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JEA – Greenland Energy Center
21 West Church Street
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Authorized Representative:
Dr. James M. Chansler, P.E., Chief Operating Officer

Permit No. 0310561-005-AC/PSD-FL-401B
Air Construction Permit Revision -
Removal of Carbon Monoxide Requirements
Greenland Energy Center
Duval County, Florida

PROJECT

This is the final air construction permit revision which revises specific conditions of Permit No. 0310561-001-AC/PSD-FL-401, which authorized the construction of two General Electric PG7241FA simple cycle combustion turbine electrical generators with a nominal output of 352 megawatts (MW) on natural gas and 380 MW on ultra low sulfur fuel oil at the Greenland Energy Center. The revised permit conditions are related to the removal of carbon monoxide requirements. The existing facility is a power plant categorized under Standard Industrial Classification No. 4911. The facility is located at 6850 Energy Center Drive, in Duval County. The UTM coordinates for this site are Zone 450.218 km East and 3336.391 km North. This final permit revision is organized into the following sections: Section 1 (General Information) and Section 2 (Permit Revisions). As noted in the Final Determination provided with this final permit revision, only a minor administrative change was made to the draft permit revision.

STATEMENT OF BASIS

This air pollution construction permit revision is issued under the provisions of: Chapter 403 of the Florida Statutes (F.S.) and Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). This project is subject to the general preconstruction review requirements in Rule 62-212.300, F.A.C. and is not subject to the preconstruction review requirements for major stationary sources in Rule 62-212.400, F.A.C., for the Prevention of Significant Deterioration (PSD) of Air Quality. A copy of this permit revision shall be filed with the referenced permit and shall become part of the permit.

Upon issuance of this final permit revision, any party to this order has the right to seek judicial review of it under Section 120.68 of the Florida Statutes by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel (Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000) and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within 30 days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida

On Behalf of:

Digitally signed by
Jonathan Holtom, P.E., CPM
Date: 2012.06.29 09:58:21
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Jeffery F. Koerner, Program Administrator
Office of Permitting and Compliance
Division of Air Resource Management

JFK/jkh/tbc

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Final Air Permit package (including the Final Determination and Final Permit Revision) was sent by electronic mail, or a link to these documents made available electronically on a publicly accessible server, with received receipt requested before the close of business on the date indicated below to the following persons:.

Dr. James M. Chansler, P.E., JEA: chanjm@jea.com
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Ms. Lynn Scearce, DEP OPC: lynn.scearce@dep.state.fl.us (for reading file)

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.

Barbara Friday
2012.06.29 10:48:16 -04'00'

FACILITY DESCRIPTION

The project authorized by Permit No. 0310561-001-AC consisted of the installation of two gas-fired simple cycle electric generating units that use ultra low sulfur distillate fuel oil as backup fuel. The units are General Electric (GE) Model PG7241FA gas turbine-electrical generator sets. The combustion turbines are equipped with GE's dry-low NO_X (DLN) combustors; a Mark VI automated combustion turbine control system; and an inlet air filtration system. The combustion turbines are designed for operation in simple cycle mode only. The two units are designated individually as "Unit 1" and "Unit 2." Each of the gas turbine-electrical generator sets has a nominal generating capacity of 176 MW on natural gas and 190 MW on ultra low sulfur distillate fuel oil (ULSFO) containing no more than 15 parts per million (ppm) sulfur.

Facility Regulatory Classification

- This facility is not a major source of hazardous air pollutants (HAP).
- This facility operates units subject to the acid rain provisions of the Clean Air Act (CAA).
- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is a major stationary source in accordance with Rule 62-212.400 (PSD), F.A.C.

PROPOSED PROJECT

For the current project, the applicant has requested an air construction permit revision to remove construction permit conditions related to carbon monoxide (CO) requirements. Specifically, the request is to remove the CO emissions limits and the requirement to maintain and operate CO continuous emissions monitoring systems (CEMS). 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. We have been informed by the applicant 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 continuous emissions monitoring systems (CEMS) to determine compliance. Because there are no plans at this point to move ahead with the combined cycle conversion, the applicant requests that the original air construction permit be revised to only consider simple cycle operation. Based on results of recorded CO data provided by JEA management, the emissions are sufficiently below major status. Specifically, review of the hourly CEMS data for 2011 indicates that the total annual CO emissions were approximately 24 tons total for Units 1 and 2.

