

**UNIT 1 NO<sub>x</sub> EMISSIONS CONTROL  
SYSTEM RETROFIT PROJECT**

**APPLICATION FOR  
AIR CONSTRUCTION PERMIT**

Prepared for:



**TAMPA ELECTRIC**  
Tampa, Florida

Prepared by:

***ECT***

*Environmental Consulting & Technology, Inc.*  
3701 Northwest 98<sup>th</sup> Street  
Gainesville, Florida 32606

ECT No. 040923-0400

December 2005

## INTRODUCTION

Tampa Electric Company (TEC) requests an air construction permit to add a selective catalytic reduction (SCR) system for nitrogen oxides (NO<sub>x</sub>) control to its Big Bend Station Unit 1 coal-fired boiler. TEC entered into agreements with the U.S. Environmental Protection Agency (EPA) and the Florida Department of Environmental Protection (FDEP) which embody the resolutions between the agencies and TEC stemming from disputed issues surrounding TEC's maintenance activities to its Big Bend and Gannon Stations that were alleged to be in violation of the EPA's new source review rules and new source performance standards which are currently codified in Title I of the Clean Air Act Amendment. These settlements and amendments are collectively known as the *Agreements*. These Agreements include requirements to install additional systems for NO<sub>x</sub> control on Unit 1. In response to these requirements, TEC determined that the installation of a SCR system is required to reduce Big Bend Station Unit 1 NO<sub>x</sub> emissions.

Figure 1 shows the location of the Big Bend Unit 1 SCR, which will be installed downstream of the economizer and upstream of the air preheater. The SCR reactor is designed as a three-plus-one catalyst configuration. The fourth catalyst management layer, designed to maximize the residual catalyst life and lower operating costs, will be initially empty and will be installed as the initial three catalyst layers lose activation.

TEC is currently evaluating available options with respect to ammonia type and supply, and will notify FDEP when TEC's plans are finalized. Current plans include the use of anhydrous ammonia supplied by pipeline without onsite storage. TEC will not have any control over the operation of the anhydrous ammonia pipeline. Should there be an interruption in the supply of anhydrous ammonia through this pipeline, TEC will be unable to continue SCR ammonia injection and will notify FDEP in accordance with the requirements of Rule 62-4.130, *Plant Operation – Problems*. SCR tuning (i.e., adjustment of the ammonia injection grid) will be performed during the initial commissioning of the system and periodically thereafter. Consistent with the recently issued air construction permit for

ii:

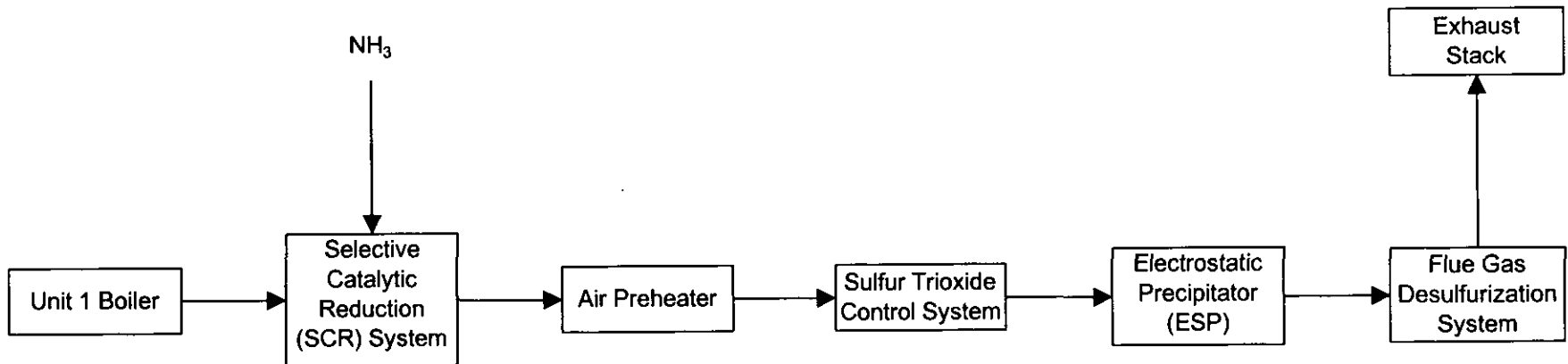


FIGURE 1.

SIMPLIFIED FLOW DIAGRAM OF BIG BEND UNIT 1 CONTROL SYSTEMS

Source: ECT, 2005.



Unit 3 SCR, TEC requests that the Unit 1 SCR air construction permit include a condition authorizing excess emissions in the event there is an unanticipated interruption, malfunction, or failure of the ammonia pipeline and associated equipment; reference Condition A.15.3 of Unit 3 SCR Air Construction Permit No. 0570039-022-AC.

TEC proposes to install a system immediately downstream of the Unit 1 air preheater to control the inherent increases of sulfur trioxide (SO<sub>3</sub>) that result from the use of vanadium-containing catalyst in SCR control systems.

TEC is proposing that ammonia slip, measured at the stack downstream of all emission control systems, be targeted at 5 parts per million by volume (ppmv). TEC is also proposing to conduct annual testing of ammonia slip and perform corrective measures if the target level is being exceeded.

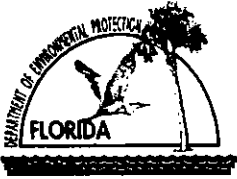
The minimum operating temperature of the SCR catalyst is approximately 625 degrees. Extended operation below this temperature is not recommended by the catalyst manufacturer since it will likely damage the catalyst, create pluggage in the air preheater, and will void the manufacturer's guarantees/warrantees. For these reasons, ammonia typically will not be injected into the SCR system during low exhaust temperature events. This will include events such as boiler startups and shutdowns, equipment malfunctions, operating and maintenance requirements such as condenser cleanings, and various other low load conditions. The Unit 1 SCR control system will not include a bypass. Consistent with the recently issued air construction permit for Unit 3 SCR, TEC requests that a permit condition be included in the Unit 1 SCR air construction permit authorizing [REDACTED] the cessation of SCR ammonia injection during periods of low loads and exhaust temperatures in accordance with the SCR catalyst manufacturer recommended operating procedures; reference Condition A.15.1 of Unit 3 SCR Air Construction Permit No. 0570039-022-AC.

