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

Mr. Frank Bakker
General Manager
OCI Beaumont LLC
P.O. Box 1647
Nederland, Texas 77627

JUL 2 5 2013

RE: Completeness Determination for OCI Beaumont LLC
Greenhouse Gas Prevention of Significant Deterioration (PSD) Permit Application
Methanol and Ammonia Production Project

Dear Mr. Bakker:

The EPA has reviewed your Greenhouse Gas (GHG) Prevention of Significant Deterioration (PSD) permit application, including supporting documentation, for OCI Beaumont LLC that was received by the EPA on December 21, 2012, and determined that your application is incomplete at this time. A list of the information needed from you so that the EPA can continue its completeness review is enclosed (see Enclosure). Please notify us if a complete response is not possible by August 23, 2013.

The requested information is necessary for EPA to develop a Statement of Basis and Rationale for the terms and conditions for any proposed 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.

The EPA may not issue a final permit without determining that: 1) there will be no effects on threatened or endangered species or their designated critical habitat, or 2) until it has completed consultation under Section 7(a)(2) 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 (NHPA) (16 USC § 470f). As a reminder, NHPA implementing regulations require that EPA provide information to the public with an opportunity for participation in the Section 106 process. 36 CFR § 800.2(d). If you have not already submitted the Biological Assessment and Cultural Resources Reports that you have agreed to prepare for EPA, we look forward to receiving these reports and continuing to work with you to comply with these statutes.

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

Sincerely yours,

Wren Stenger
Director
Multimedia Planning and
Permitting Division

Enclosure

ENCLOSURE
EPA Information Request
OCI Beaumont LLC
Methanol and Ammonia Production Project
Application for Greenhouse Gas Prevention of Significant Deterioration Permit

1. On page 1-1 of the permit application, it is stated that the Methanol Plant's capacity will be increased by the addition of a Pre-Reformer, Pre-Reformer Fired Heater, Saturator Column and a new flare to control MSS emissions from the reformer vent during emission events, startups, and shutdowns. It is also stated in the BACT analysis that OCI Beaumont (OCI) proposes a reformer tube replacement. The "OCI Process Energy Efficiency Improvement Study", located in the Appendix of the application, states that the existing reformer tubes will be replaced with larger diameter and thinner walled thickness tubes. It is important that all new, modified and affected (existing non-modified emission points where emissions will increase) units and emission points are properly identified on the process flow diagram. Will there be piping modifications to accommodate the increased methanol and/or ammonia production? If so, please identify on the process flow diagram.

2. In addition to the previous comment, please supplement the OCI process flow diagram with the following information. It is suggested that OCI consider enhancing or revising the process flow diagram to distinguish the new, modified, and affected units or emission points.

    A. On page 1-1 of the permit application, it is stated that this project allows the recovery and recycling of two former waste water streams (Stripper Tails and Dehydrator Tails) and one atmospheric vent (CO_2 Stripper Vent) through the Saturator Column for recovery of organics for organic feedstock. The process flow diagram does not include a representation of the Stripper or the Dehydrator. Please supplement the process flow diagram with these two pieces of equipment and also show the streams (Stripper Tails and Dehydrator Tails) directed to the new Saturator Column. Will there be piping modifications/additions associated with these changes? Will there be a change in the fugitive leak emissions? If so, please provide supplemental emission calculations that accounts for these increases. Where will these streams be directed when the Saturator Column is shut-down for maintenance? Please indicate this alternate route on the process flow diagram.
    B. Currently the process flow diagram does not show the CO_2 Stripper Vent directed to the Saturator Column. The process flow diagram indicates the CO_2 Stripper Vent stream directed to the atmosphere. Please supplement the process flow diagram showing this vent stream directed to the Saturator Column. Will this vent stream be directed to the atmosphere when the Saturator Column is shut-down? Please revise the process flow diagram to show all the options where this stream can be directed. What is the compliance strategy for this stream during the times when the Saturator Column is shutdown? Will there be piping modifications/additions associated with these changes? Will there be a change in the fugitive leak emissions? If so, please provide supplemental emission calculations that account for these increases.

C. On page 1-1 of the permit application, it is stated that this project proposes to direct two atmospheric vent streams (DME Eductor and the Stripper Tails Tank Vent) to the Methanol Unit Plant Flare for destruction. Will these vent streams be directed to Methanol Unit Flare, EPN: 45? Please supplement the process flow diagram showing this equipment and the vent streams from the equipment going to the Methanol Unit Flare.

