Title V Air Operation Permit Revision
FINAL Permit No. 0970043-019-AV

APPLICANT

The applicant for this project is Kissimmee Utility Authority. The applicant's responsible official and mailing address are: Larry Mattern, Vice President of Power Supply, Kissimmee Utility Authority, Cane Island Power Park (CIPP), 1701 West Carroll Street, Kissimmee, Florida 34741.

FACILITY DESCRIPTION

FMPA and the Kissimmee Utilities Authority (KUA) jointly own the CIPP, which is located in Osceola County at 6075 Old Tampa Highway, Intercession City, Florida. The site is located approximately 105 km southeast from the Chassahowitzka National Wildlife Area; the nearest Federal Prevention of Significant Deterioration (PSD) Class I Area.

The CIPP consists of one 40 megawatt (MW) simple cycle combustion turbine (Unit 1) and three combined cycle units: a 120 MW (Unit 2), a 250 MW (Unit 3) and a new 300 MW (Unit 4). The units fire natural gas as the primary fuel, with distillate fuel as backup. The figures below show the location and an aerial view of the facility. The new Unit 4 is located to the right of Unit 3 as seen in the artist rendition of the 2 facility pictures.

Figure 1. Facility Location

Figure 2. Aerial View of CIPP Units 1, 2 and 3 (left to right)

PROJECT DESCRIPTION

The purpose of this permitting action is to incorporate new 300 MW combined cycle Unit 4 in the Title V permit. The picture below shows Unit 4 already constructed. This Unit has been in operation since July 12, 2011.

Figure 3. Cane Island Power Plant including new Unit 4 (to the far right)

EMISSION UNITS DESCRIPTION

ARMS Emissions Unit 001: Unit 1 is a 40 megawatt (MW) General Electric Model LM-6000PA simple-cycle combustion turbine with an electrical generator set. The provisions of 40 CFR 64, Compliance Assurance Monitoring (CAM), do not apply to this Unit because the Acid Rain required NO_X CEMS is being used as a continuous compliance determination method.

ARMS Emissions Unit 002: Unit 2 is a General Electric Model PG7111(EA) combined-cycle combustion turbine with electrical generator set and an unfired heat recovery steam generator (HRSG) with a steam-electric generator, it produces 80 MW during simple-cycle operation and 120 MW during combined-cycle operation. This Unit fires natural gas as the primary fuel with very low sulfur distillate oil (≤ 0.05% sulfur by weight) as a backup fuel. This Unit has a simple-cycle stack and a separate HRSG stack for combined-cycle operation. The provisions of 40 CFR 64, Compliance Assurance Monitoring (CAM), do not apply to this Unit because the Acid Rain required NO_X CEMS is being used as a continuous compliance determination method.

ARMS Emissions Unit 003: Unit 3 is a nominal 167 MW stationary gas combustion turbine-electrical generator burning natural gas with very low sulfur fuel oil as backup; a supplemental gas-fired HRSG (ARMS Emissions Unit 005) to raise sufficient steam to achieve 250 MW in combined-cycle operation; a nominal 80-90 MW steam electric generator; a 44 MMBtu/hr heat input duct burner; a selective catalytic reduction unit and ancillary equipment; ammonia storage; a 130-foot stack; a 100-foot bypass stack for simple-cycle operation; and a cooling tower (ARMS Emission Unit 006), an unregulated emissions unit.

Auxiliary equipment includes: a cooling tower; water and wastewater facilities; water storage tanks; a storm water detention pond; a 230 kilovolt (KV) transmission line; and, a 1.0 million gallon storage tank for back-up distillate fuel oil (ARMS Emission Unit 004). Nitrogen oxides (NO_X) emissions are controlled by Dry Low NO_X (DLN) combustors and wet injection under simple-cycle operation. NO_X emissions are controlled by DLN and wet injection and selective catalytic reduction (SCR) when operating in combined-cycle mode. Inherently clean fuels and good combustion practices are employed to control all pollutants. The provisions of 40 CFR 64, Compliance Assurance Monitoring (CAM), do not apply to this Unit because the Acid Rain required NO_X CEMS is being used as a continuous compliance determination method. The Site Certification was approved on November 22, 1999.

ARMS Emissions Unit 009: Unit 4 consists of: a nominal 150 MW gas fueled General Electric 7241 FA CTG; a supplementary-fired HRSG with a nominal 600 million Btu per hour (MMBtu) DB; and a nominal 150 MW steam turbine generator (STG) for an overall nominal rating of 300 MW. This Unit includes a GE Mark VI Gas Turbine Control System and a 160-foot stack.

