

POLK POWER STATION

TITLE V PERMIT REVISION APPLICATION CHANGE IN SO₂ COMPLIANCE TEST METHOD

Prepared for:



Prepared by:

ECT

Environmental Consulting & Technology, Inc.
3701 Northwest 98th Street
Gainesville, Florida 32606

ECT No. 010888-0500

November 2002



Department of Environmental Protection

Division of Air Resources Management

APPLICATION FOR AIR PERMIT - TITLE V SOURCE

See Instructions for Form No. 62-210.900(1)

I. APPLICATION INFORMATION

Identification of Facility

1. Facility Owner/Company Name: <i>Tampa Electric Company</i>	
2. Site Name: <i>Polk Power Station</i>	
3. Facility Identification Number: <i>1050233</i> [] Unknown	
4. Facility Location: Street Address or Other Locator: <i>9995 State Route 37, South</i> City: <i>Mulberry</i> County: <i>Polk</i> Zip Code: <i>33860-0775</i>	
5. Relocatable Facility? [] Yes [X] No	6. Existing Permitted Facility? [X] Yes [] No

Application Contact

Name and Title of Application Contact: <i>Raiza Calderón, Engineer – Environmental Affairs</i>	
2. Application Contact Mailing Address: Organization/Firm: <i>Tampa Electric Company</i> Street Address: <i>6944 U.S. Highway 41 North</i> City: <i>Apollo Beach</i> State: <i>FL</i> Zip Code: <i>33572-9200</i>	
3. Application Contact Telephone Numbers: Telephone: <i>(813) 641-5261</i> Fax: <i>(813) 641-5081</i>	

Application Processing Information (DEP Use)

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

Purpose of Application

Air Operation Permit Application

This Application for Air Permit is submitted to obtain: (Check one)

- Initial Title V air operation permit for an existing facility which is classified as a Title V source.
- Initial Title V air operation permit for a facility which, upon start up of one or more newly constructed or modified emissions units addressed in this application, would become classified as a Title V source.

Current construction permit number: _____

- Title V air operation permit revision to address one or more newly constructed or modified emissions units addressed in this application.

Current construction permit number: _____

Operation permit number to be revised: _____

- Title V air operation permit revision or administrative correction to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application. (Also check Air Construction Permit Application below.)

Operation permit number to be revised/corrected: _____

- Title V air operation permit revision for reasons other than construction or modification of an emissions unit. Give reason for the revision; e.g., to comply with a new applicable requirement or to request approval of an "Early Reductions" proposal.

Operation permit number to be revised: 1050233-009-AV

Reason for revision: Change a test method

Air Construction Permit Application

This Application for Air Permit is submitted to obtain: (Check one)

- Air construction permit to construct or modify one or more emissions units.
- Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.
- Air construction permit for one or more existing, but unpermitted, emissions units.

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official: <i>Mark J. Hornick, General Manager</i>
2. Owner/Authorized Representative or Responsible Official Mailing Address: Organization/Firm: <i>Tampa Electric Company</i> Street Address: <i>9995 State Route 37 South (P.O. Box 111, Tampa, FL 33601)</i> City: <i>Mulberry</i> State: <i>FL</i> Zip Code: <i>33572-9200</i>
3. Owner/Authorized Representative or Responsible Official Telephone Numbers: Telephone: <i>(813) 228-1111 Ext. 39988</i> Fax: <i>(813) 428-5927</i>
4. Owner/Authorized Representative or Responsible Official Statement: <i>I, the undersigned, am the owner or authorized representative*(check here [], if so) or the responsible official (check here [], if so) of the Title V source addressed in this application, whichever is applicable. 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. 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 any permitted emissions unit.</i> <i>Mark J. Hornick</i> _____ <i>11/22/02</i> _____ Signature Date

* Attach letter of authorization if not currently on file.

