



# Department of Environmental Protection

Lawton Chiles  
Governor

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

Virginia B. Wetherell  
Secretary

March 25, 1996

## **CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

Mr. Richard Breitmoser, P.E.  
Vice President  
Environmental Health & Safety Group  
St. Johns River Power Park  
11201 New Berlin Road  
Jacksonville, FL. 32226

Re: Jacksonville Electric Authority (JEA)  
St. Johns River Power Park (SJRPP)  
Permit File No. PSD-FL-010, PA 81-13

Dear Mr. Breitmoser:

The Department has received the application to modify the above referenced permit and to allow burning of up to 20 percent petroleum coke with coal in SJRPP Units 1 & 2 in Jacksonville, Duval County, Florida. Based on our initial review of the proposed project, we have determined that additional information is needed in order to continue processing this application package. Pursuant to Rule 62-4.070, F.A.C., please submit the information requested below to the Department's Bureau of Air Regulation.

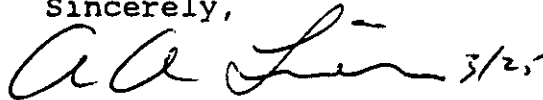
1. The test burn of the petroleum coke-coal blends were limited to 20 percent petroleum coke, by weight. The application requests 20 percent of petroleum coke on a heat input basis. Please provide the relationship between percent petroleum coke by weight and percent petroleum coke by heat.
2. The application states that a temporary hopper and conveyor will be used to load petroleum coke with coal on the reclaim conveyor prior to transporting the mixture to the crusher house and then to the coal storage silos. What assurances are provided to the Department that a maximum of 20 percent mix by heat of petroleum coke with coal is taking place once the blended fuel is sent to the coal storage silos?
3. Will the sulfur content of the petroleum coke or the blend ever exceed 4 percent, by weight?

St. Johns River Power Park  
March 25, 1996  
Page Two

4. Please describe the procedures that can be implemented by the facility for an inspector to determine if the facility is in compliance with the different scenarios for SO<sub>2</sub> removal efficiency. Describe how the proposed conditions for SO<sub>2</sub> are enforceable as a practical matter.
5. Please quantify the CO emissions in ppm, lb/hr and TPY for the past two years for the two units. Provide a range of CO emissions based on the historical data. How will you assure the Department that this range and the total annual emissions for the past two years are not exceeded when burning a blend of petroleum coke and coal.

We will resume processing this application after we receive the requested information. If you have any questions regarding this matter, please call Syed Arif at (904) 488-1344.

Sincerely,



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

AAL/sa/t

cc: J. Harper, EPA  
J. Bunyak, NPS  
C. Kirts, NED  
B. Oven, DEP  
J. Braswell, OGC  
J. Manning, RESD  
K. Kosky, KBN

Z 127 633 194



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P.O., State and ZIP Code <i>JACK, FL</i>	
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<i>PSD FI-210</i>	
<i>PA 81-13</i>	

PS Form 3800, March 1993

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<p><b>SENDER:</b></p> <ul style="list-style-type: none"> <li>• Complete items 1 and/or 2 for additional services.</li> <li>• Complete items 3, and 4a &amp; b.</li> <li>• Print your name and address on the reverse of this form so that we can return this card to you.</li> <li>• Attach this form to the front of the mailpiece, or on the back if space does not permit.</li> <li>• Write "Return Receipt Requested" on the mailpiece below the article number.</li> <li>• The Return Receipt will show to whom the article was delivered and the date delivered.</li> </ul>	<p>I also wish to receive the following services (for an extra fee):</p> <p>1. <input type="checkbox"/> Addressee's Address</p> <p>2. <input type="checkbox"/> Restricted Delivery</p> <p>Consult postmaster for fee.</p>
	<p>3. Article Addressed to: <i>Richard Breitmoser, PE</i> <i>St. Johns River Power Park</i> <i>11201 New Berlin Rd</i> <i>Jacksonville, FL 32226</i></p>
<p>5. Signature (Addressee) <i>Jerré Michals</i></p>	<p>7. Date of Delivery <i>3/27/96</i></p>
<p>6. Signature (Agent)</p>	<p>8. Addressee's Address (Only if requested and fee is paid)</p>

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# Department of Environmental Protection

Lawton Chiles  
Governor

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

Virginia B. Wetherell  
Secretary

March 5, 1996

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Ms. Jewell Harper, Chief  
Air Branch Program  
U. S. EPA - Region IV  
345 Courtland Street, N.E.  
Atlanta, Georgia 30308

Re: JEA/St. John's River Power Park  
PSD-FL-010, Amendment

Dear Ms. Harper:

Enclosed is an application from Jacksonville Electric Authority (JEA) to amend it's EPA-issued PSD permit applicable to St. John's River Power Park (SJRPP) in Duval County, Florida. The request is to allow use of 20 percent petroleum coke (petcoke) in two coal-fired boilers which are presently regulated as NSPS Subpart Da sources, with maximum sulfur dioxide emissions of 0.76 pounds per million Btu heat input.

Although JEA has included provisions to insure there are no significant emission increases related to this change in method of operation, we would like to have your comments. At this time, we are also reviewing requests to burn petcoke at several other utilities in Florida. So far, based on our experience, it appears that sulfur dioxide emissions increases can be minimized by additional scrubbing, while particulate and nitrogen oxide emission remain unchanged. Greater attention to combustion practices can maintain carbon monoxide emissions under control, while sulfuric acid mist emissions typically need to be monitored in future years to demonstrate there was no increase in actual emissions.

