

TO: STERLIN WOODARD
FROM: RON DENNIS
DATE: APRIL 20, 2005
SUBJECT: BIG BEND STATION SCR MEETING OF 4/6/05 MINUTES

On April 6, 2005, Diana Lee, Alice Harman, Jeff Sims, and I along with Al Linero, Jeff Koerner, and Cindy Mulkey of FDEP met with Laura Crouch, Byron Burrows, Mark Rhode, and Shelly Castro of Tampa Electric to review their Big Bend Station's Selective Catalytic Reduction (SCR) system for nitrogen oxides control on the coal-fired Steam Generator Unit No. 4 coal-fired boiler (0570039-020-AC).

Shelly Castro started the meeting off with introductions and then proceeded to explain the basis for the SCR project. Based on a 1998 baseline of 0.4 lb/mmBTU, NO_x reduction is required by the Consent Order to be reduced by 75% or to 0.1 lb/mmBTU. Current NO_x emissions are between 0.26 to 0.28 lb NO_x per million BTU. The SCR project is expected to further reduce NO_x emissions to meet the established 0.1 lb/mmBTU limit.

Next Mark Rhode gave an overview of the SCR project. As part of this overview, he mentioned that the project would include economizer by-pass ducts to minimize the catalyst temperature and a multi-port Sulzer ammonia injection grid followed by a mixer, turning vane, and rectifier downstream. He also mentioned that the project will most likely use ammonia to mitigate sulfur trioxide after the air pre-heater and would not require sulfur trioxide injection to insure resistivity in the electrostatic precipitator. In addition, Mark stated that the two plus one layer of catalyst would be a honeycomb graphite design. Furthermore, he stated that the dilution air stream may not have to be heated. Finally, Mark proceeded to address our earlier questions as follows:

1. In the Introduction part of the permit application, it states that the third catalyst management layer, which is designed to maximize the residual catalyst life and lower operating costs, will be initially empty and will be charged as the initial two catalyst layers lose activation. What will be the criteria for charging this layer and for replacement of the other layers? What inspection procedures will be established to provide timely identification of lost activation of the first two layers? What is the maintenance plan for the catalyst once it starts to lose its activity? In addition, what is the design capacity of each catalyst bed?

A test coupon will be the criteria used to change a catalyst layer. 6 x 6 inch sections of test coupons will be randomly placed in a catalyst layer. They will be removed and tested for reactivity. Catalyst layer changes will also be based on minimum operating hours. TECO anticipates having the 3rd catalyst layer in place in 2 to 3 years.

2. In the Introduction part of the permit application, it states that TECO is currently evaluating available options with respect to ammonia type and supply, and will notify FDEP when TECO's plans are finalized. What is the timing with respect to the final evaluation of these options? Do these options include gaseous ammonia, ammonia as aqueous solution, and urea as aqueous solution? If so, how will the ammonia be brought in – pipeline, tank truck, railcar, ship?

The ammonia supply may be anhydrous ammonia. Its delivery is still uncertain at this time.

3. In the Introduction part of the permit application, it states that SCR tuning (i.e., adjustment of the ammonia injection grid) will be performed during the initial commissioning of the system. How will this tuning be conducted? What is expected layout? How many injection ports are expected? How will assurance be provided that the settings remain consistent (i.e. injection rate, geometry of grid and angles of injection, etc.)?

The tuning grid will be multi-port with a pre-determined number of ports. The initial tuning burden will be on the catalyst supplier. It will be based on a NO_x/NH_3 ratio. However, ammonia consumption will be monitored. Any ammonia slip will be indicated by monitoring the pressure drop across the pre-heater. Annual stack testing of ammonia slip shall be required. Tuning will be checked once a year. Tuning will be done first on bulk volume then it will be controlled automatically.

4. In the Introduction part of the permit application, it states that SO_3 will increase as a result of the vanadium-containing catalyst in SCR control systems. What is the projected increase of SO_3 from this catalyst?

The projected increase in sulfur trioxide is a function of residence time, catalyst formulation, and temperature. The SCR will utilize a low sulfur dioxide to sulfur trioxide conversion catalyst.

5. Which companies are being considered for the design and construction of the Unit SCR project? Has TECO already requested bids for this work? If not, when do they plan to do so?

Several companies are being considered but Sargent Lundy is doing the engineering.

6. Which catalyst suppliers are being considered for the Unit 4 SCR project? What catalyst composition (i.e., vanadium oxide, tungsten oxide, titanium oxide, silicon oxide) and configuration (i.e., honeycomb, plate) are being proposed? What is the proposed temperature range for the catalyst bed? It our understanding that the specific operating temperature chosen is a function of the catalyst.

There are six predominant catalyst players; however, TECO has given the bid to Cormetech for a honeycomb catalyst.

7. It is our understanding that a temperature range of 650 – 750 °F provides sufficient heat for catalyst activity for vanadium/titanium oxide catalyst beds, while minimizing the rate of oxidation of SO₂ to SO₃, which is more temperature sensitive than the catalyst reaction. However, inspections conducted by EPC Compliance staff indicate that air preheater temperatures are closer to 800 °F. How does TECO plan to operate the SCR so that the optimum temperature range is maintained for catalyst activity for a vanadium/titanium oxide catalyst bed?

According to TECO, because of a confidentiality agreement, they cannot divulge the operating temperature of the catalyst. However, they stated that it was greater than 600 °F and less than 650 °F. TECO mentioned that sulfur in the fuel affects the lower end of the temperature range. TECO also mentioned that operating temperatures greater than 720 °F are problematic – for every 40 °F increase, the SO₂/SO₃ conversion doubles. For reference, the current temperatures in the duct at the proposed location are around 650 to 700 °F but vary with the load.

8. We are concerned that the air preheater temperatures cited in the previous comment could also present problems with respect to the generation of excess NO₂. According to the chemistry of the SCR process, two moles of ammonia are required to react with one mole of NO₂ whereas one mole of ammonia is required to react with one mole of NO. Therefore, we are concerned that the higher air preheater temperatures will generate more NO₂ and require a higher ammonia flow rate, which could dramatically decrease the NO_x removal efficiency and increase ammonia slip. Based upon our research, typical NO/NO₂ ratios in the flue gas for coal-fired boilers is in the range from 10:1 to 20:1. In order to provide reasonable assurance of compliance with the 50 to 70% NO_x removal rate cited in the application, what are the expected NO/NO₂ ratios and ammonia feed rate for the SCR system? In addition, since Unit 4 air preheater temperatures appear to be closer to 800 °F, which is at the lower end of the optimum operating temperature, how will TECO insure compliance with the 70% NO_x removal rate, which is at the higher end of the expected control efficiency range?

According to TECO, there are no NO₂ issues associated with the air pre-heater temperature.

9. The permit application indicates that coal, No. 2 fuel oil, petcoke, and raw coal can be burned in Unit 4. What are the impacts of these materials on the operation of the SCR catalyst, economizer, and air preheater? Are any of these materials capable of fouling the catalyst? If so, what measures, such as soot blowing, will be taken to prevent fouling of the catalyst? Based upon our research, arsenic, as well as other heavy metals, can cause catalyst “poisoning.” What are the expected arsenic and heavy metals concentrations in the flue gas?

