discontinuing the use of the TSP Monitors. Their continued use is no longer warranted because the TSP Monitors, which over estimate the concentrations of these finer particulates, have shown continuous compliance with the new standards, and have served their initial purpose of quantifying the effects of the modification. With all the expected reductions at the plant, and the more than 14 years of ambient data that show no real overall change, we believe the effects of the modification have been quantified, and the air quality has not been significantly impacted.

Even though we support the discontinued use of the SO₂ and TSP Monitors, we recommend that the plant be re-modeled using the new Unit #1, 2 Common Stack to ensure that any possible reduced stack gas buoyancy (lower stack temperature and higher moisture content) does not increase the maximum SO₂ ground level impacts.

If you have any questions, please let me know.

cag



Department of Environmental Protection

Copy
JR
CH
SA

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

November 17, 1997

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Robert Stewart, Sr. Vice President
Operations and Administration
Piney Point Phosphates, Inc.
13300 US Highway North
Palmetto, Florida 34221

Re: DEP File No. 0810002-004-AC
Piney Point Sulfuric Acid Plant Project

Dear Mr. Stewart:

We are reviewing your application to modify the existing sulfuric acid plant in Palmetto. It will not be complete until we receive the information requested below as well as your response from a further request for additional information which we will send you on November 25. The next request will include any comments from the National Park Service, Manatee County, EPA, and our modeling experts.

We have, nevertheless, begun our technical review. Best Available Control Technology (BACT) was proposed in the application as 4 pounds of sulfur dioxide per ton of acid (lb SO₂/ton) and 0.15 pounds of sulfuric acid mist (lb SAM/ton). The proposed values represent the New Source Performance Standards (NSPS) limits in force during the previous operation of the plant when it was permitted to produce 2000 tons per day (TPD) of sulfuric acid.

Other factors being equal, lower SO₂ emissions should result due to the planned replacement of degraded Type 210 and Type 11 vanadium containing (VC) pelletized catalyst in Converter 1 with low pressure LP 120 and LP 110 VC ring catalyst and the planned replacement of all pelletized VC catalyst in Converter 2 with LP 110 VC ring catalyst. The old catalysts were introduced by Monsanto in 1925 and 1963, whereas the LP line was first produced in 1980. With the lower pressure drop and improved conversion, it may be possible to enhance production, maintain it longer and still achieve lower emissions.

Though costly, total replacement of all pelletized catalyst in Converter 1 with the LP line could also result in even more SO₂ reduction and production improvement. It might even be advisable in order to minimize potential blockage of the internal ring openings by remaining pellets.

Instead of replacing the catalyst in Converter 2 with LP 110 VC catalyst as planned, it can be replaced with a "cesium-promoted" VC catalyst such as CS-110. This allows significant reduction of the operating temperature in Pass 5. The CS line was introduced in 1989 and has been demonstrated at several double absorption plants. This provides another opportunity for reduced emissions, higher steam production, and possibly increased production despite the higher cost. Please evaluate separately and in combination, the costs and benefits of both additional catalyst replacement scenarios given above.

We do not recommend processes which result in by-products or wastes and do not expect Piney Point Phosphates Inc. (PPPI) to review them further. It appears that these processes are not generally competitive with those which result in production of additional acid.

Since both absorption towers will be replaced, there are process modifications which should be considered which also result in production of sulfuric acid. One example is the "Centaur SO₂ Removal Process" developed by Monsanto in conjunction with Calgon. Basically, Converter 2 can be replaced with a reactor containing highly activated carbon catalyst/adsorbent. Wet conversion occurs in the bed which retains the acid. The acid is released by sequential back-washing of bed sections. The catalyst can operate at very low temperatures. This can result in reduced pressure drop across the plant as well as lower heat waste, lower emissions, and possibly increased production. Besides elimination of the second converter and its catalyst, it would eliminate the need for the planned replacement of the final tower, some heat exchangers, and the economizer.

Other possibilities exist such as peroxide oxidation of SO₂ to sulfuric acid. Monsanto or another company may have developed such a process. The point is that potentially feasible options need to be considered whether or not they have actually been employed on sulfuric acid plants in Florida. Please provide the technical and cost evaluations of all the options described above to allow the Department to make a thorough BACT determination. We would appreciate review of our information request by your contractor, Monsanto Enviro-Chem.

The planned replacement of all towers and their mist eliminators ought to make it possible to decrease SAM emissions. The mist eliminators described appear to be very efficient and the plant does not produce oleum which would otherwise make it more difficult to achieve a lower rate than 0.15 lb SAM/ton.

We are conducting the present evaluation under the assumption that a second plant will not be operated while the existing plant is used. Both the PSD analysis submitted for modifying the existing plant and the one submitted for building a second plant include emissions estimates for only one plant at the site. This will ultimately need to be reconciled when Piney Point's final plans are known. If there is a simultaneous two-plant option, it cannot be implemented under the applications submitted to-date.

If you have any questions regarding this matter, please call me at 850/488-1344.

Sincerely,



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

AAAL/aal

cc: Brian Beals, EPA
John Bunyak, NPS
Bill Thomas, SWD
Karen Collins, Manatee County
Ivan Nance, PPPI
John Koogler, P.E., K&A



TAMPA ELECTRIC

November 12, 1997

Mr. Al Linero
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Mr. Jerry Campbell
Environmental Protection Commission
of Hillsborough County
1410 N. 21st Street
Tampa, Florida 33605

Re: Tampa Electric Company
Big Bend Unit #4
Petroleum Coke
Permit #PSD-FL-040
Annual Report (2 of 5)

Gentlemen:

As required by Specific Condition #1.C. of the above referenced permit, enclosed please find the annual petroleum coke fuel blend report. This report is to demonstrate that the operational change, the burning of petroleum coke, did not result in an emissions increase.

If you have any questions, please feel free to call Jamie Woodlee or me at (813) 641-5060.

Sincerely,

Gregory M. Nelson, P.E.
Administrator - Air Programs
Environmental Planning

EPARPT061

Enclosures

TAMPA ELECTRIC COMPANY

P.O. BOX 111

TAMPA, FL 33601-0111

HILLSBOROUGH COUNTY 223-0800

OUTSIDE OF HILLSBOROUGH COUNTY 1-888-223-0800

HTTP://WWW.TECOENERGY.COM

AN EQUAL OPPORTUNITY COMPANY

RECEIVED

NOV 17 1997

BUREAU OF
AIR REGULATION

cc: J. Reynolds, BAR

**TAMPA ELECTRIC COMPANY
BIG BEND UNIT 4
PETROLEUM COKE FUEL BLEND
ANNUAL EMISSIONS REPORT**

**SEPTEMBER 17, 1996
THROUGH
SEPTEMBER 16, 1997**

**BIG BEND UNIT #4
ACTUAL OPERATING CONDITIONS
COMPARISON TO
HISTORICAL ACTUAL EMISSIONS**

POLLUTANT	ANNUAL EMISSION (TPY) 9/17/96 - 9/16/97	vs	1993 & 1994 ANNUAL EMISSION (TPY)
SO2	5097		6788
NOx	6018		6763
PM	70		72

g:/air/jktb4com

**BIG BEND UNIT #4
 PETROLEUM COKE FUEL BLEND
 SO2 EMISSIONS
 9/17/96 - 9/16/97**

DATE	SCRUBBER EFFICIENCY	COAL CONSUMED TONS	SULFUR CONTENT %	SO2 REMOVED TONS	SO2 EMITTED TONS
SEP (9/17-9/30)	92.95	110973	3.13	6134	264
OCT 96	91.09	128113	3.17	7029	688
NOV 96	91.74	116121	3.17	6416	578
DEC 96	93.19	123970	3.57	7836	573
JAN 97	94.29	115476	3.47	7179	435
FEB 97	92.80	52173	3.31	3045	236
MAR 97	93.92	105340	2.98	5602	363
APR 97	96.01	113619	3.17	6570	273
MAY 97	94.81	125840	3.20	7254	397
JUN 97	93.91	127623	3.19	7264	471
JUL 97	94.52	130398	3.05	7142	414
AUG 97	95.35	107151	3.16	6134	299
SEP (THRU 9/16)	94.01	79749	2.27	3234	106
SO2 TONS EMITTED					5097

**BIG BEND UNIT #4
 PETROLEUM COKE FUEL BLEND
 NOx EMISSIONS
 9/17/96 - 9/16/97**

DATE	GROSS GENERATION MWHR	GROSS HEAT RATE BTU/KWH	HEAT INPUT MMBTU	NOx EMISSIONS LBS/MMBTU	YTD EMISSIONS LBS/MMBTU	NOx EMISSIONS MONTHLY TONS	NOx EMISSIONS YTD TONS
SEP (9/17-9/30)	148054	9621	1424429	0.393	0.393	280	280
OCT 96	313830	9431	2959731	0.396	0.395	586	866
NOV 96	275232	9452	2601493	0.394	0.395	512	1378
DEC 96	302429	9419	2848579	0.399	0.396	568	1947
JAN 97	275779	9391	2589841	0.381	0.393	493	2440
FEB 97	137108	9355	1282645	0.384	0.392	246	2686
MAR 97	238129	9398	2237936	0.362	0.388	405	3091
APR 97	261759	9491	2484355	0.420	0.392	522	3613
MAY 97	298206	9507	2835044	0.404	0.394	573	4186
JUN 97	295381	9611	2838907	0.394	0.394	559	4745
JUL 97	298177	9649	2877110	0.405	0.395	583	5328
AUG 97	249092	9758	2430640	0.406	0.396	493	5821
SEP (THRU 9/16)	96647	9640	931682	0.422	0.397	197	6018
TOTAL	3189823		30342392				

**BIG BEND UNIT #4
PETROLEUM COKE FUEL BLEND
PM EMISSIONS
9/17/96 - 9/16/97**

FROM ANNUAL COMPLIANCE TEST PM = SEP 17, 1996 - FEB 1997 .003 LB/MMBTU
FROM ANNUAL COMPLIANCE TEST PM = MAR 1997 - SEP 16, 1997 .006 LB/MMBTU
FROM GENERATION SUMMARY MONTHLY HEAT INPUTS

ANNUAL PM EMISSIONS (TPY) = (0.003 LB/MMBTU)(MONTHLY HEAT INPUT MMBTU)(TN/2000LB)
(SEP 17, 1996 - FEB 1997)

ANNUAL PM EMISSIONS (TPY) = (0.006 LB/MMBTU)(MONTHLY HEAT INPUT MMBTU)(TN/2000LB)
(MAR 1997 - SEP 16, 1997) TPY =



November 12, 1996

Mr. Al Linero
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Mr. Jerry Campbell
Environmental Protection Commission
of Hillsborough County
1410 N. 21st Street
Tampa, Florida 33605

**Re: Tampa Electric Company
Big Bend Unit #4
Petroleum Coke
Permit #PSD-FL-040
Annual Report**

RECEIVED
NOV 18 1996
BUREAU OF
AIR REGULATION

Gentlemen:

As required by Specific Condition #1.C. of the above referenced permit, enclosed please find the first of the required five (5) annual reports. This report is to demonstrate that the operational change, the burning of petroleum coke, did not result in an emissions increase.

If you have any questions, please feel free to call Janice Taylor or me at 641-5039.

Sincerely,

Patrick A. Ho, P.E.
Manager
Environmental Planning

EP/RPT061

Enclosures

cc: a. Linero
D. Reynolds
M. Costello
EPA
NPS
S. Arif



**TAMPA ELECTRIC COMPANY
BIG BEND UNIT 4
PETROLEUM COKE FUEL BLEND
ANNUAL EMISSIONS REPORT
September 17, 1995-
September 16, 1996**

**BIG BEND UNIT #4
ACTUAL OPERATING CONDITIONS
COMPARISON TO
HISTORICAL ACTUAL EMISSIONS**

POLLUTANT	ANNUAL EMISSION (TPY) 9/17/95 - 9/16/96	vs	1993 & 1994 ANNUAL EMISSION (TPY)
SO2	4565		6788
NOx	6277		6763
PM	47		72

**BIG BEND UNIT #4
PETROLEUM COKE FUEL BLEND
PM EMISSIONS
9/17/95 - 9/16/96**

FROM ANNUAL COMPLIANCE TEST PM = .003 LB/MMBTU
FROM GENERATION SUMMARY ANNUAL HEAT INPUT = 31472124 MMBTU

ANNUAL PM EMISSIONS (TPY) = (0.003 LB/MMBTU)(31472124 MMBTU)(TN/2000LB)
(9/17/95-9/16/96) = 47.2 TPY => **47 TPY**

**BIG BEND UNIT #4
 PETROLEUM COKE FUEL BLEND
 NO_x EMISSIONS
 9/17/95 - 9/16/96**

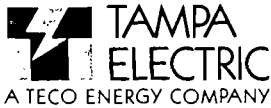
DATE	GROSS GENERATION MWHRS	GROSS HEAT RATE BTU/KWH	HEAT INPUT MMBTU	NO_x EMISSIONS LBS/MMBTU	YTD EMISSIONS LBS/MMBTU	NO_x EMISSIONS MONTHLY TONS	NO_x EMISSIONS YTD TONS
SEPT 17 - OCT 16	303546	9706	2946278	0.521	0.521	768	768
OCT 17 - NOV 16	301412	9580	2887557	0.486	0.504	702	1469
NOV 17 - DEC 16	262891	9451	2484664	0.447	0.487	555	2025
DEC 17 - JAN 16	295254	9460	2793044	0.371	0.458	518	2543
JAN 17 - FEB 16	267304	9525	2545956	0.395	0.446	503	3045
FEB 17 - MAR 16	82702	9301	769220	0.392	0.443	151	3196
MAR 17 - APR 16	293606	9312	2734030	0.347	0.428	474	3671
APR 17 - MAY 16	317246	9311	2953878	0.366	0.419	541	4211
MAY 17 - JUN 16	320400	9423	3019129	0.354	0.410	534	4746
JUN 17 - JUL 16	306826	9464	2903801	0.356	0.404	517	5262
JUL 17 - AUG 16	299709	9548	2861622	0.363	0.400	519	5782
AUG 17 - SEP 16	264217	9738	2572945	0.385	0.399	495	6277
TOTAL	3315113	N/A	31472124	N/A	N/A	N/A	42995

**BIG BEND UNIT #4
 PETROLEUM COKE FUEL BLEND
 SO2 EMISSIONS
 9/17/95 - 9/16/96**

DATE	SCRUBBER EFFICIENCY	COAL CONSUMED TONS	SULFUR CONTENT %	SO2 REMOVED TONS	SO2 EMITTED TONS
SEP (9/17-9/30/95)	96.70	62783	3.30	3807	130
OCT 95	96.30	126076	3.30	7612	292
NOV 95	95.20	122135	3.11	6871	346
DEC 95	94.06	121661	3.11	6762	427
JAN 96	95.50	113380	3.07	6316	298
FEB 96	95.80	55079	3.14	3148	138
MAR 96	94.50	103090	3.07	5683	331
APR 96	94.10	123571	2.91	6429	403
MAY 96	92.80	140604	3.12	7735	600
JUN 96	94.20	129370	3.12	7224	445
JUL 96	94.60	131506	3.17	7493	428
AUG 96	93.60	130428	3.21	7446	509
SEP (THRU 9/16/96)	93.10	52260	3.18	2940	218
SO2 TONS EMITTED					4565

Best Available Copy

al



DEPARTMENT OF
ENVIRONMENTAL PROTECTION

OCT 26 1995

SITING COORDINATION

October 20, 1995

Mr. Hamilton S. Oven, Jr.
Administrator, Siting Coordination Office
Florida Department of Environmental Protection
3900 Commonwealth Boulevard
Tallahassee, FL 32399-2400

RECEIVED

NOV 1

Division of Air
Resources Management

**Re: Tampa Electric Company
Big Bend Station Unit No. 4
Modification of Conditions of Certification
PA 79-12**

Dear Mr. Oven:

As you know, we recently received the final order modifying conditions of certification for Big Bend Unit No. 4 to accommodate the use of a coal/petroleum coke blend fuel and changes to the fuel yard. One of the issues that was raised by the Environmental Protection Commission of Hillsborough County (EPCHC) was the appropriate visible emission limit for the fuel yard. EPCHC took the position that the 20 percent opacity limit that was in the original Conditions of Certification issued in 1981, and re-established for our operations in the Department's Final Order Modifying Conditions of Certification dated March 31, 1994, was not appropriate. Instead, the EPCHC requested that a 5 percent opacity limit be applied. In informal discussions, EPCHC suggested that a 10 percent limitation be adopted as a compromise.

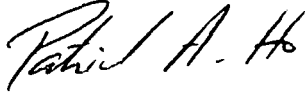
EPCHC has set forth several bases for the applicability of the 5 percent limit, but primarily has argued that the 20 percent limitation is not applicable and that 5 percent should be applied based upon reasonably available control technology (RACT). This limit, of course, has never been applied to this facility.

Since the revised Conditions of Certification now include a reference to the 5 percent opacity limitation as being applicable to visible emissions from the fuel yard, other than those unconfined emissions that are subject to the 20 percent opacity standard, we thought it appropriate to be sure that our position is understood. Although we have no objection to reciting the 5 percent opacity requirement in the Conditions of Certification or in the PSD permit, as previously discussed, all of the coal yard emissions are unconfined, as defined in Rule 62-296.200(192), Florida Administrative Code. Consequently, there are no areas to which the RACT opacity provision would be applicable.

Mr. Hamilton S. Oven, Jr.
October 20, 1995
Page 2 of 2

If you have any questions, feel free to call me at (813) 228-4839.

Sincerely,

A handwritten signature in cursive script that reads "Patrick A. Ho". The signature is written in black ink and is positioned below the word "Sincerely,".

Patrick A. Ho, P.E.
Manager
Environmental Planning

EP\gm\JKT735

File

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In Re: Tampa Electric Company)	
Big Bend Station Unit 4)	
Modification of Conditions)	DER Case No. PA 79-12C&D
of Certification PA 79-12)	OGC Case No. 94-0914
Hillsborough County, Florida)	
_____)	

**FINAL ORDER MODIFYING
CONDITIONS OF CERTIFICATION**

On August 17, 1981, the Governor and Cabinet, sitting as the Siting Board, issued a final order approving certification for Tampa Electric Company's (TECO's) Big Bend Station Unit 4. That certification order approved the construction and operation of a 486 MW (gross) coal-fired facility and associated facilities located in Hillsborough County, Florida.

On January 13, 1995, TECO filed a request to amend the conditions of certification pursuant to Section 403.516(1)(b). Florida Statutes. TECO requested that the condition be modified to approve several changes in the project design and operation of the coal yard.

Copies of TECO's proposed modification were distributed to all parties to the certification proceeding and made available for public review in June, 1995. On June 30, 1995, a Notice of Intent to Issue Proposed Modification of Power Plant Certification was published in the Florida Administrative Weekly. As of June 27, 1995, all parties to the original proceeding had received copies of the notice. The notice specified that a hearing would be held if a party to the original certification hearing objected within 45 days from receipt of the proposed notice of modification or if a person whose substantial interests would be affected by the proposed modification objected in

writing within 30 days after issuance of the public notice. One objection to the proposed modifications as noticed was received by the Department, but it was denied as untimely. Accordingly, in the absence of any timely objection,

IT IS ORDERED:

The proposed changes to TECO Big Bend Station as described in the January 13, 1995, requests for modification are APPROVED. Pursuant to Section 403.516(1)(b), F.S., the conditions of certification for the TECO Big Bend Station are MODIFIED as follows:

Condition I.A.

1. Based on a maximum heat input of 4,330 million BTU per hour, stack emissions from Big Bend Unit 4 shall not exceed the following when burning coal or a coal/petroleum coke blend:

a. - d. no change.

2. no change

3.

a. ~~The permittee shall not cause to be discharged into the atmosphere Pursuant to Chapter 1-3.62 Rules of the Environmental Protection Commission of Hillsborough County, visible emissions shall not exceed 20% opacity for any unconfined emission unit in the fuel yard. Unconfined emissions as defined by Rule 62-296.200, F.A.C., shall include the static fuel piles, etc. coal fuel processing or conveying equipment, coal fuel storage system, coal fuel transfer and loading system processing coal, visible emissions which exceed 20 percent opacity.~~

Pursuant to Rule 62.296.711(2), F.A.C., visible emissions shall not exceed 5 percent opacity for the remaining emission units in the fuel yard. Initial and subsequent visible emissions compliance tests shall be demonstrated using EPA Reference Method 9, 40 CFR Part 60, Appendix A, Visual

Determination of Fugitive Emissions from Material Sources (July 1, 1993 version). All testing shall be done within 90 days of completing reconfiguration of the fuel yard, and prior notification of testing shall be submitted in writing at least 15 days beforehand to the EPC of Hillsborough County.

Particulate emissions shall be controlled by use of control devices.

b. (No change)

c. The ~~coal~~ fuel pile operations are subject to Rule ~~6217-296.310(3)~~, F.A.C., Unconfined Emissions of Particulate Matter. Reasonable precautions to minimize unconfined particulate matter shall be in accordance with Rule ~~6217-296.310(3)(c)~~, F.A.C.; and, may include, but shall not be limited to, the coating of roads and construction sites used by contractors and regrassing or watering areas of disturbed ~~coal~~ fuel.

d. From each ~~coal~~ fuel transloading of source/emission point (i.e., off-loading and loading of ~~coal~~ fuel), the maximum annual transloading transfer of ~~coal~~ fuel shall not exceed 4,000 tons, 24-hour rolling average.

e. From each ~~coal~~ fuel transloading source/emissions point (i.e., off-loading and loading of ~~coal~~ fuel), the maximum annual transloading transfer of ~~coal~~ fuel shall not exceed 1,428,030 tons.

f. The number of railcars and trucks and the quantity of ~~coal~~ fuel loaded by each ~~coal~~ fuel transloading source/emission point (i.e., off-loading and loading of ~~coal~~ fuel) shall be recorded, maintained, and kept on file for a minimum of two years. The annual quantity of ~~coal~~ fuel loaded by each ~~coal~~ fuel transloading source/emission shall be submitted in Annual Operation Report (AOR) to the Environmental Protection Commission of Hillsborough County by March 1 of each year for the previous year's operation.

4. - 11. no change

12. Fuels fired shall consist of coal or a coal/petroleum coke blend containing a maximum of 20.0 percent petroleum coke by weight. The sulfur content of the petroleum coke shall not exceed 6.0 percent by weight (dry basis). Vanadium content of the mineral ash from the petroleum coke fired shall not exceed 35.0 percent by weight (ignited basis).

13. Gravimetric instrument data verifying that the 20.0 percent maximum petroleum coke by weight basis has not been exceeded shall be maintained and submitted to the Department's Southwest District Office and the Environmental Protection Commission of Hillsborough County (EPCHC) with each annual operating report.

14. Pursuant to Rule 62-212.200(2)(d), F.A.C., the actual emissions of the No. 4 Unit shall equal the representative actual emissions as defined in 40 CFR 52.21(b)(33). The Permittee shall maintain and submit to the Department and EPCHC on an annual basis for a period of five years from the date the unit begins firing petroleum coke, data demonstrating that the operational change did not result in an emissions increase.

Any party to this Notice has the right to seek judicial review of the Order 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 of Environmental Protection in the Office of General, 3900 Commonwealth Blvd., Tallahassee, Florida 32399-3000; 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 that the Final Order is filed with the Department of Environmental Protection.

DONE AND ENTERED this 15th day of September, 1995 in Tallahassee,
Florida.

**STATE OF FLORIDA, DEPARTMENT
OF ENVIRONMENTAL PROTECTION**

**FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to S120.52
Florida Statutes, with the designated
Department Clerk, receipt of which
is hereby acknowledged.**

Rebecca Pina 9-18-95
Clerk Date

Virginia B. Wetherell
VIRGINIA B. WETHERELL
SECRETARY
3900 Commonwealth Boulevard
Tallahassee, FL 32399-3000

CERTIFICATE OF SERVICE

I DO HEREBY certify that a true and correct copy of the foregoing has been sent by U.S. Mail to the following listed persons:

Lawrence N. Curtin
Attorney at Law
Holland & Knight
P.O. Drawer 810
Tallahassee, FL 32302

Karen Brodeen
Assistant General Counsel
Dept. of Community Affairs
2740 Centerview Drive
Tallahassee, FL 32399-2100

Michael Palecki, Chief
Bureau of Electric & Gas
Florida Public Service Commission
101 East Gaines Street
Tallahassee, FL 32399-0850

Martin D. Hernandez
Richard Tschantz
Assistant General Counsels
Southwest Florida Water Management
District
2370 Broad Street
Brooksville, FL 34609-6899

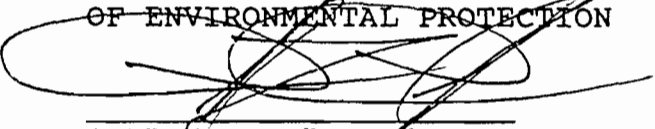
Sara M. Fotopulos
Chief Counsel
Environmental Protection Commission
of Hillsborough County
1900 Ninth Avenue
Tampa, FL 33605

Greg Nelson, P.E.
Tampa Electric Company
P.O. Box 111
Tampa, FL 33601-0111

cc: al
Szed
John R.

this 18th day of September, 1995.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION


CHARLES T. "CHIP" COLLETTE
Assistant General Counsel
3900 Commonwealth Blvd.
Tallahassee FL 32399-3000



Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

September 6, 1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Patrick Ho, P.E.
Manager of Environmental Planning
Tampa Electric Company
Post Office Box 111
Tampa, Florida 33601-0111

Dear Mr. Ho:

Re: Amendment of PSD-FL-040 to Allow Firing of Coal/Petroleum
Coke Blend in Big Bend Unit 4

The Department hereby amends the subject air construction permit allowing the firing of a blend of coal and petroleum coke. The permit is amended as shown:

New Specific Condition 1. A.:

1. A. Fuels fired shall consist of coal or a coal/petroleum coke blend containing a maximum of 20.0% petroleum coke by weight. The sulfur content of the petroleum coke shall not exceed 6.0 % by weight (dry basis). Vanadium content of the mineral ash from the petroleum coke fired shall not exceed 35.0% by weight (ignited basis).

New Specific Condition 1. B.:

1. B. Gravimetric instrument data verifying that the 20.0% maximum petroleum coke content by weight has not been exceeded shall be maintained and submitted to the Department and the Environmental Protection Commission of Hillsborough County (EPCHC) with each annual operating report.

New Specific Condition 1. C.:

1. C. Pursuant to Rule 62-212.200(2)(d), Florida Administrative Code (F.A.C.), the actual emissions of the No. 4 unit shall equal the representative actual annual emissions, as defined in 40 CFR

Mr. Patrick Ho
September 6, 1995
Page Two

52.21(b)(33). The permittee shall maintain and submit to the Department and the EPCHC on an annual basis for a period of 5 years from the date the unit begins firing petroleum coke, data demonstrating that the operational change did not result in an emissions increase.

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.

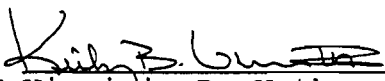
If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this amendment. Persons whose substantial interests will be affected by any decision of the Department with regard to the amendment request/application have the right to petition to become a party to

Mr. Patrick Ho
September 6, 1995
Page Three

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, Florida Administrative Code.

A copy of this amendment letter shall be attached to and shall become a part of Air Construction Permit PSD-FL-040.


STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION


for Virginia B. Wetherell, Secretary

CERTIFICATE OF SERVICE

This is to certify that this Permit Amendment and all copies were mailed to the listed persons before the close of business on September 6 1995.

FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to
Chapter 120.52(9), Florida
Statutes, with the designated
Deputy Clerk, receipt of which is
hereby acknowledged.

 9-6-95
(Clerk) (Date)

cc: B. Thomas, SWD
L. Deken, EPCHC
J. Harper, EPA
J. Bunyak, NPS
H. Oven, PPS

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):

- Addressee's Address
- Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Patrick Ho, Mgr of
Energy Planning
Tampa Electric Co
P.O. Box 111
Tampa, FL 33601-0111

4a. Article Number
2 127 632 501

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

7. Date of Delivery
SEP 11 1995

5. Signature (Addressee)

6. Signature (Agent)
A. Miller

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**

2 127 632 501



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

Sent to Patrick Ho	
Street and No. LECO	
P.O., State and ZIP Code Tampa 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	9-6-95 PSD-FI-040 BU # 4

PS Form 3800, March 1993

Florida Department of
Environmental Protection

Memorandum

TO: Virginia B. Wetherell
THRU: Kirby Green
FROM: Howard L. Rhodes *HLR*
DATE: Septmber 1, 1995
SUBJ: Tampa Electric Company - Big Bend Unit 4
Permit Amendment - PSD-FL-040

Attached for your approval and signature is a permit amendment allowing Tampa Electric to burn a blend of coal and petroleum coke (petcoke) in Big Bend Unit 4. Big Bend Unit 4 is served by a sulfur dioxide scrubber with an overall removal efficiency of at least 90 %. Tampa Electric agreed to these limits and the amendment notice was published on June 17 with no adverse comments received. The final order modifying these same conditions in the power plant certification is being submitted concurrently by the Siting Group.

If you have any questions, we will be glad to discuss the details.

HLR/aal/l

Attachment



RECEIVED

AUG 4 1995

August 2, 1995

Bureau of
Air Regulation

Mr. Hamilton S. Oven, Administrator
Siting Coordination
Florida Department of Environmental Protection
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Certified Mail No. P 278 134 841
Return Receipt Requested

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

Certified Mail No. P 278 134 842
Return Receipt Requested

Re: **Tampa Electric Company**
Big Bend Station-Unit 4
Permit Nos. PSD-FL-040 and PA 79-12C

Gentlemen:

Tampa Electric Company (TEC) is in receipt of the proposed language for the above referenced permits and offer the following comments:

Permit No. PA79-12C:

It appears that the last sentence of the first page of this final order has been cut off. The sentence should read: **“The notice specified that a hearing would be held if a party to the original certification hearing objects within 45 days from receipt of the proposed modifications or if a person whose substantial interests will be affected by the proposed modifications objects in writing . . .”.**

Permit No. PSD-FL-040 and PA 79-12C:

With respect to Specific Condition 1.C. and Specific Condition 14 of the PSD and COC permits respectively, TEC wishes to clarify our understanding of the definition of representative actual emissions as defined in 40CFR 52.21(b)(33). In accordance with 40 CFR 52.21(b)(33)(ii), TEC will use the baseline years' (1993 and 1994) averaged gross generation compared to each of five years' actual gross generation to account for capacity

Mr. Hamilton Oven
Mr. Al A. Linero
August 2, 1995
Page 2 of 2

utilization. TEC will submit an annual representative emissions comparison in tons for SO₂, NO_x and PM to the Department and EPCHC. TEC believes the above methodology will ensure that the agencies have adequate information to make the appropriate determination according to the regulations.

If you have any questions in this matter, please feel free to call Ms. Janice Taylor or me at (813) 228-4839.

Sincerely,

A handwritten signature in black ink that reads "Patrick A. Ho". The signature is written in a cursive style with a large initial "P" and "H".

Patrick A. Ho, P.E.
Manager
Environmental Planning

EP\gm\JKT731

c: John M. Reynolds, Jr. -FDEP, Tallahassee



RECEIVED
JUN 27 1995

June 21, 1995

Bureau of
Air Regulation

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

Certified Mail No. P 880 003 417
Return Receipt Requested

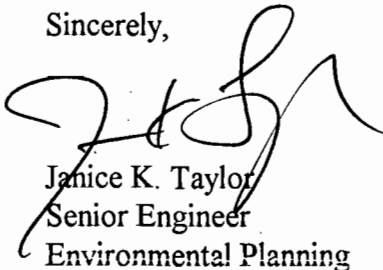
**Re: Tampa Electric Company
Big Bend Station
Unit 4 PSD Amendment**

Dear Mr. Linero:

Enclosed, please find proof of publication of the Notice of Intent to issue a permit amendment to PSD-FL-040 to allow the firing of 80% coal/20% petroleum coke blend. The notice was published in the legal ad section of the June 17, 1995 issue of the Tampa Tribune.

If you have any additional questions, please contact me at 813/228-4839.

Sincerely,



Janice K. Taylor
Senior Engineer
Environmental Planning

EP\gm\JKT715

Enclosure

c: Hamilton S. Owen-FDEP,
Tallahassee (enc.)

John R.
Cwe H.
Bill T.

Jewell Harper
John Bunyak
Liz DeKen, EPC HC

State of Florida }
County of Hillsborough } ss.

Before the undersigned authority personally appeared R. Putney, who on oath says that he is Accounting Manager of The Tampa Tribune, a daily newspaper published at Tampa in Hillsborough County, Florida; that the attached copy of advertisement being a

LEGAL NOTICE

in the matter of

STATE OF FLORIDA

was published in said newspaper in the issues of

JUNE 17, 1995

Affiant further says that the said The Tampa Tribune is a newspaper published at Tampa in said Hillsborough County, Florida, and that the said newspaper has heretofore been continuously published in said Hillsborough County, Florida, each day and has been entered as second class mail matter at the post office in Tampa, in said Hillsborough 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 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.

R. Putney

Sworn to and subscribed before me, this 19 day of JUNE, A.D. 1995

Personally Known _____ or Produced Identification _____
Type of Identification Produced _____

(SEAL)

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, Southwest District 8407 Laurel Fair Circle Tampa, Florida 33619 Environmental Protection Commission of Hillsborough County, 1900 - 9th Avenue Tampa, Florida 33805

Any person may send written comments on the proposed action to Mr. A. A. Lirero 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(s). Such requests must be submitted within 30 days of this notice. 3220 6/17/95

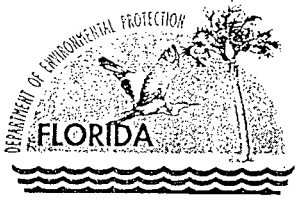
DEPARTMENT OF ENVIRONMENTAL PROTECTION NOTICE OF INTENT TO ISSUE PERMIT AMENDMENT PSD-FL-040

The Department of Environmental Protection (Department) gives notice of its intent to issue a permit amendment to Tampa Electric Company, Inc., P.O. Box 111, Tampa, Florida 33601-0111. This company operates a coal-fired power generation facility located on Big Bend Road, near Ruskin, in Hillsborough County, Florida. The amendment allows the firing of a 80% coal/20% petroleum coke blend (by weight) in Big Bend Unit 4. Preliminary testing has shown that the existing air pollution control equipment is capable of controlling emissions such that no significant increase in air pollution from this source will occur. Therefore, this change will not cause or contribute to a violation of any air pollution standard or adversely affect the environment.

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



Department of Environmental Protection

Lawton Chiles
Governor

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

Virginia B. Wetherell
Secretary

FACSIMILE TRANSMISSION SHEET

DATE 6/21/95

To: AL LINERO

Department _____

Phone _____ Fax 904-422-3474

From: J. KISSEL

DEP Southwest District Office - Air Program

Phone: (813) 744-6100 (Suncom 542-6100) Ext. 107

Operator: _____

Subject: ① BIG BEND 4 FINAL PSD PERMIT

② REASONING WHICH CHANGED .63 Lb/MM Btu TO .82

ORIGINALS BEING SENT BY MAIL

Total Number of Pages, Including Cover Page: 9

DEP SWD AIR PROGRAM FAX NUMBER: (813) 744-6458
(SUNCOM 542-6458)



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).

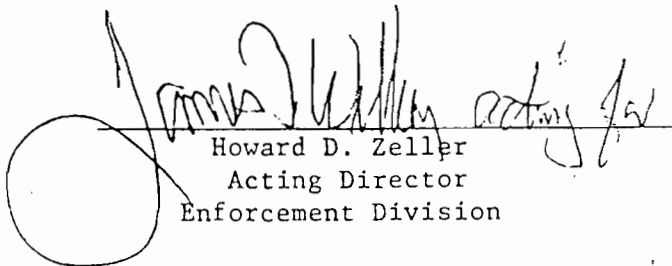
This permit shall become effective on November 14, 1981.

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 SO₂, 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 CO₂ analyzer in accordance with the provisions of 40 CFR 60.47a.

DELETED BY
EPA MODIF'N,
1988

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 prejudice 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.

TABLE 1
ALLOWABLE EMISSION LIMITS

<u>Facility</u>	<u>SO₂</u>		<u>NO_x</u>		<u>PM</u>		<u>CO</u>		<u>Opacity</u>
	<u>lb/MMBtu</u>	<u>lb/hour</u>	<u>lb/MMBtu</u>	<u>lb/hr</u>	<u>lb/MMBtu</u>	<u>lb/hr</u>	<u>lb/MMBtu</u>	<u>lb/hr</u>	
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.

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 4100 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 SO₂ 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 SO₂ emissions due to coal washing.

EPA concluded in the determination that 90% reduction in potential SO₂ 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 SO₂ 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	} 90% Removal
Emissions after washing	4.72 lbs./MMBTU	
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 SO₂ emission rate of 6.3 lbs./MMBTU which is actually an emission rate after coal washing. 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	} 90% Removal
Emissions after washing	6.30 lbs./MMBTU	
Emissions after 5% ash retention	6.00 lbs./MMBTU	
Emissions after FGD system	0.84 lbs./MMBTU	

The correct emission limitation is 0.34 lbs./MMBTU. The 0.63 lbs./MMBTU calculated by EPA reflects an overall reduction in potential SO₂ emissions of 93%.

At the request of EPA, TECO submitted a proposed 30 day rolling average SO₂ 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.

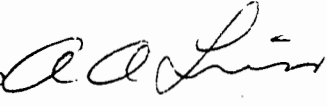
3. NITROGEN OXIDES (NO_x) AND CARBON MONOXIDE (CO)

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

Florida Department of
Environmental Protection

Memorandum

TO: Buck Oven
FROM: A.A. Linero 
DATE: June 20, 1995
SUBJECT: TEC Big Bend Unit 4 - Petcoke Modification

Following are the proposed changes to the Conditions of Certification consistent with the PSD draft permit modification and Public Notice of Intent To Issue related to the Petcoke project for Big Bend Unit 4:

Revised Condition I. A. 1.

Based on a maximum heat input of 4,330 million BTU per hour, stack emissions from Big Bend Unit 4 shall not exceed the following when burning coal or coal/petroleum coke blend:

New Condition I. A. 12.

Fuels fired shall consist of coal or a coal/petroleum coke blend containing a maximum of 20.0 percent petroleum coke by weight. The sulfur content of the petroleum coke shall not exceed 6.0 percent by weight (dry basis). Vanadium content of the mineral ash from the petroleum coke fired shall not exceed 35.0 percent by weight (ignited Basis).

New Condition I. A. 13.

Gravimetric instrument data verifying that the 20.0 percent maximum petroleum coke content by weight basis has not been exceeded shall be maintained and submitted to the Department and the Environmental Protection Commission of Hillsborough County (EPCHC) with each annual operating report.

New Condition I. A. 14.


Pursuant to Rule 62-212.200(2)(d), Florida Administrative Code (FAC), the actual emissions of the No. 4 unit shall equal the representative actual emissions as defined in 40 CFR 52.21(b)(33). The permittee shall maintain and submit to the Department and EPCHC on an annual basis for a period of 5 years from the date the unit begins firing petroleum coke, data demonstrating that the operational change did not result in an emissions increase.

Note that the above change in Condition I. A. 1. implies that the same emission limits apply when burning coal/petcoke as apply when burning only coal. This does not change any emission limits given in the original or any revised versions of the EPA - issued Big Bend Unit 4 PSD permit or BACT Determination.

The above changes relate only to the Petcoke project and do not include those made for the Unit 3 and 4 Integration Project or the Coal Yard Project, both of which will result in changes to the Conditions of Certification.

AAL/aal/l

cc: Clair Fancy
John Reynolds
File PSD-FL-040 TEC Big Bend Unit 4

TO: Buck Oven
FROM: A.A. Linero 
DATE: June 20, 1995
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AAL/aal/l

cc: Clair Fancy
John Reynolds
File PSD-FL-040 TEC Big Bend Unit 4



File

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

May 25, 1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Patrick Ho, P.E.
Manager of Environmental Planning
Tampa Electric Company
Post Office Box 111
Tampa, Florida 33601-0111

Dear Mr. Ho:

Enclosed is a proposed amendment and Public Notice for amendment of PSD-FL-040 for Big Bend Unit 4. The Department requires a public notice for this modification.

The present modification follows the recent one which approved treatment of Unit 3 flue gases by the scrubber system which previously processed gas from only Unit 4. The integration project places additional demands on the existing system which were not present when the petcoke test burn was conducted. Thus, the projections resulting from the trial burns may not be representative of emissions following the present modification request.

The continuous monitoring of sulfur dioxide and nitrogen oxide emissions can demonstrate that these parameters will not exceed PSD-significant values. However, the high sulfur and high vanadium present in petcoke can, in conjunction with the integration project, result in higher acid mist emissions than projected by the petcoke test burn alone. Since acid mist emissions are not continuously monitored it is necessary to ensure that the petcoke used in the future is of equal or superior quality to that used in the test burn.

Mr. Patrick Ho
May 25, 1995
Page Two

All comments during the public notice period should be addressed to Mr. A. A. Linero at the Department's Tallahassee address. If there are additional questions on the above, please call Mr. John Reynolds at (904) 488-1344.

Sincerely,


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

CHF/jr/t

Enclosures

cc: B. Thomas, SWD
L. Deken, EPCHC
J. Harper, EPA
J. Bunyak, NPS
H. Oven, PPS

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

CERTIFIED MAIL

In the Matter of an
Application for Permit Amendment

DEP File No. PSD-FL-040
Hillsborough Co.

Mr. Patrick Ho, P.E.
Manager of Environmental Planning
Tampa Electric Company
P.O. Box 111
Tampa, Florida 33601-0111

INTENT TO ISSUE

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

The applicant, Tampa Electric Company, applied on February 3, 1995, to the Department for an amendment of their PSD permit to fire a coal/petroleum coke blend in their Big Bend Unit 4. The facility is located in Hillsborough County.

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;

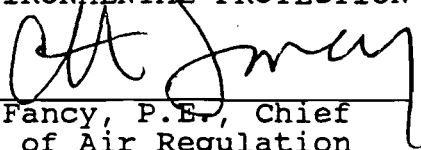
- (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
- (b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
- (c) 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



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 6-1-95 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.


Clerk 6-1-95
Date

Copies furnished to:

B. Thomas, SWD
L. Deken, EPCHC
J. Harper, EPA
J. Bunyak, NPS
H. Oven, PPS

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF INTENT TO ISSUE PERMIT AMENDMENT

PSD-FL-040

The Department of Environmental Protection (Department) gives notice of its intent to issue a permit amendment to Tampa Electric Company, Inc., P.O. Box 111, Tampa, Florida 33601-0111. This company operates a coal-fired power generation facility located on Big Bend Road, near Ruskin, in Hillsborough County, Florida. The amendment allows the firing of a 80% coal/20% petroleum coke blend (by weight) in Big Bend Unit 4. Preliminary testing has shown that the existing air pollution control equipment is capable of controlling emissions such that no significant increase in air pollution from this source will occur. Therefore, this change will not cause or contribute to a violation of any air pollution standard or adversely affect the environment.

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
Southwest District
8407 Laurel Fair Circle
Tampa, Florida 33619

Environmental Protection Commission
of Hillsborough County
1900 - 9th Avenue
Tampa, Florida 33805

Any person may send written comments on the proposed action to Mr. A. A. Linero 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(s). Such requests must be submitted within 30 days of this notice.



Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

June XX, 1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

DRAFT

Mr. Patrick Ho, P.E.
Manager of Environmental Planning
Tampa Electric Company
Post Office Box 111
Tampa, Florida 33601-0111

Dear Mr. Ho:

Re: Amendment of PSD-FL-040 to Allow Firing of Coal/Petroleum
Coke Blend in Big Bend Unit 4

The Department hereby amends the subject air construction permit allowing the firing of a blend of coal and petroleum coke. The permit is amended as shown:

New Specific Condition 1. A.:

1. A. Fuels fired shall consist of coal or a coal/petroleum coke blend containing a maximum of 20.0% petroleum coke by weight. The sulfur content of the petroleum coke shall not exceed 6.0 % by weight (dry basis). Vanadium content of the mineral ash from the petroleum coke fired shall not exceed 35.0% by weight (ignited basis).

New Specific Condition 1. B.:

1. B. Gravimetric instrument data verifying that the 20.0% maximum petroleum coke content by weight has not been exceeded shall be maintained and submitted to the Department and the Environmental Protection Commission of Hillsborough County (EPCHC) with each annual operating report.

New Specific Condition 1. C.:

1. C. Pursuant to Rule 62-212.200(2)(d), Florida Administrative Code (F.A.C.), the actual emissions of the No. 4 unit shall equal the representative actual annual emissions, as defined in 40 CFR

DRAFT

52.21(b)(33). The permittee shall maintain and submit to the Department and the EPCHC on an annual basis for a period of 5 years from the date the unit begins firing petroleum coke, data demonstrating that the operational change did not result in an emissions increase.

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 amendment request/application have the right to petition to become a party to

DRAFT

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, Florida Administrative Code.

A copy of this amendment letter shall be attached to and shall become a part of Air Construction Permit PSD-FL-040.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Virginia B. Wetherell, Secretary

CERTIFICATE OF SERVICE

This is to certify that this Permit Amendment and all copies were mailed to the listed persons before the close of business on June XX, 1995.

FILING AND ACKNOWLEDGEMENT FILED,
on this date, pursuant to Chapter
120.52(9), Florida Statutes, with
with the designated Deputy Clerk,
receipt of which is hereby
acknowledged.

(Clerk)

(Date)

cc: B. Thomas, SWD
L. Deken, EPCHC
J. Harper, EPA
J. Bunyak, NPS
H. Oven, PPS

Florida Department of
Environmental Protection

Memorandum

TO: C. H. Fancy
FROM: A. A. Linero *A.A. Linero 5/25*
DATE: May 25, 1995
SUBJ: Tampa Electric Company - Big Bend Unit 4
Permit Amendment - PSD-FL-040

Attached for your review and approval is a permit amendment allowing Tampa Electric to burn a petcoke blend in Big Bend Unit 4. Included is a condition limiting the sulfur and vanadium content of the petcoke, since sulfur can be as high as 8.5% and vanadium catalyzes SO₂ to SO₃ resulting in acid mist. Tampa Electric Company probably will complain about these limits. We believe they are needed to provide reasonable assurance that the "dirtiest" pet coke will not be used.

If you have any questions, we will be glad to discuss the details.

CHF/aal/t



RECEIVED

APR 06 1995

April 4, 1995

Bureau of
Air Regulation

Mr. John Reynolds
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Certified Mail No. P 278 134 329
Return Receipt Requested

Mr. Jerry Campbell
Environmental Protection Commission
of Hillsborough County
1410 North 21 Street
Tampa, Florida 33605

Hand Delivered

Re: Tampa Electric Company
Big Bend Station Unit 4
Site Certification PA 79-12
Coal/Petroleum Coke Blend

Gentlemen:

On March 29, 1995, Tampa Electric Company (TEC) responded to the Environmental Protection Commission of Hillsborough County's (EPC) comments about the above referenced project. In addition, TEC met with EPC on March 29, 1995 to review their concerns. Based upon the outcome of that meeting, Questions 1 through 6 of EPC's February 28, 1995 comment letter have been resolved. However, EPC is still concerned that a significant actual emission increase will occur based upon this request. Therefore, in an effort to provide additional assurance that using a fuel blend of coal and petroleum coke in Unit 4 will not increase annual emissions significantly above normal historic actual emissions, the following analysis is provided as addendum to TEC's March 29, 1995 submittal to the agency.

As pointed out by EPC and as demonstrated in the attached analysis, the initial screening of the monitored pollutants as required in the October 5, 1994, approval letter show that no significant actual emissions increase occurs for nitrogen oxides (NO_x), carbon monoxide (CO) and sulfuric acid mist (H₂SO₄). Therefore, for these pollutants, no further analysis is required.

However, as shown in Table 1, sulfur dioxide (SO₂) and particulate matter (PM) show an emissions increase. Based upon these emissions and in accordance with Prevention of Significant Deterioration (PSD) applicability requirements, TEC has done further emission comparisons.

Mr. John Reynolds
Mr. Jerry Campbell
April 4, 1995
Page 2 of 2

Table 2 depicts the emissions comparison of the averaged emissions of 1993 and 1994 from the annual operating reports. As can be seen from this comparison, no actual emissions increase during the coal/petroleum coke test burn as compared to historic actual emissions occurred during the test. Additionally, no actual emission increase is expected while firing Big Bend Unit 4 using the coal.

TEC believes this additional analysis satisfactorily addresses EPC's concern. As discussed with you on previous occasions, we are extremely anxious to proceed with this project because of the immediate savings that could be realized by our Customers; therefore, we request that this permit modification be granted as soon as possible. Please call Ms. Janice Taylor or me at (813) 228-4839 if you have any further questions.

Sincerely,



Patrick A. Ho, P.E.
Manager
Environmental Planning

EP\gm\JKT705

Attachment

c/enc: Hamilton Oven, FDEP - Tallahassee
Al Linero, FDEP - Tallahassee
Jerry Kessell, FDEP - Tampa

ADDENDUM

BASELINE TEST BURN AND PETROLEUM COKE TEST BURN COMPARISON

The test burn approval requires an initial screening to determine if the fuel blend of coal and petroleum coke compared to the baseline of 100% coal represents an actual annual emissions increase. These comparisons are shown in Table 1. For this analysis, emissions were calculated using the algorithm:

$$E_A = E_r \times L \times u_A$$

Where: E_A = Annual Emission Rate (tpy)

E_r = Measured Emission Rate (lb/MMBtu)

L = Load (MMBtu/hr during stack testing)

u_A = Annual Utilization (hr/yr for 1994)

The emissions comparison for nitrogen oxides (NO_x), carbon monoxide (CO), and sulfuric acid mist (H_2SO_4) indicate no additional analysis is necessary because the actual annual emissions decrease. However, the sulfur dioxide (SO_2) and Particulate Matter (PM) emissions comparison show an actual annual emissions increase. Therefore, in accordance with rules to determine Prevention of Significant Deterioration (PSD) applicability, further actual annual emissions comparison must be done. This analysis is presented in Table 2, which compares the fuel blend test burn with historical actual emissions. Consistent with PSD rules, which require the past two years of data be applied, TEC has used the 1993 and 1994 Annual Operating Reports data to define actual SO_2 and PM emissions. As demonstrated, no actual annual SO_2 and PM emissions increase has occurred using the fuel blend as compared to actual historic emissions.

Table 1. Baseline and Petroleum Coke Test Burn Results Comparison

BASELINE TEST BURN DATA					
Pollutant	Emission Rate (lb/MMBtu)	Load (MMBtu/hr)	Emission Rate (lb/hr)	Annual Utilization (hr/yr)*	Annual Emission (tpy)
SO ₂	0.25	4300.0	1075.00	8135	4372.6
NO _x	0.43	4300.0	1849.00	8135	7520.6
PM	0.0025	4300.0	10.75	8135	43.7
CO	0.01	4300.0	43.00	8135	174.9
H ₂ SO ₄	0.007	4300.0	30.10	8135	122.4
PETROLEUM COKE TEST BURN DATA					
Pollutant	Emission Rate (lb/MMBtu)	Load (MMBtu/hr)	Emission Rate (Lb/hr)	Annual Utilization (hr/yr)	Annualized Emission (tpy)
SO ₂	0.29	4318.7	1252.42	8135	5094.2
NO _x	0.42	4318.7	1813.85	8135	7377.9
PM	0.0035	4318.7	15.12	8135	61.5
CO	0.002	4318.7	8.64	8135	35.1
H ₂ SO ₄	0.002	4318.7	8.64	8135	35.1
EMISSION RATE CHANGE (PETROLEUM COKE TEST BURN - BASELINE TEST BURN)					
Pollutant			Emission Rate (Lb/hr)		Annualized Emission (tpy)
SO ₂			177.42		721.7
NO _x			-35.15		-143.0
PM			4.37		17.8
CO			-34.36		-139.8
H ₂ SO ₄			-21.46		-87.3

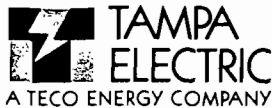
*1994 Hours of Operation

Table 2. Historical Actual Emission Data and Petroleum Coke Test Burn Results Comparison

HISTORICAL ACTUAL EMISSIONS AND PETROLEUM COKE TEST BURN EMISSIONS COMPARISON							
Pollutant	Emission Rate (lb/MMBtu)	Load (MMBtu/hr)	Emission Rate (Lb/hr)	Annual Utilization (hr/yr)*	Annual Emission (tpy)	1993 & 1994 Annual Emission (tpy)**	Annual Emission (tpy)
SO ₂	0.29	4318.7	1252.42	8135	5094.2	6864.0	-1769.8
PM	0.0035	4318.7	15.12	8135	61.5	71.5	-10.0

*1994 Hours of Operation

**Averaged 1993 and 1994 Emissions from Annual Operating Reports



RECEIVED
MAR 31 1995

Bureau of
Air Regulation

March 29, 1995

Mr. John Reynolds
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399

Certified Mail No. P 880 003 146
Return Receipt Requested

**Re: Tampa Electric Company (TEC)
Big Bend Station Unit 4
Site Certification PA 79-12 Modification
Coal/Petroleum Coke Blend**

Dear Mr. Reynolds:

As you are aware, TEC has submitted a request to modify the above referenced permit to authorize the use of a blend of coal and petroleum coke as an allowable fuel for Big Bend Station Unit 4. TEC has demonstrated through an approved Florida Department of Environmental Protection (FDEP) test burn that use of this fuel blend does not affect boiler operations or impact environmental permit limits.