If you have any questions regarding this matter, please call Syed Arif or Al Linero at (904)488-1344.

Sincerely,

C. H. Farcy, P.E.  
Chief  
Bureau of Air Regulation

CHF/AL/t

Enclosure

cc: J. Bunyak, NPS  
R. Breitmose, JEA  
C. Kirts, NED  
J. Manning, RESD

Z 127 633 181



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JEA PSD-F-010	

PS Form 3800, March 1993

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3. Article Addressed to:

Jewell Harper, Chief  
US EPA - Region IV  
345 Courtland St, NE  
Atlanta, GA 30308

4a. Article Number

Z 127 633 181

4b. Service Type

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| <input checked="" type="checkbox"/> Certified | <input type="checkbox"/> COD                            |
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5. Signature (Addressee)

Charles Davis

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PS 12 1996

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CERTIFIED MAIL

EV 960301

March 01, 1996



Mr. Clair Fancy  
Bureau of Air Regulation  
Florida Department of Environmental Protection  
2600 Blair Stone Road  
Mail Station 5505  
Tallahassee, FL 32399-2400

**RECEIVED**

MAR 05 1996  
BUREAU OF  
AIR REGULATION

*on Mar 4*

RE: Jacksonville Electric Authority (JEA)  
St. Johns River Power Park (SJRPP)  
Site Certification # PA 81-13; PSD # FL 010  
Submittal - FDEP Application For Air Permit

Dear Mr. Fancy:

Thank you for meeting on 02-14-96 with representatives of SJRPP and JEA regarding DEP concurrence structuring a federally enforceable permit condition to co-fire petroleum coke with coal at the above referenced facility. The meeting reviewed supporting data and proposed language which was presented in the 01/24/96 conceptual letter submitted to Mr. Linero of your agency. (Attachment A)

Upon review of the data and proposed language, it was determined that the "Application For Air Permit - Long Form" be prepared and submitted to your agency. Please find attached the completed application submitted in quadruplicate for your review. (Attachment B) Please note that the application's Attachment 1 contains language to be considered for placement in the SJRPP Conditions of Certification. In addition, with the proposed permit condition, co-firing petroleum coke with coal will not require PSD analysis pursuant to Rules 62-212.400 and 62.212.200(2)(d), FAC.

Please contact Jay Worley at (904) 751-7729 if have any questions. Your expeditious review and response are appreciated.

Very truly yours,

Richard Breitmoser, P.E.  
Vice President  
Environmental Health & Safety Group

**Attachments**

cc: Hamilton S. Oven, Siting Coordinator, FDEP  
Al Linero, FDEP  
Jay Worley, SJRPP

# St. Johns River Power Park

## Petroleum Coke/Coal Co-Firing SO<sub>2</sub> Emission Limit

0.76 lb

## Fundamental Requirements:

1. Coal - Meet NSPS Subpart Da and BACT Emission Limit
  - a. 0.6 lb / MMBtu or 70% SO<sub>2</sub> Reduction, and
  - b. 1.2 lb / MMBtu or 90% SO<sub>2</sub> Reduction
  - c. 0.76 lb / MMBtu

6% Sulfur = 2. Petroleum Coke - Meet 0.4 lb / MMBtu; Equivalent to 95% Reduction

$$\begin{aligned} \text{Calculation: } & \frac{0.06 \text{ lb S}}{\text{lb fuel}} \times \frac{\text{lb fuel}}{14,800 \text{ Btu}} \times \frac{2 \text{ lb SO}_2}{\text{lb S}} \times \frac{10^6}{\text{MM}} \times (1 - 0.95) \\ & = 0.4 \text{ lb / MMBtu} \end{aligned}$$



# Proposed Limits:

1. Coals -  $\leq 2\%$  Sulfur; Assume 20% Petroleum Coke Co - Firing at All Times

a. NSPS = 0.6 lb / MMBtu

$$\begin{aligned} \text{Calculation: } & \frac{0.0121 \text{ lb S}}{\text{lb fuel}} \times \frac{\text{lb fuel}}{12,100 \text{ Btu}} \times \frac{2 \text{ lb SO}_2}{\text{lb S}} \times \frac{10^6}{\text{MM}} \times (1 - 0.7) \\ & = 0.6 \text{ lb / MMBtu} \end{aligned}$$

b. Petroleum Coke = 0.4 lb / MMBtu

$$\begin{aligned} \text{c. Result: } & \left( \frac{80}{100} \times 0.6 \text{ lb / MMBtu} \right) + \left( \frac{20}{100} \times 0.4 \text{ lb / MMBtu} \right) \\ & = 0.56 \text{ lb / MMBtu} \end{aligned}$$

# Proposed Limits:

2. Coals > 2% Sulfur and ≤ 3.63% Sulfur; Variable Amount of Petroleum Coke

a. NSPS = 0.6 lb / MMBtu

$$\begin{aligned} \text{Calculation: } & \frac{3.63 \text{ lb S}}{100 \text{ lb fuel}} \times \frac{\text{lb fuel}}{12,100 \text{ Btu}} \times \frac{2 \text{ lb SO}_2}{\text{lb S}} \times \left(1 - \frac{90}{100}\right) \\ & = 0.6 \text{ lb / MMBtu} \end{aligned}$$

b. Petroleum Coke = 0.4 lb / MMBtu

c. Let C = % Coal Fired

$$\begin{aligned} \text{Equation: } & \left( \frac{C}{100} \times 0.6 \text{ lb / MMBtu} \right) + \left[ \left(1 - \frac{C}{100}\right) \times 0.4 \text{ lb / MMBtu} \right] \\ \text{SO}_2 \text{ Limit} & = \frac{0.6C}{100} - \frac{0.4C}{100} + 0.4 = \frac{0.2C}{100} + 0.4 \end{aligned}$$

