Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

PERMITTEE:

Tampa Electric Company
P.O. Box 111
Tampa, FL 33601

Authorized Representative:
Mark J. Hornick, General Manager

Permit No. 1050233-021-AC / PSD-FL-194H
Polk Power Station
Facility ID No. 1050233
SIC No. 4911
Permit Expires: June 1, 2009

PROJECT AND LOCATION

This permit authorizes an increase in the petroleum coke to coal blend ratio that is allowed to be gasified at this facility from 60% / 40% to 85% / 15% and an increase in the allowable sulfur content of the blended fuel from 3.5% to 4.7% sulfur by weight. In order to better accommodate this change in fuel ratio, minor changes and enhancements will also be made to components of the sulfuric acid plant and the acid gas removal system which will result in an increase in the allowable production of sulfuric acid from 77,640 tons per year to 299 tons per day (109,135 tons per year). The resulting syngas will continue to be fired in the existing integrated gasification combined cycle (IGCC) system at the Polk Power Station, which is located at 9995 State Route 37 South in Polk County, Florida.

STATEMENT OF BASIS

This air pollution 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.) and Title 40, Part 60 of the Code of Federal Regulations. The permittee is authorized to install the proposed equipment 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.

CONTENTS

Trina L Vielhauer for 6/20/08

Joseph Kahn, Director
Division of Air Resource Management

(Date)

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF FINAL PERMIT

In the Matter of an
Application for Permit by:

Mr. Mark J. Hornick, General Manager
Tampa Electric Company
P.O. Box 111
Tampa, Florida 33601

Air Permit No. 1050233-021-AC / PSD-FL-194H
Polk Power Station
Polk County

Enclosed is Final Permit Number 1050233-021-AC / PSD-FL-194H. This permit authorizes an increase in the petroleum coke to coal blend ratio that is allowed to be gasified at this facility from 60% / 40% to 85% / 15% and an increase in the allowable sulfur content of the blended fuel from 3.5% to 4.7% sulfur by weight. In order to better accommodate this change in fuel ratio, minor changes and enhancements will also be made to components of the sulfuric acid plant and the acid gas removal system which will result in an increase in the allowable production of sulfuric acid from 77,640 tons per year to 299 tons per day (109,135 tons per year). The resulting syngas will continue to be fired in the existing integrated gasification combined cycle (IGCC) system at the Polk Power Station, which is located at 9995 State Route 37 South in Polk County, Florida. This permit is issued pursuant to Chapter 403, Florida Statutes.

Any party to this order has the right to seek judicial review of it under section 120.68 of the Florida Statutes, by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel, Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within 30 days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida.

Trina L. Vielhauer, Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Notice of Final Permit (including the Final Determination and the Final Permit) was sent by e-mail with return receipt requested before the close of business on 6/26/08 to the persons listed:

Mr. Mark Hornick, TECO (MJHORNICK@TECOENERGY.COM)
Mr. Joshua Ellwein, P.E., TECO (JDELLWEIN@TECOENERGY.COM)
Mr. Byron Burrows, TECO (BTBURROWS@TECOENERGY.COM
Ms. Mara Nasca, SWD Office (MARA.NASCA@DEP.STATE.FL.US)
Ms. Katy Forney, EPA Region 4 (FORNEY.KATHLEEN@EPA.GOV)

Clerk Stamp

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

(Clerk) 6/26/08 (Date)

Memorandum

Florida Department of
Environmental Protection

TO: Joseph Kahn

THRU: Trina Vielhauer
Jeff Koerner

FROM: Jonathan Holtom

DATE: June 25, 2008

SUBJECT: Project No. 1050233-021-AC, Final Permit
Tampa Electric Company, Polk Power Station
85% Petroleum Coke / 15% Coal Blend Request

Attached for your approval and signature is a final construction permit for Tampa Electric Company's, Polk Power Station.

This permit authorizes an increase in the petroleum coke to coal blend ratio that is allowed to be gasified at this facility from 60% / 40% to 85% / 15% and an increase in the allowable sulfur content of the blended fuel from 3.5% to 4.7% sulfur by weight. Minor changes and enhancements will also be made to components of the sulfuric acid plant and the acid gas removal system which will result in an increase in the allowable production of sulfuric acid from 77,640 tons per year to 299 tons per day (109,135 tons per year). The resulting syngas will continue to be fired in the existing integrated gasification combined cycle (IGCC) system. The proposed work will be conducted at the Polk Power Station, which is located in Polk County, Florida.

The Public Notice requirements were met on June 9 by publishing in The Ledger (Polk County). No comments were received from the public, but minor comments were received from the applicant, in response to this Public Notice. No petitions were filed for an Administrative Hearing.

I recommend your approval and signature.

Attachments

TLV/jk/jh

PERMITTEE

Tampa Electric Company
Polk Power Station
P.O. Box 111
Tampa, FL 33601

PERMITTING AUTHORITY

Florida Department of Environmental Protection (Department)
Division of Air Resource Management
Bureau of Air Regulation, Title V Section
2600 Blair Stone Road, MS #5505
Tallahassee, Florida 32399-2400

PROJECT

Air Permit No. 1050233-021-AC / PSD-FL-194H
Polk Power Station

The purpose of this air construction permit revision project is to grant the authority to gasify a coal/petroleum coke blend with up to 85% petroleum coke with a maximum content of 4.7% sulfur, by weight. The resulting syngas will be fired in the existing integrated gasification combined cycle (IGCC) system. The higher sulfur content of the gasified fuel stock leads to a greater recovery of saleable sulfuric acid. To accommodate the increase in sulfuric acid recovery, minor modifications to the sulfuric acid plant and the methyl diethanol amine (MDEA) acid gas removal system are authorized in order to provide additional control stability. In addition, the applicant is also authorized to increase the sulfuric acid production rate to 299 tons per day of 100% sulfuric acid.

NOTICE AND PUBLICATION

The Department distributed an Intent to Issue Permit package on May 22, 2008. The applicant published the Public Notice of Intent to Issue in The Ledger (Polk County) on June 9, 2008. The Department received the proof of publication on June 17th.

COMMENTS

On June 18, 2008, the Department received comments from the applicant. The following summarizes the comments and the Department's response.

1. In the Technical Evaluation on page 3, line 5 of the last paragraph should read "No changes are proposed for the Unit 1 gasification or combustion turbine other than the use of 85 percent petcoke ***and increase in the solid fuel sulfur content up to 4.7% by weight.***"

   Response: The suggestion is noted, but no change is necessary since the Technical Evaluation is the basis for the draft permit and is not typically reissued with the final permit.

2. In the Technical Evaluation on page 6, 1st paragraph, lines 3-5, regarding the statement: "...when considering the fact that the syngas produced after removing more of the sulfur compounds will likely have a higher heat content than the current syngas." The higher heat content value of the syngas composition will not change as a result of this construction project. Small variances of the heat content value will continue to occur due to the dynamic nature of the process itself. As seen in the heat content value analysis of the syngas, the components with the greatest contribution to the gross heating value of the syngas are hydrogen (H_2) and carbon monoxide (CO), which combined are greater than 99% of total contribution. The amount of sulfur removed from the syngas prior to its combustion in the CT is not related to the higher heat content value of the syngas. This is especially true due to the fact the sulfur content of the syngas is relatively the same pre- versus post- construction activities. This was demonstrated in the trial burns with sulfur related emissions having a net increase less than the PSD "significant increase" threshold.

Response: The comment is noted.

3. In the facility description, it should be noted that Units 4 and 5 have commenced operation.

   Response: The paragraph is changed as follows:

   The Polk Power Station is an existing electrical generating plant consisting of the following equipment: a nominal 260 megawatt (MW) combined cycle combustion turbine (Unit 1), a solid fuel handling system, a solid fuel gasification plant, a sulfuric acid plant, an auxiliary boiler, and ~~two~~ four nominal 165 MW simple cycle gas turbines ~~(Units 2 and 3)~~ (Units 2, 3, 4 and 5). ~~Two additional nominal 165 MW simple cycle gas turbines (Units 4 and 5) have been permitted, but are not yet in operation.~~ The combined cycle combustion turbine, solid fuel handling system, solid fuel gasification plant, and sulfuric acid plant form an integrated gasification combined cycle (IGCC) system. Currently, the IGCC system fires synthesis gas (syngas) in the combined cycle combustion turbine produced from gasifying a blend of coal/petroleum coke with up to 60% petroleum coke and a maximum sulfur content of 3.5% by weight.

4. In the 2nd paragraph of the facility description, the reference to the acid gas removal plant should be changed to acid gas removal system.

   Response: The requested change has been made.

5. In Condition 2.a., the sentence should read: "The sulfuric acid plant compressor will be modified by performing one ***or more*** of the following options:"

   Response: The requested change has been made.

6. In Condition 2.a., the 5th bullet "Installing an oxygen injection quill in the decomposition furnace air inlet duct" should be deleted from this condition, as it is part of Condition 2.b.

   Response: The requested change has been made.

7. In Condition 2.b., the sentence should read: "The decomposition furnace air intake system will be modified to decrease the pressure drop by performing one ***or more*** of the following options:"

   Response: The requested change has been made.

8. In Condition 2.b., the 4th bullet should read "Installing an oxygen injection quill ***in the decomposition furnace*** air inlet duct."

   Response: The requested change has been made.

9. In Condition 2.c., the sentence should read: "The O_2 supply line and/or control valve leading to the decomposition furnace will be modified by performing one ***or more*** of the following options:"

   Response: The requested change has been made.

10. The last sentence of Condition 5. should read: "Compliance with this limit shall be demonstrated through the use of a continuous flow ***and composition (purity)*** monitor located between the sulfuric acid plant and the sulfuric acid storage tank."

    Response: The requested change has been made.

11. With regard to the initial testing schedule in Condition 6., PPS anticipates incorporating a number of the upgrades to the sulfuric acid plant and the MDEA acid gas removal system as immediately as possible. Once these up grades have been completed, PPS will incrementally increase the petcoke content, first to ~70% and stabilize the process for a period of approximately 4-6 weeks. After which, another step up in petcoke content to ~78% is anticipated. Once the engineering controls are stabilized, the system will be evaluated. If at that time it is deemed additional controls or upgrades (e.g. compressor motor size increase) are needed, these changes can not be made until a major outage which would not occur until the spring or summer of 2009. If this is the case, PPS will request an extension of the permit expiration date in order to accommodate the new

schedule. Additionally, PPS will conduct compliance tests at the maximum petcoke content achievable and submit the test results to the appropriate compliance authorities. Once all upgrades are complete and a "new" maximum production rate achieved, final compliance tests will be conducted and submitted to the department. This alternative scenario will result in the compliance demonstration(s) to be submitted in parts.

Response: This is acceptable within the requirements of Condition 6. No changes have been made to the permit as a result of this comment.

12. Regarding the requirements to test for VOC in Condition 7, an initial compliance stack test for VOC will be conducted. The current Title-V permit requires stack testing for VOC on Unit 1 at a frequency of "upon permit renewal". It is the opinion of PPS there should not be an annual stack testing requirement for VOC during the monitoring period and stack testing requirements should follow current Title-V permit requirements.

    Response: The Department agrees. The annual VOC testing requirement has been changed to "at least once every five years prior to renewal of the Title V operation permit."

13. In Condition 15.b.3., PPS believes the number "63" is a typo and should be removed.

    Response: The suggested deletion has been made.

CONCLUSION

The final action of the Department is to issue the permit with the minor revisions, corrections, and clarifications as described above.

FACILITY AND PROJECT DESCRIPTION

The Polk Power Station is an existing electrical generating plant consisting of the following equipment: a nominal 260 megawatt (MW) combined cycle combustion turbine (Unit 1), a solid fuel handling system, a solid fuel gasification plant, a sulfuric acid plant, an auxiliary boiler, and four nominal 165 MW simple cycle gas turbines (Units 2, 3, 4 and 5). The combined cycle combustion turbine, solid fuel handling system, solid fuel gasification plant, and sulfuric acid plant form an integrated gasification combined cycle (IGCC) system. Currently, the IGCC system fires synthesis gas (syngas) in the combined cycle combustion turbine produced from gasifying a blend of coal/petroleum coke with up to 60% petroleum coke and a maximum sulfur content of 3.5% by weight.

This permit authorizes an increase of the blend ratio of petroleum coke/coal that can be gasified to an allowable ratio of 85% petroleum coke to 15% coal, with a new maximum sulfur content of up to 4.7% by weight. The resulting syngas will continue to be fired in the existing combustion turbine. This permit also recognizes and authorizes the minor upgrades and/or additions of component equipment at the sulfuric acid plant and the methyl diethanol amine (MDEA) acid gas removal system that are outlined in the technical evaluation, along with an increase in the allowable sulfuric acid production rate of up to 299 tons per day of 100% sulfuric acid. This permit does not authorize any other increases in the allowable permitted capacities or pollutant emissions limits for any of the permitted emissions units. Except for the conditions listed below, the plant must continue to comply with all other existing permit restrictions. The following existing emissions units are affected by this project.

ID	Emission Unit Description
001	Unit 1 - Integrated gasification combined cycle (IGCC) combustion turbine rated at 260 MW
004	Sulfuric Acid Plant
005	Solid Fuel Handling System
006	Solid Fuel Gasification Plant

REGULATORY CLASSIFICATION

Title III: The existing facility is not a major source of hazardous air pollutants (HAP).

Title IV: The existing facility has units subject to the acid rain provisions of the Clean Air Act.

Title V: The existing facility is a Title V major source of air pollution in accordance with Chapter 213, Florida Administrative Code (F.A.C.).

PSD: The existing facility is a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of air quality.

NSPS: The existing facility operates units subject to the New Source Performance Standards in Part 60, Title 40 of the Code of Federal Regulations (CFR).

1. Permitting Authority: The Bureau of Air Regulation of the Florida Department of Environmental Protection is the Permitting Authority for this facility. The Bureau of Air Regulation's mailing address is 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400.

2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Southwest District Office at 13051 N. Telecom Parkway, Temple Terrace, FL 33637-0926.

3. Appendices: The following Appendices are attached as part of this permit: Appendix A (Citation Format); Appendix B (General Conditions); and, Appendix C (Common Conditions).

4. Source Obligation:

   a. At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification.

   b. At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by exceeding its projected actual emissions, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification.

   [Rule 62-212.400(12), F.A.C.]

5. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403 of the Florida Statutes (F.S.); Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.); and Title 40, Part 60 of the Code of Federal Regulations (CFR), adopted by reference in Rule 62-204.800, F.A.C. The terms used in this permit have specific meanings as defined in the applicable chapters of the Florida Administrative Code. 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. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]

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.]

7. Title V Permit: This permit authorizes construction of the permitted emissions units and initial operation to determine compliance with Department rules. A Title V operation permit is required for regular operation of the permitted emissions units. The permittee shall apply for a Title V operation permit (revision) at least 90 days prior to expiration of this permit, but no later than 180 days after commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

A. Combustion Turbine Unit 1, Sulfuric Acid Plant, and Solid Fuel Gasification Plant

This section of the permit addresses the following emissions units.

ID	Emission Unit Description
001	Unit 1 - Integrated gasification combined cycle (IGCC) combustion turbine rated at 260 MW
004	Sulfuric Acid Plant
005	Solid Fuel Handling System
006	Solid Fuel Gasification Plant

PREVIOUS APPLICABLE REQUIREMENTS

1. Other Permits: The conditions of this permit supplement all previously issued air construction and operation permits for these emissions units. Unless otherwise specified, these conditions are in addition to all other applicable permit conditions and regulations. [Rule 62-4.070, F.A.C.]

EQUIPMENT

2. Acid Gas Removal Systems: The permittee is authorized to install/replace component equipment and/or upgrade the valves and associated equipment at the sulfuric acid plant and the acid gas removal plant as needed to return the machines' controls to a normal operating range (70% or 80% output) in order to accommodate the gasification and cleansing of the higher sulfur fuel. Possible changes include the following:

   a. The sulfuric acid plant compressor will be modified by performing one or more of the following options:

      - Changing the compressor gear box ratio.
      - Increasing the compressor wheel size.
      - Installing a booster compressor.
      - Installing a parallel compressor.
      - Changing the compressor motor size.

   b. The decomposition furnace air intake system will be modified to decrease the pressure drop by performing one or more of the following options:

      - Modifying the existing burner.
      - Replacing the existing burner.
      - Modifying the air inlet duct.
      - Installing an oxygen injection quill in the decomposition furnace air inlet duct.

   c. The O_2 supply line and/or control valve leading to the decomposition furnace will be modified by performing one or more of the following options:

      - Modifying the O_2 piping to reduce the pressure drop.
      - Increasing the size of the O_2 control valve.

   d. The replacement of a control valve on the existing MDEA chiller.

   e. The installation of an additional MDEA chiller.

   f. The installation of equipment and provisions for a more consistent foam-inhibiting additive system to the circulating MDEA solvent. This will be accomplished by either adding another carbon filter bed

upstream of the heat stable salt removal system or by rerouting the piping so the existing carbon filter will be positioned immediately upstream of the heat stable salt removal system.

[Application No. 1050233-021-AC]

EMISSIONS AND PERFORMANCE REQUIREMENTS

3. Authorized Fuel: The permittee is authorized to gasify and fire a blend of petroleum coke/coal containing up to 85% petroleum coke, by weight. At the current permitted capacity for the solid fuel gasification system of 2,325 tons per day of solid fuel gasified, the allowable weight of petcoke increases from 1,395 tons per day to 1,976 tons per day. [Application No. 1050233-021-AC and Rule 62-210.200(PTE), F.A.C.]

4. Sulfur Content: The maximum sulfur content of the petroleum coke/coal blend shall not exceed 4.7% by weight. [Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

5. Sulfuric Acid Production: By this permit, the maximum plant production limit is established as 299 tons per day of 100% sulfuric acid. This limit replaces the current permitted capacity of 77, 640 tons per year listed in Specific Condition C.1. of permit No. 1050233-016-AV and is equivalent to 109,135 tons per year. Compliance with this limit shall be demonstrated through the use of a continuous flow and composition (purity) monitor located between the sulfuric acid plant and the sulfuric acid storage tank. [Application No. 1050233-021-AC]

EMISSIONS PERFORMANCE TESTING

6. Initial Testing: Within 60 days after achieving the maximum production rate at which the units will be operated, but not later than 180 days after completing the upgrades to the sulfuric acid plant and the MDEA acid gas removal system, the testing listed below shall be performed. Emissions testing shall be conducted while gasifying and firing a coal/petroleum coke blend containing the highest blended fuel ratio at which that the plant wishes to be allowed to operate (up to 85% petroleum coke / 15% coal and 4.7% sulfur, by weight).

   a. Combustion Turbine Unit 1.

      1. The permittee shall conduct stack tests on combustion turbine Unit 1 (EU-001) to demonstrate continued compliance with the permitted emissions limits for carbon monoxide (CO), Volatile Organic Compounds (VOC), sulfuric acid mist (SAM) and visible emissions.

      2. Emissions of nitrogen oxides (NO_X) and sulfur dioxide (SO_2) shall be determined continuously with data from the existing continuous emissions monitoring systems (CEMS).

   b. Sulfuric Acid Plant.

      The permittee shall conduct performance tests on the sulfuric acid plant (EU-004) to demonstrate continued compliance with the permitted emissions limits for SAM, SO_2 and visible emissions.

   [Rules 62-4.070(3) and 62-297.310(7), F.A.C.]

7. Subsequent Testing: Emissions testing shall be conducted while gasifying and firing a coal/petroleum coke blend containing the highest blended fuel ratio at which that the plant wishes to be allowed to operate (up to 85% petroleum coke / 15% coal and 4.7% sulfur, by weight).

   a. Combustion Turbine Unit 1.

      1. The permittee shall conduct stack tests annually on combustion turbine Unit 1 (EU-001) to demonstrate continued compliance with the permitted emissions limits for carbon monoxide (CO) and visible emissions.

2. The permittee shall conduct stack tests semi-annually on combustion turbine Unit 1 (EU-001) to demonstrate continued compliance with the permitted emissions limits for sulfuric acid mist (SAM). The semi-annual testing shall be performed for a period of five years following the increase in the petcoke blend ratio and shall consist of at least six test runs

3. Emissions of nitrogen oxides (NO_X) and sulfur dioxide (SO_2) shall be determined continuously with data from the existing continuous emissions monitoring systems (CEMS).

4. At least once every five years prior to renewal of the Title V operation permit, the permittee shall conduct performance tests on combustion turbine Unit 1 (EU-001) to demonstrate continued compliance with the permitted emissions limits for VOC.

b. Sulfuric Acid Plant.

At least once every five years prior to renewal of the Title V operation permit, the permittee shall conduct performance tests on the sulfuric acid plant (EU-004) to demonstrate continued compliance with the permitted emissions limits for SAM, SO_2 and visible emissions.

[Rules 62-4.070(3) and 62-297.310(7), F.A.C.]

8. Test Notification: At least 15 days prior to emissions testing, the permittee shall notify the Compliance Authority of the scheduled tests in writing. Notifications shall be provided by letter, fax, or email. [Rules 62-4.070(3) and 62-297.310(7)(a)9, F.A.C.]

9. Fuel Composition: The composition of coal, petroleum coke, and blended fuels gasified (including sulfur contents) shall be determined by proximate and ultimate analyses sampling of each unique fuel blend prior to gasification by either the owner/operator or the vendor. [Rules 62-4.070(3), 62-204.800 and 62-297.100, F.A.C.; 40 CFR 60, Appendix A]

10. Test Methods: Required tests shall be performed in accordance with the following reference methods.

Method	Description of Method and Comments
1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
6C	Determination of Sulfur Dioxide Emissions from Stationary Sources (Instrumental)
7E	Determination of Nitrogen Oxide Emissions from Stationary Sources (Instrumental)
8, 8A, 8B, or 320	Determination of Sulfuric Acid Mist
9	Visible Emissions
10	Determination of Carbon Monoxide Emissions from Stationary Sources
18	Measurement of Gaseous Organic Compound Emissions

Tests shall also be conducted in accordance with applicable requirements specified in Section 4, Appendix C of this permit. The above methods are described in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. [Rules 62-4.070(3), 62-204.800 and 62-297.100, F.A.C.; 40 CFR 60, Appendix A]

RECORDS AND REPORTS

11. Equipment Upgrade Reports: Prior to performing the upgrades, submit a report detailing all of the equipment changes that will be made to the sulfuric acid plant and MDEA acid gas removal system. Within

45 days of completing the changes, submit a report confirming that the upgrades have been completed. These reports shall be submitted to both the permitting authority and the compliance authority. [Rule 62-4.070(3), F.A.C.]