Pursuant to your conversation with Ms. Janice Taylor, it is TEC's understanding that both FDEP and Environmental Protection Commission of Hillsborough County (EPC) have concerns regarding the intent of the test burn. Please be advised that the intent of the test burn was to demonstrate the viability of burning a coal/petroleum coke blend within our current permit restrictions. This test burn was conducted from November 8, 1994 through November 29, 1994. An additional three day test burn to complete carbon monoxide testing was conducted from December 19 -21, 1994. Based on the data collected, the coal/petroleum coke fuel blend can be successfully burned in Unit 4 well within permitted emissions limits. Results of the test, along with a request to modify permit language, were submitted to the agency on January 31, 1995.

On March 3, 1995, TEC received a copy of the EPC's comments to FDEP regarding this project. In order to expedite the approval process, TEC is providing the following comments to address EPC's concerns.

EPC Comment No.1 Condition #3 of the authorization requires that a minimum of three (3) separate samples should be collected, and analyzed for sulfur, nitrogen, and metals during the particulate matter test runs. Two (2)

samples were taken during the seven (7) test runs while burning coal, but the third sample was taken after the completion of the particulate matter testing on November 3. During the petroleum coke blend test, all three (3) required samples were taken during the six (6) particulate matter runs. Therefore, only the 2 samples collected during the particulate matter test runs should be used for comparison with the sulfur, nitrogen and metals content of the petroleum coke blend particulate test runs.

TEC's Response: EPC is correct in pointing out that during the coal baseline testing TEC obtained fuel samples over the entire emissions test duration instead of only during the particulate matter test runs. TEC feels that these fuel analyses are representative for the compliance test duration and satisfy the Department's intent for fuel information. However, for comparison purposes please find enclosed revised tables (Enclosure 1) for the metal analyses.

EPC Comment No. 2 Condition's 5 and 6 of the authorization require that the petroleum coke shall be limited to 20% weight of the blend and not exceed 67,190 lb/Hr. The test report did not include the amount of coal or petroleum coke burned to demonstrate compliance with these conditions. The information, therefore, should be submitted.

TEC's Response: To ensure the appropriate coal to petroleum coke blend was maintained during the test burn, the gravimetric fuel feeders located beneath the blending bins were set to feed 80% coal and 20% petroleum coke by weight to Unit 4 during bunkering operations.

EPC Comment No. 3 Condition #7 of the authorization requires that if the plant CEMs are used for the test, then they should be quality assured pursuant to 40 CFR 60, Appendix F. It also requires that the RATA and cylinder gas audit be submitted with the report. A review of the Relative Accuracy Test Audit Data Assessment Report of Section D-3 of the report, indicates that the plant CEM's required by Subpart Da were used. However, page 6 of Section 3 of the reports indicates that a "transportable" CEM or TCEMs was used. If the plant CEMs were not used, then the TCEM test data should be submitted.

Mr. John Reynolds
Page 3 of 5
March 29, 1995

TEC's Response

As agreed upon during negotiation with the Department for this test burn, TEC used the certified Subpart Da CEMs to report the sulfur dioxide, nitrogen oxides and opacity during this test burn period, including the baseline test. Please note that TEC's transportable CEMs (TCEMs) were used to perform USEPA Method 10 "Determination of Carbon Monoxide Emissions from Stationary Sources." Big Bend Unit No. 4 is not required to monitor carbon monoxide on a continuous basis. All required data for USEPA Method 10 are located in Appendix A and Appendix G of the test report.

EPC Comment No. 4 Condition #19 of the authorization requires that the test be conducted at 90-100% of the 4330 MMBTU/Hr maximum heat input rate listed in the Site Certification and PSD permit. The test report listed the electrical energy generated during the testing in MW instead of the heat input of the fuel. The required heat input should be submitted with the report to demonstrated compliance with the condition, and ensure that the maximum heat input rate was not exceeded.

TEC's Response

Please find enclosed the heat input calculations during the emissions testing (Enclosure 2).

EPC Comment No. 5 Condition #20 of the authorization required that TECO get prior approval of the proposed test methods to be employed during testing. We never received TECO's proposal for approval. Condition #7 required that they test for PM, CO, and H₂SO₄ mist. TECO used method 5B "Determination of Nonsulfuric Acid Particulate Matter from Stationary Sources," which has a negative bias and under reports the particulate matter emissions since it does not include H₂SO₄ mist. TECO normally uses EPA method 17 to test for particulate matter which includes any H₂SO₄ acid mist being emitted. Based on the H₂SO₄ acid mist test (EPA Method 8), the negative bias appears to be approximately 12 lb/hr for the baseline test. Since the average emissions for the seven (7) particulate matter runs is approximately 13 lb/hr, the negative bias is considerable (-92%). The particulate emissions are, therefore, more closely equal to 0.005 lb/MMBTU for

Mr. John Reynolds
Page 4 of 5
March 29, 1995

the baseline or coal burn but, since the same bias was introduced during the petroleum coke blend test, the results are appropriate for comparison purposes only.

TEC's Response

As detailed in TEC's air emissions test plan submitted to the Department on September 29, 1994, all particulate matter testing would be conducted following Method 5B. TEC has used Method 5B for Big Bend Unit 4 particulate matter compliance tests since 1988. This method is the approved protocol for testing after a wet FGD according to 40 CFR 60-Subpart Da. Method 5B was approved by the Department in lieu of Method 5 on February 29, 1988 (copy of order enclosed.) TEC does not use Method 17 for particulate matter compliance testing on Big Bend Unit 4 (Enclosure 3).

EPC Comment No. 6 Table 4.1.1 and 4.1.3 lists CEM Data Daily Averages during the petroleum coke test burns. The overall averages for SO₂ outlet and NO_x inlet appear to be calculated incorrectly. The corrected averages are 0.33 and 0.51 lb/MMBTU, respectively.

TEC's Response

TEC has reviewed these tables and agrees with EPC. Corrected tables are enclosed (Enclosure 4).

EPC Comment No. 7 A review of the stack tests indicate that the particulate matter emissions increased over 40%; the sulfur dioxide emissions increased over 89%, the nitrogen oxide emissions increased over 18%. Using the CEM data daily averages, sulfur dioxide emissions increased over 32% and the nitrogen oxide emissions increased over 19%. Using the procedures referenced in 40 CFR 60, Appendix C and the authorization letter, an analysis of the results indicated an increase in actual emissions did occur. In 1992 and 1993, TECO Big Bend #4 reported average emissions of 58 TPY of particulate matter; 3,454 TPY of sulfur dioxide; 3,350 TPY of nitrogen oxides. This, along with the 40%, 89% and 18% increases for the particular pollutants during the test, suggest that significant increases (in excess of those listed in Table 62-212.400-2) in actual emissions would result land trigger PSD for particulate matter, sulfur dioxide; and nitrogen oxides. We suggest that TECO submit an application to modify their Site Certification

Mr. John Reynolds
Page 5 of 5
March 29, 1995

and PSD permits if they plan to burn petroleum coke blend as an alternative fuel in Unit #4.

TEC's Response

TEC disagrees with EPC's position that the results of the test burn show a significant emissions increase for the listed pollutants and triggers PSD review. Enclosed are graphs depicting two (2) years of historic actual emissions and the coal/petroleum coke blend emissions. As can be seen in these graphs, actual emissions fluctuate depending on unit operations. However, the most important conclusion from these graphs is the fact that the coal/petroleum coke blend does not cause an increase over actual coal emissions, but is within normal unit operations. Also enclosed is a table detailing Unit 4 annual emissions (tons/year) from our 1992 and 1993 annual operating reports. Therefore, TEC feels that no significant emissions increase has occurred and PSD applicability has not been triggered for this fuel flexibility project (Enclosure 5).

TEC believes the above comments satisfactorily address EPC's concerns and request the permit modifications be granted as soon as possible. Please call Ms. Janice Taylor or me at (813) 228-4839 if you have any further questions

Sincerely,



Patrick A. Ho, P.E.
Manager
Environmental Planning

EPJKT703

Enclosures

c/enc: Hamilton Oven - FDEP - Tallahassee
Al Linero - FDEP - Tallahassee ✓
Jerry Kessel - FDEP - Tampa
Jerry Campbell - EPCHC

ENCLOSURE 1

BIG BEND STATION UNIT NO 4
CEM DATA COMPARISON
BASELINE TEST BURN
OCTOBER 30, 1994 THRU NOVEMBER 5, 1994
PETROLEUM TEST BURN
NOVEMBER 7, 1994 THRU DECEMBER 1, 1994
DECEMBER 19, 1994 THRU DECEMBER 21, 1994

	SO2 OUTLET (LB/MMBTU)	SO2 INLET (LB/MMBTU)	REDUCTION (%)	NOx INLET (LB/MMBTU)	OPACITY (%)
BASELINE TEST BURN AVERAGE					
10-30-94 THRU 11-5-94	0.25	5.33	95	0.43	7
PETROLEUM TEST BURN AVERAGE					
11-07-94 THRU 12-01-94					
12-19-94 THRU 12-21-94	0.33	5.24	94	0.51	7

BIG BEND STATION BOILER NO 4
 CEM DATA
 DAILY AVERAGES
 PETROLEUM COKE TEST BURN
 NOVEMBER 7, 1994 THRU DECEMBER 1, 1994
 DECEMBER 19, 1994 THRU DECEMBER 21, 1994

DATE	SO2 OUTLET (LB/MMBTU)	SO2 INLET (LB/MMBTU)	REDUCTION (%)	NOx INLET (LB/MMBTU)	OPACITY (%)
11-07-94	0.29	5.17	94	0.39	8
11-08-94	0.34	5.08	94	0.34	9
11-09-94	*	*	*	*	*
11-10-94	*	*	*	*	*
11-11-94	*	*	*	*	*
11-12-94	*	*	*	*	*
11-13-94	0.25	5.33	89	0.54	7
11-14-94	0.48	5.16	91	0.49	5
11-15-94	0.52	5.23	90	0.48	4
11-16-94	0.63	5.13	88	0.52	3
11-17-94	0.50	5.14	90	0.50	10
11-18-94	0.39	5.18	94	0.51	12
11-19-94	0.32	5.16	94	0.59	13
11-20-94	0.31	5.14	94	0.58	13
11-21-94	0.32	5.21	94	0.54	12
11-22-94	0.20	5.28	98	0.46	13
11-23-94	0.29	5.27	96	0.45	10
11-24-94	0.29	5.39	95	0.48	5
11-25-94	0.29	5.39	95	0.48	5
11-26-94	**	**	**	**	4
11-27-94	**	**	**	**	4
11-28-94	0.33	5.17	94	0.58	4
11-29-94	0.29	5.08	94	0.55	4
11-30-94	0.22	5.12	96	0.47	3
12-01-94	0.25	5.13	95	0.55	6
12-19-94	0.26	5.43	95	0.56	4
12-20-94	0.28	5.57	95	0.53	4
12-21-94	0.27	5.44	95	0.54	5
PETROLEUM COKE					
TESTBURN AVERAGES	0.33	5.24	94	0.51	7

* BOILER NO 4 OUTAGE NOVEMBER 9,10,11,12, 1994

** NOx AND SO2 CEMS OUT OF SERVICE NOVEMBER 26,27, 1994

TABLE4.1.3

ENCLOSURE 2

**BIG BEND GENERATING STATION
HEAT INPUT CALCULATIONS**

BIG BEND STATION BOILER NO. 4 PETCOKE BASELINE TEST NOVEMBER 1, 1994	
September Gross Heat Rate =	9.335×10^6 Btu/MWH
BOILER NO. 4 SOURCE TEST HEAT INPUT CALCULATIONS	
Final MWH (643263) - Initial MWH (638960) =	4303 MWH
Time =	9.32 Hrs
Average MW = $4303 \text{ MWH} \div 9.32 \text{ H} =$	461 MW
$9.335 \times 10^6 \text{ Btu/MWH} \times 4303 \text{ MWH} \div 9.32 \text{ H} =$	4310×10^6 Btu/H

**BIG BEND GENERATING STATION
HEAT INPUT CALCULATIONS**

BIG BEND STATION BOILER NO. 4 PETCOKE BASELINE TEST NOVEMBER 2, 1994	
September Gross Heat Rate =	9.335×10^6 Btu/MWH
BOILER NO. 4 SOURCE TEST HEAT INPUT CALCULATIONS	
Final MWH (653043) - Initial MWH (647623) =	5420 MWH
Time =	11.78 Hrs
Average MW = $5420 \text{ MWH} \div 11.78 \text{ H} =$	460 MW
$9.335 \times 10^6 \text{ Btu/MWH} \times 5420 \text{ MWH} \div 11.78 \text{ H} =$	4295×10^6 Btu/H

**BIG BEND GENERATING STATION
HEAT INPUT CALCULATIONS**

BIG BEND STATION BOILER NO. 4 PETCOKE BASELINE TEST NOVEMBER 3, 1994	
September Gross Heat Rate =	9.335×10^6 Btu/MWH
BOILER NO. 4 SOURCE TEST HEAT INPUT CALCULATIONS	
Final MWH (663989) - Initial MWH (658707) =	5282 MWH
Time =	11.48 Hrs
Average MW = $5282 \text{ MWH} \div 11.48 \text{ H} =$	460 MW
$9.335 \times 10^6 \text{ Btu/MWH} \times 5282 \text{ MWH} \div 11.48 \text{ H} =$	4295×10^6 Btu/H

**BIG BEND GENERATING STATION
HEAT INPUT CALCULATIONS**

BIG BEND STATION BOILER NO. 4 PETCOKE BASELINE TEST NOVEMBER 16, 1994	
October Gross Heat Rate =	9.417×10^6 Btu/MWH
BOILER NO. 4 SOURCE TEST HEAT INPUT CALCULATIONS	
Final MWH (761925) - Initial MWH (756957) =	4968 MWH
Time =	10.83 Hrs
Average MW = $4968 \text{ MWH} \div 10.83 \text{ H} =$	459 MW
$9.417 \times 10^6 \text{ Btu/MWH} \times 4968 \text{ MWH} \div 10.83 \text{ H} =$	$4320 \times 10^6 \text{ Btu/H}$

**BIG BEND GENERATING STATION
HEAT INPUT CALCULATIONS**

BIG BEND STATION BOILER NO. 4 PETCOKE BASELINE TEST NOVEMBER 17, 1994	
October Gross Heat Rate =	9.417×10^6 Btu/MWH
BOILER NO. 4 SOURCE TEST HEAT INPUT CALCULATIONS	
Final MWH (769598) - Initial MWH (767390) =	2208 MWH
Time =	4.82 Hrs
Average MW = $2208 \text{ MWH} \div 4.82 \text{ H} =$	458 MW
$9.417 \times 10^6 \text{ Btu/MWH} \times 2208 \text{ MWH} \div 4.82 \text{ H} =$	4314×10^6 Btu/H

**BIG BEND GENERATING STATION
HEAT INPUT CALCULATIONS**

BIG BEND STATION BOILER NO. 4 PETCOKE BASELINE TEST NOVEMBER 18, 1994	
October Gross Heat Rate =	9.417×10^6 Btu/MWH
BOILER NO. 4 SOURCE TEST HEAT INPUT CALCULATIONS	
Final MWH (779359) - Initial MWH (776844) =	2515 MWH
Time =	5.48 Hrs
Average MW = $2515 \text{ MWH} \div 5.48 \text{ H} =$	459 MW
$9.417 \times 10^6 \text{ Btu/MWH} \times 2515 \text{ MWH} \div 5.48 \text{ H} =$	4322×10^6 Btu/H

ENCLOSURE 3



December 15, 1987

DER

DEC 18 1987

BAQM

Mr. Dale Twachtmann
Secretary
Florida Department of
Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Secretary Twachtmann:

This letter is a request by Tampa Electric Company (TEC) for approval of the use of Method 5B as an alternate sampling procedure for particulate testing for Big Bend Station Unit No. 4. This request is made pursuant to the provisions of Rule 17-2.700(3), Florida Administrative Code (FAC).

In accordance with the requirements of Rule 17-2.700(3)(b), FAC, the following information is provided:

1. The specific source and permit number for which a revision is sought is Big Bend No. 4 operating under Permit No. PA 79-12 Conditions of Certification.
2. The provision of Section 17-2.700 from which revision is requested is from Table 700-1 (Applicable Test Procedures for Point Source Compliance Tests). TEC is requesting the option to use Method 5B in addition to Methods 5 and 17 specified in Table 700-1.
3. The basis for the revision is the promulgation of Method 5B by the United States Environmental Protection Agency (EPA). The EPA Federal Register notice, dated November 26, 1986, states that Method 5B is now a fully approved test method for determining particulate matter emissions from fossil fuel steam generators.
4. Based upon EPA's promulgation of final rules adding Method 5B to the list of approved referenced methods for compliance testing, it is reasonable to conclude that Method 5B is fully adequate for use as a compliance method.

Based on this information, TEC requests that the Department issue an order providing the use of Method 5B as a viable option for demonstrating compliance of particulate emissions at Big Bend Unit No. 4.

EXHIBIT I

December 15, 1987

Page 2

We would appreciate a response on this matter as soon as possible.

If there are any questions, please call.

Sincerely,



Jerry L. Williams
Director
Environmental

JLW/cpc/016/NN

cc: Steve Smallwood (FDER)

EXHIBIT I

17-2.700(3) EXCEPTIONS AND APPROVAL OF ALTERNATE
PROCEDURES AND REQUIREMENTS

RECEIVED

Tampa Electric Company

APR 4 1988

REQUEST FOR EXCEPTION

ENVIRONMENTAL
PLANNING

UNIT: Coal
Steam Fired
Electric
Generating 486 megawatts/
unit

PERMIT NO: PSD-FL-040
Conditions of Certification
No: PA79-12
EMISSION LIMITING STANDARD:
PM-0.03 pounds per million
Btu Heat Input

PLANT: Big Bend Station

DESCRIPTION: Compliance Testing for PM for Big Bend Station
Unit No. 4.

PROVISION TO BE EXCEPTED: Section 17-2.700(2)(1)., F.A.C. and
Specific Condition 3 of the Air Permit
PSD-FL-040 and Specific Condition I.C
of the Conditions of Certification
PA79-12.

EXCEPTION REQUESTED: Use of EPA Reference Method 5B in lieu
of EPA Reference Method 5.

BASIS FOR REQUEST: EPA Reference Method 5B has been promulgated
in the Federal Register and will allow more
accurate testing.

*This is the revised page to correct
the company name with regard to
TEC's approval to use Method 5B
for stack testing Big Bend Unit #4*

RECEIVED

THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

MAR 7 1988

In the matter of:)
)
Tampa Electric Company)
)
Petitioner)
_____)

ASP-87-G01

ENVIRONMENTAL
PLANNING

ORDER APPROVING REQUEST FOR ALTERNATIVE
PROCEDURES AND REQUIREMENTS

Pursuant to Section 17-2.700 (3), Florida Administrative Code, Petitioner Tampa Electric Company ("Petitioner") submitted to the Department a request for approval of alternate source sampling procedures and requirements. Having considered the written request, a copy of which is attached hereto as Exhibit 1, and supporting documentation, the following Findings of Fact, Conclusions of Law and Order are entered:

FINDINGS OF FACT

1. On December 18, 1987, Petitioner submitted a written request for approval of alternative procedures and requirements for Big Bend Station Unit No. 4.

2. The petition requested that the Department grant Petitioner the authority to use EPA Reference Method 5B as an alternate procedure for measuring particulate matter (PM) emissions from the facility.

3. As grounds for the request, Petitioner has stated that using EPA Reference Method 5B in place of the existing EPA Reference Method 5 would allow the testing to be done more accurately. The Petitioner also stated that Reference Method 5B was promulgated in the Federal Register as an approved method on November 26, 1986.

4. After review of the petition and supporting documentation, the Department finds that the alternative procedures and requirements would be adequate for the affected air pollution sources to demonstrate compliance with applicable emission limiting standards.

CONCLUSION OF LAW

5. The relief requested is within the scope of relief which can be granted by the Department pursuant to Section 403.061, Florida Statutes, and Section 17-2.700 (3), Florida Administrative Code.

Such relief does not relieve Petitioner of the responsibility to comply with all applicable emission limiting standards, ambient air quality standards, or other permit conditions.

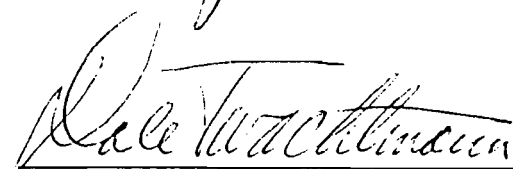
ORDER

6. Having considered the petition and supporting documentation, it is hereby ORDERED that:

The relief requested by Petitioner is granted. Therefore, specific condition No. 3 of permit No. PSD-FL-040 and specific condition I.C of the conditions of certification No. PA79-12 are hereby amended to reflect that Petitioner, Tampa Electric Company, is authorized to utilize EPA Reference Method 5B to demonstrate compliance at Big Bend Station Unit No. 4.

This order shall constitute final agency action by the Department pursuant to Section 120.52 (9), Florida Statutes. The Petitioner may file a petition for an administrative hearing on this order within twenty-one (21) days of receipt of the order. The petition shall be filed with the Department of Environmental Regulation, Office of General Counsel, Twin Towers Office Building, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, and shall be in the form required by Chapters 17-103 and 28-5, Florida Administrative Code. Failure to file a petition within the time specified above shall constitute a waiver by the Petitioner to an administrative hearing under Chapter 120, Florida Statutes.

Done and ordered this 29 day of February, 1988 in Tallahassee, Florida.


Dale Twachtmann
Secretary

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Telephone: (904) 488-4805

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that an true copy of the foregoing Order has been mailed, postage prepaid, to Jerry L. Williams, Tampa Electric Company, P. O. Box 111, Tampa, Florida 33601-0111; this 2nd day of MARCH, 1988.


MARK ZILBERBERG
Assistant General Counsel

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida
32399-1400
Telephone (904) 488-9730

ENCLOSURE 4

BIG BEND STATION UNIT NO. 4
TRACE METALS FUEL ANALYSIS
STACK TEST FUEL SAMPLES
BASELINE TEST BURN
NOVEMBER 1,2,3, 1994
PETROLEUM COKE TEST BURN
NOVEMBER 16, 17, 18 AND DECEMBER 20, 1994

ZINC (ug/g)
 ASTM D 3683-78 (REAPPROVED 1989)

RUN	1	2	3	AVG.
BASELINE TESTS	154.0	72.2		113.1
20% PETROLEUM COKE TESTS	41.6	41.6	52.4	45.2

NICKEL (ug/g)
 ASTM D 3683-78 (REAPPROVED 1989).

RUN	1	2	3	AVG.
BASELINE TESTS	13.6	14.3		14.0
20% PETROLEUM COKE TESTS	76.0	78.8	68.8	74.5

BERYLLIUM (ug/g)
 ASTM D 3683-78 (REAPPROVED 1989)

RUN	1	2	3	AVG.
BASELINE TESTS	0.84	0.92		0.88
20% PETROLEUM COKE TESTS	0.76	0.75	0.80	0.77

TABLE 4.2.2

BIG BEND STATION UNIT NO. 4
TRACE METALS FUEL ANALYSIS
STACK TEST FUEL SAMPLES
BASELINE TEST BURN
NOVEMBER 1,2,3, 1994
PETROLEUM COKE TEST BURN
NOVEMBER 16, 17, 18 AND DECEMBER 20, 1994

LEAD (ug/g)
ASTM D 3683-78 (REAPPROVED 1989)

RUN	1	2	3	AVG.
BASELINE TESTS	8.64	7.58		8.11
20% PETROLEUM COKE TESTS	6.91	6.51	6.42	6.61

CHROMIUM (ug/g)
ASTM D 3683-78 (REAPPROVED 1989)

RUN	1	2	3	AVG.
BASELINE TESTS	28.9	21.4		25.2
20% PETROLEUM COKE TESTS	20.4	25.5	19.4	21.8

VANADIUM (ug/g)
ASTM D 3683-78 (REAPPROVED 1989)

RUN	1	2	3	AVG.
BASELINE TESTS	41.9	40.7		41.3
20% PETROLEUM COKE TESTS	405.0	407.0	350.0	387.3

TABLE 4.2.3

BIG BEND STATION UNIT NO. 4
TRACE METALS FUEL ANALYSIS
STACK TEST FUEL SAMPLES
BASELINE TEST BURN
NOVEMBER 1,2,3, 1994
PETROLEUM COKE TEST BURN
NOVEMBER 16, 17, 18 AND DECEMBER 20, 1994

MERCURY (ug/g)
ASTM D 3684-94

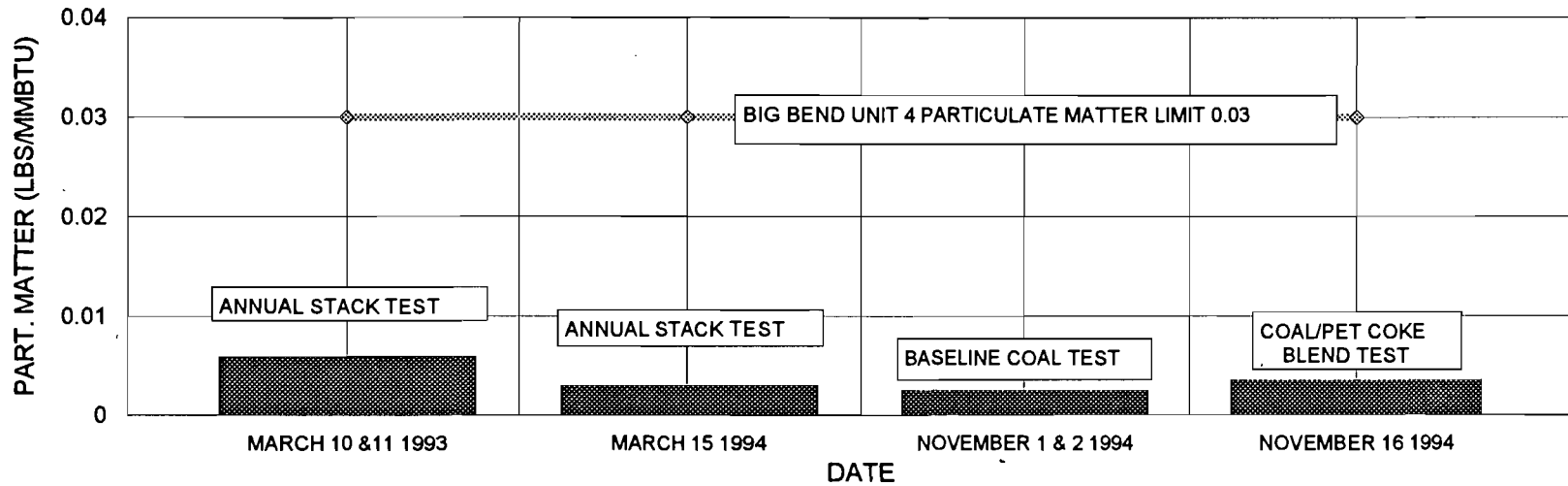
RUN	1	2	3	AVG.
BASELINE TESTS	0.075	0.069		0.072
20% PETROLEUM COKE TESTS	0.100	0.113	0.064	0.092

TABLE 4.2.4

ENCLOSURE 5

BIG BEND UNIT 4 EMISSIONS TESTS

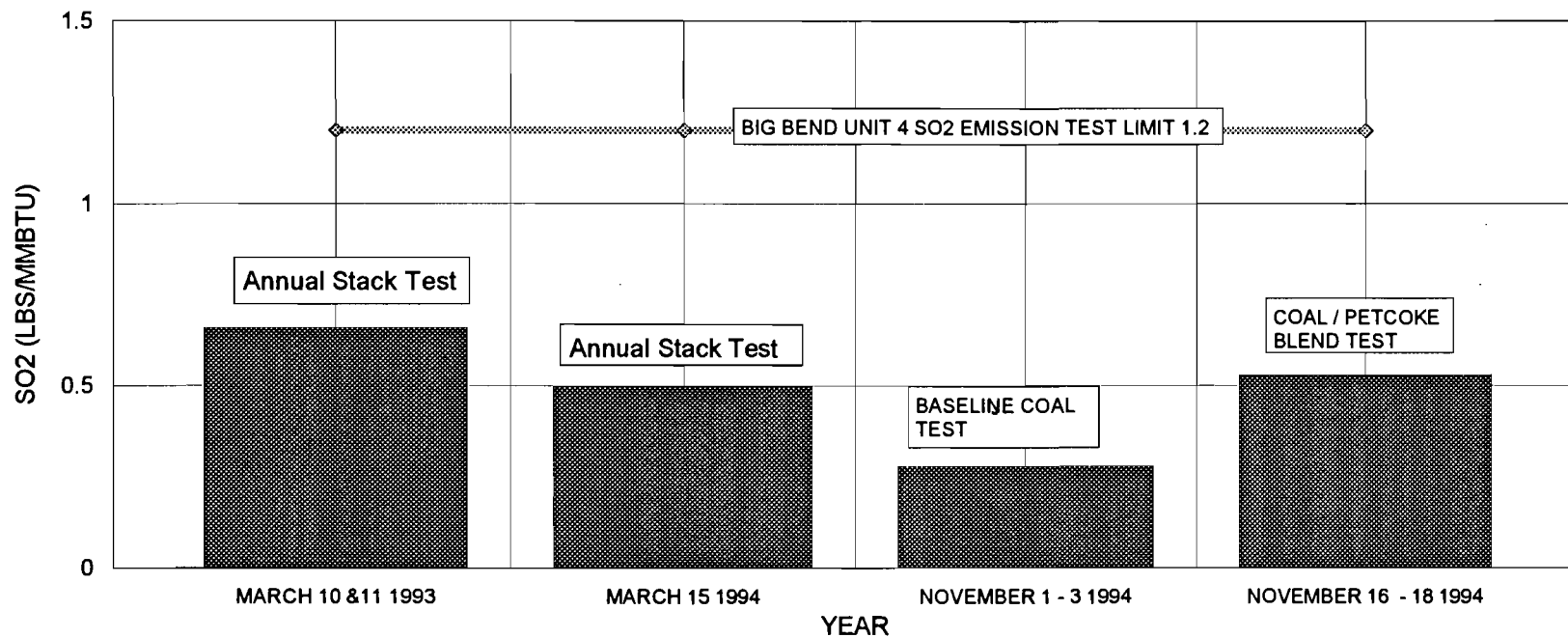
PARTICULATE MATTER RESULTS



YEAR	PARTICULATE LBS/MMBTU
1993	.006
1994	.003

YEAR	PARTICULATE LBS/MMBTU
BASELINE COAL TESTS	.0025
COAL / PETCOKE BLEND	.0035

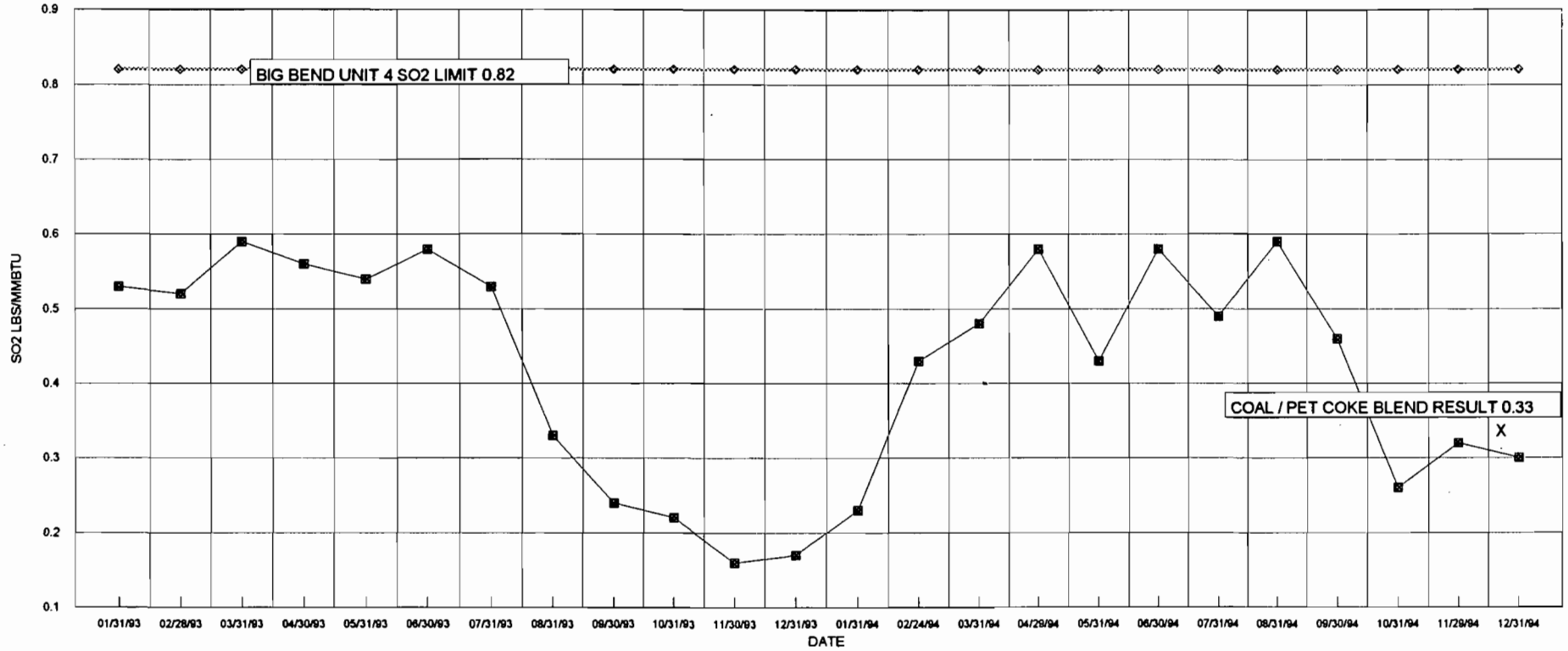
BIG BEND UNIT 4 EMISSIONS TESTS
SO2 TEST RESULTS



YEAR	SO2 LBS/MMBTU
1993	.66
1994	.50

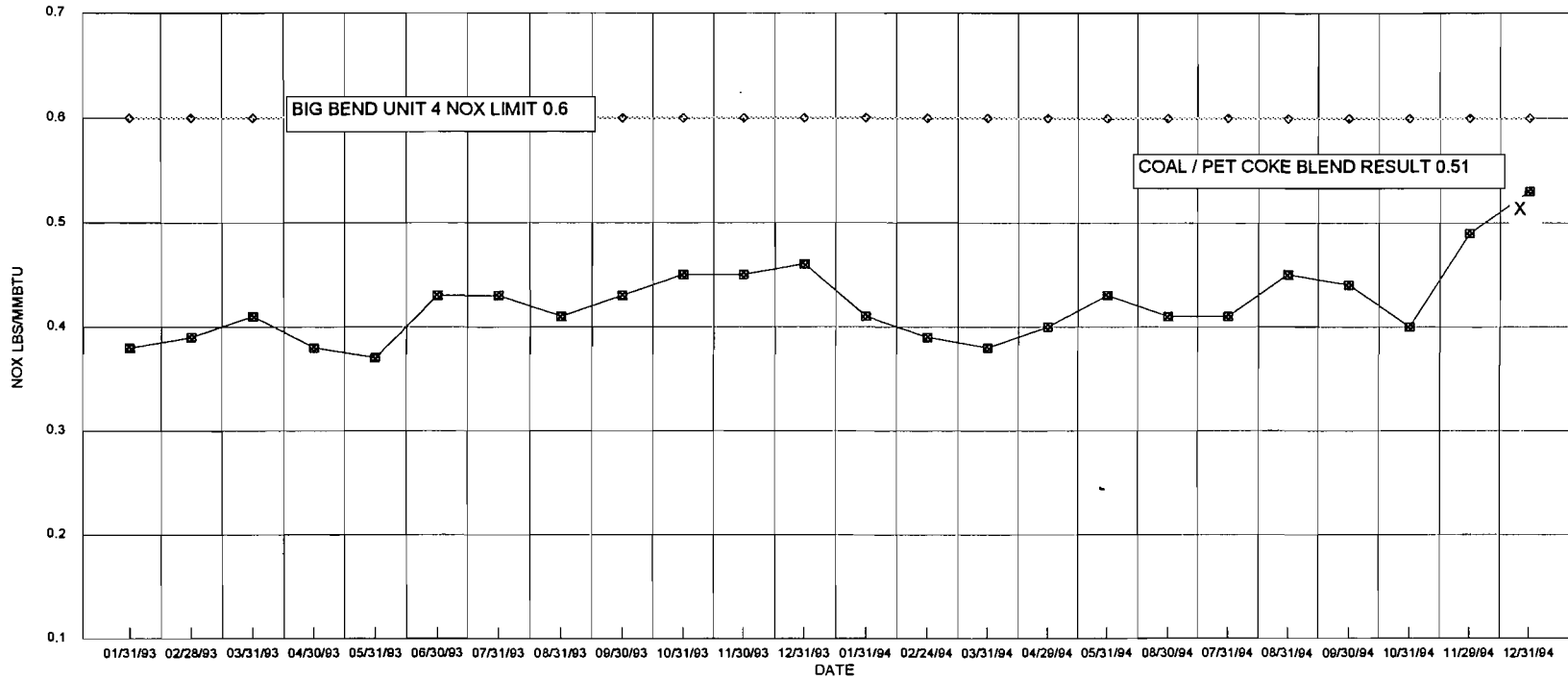
YEAR	SO2 LBS/MMBTU
BASELINE COAL TESTS	.28
COAL / PETCOKE BLEND	.53

BIG BEND UNIT 4 SO2 CEM DATA
30 DAY ROLLING AVERAGE



DATE	SO2 (LBS/MMBTU)	DATE	SO2 (LBS/MMBTU)	DATE	SO2 (LBS/MMBTU)	DATE	SO2 (LBS/MMBTU)	DATE	SO2 (LBS/MMBTU)
1/31/93	0.53	6/30/93	0.58	11/30/93	0.16	4/29/94	0.58	9/30/94	0.46
2/28/93	0.52	7/31/93	0.53	12/31/93	0.17	5/31/94	0.43	10/31/94	0.26
3/31/93	0.59	8/31/93	0.33	1/31/94	0.23	6/30/94	0.58	11/29/94	0.32
4/30/93	0.56	9/30/93	0.24	2/24/94	0.43	7/31/94	0.49	12/31/94	0.30
5/31/93	0.54	10/31/93	0.22	3/31/94	0.48	8/31/94	0.59		
								AVG.	0.42

BIG BEND UNIT 4 NOX CEM DATA
30 DAY ROLLING AVERAGE



DATE	NOX (LBS/MMBTU)	DATE	NOX (LBS/MMBTU)	DATE	NOX (LBS/MMBTU)	DATE	NOX (LBS/MMBTU)	DATE	NOX (LBS/MMBTU)
1/31/93	0.38	6/30/93	0.43	11/30/93	0.45	4/29/94	0.40	9/30/94	0.44
2/28/93	0.39	7/31/93	0.43	12/31/93	0.46	5/31/94	0.43	10/31/94	0.40
3/31/93	0.41	8/31/93	0.41	1/31/94	0.41	6/30/94	0.41	11/29/94	0.49
4/30/93	0.38	9/30/93	0.43	2/24/94	0.39	7/31/94	0.41	12/31/94	0.53
5/31/93	0.37	10/31/93	0.45	3/31/94	0.38	8/31/94	0.45		
								AVG.	0.42

**BIG BEND UNIT 4
ANNUAL OPERATING REPORT
EMISSIONS INVENTORY**

1992	SO2	NOX	PM
ANNUAL EMISSIONS (TONS/YEAR)	7064	5898	42

1993	SO2	NOX	PM
ANNUAL EMISSIONS (TONS/YEAR)	6664	6593	95

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):

- Addressee's Address
- Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
 Patrick Ho, P.E.
 Tampa Electric Co
 P O Box 111
 Tampa, FL 33601-0111

4a. Article Number
 Z 311 902 898

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

7. Date of Delivery
 JUN 5 1995

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: 1993-352-714 **DOMESTIC RETURN RECEIPT**

Is your RETURN ADDRESS completed on the reverse side?

Thank you for using Return Receipt Service

Z 311 902 898



Receipt for Certified Mail

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

PS Form 3800, March 1993

Sent to	Patrick Ho
Street and No.	TECO
P.O. Box and ZIP Code	Tampa, 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	6-1-95 PSD-FI-040

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

IN RE: TAMPA ELECTRIC COMPANY)	
BIG BEND STATION UNIT 4)	
MODIFICATION OF CONDITIONS)	DEP CASE NO. PA 79-12D
OF CERTIFICATION PA 79-12)	OGC CASE NO. 94-0914
HILLSBOROUGH COUNTY, FLORIDA)	
_____)	

FINAL ORDER MODIFYING
CONDITIONS OF CERTIFICATION

On August 17, 1981, the Governor and Cabinet, sitting as the Siting Board, issued a final order approving certification for Tampa Electric Company's (TECO's) Big Bend Station Unit 4. That certification order approved the construction and operation of a 486 MW (gross) coal-fired facility and associated facilities located in Hillsborough County, Florida.

On January 30, 1995 and March 6, 1995, TECO filed a request to modify the conditions of certification pursuant to Section 403.516(1)(b), Florida Statutes. TECO requested that the conditions be modified to approve changes to the Conditions of Certification for the continuous emission requirements necessary to implement in plant modification of flue gas treatment systems and operation. These proposed changes allow treatment of flue gas from Unit 3 in the Unit 4 FGD scrubbers.

Copies of TECO's proposed modification were distributed to all parties to the certification proceeding and made available for public review. On April 7, 1995, Notice of Proposed Modification of power plant certification was published in the Florida Administrative Weekly. As of April 3, 1995, all parties to the original proceeding had received copies of the

intent to modify. The notice specified that a hearing would be held if a party to the original certification hearing objects within 45 days from receipt of the proposed notice of modification or if a person whose substantial interests will be affected by the proposed modification objects in writing within 30 days after issuance of the public notice. Written objections to the proposed modifications were not received by the Department. Accordingly, in the absence of any timely objection,

IT IS ORDERED:

The proposed changes to TECO Big Bend Station as described in the January 30, 1995, and March 6, 1995, requests for modification are APPROVED. Pursuant to Section 403.516(1)(b), F.S., the conditions of certification for the TECO Big Bend Station are MODIFIED as follows:

Condition I.B. Air Monitoring Program

1. The permittee shall install and operate continuously monitoring devices for the Unit 4 boiler exhausts for sulfur dioxide, nitrogen dioxide, oxygen and/or carbon dioxide, and opacity. The monitoring devices shall meet the applicable requirements of Section ~~17-2-007~~-FAE 62-214, F.A.C., 40 CFR 60.47a., and 40 CFR 75. The opacity monitor shall be placed in the duct work between the electrostatic precipitator and the FGD scrubber.

a. When Units 3 and 4 are operating in the integrated mode (Unit 3 flue gases routed through the Unit 4 FGD system), the continuous monitoring system will measure sulfur dioxide emissions at the inlet and outlet of the Unit 4 FGD system and from the Unit 3 stack, while emissions of nitrogen oxides, oxygen and/or carbon dioxide, and opacity shall be measured in the Unit 4 duct prior to the FGD system.

b. When Units 3 and 4 are not operating in the integrated mode, the continuous monitoring system will measure only Unit 4's inlet duct and stack for SO₂ emissions. The emissions of nitrogen oxides, oxygen and/or carbon dioxide, and opacity shall be measured in the Unit 4 duct prior to the FGD system.

Any party to this Notice has the right to seek judicial review of the Order pursuant to Section 120.68, Florida Statutes, by the filing of Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the clerk of the Department of Environmental Protection 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 that the Final Order is filed with the Department of Environmental Protection.

DONE AND ENTERED this 19th day of June, 1995 in Tallahassee, Florida.

STATE OF FLORIDA, DEPARTMENT
OF ENVIRONMENTAL PROTECTION

FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to S120.52
Florida Statutes, with the designated
Department Clerk, receipt of which
is hereby acknowledged.

Robena Brown 6/19/95
Deputy Clerk Date

for Kenneth J. Plante

VIRGINIA B. WETHERELL
SECRETARY
3900 Commonwealth Boulevard
Tallahassee, FL 32399-3000

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing was sent by U.S. Mail to the following this 19th day of June, 1995.

Lawrence N. Curtin, Esq.
Holland & Knight
P.O. Drawer 810
Tallahassee, FL 32302

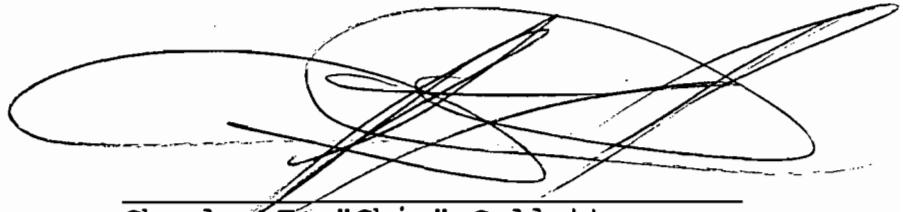
Karen Brodeen, Esq.
Department of Community Affairs
2740 Centerview Drive
Tallahassee, FL 32399-2100

Martin D. Hernandez, Esq.
Southwest Florida Water
Management District
2379 Broad Street
Brooksville, FL 34609-6899

Greg Nelson, P.E.
Tampa, Electric Company
P.O. Box 111
Tampa, FL 33601-0111

Michael Palecki
Division of Legal Services
Public Service Commission
101 East Gaines Street
Fletcher Building, Room 212
Tallahassee, FL 32399-0850

Sara M. Fotopulos, Esq.
Environmental Protection
Comm. of Hillsborough Co.
1900 Ninth Avenue
Tampa, FL 33605



Charles T. "Chip" Collette
Department of Environmental
Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400
(904) 488-9314

Attorney for the Department

Department of Environmental Regulation
Routing and Transmittal Slip

To: (Name, Office, Location)

1. ~~Clair Yancy~~
2. ~~Air Division~~
3. ~~Magnolia Ctr.~~
4. ~~421 92~~

Remarks: ~~IF PSD needed, should
get it out now.
Clair~~

~~Original - Active File on~~

~~TECO Big Bend~~

~~"Integration Project"~~

~~PA 79-92-91~~

~~PA 79-12 (Reynolds Project) copied~~

File

RECEIVED
JUN 21 1995
Bureau of
Air Regulation

From
Perry

Date 6/20/95
Phone 1-9642



RECEIVED

JUN 19 1995

Bureau of
Air Regulation

June 14, 1995

Mr. A. A. Linero
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

**Via Facimile and
Certified Mail No. P 880 003 416
Return Receipt Requested**

**Re: Tampa Electric Company
Big Bend Unit No. 4; PSD-FL-040**

Dear Mr. Linero:

On June 6, 1995, we received correspondence and attachments from Mr. Clair Fancy concerning our request for an amendment to PSD-FL-040 for Tampa Electric Company's Big Bend Unit 4. The material includes the Department's Notice of Intent to Issue the Permit Amendment to allow firing of a blend of coal and petroleum coke in the unit. Proposed permit conditions are included.

We have reviewed the proposed revision to the specific permit conditions and have the following suggestions: the new proposed specific conditions should be clarified as follows:

New Specific Condition 1. A.:

1. A. Fuels fired shall consist of coal or a coal/petroleum coke blend containing a maximum of 20% petroleum coke by weight. The sulfur content of the petroleum coke shall not exceed 6.0% by weight (dry basis). Vanadium content of the mineral ash from the petroleum coke fired shall not exceed 35.0% by weight (ignited basis).

New Specific Condition 1. B.:

1. B. Gravimetric scale data verifying that the 20% maximum petroleum coke content by weight on a monthly basis has not been exceeded shall be maintained and submitted to the Department and the Environmental Protection Commission of Hillsborough County (EPCHC) with each annual operating report.

Mr. A. A. Linero
June 14, 1995
Page 2 of 2

New Specific Condition 1. C.:

1. C. Pursuant to Rule 62-212.200(2)(d), Florida Administrative Code (F.A.C.), the actual emissions of the No. 4 unit shall equal the representative actual emissions as defined in 40 CFR 52.21(b)(33), **when the unit is firing petroleum coke**. The permittee shall maintain and submit to the Department and EPCHC on an annual basis for a period of 5 years from the date the unit begins firing petroleum coke, data demonstrating that the operational change did not result in an emission increase.

These changes will make clear that the amendments to the PSD permit apply to the operational change that has been proposed, in accordance with the applicable regulations.

We are available to discuss this clarification at your convenience. If you have any questions, please contact Janice Taylor or me at (813) 228-4839.

Sincerely,



Patrick A. Ho, P.E.
Manager
Environmental Planning

EP\gm\JKT711

c: B. Thomas, FDEP, Tampa
J. Kessel, FDEP, Tampa
J. Harper, EPA
J. Bunyak, NPS
H. Oven, FDEP, Tallahassee

Memorandum

Florida Department of
Environmental Protection

TO: Al Linero
John Reynolds

FROM: Buck Oven *HyD*

DATE: June 14, 1995

SUBJECT: TEC Big Bend - Petcoke Modification

Attached is a copy of the existing conditions of certification for Big Bend 4. Please provide me with a marked up copy of the conditions that will implement the request to burn Petcoke in accordance with the revised PSD permit.

Attach:

State of Florida Department of Environmental Regulation
Tampa Electric Company
Big Bend Unit 4
PA 79-12

CONDITIONS OF CERTIFICATION (Revised 6-2-81)

I. Air

The construction and operation of Big Bend Unit 4 at the Tampa steam electric power plant site shall be in accordance with all applicable provisions of Chapters 17-2, 17-4, 17-5 and 17-7, Florida Administrative Code. In addition to the foregoing, the permittee shall comply with the following conditions of certification:

A. Emission Limitations

1. Based on a maximum heat input of 4,330 million BTU per hour, stack emissions from Big Bend Unit 4 shall not exceed the following when burning coal ~~or~~ *coal/petroleum coke blend*:
 - a. SO₂ - 1.2 lb. per million BTU heat input, maximum two hour average, 0.84 lb/MMBtu on a 30-day rolling average.
 - b. NO_x - 0.60 lb. per million BTU heat input.
 - c. Particulates - 0.03 lb. per million BTU heat input.
 - d. Visible emissions - 20% (6-minute average), except one 6-minute period per hour of not more than 27% opacity.
2. The height of the boiler exhaust stack for Unit 4 shall not be less than 490 ft. above grade.
3. Particulate emissions from the coal handling facilities:
 - a. The permittee shall not cause to be discharged into the atmosphere from any coal processing or conveying equipment, coal storage system or coal transfer and loading system processing coal, visible emissions which exceed 20 percent opacity. Particulate emissions shall be controlled by use of control devices.
 - b. The permittee must submit to the Department within ten (10) working days after it becomes available, copies of technical data pertaining to the selected particulate emissions control for the coal handling facility. These data should include, but not be limited to, guaranteed efficiency and emission rates, and major design parameters such as air/cloth

ratio and flow rate. The Department may, upon review of these data, disapprove the use of such device if the Department determines the selected control device to be inadequate to meet the emission limits specified in 3(a) above. Such disapproval shall be issued within 30 days of receipt of the technical data.

4. Particulate emissions from limestone and flyash handling shall not exceed the following:
 - a. Limestone silos - 0.05 lb/hr.
 - b. Limestone hopper/transfer conveyors - 0.65 lb/hr.
 - c. Flyash handling system - 0.2 lb/hr.
5. Visible emissions from the following facilities shall be limited to 5% opacity: (a) limestone and flyash handling system, (b) limestone day silos and (c) flyash silos.
6. Compliance with opacity limits of the facilities listed in Condition 5 will be determined by EPA reference method 9 (Appendix A, 40 CFR 60).
7. Construction shall reasonably conform to the plans and schedule given in the application.
8. The permittee shall report any delays in construction and completion of the project to the Department's Southwest District Office.
9. Reasonable precautions to prevent fugitive particulate emissions during construction, such as coating of roads and construction sites used by contractors, will be taken by the permittee.
10. Coal should not be burned in the unit unless both electrostatic precipitator and limestone scrubber are operating properly.
11. Coal burned in the unit should be washed before it is transported to the plant site.

B. Air Monitoring Program

1. The permittee shall install and operate continuously monitoring devices for the Unit 4 boiler exhausts for sulfur dioxide, nitrogen dioxide, oxygen and opacity. The monitoring devices shall meet the applicable requirements of Section 17-2.08, FAC, and 40 CFR 60.47a. The opacity monitor may be placed in the duct work between the electrostatic precipitator and the FGD scrubber.

2. The permittee or Hillsborough county shall operate the two ambient monitoring devices for sulfur dioxide in accordance with EPA reference methods in 40 CFR, Part 53, and two ambient monitoring devices for suspended particulates. The monitoring devices shall be specifically located at a location approved by the Department. The frequency of operation shall be every six days commencing as specified by the Department.
3. The permittee shall maintain a daily log of the amounts and types of fuels used and copies of fuel analyses containing information on sulfur content, ash content and heating values.
4. The permittee shall provide sampling ports into the stack and shall provide access to the sampling ports, in accordance with DER publication, Standard Sampling Techniques and Methods of Analysis for the Determination of Air Pollutants from Point Source, July, 1975.
5. The ambient monitoring program may be reviewed by the Department and the permittee annually beginning two years after start-up of Unit 4.
6. Prior to operation of the source, the permittee shall submit to the Department a standardized plan or procedure that will allow the permittee to monitor emission control equipment efficiency and enable the permittee to return malfunctioning equipment to proper operation as expeditiously as possible.

C. Stack Testing:

1. Within 60 calendar days after achieving the maximum capacity at which each unit will be operated, but no later than 180 operating days after initial start-up, the permittee shall conduct performance tests for particulates, SO₂, NO_x and visible emissions during normal operations near 4,330 MMBtu/hr heat input and furnish the Department a written report of the results of such performance tests within 30 days. The performance tests will be conducted in accordance with the provisions of 40 CFR 60.46a, 48a, and 49a.
2. Performance tests shall be conducted and data reduced in accordance with methods and procedures in accordance with DER's Standard Sampling Techniques and Methods of Analysis for Determination on Air Pollutants from Point Sources, July, 1975.

