



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 (SO<sub>2</sub>) removal efficiency of 85 percent applies only when high sulfur coal is burned;
- Delete the requirement to install an SO<sub>2</sub> monitor at the inlet to the scrubber, since the monitor at the stack is sufficient for use in determining SO<sub>2</sub> 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.

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

*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 SO<sub>2</sub> 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 (SO<sub>2</sub>) 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, SO<sub>2</sub> 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 SO<sub>2</sub> monitor shall be installed prior to the flue gas desulfurization system for purposes of calculating SO<sub>2</sub> 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.

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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  
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