Professional Engineer Certification

1. Professional Engineer Name: <i>Daniel N. Hlaing</i> Registration Number: <i>45058</i>
2. Professional Engineer Mailing Address: Organization/Firm: <i>Environmental Consulting & Technology, Inc.</i> Street Address: <i>3701 NW 98th Street</i> City: <i>Gainesville</i> State: <i>FL</i> Zip Code: <i>32606-5004</i>
3. Professional Engineer Telephone Numbers: Telephone: <i>(352) 332-0444</i> Fax: <i>(352) 332-6722</i>

4. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(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

(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.

If the purpose of this application is to obtain a Title V source air operation permit (check here [], 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 schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [], 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.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [], 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.

Signature

Date

11/21/02

Change test method for an existing emissions unit

Construction/Modification Information

1. Description of Proposed Project or Alterations:

Condition C.14 of the current Title V permit (#1050233-009-AV) requires that EPA Method 8 be used as a test method for demonstrating compliance with the sulfur dioxide (SO₂) emission limit in Condition C.6. Since the current stack design poses problems with using the EPA Method 8 (Determination of Sulfuric Acid Mist and Sulfur Dioxide Emissions from Stationary Sources) [explained in details in correspondence dated October 3, 2002], it is proposed that the use of EPA Method 6C [Determination of Sulfur Dioxide Emissions From Stationary Sources (Instrumental Analyzer Procedure)] be allowed to demonstrate compliance with the SO₂ emission limit.

2. Projected or Actual Date of Commencement of Construction: *N/A*

3. Projected Date of Completion of Construction: *N/A*

Application Comment

It was shown in Table 1 of Ms. Laura Crouch's letter (dated October 3, 2002) to Mr. Bill Proses of FDEP-SW District that the SO₂ emissions test results using EPA Method 6C and adapted version of Method 8 simultaneously are comparable (i.e., within 5%). This accuracy is sufficient for the purpose of compliance demonstration.

B. FACILITY POLLUTANTS

List of Pollutants Emitted

1. Pollutant Emitted	2. Pollutant Classif.	3. Requested Emissions Cap		4. Basis for Emissions Cap	5. Pollutant Comment
		lb/hour	tons/year		
<i>NOX</i>	<i>A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	
<i>SO2</i>	<i>A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	
<i>CO</i>	<i>A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	
<i>PM10</i>	<i>A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	
<i>PM</i>	<i>A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	
<i>SAM</i>	<i>A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	
<i>VOC</i>	<i>A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	
<i>PB</i>	<i>B</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	

C. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements

1. Area Map Showing Facility Location: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
2. Facility Plot Plan: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
3. Process Flow Diagram(s): <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
4. Precautions to Prevent Emissions of Unconfined Particulate Matter: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
5. Fugitive Emissions Identification: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
6. Supplemental Information for Construction Permit Application: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
7. Supplemental Requirements Comment: <i>Previously submitted with the Title V permit application. These submittals are still valid as they relate to this project.</i>

Additional Supplemental Requirements for Title V Air Operation Permit Applications

8. List of Proposed Insignificant Activities: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
9. List of Equipment/Activities Regulated under Title VI: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Equipment/Activities On site but Not Required to be Individually Listed <input checked="" type="checkbox"/> Not Applicable
10. Alternative Methods of Operation: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
11. Alternative Modes of Operation (Emissions Trading): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
12. Identification of Additional Applicable Requirements: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
13. Risk Management Plan Verification: <input type="checkbox"/> Plan previously submitted to Chemical Emergency Preparedness and Prevention Office (CEPPO). Verification of submittal attached (Document ID: _____) or previously submitted to DEP (Date and DEP Office: _____) <input type="checkbox"/> Plan to be submitted to CEPPO (Date required: _____) <input checked="" type="checkbox"/> Not Applicable
14. Compliance Report and Plan: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
15. Compliance Certification (Hard-copy Required): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

