Title V Air Operation Permit Revision
Permit No. 1050004-031-AV

APPLICANT

The applicant for this project is Lakeland Electric. The applicant's responsible official and mailing address are: Tony Candales, Assistant General Manager of Production, 501 East Lemon Street, Lakeland, Florida 33801.

FACILITY DESCRIPTION

The applicant operates the existing C.D. McIntosh, Jr. Power Plant which is located in Polk County at 3030 East Lake Parker Drive in Lakeland, Florida.

This facility consists of three fossil fuel fired steam generators, two diesel powered generators, and two gas turbines. Fossil fuel fired steam generator Unit 1 (EU001) is fired with natural gas, No. 6 fuel oil or on-specification used oil generated by the City of Lakeland. Fossil fuel fired steam generator Unit 2 (EU005) is fired with natural gas, propane, No. 2 fuel oil or No. 6 fuel oil. Fossil fuel fired steam generator Unit 3 (EU006) is fired with coal, refuse derived fuel (to be removed with this permit revision), natural gas and petroleum coke. Gas Turbine Peaking Unit 1 (EU004) is primarily fired with natural gas, or No. 2 fuel oil with a maximum sulfur content of 0.5 percent by weight. McIntosh Unit 5 (EU028), a 370 MW combined cycle stationary combustion turbine, is fired with natural gas, or No. 2 fuel oil with a maximum sulfur content of 0.05 percent by weight.

This facility also includes two diesel engine peaking units and miscellaneous insignificant emissions units and/or activities.

PROJECT DESCRIPTION

The purpose of this permitting project is for the second revision of Title V Permit 1050004-023-AV, concerning conditions for the SO_2 monitoring provisions of Unit 1 (EU 001) and Unit 2 (EU 005) in order to minimize duplicative reporting and compliance measures. This revision also removes refuse derived fuel as a fuel for Unit 3 (EU006) in order to avoid future regulatory requirements for units that use this fuel. The Title V General Conditions were updated in the Appendix with the latest version dated 2/16/12.

PROCESSING SCHEDULE AND RELATED DOCUMENTS

Application for a Title V Air Operation Permit received 10/11/2011.

Draft/proposed permit issued 1/6/12.

Public Notice of Intent to Issue Air Permit published 1/17/12.

PRIMARY REGULATORY REQUIREMENTS

Title III: The facility is a major source of hazardous air pollutants (HAP).

Title IV: The facility operates units subject to the acid rain provisions of the Clean Air Act.

Title V: The facility is a Title V major source of air pollution in accordance with Chapter 62-213, Florida Administrative Code (F.A.C.).

PSD: The facility is a Prevention of Significant Deterioration (PSD)-major source of air pollution in accordance with Rule 62-212.400, F.A.C.

NSPS: The facility operates units subject to the New Source Performance Standards (NSPS) of 40 Code of Federal Regulations (CFR) 60, Subpart KKKK (combustion turbines) and 40 CFR 60, Subpart IIII (fire pump).

NESHAP: The facility operates units subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) of 40 CFR 63.

CAIR: The facility operates units subject to the Clean Air Interstate Rule (CAIR) set forth in Rule 62-296.470, F.A.C.

Siting: Unit 3 was originally certified to power plant siting provisions of Chapter 62-17, F.A.C.

CAM: Compliance Assurance Monitoring (CAM) applies only to Unit 3 for control of particulate matter emissions by use of an electrostatic precipitator (ESP).

PROJECT REVIEW

The purpose of this Title V permit revision is to revise Title V air operation permit No. 1050004-023-AV to clarify SO_2 monitoring provisions for Units 1 and 2 and to eliminate refuse derived fuel (RFD) as a boiler fuel for Unit 3. The changes being made to the permit are shown below. Additions are shown in double underline format and deletions are shown in ~~strike through~~ format. For ease of locating the new language, highlights are used in the draft/proposed permit.

1. To allow Lakeland Electric to demonstrate compliance with the sulfur dioxide (SO_2) emissions limits through the use of the Acid Rain required continuous SO_2 emissions monitoring systems (CEMS) for Units 1 and 2 as an alternative to fuel sampling and analysis, Specific Conditions **A.9.**, **A.10**., **A.14.**, **A.22.**, **D.12.**, **D.15.**, **D.17.** and **D.18.** are revised as follows:

Unit 1:

A.9. Sulfur Dioxide. When burning liquid fuel, sulfur dioxide emissions shall not exceed 2.75 pounds per million Btu heat input, as measured by applicable compliance methods. [Rule 62-296.405(1) (c)1.j., F.A.C.]

