

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
NOTICE OF FINAL PERMIT

In the Matter of an  
Application for Permit by:

Tampa Electric Company  
Post Office Box 111  
Tampa, Florida 33601-0111

Polk Power Station Unit 1  
Petroleum Coke/Coal Syngas Firing  
Polk County

Authorized Representative:

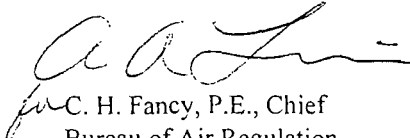
Mark J. Hornick, General Manager  
Polk Power Station

Project No. 1050233-004-AC  
Permit No. PSD-FL-194E

Enclosed is Final Permit No. PSD-FL-194E, allowing Tampa Electric Company to fire syngas from the gasification of fuel blends of petroleum coke and bituminous coal in Unit 1 at the Polk Power Station located at 9895 State Road 37 South, Mulberry, Polk County. 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 thirty days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida.

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

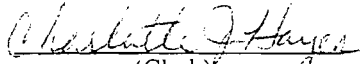
CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Notice of Final Permit (including the Final Permit) was sent by certified mail (\*) and copies were mailed by U.S. Mail before the close of business on 11/17/00 to the persons listed:

Mark J. Hornick, TEC\*  
Gregg Worley, EPA  
John Bunyak, NPS  
Bill Thomas, DEP SWD  
Buck Oven, DEP PPS  
Jeff Spence, Polk County

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) 11/17/00  
(Date)

## **FINAL DETERMINATION**

Tampa Electric Company  
Polk Power Station Unit 1, Petroleum Coke/Coal Syngas Firing  
Project No. 1050233-004-AC  
Permit No. PSD-FL-194E

### **PROJECT**

The Department distributed a public notice package on September 26, 2000 to allow Tampa Electric Company to fire syngas from the gasification of fuel blends of petroleum coke and bituminous coal in Unit 1 at the Polk Power Station located at 9895 State Road 37 South, Mulberry, Polk County. The applicant published the Public Notice on October 6, 2000 in the Tampa Tribune.

### **COMMENTS/CHANGES**

The Department received no comments from the public, the applicant, the EPA Region 4 office, the National Park Service, the SWD office, the Power Plant Siting office or the Polk County local program.

### **CONCLUSION**

The final action of the Department is to issue the permit with no changes.

Florida Department of  
Environmental Protection

Memorandum

TO: Howard L. Rhodes

THRU: ~~Clair Fancy~~ *Al Linero* 11/16  
Al Linero

FROM: Jeff Koerner (for Syed Arif) *JK*

DATE: November 16, 2000

SUBJECT: Tampa Electric Company (TEC)  
Polk Power Station Unit 1, Petroleum Coke/Coal Syngas Firing  
Project No. 1050233-004-AC  
Permit No. PSD-FL-194E

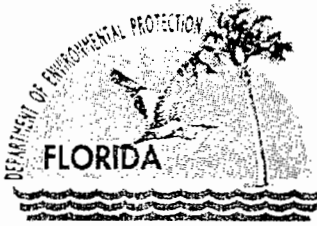
Attached is the Final permit modification to allow TEC permanent firing of syngas from the gasification of fuel blends of petroleum coke and bituminous coal. Control equipment includes a plant to remove hydrogen sulfide and other reduced sulfur species and converts them to sulfuric acid. Nitrogen (left over from oxygen manufacturing) is used for diluent injection in the combined cycle unit for NOx control. Previous permit amendment No. PSD-FL-194C authorized TEC to conduct performance tests on Unit 1 while firing syngas produced from blends of petroleum coke and bituminous coal.

Based on the performance test results, fuel analyses, historical emissions data, and evaluation of pollution control system capabilities, the use of syngas produced from blends of petroleum coke and coal as described in TEC's permit application will not result in a significant net increase in any PSD regulated pollutant. Therefore the permit modification regarding the use of petcoke in Unit 1 is not subject to PSD review. All Conditions of Certification and PSD permit conditions related to emission limits and control equipment remain in force.

The Public Notice was published on October 6, 2000 in the Tampa Tribune. No comments were received. Syed Arif is the permitting engineer for this project, but is on annual leave. I am processing the final paperwork and present the attached package for your approval and signature. Day 90 to issue this permit is December 12, 2000.

Attachments

jk



# Department of Environmental Protection

Jeb Bush  
Governor

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

David B. Struhs  
Secretary

## PERMITTEE

Tampa Electric Company  
Post Office Box 111  
Tampa, Florida 33601-0111

### *Authorized Representative:*

Mark J. Hornick, General Manager  
Polk Power Station

DEP File No. 1050233-004-AC  
Permit No. PSD-FL-194E  
Unit No. 1 Petcoke Gasification  
SIC No. 4911  
Expires: March 31, 2001

## PROJECT AND LOCATION

Re-issued and modified permit to allow Tampa Electric Company to burn synthetic gas produced from the gasification of fuel blends of up to 60 percent petroleum coke in Unit No. 1.

The unit is located at the Polk Power Station, 9895 State Road 37 South, Mulberry, Polk County. The UTM coordinates are Zone 17, 402.45 km E and 3067.35 km N.

## STATEMENT OF BASIS

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

## ATTACHED APPENDICES MADE A PART OF THIS PERMIT

Appendix GC Construction Permit General Conditions  
Appendix SC Specific Conditions (including Permits PSD-FL-194, PSD-FL-194B, PSD-FL-194C and PSD-FL-194D)

Howard L. Rhodes, Director  
Division of Air Resources Management

## FACILITY DESCRIPTION

Tampa Electric Company (TEC) Polk Power Station (PPS) Unit 1 located in Polk County, Florida is a nominal 260-megawatt (MW) electric generation facility. Major components of PPS Unit 1 include solid fuel handling and gasification systems, a sulfuric acid plant for processing of the solid fuel gasification system gas cleanup stream, an auxiliary boiler fired with No. 2 distillate fuel oil, and one integrated gasification combined cycle (IGCC) General Electric (GE) 7F combustion turbine (CT) fired with synthetic natural gas (syngas) or No. 2 distillate fuel oil.

This permitting action is to allow TEC to burn syngas produced from the gasification of fuel blends of up to 60 percent petroleum coke.

This Project is exempt from the requirements of Rule 62-212.400, F.A.C., Prevention of Significant Deterioration as discussed in the Technical Evaluation and Preliminary Determination dated September 20, 2000.

## REGULATORY CLASSIFICATION

This facility, TEC Polk Power Station, is classified as a Major or Title V Source of air pollution because emissions of at least one regulated air pollutant, such as particulate matter (PM/PM<sub>10</sub>), sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), or volatile organic compounds (VOC) exceeds 100 tons per year (TPY).

This facility is within an industry included in the list of the 28 Major Facility Categories per Table 62-212.400-1, F.A.C. Because emissions are greater than 100 TPY for at least one criteria pollutant, the facility is also a Major Facility with respect to Rule 62-212.400, Prevention of Significant Deterioration (PSD).

## PERMIT SCHEDULE

- 10/06/00 Applicant published the Public Notice in the Tampa Tribune.
- 09/26/00 Department distributed revised Intent to Issue Permit.
- 09/13/00 Department distributed initial Intent to Issue Permit.
- 08/02/00 Department received additional information; application deemed complete.
- 07/25/00 Department requested additional information.
- 07/05/00 Department received application

## RELEVANT DOCUMENTS

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

- Application received on July 5, 2000;
- Department's incompleteness letter dated July 25, 2000;
- TEC's response to Department's incompleteness letter received on August 2, 2000; and
- Department's Intent to Issue and Public Notice Packages dated September 13 and 26, 2000.