12. SAM Emissions Monitor Report: Prior to the expiration date of this permit, the permittee shall submit a report detailing the potential options for continuous SAM emissions monitoring. Upon installation of an approved SAM CEMS or other approved monitoring protocol, the semi-annual SAM compliance tests required in Specific Condition 7 may be discontinued. [Rule 62-4.070(3), F.A.C. and Applicant Request]

13. Stack Test Reports: The permittee shall prepare and submit stack test reports within 45 days of completing the required emissions tests. All reports shall be submitted to the Compliance Authority. Initial stack test reports shall also be submitted to the Permitting Authority. [Rule 62-297.310(8), F.A.C.]

14. PSD Applicability Monitoring and Reporting Requirements:

    a. The permittee shall monitor the emissions of SO_2 and SAM; and, using the most reliable information available, calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of 5 years following resumption of regular operations after the change, beginning with the first full calendar year following the year in which the change occurred. Emissions shall be computed in accordance with Rule 62-210.370, F.A.C.

    b. The permittee shall report to the Department within 60 days after the end of each year during which records must be generated under subparagraph 62-212.300(1)(e)1., F.A.C., setting out the unit's annual emissions during the calendar year that preceded submission of the report. The report shall contain the following:

        1. The name, address and telephone number of the owner or operator of the major stationary source;

        2. The annual emissions as calculated pursuant to subparagraph 62-212.300(1)(e)1., F.A.C.;

        3. If the emissions differ from the preconstruction projection, an explanation as to why there is a difference; and,

        4. Any other information that the owner or operator wishes to include in the report.

    c. The information required to be documented and maintained pursuant to subparagraphs 62-212.300(1)(e)1. and 2., F.A.C., shall be submitted to the Department, which shall make it available for review to the general public.

    [Rule 62-212.300(1)(e), F.A.C.]

15. Computation of Emissions: The owner or operator shall compute emissions in accordance with the requirements set forth below:

    a. Basic Approach. The owner or operator shall employ, on a pollutant-specific basis, the most accurate of the approaches set forth below to compute the emissions of a pollutant from an emissions unit; provided, however, that nothing in this rule shall be construed to require installation and operation of any continuous emissions monitoring system (CEMS), continuous parameter monitoring system (CPMS), or predictive emissions monitoring system (PEMS) not otherwise required by rule or permit, nor shall anything in this rule be construed to require performance of any stack testing not otherwise required by rule or permit.

        1. If the emissions unit is equipped with a CEMS meeting the requirements of paragraph 62-210.370(2)(b), F.A.C., the owner or operator shall use such CEMS to compute the emissions of the

pollutant, unless the owner or operator demonstrates to the department that an alternative approach is more accurate because the CEMS represents still-emerging technology.

2. If a CEMS is not available or does not meet the requirements of paragraph 62-210.370(2)(b), F.A.C, but emissions of the pollutant can be computed pursuant to the mass balance methodology of paragraph 62-210.370(2)(c), F.A.C., the owner or operator shall use such methodology, unless the owner or operator demonstrates to the department that an alternative approach is more accurate.

3. If a CEMS is not available or does not meet the requirements of paragraph 62-210.370(2)(b), F.A.C., and emissions cannot be computed pursuant to the mass balance methodology, the owner or operator shall use an emission factor meeting the requirements of paragraph 62-210.370(2)(d), F.A.C., unless the owner or operator demonstrates to the department that an alternative approach is more accurate.

b. Continuous Emissions Monitoring System (CEMS).

1. An owner or operator may use a CEMS to compute emissions of a pollutant for purposes of this rule provided:

(a) The CEMS complies with the applicable certification and quality assurance requirements of 40 CFR Part 60, Appendices B and F, or, for an acid rain unit, the certification and quality assurance requirements of 40 CFR Part 75, all adopted by reference at Rule 62-204.800, F.A.C.; or

(b) The owner or operator demonstrates that the CEMS otherwise represents the most accurate means of computing emissions for purposes of this rule.

2. Stack gas volumetric flow rates used with the CEMS to compute emissions shall be obtained by the most accurate of the following methods as demonstrated by the owner or operator:

(a) A calibrated flowmeter that records data on a continuous basis, if available; or

(b) The average flow rate of all valid stack tests conducted during a five-year period encompassing the period over which the emissions are being computed, provided all stack tests used shall represent the same operational and physical configuration of the unit.

3. The owner or operator may use CEMS data in combination with an appropriate f-factor, heat input data, and any other necessary parameters to compute emissions if such method is demonstrated by the owner or operator to be more accurate than using a stack gas volumetric flow rate as set forth at subparagraph 62-210.370(2)(b)2., F.A.C., above.

c. Mass Balance Calculations.

1. An owner or operator may use mass balance calculations to compute emissions of a pollutant for purposes of this rule provided the owner or operator:

(a) Demonstrates a means of validating the content of the pollutant that is contained in or created by all materials or fuels used in or at the emissions unit; and

(b) Assumes that the emissions unit emits all of the pollutant that is contained in or created by any material or fuel used in or at the emissions unit if it cannot otherwise be accounted for in the process or in the capture and destruction of the pollutant by the unit's air pollution control equipment.

2. Where the vendor of a raw material or fuel which is used in or at the emissions unit publishes a range of pollutant content from such material or fuel, the owner or operator shall use the highest

value of the range to compute the emissions, unless the owner or operator demonstrates using site-specific data that another content within the range is more accurate.

3. In the case of an emissions unit using coatings or solvents, the owner or operator shall document, through purchase receipts, records and sales receipts, the beginning and ending VOC inventories, the amount of VOC purchased during the computational period, and the amount of VOC disposed of in the liquid phase during such period.

d. Emission Factors.

1. An owner or operator may use an emission factor to compute emissions of a pollutant for purposes of this rule provided the emission factor is based on site-specific data such as stack test data, where available, unless the owner or operator demonstrates to the department that an alternative emission factor is more accurate. An owner or operator using site-specific data to derive an emission factor, or set of factors, shall meet the following requirements.

a. If stack test data are used, the emission factor shall be based on the average emissions per unit of input, output, or gas volume, whichever is appropriate, of all valid stack tests conducted during at least a five-year period encompassing the period over which the emissions are being computed, provided all stack tests used shall represent the same operational and physical configuration of the unit.

b. Multiple emission factors shall be used as necessary to account for variations in emission rate associated with variations in the emissions unit's operating rate or operating conditions during the period over which emissions are computed.

c. The owner or operator shall compute emissions by multiplying the appropriate emission factor by the appropriate input, output or gas volume value for the period over which the emissions are computed. The owner or operator shall not compute emissions by converting an emission factor to pounds per hour and then multiplying by hours of operation, unless the owner or operator demonstrates that such computation is the most accurate method available.

2. If site-specific data are not available to derive an emission factor, the owner or operator may use a published emission factor directly applicable to the process for which emissions are computed. If no directly-applicable emission factor is available, the owner or operator may use a factor based on a similar, but different, process.

e. Accounting for Emissions During Periods of Missing Data from CEMS, PEMS, or CPMS. In computing the emissions of a pollutant, the owner or operator shall account for the emissions during periods of missing data from CEMS, PEMS, or CPMS using other site-specific data to generate a reasonable estimate of such emissions.

f. Accounting for Emissions During Periods of Startup and Shutdown. In computing the emissions of a pollutant, the owner or operator shall account for the emissions during periods of startup and shutdown of the emissions unit.

g. Fugitive Emissions. In computing the emissions of a pollutant from a facility or emissions unit, the owner or operator shall account for the fugitive emissions of the pollutant, to the extent quantifiable, associated with such facility or emissions unit.

h. Recordkeeping. The owner or operator shall retain a copy of all records used to compute emissions pursuant to this rule for a period of five years from the date on which such emissions information is submitted to the department for any regulatory purpose.

[Rule 62-210.370(2), F.A.C.]

CONTENTS

The following examples illustrate the format used in the permit to identify applicable permitting actions and regulations.

REFERENCES TO PREVIOUS PERMITTING ACTIONS

Old Permit Numbers

Example: Permit No. AC50-123456 or Air Permit No. AO50-123456

Where: "AC" identifies the permit as an Air Construction Permit
"AO" identifies the permit as an Air Operation Permit
"123456" identifies the specific permit project number

New Permit Numbers

Example: Permit Nos. 099-2222-001-AC, 099-2222-001-AF, 099-2222-001-AO, or 099-2222-001-AV

Where: "099" represents the specific county ID number in which the project is located
"2222" represents the specific facility ID number
"001"identifies the specific permit project
"AC" identifies the permit as an air construction permit
"AF" identifies the permit as a minor federally enforceable state operation permit
"AO" identifies the permit as a minor source air operation permit
"AV" identifies the permit as a Title V Major Source Air Operation Permit

PSD Permit Numbers

Example: Permit No. PSD-FL-317

Where: "PSD" means issued pursuant to the Prevention of Significant Deterioration of Air Quality
"FL" means that the permit was issued by the State of Florida
"317" identifies the specific permit project

RULE CITATION FORMATS

Florida Administrative Code (F.A.C.)

Example: [Rule 62-213.205, F.A.C.]

Means: Title 62, Chapter 213, Rule 205 of the Florida Administrative Code

Code of Federal Regulations (CFR)

Example: [40 CRF 60.7]

Means: Title 40, Part 60, Section 7

GENERAL CONDITIONS

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

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey and vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

   a. Have access to and copy and records that must be kept under the conditions of the permit;
   b. Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
   c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

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

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

   a. A description of and cause of non-compliance; and

   b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

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

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. This permit also constitutes:

    a. Determination of Best Available Control Technology (Not Applicable);
    b. Determination of Prevention of Significant Deterioration (Not Applicable); and
    c. Compliance with New Source Performance Standards (Not Applicable).

14. The permittee shall comply with the following:

    a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

    b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

    c. Records of monitoring information shall include:

        1) The date, exact place, and time of sampling or measurements;
        2) The person responsible for performing the sampling or measurements;
        3) The dates analyses were performed;
        4) The person responsible for performing the analyses;
        5) The analytical techniques or methods used; and
        6) The results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

Unless otherwise specified in applicable permits, the following conditions apply to all emissions units and activities at the facility.

EMISSIONS AND CONTROLS

1. 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 permittee shall notify each Compliance Authority as soon as possible, but at least within one working day, excluding weekends and holidays. The notification shall include: pertinent information as to the cause of the problem; 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 or the regulations. [Rule 62-4.130, F.A.C.]
2. Circumvention: The permittee shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. [Rule 62-210.650, F.A.C.]
3. 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.]

TESTING REQUIREMENTS

4. Required Number of Test Runs: For mass emission limitations, a compliance test shall consist of three complete and separate determinations of the total air pollutant emission rate through the test section of the stack or duct and three complete and separate determinations of any applicable process variables corresponding to the three distinct time periods during which the stack emission rate was measured; provided, however, that three complete and separate determinations shall not be required if the process variables are not subject to variation during a compliance test, or if three determinations are not necessary in order to calculate the unit's emission rate. The three required test runs shall be completed within one consecutive five-day period. In the event that a sample is lost or one of the three runs must be discontinued because of circumstances beyond the control of the owner or operator, and a valid third run cannot be obtained within the five-day period allowed for the test, the Secretary or his or her designee may accept the results of two complete runs as proof of compliance, provided that the arithmetic mean of the two complete runs is at least 20% below the allowable emission limiting standard. [Rule 62-297.310(1), F.A.C.]
5. Operating Rate During Testing: Testing of emissions shall be conducted with the emissions unit operating at permitted capacity. Permitted capacity is defined as 90 to 100 percent of the maximum operation rate allowed by the permit. If it is impractical to test at permitted capacity, an emissions unit may be tested at less than the maximum permitted capacity; in this case, subsequent emissions unit operation is limited to 110 percent of the test rate until a new test is conducted. Once the unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the authority to operate at the permitted capacity. [Rule 62-297.310(2), F.A.C.]
6. Calculation of Emission Rate: For each emissions performance test, the indicated emission rate or concentration shall be the arithmetic average of the emission rate or concentration determined by each of the three separate test runs unless otherwise specified in a particular test method or applicable rule. [Rule 62-297.310(3), F.A.C.]
7. Test Procedures: Tests shall be conducted in accordance with all applicable requirements of Chapter 62-297, F.A.C.
   a. *Required Sampling Time.* Unless otherwise specified in the applicable rule, the required sampling time for each test run shall be no less than one hour and no greater than four hours, and the sampling time at each sampling point shall be of equal intervals of at least two minutes. The minimum observation

period for a visible emissions compliance test shall be thirty (30) minutes. The observation period shall include the period during which the highest opacity can reasonably be expected to occur.

b. *Minimum Sample Volume.* Unless otherwise specified in the applicable rule or test method, the minimum sample volume per run shall be 25 dry standard cubic feet.

c. *Calibration of Sampling Equipment.* Calibration of the sampling train equipment shall be conducted in accordance with the schedule shown in Table 297.310-1, F.A.C.

[Rule 62-297.310(4), F.A.C.]

8. Determination of Process Variables

a. *Required Equipment.* The owner or operator of an emissions unit for which compliance tests are required shall install, operate, and maintain equipment or instruments necessary to determine process variables, such as process weight input or heat input, when such data are needed in conjunction with emissions data to determine the compliance of the emissions unit with applicable emission limiting standards.

b. *Accuracy of Equipment.* Equipment or instruments used to directly or indirectly determine process variables, including devices such as belt scales, weight hoppers, flow meters, and tank scales, shall be calibrated and adjusted to indicate the true value of the parameter being measured with sufficient accuracy to allow the applicable process variable to be determined within 10% of its true value.

[Rule 62-297.310(5), F.A.C.]

9. Sampling Facilities: Sampling facilities include sampling ports, work platforms, access to work platforms, electrical power, and sampling equipment support. All stack sampling facilities must meet any Occupational Safety and Health Administration (OSHA) Safety and Health Standards described in 29 CFR Part 1910, Subparts D and E. For purposes of the temporary trial burn, the permittee may install temporary stack sampling facilities in accordance with Rule 62-297.310(6), F.A.C. [Rule 62-297.310(6), F.A.C.]

10. Test Notification: The owner or operator shall notify the Department, at least 15 days prior to the date on which each formal compliance test is to begin, of the date, time, and place of each such test, and the test contact person who will be responsible for coordinating and having such test conducted for the owner or operator. [Rule 62-297.310(7)(a)9, F.A.C.]

11. Special Compliance Tests: When the Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in a Department rule or in a permit issued pursuant to those rules is being violated, it shall require the owner or operator of the emissions unit to conduct compliance tests which identify the nature and quantity of pollutant emissions from the emissions unit and to provide a report on the results of said tests to the Department. [Rule 62-297.310(7)(b), F.A.C.]

12. Test Reports: The owner or operator of an emissions unit for which a compliance test is required shall file a report with the Department on the results of each such test. The required test report shall be filed with the Department as soon as practical but no later than 45 days after the last sampling run of each test is completed. The test report shall provide sufficient detail on the emissions unit tested and the test procedures used to allow the Department to determine if the test was properly conducted and the test results properly computed. As a minimum, the test report, other than for an EPA or DEP Method 9 test, shall provide the following information:

    1. The type, location, and designation of the emissions unit tested.
    2. The facility at which the emissions unit is located.
    3. The owner or operator of the emissions unit.

4. The normal type and amount of fuels used and materials processed, and the types and amounts of fuels used and material processed during each test run.
5. The means, raw data and computations used to determine the amount of fuels used and materials processed, if necessary to determine compliance with an applicable emission limiting standard.
6. The type of air pollution control devices installed on the emissions unit, their general condition, their normal operating parameters (pressure drops, total operating current and GPM scrubber water), and their operating parameters during each test run.
7. A sketch of the duct within 8 stack diameters upstream and 2 stack diameters downstream of the sampling ports, including the distance to any upstream and downstream bends or other flow disturbances.
8. The date, starting time and duration of each sampling run.
9. The test procedures used, including any alternative procedures authorized pursuant to Rule 62-297.620, F.A.C. Where optional procedures are authorized in this chapter, indicate which option was used.
10. The number of points sampled and configuration and location of the sampling plane.
11. For each sampling point for each run, the dry gas meter reading, velocity head, pressure drop across the stack, temperatures, average meter temperatures and sample time per point.
12. The type, manufacturer and configuration of the sampling equipment used.
13. Data related to the required calibration of the test equipment.
14. Data on the identification, processing and weights of all filters used.
15. Data on the types and amounts of any chemical solutions used.
16. Data on the amount of pollutant collected from each sampling probe, the filters, and the impingers, are reported separately for the compliance test.
17. The names of individuals who furnished the process variable data, conducted the test, analyzed the samples and prepared the report.
18. All measured and calculated data required to be determined by each applicable test procedure for each run.
19. The detailed calculations for one run that relate the collected data to the calculated emission rate.
20. The applicable emission standard and the resulting maximum allowable emission rate for the emissions unit plus the test result in the same form and unit of measure.
21. A certification that, to the knowledge of the owner or his authorized agent, all data submitted are true and correct. When a compliance test is conducted for the Department or its agent, the person who conducts the test shall provide the certification with respect to the test procedures used. The owner or his authorized agent shall certify that all data required and provided to the person conducting the test are true and correct to his knowledge.

[Rule 62-297.310(8), F.A.C.]

RECORDS AND REPORTS

13. Records Retention: All measurements, records, and other data required by this permit shall be documented in a permanent, legible format and retained for at least five (5) years following the date on which such measurements, records, or data are recorded. Records shall be made available to the Department upon request. [Rules 62-4.160(14) and 62-213.440(1)(b)2, F.A.C.]
14. Annual Operating Report: The permittee shall submit an annual report that summarizes the actual operating rates and emissions from this facility. Annual operating reports shall be submitted to the Compliance Authority by March 1st of each year. [Rule 62-210.370(2), F.A.C.]

1050233-021

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Notice of Final Permit (including the Final Determination and the Final Permit) was sent by e-mail with return receipt requested before the close of business on 6/26/18 to the persons listed:

Mr. Mark Hornick, TECO (MJHORNICK@TECOENERGY.COM)
Mr. Joshua Ellwein, P.E., TECO (JDELLWEIN@TECOENERGY.COM)
Mr. Byron Burrows, TECO (BTBURROWS@TECOENERGY.COM
Ms. Mara Nasca, SWD Office (MARA.NASCA@DEP.STATE.FL.US)
Ms. Katy Forney, EPA Region 4 (FORNEY.KATHLEEN@EPA.GOV)

Clerk Stamp

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

Mary F. Harmon (Clerk) 6/26/18 (Date)

Harvey, Mary

From: Byron Burrows [btburrows@tecoenergy.com]
Sent: Thursday, June 26, 2008 5:22 PM
To: Harvey, Mary
Subject: Re: Tampa Electric Company - 1050233-021-AC-FINAL -PSD-FL-194H

Received. Thanks!
From BlackBerry
Byron Burrows
Mob: 813.230.3445
-----Original Message-----
From: "Harvey, Mary" <Mary.Harvey@dep.state.fl.us>
Cc: Elizabeth (AIR) Walker <Elizabeth.Walker@dep.state.fl.us>
Cc: Jonathan Holtom <Jonathan.Holtom@dep.state.fl.us>
To: Mara Nasca <Mara.Nasca@dep.state.fl.us>
Cc: Victoria Gibson <Victoria.Gibson@dep.state.fl.us>
To: EPA Region 4 Ms. Katy Forney <FORNEY.KATHLEEN@EPA.GOV>
To: Mark Hornick <mjhornick@tecoenergy.com>
To: Joshua Ellwein <jdellwein@tecoenergy.com>
To: Byron Burrows <btburrows@tecoenergy.com>

Sent: 6/26/2008 2:52:54 PM
Subject: Tampa Electric Company - 1050233-021-AC-FINAL - PSD-FL-194H

Dear Sir/Madam:

Please send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software and then selecting "Send". We must receive verification of receipt and your reply will preclude subsequent e-mail transmissions to verify receipt of the document(s).

The document(s) may require immediate action within a specified time frame.
Please open and review the document(s) as soon as possible.

The document is in Adobe Portable Document Format (pdf). Adobe Acrobat Reader can be downloaded for free at the following internet site:
http://www.adobe.com/products/acrobat/readstep.html.

The Bureau of Air Regulation is issuing electronic documents for permits, notices and other correspondence in lieu of hard copies through the United States Postal System, to provide greater service to the applicant and the engineering community. Please advise this office of any changes to your

e-mail address or that of the Engineer-of-Record.

Thank you,

DEP, Bureau of Air Regulation

The Department of Environmental

Protection values your feedback as a customer. DEP Secretary Michael W.
Sole is committed to continuously assessing and

improving the level and quality of services provided to you. Please take a few minutes to comment on the quality of

service you received. Copy the url below to a web browser to complete the DEP

survey:
http://survey.dep.state.fl.us/?refemail=Mary.Harvey@dep.state.fl.us

Harvey, Mary

From: Nasca, Mara
Sent: Thursday, June 26, 2008 2:59 PM
To: Harvey, Mary
Subject: Re: Tampa Electric Company - 1050233-021-AC-FINAL - PSD-FL-194H

Thanks Mary....have a good evening

Sent from my BlackBerry Wireless Handheld

----- Original Message -----
From: Harvey, Mary
To: 'Mr. Mark Hornick, TECO' <MJHORNICK@TECOENERGY.COM>; 'Mr. Joshua Ellwein, P.E., TECO' <JDELLWEIN@TECOENERGY.COM>; 'Mr. Byron Burrows, TECO' <BTBURROWS@TECOENERGY.COM>; Nasca, Mara; 'Ms. Katy Forney, EPA Region 4' <FORNEY.KATHLEEN@EPA.GOV>
Cc: Holtom, Jonathan; Walker, Elizabeth (AIR); Gibson, Victoria
Sent: Thu Jun 26 14:52:54 2008
Subject: Tampa Electric Company - 1050233-021-AC-FINAL - PSD-FL-194H

Dear Sir/Madam:

Please send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software and then selecting "Send". We must receive verification of receipt and your reply will preclude subsequent e-mail transmissions to verify receipt of the document(s).

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Thank you,

DEP, Bureau of Air Regulation

Harvey, Mary

From: Mark Hornick [mjhornick@tecoenergy.com]
Sent: Friday, June 27, 2008 7:23 AM
To: Harvey, Mary
Subject: Re: Tampa Electric Company - 1050233-021-AC-FINAL -PSD-FL-194H

received subject document

Mark Hornick
General Manager
Polk Power Station
Tampa Electric Company
863 428-5988 (office)
813 376 6643 (cell)
mjhornick@tecoenergy.com

>>> "Harvey, Mary" <Mary.Harvey@dep.state.fl.us> 06/26/2008 2:52:54 PM
>>>
Dear Sir/Madam:

Please send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software and then selecting "Send". We must receive verification of receipt and your reply will preclude subsequent e-mail transmissions to verify receipt of the document(s).

