

Florida Department of
Environmental Protection

Memorandum

TO: Clair Fancy
Syed Arif
Dottie Diltz

FROM: Buck Oven HSO

DATE: December 27, 1999

SUBJECT: St. Johns River Power Park - PA 81-13, PSD-FL-010

RECEIVED
DEC 28 1999
BUREAU OF AIR REGULATION

Please review the attached correspondence from the Jacksonville Regulatory & Environmental Services Department concerning compliance testing, prepare a response, and provide this office with a copy of that response.

Attach:

cc: Chris Kirts
Steve Pace

I have to submit a completeness determination by 8/20. A sufficiency (your type of completeness review) determination must be made by October 12. I need the DEP staff's completeness/sufficiency comments by Oct. 5.

REGULATORY & ENVIRONMENTAL SERVICES DEPARTMENT

Air and Water Quality Division

December 20, 1999



DEC 21 1999

Mr. Hamilton Oven, P.E., Administrator
Power Plant Siting
Florida Department of Environmental Protection
2600 Blair Stone Road
Mail Station 48
Tallahassee, FL 32399-2400

**RE: Request For Clarification
St. Johns River Power Park (SJRPP)
Steam Generating Units #1 & #2
Semi-Annual CO & H₂SO₄ Compliance Testing
Permit Number: 031-0045-001-AV**

Dear Mr. Oven:

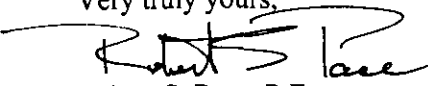
This is to request clarification of the Florida Department of Environmental Protection's (FDEP) criteria for determining whether or not a significant increase of CO and H₂SO₄ emissions has occurred as a result of St Johns River Power Park (SJRPP) burning a petroleum coke/coal mixture in its two steam generating units over the past two years.

Specifically, in July 30, 1997 correspondence (see attached), the City of Jacksonville's Regulatory and Environmental Services Department (RESD) inquired if 40 CFR 60, Appendix C was the appropriate mechanism to be used in determining compliance for CO and H₂SO₄ emissions. FDEP, in its correspondence of September 10, 1997 (see attached) stated that "The use of Appendix C is not an appropriate mechanism in determining significant increases". Subsequently, in February, 1999, Golder Associates, Inc. performed a statistical analysis of two years worth of CO and H₂SO₄ test data using Appendix C (see attached), and FDEP has apparently given verbal approval of demonstration of compliance based on the Golder Associates analysis (see SJRPP correspondence of August 10, 1999, attached).

Therefore, RESD is hereby requesting clarification as to why Appendix C was deemed to be an unacceptable means of determining compliance in September, 1997, but is now being accepted by FDEP as an appropriate means of determining significant increases of CO and H₂SO₄ emissions.

Your prompt attention to this matter is appreciated.

Very truly yours,


Robert S. Pace, P.E.
Manager, Air Quality Branch

RSP/WLW/rt

c: AWQD File 0045 B
Richard Robinson, P.E., Manager, AQB
Wayne Tutt, AQB
Dana Brown, Manager, AQB
Ernest Frey, P.E., FDEP

117 West Duval Street, Suite 225
Jacksonville, Florida 32202
Fax (904) 630-3638

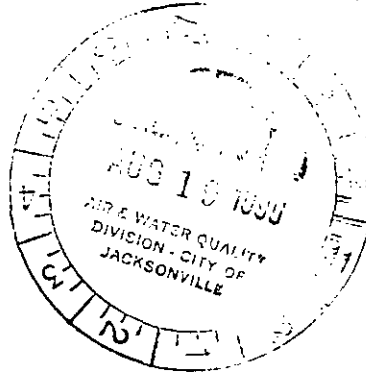
Air Quality 630-3484
Water Quality 630-3461
Ground Water 630-4900
Hazardous Materials 630-3404