TECO specified various fuels including petcoke to their catalyst supplier. They told us that too much petcoke would require that the catalyst be reactivated. However, use of the various fuels in typical quantities experienced at the plant is not expected to adversely affect the catalyst beyond normal deterioration/activation

10. In the Technical Evaluation and Preliminary Determination supplied by the FDEP, Unit 4 NO_x emissions through the third quarter of 2004 were stated to be 0.22 lb /mmBtu. However, a review of their 4th quarter emissions report showed that NO_x emissions were as high as 0.256 lb/mmBtu. In the permit application, TECO claimed that the SCR unit would be capable of achieving a 50% to 70% control efficiency. In order to achieve compliance with the 0.10 lb/mmBtu emission limit, TECO would have to achieve a minimum control efficiency of 60%. How will TECO provide reasonable assurance that this minimum control efficiency will be met at all times?

TECO stated that they gave a detailed specification to their catalyst supplier as to what they were required to meet (i.e., 0.10 lb NO_x/mmBtu).

11. It is our understanding that the velocity and pressure drop across the SCR catalyst bed can impact control efficiencies. High velocity units have typical pressure drops between 8 to 10 inches of water and have NO_x control efficiencies between 30% and 40% with a maximum efficiency of around 50%. On the other hand, more standard units have pressure drops ranging 4 to 5 inches of water. In order to provide reasonable assurance of compliance with the 0.10 lb/mmBtu limit, it appears that TECO will have to achieve a minimum control efficiency of 60%. What reasonable assurance will TECO provide to insure that the SCR unit is not a high velocity unit which has a maximum control efficiency of 50%? In addition, what are the expected design air flow rate and pressure drop for the SCR unit?

TECO stated that the pressure drop across their catalyst bed will be typical for a low ΔP catalyst. This bed will also have low face velocities, which are indicative of good industrial practice.

12. What is the basis for the 50 to 70% control efficiency cited in the application? Does this 50 to 70% control efficiency vary according to the manufacturer of the SCR equipment?

According to TECO, the basis is 0.28 lb NO_x/mmBTU. TECO provided the necessary standard for compliance of 0.1 lb NO_x/mmBTU to the catalyst manufacturer. The manufacturer has guaranteed compliance with this standard, which includes the necessary control efficiency.

13. What is the current baseline of NO_x? Based on this baseline, what is the value for 50 to 70% reduction in NO_x?

According to TECO, the baseline is 0.28 lb NO_x/mmBTU

14. If TECO can get 50 to 70% control efficiency as they claim, why is this not used in the calculation of emissions instead of using the consent decree maximum allowed?

TECO stated that they will meet the consent decree limit.

15. How did TECO arrive at 5 ppmv as the target value for ammonia slip?

According to TECO, 5 ppmv is the typical industrial standard. They also came up with this value by looking at other utilities and stack tests.

16. Measurement of ammonia slip on an annual basis is proposed for monitoring. What if failure occurs after 6 months? What other monitoring mechanisms are suggested to indicate that the efficiency of the unit is maintaining proper levels at all times? Is a correlation between the initial testing of the system and measurement of NO_x by CEMs going to establish a NO_x relation to indicate continual compliance?

TECO stated that any ammonia slip would be picked up in the SCR as increased pressure drop across the pre-heater. TECO also stated that a high dust application could impact CEMs because the laser can't go very far under this condition. In addition, in a high dust application, TECO would have to sound horns to clean the catalyst and vacuum off the catalyst. In addition, TECO indicated that the use of sonic horns would be employed as part of normal operation to help prevent fouling. Under extended maintenance, vacuuming and inspecting of the beds will be employed.

In closing, TECO suggested that we might want to visit OUC in Stanton to see a SCR in operation. In addition, Al Linero encouraged TECO to do their public notice as soon as possible to get the permit clock started again. He then said that the responses to our questions would be addressed in the final permit and not in a revised draft permit.

cc: Al Linero – FDEP (e-mail)
Diana Lee
Alice Harman
Jeff Sims



Department of Environmental Protection

Jeb Bush
Governor

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

Colleen M. Castille
Secretary

March 18, 2005

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Ms. Karen Sheffield, General Manager
Big Bend Station
Tampa Electric Company
Post Office Box 111
Tampa, Florida 33601-0111

Re: Big Bend Unit 4
DEP File No. 0570039-020-AC
Selective Catalytic Reduction System

Dear Ms. Sheffield:

Enclosed are documents indicating the Department's intent to issue an air construction permit for installation of a selective catalytic reduction system on Unit 4 at the Big Bend Station in Tampa. The documents include: the "Intent to Issue Air Construction Permit"; the "Public Notice of Intent to Issue Air Construction Permit"; the Department's "Technical Evaluation and Preliminary Determination"; and, the Draft Permit.

The Public Notice must be published one time only as soon as possible in a newspaper of general circulation in the area affected, pursuant to Chapter 50, Florida Statutes. Proof of publication, i.e., newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within seven (7) 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.

Electronic versions of these documents have been posted on the Division of Air Resource Management's world wide web site for the United States Environmental Protection Agency (U.S. EPA) Region 4 office's review. The web site address is:

<http://www.dep.state.fl.us/air/eproducts/ards/default.asp> (Permit No. 0570039-020-AC)

Please submit any other written comments you wish to have considered concerning the Department's proposed action to Mr. A. A. Linero, Program Administrator, South Permitting Section at the above letterhead address. If you have any questions, please call Tom Cascio at 850/921-9526 or Mr. Linero at 850/921-9523.

Sincerely,

Trina L. Vielhauer, Chief
Bureau of Air Regulation

TLV/aal/tc

Enclosures

"More Protection, Less Process"

Printed on recycled paper.

In the Matter of an
Application for Permit by:

Ms. Karen Sheffield, General Manager
Big Bend Station
Tampa Electric Company
P.O. Box 111
Tampa, FL 33601-0111

DEP File No. 0570039-020-AC
Nitrogen Oxides Reduction Project
Selective Catalytic Reduction
Big Bend Station Unit No. 4
Hillsborough County

INTENT TO ISSUE AIR CONSTRUCTION PERMIT

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit (copy of permit attached) for the project, detailed in the application specified above and the enclosed Technical Evaluation and Preliminary Determination, for the reasons stated below.

The applicant, Tampa Electric Company (TEC), operates the Big Bend Station located at Big Bend Road, North Ruskin, Hillsborough County. TEC applied on February 15, 2005 for an air construction permit to install a selective catalytic reduction (SCR) system for nitrogen oxides (NO_x) control on the facility's Unit No. 4 coal-fired boiler. The project is part of a larger program by TEC pursuant to a Consent Final Judgment with the Department and a Consent Decree with the Environmental Protection Agency to reduce emissions from the coal fired plants. This air construction permit will also establish these specific projects as applicable requirements for subsequent incorporation into the facility Title V Operation Permit.

The Department has permitting jurisdiction under the provisions of Chapter 403.087, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210 and 62-213. This action is not exempt from permitting procedures. The Department has determined that an air construction permit is required.

The Department intends to issue this air construction permit based on the belief that reasonable assurances have been provided to indicate that operation of these emission units will not adversely impact air quality, and the emission units will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C.