The document(s) may require immediate action within a specified time frame. Please open and review the document(s) as soon as possible.

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e-mail address or that of the Engineer-of-Record.

Thank you,

DEP, Bureau of Air Regulation

TAMPA ELECTRIC

RECEIVED
JUL 01 2008
BUREAU OF AIR REGULATION

June 30, 2008

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

Via FedEx
Airbill No. 7989 7100 2557

Mr. Bill Schroeder
Southwest District
Florida Department of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637

Via FedEx
Airbill No. 7919 2330 3463

Re: Initial Equipment Upgrade Report
Polk Power Station
File No.: 1050233-021-AC

Dear Mr. J. Koerner and Mr. B. Schroeder:

According to condition 11 of Air Permit No. 1050233-021-AC prior to performing upgrades Polk Power Station is to submit a report detailing all equipment changes made to the sulfuric acid plant ("SAP") and MDEA acid gas removal system. Please find attached the initial equipment upgrade report: "Initial Plant Modifications to Accommodate 85% pet coke, 4.7% sulfur fuels".

TEC appreciates your cooperation in this matter and if you have any questions, please call me at (813) 228-4433.

Sincerely,

Joshua D. Ellwein, P.E.
Principal Engineer - Air Programs
Environmental, Health & Safety

EHS/rlk/JDE128

Enclosure

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

(813) 228-4111

CUSTOMER SERVICE:
HILLSBOROUGH COUNTY (813) 223-0800
POLK COUNTY (863) 299-0800
ALL OTHER COUNTIES 1 (888) 223-0800

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TAMPAELECTRIC.COM

ATTACHMENT

Initial Plant Modifications to Accommodate 85% pet coke, 4.7% sulfur fuels			
Item	**Component**	**Description**	**Modification**
1	Sulfuric Acid Plant O_2 valve OXY-FV-447	3" 300# flange class Fisher Model EZ with 2" port.	Replace 2" port with full sized port.
2	Lean MDEA Stripper bottoms valve AML-FV-202	6" 150# flange class Fisher model 8560 with full port.	Replace entire valve with identical style valve with 8" body and full sized port.
3	Sulfuric Acid Plant Decomposition Furnace Inlet Air Plenum	Inlet Air Plenum	Modify ductwork to enlarge air passage into burner compartment 7.3% from 1001 square inches to 1073 square inches.
4	MDEA Anti-Foam Injection Pump	Existing pump is a 0-2.5 gallon/hour variable capacity LMI Milton Electromagnetic dosing pump. The desired injection rate for continuous anti-foam injection is only 0.05 to 0.10 gallons/hour. Reliable operation of the existing pump at turndown to this low flow is questionable and it is currently being tested.	If the pump can perform reliably at the low desired flow, no change will be made, but if it is unsuccessful, the existing pump will be replaced with a similar pump with lower capacity supplied by Novatech Company.
5	Lean MDEA supply line to reclaim system	Presently there is no activated carbon bed filter and reclamation system.	Install Tigg Corporation model CP-500 Cannosorb-P activated carbon bed. The bed has a 34 cubic foot media capacity and comes filled with 500 lbs of activated carbon produced from lignitic coal.

TAMPA ELECTRIC

June 17, 2008

Mr. Jonathan Holtom, P.E.
Florida Department of Environmental Protection
111 Magnolia Dr., Suite 4
Tallahassee, FL 32301-2956

Via: Email and FedEx
Airbill No. 7900 3572 3701

Re: Comments on Technical Evaluation & Preliminary Determination and Construction Permit Regarding Change in Fuel Blend at Polk Power Station
File No.: 1050233-021-AC

Dear Mr. J. Holtom:

The purpose of this letter is to submit comments concerning the Florida Department of Environmental Protection proposed Draft Air Construction Permit 1050233-021-AC.

Comments concerning the "Technical Evaluation & Preliminary Determination":

Page 3 of 8 – **PSD Applicability – Project**

1st paragraph, Ln 5-6, current statement: "No changes are proposed for the Unit 1 gasification or combustion turbine other than the use of 85 percent petcoke."

Suggested change: "No changes are proposed for the Unit 1 gasification or combustion turbine other than the use of 85 percent petcoke ***and increase in the solid fuel sulfur content up to 4.7% by weight.***"

Page 6 of 8 – **3. Department Review**

1st paragraph, Ln 3-5, current statement: "...when considering the fact that the syngas produced after removing more of the sulfur compounds will likely have a higher heat content than the current syngas."

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

(813) 228-4111

CUSTOMER SERVICE:
HILLSBOROUGH COUNTY (813) 223-0800
POLK COUNTY (863) 299-0800
ALL OTHER COUNTIES 1 (888) 223-0800

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TAMPAELECTRIC.COM

Comment: The higher heat content value of the syngas composition will not change as a result of this construction project. Small variances of the heat content value will continue to occur due to the dynamic nature of the process itself. As seen in the heat content value analysis of the syngas, the components with the greatest contribution to the gross heating value of the syngas are hydrogen (H_2) and carbon monoxide (CO) (combined greater than 99% of total contribution). The amount of sulfur removed from the syngas prior to its combustion in the CT is not related to the higher heat content value of the syngas. This is especially true due to the fact the sulfur content of the syngas is relatively the same pre- versus post- construction activities. This was demonstrated in the trial burns with sulfur related emissions having a net increase less than the PSD "significant increase" threshold.

Comments concerning the "Draft Air Construction Permit 1050233-021-AC / PSD-FL-194H":

Page 2 of 9 – **FACILITY AND PROJECT DESCRIPTION**

1st paragraph, current statement: "Two additional nominal 165 MW simple cycle gas turbines (Units 4 and 5) ~~*have been permitted, but are not yet in operation*~~."

Suggested change: "Two additional nominal 165 MW simple cycle gas turbines (Units 4 and 5) ***have completed construction activities and the application to include these units as part of the Title-V permit is with the Department.***"

2nd paragraph, current statement: "This permit also recognizes and authorizes the minor upgrades and/or additions of component equipment at the sulfuric acid plant and the methyl diethanol amine (MDEA) acid gas removal ~~*plant*~~ that are outlined in the technical evaluation…"

Suggested change: "This permit also recognizes and authorizes the minor upgrades and/or additions of component equipment at the sulfuric acid plant and the methyl diethanol amine (MDEA) acid gas removal ***system*** that are outlined in the technical evaluation,"

Page 4 of 9 – **EQUIPMENT**

Subpart 2,a., current statement: "The sulfuric acid plant compressor will be modified by performing one of the following options:"

Suggested statement: "The sulfuric acid plant compressor will be modified by performing one ***or more*** of the following options:"

Subpart 2,a., 5th bullet, current statement:

- *"~~Installing an oxygen injection quill in the decomposition furnace air inlet duct.~~"*

Comment: This option is included in the decomposition furnace and is not applicable to the sulfuric acid plant compressor.

Subpart 2.b., current statement: "The decomposition furnace air intake system will be modified to decrease the pressure drop by performing one of the following options:"

Suggested statement: "The decomposition furnace air intake system will be modified to decrease the pressure drop by performing one ***or more*** of the following options:"

Subpart 2.b., 4th bullet, current statement: "Installing an oxygen injection quill air inlet duct."

Suggested statement: "Installing an oxygen injection quill ***in the decomposition furnace*** air inlet duct."

Subpart 2.c., current statement: "The O_2 supply line and/or control valve leading to the decomposition furnace will be modified by performing one of the following options:"

Suggested statement: "The O_2 supply line and/or control valve leading to the decomposition furnace will be modified by performing one ***or more*** of the following options:"

Page 5 of 9 – **EMISSIONS AND PERFORMANCE REQUIREMENTS**

Condition 5., current statement: "Compliance with this limit shall be demonstrated through the use of a continuous flow monitor located between the sulfuric acid plant and the sulfuric acid storage tank."

Suggested statement: "Compliance with this limit shall be demonstrated through the use of a continuous flow ***and composition (purity)*** monitor located between the sulfuric acid plant and the sulfuric acid storage tank."

Condition 6., current statement: Within 60 days after achieving the maximum production rate at which the units will be operated, but not later than 180 days after completing the upgrades to the sulfuric acid plant and the MDEA acid gas removal system, the testing listed below shall be performed."

Comment: PPS anticipates incorporating a number of the upgrades to the sulfuric acid plant and the MDEA acid gas removal system as immediate as possible. Once these up grades have been completed, PPS will incrementally increase the petcoke content, first to ~70% and stabilize the process for a period of approximately 4-6 weeks. After which, another step up in petcoke content to ~78% is anticipated. Once the engineering controls are stabilized, the system will be evaluated. If at that time it is deemed additional controls or up grades (e.g. compressor motor size increase) are needed, these changes can not be made until a major outage which would not occur until the spring or summer of 2009. If this is the case, PPS will request an extension of the permit expiration date in order to accommodate the new schedule. Additionally, PPS will conduct a compliance test(s) at the maximum petcoke content achievable and submit the test results to the appropriate compliance authorities. Once all up grades are complete and a "new" maximum production rate achieved, a final compliance test(s) will be conducted and submitted

to the department. This alternative scenario will result in the compliance demonstration(s) to be submitted in parts.

Condition 7., subpart a.1., current statement: "The permittee shall conduct stack tests annually on combustion turbine Unit 1 (EU-001) to demonstrate continued compliance with the permitted emissions limits for carbon monoxide (CO), ~~Volatile Organic Compounds (VOC)~~, and visible emissions."

Comment: An initial compliance stack test for VOC will be conducted. The current Title-V permit requires stack testing for VOC on Unit 1 at a frequency of "upon permit renewal". It is the opinion of PPS there should not be an annual stack testing requirement for VOC during the monitoring period and stack testing requirements should follow current Title-V permit requirements.

Page 8 of 9 – **RECORDS AND REPORTS**

Subpart b.3, current statement: "The owner or operator may use CEMS data in combination with an appropriate f-factor, heat input data, and any other ~~63~~ necessary parameters…"

Comment: PPS believes the number "63" is a typo and should be removed.

TEC appreciates your cooperation in this matter and if you have any questions, please call me at (813) 228-4433.

Sincerely,

Joshua D. Ellwein, P.E.
Principal Engineer - Air Programs
Environmental, Health & Safety

EHS/rlk/JDE127

Best Available Copy

AFFIDAVIT OF PUBLICATION
THE LEDGER
Lakeland, Polk County, Florida

Case No's:

STATE OF FLORIDA)
COUNTY OF POLK)

Before the undersigned authority personally appeared Paula Freeman, who on oath says that she is Inside Classified Sales Manager , a daily newspaper published at Lakeland in Polk County, Florida; that the attached copy of advertisement, being
A

Notice of Draft Permit

In the matter of **Draft Air Permit No. 1050233-021-AC / PSD-FL-194H**

concerning **Tampa Electric Company - Polk Power Station**

was published in said newspaper in the issues of **6-9; 2008**

Affiant further says that said The Ledger is a newspaper published at Lakeland, Is said Polk County, Florida, and that the said newspaper has heretofore been continuously published in said Polk County, Florida, daily, and has been entered as second class matter at the post office in Lakeland, in said Polk County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Signed.....
Paula Freeman
Inside Classified Sale Manager
Who is personally known to me.

Sworn to and subscribed before me this 16TH day of June A.D. 2008

Patricia Ann Rouse
Notary Public

(Seal)

PATRICIA ANN ROUSE
MY COMMISSION # DD 330015
EXPIRES: October 17, 2008
Bonded Thru Notary Public Underwriters

My Commission Expires.....

B400 L060G07M3D

PUBLIC NOTICE OF INTENT TO ISSUE AIR PERI
Florida Department of Environmental Protection
Draft Air Permit No. 1050233-021-AC / PSD-FL-19
Tampa Electric Company - Polk Power Station
Polk County, Florida

Applicant: The applicant for this project is the Tampa Electric Company. ized representative is Mark Hornick, General Manager - Polk Power S dress is P.O. Box 111, Tampa, FL 33601.

Facility Location: The Tampa Electric Company operates Polk Power S at 9995 State Route 37 South, in Polk County Florida.

Project: The Polk Power Station operates an existing integrated gasifi (IGCC) system consisting of a combined cycle combustion turbine, a s tem, a solid fuel gasification plant, and a sulfuric acid plant. Currently, syngas in the combined cycle combustion turbine produced from coal/petroleum coke with up to 60% petroleum coke and a maximum sul weight. The applicant proposes to gasify petroleum coke/coal blends of coke with a maximum sulfur content of 4.7% by weight. Aside from the h the increased fuel blend authorized by this permit, the plant must comply permit restrictions. Emissions are not expected to increase in amount PSD-significant emissions increases. Therefore, the project is not subjec tion review. Emissions will be monitored by conducting stack tests and emissions monitoring data on a regular basis to determine any changes i

Permitting Authority: Applications for air construction permits are subje dance with the provisions of Chapter 403, Florida Statutes (F.S.) and Cl and 62-212 of the Florida Administrative Code (F.A.C.). The proposed from air permitting requirements and an air permit is required to perform The Bureau of Air Regulation is the Permitting Authority responsible for termination for this project. The Permitting Authority's physical address is Drive, Suite #4, Tallahassee, Florida. The Permitting Authority's mailing a Stone Road, MS #5505, Tallahassee, Florida 32399-2400. The Permitting number is 850/488-0114.

Project File: A complete project file is available for public inspection dur ness hours of 8:00 a.m. to 5:00 p.m., Monday through Friday (except le dress indicated above for the Permitting Authority. The complete project f Permit, the Technical Evaluation and Preliminary Determination, the appli mation submitted by the applicant, exclusive of confidential records und F.S. interested persons may contact the Permitting Authority's project revie tional information at the address and phone number listed above. In addi of these documents are available on the following web site: http://www.dep.state.fl.us/air/products/ads/default.asp.

Notice of Intent to Issue Air Permit: The Permitting Authority gives notice an air permit to the applicant for the project described above. The applica sonable assurance that Operation of proposed equipment will not adverse and that the project will comply with all appropriate provisions of Chapter 210, 62-212, 62-296, and 62-297, F.A.C. The Permitting Authority will issu accordance with the conditions of the proposed Draft Permit unless a. ti administrative hearing is filed under Sections 120.569 and 120.57, F.S. or ment received in accordance with this notice results in a different decis change of terms or conditions.

Comments: The Permitting Authority will accept written comments conce Draft Permit for a period of fourteen (14) days from the date of publication o Written comments must be provided to the Permitting Authority at the above ten comments filed will be made available for public inspection. If written c result in a significant change to the Draft Permit, the Permitting Authority sh Permit and require, if applicable, another Public Notice.

Petitions: A person whose substantial interests are affected by the propos sion may petition for an administrative hearing in accordance with Sect 120.57, F.S. The petition must contain the information set forth below and (received by) the Department's Agency Clerk in the Office of General Cour ment of Environmental Protection at 3900 Commonwealth Boulevard, Mail hassee, Florida 32399-3000. Petitions filed by any persons other than those notice under Section 120.60(3), F.S. must be filed within 14 days of publica Notice or receipt of a written notice, whichever occurs first. Under Sectio however, any person who asked the Permitting Authority for notice of agenc petition within 14 days of receipt of that notice, regardless of the date of p tioner shall mail a copy of the petition to the applicant at the address indica time of filing. The failure of any person to file a petition within the appropriate constitute a waiver of that person's right to request an administrative deter under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding a party to it. Any subsequent intervention (in a proceeding initiated by anot only at the approval of the presiding officer upon the filing of a motion in com 28-106.205, F.A.C.

A petition that disputes the material facts on which the Permitting Authority must contain the following information: (a) The name and address of each ag each agency's file or identification number, if known; (b) The name, addres number of the petitioner; the name address and telephone number of the petit tative, if any, which shall be the address for service purposes during the cours ing; and an explanation of how the petitioner's substantial rights will be affect determination; (c) A statement of when and how the petitioner received notic action or proposed decision; (d) A statement of all disputed issues of material none, the petition must so state; (e) A concise statement of the ultimate facts the specific facts the petitioner contends warrant reversal or modification of t posed action; (f) A statement of the specific rules or statutes the petitioner con versal or modification of the agency's proposed action including an explanatio legal facts relate to the specific rules or statutes; and (g) A statement of the the petitioner, stating precisely the action the petitioner wishes the agency to t to the agency's proposed action. A petition that does not dispute the material f the Permitting Authority's action is based shall state that no such facts are in erwise shall contain the same information as set forth above, as required by F F.A.C.

Because the administrative hearing process is designed to formulate final ag filing of a petition means that the Permitting Authority's final action may be d position taken by it in this Public Notice of Intent to Issue Air Permit. Persons wh interests will be affected by any such final decision of the Permitting Authority tion have the right to petition to become a party to the proceeding, in accorda quirements set forth above.

Mediation: Mediation is not available for this proceeding.

6

Florida Department of Environmental Protection

Memorandum

TO: Trina Vielhauer, Bureau of Air Regulation

THROUGH: Jeff Koerner, Air Permitting North Section

FROM: Jonathan Holtom, New Source Review Section

DATE: May 19, 2008

SUBJECT: Draft Air Permit No. 1050233-021-AC
Tampa Electric Company, Polk Power Station
85% Petroleum Coke / 15% Coal Blend Request

This project is subject to minor source preconstruction review. Attached for your review are the following items:

- Written Notice of Intent to Issue Air Permit;
- Public Notice of Intent to Issue Air Permit;
- Technical Evaluation and Preliminary Determination;
- Draft Permit; and
- P.E. Certification.

The Draft Permit authorizes an increase in the petroleum coke to coal blend ratio that is allowed to be gasified at this facility from 60% / 40% to 85% / 15% and an increase in the allowable sulfur content of the blended fuel from 3.5% to 4.7% sulfur by weight. Minor changes and enhancements will also be made to components of the sulfuric acid plant and the acid gas removal system which will result in an increase in the allowable production of sulfuric acid from 77,640 tons per year to 299 tons per day (109,135 tons per year). The resulting syngas will continue to be fired in the existing integrated gasification combined cycle (IGCC) system. The proposed work will be conducted at the Polk Power Station, which is located in Polk County, Florida. The Technical Evaluation and Preliminary Determination provides a detailed description of the project and the rationale for issuance. The P.E. certification briefly summarizes the proposed project. I recommend your approval of the attached Draft Permit.

Attachments

P.E. CERTIFICATION STATEMENT

PERMITTEE

Tampa Electric Company
P.O. Box 111
Tampa, FL 33601

Authorized Representative:
Mark J. Hornick, General Manager

Air Permit No. 1050233-021-AC / PSD-FL-194H
Polk Power Station
Facility ID No. 1050233
Polk, Florida

PROJECT DESCRIPTION

For the IGCC unit, based on the results of the trial burns authorized by permit project number 1050233-019-AC, the applicant is requesting permanent authority to produce and fire syngas from a blend of coal/petroleum coke with up to 85% petroleum coke and a maximum sulfur content of up to 4.7% by weight. The higher sulfur content of the gasified fuel stock leads to a greater recovery of saleable sulfuric acid. To accommodate the increase in sulfuric acid recovery, minor modifications will be required for the sulfuric acid plant and the methyl diethanol amine (MDEA) acid gas removal system in order to provide additional control stability. In addition, the applicant has requested an increase in the sulfuric acid production rate to allow the production of up to 299 tons per day of 100% sulfuric acid.

I HEREBY CERTIFY *that the air pollution control engineering features described in the above referenced application and subject to the proposed permit conditions provide reasonable assurance of compliance with applicable provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 62-4 and 62-204 through 62-297. However, I have not evaluated and I do not certify aspects of the proposal outside of my area of expertise (including, but not limited to, the electrical, mechanical, structural, hydrological, geological, and meteorological features).*

STATE OF FLORIDA PROFESSIONAL ENGINEER JONATHAN P. HOLTOM LICENSE NO. 52664

Jonathan Holtom, P.E.
Registration Number: 52664

5/15/08
(Date)

Florida Department of
Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

May 22, 2008

{Sent by Electronic Mail – Received Receipt Requested}

Mr. Mark J. Hornick, General Manager
Tampa Electric Company
Polk Power Station
P.O. Box 111
Tampa, FL 33601

Re: Draft Permit No. 1050233-021-AC / PSD-FL-194H
Tampa Electric Company – Polk Power Station
85% Petroleum Coke / 15% Coal Blend Project

Dear Mr. Hornick:

On November 16, 2007, the Department received your request to gasify and fire coal/petroleum coke blends with up to 85% petroleum coke in the existing integrated gasification combined cycle system at the Polk Power Station. Based on your requests and additional information provided, the Department gives notice of its intent to issue the attached air permit. The permit package includes the following documents: Technical Evaluation and Preliminary Determination, Draft Permit, Written Notice of Intent to Issue Air Permit, and Public Notice of Intent to Issue Air Permit.

The Public Notice of Intent to Issue Air Permit is the actual notice that you must have published in the legal advertisement section of a newspaper of general circulation in the area affected by this project.

If you have any questions, please contact the Project Engineer, Jonathan Holtom, at 850/921-9531.

Sincerely,

Trina L Vielhauer

Trina Vielhauer, Chief
Bureau of Air Regulation

Enclosures

WRITTEN NOTICE OF INTENT TO ISSUE AIR PERMIT

In the Matter of an Application for Air Permit by:

Tampa Electric Company
P.O. Box 111
Tampa, FL 33601

Authorized Representative:
Mark J. Hornick, General Manager

Air Permit No. 1050233-021-AC / PSD-FL-194H
Facility ID No. 1050233
Polk Power Station, IGCC System
85% Petroleum Coke / 15% Coal Blend Project
Polk County, Florida

Facility Location: The Tampa Electric Company operates the Polk Power Station, which is located at 9995 State Route 37 South in Polk County, Florida.

Project: The applicant requests authority to gasify a coal/petroleum coke blend with up to 85% petroleum coke with a maximum content of 4.7% sulfur, by weight. The resulting syngas will be fired in the existing integrated gasification combined cycle (IGCC) system. Details of the project are provided in the application and the enclosed Technical Evaluation and Preliminary Determination.

Permitting Authority: Applications for air construction permits are subject to review in accordance with the provisions of Chapter 403, Florida Statutes (F.S.) and Chapters 62-4, 62-210, and 62-212 of the Florida Administrative Code (F.A.C.). The proposed project is not exempt from air permitting requirements and an air permit is required to perform the proposed work. The Bureau of Air Regulation is the Permitting Authority responsible for making a permit determination for this project. The Permitting Authority's physical address is: 111 South Magnolia Drive, Suite #4, Tallahassee, Florida. The Permitting Authority's mailing address is: 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. The Permitting Authority's telephone number is 850/488-0114.