*{Permitting Note: Applicant has elected to use the Part 75 CEMS as the primary method for determining compliance with the above emission limit. Fuel sampling as specified in Specific Conditions **A.22.** and **A.23.** may be used when CEMS data is not available.}*

A.10. Sulfur Dioxide - Sulfur Content. The No. 6 fuel oil sulfur content shall not exceed 2.5 percent, by weight when CEMS are not utilized for compliance. [Rule 62-296.405(1)(e)3. & 62-213.440(1), F.A.C.]

A.14. Sulfur Dioxide. **The permittee elected to demonstrate compliance by accepting a liquid fuel sulfur limit that will be verified with fuel analysis provided by the vendor or the permittee upon each fuel delivery.** This protocol is allowed because the emissions unit does not have an operating flue gas desulfurization device. As an alternative, the acid rain required continuous emission monitoring system for sulfur dioxide may be used for emissions determination and reporting. [40 CFR 75; and, Rules 62-213.440(1) & 62-296.405(1)(f)1.b., F.A.C.]

A.22. Sulfur Dioxide. The test methods for sulfur dioxide emissions shall be EPA Methods 6, 6A, 6B, or 6C, incorporated by reference in Chapter 62-297, F.A.C., or methods from the acid rain rule. Fuel sampling and analysis may be used as an alternate sampling procedure if such a procedure is incorporated into the operation permit for the emissions unit. If the emissions unit obtains an alternate procedure under the provisions of Rule 62-297.620, F.A.C., the procedure shall become a condition of the emissions unit's permit. The Department will retain the authority to require EPA Method 6 or 6C if it has reason to believe that exceedences of the sulfur dioxide emissions limiting standard are occurring. Results of an approved fuel sampling and analysis program shall have the same effect as EPA Method 6 test results for purposes of demonstrating compliance or noncompliance with sulfur dioxide standards. **The permittee may use the EPA test methods, referenced above, to demonstrate compliance; however, as an alternate sampling procedure authorized by permit, the permittee elected to demonstrate compliance by accepting a liquid fuel sulfur limit that will be verified with a fuel analysis provided by the vendor or the permittee upon each fuel delivery.** As an alternative, the acid rain required continuous emission monitoring system for sulfur dioxide may be used for emissions determination and reporting. [40 CFR Part 75; and, Rules 62-213.440(1), 62-296.405(1)(e)3. & 62-297.401, F.A.C.]

Unit 2:

D.12. Sulfur Dioxide. For a fossil fuel fired steam generator that does not use a flue gas desulfurization device, a continuous monitoring system for measuring sulfur dioxide emissions is not required if the owner or operator monitors sulfur dioxide emissions by fuel sampling and analysis under 40 CFR 60.45(d). **The applicant has elected to utilize either fuel sampling and analysis ~~in lieu of a continuous monitoring system~~ or the acid rain required continuous emission monitoring system for determining compliance with the sulfur dioxide emission limit in Specific Condition D.7.** [40 CFR 60.45(b)(2) & 40 CFR 75; and, Rule 62-213.440(1) F.A.C. ~~and Applicant request~~.]

D.15. Compliance Tests Prior To Renewal. Prior to permit renewal, compliance tests shall be performed for the following pollutants: VE, PM, SO_2 and NO_X. The SO_2 and NO_X RATA test data may be used to demonstrate compliance, provided the testing requirements (notification, procedures & reporting) of Chapter 62-297, F.A.C. are met. [Rule 62-297.310(7)(a)3., F.A.C.]

D.17. SO_2 Compliance. Compliance with the sulfur dioxide emission standard of specific condition **D.7.** shall be demonstrated using the fuel sampling and analysis procedures of specific condition **D.18.** or the acid rain required continuous emission monitoring system, based on a 3-hour rolling average. [40 CFR 75 and Rule 62-213.440(1), F.A.C. ~~and Applicant request~~]

D.18. Fuel Sampling. The following fuel sampling and analysis program ~~shall~~ may be used to demonstrate compliance with the sulfur dioxide standard and as the substitute for the sulfur dioxide continuous monitoring system:

a. Determine and record the as-fired fuel sulfur content, percent by weight, (1) for liquid fuels using either ASTM D2622-92, ASTM D4294-90, or both ASTM D4057-88 and ASTM D129-91, or the respective successor ASTM method(s), to analyze a representative sample of the blended fuel following each fuel delivery, (2) for gaseous fuels using ASTM D1072-90, or the respective successor ASTM method.
b. Record daily the amount of each fuel fired, the density of each fuel, and the percent sulfur content by weight of each fuel.
c. Utilize the information in a. and b., above, to calculate the SO2 emission rate to ensure compliance at all times.

[Rule 62-213.440(1), F.A.C.]

2. To remove RDF as a fuel option from Unit 3, the following changes are shown, including changes to Specific Conditions **E.3.**, **E.5.**, **E.9.**, **E.10.** and **E.11.**:

Subsection A. Facility Description.