Big Bend Unit 1 SCR will be designed to meet a heat input weighted average NO<sub>x</sub> emission limit of 0.12 pound per million British thermal unit (lb/MMBtu) based on a 30-day rolling average inclusive of low load operations and exclusive of startup, shutdown, mal-

function, or abnormal events. NO<sub>x</sub> will be continuously monitored using the existing Unit 1 NO<sub>x</sub> continuous emissions monitoring system to confirm compliance. The SCR system does not add significant mass flow to the stack other than the addition of dilution air for ammonia injection. The stack temperature will be unaffected.

Major construction activities for the Big Bend Station Unit 1 SCR control system are scheduled to begin August 1, 2006, and be completed by May 1, 2010.

FDEP's Application for Air Permit, Long Form, follows this introduction. Attachment A provides a process flow diagram of Unit 1 SCR. A proposed air construction permit is provided in Attachment B.



# Department of Environmental Protection

## Division of Air Resource Management

### APPLICATION FOR AIR PERMIT - LONG FORM

#### I. APPLICATION INFORMATION

**Air Construction Permit**—Use this form to apply for an air construction permit for a proposed project:

- subject to prevention of significant deterioration (PSD) review, nonattainment area (NAA) new source review, or maximum achievable control technology (MACT) review; or
- where the applicant proposes to assume a restriction on the potential emissions of one or more pollutants to escape a federal program requirement such as PSD review, NAA new source review, Title V, or MACT; or
- at an existing federally enforceable state air operation permit (FESOP) or Title V permitted facility.

**Air Operation Permit** – Use this form to apply for:

- an initial federally enforceable state air operation permit (FESOP); or
- an initial/revised/renewal Title V air operation permit.

**Air Construction Permit & Revised/Renewal Title V Air Operation Permit (Concurrent Processing Option)**  
– Use this form to apply for both an air construction permit and a revised or renewal Title V air operation permit incorporating the proposed project.

To ensure accuracy, please see form instructions.

#### Identification of Facility

1. Facility Owner/Company Name: <b>Tampa Electric Company</b>	
2. Site Name: <b>Big Bend Station</b>	
3. Facility Identification Number: <b>0570039</b>	
4. Facility Location...: Street Address or Other Locator: <b>13031 Wyandotte Road</b> City: <b>Apollo Beach</b> County: <b>Hillsborough</b> Zip Code: <b>33572</b>	
5. Relocatable Facility? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6. Existing Title V Permitted Facility? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

#### Application Contact

1. Application Contact Name: <b>Shelly Castro, Engineer – Air Programs</b>	
2. Application Contact Mailing Address... Organization/Firm: <b>Tampa Electric Company</b> Street Address: <b>P. O. Box 111</b> City: <b>Tampa</b> State: <b>FL</b> Zip Code: <b>33601</b>	
3. Application Contact Telephone Numbers... Telephone: <b>(813) 228-4408</b> ext.                      Fax: <b>(813) 228-1308</b>	
4. Application Contact Email Address: <b>sscastro@tecoenergy.com</b>	

#### Application Processing Information (DEP Use)

1. Date of Receipt of Application:	
2. Project Number(s):	
3. PSD Number (if applicable):	
4. Siting Number (if applicable):	

## APPLICATION INFORMATION

### Purpose of Application

This application for air permit is submitted to obtain: (Check one)

#### **Air Construction Permit**

Air construction permit.

#### **Air Operation Permit**

- Initial Title V air operation permit.
- Title V air operation permit revision.
- Title V air operation permit renewal.
- Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.
- Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

#### **Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)**

- Air construction permit and Title V permit revision, incorporating the proposed project.
- Air construction permit and Title V permit renewal, incorporating the proposed project.

**Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:**

- I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

### Application Comment

Project consists of the addition of selective catalytic reduction (SCR) to emissions unit (E.U.) 001. This NO<sub>x</sub> control system is being installed in accordance with agreements between Tampa Electric Company (TEC) and the U.S. Environmental Protection Agency (EPA Consent Decree) and the Florida Department of Environmental Protection (FDEP Consent Final Judgment).

As requested by FDEP, this application constitutes TEC's request for an air construction permit for the Big Bend Station Unit 1 SCR NO<sub>x</sub> pollution control project.

**APPLICATION INFORMATION**

**Scope of Application**

<b>Emissions Unit ID Number</b>	<b>Description of Emissions Unit</b>	<b>Air Permit Type</b>	<b>Air Permit Proc. Fee</b>
001	Unit No. 1 Steam Generator	N/A	N/A

**Application Processing Fee**

Check one:  Attached - Amount: \$ \_\_\_\_\_  Not Applicable



**APPLICATION INFORMATION**

**Owner/Authorized Representative Statement**

**Complete if applying for an air construction permit or an initial FESOP.**

1. Owner/Authorized Representative Name: <b>Karen Sheffield, General Manager, Big Bend Station</b>		
2. Owner/Authorized Representative Mailing Address... Organization/Firm: <b>Tampa Electric Company</b> Street Address: <b>P.O. Box 111</b> City: <b>Tampa</b> State: <b>Florida</b> Zip Code: <b>33601-0111</b>		
3. Owner/Authorized Representative Telephone Numbers... Telephone: <b>813-228-4111</b> ext. Fax: <b>813-228-1308</b>		
4. Owner/Authorized Representative Email Address: <b>kasheffield@tecoenergy.com</b>		
5. Owner/Authorized Representative Statement:  <i>I, the undersigned, am the owner or authorized representative of the facility addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other requirements identified in this application to which the facility is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit.</i>  <table border="0"><tr><td><u><i>Karen Sheffield</i></u> Signature</td><td><u>12/28/05</u> Date</td></tr></table>	<u><i>Karen Sheffield</i></u> Signature	<u>12/28/05</u> Date
<u><i>Karen Sheffield</i></u> Signature	<u>12/28/05</u> Date	

