UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

JUN 2 9 2012

Mr. Jeffrey K. Kovacs, P.E.
Environmental Section Supervisor
ExxonMobil Corporation
P.O. Box 4004
Baytown, TX 77522-4004

RE: Application Completeness Determination for ExxonMobil Corporation
Greenhouse Gas Prevention of Significant Deterioration Permit
ExxonMobil Chemical Company – Baytown Olefins Plant (BOP)

Dear Mr. Kovacs:

This letter is in response to your application received by this office on May 22, 2012 for a Greenhouse Gas Prevention of Significant Deterioration permit. After our initial review of the application and supporting information, we have determined that this application is incomplete based on the requirements of 40 CFR 124 and additional information is required to begin the processing of the 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.

If you have any questions concerning the review of your application, please contact Melanie Magee of my staff at (214) 665-7161.

Sincerely yours,

William K Edlund

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

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

ENCLOSURE

EPA Completeness Comments
ExxonMobil Corporation
Application for Greenhouse Gas Prevention of Significant Deterioration Permit
ExxonMobil Chemical Company – Baytown Olefins Plant (BOP)

Process Description

1. On page 2-1, the permit application indicates the furnaces will fire imported natural gas or a blended fuel gas that consists of imported natural gas and tail gas. Tail gas is a recycle stream resulting from an initial separation of methane and hydrogen. The application also states that the composition of the blended fuel gas will vary and will depend on current hydrogen production and disposition. The permit application states the use of natural gas as the primary fuel for lowering the GHG emissions. Please provide additional technical information explaining why natural gas would be considered over fuel gas containing hydrogen (H2). Provide all relevant factors including economics and energy impacts. Please provide additional information pertaining to the use of H2 as a secondary fuel gas to the furnace. What circumstances will allow or disallow hydrogen to be used as either a primary in lieu of natural gas or as a secondary fuel?

2. Please supplement the process flow diagram by identifying all emission control points for GHG emissions, include the emission control point identification numbers.

3. On pages 2-3 and 2-4 of the permit application, it states that "no increase in GHG emissions are being requested" for the changes proposed at the Acetylene Converter Regeneration Vent, Cooling Tower, Wastewater Collection and Treatment System and Storage Tanks. Please provide the PSD applicability calculations for these units to support the "no increase" in GHG emissions request.

4. Please provide supplemental technical data that discusses the design and operation of the new staged flare system, i.e., percent combustion efficiency, percent emission reduction, proposed monitoring and recordkeeping strategy, maintenance schedule, etc. Will it be computer controlled? If so, will there be manual overrides? Please provide benchmark comparison data of new flare system to similar or existing sources. Was a flare gas recovery system considered for the proposed project? Please supplement the BACT analysis to support its elimination.

BACT Analysis

5. On page 4-3, the permit application states that "Good operating and maintenance practices for the steam cracking furnaces extend the performance of the combustion equipment, which reduces fuel gas usage and subsequent GHG emissions…Examples of good operating and maintenance practices include good air/fuel mixing in the combustion zone; sufficient residence time to completed combustion; proper fuel gas supply system operation in order to minimize fluctuations in fuel gas quality; good burner maintenance

and operation; and overall excess oxygen levels high enough to safely complete combustion while maximizing thermal efficiency."

A. Please provide comparative benchmark data on the percent efficiency of the burners compared to existing or similar sources. Please provide details concerning the preventive maintenance on burners, frequency and recordkeeping. How often will burners be inspected? How will this be ensured? What recordkeeping requirements are you proposing? What will alert on-site personnel to problems?

B. What will be the operating parameters that will ensure minimum excess air? Please include a discussion on how O_2 analyzers will be utilized to determine optimum excess air to provide proper combustion.

C. Please provide further discussion as to how good combustion efficiency will be ascertained for the furnace's operating parameters pertaining to feedstock/steam ratios, temperatures, pressures, and residence times. What is ExxonMobil's preferred monitoring method, recordkeeping requirements for the cracking furnaces (e.g., continuous or periodic)?

D. Please submit a detailed description of the anticipated procedures that are proposed as part of the maintenance practices and include a proposed schedule for planned maintenance.

6. It is indicated in the "Energy Efficient Design" section that "the proposed project will use a proprietary furnace design to minimize its carbon footprint…To maximize thermal efficiency at BOP; the steam cracking furnaces will be equipped with heat recovery systems to produce steam from waste heat for use throughout the plant."

