Title V Air Operation Permit Revision
Permit No. 0310561-006-AV

APPLICANT

The applicant for this project is Jacksonville Electric Authority (JEA). The applicant's responsible official and mailing address are: James M. Chansler, P.E., JEA, Greenland Energy Center, 21 West Church Street, Jacksonville, Florida 32202.

FACILITY DESCRIPTION

The applicant operates the existing Greenland Energy Center, which is located in Duval County at 6850 Energy Center Drive, Jacksonville, Florida.

The facility is an existing site consisting of two simple cycle combustion turbines (176 Megawatts each) operating on natural gas with dry low NO_X burners and fired by ultra-low sulfur fuel oil as a backup fuel with water injection controls for NO_X. Continuous emission monitors are used for Nitrogen Oxides (NO_X). These units are subject to New Source Performance Standards, Subpart KKKK, which incorporate periodic monitoring provisions in order to maintain compliance with emission standards throughout the year.

This facility also includes miscellaneous insignificant emissions units and/or activities.

PROJECT DESCRIPTION

The purpose of this permitting project is to issue a Title V air operation permit revision for the above referenced facility to incorporate the standards and requirements established in air construction permit No. 0310561-005-AC/PSF-FL-401B. The air construction permit removed carbon monoxide (CO) requirements. In the original air construction permit application, the two simple cycle turbines were to be converted to combined cycle operation as a second phase of the project. The applicant informed the Department that these plans have been placed on hold indefinitely. In the Technical Evaluation and Preliminary Determination (TEPD) for the original air construction permit, new source review applicability was based on the potential emissions of both simple cycle operation and combined cycle operation. For combined cycle operation, the facility was prevention of significant deterioration (PSD) major for CO. As a result, PSD review was conducted for CO, and CO emission limits were established as best available control technology (BACT) that included the use of CEMS to demonstrate compliance. Because there are no plans at this point to move ahead with the combined cycle conversion, the applicant requested that the original air construction permit be revised to only consider simple cycle operation. Under simple cycle operation CO is not subject to PSD.

PROCESSING SCHEDULE AND RELATED DOCUMENTS

Application for a Title V Air Operation Permit Revision received 4/25/2012.

Draft/proposed permit issued May 25, 2012.

Public Notice of Intent to Issue Air Permit published June 8, 2012.

PRIMARY REGULATORY REQUIREMENTS

Title III: The facility is not identified as 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, Subpart ZZZZ.

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

CAM: Compliance Assurance Monitoring (CAM) does not apply to any of the units at the facility as the combustion turbines are subject to 40 CFR 60 Subpart KKKK, which includes continuous emission monitoring provisions. The combustion turbines employ dry low NO_X burners and water injection control systems for natural gas and fuel oil respectively.

GHG: The facility is identified as a major source of green house gas (GHG) pollutants.

PROJECT REVIEW

To incorporate and reflect the revised requirements established by permit No. 0310561-005-AC/PSD-FL-401B, the following conditions of permit No. 0310561-003-AV have been changed as described below. Changes to the permit made as part of this revision are shown in ~~strike through~~ format for deletions and in double underline format for additions. For ease of identification, all changes were also highlighted in yellow within the draft/proposed permit document.

1. To reflect the removal of the CO limit, Specific Condition **A.9.** is deleted and marked as "Reserved".

A.9. [Reserved.] ~~Carbon Monoxide (CO). As determined by the continuous emissions monitoring system (CEMS), emissions of CO from the CTs shall not exceed:~~

~~a. *From the combustion of gas*. 4.1 parts per million by volume dry (ppmvd), corrected to 15% oxygen (O_2), on a 24-hour block average. (BACT)~~

~~b. *From the combustion of oil*. 8.0 ppmvd, corrected to 15% O_2, on a 24-hour block average. (BACT)~~

~~[Permit No. 0310561-001-AC/PSD-FL-401, Specific Condition 12 and 0310561-004-AC/PSD-FL-401A, Specific Condition 2~~]

~~*{Permitting Note: For informational purposes, the CO mass emissions rates at ISO conditions, based on a turbine inlet condition of 59° F and using the higher heating value (HHV) of the fuel at full load, are equivalent to 16.2lb/hr for gas and 38.2 lb/hr for oil.}*~~