The applicant claims that since CEMS data demonstrate that CO emissions are well below the PSD significant emissions rate, CO emission limits and CO CEMS should not be required. For these reasons, the applicant is requesting the removal of both the CO emissions limits and the requirement for CO CEMS.

The Department has reviewed this information and approves the requested changes to the air construction permit. Details are provided in the next section of this permit revision.

The following conditions of this permit revise the existing permits as indicated. ~~Strikethrough~~ is used to denote the deletion of text. Double-underlines are used to denote the addition of text. All changes are also highlighted in yellow for ease of identification.

Air Construction Permits Being Revised: Permit Nos. 0310561-001-AC/PSD-FL-401 (expiration date December 31, 2012) and 0310561-004-AC/PSD-FL-401A (expiration date extended to December 31, 2013).

1. Scope of Permit Revision Changes: This permit revision authorizes no new construction at the site and all other specific conditions of Permit Nos. 0310561-001-AC/PSD-FL-401 and 0310561-004-AC/PSD-FL-401A remain unchanged. It should be noted that permit No. 0310561-004-AC/PSD-FL-401A, issued November 7, 2011, previously removed the stack testing requirement for demonstrating compliance with the CO emissions limit.

FACILITY DESCRIPTION

2. The Facility Description is revised as follows:

The proposed facility is a new electric-generating facility referred to as Greenland Energy Center (GEC). ~~GEC will be built in two phases. The initial phase will be~~ This permit authorizes the construction of two natural gas-fired simple cycle combustion turbine (CT) units that are proposed to be operational by June 2011. ~~This permit authorizes the construction of the initial phase~~. ~~The second phase will convert these simple cycle units to a combined cycle combustion turbine ("2-on-1" configuration). Heat recovery equipment will be installed on the two simple cycle combustion turbines to capture enough heat energy to run a steam turbine (ST). This second phase is proposed to be operational in June 2013. A new PSD construction permit application has been submitted by the applicant for the second phase.~~

Emission Unit Description

ID	Emission Unit Description
001	Unit 1 – General Electric (GE) PG7241 FA gas turbine electrical generator
002	Unit 2 – GE PG7241 FA gas turbine electrical generator

APPLICABLE STANDARDS AND REGULATIONS

3. Specific Condition 1. of permit No. 0310561-001-AC/PSD-FL-401 is changed as follows:

BACT Determinations: Units 1 and 2 are subject to determinations of the Best Available Control Technology (BACT) for nitrogen oxides (NO_X), ~~carbon monoxide (CO),~~ sulfur dioxide (SO_2), particulate matter/particulate matter less than 10 microns (PM/PM_{10}) and sulfuric acid mist (SAM). [Rule 62-210.200 (BACT), F.A.C.]

EMISSIONS AND TESTING REQUIREMENTS

4. Specific Condition 12. of permit No. 0310561-004-AC/PSD-FL-401A is changed as follows:

12. Emission Standards: Emissions from the combustion turbine shall not exceed the following standards.

Pollutant	Emission Standard [e]	Averaging Time	Compliance Method	Basis
NO_X [a] (Gas)	9.0 ppmvd @ 15% O_2	24-hr block	CEMS	BACT
	58.5 lb/hr ~~[g]~~	3 1-hr runs	None	Equivalent
NO_X [a] (Oil)	42.0 ppmvd @ 15% O_2	4-hr rolling average [f]	CEMS	NSPS
	329.4 lb/hr ~~[g]~~	3 1-hr runs	None	Equivalent

Pollutant	Emission Standard [e]	Averaging Time	Compliance Method	Basis
~~CO[b] (Gas)~~	~~4.1 ppmvd @ 15% O_2~~	~~24 hr block~~	~~CEMS~~	~~BACT~~
	~~16.2 lb/hr[g]~~	~~3 1-hr runs~~	~~None~~	~~Equivalent~~
~~CO[b] (Oil)~~	~~8.0 ppmvd @ 15% O_2~~	~~24 hr block~~	~~CEMS~~	~~BACT~~
	~~38.2 lb/hr[g]~~	~~3 1-hr runs~~	~~None~~	~~Equivalent~~
PM/PM_{10}[c]	10 % Opacity	6-minute block	Visible Emissions Test	BACT
	2 gr S/100 SCF of gas/ 0.0015% S fuel oil	N/A	Record Keeping	
SAM/SO_2[d]	2 gr S/100 SCF of gas/ 0.0015% S fuel oil	N/A	Record Keeping	BACT