PERMIT SPECIFIC CONDITIONS

This permit addresses the following emissions unit.

E.U. ID No.    Brief Description

-001            Integrated Gasification Combined Cycle Unit No. 1

1. The provisions of Permit 1050233-001-AV remain in effect. However, an application shall be submitted to revise that permit to burn syngas produced from the gasification of fuel blends of up to 60 percent petroleum coke.
2. The provisions of air construction permits PSD-FL-194 (issued February 28, 1994), PSD-FL-194A (issued September 24, 1998), PSD-FL-194C (issued December 14, 1999) and PSD-FL-194D (issued October 6, 1998) are attached and incorporated into this air construction permit except for the changes that follow in Specific Conditions F, G, H, J and M below.

F. Fuel Consumption

Solid fuels input to the solid fuel gasification plant shall consist of coal or coal/petroleum coke blends containing a maximum of 60.0 percent petroleum coke by weight. The maximum input of solid fuels to the solid fuel gasification plant shall not exceed 2,325 tons per day, on a dry basis. The maximum weight of the petroleum coke blended shall not exceed 1,395 tons per day, on a dry basis. The maximum sulfur content of the blended fuel shall not exceed 3.5 percent by weight.

G. Fugitive Dust

(1) Fugitive dust emissions during the construction period shall be minimized by covering or watering dust generation areas. Particulate matter emissions from the handling of solid fuels shall be controlled by enclosing all solid fuel storage, conveyors and conveyor transfer points. Fugitive emissions shall be tested as specified in Specific Condition No. J. Water sprays or chemical wetting agents and stabilizers shall be applied to uncovered storage piles, roads, handling equipment, etc. during dry periods, as necessary, to all facilities to maintain an opacity of less than or equal to five percent.

H. Emission Limits

- 1.(a) Syngas lb/MMBtu values are based on heat input (HHV) to the solid fuel gasifier and includes emissions from the H<sub>2</sub>SO<sub>4</sub> plant thermal oxidizer. Pollutant concentrations are corrected to 15% oxygen.
8. The permittee shall maintain and submit to the Department, on an annual basis for a period of five years from the date the unit begin firing syngas produced from blends of petroleum coke and coal, CEMS data demonstrating that the operational changes did not result in a significant emissions increase of nitrogen oxides when compared to the past actual coal levels. The CEMS data shall be of the periods when the unit is burning syngas produced from petcoke/coal blends containing a maximum amount of petcoke of up to 60 percent, by weight.
9. The permittee shall maintain and submit to the Department on an annual basis for a period of five years from the date the unit begin firing syngas produced from blends of petroleum coke and coal, CEMS data demonstrating that the operational changes did not result in a significant emissions increase of sulfur dioxide when compared to

the past actual coal levels. The CEMS data shall be of the periods when the unit is burning syngas produced from petcoke/coal blends containing a maximum amount of petcoke of up to 60 percent, by weight.

10. The permittee shall maintain and submit to the Department on an annual basis for a period of five years from the date the unit begin firing syngas produced from blends of petroleum coke and coal, test results demonstrating that the operation changes did not result in a significant emissions increase of sulfuric acid mist when compared to the past actual coal levels. The sulfuric acid mist emissions shall be based on test results using EPA Method 8. The test shall be conducted when the unit is burning syngas produced from petcoke/coal blends containing a maximum amount of petcoke of up to 60 percent, by weight.

J. Performance Testing

1. k. The owner or operator shall determine compliance with the solid fuel sulfur content standard of 3.5 percent, by weight, as follows: using appropriate ASTM methods such as, ASTM D2013-72, ASTM D3177-75, and ASTM D4239-85, or latest ASTM edition methods. (I, A)

M. Notification, Reporting, and Recordkeeping

To determine compliance with the syngas and fuel oil firing heat input limitation, the permittee shall maintain daily records of syngas and fuel oil consumption for the turbine and heating value for each fuel. All records shall be maintained for a minimum of five years after the date of each record and shall be made available to representatives of the Department upon request.

Documentation verifying that the coal/petroleum coke blends input to the solid fuel gasification system have not exceeded the 60.0 percent (1,395 tons per day) maximum petroleum coke by weight limit and the blended fuel sulfur content of 3.5 percent by weight limit specified by Specific Condition F, shall be maintained and submitted to the Department's Southwest District Office with each annual report.

The permittee shall maintain and submit to the Department, on an annual basis for a period of five years from the date the unit begin firing syngas produced from blends of petroleum coke and coal, data demonstrating that the operational change associated with the use of petroleum coke did not result in a significant emission increase pursuant to Rule 62-210.200(12)(d), F.A.C.

**APPENDIX GC**  
GENERAL PERMIT CONDITIONS [F.A.C. 62-4.160]

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



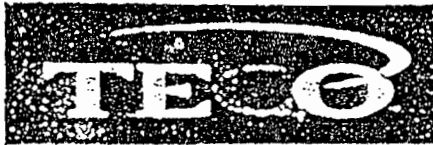
**APPENDIX GC**  
**GENERAL PERMIT CONDITIONS [F.A.C. 62-4.160]**

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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.

- G.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.
- G.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.
- G.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.
- G.12 This permit or a copy thereof shall be kept at the work site of the permitted activity.
- G.13 This re-issued permit incorporates previous determinations for:
- a) Best Available Control Technology (X)
  - b) Prevention of Significant Deterioration (X); and
  - c) New Source Performance Standards (X).
- G.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.
- G.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.

ATTACHMENT 1



TAMPA ELECTRIC

May 21, 1998

RECEIVED  
MAY 22 1998  
BUREAU OF  
AIR REGULATION

Mr. A.A. Linero, P.E., Administrator  
New Source Review Section  
Florida Department of Environmental Protection  
Bureau of Air Regulation  
111 South Magnolia Drive, Suite 4  
Tallahassee, Florida 32301

Via FedEx  
Airbill No. 803727908962

Re: Tampa Electric Company (TEC)  
Polk Power Station

*Audio ID 1050233-002-AC*

Request to Amend PSD-FL-194 for the use of Coal/Petroleum: Coke Solid Fuel Blend

Dear Mr. Linero:

The Florida Department of Environmental Protection (FDEP), Bureau of Air Regulation, currently authorizes Tampa Electric Company (TEC) to operate the Polk Power Station under Permit PSD-FL-194. The permitted equipment includes, but is not limited to, one 260 MW (nominal) integrated coal gasification combined cycle (IGCC) combustion turbine (CT). In addition to the CT, the complete IGCC includes a solid fuel handling and storage system, a solid fuel gasification system, hot gas and cold gas clean-up systems, a sulfuric acid plant, and other ancillary equipment.

TEC is requesting an amendment to Permit PSD-FL-194 to include up to a 25% coal/75% petroleum coke fuel blend as well as 100 percent coal as solid fuels for use in the IGCC. The coal/petroleum coke fuel blend will be handled in the same manner as coal is currently handled at the facility. No changes will be made to the CT or any of the solid fuel handling, gasification, hot and cold gas clean-up, or acid plant equipment or processes. The syngas generated from the coal/petroleum coke blend and supplied to the CT will be comparable to the syngas generated from 100 percent coal gasification. No emissions increase is expected from coal/petroleum coke-produced syngas versus 100 percent coal-generated syngas.

TEC will conduct applicable emissions testing of the CT during the combustion of coal/petroleum coke blend-produced syngas-firing to provide reasonable assurance that emissions have not increased. This testing will be integrated into the required Demonstration Period testing program. A test protocol will be submitted to FDEP prior to testing, consistent with permit and regulatory requirements.