Pursuant to Section 403.815, F.S., and Rule 62-110.106(7)(a)1., F.A.C., you (the applicant) are required to publish at your own expense the enclosed Public Notice of Intent to Issue Air Construction Permit. The notice shall be published one time only in the legal advertisement section of a newspaper of general circulation in the area affected. Rule 62-110.106(7)(b), F.A.C., requires that the applicant cause the notice to be published as soon as possible after notification by the Department of its intended action. For the purpose of these rules, "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. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 850/488-0114; Fax 850/922-6979). You must provide proof of publication within seven days of publication, pursuant to Rule 62-110.106(5), F.A.C. No permitting action for which published notice is required shall be granted until proof of publication of notice is made by furnishing a uniform affidavit in substantially the form prescribed in section 50.051, F.S. to the office of the Department issuing the permit. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rules 62-110.106(9) & (11), F.A.C.

The Department will issue the final construction permit unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed permit issuance action for a period of fourteen (14) days from the date of publication of Public Notice. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the construction permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

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.

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. 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.

Executed in Tallahassee, Florida.



Trina L. Vielhauer, Chief
Bureau of Air Regulation

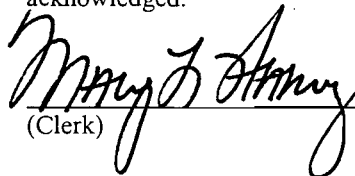
CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Intent to Issue Air Construction Permit (including the Public Notice, Technical Evaluation and Preliminary Determination, and the Draft permit) was sent by certified mail (*) and copies were mailed by U.S. Mail or by e-mail before the close of business on 3/21/05 to the person(s) listed:

Karen Sheffield, General Manager, TEC Big Bend Station*
Thomas Davis, P.E.
Shelly Castro, TEC
Alice Harman, EPCHC
Jason Waters, FDEP-SWD
Greg Worley, EPA Region 4

Clerk Stamp

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


(Clerk)

3/21/05
(Date)

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP File No. 0570039-020-AC

Tampa Electric Company
Big Bend Station, Hillsborough County

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit to Tampa Electric Company (TEC) for the Big Bend Station located at Big Bend Road, North Ruskin, Hillsborough County. This permit is for installation of a selective catalytic reduction (SCR) system on Steam Generators No. 4 for the reduction of emissions of nitrogen oxides (NO_x). A Best Available Control Technology (BACT) determination was not required pursuant to Rules 62-212.400, F.A.C. and 40 CFR 52.21, Prevention of Significant Deterioration (PSD). The applicant's mailing address is: Tampa Electric Company, P.O. Box 111, Tampa, Florida 33601-0111.

The SCR project is part of a larger program by TEC pursuant to a Consent Final Judgment (CFJ) with the Department and a Consent Decree (CD) with the Environmental Protection Agency to reduce emissions from its coal fired plants. There have been very substantial reductions of sulfur dioxide (SO₂) to-date primarily due to the installation of a scrubber on Units 1 and 2. Other NO_x control projects including installation of Low NO_x burners and separate overfire air were previously approved.

Previous projects have already reduced NO_x emissions from Unit 4 from 0.40 pounds per million Btu of heat input (lb/mmBtu) in 1998 to 0.22 lb/mmBtu in 2004. This air construction permit will establish the SCR project as an applicable requirement for subsequent incorporation into the facility Title V Operation Permit. For reference, the permit will include a limit of 0.10 pounds of NO_x per million Btu of heat input (lb/mmBtu) from Unit 4.

The new NO_x emissions limit is much less than the other applicable limits of 0.44 lb/mmBtu and 0.60 lb/mmBtu for the same unit under the Federal Acid Rain Program and the applicable New Source Performance Standard. Further control of NO_x will reduce smog formation potential in the Tampa Bay area. SCR in combination with the existing scrubber on Unit 4 is also expected to reduce mercury emissions.

The Department will issue the Final construction permit unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed construction permit issuance action for a period of fourteen (14) days from the date of publication of this Public Notice of Intent to Issue Air Construction Permit. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below. Mediation is not available in this proceeding.

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.

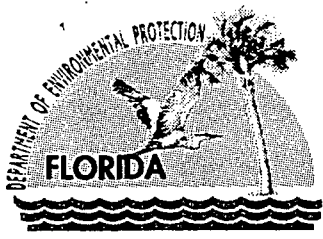
A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by rule 28-106.301

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.

A complete project file 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:

Dept. of Environmental Protection Bureau of Air Regulation Suite 4, 111 S. Magnolia Drive Tallahassee, Florida, 32301 Telephone: 850/488-0114 Fax: 850/922-6979	Dept. of Environmental Protection Southwest District 3804 Coconut Palm Drive Tampa, Florida 33619-8218 Telephone: 813/744-6100 Fax: 813/774-6084	Hillsborough County Environmental Protection Commission Air Management Division 1410 North 21 Street Tampa, Florida 33605 Telephone: 813/272-5530
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The complete project file includes the permit application, technical evaluation, Draft construction permit, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Department's reviewing engineer for this project, Tom Cascio at MS 5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, or Tom.Cascio@dep.state.fl.us, or call 850/921-9526 for additional information. Key documents may also be viewed at: www.dep.state.fl.us/Air/permitting/construction.htm in the power plant category.



Department of Environmental Protection

Jeb Bush
Governor

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

Colleen M. Castille
Secretary

DRAFT AIR CONSTRUCTION PERMIT NO. 0570039-020-AC

PERMITTEE

Tampa Electric Company (TEC)	File/Permit No.	0570039-020-AC
Big Bend Station	Facility ID:	0570039
Post Office Box 111	Project:	NO _x Reduction (SCR)
Tampa, Florida 33601-0111		Steam Generator Unit 4
<i>Authorized Representative:</i>	SIC No.	4911
Karen Sheffield, General Manager	Expires:	December 31, 2007
	County	Hillsborough

PROJECT AND LOCATION

This is an Air Construction Permit for the installation of a selective catalytic reduction system for nitrogen oxides control on the coal-fired Steam Generator Unit No. 4 coal-fired boiler. The reductions are part of an emissions reduction program required by a Consent Final Judgment with the Department and a Consent Decree with the United States Environmental Protection Agency. The air construction permit will also establish these specific projects as applicable Title V Operation Permit conditions.

The Tampa Electric Company (TEC) Big Bend Station is located at Big Bend Road, North Ruskin, Hillsborough County. UTM Coordinates are Zone 17, 361.9 km East and 3075.0 km North; Latitude: 27° 47' 36" North and Longitude: 82° 24' 11" West.

STATEMENT OF BASIS

This Air Construction Permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.). The above named permittee is authorized to install the SCR system at the facility in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

THE ATTACHED APPENDIX IS MADE A PART OF THIS PERMIT:

Appendix GC Construction Permit General Conditions

Michael G. Cooke, Director
Division of Air Resource Management

"More Protection, Less Process"

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FACILITY DESCRIPTION

This facility consists primarily of four existing fossil fuel steam generators (boilers) and three simple-cycle combustion turbines. Emissions from all steam generators are controlled by electrostatic precipitators (ESPs), and flue gas desulfurization (FGD) systems. There are ongoing nitrogen oxides (NO_x) control projects pursuant to a Consent Final Judgment (CFJ) between TEC and the Department and a Consent Decree (CD) between TEC and the United States Environmental Protection Agency (EPA).