**APPLICATION INFORMATION**


**Application Responsible Official Certification                      N/A**

**Complete if applying for an initial/revised/renewal Title V permit or concurrent processing of an air construction permit and a revised/renewal Title V permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."**

1. Application Responsible Official Name:			
2. Application Responsible Official Qualification (Check one or more of the following options, as applicable):			
<input type="checkbox"/> For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.			
<input type="checkbox"/> For a partnership or sole proprietorship, a general partner or the proprietor, respectively.			
<input type="checkbox"/> For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.			
<input type="checkbox"/> The designated representative at an Acid Rain source.			
3. Application Responsible Official Mailing Address...			
Organization/Firm:			
Street Address:			
City:	State:	Zip Code:	
4. Application Responsible Official Telephone Numbers...			
Telephone:	ext.	Fax:	
5. Application Responsible Official Email Address:			
6. Application Responsible Official Certification:			
<i>I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.</i>			
<hr style="width: 80%; margin: 0 auto;"/>			<hr style="width: 20%; margin: 0 auto;"/>
Signature			Date

**APPLICATION INFORMATION**

**Professional Engineer Certification**

1. Professional Engineer Name: <b>Thomas W. Davis</b> Registration Number: <b>36777</b>
2. Professional Engineer Mailing Address... Organization/Firm: <b>Environmental Consulting &amp; Technology, Inc.</b> Street Address: <b>3701 Northwest 98<sup>th</sup> Street</b> City: <b>Gainesville</b> State: <b>FL</b> Zip Code: <b>32606-5004</b>
3. Professional Engineer Telephone Numbers... Telephone: <b>(352) 332-0444</b> ext. Fax: <b>(352) 332-6722</b>
4. Professional Engineer Email Address: <b>tdavis@ectinc.com</b>
5. Professional Engineer Statement: <i>I, the undersigned, hereby certify, except as particularly noted herein*, that:</i> <i>(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and</i> <i>(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.</i> <i>(3) If the purpose of this application is to obtain a Title V air operation permit (check here <input type="checkbox"/>, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.</i> <i>(4) If the purpose of this application is to obtain an air construction permit (check here <input checked="" type="checkbox"/>, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here <input type="checkbox"/>, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.</i> <i>(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here <input type="checkbox"/>, if so); I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.</i>   Signature _____ Date <u>12/22/05</u> (seal)

\* Attach any exception to certification statement.

## II. FACILITY INFORMATION

### A. GENERAL FACILITY INFORMATION

#### Facility Location and Type

1. Facility UTM Coordinates... Zone 17      East (km) <b>361.9</b> North (km) <b>3,075.0</b>		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
3. Governmental Facility Code: <b>0</b>	4. Facility Status Code: <b>A</b>	5. Facility Major Group SIC Code: <b>49</b>	6. Facility SIC(s): <b>4911</b>
7. Facility Comment :			

#### Facility Contact

1. Facility Contact Name: <b>Karen Zwolak, Senior Environmental Consultant</b>
2. Facility Contact Mailing Address... Organization/Firm: <b>Tampa Electric Company</b> Street Address: <b>P. O. Box 111</b> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <span>City: <b>Tampa</b></span> <span>State: <b>FL</b></span> <span>Zip Code: <b>33601</b></span> </div>
3. Facility Contact Telephone Numbers: Telephone: <b>(813) 228-4111</b> ext.      Fax: <b>(813) 228-1308</b>
4. Facility Contact Email Address: <b><u>kozwolak@tecoenergy.com</u></b>

#### Facility Primary Responsible Official N/A

Complete if an "application responsible official" is identified in Section I. that is not the facility "primary responsible official."

1. Facility Primary Responsible Official Name:
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: Street Address: <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <span>City:</span> <span>State:</span> <span>Zip Code:</span> </div>
3. Facility Primary Responsible Official Telephone Numbers... Telephone: (    )      -      ext.      Fax: (    )      -
4. Facility Primary Responsible Official Email Address:

**Facility Regulatory Classifications**

Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a “major source” and a “synthetic minor source.”

1. <input type="checkbox"/> Small Business Stationary Source	<input type="checkbox"/> Unknown
2. <input type="checkbox"/> Synthetic Non-Title V Source	
3. <input checked="" type="checkbox"/> Title V Source	
4. <input checked="" type="checkbox"/> Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. <input type="checkbox"/> Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. <input checked="" type="checkbox"/> Major Source of Hazardous Air Pollutants (HAPs)	
7. <input type="checkbox"/> Synthetic Minor Source of HAPs	
8. <input checked="" type="checkbox"/> One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. <input type="checkbox"/> One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. <input type="checkbox"/> One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. <input type="checkbox"/> Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12. Facility Regulatory Classifications Comment:	

**List of Pollutants Emitted by Facility**

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
NOX	A	N
SO2	A	Y
CO	A	N
PM10	A	Y
PM	A	Y
VOC	A	N
H106 (Hydrogen Chloride)	A	N
H107 (Hydrogen Fluoride)	A	N
H133 (Nickel Compounds)	A	N
HAPS (Total)	A	N

**B. EMISSIONS CAPS**

**Facility-Wide or Multi-Unit Emissions Caps**

1. Pollutant Subject to Emissions Cap	2. Facility Wide Cap [Y or N]? (all units)	3. Emissions Unit ID No.s Under Cap (if not all units)	4. Hourly Cap (lb/hr)	5. Annual Cap (ton/yr)	6. Basis for Emissions Cap
<b>SO<sub>2</sub></b>	<b>N</b>	<b>001 – 004</b>		<b>71,810</b>	<b>ESCPSD</b>
<b>PM/PM<sub>10</sub></b>	<b>N</b>	<b>001 – 004</b>		<b>2,767</b>	<b>ESCPSD</b>