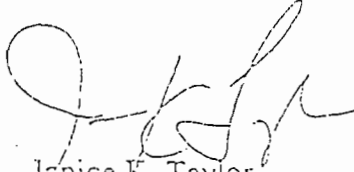
Mr. A.A. Linero, P.E., Administrator

May 21, 1998

Page 2 of 2

As we discussed in our telephone conversation on May 15, 1998 enclosed is a \$250.00 processing fee. TEC appreciates your timely review of this amendment request. Please call me at (813) 641-5039 if you have any questions or wish to discuss any aspect of this request.

Sincerely,



Janice K. Taylor

Senior Engineer

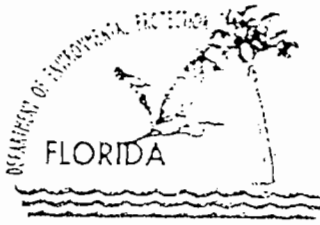
Environmental Planning

Enclosure

EP/AM/JNT/36

c: Mr. Hamilton Owen, FDEP - Tallahassee

ATTACHMENT 2



Jeb Bush  
Governor

# Department of Environmental Protection

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

David B. Struhs  
Secretary

December 13, 1999

## CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Charles A. Shelnut  
General Manager  
Tampa Electric Company  
P.O. Box 775  
Tampa, Florida 33680-0775

Dear Mr. Shelnut:

Re: Modification of PSD-FL-194  
Tampa Electric Polk Power Station, Unit No. 1  
Petroleum Coke/Coal Performance Test Request

The Department has reviewed the request from Tampa Electric Company (TEC) dated May 21, 1998 and supplementary information dated September 8, 1998 and November 10, 1998 to conduct performance tests while firing synthetic natural gas (syngas) produced from petroleum coke/coal blends at Polk Power Station, Unit No. 1.

You are hereby authorized to conduct performance tests for pollutant emissions on Polk Power Station Unit No. 1 in Polk County while firing syngas produced from blends of petroleum coke (petcoke) and bituminous coal (coal). All Conditions of Certification and Conditions of Approval in your Site Certification and PSD Permit related to air pollution emission limits and control equipment remain in force.

The performance tests will be conducted in order to gather data regarding pollutant emissions and operational limitations while firing syngas produced from blends of petcoke and coal. The blends can contain a maximum of 70 percent (% by weight) petcoke. Screening to determine whether future long-term firing of syngas produced from blends of petcoke and coal blends syngas constitutes a modification subject to a review for Prevention of Significant Deterioration (PSD) shall be performed in accordance with Chapter 403, F.S.; Chapters 62-210 through 62-297 and 62-4, F.A.C.; and, Title 40, Code of Federal Regulations (CFR; July 1, 1998 version). The procedure will consist of a comparison of estimates of "representative actual annual emissions" while burning petcoke/coal blends syngas against past actual emissions while burning coal syngas (or estimates of past actual emissions developed from 100 percent coal syngas baseline performance tests).

The performance test results along with any modification application to allow permanent firing of syngas produced from blends of petcoke/coal will be reviewed by the Department's Bureau of Air Regulation (BAR) and interested agencies (i.e., DEP Southwest District office, U.S. EPA, U.S. Fish and Wildlife Service, National Park Service, etc.).

The performance tests shall be subject to the following conditions:

1. The permittee shall notify, in writing, the Department's BAR office, the Southwest District office, and the Site Certification office at least 15 days prior to commencement of the baseline and the petcoke/coal blend syngas performance tests. A written test result report shall be submitted to these offices within 45 days upon completion of the last test run.

8. The pollutant emission results from the petroleum coke/coal blend syngas performance tests shall be used to estimate "representative actual annual emissions" following an operational change per 62-210.200 (12)(d), F.A.C., for comparison with actual emissions per Rule 62-210.200(12)(a), F.A.C. The comparison will form the basis of a PSD applicability determination pursuant to 40 CFR 52.21. The results of baseline performance tests when firing coal syngas will be used only to the extent that such information does not already exist or is insufficient to determine actual emissions.
9. Performance tests shall be conducted using EPA Reference Methods, as contained in 40 CFR 60 (Standards of Performance for New Stationary Sources), or any other method approved by the Department, in writing, in accordance with Chapter 62-297, F.A.C.
10. If additional time is needed, the permittee shall request an extension of time and provide the Department with documentation of the progress accomplished to-date and shall identify the work required to complete the performance tests.
11. Daily records (e.g., heat input, MW, fuel input rates, etc.) of IGCC operations while firing the petcoke/coal blend syngas and while firing only coal syngas (baseline) during the tests shall be required.
12. The Southwest District office may conduct a Type I or II stack audit.
13. Complete documentation (recording) of any firing of the petroleum coke-coal blend syngas shall be required (i.e., all CEMs records; testing results; materials utilized, by weight; etc.) and kept on file for a minimum of five years.
14. The authorized petroleum coke/coal blend syngas performance tests shall not result in the release of objectionable odors pursuant to Rule 62-296.320(2), F.A.C.
15. Performance testing shall cease as soon as possible if Unit No. 1 operations are not in accordance with the conditions in the air section of Site Certification No. PA 92-32, PSD Permit No. PSD-FL-194, or this authorization protocol. Performance testing shall not resume until appropriate measures to correct the problem(s) have been implemented.
16. The performance tests for pollutant emissions shall be conducted under the direct supervision of a professional engineer registered in Florida.
17. This Department action is only to authorize the petroleum coke-coal blend syngas performance tests. Any firing of petroleum coke beyond the 90 days of testing within the 150 day period approved to conduct such tests will be deemed a violation of the Site Certification No. PA 92-32 and Permit No. PSD-FL-194.
18. The Southwest District office shall be immediately notified, in writing upon completion of the final test.
19. The testing series shall include emissions tests for each of the petroleum coke/coal blends syngas and pollutants with the source operating at permitted capacity. Permitted capacity is defined as 90-100 percent of the capacity allowed by Site Certification PA 92-32 and Permit PSD-FL-194. If it is impracticable to test at permitted capacity, then the source may be tested at a lesser rate. However, the tests shall be conducted at capacities within 10 percent of each other and corrected to the same heat input basis. Furthermore, subsequent source operation with a petroleum coke-coal blend syngas, if requested and approved by the Department, shall be limited to 110 percent of the tested capacity for that blend syngas until new tests are conducted, which requires prior Department authorization.
20. Attachments to be incorporated:
  - Tampa Electric Company letters dated May 21, September 8 and November 10, 1998.
  - FDEP letters dated June 16 and October 5, 1998.

## FINAL DETERMINATION

Tampa Electric Company

Permit No. 1050233-002-AC PSD-FL-194C

Polk Power Station, Unit No. 1

An Intent to Issue PSD Permit modification to Tampa Electric Company, to temporarily burn syngas made from blends of petroleum coke and coal in Unit 1, in Polk County, was distributed on November 4, 1999. The Notice of Intent was published in the Lakeland Ledger on November 17, 1999. Copies of the draft construction permit were available for public inspection at the Department offices in Tampa and Tallahassee.

No comments were submitted by the National Park Service or the public. Telephonic comments were received from the Environmental Protection Agency (EPA) asking for clarification in the modification letter. The clarification sought was to include the word syngas after petroleum coke/coal blends. This addition will provide reasonable assurance that the blend of petroleum coke/coal will have to be converted to syngas prior to firing. The Department agrees with EPA's request and will make the necessary changes to the modification letter.

The final action of the Department is to issue the PSD permit modification with the changes noted above.