EMISSIONS UNITS

This permit addresses the installation of an ammonia or urea injection system and catalyst at the following Unit:

Emission Unit No.	System	Emission Unit Description
004	Power Generation	486 MW Fossil Fuel Steam Generator

The proposed project is called selective catalytic reduction (SCR). Recent NO_x control projects on Unit 4 include: installation of new coal nozzles suitable for low NO_x operation; modification redesign of windbox components to allow for proper distribution and staging of air; and installation of a separate overfire air (SOFA) system on Unit 4.

REGULATORY CLASSIFICATION

The facility is classified as a Major or Title V Source of air pollution because emissions of at least one regulated air pollutant, such as particulate matter (PM/PM₁₀), sulfur dioxide (SO₂), nitrogen oxides (NO_x), carbon monoxide (CO), or volatile organic compounds (VOC), exceed 100 tons per year (TPY).

The addition of SCR to Unit No. 4 reduces actual and allowable NO_x emissions. It has been determined by the Department that the project is classified as a Pollution Control Project, as defined in 40 CFR 52.21(b)32, and meets the requirements of Rule 62-212.400(2)(a)2., F.A.C., and 40 CFR 52.21(b)(2)(iii)(h). Therefore, the project is not a modification under Department regulations.

PERMIT SCHEDULE

- Month Day, 2005 Notice of Intent to Issue Permit published.
- March 18, 2005 Intent to Issue Permit distributed.
- February 15, 2005 Application deemed complete.
- February 15, 2005 Application received.

RELEVANT DOCUMENTS

The documents listed below are the basis of the permit. They are specifically related to this permitting action, but not all are incorporated into this permit. These documents are on file with the Department.

- Application received on February 15, 2005.
- The Department's Technical Evaluation and Preliminary Determination, issued concurrently with this draft permit.
- EPA Consent Decree (U.S. vs. TEC) dated February 29, 2000, amended October 4, 2000.
- FDEP Consent Final Judgment (DEP vs. TEC) dated December 6, 1999.
- Title V Air Operation Permit Renewal No. 0570039-017-AV.
- Tampa Electric Submittals for PSC Docket 040750-EI.

PROJECT DESCRIPTION

TEC will install a SCR system for NO_x control on the facility's Unit No. 4 coal-fired boiler. This emissions unit is a Combustion Engineering dry bottom, tangentially fired fossil fuel steam generator, with a generator nameplate rating of 486 megawatts (MW). The basic boiler startup and shutdown procedures will not need to be altered with the addition of the SCR (i.e., the existing Unit No. 4 boiler ramp rate is adequate for the SCR catalyst). The project consists of:

- Installation of a "two plus one" SCR reactor downstream of the economizer and upstream of the preheater.
- Installation of an ammonia or urea storage, supply, and injection system the details of which are still under development.
- SCR tuning (i.e., adjustment of the ammonia or urea injection grid) during the initial commissioning of the system.
- Installation of a sulfur trioxide (SO₃) control system such as alkali injection downstream of the Unit No. 4 preheater.
- Assessment of combined effects of SCR and previous NO_x control projects upon fly ash marketability and development of treatment, reuse, or disposal options for the fly ash.

The project is much more involved than suggested by the brief description above. Following are additional details of the work likely to occur in association with the SCR installation:

- Demolition of existing flue gas ductwork as necessary to tie-in the SCR system
- Demolition of existing structural steel, modification and reinforcement of existing steel supports for a new duct from the existing steel
- Economizer bypass for gas temperature control
- Gas ductwork from economizer outlet to the SCR inlet (includes hoppers, mixers and turning vanes)
- SCR reactor (includes equipment for catalyst management) and catalyst
- Gas ductwork between the SCR & air heater
- Foundations for ductwork and structural steel
- Structural modifications for construction cranes
- Ammonia or Urea to ammonia conversion system
- Air heater modifications
- Electrical modifications
- Relocation of existing equipment and utilities
- Mobilization/demobilization
- Equipment rental
- Engineering construction management
- Asbestos removal
- Boiler and ESP reinforcement
- New Induced Draft ("ID") fans and motors
- ID fan foundations and electrical
- New and modified ductwork
- Auxiliary power and controls modifications

PROJECT SCHEDULE

Emissions Unit ID Number	Estimated start date	Estimated completion date
004	July 1, 2005	June 1, 2007

ADMINISTRATIVE REQUIREMENTS

A.1. Regulating Agencies. All documents related to applications for permits to construct, operate or modify an emissions unit should be submitted to the Bureau of Air Regulation, Florida Department of Environmental Protection, at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, and phone number (850) 488-0114. All documents related to reports, tests, and notifications should be submitted to the Environmental Protection Commission of Hillsborough County, and copies of those submittals shall be sent to the Department of Environmental Protection, Southwest District Office.

Addresses and telephone numbers are:

Environmental Protection Commission of Hillsborough County
1410 North 21 Street
Tampa, Florida 33605
Telephone: 813/272-5530; Fax: 813/272-5605

Department of Environmental Protection
Southwest District Office, Air Resources Section
3804 Coconut Palm Drive
Tampa, Florida 33619-1352
Telephone: 813/744-6100; Fax: 813/744-6084

A.2. General Conditions. The owner and operator is subject to, and shall operate under the attached General Permit Conditions **G.1.** through **G.15.** listed in Appendix GC of this permit. General Permit Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes. [Rule 62-4.160, F.A.C.]

A.3. Terminology. The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code (F.A.C.).

A.4. Forms and Application Procedures. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C., and follow the application procedures in Chapter 62-4, F.A.C. [Rule 62-210.900, F.A.C.]

A.5. Modifications. The permittee shall give written notification to the Department when there is any modification to this facility. This notice shall be submitted sufficiently in advance of any critical date involved to allow sufficient time for review, discussion, and revision of plans, if necessary. Such notice shall include, but not be limited to, information describing the precise nature of the change; modifications to any emission control system; production capacity of the facility before and after the change; and the anticipated completion date of the change. [Chapters 62-210 and 62-212, F.A.C.]

A.6. New or Additional Conditions. For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]

A.7. Permit Extension. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit. [Rule 62-4.080, F.A.C.]

APPLICABLE STANDARDS AND REGULATIONS

A.8. Unless otherwise indicated in this permit, the construction and operation of the subject emission unit(s) shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of Chapter 403, F.S., and Florida Administrative Code Chapters 62-4, 62-103, 62-204, 62-210, 62-212, 62-213, 62-214, 62-296, and 62-297.

A.9. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting requirements or regulations. [Rule 62-210.300, F.A.C.]

A.10. The facility is subject to all of the requirements specified in Title V Air Operation Permit Renewal No. 0570039-017-AV.

A.10.1. An application for a Title V Air Operation Permit Revision, pursuant to Chapter 62-213, F.A.C., must be submitted to the Department's Bureau of Air Regulation to incorporate the specific conditions of this Air Construction Permit. [Chapter 62-213, F.A.C.]

GENERAL OPERATION REQUIREMENTS

A.11. Unconfined Particulate Emissions. During the construction period, unconfined particulate matter emissions shall be minimized by dust suppressing techniques such as covering and/or application of water or chemicals to the affected areas, as necessary. [Rule 62-296.320(4)(c), F.A.C.]

A.12. Plant Operation – Problems. If temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by fire, wind or other cause, the owner or operator shall notify the Environmental Protection Commission of Hillsborough County as soon as possible, but at least within (1) working day, excluding weekends and holidays. The notification shall include: pertinent information as to the cause of the problem; the steps being taken to correct the problem and prevent future recurrence; and where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with the conditions of this permit and the regulations. [Rule 62-4.130, F.A.C.]