3. Performance tests shall be conducted under such conditions as the Department shall specify based on representative performance of the facility. The permittee shall make available to the Department such records as may be necessary to determine the conditions of the performance tests.
4. The permittee shall provide 30 days prior notice of the performance tests to afford the Department the opportunity to have an observer present.
5. Stack tests for particulates and SO₂ shall be performed annually in accordance with conditions C. 2, 3, and 4 above.

D. Reporting

1. For Unit 4, stack monitoring, fuel usage and fuel analysis data shall be reported to the Department's Southwest District Office on a quarterly basis commencing with the start of commercial operation in accordance with 40 CFR, Part 60, Section 60.7., and in accordance with Section 17-2.08, FAC.
2. Utilizing the SAROAD or other format approved in writing by the Department, ambient air monitoring data shall be reported to the Bureau of Air Quality Management of the Department quarterly. Commencing on the date of certification, such reports shall be due by the last day of the month following the quarterly reporting period.
3. Beginning one month after certification, the permittee shall submit to the Department a quarterly status report briefly outlining progress made on engineering design and purchase of major pieces of equipment (including control equipment). All reports and information required to be submitted under this condition shall be submitted to the Administrator of Power Plant Siting, Department of Environmental Regulation, 2600 Blair Stone Road, Tallahassee, Florida, 32301.

II. Water Discharges

Any discharges into any waters of the State during construction and operation of Big Bend Unit 4 shall be in accordance with all applicable provisions of Chapter 17-3, Florida Administrative Code, and 40 CFR, 423, Effluent Guidelines and Standards for Steam Electric Power Generating Point Source Category, except as provided herein. Also, the permittee shall comply with the following conditions of certification:

A. Plant Effluents and Receiving Body of Water

For discharges made from the power plant the following conditions shall apply:



May 24, 1995

RECEIVED
MAY 30 1995

Bureau of
Air Regulation

Mr. Hamilton Oven, P.E.
Administrator, Siting Coordination Office
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Federal Express #5085772801

**Re: Tampa Electric Company
Big Bend Station-Fuel Handling Facilities
Case No. PA 79-12C**

Dear Mr. Oven:

As you are aware, TEC submitted a request to modify the approved fuel handling facilities on January 13, 1995 to your office. Comments from both the Florida Department of Environmental Protection (FDEP) Bureau of Air Regulation - Tallahassee, and the Environmental Protection Commission of Hillsborough County (EPC), have been received. TEC received the Bureau of Air Regulation's comment letter on February 25, 1995, and EPC's memorandum on March 17, 1995. Subsequently, TEC has met with EPC to resolve most of their concerns and received a follow up comment letter on April 12, 1995 on outstanding issues. TEC offers the detailed comments below on the Bureau's and EPC's respective February and April letters to resolve all issues so this permit modification may be issued:

**RESPONSE TO FLORIDA DEPARTMENT OF ENVIRONMENTAL
PROTECTION COMMENTS OF FEBRUARY 23, 1995**

FDEP Comment 1. The calculation of Appendix 1 which deals with particulate matter emissions from coal handling sources, the moisture content of the coal was assumed to be 7 percent. AP-42, Section 11.2.3 suggests a mean moisture content for the coal to be 2.3 percent. Please explain the deviation from this value, and recalculate the emissions.

TEC's Response: This issue was addressed to the satisfaction of the FDEP in the Addendum and Responses to Information Requests submitted to FDEP in June 1993. To expedite the modification approval process, that response is repeated below.

Based on available coal source information and TEC's extensive experience in receiving and using coal at its other existing power stations, the minimum

moisture content of the coal is expected to be approximately 7 percent. The assumed maximum moisture content of the coal of 15 percent is also based on available information on the characteristics of coals under consideration for the project. Therefore, the moisture content of coal to be delivered and handled at the Polk Power Station is expected to range from 7 to 15 percent.

To provide a more conservative analysis of potential particulate matter (PM) impacts, estimates and modeling analysis of the PM emission from coal handling sources are based on the expected 7 percent minimum moisture content of the coal.

FDEP Comment 2. **The modification states that the maximum amount of fuel transloaded annually will remain unchanged at 1,428,030 tons. Please state what percentage of that amount will be petroleum coke.**

TEC's Response *The percentage of petroleum coke transloaded on an annual basis will not be fixed. The dispersion modeling presented in the modification request was based on the worst-case scenario of transloading coal, only. Due to the higher moisture content of petroleum coke as well as other physical characteristics, lower particulate matter emissions are expected when transloading petroleum coke as compared to transloading an equal quantity of coal. Because the worst-case emission scenario of transloading 100 percent coal did not cause a significant impact, a fixed annual coal/petroleum coke throughput percentage is not necessary.*

Attachment 1 provides analysis on petroleum coke characteristics.

FDEP Comment 3. **Please provide data (particle size, silt content, moisture content, etc.) to show that petroleum coke is similar in characteristics to coal for emission calculations, and specifically for fugitive emissions evolution.**

TEC's Response *Please see Attachment 1.*

RESPONSE TO THE ENVIRONMENTAL PROTECTION COMMISSION OF HILLSBOROUGH COUNTY LETTER OF APRIL 11, 1995

Comment 1. **In the Final Order Modifying Conditions of Certification dated April 6, 1994 which authorized the increased transloading transfer of coal, the test method in condition I.A.3.a was an EPA Reference Method 22.**

For any opacity limits over 0 percent, a Method 9 must be conducted. We recommend that during this modification, this condition be changed to require the appropriate test method (EPA Reference Method 9, 40 CFR 60, Appendix A).

*TEC's
Response*

TEC has no objection to this method.

EPC Comment 2.

We recommend that condition I.A.3.a be modified to require a 5 percent opacity limit for the following reasons:

- a. **The fuel transloading operation is equivalent to a stevedoring operation. All of the permits issued to other stevedoring operations (with the exception of iron scrap handling at 10 percent) in Hillsborough County Port areas have established a 5 percent opacity limitation. We believe it is important to be consistent with similar operations.**
- b. **The permit that was issued for the TEC facility in Polk County handling this very same coal established a 5 percent opacity limitation. Hillsborough County has a particulate matter maintenance area and remains unclassifiable for PM10. Clearly there is justification for establishing an equivalent opacity standard at the Big Bend terminal.**
- c. **There is a residential community south of the Big Bend facility and we believe a 5 percent opacity limitation would be provided reasonable assurance that the expanded fuel transloading stevedoring operation would not adversely impact that area.**
- d. **The emissions factors that were used by TEC for the increased fuel through the coal yard and for the requested change in the transloading configuration indicated the net emissions increase was below 25 TPY. These emissions factors along with the magnitude of the net emissions change indicate a 5 percent opacity standard should be achievable. A 20 percent opacity standard does not give us reasonable assurance that their calculated emission estimates are being met.**
- e. **With the increased fuel through the coal yard and other changes that have been made at the Big Bend facility, the particulate**

matter modeling that was originally conducted to exempt the facility from particulate matter operations would show an impact if operations were modeled under current conditions. Therefore, the 5 percent opacity standard for the transloading operation would be appropriate by rule.

- f. A 5 percent standard would give us further assurance that petroleum coke is equivalent to coal as the applicant claims. Our agency has had complaints regarding petroleum coke stevedoring in the past, and we feel a 5 percent standard would give us assurance the proper handling procedures would be followed.**

TEC's Response:

As detailed to FDEP's satisfaction in TEC's February 24, 1994 letter (Attachment 2), a 5 percent opacity standard is not applicable for these sources. Additionally, TEC is unaware of any new or modified regulations that have changed which would require a 5 percent opacity limit for these sources.

With regards to EPC's comments, TEC believes the emissions sources that are referenced in EPC's letter are in or near the particulate matter Air Quality Maintenance Area (AQM) and are required to meet the Reasonable Achievable Control Technology (RACT) 5 percent opacity standard for unconfined emissions. The Polk Power Station coal yard sources are confined sources within the AQM Area of Influence and the 5 percent opacity standard is applicable.

As shown in Attachment 2, the Big Bend coal yard emissions sources are exempted from RACT based upon emission types and location. The dispersion modeling to demonstrate RACT exemption is not required in this case.

The emissions factors TEC used for this proposed modification were obtained from AP-42, Section 11.2, Fugitive Dust Sources. These factors are the best available for this analysis and are an accepted standard. It should be noted that the proposed reconfiguration of the transloading operation represents a decrease in emissions from the permitted transloading configuration.

Mr. Hamilton S. Oven, P.E.
May 24, 1995
Page 5

Based upon the above discussion and as shown in previous correspondence, TEC still believes the Big Bend sources are not subject to RACT requirements and the general opacity limit of 20 percent of Rule 62-296.310(2) is the applicable standard.

TEC believes this letter addresses all agencies concerns and request this permit modification be approved as soon as possible. Please feel free to call Ms. Janice Taylor or me at (813) 228-4839 should you have any further questions.

Sincerely,



Patrick A. Ho , P.E.
Manager
Environmental Planning

EP'sn\JKT708

Enclosures

c/enc: Al Linero, FDEP-Tallahassee
Sayed Arif, FDEP-Tallahassee
Jerry Kissel, FDEP-Tampa
Jerry Campbell, EPCHC

TYPICAL PETROLEUM COKE ANALYSIS**TYPICAL ANALYSIS, DRY BASIS**

	RANGE
Sulfur, wt. %	4.0 - 5.0
Volatiles, Content, wt. %	9 - 14
Vanadium, ppm	1100 - 1900
Nickel, ppm	100 - 200
Iron, ppm	50 - 100
Silicon, ppm	100 - 500
Nitrogen, wt. %	.6 - 1.6
Ash, wt. %	< 1.0
Calorific Value, BTU/#	13,500 - 14,000
Carbon, wt. %	85.0 - 95.0
Moisture, wt. %	7 - 10

PETROLEUM COKE TRACE METAL ANALYSIS**FROM TYPICAL SUPPLIER**

TRACE ELEMENT	RESULTS	
	SUPPLIER 1 mg/kg (ppm)	SUPPLIER 2 mg/kg (ppm)
ALUMINUM	279.0	69.8
ANTIMONY	< 0.5	< 0.5
ARSENIC	< 0.1	< 0.1
BARIUM	5.98	5.20
BERYLLIUM	< 0.01	< 0.01
CADMIUM	< 0.01	< 0.01
CHROMIUM	19.8	15.6
COPPER	< 0.5	< 0.5
FLUORINE	4.3	5.7
LEAD	< 0.5	< 0.5
MANGANESE	1.87	1.09
MERCURY	< 0.05	< 0.05
NICKEL	105.0	203.0
SELENIUM	< 0.1	< .01
SILICON	577.0	514.0
SILVER	< 0.5	< 0.5
SODIUM	215.0	223.0
THALLIUM	< 0.01	< 0.01
VANADIUM	534.0	750.0
ZINC	15.7	15.8



February 24, 1994

Mr. H.S. Oven, P.E.
Administrator
Siting Coordination Section
Florida Department of Environmental Protection
Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

**VIA FACSIMILE and
Certified Mail #P278 133 018
Return Receipt Requested**

Re: Tampa Electric Company
Big Bend Station Unit 4
Modification of Conditions of Certification PA 79-12

Dear Mr. Oven:

Thank you for the opportunity to review the draft Order for the above referenced project. Our comments on the draft Order are listed below. We have also attached a copy of the draft Order that has been marked up with our comments.

Page 1 Please modify the first paragraph as shown on the attachment. This change to the Conditions of Certification and the PSD permit was made in 1988.

Page 2 In the first full paragraph, we believe that the reference to "Big Bend Station" should read "Big Bend Unit 4."

Also, please change Condition I.A.3.a. as indicated on the attachment. Rule 17-296.711, F.A.C. is not applicable to the emission points cited in Condition I.A.3.a. The correct opacity limit for these emission points is 20%, pursuant to Rule 17-293.310(2)(a), F.A.C.

Rule 17-296.700, F.A.C., Reasonable Available Control Technology (RACT) Particulate Matter, generally applies to any source that emits PM and is located in a PM air quality maintenance area or in the area of influence of a PM air quality maintenance area. However, Rule 17-296.700(2)(d), F.A.C., exempts from regulation "any source of unconfined particulate matter which is located more than 5 kilometers (km) outside the boundary of a particulate matter air quality maintenance area." Because the Big Bend Station sources subject to

Condition I.A.3.a emit unconfined PM and are located more than 5 km outside the boundary of a PM air quality maintenance area, the Rule 17-296.700(2)(d), F.A.C., exemption makes Rule 17-296.711, F.A.C. non-applicable. Because no other specific rule applies, the general 20% opacity limit of Rule 17-293.3410(2)(a) becomes the applicable limit. Additional detail is provided below.

Unconfined emissions are "emissions which escape and become airborne from unenclosed operations or which are emitted into the atmosphere without being conducted through a stack" [17-296.200(193), F.A.C.]. Big Bend Station coal processing or conveying equipment, coal storage system, or transloading source/emission point (i.e., off-loading or loading of coal and coal piles) are sources of unconfined PM emissions because the PM is either from unenclosed operations or is not emitted through a stack.

The PM air quality maintenance nearest to Big Bend Station is "that portion of Hillsborough County which falls within the area of a circle having a center point at the intersection of U.S. 41 South and State Road 60 and a radius of 12 kilometers" [17-275.600(3)(a), F.A.C.] Unconfined PM sources are exempt from Rule 17-296.711, F.A.C., if these sources are greater than 5 km distant from this air quality maintenance area. Thus, the rule exemption applies to unconfined PM emission sources greater than 17 km distant from the intersection of U.S. 41 South and State Road 60. This highway intersection is located at Universal Transverse Coordinates (UTM) East 362,039 and North 3,092,482. The south bank of the Big Bend Station intake water channel, which is north of the PM emission sources, is located at UTM East 361,485 and North 3,075,373. The distance between these 2 points is 17.119 km. Because the water intake channel is between the highway intersection and the PM emission sources, the PM emission sources must be greater than 17 km distant from the intersection of U.S. 41 South and State Road 60.

Given this demonstration, the Big Bend Station sources subject to Condition I.A.3.a. emit unconfined PM and are not located within 5 km of a PM air quality maintenance area. Thus, the Rule 17-296.700(2)(d), F.A.C., exemption makes Rule 17-296.711, F.A.C. non-applicable. Because no other specific rule applies, the general 20% opacity limit of Rule 17-293.3410(2)(a) becomes the applicable limit.

Delete requirement for the visible emissions compliance tests. Based on our comment above, we do not see the need or basis for these tests.

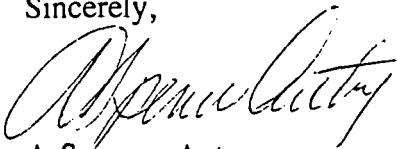
Mr. H.S. Oven, P.E.
February 24, 1994
Page 3

Page 4 In Conditions I.A.3.d. and e., we would like to have the word "transloading" inserted as indicated in the attachment. We believe that this insertion better clarifies the conditions.

Page 6 In the first paragraph, the word "Regulation" should be replaced with "Protection" as shown in the attachment.

Should you have any questions or comments on the above information, please do not hesitate to contact Greg Nelson at 813/228-4847.

Sincerely,



A. Spencer Autry
Director
Environmental

sn\LL669

Enclosure

COMMISSION

DOTTIE BERGER
PHYLLIS BUSANSKY
JOE CHILLURA
CHRIS HART
JIM NORMAN
ED TURANCHIK
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ECOSYSTEMS MANAGEMENT DIVISION
TELEPHONE (813)272-7104

EXECUTIVE DIRECTOR

ROGER P. STEWART

April 11, 1995

Mr. Hamilton S. Oven, Jr., P.E.
Administrator
Florida Department of Environmental
Protection
3900 Commonwealth Blvd.
Tallahassee, FL 23299-3000

Re: Tampa Electric Company Big Bend Station
Coal Yard Modification
PA79-12C Modifications

Dear Mr. Oven:

On March 29, 1995, representatives from the Environmental Protection Commission (EPC) of Hillsborough County met with Tampa Electric Company (TEC) to discuss the above referenced project. During the meeting, TEC discussed their draft response to EPC's comments on the project. Based on our review of the material submitted and the original project submitted we have the following comments:

1. In the Final Order Modifying Conditions of Certification dated April 6, 1994 which authorized the increased transloading transfer of coal, the test method in condition I.A.3.a was an EPA Reference Method 22. For any opacity limit over 0% a Method 9 must be conducted. We recommend that during this modification, this condition should be changed to require the appropriate test method (EPA Reference Method 9, 40 CFR 60, Appendix A).
2. We recommend that condition I.A.3.a be modified to require a 5% opacity limit for the following reasons:
 - a. The fuel transloading operation is equivalent to a stevedoring operation. All of the permits issued to other stevedoring operations (with the exception of iron scrap handling at 10%) in Hillsborough County Port areas have established a 5% opacity limitation. We believe it is important to be consistent with similar operations.


Bureau of
Air Regulation
APR 13 1995
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- b. The permit that was issued for the TEC facility in Polk County handling this very same coal established a 5% opacity limitation. Hillsborough County has a particulate matter maintenance area and remains unclassifiable for PM10. Clearly there is justification for establishing an equivalent opacity standard at the Big Bend terminal.
- c. There is a residential community south of the Big Bend facility and we believe a 5% opacity limitation would be provided reasonable assurance that the expanded fuel transloading stevedoring operation would not adversely impact that area.
- d. The emission factors that were used by TEC for the increased fuel through the coal yard and for the requested change in the transloading configuration indicated the net emissions increase was below 25 TPY. These emissions factors along with the magnitude of the net emissions change indicate a 5% opacity standard should be achievable. A 20% opacity standard does not give us reasonable assurance that their calculated emission estimates are being met.
- e. With the increased fuel through the coal yard and other changes that have been made at the Big Bend facility, the particulate matter modelling that was originally conducted to exempt the facility from particulate matter RACT is no longer applicable. We believe the facility operations would show an impact if operations were modelled under current conditions. Therefore, the 5% opacity standard for the transloading operation would be appropriate by rule.
- f. A 5% standard would give us further assurance that petroleum coke is equivalent to coal as the applicant claims. Our agency has had complaints regarding petroleum coke stevedoring in the past, and we feel a 5% standard would give us assurance the proper handling procedures would be followed.

Mr. Hamilton S. Oven, Jr., P.E.
April 11, 1995
Page 3

Should you require additional information or have any questions on these items please contact me or Liz Deken at Suncom 543-5530 (or (813) 272-5530).

Sincerely,



Jerry Campbell, P.E.
Assistant Director
Air Management Division

bm

cc: Al Linero, FDEP-Tallahassee
Jerry Kissel, FDEP-Southwest District
Janice Taylor, TEC

Memorandum

Florida Department of
Environmental Protection

TO: Buck Oven

FROM: Clair Fancy

DATE: March 8, 1995

SUBJ: Revised Permit Conditions - TECO Unit 3 & 4 Integration
Site Certification PA 79-12

Attached are revisions to the subject permit conditions that were requested by the permittee. TECO asked that this be handled separately from the other requested revisions due to the urgent nature of this project.

CHF/jr/t

Attachment



March 6, 1995

Mr. John Reynolds
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

VIA FACSIMILE

**RE: Tampa Electric Company
Big Bend Station, Unit 3 & 4 FGD Integration
Permit Number PA79-12**

Dear Mr. Reynolds:

Pursuant to our telephone conversation on March 3, 1995, we would like to propose the following changes to your Draft language to the subject permit.

Second Paragraph of Draft Language

Current language:

When Units 3 and 4 are operating in the integrated mode (Unit 3 flue gases routed through the Unit 4 air pollution control system), the continuous monitoring system shall measure sulfur dioxide emissions at the inlet and outlet of the Unit 4 air pollution control system and from the Unit 3 stack, while emissions of nitrogen oxides, oxygen and/or carbon dioxide and opacity shall be measured in the Unit 4 inlet duct prior to the FGD system. Opacity shall also be monitored from the Unit 3 stack to verify the occurrence of any bypassing of the flue gases in the integrated mode.

Revised language (language removed is lined through, language added is shaded):

When Units 3 and 4 are operating in the integrated mode (Unit 3 flue gases routed through the Unit 4 ~~air pollution control~~ **FGD** system), the continuous monitoring system shall measure sulfur dioxide emissions at the inlet and outlet of the Unit 4 ~~air pollution control~~ **FGD** system and from the Unit 3 stack, while emissions of nitrogen oxides, oxygen and/or carbon dioxide and opacity shall be measured in the Unit 4 inlet duct prior to the FGD system. ~~Opacity shall also be monitored from the Unit 3 stack to verify the occurrence of any bypassing of the flue gases in the integrated mode.~~

The changes above clarify the paragraph in two areas. First, the only Unit 4 air pollution control system that the Unit 3 flue gas passes through is the FGD system. Therefore it is more appropriate to reference only the FGD system in the amended language.

Mr. John Reynolds
March 6, 1995
Page 2 of 2

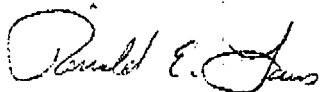
Second, the requirement to monitor opacity in the Unit 3 stack for bypassing of flue gas will not be effective for this purpose. The Unit 3 flue gas is routed to the Unit 4 FGD system downstream of the Unit 3 electrostatic precipitator and the existing Unit 3 opacity monitors. The Unit 4 flue gases cannot be bypassed prior to the Unit 4 electrostatic precipitator or the Unit 4 opacity monitor. Therefore, the opacity monitor would not see any change in opacity as a result of bypassing.

The combined Unit 3 and 4 treated flue gases will pass through both the Unit 3 and the Unit 4 stacks when operating in the integrated mode. The Unit 4 stack alone is not capable of handling the flue gas velocity associated with the gas volume of both units.

Drawing Number B4277-SK-001 included in the Modification 1 package, submitted with the January 30, 1995 letter, reflects the orientation of the Unit 3 and 4 electrostatic precipitators, emission monitors and duct arrangements relative to the Unit 4 FGD system. This document may be helpful in reviewing the relative configurations.

Thank you for your consideration and assistance in this matter. If you have any comments or questions, please call Ronald Laws or me at (813) 228-4843.

Sincerely,



Ronald E. Laws, P.E.
Senior Engineer
Environmental Planning

EPNRELO30

c: Hamilton S. Owen, Jr., FDEP

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TELEPHONE (813)272-7104

M E M O R A N D U M

DATE: February 17, 1995

TO: Rick Kirby

FROM:   Sterlin Woodard & Eric Peterson THRU: Jerry Campbell,
P.E.

SUBJECT: TECO'S Big Bend Unit #4 Petroleum Coke Test Burn

We have completed our review of the compliance test TECO submitted to this office on February 1, 1995 in response to the FDEP's October 5, 1994 letter authorizing them to burn petroleum coke, and have the following comments:

1. Condition #3 of the authorization requires that a minimum of three (3) separate samples should be collected, and analyzed for sulphur, nitrogen, and metals during the particulate matter test runs. Two (2) samples were taken during the seven (7) test runs while burning coal, but the third sample was taken after the completion of the particulate matter testing on November 3. During the petroleum coke blend test, all three (3) required samples were taken during the six (6) particulate matter runs. Therefore, only the 2 samples collected during the coal particulate matter test runs should be used for comparison with the sulphur, nitrogen and metals content of the petroleum coke blend particulate test runs.
2. Condition's 5 and 6 of the authorization require that the petroleum coke shall be limited to 20% by weight of the blend and not to exceed 67,190 lb/hr. The test report did not include the amount of coal or petroleum coke burned to demonstrate compliance with these conditions. The information, therefore, should be submitted.

3. Condition #7 of the authorization requires that if the plant CEM's are used for the test, then they should be quality assured pursuant to 40CFR60, Appendix F. It also requires that the RATA and cylinder gas audit be submitted with the report. A review of the Relative Accuracy Test Audit Data Assessment Report of Section D-3 of the report, indicates that the plant CEM's required by Subpart D.a. were used. However, page 6 of Section 3 of the reports indicates that a "transportable" CEM or TCEM's was used. If the plant CEM's were not used, then the TCEM test data should be submitted.
4. Condition #19 of the authorization requires that the test be conducted at 90-100% of the 4330 MMBTU/HR maximum heat input rate listed in the Cite Certification and PSD permit. The test report listed the electrical energy generated during the testing in MW instead of the heat input of the fuel. The required heat input should be submitted with the report to demonstrate compliance with the condition, and ensure that the maximum heat input rate was not exceeded.
5. Condition #20 of the authorization required that TECO get prior approval of the proposed test methods to be employed during testing. We never received TECO's proposal for approval. Condition #7 required that they test for PM, CO, and H₂SO₄ mist. TECO used method 5B "Determination of Nonsulfuric Acid Particulate Matter from Stationary Sources", which has a negative bias and under reports the particulate matter emissions since it does not include H₂SO₄ mist. TECO normally uses EPA method 17 to test for particulate matter which includes any H₂SO₄ acid mist being emitted. Based on the H₂SO₄ acid mist test (EPA Method 8) the negative bias appears to be approximately 12 lb/hr for the baseline test. Since the average emissions for the seven (7) particulate matter runs is approximately 13 lb/hr, the negative bias is considerable (~92%). The particulate matter emissions are, therefore, more closely equal to 0.005 lb/MMBTU for the baseline or coal burn but, since the same bias was introduced during the petroleum coke blend test, the results are appropriate for comparison purposes only.
6. Table 4.1.1 and 4.1.3 lists CEM Data Daily Averages during the petroleum coke test burns. The overall averages for SO₂ outlet and NO_x inlet appear to be calculated incorrectly. The corrected averages are 0.33 and 0.51 lb/MMBTU, respectively.

7. A review of the stack tests indicate that the particulate matter emissions increased over 40%; the sulfur dioxide emissions increased over 89%; the nitrogen oxide emissions increased over 18%. Using the CEM data daily averages sulfur dioxide emissions increased over 32%, and the nitrogen oxide emissions increased over 19%. Using the procedures referenced in 40CFR60, Appendix C and the authorization letter an analysis of the results indicates that an increase in actual emissions did occur. In 1992 and 1993 TECO Big Bend #4 reported average emissions of 58 tpy of particulate matter; 3,454 TPY of Sulfur Dioxide; 3,350 TPY of nitrogen oxides. This, along with the 40%, 89% and 18% increases for the particular pollutants during the test, suggests that significant increases (in excess of those listed in Table 62-212.400-2) in actual emissions would result and trigger PSD for particulate matter, sulfur dioxide and nitrogen oxides. We suggest that TECO submit an application to modify their Cite Certification and PSD permits if they plan to burn petroleum coke blend as an alternative fuel in Unit #4.



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JAN 17 1995

Bureau of
Air Regulation

January 13, 1995

Mr. John Reynolds
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

**CERTIFIED MAIL #P 278 133 763
RETURN RECEIPT REQUESTED**

**RE: Tampa Electric Company
Big Bend Station, Unit 3 & 4 FGD Integration
Permit Numbers PA79-12, PSD-FL-040, AO29-179911**

Dear Mr. Reynolds:

Pursuant to our discussions, we would like to propose the following amendments to the subject permits.

Big Bend Unit 4 Site Certification PA79-12

Condition I.B.1 Air Monitoring Program (page 2)

Current language:

The permittee shall install and operate continuously monitoring devices for the Unit 4 boiler exhausts for sulfur dioxide, nitrogen dioxide, oxygen and opacity. The monitoring devices shall meet the applicable requirements of Section 17-2.08, FAC, and 40 CFR 60.47a. The opacity monitor may be placed in the duct work between the electrostatic precipitator and the FGD scrubber.

Amended Language:

The permittee shall install and operate continuous monitoring devices for the Unit 4 boiler exhausts for sulfur dioxide, nitrogen dioxide, oxygen and/or Carbon Dioxide, and opacity. The monitoring devices shall meet the applicable requirements of 40 CFR 60.47a. The opacity monitor may be placed in the duct work between the electrostatic precipitator and the FGD scrubber.

When Unit 3 and 4 are operating in the integrated mode, the continuous monitoring system will measure SO₂ from both the inlet ducts from Units 3 and 4 as well as SO₂ exiting from the Unit 3 and Unit 4 chimneys. The unit emissions will be calculated by taking a ratio of the unit's generating load in megawatts. The emissions of nitrogen oxides, oxygen, and/or carbon dioxide and opacity will be measured in the Unit 4 inlet duct prior to the FGD system.

When Unit 3 and 4 are not operating in the integrated mode, the continuous monitoring system will measure only Unit 4 inlet duct and Unit 4 chimney for SO₂ emissions. The emissions of nitrogen oxides, oxygen, and/or carbon dioxide and opacity will be measured in the Unit 4 inlet duct prior to the FGD system.

Mr. John Reynolds
January 13, 1995
Page 2

Big Bend Unit 4 PSD-FL-040

No changes proposed.

Big Bend Unit 3 AO29-279911

Cover letter:

Current language of second paragraph:

For the operation of a 4115 MMBTU/hr. coal fired steam generator designated as Unit No. 3 at the Big Bend Station. This "wet" bottom boiler was manufactured by Riley-Stoker and is an opposed-fired turbo boiler. The generator has a nameplate capacity of 445.5 MW. Particulate emissions generated during the operation of the unit are controlled by dry electrostatic precipitator manufactured by Research-Cottrell, Inc.

Proposed language:

For the operation of a 4115 MMBTU/hr. coal fired steam generator designated as Unit No. 3 at the Big Bend Station. This "wet" bottom boiler was manufactured by Riley-Stoker and is an opposed-fired turbo boiler. The generator has a nameplate capacity of 445.5 MW. Particulate emissions generated during the operation of the unit are controlled by dry electrostatic precipitator manufactured by Research-Cottrell, Inc.

Unit 3 may also operate in an integrated mode with the Unit 4 FGD system. During operation in integrated mode, Unit 3 SO₂ emissions shall be treated as Unit 4 SO₂ emissions and will meet Unit 4 SO₂ emission limits.

All stack testing denoted in the permit shall be performed in the non-integrated mode of operation.

Thank you for your consideration and assistance in this matter. If you have any comments or questions, please call Ronald Laws at (813) 228-4843 or me at (813) 228-4844.

Sincerely,



Patrick A. Ho, P.E.
Manager
Environmental Planning

EP\sn\REL015

c: Hamilton S. Oven, Jr., FDEP
G. Harper, EPA

Revised Permit Conditions

**TECO Big Bend Station Units 3&4 Integration
PA 79-12**

Specific Condition 1.B.1 is revised as indicated below:

The permittee shall install and operate continuous monitoring devices for the Unit 4 boiler exhausts for sulfur dioxide, nitrogen oxides, oxygen and/or carbon dioxide, and opacity. The monitoring devices shall meet the applicable requirements of 40 CFR 60.47a. The opacity monitor shall be placed in the duct between the electrostatic precipitator and the FGD scrubber.

When Units 3 and 4 are operating in the integrated mode (Unit 3 flue gases routed through the Unit 4 FGD system), the continuous monitoring system shall measure sulfur dioxide emissions at the inlet and outlet of the Unit 4 FGD system and from the Unit 3 stack, while emissions of nitrogen oxides, oxygen and/or carbon dioxide and opacity shall be measured in the Unit 4 inlet duct prior to the FGD system.

When Units 3 and 4 are not operating in the integrated mode, the continuous monitoring system shall measure sulfur dioxide emissions only at the Unit 4 inlet duct and the Unit 4 stack, while emissions of nitrogen oxides, oxygen and/or carbon dioxide and opacity shall be measured in the Unit 4 inlet duct prior to the FGD system.



Lawton Chiles
Governor

Florida Department of Environmental Protection

FILE
COPY

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

Virginia B. Wetherell
Secretary

December 14, 1994

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Patrick Ho, P.E.
Manager of Environmental Planning
Tampa Electric Company
P.O. Box 111
Tampa, Florida 33601-0111

Dear Mr. Ho:

Re: Request for an Amendment for an Extension of Time to Complete Tests for Pollutant Emissions While Firing a Blend of Petroleum Coke and Coal in Tampa Electric Company's (TEC) Big Bend Unit #4, Site Certification No. PA 79-12; and, Amendment to PSD-FL-040(Aa)

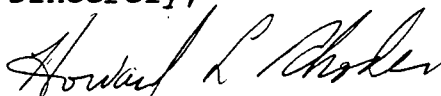
The Department has reviewed the request and supplementary information that you provided on December 12 and 13, 1994, respectively (attached), which requested an amendment to allow some additional time to complete some testing, specifically for carbon monoxide. Based on the amendment PSD-FL-040(A), which authorized the original testing project, and Condition #10 of the amendment, which provided for an authorization of additional time to conduct tests under certain conditions, the Department finds the request acceptable. Therefore, the Department authorizes an additional 72 hours of time during the month of December to complete the tests that were to be conducted in the original testing project. In addition, the Department concurs with the statement that the test results of the total project shall be due within 45-days of the last test run for which this additional time is being granted. Also, all terms of the referenced amendment of authorization [PSD-FL-040(A)] to conduct tests shall remain in effect.

- o Attachments to be incorporated:
 - o TEC's letter received December 12, 1994.
 - o TEC's letter received December 13, 1994, via FAX.

Mr. Patrick Ho
TEC: Letter Amendment Regarding an Extension of Time to Complete
Tests
PSD-FL-040(Aa)
December 14, 1994
Page 2

The above referenced amendment [PSD-FL-040(Aa)] changes and attachments shall be made to the federal permit, No. PSD-FL-040(A), and shall become a part of the permit.

Sincerely,



Howard L. Rhodes, P.E.
Director
Division of Air Resources
Management

HLR/CHF/rbm

Attachments

cc: Jerry Campbell, EPCHC
Jewell Harper, EPA/Region IV
John Bunyak, NPS
Doug Beason, Esq., DEP

Memorandum

Florida Department of
Environmental Protection

TO: Howard L. Rhodes

FROM: *John Brown*
Clair Fancy

DATE: December 14, 1994

SUBJECT: Request for an Amendment to Allow Additional Time to
Complete the Testing Project
Tampa Electric Company (TEC): Big Bend Unit #4
PSD-FL-040(Aa)

TEC was granted authorization to conduct various tests for pollutants while burning petro coke and coal combinations and 100% coal (baseline) in Big Bend Unit #4. TEC has requested additional time to complete the tests authorized for the project, specifically to conduct the final tests for carbon monoxide. Condition #10 gave the Department the ability to authorize additional time to complete testing, if justified. The Department received correspondence on December 12 and 13 that gave us the assurance that some additional time is approvable.

I recommend that this amendment be approved and authorized by signature.

HLR/CF/rbm

MESSAGE CONFIRMATION

DEC-15-'94 THU 13:58

TERM ID:

P-9999

TEL NO:

NO.	DATE	ST. TIME	TOTAL TIME	ID	DEPT CODE	OK	NG
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Post-it® Fax Note 7671		Date 12-15-94	# of pages 2
To Fannie Taylor		From Bruce Mitchell	
Co./Dept. TEC		Co. FDEP/BAG	
Phone # 8		Phone # 904-488-1347	
Fax # 813-228-4881		Fax # 904-922-6979	

Merry Xmas & Happy New Year!

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. <input type="checkbox"/> Addressee's Address 2. <input type="checkbox"/> Restricted Delivery Consult postmaster for fee.	
3. Article Addressed to: Patrick Ho Tampa Electric Co. PO Box 111 Tampa, FL 33601-0111		4a. Article Number 2 392 940 695	
		4b. Service Type <input type="checkbox"/> Registered <input type="checkbox"/> Insured <input checked="" type="checkbox"/> Certified <input type="checkbox"/> COD <input type="checkbox"/> Express Mail <input type="checkbox"/> Return Receipt for Merchandise	
		7. Date of Delivery DEC 19 1994	
5. Signature (Addressee)		8. Addressee's Address (Only if requested and fee is paid)	
6. Signature (Agent) <i>J. Williams</i>			

Thank you for using Return Receipt Service.

2 392 940 695
MAILED
12-15-94

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

PS Form 3800, March 1993

Sender	Patrick Ho
Street and No.	Tampa Electric
P.O., State and ZIP Code	PO Box 111
Postage	Tampa FL 33601-0111
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	

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DEC 16 1994



Bureau of
Air Regulation

December 13, 1994

Mr. Bruce Mitchell
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blainstone Blvd
Tallahassee, Fl. 32399-2400

Facsimile and Certified Mail #P 278 133 760
Return Receipt Requested

Re: Tampa Electric Company
Big Bend Station
Unit 4 Test Burn

Dear Mr. Mitchell:

As discussed with you today, TEC has completed stack testing for particulate matter and sulfuric acid mist. TEC has also recorded the sulfur dioxide, nitrogen oxides and opacity emissions data using the continuous emissions monitors. TEC has completed three (3) test runs of the carbon monoxide stack testing and needs to complete three (3) additional runs of carbon monoxide stack testing pursuant to Specific Condition #2 of Department's letter of authorization of October 5, 1994.

An extension to this test burn was requested in a letter to Department on November 30, 1994. TEC will submit the test result report within forty-five (45) days of completion of the last carbon monoxide test run.

If you have further questions feel free to call me at (813) 228-4839. Thank-you for your assistance.

Sincerely,

Janice K. Taylor

Senior Engineer
Environmental Planning

c: Mr. Clair Fancy FDEP - Tallahassee
Mr. Buck Oven FDEP - Tallahassee



Post-it® Fax Note	7671	Date	12/13	# of pages	1
To	BRUCE MITCHELL	From	JANICE TAYLOR		
Co./Dept.	DEP	Co.	TEC		
Phone #		Phone #			
Fax #		Fax #			

December 13, 1994

Mr. Bruce Mitchell
 Bureau of Air Regulation
 Florida Department of Environmental Protection
 2600 Blairstone Blvd
 Tallahassee, Fl. 32399-2400

Facsimile and Certified Mail #P 278 133 760
 Return Receipt Requested

Re: Tampa Electric Company
 Big Bend Station
 Unit 4 Test Burn

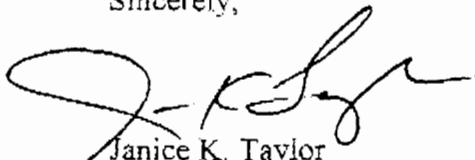
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If you have further questions feel free to call me at (813) 228-4839. Thank-you for your assistance.

Sincerely,



Janice K. Taylor
 Senior Engineer
 Environmental Planning

c: Mr. Clair Fancy FDEP - Tallahassee
 Mr. Buck Oven FDEP - Tallahassee



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DEC 12 1994
Bureau of
Air Regulation

December 8, 1994

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

VIA FACSIMILE and

CERTIFIED MAIL # P 278 134 366
RETURN RECEIPT REQUESTED

Re: Tampa Electric Company - Big Bend Station
Unit 4 Petroleum Coke Test Burn

Dear Mr. Fancy:

Pursuant to my telephone conversation with Mr. Bruce Mitchell on December 7, 1994, TEC would like to clarify our request to extend our test burn. Please be advised that TEC proposes to deplete the petroleum coke inventory as well as continue the collection of continuous emissions monitors data for sulfur dioxide, nitrogen oxides and opacity. In addition, TEC will monitor the LOI's (loss on ignition) in flyash.

Please feel free to call me at (813) 228 4839 should you have any questions. Thank you for your assistance.

Sincerely,

Janice K. Taylor
Senior Engineer
Environmental Planning

c: H.S. Owen, FDEP
B. Mitchell, FDEP

COMMISSION
PHYLLIS BUSANSKY
JOE CHILLURA
LYDIA MILLER
JIM NORMAN
JAN KAMINIS PLATT
ED TURANCHIK
SANDRA WILSON



FAX (813) 272-5157

ROGER P. STEWART
EXECUTIVE DIRECTOR
ADMINISTRATIVE OFFICES
AND
WATER MANAGEMENT DIVISION
1900 - 9TH AVENUE
TAMPA, FLORIDA 33605
TELEPHONE (813) 272-5960

AIR MANAGEMENT DIVISION
TELEPHONE (813) 272-5530

WASTE MANAGEMENT DIVISION
TELEPHONE (813) 272-5788

ECOSYSTEMS MANAGEMENT DIVISION
TELEPHONE (813) 272-7104

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DEC 13 1994

December 7, 1994

Bureau of
Air Regulation

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

Re: Tampa Electric Company
Big Bend Station, Unit 3 & 4 FGD Integration

Dear Mr. Fancy:

The Environmental Protection Commission (EPC) of Hillsborough County has reviewed the material dated November 8, 1994, supplied by Tampa Electric Company (TEC) involving the Unit 3 and 4 FGD Integration Project. The EPC was not a party to the August 8, 1994, and October 17, 1994, meetings that were referenced in TEC's November 8, 1994, permit amendment request. Therefore, the following comments are strictly based on the project description that was submitted as part of the November 8, 1994, request.

1. According to the project description the NOx analyzer associated with the current Unit 3 continuous emissions monitoring system (CEMS) is being removed and a new dilution gas probe is being installed between the Unit 3 upper ESP exit and the Unit 3 stack. The new probe will be used to collect flue gas samples to be monitored for NOx among other things. Pursuant to 40 CFR 75.20(b) the proposed change in the NOx emissions monitoring system requires recertification of the CEM for Unit 3. Change in the sampling probe location or site for measuring NOx emissions triggers the need for recertification. TEC will need to complete a recertification application and submit to EPA, FDEP, and EPC. The proposed project description did not discuss the possible need for recertification.
2. In the proposed project description TEC acknowledges that during integration the emissions reduction efficiency across the FGD required by NSPS 40 CFR 60 Subpart Da will be met. However, there is no indication that the emissions limit for

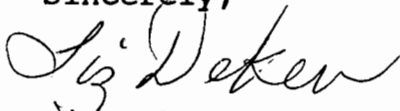
Unit 4 at the stack outlet will have to be met during integration for both the Unit 3 and 4 stacks. The PSD-FL-040 permit on Unit 4 has emission limits of 0.82 lb/MMBTU SO₂ (30 day rolling average), 0.6 lb/MMBTU NO_x (30 day rolling average), 0.03 lb/MMBTU PM (continuous limit), 0.014 lb/MMBTU CO (continuous limit) and 20% opacity. During integration since emissions from Unit 3 and 4 will be mixed the more restrictive emissions limitation will have to be met by both emission points (Stacks 3 and 4). It is also our understanding from discussions with EPA during the integration operating mode the Unit 3 stack emissions will be subject to NSPS 40 CFR 60 Subpart Da requirements. The more restrictive emission limits applicable during integration need to be reflected in the permit for Unit 3.

3. The SO₂ emission limitations currently applicable to Unit 3 are tied to emissions from Units 1, 2, and 3 in combination. TEC needs to submit a compliance plan for determining compliance for Unit 3 for both integration and nonintegration modes of operation. The plan should reflect that during integration mode the more restrictive emissions limitations as outlined in item 2 above as well as the emission limit which is tied to Units 1, 2 and 3 apply.
4. A more detailed description of the operation of the isolation dampers is required. How are they monitored? Are they opened and closed manually or electronically? How will the regulatory agencies be able to verify the operating status when conducting on-site inspections? A more detailed description of the operation is required to provide reasonable assurance that Unit 4 emissions are not vented through the Unit 3 stack during the nonintegration operating mode.
5. When Unit 4 was first put into operation there were some initial problems with high opacity which were attributed to some condensable material in the flue gas. Will the proposed removal of the Reheat system have any effect on the opacity from Unit 4? What has changed in the operation which allows them to shutdown the Reheat system?

Mr. Clair Fancy, Bureau Chief
December 7, 1994
Page 3

If any material was presented to the Department during the August and October meetings with TEC which would provide any additional information regarding the above items, please forward a copy of the material to me. Should you have any questions or require additional information regarding these comments please contact Jerry Campbell or myself at SUNCOM 543-5530.

Sincerely,



Liz Deken
Engineer

cag

cc: Hamilton S. Oven, Jr., FDEP
William Thomas, FDEP, Tampa
Patrick A. Ho, P.E., TEC



November 8, 1994

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

RECEIVED
NOV 14 1994

Bureau of
Air Regulation

CERTIFIED MAIL #P 278 133 780
RETURN RECEIPT REQUESTED

**RE: Tampa Electric Company
Big Bend Station, Unit 3 & 4 FGD Integration
Permit Numbers PA79-12, PSD-FL-040, AO29-179911**

Dear Mr. Fancy:

Please find enclosed five (5) copies of the Project Description for the subject project.

As discussed in our meetings of August 8, 1994 and October 17, 1994, TEC understands the Department will amend the following permits for this integration project.

Big Bend Unit 4	Site Certification No. PA79-12
Big Bend Unit 4	PSD No. PSD-FL-040
Big Bend Unit 3	Air Operating Permit No. AO29-179911

As previously discussed, TEC proposes to begin installation of ductwork during the Unit 4 maintenance outage scheduled for February 1995.

Thank you for your consideration and assistance in this matter. If you have any comments or questions, please call Ronald Laws at (813) 228-4843 or me at (813) 228-4844.

Sincerely,

Patrick A. Ho, P.E.
Manager
Environmental Planning

EPREL006

Enclosures

c/enc: Hamilton S. Oven, Jr., FDEP
William Thomas, FDEP, Tampa
Jerry Campbell, EPCHC

TAMPA ELECTRIC COMPANY
P.O. Box 111 Tampa, Florida 33601-0111 (813) 228-4111

An Equal Opportunity Company

BIG BEND UNITS 3 & 4 FGD INTEGRATION PROJECT

INTRODUCTION

Tampa Electric is proposing a full Flue Gas Desulfurization (FGD) integration project at the Big Bend Station (see Figure 1 and 2) which will result in significant reductions of Sulfur Dioxide emissions. This reduction will be accomplished by directing the Unit 3 untreated flue gas through the Unit 4 FGD system. This change can be implemented without affecting the Unit 4 flue gas stream due to capacity currently existing in the Unit 4 FGD system.

This Integration Project has become possible through increased understanding and technological advances in FGD systems. As a result of FGD mitigation work, Tampa Electric patented FGD modifications were installed and resulted in significant improvements in the Unit 4 FGD SO₂ removal process. In addition to Tampa Electric's own work, the Electric Power Research Institute (EPRI) has developed analytical tools to predict FGD performance which has also resulted in improved operations. EPRI and the United States Department of Energy (DOE) have conducted testing of advanced technology at Big Bend Station as part of a Clean Coal Technology demonstration project. The testing involved the use of performance enhancing additives to improve FGD process performance (capacity). As a result of Tampa Electric's own research and that of EPRI and DOE, the performance of the Unit 4 FGD system has improved significantly. The improvements allow Unit 4 to achieve its emission requirements with a reduced number of Absorber Towers (increased capacity). This increased capacity has made the Integration Project possible.

PROJECT DESCRIPTION

The Integration will consist of the addition of ductwork connecting the upper and lower Unit 3 Electrostatic Precipitator (ESP) flue gas streams at a point just prior to their respective entrances to the Unit 3 chimney (refer to drawing B4277 SK-001). The Unit 3 flue gas stream will be combined with the Unit 4 flue gas stream and processed in the Unit 4 FGD system. The treated flue gas stream will be split and directed to both the Unit 3, via a new duct and chimney penetration, and Unit 4 chimneys.

Isolation dampers will be installed at the existing upper and lower entrances to the Unit 3 chimney. These dampers will be closed to direct the untreated Unit 3 flue gas to the Unit 4 FGD system when the integration process is being utilized. A new opening will be added to the Unit 3 chimney to facilitate the discharge of a portion of the treated flue gas from the Unit 4 FGD system. The remainder of the treated flue gas will exit the Unit 4 chimney. An isolation damper will be installed at the new Unit 3 chimney opening to prevent the mixing of the Unit 4 treated flue gas and Unit 3 untreated flue gas when integration is not being utilized.

With implementation of the integration project, the Unit 4 FGD Reheat system will be eliminated such that there will be no reheating of the flue gas streams to either the Unit 3 or Unit 4 chimneys based on recent EPRI technology research. This reduces costs to Tampa Electric's customers.

The integration will also include the installation of a Dibasic Acid (DBA) addition system. The DBA

addition system will include a 15,000 gallon aboveground storage tank and associated truck unloading facility, pump and piping system to inject the DBA into the FGD system. The DBA will be utilized to enhance the FGD chemical process performance and will be consumed in the FGD process. The associated tank will be registered per F.S. 376.303 (1c).

PROJECT SCHEDULE

Construction of the necessary modifications is scheduled to begin in early January 1995. This construction schedule is closely tied to the Unit 4 and 3 major maintenance outages, February 1995 and April 1995 respectively. Construction completion is expected on May 16, 1995 (end of the Unit 3 outage). Scheduling is critical as the ductwork modifications can only be accomplished during the Unit's major outages. The next major outages which could accommodate the integration modifications for these Units are scheduled in 3 years (1998). Therefore, the FGD integration project must be implemented within the 1995 major outage schedules for timely environmental benefits. It is proposed that Unit 3 will return to service in the integrated operating mode.

UNUSUAL OPERATION MEASURES

When Unit 3 is operating in the Integration mode, untreated flue gas from Unit 3 and Unit 4 will be processed in the FGD system. Should a process upset occur while operating in integrated mode, and the FGD system becomes unable to process all of the untreated flue gas, flue gas flow shall be reduced into the FGD system, through load reductions, to match its reduced capability.

Example

Unit 3 and 4 are operating in the Integrated mode and both Units are operating at full load (near maximum flue gas flow capability). A process upset occurs reducing FGD performance such as loss of an absorber. One or both Units will reduce load until the FGD system is capable of processing all of the flue gas. At all times, Unit 4 will have preference over the FGD system to comply with all Unit 4 emission requirements.

EMISSION MONITORING

Modifications to the existing continuous emissions monitoring system (CEMS) for Unit 3 include the following:

1. Installation of a dilution gas probe between the Unit 3 upper ESP exit and the Unit 3 stack at a point where it will be capable of collecting a representative sample of the Unit 3 flue gas during both integrated and non-integrated scenarios. This probe will be used to monitor SO₂, NO_x and CO₂. The new analyzers will share the existing Unit 4 Data Acquisition System (DAS).
2. Removal of the NO_x analyzer associated with the existing dilution probe sample train

on the Unit 3 stack and transferring the remaining Unit 3 stack CEM system (SO₂, CO₂, and flow) to the Unit 4 shelter so that it shares the existing Unit 4 DAS.

The current CEMS sample probe and analyzer configuration for Unit 4 will remain unchanged and includes SO₂, NO_x, and CO₂ monitoring between the Unit 4 ESP and FGD system as well as SO₂, CO₂, and flow monitoring on the Unit 4 stack. Changes to the current Unit 4 DAS to incorporate Unit 3 systems will be made as necessary. Opacity monitoring will not be affected by the project.

The justification for monitoring Unit 3 boiler gas concentrations from only the upper ESP exit ductwork is based on EPA's conclusion that the products of combustion are significantly mixed such that a representative emission rate can be obtained by measuring at a single point in any of the exhaust streams. This conclusion is documented in EPA's Acid Rain CEM (Part 75) Policy Manual - Update #3 dated July 21, 1994.

AIR EMISSIONS MONITORING STRATEGY

During times when there is no integration of Unit 3 gas in the Unit 4 FGD system, the only change to the current methods of emissions monitoring will be that the new NO_x/CO₂ system at the outlet of the Unit 3 ESP will be used to demonstrate NO_x (lb/MMBtu) emission requirements for both the Acid Rain Program and the existing Unit 3 30-day rolling average permit limit instead of the current system located on the Unit 3 stack.

During times when the Unit 3 gas is being integrated with the Unit 4 gas and processed through the FGD system, the following monitoring procedures will be used:

SO₂ Monitoring during Integration

In order to demonstrate compliance with Unit 4's permitted SO₂ requirements, a hourly SO₂ lb/MMBtu value will be obtained from both Unit 3 and Unit 4 at the CEMS location prior to the FGD system. These two values will be weight averaged based on the individual unit megawatt loads. This averaged value will be used as the FGD inlet value. Similarly, a SO₂ lb/MMBtu value will be obtained from both the Unit 3 stack and Unit 4 stack CEMS location and a weight averaged value will be calculated based on each stack's flow. This averaged value will be used as the FGD outlet value. The FGD inlet and FGD outlet values will be used to calculate the removal efficiency across the FGD system. The same target removal efficiency across the FGD system will be met during periods of integration as is required currently for Unit 4 independently under the requirements of 40 CFR 60 Subpart Da. In addition, the weight averaged SO₂ lb/MMBtu value calculated from the CEMS on the stacks during integration will meet the independent SO₂ emission limitations established for Unit 4.

All Acid Rain Program related SO₂ and CO₂ emissions monitoring requirements for both Unit 3 and Unit 4 will continue to be monitored through the use of the CEMS on the stacks.

NO_x Monitoring during Integration

Since the reconfigured CEM system design allows both Unit 3 and Unit 4 to be monitored independently prior to any mixing of the gases from the two units, no special requirements are necessary for monitoring NO_x during periods of integration.

Particulate Matter and Opacity Monitoring during Integration

Compliance with each unit's Particulate Matter (PM) emissions limit is currently demonstrated through individual annual stack testing. This method will continue to be used to demonstrate compliance for PM. Each unit will be individually tested on an annual basis for PM during a period when no integration is taking place.

Opacity monitoring is conducted prior to any mixing of the gases from the two units, therefore no special requirements are necessary during periods of integration.

WATER MANAGEMENT ISSUES

The project is expected to have a minimal impact on the water system at Big Bend Station. In fact, the addition of Unit 3 gases to the FGD system will improve the station water balance by allowing greater use of recycle water at the plant. Big Bend Station, within the past year, has implemented many water conservation and recycle projects, including the use of recycle water in the FGD process. Although there will be an increased opportunity to reuse wastewater in the FGD system, thus reducing disposal of wastewater, additional secondary effluent water will be required for some FGD operations. Any impact the Chloride Bleed may have on the freshwater treatment/disposal system at Big Bend will be addressed in the Wastewater Management Plan required under Temporary Operating Permit No. IT29-212613.