# Proposed Limits:

## 3. Coals > 3.63% Sulfur; Variable Amount of Petroleum Coke

a. NSPS = 90% Reduction

b. Petroleum Coke = 0.4 lb / MMBtu

c. Let C = % Coal Fired and S = % Sulfur in Coal

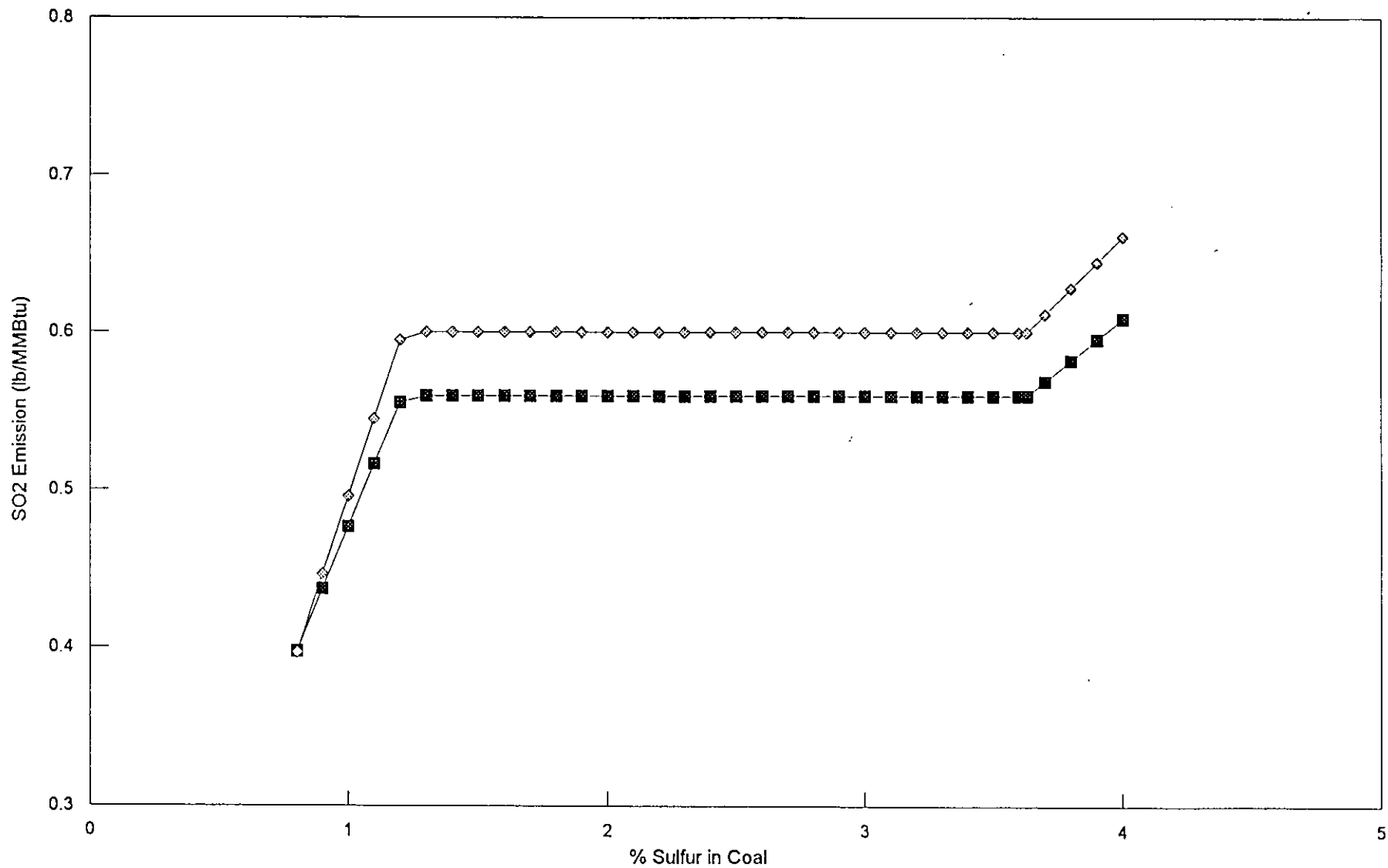
$$\begin{aligned} \text{Equation: } & \left[ \frac{C}{100} \times \frac{S}{100} \times \frac{1}{12,100} \times 2 \times \left(1 - \frac{90}{100}\right) \times 10^6 \right] + \left[ \left(1 - \frac{C}{100}\right) \times 0.4 \right] \\ & = \left( \frac{C}{100} \times S \times 0.1653 \right) + \left( 0.4 - 0.4 \times \frac{C}{100} \right) \end{aligned}$$

$$\text{SO}_2 \text{ Limit} = \frac{1}{100} \times (0.1653 \times C \times S - 0.4C + 40)$$