Project File: A complete project file is available for public inspection during the normal business hours of 8:00 a.m. to 5:00 p.m., Monday through Friday (except legal holidays), at address indicated above for the Permitting Authority. The complete project file includes the Draft Permit, the Technical Evaluation and Preliminary Determination, the application, and the information submitted by the applicant, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Permitting Authority's project review engineer for additional information at the address or phone number listed above.

Notice of Intent to Issue Permit: The Permitting Authority gives notice of its intent to issue an air permit to the applicant for the project described above. The applicant has provided reasonable assurance that operation of proposed equipment will not adversely impact air quality and that the project will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C. The Permitting Authority will issue a Final Permit in accordance with the conditions of the proposed Draft Permit unless a timely petition for an administrative hearing is filed under Sections 120.569 and 120.57, F.S. or unless public comment received in accordance with this notice results in a different decision or a significant change of terms or conditions.

Public Notice: Pursuant to Section 403.815, F.S. and Rules 62-110.106 and 62-210.350, F.A.C., you (the applicant) are required to publish at your own expense the enclosed "Public Notice of Intent to Issue Air Permit" (Public Notice). The Public Notice shall be published one time only as soon as possible in the legal advertisement section of a newspaper of general circulation in the area affected by this project. The newspaper used must meet the requirements of Sections 50.011 and 50.031, F.S. in the county where the activity is to take place. If you are uncertain that a newspaper meets these requirements, please contact the Permitting Authority at above address or phone number. Pursuant to Rule 62-110.106(5), F.A.C., the applicant shall provide proof of publication to the Permitting Authority at the above address within seven (7) days of publication. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rule 62-110.106(11), F.A.C.

Comments: The Permitting Authority will accept written comments concerning the proposed Draft Permit for a period of fourteen (14) days from the date of publication of the Public Notice. Written comments must be provided to the Permitting Authority at the above address. Any written comments filed will be made available for public inspection. If written comments received result in a significant change to the Draft Permit, the Permitting Authority shall revise the Draft Permit and require, if applicable, another Public Notice.

Petitions: A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed with (received by) the Department's Agency Clerk in the Office of General Counsel of the Department of Environmental Protection, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by the applicant or any of the parties listed below must be filed within 14 days of receipt of this Written Notice of Intent to Issue Air Permit. Petitions filed by any persons other than those entitled to written notice under Section 120.60(3), F.S., must be filed within 14 days of publication of the attached Public Notice or within 14 days of receipt of this Written Notice of Intent to Issue Air Permit, whichever occurs first. Under Section 120.60(3), F.S., however, any person who asked the Permitting Authority for notice of agency action may file a petition within 14 days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

A petition that disputes the material facts on which the Permitting Authority's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner; the name, address and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of when and how each petitioner received notice of the agency action or proposed decision; (d) A statement of all disputed issues of material fact. If there are none, the petition must so state; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action including an explanation of how the alleged facts relate to the specific rules or statutes; and, (g) A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the agency to take with respect to the agency's proposed action. A petition that does not dispute the material facts upon which the Permitting Authority's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Permitting Authority's final action may be different from the position taken by it in this Written Notice of Intent to Issue Air Permit. Persons whose substantial interests will be affected by any such final decision of the Permitting Authority on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation: Mediation is not available in this proceeding.

Executed in Tallahassee, Florida.

Trina Vielhauer, Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Written Notice of Intent to Issue Air Permit package (including the Public Notice, the Technical Evaluation and Preliminary Determination, and the Draft Permit) was sent by electronic mail with received receipt requested before the close of business on 5/22/08 to the persons listed below.

Mr. Mark Hornick, TECO (MJHORNICK@TECOENERGY.COM)
Mr. Joshua Ellwein, P.E., TECO (JDELLWEIN@TECOENERGY.COM)
Mr. Byron Burrows, TECO (BTBURROWS@TECOENERGY.COM
Ms. Mara Nasca, SWD Office (MARA.NASCA@DEP.STATE.FL.US)
Mr. Gregg Worley, EPA Region 4 (WORLEY.GREGG@EPAMAIL.EPA.GOV)
Ms. Katy Forney, EPA Region 4 (FORNEY.KATHLEEN@EPA.GOV)

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.

(Clerk) 5/22/08 (Date)

PUBLIC NOTICE OF INTENT TO ISSUE AIR PERMIT

Florida Department of Environmental Protection
Draft Air Permit No. 1050233-021-AC / PSD-FL-194H
Tampa Electric Company – Polk Power Station
Polk County, Florida

Applicant: The applicant for this project is the Tampa Electric Company. The applicant's authorized representative is Mark Hornick, General Manager – Polk Power Station. The mailing address is P.O. Box 111, Tampa, FL 33601.

Facility Location: The Tampa Electric Company operates Polk Power Station, which is located at 9995 State Route 37 South, in Polk County Florida.

Project: The Polk Power Station operates an existing integrated gasification combined cycle (IGCC) system consisting of a combined cycle combustion turbine, a solid fuel handling system, a solid fuel gasification plant, and a sulfuric acid plant. Currently, the IGCC system fires syngas in the combined cycle combustion turbine produced from gasifying a blend of coal/petroleum coke with up to 60% petroleum coke and a maximum sulfur content of 3.5% by weight. The applicant proposes to gasify petroleum coke/coal blends of up to 85% petroleum coke with a maximum sulfur content of 4.7% by weight. Aside from the higher sulfur content of the increased fuel blend authorized by this permit, the plant must comply with all other existing permit restrictions. Emissions are not expected to increase in amounts that would result in PSD-significant emissions increases. Therefore, the project is not subject to PSD preconstruction review. Emissions will be monitored by conducting stack tests and collecting continuous emissions monitoring data on a regular basis to determine any changes in emissions.

Permitting Authority: Applications for air construction permits are subject to review in accordance with the provisions of Chapter 403, Florida Statutes (F.S.) and Chapters 62-4, 62-210, and 62-212 of the Florida Administrative Code (F.A.C.). The proposed project is not exempt from air permitting requirements and an air permit is required to perform the proposed work. The Bureau of Air Regulation is the Permitting Authority responsible for making a permit determination for this project. The Permitting Authority's physical address is: 111 South Magnolia Drive, Suite #4, Tallahassee, Florida. The Permitting Authority's mailing address is: 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. The Permitting Authority's telephone number is 850/488-0114.

Project File: A complete project file is available for public inspection during the normal business hours of 8:00 a.m. to 5:00 p.m., Monday through Friday (except legal holidays), at address indicated above for the Permitting Authority. The complete project file includes the Draft Permit, the Technical Evaluation and Preliminary Determination, the application, and the information submitted by the applicant, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Permitting Authority's project review engineer for additional information at the address and phone number listed above. In addition, electronic copies of these documents are available on the following web site: http://www.dep.state.fl.us/air/eproducts/apds/default.asp.

Notice of Intent to Issue Air Permit: The Permitting Authority gives notice of its intent to issue an air permit to the applicant for the project described above. The applicant has provided reasonable assurance that operation of proposed equipment will not adversely impact air quality and that the project will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C. The Permitting Authority will issue a Final Permit in accordance with the conditions of the proposed Draft Permit unless a timely petition for an administrative hearing is filed under Sections 120.569 and 120.57, F.S. or unless public comment received in accordance with this notice results in a different decision or a significant change of terms or conditions.

Comments: The Permitting Authority will accept written comments concerning the proposed Draft Permit for a period of fourteen (14) days from the date of publication of this Public Notice. Written comments must be provided to the Permitting Authority at the above address. Any written comments

(Public Notice to be Published in the Newspaper)

filed will be made available for public inspection. If written comments received result in a significant change to the Draft Permit, the Permitting Authority shall revise the Draft Permit and require, if applicable, another Public Notice.

Petitions: A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed with (received by) the Department's Agency Clerk in the Office of General Counsel of the Department of Environmental Protection at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by any persons other than those entitled to written notice under Section 120.60(3), F.S. must be filed within 14 days of publication of this Public Notice or receipt of a written notice, whichever occurs first. Under Section 120.60(3), F.S., however, any person who asked the Permitting Authority for notice of agency action may file a petition within 14 days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

A petition that disputes the material facts on which the Permitting Authority's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address and telephone number of the petitioner; the name address and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial rights will be affected by the agency determination; (c) A statement of when and how the petitioner received notice of the agency action or proposed decision; (d) A statement of all disputed issues of material fact. If there are none, the petition must so state; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action including an explanation of how the alleged facts relate to the specific rules or statutes; and, (g) A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the agency to take with respect to the agency's proposed action. A petition that does not dispute the material facts upon which the Permitting Authority's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Permitting Authority's final action may be different from the position taken by it in this Public Notice of Intent to Issue Air Permit. Persons whose substantial interests will be affected by any such final decision of the Permitting Authority on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation: Mediation is not available for this proceeding.

TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION

APPLICANT

Tampa Electric Company
Polk Power Station
ARMS Facility ID No. 1050233

Polk County, Florida

PROJECT

Draft Permit No. 1050233-021-AC
85% Petroleum Coke / 15% Coal Blend Request
Integrated Gasification Combined Cycle (IGCC) Unit

PERMITTING AUTHORITY

Florida Department of Environmental Protection
Division of Air Resource Management
Bureau of Air Regulation
New Source Review Section

May 22, 2008

{Filename: 1050233-021-AC TEPD}

1. GENERAL PROJECT INFORMATION

Facility Description and Location

The Polk Power Station is an existing electrical generating plant (SIC No. 4911) located at 9995 State Route 37 South in Polk County, Florida. The UTM coordinates are Zone 17, 402.45 km East, and 3067.35 km North. The power plant consists of the following equipment: a nominal 260 megawatt (MW) combined cycle combustion turbine, a solid fuel handling system, a solid fuel gasification plant, a sulfuric acid plant, an auxiliary boiler, and four nominal 165 MW simple cycle gas turbines. The combined cycle combustion turbine, solid fuel handling system, solid fuel gasification plant, and sulfuric acid plant form an integrated gasification combined cycle (IGCC) system. Currently, the IGCC system fires synthesis gas (syngas) in the combined cycle combustion turbine produced from gasifying a blend of coal/petroleum coke with up to 60% petroleum coke and a maximum sulfur content of 3.5% by weight. The gasification process and acid clean-up operations currently result in the allowable production of up to 77,640 tons of 100% sulfuric acid annually.

Regulatory Categories

Title III: The existing facility is not a major source of hazardous air pollutants (HAP).

Title IV: The existing facility has units subject to the acid rain provisions of the Clean Air Act.

Title V: The existing facility is a Title V major source of air pollution in accordance with Chapter 213, Florida Administrative Code (F.A.C.).

PSD: The existing facility is a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of air quality.

NSPS: The existing facility operates units subject to the New Source Performance Standards in Part 60, Title 40 of the Code of Federal Regulations (CFR).

Project Description

For the IGCC unit, based on the results of the trial burns authorized by permit project number 1050233-019-AC, the applicant is requesting permanent authority to produce and fire syngas from a blend of coal/petroleum coke with up to 85% petroleum coke and a maximum sulfur content of up to 4.7% by weight. The higher sulfur content of the gasified fuel stock leads to a greater recovery of saleable sulfuric acid. To accommodate the increase in sulfuric acid recovery, minor modifications will be required for the sulfuric acid plant and the methyl diethanol amine (MDEA) acid gas removal system in order to provide additional control stability. In addition, the applicant has requested an increase in the sulfuric acid production rate to allow the production of up to 299 tons per day of 100% sulfuric acid.

Processing Schedule

11/16/07 Received application for a minor source air pollution construction permit.

12/14/07 Requested additional information.

03/06/08 Received additional information.

2. APPLICABLE REGULATIONS

State Regulations

This project is subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.), which authorize the Department of Environmental Protection to establish rules and regulations regarding air quality as part of the Florida Administrative Code. This project is subject to the applicable rules and regulations defined in the following Chapters of the F.A.C.: 62-4 (Permitting Requirements); 62-204 (Ambient Air Quality Requirements, PSD Increments, and Federal Regulations Adopted by Reference); 62-210 (Permits Required, Public Notice, Reports, Stack Height Policy, Circumvention, Excess Emissions, and Forms); 62-212

(Preconstruction Review, Preconstruction Review for the Prevention of Significant Deterioration of Air Quality, and Preconstruction Review for Nonattainment Areas); 62-213 (Title V Air Operation Permits for Major Sources of Air Pollution); 62-296 (Emission Limiting Standards); and 62-297 (Test Methods and Procedures, Continuous Monitoring Specifications, and Alternate Sampling Procedures). The PSD applicability of Rule 62-212.400, F.A.C. is discussed in Section 2 of this report. The combustion turbine is regulated under Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD); Best Available Control Technology (BACT) Determination, dated February 24, 1994.

Federal Regulations

The Environmental Protection Agency establishes air quality regulations in Title 40 of the Code of Federal Regulations. Part 60 identifies New Source Performance Standards (NSPS) for a variety of industrial activities. Part 61 specifies National Emissions Standards for Hazardous Air Pollutant (NESHAP) based on specific pollutants. Part 63 specifies NESHAP provisions based on the Maximum Achievable Control Technology (MACT) for given source categories. Federal regulations are adopted in Rule 62-204.800, F.A.C. The combustion turbine is regulated under Acid Rain, Phase II; New Source Performance Standards - 40 CFR 60, Subpart GG, Standards of Performance for Stationary Gas Turbines, adopted and incorporated by reference in Rule 62-204.800(7), F.A.C.

PSD Applicability - General

The Department regulates major stationary sources in accordance with Florida's PSD program, as defined in Rule 62-212.400, F.A.C. A PSD review is required in areas currently in attainment with the state and federal ambient air quality standards or areas designated as "unclassifiable" for a given pollutant. A new facility is considered "major" with respect to PSD if it emits or has the potential to emit: 250 tons per year or more of any regulated air pollutant, or 100 tons per year or more of any regulated air pollutant and the facility belongs to one of the 28 PSD major facility categories, or 5 tons per year of lead.

For new projects at PSD-major sources, each regulated pollutant is reviewed for PSD applicability based on emissions thresholds known as the significant emission rates specified in Rule 62-210.200 (Definitions), F.A.C. Pollutant emissions from the project exceeding these rates are considered "significant" and the applicant must employ the Best Available Control Technology (BACT) to minimize emissions of each such pollutant and evaluate the air quality impacts. Although a facility may be "major" with respect to PSD for only one regulated pollutant, it may be required to install BACT controls for several "significant" regulated pollutants.

PSD Applicability - Project

The Polk Power Station is an existing PSD-major facility located in Polk County, which is an area that is currently in attainment with, or designated as unclassifiable for, each pollutant with a state or federal Ambient Air Quality Standard (AAQS). The applicant states that the project will not result in any significant increases in emissions from carbon monoxide (CO), nitrogen oxides (NO_X), particulate matter (PM/PM_{10}), sulfuric acid mist (SAM), sulfur dioxide (SO_2), volatile organic compounds (VOC) or any trace metals. No changes are proposed for the Unit 1 gasification or combustion turbine other than the use of 85 percent petcoke. Since the IGCC system currently produces a syngas from petcoke/coal blends, no actual emissions increases of non-sulfur combustion byproducts (i.e., NO_X, CO and VOC) are expected. The ash content of petcoke is significantly lower than coal; approximately 0.5 weight percent for petcoke compared to 9 percent for coal. With higher concentrations of petcoke there will be a proportionate amount of lower ash content loading, thus allowing the PM removal processes to perform more efficiently. Therefore, increases in actual PM/PM_{10} emissions will not occur due to the gasification of 85 percent petcoke. Similarly, increases in actual emissions of lead (Pb) will not occur since the lead content of petcoke is approximately one order of magnitude lower than coal. The applicant's PSD applicability analysis therefore primarily focused on the two pollutants, SO_2 and sulfuric acid mist (SAM), that have the potential to increase due to the higher sulfur content of petcoke.

When the sulfur content and other quality parameters of the gasifier's solid fuel are within the capability envelope of the acid gas removal systems (carbonyl sulfide (COS) hydrolysis and MDEA acid gas removal) as they were during the trial burn test program, operating conditions of those units are adjusted to compensate for process variations (input sulfur, ambient temperature, etc.) and to ensure that SO_2 emissions from the combustion turbine remain below permitted levels according to the Part 75 Acid Rain continuous emissions monitoring system (CEMS). The MDEA acid gas removal system removes 97-98% of the hydrogen sulfide (H_2S) from the raw syngas. From the H_2S removed and sent to the sulfuric acid plant, over 99.5% is recovered into sulfuric acid. Given the extremely high level of sulfur removal that these systems provide, it is expected that small gains in removal efficiency can outweigh increases in the sulfur content of the feedstock. Based on the information available and a review of the data acquired during the test burn trials, the indications are that SAM emissions from the combustion turbine stack are directly related to SO_2 emissions (SAM ~ 0.05 x SO_2 on a molar basis). Due to the capabilities of the sulfur removal systems to produce larger quantities of sulfuric acid when the sulfur content of the raw fuel is increased, neither SO_2 nor SAM emissions from the combustion turbine stack are expected to increase in a significant amount.

During the test program, the sulfuric acid plant demonstrated its ability to accommodate feedstocks with sulfur content up to 4.7%, by weight, without any significant increases in SO_2 and SAM emissions from either the combustion turbine stack or the sulfuric acid plant stack. However, many of the controllers had to be operated at 100% output most of the time during the test program to accomplish this. Polk Power Station plans to make the following modifications to the sulfuric acid plant for improved operability on the higher sulfur fuels so the controllers can operate in their normal control range. Similar modifications to the MDEA acid gas removal system are also planned and are identified below.

Sulfuric Acid Plant Modifications

1. During the trial test burns the sulfuric acid plant compressor had to be operated very near 100% output to keep the sulfuric acid plant pressure profile within design limits. Although operating the sulfuric acid plant compressor as such was sufficient for all trial burn scenarios, it is not a desirable long-term operating condition. Consequently re-engineering of the compressor motor, and/or gear box, and/or impellor blades will be done to provide the machine with enough incremental capacity to return the machine's controls to a normal operating range while still controlling plant pressure and sulfuric acid production (70% or 80% output vs. the 100% output during the test burns). The re-engineering is not designed to increase the flow rate through the acid plant above its current capacity, which was adequate during the fuel trial burns, but rather it is to provide control stability for the compressor so it can better accommodate minor process disturbances. This can most effectively be done by one of the following options:

    - Changing the compressor gear box ratio.
    - Increasing the compressor wheel size.
    - Installing a booster compressor.
    - Installing a parallel compressor.
    - Installing an oxygen injection quill in the decomposition furnace air inlet duct.
    - Changing the compressor motor size.

2. Additional air supply from the plant air system was required for the sulfuric acid plant decomposition furnace during the trial burns to accommodate the increased solid fuel sulfur content. The external air source was needed during the tests because a flow restriction exists in the normal air supply to the furnace's burner. Although burner modifications were made between Trial Burns #1 and #2 and between Trial Burns #2 and #4, this problem was not completely resolved. The decomposition furnace air intake system will be modified to decrease the pressure drop by one of the following options:

    - Modifying the existing burner.
    - Replacing the existing burner.

- Modifying the air inlet duct.
- Installing an oxygen injection quill air inlet duct.

As with the compressor modifications, the design objective for the decomposition furnace air intake modifications is not to increase the flow rate beyond that which was demonstrated during the trial burn tests. It is merely to enable the normal air supply system to provide the necessary air while keeping the inlet airflow controls in their normal range to better accommodate minor process disturbances.

3. The decomposition furnace produces SO_2. Oxygen (O_2) must be added upstream of the catalyst beds to permit conversion of the SO_2 to sulfur trioxide (SO_3). The O_2 supply line and/or control valve restricted flow such that the control valve operated 100% open during most of the testing. Modifying the line and/or control valve to increase the O_2 supply by approximately 15% will ensure sufficient O_2 will be supplied while keeping the control valve in a normal operating range to accommodate minor process upsets. Here, again, the design intent is not to provide additional O_2 beyond that which was used during the test, but to provide control stability. This may be accomplished by the following:
    - Modifying the O_2 piping to reduce the pressure drop.
    - Increasing the size of the O_2 control valve.

MDEA Acid Gas Removal System Modifications

1. Lowering the temperature or "chilling" the MDEA sulfur removal solvent increases its sulfur removal rate. The MDEA chiller was operated throughout the trial burns to assure adequate sulfur removal. However, the trial burns were conducted during December, January, and March when the solvent was already relatively cool. The plan is to approximately double the chilling capacity for the MDEA solvent to assure adequate sulfur removal from the syngas during warmer ambient temperature seasons. This will likely be accomplished by adding an additional chiller system.
2. During normal plant operating conditions MDEA foaming occurs to some extent. If the foaming becomes severe, it can reduce hydrogen sulfide (H_2S) removal efficiency and can also lead to dilute acid gas (lower than design H_2S concentration) which has an adverse impact on the sulfuric acid plant performance. During the trial burns with increased solid fuel sulfur content, a standard commercial foam-inhibiting additive was continuously injected, but the ion exchange system for heat stable salt removal was shut down due to the adverse affect the additive has on the ion exchange resin. Long-term operation of the MDEA system is not possible without the ion exchange system. Equipment and provisions will be installed for a more consistent foam-inhibiting additive system to the circulating MDEA solvent. This will be accomplished by either adding another carbon filter bed upstream of the heat stable salt removal system or by rerouting the piping so the existing carbon filter will be positioned immediately upstream of the heat stable salt removal system. This will enable a replacement of the current batch anti-foam feeding system with a continuous very low rate anti-foam feeding system that can better control the foaming tendencies of the MDEA solvent.
3. The first MDEA chiller system added to the plant several years ago included a heat exchanger which imposed additional pressure drop on the main MDEA flow path. As a result, one of the MDEA control valves had less available pressure drop, and consequently was undersized for the application. The control valve will be replaced with one which can perform within the normal control range with the available pressure drop.

Aside from the higher blended fuel sulfur contents, the project must comply with the existing requirements of the Title V air operation permit. The primary concern is for SAM and SO_2 emissions, due to the higher sulfur content of the petroleum coke that will be gasified and fired in the future. Currently, the existing sulfuric acid plant is permitted to produce 77,640 tons/year of 100% sulfuric acid. With the increased sulfur in the fuel and the increased sulfur removal efficiency resulting from the changes outlined above, the annual sulfuric acid production capacity will likely increase. TECO is proposing a new production limit of up to 299 tons per day of 100% acid to provide the ability to scrub as much sulfuric acid as possible out of the syngas prior to its

The Department makes a preliminary determination that the proposed, project will comply with all applicable state and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the draft permit. No air quality modeling analysis is required because the project does not result in a significant increase in emissions. Jonathan Holtom is the project engineer responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting the project engineer at the Department's Bureau of Air Regulation at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

(DRAFT)

PERMITTEE:

Tampa Electric Company
P.O. Box 111
Tampa, FL 33601

Authorized Representative:
Mark J. Hornick, General Manager

Air Permit No. 1050233-021-AC / PSD-FL-194H
Polk Power Station
Facility ID No. 1050233
SIC No. 4911
Permit Expires: June 1, 2009

PROJECT AND LOCATION

This permit authorizes an increase in the petroleum coke to coal blend ratio that is allowed to be gasified at this facility from 60% / 40% to 85% / 15% and an increase in the allowable sulfur content of the blended fuel from 3.5% to 4.7% sulfur by weight. In order to better accommodate this change in fuel ratio, minor changes and enhancements will also be made to components of the sulfuric acid plant and the acid gas removal system which will result in an increase in the allowable production of sulfuric acid from 77,640 tons per year to 299 tons per day (109,135 tons per year). The resulting syngas will continue to be fired in the existing integrated gasification combined cycle (IGCC) system at the Polk Power Station, which is located at 9995 State Route 37 South in Polk County, Florida.