D. On page 3-1 of the permit application, it states that the heat generated in the reformers is used to preheat the natural gas, preheat the process steam, and produce steam for use in the plant. This heat recovery is not shown on the process flow diagram. Please supplement the process flow diagram to show the heat recovery described. Is the natural gas that is preheated in the reformer the "natural gas feedstock" indicated by Stream 1 on the process flow diagram; or the "natural gas fuel", indicated by Stream 2 on the process flow diagram?

E. The process flow diagram does not show natural gas/fuel gas and/or combustion air directed to the Pre-Reformer Fired Heater that is used to heat the gases before the gases are fed to the Pre-Reformer. Please supplement the process flow diagram. Also, please ensure this addition is done for all combustion units.

F. On page 3-2 of the permit application, it states the mixture leaving the reactors is cooled to separate the condensable liquid from the non-condensable gases using a water cooled heat exchanger. The water cooled heat exchanger does not appear to be shown on the process flow diagram. Please revise the process flow diagram to include this heat exchanger.

G. On page 3-2 of the permit application, it states that a packed tower wet scrubber (Crude Tank Scrubber) is used to recover methanol vapors from the Crude Storage Tank off-gas. In addition, on page 3-3 of the permit application, it is stated that the Methanol Product Storage Tanks vent to a water scrubber system (Shore Tank Scrubber). The Shore Tank Scrubber also controls the venting from the Shore Tank. The liquid effluent from the Shore Tank Scrubber can be sent either to the Crude Tank Scrubber as a supplemental scrubber water supply or directly to the Crude Tank for recovery of the methanol. The process diagram indicates the liquid effluent from the Shore Tank Scrubber as the sole water supply, rather than supplemental water, to the Crude Tank Scrubber. Is this depiction correct? Is there another water supply to the Crude Tank Scrubber? Please supplement the process flow diagram by labeling which water scrubber is the Crude Tank Scrubber and which water scrubber is the Shore Tank Scrubber. The current process flow diagram shows the liquid effluent from the Shore Tank Scrubber being sent to either the Crude Tank Scrubber or to Refining, not to the Crude Tank. The process flow diagram does not show this liquid going to the Crude Tank, as is stated in the process description. Please resolve the inconsistency.

H. On page 4-7 of the permit application, it is stated that the Pre-Reformer Fired Heater is utilized to preheat the feed to the Pre-Reformer and to preheat the Pre-Reformer effluent prior to introduction in the North and South Reformers. Please supplement the process flow diagram to reflect the heat recovery step utilized to preheat the Pre-Reformer effluent prior to introduction in the North and South Reformers

3. Please confirm the basis of PSD applicability for the project. Please indicate if OCI is an existing major stationary source for a regulated NSR pollutant that is not GHGs. Would PSD review for

non-GHGs (VOC, CO, PM, PM2.5) be required anyway (40CFR 52.21(b)(49)(iv))? Or is this project and/or existing source major for GHGs only (40 CFR 52.21(b)(49)(v))?

4. Please confirm the total CO_2e annual emissions for the project. The CO_2e emissions located in Table 1(a) entitled "Emission Point Summary" appear to add up to 1,470,737 tons per year; however, the total annual CO_2e emissions on page 4 of 9 of the Form PI-1 are given as 1,470,750.6 tons per year.

5. On page 3-1 of the permit application, it states that methanol production can be increased by the addition of CO_2. In addition, on page 3-2 of the permit application, it is stated that the process gas leaving the Reformers is cooled and then combined with by-product CO_2 from the Crude Methanol Tank and other potential CO_2 sources such as pipeline delivery from offsite. Does the pipeline for CO_2 from outside sources already exist? Is this a current practice for the existing Methanol production? How often is it anticipated that CO_2 will be received from outside sources once the project is completed?

6. Will there be an increase in fugitive leak emissions due to the increased production of methanol and ammonia? If so, please provide supplemental data that includes the emission increases and the calculations performed to obtain these increases. Will there be any modifications and/or additions to accommodate the increased methanol and ammonia production in the process or loading facilities? If so, please provide supplemental data to the 5-step BACT analysis for fugitive leak emissions that includes a comprehensive evaluation of the technologies considered to reduce fugitive leak emissions and a basis for elimination, or information detailing why fugitive emissions will not be emitted from this project. Also, please identify the areas/piping on the process flow diagram where throughput will be new, modified, or affected.