Example: 80% Coal and 3.8% Sulfur

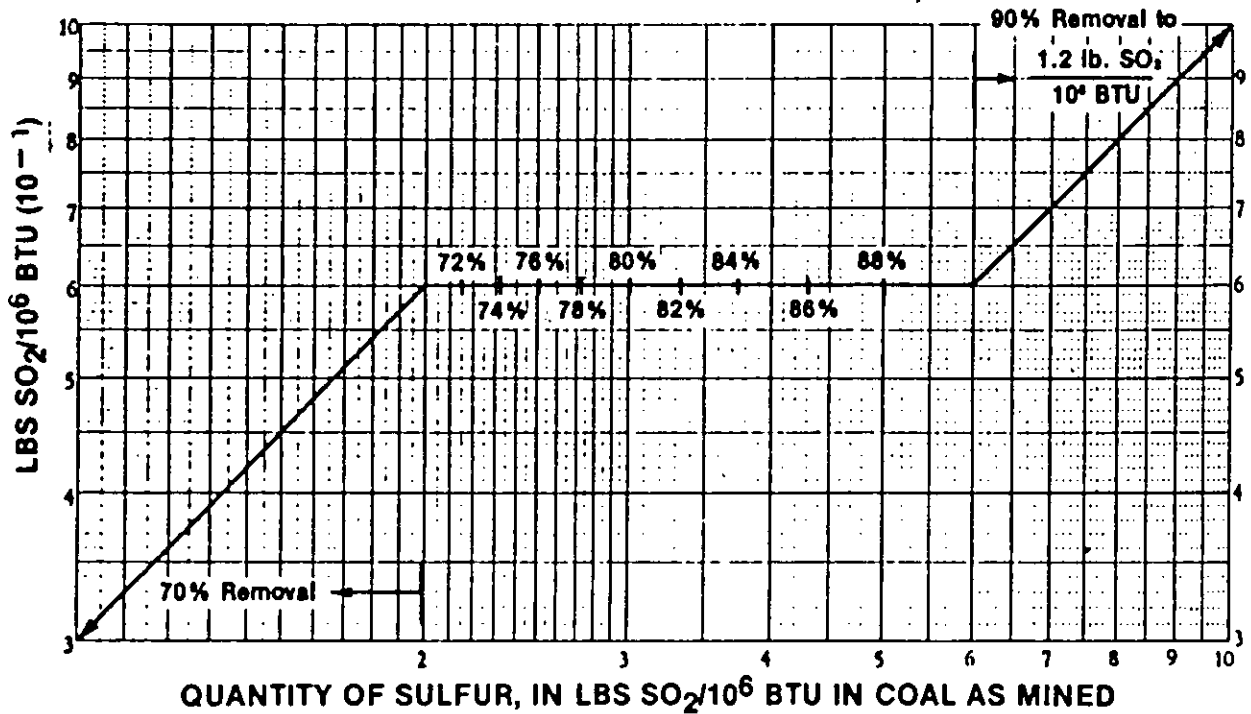
$$(0.1653 \times 80 \times 3.8 - 0.4 \times 80 + 40) \times \frac{1}{100} = 0.58 \text{ lb / MMBtu}$$

**Emission Limits**  
SO2 Emission Rate vs. Percent Sulfur in Coal



■ Combined Emission Limit    ◇ Coal SO2 NSPS Limit

**SULFUR DIOXIDE – NEW SOURCE PERFORMANCE STANDARDS  
FOR ELECTRIC UTILITY STEAM GENERATING UNITS  
CONSTRUCTED AFTER SEPTEMBER 18, 1978**



SOURCES: Federal Register, Vol. 44, No. 113, June 11, 1979: 40 CFR Part 60, S.60.43a, ESE, 1979.



# Department of Environmental Protection

Lawton Chiles  
Governor

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

Virginia B. Wetherell  
Secretary

February 8, 1996

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Richard Breitmoser, P.E.  
Environmental Health and Safety  
St. Johns River Power Park  
11202 New Berlin Road  
Jacksonville, Florida 32226

Dear Mr. Breitmoser:

RE: Modification of PSD-FL-010 and PA 81-13, Petcoke Project  
St. Johns River Power Park Units 1 & 2

The Department is in receipt of your letter dated January 24 outlining an approach to insure there are no increases in actual sulfur dioxide emissions directly attributable to burning of petcoke at St. Johns River Power Park.

Because of a previous commitment, we will need to meet at a later date to discuss your plans in detail. We propose to meet on February 19. We would appreciate an explanation as to how compliance will be insured with the proposed restrictions to insure there are no SO<sub>2</sub> emission increases attributable to burning of petcoke while maintaining present coal use flexibility. We also would like to discuss any plans to insure SO<sub>3</sub>/acid mist emissions do not increase and proposals to control carbon monoxide emission increases projected to occur based on performance test data. The implications of such increases were discussed in our previous letter.

A copy of the letter has been forwarded to the Environmental Protection Agency for their review and comments. We look forward to further discuss these matters at the next meeting. If you have any questions, please call Syed Arif at (904) 488-1344.

Sincerely,

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

AAL/sa/t

cc: J. Harper, EPA  
B. Oven, DEP

J. Bunyak, NPS  
J. Braswell

C. Kirts, NED  
J. Manning, RESD

Z 127 633 160



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PSD-FI-010 PA 81-13	

PS Form 3800, March 1993

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Richard Breitmoser, PE  
St. Johns River Park  
11202 N. Berlin Rd  
Jacksonville, FL 32226

4a. Article Number  
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 Express Mail    Return Receipt for Merchandise

7. Date of Delivery  
2.12.94

5. Signature (Addressee)  
*Richard Breitmoser*

6. Signature (Agent)  
*Pat Kramer*

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January 24, 1996

JAN 26 1996

Bureau of Air Monitoring  
& Mobile Sources

Mr. Al Linero  
Bureau of Air Regulation  
Florida Department of Environmental Protection  
2600 Blair Stone Road  
Mail Station 5505  
Tallahassee, FL 32399-2400

RE: Jacksonville Electric Authority (JEA)  
St. Johns River Power Park (SJRPP), Units 1 & 2  
Site Certification # PA 81-13; PSD # FL 010  
Petroleum Coke

Dear Mr. Linero:

Thank you for taking the time last month to confer with representatives of JEA and SJRPP regarding the development of a federally enforceable permit condition governing our proposal to co-fire petroleum coke with coal.

