Florida Department of
Memorandum Environmental Protection

TO: Howard L. Rhodes

THRU: Al Linero AAL for CHF

FROM: Teresa Heron TH

DATE: January 22, 2002

SUBJECT: El Paso Belle Glade Energy Center
600 Megawatt Gas-fueled Power Plant
DEP File No. 0990594-001-AC (PSD-FL-317)

Attached is the final package for construction of a 600 MW gas-fueled power plant in Belle Glade. The plant will consist of a 250 MW combined cycle and two intermittent duty, simple cycle, 175 MW GE 7FA combustion turbines along with ancillary equipment. There is no fuel oil issue on this project.

The NO_X BACT limit for the combined cycle unit was determined to be 2.5 ppmvd @15% O_2 on a 24-hr average time and 5 ppmvd ammonia slip. We determined that BACT for CO is 7.4 ppmvd @15% O_2.and 12 ppmvd for limited power augmentation on the combined cycle unit.

Because El Paso wanted unlimited power augmentation (steam injection), they decided to install oxidation catalyst and requested modification of the limits to 2.5 and 4 ppmvd for normal operation and (unlimited) power augmentation, respectively. This is the first oxidation catalyst to be installed on a GE 7FA in this state. They plan to do the same at their Broward project as part of an effort to resolve the case there.

We would still consider our draft BACT determination to be applicable for a combined cycle project with limited power augmentation. We clarified the special conditions that brought about the more stringent standard and oxidation catalyst installation. Under normal operations (i.e. not power augmentation) such units actually achieve about 1 ppmvd without oxidation catalyst. Therefore except for combined cycle cold startups, and substantial power augmentation, there is little tangible benefit in oxidation catalyst on such units.

The simple cycle units will meet NO_X and CO limits of 9 and 7.4 ppmvd @15% O_2. respectively. There is no power augmentation issue on simple cycle and no CO catalyst is proposed. The units reach full load and low CO emissions modes very rapidly.

We recommend your approval of the attached permit and BACT determination.

AAL/th

Attachments

September 26, 2001

SENT BY FAX ON 9/26/01

Clerk's Office
Department of Environmental Protection
Office of General Counsel
3900 Commonwealth Boulevard
Room 633B
Tallahassee, FL 32399

Attn: Ms. Kathy Carter
Agency Clerk for the Office of General Counsel

Re: El Paso Merchant Energy Company
Belle Glade Energy Center
DEP File No. 0990594-001-AC (PSD-FL-317)

Dear Ms. Carter:

El Paso Merchant Energy Company ("El Paso") respectfully requests that the Department of Environmental Protection ("Department") grant El Paso a sixty (60) day extension of time to file a petition for a formal administrative hearing regarding the Department's draft air construction permit (Department Draft Air Permit No. PSD-FL317, Project No. 0990594-001-AC) for El Paso's Belle Glade Energy Center electrical power plant.

The following items are submitted in support of this request:

(1) El Paso filed an application for an Air Construction Permit for El Paso's Belle Glade Energy Center electrical power plant with the Department on March 28, 2001. The Belle Glade Energy Center is a nominal 600 megawatt (MW) electric power generating plant to be located east of State Road 80 and south of Curlee Road in Bell Glade, Palm Beach County.

(2) On September 7, 2001, the Department distributed its Draft Permit, Technical Evaluation and Preliminary Determination, Draft Best Available Control Technology (BACT) Determination, Intent to Issue Air Construction Permit, and "Public Notice of Intent to Issue Air Construction Permit" for the Belle Glade Energy Center project. As the applicant for the Belle Glade Energy Center, El Paso is affected by the Department's proposed action.

(3) The "Public Notice of Intent to Issue Air Construction Permit" was published in the Palm Beach Post on September 14, 2001. The affidavit of publication of this notice was provided to the Department in correspondence from Environmental Consulting & Technology, Inc. (ECT) dated September 19, 2001.

(4) The Draft Permit is complex and contains numerous requirements and conditions. A preliminary evaluation of the Draft Permit indicates that several permit conditions may be inconsistent with El Paso's permit application. Given the complexity of the Draft Permit, additional time is needed for El Paso and its consultants to properly review and analyze the draft permit requirements. El Paso also wishes to meet with the Department to discuss its concerns regarding the Draft Permit requirements.

(5) El Paso does not anticipate filing a petition for a formal administrative hearing regarding the Draft Permit for the Belle Glade Energy Center. However, before waiving its rights for such a hearing, El Paso requests a 60-day extension of time to review the Draft Permit requirements and to meet with the Department.

(6) El Paso has discussed this request with the Department's permitting engineer, Mr. Al Linero, Administrator, New Source Review Section. Mr. Linero indicated that he had no objection to El Paso requesting an extension of time to file a petition for a formal administrative hearing for the Belle Glade Energy Center project.

On behalf of El Paso, a 60-day extension of time to file a petition for a formal administrative hearing regarding the Belle Glade Energy Center Draft Air Construction Permit (Department Draft Air Permit No. PSD-FL-317, Project No. 0990594-001-AC) is requested.