7. On page 3-3 of the permit application, it is stated that to control the buildup of excess H_2 and undesirable gases (CH_4 and N_2) in the synthesis loop, a portion of the un-reacted high-pressure gas is continually purged from the system. When the Ammonia Plant is not operating, the purge gas is routed to the reformer fuel gas system and burned as supplementary fuel gas. When the Ammonia Plant is in operation this stream goes to the pressure swing absorber (PSA) to separate the hydrogen from the CH_4, CO, CO_2, and residual methanol. The pure H_2 is for ammonia synthesis and the remaining purge stream (H_2, CO, CO_2 and CH_4) is sent to the reformers as supplementary fuel gas. How does the operation of the Ammonia Plant affect the operation of the Methanol Reformers? Does the difference in fuel gas concentration affect the GHG production in the reformers? Also, on page 3-4 of the permit application, it is stated that H_2 can be imported via pipeline from local suppliers and joins with a N_2 stream supplied by local suppliers via pipeline after the PSA unit. The process flow diagram does indicate the N_2 pipeline, however it does not reflect the hydrogen tie-in. Please revise the process flow diagram to show the hydrogen connection.

8. On page 3-3 of the permit application, it is stated that water is used as the cooling medium in several shell and tube heat exchangers throughout the plant. A seven-cell, induced draft Marley

cooling tower removes that heat in the return water. Also, it is stated that methanol is not found in the process water unless equipment failure has occurred. Is there a potential for CH_4 to be present in the cooling tower during an equipment failure? Because the project will increase methanol production, will there be an increase in the potential GHG emissions due to an equipment failure that could be emitted from the cooling towers? Is there a leak detection program in place for monitoring the cooling tower? Please provide any emission calculations for the increases in the potential GHG emissions from the cooling tower due to equipment failure.

9. On page 3-5 of the permit application, it is stated that non-ammonia process safety valves and start-up/shutdown vents are routed to the existing Methanol Plant Flare (EPN: 45). Also, on page 1-1 it is stated that OCI proposes to add a new flare to control MSS emissions from the reformers during emission events, startups, and shutdowns (Reformer MSS Flare, EPN: FL42). It is not clear which flare will be used for MSS emissions (emission events, startups and shutdowns). Please clarify which streams from this project and from which production plant will be directed to the flares. Please ensure that the analysis provided for vent stream to each flare reflects operation after the project. Also, this analysis should include carbon content and heat valve for the vent streams to each flare. If both flares are used in conjunction with each other, it is suggested that OCI provides a separate process flow diagram for the flares to show the vent streams directed to the flares and to explain the control scheme used for the vent streams directed to the flares. Please provide supplemental information explaining the operational scenario for the flares. What specific operating parameters will be monitored to ensure VOC destruction? What will ensure the optimum amount of natural gas to be utilized for destruction? Will there be continuous monitoring? Also, on page 3-2 of the permit application, it states that the synthesis of methanol occurs in two vessels, called methanol reactors, in the presence of a catalyst. Does the operation of the methanol plant involve the reactivation of this catalyst? Does the reactivation of the catalyst create GHG emissions in an existing unit? Because the project involves an increase in methanol production, will the GHG emissions created by catalyst reactivation be affected (increased or decreased)? Is this vent stream directed to the Methanol Plant Flare or the Reformer MSS Flare?

10. On page 4-1 of the permit application, it states that the North and South Steam Reformers are the primary reformers for the Methanol Plant. The steam reformers have the ability to operate in four different operating cases that are as follows:
    - Case A: Methanol Plant stand-alone operation (without CO_2 addition)
    - Case B: Methanol Plant stand-alone operation (with CO_2 addition)
    - Case C: Methanol and Ammonia Plant production (without CO_2 addition)
    - Case D: Methanol and Ammonia Plant production (with CO_2 addition)

    In order to determine the worst-case GHG emissions for the reformers operation, the emissions were calculated for each operating case and compared. The results of this analysis indicate Case D to be the worst-case for GHG emissions; therefore, OCI proposes to use Case D to establish the potential to emit allowable emissions for the reformers. It is not clear how the North and South Reformers are operated. Are the North and South Reformers operated in parallel, series or one at a time with the other serving as a spare? Do both Reformers vent through the same stack?