BYPRODUCT MANAGEMENT ISSUES

The integration project will involve additional Gypsum byproduct production. Current plans are to avoid storage of these gypsum byproducts in the gypsum storage area by marketing their reuse. Potential reuse applications include building products and agriculture. Currently, all gypsum byproducts produced by Unit 4 are sold. All gypsum byproducts produced as a result of Unit 3 integration operation are expected to be sold and will be handled in accordance with the Big Bend Unit 4 Byproducts Handling Manual.

ATTACHMENTS

Drawings

Figure 1	Plant location
Figure 2	Plan View of the FGD Integration Area
B4277-SK-001	Flow Diagram of the FGD Integration
MS-01 Rev.	General Arrangements FGD Integration Project

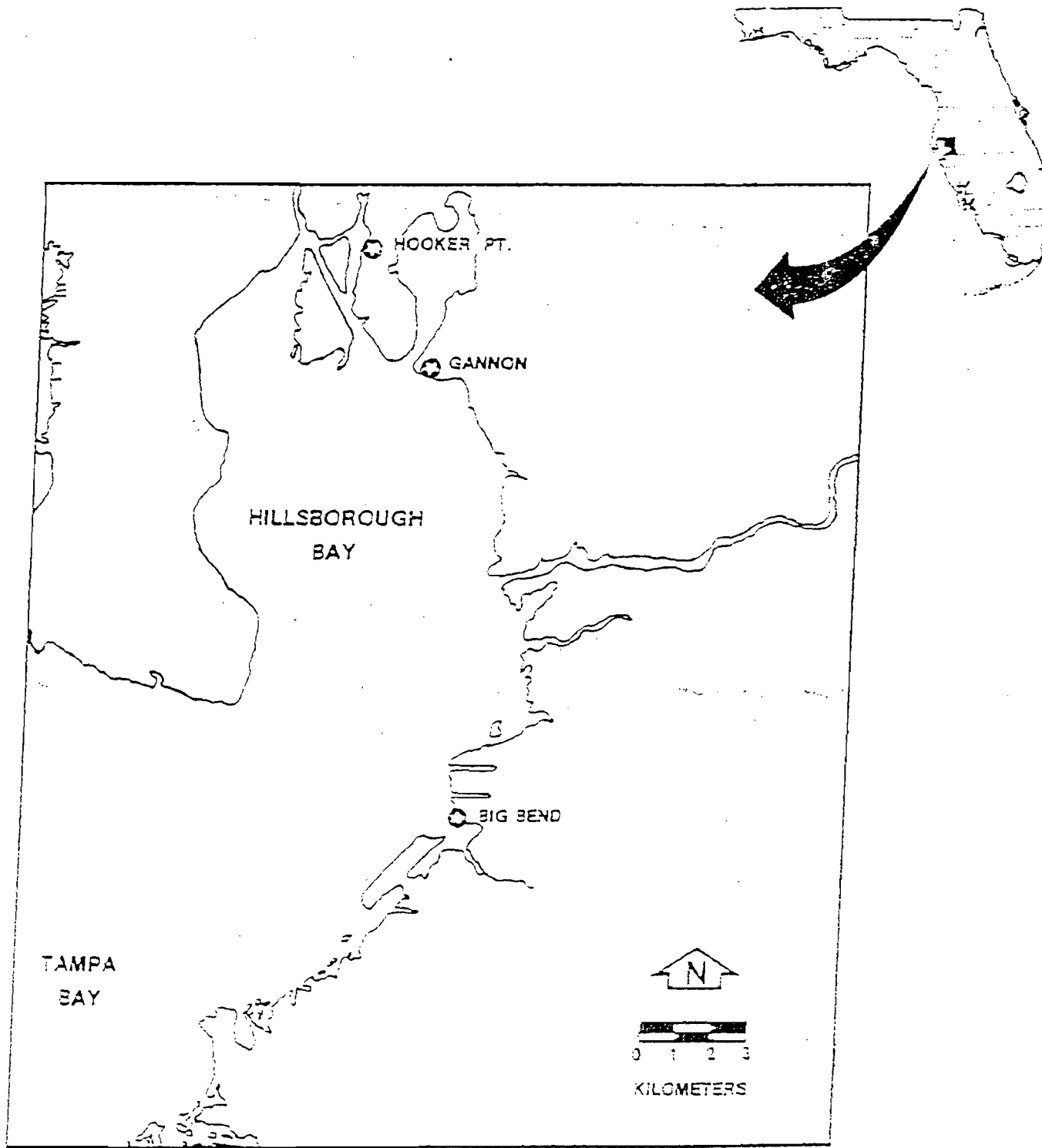
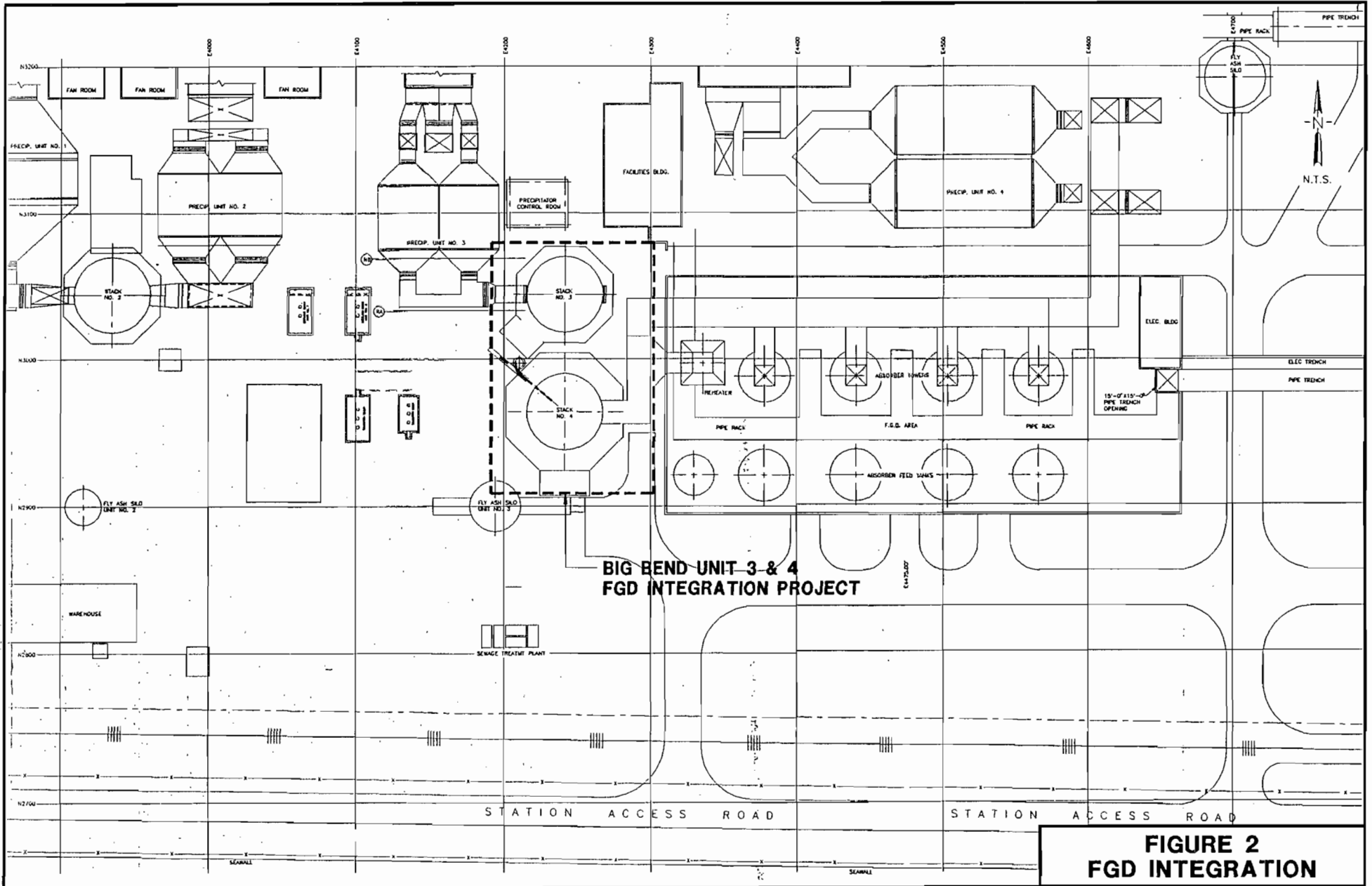
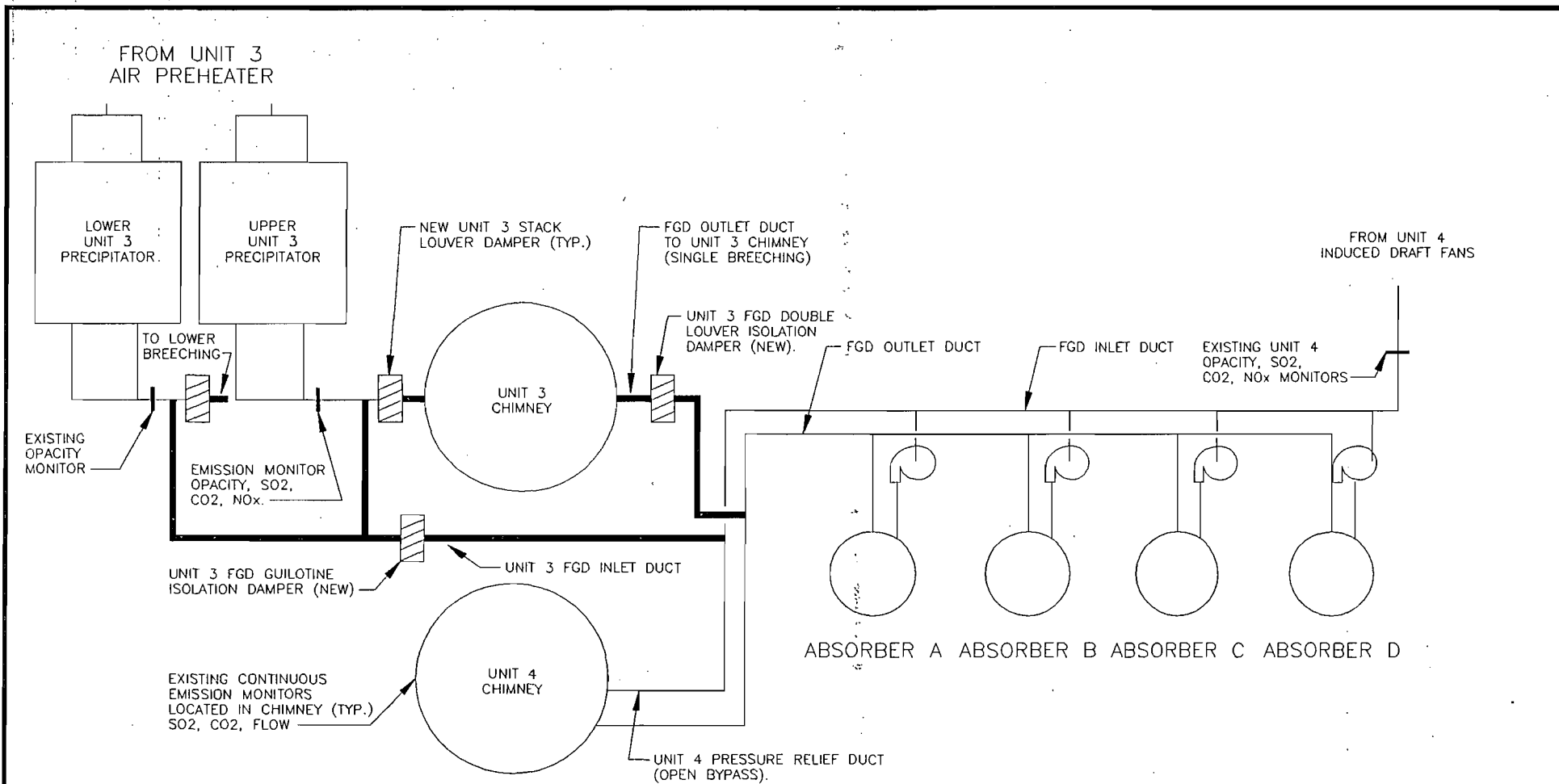


FIGURE 1 PLANT SITE LOCATION MAP

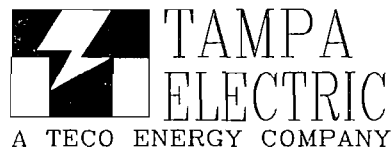


**FIGURE 2
FGD INTEGRATION**



- NOTE: 1) THE EXISTING UNIT 3 OPACITY MONITORS WILL REMAIN AT THEIR CURRENT LOCATION.
- 2) THE EXISTING CONTINUOUS EMISSION MONITORS FOR UNIT 3 AND UNIT 4 WILL REMAIN AT THEIR CURRENT LOCATION WITH THE EXCEPTION OF UNIT 3 NO_x WHICH WILL BE RELOCATED TO THE UPPER UNIT 3 PRECIPITATOR OUTLET DUCT.

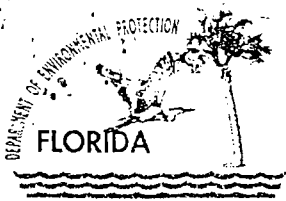
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BIG BEND UNIT 3 & 4 FGD INTIGRATION IMPLEMENTATION CONFIGURATION

DRAWN BY: REL 10/14/94

DWG. NO. B4277-SK-001



Department of Environmental Protection

Lawton Chiles
Governor

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Virginia B. Wetherell
Secretary

October 5, 1994

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

REC'D

OCT 11 1994

ENV. PROT. COMM.
OF H.C.

Mr. Patrick Ho, P.E.
Manager of Environmental Planning
Tampa Electric Company
P.O. Box 111
Tampa, Florida 33601-0111

Dear Mr. Ho:

Re: Request to Conduct Tests for Pollutant Emissions While Firing a Blend of Petroleum Coke and Coal in Tampa Electric Company's (TEC) Big Bend Unit #4, Site Certification No. PA 79-12; and, Amendment to PSD-FL-040(A)

The Department has reviewed the request that you provided on August 8, 1994 (attached). We have also considered the Department's legal authority to allow TEC's Big Bend Unit #4 to conduct the performance tests. Paragraph 403.061(15), Florida Statutes (F.S.), authorizes the Department to consult with any person proposing to construct, install, or otherwise acquire a pollution control device or system concerning the efficacy of such device or system, or the pollution problem which may be related to the source, device, or system. Paragraph 403.061(16), F.S., authorizes the Department to encourage voluntary cooperation by persons in order to achieve the purposes of the state environmental control act. Paragraph 403.061(18), F.S., authorizes the Department to encourage and conduct studies, investigations, and research relating to the causes and control of pollution. Rule 62-210.700(5), Florida Administrative Code (F.A.C.), authorizes the Department to consider variations in industrial equipment and make allowances for excess emissions that provide practical regulatory controls consistent with the public interest.

In accordance with the provisions of Paragraphs 403.061(15), (16), (18), and 403.516(1), F.S., and contingent on 14 days prior public notice (see attached notice to be published by TEC) and contingent on resolution of any written responses by persons whose substantial interests are negatively affected by your proposal, you are hereby authorized to conduct performance tests for pollutant emissions on TEC's Big Bend Unit #4 while firing a blend of petroleum coke and coal. TEC's Big Bend Unit #4 was permitted under Site Certification, No. PA 79-12, and is certified to fire only coal in accordance with the referenced Site Certification.

The emissions tests are being proposed in order to gather data regarding pollutant emissions while firing a maximum of 20%, by weight, blend of petroleum coke and coal. Screening to determine whether this change results in a modification or to determine Prevention of Significant Deterioration (PSD) applicability shall be in accordance with Chapter 403, F.S.; Chapters 62-209 thru 62-297 and 62-4, F.A.C.; and, Title 40 Code of Federal Regulations (CFR; July 1, 1993 version), which will compare the actual pollutant emissions of the baseline tests (100% coal) to the actual pollutant emissions of the performance tests while firing a blend of petroleum coke and coal. The performance test results will be reviewed by the Department's Bureau of Air Regulation (BAR) and involved agencies/parties (i.e., Environmental Protection Commission of Hillsborough County (EPCHC), U.S. EPA, National Park Service, etc.).

The performance tests shall be subject to the following conditions (conditions Nos. 2, 3, 4, 7, 8 and 11 have been revised from the September 6, 1994 proposal due to the letter received from TEC dated September 29, 1994, and in-house discussions):

1. The permittee shall notify, in writing, the Department's BAR office, the EPCHC office, and the Site Certification office at least 15 days prior to commencement of the trial baseline and petroleum coke and coal blend performance tests. A written test result report shall be submitted to these offices within 45 days upon completion of the last test run.
2. The trial petroleum coke and coal blend performance tests shall be conducted for not more than 21 days. All testing shall be concluded within 60 days of when petroleum coke is first introduced into TEC's Big Bend Unit #4. A satisfactory emissions test will consist of a minimum of six test runs per pollutant.
3. As-burned fuel samples shall be collected and analyzed for the sulfur, nitrogen, and metals (see condition No. 4) content throughout the petroleum coke and the baseline coal test periods. Weekly composites from daily sampling shall be required; in addition and during the particulate matter test runs, a minimum of three (3) separate samples shall be taken and analyzed.
4. The concentration of chromium, lead, mercury, nickel, beryllium, vanadium, and zinc in the petroleum coke blend shall be compared to the concentration of the same metals in the coal used during the baseline tests.
5. The trial burn of petroleum coke and coal blends shall be limited to a maximum of 20% petroleum coke, by weight, with coal (pure coal sulfur content not to exceed permitted value: see PSD-FL-040).

6. The maximum weight of the petroleum coke burned during the performance tests shall not exceed 67,190 lbs/hr.
7. Sulfur dioxide, nitrogen oxides (NOx), and opacity emissions data shall be recorded using continuous emissions monitors (CEMS) during the baseline and trial burn tests. If the plant CEMS are used for these tests, these systems shall be quality assured pursuant to 40 CFR 60, Appendix F requirements. The data assessment report from 40 CFR 60, Appendix F, for the most recent relative accuracy test audit (RATA) and most recent cylinder gas audit (CGA), shall be submitted with the trial burn test report. In addition, stack tests shall be conducted for the pollutants particulate matter (PM; assume that all of PM is PM10), carbon monoxide, and sulfuric acid mist.
8. For modification purposes, the pollutant emissions results from the trial petroleum coke and coal blend performance tests shall be compared to the baseline tests conducted when firing coal only.
9. Any performance tests shall be conducted using EPA Reference Methods, as contained in 40 CFR 60 (Standards of Performance for New Stationary Sources), 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants), and 40 CFR 266, Appendix IX (Multi-metals), or any other method approved by the Department, in writing, in accordance with Rule 62-297.620, F.A.C.
10. If additional time is needed, the permittee shall request an extension of time and provide the Department with documentation of the progress accomplished to date and shall identify what is left to be done to complete the performance tests.
11. Daily records (i.e., heat input, steam production, pressure, temperature, MW, fuel input rates, etc.) of boiler operations while firing a blend of petroleum coke and coal and while firing only coal (baseline) during the tests shall be required. Also, daily record keeping of the control equipment parameters shall be required and any alteration of the control equipment operational parameters between the baseline and trial burn test shall be documented and summarized in the final report.
12. A Type I or II stack audit may be conducted by the EPCHC office.
13. Complete documentation (recording) of any firing of the petroleum coke and coal blend shall be required (i.e., all CEMS records; testing results; materials utilized, by weight; and, etc.) and kept on file for a minimum of two years.

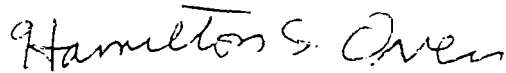
14. The authorized trial petroleum coke and coal blend performance tests shall not result in the release of objectionable odors pursuant to Rule 62-296.320(2), F.A.C.
15. Performance testing shall immediately cease if TEC's Big Bend Unit #4 operations are not in accordance with the conditions in the air section of Site Certification No. PA 79-12; PSD-Fl-040; and, this authorization protocol. Performance testing shall not resume until appropriate measures to correct the problem(s) have been implemented.
16. The performance tests for pollutant emissions shall be conducted under the direct supervision and responsible charge of a professional engineer registered in Florida.
17. This Department action is only to authorize the performance tests for a trial petroleum coke and coal blend performance tests where prior public notice was published in a newspaper of general circulation in the Tampa Area. Any firing of petroleum coke after the last performance test run is completed will be deemed a violation of the Site Certification No. PA 79-12; and, PSD-FL-040.
18. The EPCHC office shall be notified, in writing, on the date of the last test run completion.
19. The test series shall include emissions tests for each of the test blends with the source operating at permitted capacity. The baseline test shall be conducted for no less than seven days with the source operating at permitted capacity. Permitted capacity is defined as 90-100 percent of the Site Certification and permit (PSD-FL-040) capacity. If it is impracticable to test at this capacity (i.e., less than 90% of maximum operating rate allowed by the Site Certification and the permit), then the source may be tested at less than capacity for the trial burn and baseline tests; and, in this case, subsequent source operation with a petroleum coke and coal blend, if requested and approved by the Department, is limited to 110 percent of the test load until new tests are conducted, which requires prior Department authorization.
20. Prior written approval of the pollutants to be tested for and the appropriate test methods is mandatory prior to commencement of testing. The proposal shall be submitted to the Site Certification office, the BAR office, and the EPCHC office for approval.

Site Certification No. PA 79-12 and PSD-FL-040(A)
October 5, 1994
Page 5

21. Attachments to be incorporated:
- o TEC's August 5, 1994 letter with Attachments.
 - o DEP's proposed test authorization dated September 6, 1994.
 - o TEC's September 29, 1994 letter with Attachment.

Please publish the attached Notice.

Sincerely,



Hamilton S. Oven, P.E.
Administrator, Siting
Coordination Office

Attachments

cc: Clair Fancy, DEP
Jewell Harper, EPA/Region IV
John Bunyak, NPS
Jerry Campbell, EPCHC
Doug Beason, Esq., DEP

State of Florida
Department of Environmental Protection
Notice of Intent to Issue

Tampa Electric Company (TEC), Big Bend Unit #4

Site Certification No. PA 79-12

PSD-FL-040(A)

The Department of Environmental Protection (Department) hereby gives notice of its intent to issue to TEC, an approval authorizing performance tests for pollutant emissions while firing a blend of petroleum coke and coal. The proposal is detailed in the trial performance test request. The Department is issuing this authorization for the reasons stated below.

The applicant, Tampa Electric Company, P. O. Box 111, Tampa, Florida 33601-0111, submitted a request on August 8, 1994, to the Department's Siting Coordination Section for authorization to conduct pollutant emissions tests on the TEC's Big Bend Unit #4 boiler while firing a blend of petroleum coke and coal. The performance tests for pollutant emissions will be conducted at baseline conditions while firing coal only and while firing a blend of petroleum coke and coal. Petroleum coke will be blended at a maximum of 20 percent, by weight, with coal during the trial performance tests. TEC's Big Bend Unit #4 was certified under Site Certification No. PA 79-12 (PSD-FL-040) and is not currently permitted to fire petroleum coke in accordance with the referenced Site Certification.

Screening for a modification and Prevention of Signification (PSD) will be in accordance with Chapter 403, Florida Statutes (F.S.); Florida Administrative Code (F.A.C.) Chapters 62-209 through 62-297 and 62-4; and, Title 40 of the Code of Federal Regulations [CFR; Parts 52, 60, 61, and 266 (July 1, 1993 version)].

If, after the performance test results are evaluated by the Department's Site Certification Section and affected parties (i.e., Environmental Protection Commission of Hillsborough County, U.S. EPA, National Park Service, etc.) and it is determined that actual pollutant emissions [baseline @ 100% coal vs. a blend of petroleum coke and coal] did not increase, the Department may issue a modification to Site Certification PA 79-12 [PSD-FL-040(A)] authorizing continuous utilization/firing of a blend of petroleum coke and coal in the TEC's Big Bend Unit #4. However, if there is an actual emissions increase in pollutant emissions, TEC will not be permitted to fire a blend of petroleum coke and coal in the

emissions unit without further evaluation by the Department's Site Certification Section and involved agencies/parties. The proposed project will occur at the applicant's facility located in Tampa, Hillsborough County, Florida.

The Department has jurisdiction under Paragraph 403.516(1), F.S. The project is not exempt from Site Certification procedures. The Department has determined that a Site Certification modification is required to make the proposed activity permanent. If TEC wishes to modify the conditions of certification to allow the burning of petroleum coke and coal blend in the Big Bend Unit #4, a subsequent proceeding will be announced providing an opportunity for any affected person to object in the following manner.

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

Department of Environmental Protection
Site Certification Section
3900 Commonwealth Blvd.
Tallahassee, Florida 32399-3000

Department of Environmental Protection
Bureau of Air Regulation
111 South Magnolia Drive
Tallahassee, Florida 32399-2400

Environmental Protection Commission of Hillsborough County
1410 N. 21st Street
Tampa, Florida 33605

Any person may send written comments on the proposed action to Mr. Hamilton Owen, Site Certification 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.

RECEIVED

APR 06 1994

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

Bureau of
Air Regulation

In Re: Tampa Electric Company)
Big Bend Station Unit 4)
Modification of Conditions) DER CASE NO. PA 79-12C
of Certification PA 79-12) OGC CASE NO. 94-0914
Hillsborough County, Florida)

FINAL ORDER MODIFYING
CONDITIONS OF CERTIFICATION

On August 17, 1981, the Governor and Cabinet, sitting as the Siting Board, issued a final order approving certification for Tampa Electric Company's (TECO's) Big Bend Station Unit 4. That certification order approved the construction and operation of a 486 MW (gross) coal-fired facility and associated facilities located in Hillsborough County, Florida.

On September 21, 1992, TECO filed a request to modify the conditions of certification pursuant to Section 403.516(1)(b), Florida Statutes. TECO requested that the conditions be modified to approve several recently identified changes to the project design and operation. These proposed changes include changes in the coal yard facility and alterations to the plant layout.

Copies of TECO's proposed modification were distributed to all parties to the certification proceeding and made available for public review in February, 1993. On March 5, 1993, Notice of Proposed Modification of power plant certification was published in the Florida Administrative Weekly. As of February 22, 1993, all parties to the original proceeding had received copies of the intent to modify. The notice specified that a

hearing would be held if a party to the original certification hearing objects within 45 days from receipt of the proposed notice of modification or if a person whose substantial interests will be affected by the proposed modification objects in writing within 30 days after issuance of the public notice. No written objection to the proposed modifications has been received by the Department. Accordingly, in the absence of any timely objection,

IT IS ORDERED:

The proposed changes to TECO Big Bend Station as described in the September 21, 1992, and June 30, 1993, requests for modification are APPROVED. Pursuant to Section 403.516(1)(b), F.S., the conditions of certification for the TECO Big Bend Station are MODIFIED as follows:

Condition I.A.3.

a. Pursuant to Rule 17-296.310(2), Florida Administrative Code (F.A.C.), the permittee shall not cause to be discharged into the atmosphere no owner or operator shall cause, permit, or allow visible emissions equal to or greater than 20% opacity of fugitive or unconfined particulate matter from any coal processing or conveying equipment, coal storage system, or coal transfer and loading system, or transloading source/emissions point (i.e., off-loading or loading of coal and coal piles) associated with the processing of coal; visible-emissions-which-exceed-20-percent-opacity. Initial and subsequent visible emissions compliance tests shall be demonstrated using EPA Reference Method 22, 40 CFR Part 60,

Appendix A, Visual Determination of Fugitive Emissions from Material Sources (July 1, 1993 version).

b. The permittee shall submit ----

c. The coal pile operations are subject to Rule 17-296.310(3), F.A.C., Unconfined Emissions of Particulate Matter. Reasonable precautions to minimize unconfined particulate matter shall be in accordance with Rule 17-296.310(3)(c), F.A.C.; and, may include, but shall not be limited to, the coating of roads and construction sites used by contractors and regrassing or watering areas of disturbed coal.

d. From each coal transloading source/emissions point (i.e., off-loading and loading of coal), the maximum hourly transloading transfer of coal shall not exceed 4,000 tons, 24-hour rolling average.

e. From each coal transloading source/emissions point, (i.e., off-loading and loading of coal), the maximum annual transloading transfer of coal shall not exceed 1,428,030 tons.

f. The number of railcars and trucks and the quantity of coal loaded by each coal transloading source/emissions point (i.e., off-loading and loading of coal) shall be recorded, maintained, and kept on file for a minimum of two years. The annual quantity of coal loaded by each coal transloading source/emissions point shall be submitted in an annual operation report (AOR) to the Environmental Protection Commission of Hillsborough County by March 1 of each year for

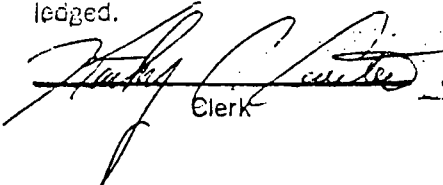
the previous year's operation.

Any party to this Notice has the right to seek judicial review of the Order pursuant to Section 120.68, Florida Statutes, by the filing of Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the clerk of the Department of Environmental Protection 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 that the Final Order is filed with the Department of Environmental Protection.

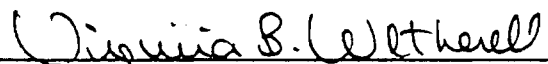
DONE AND ENTERED this 31st day of March, 1994 in Tallahassee, Florida.

FILING AND ACKNOWLEDGEMENT

FILED, on this date, pursuant to S120.52 Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.


Clerk 4-6-94
Date

STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION


VIRGINIA B. WETHERELL
SECRETARY
3900 Commonwealth Boulevard
Tallahassee, FL 32399-3000

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a copy of the foregoing was sent, by U.S. Mail to the following this 6th day of April, 1994.

Lawrence N. Curtin, Esq.
Holland & Knight
P.O. Drawer 810
Tallahassee, FL 32302

Karen Brodeen, Esq.
Department of Community Affairs
2740 Centerview Drive
Tallahassee, FL 32399-2100

Martin D. Hernandez, Esq.
Southwest Florida Water
Management District
2378 Broad Street
Brooksville, FL 34609-6899

Greg Nelson, P.E.
Tampa, Electric Company
P.O. Box 111
Tampa, FL 33601-0111

Michael Palecki
Division of Legal Services
Public Service Commission
101 East Gaines Street
Fletcher Building, Room 212
Tallahassee, FL 32399-0850

Sara M. Fotopulos, Esq.
Environmental Protection
Comm. of Hillsborough Co.
1900 Ninth Avenue
Tampa, FL 33605



Richard Donelan, Esq.
Department of Environmental
Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400
(904) 488-9314

Department of Environmental Regulation
Routing and Transmittal Slip

To: (Name, Office, Location)

1. *Clair Fancy, Air Regulation, 5505* ^{M.S.}

2. *Patly: Change we issued changes to PSD permit*

3. *copy Hillsboro County's SW Dist*

4. *Clair*

Remarks:

Clair - Brian Beals letter attached
RECEIVED *Patly*

APR 06 1994

Bureau of
 Air Regulation

5/8

Patly

Thanks. That makes it clear. Copy district is county with both documents. maybe a start cover memo would be in order. Keeping these siting projects in good order needs to be a priority as they are our biggest sources and confusion has occurred in the past.

C. Newman

Clair

From:

*done
 5/9/94*

Date

4/6/94

Phone

921-9682

PT



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

NOV 12 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

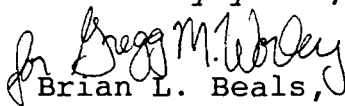
RE: TECO Big Bend Proposed Modification

Dear Mr. Fancy:

As requested by your letter dated September 24, 1992, we have reviewed the proposed modification to the above referenced facility consisting of changes to the coal yard. It appears from the information submitted that the emissions increase resulting from the modification will be approximately 14 tons per year of particulate matter. If this is the case, then the increase would be a minor modification to an existing major source and not subject to Prevention of Significant Deterioration (PSD) requirements. Even though the proposed change would require a modification of the Conditions of Certification under Florida's Power Plant Siting Act (PPSA), there would be no need to modify the existing PSD permit for the facility (PSD-FL-040).

Thank you for the opportunity to review this package. If you have any questions or comments, please contact Mr. Gregg Worley of my staff at (404) 347-5014.

Sincerely yours,


Brian L. Beals, Chief
Source Evaluation Unit
Air Enforcement Branch

RECEIVED

NOV 17 1992

Division of Air
resources Management



State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

File Copy

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

Interoffice Memorandum

TO: Buck Oven

FROM: Bruce Mitchell *Bon*

THRU: Preston Lewis *SLH*

DATE: October 21, 1992

SUBJ: Comments on TECO's proposals to modify the Big Bend Power Station's Coal Yard and to replace some equipment of the North Coal Yard Reclaimer

The following comments regarding the above referenced proposals are:

A. Modification of the Coal Yard

1. For each operation that the potential pollution emissions were calculated in Attachment 4, provide the basis (i.e., lab results, etc.) for the moisture content used (i.e., 15%). In accordance with the literature, the value of 15% is very high and would affect the potential emissions because it is in the denominator of the equation used to estimate the emissions. Since the range for coal moisture is 0.25 - 4.8 (see Table 11.2.3-3., AP-42 Emission Factors), with a mean of 2.3, then the highest acceptable value that should be used is 2.3 (note: worst case would be represented by using 0.25). Therefore, please recalculate the potential pollutant emissions and edit the appropriate table.
2. For each operation that the potential pollution emissions were calculated in Attachment 4, provide and qualify the basis (i.e., vendor specs, test results, use of dust suppressants, etc.) for the dust collection/suppression efficiencies used (i.e., 50 -85%). If it is determined that the projected efficiency is not justifiable, then state and qualify the new value and recalculate the potential pollutant emissions and edit the appropriate table.
3. In Attachment 4, Particulate Matter Emission Calculations, the aerodynamic particle size multiplier that was used is 0.74, which represents an aerodynamic particle size of <30um (see Table 11.2.3-3., AP-42 Emission Factors). Because of the significant rates for particulate matter (PM) and PM₁₀, please calculate the potential pollutant emissions for both PM and PM₁₀.

4. In Attachment 4, Mobile Equipment Operations on Stockpile, the calculations for potential pollutant emissions used an aerodynamic particle size multiplier of 0.80. Referencing #3 above and the calculations in Attachment 4, please explain why this value was used and the discrepancy between the other value (i.e., 0.74) that was used for all other calculations.
5. The introduction states that the operations might be handling limestone material also. Please calculate the potential pollutant emissions expected from the handling and processing of this material; also, include all assumptions, calculations and reference material, used in the projection of the potential pollutant emissions.
6. For the coal silo baghouse control system, it appears that the applicant is requesting a more restrictive emission limiting standard (i.e., 0.02 gr/dscf) than allowed by rule (i.e., F.A.C. Rule 17-2.650(2)(c)11.b.ii.: 0.03 gr/dscf). Please acknowledge if this is correct. Note, the vendor will guarantee 0.01 gr/dscf.
7. The applicant has stated that the visible emission standard for the coal silo baghouse control system should be in accordance with F.A.C. Rule 17-2.610(2)(a), which is "less than 20% opacity" (see Section III. C. of the application). However, the appropriate standard is in accordance with F.A.C. Rule 17-2.650(2)(c)11.b.i., which is "no visible emissions (5% opacity)". Please acknowledge agreement with this or provide an explanation if there is a disagreement.

B. North Coal Yard Reclaimer Equipment Replacement

1. For each operation that the potential pollution emissions were calculated in Attachment 1, provide the basis (i.e., lab results, etc.) for the moisture content used (i.e., 6.5%). In accordance with the literature, the value of 6.5% is considered high and would affect the potential emissions because it is in the denominator of the equation used to estimate the emissions. Since the range for coal moisture is 0.25 - 4.8 (see Table 11.2.3-3., AP-42 Emission Factors), with a mean of 2.3, then the highest acceptable value that should be used is 2.3 (note: worst case would be represented by using 0.25). Therefore, please recalculate the potential pollutant emissions and edit the appropriate table.

2. For each operation that the potential pollution emissions were calculated in Attachment 4, provide and qualify the basis (i.e., vendor specs, test results, use of dust suppressants, etc.) for the dust collection/suppression efficiencies used (i.e., 50 -90%). If it is determined that the projected efficiency is not justifiable, then state and qualify the new value and recalculate the potential pollutant emissions and edit the appropriate table.
3. In Attachment 1, Particulate Matter Emission Calculations, Part A.: Transfer from Pile to Mobile Reclaim Conveyor, a dust control efficiency factor of 0.90 was projected. The calculations used a factor of 0.50. Which value is correct? Whichever it is, please make the appropriate corrections, qualify the value to be used, and recalculate the potential pollutant emissions.
4. Please submit plot plans exhibiting the equipment of the existing operations and the equipment of the proposed future operations.
5. Please describe the existing dust control systems currently in operation and referred to in the brief overviews in Attachment 1.
6. Based on the submittal, the company assumes that the proposed changes of the equipment to the north coal yard pile reclaimer operation is exempt from Department permitting. This decision is based on technical assumptions and calculations, which were not sealed by a Florida registered P.E. Pursuant to F.A.C. Rule 17-4.050, a P.E. is required to sign and seal technical information related to the Department's review of potential air pollution activities and its operation. Therefore, the request package should be signed and sealed by a Florida registered P.E. (see the IM from Mr. John Shearer dated August 14, 1990).
7. Is the "mobile conveyor to the boom conveyor" going to be removed from service? If not, please explain.

IM to Buck Oven
TECO Big Bend Projects
October 21, 1992
Page 4

8. Will the "yard operations" be handling any aggregates than coal? If yes, please explain in detail and provide the calculations of the potential pollution emissions expected from the handling of the material. Also, please provide any assumptions reference material.

If there are any questions, please call me at 904-488-
Thanks! RBM.

Attachments

BM/rbm

Hand Delivered @ 12:32, 10/21/92 RBM
E-mailed to Buck @ 12:33, 10/21/92 RBM
Preston Lewis }
John Brown } 10/21/92 RBM

11.2.3 AGGREGATE HANDLING AND STORAGE PILES

11.2.3.1 General

Inherent in operations that use minerals in aggregate form is the maintenance of outdoor storage piles. Storage piles are usually left uncovered, partially because of the need for frequent material transfer into or out of storage.

Dust emissions occur at several points in the storage cycle, such as during material loading onto the pile, disturbances by strong wind currents, and loadout from the pile. The movement of trucks and loading equipment in the storage pile area is also a substantial source of dust.

11.2.3.2 Emissions And Correction Parameters

The quantity of dust emissions from aggregate storage operations varies with the volume of aggregate passing through the storage cycle. Also, emissions depend on three parameters of the condition of a particular storage pile: age of the pile, moisture content and proportion of aggregate fines.

When freshly processed aggregate is loaded onto a storage pile, its potential for dust emissions is at a maximum. Fines are easily disaggregated and released to the atmosphere upon exposure to air currents, either from aggregate transfer itself or from high winds. As the aggregate weathers, however, potential for dust emissions is greatly reduced. Moisture causes aggregation and cementation of fines to the surfaces of larger particles. Any significant rainfall soaks the interior of the pile, and the drying process is very slow.

Silt (particles equal to or less than 75 microns in diameter) content is determined by measuring the portion of dry aggregate material that passes through a 200 mesh screen, using ASTM-C-136 method. Table 11.2.3-1 summarizes measured silt and moisture values for industrial aggregate materials.

11.2.3.3 Predictive Emission Factor Equations

Total dust emissions from aggregate storage piles are contributions of several distinct source activities within the storage cycle:

1. Loading of aggregate onto storage piles (batch or continuous drop operations).
2. Equipment traffic in storage area.
3. Wind erosion of pile surfaces and ground areas around piles.
4. Loadout of aggregate for shipment or for return to the process stream (batch or continuous drop operations).

Adding aggregate material to a storage pile or removing it both usually involve dropping the material onto a receiving surface. Truck dumping on the pile or loading out from the pile to a truck with a front end loader are examples of batch drop operations. Adding material to the pile by a conveyor stacker is an example of a continuous drop operation.

TABLE 11.2.3-1. TYPICAL SILT AND MOISTURE CONTENT VALUES
OF MATERIALS AT VARIOUS INDUSTRIES

11.2.3-2

EMISSION FACTORS

Industry	Material	Silt (%)			Moisture (%)		
		No. of test samplers	Range	Mean	No. of test samplers	Range	Mean
Iron and steel production ^a	Pellet ore	10	1.4 - 13	4.9	8	0.64 - 3.5	2.1
	Lump ore	9	2.8 - 19	9.5	6	1.6 - 8.1	5.4
	Coal	7	2 - 7.7	5	6	2.8 - 11	4.8
	Slag	3	3 - 7.3	5.3	3	0.25 - 2.2	0.92
	Flue dust	2	14 - 23	18.0	0	NA	NA
	Coke breeze	1		5.4	1		6.4
	Blended ore	1		15.0	1		6.6
	Sinter	1		0.7	0	NA	NA
	Limestone	1		0.4	0	NA	NA
Stone quarrying and processing ^b	Crushed limestone	2	1.3 - 1.9	1.6	2	0.3 - 1.1	0.7
Taconite mining and processing ^c	Pellets	9	2.2 - 5.4	3.4	7	0.05 - 2.3	0.9
	Tailings	2	NA	11.0	1		0.35
Western surface coal mining ^d	Coal	15	3.4 - 16	6.2	7	2.8 - 20	6.9
	Overburden	15	3.8 - 15	7.5	0	NA	NA
	Exposed ground	3	5.1 - 21	15.0	3	0.8 - 6.4	3.4
Coal fired power generation ^e	Coal	60	0.6 - 4.8	2.2	59	2.7 - 7.4	4.5

^aReferences 2-5. NA = not applicable.

^bReference 1.

^cReference 6.

^dReference 7.

^eReference 8. Values reflect "as received" conditions of a single power plant.

The quantity of particulate emissions generated by either type of drop operation, per ton of material transferred, may be estimated, with a rating of A, using the following empirical expression²:

$$E = k(0.0016) \frac{\left(\frac{U}{2.2}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} \text{ (kg/Mg)}$$

$$E = k(0.0032) \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} \text{ (lb/ton)}$$

where: E = emission factor
 k = particle size multiplier (dimensionless)
 U = mean wind speed, m/s (mph)
 M = material moisture content (%)

The particle size multiplier, k, varies with aerodynamic particle diameter, as shown in Table 11.2.3-2.

TABLE 11.2.3-2. AERODYNAMIC PARTICLE SIZE MULTIPLIER (k)

<u><30 um</u>	<u><15 um</u>	<u><10 um</u>	<u><5 um</u>	<u><2.5 um</u>
0.74	0.48	0.35	0.20	0.11

The equation retains the assigned quality rating if applied within the ranges of source conditions that were tested in developing the equation, as given in Table 11.2.3-3. Note that silt content is included in Table 11.2.3-3, even though silt content does not appear as a correction parameter in the equation. While it is reasonable to expect that silt content and emission factors are interrelated, no significant correlation between the two was found during the derivation of the equation, probably because most tests with high silt contents were conducted under lower winds, and vice versa. It is recommended that estimates from the equation be reduced one quality rating level, if the silt content used in a particular application falls outside the range given in Table 11.2.3-3.

TABLE 11.2.3-3. RANGES OF SOURCE CONDITIONS FOR EQUATION 1

Silt Content	Moisture Content	Wind Speed	
		(m/s)	(mph)
0.44 - 19	0.25 - 4.8	0.6 - 6.7	1.3 - 15

Also, to retain the equation's quality rating when applied to a specific facility, it is necessary that reliable correction parameters be determined for the specific sources of interest. The field and laboratory procedures for aggregate sampling are given in Reference 3. In the event that site specific values for correction parameters cannot be obtained, the appropriate mean values from Table 11.2.3-1 may be used, but, in that case, the quality rating of the equation is reduced by one level.

For emissions from equipment traffic (trucks, front end loaders, dozers, etc.) traveling between or on piles, it is recommended that the equations for vehicle traffic on unpaved surfaces be used (see Section 11.2.1). For vehicle travel between storage piles, the silt value(s) for the areas among the piles (which may differ from the silt values for the stored materials) should be used.

Worst case emissions from storage pile areas occur under dry windy conditions. Worst case emissions from materials handling operations may be calculated by substituting into the equation appropriate values for aggregate material moisture content and for anticipated wind speeds during the worst case averaging period, usually 24 hours. The treatment of dry conditions for vehicle traffic (Section 11.2.1), centering on parameter p, follows the methodology described in Section 11.2.1. Also, a separate set of nonclimatic correction parameters and source extent values corresponding to higher than normal storage pile activity may be justified for the worst case averaging period.

11.2.3.4 Controls

Watering and chemical wetting agents are the principal means for control of aggregate storage pile emissions. Enclosure or covering of inactive piles to reduce wind erosion can also reduce emissions. Watering is useful mainly to reduce emissions from vehicle traffic in the storage pile area. Watering of the storage piles themselves typically has only a very temporary slight effect on total emissions. A much more effective technique is to apply chemical wetting agents for better wetting of fines and longer retention of the moisture film. Continuous chemical treatment of material loaded onto piles, coupled with watering or treatment of roadways, can reduce total particulate emissions from aggregate storage operations by up to 90 percent.⁹

References for Section 11.2.3

1. C. Cowherd, Jr., et al., Development Of Emission Factors For Fugitive Dust Sources, EPA-450/3-74-037, U. S. Environmental Protection Agency, Research Triangle Park, NC, June 1974.

2. R. Bohn, et al., Fugitive Emissions From Integrated Iron And Steel Plants, EPA-600/2-78-050, U. S. Environmental Protection Agency, Cincinnati, OH, March 1978.
3. C. Cowherd, Jr., et al., Iron And Steel Plant Open Dust Source Fugitive Emission Evaluation, EPA-600/2-79-103, U. S. Environmental Protection Agency, Cincinnati, OH, May 1979.
4. R. Bohn, Evaluation Of Open Dust Sources In The Vicinity Of Buffalo, New York, EPA Contract No. 68-02-2545, Midwest Research Institute, Kansas City, MO, March 1979.
5. C. Cowherd, Jr., and T. Cuscino, Jr., Fugitive Emissions Evaluation, MRI-4343-L, Midwest Research Institute, Kansas City, MO, February 1977.
6. T. Cuscino, et al., Taconite Mining Fugitive Emissions Study, Minnesota Pollution Control Agency, Roseville, MN, June 1979.
7. K. Axetell and C. Cowherd, Jr., Improved Emission Factors For Fugitive Dust From Western Surface Coal Mining Sources, 2 Volumes, EPA Contract No. 68-03-2924, PEI, Inc., Kansas City, MO, July 1981.
8. E. T. Brookman, et al., Determination of Fugitive Coal Dust Emissions From Rotary Railcar Dumping, 1956-L81-00, TRC, Hartford, CT, May 1984.
9. G. A. Jutze, et al., Investigation Of Fugitive Dust Sources Emissions And Control, EPA-450/3-74-036a, U. S. Environmental Protection Agency, Research Triangle Park, NC, June 1974.

17-4.030 General Prohibition. Any stationary installation which will reasonably be expected to be a source of pollution shall not be operated, maintained, constructed, expanded, or modified without the appropriate and valid permits issued by the Department, unless the source is exempted by Department rule. The Department may issue a permit only after it receives reasonable assurance that the installation will not cause pollution in violation of any of the provisions of Chapter 403, F.S., or the rules promulgated thereunder. A permitted installation may only be operated, maintained, constructed, expanded or modified in a manner that is consistent with the terms of the permit. Specific Authority: 403.021, 403.031, 403.061, 403.088, F.S. Law Implemented: 403.021, 403.031, 403.061, 403.087, 403.088, F.S. History: New 3-4-70, Revised 5-17-72, Amended 8-31-88. Previously numbered as 17-4.03.

17-4.040 Exemptions.

(1) The following installations are exempted from the permit requirements of this Chapter. The following exemptions do not relieve any installation from any other requirements of Chapter 403., F.S., or rules of the Department. Other installations may be exempted under other Chapters of Title 17.

(a) Structural changes which will not change the quality, nature or quantity of air and water contaminant emissions or discharges or which will not cause pollution.

(b) Any existing or proposed installation which the Department shall determine does not or will not cause the issuance of air or water contaminants in sufficient quantity, with respect to its character, quality or content, and the circumstances surrounding its location, use and operation, as to contribute significantly to the pollution problems within the State, so that the regulation thereof is not reasonably justified. Such a determination is agency action and is subject to Chapter 120, F.S. Such determination shall be made in writing and filed by the Department as a public record. Such determination may be revoked if the installation is substantially modified or the basis for the exemption is determined to be materially incorrect.

17-4.030 - 17-4.040(1)(b)

(2) These exemptions do not apply to the discharge to waters of the state from any article, machine, equipment, contrivance or their exhaust system, which contains water-borne radioactive material in concentrations above the natural radioactive background concentration in the receiving water. Specific Authority: 403.061, 403.805, F.S. Law Implemented: 403.021, 403.031, 403.061, 403.087, 403.088, 403.802, 403.805, 403.813, F.S. History: Formerly 17-4.03(2), F.A.C.; New 3-4-72; Revised 5-17-72; Amended 8-7-73, 6-10-75, 10-26-75, 7-8-76, 7-13-78, 3-1-79; Joint Administrative Procedures Committee Objection Withdrawn - See FAW Vol. 3, No. 30, 7-29-77; Amended 3-11-81, 7-8-82, 3-31-83, 3-15-84, 12-10-84, 5-8-85, 3-18-86, 8-31-88. Previously numbered as 17-4.04.

17-4.050 Procedure to Obtain Permits; Application.

(1) Any person desiring to obtain a permit from the Department shall apply on forms prescribed by the Department and shall submit such additional information as the Department by law may require.

(2) All applications and supporting documents shall be filed in quadruplicate with the Department.

(3) To ensure protection of public health, safety, and welfare, any construction, modification, or operation of an installation which may be a source of pollution, or of a public drinking water supply, shall be in accordance with sound professional engineering practices pursuant to Chapter 471, F.S.; and all final geological papers or documents involving the practice of the profession of geology shall be in accordance with sound professional geological practices pursuant to Chapter 492, F.S. All applications for a Department permit shall be certified by a professional engineer registered in the State of Florida except when the application is for renewal of an air pollution operation permit at a minor facility as defined in Rule 17-2.100(120), F.A.C., or where professional engineering is not required by Chapter 471, F.S. Where required by Chapter 471 or 492, F.S., applicable portions of permit applications and supporting documents which are submitted to the Department for public record shall be signed and sealed by the professional(s) who prepared or approved them.

(4) Processing fees are as follows:

(a) Air Pollution Source Permits.

1. Construction Permits.

17-4.040(2) - 17-4.050(4)(a)1



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 7, 1992

Mr. Lynn F. Robinson
Tampa electric Company
P.O. Box 111
Tampa, Florida 33601-0111

Re: TECO Big Bend Modification PA 79-12

Dear Mr. Robinson:

The Department of Environmental Regulation has initiated its review of your request for modification of the Big Bend Station's coal yard. Analysis of the air modeling revealed impacts that are well below the significant impact levels for particulate matter for both the annual and 24-hour averaging periods. However, upon reviewing the PSD analysis for Big Bend Unit 4, it was noticed that the predicted maximum annual average TSP concentration exceeded the new particulate matter annual standard for PM₁₀ of 50 ug/m³. There is some concern that the small increase in particulate matter emissions in conjunction with any contemporaneous increases may show violations of the ambient standard. There is also some concern regarding the 24-hour ambient standard. TECO should satisfy the Department that all particulate matter ambient air quality standards are met or that your sources do not significantly contribute to a violation of a standard. It is suggested that you submit a complete and detailed list of all contemporaneous particulate matter emission changes to help resolve this matter.

If you have questions regarding these concerns, you may wish to contact Max Linn at (904) 488-6140.

Sincerely,

Hamilton S. Owen

Hamilton S. Owen, P.E.
Administrator, Siting
Coordination Office

cc: Clair Fancy
Bill Thomas
Max Linn
Jerry Campbell

RECEIVED

OCT 7 1992

Division of Air
Resources Management



Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

September 25, 1992

Mr. Brian Mitchell, Acting Chief
Policy, Planning and Permit Review Branch
National Park Service-Air Quality Division
Post Office Box 25287
Denver, Colorado 80225

Dear Mr. Mitchell:

RE: TECO Big Bend Modification
Hillsborough County, PSD-FL-040

Enclosed is a request for a modification to the site certification for the Tampa Electric Company Big Bend Power Station coal yard. Please send your completeness comments to the Bureau of Air Regulation by October 16, 1992. The Bureau's FAX number is (904)922-6979.

If you have any questions, please call Bruce Mitchell at (904)488-1344 or Tom Rogers at (904)488-6140 or write to me at the above address.

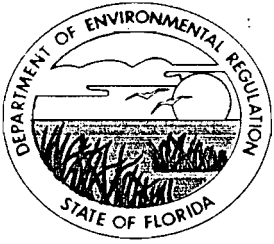
Sincerely,

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

CHF/pa

cc: H. S. Owen

Enclosures



Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

September 24, 1992

Ms. Jewell A. Harper, Chief
Air Enforcement Branch
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, GA 30365

Dear Ms. Harper:

RE: TECO Big Bend Modification
Hillsborough County, PSD-FL-040

Enclosed is a request for a modification to the site certification for the Tampa Electric Company Big Bend Power Station coal yard. Since this will also necessitate a modification to the PSD permit (PSD-FL-040) originally issued by EPA in 1981, we will handle this request in accordance with the terms of partial delegation for sources subject to the PPSA, unless you advise us otherwise. Please send your completeness comments to the Bureau of Air Regulation by October 16, 1992.

If you have any questions, please call Bruce Mitchell at (904)488-1344 or Tom Rogers at (904)488-6140 or write to me at the above address.