This facility consists of three fossil fuel fired steam generators, two diesel powered generators, and two gas turbines. Fossil fuel fired steam generator Unit 1 is fired with natural gas, No. 6 fuel oil or on-specification used oil generated by the City of Lakeland. Fossil fuel fired steam generator Unit 2 is fired with natural gas, propane, No. 2 fuel oil or No. 6 fuel oil. Fossil fuel fired steam generator 3 is fired with coal, ~~refuse derived fuel,~~ natural gas and petroleum coke. Gas Turbine Peaking Unit 1 is primarily fired with natural gas, or No. 2 fuel oil with a maximum sulfur content of 0.5 percent by weight. McIntosh Unit 5, a 370 MW combined cycle stationary combustion turbine, is fired with natural gas, or No. 2 or superior grade fuel oil with a maximum sulfur content of 0.05 percent by weight. Also included in this permit are miscellaneous unregulated/insignificant emissions units and/or activities.

The specific conditions in this section apply to the following emission units:

E.U. ID No.	Brief Description
-006	McIntosh Unit 3 - Fossil Fuel Fired Steam Generator

McIntosh Unit 3 is a nominal 364 megawatt (electric) dry bottom wall-fired fossil fuel fired steam generator. The unit is fired on coal, residual oil, natural gas and ~~co-fires refuse derived fuel (RDF) and~~ petroleum coke. The maximum heat input rate is 3,640 million Btu per hour. Unit 3 is equipped with an electrostatic precipitator (ESP), a flue gas desulfurization system (FGD), and low NO_X burners (LNB) and an overfire air (OFA) system to control emissions. McIntosh Unit 3 began commercial service in September, 1982. Compliance Assurance Monitoring (CAM) requirements for the ESP are included in Appendix CAM. The FGD is exempted from CAM because the Acid Rain SO_2 continuous emissions monitor will be used to demonstrate continuous compliance. The stack parameters are: height, 250 feet: diameter, 18 feet; exit temperature, 125 degrees F; and, actual stack gas flow rate, 1,260,536 acfm.

E.3. METHODS OF OPERATION - FUELS. The Only Fuels Allowed To Be Burned Are:

a. Coal Only;
b. Low Sulfur Fuel Oil Only (≤ 0.5 Percent Sulfur By Weight);

c. Coal ~~And Up To 10 Percent Refuse (Based On Heat Input);~~
d. Low Sulfur Fuel Oil And ~~Up To 10 Percent Refuse (Based On Heat Input);~~
e. Coal And Up To 20 Percent Petroleum Coke (Based On Weight);
f. Coal And Up To 20 Percent Petroleum Coke (Based On Weight) ~~And 10 Percent Refuse (Based On Heat Input)~~;
g. High Sulfur Fuel Oil (> 0.5 Percent Sulfur By Weight); And,
h. Natural Gas Or Propane Only, Or In Combination With Any Of The Other Fuels Or Fuel Combinations Listed Above.

[Rules 62-4.160(2), 62-210.200 (definitions - PTE), and 62-213.440(1), F.A.C.; and, PSD-FL-008(b)]

E.5. Particulate Matter. Particulate matter emitted to the atmosphere from the boiler shall not exceed:

Mode of Firing	Pound / MMBtu Heat Input
Coal	0.044
Coal/Petroleum Coke	0.044
~~Coal/Refuse~~	~~0.050~~
~~Coal/Petroleum Coke/Refuse~~	~~0.050~~
Oil	0.070
~~Oil/Refuse~~	~~0.075~~

[40 CFR 60.42(a)(2); and, PSD-FL-008(B)]

E.9. Sulfur Dioxide. 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 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 pound 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 five years and made available by the City upon request of the Department. Whenever blends of petroleum coke with other fuels are co-fired, sulfur dioxide emissions shall not exceed 0.718 pound per million Btu heat input based on a 30-day rolling average and shall comply with the reduction requirements given above. [PSD-FL-008(B); and, Rule 62-213.440, F.A.C.]

E.10. Sulfur Dioxide. The burning of high sulfur oil (greater than 0.5 percent sulfur by weight) or a combination of high sulfur oil ~~and municipal refuse~~ as an emergency fuel without the use of the SO_2 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 pound per million Btu heat input under this condition. [PSD-FL-008(B)]

E.11. Sulfur Dioxide. 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 sulfur 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 SO_2 scrubber. Sulfur dioxide emitted to the atmosphere from the boiler shall not exceed 0.8 pound per million Btu heat input under this condition. [PSD-FL-008(B)]

CONCLUSION

This project revises Title V air operation permit No. 1050004-023-AV. This Title V Air Operation Permit is issued under the provisions of Chapter 403, Florida Statues (F.S.), and Chapters 62-4, 62-210, 62-213 and 62-214, F.A.C.