Walker

EV 990810

August 10, 1999

Mr. Syed Arif, P.E.
Florida Dept. Of Env. Protection
Air Resources Management
Magnolia Park Courtyard, Rm. 123
Tallahassee, FL 32301



RE: JEA/St. Johns River Power Park (SJRPP)
PSD-FL-010(B)
Conditions of Certification PA 81-13
CO (Carbon Monoxide) and H₂SO₄ (Sulfuric Acid) Mist
Semi-Annual Compliance Testing Completion

Dear Mr. Arif,

Pursuant to your review of our past two years of semi-annual stack testing data for CO/H₂SO₄ mist during petroleum coke co-firing with coal, as reviewed and prepared by Mr. Kennard F. Kosky, P.E., of Golder Associates, Inc. (see enclosure), we appreciate your concurrence during our telephone conversation of August 9, 1999, that SJRPP has successfully fulfilled the permit conditions of PSD Conditions 3.B. and C., and Specific Conditions I.A.2.h. and i., directing that semi-annual performance testing shall be performed, demonstrating that the change in operations did not result in significant increases in CO or H₂SO₄ mist emissions to the environment.

Co-firing with petroleum coke began in April, 1997, with the first test performed in June, 1997, with additional testing performed in 11/97, 5/98, 10/98, and 6/99. Your suggestion of performing the tests again during our scheduled RATA in October, 1999, shall be performed. This test shall fulfill the first year annual requirement as specified in PSD 3.B. and Specific Condition I.A.2.h for CO, directing that an additional three years of annual testing be performed, with the permitted annual requirements fulfilled in the year 2001. At this time, an additional compliance test report shall be submitted to your person for review. No additional H₂SO₄ mist testing is required pursuant to the permits.

Please contact me at (904) 665-8797 if you have any additional questions or comments.

Sincerely,

Mark K. Loechelt

Mark K. Loechelt
Env. Production Assurance Leader

Enclosure: CO/H₂SO₄ Compliance Certification 02/04/99

xc: H. Oven, FDEP
E. Frey, FDEP
S. Pace, RESD
W. Tutt, RESD

WJ



**St. Johns River Power Park (SJRPP)
PSD-FL-010(B); PA 81-13
Co-Firing of Petroleum Coke
Emissions of Sulfuric Acid Mist and Carbon Monoxide
Compliance Certification**

This certification addresses the requirements of Specific Conditions 3.B. and 3.C. of the Prevention of Significant Deterioration (PSD) permit regarding the increase of emissions when co-firing petroleum coke and coal. As required by Specific Conditions 3.B. and 3.C., information must be submitted over a period of two years to demonstrate that operational changes did not result in emissions increases of Sulfuric Acid Mist (H_2SO_4) and Carbon Monoxide (CO). In accordance with 40 CFR 52.21 (b)(21)(v) and (b) (33) and 40 CFR 52.21 (b) (33), for an electric steam generating unit the emissions resulting from increased utilization due to electric demand is not included in calculating any emissions increase. Since SJRPP Units 1 and 2 are base load units and their operation is not affected by co-firing petroleum coke and coal, the appropriate comparison is the emissions rates when co-firing petroleum coke with coal and firing coal only.

H_2SO_4

The results of tests to determine H_2SO_4 emissions are summarized in Table 1- H_2SO_4 . This includes the baseline coal tests that were performed in July and August, 1995 during the Co-firing Trial Test Burn and in January and February 1997 while the permit was under review. Also presented in Table 1- H_2SO_4 , are tests conducted in 1997 and 1998 while co-firing petroleum coke with coal. The tests conducted in early 1997 were a result of the Sierra Club agreement and generated information for coal only and co-firing petroleum coke with coal.

The procedure used to evaluate all the H_2SO_4 data was that provided in 40 CFR Part 60 Appendix C for determining an emission change under EPA New Source Performance Standard (NSPS) regulations. The upper and lower confidence intervals are determined using Student's "t" test which is commonly used to compare the means of small sample sizes. This procedure can account for operational variability associated with emission rates and provide a statistical comparisons for determining whether differences between mean values exist at a specified confidence level.