As discussed, we are seeking DEP concurrence structuring a federally enforceable permit condition that prevents PSD applicability by preventing actual SO<sub>2</sub> emissions associated with the petroleum coke fraction of the blended fuel from exceeding past actual SO<sub>2</sub> emissions associated with burning coal. In this manner, there will be no prospective increase in SO<sub>2</sub> emissions caused by the proposed change (i.e., utilization of petroleum coke.) Pursuant to EPA's June 21, 1992 WEPCO regulations (57 Fed. Reg. 32314), increases in air emissions not caused by proposed changes must be excluded from steam electric power plants' future actual emissions in assessing PSD applicability. EPA emphasized in the preamble statement that new source review "applies only where the emissions increase is caused by the change." 57 Fed. Reg. at 32325. Our approach comports with the WEPCO regulations, and corresponding state rules, by eliminating the possibility that the petroleum coke portion of prospective fuel blends will exceed "past actual" SO<sub>2</sub> emissions associated with coal burning. Consistently with the WEPCO regulations, future increases in SO<sub>2</sub> emissions caused solely by enhanced electricity demand or caused by permissible variations in coal sulfur content should not count towards PSD applicability.

During the meeting last month we attained conceptual agreement on this overall approach, and concurred that the next task would be to work on specific permit language. Having considered this matter further, we propose a federally enforceable limitation on SO<sub>2</sub> emissions when co-firing petroleum coke that includes both an emission limit and a percent of SO<sub>2</sub> reduction requirement. More specifically, we proposed the following as an emission limitation:

- (a) When blends of petroleum coke and coal with a sulfur content of up to or equal to 2 percent are fired in Units 1 and 2, the SO<sub>2</sub> emissions shall not exceed 0.56 lb/mmBTU and a minimum of 75 percent reduction in the flue gas desulfurization system.



- (b) When co-firing petroleum coke with coals having a sulfur content between 2 percent and 3.63 percent, SO<sub>2</sub> emissions shall not exceed the emission limitation determined by the following formula:

$$\text{SO}_2 \text{ emission limit (lb/mmBTU)} = (0.2 \times C/100) + 0.4$$

where: C is the percent of coal co-fired on a heat input basis;  
e.g., 80 percent

- (c) When coals with a sulfur content greater than 3.63 percent are co-fired with petroleum coke, the SO<sub>2</sub> emissions shall not exceed the emission limitation determined by the following formula:

$$\text{SO}_2 \text{ emission limit (lb/mmBTU)} = (0.1653 \times C \times S - 0.4C + 40) \times 1/100$$

where: C is the percent of coal co-fired on a heat input basis;  
e.g., 80 percent; and S is the percent sulfur in the coal;  
e.g., 3.8 percent.

- (d) The maximum SO<sub>2</sub> emission rate when firing petroleum coke shall not exceed 0.688 lb/mmBTU.

- (e) Compliance with the SO<sub>2</sub> emissions limit shall be based on a 30-day rolling average for those days when petroleum coke is fired. Any use of petroleum coke during a 24-hour period shall be considered one day of the 30-day rolling average. The 30-day rolling average shall be calculated according to the New Source Performance Standards (NSPS) codified in 40 CFR Part 60 Subpart Da, except as noted above.

\*\*\*

These proposed specific conditions are supported by the following rationale:

1. The NSPS codified in 40 CFR Part 60 Subpart Da require, over a range of coal types that may be fired, either a 0.6 lb/mmBTU outlet SO<sub>2</sub> concentration or a 70 percent reduction in the potential SO<sub>2</sub> emissions. For coals with a sulfur content of greater than 1.2 percent, the 0.6 lb/MMBTU emission limit governs; for coals with a sulfur content of 1.2 percent or less the 70 percent reduction requirement would govern. The enclosed table, Attachment A, present in the 6th and 7th columns the NSPS emission limit and the percent SO<sub>2</sub> removals as a function of the coal sulfur content (1st column). In terms of practical application, under Subpart Da: (1) when the inlet air to the scrubber has SO<sub>2</sub> concentrations under 2.0 lbs/mmBTU, 70% SO<sub>2</sub> reduction is required; (2) when the inlet SO<sub>2</sub> concentration is higher than 2.0 but less than 6.0 lbs/mmBTU, required SO<sub>2</sub> scrubbing must result in emissions of 0.6 lb/mmBTU or less; (3) at higher concentrations, 90% removal is required. It should be noted that the facility currently has a SO<sub>2</sub> 0.76 lb/mmBTU emission limit established as BACT for coal firing. Of course, the proposed emission limit for co-firing petroleum coke and coal could never exceed this limit.