A.13. Operating Procedures. Operating procedures shall include good operating practices and proper training of all operators and supervisors. The good operating practices shall meet the guidelines and procedures as established by the equipment manufacturers. All operators (including supervisors) of air pollution control devices shall be properly trained in plant specific equipment. [Rule 62-4.070(3), F.A.C.]

A.14. Circumvention. The owner or operator shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. [Rules 62-210.650, F.A.C.]

CONTROL TECHNOLOGY

A.15. The permittee shall install a selective catalytic reduction (SCR) system for nitrogen oxides (NO_x) control on the facility's Unit No. 4 coal-fired boiler.

[Applicant Request and EPA Consent Decree (U.S. vs. TEC) dated February 29, 2000, amended October 4, 2000, and FDEP Consent Final Judgment (DEP vs. TEC) dated December 6, 1999.]

EMISSION LIMITS AND STANDARDS

A.16. After May 31, 2007 NO_x emissions (reported as NO₂) from Unit No. 4 when combusting bituminous or anthracite coal, or a coal/petroleum coke blend, shall not exceed 0.10 lb/million Btu heat input. Based upon a heat input limit of 4330 million Btu/hour, NO_x emissions shall not exceed 433 lb/hr. These emission limits are based on a 30-day rolling average.

[Applicant Request and EPA Consent Decree (U.S. vs. TEC) dated February 29, 2000, amended October 4, 2000, and FDEP Consent Final Judgment (DEP vs. TEC) dated December 6, 1999.]

{Permitting Note: Limits in condition are sufficient to also comply with requirements of: Rule 62-204.800(7)(b)2., F.A.C.; 40 CFR 60.44a(a); 40 CFR 60.4a(c); and PSD-FL-040}

A.17. Ammonia slip, measured at the stack downstream of all emissions control systems, shall not exceed 10 parts per million by volume (ppmv). Annual testing of ammonia slip shall be conducted, and corrective measures taken if measured values exceed 5 ppmv. [Applicant request; and Rule 62-4.070(3), F.A.C.]

COMPLIANCE DETERMINATION

A.18. Nitrogen oxides emissions shall be continuously monitored to confirm compliance, using the Unit's existing continuous emissions monitoring system (CEMS). Compliance is determined by calculating the arithmetic average of all hourly emission rates for NO_x for the 30 successive boiler operating days, except for data obtained during startup, shutdown, malfunction. [Rule 62-204.800(7)(b)2., F.A.C.; 40 CFR 60.46a(g), 0570039-017-AV]

A.19. Compliance with the ammonia (NH₃) slip limit shall be determined using EPA conditional test method (CTM-027), or other methods approved by the Department. [Rule 62-4.070(3), F.A.C.]

A.20. Compliance with the allowable emission limiting standards shall be determined by May 31, 2007 and annually thereafter as indicated in the facility's Title V Air Operations Permit, by using the appropriate EPA reference test methods, or Department test methods. [0570039-017-AV; and Rules 62-204.220 and 62-4.070(3), F.A.C.]

A.21. Compliance with the allowable emission limiting standards specified in this Air Construction Permit shall be determined using the appropriate specific conditions of the facility's existing Title V Air Operation Permit No. 0570039-017-AV. Compliance with the additional 30 day NO_x limit of 0.10 lb/mmBtu shall be demonstrated using CEMS data beginning July 1, 2007 and every 30 calendar or operating days thereafter. [0570039-017-AV.]

A.22. Test Results. Compliance test results shall be submitted to the Environmental Protection Commission of Hillsborough County and the Department no later than 45 days after completion of the last test run. [Rule 62-297.310(8), F.A.C.]

NOTIFICATION, REPORTING, AND RECORDKEEPING

A.23. Emission Compliance Stack Test Reports. A test report indicating the results of the required compliance tests shall be filed as per Specific Condition A.22. The test report shall provide sufficient detail on the tested emission unit and the procedures used to allow the compliance authority to determine if the test was properly conducted and if the test results were properly computed. [Rule 62-297.310(8), F.A.C.]

COMPLIANCE ASSURANCE

A.24. Compliance Assurance Monitoring (CAM). The permittee shall evaluate the applicability of CAM to Unit No. 4 and, if applicable, submit a CAM plan as a revision to the facility's current Title V air operation permit. [40 CFR 64; and Rule 62-204.800, F.A.C.]

APPENDIX GC – GENERAL CONDITIONS

The permittee shall comply with the following general conditions from Rule 62-4.160, F.A.C.

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey and vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.
4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:
 - a. Have access to and copy and records that must be kept under the conditions of the permit;
 - b. Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
 - c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

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

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
 - a. A description of and cause of non-compliance; and
 - b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

APPENDIX GC – GENERAL CONDITIONS

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

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.
10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.
11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
12. This permit or a copy thereof shall be kept at the work site of the permitted activity.
13. This permit also constitutes:
 - a. Determination of Best Available Control Technology (NA);
 - b. Determination of Prevention of Significant Deterioration (NA); and
 - c. Compliance with New Source Performance Standards (NA).
14. The permittee shall comply with the following:
 - a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
 - b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
 - c. Records of monitoring information shall include:
 - 1) The date, exact place, and time of sampling or measurements;
 - 2) The person responsible for performing the sampling or measurements;
 - 3) The dates analyses were performed;
 - 4) The person responsible for performing the analyses;
 - 5) The analytical techniques or methods used; and
 - 6) The results of such analyses.
15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

1.0 APPLICATION INFORMATION

1.1 Applicant Name and Address

Tampa Electric Company
P.O. Box 111
Tampa, Florida 33601-0111

Representative: Karen Sheffield, General Manager, Big Bend Station

1.2 Reviewing and Process Schedule

02-15-05: Date of receipt of request at FDEP Bureau of Air Regulation
03-15-05: Application deemed complete
03-30-05: Issued intent

2.0 FACILITY INFORMATION

2.1 Facility Location: Big Bend Station located at Big Bend Road, North Ruskin, Hillsborough County

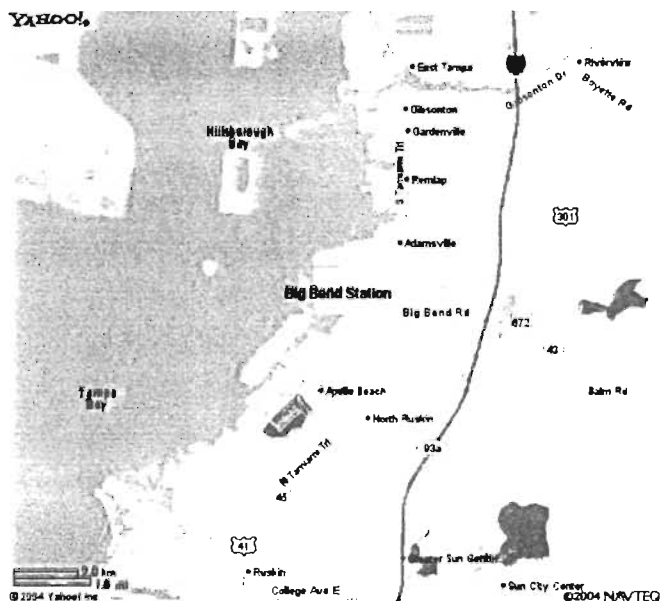


Figure 1. Ruskin, Apollo Beach, Big Bend



Figure 2. Big Bend Station

2.2 Standard Industrial Classification Code (SIC)

Major Group No.	49	Electric, Gas, and Sanitary Services
Group No.	491	Electric Services
Industry No.	4911	Electric Services

2.3 Existing Facility/Emission Unit Description

This facility is an electric utility.

