

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

IN RE: CITY OF LAKELAND;)	
C.D. McINTOSH POWER PLANT)	
UNIT NO. 3; MODIFICATION OF)	OGC NO. 93-3123
CONDITIONS OF CERTIFICATION)	
PA-74-06SR-E)	
_____)	

FINAL ORDER MODIFYING
CONDITIONS OF CERTIFICATION

On December 7, 1978, the Governor and Cabinet, acting as the Siting Board, issued a final order, pursuant to Chapter 403, Part II, Florida Statutes (F.S.), approving Certification of the City of Lakeland McIntosh Power Plant Unit Number 3 ("McIntosh Unit No. 3"). The Site Certification authorized construction and operation of a coal-refuse, and oil-fired steam electric generating unit, along with various associated facilities. That Site Certification was subsequently modified in 1980, 1988, and 1993.

On December 7, 1994, the City of Lakeland filed a request to modify the conditions of certification for McIntosh Unit No. 3 pursuant to Section 403.516(1)(b), F.S., and Rule 62-17.211, Florida Administrative Code (F.A.C.). On October 26, 1995, the City of Lakeland supplemented the request for modification. The City of Lakeland requested that the conditions be modified to approve use of an alternative fuel, petroleum coke. In addition, the City of Lakeland's requests included minor revisions to:

1) update regulatory references; 2) clarify that the Certification regulates only McIntosh Unit No. 3; 3) reflect the elimination of use of the artificial marsh, and 4) adjust submittal requirements for fuel usage and analysis data.

Copies of the City of Lakeland's modification request were distributed to all parties to the certification proceeding and made available for public review. On January 27, 1995, a Notice of Receipt of Proposed Modification of Power Plant Certification regarding the proposed modifications was published in the Florida Administrative Weekly. The notice specified the Department of Environmental Protection's (Department) intent to modify the conditions of certification. On March 9, 1995, the City of Lakeland responded to the Department's requests for additional information. On December 22, 1995, a Notice of Intent to Issue Proposed Modification of Power Plant Certification was published in the Florida Administrative Weekly. The notice specified that a hearing would be held if requested by the parties on or before 45 days from receipt of the notice of proposed modification or if requested within 30 days of publication of the notice by persons whose substantial interests are affected by the proposed modification. No written objection to the proposed modification was received by the Department.

Accordingly, in the absence of any timely objection, **IT IS ORDERED:**

The proposed changes to the Conditions of Certification for McIntosh Unit No. 3 as described in the December 7, 1994, request for modification and October 26, 1995 supplemental request, as clarified by the City of Lakeland's March 9, 1995 responses to DEP's requests for additional information are **APPROVED**. Pursuant to Section 403.516(1)(b), F.S., the Department hereby **MODIFIES** the conditions of certification for the City of Lakeland McIntosh Unit No. 3 as follows:

GENERAL

1. Change in Discharge

All discharges or emissions authorized herein shall be consistent with the terms and conditions of this certification. The discharge of any regulated pollutant not identified in the application, or any discharge more frequent than, or at a level in excess of that authorized herein, shall constitute a violation of the certification. Any proposed anticipated facility expansions, production increases, or process modifications which will result in new, different or increased discharges or expansion in steam generating capacity of Unit No. 3 will require a submission of a new or supplemental application pursuant to Chapter 403, Florida Statutes.

2. Noncompliance Notification

If, for any reason, the permittee does not comply with or will be unable to comply with any limitation

specified in this certification, the permittee shall notify the Southwest District Manager of the Department by telephone during the working day during which said noncompliance occurs and shall confirm this situation in writing within seventy-two (72) working-day hours of first becoming aware of such conditions, supplying the following information:

- a. A description and cause of noncompliance; and
- b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying event.

3. Unit No. 3 Operation Facilities

The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this certification. Such systems are not to be bypassed without prior department approval.

4. Adverse Impact - no change

5. Right of Entry

The permittee shall allow the Secretary of the Florida Department of Environmental Protection Regulation and/or authorized representatives, upon the presentation of credentials: ---- no change

6. - 10. - no change

11. Review of Site Certification

The certification shall be final unless revised, revoked or suspended pursuant to law. At least every five years from the date of issuance of this certification or any National Pollutant Discharge Elimination System Permit issued pursuant to the Federal Water Pollution Control

Act Amendments of 1972; for the plant units, the Department shall review all monitoring data that has been submitted to it during the preceding five-year period, for the purposes of determining the extent of the permittee's compliance with the conditions of this certification and the environmental impact of this facility unit. The Department shall submit the results of its review and recommendations to the permittee. Such review will be repeated at least every five years thereafter.

12. Modification of Conditions

The conditions of this certification may be modified in the following manner:

- a. The Board hereby delegates to the Secretary the authority to modify, after notice and opportunity for hearing, any conditions pertaining to monitoring or sampling.
- b. This certification shall be automatically modified to conform to any subsequent amendments, modifications, or renewals made by DEP under a federally delegated or approved program to any separately issued Prevention of Significant Deterioration (PSD) permit, Title V Air Permit, or National Discharge Elimination System (NPDES) permit for the certified facility. Lakeland or Orlando Utilities Commission (OUC), as appropriate, shall send each party to the certification proceeding (at the party's last known address as shown on the record of such proceeding) copies of notice of requests submitted by Lakeland or OUC for modifications or renewals of the above listed permits if the request involves a relief mechanism (e.g., mixing zone, variance, etc.) From state

standards, a relaxation of conditions included in the permit due to state permitting requirements, or the inclusion of less restrictive air emission limitations in the air permits.

- c. All other modifications shall be made in accordance with Section 403.516, F.S.

CONDITIONS OF CERTIFICATION - SPECIAL

I. Air

The construction and operation of the Unit No. 3 at the McIntosh Plant shall be in accordance with all applicable provisions of the Chapters 62-210 - 62-297 ~~17-2, 17-5, and 17-7~~, Florida Administrative Code. The permittee shall comply with the following conditions of certification:

A. Emission Limitations

1. Stack emissions shall not exceed those specified in Chapter ~~17-2.04(6)(e) 1.~~ 62-296.405, and 62.296.800(2)(a)1., FAC.
2. ~~The permittee shall not burn a fuel oil containing more than an average of 0.7% sulfur unless it can be demonstrated that either, a) heat efficiency is such as to insure compliance with all applicable emission limitations, or b) that a flue gas desulfurization unit is installed that will insure compliance with applicable emission limitations.~~
 - a. Sulfur dioxide emitted to the atmosphere from the boiler shall not exceed 1.2 pounds per million BTU heat input in accordance with 40 CFR 60 Subpart D, Standards of Performance for Fossil-Fuel-Fired Steam Generators for which Construction Started After August 17, 1971.
 - b. A flue gas desulfurization system will be

installed to treat exhaust gases and will operate such that whenever coal or blends of coal and petroleum coke or refuse are burned, sulfur dioxide in gases discharged to the atmosphere from the boiler shall not exceed 10 percent of the potential combustion concentration (90 percent reduction), or 35 percent of the potential combustion concentration (65 percent reduction), when emissions are less than 0.75 pounds per million BTU heat input. Compliance with the percent reduction requirement shall be determined on a 30-day rolling average. This compliance information shall be retained for a period of three years and made available by the City upon request by the Department. Whenever blends of petroleum coke are co-fired with other fuels, sulfur dioxide emissions shall not exceed 0.718 pounds per million BTU heat input based on a 30-day rolling average and shall comply with the reduction requirements given above.