   A. Please provide benchmarking data that compares the technologies outline in this section to other existing or similar sources, i.e., the percent energy efficiency and CO_2 control effectiveness of the economizer, steam generation from process waste heat, feed preheat and minimize hydrocarbon ratio.

   B. What operating parameters does ExxonMobil prefer to monitor to determine that the thermal efficiency in the plant is optimized, i.e., stack temperature, pressure, fuel combusted per product produced, etc.?

   C. Provide any supporting data to substantiate operating and design improvements to the proposed technologies compared to the past operation and design, e.g., past energy consumed per ton of product and what will be the difference compared to the new construction, comparative benchmark studies to similar operations. Please include any technical data that supports your conclusions, as well as the associated decrease in GHG per pound of product.

7. On page 4-8 of the permit application, the cost estimates provided for the Carbon Capture and Storage (CCS) appear to solely rely on the August 2010 report entitled "Report of the

Interagency Task Force on Carbon Capture and Storage." BACT is a case-by-case determination. Please provide site-specific facility data to evaluate and eliminate CCS from consideration. This material should contain detailed information on the quantity and concentration of CO_2 that is in the waste stream and the equipment for capture, storage and transportation. Please include cost of construction, operation and maintenance, cost per pound of CO_2 removed by the technologies evaluated and include the feasibility and cost analysis for storage or transportation for these options. Please discuss in detail any site specific safety or environmental impacts associated with such a removal system.

8. On page 4-10 of the permit application in the entitled Decoking Activities, the application identifies two potential practices that are technically feasible for CO_2 control for decoking operations which are limiting air/steam during the decoking process and minimizing the amount of coke formed in the furnace through proper design and operation.

    A. Please provide supplemental data that will discuss the design of the proposed furnaces and how it will translate to decreasing coking potential as is asserted in the application?

    B. What percentage of coke reduction in the tubes will occur in lbs coke/lbs of product processed? Please include technical data that supports your conclusions, as well as the associated decrease in GHG per pound of product.

    C. What design or process operation modifications will ensure the uniform distribution of the feed and heating in the tubes?

9. Being mindful of EPA's PSD and Title V Permitting Guidance for GHG dated March, 2011 on page 17, which states the following:

    > "The CAA and corresponding implementing regulations require that a permitting authority conduct a BACT analysis on a case-by-case basis, and the permitting authority must evaluate the amount of emissions reductions that each available emissions-reducing technology or technique would achieve, as well as the energy, environmental, economic and other costs associated with each technology or technique. Based on this assessment, the permitting authority must establish a numeric emissions limitation that reflects the maximum degree of reduction achievable for each pollutant subject to BACT through the application of the selected technology or technique. However, if the permitting authority determines that technical or economic limitations on the application of a measurement methodology would make a numerical emissions standard infeasible for one or more pollutants, it may establish design, equipment, work practices or operational standards to satisfy the BACT requirement."

    Please propose short-term emission limitations or efficiency based limits for all PSD emission sources. Please provide an analysis that substantiates any reasons for

infeasibility of a numerical emission limitation. For the emission sources where numerical emission limitations are infeasible, please propose an operating work practice standard that can be practically enforceable.

10. On page 4-16 of the permit application, it states "the proposed project selects as-observed AVO as BACT for piping components in natural gas service and instrument LDAR for piping components in VOC service." Please specify level of LDAR to be used and the basis of elimination for the other LDAR programs.

Calculations

11. Please provide the percent efficiency used to calculate the annual average heat input capacity for natural gas combustion for the cracking furnaces. Please provide benchmarking data how this heat input capacity was obtained and how it compares to other recently permitted units nationally?

12. Please provide supporting technical data that was used to calculate the CO_2e emission calculations for in the decoking emissions calculations. How was the mole ratio of CO_2/CO derived or obtained? Please provide a technical discussion how the estimation of one decoke per month per furnace was obtained? Please indicate if benchmark data was used in this estimation?

13. Aforementioned on page 2-1 of the permit application, it is indicated that "the furnaces will fire imported natural gas or a blended fuel gas that consists of imported natural gas and tail gas." Please provide the blended fuel gas analysis results to determine the fuel's carbon content factor used in equation C-5 from 40 CFR 98, Subpart C to calculate GHG emissions rates. What will be ExxonMobil's preferred method of monitoring and recordkeeping for the determination of fuel quality, i.e., continuous gas chromatograph, fuel meters, etc.,