**A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)**

Emissions Unit Description and Status

<p>1. Type of Emissions Unit Addressed in This Section: (Check one)</p> <p><input checked="" type="checkbox"/> 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).</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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.</p>			
<p>2. Regulated or Unregulated Emissions Unit? (Check one)</p> <p><input checked="" type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.</p> <p><input type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.</p>			
<p>1. Description of Emissions Unit Addressed in This Section (limit to 60 characters):</p> <p><i>Existing Sulfuric Acid Plant</i></p>			
<p>4. Emissions Unit Identification Number: ID: <i>004</i></p>		<p><input type="checkbox"/> No ID <input type="checkbox"/> ID Unknown</p>	
<p>5. Emissions Unit Status Code: <i>A</i></p>	<p>6. Initial Startup Date: <i>4/10/96</i></p>	<p>7. Emissions Unit Major Group SIC Code: <i>49</i></p>	<p>8. Acid Rain Unit? <input type="checkbox"/></p>
<p>9. Emissions Unit Comment: (Limit to 500 Characters)</p> <p><i>The sulfuric acid plant takes a sulfur gas stream from the solid fuel gasification plant, and converts it to 100 percent sulfuric acid using double contact process. It has a 15 MMBtu/hr propane-fired furnace which converts H₂S to SO₂, and vents to atmosphere only during warm-up; and a 9 MMBtu/hr propane-fired non-contact SO₂ to SO₃ converter preheater, which is vented to the atmosphere.</i></p>			

Emissions Unit Control Equipment

1. Control Equipment/Method Description (Limit to 200 characters per device or method):

Sulfuric Acid Plant – Double Contact Process

2. Control Device or Method Code(s): *044*

Emissions Unit Details

Constructed to TEC's specifications

1. Package Unit:	
Manufacturer:	Model Number:
2. Generator Nameplate Rating: MW	
3. Incinerator Information:	
Dwell Temperature:	°F
Dwell Time:	seconds
Incinerator Afterburner Temperature:	°F

**B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)**

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:		mmBtu/hr
2. Maximum Incineration Rate:	lb/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate:	<i>77,640 ton/ year, 100% sulfuric acid</i>	
5. Requested Maximum Operating Schedule:		
	<i>24 hours/day</i>	<i>7 days/week</i>
	<i>52 weeks/year</i>	<i>8,760 hours/year</i>
6. Operating Capacity/Schedule Comment (limit to 200 characters):		
	<i>Maximum production rate is the permitted sulfuric acid production limit.</i>	

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type) (limit to 500 characters): <i>Sulfuric acid production</i>		
2. Source Classification Code (SCC): <i>3-01-022-01</i>		3. SCC Units: <i>Tons Produced or Manufactured</i>
1. Maximum Hourly Rate: <i>8.9</i>	1. Maximum Annual Rate: <i>77,640</i>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

Segment Description and Rate: Segment _____ of _____

1. Segment Description (Process/Fuel Type) (limit to 500 characters):		
2. Source Classification Code (SCC):		3. SCC Units:
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)**

Potential/Fugitive Emissions

1. Pollutant Emitted: SO₂		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <p align="center">35.6 lb/hour 155.3 tons/year</p>		4. Synthetically Limited? []	
5. Range of Estimated Fugitive Emissions: [] 1 [] 2 [] 3 _____ to _____ tons/year			
6. Emission Factor: 4 lb/ton Reference: <i>Allowable Emission Rate</i>		7. Emissions Method Code: 0	
8. Calculation of Emissions (limit to 600 characters): $4 \frac{\text{lb SO}_2}{\text{ton H}_2\text{SO}_4} \times 8.9 \frac{\text{ton H}_2\text{SO}_4}{\text{hour}} = 35.6 \frac{\text{lb SO}_2}{\text{hour}}$ $\frac{4 \frac{\text{lb SO}_2}{\text{ton H}_2\text{SO}_4} \times 77,640 \frac{\text{ton H}_2\text{SO}_4}{\text{year}}}{2,000 \text{ lb / ton}} = 155.3 \frac{\text{ton SO}_2}{\text{year}}$			
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):			