# Florida Department of Environmental Protection

Lawton Chiles  
Governor

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

Virginia B. Wetherell  
Secretary

PERMITTEE:  
Tampa Electric Company  
702 North Franklin Street  
Tampa, Florida 33602

Permit Number: PA-92-32  
PSD-FL-194  
Expiration Date: June 1, 1996  
County: Polk  
Latitude/Longitude: 27°43'43"N  
81°59'23"W  
Project: 260 MW Integrated Coal  
Gasification Combined  
Cycle Combustion Turbine

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 17-212 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department and specifically described as follows:

For one 260 MW integrated coal gasification combined cycle (IGCC) combustion turbine (GE 7F CT or equivalent) with maximum heat input at 59°F of 1,755 MMBtu/hr (syngas) and 1765 MMBtu/hr (oil) to be located at the Polk County site near Bowling Green, Florida. The coal gasification facility will consist of coal receiving, storage and process facilities, air separation unit, gasifier, product gas cleaning facilities, acid gas removal unit, and auxiliary equipment. The first phase will also include a 49.5 MMBtu/hr auxiliary boiler and a 71,450 barrel fuel oil storage tank.

The source shall be constructed in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Attachments are listed below:

1. Tampa Electric Company (TECO) application received July 30, 1992.
2. Department's letter dated September 22, 1992.
3. TECO's letter dated April 12, 1993.

PERMITTEE:  
Tampa Electric Company

Permit Number: PA-92-32  
PSD-FL-194  
Expiration Date: June 1, 1996

GENERAL CONDITIONS:

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 any 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 of 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 acknowledgement 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.

PERMITTEE:  
Tampa Electric Company

Permit Number: PA-92-32  
PSD-FL-194  
Expiration Date: June 1, 1996

GENERAL CONDITIONS:

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 any 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.

PERMITTEE:  
Tampa Electric Company

Permit Number: PA-92-32  
PSD-FL-194  
Expiration Date: June 1, 1996

GENERAL CONDITIONS:

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 17-4.120 and 17-730.300, 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:

- (X) Determination of Best Available Control Technology (EACT)
- (X) Determination of Prevention of Significant Deterioration (PSD)
- (X) Compliance with New Source Performance Standards (NSPS)

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 for 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.

PERMITTEE:  
Tampa Electric Company

Permit Number: PA-92-32  
PSD-FL-194  
Expiration Date: June 1, 1996

GENERAL CONDITIONS:

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the dates analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- 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.

SPECIFIC CONDITIONS:

A. Operation and Construction

The construction and operation of Polk Power Station (Project) shall be in accordance with all applicable provisions of Chapter 17, F.A.C. The following emission limitations reflect final BACT determinations for Phase I (integrated gasification, combined cycle (IGCC) combustion turbine and auxiliary equipment) of the project fired with syngas or fuel oil. BACT determinations for the remaining phases will be made upon review of supplemental applications. In addition to the foregoing, the Project shall comply with the following conditions of certification as indicated.

B. Heat Input

The maximum heat input to the IGCC combustion turbine (CT) shall neither exceed 1,755 MMBtu/hr while firing syngas, nor 1765 MMBtu/hr while firing No. 2 fuel oil at an ambient temperature of 59° F. Heat input may vary depending on ambient conditions and the CT characteristics. Manufacturer's curves for the heat input correction to other temperatures shall be provided to DEP for review 120 days after the siting board approval of the site certification. Subject to approval by the Department, the manufacturer's curve may be used to establish heat input rates over a range of temperature for the purpose of compliance determination.

PERMITTEE:  
Tampa Electric Company

Permit Number: PA-92-32  
PSD-FL-194  
Expiration Date: June 1, 1996

SPECIFIC CONDITIONS:

C. Hours of Operation

The IGCC unit in Phase I may operate continuously, i.e., 8,760 hrs/year.

D. Fuel

Only syngas and low sulfur fuel oil shall be fired in the IGCC combustion turbine. Only low sulfur fuel oil shall be fired in the auxiliary boiler. The maximum sulfur content of the low sulfur fuel oil shall not exceed 0.05 percent, by weight.

E. Auxiliary Boiler

The maximum heat input to the auxiliary boiler shall not exceed 49.5 MMBtu/hr when firing No. 2 fuel oil with 0.05 percent maximum sulfur content (by weight). All fuel consumption must be continuously measured and recorded for the auxiliary boiler.

F. Fuel Consumption

The maximum coal input to the coal gasification plant shall not exceed 2,325 tons per day, on a dry basis.

G. Fugitive Dust

Fugitive dust emissions during the construction period shall be minimized by covering or watering dust generation areas. Particulate emissions from the coal handling shall be controlled by enclosing all conveyors and conveyor transfer points (except those directly associated with the coal stacker/reclaimer for which an enclosure is operationally infeasible). Fugitive emissions shall be tested as specified in Specific Condition No. J. Inactive coal storage piles shall be shaped, compacted, and oriented to minimize wind erosion. Water sprays or chemical wetting agents and stabilizers shall be applied to uncovered storage piles, roads, handling equipment, etc. during dry periods and, as necessary, to all facilities to maintain an opacity of less than or equal to five percent. When adding, moving or removing coal from the coal pile, an opacity of 20 percent is allowed.

PERMITTEE:  
Tampa Electric Company

Permit Number: PA-92-32  
PSD-PL-194  
Expiration Date: June 1, 1996

SPECIFIC CONDITIONS:

H. Emission Limits

1. The maximum allowable emissions from the IGCC combustion turbine, when firing syngas and low sulfur fuel oil, in accordance with the BACT determination, shall not exceed the following:

POLLUTANT	EMISSIONS LIMITATIONS - 7F CT			
			Post Demonstration Period	
	FUEL	BASIS <sup>a</sup>	LB/HR*	TPY <sup>b</sup>
NOx	Oil	42 ppmvd**	311	N/A
	Syngas	25 ppmvd	222.5	1,044
VOC <sup>c</sup>	Oil	0.028 lb/MMBtu	32	N/A
	Syngas	0.0017 lb/MMBtu	3	38.5
CO	Oil	40 ppmvd	99	N/A
	Syngas	25 ppmvd	98	430.1
PM/PM <sub>10</sub> <sup>d</sup>	Oil	0.009 lb/MMBtu	17	N/A
	Syngas	0.013 lb/MMBtu	17	74.5
Pb	Oil	5.30E-5 lb/MMBtu	0.101	N/A
	Syngas	2.41E-6 lb/MMBtu	0.0035	0.067
SO <sub>2</sub>	Oil	0.048 lb/MMBtu	92.2	N/A
	Syngas	0.17 lb/MMBtu	357	1563.7
Visible Emissions	Syngas	10 percent opacity		
	Oil	20 percent opacity		

(\*) Emission limitations in lbs/hr are 30-day rolling averages. "Pollutant emission rates may vary depending on ambient conditions and the CT characteristics. Manufacturer's curves for the emission rate correction to other temperatures at different loads shall be provided to DEP for review 120 days after the siting board approval of the site certification. Subject to approval by the Department, the manufacturer's curve may be used to establish pollutant emission rates over a range of temperature for the purpose of compliance determination."

(\*\*) The emission limit for NO<sub>x</sub> is adjusted as follows for higher fuel bound nitrogen contents up to a maximum of 0.030 percent by weight:

PERMITTEE:  
Tampa Electric Company

Permit Number: PA-92-32  
PSD-FL-194  
Expiration Date: June 1, 1996

SPECIFIC CONDITIONS:

<u>FUEL BOUND NITROGEN</u> <u>(% by weight)</u>	<u>NO<sub>x</sub> EMISSION LEVELS</u> <u>(ppmvd @ 15% O<sub>2</sub>)</u>
0.015 or less	42
0.020	44
0.025	46
0.030	48

using the formula  $STD = 0.0042 + F$  where:

STD = allowable NO<sub>x</sub> emissions (% by volume at 15% O<sub>2</sub> and on a dry basis).

