

US EPA ARCHIVE DOCUMENT



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6

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APR 13 2012

Mr. Mark Mallet, P.E.
Vice President – Operations and Engineering
Freeport LNG Development, L.P.
333 Clay Street, Suite 5050
Houston, TX 77002-4173

RE Application Completeness Determination for Freeport LNG Project, L.P.
Greenhouse Gas Prevention of Significant Deterioration (PSD) Permit

Dear Mr. Mallet,

This letter is in response to your permit application received on December 21, 2011 for a Greenhouse Gas Prevention of Significant Deterioration permit. After an initial review of the application and supporting information, we have determined that additional information is required to begin the processing of the draft application. Enclosed is a list of the information required (see Enclosure).

Upon receipt of the additional information, the Environmental Protection Agency (EPA) will prepare a completeness determination. The requested information is necessary for EPA to develop a Statement of Basis and Rationale for the terms and conditions for the requisite permit. As we develop our preliminary determination, it may be necessary for EPA to request additional clarifying or supporting information. If the supporting information substantially changes the original scope of the permit application, an amendment or new application may be required.

Although not required as a part of our completeness determination, the EPA may not issue a final permit without determining that there will be no effects on endangered species or until it has completed consultation under Section 7 of the Endangered Species Act (16 USC 1536). In addition, the EPA must undergo consultation pursuant to Section 106 of the National Historic Preservation Act (16 USC 470f). To expedite these consultations, the EPA requests that permit applicants provide a Biological Assessment and a cultural resources report covering the project and action area to the EPA.

If you have any questions regarding the review of you permit application, please contact Melanie Magee of my staff at (214) 665-7161 or magee.melanie@epa.gov.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Carl E. Edlund".

Carl E. Edlund, P.E.
Director
Multimedia Planning and
Permitting Division

cc: Mr. Steve Hagle, P.E.
Deputy Director, Office of Air
Texas Commission on Environmental Quality

Mr. Mike Wilson, P.E.
Director, Air Permits Division
Texas Commission on Environmental Quality

ENCLOSURE

EPA Completeness Comments Freeport LNG Development, L.P. Application for Greenhouse Gas Prevention of Significant Deterioration Permit

BACT Analysis

1. The application includes potential BACT limits for the liquefaction project in table 10-1. Also, later in the BACT analysis the applicant proposes to limit the frequency of start-up and shut-down events to twice a year. Do the proposed BACT limits include all operating scenarios? Please provide additional information to clarify.
2. Beginning on page 10-4 of the permit application, EPA notes the differences between the applicant's proposed project and the provided examples of existing and proposed projects that utilize CCS; it is important to be mindful that BACT is a case-by-case determination. The control alternatives evaluated should include not only existing controls for the source category in question, but also (through technology transfer) controls applied to similar source categories and gas streams. This requires more site-specific facility information to thoroughly evaluate and eliminate CCS from consideration. This information should contain detailed information on the quantity and quality of % CO₂ content in the stream. Please provide a detailed cost analysis of the equipment design. Please include cost of construction, operation and maintenance of the technologies evaluated. Also, include the feasibility for storage or transportation and cost analysis for these options. Would there be energy penalties associated with the site-specific CCS technology? If so, please include a detailed cost analysis. Please discuss in detail any site specific safety or environmental impacts associated with such a removal system.
3. Please provide a spreadsheet that details the cost information provided in the permit application beginning on page 10-21.
4. How will the air/fuel ratio be assured during operation of the combustion turbine, i.e., alarms, alerts, computer monitored, etc? Will O₂ analyzers be utilized? What will be the target ratio? What are the proposed monitoring and recordkeeping requirements for the combustion turbine's operating parameters? Please provide more details of what will constitute good combustion, operating and maintenance practices for the combustion turbine. Please provide more information pertaining to the automation of the combustion turbine operation that will ensure optimal fuel combustion. Please provide the designed efficiency and comparative benchmark data of the combustion turbine, i.e., comparison data of existing or similar combustion turbines. How were the optimal operating

parameters for the combustion turbine determined? What is the company's proposed compliance monitoring methodology? What will be the operating control parameters of the air chiller? How will air chiller be maintained to ensure it operating properly and efficiently?