Sincerely,

Patricia G. Adams

W.C. H. Fancy
Chief
Bureau of Air Regulation

CHF/pa

cc: H. S. Oven

BIG BEND POWER STATION
NORTH COAL YARD
RECLAIMER REPLACEMENT

Prepared for:



Tampa, Florida

Prepared by:



Environmental Consulting & Technology, Inc.

Gainesville, Florida

ECT No. 92213-0100-1100

SEPTEMBER 1992

OVERVIEW

Tampa Electric Company (TEC) is planning to replace the north coal yard reclaimer at the Big Bend Power Station. The existing reclaim system recovers coal with a bucket wheel, which places the coal onto a mobile conveyor. The mobile conveyor transfers the coal onto the reclaimer boom conveyor, which transfers the coal onto conveyor P, and the coal handling system. The replacement reclaim system will recovery coal using existing mobile equipment, which will place the coal into a new fixed hopper. This hopper will drop the coal directly onto the existing reclaimer boom. The coal handling system downstream of the existing reclaimer boom will remain unchanged.

The north yard reclaimer replacement is not a modification under §403.516, Florida Statutes because new like-kind equipment will replace existing equipment. Coal throughput will not be increased. Additionally, the replacement will eliminate one coal transfer, modestly reducing the short- and long-term particulate matter (PM) emission rates for the Big Bend Facility. The calculated emission rates are provided in Tables 1 and 2. Calculation detail is provided in Attachment 1.

Table 1. North Yard Reclaimer Particulate Matter Short-Term Emission Comparisons

Transfer	Emission Rate (g/sec)	
	Existing System	Replacement System
Stockpile to Conveyor	0.23	0.23
Mobile Conveyor to Boom Conveyor	0.23	NA
Boom Conveyor to Conveyor P	0.23	0.23
Total	0.69	0.46

Note: NA = not applicable.

Source: ECT, 1992.

Table 2. North Yard Reclaimer Particulate Matter Long-Term Emission Comparisons

Transfer	Emission Rate (TPY)	
	Existing System	Replacement System
Stockpile to Conveyor	0.47	0.47
Mobile Conveyor to Boom Conveyor	0.47	NA
Boom Conveyor to Conveyor P	0.47	0.47
Total	1.41	0.94

Note: NA = not applicable.

Source: ECT, 1992.

ATTACHMENT 1
PARTICULATE MATTER EMISSION CALCULATIONS FOR
MODIFIED NORTH COAL YARD RECLAIMER SOURCES

PART A. EXISTING RECLAIM SYSTEM SOURCES

TRANSFER FROM PILE TO MOBILE RECLAIM CONVEYOR

Coal is transferred from the coal pile to the coal reclaim sub-system using a bucket system to place the coal onto the mobile reclaim conveyor. This transfer is in the open. The existing dust control system provides fugitive dust control. The emission factor for this operation, from AP-42, Section 11.2.3, Aggregate Handling and Storage (EPA, 1991), is:

$$E = [0.0032 \times k \times (u/5)^{1.3}] / (M/2)^{1.4}$$

where: E = emission factor (lb/t);
k = particulate size coefficient (dimensionless) = 0.74;
u = annual average windspeed (mph) = 8.6 mph (NWS meteorological data for Tampa); and
M = moisture content of the coal (%) = 6.5%.

Substituting, the emission factor is:

$$E = [0.0032 \times 0.74 \times (8.6/5)^{1.3}] / (6.5/2)^{1.4};$$
$$E = 0.00092 \text{ lb/t.}$$

The short-term emissions are calculated using the equation:

$$A_s = E \times H \times c_1$$

where: A_s = short-term emissions (lb/hr);
E = emission factor = 0.00092 lb/t;
H = hourly coal transfer = 4,000 t/hr; and
 c_1 = dust control efficiency factor = 0.90.

Substituting, the short-term emissions are

$$A_s = 0.00092 \text{ lb/t} \times 4,000 \text{ t/hr} (1 - 0.50);$$
$$A_s = 1.84 \text{ lb/hr, and}$$
$$A_s = 0.23 \text{ g/sec.}$$

The annual emissions are calculated using the equation:

$$A_L = E \times T \times c_1 \times c_2$$

where: A_L = annual emissions (tpy);
 E = emission factor = 0.00092 lb/t;
 T = annual coal usage = 2,050,000 tpy;
 c_1 = dust control efficiency = 0.50; and
 c_2 = conversion constant = 1 t/2,000 lb.

Substituting, the annual emissions are

$$A_L = 0.00092 \text{ lb/t} \times 2,050,000 \text{ tpy} \times (1 - 0.50) \times 1 \text{ t}/2,000 \text{ lb};$$

$$A_L = 0.47 \text{ tpy}; \text{ and}$$

$$A_L = 0.014 \text{ g/sec.}$$

TRANSFER FROM MOBILE RECLAIM CONVEYOR TO NORTH STACKER BOOM CONVEYOR

Coal is transferred from the mobile reclaim conveyor to the north stacker boom conveyor within the reclaim sub-system. This transfer is in the open. The existing dust control system provides fugitive dust control. The emission factor for this operation, from AP-42, Section 11.2.3, Aggregate Handling and Storage (EPA, 1991), is:

$$E = [0.0032 \times k \times (u/5)^{1.3}] / (M/2)^{1.4}$$

where: E = emission factor (lb/t);
 k = particulate size coefficient (dimensionless) = 0.74;
 u = annual average windspeed (mph) = 8.6 mph (NWS meteorological data for Tampa); and
 M = moisture content of the coal (%) = 6.5%.

Substituting, the emission factor is:

$$E = [0.0032 \times 0.74 \times (8.6/5)^{1.3}] / (6.5/2)^{1.4};$$

$$E = 0.00092 \text{ lb/t.}$$

The short-term emissions are calculated using the equation:

$$A_s = E \times H \times (1 - c_1)$$

where: A_s = short-term emissions (lb/hr);
 E = emission factor = 0.00092 lb/t;
 H = hourly coal transfer = 4,000 t/hr; and
 c_1 = dust control efficiency factor = 0.50.

Substituting, the short-term emissions are

$$\begin{aligned} A_s &= 0.00092 \text{ lb/t} \times 4,000 \text{ t/hr} (1 - 0.50); \\ A_s &= 1.84 \text{ lb/hr; and} \\ A_s &= 0.23 \text{ g/sec.} \end{aligned}$$

The annual emissions are calculated using the equation:

$$A_L = E \times T \times (1 - c_1) \times c_2$$

where: A_L = annual emissions (tpy);
 E = emission factor = 0.00092 lb/t;
 T = annual coal usage = 2,050,000 tpy;
 c_1 = dust control efficiency factor = 0.50; and
 c_2 = conversion constant = 1 t/2,000 lb.

Substituting, the annual emissions are

$$\begin{aligned} A_L &= 0.00092 \text{ lb/t} \times 2,050,000 \text{ tpy} \times (1 - 0.50) \times 1 \text{ t/2,000 lb}; \\ A_L &= 0.47 \text{ tpy; and} \\ A_L &= 0.014 \text{ g/sec.} \end{aligned}$$

TRANSFER FROM NORTH STACKER BOOM CONVEYOR TO CONVEYOR P

Coal is transferred from the north stacker boom conveyor to conveyor P within the reclaim sub-system. This transfer is in the open. The existing dust control system provides fugitive dust control. The emission factor for this operation, from AP-42, Section 11.2.3, Aggregate Handling and Storage (EPA, 1991), is:

$$E = [0.0032 \times k \times (u/5)^{1.3}] / (M/2)^{1.4}$$

where: E = emission factor (lb/t);
 k = particulate size coefficient (dimensionless) = 0.74;
 u = annual average windspeed (mph) = 8.6 mph (NWS meteorological data for Tampa); and
 M = moisture content of the coal (%) = 6.5%.

Substituting, the emission factor is:

$$E = [0.0032 \times 0.74 \times (8.6/5)^{1.3}] / (6.5/2)^{1.4};$$

$$E = 0.00092 \text{ lb/t.}$$

The short-term emissions are calculated using the equation:

$$A_s = E \times H \times (1 - c_1)$$

where: A_s = short-term emissions (lb/hr);
 E = emission factor = 0.00092 lb/t;
 H = hourly coal transfer = 4,000 t/hr; and
 c_1 = dust control efficiency factor = 0.50.

Substituting, the short-term emissions are

$$A_s = 0.00092 \text{ lb/t} \times 4,000 \text{ t/hr} (1 - 0.50);$$

$$A_s = 1.84 \text{ lb/hr, and}$$

$$A_s = 0.23 \text{ g/sec.}$$

The annual emissions are calculated using the equation:

$$A_L = E \times T \times (1 - c_1) \times c_2$$

where: A_L = ~~annual emissions (tpy);~~
 E = ~~emission factor = 0.00092 lb/t;~~
 T = ~~annual coal usage = 2,050,000 tpy;~~
 c_1 = ~~dust control efficiency factor = 0.50; and~~
 c_2 = ~~conversion constant = 1 t/2,000 lb.~~

Substituting, the annual emissions are

$$A_L = 0.00092 \text{ lb/t} \times 2,050,000 \text{ tpy} \times (1 - 0.50) \times 1 \text{ t/2,000 lb};$$

$$A_L = 0.47 \text{ tpy}; \text{ and}$$

$$A_L = 0.014 \text{ g/sec.}$$

PART B. REPLACEMENT RECLAIM SYSTEM SOURCES

TRANSFER FROM PILE TO NORTH STACKER BOOM CONVEYOR

Coal will be transferred from the coal pile to the north stacker boom conveyor within the reclaim sub-system using mobile equipment to place the coal into an above-grade hopper. This transfer will be in the open. The existing dust control system will provide fugitive dust control. The emission factor for this operation, from AP-42, Section 11.2.3, Aggregate Handling and Storage (EPA, 1991), is:

$$E = [0.0032 \times k \times (u/5)^{1.3}] / (M/2)^{1.4}$$

where: E = emission factor (lb/t);
 k = particulate size coefficient (dimensionless) = 0.74;
 u = annual average windspeed (mph) = 8.6 mph (NWS meteorological data for Tampa); and
 M = moisture content of the coal (%) = 6.5%.

Substituting, the emission factor is:

$$E = [0.0032 \times 0.74 \times (8.6/5)^{1.3}] / (6.5/2)^{1.4};$$

$$E = 0.00092 \text{ lb/t.}$$

The short-term emissions are calculated using the equation:

$$A_s = \bar{E} \times \bar{H} \times (1 - c_d)$$

where: A_s = short-term emissions (lb/hr);
 \bar{E} = emission factor = 0.00092 lb/t;
 \bar{H} = hourly coal transfer = 4,000 t/hr; and
 c_d = dust control efficiency factor = 0.50.

Substituting, the short-term emissions are:

$$\begin{aligned} A_s &= 0.00092 \text{ lb/t} \times 4,000 \text{ t/hr} (1 - 0.50); \\ A_s &= 1.84 \text{ lb/hr; and} \\ A_s &= 0.23 \text{ g/sec.} \end{aligned}$$

The annual emissions are calculated using the equation:

$$A_L = E \times T \times (1 - c_1) \times c_2$$

where: A_L = annual emissions (tpy);
 E = emission factor = 0.00092 lb/t;
 T = annual coal usage = 2,050,000 tpy;
 c_1 = dust control efficiency factor = 0.50; and
 c_2 = conversion constant = 1 t/2,000 lb.

Substituting, the annual emissions are

$$\begin{aligned} A_L &= 0.00092 \text{ lb/t} \times 2,050,000 \text{ tpy} \times (1 - 0.50) \times 1 \text{ t}/2,000 \text{ lb}; \\ A_L &= 0.47 \text{ tpy; and} \\ A_L &= 0.014 \text{ g/sec.} \end{aligned}$$

TRANSFER FROM NORTH STACKER BOOM CONVEYOR TO CONVEYOR P

Coal will be transferred from the north stacker boom conveyor to conveyor P within the reclaim sub-system. This transfer will be in the open. The existing dust control system will provide fugitive dust control. The emission factor for this operation, from AP-42, Section 11.2.3, Aggregate Handling and Storage (EPA, 1991), is:

$$E = [0.0032 \times k \times (u/5)^{1.5}] / (M/2)^{1.4}$$

where: E = emission factor (lb/t);
 k = particulate size coefficient (dimensionless) = 0.74;
 u = annual average windspeed (mph) = 8.6 mph (NWS meteorological data for Tampa); and
 M = moisture content of the coal (%) = 6.5%.

Substituting, the emission factor is:

$$E = [0.0032 \times 0.74 \times (8.6/5)^{1.3}] / (6.5/2)^{1.4};$$

$$E = 0.00092 \text{ lb/t.}$$

The short-term emissions are calculated using the equation:

$$A_s = E \times H \times (1 - c_1)$$

where: A_s = short-term emissions (lb/hr);
 E = emission factor = 0.00092 lb/t;
 H = hourly coal transfer = 4,000 t/hr; and
 c_1 = dust control efficiency factor = 0.50.

Substituting, the short-term emissions are:

$$A_s = 0.00092 \text{ lb/t} \times 4,000 \text{ t/hr} (1 - 0.50);$$

$$A_s = 1.84 \text{ lb/hr; and}$$

$$A_s = 0.23 \text{ g/sec.}$$

The annual emissions are calculated using the equation:

$$A_L = E \times T \times (1 - c_1) \times c_2$$

where: A_L = annual emissions (tpy);
 E = emission factor = 0.00092 lb/t;
 T = annual coal usage = 2,050,000 tpy;
 c_1 = dust control efficiency factor = 0.50; and
 c_2 = conversion constant = 1 t/2,000 lb.

Substituting, the annual emissions are

$$A_L = 0.00092 \text{ lb/t} \times 2,050,000 \text{ tpy} \times (1 - 0.50) \times 1 \text{ t}/2,000 \text{ lb};$$

$$A_L = 0.47 \text{ tpy; and}$$

$$A_L = 0.014 \text{ g/sec.}$$



State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To: <u>Steve Smallwood</u>	Location: <u>DARM</u>
To: <u>CLAU - FYI</u>	Location: _____
To: _____	Location: _____
From: _____	Date: _____

Interoffice Memorandum

TO: Deputy Assistant Secretaries
Division Directors

FROM: John Shearer, P.E.
Assistant Secretary

DATE: August 14, 1990

SUBJECT: Professional Engineering Certification of Items of
Incompleteness Regarding a Permit Application

[Handwritten Signature]
RECEIVED
AUG 16 1990
DER-BAQM

RULE 17-4.050, F.A.C. - PROCEDURES TO OBTAIN PERMITS; APPLICATION, states that all applications for a Department permit shall be certified by a professional engineer registered in the State of Florida...

In instances where the permit application is deemed incomplete, and the Department requests additional information that is of an engineering nature, the response to these items of incompleteness also needs to be certified by a professional engineer registered in the State of Florida. Many times the missing information is what is really needed to give reasonable assurances that the source will comply with the Department's rules and regulations. The professional engineer's seal is heavily relied on for providing reasonable assurance that the state air and water quality standards are being met.

JS/pl

BEFORE THE GOVERNOR AND CABINET
OF THE STATE OF FLORIDA

IN RE: TAMPA ELECTRIC COMPANY
BIG BEND STATION UNIT 4
POWER PLANT SITING CERTIFICATION
APPLICATION PA 79-12
REQUEST FOR MODIFICATION

CASE NO. 80-1723

FINAL ORDER

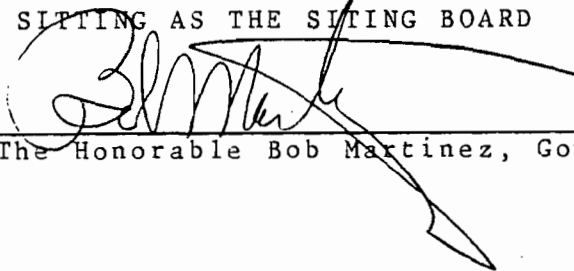
BY THE GOVERNOR AND CABINET

The Governor and Cabinet, sitting as the Siting Board, having reviewed the Stipulation and Agreement which is attached hereto as Exhibit 1, and otherwise being fully advised herein, issue this Final Order and, therefore, it is ORDERED:

1. The Stipulation and Agreement executed by the Florida Department of Environmental Regulation, Southwest Florida Water Management District, Department of Community Affairs, Public Service Commission and Tampa Electric Company is approved and adopted. The conditions of certification for the Tampa Electric Company Big Bend Station Unit 4 shall be and hereby are modified in the manner shown in the Stipulation and Agreement, pursuant to Section 403.516(2), Florida Statutes.

DONE AND ORDERED this 6th day of October, 1987 in Tallahassee, Florida, pursuant to the vote of the Governor and Cabinet, sitting as the Siting Board, at a duly noticed and constituted Cabinet meeting on October 6, 1987.

FOR THE GOVERNOR AND CABINET
SITTING AS THE SITING BOARD

By: 
The Honorable Bob Martinez, Governor

The action of the Siting Board is based on the following vote:

	<u>For</u>	<u>Against:</u>	<u>Absent</u>
Honorable Bob Butterworth	X		
Honorable Betty Castor	X		
Honorable Doyle Conner			X
Honorable Bill Gunter	X		
Honorable Gerald A. Lewis	X		
Honorable Bob Martinez	X		
Honorable Jim Smith	X		

FILING AND ACKNOWLEDGEMENT

Filed on this date, pursuant to Section 120.52(10), Florida Statutes (1985), with the designated Department Clerk, receipt of which is hereby acknowledged.

C. Hutchins
Clerk

Date 10-12-87

Copies furnished to:

Lawrence N. Curtin, Esquire
Aurell, Fons, Radey & Hinkle
Post Office Drawer 11307
Tallahassee, Florida 32302

Richard Donelan, Esquire
Assistant General Counsel
State of Florida Department
of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399

C. Lawrence Keeseey, Esquire
Department of Community Affairs
Howard Building
2572 Executive Center Circle,
East
Tallahassee, Florida 32399

Dan Fernandez, Esquire
Southwest Florida Water
Management District
2379 Broad Street
Brooksville, Florida 33512

Mike Twomey, Esquire
Public Service Commission
101 East Gaines Street
Tallahassee, Florida 32399

Hamilton S. Oven, Jr.
Department of Environmental
Regulation
Twin Towers Office Building
Tallahassee, Florida 32399

Honorable Betty Castor
Commissioner of Education
The Capitol
Tallahassee, Florida 32399

Honorable Bob Martinez
The Governor
The Capitol
Tallahassee, Florida 32399

Honorable Jim Smith
Secretary of State
The Capitol
Tallahassee, Florida 32399

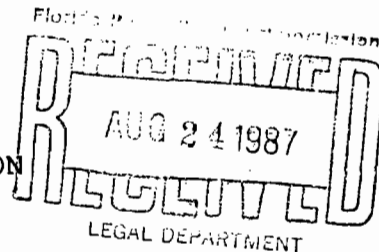
Honorable Bob Butterworth
Attorney General
The Capitol
Tallahassee, Florida 32399

Honorable Bill Gunter
Treasurer and Insurance
Commissioner
The Capitol
Tallahassee, Florida 32399

Honorable Gerald Lewis
Comptroller
The Capitol
Tallahassee, Florida 32399

Honorable Doyle Conner
Commissioner of Agriculture
The Capitol
Tallahassee, Florida 32399

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION



IN THE MATTER OF:

TAMPA ELECTRIC COMPANY
POWER PLANT SITING APPLICATION
BIG BEND STATION UNIT NO. 4,
PA 79-12

CASE NO. 80-1723

AGREEMENT OF PARTIES
MODIFYING CONDITIONS OF CERTIFICATION

Pursuant to the provisions of Section 403.516(2), Florida Statutes, and Rule 17-17.211(4), Florida Administrative Code, the parties entering appearances at and appearing in the certification proceedings, by and through their undersigned representatives, hereby agree as follows:

1. The signatories to this agreement include representatives of all the parties entering appearances at and participating in the above referenced certification proceedings.

2. On August 17, 1981, the Final Order Adopting Hearing Officer's Recommendation of Certification Subject to Conditions was entered in DOAH Case No. 80-1723, reflecting action taken by the Governor and Cabinet at the duly constituted Cabinet meeting of August 4, 1981. The Final Order constitutes approval of certification for the construction and operation of Tampa Electric Company's Big Bend Unit No. 4 subject to the Conditions of Certification attached thereto.

3. Pursuant to Florida Administrative Code Rule 17-17.211(4), Tampa Electric Company seeks a modification of Conditions II.A.10., II.B.1., II.B.2.b., III.D., III.E., XXVIII. and XXX., which provide as follows:

II.A.10. Boiler and Bottom Ash Sluice System Blowdown

Blowdown from the boiler and from the bottom ash sluice system shall be treated as appropriate prior to discharge to the cooling water system. The following effluent limitations shall apply:

Effluent	Daily Maximum	Maximum 30-Day Daily Average
TSS	100 mg/l	30 mg/l
Oil and Grease	20 mg/l	15 mg/l
pH	6-9	

TECO shall provide the dimensions of the bottom ash system settling pond and provide calculations demonstrating that sufficient residence time will be provided to achieve the above limitations.

II.B.1. Chemical Monitoring

The following parameters shall be monitored during discharge as shown, discharge commencing with the start of commercial operation of Unit 4 and reported quarterly to the Department's Southwest District Office:

<u>Parameter</u>	<u>Location</u>	<u>Sample Type</u>	<u>Frequency</u>
Flow, Cooling	Intake	Pump Log	Continuous
Flow, Bottom Ash	Prior to CWS	Recorder	Continuous
Flow, Boiler Blowdown	Prior to CWS	Daily Log	Daily
Flow, FGD Bleed	Prior to CWS	Recorder	Continuous
pH	CWS and prior to CWS on FGD Bleed	Grab	Two per Week
	Boiler & Bottom Ash Blowdown		
Temperature	CWS Outfall	Recorder	Continuous
TSS	Bottom Ash Blowdown, FGD Bleed, & Boiler Blowdown	Grab	Two per Week
Chlorine, Total Residual	Outfall	Multiple Grab	Two per Month Weekly
Oil and Grease	Boiler Blowdown Bottom Ash Blowdown and FGD bleed	Grab	Two per Month
Metals	Intake, Outfall FGD Bleed Stream Bottom Ash Blowdown & Boiler Blowdown Prior to discharge to CWS	Two-Grab composite, not less than two hours between samples	Two per Month for the first year, then monthly thereafter
Arsenic	"		"
Cadmium	"		"
Iron	"		"
Lead	"		"
Mercury	"		"
Selenium	"		"
Zinc	"		"
Copper	"		"
Chromium	"		"
Nickel	"		"

II.B.2.b. Entrainment

1. In order to evaluate the entrainment mortality at the Big Bend Station, TECO shall conduct a Fine Mesh Screen Survivability Study (similar to the 1980 Prototype FMS study) for one full spawning period (March through September). Sampling for the study will be conducted at three locations pertaining to Unit 4:

Station 1: Front of screen after organisms are impinged and washed to the screen return system.

Station 2: Behind the screen.

Station 3: At the discharge point in the Organism Return Canal (ORC).

Stations 1 and 2 will be sampled simultaneously to estimate the total number of organisms entrained at the plant. Initial and latent mortality tests will be conducted on organisms collected at locations 1 and 3 only. A detailed scope of study

shall be submitted by TECO at least twelve months prior to the commencement of commercial operation of Unit 4.

III.D. Monitoring and Reporting

Tampa Electric Company shall implement the following groundwater monitoring program:

1. The groundwater levels shall be monitored at wells as approved by DER and the Southwest Water Management District. Chemical analyses shall be made on samples from all monitored wells identified in this Condition. The location, frequency, water levels and selected chemical analyses shall be as given in Condition III.D.3.
2. The groundwater monitoring program shall be implemented at least one year prior to operation of Big Bend Unit 4. The chemical analyses shall be in accord with the latest edition of Standard Methods for the Analysis of Water and Wastewater. The data shall be submitted within 30 days of collection/analysis to the Southwest Florida Water Management District and to the DER Power Plant Siting Section.
3. After consultation with the DER and SWFWMD, TECO shall install a monitoring well system, as generally shown on Figure 3, to monitor groundwater quality in the top 40 feet of the surficial aquifer. One well shall be installed to a depth greater than 40 feet but less than 100 to monitor vertical dispersion or groundwater contaminants. Monitoring well locations and designs shall be submitted to the Department and SWFWMD for review. Approval or disapproval of the locations and design shall be granted within 60 days. The water samples collected from each of the monitor wells shall be collected immediately after removal by pumping of a quantity of water equal to two casing volumes. The water quality analyses shall be performed monthly during the year prior to commercial operation and for two years after operation and quarterly thereafter. Results shall be submitted to the Department and the SWFWMD by the fifteenth (15th) day of the month following the month during which such analyses were performed. Testing for the following constituents is required:

Conductance	Nickel
pH	Selenium
Chloride	Chromium
Iron	Arsenic
Cadmium	Beryllium
Zinc	Mercury
Copper	Lead
Sulfate	Gross Alpha
Silver	Barium

4. After the second year of monitoring and periodically thereafter, the Department and the permittee shall review the results of the monitoring program and determine the necessity for modifying or continuing the program.

[FIGURE 3]

III.E. Leachate

1. Zone of Discharge

Leachate from the FGD/gypsum landfill, coal storage pile, bottom ash pond, wastewater treatment ponds, ash disposal cells, and spray irrigation field shall not

contaminate waters of the State (including both surface and groundwaters) in excess of the limitations of Chapter 17-3, FAC., beyond the boundary of the site.

2. Corrective Action

When the groundwater monitoring system shows a violation of the groundwater water quality standards of Chapter 17-3, FAC., the appropriate ponds, FGD landfill, or coal pile shall be sealed, relocated or closed, or the operation of the affected facility shall be altered in such a manner as to assure the Department that no violation of the groundwater standards will occur beyond the boundary of the site.

XXVIII. Fine Mesh Screens

Fine mesh screens, similar to those tested and described by TECO in the 316 Demonstration, shall be installed on the intakes of Units 3 and 4 with the appropriate sprays and screen wash sluice return system to minimize entrainment. The screen wash sluice return system shall discharge to the east end of the canal north of the intake canal or to a location acceptable to the Department and EPA. TECO shall submit a plan to DER to explore the possibility of re-entrainment of ORC--returned organism.

XXX. Variances

TECO is granted variances for discharges of FGD system blowdown and bottom ash pond blowdown pursuant to Sections 403.201 and 403.511(2) F.S., for a period of two years after the start of commercial operation for the following parameters:

- a. Arsenic - 17-3.061(2)(a)
- b. Cadmium - 17-3.121(9)
- c. Chromium - 17-3.061(2)(d)
- d. Copper - 17-3.121(11)
- e. Iron - 17-3.121(16)
- f. Mercury - 17-3.121(18)
- g. Nickel - 17-3.121(19)
- h. Selenium - 17-3.121(26)

During the period that the variance is in effect, TECO shall (1) determine the concentrations of the above metals as well as lead in the two discharge streams; (2) operate the FGD blowdown treatment system so as to minimize the metal content of the discharge from the system; and (3) submit reports of the above studies and analyses after the first year and at least twenty months after the start of commercial operation of Unit 4.

Upon receipt of the aforementioned reports, the Secretary shall determine whether the variances should be renewed and may impose appropriate conditions to minimize the discharges and their impacts.

4. Tampa Electric Company seeks to modify Condition II.A.10. by deleting the references to the bottom ash sluice system from the condition. The purpose of the deletion is to reflect the fact that this system no longer discharges.

5. Tampa Electric Company seeks to modify Condition II.B.1. concerning chemical monitoring to (1) delete all references to monitoring requirements for discharges of blowdown from the bottom ash sluice system since that system no longer discharges;

and (2) delete monitoring requirements for heavy metals for both the circulating water system and boiler blowdown since Hillsborough Bay has been shown to be in compliance with Class III water quality standards.

6. Tampa Electric Company seeks to modify Condition II.B.2.b. by adding language that addresses the implementation of the fine mesh screens inspection and maintenance program as described by the Company to DER in its letter of July 21, 1987.

7. Tampa Electric Company seeks to modify Condition III.D. and E. by deleting all references to the Big Bend Unit 4 groundwater monitoring program and referencing the existing stationwide DER approved groundwater monitoring plan pursuant to 17-4.245, FAC.

8. Tampa Electric Company seeks to modify Condition XXVIII. by designating the time period for which the fine mesh screens shall be in operation as agreed upon by DER in their meeting with Tampa Electric Company of July 17, 1987.

9. Tampa Electric Company seeks to modify Condition XXX. by deleting the reference to a two-year limitation for the variance for discharges from the FGD system blowdown and the bottom ash pond blowdown. It is requested that the variance be extended for an additional two years. As stated above, bottom ash blowdown is no longer discharged. Big Bend Unit No. 4 has not discharged FGD blowdown since beginning commercial operation. The FGD blowdown system is still being adjusted in an effort to produce wallboard quality gypsum. Tampa Electric Company estimates that the situation will continue through June of 1988, when it is expected that the discharge of FGD blowdown will be initiated. An additional 12 months from the commencement of the discharge would then be required to characterize the volume and quality of FGD blowdown. During this period of time, it is necessary that the variance remain in effect.

10. Wherefore, the parties hereby concur, and do not object to amending and modifying Conditions II.A.10., II.B.1., II.B.2.b., III.D., III.E., XXVIII., and XXX., to read as follows:

I.A.10. Boiler and Bottom Ash Sluice System Blowdown

Blowdown from the boiler and from the bottom ash sluice system shall be treated as appropriate prior to discharge to the cooling water system. The following effluent limitations shall apply:

Effluent	Daily Maximum	Maximum 30-Day Daily Average
TSS	100 mg/l	30 mg/l
Oil and Grease	20 mg/l	15 mg/l
pH	6-9	

TECO shall provide the dimensions of the bottom ash system settling pond and provide calculations demonstrating that sufficient residence time will be provided to achieve the above limitations.

II.B.1. Chemical Monitoring

The following parameters shall be monitored during discharge as shown, discharge commencing with the start of commercial operation of Unit 4 and reported ~~quarterly~~ monthly to the Department's Southwest District Office:

<u>Parameter</u>	<u>Location</u>	<u>Sample Type</u>	<u>Frequency</u>
Flow, Cooling	Intake	Pump Log	Continuous
Flow, Bottom Ash	Prior to CWS	Recorder	Continuous
Flow, Boiler Blowdown	Prior to CWS	Daily Log	Daily
Flow, FGD Bleed	Prior to CWS	Recorder	Continuous
pH	CWS and prior to CWS on FGD Bleed & Boiler & Bottom Ash Blowdown	Grab	Two per Week
Temperature	CWS Outfall	Recorder	Continuous
TSS	Bottom Ash Blow-down, FGD Bleed, & Boiler Blowdown	Grab	Two per Week
Chlorine, Total Residual	Outfall of CWS	Multiple Grab	Two per Month Weekly
Oil and Grease	Boiler Blowdown Bottom Ash Blow-down and FGD bleed	Grab	Two per Month
Metals	Intake, Outfall FGD Bleed Stream Bottom Ash Blow-down & Boiler Blowdown prior to discharge to CWS	Two-Grab composite, not less than two hours between samples	Two One per Month for the first year, then monthly thereafter
Arsenic	"		"
Cadmium	"		"
Iron	"		"
Lead	"		"
Mercury	"		"
Selenium	"		"
Zinc	"		"
Copper	"		"
Chromium	"		"
Nickel	"		"

II.B.2.b. Entrainment

1. In order to evaluate the entrainment mortality at the Big Bend Station, TECO shall conduct a Fine Mesh Screen Survivability Study (similar to the 1980 Prototype FMS study) for one full spawning period (March through September). Sampling for the study will be conducted at three locations pertaining to Unit 4:

Station 1: Front of screen after organisms are impinged and washed to the screen return system.

Station 2: Behind the screen.

Station 3: At the discharge point in the Organism Return Canal (ORC).

Stations 1 and 2 will be sampled simultaneously to estimate the total number of organisms entrained at the plant. Initial and latent mortality tests will be conducted on organisms collected at locations 1 and 3 only. A detailed scope of study shall be submitted by TECO at least twelve months prior to the commencement of commercial operation of Unit 4.

The applicant shall implement the fine mesh screens inspection and maintenance program submitted to the Department on July 21, 1987, to assure that the screens are properly maintained and operated. The applicant shall maintain logs of inspections, maintenance, and repairs. The logs shall include the date of inspection, item(s) inspected, repairs needed, and date maintenance job request submitted.

III.D. Monitoring and Reporting

Tampa Electric Company shall implement the following groundwater monitoring program:

- 1- The groundwater levels shall be monitored at wells as approved by DER and the Southwest Water Management District. Chemical analyses shall be made on samples from all monitored wells identified in this Condition. The location, frequency, water levels and selected chemical analyses shall be as given in Condition III-D-3.
- 2- The groundwater monitoring program shall be implemented at least one year prior to operation of Big Bend Unit 4. The chemical analyses shall be in accord with the latest edition of Standard Methods for the Analysis of Water and Wastewater. The data shall be submitted within 30 days of collection/analysis to the Southwest Florida Water Management District and to the DER Power Plant Siting Section.
- 3- After consultation with the DER and SWFWMD, TECO shall install a monitoring well system, as generally shown on Figure 3, to monitor groundwater quality in the top 40 feet of the surficial aquifer. One well shall be installed to a depth greater than 40 feet but less than 100 to monitor vertical dispersion or groundwater contaminants. Monitoring well locations and designs shall be submitted to the Department and SWFWMD for review. Approval or disapproval of the locations and design shall be granted within 60 days. The water samples collected from each of the monitor wells shall be collected immediately after removal by pumping of a quantity of water equal to two casing volumes. The water quality analyses shall be performed monthly during the year prior to commercial operation and for two years after operation and quarterly thereafter. Results shall be submitted to the Department and the SWFWMD by the fifteenth (15th) day of the month following the month during which such analyses were performed. Testing for the following constituents is required:

Conductance	Nickel
pH	Selenium
Chloride	Chromium
Iron	Arsenic
Cadmium	Beryllium

Zinc
Copper
Sulfate
Silver

Mercury
Lead
Gross Alpha
Barium

4. After the second year of monitoring and periodically thereafter, the Department and the permittee shall review the results of the monitoring program and determine the necessity for modifying or continuing the program.

[FIGURE 3] (DELETE FIGURE 3)

III-E. Beachate

1. Zone of Discharge

Beachate from the FGD/gypsum landfill, coal storage pile, bottom ash pond, wastewater treatment ponds, ash disposal cells, and spray irrigation field shall not contaminate waters of the State (including both surface and groundwaters) in excess of the limitations of Chapter 17-3, FAC, beyond the boundary of the site.

2. Corrective Action

When the groundwater monitoring system shows a violation of the groundwater water quality standards of Chapter 17-3, FAC, the appropriate ponds, FGD landfill, or coal pile shall be sealed, relocated or closed, or the operation of the affected facility shall be altered in such a manner as to assure the Department that no violation of the groundwater standards will occur beyond the boundary of the site.

Tampa Electric Company shall monitor the groundwater at Big Bend Station in accordance with the approved groundwater monitoring plan.

XXVIII. Fine Mesh Screens

Fine mesh screens, similar to those tested and described by TECO in the 316 Demonstration, shall be installed on the intakes of Units 3 and 4 with the appropriate sprays and screen wash sluice return system to minimize entrainment. The screen wash sluice return system shall discharge to the east end of the canal north of the intake canal or to a location acceptable to the Department and EPA. TECO shall submit a plan to DER to explore the possibility of re-entrainment of ORC--returned organism. The applicant shall operate the fine mesh screens for Units 3 and 4 intake structures and the organism return mechanism from March 15 through October 15 of each year.

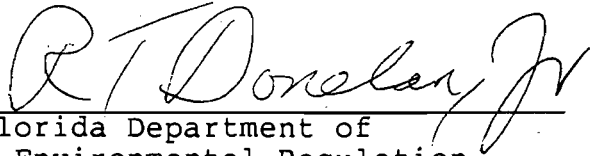
XXX. Variances

TECO is granted variances for discharges of FGD system blowdown and bottom ash pond blowdown pursuant to Sections 403.201 and 403.511(2) F.S., for a period of two years from the date of the final order granting this modification after the start of commercial operation for the following parameters:

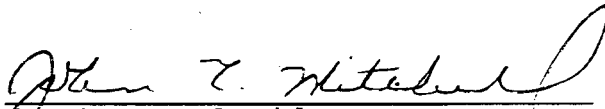
- a. Arsenic - 17-3.061(2)(a)
- b. Cadmium - 17-3.121(9)
- c. Chromium - 17-3.061(2)(d)
- d. Copper - 17-3.121(11)
- e. Iron - 17-3.121(16)
- f. Mercury - 17-3.121(18)
- g. Nickel - 17-3.121(19)
- h. Selenium - 17-3.121(26)

During the period that the variance is in effect, TECO shall (1) determine the concentrations of the above metals as well as lead in the two discharge streams; (2) operate the FGD blowdown treatment system so as to minimize the metal content of the discharge from the system; and (3) submit a reports of the above studies and analyses after the first year and at least twenty months after the start of commercial operation of Unit 4; no later than 15 months after the start of normal operational discharge.

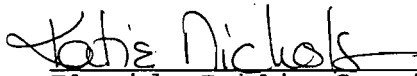
Upon receipt of the aforementioned reports, the Secretary shall determine whether the variances should be renewed and may impose appropriate conditions to minimize the discharges and their impacts.



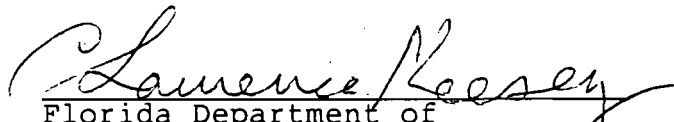
Florida Department of
Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399



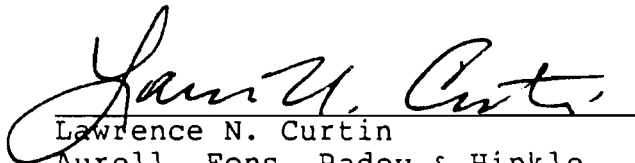
Southwest Florida Water
Management District
5060 U.S. Highway 41 South
Brooksville, Florida 33512



Florida Public Service Commission
101 East Gaines Street
Tallahassee, Florida 32304



Florida Department of
Community Affairs
2571 Executive Center Circle East
Tallahassee, Florida 32301



Lawrence N. Curtin
Aurell, Fons, Radey & Hinkle
Post Office Drawer 11307
Tallahassee, Florida 32302

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

May 6, 1985

Mr. James T. Wilburn, Chief
Air Management Branch
USEPA-Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Re: Modification to PSD-FL-040
TECO Big Bend Unit 4

Dear Mr. Wilburn:

This is to acknowledge the receipt of your March 12, 1985 letter requesting a public notice to be published prior to a modification of the above referenced permit.

Tampa Electric Company (TECO) requested that the carbon monoxide (CO) emission limits contained in this permit be changed to correct an error when an incorrect emission factor was used in their application. The correction of this error will result in a theoretical significant increase in the CO emission limits. At your request, we have enclosed a copy of the proof of publication so you can proceed to revise the PSD permit to reflect the emission change for CO.

Should you require any further information, please feel free to contact me.

Sincerely,

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/ES/s

cc: Richard Garrity
Iwan Choronenko
Jerry Williams

attachment



DER
MAY 3 1985
BAQM

May 1, 1985

Mr. C.H. Fancy, P.E.
State of Florida
Department of Environmental
Regulation
Bureau of Air Quality
Management
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32301

Re: Proof of Public Notice
Modification to PSD-FL-040
Big Bend Unit #4

Dear Mr. Fancy:

Please find attached a copy of the "Public Notice" for the above referenced source as published in the Tampa Tribune on Saturday, April 20, 1985.

If you have any questions, please call.

Sincerely,

A. Spencer Autry
Manager
Environmental Planning

ASA/jst/024/3

attached

cc: Richard Garrity
Iwan Choronenko

RECEIVED

MAY 01 1985

THE TAMPA TRIBUNE

Published Daily
Tampa, Hillsborough County, Florida

ENVIRONMENTAL
PLANNING

State of Florida }
County of Hillsborough } ss.

Before the undersigned authority personally appeared
G. T. Gleason, who on oath says that he is Controller of The Tampa Tribune, a daily
newspaper published at Tampa in Hillsborough County, Florida; that the attached copy
of advertisement being a

LEGAL NOTICE

in the matter of PUBLIC NOTICE BY THE TAMPA ELECTRIC
COMPANY REQUESTED THAT THEIR PREVENTION OF
SIGNIFICANT DETERIORATION PERMIT (PSD-FL-040)

was published in said newspaper in the issues of
-----APRIL 20th, 1985-----

Affiant further says that the said The Tampa Tribune is a newspaper published at
Tampa, in said Hillsborough County, Florida, and that the said newspaper has
heretofore been continuously published in said Hillsborough County, Florida, each day
and has been entered as second class mail matter at the post office in Tampa, in said
Hillsborough County, Florida, for a period of one year next preceding the first publica-
tion of the attached copy of advertisement; and affiant further says that he 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.

G. T. Gleason

Sworn to and subscribed before me, this 22nd day
of APRIL 1985

Richard Wayne Bouchard
Notary Public, State of Florida

My Commission Expires Jan. 6, 1989
Bonded Thru Tray Fain - Insurance, Inc.

(SEAL)

PUBLIC NOTICE
On January 30, 1985, the
Tampa Electric Company re-
quested that their Prevention
of Significant Deterioration
permit (PSD-FL-040) for the
coal-fired boiler, Unit 4, at the
Big Bend facility near Ruskin,
Florida, be revised. The re-
quested revision will result in
a projected increase of 271
tons per year of carbon
monoxide.
EPA has reviewed the propo-
sal to increase emissions.
The increase is due to an
error in emissions calculations
for this source and no process
or structural modifications
are involved. The projected
increase in emissions from
272 tons per year to 543 tons
per year of carbon monoxide

will increase the ambient
concentration (8 hour
average) to approximately 96
ug/m3. The significant level
for carbon monoxide is 575
ug/m3 and therefore, no
adverse impacts are expected
due to the increase. The best
available control technology
has been determined to be
proper combustion controls
and is not changed in this
proposed revision.
Any person may submit
written comments regarding
this proposed permit revision.
All comments must be re-
ceived not later than 30 days
from the date of this notice in
order to be considered. A pub-
lic hearing may be held if suffi-
cient justification is provided,
as determined by the Adminis-
trator. Letters should be ad-
dressed to:
Mr. Clair Fancy, P.E.
State of Florida
Department of
Environmental Regulation
Bureau of Air
Quality Management
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301
2111 4/20/85

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

March 27, 1985

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Jerry L. Williams, Environmental Director
Tampa Electric Company
P.O. Box 111
Tampa, Florida 33601

RE: Request for permit modification to PSD-FL-040,
Big Bend Unit 4

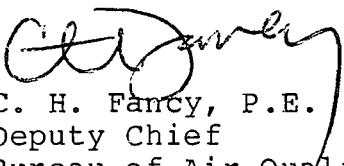
Dear Mr. Williams:

On February 4, 1985, the Bureau of Air Quality Management received your request to modify the carbon monoxide limits for permit PSD-FL-040. Because this change concerns a federal PSD permit, your request was forwarded to the EPA in Atlanta for their review and comments.

Because this change will result in a theoretical significant increase in carbon monoxide emissions, a public notice will need to be published regarding this change. Please use the sample public notice attached to this letter and provide us with a proof of publication so that we can finish processing the requested change.

If you have any questions, please write to me at the above address, or call Edward Svec, Review Engineer, at (904)488-1344.

Sincerely,


C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/ES/rw

Attachment

cc: Richard Garrity
Iwan Choronenko



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

MAR 12 1985

REF: APT-AM

DER
3/12/85
BOM

Mr. Clair H. Fancy, Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

RE: PSD-FL-040 TECO Big Bend Unit 4

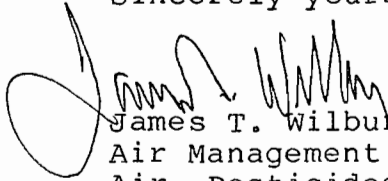
Dear Mr. Fancy:

This is to acknowledge receipt of your February 8, 1985, letter requesting the modification of the federal Prevention of Significant Deterioration (PSD) permit (PSD-FL-040) issued for the construction of the coal-fired boiler, Unit 4, at the Tampa Electric Company's (TECO) Big Bend facility near Ruskin, Florida. The permit issued on October 15, 1981, contained carbon monoxide (CO) emission limits for the unit based on estimates provided by the company in which an incorrect emission factor was used.

The PSD preliminary and final determinations for Unit 4 at the TECO Big Bend facility reflected CO emission estimates which appeared in the TECO application. The company used the wrong emission factor from the EPA document "Compilation of Air Pollutant Emission Factors" (AP-42). As a result, there was an underestimation of CO emissions in the original review. The requested modification would theoretically increase CO emissions from 272 tons per year to 543 tons per year and will increase the ambient concentration (8-hour average) to approximately 16 ug/m³. The significant level for CO is 575 ug/m³, 8-hour average and therefore, no adverse impacts are expected due to the increase. The best available control technology has been determined to be proper combustion controls and has not been changed in this proposed revision. As the correction of this error will result in a theoretical significant increase in CO emissions (271 tons per year), a public notice will need to be published regarding this change. For your convenience, enclosed is a sample public notice which may be used. Please provide us a copy of the proof of publication so that we may proceed to revise the PSD permit to reflect the emission change for CO.

If you have any questions regarding this letter, you may contact me or Wayne J. Aronson, New Source Review Team Leader, at 404/881-4552.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "James T. Wilburn". The signature is written in a cursive style with a large initial "J" and "W".

James T. Wilburn, Chief
Air Management Branch
Air, Pesticides, and Toxics
Management Division

Enclosure

PUBLIC NOTICE

On January 30, 1985, the Tampa Electric Company requested that their Prevention of Significant Deterioration permit (PSD-FL-040) for the coal-fired boiler, Unit 4, at the Big Bend facility near Ruskin, Florida, be revised. The requested revision will result in a projected increase of 271 tons per year of carbon monoxide.

EPA has reviewed the proposal to increase emissions. The increase is due to an error in emissions calculations for this source and no process or structural modifications are involved. The projected increase in emissions from 272 tons per year to 543 tons per year of carbon monoxide will increase the ambient concentration (8-hour average) to approximately 16 ug/m^3 . The significant level for carbon monoxide is 575 ug/m^3 and therefore, no adverse impacts are expected due to the increase. The best available control technology has been determined to be proper combustion controls and is not changed in this proposed revision.

Any person may submit written comments regarding this proposed permit revision. All comments must be received not later than 30 days from the date of this notice in order to be considered. A public hearing may be held if sufficient justification is provided, as determined by the Administrator. Letters should be addressed to:

Mr. Clair Fancy, P.E.
State of Florida Department of
Environmental Regulation
Bureau of Air Quality Management
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

MAR 12 1985

REF: APT-AM

DER
MAR 18 1985
BAQM

Mr. Clair H. Fancy, Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

RE: PSD-FL-040 TECO Big Bend Unit 4

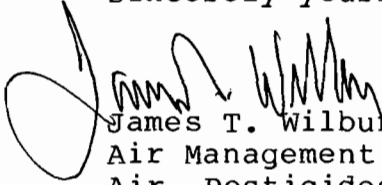
Dear Mr. Fancy:

This is to acknowledge receipt of your February 8, 1985, letter requesting the modification of the federal Prevention of Significant Deterioration (PSD) permit (PSD-FL-040) issued for the construction of the coal-fired boiler, Unit 4, at the Tampa Electric Company's (TECO) Big Bend facility near Ruskin, Florida. The permit issued on October 15, 1981, contained carbon monoxide (CO) emission limits for the unit based on estimates provided by the company in which an incorrect emission factor was used.

The PSD preliminary and final determinations for Unit 4 at the TECO Big Bend facility reflected CO emission estimates which appeared in the TECO application. The company used the wrong emission factor from the EPA document "Compilation of Air Pollutant Emission Factors" (AP-42). As a result, there was an underestimation of CO emissions in the original review. The requested modification would theoretically increase CO emissions from 272 tons per year to 543 tons per year and will increase the ambient concentration (8-hour average) to approximately 16 ug/m^3 . The significant level for CO is 575 ug/m^3 , 8-hour average and therefore, no adverse impacts are expected due to the increase. The best available control technology has been determined to be proper combustion controls and has not been changed in this proposed revision. As the correction of this error will result in a theoretical significant increase in CO emissions (271 tons per year), a public notice will need to be published regarding this change. For your convenience, enclosed is a sample public notice which may be used. Please provide us a copy of the proof of publication so that we may proceed to revise the PSD permit to reflect the emission change for CO.

If you have any questions regarding this letter, you may contact me or Wayne J. Aronson, New Source Review Team Leader, at 404/881-4552.

Sincerely yours,

A handwritten signature in black ink, appearing to read "James T. Wilburn". The signature is written in a cursive style with a large initial "J" and "W".

James T. Wilburn, Chief
Air Management Branch
Air, Pesticides, and Toxics
Management Division

Enclosure

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION)

Bill T

Initial

Date

2.

Initial

Date

3.

Initial

Date

4.

Initial

Date

REMARKS:

Please handle. Need letter to TRCO to tell them to publish attached is fine for 30 days send us proof of publication. Check with Larry on this.

*Ed
Have you been into this at all?*

BT

INFORMATION

Review & Return

Review & File

Initial & Forward

DISPOSITION

Review & Respond

Prepare Response

For My Signature

For Your Signature

Let's Discuss

Set Up Meeting

Investigate & Report

Initial & Forward

Distribute

Concurrence

For Processing

Initial & Return

FROM:

Alan

DATE

3/19

PHONE

PUBLIC NOTICE

On January 30, 1985, the Tampa Electric Company requested that their Prevention of Significant Deterioration permit (PSD-FL-040) for the coal-fired boiler, Unit 4, at the Big Bend facility near Ruskin, Florida, be revised. The requested revision will result in a projected increase of 271 tons per year of carbon monoxide.

EPA has reviewed the proposal to increase emissions. The increase is due to an error in emissions calculations for this source and no process or structural modifications are involved. The projected increase in emissions from 272 tons per year to 543 tons per year of carbon monoxide will increase the ambient concentration (8-hour average) to approximately 16 ug/m³. The significant level for carbon monoxide is 575 ug/m³ and therefore, no adverse impacts are expected due to the increase. The best available control technology has been determined to be proper combustion controls and is not changed in this proposed revision.

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Mr. Clair Fancy, P.E.
State of Florida Department of
Environmental Regulation
Bureau of Air Quality Management
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

February 8, 1985

Mr. James T. Wilburn, Chief
Air Management Branch
USEPA - Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Re: Request from Tampa Electric Company
to Modify PSD-FL-040

Dear Mr. Wilburn:

The Bureau of Air Quality Management received a request from Tampa Electric Company on February 4, 1984, to modify their federal permit, PSD-FL-040, for their Big Bend Station Unit 4 in Ruskin, Florida. In their permit application, Tampa Electric used an incorrect emission estimate from AP-42 which underestimated the emissions of CO by a factor of two.

After reviewing this request, the bureau recommends that Table 1 of permit PSD-FL-040 be modified to reflect the proper AP-42 emission factor CO as follows:

From:

<u>Facility</u>	<u>Pollutants</u>	
	<u>lb/MMBtu</u>	<u>lb/hr</u>
1. Unit 4 Boiler (4330 MMBtu/hr) Continuous Limit	0.014	61


To:

<u>Facility</u>	<u>Pollutants</u>	
	<u>lb/MMBtu</u>	<u>lb/hr</u>
1. Unit 4 Boiler (4330 MMBtu/hr) Continuous Limit	0.029	124

Mr. James T. Wilburn
Page Two
February 8, 1985

Should you require any further information, please feel free to contact me.

Sincerely,

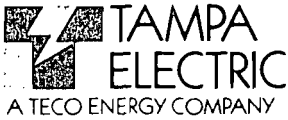


C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/ES/s

cc: Richard Garrity
Iwan Choronenko
Jerry Williams

attachment



January 30, 1985

Mr. Steve Smallwood
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

RE: Request for Permit Modification
Big Bend Station Unit 4
Tampa Electric Company
PSD-FL-040

Dear Mr. Smallwood:

As you are probably aware, Tampa Electric Company is in the final stages of constructing a 417 MW (net) coal fired electric generating unit at the Big Bend Station in Ruskin, Florida. The commercial operation date for this new unit, Big Bend Unit 4, is expected to be in March of 1985.

In anticipation of our upcoming commercial operation of Unit 4, Tampa Electric Company has been reviewing all permitting associated with the new unit. On reviewing the above referenced Prevention of Significant Deterioration (PSD) permit and associated application documents, a calculation error was identified in the PSD application emissions estimate for carbon monoxide (CO). In the application, an incorrect emission factor from the EPA document Compilation of Air Pollutant Emission Factors, AP-42, was inadvertently used to estimate the CO emissions. The use of the incorrect emission factor lead to an underestimation of the CO emissions by a factor of two. Attachment I contains the calculations for the corrected estimate.

As seen in Attachment I, the CO emission rate is expected to be approximately 124 lb/hr and 0.029 lb/MMbtu.

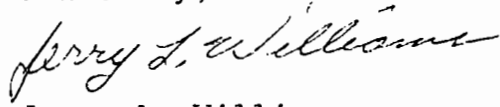
DER .
FEB 4 1985
BAQM

Mr. Steve Smallwood
January 30, 1985
Page Two

Tampa Electric Company requests a modification of the CO limits listed in Table 1 of permit number PSD-FL-040 to reflect the corrected estimate. Attachment II contains the corrected pages to our PSD application.

If you should have any questions please feel free to call me.