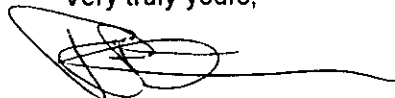
2. The representative actual annual SO<sub>2</sub> emission rate for Units 1 and 2 while burning coal has been 0.4 lb/mmBTU. By assuring that the SO<sub>2</sub> emission rate associated with the petroleum coke fraction of the blended fuel does not exceed 0.4 lb/MMBTU, the future actual emissions associated with the SJRPP's proposed change (burning petroleum coke) will not exceed the past actual emissions. To achieve a 0.4 lb/MMBTU emission rate with the typical sulfur content for petroleum coke (i.e., 6 percent), a 95 percent reduction is required. This is shown on the last column in Attachment A.
3. Except for coals with a sulfur content of greater than 2 percent, the proposed percent reduction requirement and the emission limit is based on co-firing 20 percent petroleum coke with coal (on a heat input basis). This assures that when co-firing lower percentages of petroleum coke with coal, the resulting emission rate would be lower than could be allowed by meeting only the NSPS and the "actual" emission rate. For example, if a 10 percent mixture of petroleum coke is co-fired with a 1.2 percent sulfur coal, then the resulting petroleum coke emissions rate to meet NSPS and 0.4 lb/mmBTU would be 0.58 lb/MMBTU. In contrast, the proposed condition would limit the SO<sub>2</sub> emissions to 0.56 lb/mmBTU.
4. The effect of the proposed SO<sub>2</sub> emission limitation is shown in Attachment A (2nd and 3rd columns). As shown, for coals with sulfur content less than 1.2 percent, the 75 percent reduction requirement would produce emission rates less than 0.56 lb/mmBTU while meeting the Subpart Da reduction requirement of 70 percent and the "actual" emission rate of 0.4 lb/mmBTU for petroleum coke. For coals with a sulfur content of 1.2 percent to 2.0 percent, the proposed petroleum coke emission limit of 0.56 lb/mmBTU would meet the Subpart Da limit of 0.6 lb/mmBTU for coal and 0.4 lb/mmBTU for petroleum coke.
5. The equation for a SO<sub>2</sub> emission limit for coals above 2 percent would allow some flexibility for petroleum coke/coal mixtures. This formula would be applicable for sulfur coals from 2.0 to 3.63 percent, since coals in this range would be required to meet the 0.6 lb/mmBTU in Subpart Da. The proposed equations for SO<sub>2</sub> emission limitations for coal above 2 percent sulfur content would allow some flexibility for petroleum coke/coal mixtures. The equation in paragraph (b) will achieve compliance with the governing Subpart Da limit of 0.6 lb/mmBTU and 0.4 lb/mmBTU for petroleum coke. The equation in paragraph (c) accounts for the governing Subpart Da requirement of 90 percent SO<sub>2</sub> reduction and 0.4 lb/mmBTU for petroleum coke. The maximum SO<sub>2</sub> emission rate associated with firing only coal, regardless of coal sulfur content, cannot exceed 0.76 lb/mmBTU as required by PSD and PPSA approval. Therefore, petcoke/coal mixtures can never exceed 0.688 lbs/mmBTU.
6. SJRPP Units 1 and 2 feature an inlet continuous emission monitoring system to monitor inlet SO<sub>2</sub> levels prior to the flue gas desulfurization system as required by Subpart Da, and an outlet continuous emission monitoring system which records SO<sub>2</sub> emissions as required by Subpart Da and 40 CFR Part 75. These SO<sub>2</sub> data are quality assured pursuant to Subpart Da and Part 75 requirements. The percent reduction requirements and the SO<sub>2</sub> emissions limitations for coals blended with petroleum coke that have a sulfur content less than 3.63 percent shall be ensured by operating in accordance with the data from the inlet and outlet continuous emissions monitoring system. The sulfur content of the coal shall be ensured by utilizing the "as received" coal analytical data or on-site sampling and analysis.

Mr. Al Linero  
January 24, 1996  
Page 4

The proposed emission limitation meets the letter and intention of the WEPCO regulations. Also, this condition comports with EPA's "federal enforceability" guidance because it is enforceable both as a matter of law and as a practical matter; simply put, this condition obviates the possibility of an increase in actual emissions attributable to petroleum coke. Moreover, this proposal comports with good environmental policy: As shown in Attachments B and C, under the proposed permit condition co-firing petroleum coke will be subject to lower emissions limitations than the limitations applicable when utilizing only coal. These graphs compare the emission limits and reduction percentages currently applicable to coal firing and proposed for petroleum coke co-firing.

With the proposed permit condition, co-firing petroleum coke will not require PSD analysis pursuant to Rules 62-212.400 and 62-212.200(2)(d), F.A.C. We look forward to meeting with you in approximately two weeks to answer any questions and, as necessary, schedule a meeting so that we may finalize this matter. We hope to begin utilizing petroleum coke this Spring. Please contact Jay Worley at (904) 751-7729 if you have any questions.

Very truly yours,



Richard Breitmoser, P.E.  
Vice President  
Environmental Health and Safety Group