5. Please explain if a combined cycle combustion turbine was considered for this project. If so, please provide the detailed analysis that substantiates the selection of the simple cycle combustion turbine; if not, please explain why it was not considered as a viable option for this project.
6. In the BACT analysis on pages 10-16 and 10-17 the applicant proposes to install new heaters designed to optimize combustion efficiency. Please provide technical data that supports this statement, i.e., detailed manufacturer data on the design efficiency of the heaters and comparative benchmark data to existing or similar sources. Please include maintenance and tune-up plans per manufacturer specifications and the good combustion and operating practices that will be implemented and how it will be monitored to ensure compliance. What operating parameters will be in place and monitored to ensure the waste recovery heat exchanger is operating efficiently and transferring the heat needs to the amine sweetening unit and dehydrating system in lieu of burning natural gas fuel in the heater?
7. What were the assumptions or bases used to calculate the heater emission limit cap? How was it derived? The application indicates the back-up heaters will only operate for 336 hours. What basis was used to dictate the limiting criteria? What are the proposed monitoring and recordkeeping requirements for the 336 hours per year limit for the heaters?
8. The proposed BACT limit on page 10-1 for the annual emission cap for the low temperature and high temperature heater is 100,486 tpy. EPA does not intend to issue an emission's CAP as part of a BACT determination. Please clarify if it is the intention of the applicant for the calculated individual mass per unit time (lb/hr) emissions of each heater presented on page 8 of the Appendix to be the proposed short term BACT limit in lieu of an emissions cap?
9. Please provide data on regenerative thermal oxidizer design efficiency, comparative performance benchmark data to similar units, any proposed operating and maintenance practices and the monitoring and recordkeeping requirements to ensure compliance with recommendations.

10. Please provide the basis used to select the TCEQ 28 MID LDAR program for fugitive emissions. Were other TCEQ LDAR programs considered as a possibility for this project? If so, what was the basis for elimination of the other programs?

Emissions calculations

11. On page 7-3, does the GHG emission rates presented in Table 7-1 include maintenance, startup and shutdown emissions?
12. Calculations for GHGs are provided in Appendix A. The applicant included in footnotes the source of the formulas used in calculating the emissions for each emissions source, but neglected to provide the formula and demonstrate how emission rates themselves were determined with the exception of the Amine Unit/Thermal Oxidizer, Ground Flare, and NGL Flare on pages 10, 11, and 12. Please supplement Appendix A to indicate the formulas used in the calculations for both hourly and annual emissions rates for all emission sources. Please provide the calculations and rationale from the Callidus Technologies proposal dated 10/31/2011 and 9/12/2011, that were used to calculate the values for the Liquefaction and NGL flare, respectively.
13. Appendix A includes the emissions calculations for the Amine Unit/Thermal Oxidizer, Ground Flare, and NGL Flare. While the formulas and calculations for each of these emissions sources are shown, the annual emissions calculations were done using the unit (metric tonnes/year). Both Section 7 Emissions Calculations and the Air Contaminant Data table in Appendix A use the unit (tons/year) for annual emissions calculations. Additionally, the formulas and calculations used for emission calculations for both Pretreatment GHG fugitive emissions and Liquefaction GHG fugitive emissions were done using (tons/year). Please amend Appendix A so that both the calculations and the air contaminant emission rate values for each emission source are using the same unit (tons/year).
14. Please supplement the GHG Potential Emissions Calculations table on page 8 of Appendix A to reflect annual emissions in tons/year.
15. Discrepancies were noted in the hourly emission estimates in lb/hr given on page 8. For example, the hourly emissions estimates in lb/hr for the three Amine unit/Thermal Oxidizers given on page 8 do not match the hourly emission estimates given on page 2 or page 10. Please explain the discrepancy between the hourly emission estimates for each of the three Amine unit/Thermal oxidizers and provide calculations and other evidentiary support to explain the discrepancy. Note that any changes in the hourly emissions calculations for any of the three Amine unit/Thermal Oxidizers may impact the total

emissions calculation. Please provide the calculations and rationale from the Anguil Environmental Systems Thermal Oxidizer Proposal dated September 28, 2011 used to obtain CO₂ molar flow rates.

16. In the BACT Analysis for the Amine Units/Thermal Oxidizers one of the selected BACT options was the use of boil-off gas (BOG) or natural gas as fuel. Yet, in the emissions estimates section of the application, emission estimates for the Amine Units/Thermal oxidizers appear to have only been calculated using natural gas. Is the fuel composition of BOG similar to natural gas? Please provide the emissions estimates for the Amine Units/Thermal Oxidizers using BOG as fuel.
17. Please provide the emails that are referenced for the fugitive emission calculations for the Pretreatment and Liquefaction plants. The emails are from Mr. Ruben Valasquez to Ms. Melissa Dakas. The dates for the emails are October 7, 2011 and October 13, 2011 for Pretreatment and October 7, 2011 for Liquefaction. Also, include the TCEQ Air Permit Technical Guidance for Chemical Sources: Equipment Leak Fugitives (October, 2000).