Sincerely,



Jerry L. Williams
Director
Environmental

JLW/jbj/047/1

Attachment

cc: Dr. Richard Garrity (DER)

CARBON MONOXIDE (CO) EMISSIONS ESTIMATE
BIG BEND STATION UNIT 4
PSD-FL-040

Fuel input rate at 100% load = 413,000 $\frac{\text{lbs coal}}{\text{hour}}$

Heat input rate at 100% load = 4330 $\frac{\text{MMbtu}}{\text{hour}}$

CO emission factor = 0.6 $\frac{\text{lbs CO}^*}{\text{ton coal}}$

$$(a) \quad 413,000 \frac{\text{lbs coal}}{\text{hour}} \times \frac{1}{2000} \frac{\text{tons coal}}{\text{lbs coal}} \times 0.6 \frac{\text{lbs CO}^{**}}{\text{ton coal}} = 123.9 \frac{\text{lbs CO}}{\text{hour}}$$

$$(b) \quad 123.9 \frac{\text{lbs CO}}{\text{hour}} \times \frac{1}{4330} \frac{\text{hour}}{\text{MMBtu}} = 0.0286 \frac{\text{lbs CO}}{\text{MMBtu}}$$

* Compilation of Air Pollutant Emission Factors, AP-42. See Table 1.1-1. attached.

** In the previously submitted and approved PSD application an emission factor of 0.3 $\frac{\text{KgCO}}{\text{Mg Coal}}$ was mistakenly used as 0.3 $\frac{\text{lb CO}}{\text{Ton Coal}}$. See Table 1.1-1. attached.

TABLE 1.1-1. EMISSION FACTORS FOR EXTERNAL BITUMINOUS AND SUBBITUMINOUS COAL COMBUSTION^a

Firing Configuration	Particulate ^b		Sulfur Oxides ^c		Nitrogen Oxides ^d		Carbon Monoxide ^e		Nonmethane VOC ^{e,f}		Methane ^e	
	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton
Pulverized coal fired												
Dry bottom	5A	10A	19.5S(17.5S)	39S(35S)	10.5(7.5) ^g	21(15) ^g	0.3	0.6	0.04	0.07	0.015	0.03
Wet bottom	3.5A ^h	7A ^h	19.5S(17.5S)	39S(35S)	17	34	0.3	0.6	0.04	0.07	0.015	0.03
Cyclone furnace	1A ^h	2A ^h	19.5S(17.5S)	39S(35S)	18.5	37	0.3	0.6	0.04	0.07	0.015	0.03
Spreader stoker												
Uncontrolled	30 ⁱ	60 ⁱ	19.5S(17.5S)	39S(35S)	7	14	2.5	5	0.04	0.07	0.015	0.03
After multiple cyclone												
With flyash reinjection from multiple cyclone	8.5	17	19.5S(17.5S)	39S(35S)	7	14	2.5	5	0.04	0.07	0.015	0.03
No flyash reinjection from multiple cyclone	6	12	19.5S(17.5S)	39S(35S)	7	14	2.5	5	0.04	0.07	0.015	0.03
Overfeed stoker ^j												
Uncontrolled	8 ^k	16 ^k	19.5S(17.5S)	39S(35S)	3.25	7.5	3	6	0.04	0.07	0.015	0.03
After multiple cyclone	4.5	9	19.5S(17.5S)	39S(35S)	3.25	7.5	3	6	0.04	0.07	0.015	0.03
Underfeed stoker												
Uncontrolled	7.5 ^l	15 ^l	15.5S	31S	4.75	9.5	5.5	11	0.65	1.3	0.4	0.8
After multiple cyclone	5.5	11	15.5S	31S	4.75	9.5	5.5	11	0.65	1.3	0.4	0.8
Handfired units	7.5	15	15.5S	31S	1.5	3	45	90	5	10	4	8

^a Factors represent uncontrolled emissions unless otherwise specified and should be applied to coal consumption as fired.

^b Based on EPA Method 5 (front half catch) as described in Reference 12. Where particulate is expressed in terms of the coal ash content (A), the factor is determined by multiplying the weight X ash content of the coal (as fired) by the numerical value preceding the "A". For example, if a coal having 8% ash is fired in a dry bottom unit, the particulate emission factor would be 5 x 6 or 40 kg/Mg (80 lb/ton). On average, the "condensable" material collected in the back half catch of EPA Method 5 is less than 5% of the front half, or "filterable", catch for pulverized coal and cyclone furnaces; about 10% for spreader stokers; about 15% for other stokers; and about 50% for handfired units (References 6, 19, and 49).

^c Expressed as SO₂, including SO₂, SO₃ and gaseous sulfates. The factors in parentheses should be used to estimate gaseous sulfur oxide emissions for subbituminous coal. In all cases, "S" is the weight % sulfur content of the coal as fired. See Footnote b for an example calculation. On average for bituminous coal, 97% of the fuel sulfur is emitted as SO₂, whereas only about 0.7% of the fuel sulfur is emitted as SO₃ and gaseous sulfate. An equally small percent of the fuel sulfur is emitted as particulate sulfate (References 9, 13). Small quantities of sulfur are also retained in the bottom ash. With subbituminous coal, generally about 10% more fuel sulfur is retained in the bottom ash and particulate, because of the more alkaline nature of the coal ash. Conversion to gaseous sulfate appears to be about the same as for bituminous coal.

^d Expressed as NO₂. Generally, 95 - 99 volume % of the nitrogen oxides present in combustion exhaust will be in the form of NO, the rest being NO₂ (Reference 11). To express these factors as NO, multiply by a factor of 0.66. All factors represent emissions at baseline operation (i.e., 60 - 110% load and no NO_x control measures, as discussed in the text).

^e Nominal values achievable under normal operating conditions. Values one or two orders of magnitude higher can occur when combustion is not complete.

^f Nonmethane volatile organic compounds (VOC), expressed as C₂ to C₁₆ n-alkane equivalents (Reference 58). Because limited data on NMVOC were available to distinguish the effects of firing configuration, all data were averaged collectively to develop a single average for pulverized coal units, cyclones, spreader and overfeed stokers.

^g Parenthetic value is for tangentially fired boilers.

^h Uncontrolled particulate emissions, when no flyash reinjection is employed. When a control device is installed, and collected flyash is reinjected to the boiler, particulate from the boiler reaching the control equipment can increase by up to a factor of two.

ⁱ Accounts for flyash settling in an economizer, air heater or breeching upstream of a control device or stack. (Particulate directly at the boiler outlet typically will be twice this level.) This factor should be applied even when flyash is reinjected to the boiler from boiler, air heater or economizer dust hoppers.

^j Includes traveling grate, vibrating grate and chain grate stokers.

^k Accounts for flyash settling in the breeching or stack base. Particulate loadings directly at the boiler outlet typically can be 50% higher.

^l Accounts for flyash settling in the breeching downstream of the boiler outlet.

Attachment II

Revised pages to:

VOLUME I

Prevention of Significant Deterioration (PSD)
Application - Tampa Electric Company

(PSD-FL-040)

system for measuring SO₂ 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 ¹²⁴~~62~~ 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

<u>Test No.</u>	<u>Test Condition*</u>	<u>Excess Air</u>	<u>Emission (lb/MMBtu)</u>	
			<u>NO_x**</u>	<u>CO</u>
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° 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 NO₂.

Source: EPA 1975.

TABLE 4-8

POLLUTANT EMISSIONS SUMMARY
BIG BEND STATION UNIT 4

Pollutant	Pollutant Emission			Applicable NSPS/SIP Requirement
	lb/hr	lb/MMBtu	% Reduction	
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

*SO₂ emission represents range of sulfur content of raw coals of 3.0 and 6.0 lb/MMBtu.

BIG BEND UNIT 4

CORRECTIVE ACTION PLAN FOR
POLLUTION CONTROL EQUIPMENT

TAMPA ELECTRIC COMPANY

DECEMBER 1984

CONTENTS

	<u>Page</u>
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II. Air Pollution Controls	3
III. Particulate Control System	6
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2. Principle of Operation	6
3. Operation	6
3.1 Operator Monitoring	6
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I. Introduction

Tampa Electric Company (TEC) Big Bend Unit 4 is a 417 MW (net) coal-fired electric generating unit at the existing Big Bend power plant site (See Figure 1). It has been designed to meet all applicable air quality control laws, and regulations.

This report satisfies the State of Florida Department of Environmental Regulations (FDER) permit number PA 79-12, Conditions of Certification, Section I, B.6. which states:

Prior to operation of the source, the permittee shall submit to the Department a standardized plan or procedure that will allow the permittee to monitor emission control equipment efficiency and enable the permittee to return malfunctioning equipment to proper operation as expeditiously as possible.

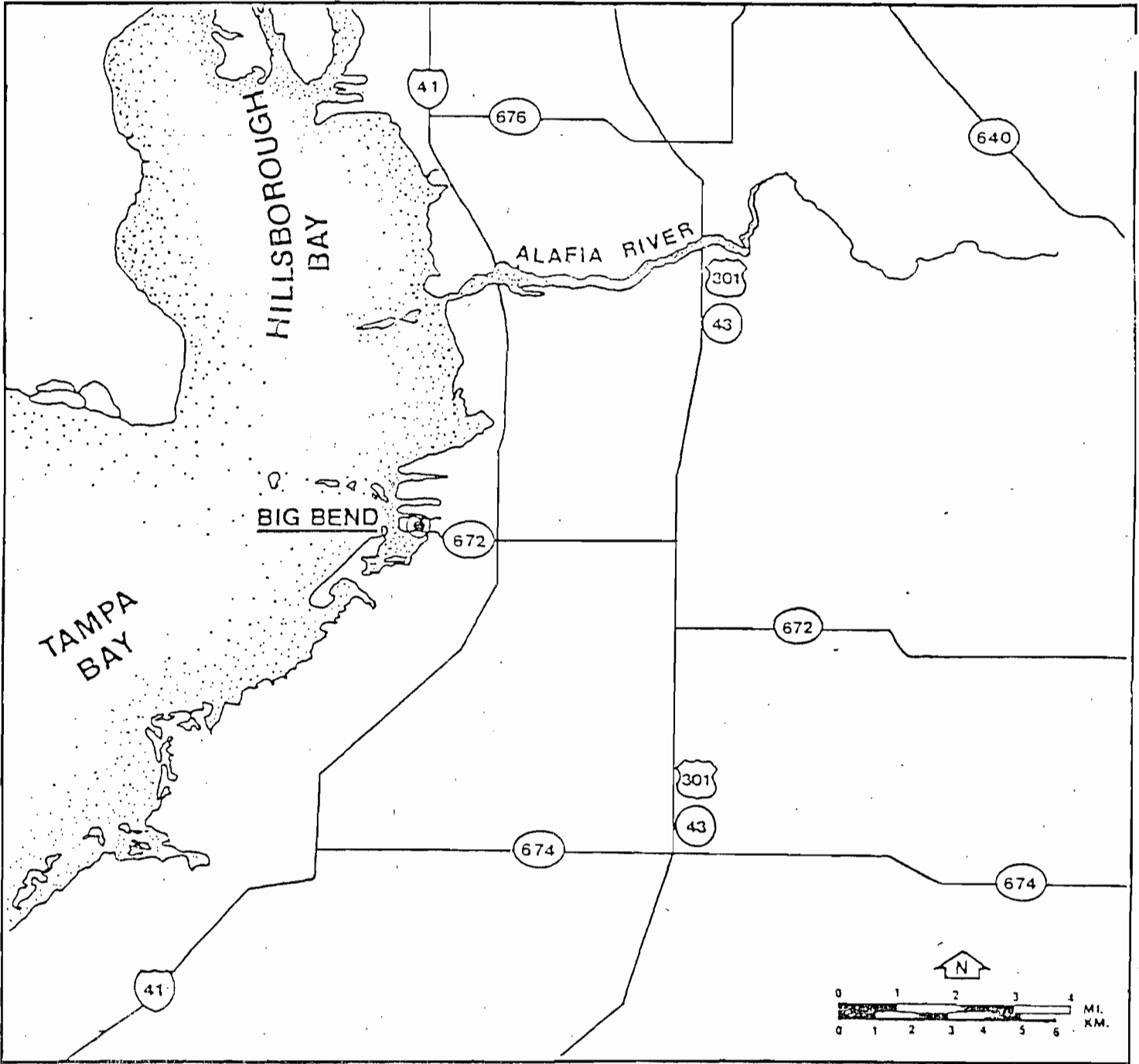


FIGURE 1 Location of Tampa Electric Company Big Bend Generating Units

II. Air Pollution Controls

As stated in Tampa Electric Company's PSD application, the principle air pollution control techniques and systems incorporated in the design of the facility are:

- Particulate Matter emissions from the boiler will be controlled by an electrostatic precipitator (ESP) installed at the exit of the air preheater (in compliance with the New Source Performance Standards (NSPS)).
- SO₂ emissions will be minimized by a combination of coal washing and boiler exhaust gas cleaning using a flue gas desulfurization (FGD) system (in compliance with the NSPS).
- NO_x formation during combustion will be inhibited by the proper operation and design of the boiler and combustion air control system (in compliance with NSPS).
- CO emissions will be minimized by optimum excess-air operation and design of the combustion air control system.
- Fugitive dust emissions resulting from the receiving, handling, and storage of coal and limestone will be minimized by the surface moisture content of coal in storage piles; particle size of received limestone; containment and control of transfer points, conveyors,

and crushing equipment; and proper maintenance of coal and limestone handling facilities.

A flow diagram of the combustion system and associated air pollution control techniques and equipment is presented in Figure 2.

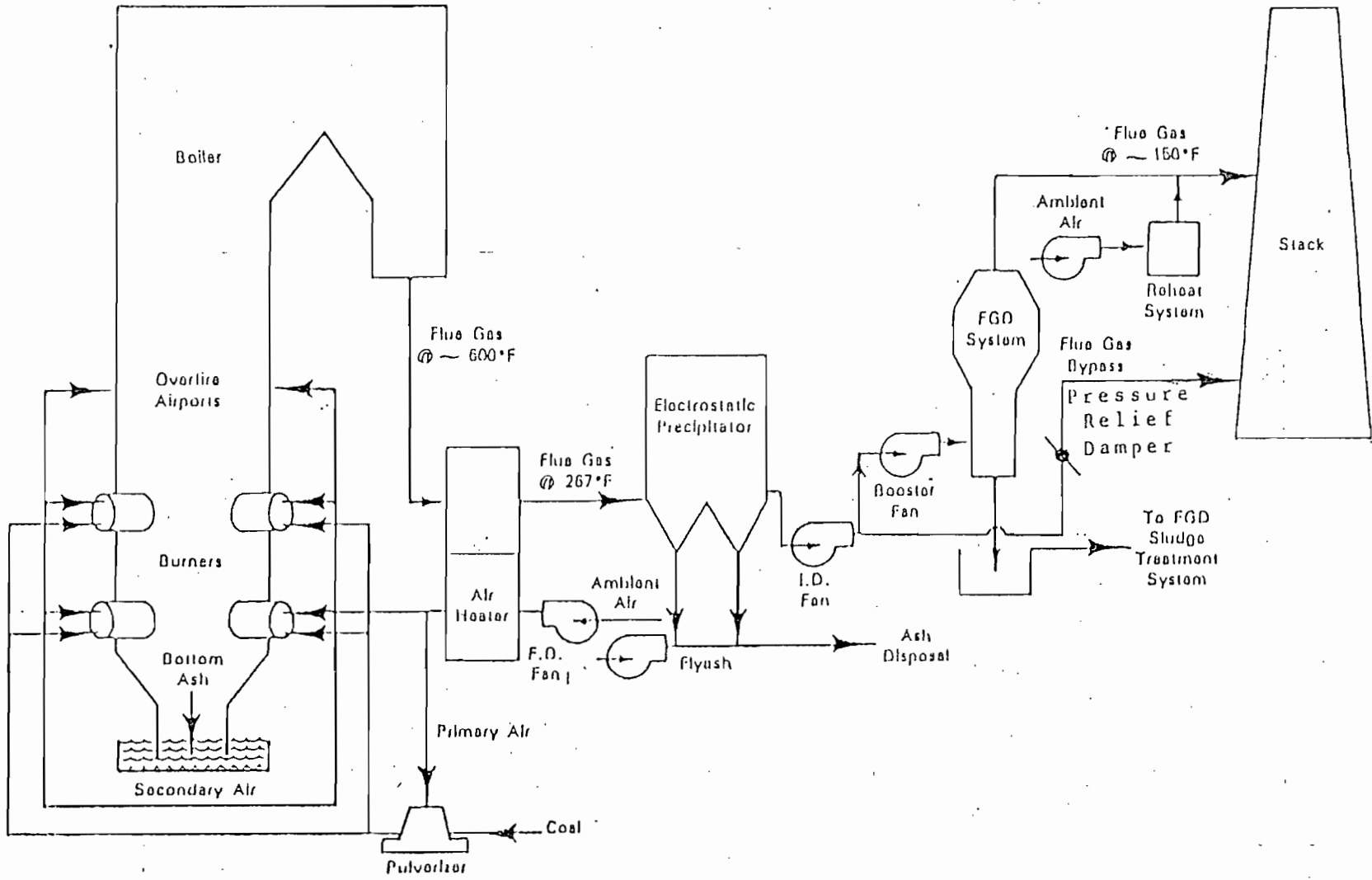


Figure 2

Air Pollution Control Systems for Big Bend Station Unit 4

III. Particulate Control System

1. General Description

Big Bend Unit 4 is equipped with two identical Belco rigid frame electro-static precipitators (upper and lower) for the control of particulate contained in the boiler exhaust gases. The precipitator is located downstream of the air preheater and upstream of the FGD system. The precipitator has been designed for a removal efficiency of 99.74%. Based on the design goals for Big Bend Unit 4, this removal efficiency ensures an emission limit of 0.03 pounds of particulate per million BTU. Compliance will be demonstrated annually by an in-stack emission compliance test. Figure 2 shows the Big Bend Unit 4 combustion system and associated pollution control equipment.

2. Principle of Operation

Boiler exhaust gases containing particulate pass between high voltage electrodes and grounded collecting plates. The electric fields established between the electrodes and the grounded plates polarizes the particulate which causes it to become attached to the grounded collecting plates. Periodic mechanical rapping of the collecting plates dislodges the attached particles from the plates and collect it in the flyash hoppers. The collected particulate will be conveyed from the hoppers and transported to the Big Bend Unit 4 flyash silo.

3. Operation

3.1 Operator Monitoring

Performance of the electrostatic precipitator is monitored by plant operators. Collective responsibilities of these operators include:

- A. Maintaining proper opacity.
- B. Reviewing the following precipitator parameters:
 - 1. Power availability to the annunciator panel
 - 2. Status of the alarms
 - 3. Primary voltage
 - 4. Primary current
 - 5. Proper functioning of the mechanical rapping system
 - 6. Spark rate
- C. Reviewing the following flyash handling system parameters:
 - 1. Power availability to the annunciator panels
 - 2. Status of the alarms
 - 3. Proper functioning of the flyash feeder valves
 - 4. Proper sequencing of each flyash feeder
 - 5. Adequacy of flow of flyash from hoppers through flyash feeders.
- D. Initiating a Maintenance Job Request (MJR) for any needed repairs. (An MJR is the means by which all maintenance work is initiated and documented by Tampa Electric Company.)

3.2 Annunciator System

Any monitored variable that deviates from the specified control limits will be alarmed in the main plant control room as well as the precipitator control room. The alarm in the main plant control room will indicate PRECIPITATOR TROUBLE and the alarm in the

precipitator control room will indicate the cause of the PRECIPITATOR TROUBLE alarm. Figures 3 and 4 show the main plant control room and the lower precipitator control room annunciator panels, respectively. The annunciator panel shown in Figure 4 is duplicated for the upper precipitator. Both the upper and lower annunciator precipitator panels are located in the precipitator control room.

4. Malfunction Response

An opacity monitor continuously monitors precipitator exit gases. The opacity monitor will indicate any exceedance of the applicable opacity limits, including exceedances that may be due to precipitator malfunctions.

In the event that stack opacity reaches an alert alarm point based on the applicable opacity limits, an annunciator will alarm in the main plant control room, SMOKE DENSITY HIGH (Figure 3). The main plant control room operator will alert the responsible operator within the plant. This operator will review both the precipitator and flyash system to identify and correct the cause of the SMOKE DENSITY HIGH alarm. If necessary, the operator will reduce generation in order to ensure environmental compliance.

Any problem identified by plant operators will be corrected by the operators. Those problems that cannot be corrected by the operator will be referred to the appropriate craft personnel by generating an MJR. Craft personnel will address the problem under an emergency

status. When repairs can be effected immediately, craft personnel will do so. Otherwise, repairs will be deferred until the next unit outage.

Another type of alarm that an operator will respond to is PRECIPITATOR TROUBLE which will be alarmed in the plant main control room and called out on the plant public address (PA) system so that a plant operator can respond to the condition.

Upon hearing the PRECIPITATOR TROUBLE alarm called out on the plant PA system, the plant operator will go to the precipitator control room where an annunciator panel will identify the specific cause of the PRECIPITATOR TROUBLE alarm. Afterwards, the operator will go to the affected equipment and correct the problem immediately. Those problems which cannot be corrected by the operator will be referred to appropriate craft personnel by the operator generating an MJR.

5. Repair Procedures

All maintenance work is initiated by an MJR. All operating, maintenance, and engineering personnel share the responsibility of originating MJRs.

In the event of an emergency (a situation which constitutes a hazard to equipment or personnel, loss of production, or noncompliance), immediate attention and repairs will be initiated. Work will continue until the problem has been corrected. An MJR is not needed to start emergency type work, but must be provided as soon as practical.

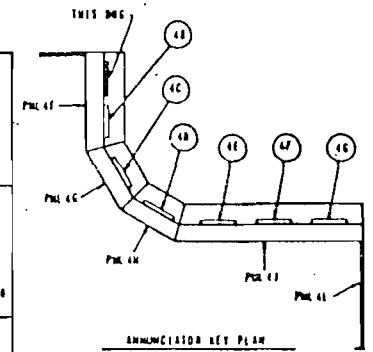
Copies of emergency MJRs are forwarded to plant management for their review and analysis.

Best Available Copy

Main Plant Control Room Annunciator Panel

Figure 3

	FURNACE PRESSURE HIGH	B FD FAN TRIP	A FD FAN TRIP		A PRECIPITATOR TROUBLE	B PRECIPITATOR TROUBLE				
4411	4412	4413	4414	4415	4416	4417	4418	4419	4420	
COMBUSTION AIR FLOW LOW	FURNACE PRESSURE LOW	B FD FAN TROUBLE	A FD FAN TROUBLE	FD FAN FLOW TROUBLE	AIR FUEL RATIO LOW					
4421	4422	4423	4424	4425	4426	4427	4428	4429	4430	
COMBUSTION AIR FLOW HIGH TRIP BYPASSED	FURNACE PRESSURE HIGH TRIP BYPASSED	AIR PREHEATER DRIVE TROUBLE	ANALOG D'ENTRÉE PUMP TROUBLE	ANNUNCIATOR POWER SUPPLY TROUBLE	O ₂ HIGH LOW			PRESSURE RELIEF DAMPER OPEN	BOOSTER FAN TRIP	
4431	4432	4433	4434	4435	4436	4437	4438	4439	4440	
FURNACE PRESSURE TRIP DEVIATION	FURNACE PRESSURE TRIP DEVIATION BYPASSED	AIR HEATER COLD END AVERAGE TEMPERATURE LOW	ELECTRONIC RELIEF VALVE OPEN	LOSS OF BOILER DRUM ACTUATOR DRIVE POWER	SMOKE DENSITY HIGH	FGO INLET SO ₂ HIGH	FGO OUTLET SO ₂ HIGH		BOOSTER FAN TROUBLE	
4441	4442	4443	4444	4445	4446	4447	4448	4449	4450	



ANNUNCIATOR KEY PLAN
ANNUNCIATOR DEVICE NUMBER
SHOWN IN CIRCLES

- NOTES:
1. FOR ANNUNCIATOR GENERAL NOTES - SEE ESK-10A, 10B & 10C.
 2. FOR ELEMENTARY DIAGRAMS - SEE ESK-10A8 THRU 10A10.
 3. FOR WIRING DIAGRAMS - SEE 12408-EE 30.

ANNUNCIATOR 44-BEND ARRANGEMENT & WIRING

EN 700
ILO 7554
FOR
CEN 553

WIRING ARRANGEMENT
ANNUNCIATOR 44 (PLATE 44) EN 1
UNIT NO. 4, BIG BEND STATION
TAMPA ELECTRIC COMPANY

12408-ESK-10AA

BEST AVAILABLE COPY

A PRECIPITATOR VOLTAGE HIGH 4LJ11	A PRECIPITATOR ANNUNCIATOR GROUND 4LJ12	OUTLET DISTRIBUTION PLATE RAPPER TROUBLE 4LJ13	RAPPER DRIVE MOTOR TROUBLE 4LJ14
INSULATOR COMPARTMENT FAN TROUBLE 4LJ21	INSULATOR COMPARTMENT FILTER CLOGGED 4LJ22	INSULATOR COMPARTMENT PRESSURE LOW 4LJ23	INSULATOR COMPARTMENT TEMP LOW 4LJ24
 4LJ31	 4LJ32	 4LJ33	 4LJ34
HOPPER 11A ASH LEVEL HIGH 4LJ41	HOPPER 12A ASH LEVEL HIGH 4LJ42	HOPPER 13A ASH LEVEL HIGH 4LJ43	HOPPER 14A ASH LEVEL HIGH 4LJ44
HOPPER 21A ASH LEVEL HIGH 4LJ51	HOPPER 22A ASH LEVEL HIGH 4LJ52	HOPPER 23A ASH LEVEL HIGH 4LJ53	HOPPER 24A ASH LEVEL HIGH 4LJ54
HOPPER 31A ASH LEVEL HIGH 4LJ61	HOPPER 32A ASH LEVEL HIGH 4LJ62	HOPPER 33A ASH LEVEL HIGH 4LJ63	HOPPER 34A ASH LEVEL HIGH 4LJ64
HOPPER 41A ASH LEVEL HIGH 4LJ71	HOPPER 42A ASH LEVEL HIGH 4LJ72	HOPPER 43A ASH LEVEL HIGH 4LJ73	HOPPER 44A ASH LEVEL HIGH 4LJ74
HOPPER 51A ASH LEVEL HIGH 4LJ81	HOPPER 52A ASH LEVEL HIGH 4LJ82	HOPPER 53A ASH LEVEL HIGH 4LJ83	HOPPER 54A ASH LEVEL HIGH 4LJ84
 4LJ91	 4LJ92	 4LJ93	 4LJ94

A PRECIPITATOR LOCAL ANN 4LJ WINDOW ARRANGEMENT & ENGRAVING
PRECIP - ELEVATION 105'

IV. Sulfur Dioxide Removal System

1. General Description

Big Bend Unit 4 is equipped with a Research-Cottrell Double Loop (TM) FGD system for the control of sulfur dioxide (SO₂) emissions. At least 90% of the potential SO₂ emissions will be reduced utilizing washed coal and the above FGD system as required by the PSD permit.

The Big Bend Unit 4 FGD system has been designed to provide for reliable FGD system operation. Tampa Electric Company's specification required the vendors to provide the best available equipment for the application, to provide 100% equipment redundancy on rotating equipment and major systems, and to provide the proper organization for initial operation.

2. Principle of Operation

The FGD system receives flue gas from the boiler I.D. fans discharge and either removes the required amount of SO₂ utilizing limestone (calcium carbonate, CaCO₃), and reheats the gas for discharge to the stack or directs the flue gas through the pressure relief damper (PRD) under emergency conditions. (See Figure 2).

Limestone (CaCO₃) slurry contacts the SO₂ in the flue gas in the absorber towers. In the towers, the conditions necessary for the SO₂ and CaCO₃ chemical reactions are maintained. The Unit 4 FGD system

consists of four absorber towers each capable of treating one third of the total gas flow.

The flue gas is directed tangentially into the quencher section of each absorber tower by the tower booster fan. The cyclonic motion of the gas in the quencher reduces gas velocity. The gas is cooled to saturation by spraying it with a solids-slurry mix, of which 3-5% of the solids is unreacted limestone and the remainder reaction products. This liquid to gas contact removes a small amount of the incoming SO_2 .

The gas then passes around the slurry bowl to the absorber loop. The gas is brought into contact with a solids slurry mix, of which 20-40% of the solids is unreacted limestone and the remainder reaction products. It is in the absorber section that the $\text{SO}_2/\text{CaCO}_3$ reaction is maximized and the required SO_2 removal is completed. Water entrained in the scrubbed gas stream is then removed by the mist eliminators in the absorber tower. The gas enters a common duct where it mixes with the gas exiting the other towers in service. The combined gases are reheated through direct contact with hot ambient air before entering the stack.

The number of towers in service and the amount of limestone reagent needed in the towers is dependent on the amount of flue gas being scrubbed and the SO_2 mass flow entering the towers.

3. Operation

Plant personnel will monitor FGD system performance by operator surveillance, the plant computer, laboratory analysis, and control room instrumentation. This instrumentation, includes but is not limited to, the process continuous monitoring equipment and process stream instrumentation on the control panels.

3.1 Analytical Work

Fuel, limestone, make-up water, return water, and process slurry streams will be sampled and analyzed for verification of continuous monitoring equipment, for monitoring mechanical equipment performance, and for monitoring process performance. Additionally, laboratory analyses will assure by-product gypsum quality and an efficient and cost effective operation.

3.2 FGD System Monitoring

The FGD system is equipped with instrumentation that continuously monitor the various operational parameters associated with the "scrubbing" process. The instrumentation indication includes, but is not limited to: flowrate, temperature, pressure, SO₂ concentrations, pH and density. Plant operators rely on all instrumentation and controls to monitor and operate the FGD system.

In addition to the above, continuous emission monitors (CEM) located in the FGD inlet duct and in the FGD outlet duct, are used to document the FGD system emissions and the FGD system percent SO₂ removal. The output from the CEMS is tied into a Honeywell software package in

the main computer. The computer processes the data into a format which documents the following:

1. The SO₂ emission rate from the FGD system (lb/MM BTU) .
2. The inlet SO₂ concentration.
3. The hourly, daily, and 30-day rolling averages of the inlet SO₂ and outlet SO₂ emissions.
4. The percent reduction in SO₂.
5. The 2-hour averages of outlet SO₂.

The software package also identifies an instrument malfunction or the following:

1. 2-hour averages of SO₂ emissions in excess of permit limitations.
2. 30-day rolling averages of SO₂ emissions in excess of permit limitations.
3. Reduction of SO₂ levels for the 30 day rolling averages less than the 90 percent reduction required by permit conditions.

4. Malfunction Response

4.1 General FGD

Plant operators will respond to problems identified through routine operator surveillance. When an exceedance of an emission limit is imminent, immediate operator action will be taken to identify and correct the problem in order to stay in compliance or to minimize stack

emissions. If the problem cannot be corrected by operator action, an MJR will be generated.

4.2 Pressure Relief Damper (PRD)

Flue gas leaving the induced draft fans can enter the stack in two ways, through the absorber towers or through the PRD. The PRD is open during boiler start-up on warm-up oil. When the boiler is burning coal, the PRD is closed, and all flue gas is directed through the absorber towers. The flue gas is routed through an absorber tower by the tower booster fan.

The PRD has two important functions:

1. To protect the boiler from back pressure due to loss of gas path.
2. To protect the FGD system from a boiler upset.

Because these functions are critical, redundant inlet temperature and inlet pressure signals are provided to a programmable controller. Redundant output signals are also provided from the programmable controller to de-energize the solenoids and operate the dampers in a "fast-open" mode. The PRD will fail "safe" in the open position in the event of a mechanical or control malfunction. This further reinforces the importance of its proper operation.

The following are conditions that will "fast open" the PRD indicating a unit upset or malfunction:

- a. Master Fuel Trip
- b. High FGD System Inlet Pressure
- c. Booster Fan Trip
- d. High FGD System Inlet Temperature
- e. Loss of Quencher Flow (in a tower that is in service)
- f. Loss of PC (programmable controller)
- g. Loss of instrument air
- h. Loss of 120V AC power to the solenoids

The alarm PRESSURE RELIEF DUCT DAMPER OPEN will be annunciated whenever the PRD is opened. This alarm will annunciate in both the FGD control room and the main plant control room. The cause for it opening (e.g., quencher low flow, high inlet temperature, and high inlet pressure), will annunciate in the FGD control room. The master fuel trip, as well as the cause for the master fuel trip, will alarm in the main plant control room.

a. MASTER FUEL TRIP

A master fuel trip will be initiated when an emergency condition requiring an immediate unit trip occurs. All fuel supplies to the boiler will be immediately shut off when the trip occurs.

b. HIGH FGD SYSTEM INLET PRESSURE

Increasing pressure in the ductwork between the induced draft fan discharge and the booster fan inlet (FGD inlet duct) will cause the booster fan inlet vanes to open in an attempt to maintain setpoint

pressure. If the inlet vanes reach 100% rating and the pressure continues to increase, the control logic will open the PRD. The absorber towers will remain in service and the PRD will remain opened to relieve the excess pressure. Because the opening of the PRD will cause the inlet duct pressure to drop, the booster fan inlet vanes controls will respond in attempt to maintain inlet duct setpoint pressure.

Both the high FGD system inlet pressure and the PRD opening will be alarmed in both the FGD control room and the main plant control room. When the PRD is open, unit generation will be curtailed at a rate consistent with responsible operating practices to minimize SO₂ emissions. When the fault is cleared, the PRD will be closed and generation will be restored.

In the event that the high inlet pressure is caused by a large boiler upset, the main plant control center operator will use his best judgement in stabilizing the boiler to protect plant equipment and personnel. This may or may not involve immediate generation curtailment. If it does not, generation will be reduced as soon as the control center operator is able to do so. When the upset is cleared the PRD will be closed directing 100% of the flue gas through the FGD system.

c. BOOSTER FAN TRIP

In the event of a booster fan trip, an automatic unit load "runback" is initiated by the boiler controls. The unit load runback is to one of two(2) predetermined load set points based on the gas flow condition at the time of the trip. One setpoint is for a two (2) tower operation, when three (3) fans are operating (3 tower operation) and one fan trips; the second setpoint is a lower load setpoint for a one (1) tower operation, when two (2) fans are operating (2 towers in operation) and one fan trips. The automatic runback of unit load is an attempt to lower the gas flow to prevent the PRD from opening on high inlet duct pressure.

If the PRD does open on a booster fan trip while the runback is active, the runback stops and holds that load value even though the setpoint has not been achieved. The main plant control center operator will release the hold and manually lower unit load until the operating tower(s) can accommodate the gas flow; the PRD will then be closed.

d. HIGH FGD INLET GAS TEMPERATURE

In the event that the FGD inlet duct temperature reaches 450 degrees F, the PRD will open, the booster fan inlet vanes will close, and the deluge water valve for each tower in service will open. This control action is for tower thermal protection. When the PRD is verified open, the control logic will close the absorber tower inlet and outlet isolation dampers and trip the booster fans;

when the isolation dampers are verified fully closed, the deluge valve will close. Alarms will annunciate in both the main plant and FGD control rooms indicating that the FGD system inlet gas temperature is high and that the PRD is open. This is an emergency condition requiring an immediate reduction in generation or an initiation of a unit trip by the main plant control center operator.

e. LOSS OF QUENCHER FLOW IN A TOWER IN SERVICE

One quencher pump with adequate flow is required for a tower in service to quench the gas for SO₂ absorption and thermal protection of tower internals. In the event that low flow is indicated by low pump motor wattage, the standby pump will receive a start command. If adequate flow is not restored within 3 minutes, the PRD will open. Alarms will indicate the PRD opening in both the main plant and FGD control rooms. In addition, a quencher low flow alarm on the effected tower will annunciate in the FGD control room. Once the PRD is verified open, the control logic will isolate the tower with the low flow condition by closing the tower inlet and outlet isolation dampers and tripping the tower booster fan. The remaining tower(s) in service will stay in service. Because the opening of the PRD will cause the inlet duct pressure to drop, the booster fan inlet vanes controls will respond in attempt to maintain inlet duct set point pressure.

Generation will be reduced until the remaining towers in service can accommodate the gas flow at which time the PRD will be closed. When the fault is cleared or another tower is readied for service, generation will be restored.

f. LOSS OF PROGRAMMABLE CONTROLLER (PC)

Loss of the PC will cause all FGD mechanical components to fail "safe". The PRD will open and all towers inlet and outlet isolation dampers will close causing all boiler flue gas to bypass the FGD system. The main plant control center operator will reduce generation in order to minimize SO₂ emissions. When the back-up programmable controller has been made operational and the correct logic has been established, the FGD system will be returned to service, and the PRD closed. Generation will then be restored.

g. LOSS OF INSTRUMENT AIR

A loss of main plant instrument air will trip the unit and cause the PRD to fail "safe" in the open position.

A loss of instrument air to the PRD solenoids will also cause the PRD to fail "safe" in the open position. In the latter case, the FGD tower(s) are still operational. Because the opening of the PRD will cause the inlet duct pressure to drop, the booster fan inlet vanes controls will respond in attempt to maintain inlet duct set point pressure. The main plant control center operator will

reduce generation in order to minimize SO₂ emissions. When instrument air to the PRD solenoids is reestablished the PRD will be closed and generation will be restored.

h. LOSS OF 120V AC POWER

Loss of power to the solenoids will cause the PRD to fail "safe" in the open position. In this case, the FGD tower(s) are still operational. Because the opening of the PRD will cause the inlet duct pressure to drop, the booster fan inlet vanes controls will respond in attempt to maintain inlet duct set point pressure. The main plant control center operator will reduce generation in order to minimize SO₂ emissions. This will continue until power is restored to the PRD. When power is restored, the PRD will be closed and load will be restored.

4.3 PRD Testing

Because of the importance of the PRD responding under emergency conditions, it will be fully stroked once per day. Test control switches have been provided solely for this purpose. The FGD system will remain in service during this activity, which should require approximately forty seconds.

4.4 Emergency Communications

In the event of an emergency condition the person in charge (Supervisor of Plant Operations) will contact the plant general manager or his designated assistant.

Information containing the time of upset, the cause of upset, the corrective action taken, and the actions taken to minimize air emissions will be documented by plant operations. The log will be reviewed by the FGD engineer who will notify Tampa Electric Company's Environmental Planning Department. The Environmental Planning Department will implement notifications to the Environmental agencies, as necessary.

5. Repair Procedures

FGD Repair Procedures are similar to that for the Electrostatic Precipitator. See Section III.5.

V. Continuous Emission Monitors (CEM)

1. Equipment Application

Big Bend Unit 4 is equipped with continuous emission monitors to analyze flue gas for SO_2 , NO_x , O_2 , and opacity. These monitors supply data that is necessary to ensure environmental compliance when the unit is in operation. Each of these process variables is discussed below.

1.1 SO_2

SO_2 concentration is measured at both the inlet and outlet ducts of the FGD system. The two measurements are used jointly to determine overall percent SO_2 removal by the FGD system. The outlet duct concentration is used to determine SO_2 emissions.

SO_2 concentration at the outlet duct is measured by a Lear Siegler Model SM 810 in-situ SO_2/NO_x dual gas analyzer. SO_2 concentration at the inlet duct is measured by a Lear Siegler Model SM 810 in-situ SO_2 single gas analyzer. Both analyzers provide analog signals representing SO_2 concentration and flue gas temperature to the plant process computer and to a strip chart recorder located in the plant main control room. The plant process computer will convert the analog signal to pounds SO_2 per MM BTU and the strip chart recorder will indicate SO_2 concentration in ppm. In the event that SO_2 concentration exceeds a predetermined setpoint, an annunciator panel alarm in the plant main control room will alert operators to higher than normal SO_2 level.

Each analyzer also provides a digital signal to the plant process computer anytime it is in a malfunction condition or in a zero/span calibration mode. Additionally, the computer will also log any occurrence of the analyzer exceeding calibration span.

1.2 NO_x

NO_x concentration is measured at both the inlet and outlet ducts of the FGD system. Either the inlet or outlet duct signals can be used to determine NO_x emissions.

NO_x concentration in the outlet duct is measured by a Lear Siegler Model SM 810 in-situ SO₂/NO_x dual gas analyzer. This is the same analyzer used to measure SO₂ concentration in the outlet duct of the FGD system. NO_x concentration in the inlet duct is measured by a Dupont Model 461 extractive NO_x analyzer.

Either monitor can be used to provide an analog signal representing NO_x concentration to the plant process computer and to a strip chart recorder located in the plant main control room. The plant process computer will convert the analog signal to pounds NO_x per MM BTU and the strip chart recorder will indicate NO_x concentration in ppm. In the event that NO_x concentration exceeds a predetermined setpoint, an annunciator panel in the main plant control room will alert operators to higher than normal NO_x level.

Each analyzer also provides a digital signal to the plant process computer anytime it is in a malfunction condition or in zero/span calibration mode. Additionally, the computer will also alarm any occurrence of the analyzer exceeding calibration span.

1.3 O₂

O₂ concentration is measured at both the inlet and outlet ducts of the FGD system. These values are used by the plant process computer to calculate SO₂ and NO_x emissions using a dry basis F factor (Fd).

O₂ concentration in both the inlet and outlet ducts is measured by a Lear Siegler Model CM 50 in-situ dilutant O₂ analyzer.

Both analyzers provide analog signals representing dilutant O₂ concentration to the plant process computer and to a strip chart recorder located in the plant main control room.

Each analyzer also provides a digital signal to the plant process computer anytime the analyzer is in a malfunction condition or in a zero/span calibration mode.

1.4 Opacity

Opacity is measured at the inlet duct of the FGD system by a Contraves Goerz Model 400 Opacity monitor coupled with a Model 500 Remote display unit.

This analyzer provides an analog signal representing opacity to the plant process computer and to a strip chart recorder located in the plant main control room. In the event that opacity exceeds a predetermined setpoint, an alarm in the plant main control room will alert operators to a higher than normal opacity level.

This analyzer also provides a digital signal to the plant process computer anytime the analyzer is in a malfunction condition or zero/span calibration mode.

2. Monitor Maintenance

In order to ensure continuous, accurate and reliable monitor performance, the following preventative maintenance checks will be initiated:

2.1 Lear Siegler, Inc; SM810

Daily

- Check security of mounting bolts, especially at the probe/flange interface
- Check fault monitors
- Check effluent temperature
- Check reference light intensity
- Review data file since last visit

Weekly

- Manually zero/span

- Inspect/clean optics system
- Check air purge system

Quarterly

- Grease probe
- Performed dynamic calibration
- Check heat blanket temperature

Semi-annual

- Inspect, clean and align optics plate assemblies
- Inspect and lubricate moving parts
- Inspect probe tubing and measurement cavity
- Clean window
- Align probe and transceiver
- Inspect J-Box, check operation
- Check calibration drifts
- Calibrate total system

Annual

- Replace probe filter

2.2 Dupont Co. Model 461

Daily

- Check sensing line heaters
- Check oven temperature
- Check sample flow
- Check oxygen pressure gauge
- Check sample vacuum indication
- Verify computer and recorder indication
- Verify 24 hour span check

Weekly

- Compare Meter Function Switch indicated values to calibration data.

Quarterly

- Check for loose or corroded terminations and fittings
- Perform amplifier Balance Test

Semi-annual

- Perform linearity Test
- Perform lamp Voltage Test
- Perform leak Test
- Perform analog Signal Processor Calibration

2.3 Lear Siegler Inc.; CM50

Daily

- Check fault monitors
- Review data file since last visit

Weekly

- Insure all fault indicators are in working order
- Check for agreement between recording mediums
- Check flow values
- Check air pressure
- Check probe temperature
- Perform an operational calibration

Quarterly

- Grease probe

Semi-annual

- Inspect/clean probe
- Calibrate probe heater circuit
- Calibrate cold junction correction circuitry
- Perform leak test
- Test output loops
- Clean, and inspect all switches, relays and solenoids
- Check TV and RMI/EMI circuits
- Check drift rate

Annually

- Replace ceramic probe filter

2.4 Contraves Goerz Corp.; Model 400/500

Daily

- Check fault monitors
- Review automatic zero and span values for excessive drift rate trends

Weekly

- Check function of all fault monitors
- Manually calibrate

Quarterly

- Clean optics
- Clean chopper
- Replace air filters
- Replace optical head dessicant
- Replace retroreflector dessicant

Semi-annual

- Clean and inspect optics/electronics
- Perform 24-hour calibration drift test
- Perform calibration error test
- Clean and inspect air flow system assemblies

3. Malfunction Response

When a problem is identified with any of the continuous emission monitors that causes a loss of data, the immediate operator action will be taken to correct the problem in order to resume data collection. If the problem cannot be corrected by operator action, an MJR will be generated to correct the problem.

In the event the malfunctioning CEM cannot be repaired to obtain the minimum data capture required by the environmental regulations, alternative monitoring system will be available to the plant to provide back-up data capture.

4. Repair Procedures

All maintenance work is initiated by a Maintenance Job Request (MJR). All operating, maintenance and engineering personnel share the responsibility of originating MJR's.

In the event of a CEM malfunction, an emergency MJR will be initiated and immediate action will be taken to identify the malfunction and correct the problem. An MJR is not needed to start emergency type work.



April 30, 1982

Mr. Steve Smallwood
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32301

*8/91 was certified
for construction*

DER
MAY 03 1982
BAQM

Re: Tampa Electric Company
Big Bend Unit No. 4

Dear Mr. Smallwood:

As per Section I.D.2 of the Conditions of Certification for Big Bend Unit 4, quarterly reporting of ambient air monitoring data to the Bureau of Air Quality Management is required. Enclosed is a corrected copy of the twenty-four hour sulfur dioxide data for the fourth quarter of 1981.

The data collected from November 15, 1981 to December 30, 1981 at one of the air monitoring stations is considered invalid.

If you have any questions concerning this data, please contact me.

Sincerely,

Jerry L. Williams, P.E.
Director
Environmental Planning

JLW:dh
Enclosure

CENTRAL TESTING LABORATORY
 STATISTICAL ANALYSIS
 TAMPA BAY AREA, FLORIDA
 OCTOBER 1981-DECEMBER 1981
 24 HOUR SO₂ DATA SUMMARY
 MICROGRAMS PER CUBIC METER

STATION NUMBER	NUMBER OF OBSERVATIONS	MINIMUM OBSERVATION	MAXIMUM OBSERVATION	2ND MAXIMUM OBSERVATION	ARITHMETIC MEAN	STANDARD DEVIATION
2	24	0.0	42.31	38.30	12.79	11.89
3	19	0.0	32.56	25.56	12.01	9.78
5	19	0.0	81.98	40.90	14.90	20.17
9	27	0.0	28.86	25.16	10.14	9.16
10	13	0.0	40.90	30.91	11.77	13.63
17	25	0.0	28.37	19.01	5.54	7.44

CENTRAL TESTING LABORATORY
TAMPA BAY AREA
24 HOUR SO2 DATA SUMMARY

DATE SAMPLED	START TIME	AMBIENT TEMPERATURE	STATION NUMBER	UG/M3	P.P.B.
10/01/81	0001	93	2	38.30	14.63
10/01/81	0001	95	3	25.56	9.76
10/01/81	0001	90	5	25.42	9.71
10/01/81	0001	90	9	25.16	9.61
10/01/81	0001	90	10	40.90	15.63
10/01/81	0001	78	17	28.37	10.84
10/04/81	0001	93	2	0.0	0.0
10/04/81	0001	92	3	0.57	0.22
10/04/81	0001	91	5	0.57	0.22
10/04/81	0001	92	9	0.0	0.0
10/04/81	0001	91	10	0.0	0.0
10/04/81	0001	78	17	0.0	0.0
10/07/81	0001	87	2	8.95	3.42
10/07/81	0001	90	3	17.14	6.55
10/07/81	0001	86	5	20.40	7.79
10/07/81	0001	90	9	19.57	7.47
10/07/81	0001	88	10	7.90	3.02
10/07/81	0001	80	17	0.0	0.0
10/10/81	0001	88	2	20.79	7.94
10/10/81	0001	94	3	21.26	8.12
10/10/81	0001	89	5	81.98	31.32
10/10/81	0001	91	9	3.57	1.36
10/10/81	0001	85	10	22.51	8.60
10/10/81	0001	75	17	17.52	6.69

DATE SAMPLED	START TIME	AMBIENT TEMPERATURE	STATION NUMBER	UG/M3	P.P.B.
10/13/81	0001	**	2	**.**	**.**
10/13/81	0001	**	3	**.**	**.**
10/13/81	0001	**	5	**.**	**.**
10/13/81	0001	**	9	**.**	**.**
10/13/81	0001	**	10	**.**	**.**
10/13/81	0001	**	17	**.**	**.**
10/16/81	0001	**	2	**.**	**.**
10/16/81	0001	**	3	**.**	**.**
10/16/81	0001	83	5	2.29	0.87
10/16/81	0001	89	9	9.07	3.47
10/16/81	0001	81	10	5.14	1.96
10/16/81	0001	**	17	**.**	**.**
10/19/81	0001	**	2	**.**	**.**
10/19/81	0001	**	3	**.**	**.**
10/19/81	0001	**	5	**.**	**.**
10/19/81	0001	89	9	4.00	1.53
10/19/81	0001	**	10	**.**	**.**
10/19/81	0001	**	17	**.**	**.**
10/22/81	0001	87	2	24.54	9.37
10/22/81	0001	90	3	19.59	7.48
10/22/81	0001	86	5	24.09	9.20
10/22/81	0001	88	9	18.94	7.24
10/22/81	0001	85	10	27.02	10.32
10/22/81	0001	**	17	**.**	**.**

DATE SAMPLED	START TIME	AMBIENT TEMPERATURE	STATION NUMBER	UG/M3	P.P.B.
10/25/81	0001	95	2	42.31	16.16
10/25/81	0001	**	3	**.**	**.**
10/25/81	0001	**	5	**.**	**.**
10/25/81	0001	89	9	3.13	1.20
10/25/81	0001	92	10	4.80	1.83
10/25/81	0001	81	17	3.74	1.43
10/28/81	0001	81	2	4.55	1.74
10/28/81	0001	83	3	14.87	5.68
10/28/81	0001	80	5	8.26	3.15
10/28/81	0001	77	9	28.86	11.02
10/28/81	0001	79	10	30.91	11.81
10/28/81	0001	80	17	0.0	0.0
10/31/81	0001	81	2	1.96	0.75
10/31/81	0001	85	3	0.62	0.24
10/31/81	0001	83	5	0.0	0.0
10/31/81	0001	88	9	0.0	0.0
10/31/81	0001	81	10	4.80	1.83
10/31/81	0001	74	17	0.0	0.0
11/03/81	0001	89	2	7.95	3.04
11/03/81	0001	85	3	0.64	0.24
11/03/81	0001	83	5	0.0	0.0
11/03/81	0001	85	9	0.64	0.24
11/03/81	0001	84	10	4.84	1.85
11/03/81	0001	76	17	0.0	0.0

DATE SAMPLED	START TIME	AMBIENT TEMPERATURE	STATION NUMBER	UG/M3	P.P.B.
11/06/81	0001	81	2	6.59	2.52
11/06/81	0001	83	3	4.16	1.59
11/06/81	0001	**	5	**.**	**.**
11/06/81	0001	83	9	19.11	7.30
11/06/81	0001	80	10	1.80	0.69
11/06/81	0001	70	17	1.86	0.71
11/09/81	0001	83	2	24.49	9.36
11/09/81	0001	81	3	2.35	0.90
11/09/81	0001	**	5	**.**	**.**
11/09/81	0001	80	9	3.03	1.16
11/09/81	0001	83	10	1.81	0.69
11/09/81	0001	81	17	1.88	0.72
11/12/81	0001	84	2	4.15	1.58
11/12/81	0001	74	3	9.16	3.50
11/12/81	0001	**	5	**.**	**.**
11/12/81	0001	79	9	8.85	3.38
11/12/81	0001	87	10	0.60	0.23
11/12/81	0001	84	17	5.45	2.08
11/15/81	0001	77	2	7.71	2.94
11/15/81	0001	76	3	10.81	4.13
11/15/81	0001	80	5	1.75	0.67
11/15/81	0001	78	9	1.17	0.45
11/15/81	0001	**	10	**.**	**.**
11/15/81	0001	77	17	0.0	0.0

DATE SAMPLED	START TIME	AMBIENT TEMPERATURE	STATION NUMBER	UG/M3	P.P.B.
11/18/81	0001	75	2	19.50	7.45
11/18/81	0001	72	3	19.32	7.38
11/18/81	0001	72	5	24.29	9.28
11/18/81	0001	72	9	24.30	9.28
11/18/81	0001	**	10	**.**	**.**
11/18/81	0001	73	17	15.75	6.02
11/21/81	0001	84	2	20.97	8.01
11/21/81	0001	76	3	12.56	4.80
11/21/81	0001	79	5	25.55	9.76
11/21/81	0001	75	9	21.39	8.17
11/21/81	0001	**	10	**.**	**.**
11/21/81	0001	81	17	19.01	7.26
11/24/81	0001	72	2	0.0	0.0
11/24/81	0001	**	3	**.**	**.**
11/24/81	0001	**	5	**.**	**.**
11/24/81	0001	70	9	9.72	3.71
11/24/81	0001	**	10	**.**	**.**
11/24/81	0001	**	17	**.**	**.**
11/27/81	0001	**	2	**.**	**.**
11/27/81	0001	**	3	**.**	**.**
11/27/81	0001	70	5	4.22	1.61
11/27/81	0001	**	9	**.**	**.**
11/27/81	0001	**	10	**.**	**.**
11/27/81	0001	75	17	5.17	1.98

DATE SAMPLED	START TIME	AMBIENT TEMPERATURE	STATION NUMBER	UG/M3	P.P.B.
11/30/81	0001	**	2	***	***
11/30/81	0001	**	3	***	***
11/30/81	0001	**	5	***	***
11/30/81	0001	82	9	3.52	1.34
11/30/81	0001	**	10	***	***
11/30/81	0001	79	17	3.63	1.38
12/03/81	0001	78	2	18.69	7.14
12/03/81	0001	**	3	***	***
12/03/81	0001	**	5	***	***
12/03/81	0001	80	9	10.63	4.06
12/03/81	0001	**	10	***	***
12/03/81	0001	81	17	9.10	3.47
12/06/81	0001	75	2	16.46	6.29
12/06/81	0001	81	3	11.80	4.51
12/06/81	0001	80	5	5.97	2.28
12/06/81	0001	74	9	5.89	2.25
12/06/81	0001	**	10	***	***
12/06/81	0001	77	17	5.88	2.25
12/09/81	0001	**	2	***	***
12/09/81	0001	77	3	2.93	1.12
12/09/81	0001	80	5	2.44	0.93
12/09/81	0001	80	9	17.28	6.60
12/09/81	0001	**	10	***	***
12/09/81	0001	78	17	10.56	4.03

DATE SAMPLED	START TIME	AMBIENT TEMPERATURE	STATION NUMBER	UG/M3	P.P.B.
12/12/81	0001	61	2	3.15	1.20
12/12/81	0001	62	3	22.24	8.50
12/12/81	0001	71	5	40.90	15.62
12/12/81	0001	69	9	20.97	8.01
12/12/81	0001	**	10	**.**	**.**
12/12/81	0001	71	17	5.23	2.00
12/15/81	0001	78	2	4.29	1.65
12/15/81	0001	80	3	32.56	12.44
12/15/81	0001	**	5	**.**	**.**
12/15/81	0001	**	9	**.**	**.**
12/15/81	0001	**	10	**.**	**.**
12/15/81	0001	76	17	0.0	0.0
12/18/81	0001	0	2	0.0	0.0
12/18/81	0001	**	3	**.**	**.**
12/18/81	0001	55	5	10.14	3.87
12/18/81	0001	58	9	10.79	4.12
12/18/81	0001	**	10	**.**	**.**
12/18/81	0001	80	17	0.0	0.0
12/21/81	0001	54	2	0.0	0.0
12/21/81	0001	**	3	**.**	**.**
12/21/81	0001	**	5	**.**	**.**
12/21/81	0001	60	9	0.0	0.0
12/21/81	0001	**	10	**.**	**.**
12/21/81	0001	62	17	0.0	0.0

DATE SAMPLED	START TIME	AMBIENT TEMPERATURE	STATION NUMBER	UG/M3	P.P.B.
12/24/81	0001	78	2	12.06	4.61
12/24/81	0001	80	3	0.0	0.0
12/24/81	0001	76	5	0.0	0.0
12/24/81	0001	85	9	0.0	0.0
12/24/81	0001	**	10	***	**.*
12/24/81	0001	70	17	0.0	0.0
12/27/81	0001	**	2	***	**.*
12/27/81	0001	**	3	***	**.*
12/27/81	0001	**	5	***	**.*
12/27/81	0001	**	9	***	**.*
12/27/81	0001	**	10	***	**.*
12/27/81	0001	**	17	***	**.*
12/30/81	0001	85	2	19.55	7.47
12/30/81	0001	**	3	***	**.*
12/30/81	0001	84	5	4.83	1.84
12/30/81	0001	83	9	4.11	1.57
12/30/81	0001	**	10	***	**.*
12/30/81	0001	79	17	5.26	2.01



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

MAR 31 1982

REF: 4AW-AF

DER
APR 5 1982
BAQM

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

Re: PSD-FL-040

Dear Mr. Turner:

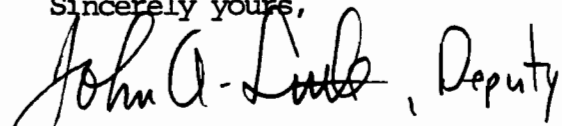
On February 16, 1982, Tampa Electric Company applied for a minor modification to their application to construct a fourth unit at their existing Big Bend facility. TECO received a PSD permit to construct this coal-fired boiler on November 14, 1981. The proposed modification to unit #4 would consist of the construction of a new stack to accommodate the exhaust gas stream from the #4 boiler.

