

**Prevention of Significant Air Quality Deterioration Review
Of the Live Oaks Company L.L.C.
Live Oaks Power Project
To be located in Glynn County, Georgia**

**FINAL DETERMINATION
SIP Permit Application No. 13400
December 2003**

**State of Georgia
Department of Natural Resources
Environmental Protection Division
Air Protection Branch**

Stationary Source Permitting Program (SSPP)	Planning & Support Program
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Background

On November 19, 2001, (updated December 20, 2001) Live Oaks Company, LLC submitted an application for an air quality permit to construct and operate a natural gas fired cogeneration facility at a site to be called the Live Oaks Power Project in Sterling, Georgia (Glynn County). The facility will utilize one train of combined cycle generating units to generate electric power and steam.

On September 3, 2003, EPD issued a Preliminary Determination stating that the construction and operation of the combined-cycle facility should be approved. The Preliminary Determination contained a draft Air Quality Permit for the construction and operation of the combined-cycle facility.

The Division requested that Live Oaks place a public notice in a newspaper of general circulation in the area of the proposed facility notifying the public of the proposed construction and providing the opportunity for written public comment and public hearing. Such public notice was placed in *The Brunswick News* (legal organ for Glynn County) on September 16, 2003. The public comment period expired October 15, 2003.

During the comment period, comments were received from the U.S. EPA and a local citizen. This discussion will not elaborate on typographical or grammatical revisions made to the final permit. The proposed changes to the draft Air Quality Permit will not significantly change the emission limits or compliance strategy of the Permit. The requested changes are listed below along with the changes made to the final Permit. A copy of the final permit is provided in Appendix A. A copy of comments received during the public comment period is provided in Appendix B.

Review of U.S. EPA Region IV Comments

1. Evaporative Cooling

Suggest adding "evaporative cooling" to the equipment description on the first page of the final permit.

Response: EPD verified that Live Oaks will be using evaporative cooling at the facility. EPD agrees with EPA and "evaporative cooling" has been added to the final permit cover page.

2. Short Term Transient Periods

The first full paragraph on page 3 of the preliminary determination lists certain operating conditions when the 2.5 ppmvd emissions limit for nitrogen oxides does not apply. The discussion of exclusions includes the phrase "exclusive of short-term transient periods (i.e., periods when load level is changing)." I understand from our discussion that this exclusion does not apply to load level changes that occur after a combustion turbine has achieved a normal operating mode. Furthermore, as you pointed out, the draft permit does not contain this phrase.

Response: The statement "exclusive of short-term transient periods (i.e., periods when load level is changing)" only applies during periods of startup or shutdown of the turbines and not during normal operation modes.

3. Drift Eliminators

The best available control technology for cooling tower particulate matter emissions is a drift eliminator restricting drift loss to 0.002 percent of flow. You might consider including this drift eliminator specification in the final permit.

Response: EPD believes that "drift eliminators" are a standard component of a cooling tower and are not considered add on controls. EPD has made no changes to the permit based on this comment.

Review of Public Comments from a Glynn County Citizen

EPD received comments from a Glynn County Citizen through email. The following comments were submitted by Mr. Philip Saleeby.

4. Toxic Impact on Surrounding Area

I would like to comment on the power plant to be built in Glynn County; I am a pulmonologist and am concerned about the issue of the tall stacks. I know nothing about pollution from these gas powered plants. However, tall stacks are there to disperse pollution from the vicinity of the plant in order to pass emission standards. Dispersing pollution to our neighbors to the south is not being neighborly in my opinion. What happens if there is an inversion preventing the pollution from being dispersed?? The pollution will then fall down to the areas around the plant which consist of many subdivisions and residential areas. Also the new wild animal park is near this area and a lot of tourists will be affected by the inversion and subsequent pollution. I have many patients who live in this area with COPD and ASTHMA and their health will be directly affected by this pollution. Furthermore, my daughter and her two asthmatic children live in close proximity to this plant. I would like to have information on the concentrations of pollutants during an inversion and the comparison to an average day without the inversion. The Brunswick News article on 9-24-03 states that there will be no significant release of toxic pollutants into the air but this, I believe, is calculated on the average (daily) of pollution from the proposed plant and does not take into account the worst case scenarios which will directly affect the health of my family and patients. I do feel that from an economic standpoint the plant will be great for the community. I would certainly like to support this plant and would like to see figures on pollution during these aversions. Certainly there should be data from other gas powered plants already operating not only in this country but throughout the world. Thank you for allowing me to comment on this issue