STATEMENT OF BASIS

This air pollution 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.) and Title 40, Part 60 of the Code of Federal Regulations. The permittee is authorized to install the proposed equipment 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.

CONTENTS

(DRAFT)

Joeseph Kahn, Director
Division of Air Resource Management

(Date)

FACILITY AND PROJECT DESCRIPTION

The Polk Power Station is an existing electrical generating plant consisting of the following equipment: a nominal 260 megawatt (MW) combined cycle combustion turbine (Unit 1), a solid fuel handling system, a solid fuel gasification plant, a sulfuric acid plant, an auxiliary boiler, and two nominal 165 MW simple cycle gas turbines (Units 2 and 3). Two additional nominal 165 MW simple cycle gas turbines (Units 4 and 5) have been permitted, but are not yet in operation. The combined cycle combustion turbine, solid fuel handling system, solid fuel gasification plant, and sulfuric acid plant form an integrated gasification combined cycle (IGCC) system. Currently, the IGCC system fires synthesis gas (syngas) in the combined cycle combustion turbine produced from gasifying a blend of coal/petroleum coke with up to 60% petroleum coke and a maximum sulfur content of 3.5% by weight.

This permit authorizes an increase of the blend ratio of petroleum coke/coal that can be gasified to an allowable ratio of 85% petroleum coke to 15% coal, with a new maximum sulfur content of up to 4.7% by weight. The resulting syngas will continue to be fired in the existing combustion turbine. This permit also recognizes and authorizes the minor upgrades and/or additions of component equipment at the sulfuric acid plant and the methyl diethanol amine (MDEA) acid gas removal plant that are outlined in the technical evaluation, along with an increase in the allowable sulfuric acid production rate of up to 299 tons per day of 100% sulfuric acid. This permit does not authorize any other increases in the allowable permitted capacities or pollutant emissions limits for any of the permitted emissions units. Except for the conditions listed below, the plant must continue to comply with all other existing permit restrictions. The following existing emissions units are affected by this project.

ID	Emission Unit Description
001	Unit 1 - Integrated gasification combined cycle (IGCC) combustion turbine rated at 260 MW
004	Sulfuric Acid Plant
005	Solid Fuel Handling System
006	Solid Fuel Gasification Plant

REGULATORY CLASSIFICATION

Title III: The existing facility is not a major source of hazardous air pollutants (HAP).

Title IV: The existing facility has units subject to the acid rain provisions of the Clean Air Act.

Title V: The existing facility is a Title V major source of air pollution in accordance with Chapter 213, Florida Administrative Code (F.A.C.).

PSD: The existing facility is a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of air quality.

NSPS: The existing facility operates units subject to the New Source Performance Standards in Part 60, Title 40 of the Code of Federal Regulations (CFR).

1. Permitting Authority: The Bureau of Air Regulation of the Florida Department of Environmental Protection is the Permitting Authority for this facility. The Bureau of Air Regulation's mailing address is 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400.
2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Southwest District Office at 13051 N. Telecom Parkway, Temple Terrace, FL 33637-0926.
3. Appendices: The following Appendices are attached as part of this permit: Appendix A (Citation Format); Appendix B (General Conditions); and, Appendix C (Common Conditions).

4. Source Obligation:

   a. At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification.

   b. At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by exceeding its projected actual emissions, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification.

   [Rule 62-212.400(12), F.A.C.]

5. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403 of the Florida Statutes (F.S.); Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.); and Title 40, Part 60 of the Code of Federal Regulations (CFR), adopted by reference in Rule 62-204.800, F.A.C. The terms used in this permit have specific meanings as defined in the applicable chapters of the Florida Administrative Code. 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. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]
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.]
7. Title V Permit: This permit authorizes construction of the permitted emissions units and initial operation to determine compliance with Department rules. A Title V operation permit is required for regular operation of the permitted emissions units. The permittee shall apply for a Title V operation permit (revision) at least 90 days prior to expiration of this permit, but no later than 180 days after commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

12. SAM Emissions Monitor Report: Prior to the expiration date of this permit, the permittee shall submit a report detailing the potential options for continuous SAM emissions monitoring. Upon installation of an approved SAM CEMS or other approved monitoring protocol, the semi-annual SAM compliance tests required in Specific Condition 7 may be discontinued. [Rule 62-4.070(3), F.A.C. and Applicant Request]

13. Stack Test Reports: The permittee shall prepare and submit stack test reports within 45 days of completing the required emissions tests. All reports shall be submitted to the Compliance Authority. Initial stack test reports shall also be submitted to the Permitting Authority. [Rule 62-297.310(8), F.A.C.]

14. PSD Applicability Monitoring and Reporting Requirements:

    a. The permittee shall monitor the emissions of SO_2 and SAM; and, using the most reliable information available, calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of 5 years following resumption of regular operations after the change, beginning with the first full calendar year following the year in which the change occurred. Emissions shall be computed in accordance with Rule 62-210.370, F.A.C.

    b. The permittee shall report to the Department within 60 days after the end of each year during which records must be generated under subparagraph 62-212.300(1)(e)1., F.A.C., setting out the unit's annual emissions during the calendar year that preceded submission of the report. The report shall contain the following:

        1. The name, address and telephone number of the owner or operator of the major stationary source;

        2. The annual emissions as calculated pursuant to subparagraph 62-212.300(1)(e)1., F.A.C.;

        3. If the emissions differ from the preconstruction projection, an explanation as to why there is a difference; and,

        4. Any other information that the owner or operator wishes to include in the report.

    c. The information required to be documented and maintained pursuant to subparagraphs 62-212.300(1)(e)1. and 2., F.A.C., shall be submitted to the Department, which shall make it available for review to the general public.

    [Rule 62-212.300(1)(e), F.A.C.]

15. Computation of Emissions: The owner or operator shall compute emissions in accordance with the requirements set forth below:

    a. Basic Approach. The owner or operator shall employ, on a pollutant-specific basis, the most accurate of the approaches set forth below to compute the emissions of a pollutant from an emissions unit; provided, however, that nothing in this rule shall be construed to require installation and operation of any continuous emissions monitoring system (CEMS), continuous parameter monitoring system (CPMS), or predictive emissions monitoring system (PEMS) not otherwise required by rule or permit, nor shall anything in this rule be construed to require performance of any stack testing not otherwise required by rule or permit.

        1. If the emissions unit is equipped with a CEMS meeting the requirements of paragraph 62-210.370(2)(b), F.A.C., the owner or operator shall use such CEMS to compute the emissions of the pollutant, unless the owner or operator demonstrates to the department that an alternative approach is more accurate because the CEMS represents still-emerging technology.

        2. If a CEMS is not available or does not meet the requirements of paragraph 62-210.370(2)(b), F.A.C, but emissions of the pollutant can be computed pursuant to the mass balance methodology

of paragraph 62-210.370(2)(c), F.A.C., the owner or operator shall use such methodology, unless the owner or operator demonstrates to the department that an alternative approach is more accurate.

3. If a CEMS is not available or does not meet the requirements of paragraph 62-210.370(2)(b), F.A.C., and emissions cannot be computed pursuant to the mass balance methodology, the owner or operator shall use an emission factor meeting the requirements of paragraph 62-210.370(2)(d), F.A.C., unless the owner or operator demonstrates to the department that an alternative approach is more accurate.

b. Continuous Emissions Monitoring System (CEMS).

1. An owner or operator may use a CEMS to compute emissions of a pollutant for purposes of this rule provided:

(a) The CEMS complies with the applicable certification and quality assurance requirements of 40 CFR Part 60, Appendices B and F,. or, for an acid rain unit, the certification and quality assurance requirements of 40 CFR Part 75, all adopted by reference at Rule 62-204.800, F.A.C.; or

(b) The owner or operator demonstrates that the CEMS otherwise represents the most accurate means of computing emissions for purposes of this rule.

2. Stack gas volumetric flow rates used with the CEMS to compute emissions shall be obtained by the most accurate of the following methods as demonstrated by the owner or operator:

(a) A calibrated flowmeter that records data on a continuous basis, if available; or

(b) The average flow rate of all valid stack tests conducted during a five-year period encompassing the period over which the emissions are being computed, provided all stack tests used shall represent the same operational and physical configuration of the unit.

3. The owner or operator may use CEMS data in combination with an appropriate f-factor, heat input data, and any other 63 necessary parameters to compute emissions if such method is demonstrated by the owner or operator to be more accurate than using a stack gas volumetric flow rate as set forth at subparagraph 62-210.370(2)(b)2., F.A.C., above.

c. Mass Balance Calculations.

1. An owner or operator may use mass balance calculations to compute emissions of a pollutant for purposes of this rule provided the owner or operator:

(a) Demonstrates a means of validating the content of the pollutant that is contained in or created by all materials or fuels used in or at the emissions unit; and

(b) Assumes that the emissions unit emits all of the pollutant that is contained in or created by any material or fuel used in or at the emissions unit if it cannot otherwise be accounted for in the process or in the capture and destruction of the pollutant by the unit's air pollution control equipment.

2. Where the vendor of a raw material or fuel which is used in or at the emissions unit publishes a range of pollutant content from such material or fuel, the owner or operator shall use the highest value of the range to compute the emissions, unless the owner or operator demonstrates using site-specific data that another content within the range is more accurate.

3. In the case of an emissions unit using coatings or solvents, the owner or operator shall document, through purchase receipts, records and sales receipts, the beginning and ending VOC inventories,

the amount of VOC purchased during the computational period, and the amount of VOC disposed of in the liquid phase during such period.

d. Emission Factors.

1. An owner or operator may use an emission factor to compute emissions of a pollutant for purposes of this rule provided the emission factor is based on site-specific data such as stack test data, where available, unless the owner or operator demonstrates to the department that an alternative emission factor is more accurate. An owner or operator using site-specific data to derive an emission factor, or set of factors, shall meet the following requirements.

   a. If stack test data are used, the emission factor shall be based on the average emissions per unit of input, output, or gas volume, whichever is appropriate, of all valid stack tests conducted during at least a five-year period encompassing the period over which the emissions are being computed, provided all stack tests used shall represent the same operational and physical configuration of the unit.

   b. Multiple emission factors shall be used as necessary to account for variations in emission rate associated with variations in the emissions unit's operating rate or operating conditions during the period over which emissions are computed.

   c. The owner or operator shall compute emissions by multiplying the appropriate emission factor by the appropriate input, output or gas volume value for the period over which the emissions are computed. The owner or operator shall not compute emissions by converting an emission factor to pounds per hour and then multiplying by hours of operation, unless the owner or operator demonstrates that such computation is the most accurate method available.

2. If site-specific data are not available to derive an emission factor, the owner or operator may use a published emission factor directly applicable to the process for which emissions are computed. If no directly-applicable emission factor is available, the owner or operator may use a factor based on a similar, but different, process.

e. Accounting for Emissions During Periods of Missing Data from CEMS, PEMS, or CPMS. In computing the emissions of a pollutant, the owner or operator shall account for the emissions during periods of missing data from CEMS, PEMS, or CPMS using other site-specific data to generate a reasonable estimate of such emissions.

f. Accounting for Emissions During Periods of Startup and Shutdown. In computing the emissions of a pollutant, the owner or operator shall account for the emissions during periods of startup and shutdown of the emissions unit.

g. Fugitive Emissions. In computing the emissions of a pollutant from a facility or emissions unit, the owner or operator shall account for the fugitive emissions of the pollutant, to the extent quantifiable, associated with such facility or emissions unit.

h. Recordkeeping. The owner or operator shall retain a copy of all records used to compute emissions pursuant to this rule for a period of five years from the date on which such emissions information is submitted to the department for any regulatory purpose.

[Rule 62-210.370(2), F.A.C.]

CONTENTS

CITATION FORMATS

The following examples illustrate the format used in the permit to identify applicable permitting actions and regulations.

REFERENCES TO PREVIOUS PERMITTING ACTIONS

Old Permit Numbers

Example: Permit No. AC50-123456 or Air Permit No. AO50-123456

Where: "AC" identifies the permit as an Air Construction Permit
"AO" identifies the permit as an Air Operation Permit
"123456" identifies the specific permit project number

New Permit Numbers

Example: Permit Nos. 099-2222-001-AC, 099-2222-001-AF, 099-2222-001-AO, or 099-2222-001-AV

Where: "099" represents the specific county ID number in which the project is located
"2222" represents the specific facility ID number
"001"identifies the specific permit project
"AC" identifies the permit as an air construction permit
"AF" identifies the permit as a minor federally enforceable state operation permit
"AO" identifies the permit as a minor source air operation permit
"AV" identifies the permit as a Title V Major Source Air Operation Permit

PSD Permit Numbers

Example: Permit No. PSD-FL-317

Where: "PSD" means issued pursuant to the Prevention of Significant Deterioration of Air Quality
"FL" means that the permit was issued by the State of Florida
"317" identifies the specific permit project

RULE CITATION FORMATS

Florida Administrative Code (F.A.C.)

Example: [Rule 62-213.205, F.A.C.]

Means: Title 62, Chapter 213, Rule 205 of the Florida Administrative Code

Code of Federal Regulations (CFR)

Example: [40 CRF 60.7]

Means: Title 40, Part 60, Section 7

GENERAL CONDITIONS

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

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

   a. Have access to and copy and records that must be kept under the conditions of the permit;
   b. Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
   c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

   Reasonable time may depend on the nature of the concern being investigated.
8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

   a. A description of and cause of non-compliance; and

   b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

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

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. This permit also constitutes:

    a. Determination of Best Available Control Technology (Not Applicable);
    b. Determination of Prevention of Significant Deterioration (Not Applicable); and
    c. Compliance with New Source Performance Standards (Not Applicable).

14. The permittee shall comply with the following:

    a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

    b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

    c. Records of monitoring information shall include:

        1) The date, exact place, and time of sampling or measurements;
        2) The person responsible for performing the sampling or measurements;
        3) The dates analyses were performed;
        4) The person responsible for performing the analyses;
        5) The analytical techniques or methods used; and
        6) The results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

Unless otherwise specified in applicable permits, the following conditions apply to all emissions units and activities at the facility.

EMISSIONS AND CONTROLS

1. 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 permittee shall notify each Compliance Authority as soon as possible, but at least within one working day, excluding weekends and holidays. The notification shall include: pertinent information as to the cause of the problem; 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 or the regulations. [Rule 62-4.130, F.A.C.]
2. Circumvention: The permittee shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. [Rule 62-210.650, F.A.C.]
3. 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.]

TESTING REQUIREMENTS

4. Required Number of Test Runs: For mass emission limitations, a compliance test shall consist of three complete and separate determinations of the total air pollutant emission rate through the test section of the stack or duct and three complete and separate determinations of any applicable process variables corresponding to the three distinct time periods during which the stack emission rate was measured; provided, however, that three complete and separate determinations shall not be required if the process variables are not subject to variation during a compliance test, or if three determinations are not necessary in order to calculate the unit's emission rate. The three required test runs shall be completed within one consecutive five-day period. In the event that a sample is lost or one of the three runs must be discontinued because of circumstances beyond the control of the owner or operator, and a valid third run cannot be obtained within the five-day period allowed for the test, the Secretary or his or her designee may accept the results of two complete runs as proof of compliance, provided that the arithmetic mean of the two complete runs is at least 20% below the allowable emission limiting standard. [Rule 62-297.310(1), F.A.C.]
5. Operating Rate During Testing: Testing of emissions shall be conducted with the emissions unit operating at permitted capacity. Permitted capacity is defined as 90 to 100 percent of the maximum operation rate allowed by the permit. If it is impractical to test at permitted capacity, an emissions unit may be tested at less than the maximum permitted capacity; in this case, subsequent emissions unit operation is limited to 110 percent of the test rate until a new test is conducted. Once the unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the authority to operate at the permitted capacity. [Rule 62-297.310(2), F.A.C.]
6. Calculation of Emission Rate: For each emissions performance test, the indicated emission rate or concentration shall be the arithmetic average of the emission rate or concentration determined by each of the three separate test runs unless otherwise specified in a particular test method or applicable rule. [Rule 62-297.310(3), F.A.C.]
7. Test Procedures: Tests shall be conducted in accordance with all applicable requirements of Chapter 62-297, F.A.C.
    a. *Required Sampling Time.* Unless otherwise specified in the applicable rule, the required sampling time for each test run shall be no less than one hour and no greater than four hours, and the sampling time at each sampling point shall be of equal intervals of at least two minutes. The minimum observation

period for a visible emissions compliance test shall be thirty (30) minutes. The observation period shall include the period during which the highest opacity can reasonably be expected to occur.

b. *Minimum Sample Volume.* Unless otherwise specified in the applicable rule or test method, the minimum sample volume per run shall be 25 dry standard cubic feet.

c. *Calibration of Sampling Equipment.* Calibration of the sampling train equipment shall be conducted in accordance with the schedule shown in Table 297.310-1, F.A.C.

[Rule 62-297.310(4), F.A.C.]

8. Determination of Process Variables

a. *Required Equipment.* The owner or operator of an emissions unit for which compliance tests are required shall install, operate, and maintain equipment or instruments necessary to determine process variables, such as process weight input or heat input, when such data are needed in conjunction with emissions data to determine the compliance of the emissions unit with applicable emission limiting standards.

b. *Accuracy of Equipment.* Equipment or instruments used to directly or indirectly determine process variables, including devices such as belt scales, weight hoppers, flow meters, and tank scales, shall be calibrated and adjusted to indicate the true value of the parameter being measured with sufficient accuracy to allow the applicable process variable to be determined within 10% of its true value.

[Rule 62-297.310(5), F.A.C.]

9. Sampling Facilities: Sampling facilities include sampling ports, work platforms, access to work platforms, electrical power, and sampling equipment support. All stack sampling facilities must meet any Occupational Safety and Health Administration (OSHA) Safety and Health Standards described in 29 CFR Part 1910, Subparts D and E. For purposes of the temporary trial burn, the permittee may install temporary stack sampling facilities in accordance with Rule 62-297.310(6), F.A.C. [Rule 62-297.310(6), F.A.C.]

10. Test Notification: The owner or operator shall notify the Department, at least 15 days prior to the date on which each formal compliance test is to begin, of the date, time, and place of each such test, and the test contact person who will be responsible for coordinating and having such test conducted for the owner or operator. [Rule 62-297.310(7)(a)9, F.A.C.]

11. Special Compliance Tests: When the Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in a Department rule or in a permit issued pursuant to those rules is being violated, it shall require the owner or operator of the emissions unit to conduct compliance tests which identify the nature and quantity of pollutant emissions from the emissions unit and to provide a report on the results of said tests to the Department. [Rule 62-297.310(7)(b), F.A.C.]

12. Test Reports: The owner or operator of an emissions unit for which a compliance test is required shall file a report with the Department on the results of each such test. The required test report shall be filed with the Department as soon as practical but no later than 45 days after the last sampling run of each test is completed. The test report shall provide sufficient detail on the emissions unit tested and the test procedures used to allow the Department to determine if the test was properly conducted and the test results properly computed. As a minimum, the test report, other than for an EPA or DEP Method 9 test, shall provide the following information:

1. The type, location, and designation of the emissions unit tested.
2. The facility at which the emissions unit is located.
3. The owner or operator of the emissions unit.

4. The normal type and amount of fuels used and materials processed, and the types and amounts of fuels used and material processed during each test run.
5. The means, raw data and computations used to determine the amount of fuels used and materials processed, if necessary to determine compliance with an applicable emission limiting standard.
6. The type of air pollution control devices installed on the emissions unit, their general condition, their normal operating parameters (pressure drops, total operating current and GPM scrubber water), and their operating parameters during each test run.
7. A sketch of the duct within 8 stack diameters upstream and 2 stack diameters downstream of the sampling ports, including the distance to any upstream and downstream bends or other flow disturbances.
8. The date, starting time and duration of each sampling run.
9. The test procedures used, including any alternative procedures authorized pursuant to Rule 62-297.620, F.A.C. Where optional procedures are authorized in this chapter, indicate which option was used.
10. The number of points sampled and configuration and location of the sampling plane.
11. For each sampling point for each run, the dry gas meter reading, velocity head, pressure drop across the stack, temperatures, average meter temperatures and sample time per point.
12. The type, manufacturer and configuration of the sampling equipment used.
13. Data related to the required calibration of the test equipment.
14. Data on the identification, processing and weights of all filters used.
15. Data on the types and amounts of any chemical solutions used.
16. Data on the amount of pollutant collected from each sampling probe, the filters, and the impingers, are reported separately for the compliance test.
17. The names of individuals who furnished the process variable data, conducted the test, analyzed the samples and prepared the report.
18. All measured and calculated data required to be determined by each applicable test procedure for each run.
19. The detailed calculations for one run that relate the collected data to the calculated emission rate.
20. The applicable emission standard and the resulting maximum allowable emission rate for the emissions unit plus the test result in the same form and unit of measure.
21. A certification that, to the knowledge of the owner or his authorized agent, all data submitted are true and correct. When a compliance test is conducted for the Department or its agent, the person who conducts the test shall provide the certification with respect to the test procedures used. The owner or his authorized agent shall certify that all data required and provided to the person conducting the test are true and correct to his knowledge.

[Rule 62-297.310(8), F.A.C.]

RECORDS AND REPORTS

13. Records Retention: All measurements, records, and other data required by this permit shall be documented in a permanent, legible format and retained for at least five (5) years following the date on which such measurements, records, or data are recorded. Records shall be made available to the Department upon request. [Rules 62-4.160(14) and 62-213.440(1)(b)2, F.A.C.]
14. Annual Operating Report: The permittee shall submit an annual report that summarizes the actual operating rates and emissions from this facility. Annual operating reports shall be submitted to the Compliance Authority by March 1st of each year. [Rule 62-210.370(2), F.A.C.]