a. Continuous compliance with the 24-hour block and 4-hour rolling average NO_X standards shall be demonstrated based on data collected by the required Continuous Emissions Monitoring System (CEMS). The initial EPA Method 7E or Method 20 tests associated with demonstration of compliance with 40 CFR 60, Subpart KKKK or certification of the CEMS instruments may also be used to demonstrate compliance with the individual standards for natural gas and ULSFO during the time of those tests. NO_X mass emission rates are at International Organization for Standardization (ISO) conditions and are defined as oxides of nitrogen expressed as NO_2.

~~b. Continuous compliance with the 24-hour CO standards shall be demonstrated based on data collected by the required CEMS. The initial EPA Method 10 tests associated with the certification of the CEMS instruments may also be used to demonstrate compliance with the individual standards for natural gas and ULSFO. CO mass emission rates are at ISO conditions.~~

c. The sulfur fuel specification combined with the efficient combustion design and operation of the gas turbine represents BACT for PM/PM_{10} emissions. Compliance with the fuel specifications, ~~CO standards,~~ and visible emissions standards shall serve as indicators of good combustion. Compliance with the fuel specifications shall be demonstrated by keeping records of the fuel sulfur content. Compliance with the visible emissions standard shall be demonstrated by conducting tests in accordance with EPA Method 9.

d. The fuel sulfur specification effectively limits the potential emissions of SAM and SO_2 from the gas turbines and represents BACT for these pollutants. Compliance with the fuel sulfur specifications shall be determined by the ASTM methods or a certified fuel sulfur analysis from the fuel vendor for determination of fuel sulfur as detailed in the draft permit.

e. The mass emission rate standards are based on a turbine inlet condition of 59 °F, evaporative cooling on, and using the HHV of the fuel. Mass emission rate may be adjusted to actual test conditions in accordance with the performance curves and/or equations on file with the Department.

f. 40 CFR 60, NSPS-Subpart KKKK as described in 60.4380(b)(1).

g. For informational purposes.

[Rules 62-4.070(3), 62-210.200 (BACT), 62-212.400(PSD), F.A.C.; ~~and~~ 40 CFR 60, Subpart KKKK; and, Permit Nos. 0310561-001-AC/PSD-FL-401 & 0310561-004-AC/PSD-FL-401A]

5. Specific Condition 14. of permit No. 0310561-001-AC/PSD-FL-401 is changed as follows:

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

Method	Description of Method and Comments
7E	Determination of NO_X Emissions from Stationary Sources (Instrumental)
9	Visual Determination of Opacity of Emissions from Stationary Sources

Method	Description of Method and Comments
~~10~~	~~Determination of Carbon Monoxide Emissions from Stationary Sources~~
20	Determination of NO_X, SO_2, and Diluent Emissions from Stationary Combustion Turbines

The 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 for compliance testing unless prior written approval is received from the administrator of the Department's Emissions Monitoring Section in accordance with an alternate sampling procedure pursuant to 62-297.620, F.A.C. [Rule 62-204.800, F.A.C. and 40 CFR 60, Appendix A]

6. Specific Condition 18. of permit No. 0310561-001-AC/PSD-FL-401 is changed as follows:

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.]

CONTINUOUS MONITORING REQUIREMENTS

7. Specific Condition 25. of permit No. 0310561-001-AC/PSD-FL-401 is changed as follows:

CEM Systems: Subject to the following, the permittee shall install, 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. The monitoring system shall be installed, and functioning within the required performance specifications by the time of the initial compliance demonstration.

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 within 60 calendar days of achieving permitted capacity as defined in Rule 62-297.310(2), F.A.C., but no later than 180 calendar days after initial startup. 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, 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 and 40 CFR 75]

8. Specific Condition 27. of permit No. 0310561-001-AC/PSD-FL-401 is changed as follows:

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 Condition 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.]

CEMS REQUIREMENTS FOR ANNUAL EMISSIONS

9. Specific Condition 28. of permit No. 0310561-001-AC/PSD-FL-401 is changed as follows:

CEMS Annual Emissions Requirement: 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 and 62-210.370(3), F.A.C.]