Enclosures

cc: Hamilton S. Owen, Siting Coordinator, DEP  
Jay Worley, SJRPP

cc: Al Linero, BAR  
Syed Arief, BAR

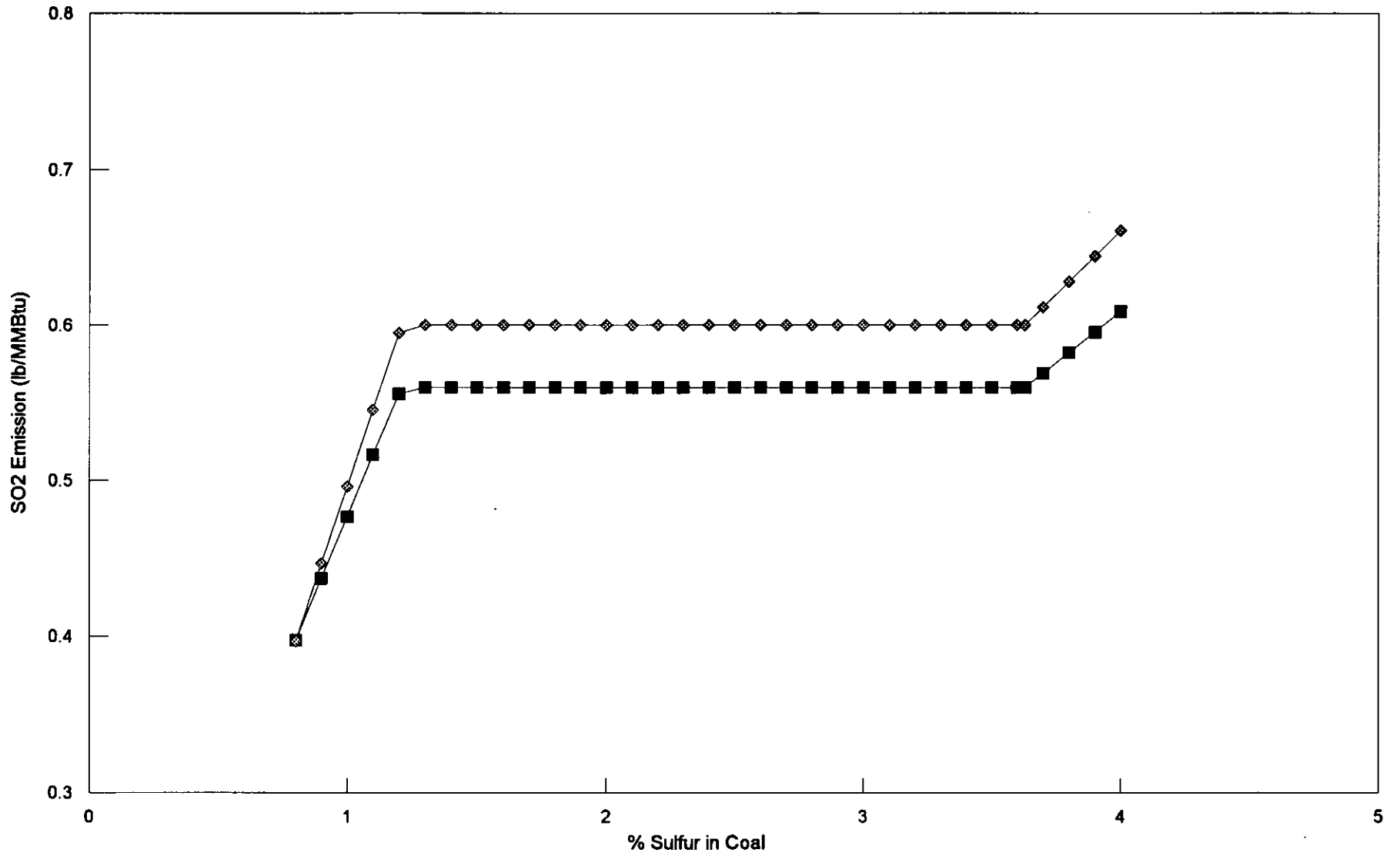
## ATTACHMENT A

**St. Johns River Power Park  
 Combined Emissions Limit and Scrubber Efficiency for Co-firing Petroleum Coke and Coal**

Coal Sulfur Content	Combined Emission Limit (lb/mmBtu)	Combined Scrubber Efficiency	Uncontrolled Emissions		Coal SO2 NSPS Limit (lb/mmBtu)	Coal SO2 Removal (lb/mmBtu)	Pet Coke SO2 Removal (lb/mmBtu)
			Coal SO2 (lb/mmBtu)	Pet Coke SO2 (lb/mmBtu)			
0.80%	0.40	75.01%	1.32	8.11	0.40	70.00%	95.07%
0.90%	0.44	75.01%	1.49	8.11	0.45	70.00%	95.07%
1.00%	0.48	75.01%	1.65	8.11	0.50	70.00%	95.07%
1.10%	0.52	75.01%	1.82	8.11	0.55	70.00%	95.07%
1.20%	0.56	75.01%	1.98	8.11	0.60	70.00%	95.07%
1.30%	0.56	76.67%	2.15	8.11	0.60	72.08%	95.07%
1.40%	0.56	78.27%	2.31	8.11	0.60	74.07%	95.07%
1.50%	0.56	79.65%	2.48	8.11	0.60	75.80%	95.07%
1.60%	0.56	80.86%	2.64	8.11	0.60	77.31%	95.07%
1.70%	0.56	81.93%	2.81	8.11	0.60	78.65%	95.07%
1.80%	0.56	82.88%	2.98	8.11	0.60	79.83%	95.07%
1.90%	0.56	83.73%	3.14	8.11	0.60	80.89%	95.07%
2.00%	0.56	84.49%	3.31	8.11	0.60	81.85%	95.07%
2.10%	0.56	85.18%	3.47	8.11	0.60	82.71%	95.07%
2.20%	0.56	85.81%	3.64	8.11	0.60	83.50%	95.07%
2.30%	0.56	86.39%	3.80	8.11	0.60	84.22%	95.07%
2.40%	0.56	86.91%	3.97	8.11	0.60	84.88%	95.07%
2.50%	0.56	87.40%	4.13	8.11	0.60	85.48%	95.07%
2.60%	0.56	87.84%	4.30	8.11	0.60	86.04%	95.07%
2.70%	0.56	88.26%	4.46	8.11	0.60	86.56%	95.07%
2.80%	0.56	88.64%	4.63	8.11	0.60	87.04%	95.07%
2.90%	0.56	89.00%	4.79	8.11	0.60	87.48%	95.07%
3.00%	0.56	89.33%	4.96	8.11	0.60	87.90%	95.07%
3.10%	0.56	89.65%	5.12	8.11	0.60	88.29%	95.07%
3.20%	0.56	89.94%	5.29	8.11	0.60	88.66%	95.07%
3.30%	0.56	90.21%	5.45	8.11	0.60	89.00%	95.07%
3.40%	0.56	90.47%	5.62	8.11	0.60	89.32%	95.07%
3.50%	0.56	90.72%	5.79	8.11	0.60	89.63%	95.07%
3.60%	0.56	90.95%	5.95	8.11	0.60	89.92%	95.07%
3.63%	0.56	91.01%	6.00	8.11	0.60	90.00%	95.07%
3.70%	0.57	91.01%	6.12	8.11	0.61	90.00%	95.07%
3.80%	0.58	91.01%	6.28	8.11	0.63	90.00%	95.07%
3.90%	0.60	91.01%	6.45	8.11	0.64	90.00%	95.07%
4.00%	0.61	91.01%	6.61	8.11	0.66	90.00%	95.07%