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code: RULE		2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: 4 lb/ton of 100% H₂SO₄		4. Equivalent Allowable Emissions: <p align="center">lb/hour tons/year</p>	
5. Method of Compliance (limit to 60 characters): EPA Method 6C [Determination of Sulfur Dioxide Emissions from Stationary Sources (Instrumental Analyzer Procedure)] or alternative method approved by FDEP			
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): In lieu of EPA Method 8 [Determination of Sulfuric Acid Mist and Sulfur Dioxide Emissions from Stationary Sources]			

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)**

Potential/Fugitive Emissions

1. Pollutant Emitted: SAM		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <p align="center">1.34 lb/hour 5.82 tons/year</p>		4. Synthetically Limited? []	
5. Range of Estimated Fugitive Emissions: [] 1 [] 2 [] 3 _____ to _____ tons/year			
6. Emission Factor: 0.15 lb/ton Reference: Allowable Emission Rate		7. Emissions Method Code: 0	
8. Calculation of Emissions (limit to 600 characters): $0.15 \frac{\text{lb SAM}}{\text{ton H}_2\text{SO}_4} \times 8.9 \frac{\text{ton H}_2\text{SO}_4}{\text{hour}} = 1.34 \frac{\text{lb SAM}}{\text{hour}}$ $\frac{0.15 \frac{\text{lb SAM}}{\text{ton H}_2\text{SO}_4} \times 77,640 \frac{\text{ton H}_2\text{SO}_4}{\text{year}}}{2,000 \text{ lb / ton}} = 5.82 \frac{\text{ton SAM}}{\text{year}}$			
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):			

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code: RULE		2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: 0.15 lb/ton of 100% H₂SO₄		4. Equivalent Allowable Emissions: <p align="center">lb/hour tons/year</p>	
5. Method of Compliance (limit to 60 characters): EPA Method 8 [Determination of Sulfuric Acid and Sulfur Dioxide Emissions from Stationary Sources] or alternative method approved by FDEP			
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):			

**J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)**

Supplemental Requirements

1. Process Flow Diagram <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
2. Fuel Analysis or Specification <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
3. Detailed Description of Control Equipment <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
4. Description of Stack Sampling Facilities <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
5. Compliance Test Report <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously submitted, Date: <u>10/3/02</u> <input type="checkbox"/> Not Applicable
6. Procedures for Startup and Shutdown <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
7. Operation and Maintenance Plan <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
8. Supplemental Information for Construction Permit Application <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
9. Other Information Required by Rule or Statute <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
10. Supplemental Requirements Comment: <p align="center"><i>Previously submitted</i></p>

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
12. Alternative Modes of Operation (Emissions Trading) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
13. Identification of Additional Applicable Requirements <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
14. Compliance Assurance Monitoring Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
15. Acid Rain Part Application (Hard-copy Required) <input type="checkbox"/> Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID: _____ <input type="checkbox"/> Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID: _____ <input type="checkbox"/> New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID: _____ <input type="checkbox"/> Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID: _____ <input type="checkbox"/> Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) Attached, Document ID: _____ <input type="checkbox"/> Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable



TAMPA ELECTRIC

October 3, 2002

Mr. Bill Proses
Southwest District
Florida Department of
Environmental Protection
3804 Coconut Palm Drive
Tampa, Florida 33619-8318

Via FedEx
Airbill No. 7921 1285 2820

**Re: Tampa Electric Company (TEC)
Polk Power Station Sulfuric Acid Plant
Stack Emission Test
Permit No. 1050233-009-AV
AIRS #1050233, EU#004**

Dear Mr. Proses:

According to Condition C.20 of the Title V Permit #1050233-009-AV, TEC is required to perform prior to renewal of the permit a formal compliance test demonstrating compliance for sulfuric acid mist (H_2SO_4) and sulfur dioxide (SO_2) at Polk Power Station for E.U. ID No. 004. As referenced in Condition C.14 and Chapter 62-297, F.A.C, EPA Method 8 is required to be used for sulfuric acid mist/sulfur dioxide compliance. Provided with this correspondence is the August 22 & 23, 2002 emission performance test. This emission performance test was performed in order to evaluate different methods for testing and to develop a recommended single method.

