

Department of Environmental Protection

Jeb Bush
Governor

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

Colleen M. Castille
Secretary

July 23, 2004

CERTIFIED MAIL - Return Receipt Requested

Ms. Laura R. Crouch
Manager – Air Programs
Environmental, Health, and Safety
Tampa Electric Company
Polk Power Station Unit 1
P.O. Box 111
Tampa, Florida 33601-0111

Dear Ms. Crouch:

RE: Request to Conduct Performance Tests While Firing Syngas derived from Petcoke and Coal and Petcoke

The Department received your letter on July 8, 2004, requesting permission to conduct performance tests while firing syngas derived from petcoke and coal and petcoke in Unit 1. The proposed baseline test will be conducted on syngas derived from 60% petcoke and 40% coal and the second test will be conducted on syngas derived from 100% petcoke. Based on a review of the request, the following information will have to be provided before processing of the request will resume:

1. Since the request will affect a Title V facility, please have the response signed by the Responsible Official.
2. All of the technical information in the request must be sealed by a Professional Engineer registered in Florida, and that person will also be required to oversee the technical aspects of the proposed project and the performance tests.
3. Because of PSD concerns in the change in potential emissions, simultaneous performance tests will have to be conducted on the sulfuric acid plant while testing Unit 1 for both the baseline test and the 100% petcoke test.
4. For Unit 1, please provide the proposed testing methods that will be conducted and the pollutants (should include all of the criteria pollutants, with any exceptions explained away) to be tested for at the baseline level and at 100% petcoke. In addition, please provide a sketch showing the locations where testing will occur.
5. Referencing Issue #4, above, provide the same information for the sulfuric acid plant.

If you have any questions regarding this matter, please contact Mr. Bruce Mitchell at 904/413-9198 or write to me at the above letterhead address.

Sincerely,

Trina L. Vielhauer
Chief
Bureau of Air Regulation

TLV/bm

Enclosure

cc: Jason Waters, SWD

"More Protection, Less Process"

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- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
 Ms. Laura R. Crouch
 Manager - Air Programs
 Environmental, Health, and Safety
 Tampa Electric Company
 Polk Power Station Unit 1
 P.O. Box 111
 Tampa, Florida 33601-0111

2. Article Number
 (Transfer from service label)

7001 1140 0002 1578 1550

PS Form 3811, August 2001

Domestic Return Receipt

102595-02-M-1540

COMPLETE THIS SECTION ON DELIVERY

A. Signature
 X *G. Morales* Agent
 Addressee

B. Received by (Printed Name) *G. MORALES* C. Date of Delivery *7/26/04*

D. Is delivery address different from item 1? Yes
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3. Service Type
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 Registered Return Receipt for Merchandise
 Insured Mail C.O.D.

4. Restricted Delivery? (Extra Fee) Yes

**U.S. Postal Service
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 Ms. Laura R. Crouch, Manager - Air Programs

Postage	\$
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 Ms. Laura R. Crouch, Manager - Air Programs

Street, Apt. No.;
 or PO Box No. P.O. Box 111

City, State, ZIP+4
 Tampa, Florida 33601-0111

PS Form 3800, January 2001

See Reverse for Instructions



TAMPA ELECTRIC

July 7, 2004

Mr. Jim Pennington
Florida Department of
Environmental Protection
Division of Air Resource Management
111 South Magnolia Drive, Suite 4
Tallahassee, Florida 32301

Via FedEx
Airbill No. 7926 7916 5239

RECEIVED

JUL 08 2004

BUREAU OF AIR REGULATION

Re: Tampa Electric Company
Polk Power Station Unit 1
100% Petcoke Test Burn Request
Permit No. 1050233-012-AV
AIRS #1050233, EU ID #001

Dear Mr. Pennington:

The purpose of this letter is to request permission to conduct a test burn at Polk Power Station (PPS) Unit 1 under the authority of the current Title V Air Operation Permit No. 1050233-012-AV. The test burn would be conducted to test the feasibility of firing syngas produced from the gasification of up to 100% petcoke fuel (with a flux) at a maximum sulfur content of 6 percent by weight. As you are aware, Tampa Electric Company (TEC) received authorization from the Florida Department of Environmental Protection (FDEP) to conduct performance tests while firing syngas produced from a maximum of 70 percent (% by weight) petcoke and coal blends on December 13, 1999. Upon receipt of the authorization, TEC immediately began procuring petcoke fuel to facilitate the test burn. From February 7, 2000 through February 15, 2000, TEC successfully gasified a blend of 40% petcoke and 60% coal, per the authorization. A subsequent petcoke/coal blend syngas test burn was conducted from April 24, 2000 to April 26, 2000, in which TEC gasified a blend of 60% petcoke and 40% coal. The pollutant emissions from these performance tests were used to request a permit modification to combust syngas produced from a fuel blend containing no greater than 60% petcoke and 40% coal, which was authorized on November 17, 2000 through the Air Construction Permit No. 1050233-004-AC/PSD-FL-194E.