c. Continuous burning of natural gas, low sulfur fuel oil (less than or equal to 0.5 percent sulfur by weight), or combinations of these two fuels with or without the use of the SO₂ scrubber will be allowed.

d. The burning of high sulfur oil (greater than 0.5 percent by weight) or a combination of high sulfur oil and municipal refuse as an emergency fuel without the use of the SO₂ scrubber will be allowed only when the flue gas desulfurization system malfunctions to the extent that the burning of coal would cause emission limitations to be exceeded. Sulfur dioxide emitted to the

atmosphere from the boiler shall not exceed 0.8 pounds per million BTU under this condition.

e. During malfunctions of equipment which cause an interruption of the coal feed to the boiler, the burning of high sulfur oil (greater than 0.5 percent by weight) or a combination of high sulfur oil and municipal refuse will be allowed only if all flue gases are fully scrubbed by the SO₂ scrubber. Sulfur dioxide emitted to the atmosphere from the boiler shall not exceed 0.8 pound per million Btu under this condition.

3. - no change

4. Particulate emissions from the coal handling facilities:

a. The applicant shall not cause to be discharged into the atmosphere from any coal processing or conveying equipment, coal storage system, or coal transfer and loading system ~~processing coal~~, visible emissions which exceed 20 percent opacity.

b. - no change

5. Particulate matter emitted into the atmosphere from the boiler shall not exceed:

<u>Mode of Firing</u>	<u>lb/10⁶ BTU Heat Input</u>
<u>Coal</u>	<u>0.044</u>
<u>Coal/Petcoke</u>	<u>0.044</u>
<u>Coal/Refuse</u>	<u>0.050</u>
<u>Coal/Petcoke/Refuse</u>	<u>0.050</u>
<u>Oil</u>	<u>0.070</u>
<u>Oil/Refuse</u>	<u>0.075</u>

E. Air Monitoring Program:

~~1. The permittee shall install and operate continuously monitoring devices for the Unit No. 3 boiler exhaust for sulfur dioxide, nitrogen dioxide and opacity. The~~

monitoring devices shall meet the applicable requirements of 17-2.08, F.A.C. Continuous monitors shall be installed and operated in accordance with 40 CFR 60.45 and 60.13. In addition, the ASTM-certified automatic solid fossil fuel sampler shall be installed which produces a representative daily sample for analysis of sulfur, moisture, heating value and ash. The solid fossil fuel analysis data shall be used in conjunction with emission factors and the continuous monitoring data to calculate SO₂ reduction.

2. - 3. - no change

4. The permittee shall provide sampling ports into the stack and shall provide access to the sampling ports, in accordance with Standard Sampling Techniques and Methods of Analysis for The Determination of Air Pollutants from Point Sources, July 1975 Rule 62-297, F.A.C.

5. - no change

6. Emission Control Systems:

Prior to operation of the source, the owner or operator shall submit to the Department a standardized plan or procedure that will allow the company to monitor emission control equipment efficiency and enable the company to return malfunctioning equipment to proper operation as expeditiously as possible.

C. Stack Testing:

1. - no change

2. Performance tests shall be conducted and data reduced in accordance with methods and procedures in accordance with EPA or DEP-approved test methods. Standard Sampling Techniques and Methods of the Determination on Air Pollutants from Point Sources, July 1975.

3. - 4. - no change

5. Stack tests for particulates, NO_x and SO₂ shall be performed annually in accordance with conditions 2, 3 and 4 above. CEMS and CEM's relative accuracy tests may be used to determine compliance as long as the source and test conditions are consistent with the applicable requirements.

D. Reporting

1. ~~Stack monitoring, fuel usage and fuel analysis~~ data shall be reported to the Department on a quarterly basis in accordance with 40 CFR, Part 60, Section 60.7(c), (d) and in accordance with 62-297.405(1)(g) 17-2-08, FAC. Fuel usage and fuel analysis data shall be reported to the Department on an annual basis.

2. - no change

E. - F. - no change

G. Reporting:

1. Beginning one month after certification the applicant shall submit to the Department a quarterly status report briefly outlining progress made on engineering design and purchase of major pieces of equipment (including control equipment). All reports and information required to be submitted under this condition shall be submitted to ~~Mr. Hamilton S. Owen, Jr., the Administrator, of Power Plant Siting~~ Coordination Office, Department of Environmental Protection Regulation, 2600 Blair Stone Road, MS 48, Tallahassee, Florida 32399-2400.

2. Lakeland shall maintain and submit to the Department on an annual basis for a period of five years from the date the unit is initially in commercial operation, co-fired with petroleum coke, information demonstrating in accordance with 40 CFR 52.21 (b) (33) and 40 CFR 52.21

(b) (21) (v) that the operational changes did not result in emission increases of carbon monoxide, nitrogen oxides, or sulfuric acid mist.

H. Fuels:

The following fuels may be burned:

Coal only;

Low sulfur fuel oil only (≤ 0.5 percent sulfur by weight);

Coal and up to 10 percent refuse (based on heat input)

Low sulfur fuel oil and up to 10 percent refuse (based on heat input);

Coal and up to 20 percent petroleum coke (based on weight);

Coal and up to 20 percent petroleum coke (based on weight) and 10 percent refuse (based on heat input);

High sulfur oil (> 0.5 percent sulfur by weight) consistent with Conditions I.A.2.b. or I.A.2.c.;

Natural gas only or in combination with any of the other fuels or fuel combinations listed above;

II. Water Discharges

Discharges during construction and operation of the Unit No. 3 shall be in accordance with all applicable provisions of Chapter 62-302 17-3, Florida Administrative Code and 40 CFR 423, Effluent Guidelines and Standards for Steam Electric Power Generating Point Source Category. In addition, the permittee shall comply with the following conditions of certification:

A. Pretreatment Standards

Wastewater discharges from Unit No. 3 to the Lakeland wetlands treatment system shall comply with the effluent limitation guidelines contained in 40 CFR § 423.16, ~~Part 423.12~~ and amendments. The specific standards applicable to the

facilities as planned are:

1. Cooling Tower Blowdown

There shall be no detectable amounts of materials added for corrosion inhibition containing zinc and chromium in cooling tower blowdown discharged to the City of Lakeland wetland treatment system. ~~On an emergency basis the on site Marsh Treatment System may be used to treat cooling tower blowdown.~~

2. - 3. - no change

4. Chemical Wastes and Boiler Blowdown

All low volume wastes (demineralizer regeneration, cooling tower basin cleaning wastes, floor drainage, sample drains and similar wastes), metal cleaning wastes (including preheater and fireside wash) and boiler blowdown shall be treated as required for pH adjustment and removal of chemical constituents. These wastewaters will be treated in a process wastewater treatment system capable of complying with 40 CFR, § 423.16 ~~Part 423.12~~ and discharged with the cooling tower blowdown via a return pipeline to the Lakeland wetlands treatment system. The remaining sludge shall be disposed of in the on site FGD stabilized sludge landfill.