EPA Method 8 specifies that the stack velocity be determined by differential pressure using a manometer. Due to the very low velocity in the sulfuric acid plant stack at Polk Power Station, TEC testing personnel have found it impossible to register a differential pressure reading for the exit gas using a manometer. This, in turn, prevents the direct application of EPA Method 8. This problem was addressed on the April 26, 2000 letter to the Florida Department of Environmental Protection (FDEP), where TEC requested permission to use an alternative approach to determine the exit velocity of the sulfuric acid plant stack gas. Richard L. Davis of Davis & Associates Consulting, Inc developed an algorithm that allowed TEC to calculate the exit velocity of acid plant stack gas based on available plant operating data. TEC reviewed this algorithm and found it to be technically correct and precise, therefore TEC used it for the sulfuric acid plant initial compliance test and the August 22 & 23, 2002 emission performance test. Other than this adaptation, TEC strictly adhered to all requirements of EPA Method 8.

During the August 22 & 23, 2002 emission performance test, EPA Method 6C was simultaneously used along with the adapted EPA Method 8 for the determination of sulfur dioxide emissions from the sulfuric acid plant. This test method continuously extracts a gas sample from a stack, and a portion of the sample is conveyed to an instrumental analyzer for determination of SO_2 gas concentration. Since the H_2SO_4 and SO_2 emission limits are of 0.15 pounds per ton of 100 percent acid produced and 4 pounds per ton of 100 percent acid produced, respectively, the concentrations would need to be converted to a lb/ton number. The results of this test method are included in Appendix A of the performance test report enclosed. This test method is considered an accurate representation of the emissions from the sulfuric acid plant, but it only is applicable for determining SO_2 gas concentrations and not H_2SO_4 gas concentrations.

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

(813) 228-4111

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

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

Mr. Bill Proses
 October 3, 2002
 Page 2 of 3

Presented below in Table 1 is a comparison of the emission rates using the EPA Method 6C and the adapted EPA Method 8 for the August 22 & 23, 2002 sulfuric acid plant emission performance test..

TABLE 1. EPA Method 6C and Adapted Method 8 Comparison for Sulfuric Acid Plant Emission Performance Test (August 22 & 23, 2002)

Sulfuric Acid Plant August 22 & 23, 2002	SO ₂ Concentration [EPA Method 8] lb/dscf	Conversion Factor lbs/dscf to ppm	SO ₂ Concentration		Difference %
			EPA Method 6C	Adapted EPA Method 8	
			ppm	ppm	
Run 1	2.380E-05	1.660E-07	135.03	143.37	-5.82
Run 2	2.564E-05	1.660E-07	147.72	154.46	-4.36
Run 3	2.756E-05	1.660E-07	161.13	166.02	-2.95
Average			148.0	154.6	-4.38

The only other option at the present time to calculate the H₂SO₄ and SO₂ emissions from the sulfuric acid plant would be to use the following alternative equation for a source that processes "elemental sulfur or an ore that contains elemental sulfur" and uses air to supply oxygen as referenced in 60.84(d) :

$$E_s = (C_s S) / [0.265 - (0.126\% O_2) - (A \% CO_2)]$$

At Polk, the source of the sulfur to the sulfuric acid plant is not "elemental sulfur or an ore containing elemental sulfur" as specified in 60.84. Rather, it is hydrogen sulfide (H₂S) in the acid gas stream from the solid fuel gasification plant's gas cleanup system. Also, the Polk Power Station sulfuric acid plant uses pure oxygen in addition to air to supply the oxygen for acid production. Consequently, the alternative equation above does not calculate an accurate emission rate for this process.

Presented below in Table 2 is a comparison of the emission rates using the alternative method referenced in 60.84(d) and the adapted EPA Method 8 for the sulfuric acid plant initial compliance test performed on June 25, 1999.