7. Facility-Wide or Multi-Unit Emissions Cap Comment:

**Additional SO<sub>2</sub> caps for Units 001 – 003 are 31.5 ton/hr (3-hour average), and 25 ton/hr (24-hour block average). In addition, Units 001 and 002 are limited to 16.5 ton/hr SO<sub>2</sub> (24-hour block average).**

### C. FACILITY ADDITIONAL INFORMATION

#### Additional Requirements for All Applications, Except as Otherwise Stated

1. Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <b>Oct. 2004</b>
2. Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input checked="" type="checkbox"/> Attached, Document ID: <u>Att. A</u> <input type="checkbox"/> Previously Submitted, Date:
3. Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <b>Oct. 2004</b>

#### Additional Requirements for Air Construction Permit Applications

1. Area Map Showing Facility Location: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <b>June 30, 2004</b>
2. Description of Proposed Construction or Modification: <input checked="" type="checkbox"/> Attached, Document ID: <u>See comment below</u> <input type="checkbox"/> Not Applicable
3. Rule Applicability Analysis: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <b>June 30, 2004</b>
4. List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
5. Fugitive Emissions Identification (Rule 62-212.400(2), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <b>June 30, 2004</b>
6. Preconstruction Air Quality Monitoring and Analysis (Rule 62-212.400(5)(f), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
7. Ambient Impact Analysis (Rule 62-212.400(5)(d), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
8. Air Quality Impact since 1977 (Rule 62-212.400(5)(h)5., F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
9. Additional Impact Analyses (Rules 62-212.400(5)(e)1. and 62-212.500(4)(e), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
10. Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable



**Additional Requirements for FESOP Applications N/A**

1. List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.):  
 Attached, Document ID: \_\_\_\_\_  Not Applicable

**Additional Requirements for Title V Air Operation Permit Applications N/A**

See comment below

1. List of Insignificant Activities (Required for initial/renewal applications only):  
 Attached, Document ID: \_\_\_\_\_  Not Applicable
2. Identification of Applicable Requirements (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought):  
 Attached, Document ID: \_\_\_\_\_  
 Not Applicable
3. Compliance Report and Plan (Required for all initial/revision/renewal applications):  
 Attached, Document ID: \_\_\_\_\_  
Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.
4. List of Equipment/Activities Regulated under Title VI (If applicable, required for initial/renewal applications only):  
 Attached, Document ID: \_\_\_\_\_  
 Equipment/Activities On site but Not Required to be Individually Listed  
 Not Applicable
5. Verification of Risk Management Plan Submission to EPA (If applicable, required for initial/renewal applications only) :  
 Attached, Document ID: \_\_\_\_\_  Not Applicable
6. Requested Changes to Current Title V Air Operation Permit:  
 Attached, Document ID: \_\_\_\_\_  Not Applicable

**Additional Requirements Comment**

**A description of the proposed addition of selective catalytic reduction NO<sub>x</sub> control system to Unit 1 is provided in the Introduction and also in Application Comment section on Page 2 of this application.**

**EMISSIONS UNIT INFORMATION**

**EMISSIONS UNIT INFORMATION**

Section [ 1 ] of [ 1 ]

**A. GENERAL EMISSIONS UNIT INFORMATION**

**Title V Air Operation Permit Emissions Unit Classification**

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

**Emissions Unit Description and Status**

1. Type of Emissions Unit Addressed in this Section: (Check one)

This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:  
**Riley Stoker wet bottom fossil fuel steam boiler**

3. Emissions Unit Identification Number: **001**

4. Emissions Unit Status Code: <b>A</b>	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code: <b>49</b>	8. Acid Rain Unit? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
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9. Package Unit:  
Manufacturer: **Riley Stoker** Model Number:

10. Generator Nameplate Rating: **445 MW**

11. Emissions Unit Comment:

**EMISSIONS UNIT INFORMATION**

Section [ 1 ] of [ 1 ]

**Emissions Unit Control Equipment**

1. Control Equipment/Method(s) Description:

**Low-NO<sub>x</sub> Burners (LNB) - NO<sub>x</sub>**  
[Control Device Code 205]

**Selective Catalytic Reduction (SCR) - NO<sub>x</sub>**  
[Control Device Code 139]

**Miscellaneous Control Devices - SO<sub>3</sub>**  
[Control Device Code 099]

**Electrostatic Precipitator (ESP) - PM/PM<sub>10</sub>**  
[Control Device Code 010]

**Wet Limestone Injection Flue Gas Desulfurization (FGD) - SO<sub>2</sub> & PM/PM<sub>10</sub>**  
[Control Device Code 042] (when firing coal/petroleum coke blends and coal residual)

2. Control Device or Method Code(s): 205, 139, 099, 010, 042

**EMISSIONS UNIT INFORMATION**

Section [ 1 ] of [ 1 ]

**B. EMISSIONS UNIT CAPACITY INFORMATION**

(Optional for unregulated emissions units.)

**Emissions Unit Operating Capacity and Schedule**

1. Maximum Process or Throughput Rate:					
2. Maximum Production Rate:	<b>445 MW</b>				
3. Maximum Heat Input Rate:	<b>4,037 million Btu/hr</b>				
4. Maximum Incineration Rate:	pounds/hr tons/day				
5. Requested Maximum Operating Schedule:	<table><tr><td>24 hours/day</td><td>7 days/week</td></tr><tr><td>52 weeks/year</td><td>8,760 hours/year</td></tr></table>	24 hours/day	7 days/week	52 weeks/year	8,760 hours/year
24 hours/day	7 days/week				
52 weeks/year	8,760 hours/year				
6. Operating Capacity/Schedule Comment:					

**EMISSIONS UNIT INFORMATION**

Section [ 1 ] of [ 1 ]