Please contact Mr. Krish Ravishankar of El Paso at (713) 420-5563 or the undersigned at (352) 332-6230, Ext.351 if there are any questions regarding this matter.

Sincerely,

ENVIRONMENTAL CONSULTING & TECHNOLOGY, INC.

Thomas W. Davis, P.E.
Principal Engineer

cc: Mr. Krish Ravishankar, El Paso
Mr. Al Linero, FDEP

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

OCT 12 2001

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BUREAU OF AIR REGULATION

4APT-APB

Mr. A. A. Linero, P.E.
Florida Department of Environmental Protection
Mail Station 5500
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Linero:

Thank you for sending the preliminary determination and draft prevention of significant deterioration (PSD) permit for El Paso Merchant Energy's Manatee Energy Center (PSD-FL-318) dated September 11, 2001. The preliminary determination is for the proposed construction of two simple cycle combustion turbines (CTs) and one combined cycle combustion turbine with a total nominal generating capacity of 600 MW to be located in Manatee County, Florida. The combustion turbines proposed for the facility are General Electric, frame 7 FA units. As proposed, each simple cycle CT will be allowed to fire natural gas an average of 5,000 hours per year and the combined cycle CT will be allowed to fire natural gas up to 8,760 hours per year. Total net emissions increases from the proposed project are above the thresholds requiring PSD review for nitrogen oxides (NO_x), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter (PM/PM_{10}), and sulfuric acid mist.

Based on our review of the PSD permit application, preliminary determination and draft PSD permit, we have the following comments:

1. The permit application package includes a draft permit with appendices including Appendix BD, the best available control technology (BACT) determination. We understand that the draft permit takes precedence over Appendix BD and that any items in Appendix BD that appear to be a requirement must be incorporated in the permit to be enforceable. This understanding lies at the base of some of the comments below.

2. We understood the reason for El Paso proposing to configure only one of the combustion turbines as part of a combined cycle system (that is, to avoid the requirements of Florida's Power Plant Siting Act). But at the same time, we were concerned that El Paso might sequentially convert the simple cycle combustion turbines to combined cycle operation without going through the same level of control technology assessment that would have been required had combined cycle operation been proposed from the start. Therefore, we were pleased to see the permit condition requiring a revised CO and NO_x BACT analysis should El Paso propose to convert a simple cycle combustion turbine to combined cycle

service and further requiring that this analysis be performed as though the turbine had never been built (thus precluding any "equity in the ground" advantage).

3. The 2.5 ppmvd NO_x emission limit determined to represent BACT for the combined cycle combustion turbine is equal to the lowest BACT emission rate that has been established in Region 4 to date and is similar to many of the lowest BACT emission rates that have been established in other regions as well. On the other hand, the 24-hour compliance averaging period associated with the 2.5 ppmvd limit (as well as the 9 ppmvd NO_x emission limit for the simple cycle combustion turbines) is longer than many of the combustion turbine NO_x compliance averaging periods for similar projects. (Compliance averaging periods of 1 to 3 hours appear in many permits.) However, we consider 24 hours to be an acceptable averaging period in light of the low emission limits.

4. Regarding the CO BACT determination and associated emissions limits, we have the following comments:

   a. The draft permit CO emission limit of 8 ppmvd for the simple cycle combustion turbines and for the combined cycle combustion turbine when not operating in power augmentation mode is among the lower BACT limits established in Region 4 for combustion turbines. We further understand Florida Department of Environmental Protection's (FDEP) expectation that the turbines will in fact typically operate with even lower emissions based on inherent combustor design and good combustion practices alone. However, please note that the use of catalytic oxidation for further control of combustion turbine CO emissions, especially for combined cycle combustion turbines, has become much more common as part of BACT determinations for combustion turbine projects. Catalytic oxidation has the added advantage of controlling volatile organic compound (VOC) emissions including volatile organic hazardous air pollutants.

   b. Further related to the CO draft permit emission limit of 8 ppmvd, we note that Appendix BD (the BACT determination) indicates an emission rate of 7.4 ppmvd at full load for either combined cycle or simple cycle combustion turbines. Based on our understanding that the draft permit has precedence over Appendix BD, we presume that 8 ppmvd will be the enforceable limit.

   c. Emissions of CO from combustion turbines increase sharply below a certain load level (unless an add-on control device is in use). For GE 7FA combustion turbines, this sharp increase occurs with operation below about a 50-percent load level. It is not clear to us that the draft permit restricts normal operation (that is, operation other than during startup and shutdown) to load levels of 50 percent and higher. Condition A.17.c. prohibits operation of the combined cycle combustion turbine at "DLN Modes 1, 2, 3, and 4" (except during startup and shutdown), and Condition B.13.c. specifies a similar restriction for the simple cycle combustion

turbines. Since the load levels equivalent to these modes are not specifically stated, however, we are not certain what load levels are prohibited. Furthermore, we would appreciate your identifying which monitoring requirements in the draft permit serve to track compliance with the low-load restrictions.