F = NO<sub>x</sub> emission allowance for FBN defined by the following table:

<u>FUEL BOUND NITROGEN</u> <u>(% by weight)</u>	<u>F (NO<sub>x</sub> % BY VOLUME)</u>
0 < N < 0.015	0
0.015 < N < 0.03	0.04 (N-0.015)

N = nitrogen content of the fuel (% by weight).

NO<sub>x</sub> emissions are preliminary for the fuel oil specified in Specific Condition D of Conditions of Certification. The permittee shall submit fuel bound nitrogen content data for the low sulfur fuel oil prior to commercial operation to the Bureau of Air Regulation in Tallahassee, and on each occasion that fuel oil is transferred to the storage tanks from any other source to the Southwest District office in Tampa. The % FBN (Z) following each delivery of fuel shall be determined by the following equation:

$$x(Y) + m(n) = (x+m) (Z)$$

where x = amount fuel in storage tank  
y = % FBN in storage tank  
m = amount fuel added  
n = % FBN of fuel added  
Z = % FBN of composite

- (a) Syngas lb/MMBtu values based on heat input (HHV) to coal gasifier and includes emissions from H<sub>2</sub>SO<sub>4</sub> plant thermal oxidizer. Pollutant concentrations in ppmvd are corrected to 15% oxygen.
- (b) Annual emission limits (TPY) based on 10 percent annual capacity factor firing fuel oil.

$$\frac{\text{Load (\%)} \times \text{hours of operation}}{100} \leq 876 \text{ for fuel oil.}$$



PERMITTEE:  
Tampa Electric Company

Permit Number: PA-92-32  
PSD-FL-194  
Expiration Date: June 1, 1996

SPECIFIC CONDITIONS:

- (c) Exclusive of background concentrations.
- (d) Excluding sulfuric acid mist.

2. The maximum allowable emissions from the IGCC combustion turbine, when firing syngas and No. 2 fuel oil during the two year demonstration period, shall not exceed the following:

POLLUTANT	FUEL	EMISSIONS LIMITATIONS	
		7PCT LB/HR*	TPYA
NO <sub>x</sub>	Oil**	311	N/A
	Syngas	664.2	2,908.3
VOC <sup>b</sup>	Oil	32	N/A
	Syngas	3	38.5
CO	Oil	99	N/A
	Syngas	99	430.1
PM/PM <sub>10</sub> <sup>c</sup>	Oil	17	N/A
	Syngas	17	74.5
Pb	Oil	0.101	N/A
	Syngas	0.023	0.13
SO <sub>2</sub>	Oil	92.2	N/A
	Syngas	518	2,269
Visible Emissions		Syngas 10 percent opacity Oil 20 percent opacity	

(\*) Emission limitations in lbs/hr are 30-day rolling averages.

(\*\*) Footnote \*\* as shown in Specific Condition H.1. for fuel bound nitrogen adjustment also applies to oil firing during the Demonstration Period.

(a) Annual emission limits (TPY) based on 10-percent annual capacity factor firing No. 2 fuel oil.

$$\frac{\text{Load (\%)}}{100} \times \text{hours of operation} \leq 876 \text{ for oil.}$$

(b) Exclusive of background concentrations.

(c) Excluding sulfuric acid mist.

PERMITTEE:  
Tampa Electric Company

Permit Number: PA-92-32  
PSD-FL-194  
Expiration Date: June 1, 1996

SPECIFIC CONDITIONS:

3. The following allowable turbine emissions, were determined by EACT, and are also tabulated for PSD and inventory purposes:

ALLOWABLE EMISSIONS

<u>POLLUTANT</u>	<u>FUEL</u>	<u>IGCC</u>		<u>IGCC</u>	
		<u>POST DEMONSTRATION</u>		<u>2-YEAR DEMONSTRATION</u>	
		<u>LB/HR</u>	<u>TPYA</u>	<u>LB/HR</u>	<u>TPY<sup>D</sup></u>
Sulfuric Acid <sup>C</sup>	Syngas	55	241	55	241
Inorganic Arsenic	Syngas	0.0006	0.019	0.08	0.35
Beryllium	Syngas	0.0001	0.0029	0.0001	0.0029
Mercury	Syngas	0.0034	0.017	0.025	0.11

- (a) Based on baseload operations firing syngas, with emission rates equivalent to 100 percent CGCU operations; up to 10 percent annual capacity factor firing fuel oil.
- (b) Based on baseload operations firing syngas, with a maximum of 8760 hrs/yr of HGCU operations; up to 10 percent annual capacity factor firing fuel oil.
- (c) Sulfuric acid mist emissions assume a maximum of 0.05 percent sulfur in the fuel oil.

4. Excess emissions from the turbine resulting from startup, shutdown, malfunction, or load change shall be acceptable providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24-hour period unless specifically authorized by the Department for a longer duration. Best operating practices shall be documented in writing and a copy submitted to the Department along with the initial compliance test data. The document may be updated as needed with all updates submitted to the Department within thirty (30) days of implementation and shall include time limitations on excess emissions caused by turbine startup.

5. After the demonstration period, permittee shall operate the combustion turbine to achieve the lowest possible NO<sub>x</sub> emission limit but shall not exceed 25 ppmvd corrected to 15% oxygen and ISO conditions.

PERMITTEE:  
Tampa Electric Company

Permit Number: PA-92-32  
PSD-FL-194  
Expiration Date: June 1, 1996

SPECIFIC CONDITIONS:

6. The combustion turbine will be operated for 12-18 months after the demonstration period (estimated to be from Mid 1998 until December 31, 1999). During that period NO<sub>x</sub> emission testing will be performed on the turbine at a regular interval of every 2 months. The Department shall be provided with a test protocol including a time schedule 15 days prior to the initial test. The permittee will provide the Department the emission test results 30 days after the test is performed. These results are not for compliance purposes. The Department shall be notified and the reasons provided if a scheduled test is delayed or canceled.

7. One month after the test period ends (estimated to be by February 2000), the permittee will submit to the Department a NO<sub>x</sub> recommended BACT Determination as if it were a new source using the data gathered on this facility, other similar facilities and the manufacturer's research. The Department will make a determination on the BACT for NO<sub>x</sub> only and adjust the NO<sub>x</sub> emission limits accordingly.

I. Auxiliary Boiler Operation

Operation of the auxiliary boiler shall be limited to a maximum of 1,000 hours per year and only during periods of startup and shutdown of the IGCC unit, or when steam from the IGCC unit's heat recovery steam generator is unavailable. The following emission limitations shall apply:

1. NO<sub>x</sub> emissions shall not exceed 0.16 lbs/MMBtu for oil firing.

2. Sulfur dioxide emissions shall be limited by firing low sulfur fuel oil with a maximum sulfur content of 0.05 percent by weight.

3. Visible emissions shall not exceed 20 percent opacity (except for one six-minute period per hour during which opacity shall not exceed 27 percent), while burning low sulfur fuel oil.