**C. EMISSION POINT (STACK/VENT) INFORMATION**  
 (Optional for unregulated emissions units.)

**Emission Point Description and Type**

1. Identification of Point on Plot Plan or Flow Diagram: <b>CS0W1</b>		2. Emission Point Type Code: <b>2</b>	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:  <b>N/A</b>			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:			
5. Discharge Type Code: <b>V</b>	6. Stack Height: <b>490 feet</b>	7. Exit Diameter: <b>24 feet</b>	
8. Exit Temperature: <b>127 °F</b>	9. Actual Volumetric Flow Rate: <b>1,231,324 acfm</b>	10. Water Vapor: <b>%</b>	
11. Maximum Dry Standard Flow Rate: <b>dscfm</b>		12. Nonstack Emission Point Height: <b>feet</b>	
13. Emission Point UTM Coordinates... Zone: East (km): North (km):		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment:  <b>Stack data is for Unit 1, scrubbed. In Units 1 and 2 unscrubbed mode, the exhaust flows from both Units 1 and 2 discharge to dry stack CS001.</b>			

**EMISSIONS UNIT INFORMATION**

Section [ 1 ] of [ 1 ]

**D. SEGMENT (PROCESS/FUEL) INFORMATION**

**Segment Description and Rate: Segment 1 of 5**

1. Segment Description (Process/Fuel Type):  <b>Coal burned in Unit No. 1.</b>		
2. Source Classification Code (SCC): <b>1-01-002-01</b>		3. SCC Units: <b>Tons Burned</b>
4. Maximum Hourly Rate: <b>183.5</b>	5. Maximum Annual Rate: <b>1,607,460</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: <b>5.4</b>	8. Maximum % Ash: <b>13.3</b>	9. Million Btu per SCC Unit: <b>22</b>
10. Segment Comment:  <b>Btu per SCC unit value (Field 9) based on a nominal coal heat content of 11,000 Btu/lb. Maximum % sulfur (Field 7) is estimated based on 2005 purchases.</b>		

**Segment Description and Rate: Segment 2 of 5**

1. Segment Description (Process/Fuel Type):  <b>No. 2 fuel oil burned in Unit No. 1.</b>		
2. Source Classification Code (SCC): <b>1-01-005-01</b>		3. SCC Units: <b>1,000 Gallons Burned</b>
4. Maximum Hourly Rate: <b>N/A</b>	5. Maximum Annual Rate: <b>N/A</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: <b>0.5</b>	8. Maximum % Ash: <b>0.1</b>	9. Million Btu per SCC Unit: <b>139</b>
10. Segment Comment:  <b>No. 2 fuel oil burned only during startup, shutdown, flame stabilization, and during the start of a mill.</b>		

**EMISSIONS UNIT INFORMATION**

Section [ 1 ] of [ 1 ]

**D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)**

**Segment Description and Rate: Segment 3 of 5**

1. Segment Description (Process/Fuel Type):  <b>Petroleum coke burned in Unit No. 1.</b>		
2. Source Classification Code (SCC): <b>1-01-008-01</b>		3. SCC Units: <b>Tons Burned</b>
4. Maximum Hourly Rate: <b>36.7</b>	5. Maximum Annual Rate: <b>321,492</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: <b>7.0</b>	8. Maximum % Ash: <b>0.8</b>	9. Million Btu per SCC Unit: <b>28</b>
10. Segment Comment:  <b>Maximum petcoke rates (Fields 4 and 5) based on 20% of coal rates.</b>		

**Segment Description and Rate: Segment 4 of 5**

1. Segment Description (Process/Fuel Type):  <b>Raw coal residual burned in Unit No. 1.</b>		
2. Source Classification Code (SCC): <b>1-01-002-01</b>		3. SCC Units: <b>Tons Burned</b>
4. Maximum Hourly Rate: <b>*</b>	5. Maximum Annual Rate: <b>73,000</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: <b>1.43</b>	8. Maximum % Ash: <b>57.7</b>	9. Million Btu per SCC Unit: <b>6.1</b>
10. Segment Comment:  <b>*Firing of raw coal residual is limited to 200 tons per day total for Units 1 through 4. Maximum annual coal residual rate (Field 5) is the total for Units 1 through 4.</b>		

**EMISSIONS UNIT INFORMATION**

Section [ 1 ] of [ 1 ]

**D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)**

**Segment Description and Rate:** Segment 5 of 5

1. Segment Description (Process/Fuel Type):  <b>Beneficiated coal residual burned in Unit No. 1.</b>		
2. Source Classification Code (SCC): <b>1-01-002-01</b>		3. SCC Units: <b>Tons Burned</b>
4. Maximum Hourly Rate: *	5. Maximum Annual Rate: <b>182,500</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: <b>1.5</b>	8. Maximum % Ash: <b>35.4</b>	9. Million Btu per SCC Unit: <b>17.95</b>
10. Segment Comment:  <b>*Firing of beneficiated coal residual is limited to 500 tons per day total for Units 1 through 4. Maximum annual coal residual rate (Field 5) is the total for Units 1 through 4. Sulfur, ash, and heat contents are on a dry basis.</b>		



**EMISSIONS UNIT INFORMATION**

Section [ 1 ] of [ 1 ]

**E. EMISSIONS UNIT POLLUTANTS**

**List of Pollutants Emitted by Emissions Unit**

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
1 - NOX	205 (Low NO <sub>x</sub> Burners)	139 [SCR]	EL
2 - CO			NS
3 - PM	010 (ESP)	042 (FGD)	EL
4 - PM10	010 (ESP)	042 (FGD)	NS
5 - SO2	042 (FGD)		EL
6 - VOC			NS
7 - H106 (HCl)			NS
8 - H107 (HF)			NS
9- HAPS			NS