5. We have the following comments concerning the startup and shutdown provisions of the permit package:

   a. As we have often commented, startup and shutdown are part of normal combustion turbine operation and need to be addressed in PSD permits. FDEP has done so for this project by establishing a work practice standard and by limiting the number of hours of emissions that can be excluded from NO_x and CO compliance demonstrations for the combined cycle combustion turbine and from NO_x compliance demonstration for the simple cycle combustion turbines. Other permit options that could be considered include limitations on the number of startups and shutdowns in any 12-month period; mass emission limits for NO_x and CO emissions during any 24-hour period to include emissions during startup and shutdown; and future establishment of startup and shutdown BACT emission limits for NO_x and CO derived from test results during the first few months of commercial operation. In addition, compliance with any explicit or implicit annual emissions limits should be assessed with startup and shutdown emissions included. Regarding the option of mass emission limits, we acknowledge FDEP's comments that such limits may be difficult to quantify.

   b. The only definition of startup that we find is in Appendix BD of the package. As mentioned previously, we understand that the provisions of Appendix BD are not necessarily enforceable. Furthermore, the definition in Appendix BD denotes when startup commences but does not state the operating level or other characteristic marking the end of startup and the beginning of normal operation. We recommend that a more complete definition be developed so that the emission measurements eligible for exclusion under the excess emissions provisions can be confirmed easily.

   c. Conditions 17d of the combined cycle section and 13d of the simple cycle section contain provisions allowing certain data during periods of startup and shutdown to be excluded from compliance demonstrations.

      i. Condition 17d for the combined cycle combustion turbine exempts up to 2 hourly emission rate values in a calendar day, except for combined cycle cold startups, in which case up to 4 hourly emission rate values in a calendar day can be exempted. Additionally, Condition 17d indicates that no more than a total of 4 hourly emission rate values shall be exempted in a calendar day. It is unclear to us the purpose of the latter restriction on total hourly emission rate values. Also, it

should be clarified in what case a total of 4 hours can be exempted when there is no combined cycle cold startup during the calendar day.

ii. Condition 13d for the simple cycle combustion turbines exempts "no more than 2 hourly emission rate values" from the NO_x compliance demonstration as well as restricting the exemption to "no more than a total of 3 hourly emission rate values" in a calendar day. The purpose of the latter restriction is unclear, since the NO_x compliance period is a 24-hour block average. Finally, to remain consistent with previous FDEP simple cycle combustion turbine permits, no more than 2 hours out of a 24-hour period (or calendar day) should be exempted from compliance demonstrations.

6. Draft permit Condition 14 pertaining to simple cycle combustion turbines requires testing initially and at permit renewal for PM/PM_{10}, CO, NO_x, and VOC. The draft permit conditions for the combined cycle combustion turbine do not require PM/PM_{10} and VOC initial and renewal testing. We have agreed with FDEP in the past that PM/PM_{10} and VOC testing is not required for combined cycle combustion turbines with continuous emission monitoring systems (CEMS) for CO. However, a permit for a project with both combined cycle and simple cycle combustion turbines that has different initial and renewal testing requirements for the two types of turbines may be perceived as inconsistent. On a related point, we recommend that FDEP give consideration to requiring CO CEMS for the simple cycle combustion turbines as well as for the combined cycle combustion turbine in view of the fact that the simple cycle combustion turbines will be allowed to operate up 5,000 hours per year at full load (and even more hours at a combination of full and partial loads).

7. The term "pipeline-quality natural gas" appears several times in the draft permit. We have sought in the past for a government agency or industry trade group definition of "pipeline-quality" and have never succeeded in finding such a definition. We presume that the term "pipeline-quality natural gas" means natural gas obtained from an intrastate or interstate commercial natural gas pipeline.

8. The draft permit contains an emission limit for ammonia of 5 ppmvd. Ammonia is not regulated under the PSD program, and we do not have a definitive policy on ammonia emissions. However, we can comment that the limit in the draft permit is consistent with (although not equal to the lowest) ammonia limits we are aware of from projects outside Region 4.

9. In the air quality impact evaluations prepared for this project, we see no acknowledgment that NO_x emissions are precursors to ground-level ozone formation. Such acknowledgment would help demonstrate why control of NO_x emissions from combustion turbines is important.

Thank you for the opportunity to comment on the Manatee Energy Center preliminary determination and draft PSD permit. If you have any questions regarding these comments, please direct them to either Katy Forney at 404-562-9130 or Jim Little at 404-562-9118.

Sincerely,

Kay T. Prince

Kay T. Prince
Chief
Air Planning Branch

cc. J. Hunsa ✓
C. Holladay ✓
B. Thomas, SWD ✓
K. Collins, Manatee Co. ✓
J. Davis, EC T ✓
Q. Bunyak, NPS ✓