5. Sluice Pond Overflow

Sluice pond overflow (coal pile runoff from less than 10-year, 24-hour rainfall and bottom and fly ash transport water) shall be treated if necessary ~~required~~ to meet the requirements of 40 CFR, § 423.16 ~~Part 423.12~~ and discharged with the cooling tower blowdown to the Lakeland wetlands treatment system.

6. Flue Gas Desulfurization Sludge Pond Overflow

The flue gas desulfurization sludge pond overflow shall be treated if required to meet the requirements

of 40 CFR, § 423.16 ~~Part 423.12~~ in a process waste system and discharged with the cooling tower blowdown to the Lakeland wetlands treatment system.

B. In-Plant Water Monitoring Program

A monitoring program shall be undertaken by the City of Lakeland on each effluent stream within the facility to determine compliance by Unit 3 with the applicable effluent guidelines of 40 CFR, § 423.16 ~~Part 423.12~~ for those wastewaters discharged to the Lakeland wetlands treatment system. This monitoring program may be reviewed annually to determine the necessity for its continuance.

III. Groundwater

A. General

The use of groundwater shall be minimized to the greatest extent practicable.

B. Well Criteria

The well locations shall be approved by the Southwest Florida Water Management District. Design and construction of new wells shall be in accordance with the applicable rules of the Department of Environmental Protection Regulation and Southwest Florida Water Management District.

C. Groundwater Use Limitations - No change

IV. Leachate

A. Compliance

Leachate from coal storage piles, settling and treatment ponds, ~~artificial marsh, rapid infiltration beds,~~ secure land fills and flue gas desulfurization sludge ponds (FGD) shall not contaminate waters of the State (including both surface and groundwaters) in excess of the limitations of Chapters 62-302 and 62-520 ~~17-3~~, F.A.C.

B. Monitoring

A monitoring well system shall be used to determine

whether or not leachate from the treatment ponds, ~~artificial marsh~~, secure landfill, ash sluice ponds, and the flue gas desulfurization sludge ponds is reaching the groundwater.

1.-4. - no change

5. A quarterly summary of the results of the monitoring shall be provided by the permittee to the Southwest District of the Department of Environmental Protection Regulation and to the Southwest Florida Water Management District.

6. The permittee shall keep a monthly record of the monitoring results and shall notify the Department's Southwest District Manager and the Southwest Florida Water Management District when said measurements reach 90% of the levels permitted in the water quality standards of Rule 62-520.420 ~~17-3.101~~, F.A.C.

V. Control Measures During Construction

A. Stormwater Runoff

During construction and plant operation, necessary measures shall be used to settle, filter, treat or absorb silt containing or pollutant laden stormwater runoff to limit the suspended solids to 50 mg/l or less during rainfall periods not exceeding the 10-year, 24-hour rainfall, and to prevent an increase in turbidity to 29 NTU's ~~50 Jackson Turbidity Units~~ above background in waters of the State.

Control measures shall consist at the minimum, of filters, sediment traps, barriers, berms or vegetative planting. Exposed or disturbed soil shall be protected as soon as possible to minimize silt and sediment laden runoff. The pH shall be kept within the range of 6.0 to 8.5.

VI. Solid Wastes

Solid Wastes resulting from construction or operation shall be disposed of in accordance with the applicable regulations of Chapter 62-701 ~~17-7~~, FAC.

Open burning in connection with land clearing shall be in accordance with Chapter 62-256 ~~71-5~~, FAC, no additional permits shall be required, but the Division of Forestry shall be notified. Open burning shall not occur if the Division of forestry has issued a ban on burning due to fire hazard conditions.

VIII. Solid Waste Utilization System - no change

The solid waste utilization facility shall be designed and operated in compliance with all applicable regulations of the Department, including but not limited to Chapter 62-701 ~~71-7~~, FAC.

XIII. Transmission Lines

Directly associated transmission lines shall be constructed and maintained in a manner to minimize environmental impacts in accordance with Chapter 403, F.S., and Chapters 27F-6, 27F-7, and 62-312, ~~22~~ FAC.

A. Construction

1. Filling and construction in waters of the State shall be minimized to the extent practicable. No such activities shall take place without obtaining lease or title from the Board of Trustees of the Internal Improvement Trust Fund ~~Department of Natural Resources~~.

2.-9. - no change

10. Any archaeological sites discovered during construction of the transmission line shall be disturbed as little as possible and such discovery shall be communicated to the Department of State, Division of ~~Archive History and Records Management~~ Historical Resources.

XIV. Construction in Waters of the State

No construction in waters of the State shall commence without obtaining lease or title from the ~~Department of Natural~~

Resources Board of Trustees of the Internal Improvement Trust Fund.

XVI. Sanitary Waste Disposal

Sanitary waste from operating plant facilities shall be disposed of in a septic tank system, as approved by the Health Department of Health & Rehabilitative Services, as long as the average daily flow does not exceed 2,000 gallons per day. If the sanitary waste exceeds 2000 gpd, a properly designed treatment system shall be constructed upon receipt of approval by the Department.

NOTICE OF RIGHTS

Any party to this Order has the right to seek judicial review of this Order pursuant to Section 120.68, Florida Statutes, by filing a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department of Environmental Protection in the Office of the General Counsel, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000; and by filing a copy of the Notice of Appeal accompanied by the appropriate filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date the Final Order is filed with the Clerk of the Department of Environmental Protection.

DONE AND ORDERED this 15th day of February, 1996, in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to S120.52
Florida Statutes, with the designated
Department Clerk, receipt of which
is hereby acknowledged.