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: <b>NO<sub>x</sub></b>		2. Total Percent Efficiency of Control: <b>80 percent</b>	
3. Potential Emissions: <b>484.4</b> lb/hour <b>2,122</b> tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): <b>N/A</b> to      tons/year			
6. Emission Factor: <b>N/A</b>  Reference:		7. Emissions Method Code: <b>0</b>	
8. Calculation of Emissions:  $\frac{0.12 \text{ lb } NO_x}{MMBtu} \times \frac{4,037 \text{ MMBtu}}{hr} = 484.4 \text{ lb } \frac{NO_x}{hr}$ $484.4 \text{ lb } \frac{NO_x}{hr} \times 8,760 \frac{hr}{yr} \times \frac{ton}{2,000} = 2,122 \frac{ton}{yr}$			
9. Pollutant Potential/Estimated Fugitive Emissions Comment:			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -  
ALLOWABLE EMISSIONS**

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: <b>Other</b>	2. Future Effective Date of Allowable Emissions: <b>May 1, 2010</b>
3. Allowable Emissions and Units: <b>0.12 lb/MMBtu, heat input weighted 30-day rolling average</b>	4. Equivalent Allowable Emissions: <b>484.4 lb/hour      2,122 tons/year</b>
5. Method of Compliance: <b>NO<sub>x</sub> CEMS</b>	
6. Allowable Emissions Comment (Description of Operating Method): <b>Basis for allowable emissions is the EPA Consent Decree and the FDEP Consent Final Judgment</b>	

Allowable Emissions Allowable Emissions    of   

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour      tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions    of   

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour      tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
POTENTIAL/ESTIMATED FUGITIVE EMISSIONS**  
(Optional for unregulated emissions units.)

**Potential/Estimated Fugitive Emissions**

**Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.**

1. Pollutant Emitted:		2. Total Percent Efficiency of Control:	
3. Emissions:  lb/hour		Potential  tons/year	4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No
5. Range of Estimated Fugitive Emissions (as applicable): to                      tons/year			
6. Emission Factor:  Reference:		7. Emissions Method Code:	
8. Calculation of Emissions:			
9. Pollutant Potential/Estimated Fugitive Emissions Comment: <b>Other than NO<sub>x</sub>, TEC is not requesting any revisions to currently authorized emission standards as specified in FINAL Title V Permit No. 0570039-021-AV. The information requested by Section F1 regarding Unit 1 allowable emissions for pollutants other than NO<sub>x</sub> can be found in FINAL Title V Permit No. 0570039-021-AV.</b>			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -  
 ALLOWABLE EMISSIONS**

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions \_\_\_ of

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour                      tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): <b>Other than NO<sub>x</sub>, TEC is not requesting any revisions to currently authorized emission standards as specified in FINAL Title V Permit No. 0570039-021-AV. The information requested by Section F2 regarding allowable emissions for pollutants other than NO<sub>x</sub> for Unit No. 1 can be found in FINAL Title V Permit No. 0570039-021-AV.</b>	

Allowable Emissions Allowable Emissions \_\_\_ of

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour                      tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**EMISSIONS UNIT INFORMATION**

Section [ 1 ] of [ 1 ]

**G. VISIBLE EMISSIONS INFORMATION**

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

**Visible Emissions Limitation:** Visible Emissions Limitation \_\_\_ of

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: <input type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions:                      %      Exceptional Conditions:                      % Maximum Period of Excess Opacity Allowed:                      min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:  <b>TEC is not requesting any revisions to currently authorized visible emission standards as specified in FINAL Title V Permit No. 0570039-021-AV. The information requested by Section G regarding visible emissions for Unit No. 1 can be found in FINAL Title V Permit No. 0570039-021-AV.</b>	

**Visible Emissions Limitation:** Visible Emissions Limitation \_\_\_ of

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: <input type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions:                      %      Exceptional Conditions:                      % Maximum Period of Excess Opacity Allowed:                      min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

**EMISSIONS UNIT INFORMATION**

Section [ 1 ] of [ 1 ]

**H. CONTINUOUS MONITOR INFORMATION**

Complete if this emissions unit is or would be subject to continuous monitoring.

**Continuous Monitoring System:** Continuous Monitor \_\_\_ of

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information: Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:  <b>Information regarding Unit No. 1 CEMS remains unchanged from the data previously provided to the Department.</b>	

**Continuous Monitoring System:** Continuous Monitor \_\_\_ of

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information: Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

**EMISSIONS UNIT INFORMATION**

Section [ 1 ] of [ 1 ]

**I. EMISSIONS UNIT ADDITIONAL INFORMATION**

**Additional Requirements for All Applications, Except as Otherwise Stated**

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input checked="" type="checkbox"/> Attached, Document ID: <u>A</u> <input type="checkbox"/> Previously Submitted, Date
2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: ____ <input checked="" type="checkbox"/> Previously Submitted, Date <b>June 2004</b>
3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input checked="" type="checkbox"/> Attached, Document ID: <b>Intro.</b> <input type="checkbox"/> Previously Submitted, Date
4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: ____ <input checked="" type="checkbox"/> Previously Submitted, Date <b>June 2004</b> <input type="checkbox"/> Not Applicable (construction application)
5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: ____ <input checked="" type="checkbox"/> Previously Submitted, Date <b>June 2004</b> <input type="checkbox"/> Not Applicable
6. Compliance Demonstration Reports/Records <input type="checkbox"/> Attached, Document ID: Test Date(s)/Pollutant(s) Tested:  <input type="checkbox"/> Previously Submitted, Date: Test Date(s)/Pollutant(s) Tested:  <input type="checkbox"/> To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested:  <input checked="" type="checkbox"/> Not Applicable  Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.
7. Other Information Required by Rule or Statute <input type="checkbox"/> Attached, Document ID: ____ <input checked="" type="checkbox"/> Not Applicable



**EMISSIONS UNIT INFORMATION**

Section [ 1 ] of [ 1 ]

**Additional Requirements for Air Construction Permit Applications**

1. Control Technology Review and Analysis (Rules 62-212.400(6) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)) <input type="checkbox"/> Attached, Document ID: ___ <input checked="" type="checkbox"/> Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(5)(h)6., F.A.C., and Rule 62-212.500(4)(f), F.A.C.) <input type="checkbox"/> Attached, Document ID: ___ <input checked="" type="checkbox"/> Not Applicable
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only) <input type="checkbox"/> Attached, Document ID: ___ <input checked="" type="checkbox"/> Not Applicable