Due to the initial success of the petcoke test burn and the operational experience from firing approximately 55% petcoke and 45% coal for the past four years without triggering the Prevention of Significant Deterioration (PSD) threshold limits as defined in Table 62-212.400-2, TEC would like to test higher petcoke percentages at Polk Unit 1. This test burn is the first step in a process TEC is undertaking in an attempt to submit a construction permit application to FDEP in order to permanently be able to fire syngas produced from the gasification of up to 100% petcoke.

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

(813) 228-4111

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HTTP://WWW.TAMPAELECTRIC.COM

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

The main constituents of clean syngas are hydrogen, carbon monoxide, carbon dioxide and nitrogen. The syngas contains trace levels (i.e., at the ppm level) of hydrogen sulfide and carbonyl sulfide. These two sulfur compounds are the primary source of Heat Recovery Steam Generator (HRSG) stack SO₂ and H₂SO₄ mist emissions.

The concentration of these sulfur compounds in the clean syngas is largely independent of the originating fuel. Instead, the sulfur compound syngas concentrations depend on the performance of many plant systems, such as the acid gas removal system. For this reason, TEC has requested the test burn be conducted at a maximum of 6 percent by weight sulfur content instead of the currently permitted 3.5 percent by weight sulfur content to provide greater flexibility to accommodate the different types of petcoke fuels in the market. TEC does not anticipate this introduction of higher sulfur content petcoke will result in a significant increase in any regulated pollutant as defined in Table 212.400-2 F.A.C. The petcoke will be handled in the same manner as the petcoke/coal blend that is currently handled at the facility. Attachment 1 & 2 are provided for explanation of the material balances and associated SO₂ emissions. Attachment 1 provides a representative analysis of the petcoke under consideration for this test burn and an estimation of the fuel blend composition and the estimated emissions. Attachment 2 provides a material balance of the sulfur, mass flows, and SO₂ emissions associated with the gasification, acid gas removal, sulfuric acid plant, and combustion turbine processes. Two cases are provided; the first case is representative of the current fuel blend used at the Polk facility of up to 60% petcoke and 40% coal. The second case is the estimated parameters associated with the combustion of 100% Petcoke.

TEC will conduct applicable emissions testing of the CT during the combustion of petcoke produced syngas-firing to provide reasonable assurance emissions have not increased. TEC requests authorization to conduct the comparison test burn for a period of up to 150 days, as granted for the previous 2000 test burn. This duration will allow TEC to evaluate, in addition to the emissions from the CT, the impacts of the material on the fuel handling systems and other associated process equipment and the effects, if any, of firing syngas produced from the gasification of a higher petcoke percentage. TEC will conduct a baseline test burn to establish the representative emissions from Polk Unit 1 prior to the introduction of higher than 60% petcoke into the gasifier. Baseline testing will consist of sulfur dioxide (SO₂) and nitrogen oxides (NO_x) data collection through the use of Continuous Emissions Monitors (CEMs).

Following the baseline test, TEC will conduct a test burn of syngas produced from the gasification of up to 100% petcoke. Petcoke testing will last up to 90 days out of the 150 days window and will consist of sulfur dioxide (SO₂) and nitrogen oxides (NO_x) data collection through the use CEMs in the same fashion as was conducted during the 2000 test burn. Because of the intense gas cleaning steps involved in the gasification process, the sulfuric acid mist emissions are not expected to be affected by the firing of the syngas produced from the gasification of the petcoke.

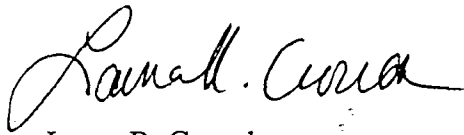
The baseline and up to 100% petcoke test burns will be conducted under standard PPS operating conditions and, to the extent possible, at least 90% of the maximum permitted heat input. Data will be compiled and results reported to the FDEP within 60 days of the completion of the test burn. Any petcoke fuel stock that is on hand after the test burn will be consumed immediately

Mr. Jim Pennington
July 7, 2004
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after the test burn is completed. TEC will procure enough petcoke on-site to supply the needs of the test burn, with perhaps a slight margin to compensate for unforeseen circumstances. TEC intends to begin the test burn upon receiving approval from FDEP. Approval of the facility Designated Representative will be provided in Attachment 3.

TEC appreciates the Department's cooperation and consideration in this matter. If you have any questions or comments pertaining to this request, please direct them to Raiza Calderon at (813) 228-4369.