Rebecca B. Clerk 2/14/96 Date

for Virginia B. Wetherell
VIRGINIA B. WETHERELL
SECRETARY

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that copies of the foregoing has been furnished by regular U. S. Mail to the following this 14th day of February, 1996:

James S. Alves, Esquire
Hopping Green Sams & Smith
P.O. Box 6526
Tallahassee, FL 32314-6526

City of Lakeland
2379 Broad Street
Lakeland, FL 33802

Mark Carpanini, Esquire
Office of County Attorney
P.O. Box 60
Bartow, FL 33830-0060

Richard Tschantz, Esquire
Southwest Fla. Water Mgmt. Dist.
2379 Broad Street
Brooksville, FL 34609-6899

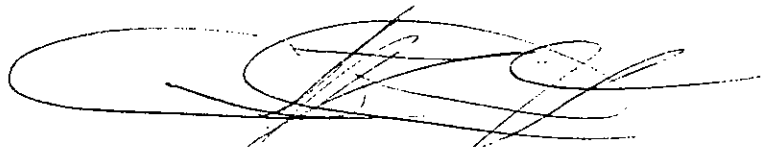
Robert V. Elias, Esquire
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P.O. Box 2039
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Orlando Utilities Commission
500 South Orange Street
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Farzie Shelton
Dept of Water and Electric
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Lakeland, FL 33801-5050

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Tallahassee, FL 32399-2100



CHARLES T. "CHIP" COLLETTE,
Assistant General Counsel
Florida Department of
Environmental Protection
2600 Blair Stone Road
MS 35
Tallahassee, FL 32399-2400

ATTACHMENTS 1 through 8

January 4, 1995

Clair H. Fancy, Chief
Bureau of Air Regulation
Division of Air Resources Management
Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399

RE: City of Lakeland--C.D. McIntosh Power Plant, Unit No. 3
Request to Amend PSD Permit No. PSD-FL-8

Dear Clair:

The City of Lakeland ("Lakeland") requests minor amendments to the above-referenced prevention of significant deterioration (PSD) permit (and corresponding application) for its McIntosh Power Plant, Unit No. 3. Lakeland originally submitted a PSD permit application to the U.S. Environmental Protection Agency (EPA) in February of 1978, and EPA subsequently issued the permit on December 27, 1978, authorizing construction of the coal-, municipal refuse-, and oil-fired steam electric generation unit. Consistent with its permit, the unit was later constructed and actual start-up occurred on September 1, 1982. As a result of the final unit design, the City has identified several needed changes to the PSD permit and corresponding application:

- Adjust particulate matter limits to 0.1 lb/mmBtu heat input (regardless of the fuel being burned);
- Clarify that the minimum sulfur dioxide (SO₂) removal efficiency of 85 percent applies only when high sulfur coal is burned;
- Delete the requirement to install an SO₂ monitor at the inlet to the scrubber, since the monitor at the stack is sufficient for use in determining SO₂ removal efficiencies; and
- Recognize that natural gas and low sulfur oil may be used as startup fuels or at any other time.

In addition, based on a successful test burn of petroleum coke, the City requests that the PSD permit be amended to specifically allow such fuel to be cofired with permitted fuels. When petroleum coke is blended in the appropriate amounts with coal (or coal and refuse), the

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particulate matter, sulfur dioxide, nitrogen oxides, and opacity limits will not be exceeded. The total amount of petroleum coke will not exceed 20 percent (by weight).

As we stated in our December 1, 1994, letter to you, neither New Source Performance Standard Subpart Da applicability nor Prevention of Significant Deterioration (PSD) review should be triggered by the requested permit revisions. Based on recent telephone conversations with Bruce Mitchell of the Department's Bureau of Air Regulation, I understand that the Department has concurred with our analysis, except that it may be appropriate to require PSD review for carbon monoxide and sulfur acid mist emissions. As the information from the test burn indicates, however, no increase in sulfuric acid mist emissions should occur as a result of cofiring petroleum coke with other permitted fuels.

The test burn data indicates only a slightly higher emission rate for sulfuric acid mist when cofiring petroleum coke with coal than when coal with a sulfur content of 2.5 percent is burned alone; however, the student "t" test indicates that there is no statistical difference between these emission rates. This approach for determining emission rate changes is consistent with 40 CFR Part 60, Appendix C. Further, while the emission rate for carbon monoxide when petroleum coke was cofired during the test burn is statistically higher than when coal was burned alone during the test, the higher rate is attributable to the differences in grindability between the high and low sulfur coals used and to combustion conditions, as opposed to the characteristics of petroleum coke. (See memorandum from Timothy C. Bates, Acting Plant Manager for McIntosh Power Plant, dated December 29, 1994, included as Attachment C.)

Because no increase in regulated air pollutant emissions will occur as a result of cofiring petroleum coke with other permitted fuels, PSD review should not be triggered for any pollutants. Moreover, even if PSD review is required, control technology review for the boiler should not be required since no physical or operational changes are being made to the boiler to cofire petroleum coke.

The City of Lakeland respectfully requests that the Department accept the requested changes to the PSD application and make the requested changes to the PSD permit. In support of Lakeland's requested permit revisions and to illustrate the requested changes to its application, a permit application has been prepared on the Department's new form and is enclosed as Attachment A. (Some of the information requested on the application form will be submitted within the next few months when the Title V application for the McIntosh Plant is submitted.) In addition, the PSD permit, as proposed to be revised, is enclosed as Attachment B and is also being provided on a computer disk, WordPerfect 5.1 format.

In support of its request, Lakeland provides the following information.

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Particulate Matter Limits

The particulate matter limits included in the PSD permit should be changed to 0.1 lb/mmBtu heat input (regardless of the type of fuel burned), consistent with the corresponding Site Certification and New Source Performance Standard (NSPS) Subpart D. The lower limits were included in the permit because it was anticipated that the Unit might be subject to NSPS Subpart Da (40 CFR 60.40a-60.49a), which was proposed on September 19, 1978--just three months prior to issuance of the permit. The Subpart Da requirements would have applied to the Unit *if* it had commenced construction on or after the proposal date of September 19, 1978, even though the rules were not finalized until the following year. After the Unit's permit had been issued, the U.S. Environmental Protection Agency determined in March of 1979 that the Unit had commenced construction on March 21, 1978, *prior* to the effective date of Subpart Da. The Unit was therefore subject only to Subpart D and *not* Subpart Da. The particulate matter limits should therefore be appropriately adjusted to the Subpart D limit of 0.1 lb/mmBtu heat input. 40 CFR § 60.42(a)(1). This limit is also consistent with Rule 62-296.405(1)(b), Florida Administrative Code.

Accordingly, the City requests that Condition No. 1 of the permit be changed as follows:

- A. Particulate matter emitted to the atmosphere from the boiler shall not exceed 0.1 lb/mmBtu heat input, regardless of the fuel burned.

Mode of Firing	lb/10 ⁶ Btu Heat Input
Coal	0.044
Coal/Refuse	0.050
Oil	0.070
Oil/Refuse	0.075

Sulfur Dioxide Removal Efficiency

The City of Lakeland proposed a removal efficiency of 85 percent of the sulfur dioxide from the stack gases through installation of a limestone scrubber based on the expectation of utilizing "high sulfur" coal (sulfur content of 3.3 percent). Because the City's application was based on a proposed revision to the New Source Performance Standards for power plants under Subpart Da and Unit No. 3 is *not* subject to Subpart Da standards, the Unit should *not* be required to comply with an 85 percent removal rate when lower sulfur fuels are burned. See letter from the U.S. Environmental Protection Agency to the City of Lakeland dated March 2,

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1979. Further, the limit of 1.2 lb/mmBtu heat input applies, regardless of the removal efficiency.