J. Performance Testing

Initial (I) compliance tests shall be performed on the turbine using both fuels and on the auxiliary boiler using fuel oil. The stack test for the turbine and the auxiliary boiler shall be performed with the sources operating at capacity (maximum heat rate input for the tested operating temperature). Capacity is defined as 90 - 100 percent of permitted capacity. If it is impracticable to test at capacity, then sources may be tested at less than capacity; in this case subsequent source operation is limited to 110 percent of the test load until a new test is conducted. Once the unit is so limited, then operation at higher capacities is allowed for no more than fifteen consecutive days for purposes of

PERMITTEE:  
Tampa Electric Company

Permit Number: PA-92-32  
PSD-FL-194  
Expiration Date: June 1, 1996

SPECIFIC CONDITIONS:

additional compliance testing to regain the rated capacity in the permit, with prior notification to the Department. Annual (A) compliance tests shall be performed on the turbine and the auxiliary boiler with the fuel(s) used for more than 400 hours in the preceding 12-month period. Tests for the applicable emission limitations shall be conducted using EPA reference methods in accordance with 40 CFR 60, Appendix A, as adopted by reference in Rule 17-297, F.A.C., and the requirements of 40 CFR 75:

1. Combustion Turbine

- a. Reference Method 5B for PM (I, A, for oil only).
- b. Reference Method 8 for sulfuric acid mist (I, for oil only).
- c. Reference Method 9 for VE (I, A).
- d. Reference Method 10 for CO (I, A).
- e. Reference Method 20 for NO<sub>x</sub> (I, A).
- f. Reference Method 18 for VOC (I, A).
- g. Trace elements of Lead (Pb), Beryllium (Be) and Arsenic (As) shall be tested (I, for oil only) using Emission Measurement Technical Information Center (EMTIC) Interim Test Methods. As an alternative, Method 104 for Beryllium (Be) may be used; or Be and Pb may be determined from fuel analysis using either Method 7090 or 7091, and sample extraction using Method 3040 as described in the EPA solid waste regulations SW 846.
- h. ASTM D 2880-71 (or equivalent) for sulfur content of distillate oil (I,A).
- i. ASTM D 1072-80, D 3031-81, D 4084-82, or D 3246-81 for sulfur content of natural gas (I, and A if deemed necessary by DEP).
- j. Reference Method 22 for fugitive emissions (I,A).

2. Auxiliary Boiler

- a. Reference Method 9 of VE (I,A).
- b. ASTM D 2880-71 (or equivalent) for sulfur content of distillate oil (I,A).

PERMITTEE:  
Tampa Electric Company

Permit Number: PA-92-32  
PSD-FL-194  
Expiration Date: June 1, 1996

SPECIFIC CONDITIONS:

c. Reference Methods 7, 7A, 7C, 7D, or 7E for NO<sub>x</sub> (I,A).

Other DEP approved methods may be used for compliance testing after prior departmental approval.

K. Sulfur Content of Fuel

The maximum sulfur content of the low sulfur fuel oil shall not exceed 0.05 percent by weight. Compliance shall be demonstrated in accordance with the requirements of 40 CFR 60.334 by testing for sulfur content of the fuel oil in the storage tanks once per day when firing oil. Testing for fuel oil heating value, shall also be conducted on the same schedule.

L. Monitoring Requirements

A continuous emission monitoring system (CEMS) shall be installed, operated, and maintained in accordance with 40 CFR 60, Appendix F, for the combined cycle unit to monitor nitrogen oxides and a diluent gas (CO<sub>2</sub> or O<sub>2</sub>). The applicant shall request that this condition of certification be amended to reflect the Federal Acid Rain Program requirements of 40 CFR 75 when those requirements become effective within the state.

1. Each CEMS shall meet performance specifications of 40 CFR 60, Appendix B.

2. CEMS data shall be recorded and reported in accordance with Chapter 17-297.500, F.A.C., 40 CFR 60 and 40 CFR 75. The record shall include periods of startup, shutdown, and malfunction.

3. A malfunction means any sudden and unavoidable failure of air pollution control equipment or process equipment to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions.

4. The procedures under 40 CFR 60.13 shall be followed for installation, evaluation, and operation of all CEMS.

5. For purposes of the reports required under this permit, excess emissions are defined as any calculated average emission concentration, as determined pursuant to Specific Condition No. H.4. herein, which exceeds the applicable emission limits in Condition No. H.1.

PERMITTEE:  
Tampa Electric Company

Permit Number: PA-92-32  
PSD-FL-194  
Expiration Date: June 1, 1996

SPECIFIC CONDITIONS:

M. Notification, Reporting and Recordkeeping

To determine compliance with the syngas and fuel oil firing heat input limitation, the permittee shall maintain daily records of syngas and fuel oil consumption for the turbine and the heating value for each fuel. All records shall be maintained for a minimum of two years after the date of each record and shall be made available to representatives of the Department upon request.

N. Applicable Requirements

The project shall comply with all the applicable requirements of Chapters 17-209 through 17-297, F.A.C., and 40 CFR 60 Subparts A and GG. The requirements shall include:

1. 40 CFR 60.7(a)(1) - By postmarking or delivering notification of the start of construction no more than 30 days after such date.
2. 40 CFR 60.7(a)(2) - By postmarking or delivering notification of the anticipated date of the initial startup of each turbine and the auxiliary boiler not more than 60 days nor less than 30 days prior to such date.
3. 40 CFR 60.7(a)(3) - By postmarking or delivering notification of the actual startup of each turbine and the auxiliary boiler within 15 days of such date.
4. 40 CFR 60.7(a)(5) - By postmarking or delivering notification of the date for demonstrating the CEMSS performance, no less than 30 days prior to such date.
5. 40 CFR 60.7(a)(6) - By postmarking or delivering notification of the anticipated date for conducting the opacity observations no less than 30 days prior to such date.
6. 40 CFR 60.7(b) - By initiating a recordkeeping system to record the occurrence and duration of any startup, shutdown or malfunction of a turbine and the auxiliary boiler, of the air pollution control equipment, and when the CEMS is inoperable.
7. 40 CFR 60.7(c) - By postmarking or delivering a quarterly excess emissions and monitoring system performance report within 30 days of the end of each calendar quarter. This report shall contain the information specified in 40 CFR 60.7(c) and (d).
8. 40 CFR 60.8(a) - By conducting all performance tests within 60 days after achieving the maximum turbine and boiler firing rates, but not more than 180 days after the initial startup of each turbine and the auxiliary boiler.

PERMITTEE:  
Tampa Electric Company

Permit Number: PA-92-32  
PSD-FL-194  
Expiration Date: June 1, 1996

SPECIFIC CONDITIONS:

9. 40 CFR 60.8(d) - By postmarking or delivering notification of the date of each performance test required by this permit at least 30 days prior to the test date; and,

10. 17-297.345 - By providing stack sampling facilities for the combustion turbine and the auxiliary boiler.

All notifications and reports required by this specific condition shall be submitted to the Department's Air Program, within the Southwest District office. Performance test results shall be submitted within 45 days of completion of such test.

C. Submission of Reports

The following information shall be submitted to the Department's Bureau of Air Regulation within 12 months of issuance of this permit:

1. Description of the final selection of the turbine and the auxiliary boiler to be installed at the facility. Descriptions shall include the specific make and model numbers, any changes in the proposed method of operation, fuels, emissions or equipment.

2. Description of the CEMS selected. Description shall include the type of sensors, the manufacturer and model number of the equipment.

3. If construction has not commenced within 18 months of issuance of this permit, then the permittee shall obtain from DEP a review and, if necessary, a modification of the BACT determination and allowable emissions for the unit(s) on which construction has not commenced [40 CFR 52.21(r)(2)]. Units to be constructed or modified in later phases of the project will be reviewed and limitations revisited under the supplementary review process of the Power Plant Siting Act.