Harvey, Mary

From: Harvey, Mary

Sent: Thursday, May 22, 2008 4:14 PM

To: 'Mr. Mark Hornick, TECO'; 'Mr. Joshua Ellwein, P.E., TECO'; 'Mr. Byron Burrows, TECO'; Nasca, Mara; 'Mr. Gregg Worley, EPA Region 4'; 'Ms. Katy Forney, EPA Region 4'

Cc: Holtom, Jonathan; Walker, Elizabeth (AIR); Gibson, Victoria

Subject: DRAFT PERMIT #1050233-021-AC/PSD-FL-194H - TAMPA ELECTRIC COMPANY - POLK POWER STATION

Attachments: 1050233.021.AC.D_pdf.zip

Tracking:

Recipient	Delivery	Read
'Mr. Mark Hornick, TECO'		
'Mr. Joshua Ellwein, P.E., TECO'		
'Mr. Byron Burrows, TECO'		
Nasca, Mara	Delivered: 5/22/2008 4:14 PM	Read: 5/22/2008 7:08 PM
'Mr. Gregg Worley, EPA Region 4'		
'Ms. Katy Forney, EPA Region 4'		
Holtom, Jonathan	Delivered: 5/22/2008 4:14 PM	Read: 5/22/2008 4:59 PM
Walker, Elizabeth (AIR)	Delivered: 5/22/2008 4:14 PM	Read: 5/22/2008 4:49 PM
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Thank you,

DEP, Bureau of Air Regulation

Harvey, Mary

From: Mark Hornick [mjhornick@tecoenergy.com]
Sent: Tuesday, May 27, 2008 8:29 AM
To: Harvey, Mary
Subject: Re: DRAFT PERMIT #1050233-021-AC/PSD-FL-194H - TAMPA ELECTRICCOMPANY - POLK POWER STATION

I have received the subject transmittal

Mark Hornick
General Manager
Polk Power Station
Tampa Electric Company
863 428-5988 (office)
813 376 6643 (cell)
mjhornick@tecoenergy.com

>>> "Harvey, Mary" <Mary.Harvey@dep.state.fl.us> 05/22/2008 4:14 PM
>>>
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DEP, Bureau of Air Regulation

The Department of Environmental

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service you received. Copy the url below to a web browser to complete the DEP

survey:
http://survey.dep.state.fl.us/?refemail=Mary.Harvey@dep.state.fl.us
Thank you in advance for completing the survey.

Harvey, Mary

From: Holtom, Jonathan
To: Harvey, Mary
Sent: Thursday, May 22, 2008 4:59 PM
Subject: Read: DRAFT PERMIT #1050233-021-AC/PSD-FL-194H - TAMPA ELECTRIC COMPANY - POLK POWER STATION

Your message

To:	'Mr. Mark Hornick, TECO'; 'Mr. Joshua Ellwein, P.E., TECO'; 'Mr. Byron Burrows, TECO'; Nasca, Mara; 'Mr. Gregg Worley, EPA Region 4'; 'Ms. Katy Forney, EPA Region 4'
Cc:	Holtom, Jonathan; Walker, Elizabeth (AIR); Gibson, Victoria
Subject:	DRAFT PERMIT #1050233-021-AC/PSD-FL-194H - TAMPA ELECTRIC COMPANY - POLK POWER STATION
Sent:	5/22/2008 4:14 PM

was read on 5/22/2008 4:59 PM.

Harvey, Mary

From: Byron Burrows [btburrows@tecoenergy.com]
Sent: Thursday, May 22, 2008 4:55 PM
To: Harvey, Mary
Subject: Re: DRAFT PERMIT #1050233-021-AC/PSD-FL-194H - TAMPA ELECTRICCOMPANY - POLK POWER STATION

Received. Thanks!
From BlackBerry
Byron Burrows
Mob: 813.230.3445
-----Original Message-----
From: "Harvey, Mary" <Mary.Harvey@dep.state.fl.us>
Cc: Elizabeth (AIR) Walker <Elizabeth.Walker@dep.state.fl.us>
Cc: Jonathan Holtom <Jonathan.Holtom@dep.state.fl.us>
To: Mara Nasca <Mara.Nasca@dep.state.fl.us>
Cc: Victoria Gibson <Victoria.Gibson@dep.state.fl.us>
To: EPA Region 4 Ms. Katy Forney <FORNEY.KATHLEEN@EPA.GOV>
To: EPA Region 4 Mr. Gregg Worley <WORLEY.GREGG@EPAMAIL.EPA.GOV>
To: Mark Hornick <mjhornick@tecoenergy.com>
To: Joshua Ellwein <jdellwein@tecoenergy.com>
To: Byron Burrows <btburrows@tecoenergy.com>

Sent: 5/22/2008 4:14:19 PM
Subject: DRAFT PERMIT #1050233-021-AC/PSD-FL-194H - TAMPA ELECTRIC COMPANY - POLK POWER STATION

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Thank you,

DEP, Bureau of Air Regulation

The Department of Environmental

Protection values your feedback as a customer. DEP Secretary Michael W. Sole is committed to continuously assessing and

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service you received. Copy the url below to a web browser to complete the DEP

Harvey, Mary

From: Walker, Elizabeth (AIR)
To: Harvey, Mary
Sent: Thursday, May 22, 2008 4:49 PM
Subject: Read: DRAFT PERMIT #1050233-021-AC/PSD-FL-194H - TAMPA ELECTRIC COMPANY - POLK POWER STATION

Your message

To:	'Mr. Mark Hornick, TECO'; 'Mr. Joshua Ellwein, P.E., TECO'; 'Mr. Byron Burrows, TECO'; Nasca, Mara; 'Mr. Gregg Worley, EPA Region 4'; 'Ms. Katy Forney, EPA Region 4'
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Sent:	5/22/2008 4:14 PM

was read on 5/22/2008 4:49 PM.

Harvey, Mary

From: Nasca, Mara
Sent: Thursday, May 22, 2008 7:10 PM
To: Harvey, Mary
Subject: Re: DRAFT PERMIT #1050233-021-AC/PSD-FL-194H - TAMPA ELECTRIC COMPANY - POLK POWER STATION

Thanks Mary

Sent from my BlackBerry Wireless Handheld

----- Original Message -----
From: Harvey, Mary
To: 'Mr. Mark Hornick, TECO' <MJHORNICK@TECOENERGY.COM>; 'Mr. Joshua Ellwein, P.E., TECO' <JDELLWEIN@TECOENERGY.COM>; 'Mr. Byron Burrows, TECO' <BTBURROWS@TECOENERGY.COM>; Nasca, Mara; 'Mr. Gregg Worley, EPA Region 4' <WORLEY.GREGG@EPAMAIL.EPA.GOV>; 'Ms. Katy Forney, EPA Region 4' <FORNEY.KATHLEEN@EPA.GOV>
Cc: Holtom, Jonathan; Walker, Elizabeth (AIR); Gibson, Victoria
Sent: Thu May 22 16:14:19 2008
Subject: DRAFT PERMIT #1050233-021-AC/PSD-FL-194H - TAMPA ELECTRIC COMPANY - POLK POWER STATION

Dear Sir/Madam:

Please send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software and then selecting "Send". We must receive verification of receipt and your reply will preclude subsequent e-mail transmissions to verify receipt of the document(s).

The document(s) may require immediate action within a specified time frame. Please open and review the document(s) as soon as possible.

The document is in Adobe Portable Document Format (pdf). Adobe Acrobat Reader can be downloaded for free at the following internet site:
http://www.adobe.com/products/acrobat/readstep.html.

The Bureau of Air Regulation is issuing electronic documents for permits, notices and other correspondence in lieu of hard copies through the United States Postal System, to provide greater service to the applicant and the engineering community. Please advise this office of any changes to your e-mail address or that of the Engineer-of-Record.

Thank you,

DEP, Bureau of Air Regulation

Harvey, Mary

From: Nasca, Mara
To: Harvey, Mary
Sent: Thursday, May 22, 2008 7:08 PM
Subject: Read: DRAFT PERMIT #1050233-021-AC/PSD-FL-194H - TAMPA ELECTRIC COMPANY - POLK POWER STATION

Your message

To:	'Mr. Mark Hornick, TECO'; 'Mr. Joshua Ellwein, P.E., TECO'; 'Mr. Byron Burrows, TECO'; Nasca, Mara; 'Mr. Gregg Worley, EPA Region 4'; 'Ms. Katy Forney, EPA Region 4'
Cc:	Holtom, Jonathan; Walker, Elizabeth (AIR); Gibson, Victoria
Subject:	DRAFT PERMIT #1050233-021-AC/PSD-FL-194H - TAMPA ELECTRIC COMPANY - POLK POWER STATION
Sent:	5/22/2008 4:14 PM

was read on 5/22/2008 7:08 PM.

Harvey, Mary

From: Gibson, Victoria
To: Harvey, Mary
Sent: Thursday, May 22, 2008 4:15 PM
Subject: Read: DRAFT PERMIT #1050233-021-AC/PSD-FL-194H - TAMPA ELECTRIC COMPANY - POLK POWER STATION

Your message

To:	'Mr. Mark Hornick, TECO'; 'Mr. Joshua Ellwein, P.E., TECO'; 'Mr. Byron Burrows, TECO'; Nasca, Mara; 'Mr. Gregg Worley, EPA Region 4'; 'Ms. Katy Forney, EPA Region 4'
Cc:	Holtom, Jonathan; Walker, Elizabeth (AIR); Gibson, Victoria
Subject:	DRAFT PERMIT #1050233-021-AC/PSD-FL-194H - TAMPA ELECTRIC COMPANY - POLK POWER STATION
Sent:	5/22/2008 4:14 PM

was read on 5/22/2008 4:15 PM.

EPSAP Permit Application Review

APPLICATION IDENTIFICATION INFORMATION

APPLICATION: PPS 1 PETCOKE MODIFICATION (#1662-1)
FACILITY: TAMPA ELECTRIC COMPANY (#1050233)

(+) 1 - 260 MW Combined cycle CT

(+) 4 - Sulfuric Acid Plant

(+) 5 - Solid Fuel Handling Syste

(+) 6 - Solid Fuel Gasification S

Assign Rights or Transfer Application

Edit Application for Sufficiency

Application Contact | Owner/Authorized Rep. | Professional Engineer | Responsible Official

Final PE Signature File Authentication Code:
8B34DDD6828E2C997ECD4F890B31E80B7611AF12

Select an Option Below to Confirm Receipt of the PE Signature Document:

(•) I have NOT received the PE Signature Document.

( ) I have received the PE Signature Document and confirmed that the Signature File Authentication Code shown above exactly matches the one on the PE Signature Document.

( ) I have received the PE Signature Document and found that the Signature File Authentication Code shown above does NOT match the one on the PE Signature Document.

Permit Number: 1050233 - 021 - AC Update

Application Number: 1662

Applicant's Version: 1

Application Name: PPS 1 PETCOKE MODIFICATION

Application Type: LONG FORM

Purpose of Application: AIR CONSTRUCTION PERMIT.

Time Clock Waiver: NO

Date Submitted: 11/16/2007

Applicant's Data Downloaded from ARMS? YES

Applicant Comment: Air construction permit application to increase the Polk Power Station IGCC Solid Fuel Gasification System (EU 006) gasifier feedstock blend up to 85% petroleum coke and 15% coal by weight, and the gasifier feedstock fuel blend sulfur content up to 4.4% weight percent (dry basis).

Click Here to View Certification Statements

APPLICATION: PPS 1 PETCOKE MODIFICATION (#1662-1)
FACILITY: TAMPA ELECTRIC COMPANY (#1050233)

Facility Attachments

Supplemental Item	Electronic File Name	Attachment Description	Electronic Document?	Date Uploaded
OTHER FACILITY INFORMATION	Chart 1.pdf	Chart 1 - Graph of Net Emissions Analysis	Yes	11/15/2007
->>	Table 1.pdf	Table 1 - Analysis of Net Emissions	Yes	11/15/2007
->>	Table 2.pdf	Table 2 - Analysis of Sulfuric Acid Mist Net Emissions	Yes	11/15/2007
->>	Table 3.pdf	Table 3 - AOR Summaries	Yes	11/15/2007
RULE APPLICABILITY ANALYSIS	NSR Applicability.pdf	Attachment I - NSR Applicability	Yes	11/15/2007

Emissions Unit Attachments

Emissions Unit: 001 - 260 MW Combined cycle CT (Phase II Acid Rain Unit)

Supplemental Item	Electronic File Name	Attachment Description	Electronic Document?	Date Uploaded
OTHER EMISSIONS UNIT INFORMATION	Table 1.pdf	Table 1 - Analysis of Net Emissions	Yes	11/15/2007

Emissions Unit: 004 - Sulfuric Acid Plant

Supplemental Item	Electronic File Name	Attachment Description	Electronic Document?	Date Uploaded
DETAILED DESCRIPTION OF CONTROL EQUIPMENT	Plant Modifications.pdf	Attachment II - Potential Plant Modifications	Yes	11/15/2007
OTHER EMISSIONS UNIT INFORMATION	Table 3.pdf	Table 3 - AOR Summaries	Yes	11/15/2007

Report Completed as of: 3/10/2008 11:11:18 AM

	Applicant version 2	Engineer version

I. Application Section

Application Identification Information

Version Number:	2	1
Date Submitted:	2008-03-06 00:00:00	2007-11-16 00:00:00

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Permit Type and Fee Information

Permit Type:	AC1F - Construction permit having potential emissions less than 5 tpy of each pollutant	AC1B - Const. permit having potential emissions of 100 tpy or more of any single pollutant and not subject to PSD or NAA review

EU Regulations

40 CFR 72

Regulation exists only in Engineer version

Regulation:	40 CFR 72
Regulation Type:	Federal

40 CFR 75, SUBPART B

Regulation exists only in Engineer version

Regulation:	40 CFR 75, SUBPART B
Regulation Type:	Federal

40 CFR 60, SUBPART GG

Regulation exists only in Engineer version

Regulation:	40 CFR 60, SUBPART GG
Regulation Type:	Federal

62-212.400(5)

Regulation exists only in Engineer version

Regulation:	62-212.400(5)
Regulation Type:	State

62-212.400(6)

Regulation exists only in Engineer version

Regulation:	62-212.400(6)
Regulation Type:	State

	Applicant version 2	Engineer version
EU Segments		
20100201		
Segment Comment:	Syngas-Primary fuel. Syngas produced from coal or blends of up to 85% petcoke and 15% coal.	Syngas-Primary fuel. Syngas produced from coal or blends of up to 60% petcoke and 40% coal.
EU Pollutants		
CO		
Allowable Emissions 1		
Test Method 10		
Test Method exists only in Engineer version		
Description:		CO EMISSIONS FROM STATIONARY SOURCES (INSTRUMENTAL ANALYZER PROCEDURE)
Allowable Emissions 2		
Test Method 10		
Test Method exists only in Engineer version		
Description:		CO EMISSIONS FROM STATIONARY SOURCES (INSTRUMENTAL ANALYZER PROCEDURE)
H015		
H021		
H114		
NOX		
Allowable Emissions 1		
Test Method 20		
Test Method exists only in Engineer version		
Description:		NOx, SO2, and Diluent Emissions from Stationary Gas Turbines
Allowable Emissions 2		
Test Method 20		
Test Method exists only in Engineer version		
Description:		NOx, SO2, and Diluent Emissions from Stationary Gas Turbines
Allowable Emissions 4		
Test Method 20		
Test Method exists only in Engineer version		

	Applicant version 2	Engineer version
Description:		NOx, SO2, and Diluent Emissions from Stationary Gas Turbines

PB

PM

Allowable Emissions 1

Test Method 5B

Test Method exists only in Engineer version

Description:		Nonsulfuric Acid Particulate Matter from Stationary Sources

Allowable Emissions 2

Test Method 5B

Test Method exists only in Engineer version

Description:		Nonsulfuric Acid Particulate Matter from Stationary Sources

PM10

Allowable Emissions 1

Test Method 5B

Test Method exists only in Engineer version

Description:		Nonsulfuric Acid Particulate Matter from Stationary Sources

Allowable Emissions 2

Test Method 5B

Test Method exists only in Engineer version

Description:		Nonsulfuric Acid Particulate Matter from Stationary Sources

SAM

Baseline Actual Emissions (tons/year):	23.9	101.1
Baseline 24-Month Period From Date:	01-JAN-2006	01-MAY-2005
Baseline 24-Month Period To Date:	01-JAN-2008	01-MAY-2007
Projected Actual Emissions (tons/year):	27.3	107.7
Calculation of Emissions:	See attached Response to RAI and calculation spreadsheets. There are no expected emissions increase due to this construction activity (increase of petcoke and sulfur content in the fuel blend for gasification).	See attached Spreadsheets Tables 1, 2 and 3 as well as Chart 1 for calculation details.

SO2

Include in the Facility Emissions Cap:	No	
Emission Factor Reference:	BACT DETERMINATION	BACT determination
	See attached Response to RAI and calculation spreadsheets. There are no	

	Applicant version 2	Engineer version
Calculation of Emissions:	expected emissions increase due to this construction activity (increase of petcoke and sulfur content in the fuel blend for gasification).	
Pollutant Comment:	The emission rate of SO2 (lb/hr) is expected to be the same post-construction as pre-construction because the process will continue to target the same SO2 emission rate.	Potential emissions based on syngas-firing during the 2-year demonstration period.

Allowable Emissions 3

Test Method 20

Test Method exists only in Engineer version

Description:		NOx, SO2, and Diluent Emissions from Stationary Gas Turbines

VOC

Allowable Emissions 1

Test Method 18

Test Method exists only in Engineer version

Description:		Gaseous Organic Compound Emissions by Gas Chromatography

Allowable Emissions 2

Test Method 18

Test Method exists only in Engineer version

Description:		Gaseous Organic Compound Emissions by Gas Chromatography

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4

EU Operating Capacity and Schedule

Max. Production Rate:	108624	77640
Max. Production Rate Units:	TONS/YEAR	tons/year
Operating Capacity and Schedule Comment:	108624 TPY and 12.4 tons/hr 100% sulfuric acid production rate.	77640 TPY and 8.9 tons/hr 100% sulfuric acid production rate.

Permit Type and Fee Information

Permit Type:	AC1F - Construction permit having potential emissions less than 5 tpy of each pollutant	AC1B - Const. permit having potential emissions of 100 tpy or more of any single pollutant and not subject to PSD or NAA review

EU Regulations
62-296.402(2)(a)

Regulation exists only in Engineer version

	Applicant version 2	Engineer version
Regulation:		62-296.402(2)(a)
Regulation Type:		State

62-296.402(2)(b)

Regulation exists only in Engineer version

Regulation:		62-296.402(2)(b)
Regulation Type:		State

62-296.402(2)(c)

Regulation exists only in Engineer version

Regulation:		62-296.402(2)(c)
Regulation Type:		State

EU Pollutants
SAM

Allowable Emissions 1

Test Method 8

Test Method exists only in Engineer version

Description:		Sulfuric Acid Mist and SO2 Emissions

SO2

Allowable Emissions 1

Test Method 8

Test Method exists only in Engineer version

Description:		Sulfuric Acid Mist and SO2 Emissions

6

EU Operating Capacity and Schedule

Operating Capacity and Schedule Comment:	Maximum solid fuel input to the gasification plant shall not exceed 2,325 tons/day on a dry basis. Maxium weight of the petroleum coke blended shall not exceed 1,976.25 tons per day, on a dry basis.	Maximum solid fuel input to the gasification plant shall not exceed 2325 tons/day on a dry basis.

EU Regulations
62-212.400(5)

Regulation exists only in Engineer version

Regulation:		62-212.400(5)
Regulation Type:		State

EU Segments
39999999

Maximum % Sulfur:	4.7	4.55

DO I NEED A PERMIT?

In Florida, a permit is required prior to constructing, operating or modifying a unit or facility that emits or is reasonably expected to emit any air pollutant unless an exemption from permitting applies. [Rule 62-210.300, Florida Administrative Code (FAC)] The following series of questions is intended to help you determine if the construction, operation or modification of a unit or activity needs a permit in Florida.

Exemptions

Question 1: Is my unit or activity categorically or conditionally exempt?
There are two types of exemptions established by rule. First, there are specific exemptions based upon the type of activity or unit. These are called categorical exemptions and are listed in Rule 62-210.300(3)(a), FAC. Examples of activities and units exempted from construction and operation permits include home heating furnaces, application of fungicides and pesticides, and restaurants. There are also activities and units that are exempt as long as they meet certain requirements that are set forth in the rules. These are referred to as conditional exemptions and are also set forth in Rule 62-210.300(a), FAC. For example, some emergency generators, fossil fuel steam generators, printing operations, and internal combustion engines may be exempt if they meet the criterion set forth in the rule. These exemptions are self-executing and do not require an application or advance notification to the permitting authority.

Question 2: Is my unit or activity generically exempt?
If your unit or activity is not categorically or conditionally exempt, it may meet the generic exemption thresholds in Rule 62-210.300(3)(b), FAC. These exemptions are based upon the activity, unit or facility's potential emissions and whether other state or federal rules may regulate the activity or unit. These exemptions are self-executing and do not require an application or advance notification to the permitting authority.

One of the requirements to qualify for a categorical, conditional or generic exemption is that the activity or unit is not subject to a unit specific applicable requirement. This means that there is no other state or federal rules that establish requirements on that activity or unit beyond record keeping or reporting. The majority of the state rules that would be unit specific are set forth in Chapter 62-296, FAC. The federal rules are more voluminous but unit specific requirements would largely be in Title 40, Chapters 60, 61 or 63 of the Code of Federal Regulation (CFR).

Question 3: Would my unit or activity qualify for a case-by-case exemption?
If your unit or activity does not fall within the exemption requirements in Rule 62-210.300, FAC, it may qualify for a case-by-case exemption provided in Rule 62-4.040, FAC. Typically, this exemption is used for units or activities that emit air pollutants in quantities that are small enough based upon certain factors that regulation of the activity or unit is not reasonably justified. If a state or federal rule applies to your unit or activity, it likely will not qualify for this exemption. This exemption requires the concurrence and action of the permitting authority.

General Permits
If your unit or activity does not meet any of the exemption criterion, you may be authorized to construct or operate the unit or activity by following the requirements of a specific rule called a "general permit" instead of obtaining a case-by-case permit.

Question 4: Is my unit or activity covered by a general permit?
A general permit is actually a specific rule that governs the construction and operation of specific units or activities such that an individual permit is not necessary. If your unit or activity is covered by a general permit, you will need to follow registration procedures [*link to 210.920 1 or 2*] and submit the processing fee [*link to 4.050*] but no individual permit application or permit is required. Rule 62-210.310, FAC, identifies the general permit rules and procedures. Examples of activities and units that may be eligible for a general permit include printing operations, bulk gasoline plants, surface coating operations, concrete batch plants and dry cleaning facilities. [question for Larry: are they moving the TV gps into 210 or do we need to still reference 213?]