Table 1- H_2SO_4 also presents the 95 percent confidence intervals of the mean values. Table 2- H_2SO_4 presents a summary. The results of the baseline tests found average emissions of 7.01 ppm while firing coal. The emissions rates when co-firing petroleum coke with coal were, on the average, 5.55 ppm or about 20 percent less than the baseline emissions for coal only over the two year period (1997-98). The statistical evaluation shows that there is no significant difference between the means of the coal only tests and the tests conducted while co-firing petroleum coke and coal. This conclusion applies to whether each year are

evaluated against the coal only tests (i.e., 1997 or 1998) or whether the data is evaluated against either unit (i.e., Unit 1 or Unit 2). These data would confirm that a significant net increase in emissions has not resulted from co-firing petroleum coke and coal over the two year period from the date the units were initially co-fired with petroleum coke. Therefore, SJRPP Units 1 and 2 have complied with the Specific Condition 3.C. of the PSD approval.

CO:

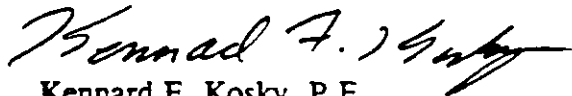
As provided to the Department during the permit review for co-firing petroleum coke with coal, the comparisons of CO emissions for coal only and those during the co-firing test burn were confounded by the variability of CO emissions that normally occur when using any fuel and the lack of combustion adjustments made during the test burn. The latter resulted in higher CO emissions which could have been ameliorated if fine tuning of the combustion process, specific to the co-firing of petroleum coke with coal, had been performed. Such fine tuning would have improved the combustion process while concomitantly producing lower CO emissions. As required in the Department's approval to co-fire petroleum coke with coal, Specific Condition 3.B. of the PSD permit required that EPA Method 10 and CEMS data for CO be submitted and used for the comparisons. Due to the variability in CO concentration during normal operation, CEMS data are most appropriate for evaluating differences between firing only coal and co-firing petroleum coke with coal.

CEMS data for 1998 indicated no significant periods of coal only operation from which comparison could be made. Moreover, in February 1998, the data range on the CEM was changed from 500 ppm to 2,000 ppm. This had the effect of increasing the average CO concentrations, since the very high peak values (> 500 ppm) were not previously recorded. The data for 1996 were also evaluated for use in determining baseline CO concentrations for firing coal only. However, starting in January 1997, SJRPP elected, under the EPA Title IV Acid Rain program, to reduce emissions of NOx thereby confounding the ability to compare data from 1996 with data from 1997. In general, reductions in NOx are followed by an increase in CO concentrations. Indeed, small decreases in NOx concentrations can effect large increases in CO. Therefore, the best data set to evaluate whether the co-firing of petroleum coke with coal resulted in an increase of CO concentrations was the use of the 1997 CO CEMS data. The results are summarized below.

Fuel-Unit	CO Emission Rates (lb/mmBtu)		
	Upper Confidence <u>Interval</u>	<u>Mean</u>	Lower Confidence <u>Interval</u>
Coal - Unit 1	0.561	0.303	0.045
Pet Coke & Coal Unit 1	0.166	0.151	0.135
Coal - Unit 2	0.150	0.122	0.093
Pet Coke & Coal Unit 2	0.146	0.133	0.119

The data represent the averages of daily CO emission rates as provided by the CEMS for both Units 1 and 2 when firing only coal and when co-firing petroleum coke with coal. The upper and lower confidence intervals are also shown, since there is considerable operational variability associated with the daily CO emission rates and such comparisons are appropriate for determining differences between mean values. The procedure used is identical to that provided in 40 CFR Part 60 Appendix C for determining an emission change under EPA regulations.