A public notice delineating this proposed change in the application appeared in the Tampa Tribune on February 22, 1982. This announced public comment period closed fifteen (15) days later and no comments were received.

EPA concludes, that since this proposed construction modification does not contribute to any significant emissions increases or additional increment consumption, the modification is hereby accepted. This letter granting authority for the construction modification described in TECO's February 16, 1982 submittal should be attached to and become a part of your November 14, 1981 permit. In addition, TECO's February 16, 1982 submittal will become an amendment to the original application.

Any questions concerning this approval may be directed to Mr. Kent Williams, Chief, New Source Review Section, at (404) 881-4552.

Sincerely yours,

for  Deputy
Charles R. Jeter
Regional Administrator

Best Available Control Technology (BACT) Determination

Tampa Electric Company

Hillsborough County

Tampa Electric Company proposes to increase electric generating capacity by the addition of a 425 megawatt coal-fired steam generating unit to the existing Big Bend facility located near Tampa, Florida. The unit will use approximately 207 tons per hour of bituminous coal with a maximum sulfur content of 4.0 percent by weight. In addition, coal and limestone materials handling, storage and preparation systems will be constructed. The unit is scheduled to start up during the first quarter of 1985.

BACT Determination Requested by the Applicant:

<u>Pollutant</u>	<u>Emission Limit lb/million BTU</u>	<u>Percent Reduction</u>
Particulate	0.03	99.7
NO _x	0.60	65.0
SO ₂	90% reduction	90.0

Particulates will be controlled by an electrostatic precipitator (ESP); SO₂ emissions will be minimized by a combination of coal washing and use of a flue gas desulfurization (FGD) system; NO_x will be minimized by proper design and operation of the boiler and combustion air control system.

Review Group Members:

There was no formal review group. Comments and recommendations were obtained from the BAQM New Source Review Section and Air Modeling Section, the Power Plant Siting Committee, the Hillsborough County Environmental Protection Commission and the DER Southwest District office.

BACT Determination by DER:

<u>Pollutant</u>	<u>Emission Limit lb/million BTU</u>	<u>Minimum Reduction</u>
Particulate	0.03	99%
SO ₂	1.2	90%
NO _x	0.6	65%
VE	20% (6-minute average), except one 6-minute period per hour of not more than 27% opacity	

Justification of DER Determination:

The facility is located in the area of influence of the Hillsborough county nonattainment area for particulate matter (17-2.13(1)(2)F.A.C.). The major modification does not significantly impact the nonattainment area and is therefore exempt from the nonattainment requirements (17-2.17(2)(b)F.A.C.). It must, however, comply with the provisions of 17-2.04 F.A.C. (Prevention of Significant Deterioration).

No increase in pollutant concentration over the baseline is allowed unless BACT is employed to control emissions. BACT in this case is determined to be equivalent to the New Source Performance Standard (NSPS) Subpart Da, Section 60.40a, promulgated June 11, 1979. Federal Register (44 FR 33580).

Details of the Analysis May be Obtained by Contacting:

Edward Palagyi, BACT Coordinator
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32307

Recommended By:

Lawrence A. George Has
Steve Smallwood, Chief, BAQM

Date: April 9, 1981

Approved:

Victoria Tschinkel
Victoria Tschinkel, Secretary

Date: April 10, 1981



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

FEB 19 1982

REF: 4AW-AF

DER

FEB 22 1982

BAQM

Mr. Steve Smallwood
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32301

Dear Mr. Smallwood:

Enclosed please find a public notice plus documentation for a permit modification requested from TECO. This request to modify is for PSD-FL-040, Big Bend Unit 4. If you have any questions or comments regarding this request, please contact Dr. Kent Williams of my staff at 404/881-4552.

Sincerely yours,

Tommie A. Gibbs

Tommie A. Gibbs
Chief
Air Facilities Branch

Enclosure

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

KAHEL		FANCY		STARNES	
BLOMMEL		THOMAS		MARTY HALL	
BARKER		GEORGE		MARSHALL MOTT-SMITH	
J. ROGERS		PALAGYI			

REMARKS

DISPOSITION

REVIEW & RETURN
REVIEW & FILE
INITIAL & FORWARD

DISPOSITION

REVIEW & RESPOND
PREPARE RESPONSE
FOR MY SIGNATURE
FOR YOUR SIGNATURE
LET'S DISCUSS
SET UP MEETING
INVESTIGATE & REPORT
INITIAL & FORWARD
DISTRIBUTE
CONCURRENCE
FOR PROCESSING
INITIAL & RETURN

*EPA PSD Permit
TECO By Hand*

*copy Buck One (sent 2/24 PA)
to: Larry ~~Biller~~
for comment*

No comment, we sent Buck a memo on this saying no changes needed in conditions of certification.

File: PSD-FL-040

FROM:

STEVE SMALLWOOD

SS

DATE

2-24

PHONE

Best Available Copy



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

FEB 19 1982

REF: 4AW-AF

Mr. Jerry L. Williams, Director
Environmental Planning
Tampa Electric Company
P. O. Box 111
Tampa, Florida 33601

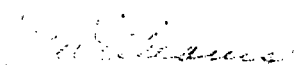
Dear Mr. Williams:

Enclosed is a public notice for the modification of the PSD permit for TECO's Big Bend Unit No. 4. Please place this in the Tampa Tribune and send the affidavit to our office.

In addition, I have enclosed the materials to be put on display in Roger Stewart's office at the Hillsborough County Environmental Protection Commission. I am requesting that you deliver them for public viewing so that the publication of the notice can be coordinated with the public availability of these materials.

Thank you for your assistance.

Sincerely yours,


Kent C. Williams
Chief
New Source Review Section

Enclosure(s)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

FEB 19 1982

REF: 4AW-AF

Mr. Roger P. Stewart, Director
Hillsborough County Environmental
Protection Commission
1900 9th Avenue
Tampa, Florida 33605

Dear Mr. Stewart:

The Tampa Electric Company has requested a minor permit modification to a previously issued federal PSD permit, PSD-FL-040. The modification request, along with a public notice to be published in the Tampa Tribune, accompanys this letter. Please maintain these materials in the Commission's offices for public review until the comment period closes. The comment period is for 15 days and begins on the date the notice is published in the newspaper. We will notify you as to the close of the comment period based upon the date the notice first appears.

Thank you for your assistance. If you have any questions, please contact Dr. Kent Williams of my staff at 404/881-4552.

Sincerely yours,

Tommie A. Gibbs
Chief
Air Facilities Branch

Enclosure

cc: FL DER

PUBLIC NOTICE

On October 15, 1981, the Tampa Electric Company (TECO) received a federal Prevention of Significant Deterioration permit, PSD-FL-040, to modify an existing air pollution source near the City of Tampa in Hillsborough County, Florida. The modification consisted of the construction of a coal-fired steam electric generating station with a 425 megawatt capacity.

TECO has requested a minor permit modification from the U.S. Environmental Protection Agency. The modification will result in no new emissions above those previously permitted nor will there be any increase in ambient air quality impacts from the new unit. No increase in increment consumption will result. TECO's request, along with supporting documentation, are available for public review in the office of Mr. Roger P. Stewart, Hillsborough County Environmental Protection Commission, 1900 9th Avenue, Tampa, Florida 33605.

Any person may submit written comments regarding this proposed permit modification. All comments received not later than 15 days from the date of this notice will be considered in the permit modification request. Letters should be addressed to:

Mr. Tommie A. Gibbs
Chief, Air Facilities Branch
U. S. Environmental Protection Agency
345 Courtland Street
Atlanta, Georgia 30365



February 16, 1982

Mr. Kent Williams
Chief, New Source Review Section
U.S. Environmental Protection Agency
345 Courtland Street
Atlanta, Georgia 30365

Dear Mr. Williams:

In accordance with discussions at your recent meeting with Heywood Turner, enclosed is a summary of the effects of the new stack for Big Bend Unit No. 4. This information demonstrates that only very minor changes in impacts will occur as a result of the new stack. In addition, there will be no changes in emissions from Unit No. 4. Based upon our review, we believe that further review of Unit No. 4, under 40 C.F.R., Section 52.21, is not required.

Should you have any questions concerning the foregoing, please contact us.

Sincerely,

A handwritten signature in cursive script that reads "Jerry L. Williams".

Jerry L. Williams, P.E.
Director
Environmental Planning

JLW:dh
Enclosure
cc: Howard D. Zeller
Heywood A. Turner

INTRODUCTION

Big Bend Unit 4 was originally designed to share an existing common stack with Unit 3. Information which has recently become available indicates that significant technical and subsequent operational problems will occur if this arrangement is used.

Although there are numerous problems associated with the use of a common stack for both units, the basic problem is the corrosive nature of the flue gas when it cools and condenses sulfuric acid, or when it has been "scrubbed" and therefore saturated and acidic. The only condition which is worse is when cold, scrubbed flue gas is mixed with hot, unscrubbed flue gas and the temperature of the sulfuric acid which condenses is raised resulting in more severe corrosion. During the past year, this problem has become apparent at two flue gas desulfurization installations where extreme corrosion has resulted from the conditions.

To avoid exposing the outlet ducts of Unit 3 to scrubbed flue gas from Unit 4 when Unit 3 is down, it would be necessary to install two (2) isolation dampers in the outlet ductwork of Unit 3. Because of the corrosive nature of the flue gas, these dampers would have to be constructed of an alloy such as Inconel 625 which is very expensive. To avoid exposing the outlet ductwork of Unit 4 to Unit 3 flue gas which would condense acid in stagnant areas, it would be necessary to install isolation dampers in the Unit 4 outlet ductwork. In addition, the four (4) breechings, the metal ductwork between the concrete shell of the stack and the brick liner, would be exposed to all of the various flue gas conditions: scrubbed, unscrubbed and mixed flue gas. This would require replacement of the existing carbon steel breechings with an alloy such as Inconel 625 or a lining over the carbon steel.

Even with the use of alloys and/or linings, high maintenance of the dampers and breechings is expected as a result of the corrosive nature of the flue gas. Dampers, in general, are very unreliable and when exposed to these conditions, reliability can be expected to decrease. In regard to the breechings, the architect/engineer recommended that regardless of what material is used, inspections should be performed at least every six (6) months and repairs should be done annually to prevent catastrophic failure. To perform the required maintenance on the isolation dampers and breechings, simultaneous outages for Unit 3 and Unit 4 would be required because of the location of this equipment. This

would be the major impact on the reliability and availability of these two (2) units in regard to this problem. In addition, to remove and replace the existing Unit 3 carbon steel breechings with alloy breechings and to install the Unit 3 isolation dampers, would require significant downtime for Unit 3.

In summary, because of the capital and operating cost of the required isolation dampers and new breechings and the impact on availability of both units that a common stack would have, the economic and technical aspects of constructing a new stack at Big Bend Station have been evaluated and compared to the cost associated with the current arrangement of the shared stack. The conclusion of the evaluation is that the construction of a new stack for Unit 4 is the most feasible solution.

NEW STACK CONFIGURATION

The new stack for Unit 4 will be constructed on the west side of the flue gas desulfurization system and directly south of the existing eastern most stack. The location is illustrated on the attached plot plan. The engineering and construction effort associated with locating the new stack in this area will not delay the Unit 4 commercial operation date.

The new stack height will be 490 feet with a maximum inside diameter of 24 feet. These dimensions are equivalent to those of the two existing stacks. These physical dimensions of the new stack coupled with the fact that there will be no change in Unit 4 air emissions or flue gas flow parameters as a result of the addition, make the Unit 4 air quality impacts of the new stack scenario equivalent to the air quality impacts originally predicted for a shared common stack with Unit 3 off-line, a case detailed in the Unit 4 PSD application.

IMPACT ON AMBIENT AIR QUALITY

SULFUR DIOXIDE

Environmental Science and Engineering, Inc. performed a computer modeling evaluation of the Big Bend generating facility with Unit 4 exhaust gases exiting through a new, separate stack. The flue gas parameters and heat input rate for the boilers were the same as those in the original Unit 4 PSD analysis. The parameters for the new stack were identical to those for the existing stack serving Unit 3

(i.e. 490 feet tall, 24 feet I.D.). Unit 4 was modeled at the maximum NSPS limit of 1.2 lbs. sulfur dioxide/MM BTU heat input rate, thus the modeling is conservative. The methodology used and the results of the analysis are discussed below.

The United States Environmental Protection Agency (EPA) / Florida Department of Environmental Regulation (FDER) approved single source (CRSTER) model, along with a 5-year meteorological data base (1970-1974) from Tampa International Airport, were used to determine worst case meteorological periods for two scenarios. Receptor ranges extended from 0.5 kilometers to 5.0 kilometers with a 0.5 kilometer spacing. Several emission cases were evaluated for each scenario.

Scenario I included all four units on-line with Units 1 and 2 exiting through one stack, and Unit 3 and Unit 4 each exiting through separate stacks. Plant load conditions evaluated consisted of 100%, 75% and 50%.

Scenario II included Unit 1 on-line and Unit 2 off-line with Unit 3 and Unit 4 each exiting through separate stacks. Plant load conditions evaluated consisted of 100% and 75% only, since Scenario I and past Big Bend modeling showed that 50% load is not critical in determining maximum impact concentrations.

Results of the CRSTER modeling were refined using the EPA/FDER approved Industrial Source Complex model (ISC). Receptors were located at 0.1 km intervals. Interaction with other sources were included in the refinement runs, as was performed in the Big Bend 4 PSD application evaluation.

The highest, second-highest 3-hour concentration of 1188 ug/m³ occurred at 100% load for Scenario I. No significant contribution from other sources occurred for these conditions. This scenario also resulted in the highest, second-highest 24-hour concentration, due to all sources of 208 ug/m³. TECO's contribution was 85% of the total concentration (177 ug/m³). The results of the computer modeling predicts there will be no violation of Florida Ambient Air Quality Standards.

The table below compares the results of this analysis (Case IV) to the worst case sulfur dioxide ambient air quality impacts originally predicted. The originally predicted impacts of Unit 4 operating alone do not change with the additional stack.

WORST CASE SO₂ IMPACTS (ug/m³)

Case	Annual	24-Hour	3-Hour
I Unit 4 only (as originally proposed) ^a .	1.0	34.2	163
II Unit 4 only (with new stack) ^b .	1.0	34.2	163
III All sources (as originally proposed) ^a .	18.5	185	1087
IV All sources (with new stack)	N.A.	208	1188
Florida AAQS	60	260	1300
Federal AAQS	80	365	1300

Notes:

a. EPA-PSD preliminary determination, Table 4

b. Same as Case I

PARTICULATE MATTER, NITROGEN OXIDES, CARBON MONOXIDE

In the original PSD analysis, the maximum predicted impacts for particulate matter (PM) nitrogen oxides (NO_x) and Carbon Monoxide (CO) were shown to be insignificant (PSD determination p.6.). This information is summarized in the following table.

MAXIMUM AIR QUALITY IMPACTS DUE TO
UNIT 4 BOILER (ug/m³)

PM	Annual		24-Hour		8-Hour	3-Hour	1-Hour
	SO ₂	NO _x	PM	SO ₂	CO	SO ₂	CO
1	1.0	0.5	0.9	34.2	8	163	2000

Significance
Levels

1	1	1	5	5	500	25	2000
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Source: EPA, PSD preliminary determination, Table 2

Because the new stack will be of the same height and inside diameter as the stack originally intended to be common to Units 3 and 4 and the fact that the above impacts were determined for Unit 4 operating alone, there is no change in these predictions for the case of a new stack.

IMPACT ON NONATTAINMENT AREAS

Because the Case of Big Bend 4 operating with a new stack is equivalent to the case of Unit 4 operating alone as examined in the original PSD analysis, the predicted impacts on nonattainment areas will not change. These impacts were found to be below significant levels as shown in the table below.

	<u>Annual</u>		<u>24-Hour</u>		<u>3-Hour</u>
	PM	SO ₂	PM	SO ₂	SO ₂
Maximum impact on nonattainment areas (ug/m ³)	1	1	0.4	4.0	17.0
Significance levels(ug/m ³)	1	1	5	5	25

Source: EPA-Preliminary Determination Table 2

PSD INCREMENT IMPACT

SULFUR DIOXIDE

The worst case sulfur dioxide increment impacts from the original PSD analysis occurred for the case of Unit 4 operating alone. This case is equivalent to Unit 4

operation with the new stack, thus maximum increment consumption is not affected by the addition of the new stack. This information is summarized in the table below.

WORST CASE SO₂ INCREMENT IMPACTS (ug/m³)

<u>Case</u>	<u>Annual</u>	<u>24-Hour</u>	<u>3-Hour</u>
Unit 4 only (as originally proposed) ^a .	1.0	34.2	163
Unit 4 only (with new stack)	1.0	34.2	163

a. Source: EPA-PSD preliminary determination - Table 3

PARTICULATE MATTER

EPA determined from the original PSD analysis that Unit 4 had an insignificant TSP impact, and therefore, a TSP increment analysis was not required. This was based on the impacts due to the operation of Unit 4 alone which is equivalent to the impacts with the new stack. Thus the particulate matter impacts remain insignificant.

VISIBLE EMISSIONS

Because Big Bend Unit 4 is subject to new source performance standards, opacity will be limited to 20% on a 6 minute average with the exception of one 6 minute period per hour when opacity is limited to 27%. The opacity limitations apply to either the case of a shared stack or a new separate stack. Thus there will be no change in the allowable opacity as a result of the new stack.

With individual stacks, two distinct plumes will be generated which may cause a greater portion of the sky to appear discolored. However, actual plume opacity may decrease for both units as compared to a single stack, since the plume will be initially dispersed into a greater volume of air. As a result, no significant increase in visible emissions is expected as a result of the new stack.

The NSPS emission limits insure that impacts on and impairments to visibility will be minimal. The nearest Class I area is located 92 km from Big Bend, and therefore no significant visibility impacts on such areas are expected due to the new stack.

SOILS AND VEGETATION

Since the AAQS and the allowable Class I and Class II PSD increments are not predicted to be exceeded with the new stack, the impacts of operation upon soils and vegetation are not expected to be significant. Federal Primary AAQS were promulgated in order to protect the public health, and Secondary AAQS were promulgated in order to protect the public welfare (i.e. damage to vegetation, animals, soils, visibility, structures, etc.), both with an adequate margin of safety. As part of the Florida Sulfur Oxides Study (Environmental Research and Technology, Inc., 1978), a study was conducted in Florida of the environmental effects of ambient sulfur dioxide. The study concluded that "There is not reasonable basis in the established body of scientific information for assuming that existing federal ambient air quality legislation is not sufficiently stringent to protect Florida's environment from significant stress caused by sulfur oxides." It is noted that while the U.S. EPA has rescinded its 24-hour and annual Secondary AAQS, the State of Florida has retained these standards, providing additional margin of safety beyond that already inherent in the federal standards.

CONCLUSIONS

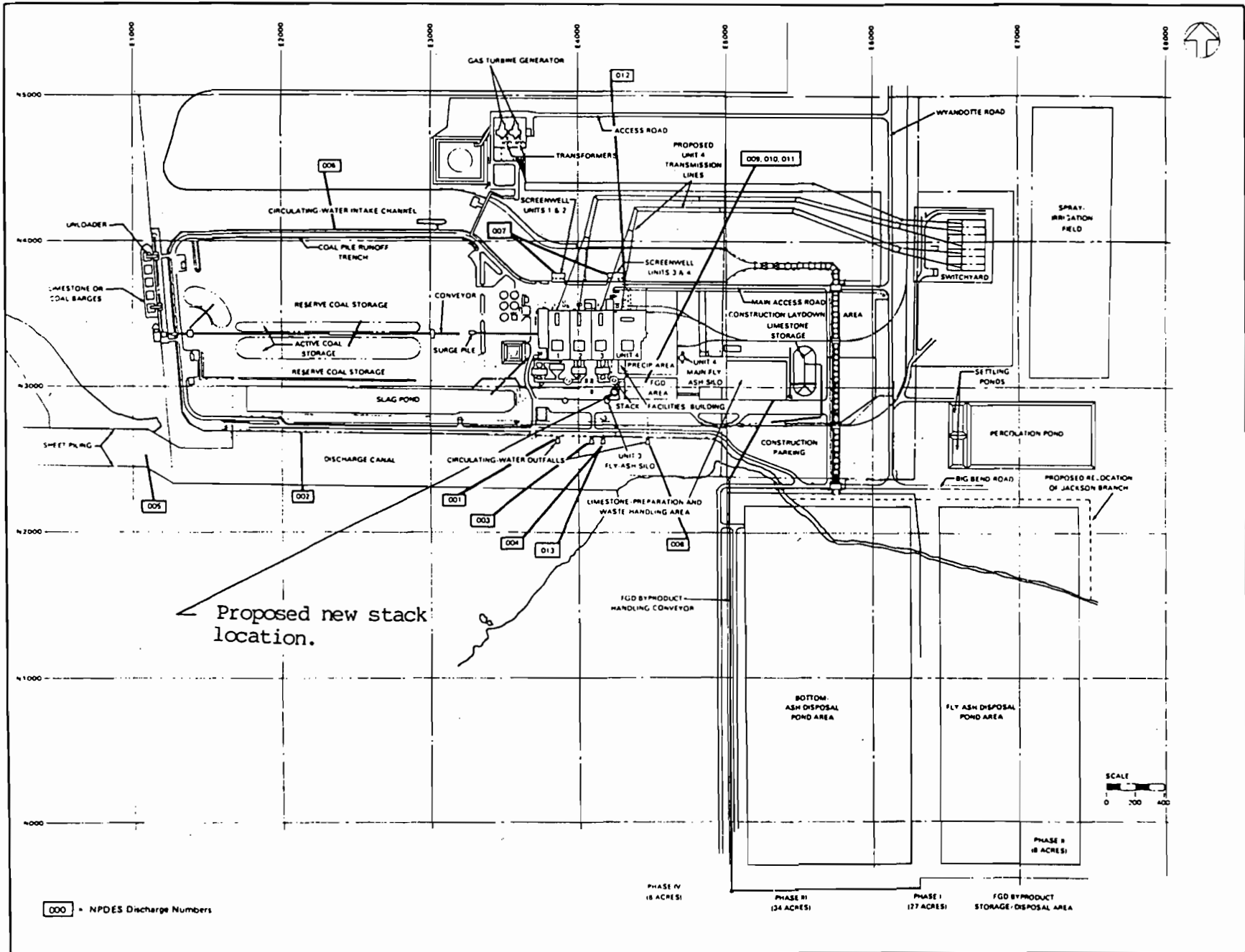
In summary, the following conclusions can be made with regard to the installation of the new stack for Big Bend Unit No. 4:

- . Construction of the new stack for Unit No. 4 at the proposed location is the most economical and feasible solution to the common stack problem which will still allow for meeting the commercial operation date of the unit.
- . There will be no increase in emissions.
- . Ambient air quality impacts for sulfur dioxide will be well below the Florida Ambient Air Quality Standards.
- . Ambient air quality impact predictions for particulate matter, nitrogen oxides and carbon monoxide

will not change from the original predictions which were below the significance levels.

- . Impact on nonattainment areas will not change from the original predictions which were below significance levels.
- . Worst case PSD increment consumption will not change.
- . There will be no impact on visible emissions.
- . There will be no impact on soils and vegetation.

Based upon these items it is further concluded that the new stack will not be a significant change to the project and does not constitute a modification. Thus, further review under 40 C.F.R. Section 52.51, is not required.



Plot plan, Big Bend Station.

State of Florida Department of Environmental Regulation
Tampa Electric Company
Big Bend Unit 4
PA 79-12

TECO

CONDITIONS OF CERTIFICATION (Revised 6-7-81)

I. Air

The construction and operation of Big Bend Unit 4 at the Tampa steam electric power plant site shall be in accordance with all applicable provisions of Chapters 17-2, 17-4, 17-5 and 17-7, Florida Administrative Code. In addition to the foregoing, the permittee shall comply with the following conditions of certification:

A. Emission Limitations

1. Based on a maximum heat input of 4,330 million BTU per hour, stack emissions from Big Bend Unit 4 shall not exceed the following when burning coal:
 - a. SO₂ - 1.2 lb. per million BTU heat input, maximum two hour average, 0.84 lb/MMBtu on a 30-day rolling average.
 - b. NO_x - 0.60 lb. per million BTU heat input.
 - c. Particulates - 0.03 lb. per million BTU heat input.
 - d. Visible emissions - 20 (6-minute average), except one 6-minute period per hour of not more than 27.5 opacity.
2. The height of the boiler exhaust stack for Unit 4 shall not be less than 490 ft. above grade.
3. Particulate emissions from the coal handling facilities:
 - a. The permittee shall not cause to be discharged into the atmosphere from any coal processing or conveying equipment, coal storage system or coal transfer and loading system processing coal, visible emissions which exceed 20 percent opacity. Particulate emissions shall be controlled by use of control devices.
 - b. The permittee must submit to the Department within ten (10) working days after it becomes available, copies of technical data pertaining to the selected particulate emissions control for the coal handling facility. These data should include, but not be limited to, guaranteed efficiency and emission rates, and major design parameters such as air/cloth

ratio and flow rate. The Department may, upon review of these data, disapprove the use of such device if the Department determines the selected control device to be inadequate to meet the emission limits specified in 3(a) above. Such disapproval shall be issued within 30 days of receipt of the technical data.

4. Particulate emissions from limestone and flyash handling shall not exceed the following:
 - a. Limestone silos - 0.05 lb/hr.
 - b. Limestone hopper/transfer conveyors - 0.65 lb/hr.
 - c. Flyash handling system - 0.2 lb/hr.
5. Visible emissions from the following facilities shall be limited to 5% opacity: (a) limestone and flyash handling system, (b) limestone day silos and (c) flyash silos.
6. Compliance with opacity limits of the facilities listed in Condition 5 will be determined by EPA reference method 9 (Appendix A, 40 CFR 60).
7. Construction shall reasonably conform to the plans and schedule given in the application.
8. The permittee shall report any delays in construction and completion of the project to the Department's Southwest District Office.
9. Reasonable precautions to prevent fugitive particulate emissions during construction, such as coating of roads and construction sites used by contractors, will be taken by the permittee.
10. Coal should not be burned in the unit unless both electrostatic precipitator and limestone scrubber are operating properly.
11. Coal burned in the unit should be washed before it is transported to the plant site.

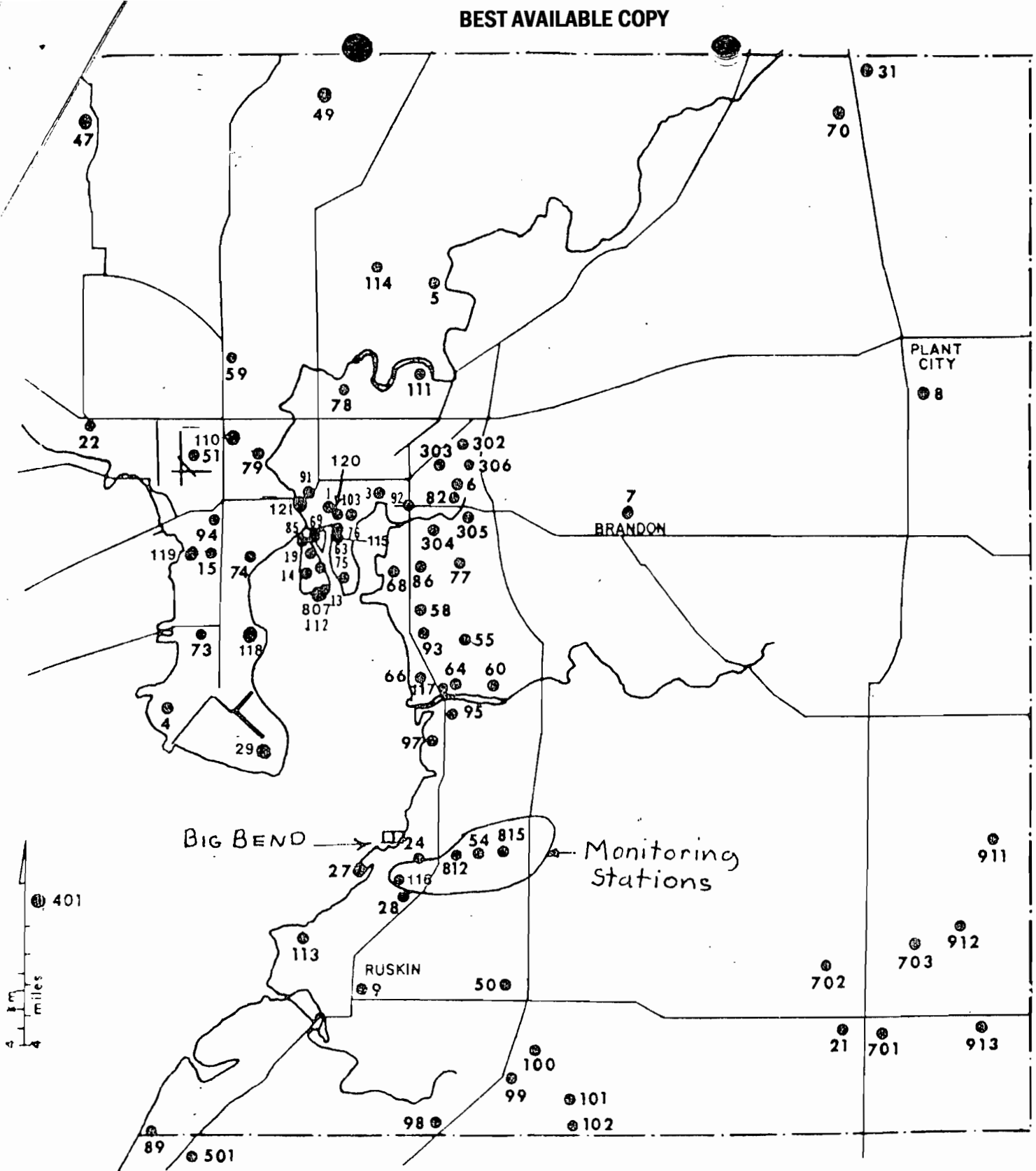
B. Air Monitoring Program

1. The permittee shall install and operate continuously monitoring devices for the Unit 4 boiler exhausts for sulfur dioxide, nitrogen dioxide, oxygen and opacity. The monitoring devices shall meet the applicable requirements of Section 17-2.08, FAC, and 40 CFR 60.47a. The opacity monitor may be placed in the duct work between the electrostatic precipitator and the FGD scrubber.

2. The permittee or Hillsborough county shall operate the two ambient monitoring devices for sulfur dioxide in accordance with EPA reference methods in 40 CFR, Part 53, and two ambient monitoring devices for suspended particulates. The monitoring devices shall be specifically located at a location approved by the Department. The frequency of operation shall be every six days commencing as specified by the Department.
3. The permittee shall maintain a daily log of the amounts and types of fuels used and copies of fuel analyses containing information on sulfur content, ash content and heating values.
4. The permittee shall provide sampling ports into the stack and shall provide access to the sampling ports, in accordance with DER publication, Standard Sampling Techniques and Methods of Analysis for the Determination of Air Pollutants from Point Source, July, 1975.
5. The ambient monitoring program may be reviewed by the Department and the permittee annually beginning two years after start-up of Unit 4.
6. Prior to operation of the source, the permittee shall submit to the Department a standardized plan or procedure that will allow the permittee to monitor emission control equipment efficiency and enable the permittee to return malfunctioning equipment to proper operation as expeditiously as possible.

C. Stack Testing:

1. Within 60 calendar days after achieving the maximum capacity at which each unit will be operated, but no later than 180 operating days after initial start-up, the permittee shall conduct performance tests for particulates SO₂, NO_x and visible emissions during normal operations near 4,330 MMBtu/hr heat input and furnish the Department a written report of the results of such performance tests within 30 days. The performance tests will be conducted in accordance with the provisions of 40 CFR 60.46a, 48a, and 49a.
2. Performance tests shall be conducted and data reduced in accordance with methods and procedures in accordance with DER's Standard Sampling Techniques and Methods of Analysis for Determination on Air Pollutants from Point Sources, July, 1975.



AIR SAMPLING STATIONS
HILLSBOROUGH COUNTY, FLORIDA
1979

Figure 1

3. Performance tests shall be conducted under such conditions as the Department shall specify based on representative performance of the facility. The permittee shall make available to the Department such records as may be necessary to determine the conditions of the performance tests.
4. The permittee shall provide 30 days prior notice of the performance tests to afford the Department the opportunity to have an observer present.
5. Stack tests for particulates and SO₂ shall be performed annually in accordance with conditions C. 2, 3, and 4 above.

D. Reporting

1. For Unit 4, stack monitoring, fuel usage and fuel analysis data shall be reported to the Department's Southwest District Office on a quarterly basis commencing with the start of commercial operation in accordance with 40 CFR, Part 60, Section 60.7., and in accordance with Section 17-2.08, FAC.
2. Utilizing the SAROAD or other format approved in writing by the Department, ambient air monitoring data shall be reported to the Bureau of Air Quality Management of the Department quarterly. Commencing on the date of certification, such reports shall be due by the last day of the month following the quarterly reporting period.
3. Beginning one month after certification, the permittee shall submit to the Department a quarterly status report briefly outlining progress made on engineering design and purchase of major pieces of equipment (including control equipment). All reports and information required to be submitted under this condition shall be submitted to the Administrator of Power Plant Siting, Department of Environmental Regulation, 2600 Blair Stone Road, Tallahassee, Florida, 32301.

II. Water Discharges

Any discharges into any waters of the State during construction and operation of Big Bend Unit 4 shall be in accordance with all applicable provisions of Chapter 17-3, Florida Administrative Code, and 40 CFR, 423, Effluent Guidelines and Standards for Steam Electric Power Generating Point Source Category, except as provided herein. Also, the permittee shall comply with the following conditions of certification:

A. Plant Effluents and Receiving Body of Water

For discharges made from the power plant the following conditions shall apply:

State of Florida Department of Environmental Regulation
Tampa Electric Company
Big Bend Unit 4
PA 79-12

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9. Reasonable precautions to prevent fugitive particulate emissions during construction, such as coating of roads and construction sites used by contractors, will be taken by the permittee.
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11. Coal burned in the unit should be washed before it is transported to the plant site.

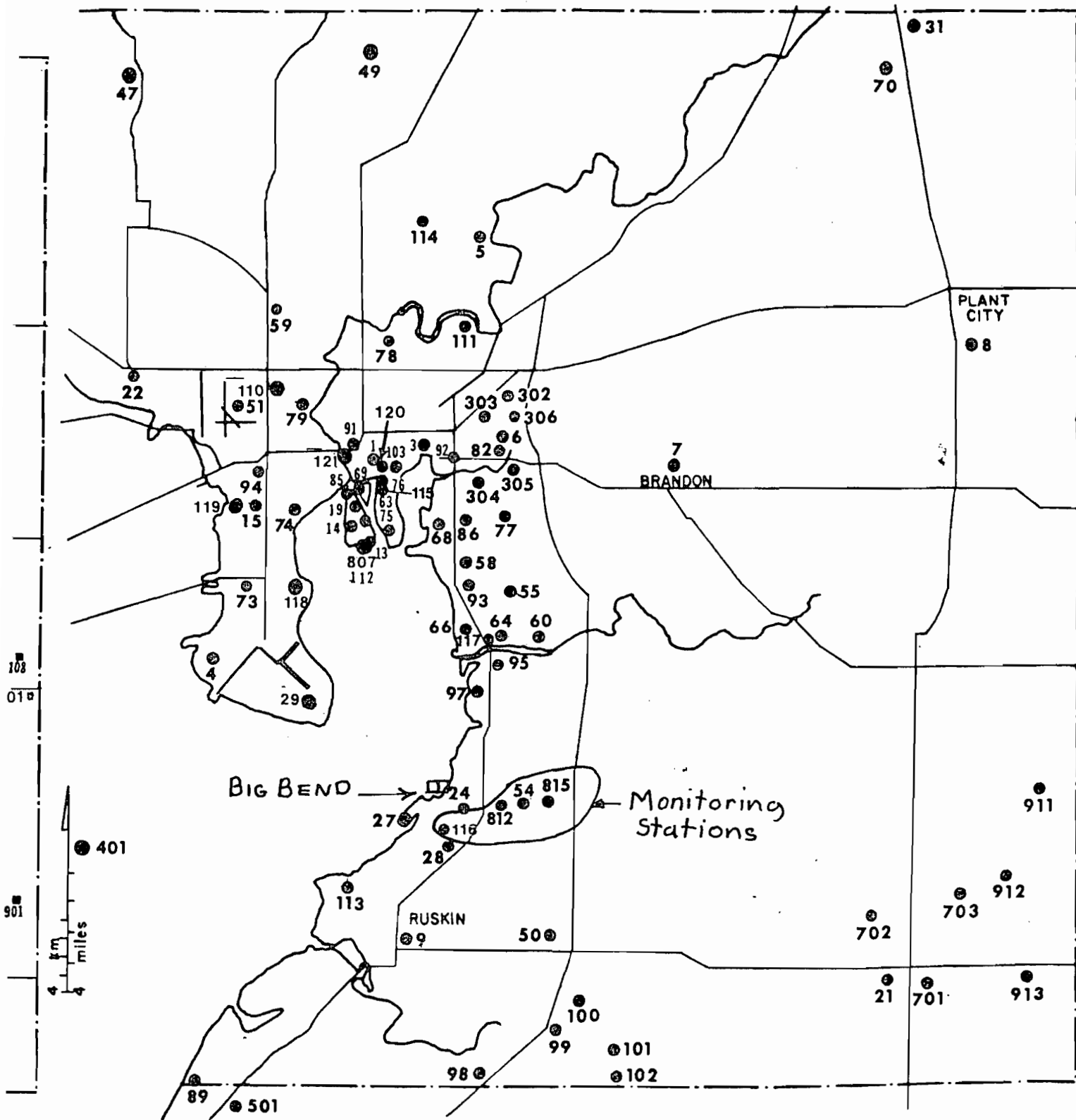
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5. The ambient monitoring program may be reviewed by the Department and the permittee annually beginning two years after start-up of Unit 4.
6. Prior to operation of the source, the permittee shall submit to the Department a standardized plan or procedure that will allow the permittee to monitor emission control equipment efficiency and enable the permittee to return malfunctioning equipment to proper operation as expeditiously as possible.

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AIR SAMPLING STATIONS
HILLSBOROUGH COUNTY, FLORIDA
1979

Figure I

3. Performance tests shall be conducted under such conditions as the Department shall specify based on representative performance of the facility. The permittee shall make available to the Department such records as may be necessary to determine the conditions of the performance tests.
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A. Plant Effluents and Receiving Body of Water

For discharges made from the power plant the following conditions shall apply:



POST OFFICE BOX 111 TAMPA, FLORIDA 33601 TELEPHONE (813) 879-1111

May 15, 1981

RECEIVED
MAY 18 1981
DIV. ENVIRONMENTAL
PERMITTING

Mr. Hamilton S. Oven
Florida Department of
Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 322301

RE: Big Bend Unit 4
Site Certification Application
Amendment 6

RECEIVED
MAY 1981
BUREAU
A Q M

Dear Mr. Oven:

Based on the State of Florida Department of Environmental Regulation Site Certification Review in regard to the Big Bend Station 316 Demonstrations, Tampa Electric Company will install fine mesh screens at the cooling water intake structures of Units 3 and 4 to meet state and federal requirements.

The attached document describes the conceptual design and operation of the fine mesh screen facility, including the organism return system. The document amends the Units 3 and 4 NPDES Permit Applications and the once-through cooling alternative in the Unit 4 Site Certification Application.

Sincerely,

Heywood A. Turner
Sr. Vice President-Production

Attachment

cc: Mr. Mickey Bryant

Preliminary Design and Operation Description
Fine-Mesh Dual-Flow Screens
Big Bend Station Units 3 and 4
Tampa Electric Company
May, 1981

The intake would consist of a fine-mesh screen structure surrounding the Units 3 and 4 screenwells. The structure would be supported on piles and extend approximately 30 feet into the channel beyond the existing Unit 3 screenwell. The bottom would be at el. -24.5 ft and the deck would be at el. +9 ft. Flow would enter the structure after passing through chain link fence. There would be six (three for each unit) fine-mesh dual-flow traveling water screens fitted in a 60 ft-by-180 ft sheetpile wall enclosure. Flow passing through these screens would then enter coarse-mesh screens at the circulating water pumps of Units 3 and 4.

The new dual-flow screens will be designed for travel speeds from 7 to 28 fpm and the 10-ft-long screen panels would be equipped with fine mesh (approximately 0.5mm). The distance between the ascending and descending screens faces would be nine feet, and the design approach velocity would be approximately 0.5 fps at full flow.

High and low pressure spray systems would be provided on each screen. The low pressure system would wash organisms off the screen mesh and lifting trays into an organism trough located on the ascending side of each screen. The high pressure system would wash debris from the descending side into another trough. All troughs would manifold into a common sluiceway and the combined flow would pass through a debris trap and 4-inch mesh screen. The flow would then carry organisms to the "Organism Return Canal" (ORC) via an 18-inch diameter gravity-flow pipeline. Alternative pipeline routes are being evaluated.

Construction would be performed in the wet and would consist of excavation, driving necessary piles and sheeting, fabricating the operating deck, and then installing the equipment. Any maintenance required on the screens below the operating deck would require lifting of the screens with a bridge crane. Screenwash pumps would require about 250 hp. and the dual-flow screens require a total of 60 hp.

In the event of excessive screen clogging, a control room alarm would activate on a 10-inch head differential and relief gates would be provided through the cutoff wall which open on a 1.5-ft head differential to supply the station flow. The coarse mesh (3/8-in. opening) screen wells would be maintained and function as a back-up in the event the new screens clogged and the relief gates opened. When fine-mesh screens are removed for maintenance, the sheetpile opening would be blocked.

ROUTING AND TRANSMITTAL SLIP
BAQM - Central Air Permitting

ACTION NO.

ACTION DUE DATE

TO: (NAME, OFFICE, LOCATION)

INITIAL

DATE

AMODIO BOCK GEORGE HANKS

INITIAL

DATE

HERON HODGES HOLLADAY KING

INITIAL

DATE

PALAGYI POWELL ROGERS SVEC

INITIAL

DATE

THOMAS VEGA FILE ALL

REMARKS:

INFORMATION

REVIEW & RETURN

REVIEW & FILE

INITIAL & FORWARD

DISPOSITION

REVIEW & RESPOND

PREPARE RESPONSE

FOR MY SIGNATURE

FOR YOUR SIGNATURE

LET'S DISCUSS

SET UP MYWORD

INVESTIGATE & RESP

INITIAL & FORWARD

DISTRIBUTE

CONCURRENCE

FOR PROCESSING

INITIAL & RETURN

*Please review ASAP.
Let's discuss Monday
the 16th at 1:30 p.m.*

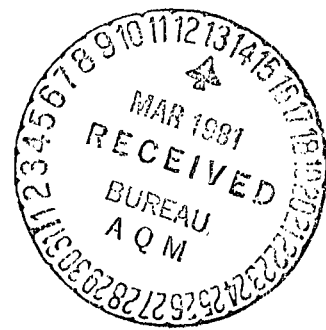
1. rule per capability
- 2.

FROM:

Larry

DATE

PHONE



VI Facility Specific Concerns

A. Air Quality

1. Selected Fuel

Tampa Electric Company plans to utilize bituminous coal in Unit 4. Approximately 950,000 tons of coal per year will be burned in the Unit. Normally coal is delivered to the Big Bend Station by covered barges. If ~~it~~ should ^{it} become necessary, the existing _x rail access could be utilized to allow coal delivery by rail. ^{However,} _^ TECO would have to install rail unloading facilities and a conveyor system from the rails to the existing coal handling system.

It appears that the coals under consideration have a heat content of approximately 11,000 Btu/per pound, an ash content of 9-28% and a sulfur content of approximately 3%. ^{plus to have.} TECO ~~is planning on having the coal washed.~~ ^{in order to} ~~The~~ ~~washing will~~ remove some ash and sulfur which ~~in-turns~~ _{subsequently} will _^ reduce air pollutant emission levels.

2. Air Quality Impacts

The air quality in the area of the Big Bend site is currently affected by emissions from Big Bend Units 1-3, the Agrico phosphate terminal and the Gardinier complex. The air quality in the area ^{would additionally} will also be impacted by the construction and operation of the Big Bend Unit #4.

a. Construction Emissions

During construction, ambient air quality in the area ^{would} will be slightly degraded due to fugitive dust generated by the movement of trucks and construction vehicles. These impacts ^{would} will be temporary.

TECo has agreed to employ dust suppression measures during construction. The general industrial/agricultural nature of the surrounding areas minimizes the number of people who might be affected. The distance between the site and residences will also help to mitigate any nuisance caused by smoke or dust.

b. Operational Emissions

The emission of air pollutants from the Big Bend site are ^{regulated} limited by Chapter 17-2, FAC, and by the New Source Performance Standards as imposed by

the U.S. Environmental Protection Agency. In order to comply with these regulations, TECo plans to utilize washed coal with electrostatic precipitators to control emission of fly ash and a wet limestone scrubber to control emission of sulfur oxides. Nitrogen oxide emissions will be controlled by proper operation and design of the boiler.

COAL	206.5 ton/hr
SO ₂	3100 lb/hr
PM	130 lb/hr
NO _x	2600 lb/hr

When Unit 4 is operating at capacity, the unit will consume 206.5 tons per hour of coal and will emit 3100 pounds per hour of SO₂, 130 pounds per hour of particulates, and 2600 pounds per hour of nitrogen oxides.

c. Operational Impacts on Ambient Air Quality

The ^{490 feet} stack height of ~~490 feet~~ will assist the ~~emission~~ control equipment in reducing ambient air quality impacts. Only during rare meteorological conditions will stack emissions reach the ground ^{in the vicinity of} ~~close to~~ the plant. The stack height insures dispersion and dilution of air pollutants before the pollutants reach ground level at some distance from the site.

Unit 4 will share a stack with Unit 3. ^{consequently,} The combined heat of both units will increase the buoyancy of the exhaust plume. This increases the ^{altitude} height to which the plume will rise, thereby enhancing dispersion of the air pollutants.

Air quality impacts are shown on Table 5. The computerized dispersion models used by Teco to predict ambient air quality impacts indicate no violations of ambient air quality standards and no significant interaction with the non-attainment area in Tampa.

Best Available Copy

TABLE

Ambient Air Quality Impacts

($\mu\text{g}/\text{m}^3$)

Prevention of Significant Deterioration Increments

Pollutant & Source	Annual Avg.*	24 Hour Avg.**	3 Hour Avg.*	
SO ₂ : Unit 4 Only	1.1	34.2	103	
	18.5	185	992	
	18.5	185	992	
	Plant + Existing Sources	18.5	185	992
(Ambient Standard)	60	260	1300	
(PSD Increment)	20	91	512	
Particulates:				
	Unit 4 Only	4.1	0.9	N/A
	Plant + Existing Sources	69.2***	128.1****	N/A
	(Ambient Standards)	60	150	N/A
(PSD Increment)	19	37	N/A	
NO _x :				
	Unit 4 Only	0.8		N/A
	Plant + Existing Sources	20.5		
(ambient Standards)	100		N/A	

* Annual Includes Sources within 50 Kilometers

** Includes Sources within 15 Kilometers

*** Based on modeling with Agrico at max allowable emissions

**** Based on actual emissions value would be 27g/m³

u

?

3. Prevention of Significant Deterioration

Pursuant to Section 17-2, FAC, and 40 CFR 52.21, the Big Bend Unit 4 is subject to a review for the Prevention of Significant Deterioration (PSD) of air quality. The Clean Air Act Amendments of 1977 prescribe incremental limitations on the air quality impacts of a new source. As seen in Table 6 on Ambient Air Quality Impacts, Unit 4 should not violate ambient air quality standards nor should it cause a violation of the PSD increments.

The U.S. Environmental Protection Agency ^{The EPA} Preliminary PSD Determination for TECo Big Bend Station Unit 4 was

received by the Department. ~~The EPA~~ regulations on PSD require the following air quality impacts to be addressed:

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

^{The EPA} found that air quality modelling showed no violations of the National Ambient Air Quality Standards. Likewise EPA found the PSD increments in the area would not be violated with Unit 4 in operation. The percent consumption of the applicable Class II PSD increments caused by the Big Bend Station are presented in the following table:

Table 4

Increment	Pollutant	
	Particulate	SO ₂
Annual	0	---
24 hour	---	---
3 hour	N/A	---

EPA judged ^{that} the projected impacts on visibility, soils and vegetation and on air quality due to growth would be minimal.

4. Best Available Control Technology

Section 17-2.03 Florida Administrative Code (FAC) and Section 169, 424SC 7401 require evaluation of proposed air pollutant emission control equipment and a determination as to whether or not an applicant will utilize the Best Available Control Technology (BACT) for each pollutant. In the preliminary PSD Determination for ^{TECo} ~~Seminole~~, EPA concluded that the systems proposed by the applicant represent BACT for ^{controlling} particulates, ^{and oxides of} ~~SO₂~~ and nitrogen ~~oxides~~ and sulfur.

The installation of high efficiency electrostatic precipitators to control particulate emission from the boilers, bag filters to control particulate emissions from fly ash handling, and liquid spray and bag filter systems to control particulate emissions from coal handling and lime and limestone handling all represent BACT.

The use of washed coal and the installation of limestone scrubber which will achieve ^{a 90%} an overall reduction of ~~90%~~ ^{and} the potential sulfur oxide emissions, would comply with EPA's requirements Under 40 CFR Part 60, Federal New Source Performance Standards. EPA considers this control technology BACT.

The use of boiler design controls which limit flame temperature and oxygen availability in order to control the formation of nitrogen oxides in the boiler to 0.6 pounds per million BTU is considered by EPA to be BACT.