This air construction permit will affect Steam Generators No. 4.

2.4 Regulatory Classification

Because potential emissions of at least one regulated pollutant exceed 100 tons per year, the existing facility is a Title V major source of air pollution in accordance with Chapter

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

62-213, F.A.C. Regulated pollutants include pollutants such as carbon monoxide (CO), nitrogen oxides (NO_x), particulate matter (PM/PM₁₀), sulfur dioxide (SO₂), and volatile organic compounds (VOC).

The existing facility is major source of hazardous air pollutants (HAPs).

The facility operates emissions units subject to the acid rain provisions of the Clean Air Act.

The facility is considered a "fossil fuel fired steam electric plant of more than 250 million BTU per hour of heat input". This kind of facility is one of the 28 source categories with the lower applicability threshold of 100 tons per year with respect to the Rule 62-212.400, Prevention of Significant Deterioration of Air Quality (PSD). Potential emissions of at least one regulated pollutant exceed 100 tons per year. Therefore, the facility is classified as a PSD-major source.

Unit 4 was certified pursuant Electrical Power Plant Siting in accordance with Chapter 62-17, F.A.C. and Chapter 403, Part II, F.S.

3.0 PERMITTING STATUS

Operation of the Big Bend Station is authorized by the Title V Operation Permit Revision 0570039-017-AV that has an effective date of January 1, 2005 and expires on December 31, 2009. The current permit includes the applicable requirements from federal and state regulations and construction permits. It also includes a Consent Final Judgment (CFJ, DEP vs. TEC) dated December 6, 1999 and a Consent Decree (CD, EPA vs. TEC) dated February 29, 2000 and amended October 4, 2000. The CFJ and CD require substantial progressive emission reductions from the four coal fired steam generation units by specific dates.

The current Title V Operation Permit includes a number of projects or improvements pursuant to the CFJ and CD including: improved scrubbing efficiency on Units 1 and 2; Low NO_x Burners (LNBS) on Units 1, 2, and 3; installation of new coal nozzles suitable for low NO_x operation; modification redesign of windbox components to allow for proper distribution and staging of air; and installation of a separate overfire air (SOFA) system on Unit 4.

4.0 ADDITIONAL NO_x CONTROL REQUIREMENTS

Section V.E. of the CFJ requires that:

Tampa Electric Company shall add nitrogen oxide controls, repower or shut down Units 1 through 3 at Big Bend Station by May 2010 and at Unit 4 by May 2007. If SCRs or similar nitrogen oxide controls are installed, BACT for nitrogen oxide will be 0.10 lbs/mmBtu on Unit 4 and 0.15 lbs/mmBtu on Units 1, 2, and 3.

Section IV.B.33 of the CD requires that:

Tampa Electric shall advise EPA in writing, on or before May 1, 2005, whether Big Bend Unit 4 will be Shutdown, will be Re-Powered, or will continue to be fired by coal.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

By letter dated August 19, 2004 Tampa Electric advised EPA that:

Based on the results of a recent comprehensive study performed on Big Bend Station, Big Bend Units 1, 2, 3 and 4 will continue to be fired on coal and as such will comply with the applicable provisions of the Consent Decree associated with this decision.

Section IV.B.34.A of the CD requires that:

If Tampa Electric elects to continue firing Unit 4 with coal, on or before June 1, 2007, Tampa Electric shall install and commence operation of SCR, or other technology if approved in writing by EPA in advance, sufficient to limit the coal-fired Emission Rate of NO_x from Unit 4 to no more than 0.10 lb/mmBTU. Thereafter, Tampa Electric shall continue operation of SCR or other EPA approved control technology, and Tampa Electric shall continue to meet an Emission Rate for NO_x from Unit 4 no greater than 0.10 lb/mmBTU.

5.0 TAMPA ELECTRIC PROPOSAL TO COMPLY WITH CFJ AND CD

By letter dated July 15, 2004 Tampa Electric submitted a petition to the Florida Public Service Commission for approval of new environmental programs for cost recovery through the environmental Recovery Clause at Section 366.8255, Florida Statutes.

The petition summarizes the CFJ and CD and includes a study conducted by Tampa Electric and its consultant, Sargent Lundy. The study justifies the decision to continue operating Units 1 through 4 as coal-fired units and installing SCR to comply with the NO_x requirements of the CFJ and CD.

The repowering options evaluated in the study included reboiling with subcritical pulverized coal ("PC") boilers, circulating fluidized bed ("CFB") boilers, conversion of the existing boilers to natural gas, combined cycle ("CC") gas turbine technology and IGCC similar to the Polk facility.

The greenfield options evaluated in the Study included all the foregoing repowering technologies with the exceptions that new PC boilers would be supercritical, and natural gas fired Rankin cycle units would not be evaluated due to lower cycle heat rates.

The cost to install SCR on the four existing coal-fired units was estimated to be \$305,450,000 whereas the cost of the least expensive CFB repowering option was estimated to be \$700,000,000 more. The cost to install SCR on Unit 4 was estimated to be \$65,350,000. The annual operating and maintenance costs were estimated to be \$12,750,000 of which \$2,500,000 corresponds to Unit 4.

By an order dated October 11, 2004 and consummated (made final) on November 4, 2004 the PSC granted Tampa Electric's petition.

6.0 SCR PROJECT ON UNIT 4

Much of the following description is from the application submitted to the Department on February 15, 2005. Some additional details are from the Tampa Electric website or their filings with the PSC:

Figure 3 is a diagram of the proposed SCR installation. This configuration is typically known as dusty or hot side SCR meaning it is placed before the electrostatic precipitator.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

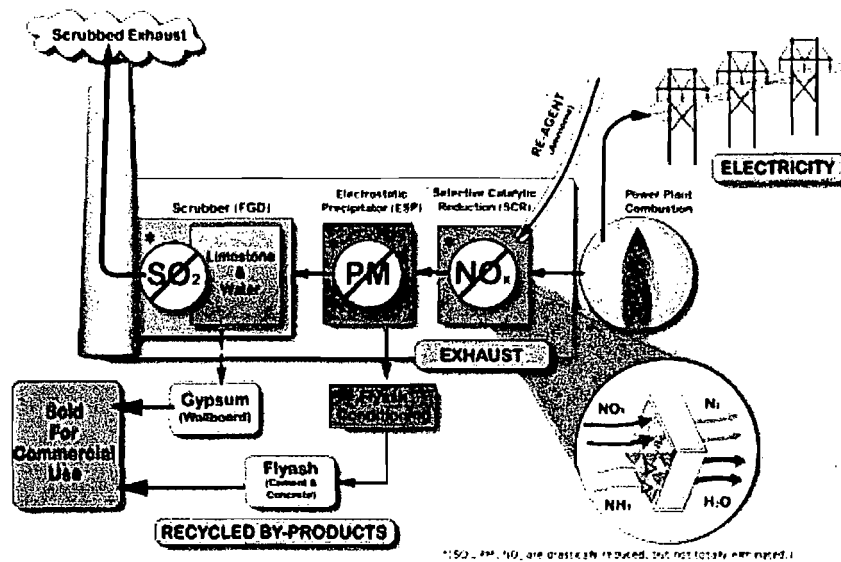


Figure 3. Diagram of SCR Installation and Existing Pollution Control Equipment

Following are key points regarding the proposed project:

- The SCR system will be installed downstream of the economizer and upstream of the preheater.
- The SCR reactor will be designed as a “two plus one” catalyst configuration. It is planned that the third catalyst management layer, designed to maximize the residual catalyst life and lower operating costs, will be initially empty and will be charged as the initial two catalyst layers lose activation.
- The applicant has indicated that available options with respect to ammonia type and supply are currently being evaluated. The options include use of urea or use of ammonia delivered by pipeline via the existing ammonia grid that serves the fertilizer industry. The Department will be sent update reports as the study progresses.
- SCR tuning (i.e., adjustment of the ammonia injection grid) will be performed during the initial commissioning of the system.
- The Applicant will install a system (probably alkali injection) immediately downstream of the Unit No. 4 preheater to control the increase of sulfur trioxide (SO_3) that the applicant expects will result from the use of a vanadium-containing catalyst in SCR systems.
- The Applicant has proposed that ammonia slip, measured at the stack downstream of all emissions control systems, be targeted at 5 parts per million by volume (ppmv). Annual testing of ammonia slip will be conducted and corrective measures taken if this target level is exceeded.
- The basic boiler startup and shutdown procedures will not need to be altered with the addition of the SCR (i.e., the existing Unit No. 4 boiler ramp rate is adequate for the SCR catalyst).

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

- The Applicant reviewed the impact that the operation of an SCR system would have on coal combustion by-products and found that the fly ash would have limited marketability due to increased carbon content. Therefore, a large portion of the fly ash could potentially need to be disposed of in a landfill. The Applicant researched this issue and found that other companies mitigate the SCR impact on fly ash by using carbon burnout technology to reduce the carbon content. The Applicant is currently evaluating the use of this technology, and has indicated that if it is found feasible at the facility, an air construction permit application will be submitted to the Department to implement the change.

More specific details of the capital cost components of the SCR system include:

- Demolition of existing flue gas ductwork as necessary to tie-in the SCR system
- Demolition of existing structural steel, modification and reinforcement of existing steel supports for a new duct from the existing steel
- Economizer bypass for gas temperature control
- Gas ductwork from economizer outlet to the SCR inlet (includes hoppers, mixers and turning vanes)
- SCR reactor (includes equipment for catalyst management)
- Gas ductwork between the SCR & air heater
- Foundations for ductwork and structural steel
- Structural modifications for construction cranes
- Catalyst
- Urea to ammonia conversion system
- Air heater modifications
- Electrical modifications
- Relocation of existing equipment and utilities
- Mobilization/demobilization
- Equipment rental
- Engineering construction management
- Asbestos removal
- Boiler reinforcement
- New Induced Draft ("ID") fans and motors
- ID fan foundations
- ID fan electrical
- New and modified ductwork
- ESP reinforcement
- Auxiliary power modifications
- Controls modifications

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

The Department notes that the scrubber should be able to remove SO₃ formed in the SCR system and ammonium sulfate/sulfite/bisulfite species to a high degree.

The Department notes that with respect to combustion by-products, the ash would most likely be affected by previous combustion modifications rather than by the SCR system. The SCR system could have some effect on the ash due to presence of ammonia, some of which could adhere to the fly ash.

7.0 PROJECT SCHEDULE

Emissions Unit ID Number	Estimated Start Date	Estimated Completion Date
004	July 1, 2005	June 1, 2007

8.0 PROJECT EMISSIONS & RULE APPLICABILITY

There will be a decrease in the allowable emissions of nitrogen oxides (NO_x) as a result of implementing this project. Noted below are the existing limits and the proposed changes for the pollutant:

Pollutant	Existing limits	Proposed limit
Nitrogen Oxides (NO _x)	0.60 pounds per mmBtu heat input (Title V Permit Specific Condition B.9.), based on a 30-day rolling average. 0.44 pounds per mmBtu heat input (Acid Rain Part requirement). Heat input to Unit No. 4 is limited to 4330 mmBtu/hour.	0.10 pounds per mmBtu heat input, based on a 30-day rolling average. Emissions will be continuously monitored to confirm compliance, using the Unit's existing continuous emissions monitoring system (CEMS).

Unit 4 was originally designed for relatively low NO_x operation. The system was upgraded by inclusion of new Low NO_x designed coal and air nozzles together with modifications to the existing close coupled overfire air (CCOFA) system. In late 2003 TEC installed a separate overfire air (SOFA) system that provides for deeper staging of the combustion process and further reductions of NO_x.

According to the EPA Clean Air Markets Website, Unit 4 emitted 0.40 lb/mmBtu in 1998. In 2003, Units 4 emitted 0.35 lb/mmBtu. Emissions through the third quarter of 2004 indicate emissions of 0.22 lb/mmBtu. This is already a substantial reduction to-date.

Further reduction to 0.10 lb/mmBtu can be accomplished without aggressive ammonia or urea injection. This supports the idea that SCR will not necessarily have as much effect on ash properties compared with similar projects at other plants. It is possible that Tampa Electric can back off somewhat in the combustion techniques used to reduce NO_x when SCR becomes available and then optimize the control stratagem to reduce impacts on ash.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Using the appropriate maximum heat input value for Unit No. 4 (i.e., 4,330 mmBtu/hour), and the existing and proposed emissions limits for NO_x noted above, results in a calculation of the expected reduction of potential NO_x emissions of about 6,448 tons per year. This is equivalent to a 77% reduction from current allowable limits under the Acid Rain Part of the facility's Title V Permit Renewal. Computations follow below:

$(0.44 - 0.10) \text{ lbs/mmBtu} = 0.34 \text{ lbs/mmBtu}$ heat input reduction

$0.34 \text{ lbs/mmBtu} \times 4330 \text{ mmBtu/hour} \times 8760 \text{ hours per year} / 2000 \text{ lbs/ton} = 6,448 \text{ tons per year}$

Based on a more realistic estimate of an 80 percent capacity factor and the most recent emission rate of 0.22 lb/mmBtu, the calculations would be as follows:

$(0.22 - 0.10) \text{ lbs/mmBtu} = 0.12 \text{ lbs/mmBtu}$ heat input reduction

$0.12 \text{ lbs/mmBtu} \times 4330 \text{ mmBtu/hour} \times (0.80) 8760 \text{ hours per year} / 2000 \text{ lbs/ton} = 1,820 \text{ tons per year}$

In summary, the addition of SCR to Unit No. 4 reduces actual as well as allowable NO_x emissions, and does not involve any other significant changes related to emissions of other pollutants or operational parameters (e.g., mass flow to the stack, other than the addition of dilution air for ammonia injection, or stack temperature). The SCR system in combination with the existing scrubbers should help reduce mercury emissions as well.

It has been determined by the Department that the project is a Pollution Control Project, as defined in 40 CFR 52.21(b)(32), and meets the requirements of Rule 62-212.400(2)(a)2., F.A.C., and 40 CFR 52.21(b)(2)(iii)(h). Therefore, the project is not defined as a modification under Department regulations.