As shown in the above table, the CO values observed for each unit when co-firing petroleum coke and coal are within the observed ranges when firing only coal. Indeed, the means for both units indicate that firing coal alone would have an emission rate of 0.213 lb/mmBtu, while co-firing petroleum coke with coal would have an emission rate of 0.142 lb/mmBtu. Stack tests using EPA Method 10 were also conducted during the two year period (1997-98) while co-firing petroleum coke with coal. These results are presented in Table 1-CO and show that the average emissions are within the values reported for coal from the CEM data. Taken together, the data indicate that CO emissions from co-firing petroleum coke with coal are not significantly different from firing coal only and that there has not been an increase CO emissions as a result of co-firing petroleum coke with coal.



Kennard F. Kosky, P.E.
Principal
Florida Professional Engineer License No. 14996
February 1, 1999

SEAL



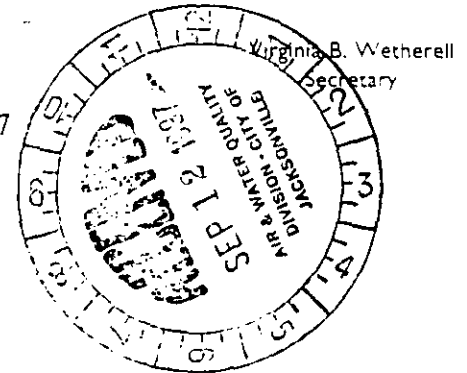


Department of Environmental Protection

Lawton Chiles
Governor

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

September 10, 1997



CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Wayne E. Tutt, Associate Engineer
Regulatory & Environmental Services
Department
Air & Water Quality Division
421 West Church Street, Suite 422
Jacksonville, Florida 32202-4111

Re: Site Certification No. PA 81-13
St. Johns River Power Park Units #1 & #2

Dear Mr. Tutt:

This correspondence is provided to address the July 30, 1997 letter to Buck Oven regarding semiannual testing for Carbon Monoxide (CO) and Sulfuric Acid Mist (H₂SO₄). The request to the Florida Department of Environmental Protection was related in the October 28, 1996 modifications to the Conditions of Certification for the St. Johns River Power Park (SJRPP). The modified conditions authorized the co-firing of petroleum coke and coal. Conditions I.A.2.h. and I.A.2.i. requires semiannual testing of CO and H₂SO₄ for the first two years of co-firing and annual testing for the next three years, as information demonstrating that the operational changes (i.e., co-firing petroleum coke and coal) did not result in a significant net increase in emissions. Additionally, quarterly continuous emission monitoring data for CO was required. The same conditions were included in the modification to the Prevention of Significant Deterioration (PSD) approval (PSD-FL-010(B), October 14, 1996).

The conditions in the modified PSD permit and the Conditions of Certification were included as a mechanism to assure that a significant increase in CO or H₂SO₄ emissions did not occur as a direct result of co-firing petroleum coke. Because of the variability of these pollutants during the combustion process, SJRPP is required by the Department to perform semiannual testing during the first two years to determine if significant emission increases have occurred. The intent of the conditions were to review emissions over a long term i.e., two years, to determine if an increase has occurred.

In order to compare whether a significant increase has occurred, the test data should be evaluated against all the baseline information provided by SJRPP. For CO, the single 1995 testing is not representative, since CO emissions can be highly variable based on combustion conditions and fuel properties such as Hardgrove Grindability Index. SJRPP provided information during the permitting process that indicated that CO emissions could be highly variable, during normal

operation when firing coal could range from less than 10 ppm to 500 ppm. Therefore, a long-term baseline CO emissions level must be used for comparing semiannual or annual testing. The use of Appendix C is not an appropriate mechanism in determining significant increases. The June 1997 test data provided by SJRPP indicate CO emissions ranging between 75 and 120 ppm. These CO emissions are within the CO baseline emission when burning coal, therefore, there was no significant increase in CO emissions.

