TECHNICAL EVALUATION
AND
PRELIMINARY DETERMINATION

JEA

Greenland Energy Center

Removal of Carbon Monoxide Requirements

Jacksonville, Duval County

DEP File No. 0310561-005-AC (PSD-FL-401B)

Florida Department of Environmental Protection
Division of Air Resource Management
Office of Permitting and Compliance
Power Plant Group
2600 Blair Stone Road, MS #5505
Tallahassee, Florida 32399-2400

May 25, 2012

I. APPLICATION INFORMATION

A. APPLICANT

JEA - Greenland Energy Center (GEC)
21 West Church Street
Jacksonville, Florida 32202

Authorized Representative

James M. Chansler, P.E., D.P.A., Chief Operating Officer
JEA
21 West Church Street
Jacksonville, Florida 32202

B. PROCESSING SCHEDULE

- Application for Air Construction Permit Revision received on April 25, 2012.

C. FACILITY LOCATION

The existing Greenland Energy Center is located at 12121 Phillips Highway in Jacksonville, Duval County. The site is 193 km from the Chassahowitzka National Wildlife Refuge; 78 km from Okeefenokee Wilderness (OW); and 128 km from Wolf Island Wilderness (WIW) all Federal Prevention of Significant Deterioration (PSD) Class I Areas.

The UTM coordinates for this site are Zone 450.218 km East and 3336.391 km North. The locations of Jacksonville and GEC are shown in the following figures.

Figure 1. Location of Jacksonville

Figure 2. GEC Location

Figure 3. Site Aerial Photograph

D. FACILITY DESCRIPTION

The facility is an existing electric-generating facility referred to as Greenland Energy Center (GEC). JEA's original plans were that GEC was to be built in two phases. The initial phase was the construction of two natural gas-fired simple cycle combustion turbine (CT) units. The second phase plan was to convert these simple cycle units to a combined cycle combustion turbine system ("2-on 1" configuration). Plans for this second phase have been placed on hold indefinitely by the applicant.

This technical evaluation and preliminary determination (TEPD),therefore, only addresses the simple cycle turbine operation.

The pictures below are the artist renderings of GEC at completion of phase one (simple cycle). Following construction of phase one, the generating station is capable of producing a nominal plant output of 352 megawatt (MW) on natural gas and 380 MW on ultra low sulfur fuel oil (ULSFO) from simple cycle operation.

Figure 4. North Northeast View

Figure 4A. Northeast View

E. PROJECT DESCRIPTION AS PROPOSED BY APPLICANT

This project considers the following existing regulated Air Resource Management System (ARMS) emission units:

EU ID	Emission Unit Description
001	Unit 1 – General Electric PG7241 FA gas turbine electrical generator (nominal 190 MW)
002	Unit 2 – General Electric PG7241 FA gas turbine electrical generator (nominal 190 MW)

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) document for the original air construction permit (No. 0310561-001-AC / PSD-FL-401), 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 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. Revised Table 3, from the TEPD, is noted below reflecting this change.

For these reasons, the applicant is requesting the removal of the CO emissions limits and the requirement for CO CEMS. Further, the applicant claims that since CEMS data demonstrate that CO emissions are well below the PSD review threshold, CO emission limits and CO CEMS are no longer required. Based on CEMS data provided by JEA management, the Department has verified this claim. 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.

In conclusion, the Department has reviewed this information and accepts the changes to the air construction permit.

F. PSD APPLICABILITY REVISION FOR THE PROJECT

The following table identifies the estimated emissions increases based on the initial application for the proposed initial simple cycle operation and the future combined cycle operation. At the time of issuance of the original PSD permit for the Greenland Energy Center, the Department informed JEA that the new source review applicability for the simple cycle project would be based on the potential emissions of the planned combined cycle conversion project. Since the second phase will not be built in the near future, it is appropriate to remove its effect from the PSD applicability analysis, as noted below.

Table 3 - Summary of the Applicant's PSD Applicability (Revised)

Pollutant	Simple Cycle Net Emissions Increase*(a)* (TPY)	~~Combined Cycle Net Emissions Increase*(b)* (TPY)~~	PSD Significant Emissions Rate (TPY)	Subject to PSD Review?~~*(c)*~~
CO	70.24	~~251.89~~	100	~~Yes~~No
NO_X	346.51	~~142.58~~	40	Yes
PM	71.25	~~215.41~~	25	Yes
PM_{10}	71.25	~~215.41~~	15	Yes
SAM	11.05	~~43.49~~	7	Yes
SO_2	28.82	~~72.65~~	40	~~Yes~~No
VOC	13.0	~~34.40~~	40	No

Notes:

(a) The potential to emit (PTE) is the expected emissions from combustion turbine operation at 3,000 hours per CT per year on natural gas and 500 hours per CT per year on ULSFO. PTE from emergency equipments (EU 004) are included based on a combined fuel usage of not more than 32,000 gallons per year. PTE from fuel gas heater (EU 005) are included based on the unit firing natural gas for 8,760 hours per year.

~~*(b)PTE based on firing 8,260 hours per year on natural gas with 500 hours per year on ULSFO, at International Organization for Standardization (ISO) conditions. NOx emissions in combined cycle mode controlled by a selective catalytic reduction (SCR) system, and good combustion controls for other pollutants (however, a detailed BACT analysis will be performed in the future application for combined cycle operation).*~~

~~*(c)PSD review for the simple cycle project is based on the expected PTE of the future combined cycle operation.*~~

As shown in the table, the project is subject to PSD preconstruction review for emissions of: NOx, ~~CO,~~ ~~SO_2,~~ PM/PM_{10}, and SAM.

If the original project had not proposed combined cycle operation, then it would not have triggered PSD review for CO. Because the original projected emissions of CO from the simple cycle project were not greater than the PSD significant emissions rate, a CO emissions limit and CO continuous emissions monitoring would not have been required. However, the CO CEMS were installed and site specific data has been recorded showing that actual CO emissions from the simple cycle units have only reached about a third of the original projection. At this low level of emissions, the Department agrees with the applicant that there is no applicable requirement to protect by imposing a CO emissions limit and that continuing to maintain and operate a CO CEMS is an unnecessary expense.

II. CONCLUSION

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the draft permit. Tom Cascio is the project engineer responsible for reviewing the application and drafting the permit documents. Additional details of this analysis may be obtained by contacting the project engineer at the Department's Office of Permitting and Compliance at: 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400.