I would like to offer some further comments on the gas plant in Glynn County; I reviewed the documents at the EPD on Friday; According the to EPD the plant will have no positive effect on Glynn County such as increased development and population growth since the workers on the plant will be from outside the area and there will be no "industrial growth in the immediate area"; furthermore the electricity will not go to the county but to areas outside Glynn County; The tall pollution dispersion stacks will disperse tons and tons of NO, CO, and SO₂-all leading to further obliteration of the ozone layer and production of acid rain; according to an article I found on the web this is the equivalent of adding overnight 700,000 automobiles to Glynn County as far as the additive pollution in one year!! the EPA also "recognizes that pollutants will be higher during startup and shut down "of the plant; monitoring stations will be at the Okefenokee 64km away and Wolf Island 23 km away and not in the immediate area; Nowhere in this report did I see details of the effect on the health of the residents of Glynn county; nor did I see any documentation on what happens when there is an inversion causing the tons of pollutants to come down on the county and not be dispersed to our neighbors; I have heard nothing from out county commissioners on this matter; will there be a public hearing so that the community can get there concerns answered and we can hear from our community leaders on this matter; thanks, philip r saleeby md : PS did you know that the gov. of Norway lost a vote of confidence on this matter and was replaced in 2000??

Response: The stack height for the proposed combustion turbines complies with good engineering practice (GEP) regulations. The Environmental Protection Agency (EPA) final rule for GEP stack height was published in the Federal Register on July 8, 1985 (40 CFR Part 51). GEP is defined in Section 123 of the Clean Air Act Amendments of 1977 as “the height necessary to insure that emissions from the stack do not result in excessive concentrations of any air pollutant in the immediate vicinity of the source as a result of atmospheric downwash, eddies or wakes which may be created by the source itself, nearby structures or nearby terrain obstacles.” Since modeling conducted by the applicant and verified by the EPD shows compliance with all applicable state and federal regulations, the design stack height for the proposed source should ensure adequate health protection for residents living near the proposed facility. For example, the National Ambient Air Quality Standards were set at levels low enough to protect the public health.

The dispersion modeling performed for this project was based on five years of representative hourly metrological data, including many hours of inversion conditions. The model performs calculations hourly and worst-case concentrations are predicted for applicable averaging periods and pollutants. Since the model makes thousands of calculations, a comparison of results during inversion conditions compared to average conditions is not readily available, but some of the highest concentrations occur during inversion conditions. It should also be noted that, depending on wind direction variability, concentrations from any source would be near zero in locations that are not downwind.

Additional Changes

Cover Page

Evaporative cooling was added to the equipment description.

New Condition 1.4

New Condition 1.4 is a general condition in the permit which expressly states that nothing shall preclude the use of any credible evidence.

Condition 2.9

The ASTM reference was revised to remove the year reference.

Condition Nos. 2.4, 2.5.b, 2.12.b, 2.12.d, 4.2.b, 4.2.c, 5.2.b, 8.7, 8.8, and 8.9

EPD proposed the use of catalytic oxidation for control of CO and VOC emissions from each combined cycle system. Potential CO and VOC emissions, after control, were below the PSD Significant Emission Thresholds of 100 tpy and 40 tpy, respectively. With that in mind, EPD stated in the draft permit that (1) the use of catalytic oxidation was for PSD Avoidance purposes; (2) the CO emissions limit per combined cycle system was for PSD Avoidance purposes; (3) the short term CO emissions limit per combined cycle system was for PSD Avoidance purposes; and (4) the short term VOC emissions limit per combined cycle system was for PSD Avoidance purposes.

Upon further review, EPD has determined that the draft permit does not provide for a reasonable assurance of compliance for the PSD Avoidance classification for VOC emissions. The total potential controlled VOC emissions from the combined-cycle systems are approximately 38.48 tpy which is equivalent to 2 ppmvd @15% oxygen. There is a reasonable assurance that the facility could not comply with the 2 ppmvd at 15% oxygen during periods of startup and shutdown and thus jeopardize the PSD Avoidance status for VOC emissions.