Similar to CO, H₂SO₄ emission were expected to vary due to combustion effects. While the 1995 baseline tests indicated a H₂SO₄ concentration of 6.19 ppm, further baseline tests conducted in February 1997 by SJRPP indicated a H₂SO₄ concentration of 8.16 ppm. The H₂SO₄ concentration for the June 1997 test was clearly below the baseline tests conducted for coal firing. Thus, no increase in emissions of H₂SO₄ has occurred.

Overall, no specific short-term emission limits were established for CO and H₂SO₄ as a result of petroleum coke use. The Department will make a future determination whether or not significant annual increases have occurred based on analysis of future actual representative annual emissions. This determination will be based on information provided by SJRPP through semi-annual tests, continuous emission monitoring data, etc.

For your information, the Sierra Club challenged issuance of the permit. SJRPP and the Sierra Club jointly obtained the independent assistance of Dr. William C. Zegel, now President of Air and Waste Management Association. He determined that CO and H₂SO₄ emissions increases are not occurring as a result of burning a petroleum coke blend. As a result, the Sierra Club dropped its request for an administrative hearing.

As more testing is conducted, similar test comparisons will be made. If there are any questions please call Syed Arif at (850) 488-1344.

Sincerely,



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

AAL/sa

cc: H. Oven, DEP/SCO
W. Walker, RESD

**REGULATORY & ENVIRONMENTAL
SERVICES DEPARTMENT**
Air & Water Quality Division



July 30, 1997

Mr. Hamilton Oven, P.E., Administrator
Site Certification Section
Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

**RE: St. Johns River Power Park
Steam Generating Units #1 and #2
Semiannual Carbon Monoxide (CO) and Sulfuric Acid Mist (H₂SO₄)
Compliance Testing
Test Dates: June 4 and June 5, 1997
AWQD Correspondence of November 9, 1995**

Dear Mr. Oven:

This is to request guidance in determining CO and H₂SO₄ emissions compliance of the above captioned emission units. As per the "Corrected Final Order Modifying Conditions of Certification", the St. Johns River Power Park (SJRPP) is required to conduct semiannual testing to determine if a significant increase in emissions has occurred. This test series represents the first such CO and H₂SO₄ semiannual testing.

Because no mechanism for determining exactly what constitutes a significant increase in emissions was ever defined, Air and Water Quality Division (AWQD) personnel used 40 CFR 60. Appendix C, to evaluate the initial series of testing conducted in July and August 1995, as did SJRPP personnel in its request for modification. As stated in the above referenced AWQD correspondence, our review of the 1995 test data indicated a significant increase in CO and H₂SO₄ emissions; however, SJRPP personnel stated that these increases could be controlled by limiting SO₂ emissions, and the request for modification was granted by the Florida Department of Environmental Protection (FDEP).

Results from this latest series of testing indicate CO emission levels which are higher than the baseline levels of 1995 for both steam generating units. A problem arises, however, when trying to use Appendix C to determine if a significant increase has occurred. The SJRPP conducted 12 one-hour test runs in 1995, but only three one-hour test runs in June 1997. Appendix C, Section 2.2.1, requires an equal number of data samples in order to conduct a Student's t test statistical analysis.

Air Quality	630-3484
Water Quality	630-3461
Ground Water	630-4900
Hazardous Materials	630-3404



Line No: J (Unwashed)

May 1, 1986

-2-

REACTIVITY DATA

Conditions Contributing to Instability Not Applicable.

Incompatibility Contact with acids can result in release of dangerous concentrations of hydrogen sulfide gas.

Hazardous Decomposition Products. None

Conditions Contributing to Hazardous Polymerization. Not Applicable

PRECAUTIONS, SAFE HANDLING

Avoid all contact with eyes and skin.

Do not permit contact with acidic materials.

GENERALLY APPLICABLE CONTROL MEASURES

If handling this material, use impervious clothing, gloves, face shields (8 inch minimum) and other appropriate protective clothing necessary to prevent any possibility of skin contact. Where there is any possibility of eye contact, wear dust and splash-proof safety goggles.

Eye wash stations and safety showers should be readily accessible near use areas.