**Additional Requirements for Title V Air Operation Permit Applications N/A**

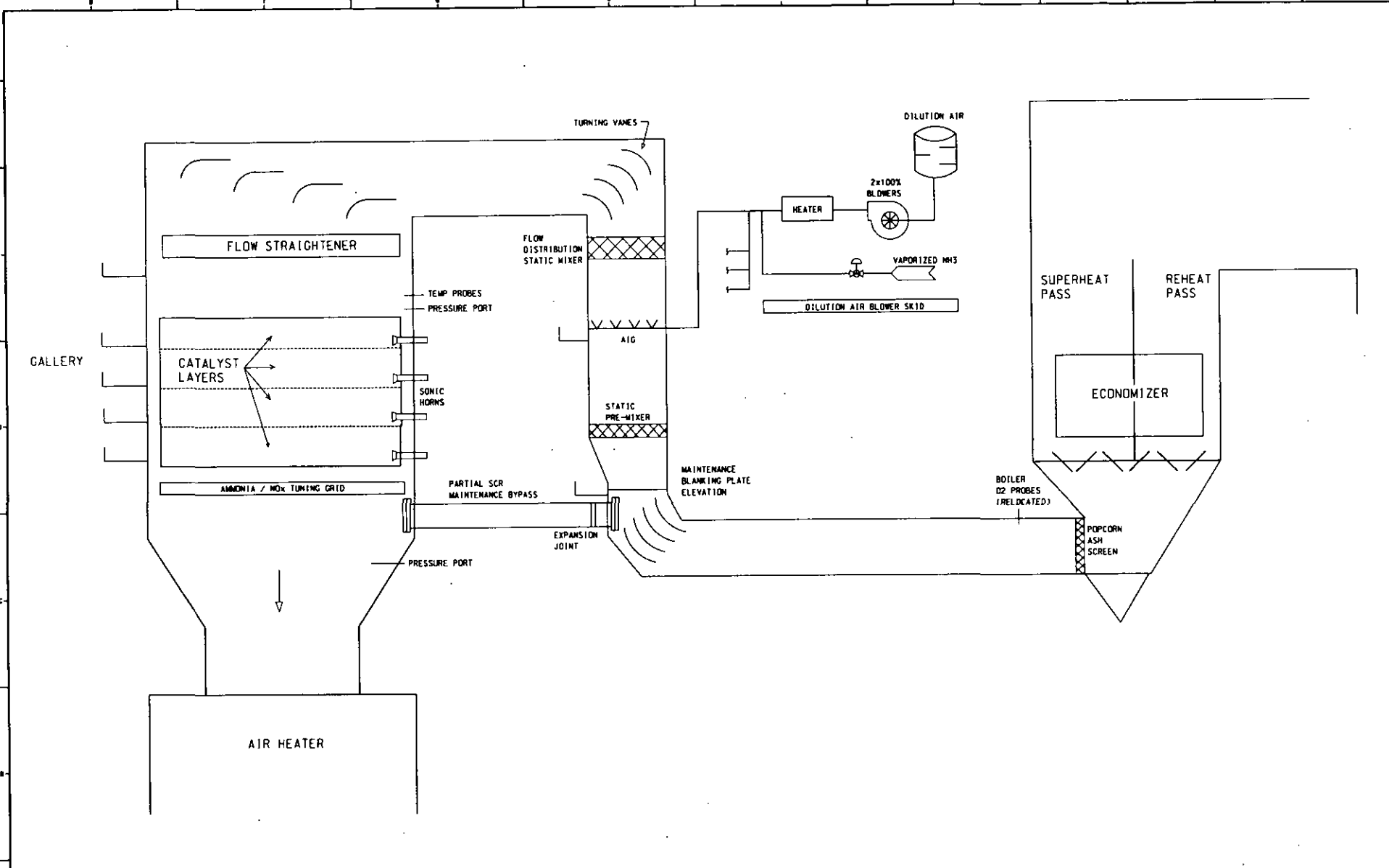
1. Identification of Applicable Requirements <input type="checkbox"/> Attached, Document ID: ___ <input type="checkbox"/> Previously Submitted, Date
2. Compliance Assurance Monitoring <input type="checkbox"/> Attached, Document ID: ___ <input type="checkbox"/> Previously Submitted, Date
3. Alternative Methods of Operation <input type="checkbox"/> Attached, Document ID: ___ <input type="checkbox"/> Previously Submitted, Date
4. Alternative Modes of Operation (Emissions Trading) <input type="checkbox"/> Attached, Document ID: ___ <input type="checkbox"/> Not Applicable
5. Acid Rain Part Application <input type="checkbox"/> Certificate of Representation (EPA Form No. 7610-1) <input type="checkbox"/> Copy Attached, Document ID: <input type="checkbox"/> Acid Rain Part (Form No. 62-210.900(1)(a)) <input type="checkbox"/> Attached, Document ID: <input type="checkbox"/> Previously Submitted, Date: <input type="checkbox"/> Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) <input type="checkbox"/> Attached, Document ID: <input type="checkbox"/> Previously Submitted, Date: <input type="checkbox"/> New Unit Exemption (Form No. 62-210.900(1)(a)2.) <input type="checkbox"/> Attached, Document ID: <input type="checkbox"/> Previously Submitted, Date: <input type="checkbox"/> Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) <input type="checkbox"/> Attached, Document ID: <input type="checkbox"/> Previously Submitted, Date: <input type="checkbox"/> Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) <input type="checkbox"/> Attached, Document ID: <input type="checkbox"/> Previously Submitted, Date: <input type="checkbox"/> Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) <input type="checkbox"/> Attached, Document ID: <input type="checkbox"/> Previously Submitted, Date: <input type="checkbox"/> Not Applicable

**EMISSIONS UNIT INFORMATION**

Section [ 1 ] of [ 1 ]

**Additional Requirements Comment**

**ATTACHMENT A**  
**PROCESS FLOW DIAGRAM**



**TECO**  
TAMPA ELECTRIC

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL FOR THAT OF ITS SUBCONTRACTOR(S) PERFORMING THE WORK.