EPD is specifying that the use of catalytic oxidation is BACT for CO and VOC emissions in New Condition 2.4. The rolling annual CO emissions limit per combined-cycle system is now a BACT emissions limit rather than a PSD Avoidance limit [see New Condition 2.5.b]. The short term CO and VOC emissions limits per combined-cycle system are now BACT emissions limits rather than a PSD Avoidance limits [see New Conditions 2.12.b and 2.12.d]. The legal authority for the CO and VOC emissions testing includes 40 CFR 52.21(j) rather than PSD Avoidance [see new Conditions 4.2.b and 4.2.c]. The legal authority for the CO CEMS includes 40 CFR 52.21(j) rather than PSD Avoidance [see new Condition 5.2.b]. The legal authority for computing and recording CO emissions includes 40 CFR 52.21(j) rather than PSD Avoidance [see Conditions 8.7, 8.8, and 8.9].

Condition Nos. 2.12.a, 2.12.b, 2.12.d, 8.18.b.i and 8.18.b.ii

EPD proposed short term emission limits in Draft Condition 2.12, and Draft Conditions 8.18.b.i and 8.18.b.ii define an exceedance for NO_x and CO emissions based on Draft Condition 2.12. Upon further review, EPD has determined that neither of these conditions implement PSD in the manner prescribed in the Preliminary Determination.

In the Preliminary Determination [PD at 25-26] EPD stated that the short term NO_x BACT emissions limit does not apply during periods of startup and shutdown. The contribution of NO_x emissions from periods of startup and shutdown count towards the annual rolling limit. With that in mind, New Condition 2.12.a does not apply during periods of startup and shutdown.

It was EPD's intent to use this same approach for CO, VOC, PM₁₀, and visible emissions even though EPD did not state this in the Preliminary Determination. Startup and shutdown of the combined-cycle systems are part of *normal source operation*, and EPA requires that air permits for such facilities include (1) definitions of startup and shutdown; and (2) a mechanism to limit emissions from startup and shutdown. EPD proposed this PSD permit with conditions which defined cold start, warm start, hot start, and shutdown and these definitions served to allocate time for these operational scenarios. EPD included a rolling annual CO emissions limit as a mechanism to limit emissions from *normal source operation plus malfunctions* in order to limit emissions from startup and shutdown. With that in mind, New Condition 2.12.b does not apply during periods of startup and shutdown.

Recent PSD permits issued by EPD for combined-cycle systems also included language which excluded the short term VOC, PM₁₀, and visible emissions limits from applying during periods of startup and shutdown. It was EPD's intent to propose the same concept in the Live Oaks PSD permit.

EPD believes there is a correlation between CO and VOC emissions; therefore, as CO emissions are higher during startup and shutdown than during other time periods, VOC emissions would follow. There is no known way to continuously track VOC emissions from the combined-cycle system stack and thus no known way to determine the order of magnitude of VOC emissions during periods of startup and shutdown. EPD does believe that VOC emissions during periods of startup and shutdown will be higher than 2.0 ppmvd at 15% oxygen. With that in mind, EPD believes that there is a reasonable assurance that if and when CO emissions approach or exceed the rolling annual CO BACT emissions limit, VOC emissions would approach or exceed the VOC BACT emissions limit prescribed in the Preliminary Determination. New Condition 2.12.d does not apply during periods of startup and shutdown.

Draft Conditions 2.6, 2.7, and 2.14 serve as BACT work practice standards, in part, for PM₁₀ and visible emissions. These conditions apply during periods of startup, shutdown, and other scenarios. Thus, EPD believes that New Conditions 2.12.c and 2.12.e do not need to apply during periods of startup and shutdown for purposes of PSD.

New Conditions 8.18.b.i and 8.18.b.ii are revised as well based on these changes to Draft Condition 2.12.

Condition Nos. 8.5, 8.6, 8.7, 8.8, 8.9, 8.10, 8.18, 8.19

Additional language was added to clarify the meaning of combined cycle system.

APPENDIX A - Final Permit 4911-127-0075-P-01

APPENDIX B - Copy of Comments Received During Public Comment Period.

1. U.S. EPA Region IV dated September 22, 2003
2. US Fish & Wildlife Service dated September 9, 2003
3. Glynn County Citizen dated September 25, 2003 and October 4, 2003