If your unit or activity does not meet the requirements for an exemption or general permit, an air construction, operation and/or Title V operation permit is required.

Construction Permits
A construction permit is required prior to building a new unit or facility. The type of construction permit required is dependent upon the type of unit or facility and its potential (i.e. maximum possible) air pollutant emissions.

Prevention of Significant Deterioration (PSD) Permit
Question 5: Is the unit or facility you are building a new major stationary source of air pollution?
If you are building a brand new unit or facility on a greenfield site, it may require a construction permit called a PSD permit. There are two thresholds beyond which a PSD permit is required. If a facility is specifically identified on the major stationary stationary source list in Rule 62-210.200, FAC and it could emit more than 100 tons per year of a PSD pollutant, a PSD permit is required. If the facility is not specifically listed but it could emit more than 250 tons per year of a PSD pollutant, a PSD permit is required. PSD permit applications are processed in our Tallahassee office. If emission limits are taken to stay below the 100 or 250 ton per year threshold, the permit application is handled by the Department's District or Local Program Office.

In addition, if you are making a physical or operational change at an existing facility that is not currently a major stationary source but the PSD pollutant emissions associated with that change meet the major stationary source thresholds (i.e. 100 tons per year for specified facility types or 250 tons per year for all other facility types), that change requires a PSD permit.

PSD permit applications require ambient air quality modeling and an evaluation of the best available control technologies pursuant to Rule 62-212.400, FAC. In addition, there is a required $7500 permit application fee for PSD applications.

TAMPA ELECTRIC

March 7, 2008

Mr. Jonathan Holtom, P.E.
Florida Department of Environmental Protection
111 South Magnolia Drive, Suite 4
Tallahassee, FL 32301

Via FedEx
Airbill: 7910 1623 6606

Re: **Electronic Permit Submittal and Processing System (EPSAP) Professional Engineer Signature Document**
File No.: 1050233-021-AC

Dear Mr. J. Holtom:

Please find included with this letter the appropriate Electronic Permit Submittal and Processing System (EPSAP) Professional Engineer Signature Document. As noted on the form, certain previously submitted tables and attachments are no longer applicable for the air construction permit 1050233-021-AC. While not all of the following forms are wholly applicable (those portions addressing or characterizing SAM emissions profile), portions of the documents (i.e. comparison of CEMS flow data to EPA RM 2) still retain relevance to the construction permit application. Specifically:

- "NSR Applicability" – (only non-SAM emission characterization applicable)
- "Table 1" – (no longer applicable)
- "Table 2" – (no longer applicable)
- "Table 3" – (only past operating hours applicable)
- "Chart 1" – (no longer applicable)
- "Attachment 4 – SO2 and SAM Past Actuals to Future Projected" – (submitted because specifically requested by the Department, but deemed not applicable by TECO)
- "Plant Modification" – (information in this document has been updated and expanded in "Response to RAI" to help provide a better understanding to the Department of potential maintenance activities to optimize plant process controls)

TEC continues to look forward to resolving any questions the Department has regarding this permit application and would to continue an open dialogue between both parties to help ensure a thorough understanding is achieved.

If you have any questions, please contact me at (813) 228-4433.

Sincerely,

Joshua D. Ellwein, P.E.
Principal Engineer - Air Programs
Environmental, Health & Safety

RECEIVED
MAR 10 2008
BUREAU OF AIR REGULATION

EHS/rlk/JDE125

Enclosure

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

(813) 228-4111

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ALL OTHER COUNTIES 1 (888) 223-0800

Electronic Permit Submittal and Processing System (EPSAP)
Professional Engineer Signature Document

"This document is signed and sealed to secure the data in this permit application and any attached files that were submitted electronically as described in Florida Department of Business and Professional Regulation, Board of Professional Engineers, Procedures for Signing and Sealing Electronically Transmitted Plan, Specifications, Reports or other Documents, Rule 61G15-23.003., F.A.C.."

EPSAP Application Number: 1662-2
Facility Identification Number: 1050233
Facility Owner/Company Name: TAMPA ELECTRIC COMPANY

Purpose of Application:
Air construction permit.

Signature File Created: 3/6/2008 4:22:10 PM

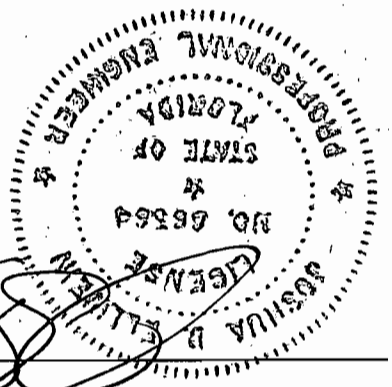
File Description	Authentication Code
Submitted Application Data	EC201AFE4DEAF0516D108AACB8017227315A1553
Uploaded Facility Documents:	
NSR Applicability.pdf	7FAEDE1941CF1CF7E6C96786BCAB044991220484
Table 1.pdf	6DC676B8AE4D1F92F999DF640AF369A5AFE91D2F
Table 2.pdf	A853EA9F041FA86A7931DA574AF22F28101ADC91
Table 3.pdf	DCD8AD2611238F9290C4E169EB2FDE79CFB40B7D
Chart 1.pdf	07AF88AD100929BBC24DA7F089BDFE30914F35B6
Attachment 1 - CEM v EPA RM.pdf	D722AA0509AC9025298F613F7EA4D9EB29CE0868
Attachment 2 - Graph of Flow Comparison.pdf	F239D095515610D7C0931F75466C58E41AFF7400
Attachment 3 - SAM Emission Rate Comparison.pdf	4241576256EDA81EFD6633E5D0FEB98A06A2F973
Attachment 4 - SO2 and SAM Past Actuals to Future Projected.pdf	1084716695F929AB15D96E9378A8978808766070
Table 1 - SAM to SO2 Emissions Relationship.pdf	8D02FCCEA79C7DFE5B8B1934D722E0273A089BE9
Table 3 - Hours of Operations.pdf	E360CED76E6CBAAA7FB481734C94CBD6EEAAC160
Table 4 - Projected SAM Emissions.pdf	733925F2992FCC248ADDBBBE9DF4AF0DC2C6BD38
Response to RAI - Final.doc	FF89B565E64808C62C84E933F1C2C99E9E627DED
Table 2 - Trial Burn SO2 Emissions Summary.pdf	B0BCAA842C3290C2E0D1BC103BF86FD50A997DBE
Uploaded Emissions Unit Documents:	
Plant Modifications.pdf	D59295467F4EF4E8469D6EF70253A58EEE0687FC
Table 1.pdf	6DC676B8AE4D1F92F999DF640AF369A5AFE91D2F
Table 3.pdf	DCD8AD2611238F9290C4E169EB2FDE79CFB40B7D
Final Signature File	52949A4AC88BFB006704893C986241CC7E7B0D99

NA NE NA NA NA 3/6/08

NE NA NA 3/6/08

Professional Engineer (PE): JOSHUA ELLWEIN **License No:** 66384

(sign and affix PE seal below)



PE Signature

Date 3/6/08

TAMPA ELECTRIC

February 15, 2008

Mr. Jonathan Holtom, P.E.
Florida Department of Environmental Protection
111 South Magnolia Drive, Suite 4
Tallahassee, FL 32301

Via FedEx
Airbill. 792006754372

Re: **Request for Additional Information Regarding Change in Fuel Blend at Polk Power Station**
File No.: 1050233-021-AC

Dear Mr. J. Holtom:

The purpose of this letter is to respond to the Department's request for additional information (RAI) related to Tampa Electric Company's (TEC) air construction permit application purpose to increase the allowable petcoke/coal fuel blend from 60/40% and 3.5% sulfur content to 85/15% and 4.7% sulfur content for the Polk Power Station (PPS).

TEC has continued its efforts to resolve discrepancies between the previously reported stack test emission rates, and mass and heat balance process operations as understood after operating this Integrated Gasification Combine-Cycle (IGCC) plant for over 10 years. Please find below TEC's clarification to Department's identified areas as well as additional process information in order to provide reasonable assurance of emission analysis and prediction. ***Character process description and emission information contained within this letter is proprietary and should be handled as such.***

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

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Department Request #1

Please provide an explanation for the unexpected trend in SAM emissions at the different fuel blends that were tested.

TEC Response #1

There are two reasons why the sulfuric acid mist (SAM) emissions may not have correlated with sulfur content of the gasifier's solid fuel as the Department expected.

1) When the sulfur content and other quality parameters of the gasifier's solid fuel are within the capability envelope of the acid gas removal systems (COS hydrolysis and MDEA acid gas removal) as they were during the trial burn test program, operating conditions of those units are adjusted to compensate for process variations (input sulfur, ambient temperature, etc) and to ensure that CT/HRSG sulfur dioxide (SO_2) emissions remain below permitted levels according to the Part 75 Acid Rain CEMS. Given the extremely high level of sulfur removal that these systems provide, it is not unexpected that small gains in removal efficiency can outweigh increases in the sulfur content of the feedstock. The best information and data indicate SAM emissions are directly related to SO_2 emissions (SAM ~ 0.05 x SO_2 on a molar basis). Consequently, neither SO_2 nor SAM emissions will be strongly related to the sulfur content of the solid fuel to the gasifier.
2) TEC asserts that the SAM emissions previously reported, as determined via EPA Reference Method (RM) 8, are higher than the true SAM emissions due to positive and variable biases in the RM 8 measured flow and SAM concentration. TEC believes there is not enough precision within the method to accurately capture and correlate the CT/HRSG SAM conversion subtleties. An accumulation of a number of "high biases" resulted in over reporting the actual CT/HRSG stack flow and SAM concentrations.

CT/HRSG Stack Flow Rate Determination

The previously submitted stack test results based on EPA RM 8 are higher than actual SAM emissions in part because the method over-reports the CT/HRSG stack flow. This over-reporting result from

a) EPA RM 8's accuracy measuring stack flow and
b) EPA RM 8's under-reporting of the moisture content of the stack gas.

RM 8 stipulates RM 2 methodology for determining flow in the CT/HRSG stack. The stack flue gas flow is calculated using the differential pressure measured by a pitot tube at six (6) points along two (2) traverse paths across the diameter of the stack, 90 degrees apart. Stack tests conducted by TEC Air Services crew from 2001 through 2006 show 9.6% more stack flow (dkscfh) on average using a Type S pitot tube versus CEMS flow data for the exact same stack test time periods. The trial burn stack tests (Baseline, 75% PC, 85% PC, and 100% PC) conducted by Trigon Engineering show an even greater stack flow rate difference, 15.8% on average using a Type S pitot tube versus CEMS flow data for the exact same stack test time periods. See Table 1 of Attachment 1 and Chart 1 of Attachment 2. Overall, the CT/HRSG stack flow from the Type S pitot tube measurement was biased 12.1% higher than that from the CEMS flow monitor.

TEC uses a highly accurate three-dimensional (3D) probe to perform the annual RATA on the CEMS flow meter. The 3D probe measurement (using EPA Methods 2F and 2H) is a more accurate and reliable method for determining actual stack total flow than using a simple pitot tube since it accounts for yaw and pitch angles as well as wall effects. The RATA shows the CEMS flow monitor consistently reads 3 to 4% higher than the 3D probe, so even using the CEMS flow indication instead of the Type S pitot tube results in a 3 to 4% over-estimation of SAM emissions.

CT/HRSG Stack Flue Gas Moisture Content

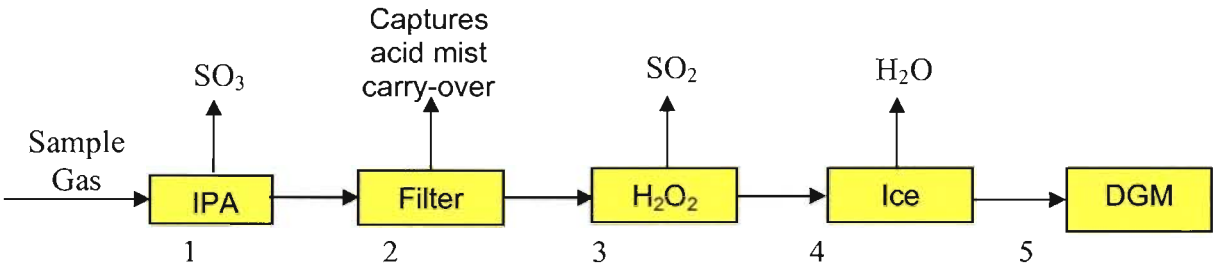
TEC believes that RM 4 used to determine the moisture content of the flue gas in the CT/HRSG by condensation and absorption is also less accurate than is ideal for this type of analysis. TEC has very thorough understanding of the water vapor content in the CT/HRSG stack flue gas from its 11½ years of operational plant data. Water vapor in the CT/HRSG stack comes almost entirely from three (3) sources:

a. Water formed by the combustion and oxidation of the H_2 in the syngas. This is the largest contributor to water vapor in the stack.
b. Water vapor added to the syngas in the saturator used to help control NO_X emissions.
c. Humidity in the ambient air to the CT compressor.

Each of the above stream flows and their associated concentrations are continuously and often redundantly measured to support normal plant operations. Annual compliance stack test moisture determination using RM 4 has consistently under-reported the water vapor content in the CT/HRSG stack by approximately 1.5% on average. Although this is a relatively small difference, it compounds the variability in the sensitivity and acuity of EPA RM 8 to accurately evaluate SAM emissions for PSD analysis.

SAM Concentration Differences from EPA RM 8

EPA RM 8 has a title that implies broad applicability of the method; however, it was not intended nor validated on sources other than sulfuric acid plants whose flue gas contains no water vapor. A simplified process flow diagram of RM 8 is shown below. RM 8 works by differential absorption of SO_3 and SO_2. The first impinger trap (1) is filled with 80% Isopropyl Alcohol (IPA), intended to absorb SO_3 and SAM but resist absorption and oxidation of SO_2. Next is a filter (2) to capture any acid mist carry-over. The second impinger (3) contains hydrogen peroxide (H_2O_2) to absorb the SO_2. The chilled impinger (4) removes moisture prior to the dry gas meter (DGM) (5).



Simplified PFD of EPA RM 8

High biases of up to 30-60% have been documented when using RM 8 to measure the SAM concentration in a flue gas from other than an acid plant. High biases exist for a number of reasons related to the water vapor content of flue gas.

The extracted flue gas sample cools as it passes through the first (IPA) impinger and filter. As the flue gas cools, moisture condenses out of the sampled gas and mixes with the IPA in the first impinger. This affects the SO_3 analysis of the first impinger in two ways. First, as the condensed moisture dilutes the IPA, there will inevitably be an enhancement of the absorption of soluble species, such as SO_2 (*Tsaiet al.,* 2001). This allows continued conversion of SO_2 to SO_3 and SO_3 to SAM in the impinger fluid prior to acid concentration measurement. Second, as the IPA concentration is diluted it changes the pH of the solution. Titration (the methodology used to measure the SAM captured in the first impinger), is very sensitive to both pH and IPA concentration.

The filter after the first impinger, a high surface area material, provides a medium for further moisture condensation and absorption of SO_2. The absorbed SO_2 can be further oxidized to form sulfate (Lunsford, 1979) that causes additional over-estimation.

Best Available Data Correlation

As described above, the data indicates that the Type S pitot tube overstates the CT/HRSG stack flow rate and there are known high biases when using EPA RM 8 to determine SAM concentration in flue gases other than from an acid plant. The mechanisms for these biases can cause variability in the results. Since RM 8 overstates SAM emissions, the Department can be very confident that an emission unit is in compliance if compliance is demonstrated using RM 8. However, when evaluating SAM for PSD implications it is important to realize the method may be susceptible to variances and overstatement of emission rates. TEC believes that applying corrections for CT/HRSG stack flow rate and using statistical methods to mitigate the impact of the sample analysis bias can yield useful SAM data correlations.

Table 2 on Attachment 3 shows the last 30 individual one hour SAM determinations alongside SO_2 emissions during the exact same periods. When the RM 8 SAM emission rates are determined using the CEMS stack flow with plant process knowledge and process instrumentation to determine stack moisture content, and 4 outlying data points are discarded which were more than 3 standard deviations from the mean (those circled in red on the Chart 2 below), the SAM/SO_2 molar ratio is 0.0505 with a standard deviation of only 0.007. This is consistent with the turbine manufacturer's representations and TEC believes it to be the best correlation of SAM emissions rates, i.e., SAM emissions are approximately 5% of SO_2 emissions on a molar basis.

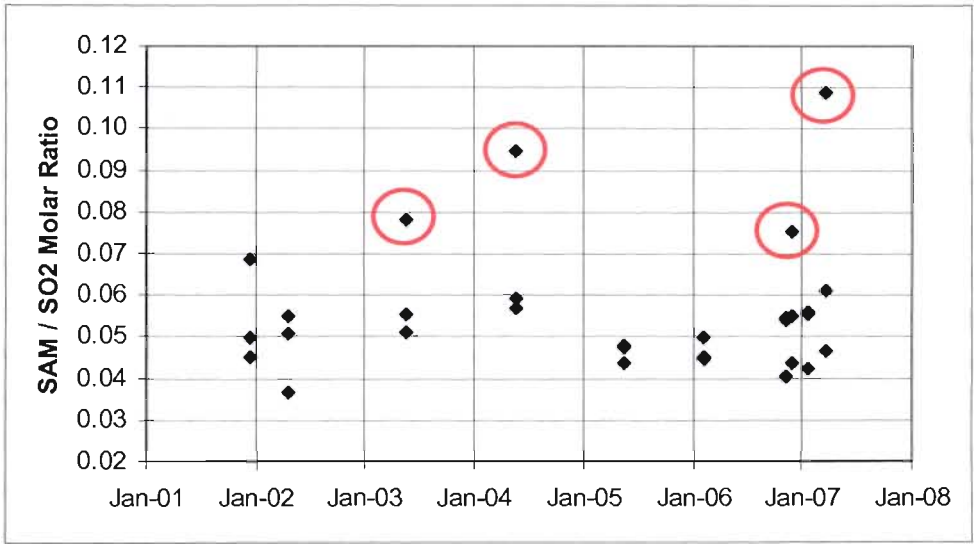


Chart 2

Department Request #2

A) Please provide a comparison of past actual annual SO_2 and SAM emissions from the combustion turbine to future projected annual emissions on a Lb/MMBtu basis.

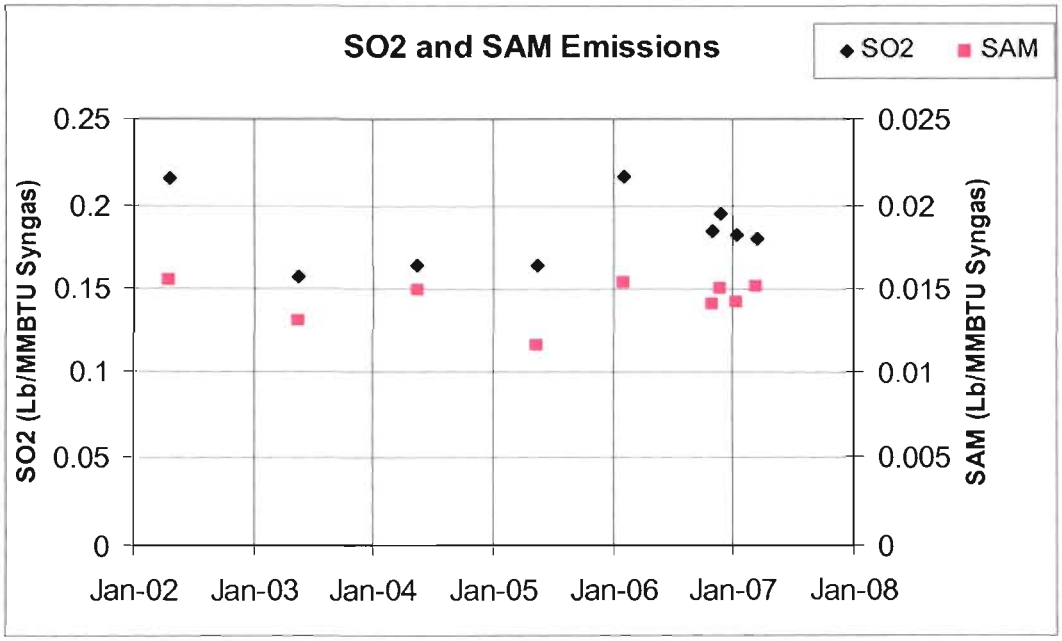
B) For reasonable assurance purposes, in addition to the SO_2 continuous emissions monitor, please propose a method for regularly monitoring emissions of SAM from the combustion turbine to ensure that there are no PSD significant emissions increases from the project.

TEC Response #2A

Because it was specifically requested by the Department, a comparison of past actual $S0_2$ and SAM emissions from the combustion turbine to future projected annual emissions is provided in Table 3 on Attachment 4.

The following graph shows SO_2 and SAM emissions in Lb/MMBTU (syngas Higher Heating Value (HHV)) from all CT/HRSG SAM stack tests starting in 2002 through completion of the recent trial burn test program. There are no obvious trends, and we expect no material change in

data mean or scatter in the future, whether or not we process solid fuel containing up to 4.7% sulfur.



SO_2 data in the preceding graph was taken directly from the CEMS, SAM data has been corrected for stack flow rate and moisture content, and the four (of 30) statistically outlying points have been discarded. Syngas HHV is that which was reported in the stack test reports. Some of the HHV data may be subject to in accuracies since some of the values may have been determined using EPA procedures related to the determination of heat input (specifically F factors) which are not accurate for syngas fuel because of its varying composition.

Although the Department may prefer reporting emission data from "typical" electric generating units on the basis of Lb/MMBTU, TEC contends this approach for evaluation of emissions from an IGCC process is inappropriate. Heat input is more complicated for the IGCC process than natural gas combined cycle (NGCC) or even pulverized coal (PC) fired boilers. Also, TEC continues to believe that expressing emissions on a Lb/Hr basis is the best indicator of environmental performance at PPS. First, it is most indicative of the facility's direct impact on the environment since it reports actual quantities of pollutants which enter the environment.

Second, it can be calculated with much greater accuracy than emissions based on a unit of fuel mass or its energy content. Stack emissions expressed as Lb/Hr are simply the stack flow times the concentration of the pollutant in the stack. When these emission rates (Lb/Hr) must be divided by fuel flow rates or heating values, more measurements are required, introducing greater uncertainty into the calculated result.

TEC Response #2B

TEC proposes two actions to provide reasonable assurance that there are no PSD significant SAM emissions increases from the project.