2. To reflect the removal of the CO CEMS requirements, Specific Conditions **A.16.**, **A.17.**, **A.18.** and **A.22.** are changed as follows (Specific Condition **A.17**.e. is also revised to correct a cross reference within the permit):

A.16. CEM Systems. Subject to the following, the permittee shall calibrate, operate, and maintain a continuous emission monitoring system (CEMS) to measure and record the emissions of NO_X ~~and CO~~ from the combustion turbine in terms of the applicable standards.

a. *NO_X Monitor*. Each NO_X monitor shall be certified pursuant to the specifications of 40 CFR 75. Quality assurance procedures shall conform to the requirements of 40 CFR 75. The annual and required RATA tests required for the NO_X monitor shall be performed using EPA Method 20 or 7E in Appendix A of 40 CFR 60.

b. ~~*CO Monitor*. The CO monitor shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 4 or 4A. Quality assurance procedures shall conform to the requirements of 40 CFR 60, Appendix F, and the Data Assessment Report of Section 7 shall be made each calendar quarter, and reported semiannually to the Compliance Authority. The RATA tests required for the CO monitor shall be performed using EPA Method 10 in Appendix A of 40 CFR 60 and shall be based on a continuous sampling train. The CO monitor span values shall be set appropriately, considering the allowable methods of operation and corresponding emission standards.~~

~~c.~~ *Diluent Monitor*. The oxygen (O_2) or carbon dioxide (CO_2) content of the flue gas shall be monitored at the location where ~~CO and~~ NO_X ~~are~~ is monitored to correct the measured emissions rates to 15% oxygen. If a CO_2 monitor is installed in the future, the oxygen content of the flue gas shall be calculated using F-factors that are appropriate for the fuel fired. Each monitor shall comply with the performance and quality assurance requirements of 40 CFR 75.

[Rules 62-4.070(3) & 62-210.200(BACT), F.A.C.; 40 CFR 60 & 40 CFR 75; and, Permit Nos. 0310561-001-AC/PSD-FL-401, Specific Condition 25 & Permit No. 0310561-005-AC/PSD-FL-401B, Specific Condition 7]

A.17. CEMS Data Requirements for BACT Standards.

a. *Data Collection*. Emissions shall be monitored and recorded at all times including startup, operation, shutdown, and malfunction except for continuous monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments. The CEMS shall be designed and operated to sample, analyze, and record data evenly spaced over an hour. If the CEMS measures concentration on a wet basis, the CEM system shall include provisions to determine the moisture content of the exhaust gas and an algorithm to enable correction of the monitoring results to a dry basis (0% moisture). Alternatively, the owner or operator may develop through manual stack test measurements a curve of moisture contents in the exhaust gas versus load, and use these typical values in an algorithm to enable correction of the monitoring results to a dry basis (0% moisture). Final results of the CEMS shall be expressed as ppmvd corrected to 15% oxygen. The CEMS shall be used to demonstrate compliance with the CEMS emission standards for ~~CO and~~ NO_X as specified in this permit. For purposes of determining compliance with the CEMS emissions standards of this permit, missing (or excluded) data shall not be substituted. Upon request by the Department, the CEMS emissions rates shall be corrected to ISO conditions.

b. *Valid Hour*. Hourly average values shall begin at the top of each hour. Each hourly average value shall be computed using at least one data point in each fifteen-minute quadrant of an hour, where the unit combusted fuel during that quadrant of an hour. Notwithstanding this requirement, an hourly value shall be computed from at least two data points separated by a minimum of 15 minutes (where the unit operates for more than one quadrant of an hour). If less than two such data points are available, the hourly average value is not valid. The permittee shall use all valid measurements or data points collected during an hour to calculate the hourly average values.

c. *24-hour Block Averages*. A 24-hour block shall begin at midnight of each operating day and shall be calculated from 24 consecutive hourly average emission rate values. If a unit operates less than 24 hours during the block, the 24-hour block average shall be the average of all available valid hourly average emission rate values for the 24-hour block. For purposes of determining compliance with the 24-hour CEMS standards, the missing data substitution methodology of 40 CFR Part 75, Subpart D, shall not be utilized. Instead, the 24-hour block average shall be determined using the remaining hourly data in the 24-hour block. [Rule 62-212.400(BACT), F.A.C.]