The actual sulfur dioxide emissions will be much less than 1.2 lb/mmBtu even when the 85 percent removal rate is not achieved because the desulfurization unit will continue to operate even when lower sulfur coal (or coal/refuse/petroleum coke combinations) is burned. In other words, the resultant sulfur dioxide emissions when burning a lower sulfur fuel (sulfur content of less than 3.3 percent) and operating the desulfurization unit will be less than the sulfur dioxide emissions would be if high sulfur coal (3.3 percent sulfur) were burned, even with the desulfurization unit operating at an 85 percent removal efficiency. An 85 percent removal efficiency should therefore not be required when lower sulfur fuels are burned.

Accordingly, Condition 2.B. should be changed as follows:

A flue gas desulfurization system will be installed to treat all exhaust gases. The desulfurization system and will operate at a minimum SO₂ removal efficiency of 85 percent whenever high sulfur (3.3% sulfur) coal is burned.

Monitor for Sulfur Dioxide Removal Efficiency

The PSD permit for McIntosh Unit No. 3 required the installation and operation of sulfur dioxide (SO₂) continuous emissions monitors (CEMs), both before and after the flue gas desulfurization unit, to calculate sulfur removal efficiencies. Consequently, when Unit No. 3 was constructed, SO₂ CEMs were installed both before and after the flue gas desulfurization unit. Subsequent to installation however, the CEM located before the flue gas desulfurization unit has not performed as consistently as desired (and has in fact malfunctioned) due to the high level of sulfuric acid in the flue gas prior to the desulfurization unit. Sulfur removal efficiencies can be determined by calculating the sulfur dioxide emission rate prior to the desulfurization unit based on the sulfur content of the fuel being burned and comparing that rate to the sulfur dioxide emission rate recorded by the CEM installed *after* the desulfurization unit. Because this alternative method of determining the sulfur removal efficiency exists and because it is impracticable to successfully operate a CEM prior to the desulfurization unit, the City respectfully requests that Condition No. 6 be revised as follows:

Continuous monitors shall be installed and operated in accordance with 40 CFR 60.45 and 60.13. ~~In addition, a continuous SO₂ monitor shall be installed prior to the flue gas desulfurization system for purposes of calculating SO₂ removal efficiencies.~~

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Startup Fuels

Because, like all other coal units, Unit No. 3 must be started on natural gas or fuel oil, Lakeland requests that the PSD permit be revised to reflect that natural gas and low sulfur fuel oil may be burned during startup. Further, because these fuels are "clean fuels," Lakeland also requests that the PSD permit be revised to clarify that these fuels may be burned at any time.

Petroleum Coke

As stated above, the City of Lakeland recently conducted a successful test burn of petroleum coke blended with coal. In an effort to use the most cost-effective fuels while not increasing emissions above allowable limits, the City of Lakeland requests that its PSD permit be revised to allow petroleum coke to be burned when blended with coal. Because continuous emissions monitors are installed for sulfur dioxide, nitrogen oxides, and opacity, as required by the PSD permit (Condition No. 6) and NSPS (40 CFR § 60.45), the City can ensure that the emission limits for these pollutants are not exceeded when petroleum coke is blended with coal (or coal and refuse) and burned in Unit No. 3. The City accordingly requests that a Condition No. 8 be added as follows:

8. The following fuels may be burned:

Coal only

Oil only

Coal and up to 10% refuse (based on heat input)

Oil and up to 10% refuse (based on heat input)

Coal and up to 20% petroleum coke (based on weight)

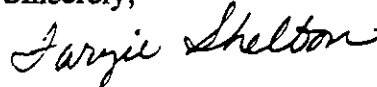
Coal and up to 20% petroleum coke (based on weight) and 10% refuse (based on heat input)

In addition to this request to amend the PSD permit and application, Lakeland is seeking a separate modification of the site certification for Unit No. 3, which was issued pursuant to the Florida Power Plant Siting Act (PA-74-06) on December 7, 1978. The request for modification of the site certification, dated December 7, 1994, is attached to the enclosed permit application as Attachment SI-1.

Clair H. Fancy, Chief
Bureau of Air Regulation
January 4, 1995
Page 6

Thank you for your consideration of this request. If you have any questions, please contact me at 813-499-6603.

Sincerely,



and Farzie Shelton
Environmental Affairs
Department of Electric & Water Utilities

(4 copies enclosed)

cc: Hamilton S. Oven, Jr., DEP
Bill Thomas, DEP SW District
Mike Hickey, DEP SW District
Jewell Harper, EPA Region IV
Brian Beals, EPA Region IV
Ken Kosky, KBN
Angela Morrison, HBGS

April 6, 1995

VIA HAND DELIVERY

Hamilton S. Oven, Jr., Administrator
Power Plant Siting Section
Florida Department of Environmental Protection
3900 Commonwealth Boulevard
Tallahassee, FL 32399

RE: City of Lakeland; C.D. McIntosh Unit No. 3; Supplemental Response to Request for Additional Information Regarding Requests to Modify Site Certification (PA-78-06) and to Revise PSD Permit (PSD-FL-8)

Dear Buck:

On January 27, 1995, you requested additional information regarding the above-referenced site certification modification request submitted by the City of Lakeland on December 7, 1994, and Prevention of Significant Deterioration (PSD) permit revision request submitted on January 4, 1995. Your January 27 information request was based on comments received from the Department's Division of Air Resources Management. The City of Lakeland subsequently responded to the request for additional information by letter dated March 9, 1995 (received by the Department on March 10, 1995). Based on a recent meeting with Clair Fancy of the Division of Air Resources Management on March 29, however, the City of Lakeland has decided to supplement that response and to modify its request to revise the PSD permit. Because the response to the Department's request for additional information is being supplemented and because the request to revise the PSD permit is being modified, the Department should have an additional thirty days within which to review the submittal and to request any additional information that is necessary to process the application.

This modified request to revise the City of Lakeland's PSD permit for C.D. McIntosh Unit No. 3 replaces the request previously submitted to the Department on January 4, 1995. A copy of the PSD permit, as proposed to be revised, is enclosed as Exhibit A.

Specifically, the City of Lakeland respectfully requests that specific condition 2.B. be revised to clarify that the 85 percent sulfur dioxide removal efficiency for the flue gas desulfurization system applies only when 3.3 percent sulfur coal is burned. The permit, which was issued by the U.S. Environmental Protection Agency (EPA), states that the flue gas desulfurization system "will operate at a minimum SO₂ removal efficiency of 85 percent." This condition contemplated that high sulfur coal would be used. Both the Site Certification and PSD permit applications stated the sulfur dioxide emissions were based on a 3.3 percent sulfur content of the coal and an 80 percent efficiency rating for the sulfur dioxide scrubber.