Sincerely,



Laura R. Crouch
Manager - Air Programs
Environmental, Health, and Safety

EA/gm/RC187

c/enc: Mr. Jerry Kissel, FDEP SW District

Attachment 1
Polk Power Station Unit 1
Estimation of Fuel Blend Composition & Emissions

Example of Current Fuel - Up To 60% Petroleum Coke)

Heating Value	14,690	Wt % Dry Basis
% Sulfur	3.27	Wt % Dry Basis
Ash (%)	4.57	Wt % Dry Basis
Moisture Content (%)	9.51	Wt % As Received

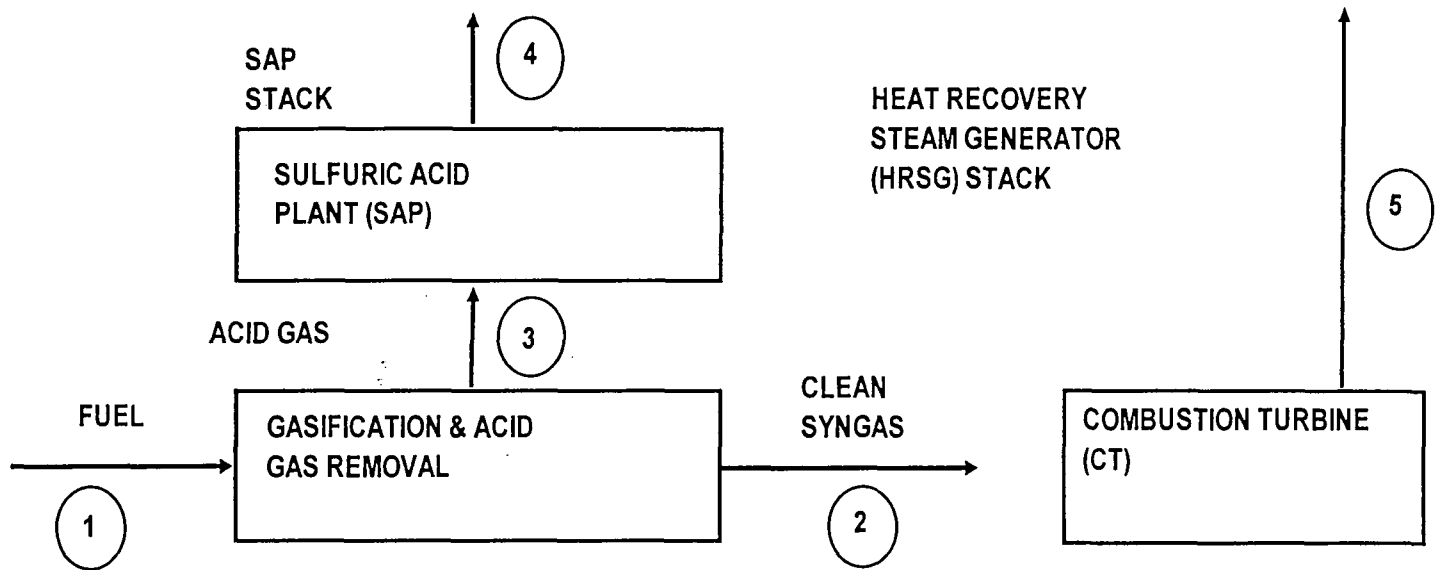
Test Fuel - Up To 100% Petroleum Coke

Heating Value (BTU/LB)	14,750	Wt % Dry Basis
% Sulfur	6.00	Wt % Dry Basis
Ash (%)	2.89	Wt % Dry Basis
Moisture Content (%)	9.24	Wt % As Received

Comparison of Facility SO2 Emissions

Current Fuel (LB/HR)		Test Fuel (LB/HR)
359		356

Attachment 2
Polk Power Station Unit 1
Material Balance



MATERIAL BALANCE PROJECTIONS

(All Flow Rates in Lb/Hr)

Stream Number	1	2	3	4	5
Stream Description	Fuel (Dry Basis)	Clean Syngas	Acid Gas	Acid Plant Stack	HRSG Stack
Current Fuel (Up to 60% Petroleum Coke)					
Total Flow (LB/HR)	169,097	401,263	26,138	50,652	3,879,887
Sulfur (LB/HR)	5,538	165	5,373	14	165
Sulfur (as SO ₂)(LB/HR)	n/a	n/a	n/a	29	331

Test Fuel (Up To 100% Petroleum Coke)					
Total Flow (LB/HR)	170,930	386,263	45,738	60,000	3,909,887
Sulfur (LB/HR)	10,256	160	10,096	18	160
Sulfur (as SO ₂)(LB/HR)	n/a	n/a	n/a	36	320

Attachment 3
Polk Power Station Unit 1
Designated Representative Signature

Responsible Official Certification

I have reviewed the letter of request for authorization to conduct a petcoke test burn at Polk Power Station. I hereby certify that these documents are authentic and accurate to the best of my knowledge.

Signature: Mark Hornick
General Manager

Date: 7/6/04