FILE: 1.0.1 B22 SCR.DGN

ISSUING RECORD					REVISION RECORD				
REV.	DATE	BY	FOR	REASON	REV.	DATE	BY	FOR	REASON
A	12-22-2005	A. MASSA	K. HOPKINS	O. ANDERSON					

SCALE: NONE

PROJECT NUMBER: 11764-002

**SCR PROJECT FLOW DIAGRAM**

UNITS 1 & 2  
BIG BEND POWER STATION  
TAMPA ELECTRIC

REV: A

NOX12052005

**ATTACHMENT B**  
**PROPOSED AIR CONSTRUCTION PERMIT**

**DRAFT AIR CONSTRUCTION PERMIT NO. 0570039-024-AC**

**PERMITTEE**

Tampa Electric Company (TEC)	File/Permit No.	0570039-024-AC
Big Bend Station	Facility ID:	0570039
Post Office Box 111	Project:	NO <sub>x</sub> Reduction (SCR)
Tampa, Florida 33601-0111		Steam Generator Unit 1
<i>Authorized Representative:</i>	SIC No.	4911
Karen Sheffield, General Manager	Expires:	December 1, 2010
	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 solid fuel-fired Steam Generator Unit No. 1. 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 Wyandotte Road, Apollo Beach, 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

### 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<sub>x</sub>) 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 injection system and catalyst at the following Unit:

Emission Unit No.	System	Emission Unit Description
001	Power Generation	445 MW Fossil Fuel Steam Generator

The proposed project is called selective catalytic reduction (SCR). A recent NO<sub>x</sub> control project on Unit 1 includes installation of new coal burners suitable for low NO<sub>x</sub> operation.

### 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/PM<sub>10</sub>), sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), or volatile organic compounds (VOC), exceed 100 tons per year (TPY).

The addition of SCR to Unit No. 1 reduces NO<sub>x</sub> 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, 2006 Notice of Intent to Issue Permit published.
- Month Day, 2006 Intent to Issue Permit distributed.
- February 15, 2006 Application deemed complete.
- December 28, 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 December 28, 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.
- E-mail memorandum from EPA received on September 15, 2005.

## PROJECT DESCRIPTION

TEC will install an SCR system for NO<sub>x</sub> control on the facility's Unit No. 1 coal-fired boiler. This emissions unit is a Riley Stoker Corporation "wet" bottom utility boiler, with a generator nameplate rating of 445 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. 1 boiler ramp rate is adequate for the SCR catalyst). The project consists of:

- Installation of a "three plus one" SCR reactor downstream of the economizer and upstream of the air preheater.
- Installation of an ammonia storage, supply, and injection system the details of which are still under development.
- SCR tuning (i.e., adjustment of the ammonia injection grid) during the initial commissioning of the system and periodically thereafter.
- Installation of an ammonia injection sulfur trioxide (SO<sub>3</sub>) control system downstream of the Unit No. 1 air preheater.

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 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
001	August 1, 2006	May 1, 2010

**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  
Roger P. Stewart Center  
3629 Queen Palm Drive  
Tampa, Florida 33619  
Telephone: 813/627.2600; Fax: 813/627-2660

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 nor operate the SCR equipment in such a manner which would violate allowable emission rates stated herein, notwithstanding the conditions provided in A.15.1. [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<sub>x</sub>) control on the facility's Unit No. 1 solid fuel-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.]

#### SCR OPERATION

A.15.1 The permittee shall operate the SCR system in accordance with the SCR system supplier's recommendations, including operating the SCR between minimum and maximum operating temperatures.

A.15.2. The partial SCR maintenance bypass duct is normally closed except during maintenance periods.

**A.15.3** Abnormal events: "Abnormal events" are defined as an unanticipated interruption, malfunction, or failure of the pipeline or associated equipment utilized to supply ammonia to the Big Bend Station for use in the operation of the selective catalytic reduction control system. Excess emissions occurring from operation of the boilers during an abnormal event are authorized provided that best operational practices are employed to minimize the amount and duration of the emissions during an abnormal event.

#### EMISSION LIMITS AND STANDARDS

**A.16.** After April 30, 2010 NO<sub>x</sub> emissions (reported as NO<sub>2</sub>) from Unit No. 1 when combusting solid fuel, shall not exceed 0.12 lb NO<sub>x</sub>/million Btu heat input on a heat input weighted 30 boiler operating day rolling average basis. These emission limits are based on the definition of "emission rate" so that an equation is used that divides total pounds of NO<sub>x</sub> by total heat input in each 30-day period to reach 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; and E-mail memorandum from EPA received on September 15, 2005.]

{Permitting Note: Limits in this 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 heat input weighted average of all hourly emission rates for NO<sub>x</sub> for the 30 successive boiler operating days, except for data obtained during startup, shutdown, malfunction, or abnormal events.

[Rule 62-204.800(7)(b)2., F.A.C.; 40 CFR 60.46a(g), 0570039-017-AV]

**A.19.** Compliance with the ammonia (NH<sub>3</sub>) slip limit shall be determined using EPA conditional test method (CTM-027), EPA method 320 or other methods approved by the Department. [Rule 62-4.070 (3), F.A.C.]

**A.20.** Compliance with the emission limiting standards specified in this Air Construction Permit shall be determined by April 30, 2010, and annually thereafter, using the appropriate specific conditions of the facility's existing Title V Air Operations Permit No. 0570039-017-AV, 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 heat input weighted 30 boiler operating day rolling average NO<sub>x</sub> emission limit of 0.12 lb NO<sub>x</sub>/mmBtu shall be demonstrated using CEMS data beginning May 31, 2010 (or 30 boiler operating days after May 1, 2010), and every 30 boiler operating days thereafter.

**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. 1 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.]