Hamilton S. Oven, Jr.
Florida Department of Environmental Protection
April 6, 1995
Page 2

The applications also state that 80 percent is the minimum efficiency required when burning 3.3 percent sulfur coal and still complying with EPA's "new" New Source Performance Standards (NSPS). The applications were referring to the *proposed* NSPS sulfur dioxide limit under Subpart Da of Title 40, Code of Federal Regulations (CFR) Part 60, which was subsequently revised to be less stringent. The *proposed* standard for sulfur dioxide emissions under Subpart Da was 1.2 pounds per million British thermal units (lb/mmBtu) and 85 percent reduction when solid fuel is fired. 43 Fed. Reg. 42175 (Sept. 19, 1978). The sulfur dioxide standard was changed in the final version of the rules, which were issued after the McIntosh Unit No. 3 PSD permit was issued, to 1.2 lb/mmBtu and 90 percent reduction *or* 70 percent reduction when emissions are less than 0.60 lb/mmBtu. 40 C.F.R. §60.43a.

As the City has stated in previous correspondence to the Department, EPA has definitively found that NSPS Subpart Da does *not* apply to C.D. McIntosh Unit No. 3 because construction had commenced prior to the date the new NSPS standards were proposed (see letters from the City to the Department dated November 10 and December 1, 1994). Nevertheless, if Unit No. 3's PSD permit is read to imply that the 85 percent removal efficiency applies at all times, even when, for example, emissions are less than 0.60 lb/mmBtu, the sulfur dioxide standard would be significantly more stringent than the NSPS Subpart Da standard. Moreover, Unit No. 3's sulfur dioxide emission limit would be significantly more stringent than sulfur dioxide limits in PSD permits for similar emission units issued during the same time frame.

For example, the PSD permit for Florida Power Corporation's coal-fired Crystal River Units ~~1 and 2~~, which was issued on March 30, 1978, has a sulfur dioxide limit of 1.2 lb/mmBtu, with *no* required scrubber or removal efficiency. Like McIntosh Unit No. 3, the Crystal River units were not subject to NSPS Subpart Da. In addition, the PSD permit for Jacksonville Electric Authority's coal-fired St. Johns River Power Park, which was issued on January 14, 1981, has a sulfur dioxide limit of 0.76 lb/mmBtu, which is the equivalent of 4 percent sulfur coal with a 90 percent removal efficiency. The JEA units, which *were* subject to Subpart Da, have a less stringent sulfur dioxide limit than McIntosh Unit No. 3 if 85 percent removal is required when low sulfur fuel is fired. What is more, a relative recent PSD permit issued for the Orlando Utilities Commission's Stanton Unit No. 2 (September, 1991) has a sulfur dioxide limit of 0.85 lb/mmBtu, 3-hour average. Again, this unit is subject to NSPS Subpart Da and has a less stringent limit than if McIntosh Unit No. 3 is required to have 85 percent removal when firing low sulfur coal. For example, with 1 percent sulfur coal, the 85 percent removal requirement in the McIntosh Unit No. 3 permit condition requires an emissions level of 0.24 lb/mmBtu. In contrast, the NSPS limit would be almost twice that--0.47 lb/mmBtu.

Because the original PSD application contemplated that high sulfur (3.3 percent) coal would be fired to achieve an 85 (80) percent removal efficiency, because NSPS Subpart Da does not apply to Unit No. 3, and because the sulfur dioxide standard would be severely stringent if

Hamilton S. Oven, Jr.
Florida Department of Environmental Protection
April 6, 1995
Page 3

an 85 percent removal efficiency is required when coal with a sulfur content of less than 3.3 percent is used, the City respectfully requests that the Department revise specific condition 2.B. as follows:

A flue gas desulfurization system will be designed to treat all exhaust gases, and The FGD system will operate at: (1) a minimum SO₂ removal efficiency of 85 percent whenever high sulfur (i.e., 3.3 percent or greater) coal is burned, or (2) a minimum of 55 percent SO₂ removal efficiency when the SO₂ emissions are 0.9 lb/mmBtu or less. The sulfur dioxide emissions from the unit shall not exceed 0.9 lb/mmBtu based on a 30-day rolling average.

The proposed minimum removal efficiency of 55 percent and sulfur dioxide emissions of 0.9 lb/mmBtu will ensure that the scrubber is operated effectively and that the corresponding sulfur dioxide emissions are equivalent to the situation where 3.3 percent sulfur coal is fired with 85 percent removal efficiency. For example, the maximum potential uncontrolled sulfur dioxide emissions for high sulfur coal would be 5.74 lb/mmBtu (3.3% sulfur coal/100 x 2lbSO₂ x 1/11,500 Btu/lb x 10⁶ Btu/mmBtu). At a flue gas desulfurization control efficiency of 85 percent, the controlled emission rate would be 0.9 lb/mmBtu [(1-85%/100) x 5.74 lb/mmBtu]. By requiring that sulfur dioxide emissions not exceed 0.9 lb/mmBtu when coal with a sulfur content below 3.3 percent is fired, the City will be ensuring that the sulfur dioxide emissions are no greater than when high sulfur coal is fired with a control efficiency of 85 percent. This emission rate is consistent with what was originally contemplated during the permit review process (85% SO₂ removal with 3.3% sulfur coal at 11,500 Btu/lb). Since the permit currently allows sulfur dioxide emissions up to 1.2 lb/mmBtu with 85 percent sulfur dioxide removal, an emission rate of 0.9 lb/mmBtu is appropriate as the limit for sulfur dioxide removal efficiencies less than 85 percent.

The proposed 55 percent minimum removal efficiency, which will ensure proper operation of the flue gas desulfurization system, is based on a ratio of the maximum potential sulfur dioxide emissions allowed by NSPS Subpart Da and the 85 percent control efficiency established in the original permit. As you know, NSPS Subpart Da requires 90 percent removal, while the PSD permit for McIntosh Unit No. 3 requires 85 percent removal (both with sulfur dioxide limits of 1.2 lb/mmBtu). With 90 percent removal, the resultant emissions are a unit of 0.10, and with 85 percent removal, the resultant emissions are a unit of 0.15--a difference of 50 percent. NSPS Subpart Da also provides that when emissions are 0.6 lb/mmBtu or less, 70 percent removal is required. With 70 percent removal, the resultant emissions are a unit of 0.30.