The Department of Environmental Regulation having considered ^(a) EPA's BACT determination; ^{(b) all available} scientific, engineering and technical material; ^{(c) existing} the emission limiting control standards of other states; and ^(d) the social and economic impact of the application of such technology, also finds that the emission control technology to be used by Tampa Electric Company, to be the Best Available Control Technology as shown in the following:

7

Best Available Control Technology
Analysis for the Proposed
Tampa Electric Company Big Bend Station Unit 4

The Best Available Control Technology section of the Site Certification Application and Environmental Analysis for the Tampa Electric Company have been reviewed by the Bureau of Air Quality Management. The application was generally complete, ~~and well prepared.~~ The Best Available Control Technology emission rates requested by the applicant were a maximum sulfur dioxide (SO₂) emission rate of 1.2 lbs/MMBTU with 90% removal of SO₂; a maximum particulate emission rate of 0.03 lbs/MMBTU with 99% reduction in particulate; and a maximum emission rate of 0.6 lbs/MMBTU for nitrogen oxides (NO_x) with a 65% reduction.

The emission rates proposed ^{by TECO are} ~~all~~ equal to the New Source Performance Standards, ~~which were adopted by the U.S. EPA on~~ . The emission rates adopted by the U.S. EPA are based on extensive recent evaluations of technology employed by the electric power industry in the United States. The emission rates requested by the ^{Tampa} Seminole Electric ^{Company} ~~Cooperative~~ are more restrictive than Florida's emission limiting standards for new coal fired fossil fuel steam generators with a heat input greater than 250 MMBTU/hour.

A determination of Best Available Control Technology for visible emissions from the unit was not requested by the applicant. Specific emission rates were not requested for the limestone and coal handling systems.

The applicant's requested emission rate of 1.2 lbs/MMBTU with 90% removal of SO₂ constitutes Best Available Control Technology for this pollutant. ~~The applicant analyzed three alternatives which~~ included a

double alkali process, a lime process and the Wellman-Lord regenerable process. The double alkali system was found to be economically unattractive for several reasons. First, the the two alkalies increases the reagent operating costs to a level six to seven times greater than ^{that of} the limestone system. The waste sludge is not marketable and cannot be land filled without treatment, ^{consequently} ~~which increases~~ the comparative costs over the limestone system ^{will be greater}. For the same reason, the lime process was found economically unattractive. The Wellman-Lord system is highly capital intensive with high operating and maintenance costs. It is also highly energy intensive. TECo has found little available market demand for any sulfuric acid product. For these reasons TECo found the Wellman-Lord process unattractive.

~~Provision of~~ ^{of greater than 90%} increased SO₂ removal efficiency would not markedly improve the ambient air quality in the area, therefore the increased cost of additional removal efficiency would ~~not~~ ^{neither} be cost effective ^{nor} ~~or~~ warranted.

The additional "waste of large quantities of fuel energy and the use of greater land areas" required to meet ^{SO₂ removal} ~~the more stringent rates~~ ^{more} are ^{than} ^{90%} not justified by the degree of Air Quality improvement projected.


To achieve the 90% reduction, TECo analyzed four control processes, the limestone system selected, and three alternatives. The alternatives ←

The applicant's requested emission rate of 0.03 lbs/MMBTU for particulate is 70% lower than the emission currently allowed by Florida's emission limiting standards for new coal fired fossil fuel steam generators. The applicant ^{reviewed} ~~undertook~~ an assessment of the particulate control alternatives ^{which} ~~and~~ concluded that baghouses and precipitators ~~would be roughly equivalent in terms of the degree control achieved.~~ ^{In} ~~comparing the practicality of the two models,~~ addition, the electrostatic precipitator constitutes proven technology on units of the size proposed by Tampa Electric Company. ^{However, while} The U.S. EPA has published studies on two facilities of 39 MW and 175 MW capacity which are utilizing baghouses; ^S however, the application of this technology to a 417 MW unit with flue gas desulfurization could produce scale up difficulties. ^{Further, conducted} An analysis by the Seminole Electric Cooperative on 640 MW units indicated the cost of baghouses to be an additional \$5 million in capital and \$2 million/year in maintenance. Therefore, ^{although} the U.S. EPA ^{finds that the} ~~proposed~~ New Source Performance Standard of ⁰ 0.03 lbs/MMBTU ^{is} achievable with ^{either} ~~as~~ baghouse or electrostatic precipitator ~~will constitute~~ Best Available Control Technology for particulates, ^{TECO chose to use} electrostatic precipitators.

The applicant requested that an emission rate of 0.60 lbs/MMBTU be declared Best Available Control Technology for nitrogen oxides (NO_x). This is consistent with the proposed federal New Source Performance Standards. Reductions in nitrogen oxide emissions ^{would be} ~~are~~ accomplished through boiler design.

Equipment designer's have guaranteed that NO_x emissions from units will not exceed 0.6 lbs/MMBTU at loads ranging from 20% to 100%. Since loads of less than 20% are only due to start-up or operation as spinning reserve, ^{guarantees for that range are} this is recognized as acceptable practice, particularly on base load units. Based on presently available information, an emission rate of 0.6 lbs/MMBTU constitutes Best Available Control Technology for nitrogen oxides from TECo's proposed boilers.

The applicant did not request a visible emission limit for the proposed facility. The U.S. EPA's ~~proposed~~ New Source Performance Standards specify a visible emission ^mlimit of 20% opacity with an allowable opacity of not more than 27% for six minutes in any hour. The Florida Standards for new coal fired fossil fuel steam generators limits the visible emissions to 20% opacity except that 40% opacity may not be exceeded more than two minutes in any hour. ^{Because} ~~Since~~ the proposed federal standards have been based on a review of the best control technology available, the Best Available Control ^{Technology} constitutes 20% opacity except that an opacity of 27% may not be exceeded more than six minutes in any hour.

The coal and limestone handling facilities are discussed in the application; however, a specific emission rate is not requested as Best Available Control Technology. Therefore, the Bureau recommends an emission rate based on the determination for Crystal River Units #1 and #2 fly ash handling facilities. Best Available Control Technology for coal and limestone handling facilities shall constitute the use of covered conveyors and sprays to control fugitive dust in areas where baghouses are not utilized. 

Baghouse^s with a particulate removal efficiency of 99.9%+ constitutes Best Available Control Technology. This is the collection efficiency for which a baghouse is normally considered capable.

Upon reviewing the preceding information, the Department also finds that the Big Bend Station Unit 4 will not contribute to significant deterioration of air quality.

5. Acid Rain

6. Radiation from Coal-Fired Power
Plants

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee		
To: _____	Loctn.: _____	
To: _____	Loctn.: _____	
To: _____	Loctn.: _____	
From: _____	Date: _____	
Reply Optional []	Reply Required []	Info. Only []
Date Due: _____	Date Due: _____	

TO: Buck Oven, Power Plant Siting Section
 THRU: ^{BT} Bill Thomas, Bureau of Air Quality Management
 THRU: Willard Hanks *work*
 FROM: Bob King *BK*
 DATE: March 26, 1981
 SUBJ: Site Certification - TECO's Big Bend Unit #4

The Bureau believes that the following specific conditions are required as part of the site certification for Big Bend Unit #4.

1. Maximum heat input to the Unit will be 4,330 million Btu per hour.
- ✓ 2. Coal will not be burned in the Unit unless both electrostatic precipitator and limestone scrubber are operating properly.
- ✓ 3. Coal burned in the Unit must be washed before it is transported to the plant site.
- ✓ 4. The Unit is subject to all the provisions of 40 CFR 60, subpart Da, under section 17-2.21, F.A.C., which includes:

← A. Maximum emissions from the boiler shall not exceed the following allowable emission limits:

*Proposed/effective
9/19/78*

<u>Pollutant</u>	<u>Maximum Emission Rate (lb/MMBtu)</u>	<u>Minimum Reduction</u>
------------------	---	------------------------------

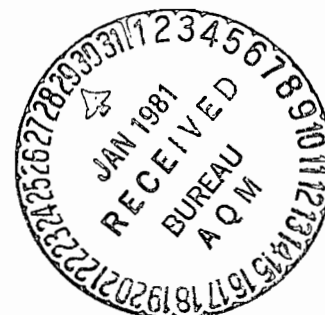
*10/05/79
Application Received*

Particulate	0.03	99%
SO ₂	1.2	90%
NO _x	0.6	65%
Visible Emission	20% (6-minute average), except one 6-minute period per hour of not more than 27% opacity.	

- ✓ B. After construction is completed, the Unit will be tested for particulate matter, sulfur dioxide, nitrogen oxides and visible emissions during normal operations near 4,330 MMBtu/hr heat input. The performance tests will be conducted in accordance with the provisions of 40 CFR 60.46a, 48a and 49a.
 - ✓ C. The applicant will install and maintain continuous monitoring instruments to measure and to record emissions for opacity, sulfur dioxide, nitrogen oxides and oxygen in accordance with the provisions of 40 CFR 60.47a.
5. Visible emissions from the following facilities shall be limited to 5% opacity: (a) limestone and flyash handling system, (b) limestone day silos and (c) flyash silos.
 6. Compliance with opacity limits of the facilities listed in Condition 5 will be determined by EPA reference method 9 (Appendix A, 40 CFR 60).
 7. Construction shall reasonably conform to the plans and schedule given in the application.
 8. The applicant shall report any delays in construction and completion of the project to the Department's Southwest District Office.
 9. Reasonable precautions to prevent fugitive particulate emissions during construction, such as coating of roads and construction sites used by contractors, will be taken by the applicant.

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee	
To: _____	Loctn.: _____
To: _____	Loctn.: _____
To: _____	Loctn.: _____
From: _____	Date: _____



TO: Power Plant Siting Review Committee

FROM: Hamilton S. Owen, Jr. *HSO*

DATE: January 28, 1981

SUBJECT: TECO Big Bend #4

By law DER must complete its report on TECO Big Bend #4 by April 19, 1981. In order to allow time for review by Steve Fox and Secretary Varn, a final draft should be complete by the end of March. Please submit any comments, analyses, opinions, recommendations or suggested conditions of certification as soon as practical but no later than March 1, 1981. If you need additional information, please contact me ASAP.

NOTE: Water quality variances may be requested.

We are also expecting an application from JEA on February 18, 1981.

HSOjr:my

- cc: Suzanne Walker
 Lou Hubener
 Bill Brown
 Bill Kutash
 Steve Palmer
 Larry Olsen
 Bob King
 Bill Hinkley
 Al Bishop
 Bob McVety
 Don Kell
 Rodney Dehan
 Mickey Bryant
 Jay Thabaraj

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO.

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION)

Bob King, Suite 600

INITIAL

DATE
1/28/81

2.

INITIAL

DATE

3.

INITIAL

DATE

4.

INITIAL

DATE

REMARKS:

Comments on -
 (1) Permit condition: 0.03
 lb/mar 13766
 (2) Drift impact from cooling
 tower operations



INFORMATION

REVIEW & RETURN

REVIEW & FILE

INITIAL & FORWARD

DISPOSITION

REVIEW & RESPOND

PREPARE RESPONSE

FOR MY SIGNATURE

FOR YOUR SIGNATURE

LET'S DISCUSS

SET UP MEETING

INVESTIGATE & REPT

INITIAL & FORWARD

DISTRIBUTE

CONCURRENCE

FOR PROCESSING

INITIAL & RETURN

FROM: Buck Oven, Jr.

DATE 1/28/81

PHONE



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

FEB 19 1982

REF: 4AW-AF

DER

FEB 22 1982

BAQM

Mr. Steve Smallwood
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32301

Dear Mr. Smallwood:

Enclosed please find a public notice plus documentation for a permit modification requested from TECO. This request to modify is for PSD-FL-040, Big Bend Unit 4. If you have any questions or comments regarding this request, please contact Dr. Kent Williams of my staff at 404/881-4552.

Sincerely yours,

Tommie A. Gibbs

Tommie A. Gibbs
Chief
Air Facilities Branch

Enclosure

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP				ACTION NO.
				ACTION DUE DATE
KAHEL		FANCY		STARNES
BLOMMEL		THOMAS		MARTY HALL
BARKER		GEORGE		MARSHALL MOTT-SMITH
J. ROGERS		PALAGYI		

REMARKS	INFORMATION
<p style="font-size: 1.2em; margin: 0;"><i>EPA PSD Permit</i></p> <p style="font-size: 1.2em; margin: 0;"><i>TECO Big Bend</i></p> <p style="font-size: 1.2em; margin: 0;"><i>copy Buck Owen (sent 2/24 PA)</i></p> <p style="font-size: 1.2em; margin: 0;"><i>to: Jerry B...</i></p> <p style="font-size: 1.2em; margin: 0;"><i>for comment</i></p> <p style="font-size: 1.2em; margin: 0;"><i>No comment, we sent Buck a memo on this saying no changes needed in conditions of certification.</i></p> <p style="font-size: 1.2em; margin: 0;"><i>File: PSD-FL-040</i></p>	REVIEW & RETURN
	REVIEW & FILE
	INITIAL & FORWARD
	DISPOSITION
	REVIEW & RESPOND
	PREPARE RESPONSE
	FOR MY SIGNATURE
	FOR YOUR SIGNATURE
	LEFT DIVISION
	SET UP MEETING
	INVESTIGATE & REPT
	INITIAL & FORWARD
	DISTRIBUTE
	CONCURRENCE
	FOR PROCESSING
INITIAL & RETURN	

FROM: STEVE SMALLWOOD <i>SS</i>	DATE: <i>2-24</i>
--	-------------------



January 30, 1985

Mr. Steve Smallwood
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

RE: Request for Permit Modification
Big Bend Station Unit 4
Tampa Electric Company
PSD-FL-040

Dear Mr. Smallwood:

As you are probably aware, Tampa Electric Company is in the final stages of constructing a 417 MW (net) coal fired electric generating unit at the Big Bend Station in Ruskin, Florida. The commercial operation date for this new unit, Big Bend Unit 4, is expected to be in March of 1985.

In anticipation of our upcoming commercial operation of Unit 4, Tampa Electric Company has been reviewing all permitting associated with the new unit. On reviewing the above referenced Prevention of Significant Deterioration (PSD) permit and associated application documents, a calculation error was identified in the PSD application emissions estimate for carbon monoxide (CO). In the application, an incorrect emission factor from the EPA document Compilation of Air Pollutant Emission Factors, AP-42, was inadvertently used to estimate the CO emissions. The use of the incorrect emission factor lead to an underestimation of the CO emissions by a factor of two. Attachment I contains the calculations for the corrected estimate.

As seen in Attachment I, the CO emission rate is expected to be approximately 124 lb/hr and 0.029 lb/MMbtu.

DER
FEB 4 1985
BAQM

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION)

Clair Fancay

Initial

Date

2.

~~*Bill T.*~~ *2/5*

Initial

Date

3.

Ed Svec

Initial

Date

4.

Initial

Date

REMARKS:

If Steve needs to see this, send it back up.

If he is correct, we need to prepare something for EPA to change their permit.
Judy
Clair

INFORMATION

Review & Return

Review & File

Initial & Forward

DISPOSITION

Review & Respond

Prepare Response

For My Signature

For Your Signature

Let's Discuss

Set Up Meeting

Investigate & Report

Initial & Forward

Distribute

Concurrence

For Processing

Initial & Return

FROM:

Steve Smallwood

DATE *2-4-85*

PHONE



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

MAR 12 1985

REF: APT-AM

DER
MAR 18 1985
BAQM

Mr. Clair H. Fancy, Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

RE: PSD-FL-040 TECO Big Bend Unit 4

Dear Mr. Fancy:

This is to acknowledge receipt of your February 8, 1985, letter requesting the modification of the federal Prevention of Significant Deterioration (PSD) permit (PSD-FL-040) issued for the construction of the coal-fired boiler, Unit 4, at the Tampa Electric Company's (TECO) Big Bend facility near Ruskin, Florida. The permit issued on October 15, 1981, contained carbon monoxide (CO) emission limits for the unit based on estimates provided by the company in which an incorrect emission factor was used.

The PSD preliminary and final determinations for Unit 4 at the TECO Big Bend facility reflected CO emission estimates which appeared in the TECO application. The company used the wrong emission factor from the EPA document "Compilation of Air Pollutant Emission Factors" (AP-42). As a result, there was an underestimation of CO emissions in the original review. The requested modification would theoretically increase CO emissions from 272 tons per year to 543 tons per year and will increase the ambient concentration (8-hour average) to approximately 16 ug/m^3 . The significant level for CO is 575 ug/m^3 , 8-hour average and therefore, no adverse impacts are expected due to the increase. The best available control technology has been determined to be proper combustion controls and has not been changed in this proposed revision. As the correction of this error will result in a theoretical significant increase in CO emissions (271 tons per year), a public notice will need to be published regarding this change. For your convenience, enclosed is a sample public notice which may be used. Please provide us a copy of the proof of publication so that we may proceed to revise the PSD permit to reflect the emission change for CO.

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION)

Bill T.

Initial

Date

2.

Initial

Date

3.

Initial

Date

4.

Initial

Date

REMARKS:

Please handle. need letter to TRCO to tell them to publish attached notice for 30 days send us proof of publication. Check with Larry on this.

Ed
Have you been into this at all?

BT

INFORMATION

Review & Return

Review & File

Initial & Forward

DISPOSITION

Review & Respond

Prepare Response

For My Signature

For Your Signature

Let's Discuss

Set Up Meeting

Investigate & Report

Initial & Forward

Distribute

Concurrence

For Processing

Initial & Return

FROM:

Alan

DATE

3/19

PHONE

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):

- Addressee's Address
- Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Patrick Ho, P.E.
Tampa Electric Co
P O Box 111
Tampa, Fl 33601-0111

4a. Article Number

Z 311 902 898

4b. Service Type

- Registered Insured
 Certified COD
 Express Mail Return Receipt for Merchandise

7. Date of Delivery

JUN 5 1995

5. Signature (Addressee)

6. Signature (Agent)

[Handwritten Signature]

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 311 902 898



Receipt for Certified Mail

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

PS Form 3800, March 1993

Sent to	Patrick Ho
Street and No.	TECO
P.O., State and ZIP Code	Tampa, 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	6-1-95 PSD-FI-040

THE TAMPA TRIBUNE

Published Daily

Tampa, Hillsborough County, Florida

State of Florida }
County of Hillsborough } ss.

Before the undersigned authority personally appeared R. Putney, who on oath says that he is Accounting Manager of The Tampa Tribune, a daily newspaper published at Tampa in Hillsborough County, Florida; that the attached copy of advertisement being a

LEGAL NOTICE

in the matter of

STATE OF FLORIDA

was published in said newspaper in the issues of

JUNE 17, 1995

Affiant further says that the said The Tampa Tribune is a newspaper published at Tampa in said Hillsborough County, Florida, and that the said newspaper has heretofore been continuously published in said Hillsborough County, Florida, each day and has been entered as second class mail matter at the post office in Tampa, in said Hillsborough 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 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.

Sworn to and subscribed before me, this 19 day of JUNE, A.D. 1995

Personally Known _____ or Produced Identification _____
Type of Identification Produced _____

(SEAL)

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, Southwest District
8407 Laurel Fair Circle
Tampa, Florida 33619
Environmental Protection Commission of Hillsborough County, 1900 - 9th Avenue
Tampa, Florida 33805

Any person may send written comments on the proposed action to Mr. A. A. Lirnero 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(s). Such requests must be submitted within 30 days of this notice.

3220 6/17/95

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
PROTECTION NOTICE OF INTENT TO ISSUE PERMIT AMENDMENT PSD-FL-040
The Department of Environmental Protection (Department) gives notice of its intent to issue a permit amendment to Tampa Electric Company, Inc., P.O. Box 111, Tampa, Florida 33601-0111. This company operates a coal-fired power generation facility located on Big Bend Road, near Ruskin, in Hillsborough County, Florida. The amendment allows the firing of a 80% coal/20% petroleum coke blend (by weight) in Big Bend Unit 4. Preliminary testing has shown that the existing air pollution control equipment is capable of controlling emissions such that no significant increase in air pollution from this source will occur. Therefore, this change will not cause or contribute to a violation of any air pollution standard or adversely affect the environment.
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

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):

- Addressee's Address
- Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
 Patrick Ho, Mgr of
 Envr. Planning
 Tampa Electric Co
 P.O. Box 111
 Tampa, FL 33601-0111

4a. Article Number
 Z 127 632 501

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

7. Date of Delivery
 SEP 11 1995

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: 1993-352-714

DOMESTIC RETURN RECEIPT

Thank you for using Return

Z 127 632 501



Receipt for Certified Mail

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

Sent to Patrick Ho	
Street and No. TECO	
City, State and ZIP Code Tampa 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	9-6-95 PSD-FI-040 BU # 4

PS Form 3800, March 1993

Best Available Copy

State of Florida

DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices
And/Or To Other Than The Addressee

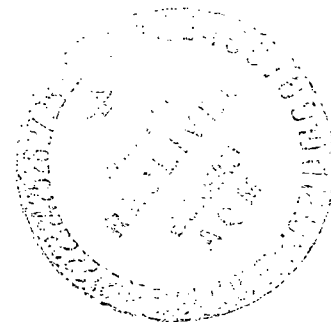
To: _____	Loctn.: _____
To: _____	Loctn.: _____
To: _____	Loctn.: _____
From: _____	Date: _____

TO: Power Plant Siting Review Committee

FROM: Hamilton S. Oven, Jr. *HSO*

DATE: January 28, 1981

SUBJECT: TECO Big Bend #4



By law DER must complete its report on TECO Big Bend #4 by April 19, 1981. In order to allow time for review by Steve Fox and Secretary Varn, a final draft should be complete by the end of March. Please submit any comments, analyses, opinions, recommendations or suggested conditions of certification as soon as practical but no later than March 1, 1981. If you need additional information, please contact me ASAP.
NOTE: Water quality variances may be requested.

We are also expecting an application from JEA on February 18, 1981.

HSOjr:my

cc: Suzanne Walker
Lou Hubener
Bill Brown
Bill Kutash
Steve Palmer
Larry Olsen
Bob King
Bill Hinkley
Al Bishop
Bob McVety
Don Kell
Rodney Dehan
Mickey Bryant
Jay Thabaraj

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO.

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION)

Bob King, Suite 600

INITIAL

DATE 1/28/81

2.

INITIAL

DATE

3.

INITIAL

DATE

4.

INITIAL

DATE

REMARKS:

Comments on -
 (1) Permit condition 0.03
 16/M4BTL
 (2) Drift impact from cooling tower operation



INFORMATION

REVIEW & RETURN

REVIEW & FILE

INITIAL & FORWARD

DISPOSITION

REVIEW & RESPOND

PREPARE RESPONSE

FOR MY SIGNATURE

FOR YOUR SIGNATURE

LET'S DISCUSS

SET UP MEETING

INVESTIGATE & REPT

INITIAL & FORWARD

DISTRIBUTE

CONCURRENCE

FOR PROCESSING

INITIAL & RETURN

FROM:

Buck Oven, Jr.

DATE 1/28/81

PHONE



El DEF

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

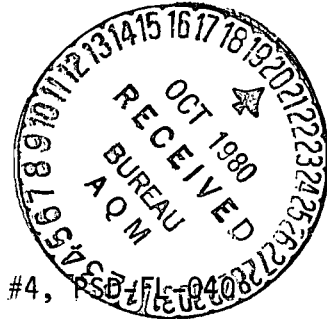
REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30308

OCT 17 1980

REF: 4AH-AF

Dr. William Johnson, Manager
Environmental Planning
Post Office Box 111
Tampa, Florida 33601



RE: Big Bend Unit #4,

Dear Dr. Johnson:

Review of the referenced application in accordance with Federal Prevention of Significant Deterioration (PSD) Regulations (40 CFR 52.21) continues. The August 7, 1980 amendments to the PSD Regulations has necessitated submittal of certain additional information.

Please submit information to answer the questions outlined on the attached page.

The information on allowable emissions in Question #1 is necessary due to the 1980 PSD Regulations' emphasis on regulated pollutants including criteria and non-criteria pollutants. Because your application was determined complete as of March 11, 1980 which precedes the promulgation date, additional BACT analysis and monitoring are not required. However, an analysis of emissions and allowable emissions rates must be included in your application.

Questions 2 and 3 are necessary to determine if the October 1, 1977 sulfur dioxide reduction affects increment consumption. The baseline date for sulfur dioxide for the Big Bend area is November 25, 1977. Since the reduction occurred prior to baseline date, it affects increment consumption only if it results from construction at a major stationary source. If in complying with the Florida imposed lower emissions limit the source did not undergo a physical change or a change in the method of operation, the reduction does not affect increment consumption.

Moreover, if the change is determined not to expand increment, additional analysis also will be required to demonstrate that emissions from the proposed modification do not threaten the allowable increment. A determination on whether or not increment was expanded by the 1977 reduction will be made on the basis of the information you submit.

Given this determination's potential impact on growth in the Big Bend area, your response should be thorough. In addition, we encourage that your response be prompt. A preliminary determination concerning approval cannot be made without review of the requested information.

Should you have questions regarding this letter please contact Kent Williams,
Chief, New Source Review, at 404/881-4552.

Sincerely,

Tommie A. Gibbs

Tommie A. Gibbs, Chief
Air Facilities Branch

TAG:JLS:cg

Attachment

ATTACHMENT

1. Provide emissions estimates from Unit #4 and proposed allowable emission rates for the following pollutants regulated under the Clean Air Act. Previously submitted information on this subject is summarized in the table.

Pollutant	Maximum Quantity Entering Boiler ^a (T/yr)	Significance Level ^b (T/yr)
Lead	c	0.6
Asbestos	c	0.007
Beryllium	3.1	0.0004
Mercury	0.21	0.1
Fluorides	117.0	3.0
Any other regulated pollutants	c	--

- a. Maximum amount (T/yr) in coal fired in the boiler estimated from data in the application, amendment 4.
 - b. Extracted from 40 CFR 52.21 (b)(23); 45FR52737.
 - c. No data provided in the application.
2. Was the October 1, 1977 reduction in sulfur dioxide emissions from Units #1-3 the result of construction at the source? If so, describe the physical change or the change in the method of operation which occurred.
 3. When will construction commence on the proposed modification?



0039
04

RECEIVED
SEP 25 1979
H.C.E.P. III

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
APPLICATION TO OPERATE/CONSTRUCT
AIR POLLUTION SOURCES

SOURCE TYPE: _____ [] New¹ [] Existing¹
APPLICATION TYPE: [] Construction [] Operation [] Modification
COMPANY NAME: Tampa Electric Company COUNTY: Hillsborough

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) stack emissions from combustion of coal, Unit No. 4, Big Bend Station

SOURCE LOCATION: Street Big Bend Road City Ruskin
UTM: East 361,900 North 3,075,000
Latitude 27 ° 47 ' 42 "N Longitude 82 ° 24 ' 16 "W

APPLICANT NAME AND TITLE: Tampa Electric Company
APPLICANT ADDRESS: P. O. Box 111 Tampa, FL 33601

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Tampa Electric Company
construction

I certify that the statements made in this application for a _____
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: William J. Johnson
W. J. Johnson, Manager-Environmental Planning
Name and Title (Please Type)
Date: _____ Telephone No. (813)879-4111

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 appli-
cant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution
sources.

Signed: William N. Cantrell
William N. Cantrell
Name (Please Type)
Tampa Electric Company
Company Name (Please Type)

(Affix Seal)

P. O. Box 111, Tampa, FL 33601
Mailing Address (Please Type)
Date: 9/21/79 Telephone No. (813)879-4111

Florida Registration No. 23494

¹See 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 will be that of constructing a coal-fired boiler and associated structures for the purpose of generating steam to drive a turbine to produce electricity.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction February 1982 Completion of Construction March 1985

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.)

Electrostatic Precipitator	\$10.0 million	preliminary estimate
Flue Gas Desulfurization	85.5 million	preliminary estimate
Waste Disposal System	7.0 million	preliminary estimate

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

N.A.

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 No

F. Normal equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr _____ ; if power plant, hrs/yr 6400 ; if seasonal, describe: N.A.

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? | <u>yes, ozone only</u> |
| a. If yes, has "offset" been applied? | <u>no</u> <u>Note 1</u> |
| b. If yes, has "Lowest Achievable Emission Rate" been applied? | <u>no</u> <u>Note 1</u> |
| c. If yes, list non-attainment pollutants. | |
| <u>ozone</u> | |
| 2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. | <u>yes</u> |
| 3. Does the State "Prevention of Significant Deterioration" (PSD) requirements apply to this source? If yes, see Sections VI and VII. | <u>yes</u> |
| 4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? | <u>yes</u> |
| 5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? | <u>yes</u> |

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		
Coal	See Section 111E - Fuels, for data on coal and its contaminants and its utilization rates.			

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): See Section 111E

2. Product Weight (lbs/hr): _____

C. Airborne Contaminants Emitted: Calculations on Attachment B

Name of Contaminant	Emission ¹		Allowed Emission ² Rate per Ch. 17-2, F.A.C. lbs per MMBTU			Allowable ³ Emission lbs/hr	Potential Emission ⁴		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr					lbs/hr	T/yr	
	NOTE 2		NOTE 3			NOTE 4	NOTE 5		
Particulates	433	997	0.1	/	0.03	130	50,364	115,966	
Sulfur Dioxide	5196	11,964	1.2	/	1.2	5196	51,960	119,641	
Nitrogen Dioxide	3031	6979	0.7	/	0.6	2598	2598	5982	

D. Control Devices: (See Section V, Item 4) calculation on Attachment C.

Name and Type (Model & Serial No.)	Contaminant	Efficiency NOTE 6	Range of Particles ⁵ Size Collected (in microns)	Basis for Efficiency (Sec. V, It ⁵)
Electrostatic Precipitator	Particulates	99.74	0.3 - 5.0	Design
Flue Gas Desulfurization	Sulfur Dioxide	70-90%	N.A.	Design

¹See Section V, Item 2.

²Reference 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)

³Calculated from operating rate and applicable standard

⁴Emission, if source operated without control (See Section V, Item 3)

⁵If Applicable

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		
Coal	See Section 111E - Fuels, for data on coal and its contaminants and its utilization rates.			

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): See Section 111E

2. Product Weight (lbs/hr): _____

C. Airborne Contaminants Emitted: Calculations on Attachment B

Name of Contaminant	Emission ¹		Allowed Emission ² Rate per Ch. 17-2, F.A.C. lbs per MMBTU		Allowable ³ Emission lbs/hr	Potential Emission ⁴		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr				lbs/hr	T/yr	
	NOTE 2		NOTE 3		NOTE 4	NOTE 5		
Particulates	433	997	0.1	/ 0.03	130	50,364	115,966	
Sulfur Dioxide	5196	11,964	1.2	/ 1.2	5196	51,960	119,641	
Nitrogen Dioxide	3031	6979	0.7	/ 0.6	2598	2598	5982	

D. Control Devices: (See Section V, Item 4) calculation on Attachment C.

Name and Type (Model & Serial No.)	Contaminant	Efficiency NOTE 6	Range of Particles ⁵ Size Collected (in microns)	Basis for Efficiency (Sec. V, It ⁵)
Electrostatic Precipitator	Particulates	99.74	0.3 - 5.0	Design
Flue Gas Desulfurization	Sulfur Dioxide	70-90%	N.A.	Design

¹See Section V, Item 2.

²Reference 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)

³Calculated from operating rate and applicable standard

⁴Emission, if source operated without control (See Section V, Item 3)

⁵If Applicable

	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 device: 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.):

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

- Total process input rate and product weight – show derivation. Maximum heat input to boiler is 4330 MMBTU/hour. Operating range is from approximately 35% to 100%.
- 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. 40 CFR 60, Subpart Da, June 11, 1979. See calculations on Attachment B for emission estimates. Please refer to attached PSD Application, Volume II - BACT:
- Attach basis of potential discharge (e.g., emission factor, that is, AP42 test). Section 3 - Regulatory Requirements. Please see calculations on Attachment B.
- 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, etc.). Please refer to PSD Application, Volume II - BACT: Section 4 - Proposed Air Pollution
- 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). Please refer to Attachment C.
- An 8½" 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. Please refer to Attachment D.
- An 8½" 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 (Example: Copy of relevant portion of USGS topographic map). Please refer to Attachment E.
- An 8½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram. Please refer to Attachment F.

Controls.

- 9. An application fee of \$20, unless exempted by Section 17-4.05(3), F.A.C. 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?
 Yes No

Contaminant	Rate or Concentration
Particulate	0.03 lbs per MMBTU (\geq 99% removal)
Sulfur Dioxide	1.20 lbs per MMBTU (70-90% removal)
Nitrogen Dioxide	0.60 lbs per MMBTU

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy) Yes No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration
Particulate	0.03 lbs per MMBTU (\geq 99% removal)
Sulfur Dioxide	1.20 lbs per MMBTU (70-90% removal)
Nitrogen Dioxide	0.60 lbs per MMBTU

D. Describe the existing control and treatment technology (if any). N.A.

- | | |
|---------------------------|----------------------|
| 1. Control Device/System: | 4. Capital Costs: |
| 2. Operating Principles: | 6. Operating Costs: |
| 3. Efficiency: * | 8. Maintenance Cost: |
| 5. Useful Life: | |
| 7. Energy: | |
| 9. Emissions: | |

Contaminant	Rate or Concentration

*Explain method of determining D 3 above.

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).

1. Please refer to attached PSD Application for thorough discussion of this question: Volume II - BACT, Section 5 - Alternative Air Pollution Controls; Section 6 - Evaluation of Alternative SO₂ Control Systems. Specific details will be supplied when selection of control systems vendor is made.

- a. Control Device:
- b. Operating Principles:
- c. Efficiency*:
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy*:
- 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*:
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy**:
- h. Maintenance Costs:
- 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:

*Explain method of determining efficiency.

**Energy to be reported in units of electrical power - KWH design rate.

3.

- a. Control Device:
- b. Operating Principles:
- c. Efficiency*:
- d. Capital Cost:
- e. Life:
- f. Operating Cost:
- g. Energy:
- h. Maintenance Cost:

*Explain method of determining efficiency above.

- 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*:
- d. Capital Cost:
- e. Life:
- f. Operating Cost:
- g. Energy:
- 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: Please refer to attached PSD Application: Volume II -

- 1. Control Device: BACT, Section 4 - Proposed Air Pollution Controls. Final details will be supplied when selection of control equipment vendor is made.
- 2. Efficiency*:
- 3. Capital Cost:
- 4. Life:
- 5. Operating Cost:
- 6. Energy:
- 7. Maintenance Cost:
- 8. Manufacturer:
- 9. Other locations where employed on similar processes:

a.

- (1) Company:
- (2) Mailing Address:
- (3) City:
- (4) State:
- (5) Environmental Manager:
- (6) Telephone No.:

*Explain method of determining efficiency above.

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*:

b.

- (1) Company:
- (2) Mailing Address:
- (3) City:
- (4) State:

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions*:

Contaminant	Rate or Concentration
<hr/>	<hr/>
<hr/>	<hr/>
<hr/>	<hr/>

(8) Process Rate*:

10. Reason for selection and description of systems:

*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

A. Company Monitored Data Please refer to attached PSD Application, Volume I – PSD:
 1. _____ no sites _____ TSP _____ () SO²* _____ Wind spd/dir Section 3.1 and 4.1.

Period of monitoring _____ / _____ / _____ to _____ / _____ / _____
 month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

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 Please refer to PSD Application, Volume I – PSD:

1. _____ Year(s) of data from _____ / _____ / _____ to _____ / _____ / _____ Section 3.2.
 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 Please refer to PSD Application, Volume I – PSD: Sections 3.2, 4.3;

1. _____ Section 5. 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. Applicant's Maximum Allowable Emission Data

Pollutant	Emission Rate
TSP	_____ 17.73 _____ grams/sec (0.03 lbs/MMBTU)
SO ²	_____ 709.43 _____ grams/sec (1.2 lbs/MMBTU)

E. Emission Data Used in Modeling Please refer to attached PSD Application: Appendix G.

Attach list of emission sources. Emission data required is source name, description on 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. Please refer to attached PSD Application.

*Specify bubbler (B) or continuous (C).

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.

Please refer to attached PSD Application: Volume II – BACT: Sections 5,6,7

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. Please refer to attached

PSD Application, Volume II – BACT.

NOTES

1. Calculations (Attachment A) show that emissions of volatile organic compounds from the proposed source are below the exemption cutoff level found in 17-2.17(3)(a)1.a.
2. Calculation based on current FDER allowable emission rates.
3. Slash divides FDER allowable emission rate on the left from EPA (NSPS) emission rate on the right.
4. Calculation based on EPA (NSPS) allowable emission rate effective June 11, 1979.
5. Potential particulate emissions are calculated using a design coal at standard operating conditions.

Potential sulfur dioxide emissions are calculated using highest sulfur coal reasonably considered.

Potential nitrogen oxides emissions are calculated using the allowable rates since the control is the design of the boiler which cannot be changed or "turned off."

6. Efficiency for particulate is calculated using design coal at standard operating conditions (Attachment C).

Efficiency for sulfur dioxide is based on the NSPS and on a range of sulfur content.

7. This fuel analysis is for a precipitator specification design coal. The actual coal composition may vary considerably from this analysis.
8. Gas Flow Rate, Exit Temperature, Water Vapor Content, and Velocity are given for Unit 4 only. The flue gas will enter the existing stack that also serves Unit 3.

CALCULATIONS

$$\frac{.01 \text{ lbs VOC}}{\text{ton coal}} \times \frac{206.5 \text{ tons}}{\text{hour}} = 2.065 \frac{\text{lbs VOC}}{\text{hour}}$$

$$\frac{.01 \text{ lbs VOC}}{\text{ton coal}} \times \frac{1,000,000 \text{ tons}}{\text{year}} \times \frac{1 \text{ ton}}{2,000 \text{ lbs}} \times \frac{5 \text{ ton VOC}}{\text{year}}$$

The factor $\left(\frac{.01 \text{ lbs VOC}}{\text{ton coal}}\right)$ is taken from a January 23, 1978 EPA memorandum recommending the use of this factor until AP-42 can be revised.

CALCULATIONS

IIIC. Airborne Contaminants Emitted

Emissions

Particulates

$$\frac{4330 \text{ MMBTU}}{\text{hour}} \times \frac{0.1 \text{ lbs}}{\text{MMBTU}} = \frac{433 \text{ lbs}}{\text{hour}}$$

$$\frac{433 \text{ lbs}}{\text{hour}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} \times \left(\frac{8760 \text{ hrs}}{\text{yr}} \times .5257 \right) = \frac{977 \text{ tons}}{\text{year}}$$

Sulfur Dioxide

$$\frac{4330 \text{ MMBTU}}{\text{hour}} \times \frac{1.2 \text{ lbs}}{\text{MMBTU}} = \frac{5196 \text{ lbs}}{\text{hour}}$$

$$\frac{5196 \text{ lbs}}{\text{hour}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} \times \left(\frac{8760 \text{ hrs}}{\text{year}} \times .5257 \right) = \frac{11,964 \text{ tons}}{\text{year}}$$

Nitrogen Dioxide

$$\frac{4330 \text{ MMBTU}}{\text{hour}} \times \frac{0.7 \text{ lbs}}{\text{MMBTU}} = \frac{3031 \text{ lbs}}{\text{hour}}$$

$$\frac{3031 \text{ lbs}}{\text{hour}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} \times \left(\frac{8760 \text{ hrs}}{\text{year}} \times .5257 \right) = \frac{6979 \text{ tons}}{\text{year}}$$

Allowable Emissions

Particulates

$$\frac{4330 \text{ MMBTU}}{\text{hour}} \times \frac{0.03 \text{ lbs}}{\text{MMBTU}} = \frac{130 \text{ lbs}}{\text{hour}}$$

Sulfur Dioxide

$$\frac{4330 \text{ MMBTU}}{\text{hour}} \times \frac{1.2 \text{ lbs}}{\text{MMBTU}} = \frac{5196 \text{ tons}}{\text{year}}$$

CALCULATIONS

Nitrogen Dioxide

$$\frac{4330 \text{ MMBTU}}{\text{hour}} \times \frac{0.6 \text{ lbs}}{\text{MMBTU}} = 2598 \frac{\text{tons}}{\text{year}}$$

Potential Emissions

Particulate

$$\frac{2.67 \text{ gr}}{\text{acfm}} \times \frac{1.429 \times 10^{-4} \text{ lbs}}{\text{grain}} \times 2,200,000 \text{ acfm} \times \frac{60 \text{ min}}{1 \text{ hour}} = 50,364 \frac{\text{lbs}}{\text{hour}}$$

$$\frac{50,364 \text{ lbs}}{\text{hour}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} \times \left(\frac{8760 \text{ hrs}}{\text{year}} \times .5257 \right) = 115,966 \frac{\text{tons}}{\text{year}}$$

Sulfur Dioxide

$$\frac{4330 \text{ MMBTU}}{\text{hour}} \times \frac{1.2 \text{ lbs}}{\text{MMBTU}} = \frac{51,960 \text{ lbs}}{\text{hour}}$$

$$\frac{51,960 \text{ lbs}}{\text{hour}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} \times \left(\frac{8760 \text{ hrs}}{\text{year}} \times .5257 \right) = 119,641 \frac{\text{tons}}{\text{year}}$$

Nitrogen Dioxide

$$\frac{4330 \text{ MMBTU}}{\text{hour}} \times \frac{0.6 \text{ lbs}}{\text{MMBTU}} = \frac{2598 \text{ lbs}}{\text{hour}}$$

$$\frac{2598 \text{ lbs}}{\text{hour}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} \times \left(\frac{8760 \text{ hrs}}{\text{year}} \times .5257 \right) = 5982 \frac{\text{tons}}{\text{year}}$$

NOTE: These particulate emissions are calculated using design inlet grain loading from the precipitator specification in order to facilitate efficiency calculations. Elsewhere in the application, a slightly different particulate emission rate has been calculated using ash content of the design coal in order to facilitate fly ash and bottom ash calculations.

CALCULATIONS

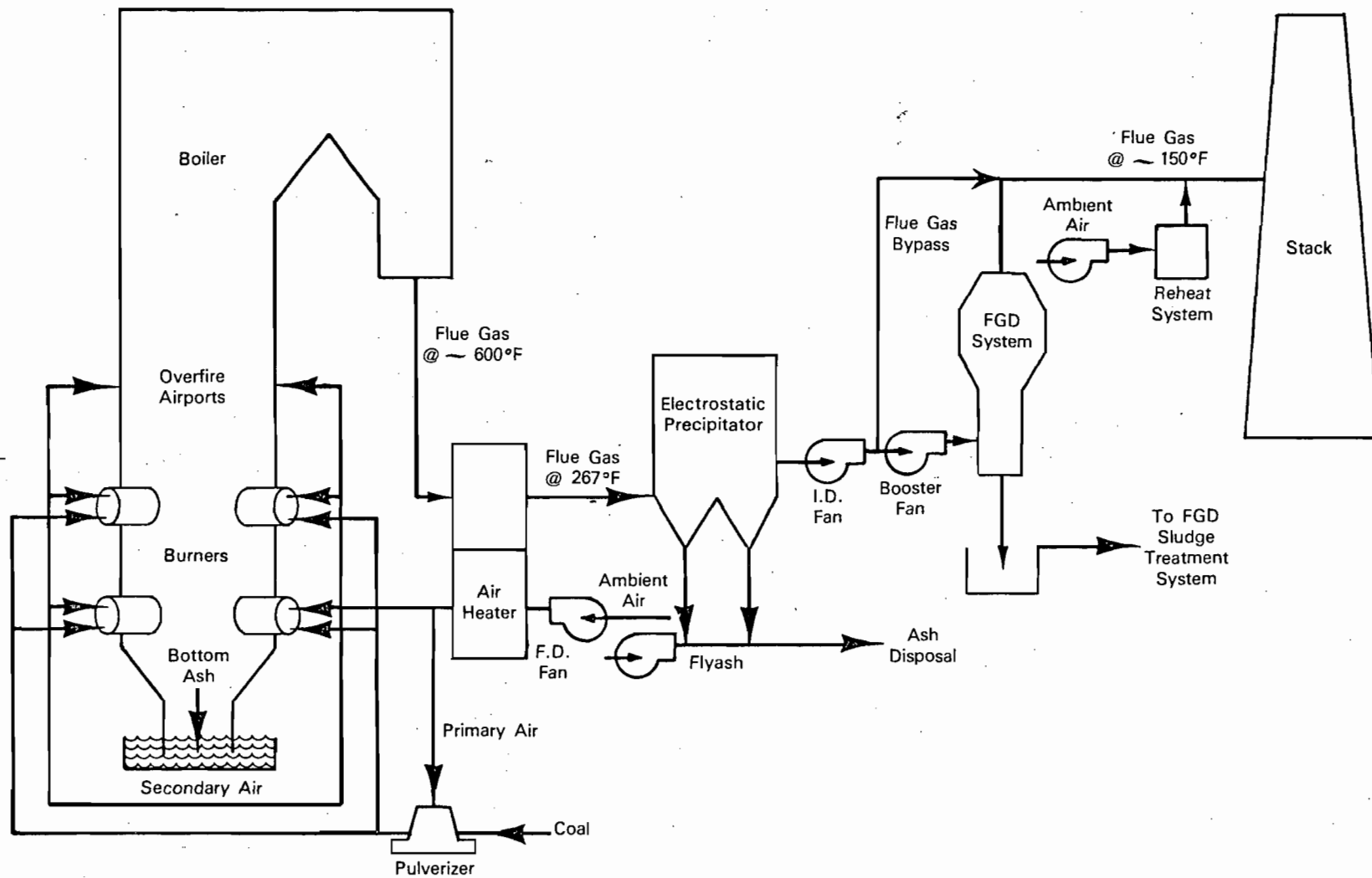
Inlet Grain Loading

$$\frac{2.67 \text{ gr}}{\text{acfm}} \times \frac{1.429 \times 10^{-4} \text{ lbs}}{\text{grain}} \times \frac{60 \text{ min.}}{\text{hour}} \times 2,200,000 \text{ acfm} = \frac{50,364 \text{ lbs}}{\text{hour}}$$

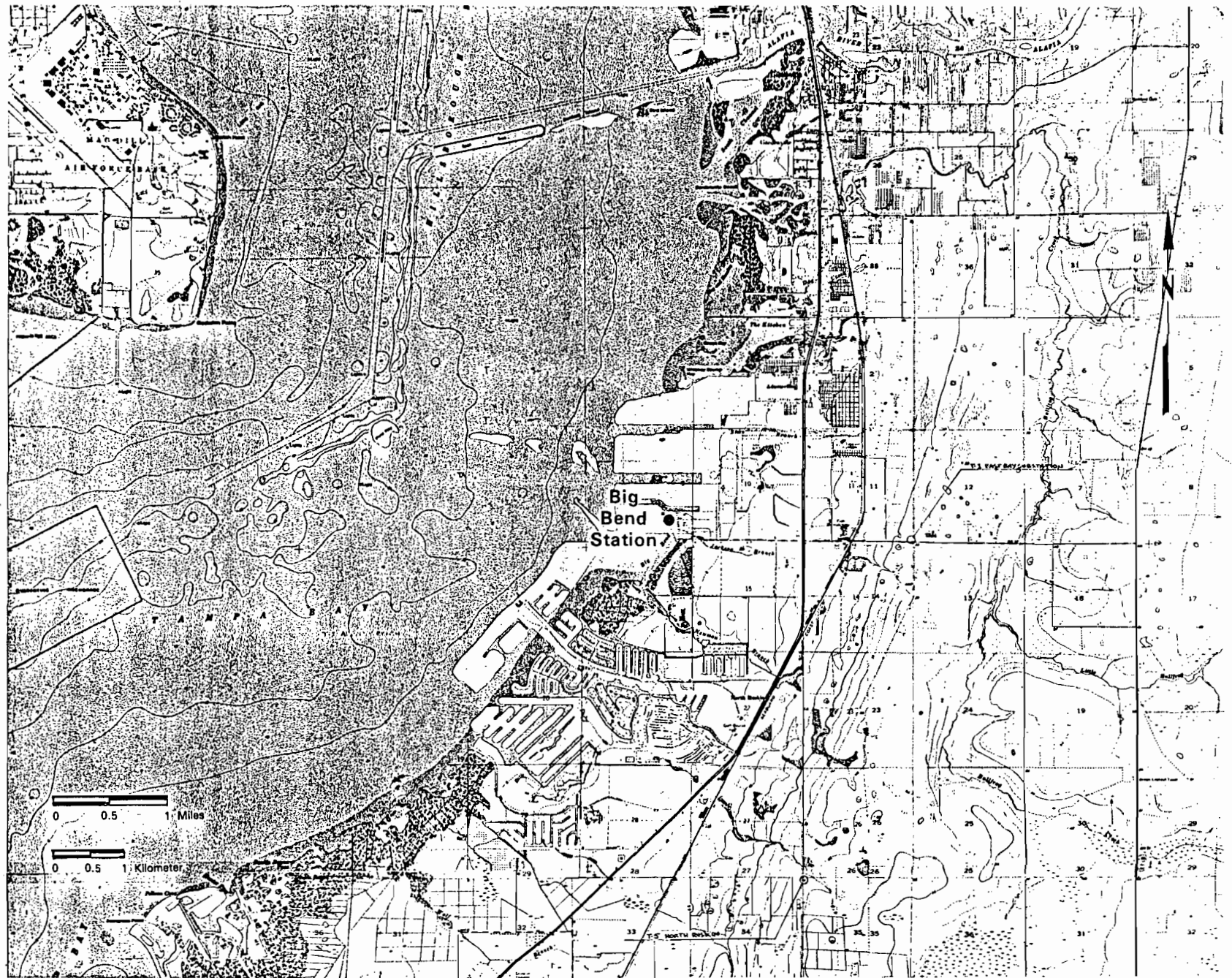
Outlet Grain Loading

$$\frac{0.007 \text{ gr}}{\text{acfm}} \times \frac{1.429 \times 10^{-4} \text{ lbs}}{\text{grain}} \times \frac{60 \text{ min}}{\text{hour}} \times 2,200,000 \text{ acfm} = \frac{130 \text{ lbs}}{\text{hour}}$$

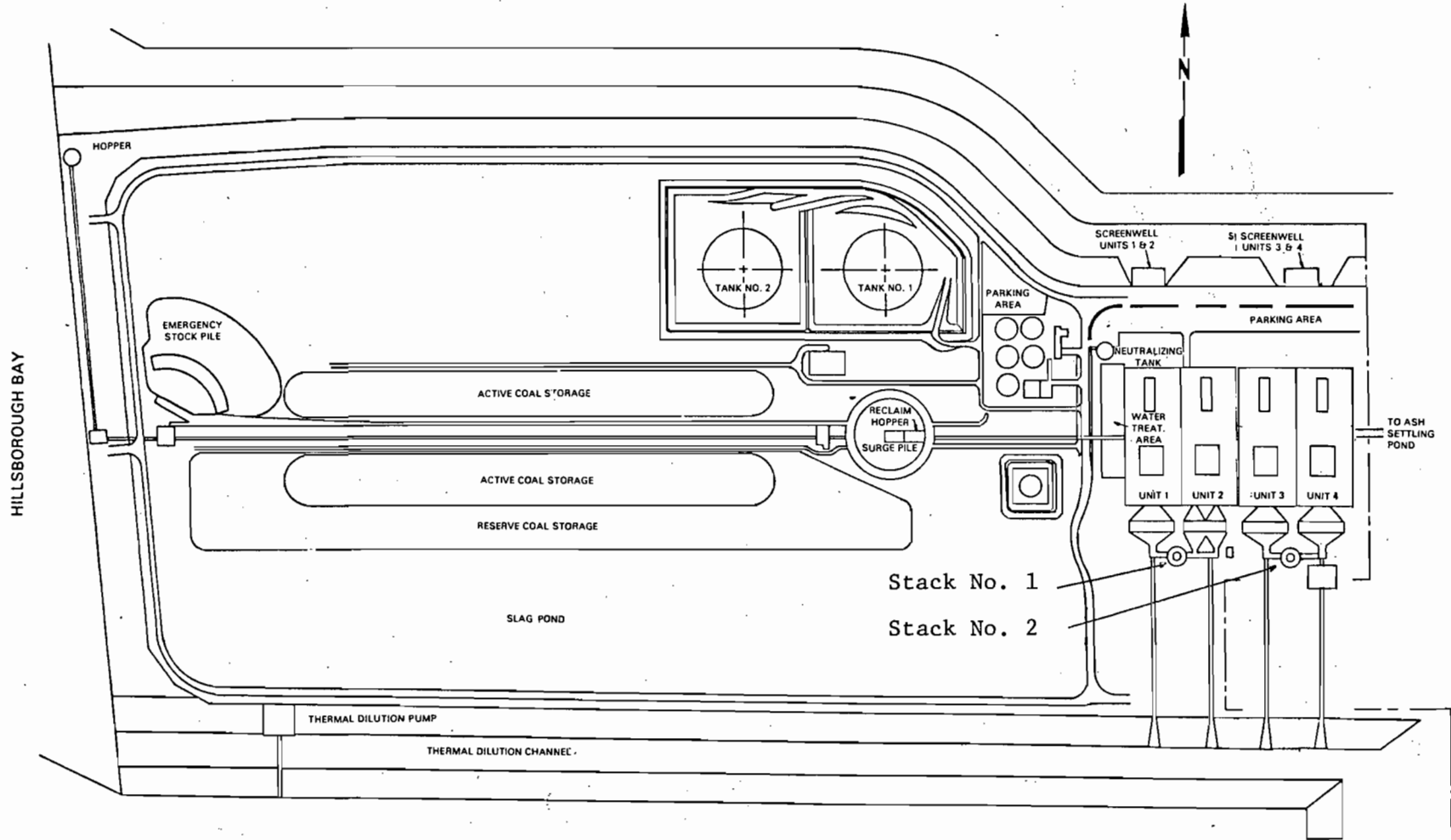
$$\text{Efficiency} = \frac{50,364 - 130}{50,364} \times 100 = 99.74\%$$



Proposed Air Pollution Control Systems for Big Bend Station Unit 4



Site Location Map



Plant Layout