P. Protocols

The following protocols shall be submitted to the Department's Air Program, within the Southwest District office, for approval:

1. CEMS Protocol - Within 60 days of selection of the CEMS, but prior to the initial startup, a CEMS protocol describing the system, its installation, operating and maintenance characteristics and requirements. The Department shall approve the protocol provided that the system and the protocol meet the requirements of 40 CFR 60.13, 60.334, Appendix B and Appendix F. This condition of certification shall be amended to reflect the Federal Acid Rain Program requirements of 40 CFR 75 when those requirements become effective within the State.

PERMITTEE:  
Tampa Electric Company

Permit Number: PA-92-32  
PSD-FL-194  
Expiration Date: June 1, 1996

SPECIFIC CONDITIONS:

2. Performance Test Protocol - At least 90 days prior to conducting the initial performance tests required by this permit, the permittee shall submit to the Department's Air Program, within the Southwest District office, a protocol outlining the procedures to be followed, the test methods and any differences between the reference methods and the test methods proposed to be used to verify compliance with the conditions of this permit. The Department shall approve the testing protocol provided that it meets the requirements of this permit.

Q. Modifications

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

Issued this 24th day  
of February, 1994.

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL PROTECTION

Virginia B. Wetherell  
Virginia B. Wetherell, Secretary





# Department of Environmental Protection

Lawton Chiles  
Governor

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

Virginia B. Wetherell  
Secretary

September 18, 1998

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Gregory M. Nelson, P.E.  
Administrator, Air Programs  
Tampa Electric Company  
Post Office Box 111  
Tampa, Florida 33601-0111

Re: Modification of DEP File PSD-FL-194B  
Polk Power Station

Dear Mr. Nelson:

The Department reviewed your letter and application dated February 24, 1998 and additional information submitted on June 11, 1998 requesting an extension of the demonstration period for integrated coal gasification and combined-cycle system and an extension of the time to submit a proposed BACT determination. This request is acceptable to the Department. Following publication of the Public Notice of the Intent to Issue dated July 31, the referenced permit is hereby modified as follows:

## SPECIFIC CONDITION H.2.

The maximum allowable emissions from the IGCC combustion turbine, when firing syngas and No. 2 fuel oil during the ~~two~~ three year demonstration period (until September 30, 1999), shall not exceed the following:

(Note that the rest of this condition is related to applicable emissions and is not changed by this action)

## SPECIFIC CONDITION H.6.

The combustion turbine will be operated for 12-18 months after the demonstration period (estimated to be from ~~Mid-1998~~ October 1, 1999 until ~~December 31, 1999~~ April 1, 2001).

(Note that the rest of this condition is related to testing requirements and is not changed by this action)


## SPECIFIC CONDITION H.7.

One month after the test period ends (estimated to be by ~~February 2000~~ June 1, 2001), the permittee will submit to the Department a NO<sub>x</sub> recommended BACT Determination as if it were a new source using data gathered on this facility, other similar facilities and the manufacturer's research. The Department will make a determination on the BACT for NO<sub>x</sub> only and adjust the NO<sub>x</sub> emission limits accordingly.

*"Protect, Conserve and Manage Florida's Environment and Natural Resources"*

A copy of this letter shall be filed with the referenced permit and shall become part of the permit. This permit modification is issued pursuant to Chapter 403, Florida Statutes. Any party to this order (permit modification) has the right to seek judicial review of it under Section 120.68, F.S., by the filing of 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 of Appeal must be filed within (thirty) days after this Notice is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

  
for Howard L. Rhodes, Director  
Division of Air Resources

CERTIFICATE OF SERVICE

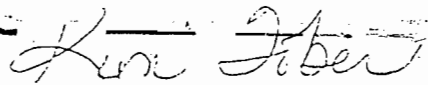
The undersigned duly designated deputy agency clerk hereby certifies that this PERMIT MODIFICATION was sent by certified mail (\*) and copies were mailed by U.S. Mail before the close of business on 9-24-98 to the person(s) listed:

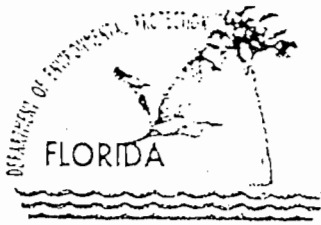
- Greg Nelson, P.E.\*
- Doug Neeley, EPA
- John Bunyak, NPS
- Buck Oven, PPS
- Bill Thomas, DEP SWD
- Joe King, Polk County

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.

 9-24-98  
(Clerk) (Date)



Jeb Bush  
Governor

# Department of Environmental Protection

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

David B. Struhs  
Secretary

December 13, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Charles A. Shelnut  
General Manager  
Tampa Electric Company  
P.O. Box 775  
Tampa, Florida 33680-0775

Dear Mr. Shelnut:

Re: Modification of PSD-FL-194  
Tampa Electric Polk Power Station, Unit No. 1  
Petroleum Coke/Coal Performance Test Request

The Department has reviewed the request from Tampa Electric Company (TEC) dated May 21, 1998 and supplementary information dated September 8, 1998 and November 10, 1998 to conduct performance tests while firing synthetic natural gas (syngas) produced from petroleum coke/coal blends at Polk Power Station, Unit No. 1.

You are hereby authorized to conduct performance tests for pollutant emissions on Polk Power Station Unit No. 1 in Polk County while firing syngas produced from blends of petroleum coke (petcoke) and bituminous coal (coal). All Conditions of Certification and Conditions of Approval in your Site Certification and PSD Permit related to air pollution emission limits and control equipment remain in force.

The performance tests will be conducted in order to gather data regarding pollutant emissions and operational limitations while firing syngas produced from blends of petcoke and coal. The blends can contain a maximum of 70 percent (% by weight) petcoke. Screening to determine whether future long-term firing of syngas produced from blends of petcoke and coal blends syngas constitutes a modification subject to a review for Prevention of Significant Deterioration (PSD) shall be performed in accordance with Chapter 403, F.S.; Chapters 62-210 through 62-297 and 62-4, F.A.C.; and, Title 40, Code of Federal Regulations (CFR; July 1, 1998 version). The procedure will consist of a comparison of estimates of "representative actual annual emissions" while burning petcoke/coal blends syngas against past actual emissions while burning coal syngas (or estimates of past actual emissions developed from 100 percent coal syngas baseline performance tests).

The performance test results along with any modification application to allow permanent firing of syngas produced from blends of petcoke/coal will be reviewed by the Department's Bureau of Air Regulation (BAR) and interested agencies (i.e., DEP Southwest District office, U.S. EPA, U.S. Fish and Wildlife Service, National Park Service, etc.).

The performance tests shall be subject to the following conditions:

1. The permittee shall notify, in writing, the Department's BAR office, the Southwest District office, and the Site Certification office at least 15 days prior to commencement of the baseline and the petcoke/coal blend syngas performance tests. A written test result report shall be submitted to these offices within 45 days upon completion of the last test run.

2. The petcoke/coal blend syngas performance tests shall commence on or before March 1, 2000 and be conducted for not more than 90 days. The tests shall be conducted based on the proposed testing protocol to establish steady state operation and to achieve a maximum (70%) blend. If, for any reasons, a steady state operation of 70% petroleum coke/coal blend syngas, or less, is not achieved, or the testing at 70% petcoke blend syngas or less, presents any operational or environmental concerns, the testing shall be curtailed. The Department shall be immediately notified of the problems that have prevented steady state operations and what steps will be initiated to correct the problem. All testing shall be concluded within 150 days of when petcoke is first introduced into Unit No. 1.