Hamilton S. Oven, Jr.
Florida Department of Environmental Protection
April 6, 1995
Page 4

An equivalent removal efficiency based on the difference between NSPS and the McIntosh Unit No. 3 PSD permit is 50 percent higher than the 0.30 unit, or 0.45, which corresponds to a 55 percent removal efficiency. This is demonstrated through the following calculation:

NSPS Maximum Emissions (not to exceed 1.2 lb/mmBtu) - $0.10 \times S$ (90% removal)
Permit Maximum Emissions (not to exceed 1.2 lb/mmBtu) - $0.15 \times S$ (85% removal)
NSPS Minimum Emissions (not to exceed 0.6 lb/mmBtu) - $0.30 \times S$ (70% removal)
Where: S = uncontrolled SO₂ emissions

Proposed Min. Removal = $0.15/0.10 \times 0.30 = 0.45$; this is equivalent to 55% removal $[(1 - 0.45) \times 100\%]$

With an emission limit of 0.9 lb/mmBtu and a minimum removal efficiency of 55 percent when lower sulfur coal is burned, the City of Lakeland will be ensuring that emissions are no greater than as originally contemplated during the PSD permit review process and that the scrubber is operated effectively. Further, by agreeing to a sulfur dioxide limit of 0.90 lb/mmBtu, based on a 30-day rolling average, which will apply at all times, the overall emissions from the Unit will be less than previously authorized. The City therefore respectfully requests that specific condition 2.B. be revised as set forth above.

The City of Lakeland anticipates that once this issue regarding sulfur dioxide removal efficiency is resolved, at least tentatively, the City may further modify its request for PSD permit revision to address the use of petroleum coke as a fuel. The City expects that any supplemental information regarding petroleum coke would be submitted within the next two weeks or so.

Thank you for your continued cooperation and assistance in this matter. We have scheduled a meeting with Clair Fancy and his staff for Monday, April 10 to discuss this matter in more detail. In the meantime, if you or you staff have any questions about this request please call me at (813)499-6603.

Sincerely,



Farzie Shelton
Environmental Coordinator
Department of Electric and Water Utilities

Hamilton S. Oven, Jr.
Florida Department of Environmental Protection
April 6, 1995
Page 5

cc: Clair Fancy, FDEP
Al Linero, FDEP
Bruce Mitchell, FDEP
Angela Morrison, HGSS
Ken Kosky, KBN

United States
Environmental Protection
Agency

345 Courtland Street NE
Atlanta GA 30308

Mississippi, North Carolina,
South Carolina, Tennessee,
Kentucky



MAR 02 1979

REF: 4RC

Mr. Stephen C. Watson
Assistant City Attorney
City of Lakeland
World Citrus Center
Lakeland, Florida 33802

Re: City of Lakeland McIntosh
Power Plant Unit 3

Dear Mr. Watson:

We have reviewed the materials previously submitted on whether Clean Air Act new source performance standards (NSPS) promulgated in the September 19, 1978, Federal Register, apply to the above. The materials disclose that Unit 3 is not subject to those NSPS. The basis for this conclusion is described in the attached memorandum.

If you have any questions on this, please call (telephone 404/881-2335).

Sincerely yours,

Sanford W. Harvey Jr.
Sanford W. Harvey Jr.
Regional Counsel

Enclosure

MAR 5 REC'D

DATE: NOV 15 1978

u A4

RE: BACT Baseline for Louisa Generating Station

8.5

Michael A. Trutna
Policy Development Section, SIB, CPDD

Gale A. Wright, P.E.
to: Chief, Technology Analysis Section, Region VII

In your memo of October 13, 1978, (enclosed) you asked for assistance in determining the BACT baseline for the proposed construction at the Louisa Generating Station of the Illinois Gas and Electric Company (IGEC). Specifically, you asked how the September 19, 1978, proposal to revise the applicable NSPS for SO₂ from power plants might affect your BACT determination, notwithstanding you have determined that the revised standard itself will not apply (i.e., the boiler was ordered in the spring of 1978).

Since you have determined that a complete application was not received until May 31, 1978, I agree with your statement that the new PSD regulations activating Section 165 of the recent Act Amendments will apply. As you know, under the new PSD requirements, applicable sources must apply BACT. The resulting BACT determination must be made on a case-by-case basis taking into account several considerations including socio-economic costs and the anticipated environmental and energy impacts. In no event will BACT represent less control than provided by the applicable NSPS. Thus, as a minimum, the Louisa Station must at least meet the old NSPS as provided under the previous PSD regulations.

More importantly, case-by-case BACT may well require substantially more control than the old NSPS. The accepted practice within EPA is to make the initial presumption that all power plant applicants subject to the new PSD regulations can accomplish emission reductions at least equivalent to those required under the proposed NSPS revisions. This generally means that such sources will be expected to install a continuous sulfur removal system in the case of SO₂ control. Although the source may have filed a complete application before the date of NSPS proposal, information from well controlled sources that formed the basis for the NSPS revision was available well before IGEC's application was filed. Therefore, it is reasonable to expect that the Louisa Generating Station should plan to install a sulfur removal system which operates at 85% or higher control efficiency on a 24-hour basis unless they can present evidence of unusual circumstances which justify less control.

If I can be of any further assistance on the matter, please feel free to call on me.

Enclosure

cc: R. Rhoads
D. Tyler
D. Dunbar
R. Biondi
NSR Contacts, Regions I-X

AIR PROGRAMS
OFFICE
RECEIVED
NOV 17 1978
RECEIVED
EPA-REGION IV
ATLANTA, GA.

Table 3-2 NO_x and SO₂ Compliance Test Results:
City of Lakeland McIntosh Power Plant, Unit #3
June 9, 1992

Run #	O ₂ (%V)	NO _x (ppmV)	SO ₂ (ppmV)	NO _x (lb/MMBtu)	SO ₂ (lb/MMBtu)
1	5.7	207.2	287.5	0.333	0.642
2	5.8	201.4	295.7	0.326	0.647
3	5.9	192.8	281.2	0.314	0.636
Averages	5.8	200.5	288.1	0.324	0.647

Table 3-2 NO_x and SO₂ Compliance Test Results:
City of Lakeland McIntosh Power Plant, Unit #3
June 23, 1997 ~~3~~

Run #	O ₂ (%V)	NO _x (ppmV)	SO ₂ (ppmV)	NO _x (lb/MMBtu)	SO ₂ (lb/MMBtu)
1	7.0	264.1	147.7	0.464	0.361
2	7.0	272.0	143.7	0.478	0.351
3	7.0	271.1	143.9	0.476	0.351
Averages	7.0	269.1	145.1	0.473	0.354