d. *4-hour Rolling Average*. Compliance with this rolling average is as described in 40 CFR 60.4380(b)(1).

e. *Data Exclusion*. Each CEMS shall monitor and record emissions during all operations including episodes of startup, shutdown, malfunction and DLN tuning. Some of the CEMS emissions data recorded during these episodes may be excluded from the corresponding CEMS compliance demonstration subject to the provisions of Specific Conditions **A.12.** and **A.13.** ~~Nos. 22 and 23 of this section~~. All periods of data excluded shall be consecutive for each such episode and only data obtained during the described episodes (startup, shutdown, malfunction, DLN tuning) may be used for the appropriate exclusion periods. The permittee shall minimize the duration of data excluded for such episodes to the extent practicable. Data recorded during such episodes shall not be excluded if the episode was caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure, which may reasonably be prevented. Best operational practices shall be used to minimize hourly emissions that occur during such episodes.

f. *Availability*. Monitor availability for the CEMS shall be based on performance standards as set forth in 40 CFR 75.

[Rules 62-4.070(3) & 62-212.400(BACT), F.A.C.; and, Permit Nos. 0310561-001-AC/PSD-FL-401, Specific Conditions 26 & 27 and 0310561-005-AC/PSD-FL-401B, Specific Condition 8]

A.18. CEMS Requirement for Annual Emissions. The owner or operator shall use data from the NO_X ~~and CO~~ CEMS when calculating annual emissions for purposes of computing actual emissions, baseline actual emissions, and net emissions increase, as defined at Rule 62-210.200, F.A.C., and for purposes of computing emissions pursuant to the reporting requirements of Rule 62-210.370(3), F.A.C. In computing the emissions of a pollutant, the owner or operator shall account for the emissions during periods of startup and shutdown of the emissions unit. [Rules 62-210.200 & 62-210.370(3), F.A.C.; and, Permit

Nos. 0310561-001-AC/PSD-FL-401, Specific Condition 28 & 0310561-005-AC/PSD-FL-401B, Specific Condition 9]

A.22. Continuous Compliance. The permittee shall demonstrate continuous compliance ~~with the 24-hour block average CO emissions standards; and~~ with the 24-hour block and 4-hour rolling average NO_X emission standards based on data collected by the certified CEMS. Within 45 days of conducting any RATA on a CEMS, the permittee shall submit a report to the Compliance Authority summarizing results of the RATA. ~~Compliance with the CO emission standards also serves as an indicator of efficient fuel combustion, which reduces emissions of particulate matter.~~ [Rules 62-4.070 & 62-210.200 (BACT), F.A.C.; and, Permit Nos. 0310561-001-AC/PSD-FL-401, Specific Condition 18 & 0310561-005-AC/PSD-FL-401B, Specific Condition 6]

3. Because CO testing is no longer required, the CO test method is removed from Specific Condition **A.19.** as follows:

A.19. Test Methods. Required tests shall be performed in accordance with the following reference methods:

Method	Description of Method and Comments
7E	Determination of Nitrogen Oxide Emissions from Stationary Sources
9	Visual Determination of the Opacity of Emissions from Stationary Sources
~~10~~	~~Determination of Carbon Monoxide Emissions from Stationary Sources~~
20	Determination of Nitrogen Oxides, Sulfur Dioxide and Diluent Emissions from Stationary Gas Turbines

The above methods are described in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Rule 62-297.401, F.A.C.; and Permit Nos. 0310561-001-AC/PSD-FL-401, Specific Condition 14 & 0310561-005-AC/PSD-FL-401B, Specific Condition 5.]

4. As an administrative change, Condition TV36. of Appendix TV, Title V General Conditions, is deleted to reflect the February 16, 2012, repeal of the Anti-Idling Rule.

5. Table 1 and Table 2 are revised to reflect the removal of the CO emissions limits and CEMS requirements.

CONCLUSION

This project revises Title V air operation permit No. 0310561-003-AV, which was effective on January 1, 2012. 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 214, F.A.C.