Estimated Date of Introduction of Fuel Blend Syngas: January 1, 2000  
(Note: This is the date at which a run on Petcoke fuel blend syngas may be commenced. It does not indicate that Unit 1 will run continuously from January 1 to June 1, 2000)

Estimated Testing Schedule:

Scenario: 55% Petcoke/ 45% Coal

Estimated date to begin testing: March 1, 2000

Scenario: 60% Petcoke/40% Coal (if 55% blend emissions are less than baseline)

Estimated date to begin testing: April 1, 2000

Scenario: 65% Petcoke/ 35% Coal (if 60% blend emissions are less than baseline)

Estimated date to begin testing: May 1, 2000

Scenario: 70% Petcoke/ 30% Coal (if 65% blend emissions are less than baseline)

Estimated date to begin testing: May 15, 2000


3. Stack emissions from Unit No. 1 shall not exceed the following during baseline and petcoke/coal blend syngas performance tests (based on most stringent of present PSD Permit and Certification Conditions):
  - a. Sulfur dioxide (SO<sub>2</sub>) - 357 pounds per hour on a 30-day rolling average.
  - b. Nitrogen oxides (NO<sub>x</sub>) - 222.5 pounds per hour on a 30-day rolling average.
4. As-burned fuel samples shall be collected and analyzed for the sulfur and nitrogen content throughout the petroleum coke/coal blend syngas and the baseline coal syngas test periods.
5. The performance tests of the petcoke/coal blend syngas shall be limited to a maximum of 70% petcoke, by weight. The maximum weight of the petroleum coke burned during the petcoke/coal blend syngas performance tests shall not exceed 1625 tons per day, on a dry basis.
6. The maximum sulfur content of the fuel shall not exceed 3.5 percent, by weight, during the baseline tests and the petroleum coke/coal blend syngas tests.
7. SO<sub>2</sub>, NO<sub>x</sub>, and opacity emissions data shall be recorded using continuous emissions monitors (CEMS) during the baseline and the petcoke/coal blend syngas tests. If the plant CEMS are used for these tests, these systems shall be quality assured pursuant to 40 CFR 60, Appendix F requirements. The data assessment report per 40 CFR 60, Appendix F, for the most recent relative accuracy test audit (RATA) and most recent cylinder gas audit (CGA), shall be submitted with the test report. In addition, stack tests shall be conducted for sulfuric acid mist during the baseline and petcoke/coal blend syngas tests. A satisfactory performance test for each baseline test and each petroleum coke-coal blend syngas shall consist of a minimum of three tests at three runs per test.

8. The pollutant emission results from the petroleum coke/coal blend syngas performance tests shall be used to estimate "representative actual annual emissions" following an operational change per 62-210.200 (12)(d), F.A.C., for comparison with actual emissions per Rule 62-210.200(12)(a), F.A.C. The comparison will form the basis of a PSD applicability determination pursuant to 40 CFR 52.21. The results of baseline performance tests when firing coal syngas will be used only to the extent that such information does not already exist or is insufficient to determine actual emissions.
9. Performance tests shall be conducted using EPA Reference Methods, as contained in 40 CFR 60 (Standards of Performance for New Stationary Sources), or any other method approved by the Department, in writing, in accordance with Chapter 62-297, F.A.C.
10. If additional time is needed, the permittee shall request an extension of time and provide the Department with documentation of the progress accomplished to-date and shall identify the work required to complete the performance tests.
11. Daily records (e.g., heat input, MW, fuel input rates, etc.) of IGCC operations while firing the petcoke/coal blend syngas and while firing only coal syngas (baseline) during the tests shall be required.
12. The Southwest District office may conduct a Type I or II stack audit.
13. Complete documentation (recording) of any firing of the petroleum coke-coal blend syngas shall be required (i.e., all CEMs records; testing results; materials utilized, by weight; etc.) and kept on file for a minimum of five years.
14. The authorized petroleum coke/coal blend syngas performance tests shall not result in the release of objectionable odors pursuant to Rule 62-296.320(2), F.A.C.
15. Performance testing shall cease as soon as possible if Unit No. 1 operations are not in accordance with the conditions in the air section of Site Certification No. PA 92-32, PSD Permit No. PSD-FL-194, or this authorization protocol. Performance testing shall not resume until appropriate measures to correct the problem(s) have been implemented.
16. The performance tests for pollutant emissions shall be conducted under the direct supervision of a professional engineer registered in Florida.
17. This Department action is only to authorize the petroleum coke-coal blend syngas performance tests. Any firing of petroleum coke beyond the 90 days of testing within the 150 day period approved to conduct such tests will be deemed a violation of the Site Certification No. PA 92-32 and Permit No. PSD-FL-194.
18. The Southwest District office shall be immediately notified, in writing upon completion of the final test.
19. The testing series shall include emissions tests for each of the petroleum coke/coal blends syngas and pollutants with the source operating at permitted capacity. Permitted capacity is defined as 90-100 percent of the capacity allowed by Site Certification PA 92-32 and Permit PSD-FL-194. If it is impracticable to test at permitted capacity, then the source may be tested at a lesser rate. However, the tests shall be conducted at capacities within 10 percent of each other and corrected to the same heat input basis. Furthermore, subsequent source operation with a petroleum coke-coal blend syngas, if requested and approved by the Department, shall be limited to 110 percent of the tested capacity for that blend syngas until new tests are conducted, which requires prior Department authorization.
20. Attachments to be incorporated:
  - Tampa Electric Company letters dated May 21, September 8 and November 10, 1998.
  - FDEP letters dated June 16 and October 5, 1998.

A copy of this letter shall be filed with the referenced permit and shall become part of the permit. This permit modification is issued pursuant to Chapter 403, Florida Statutes.

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

Executed in Tallahassee, Florida.

  
Howard L. Rhodes, Director  
Division of Air Resources  
Management

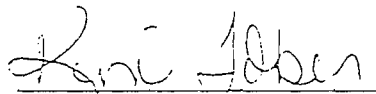
#### CERTIFICATE OF SERVICE

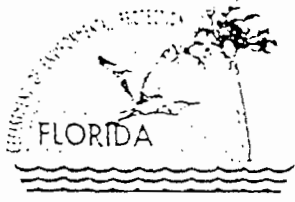
The undersigned duly designated deputy agency clerk hereby certifies that this permit modification was sent by certified mail (\*) and copies were mailed by U.S. Mail before the close of business on 12-14-99 to the person(s) listed:

Charles A. Shelnut, TEC\*  
Buck Owen, DEP PPS  
Bill Thomas, DEP SWD  
Gregg Worley, EPA  
John Bunyak, NPS  
Patrick Shell, TEC

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) 12-14-99  
(Date)



# Department of Environmental Protection

Lawton Chiles  
Governor

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

Virginia B. Wetherell  
Secretary

October 6, 1998

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. James Hunter, Administrator  
Air Environmental Planning  
Tampa Electric Company  
Post Office Box 111  
Tampa, Florida 33601-0111

Re: Amendment of DEP File PSD-FL-194D  
Polk Power Station

Dear Mr. Hunter:

The Department reviewed your letter dated September 21, 1998 requesting permission to install a carbonyl sulfide (COS) hydrolysis vessel upstream of the acid gas removal unit. It is our understanding that this change will result in the conversion of COS to hydrogen sulfide prior to the acid gas removal equipment and lower sulfur dioxide emissions from Polk Power Station Unit 1 combustion turbine. Because no emission increases are expected, the Department concurs with your decision and does not require any permit modifications.

Sincerely,

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

AAL/sa

cc: Buck Oven, PPS  
Bill Thomas, DEP SWD  
Joe King, Polk County