EMERGENCY AND FIRST AID PROCEDURES

Eyes Speed is essential. Flush thoroughly with running water for 15 minutes including under the eyelids. Contact physician.

Skin Wash affected area immediately with water for at least 15 minutes or until slippery feel is gone. Remove contaminated clothing. Contaminated leather items such as belts or shoes can cause delayed irritation or burns.

Inhalation Remove to fresh air.

Ingestion Do not induce vomiting. Rinse mouth out with water. Drink large amounts of water. Seek prompt medical assistance for further treatment, observation and support.

SPILL/LEAK CLEAN-UP PROCEDURES

IF SPILL OR LEAK OCCURS, IMMEDIATELY CONSULT *the JSC Fernandez* MILL ENVIRONMENTAL CONTROL DEPARTMENT.

Never divert spill to an acid-containing sewer.

Dilute and flush to an approved treatment system as per mill requirements.

(904) 261-5551

Important: The information and data herein are believed to be accurate and have been compiled from sources believed to be reliable. It is offered for your consideration, investigation and verification. API/NFPA makes no warranty of any kind, express or implied, concerning the accuracy or completeness of the information and data herein. API/NFPA will not be liable for claims relating to any party's use of or reliance on information and data contained herein regardless of whether it is claimed that the information and data are inaccurate, incomplete or otherwise misleading.

LIME SOLIDS

1. Lime MUD ①

REPORT OF ANALYTICAL RESULTS

Date: 12/30/93

Client: CH2M HILL/LGM
ONE INNOVATION DRIVE, SUITE C
P.O. BOX 370
ALACHUA, FL 32615-0370

Project Number: LGM00999.99
CONTAINER CORP.
Laboratory Number: 37203
Date Received: 12/09/93

Attn: MS. NANCY MOSURICK

Sample Description: MUD LIME-TC TCLP EXTRACT L003671001
Laboratory Sample Number: 37203001 Date Collected: 12/01/93 Matrix: SOIL

Analytical Parameter	Method	Rep Limit	Result	Units	Lab Date
TCLP Silver	EPA200.7/SM6010	0.002	<0.002	mg/L	12/29/93
TCLP Arsenic	EPA200.7/SM6010	0.019	0.034	mg/L	12/29/93
TCLP Barium	EPA200.7/SM6010	0.001	0.454	mg/L	12/29/93
TCLP Cadmium	EPA200.7/SM6010	0.001	0.003	mg/L	12/29/93
TCLP Chromium	EPA200.7/SM6010	0.003	<0.003	mg/L	12/29/93
TCLP Mercury	EPA245.1/SM7470	0.0002	<0.0002	mg/L	12/21/93
TCLP Lead	EPA200.7/SM6010	0.033	<0.033	mg/L	12/29/93
TCLP Selenium	EPA200.7/SM6010	0.040	<0.040	mg/L	12/29/93

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: *Donald R. Bull*

INTERPT (+910385)

St. John's River Power Park Sample Analysis Report

SJRPP

Miscellaneous

Lime Sample

Sample Number: 97-0113-SP

Sampled Date:

<u>Parameter</u>	<u>EPA Method</u>	<u>Value</u>	<u>Units</u>	<u>Detection Limit</u>	<u>Analysis Date</u>	<u>Lab</u>
Arsenic	6010	<.2	mg/L	0.2	3/4/97	SAV
Barium	6010	<1	mg/L	1	3/4/97	SAV
Cadmium	6010	<.01	mg/L	0.01	3/4/97	SAV
Chromium	6010	<.2	mg/L	0.2	3/4/97	SAV
Lead	6010	<.5	mg/L	0.5	3/4/97	SAV
Mercury	1311/7470	<.02	mg/L	0.02	3/4/97	SAV
Selenium	6010	<.5	mg/L	0.5	3/4/97	SAV
Silver	6010	<.1	mg/L	0.1	3/4/97	SAV

Thursday, March 06, 1997

Jacksonville, Florida

Page 1 of 1