Source: ESE, 1993

typo

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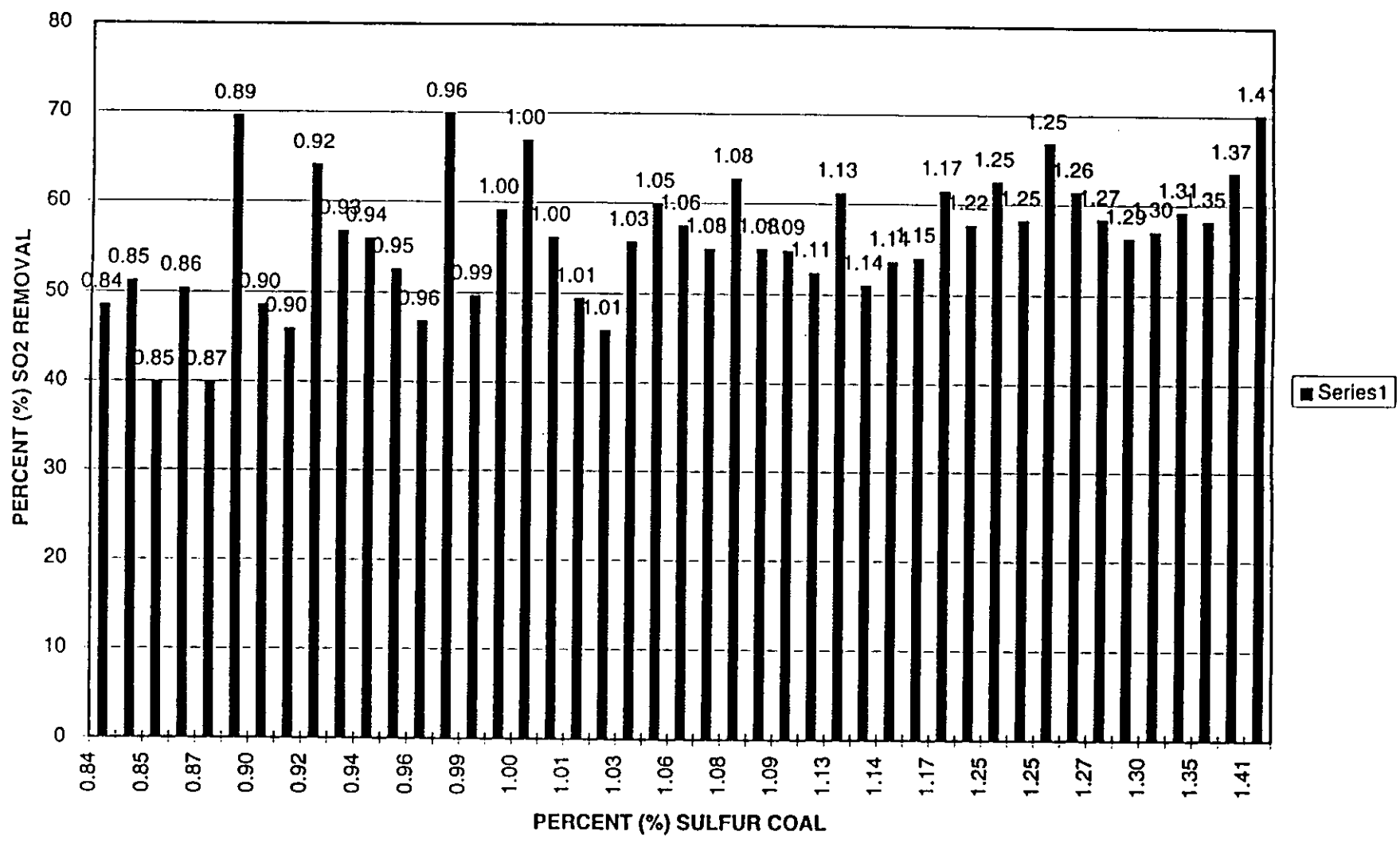
Table 3-2 NO_x and SO₂ Compliance Test Results:
City of Lakeland McIntosh Power Plant, Unit #3
June 9, 1994

Run #	O ₂ (%V)	NO _x (ppmV)	SO ₂ (ppmV)	NO _x (lb/MMBtu)	SO ₂ (lb/MMBtu)
1	6.9	250.0	247.9	0.436	0.601
2	7.0	247.9	244.2	0.435	0.596
3	6.9	247.4	269.4	0.431	0.652
Averages	6.9	248.4	253.8	0.434	0.616

Note: All concentrations are expressed on a dry basis.



PERCENT (%) SULFUR COAL VS PERCENT (%) SO2 REMOVAL - 1994



DATE JAN 10 1979

copy All staff
All States
All local

~~Walter C. Barber~~ A-7
Goetz
STW
RECEIVED
Return
JAN 20 1979

SUBJECT: BACT Determinations for Power Plants Subject to Revised NSPS

FROM: Walter C. Barber, Director
Office of Air Quality Planning and Standards

Walter Barber

NSPS
Dept. of Env.
RECEIVED

TO: Deputy Regional Administrator, Regions I-X

OFFICE OF SECRETARY

It has come to my attention that some confusion may exist relative to the applicability of the proposed new source performance standard (NSPS) for steam electric power plants to the PSD permitting process. The PSD program requires a determination that new power plants employ best available control technology (BACT) which is defined on a case-by-case basis and can be no less stringent than the applicable NSPS. Thus, for new power plants where the proposed NSPS identifies the applicable standard, all PSD permit decisions regarding BACT and application completeness should be made to reflect at least the level of stringency contained in this proposal.

JP

At the time of proposal, Administrator Costle indicated that no final decision had been made as to the appropriate stringency of the standard and that he would base the final rule on the record developed during the public comment period. Mr. Costle further indicated that he was proposing the stringent alternative, in part, because it would be easier to design down to a less stringent promulgation than it would be to design up to a more stringent standard. Accordingly, BACT decisions made prior to promulgation which require control equal to that contained in the proposal should be reviewed against the final standard to determine if alternative (less stringent) controls would be more appropriate. Of course, any more stringent standards required by the promulgated rule would also establish a new technology baseline for the relevant portion of the BACT determination.

Richard P. ...

- cc: D. Hawkins
Director, Air & Hazardous Materials Division, Regions I-X
- R. Rhoads
- S. Kuhrtz
- I. Artico
- B. Steigerwald
- M. Fast
- D. Borchers
- E. Tuerk

Economic, Energy and Environmental Impacts Associated with SO₂ Removals

Impact	SO ₂ Removal In FGD System		
	55%	65%	85%
Economic			
Actual	Base	\$962,130	\$1,605,067
Lost Revenue		\$933,090	\$1,201,560
Total:		\$1,895,220	\$2,806,627
Energy (kW-hr/yr)	12,951,000	29,321,000	34,031,000
Increase:		16,370,000	21,080,000
		126.40%	162.77%
Environmental			
By-Products (tons/yr)	149,595	157,057	171,983
Increase:		7,462	22,388
		4.99%	14.97%
Water Use (1,000 gal/yr)	190,441	291,234	291,592
Increase:		100,793	101,150
		52.93%	53.11%
Secondary Emissions (tons/yr)	Base	110	142
Assumptions:			
Sulfur Content:	1.11%	1.11%	1.11%
Heat Content:	12,925	12,925	12,925
Capacity Factor:	80%	80%	80%
Heat Input:	3,640	3,640	3,640