1) During the demonstration period TEC will conduct semi-annual CT/HRSG SAM stack tests. The primary methodology for these tests will be the current EPA RM 8 unless otherwise mutually agreed between TEC and DEP. In addition to the normal RM 8 results, TEC will also report the adjusted results based on the stack flow as determined by the CEM and plant process and instrumentation measured stack moisture content. Furthermore, instead of the nominal three determinations per test, TEC will often perform more, e.g., 6 or 8 determinations per test, to provide a better statistical basis for identifying and potentially removing outlying data points.

2) TEC will investigate potential continuous or semi-continuous SAM monitors and alternative methods to EPA RM 8 (e.g. EPA RM 8A). TEC will prepare a report on findings and recommendations to DEP within one year of issuance of the construction permit. TEC and DEP may mutually agree to try to implement some of the recommendations of the report in conjunction with the semi-annual RM 8 stack tests for comparison.

Department Request #3

A) Please propose and provide details for the control devices or methods that will be installed to avoid any significant increases in SO_2 and SAM emissions from the sulfuric acid plant.

B) Also, for reasonable assurance purposes, please propose a method for regularly monitoring emissions of SO_2 and SAM from the sulfuric acid plant to ensure that there are no PSD significant emissions increases from the project.

TEC Response #3A

During the test program, the sulfuric acid plant demonstrated its ability to accommodate feedstocks with sulfur content up to 4.7% (wt., dry) without any significant increases in SO_2 and SAM emissions. However, many of the controllers had to be operated at 100% output most of the time during the test program to accomplish this. Polk Power Station plans to make the following modifications to the sulfuric acid plant for improved operability on the higher sulfur fuels so the controllers can operate in their normal control range. Similar modifications to the MDEA acid gas removal system are also planned and are identified below.

Sulfuric Acid Plant Modifications

1. During the trial test burns the sulfuric acid plant compressor had to be operated very near 100% output to keep the H_2SO_4 plant pressure profile within design limits. Although operating the SAP compressor as such was sufficient for all trial burn scenarios, it is not a desirable long-term operating condition. Consequently re-engineering of the compressor motor, and/or gear box, and/or impellor blades will be done to provide the machine with enough incremental capacity to return the machine's controls to a normal operating range (70% or 80% output vs. the 100% output during the test burns). Please note, the re-engineering is not a design to increase the flow rate through the acid plant above its current capacity, which was adequate during the fuel trial burns, but rather it is to provide

control stability for the compressor so it can better accommodate minor process disturbances. This can most effectively be done by one of the following options:

- Changing the compressor gear box ratio
- Increasing the compressor wheel size
- Installation of a booster compressor
- Installation of a parallel compressor
- Installation of an oxygen injection quill in the decomposition furnace air inlet duct
- Change in the compressor motor size

2. Additional air supply from the plant air system was required for the sulfuric acid plant decomposition furnace during the trial burns to accommodate the increased solid fuel sulfur content. The external air source was needed during the tests because a flow restriction exists in the normal air supply to the furnace's burner. Although burner modifications were made between Trial Burns #1 and #2 and between Trial Burns #2 and #4, this problem was not completely resolved. The decomposition furnace air in intake system will be modified to decrease the pressure drop by one of the following options:

   - Modification of the existing burner
   - Replacement of the existing burner
   - Modification of the air inlet duct
   - Installation of an oxygen injection quill air inlet duct

   As with the compressor modifications, the design objective for the decomposition furnace air intake modifications is not to increase the flow rate beyond that which was demonstrated during the trial burn tests. It is merely to enable the normal air supply system to provide the necessary air while keeping the inlet airflow controls in their normal range to better accommodate minor process disturbances.

3. The decomposition furnace produces SO_2. O_2 must be added upstream of the catalyst beds to permit conversion of the SO_2 to SO_3. The O_2 supply line and/or control valve restricted flow such that the control valve operated 100% open during most of the testing. Modifying the line and/or control valve to increase the O_2 supply by approximately 15%

will ensure sufficient O_2 will be supplied while keeping the control valve in a normal operating range to accommodate minor process upsets. Here, again, the design intent is not to provide additional O_2 beyond that which was used during the test, but to provide control stability. This may be accomplished by the following:

- Modification of the oxygen piping to reduce the pressure drop
- Increasing the size of the oxygen control valve

MDEA Acid Gas Removal System Modifications

1. Lowering the temperature or "chilling" the MDEA sulfur removal solvent increases its sulfur removal rate. The MDEA chiller was operated throughout the trial burns to assure adequate sulfur removal. However, the trial burns were conducted during December, January, and March when the solvent was already relatively cool. Consequently, we plan to approximately double the chilling capacity for the MDEA solvent to assure adequate sulfur removal from the syngas during warmer ambient temperature seasons. This will likely be accomplished by adding an additional chiller system.

2. During normal plant operating conditions MDEA foaming occurs to some extent. If the foaming becomes severe, it can reduce H_2S removal efficiency and can also lead to dilute acid gas (lower than design H_2S concentration) which has an adverse impact on the sulfuric acid plant (SAP) performance. During the trial burns with increased solid fuel sulfur content, PPS continuously injected a standard commercial foam-inhibiting additive, but shut down the ion exchange system for heat stable salt removal due to the adverse affect the additive has on the ion exchange resin. Long-term operation of the MDEA system is not possible without the ion exchange system. Equipment and provisions will be installed for a more consistent foam-inhibiting additive addition system to the circulating MDEA solvent. This will be accomplished by either adding another carbon filter bed upstream of the heat stable salt removal system or by rerouting the piping so the existing carbon filter will be positioned immediately upstream of the heat stable salt removal system. This will enable a replacement of the current batch anti-foam feeding system with a continuous very low rate anti-foam feeding system that can be better control the foaming tendencies of the MDEA solvent.

3. The first MDEA chiller system added to the plant several years ago included a heat exchanger which imposed additional pressure drop on the main MDEA flow path. As a result, one of the MDEA control valves had less available pressure drop, and consequently was undersized for the application. The control valve will be replaced with one which can perform within the normal control range with the available pressure drop.

TEC Response #3B

TEC proposes to conduct one SAP stack test at the completion of construction to confirm the results observed during the test program. Reported SAP SAM emissions are less than 5% of the total facility SAM emissions and play only a minor role in the projects SAM evaluation. Furthermore, SAP SAM emissions were below permit limits during all of the trail burn test scenarios. The SAP stack was specifically designed to have an ultra low velocity profile to address potential SAM emissions. The stacks design minimizes the area within the stack where the transport velocities are great enough to carry SAM emissions out of the stack. Please note, the proposed SAP modifications are not designed to increase flow rate through the acid plant, and correspondingly the stack, above which was done during the trial burn stack tests, thus the stack will retain its equivalent ability to knock out SAM. Additionally, TEC also has observed that the stack flow determined by EPA RM 8 for the SAP stack (which is the basis for the reported SAP SAM emissions) is consistently well above the capabilities of the equipment (compressor capacity), resulting in over-reporting of SAP stack SAM emissions. We believe these factors should provide reasonable assurance to the DEP that the SAP SAM emissions will not exceed PSD limits.

Department Request #4

If it is determined that it will be more expedient to process this request and the pending future request to burn 6% sulfur fuel at the same time, please provide a complete application for a PSD permit, including details and descriptions for any needed control devices that satisfy best available control technology (BACT) requirements.

TEC Response #4

The test program has shown that the AGR and SAP would not be able to accommodate an increase in sulfur loading as would be seen with a fuel containing 6% sulfur without a significant capacity increase and associated capital investment. Consequently, TEC does not intend to request an additional increase in the solid fuel sulfur content above 4.7% in the foreseeable future.

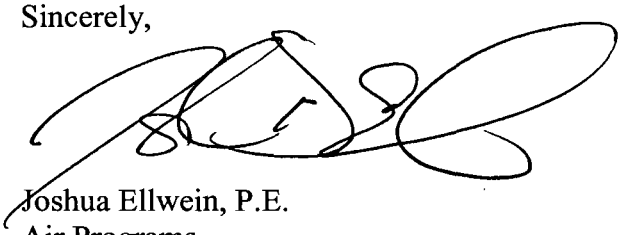
Additional Information

Dialogue with FDEP personal has cited source obligation rule 62.212.400(12)(b) stating that an evaluation of a major modification to a major source shall not include any past relaxation of any enforceable limitation to a major stationary source, but rather evaluate the modification as though construction had not yet commenced on the source. On page 3 of the BACT analysis for the original PSD permit (PSD-FL-194, 2/28/94) for PPS, a maximum solid fuel sulfur content of 3.05% is listed. The 3.05% (and the 11,035 BTU/Lb in the same sentence) refer to the fuel on an as-received basis, which translates to 3.50% sulfur on a dry basis which is consistent with all the plant design documents. On 9/12/01 PPS was issued final permit revision 1050233-008-AV incorporating the use of syngas produced from a blend of coal and petroleum coke as a permitted fuel in the gas turbines. Specific Condition E.1 of this permit cites 3.5% by weight. Instead of a relaxation of conditions relative to the initial BACT, this is merely a restatement of the design sulfur content of the plant's fuel on a different basis ("dry" instead of "as received"). The relaxation of the initial PSD permit is not on the sulfur content of the solid fuel, but the type of fuel to be gasified (e.g. 100% coal to 60% petcoke/40% coal). The hours of operation for the unit have always been 8,760, and therefore never a relaxation on plant availability.

TEC continues to look forward to resolving any questions the Department has regarding this permit application and would to continue an open dialogue between both parties to help ensure a thorough understanding is achieved.

If you have any questions, please contact me at (813) 228-4433.

Sincerely,



Joshua Ellwein, P.E.
Air Programs
Environmental, Health & Safety

Enclosures

Attachment 1

Date	Test Description	Stack Test Run Number	CEM KSCFH (Wet)	EPA RM KSCFH (Wet)	% Difference Wet (%)	Plant Data Moisture Content (%)	EPA RM Moisture Content (%)	CEM KSCFH (Dry)	EPA RM KSCFH (Dry)	% Difference Dry (%)
12/19/01	PC Baseline	Run 1	860	907	5.4	5.94	5.70	809	856	5.7
12/19/01	PC Baseline	Run 2	857	902	5.1	5.94	5.70	806	851	5.4
12/19/01	PC Baseline	Run 3	843	896	6.1	5.93	5.40	793	847	6.6
4/23/02	2002 Annual	Run 1	852	928	8.6	6.77	6.20	794	871	9.2
4/23/02	2002 Annual	Run 2	852	933	9.0	6.83	5.20	794	885	10.8
4/23/02	2002 Annual	Run 3	852	931	8.9	6.92	5.50	793	880	10.4
5/20/03	2003 Annual	Run 1	832	923	10.3	6.70	6.11	777	867	10.9
5/20/03	2003 Annual	Run 2	839	903	7.3	6.52	4.39	784	863	9.6
5/20/03	2003 Annual	Run 3	832	890	6.8	6.48	5.18	778	844	8.2
5/19/04	2004 Annual	Run 1	806	899	10.9	7.58	6.27	745	842	12.3
5/19/04	2004 Annual	Run 2	795	887	10.9	7.32	4.50	737	847	13.9
5/19/04	2004 Annual	Run 3	788	879	10.9	7.09	5.29	732	833	12.9
5/18/05	2005 Annual	Run 1	853	908	6.3	6.56	5.30	797	860	7.6
5/18/05	2005 Annual	Run 2	846	922	8.6	6.36	6.08	792	866	8.9
5/18/05	2005 Annual	Run 3	849	915	7.5	6.88	6.22	790	858	8.2
2/7/06	2006 Annual	Run 1	869	952	9.1	6.88	4.63	809	908	11.5
2/7/06	2006 Annual	Run 2	871	942	7.8	6.90	4.15	811	903	10.8
2/7/06	2006 Annual	Run 3	869	945	8.3	6.78	4.49	810	902	10.7
		Average:	843	915	8.2			786	866	9.6
11/8/06	Base	Run 1	814	956	16.1	6.42	3.81	762	920	18.8
11/8/06	Base	Run 2	815	925	12.6	6.35	4.18	764	887	14.9
11/8/06	Base	Run 3	812	942	14.8	6.20	5.24	761	893	15.9
12/1/06	75% PC	Run 1	813	924	12.9	7.28	5.83	753	871	14.4
12/1/06	75% PC	Run 2	817	948	14.9	7.09	5.61	759	895	16.4
12/1/06	75% PC	Run 3	820	940	13.7	6.98	5.22	763	891	15.5
1/18/07	85% PC	Run 1	818	942	14.0	6.92	4.19	762	902	16.9
1/18/07	85% PC	Run 2	826	919	10.7	6.86	3.90	769	883	13.8
1/18/07	85% PC	Run 3	822	933	12.6	6.89	3.84	766	897	15.8
3/23/07	100% PC	Run 1	814	953	15.8	6.47	5.48	761	901	16.8
3/23/07	100% PC	Run 2	819	921	11.7	6.28	5.49	767	870	12.6
3/23/07	100% PC	Run 3	813	969	17.5	6.13	5.88	763	912	17.7
		Average:	817	939	13.9			763	893	15.8
		Overall Average:	832	924	10.5	6.68	5.17	777	877	12.1
		Standard Deviation:				0.42	0.77			

Table 1

Attachment 2

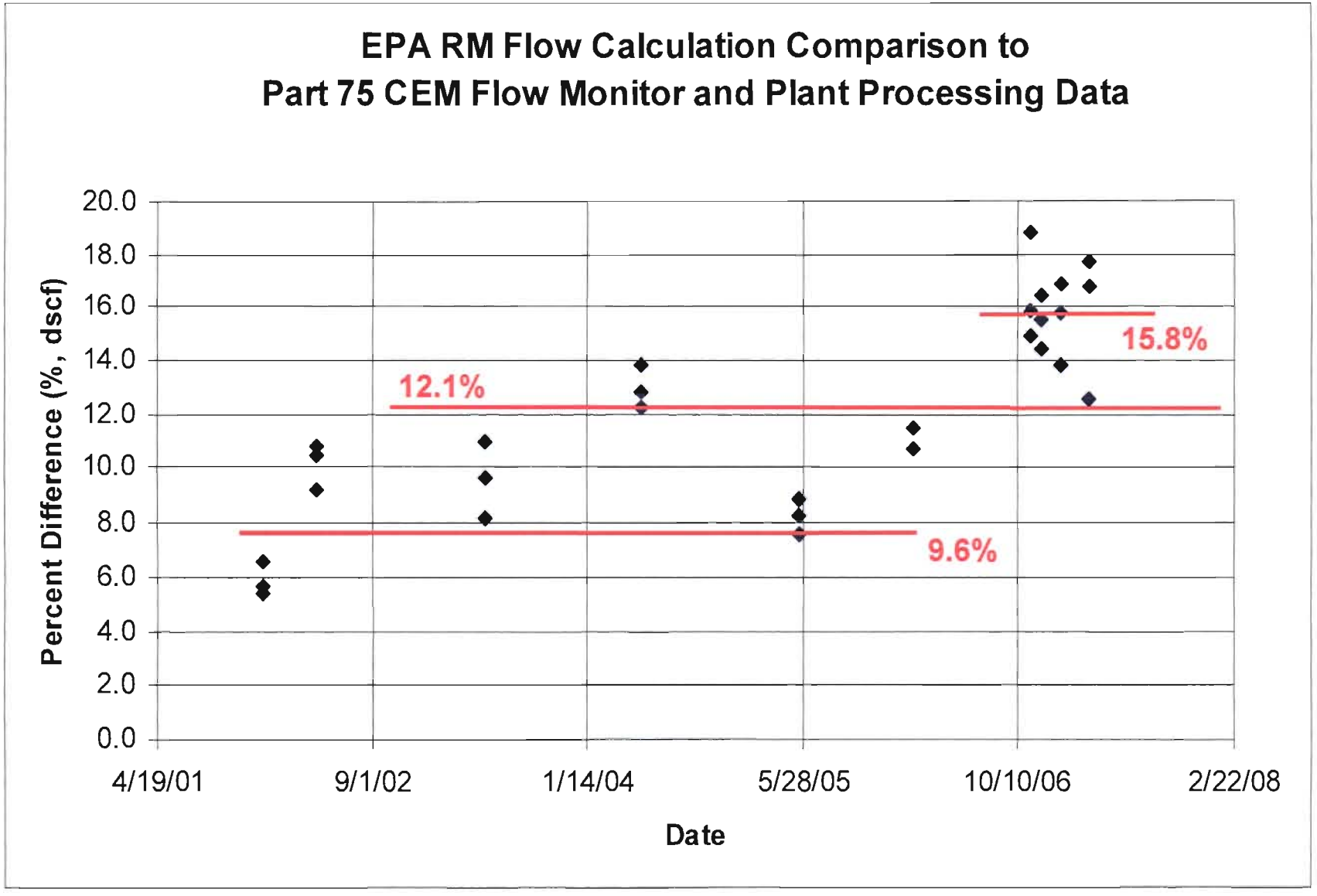


Chart 1

Attachment 3

Test Run	Date			Reported H_2SO_4 Lb/Hr	Corrected H_2SO_4 Lb/Hr	CEM SO_2 Lb/Hr	Corrected H_2SO_4/SO_2 Molar Ratio	Emission Ratio H_2SO_4/SO_2 Lb/Hr	**Corrected H_2SO_4/SO_2 Molar Ratio**	**Outlier H_2SO_4/SO_2 Molar Ratio**	Outlier SD's From Mean
1	12/19/01	PC Baseline	Run 1	23.0	21.8	317	0.0449	0.069	**0.0449**		
2	12/19/01	PC Baseline	Run 2	25.9	24.5	321	0.0499	0.076	**0.0499**		
3	12/19/01	PC Baseline	Run 3	31.1	29.1	278	0.0685	0.105	**0.0685**		
4	4/23/02	2002 Annual	Run 1	28.1	25.7	332	0.0505	0.077	**0.0505**		
5	4/23/02	2002 Annual	Run 2	32.0	28.7	343	0.0547	0.084	**0.0547**		
6	4/23/02	2002 Annual	Run 3	22.8	20.5	369	0.0363	0.056	**0.0363**		
7	5/20/03	2003 Annual	Run 1	24.6	22.1	261	0.0552	0.085	**0.0552**		
8	5/20/03	2003 Annual	Run 2	24.6	22.3	287	0.0509	0.078	**0.0509**		
9	5/20/03	2003 Annual	Run 3	32.9	30.3	254	0.0779	0.119		0.0779	3.8
10	5/19/04	2004 Annual	Run 1	29.9	26.5	293	0.0590	0.090	**0.0590**		
11	5/19/04	2004 Annual	Run 2	26.6	23.2	265	0.0570	0.087	**0.0570**		
12	5/19/04	2004 Annual	Run 3	42.7	37.6	260	0.0944	0.145		0.0944	6.1
13	5/18/05	2005 Annual	Run 1	21.6	20.0	277	0.0472	0.072	**0.0472**		
14	5/18/05	2005 Annual	Run 2	20.6	18.8	283	0.0435	0.067	**0.0435**		
15	5/18/05	2005 Annual	Run 3	22.5	20.7	283	0.0477	0.073	**0.0477**		
16	2/7/06	2006 Annual	Run 1	34.0	30.4	399	0.0497	0.076	**0.0497**		
17	2/7/06	2006 Annual	Run 2	30.0	26.7	394	0.0443	0.068	**0.0443**		
18	2/7/06	2006 Annual	Run 3	28.0	24.8	359	0.0450	0.069	**0.0450**		
19	11/8/06	Base	Run 1	21.8	18.1	294	0.0402	0.062	**0.0402**		
20	11/8/06	Base	Run 2	32.4	27.9	339	0.0538	0.082	**0.0538**		
21	11/8/06	Base	Run 3	30.6	26.1	312	0.0546	0.084	**0.0546**		
22	12/1/06	75% PC	Run 1	41.4	35.8	311	0.0751	0.115		0.0751	3.4
23	12/1/06	75% PC	Run 2	32.8	27.8	330	0.0549	0.084	**0.0549**		
24	12/1/06	75% PC	Run 3	26.4	22.6	337	0.0438	0.067	**0.0438**		
25	1/18/07	85% PC	Run 1	24.3	20.5	316	0.0424	0.065	**0.0424**		
26	1/18/07	85% PC	Run 2	29.6	25.7	303	0.0555	0.085	**0.0555**		
27	1/18/07	85% PC	Run 3	30.8	26.3	308	0.0558	0.085	**0.0558**		
28	3/23/07	100% PC	Run 1	26.7	22.5	319	0.0462	0.071	**0.0462**		
29	3/23/07	100% PC	Run 2	33.2	29.3	314	0.0609	0.093	**0.0609**		
30	3/23/07	100% PC	Run 3	58.5	49.0	295	0.1085	0.166		0.1085	8.1
						Mean:	0.0556	(including outliers)	0.0505	(excluding outliers)	
						Standard Deviation:	0.0157	(including outliers)	0.0072	(excluding outliers)	

Table 2

Attachment 4

SAM Past Actual Annual Comparison to Future Projected Annual Emissions

	Max 2-yr Heat Input May 2005-April 2007 (MMBtu[1])	Past Actual Emission Rate (lb/MMBtu[2])	Future Projected Emission Rate (lb/MMBtu)	Past Actual Annual Emissions (Tns/yr)	Future Projected Annual Emissions (Tns/yr)	Difference (Tns/yr)
Data Corrected for Flow & Exclude Outliers[3]	16,896,824	0.0099	0.0106	83.7	89.9	6.2
Data Corrected for Flow & Include Outliers	16,896,824	0.0105	0.0138	88.5	116.6	28.1
Test Burn Data Only (corrected)	16,896,824	0.0099	0.0106	83.3	89.9	6.6
Test Burn Data Only (uncorrected)	16,896,824	0.0117	0.0160	98.5	135.4	36.9

SO_2 Past Actual Annual Comparison to Future Projected Annual Emissions

	2-yr SO_2 Emmision Evaluation 2003-2004 (MMBtu[1])	Past Actual Emission Rate (lb/MMBtu[2])	Future Projected Emission Rate (lb/MMBtu)	Past Actual Annual Emissions (Tns/yr)	Future Projected Annual Emissions (Tns/yr)	Difference (Tns/yr)
Test Burn Data Only (corrected)	14,802,848	0.1324	0.1265	979.8	936.4	-43.3
Test Burn Data Only (uncorrected)	14,802,848	0.0955	0.0969	706.9	717.6	10.7

Table 4

Notes:

1. based on gasifier (solid fuel) heat input evaluation for 2003-2007
2. Based on 2005-2007 AOR average heat input (annualized) = 2,434 MMBtu/hr
3. Past actual emissions based on average of 2002-2007 emissions test
4. Based on 2003-2004 AOR average heat input (annualized) = 2,320 MMBtu/hr

5% molar ratio ≈ 6.1% by wt.

4.7% max Sulfur w/o major changes to

Request: ↑ in acid production
4.7% S in 85/15 blend

SO_2 & SAM Not expected to increase (hourly)