TABLE 2. Alternative Method and Adapted EPA Method 8 Comparison for Sulfuric Acid Plant Initial Compliance Test (June 25, 1999)

Sulfuric Acid Plant June 25, 1999	SO ₂ Concentration [C _s] lb/dscf	H ₂ SO ₄ Concentration [C _s] lb/dscf	SO ₂ Emission Rate [E _s]		H ₂ SO ₄ Emission Rate [E _s]	
			Alternative Method	Adapted EPA Method 8	Alternative Method	Adapted EPA Method 8
			lb/ton	lb/ton	lb/ton	lb/ton
Run 1	3.053E-05	7.873E-07	1.4035	2.107	0.0362	0.054
Run 2	2.755E-05	7.888E-07	1.2653	1.980	0.0362	0.057
Run 3	-	-	-	-	-	-
Average			1.3344	2.0435	0.0362	0.0555

Mr. Bill Proses
 October 3, 2002
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Presented below in Table 3 is a comparison of the emission rates using the alternative method referenced in 60.84(d) and the adapted EPA Method 8 for the August 22 & 23, 2002 sulfuric acid plant emission performance test.

TABLE 3. Alternative Method and Adapted EPA Method 8 Comparison for Sulfuric Acid Plant Emission Performance Test (August 22 & 23, 2002)

Sulfuric Acid Plant August 22 & 23, 2002	SC ₂ Concentration [C _s] lb/dscf	H ₂ SO ₄ Concentration [C _a] lb/dscf	SO ₂ Emission Rate [E _B]		H ₂ SO ₄ Emission Rate [E _s]	
			Alternative Method	Adapted EPA Method 8	Alternative Method	Adapted EPA Method 8
			lb/ton	lb/ton	lb/ton	lb/ton
Run 1	2.38017E-05	3.55016E-07	1.0883	2.2017	0.0162	0.0328
Run 2	2.56370E-05	3.58358E-07	1.1722	2.3426	0.0164	0.0327
Run 3	2.75575E-05	3.06610E-07	1.2600	2.5804	0.0140	0.0287
Average			1.1735	2.3749	0.0155	0.0314

Although the alternative method calculates the emission rate to be lower than the adapted EPA Method 8, it is not an accurate representation of the emissions from the sulfuric acid plant. TEC is planning on submitting an administrative amendment requesting for official permission from FDEP to use the adapted EPA Method 8 for future sulfuric acid plant compliance tests in Quarter IV, 2002.

Enclosed please find the emissions performance report for tests performed on August 22 & 23, 2002 at the Sulfuric Acid Plant. As stated in the Summary of Results, below is a list of results:

- sulfur dioxide - calculated average was 2 lbs/ton; permit limit 4 lbs/ton.
- sulfuric acid mist - calculated average was 0.03 lbs/ton; permit limit 0.15 lbs/ton.
- average opacity observed during the 30-minute test was 0 percent; permit limit 10 percent.

If you have any questions, please call Raiza Calderon or me at (813) 641-5261.

Sincerely,



Laura R. Crouch
 Manager - Air Programs
 Environmental Affairs

bc: R.L. Dorey
 M.J. Hornick
 J.E. McDaniel
 M.R. Perkins (enc)
 D.A. Smith
 L.T. Webb
 AP 6.0
 AR 6.5 (enc)
 C 2.1

r: R. Calderon
 S.S. Castro
 L.R. Crouch
 D. Latchman
 L.A. Pence

EA/bmr/RC139

c/enc: Mr. Jerry Kissel, FDEP SW

From: Costello, Martin
Sent: Wednesday, November 20, 2002 10:34 AM
To: Linero, Alvaro
Cc: Riza Calderon (E-mail)
Subject: TEC Polk Unit 1

I expect you to receive a request form TEC to substitute Method 6C for the current method required in the PSD permit (Method 8) on the acid plant. I support this change since the current port location has very low flow rates and the annual compliance tests for SO2 have required very long run times.

Let me know if you have any questions on this issue.

Martin Costello, P.E.
Florida Department of Environmental Protection
Bureau of Air Monitoring and Mobile Sources
Emissions Monitoring Section
850/921-9578 or Suncom 291-9578