Auxiliary equipment includes: an emergency diesel engine fire pump and small diesel fuel storage tank (ARMS Emissions Unit 010); a nominal 750 kilowatts diesel generator with a small diesel fuel storage tank (ARMS Emissions Unit 011); and a mechanical draft cooling tower with drift eliminators (ARMS Emissions Unit 012). The emergency diesel engine fire pump and the safe shutdown diesel generator use ultralow sulfur diesel (ULSD) fuel oil (FO) (0.0015% Sulfur).

CO, $PM/PM_{10}/PM_{2.5}$, SAM and SO_2 emissions are minimized by the efficient combustion of natural gas. NO_X emissions are reduced with dry low-NO_X (DLN) combustion technology. A selective catalytic reduction (SCR) system further controls NO_X emissions. Flue gas oxygen content or carbon dioxide content is monitored as a diluent gas. The provisions of 40 CFR 64, Compliance Assurance Monitoring (CAM), do not apply to this Unit because the Acid Rain required NO_X CEMS is being used as a continuous compliance determination method.

This Unit and its auxiliary equipment started commercial operation on July 12, 2011.

Unregulated ARMS Emissions Unit 007 and 008: Storage tanks for the very low sulfur back-up fuel oil.

Also included in this permit are miscellaneous unregulated/insignificant emissions units and/or activities.

PROCESSING SCHEDULE AND RELATED DOCUMENTS

Application for a Title V Air Operation Permit Revision received August 3, 2011.

Draft/Proposed Title V Air Operation Permit issued October 28, 2011

PRIMARY REGULATORY REQUIREMENTS

Title III: The facility is 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.

NESHAP: The facility operates units that are "affected units" under the National Emissions Standards for Hazardous Air Pollutants (NESHAP) of 40 CFR 63, Subpart YYYY, Standards for Stationary Combustion Turbines. As existing units, there are no requirements that must be met. In addition, EPA issued a final rule on August 18, 2004 staying the effectiveness of this rule for new lean premix gas-fired turbines and diffusion flame gas-fired turbines. Under this stay, new sources in the lean premix gas-fired turbines and diffusion flame gas-fired turbines subcategories, sources constructed or reconstructed after January 14, 2003, are temporarily relieved of the obligation to apply pollution controls and to comply with associated operating, monitoring, and reporting requirements. However, such sources must continue to submit Initial Notifications pursuant to 40 CFR 63.6145.

HAP: Based on the Title V Air Permit Renewal Application received on May 14, 2009, this facility is a major source of hazardous air pollutants (HAP).

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

CAM: The facility is not subject to provisions of 40 CFR 64, Compliance Assurance Monitoring.

PROJECT REVIEW

This Title V permit revision is to incorporate the requirements and provisions for new Unit 4 and its auxiliary equipment, which were established by permit No. 0970043-014-AC (PSD-FL-400) and revised by permit No. 0970043-018-AC (PSD-FL-400A). The requirements established by those permits are reflected in this revised Title V permit by the addition of new Subsections E, F, G and H to existing Title V permit No. 0970043-017-AV (renewal), as detailed below.

1. Subsection E. is added to incorporate the requirements for the new combined cycle combustion turbine (EU 009).
2. Subsection F. is added to incorporate the applicable requirements from the PSD permit, as well as the requirements from NSPS Subpart IIII, for the new emergency fire pump (EU 010).
3. Subsection G. is added to incorporate the applicable requirements from the PSD permit, as well as the requirements from NSPS Subpart IIII, for the new emergency generator (EU 011).
4. Subsection H is added to incorporate the applicable requirements for the new cooling tower (EU 012).
5. The Acid Rain and CAIR Subsections are revised to incorporate the latest forms which include the new Unit 4.
6. Administrative Changes: Conditions contained in the construction permit that imposed initial requirements are not carried into the Title V permit, as they are now obsolete. In addition, the Appendix section is revised as follows:

   Appendix NESHAP YYYY, 40 CFR 63, Subpart YYYY - Requirements for Gas Turbines is added.

Appendix NSPS KKKK, 40 CFR 60, Subpart KKKK - Requirements for Gas Turbines and Duct Burners is added.

Appendix RR, Facility-wide Reporting Requirements is replaced with the current version dated 1-5-11.

Appendix TV, Title V General Conditions is replaced with the current version dated 11-1-10.

CONCLUSION

This project revises Title V air operation permit No. 0970043-017-AV (renewal), which was effective on January 1, 2010. This is the first revision to this permit. This Title V air operation permit revision 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.