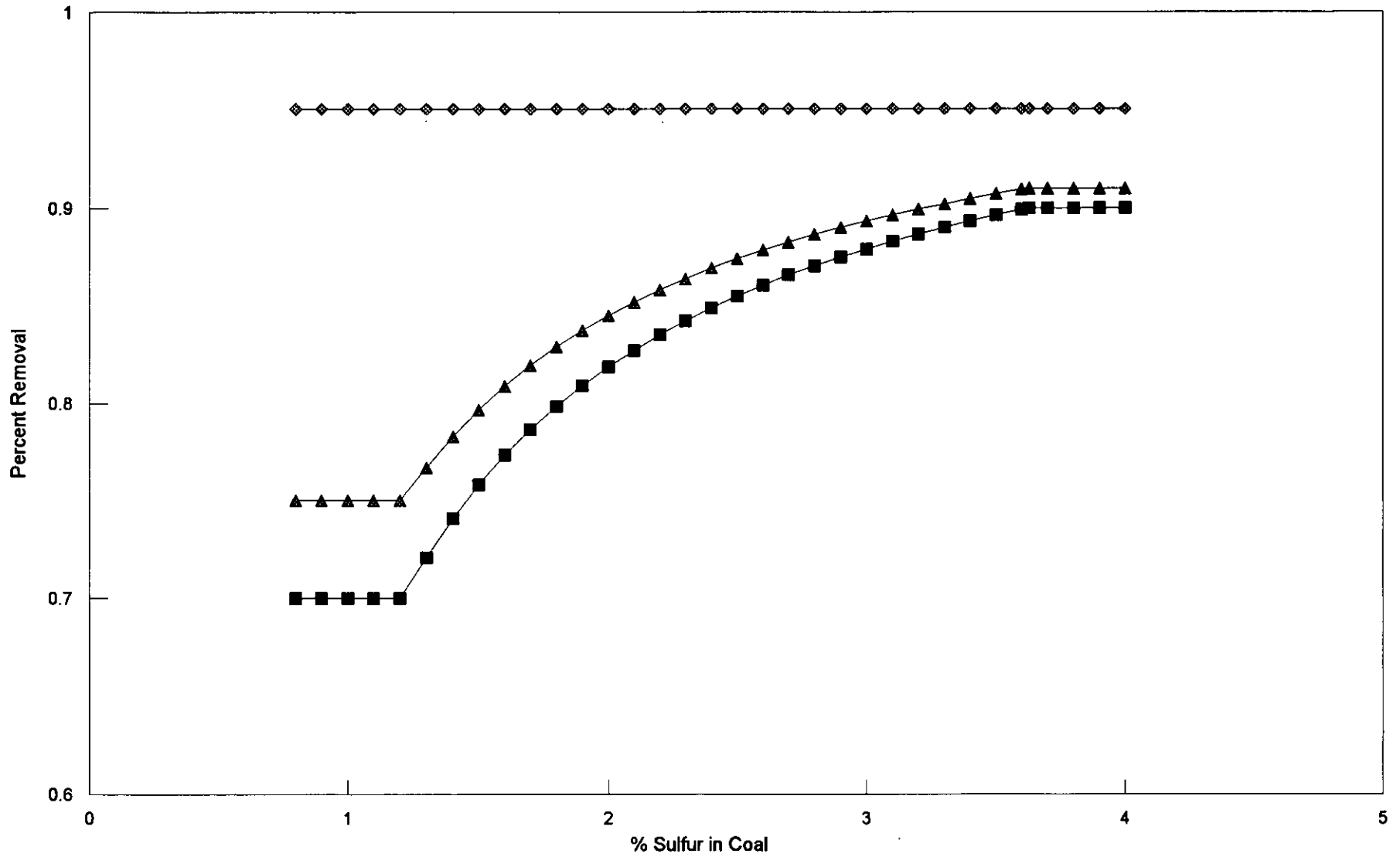
Assumptions: 12,100 Btu/lb for Coal  
 14,800 Btu/lb for Petroleum Coke  
 6% sulfur content of Petroleum Coke  
 20% Petroleum Coke firing (mmBtu/hr basis)  
 0.40 lb/mmBtu for Petroleum Coke

**Emission Limits**  
SO<sub>2</sub> Emission Rate vs. Percent Sulfur in Coal



■ Combined Emission Limit    ♦ Coal SO<sub>2</sub> NSPS Limit

**Percent Removal**  
**SO<sub>2</sub> Removal vs. Percent Sulfur in Coal**



■ Coal SO<sub>2</sub> Removal      ◇ Pet Coke SO<sub>2</sub> Removal      ▲ Combined Scrubber Efficiency