Furthermore the additional projects related to the SCR installation and enumerated above are projects in support of a pollution control project. They are treated as pollution control projects and do not constitute modifications under Department regulations.

The emission unit affected by this permit shall comply with all applicable provisions of the Florida Administrative Code (including applicable portions of the Code of Federal Regulations incorporated therein), and all specific conditions of the facility's existing Title V Air Operation Permit Renewal No. 0590039-017-AV.

9.0 CONCLUSION

Based on the foregoing technical evaluation of the application and other available information, the Department has made a determination that the proposed project will comply with all applicable state and federal air pollution regulations. The Department will issue a Draft Air Construction Permit to the applicant that provides for the above changes at the facility.



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JAN 03 2006

BUREAU OF AIR REGULATION

December 28, 2005

Mr. Tom Cascio,
Florida Department of
Environmental Protection
111 South Magnolia Drive, Suite 4
Tallahassee, FL 32301

Via FedEx
Airbill No. 7913 2053 4955

**Re: Tampa Electric Company
Big Bend Station
Consent Decree
Civil Action No. 99-2524 CIV-T-23F
Air Construction Permit Application for
Unit 1 Selective Catalytic Reduction (SCR) Project**

Dear Mr. Cascio,

Tampa Electric Company (TEC) requests an air construction permit to install a selective catalytic reduction (SCR) system for nitrogen oxides (NO_x) control on its Big Bend Station Unit 1 coal-fired boiler. TEC entered into the agreements with the Environmental Protection Agency (EPA) and the Florida Department of Environmental Protection (FDEP) concerning the installation of additional air pollution control systems at Big Bend Station. These agreements (EPA Consent Decree and FDEP Consent Final Judgment) included requirements to install additional air pollution control systems for NO_x control on Unit 1. In response to these requirements, TEC determined that the installation of low NO_x burners (LNB) and an SCR system are the technologies to be utilized to reduce the NO_x emissions on Big Bend Unit 1 to satisfy the requirements of the agreements.

Additionally, TEC reviewed the impacts with the operation of the SCR, associated combustion controls and associated systems (sulfur trioxide control) to determine the affects on the coal combustion byproducts and found that the fly ash would have limited marketability due to high ammonia content and carbon content. Therefore, a large portion of the fly ash could potentially need to be disposed of in a landfill. TEC researched this issue and found that several other companies mitigate the SCR impacts on fly ash by using carbon burnout (CBO) technology to reduce the carbon content. TEC has evaluated this technology and determined it to be feasible at Big Bend Station. A separate air construction permit for the CBO technology was submitted.

As stated in a letter sent to the FDEP dated April 4, 2003 and as mentioned in the meeting between TEC and FDEP on May 31, 2005, TEC reviewed the effects of installing the future NO_x

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OUTSIDE HILLSBOROUGH COUNTY 1 (888) 223-0800

Mr. Tom Cascio
December 28, 2005
Page 2 of 2


control and SO₃ control systems and determined that there is a potential for increase in particulate matter (PM) and opacity. Therefore, a request for higher permit limits may be submitted in the future.

Please find the enclosed air construction permit application for Big Bend Station's Unit 1 SCR.

TEC appreciates the cooperation of the Department in this matter. If you have any questions or comments, please contact Shelly Castro or me at (813) 228-4408.

Sincerely,

bc: M.X. Aguirre
J.B. Alagood
C.R. Black
K.L. Bramley
G.M. Briggs
R. Calderon
S.A. Cannon
S.S. Castro
D.A. Cowdrick
L.R. Crouch
M.C. Duff
G.B. Grotecloss
C.J. Hemrich
D.M. Lukcic
C.A. Magliocco
R.A. Morgado
G.M. Nelson
L.A. Pence
M.A. Rhode
M.R. Rivers
J.G. Robertson
K.A. Sheffield
P.L. Shell
W.T. Whale
J.T. Whele
K.O. Zwolak (enc)
T.W. Davis, ECT (enc)
L.N. Curtin, H&K (enc)
AC 7.2 (enc)
AP 1.24 (enc)
C 2.1


Byron T. Burrows
Manager - Air Programs
Environmental, Health & Safety

EHS/ttk/SSC

Enclosure

c/enc: Ms. Alice Harman, EPCHC
Mr. Jason Waters, FDEP SW
Mr. David Lloyd, EPA
Mr. Scott Sheplak, FDEP
Ms. Trina Vielhauer, FDEP
Mr. Sterlin Woodard, EPCHC



TAMPA ELECTRIC

February 8, 2005

Ms. Teresa Heron,
Florida Department of
Environmental Protection
111 South Magnolia Drive, Suite 4
Tallahassee, FL 32301

RECEIVED

FEB 15 2005

BUREAU OF AIR REGULATION

Via FedEx
Airbill No. 7922 0108 1668

**Re: Tampa Electric Company
Big Bend Station
Consent Decree
Civil Action No. 99-2524 CIV-T-23F
Air Construction Permit Application for
Unit 4 Selective Catalytic Reduction (SCR) Project**

Dear Ms. Heron,

Tampa Electric Company (TEC) requests an air construction permit to install a selective catalytic reduction (SCR) system for nitrogen oxides (NO_x) control on its Big Bend Station Unit 4 coal-fired boiler. TEC entered into the agreements with the Environmental Protection Agency (EPA) and the Florida Department of Environmental Protection (FDEP) concerning the installation of additional air pollution control systems at Big Bend Station. These agreements (EPA Consent Decree and FDEP Consent Final Judgment) included requirements to install additional air pollution control systems for NO_x control on Unit 4. In response to these requirements, TEC determined that the installation of low NO_x burners (LNB), separated overfire air (SOFA), and an SCR system are the technologies to be utilized to reduce the NO_x emissions on Big Bend Unit 4 to satisfy the requirements of the agreements.

Additionally, TEC reviewed the impacts that operation of an SCR would have on the coal combustion byproducts and found that the fly ash would have limited marketability due to increased carbon content. Therefore, a large portion of the fly ash could potentially need to be disposed of in a landfill. TEC researched this issue and found that several other companies mitigate the SCR impacts on fly ash by using carbon burnout (CBO) technology to reduce the carbon content. TEC is currently evaluating use of this technology and if it is determined to be feasible at Big Bend Station a separate air construction permit will be submitted.

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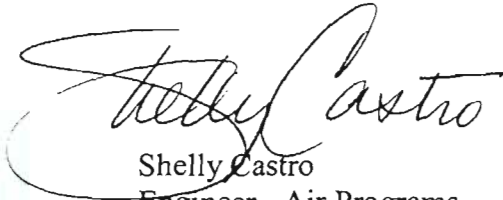
Ms. Teresa Heron
February 8, 2005
Page 2 of 2

Please find the enclosed air construction permit application for Big Bend Station's Unit 4 SCR.

TEC appreciates the cooperation of the Department in this matter. If you have any questions or comments, please contact Shelly Castro or me at (813) 228-4408.

Sincerely,

1-813-228-1282



Shelly Castro
Engineer - Air Programs
Environmental, Health & Safety

EHS/bmr/SSC215

Enclosure

c/enc: Ms. Alice Harman, EPCHC
Mr. Jerry Kissel, FDEP SW
Mr. David Lloyd, EPA
Mr. Scott Sheplak, FDEP
Ms. Trina Vielhauer, FDEP
Mr. Sterlin Woodard, EPCHC