Since your application indicates several operating cases for the North and South Reformers, please propose a BACT limit for each operating case. EPA typically will issue an output-based BACT emission limit (e.g., lb or ton CO_2/ton methanol or Heat Required MMBtu) or a combination of an output- and input-based limit, where feasible and appropriate. For the individual reformers for this project, in addition to the proposed tons per year emission limit, please propose an output-based, combination of an output- and input-based limit or efficiency-based limit for the North and South Steam Reformers in each operating scenario. Please provide an analysis that substantiates any reasons for infeasibility of a numerical emission limitation or an efficiency based limit for individual emission units. For the emission sources where numerical emission limitations are infeasible, please propose an operating work practice standard that can be practically enforceable.

11. On page 4-7 of the permit application, it is stated that Pre-Reformer Fired Heater will operate with different heat input from natural gas depending on the specific case that the steam reformers are operating. The four different operating cases of the steam reformers are summarized in Comment #9. In order to determine the worst-case GHG emissions for the heater's operation, the emissions were calculated for each operating case and compared. The results of this analysis indicate Case C to be the worst-case for GHG emissions; therefore, OCI proposes to use Case C to establish the potential to emit allowable emissions for the heater. Please refer to Comment #9 and provide the same information that is requested for the North and South Reformers, for the Pre-Reformer Fired Heater.

12. The case analysis submitted for the Pre-Reformer Fired Heater for Cases A and C appear to have identical chemical constituent profiles and fuel flow rates, however different GHG emission rates were calculated and presented for Cases A and C on page 4-9. Please explain the difference.

13. On page 4-1 of the permit application, it states that OCI proposes to use Case D to establish the potential to emit allowable emissions for the North and South Reformers. The design specification information presented in Table 6 entitled "Boilers and Heaters" for the North and South Reformers are not consistent with the case analysis submitted for Case D. The chemical constituent profile and fuel flow rates presented in Table 6 does not appear to match the chemical constituent profile and fuel flow rates submitted in the case analysis for Case D. Please explain.

14. On page 4-10 of the permit application, it states that as a part of this debottlenecking project, the DME Eductor's maintenance emissions are being routed to the Methanol Plant Flare rather than to the atmosphere. The project will also change the status of the Stripper Tails Tank to a process vessel and the vent will be routed to the flare. Will there be modifications made to the Stripper Tails Tank as a result of this change in status? If so, please provide supplemental information that details these modifications. Will there be piping modifications/additions to route the maintenance emissions from the DME Eductor and the Stripper Tails Tank to the flare? If so, will this create an increase in fugitive leak emissions? Please revise process flow diagram to reflect any changes. Also, on page 1-1 of the permit application, it is stated that this project will allow the recovery and recycle of two former waste water streams (Stripper Tails and Dehydrator

Tails) and one atmospheric vent (CO_2 Stripper Vent) through the new Saturator Column for recovery of organics for feedstock and two atmospheric vent streams (DME Eductor and the Stripper Tails Tank Vent) that will be routed to the Methanol Unit Plant Flare for destruction. Please clarify if routing the DME Eductor emissions to the flare will be normal operations, as it reads on page 1-1, or only during MSS, as it reads on page 4-10. If the emissions from the DME Eductor are routed to the flare during normal operations, as well as during MSS, please revise the emission calculations and data provided for this vent stream on page 4-10?

15. On page 9 of 9 of the permit application on Table 2F entitled "Project Emission Increase" for GHG emissions; it appears as though Table 2F for GHG does not contain a complete list of emissions addressed in this application. Please ensure the table contains all emissions that are new, modified and affected. On page 4-1 of the application, OCI provided the following list of emission sources that are addressed in this application:
    - North and South Reforming Furnaces (EPN: STK41)
    - Pre-Reformer Fired Heater (EPN: PRFMHTR)
    - Reformer MSS Flare (EPN: FL 42)
    - Methanol Plant Flare (EPN: 45)
    - Marine Vapor Control System Flare (EPN: 326)
    - CO2 Stripper Vent (EPN: MET-STK44)
    - Ammonia Plant Flare (EPN: FL321)

    Please ensure that the emission sources identified in the list above are included in Table 2F for CO_2e emissions and properly identified as new, modified or affect. In addition to the above list of emission sources, will there be an increase and/or decrease of GHG emissions due to the increase in methanol and ammonia production from the following emission sources?
    - Ammonia Startup Heater (EPN: HTR 324)
    - Methanol Process Fugitives (EPN: MET-FUG247)
    - Methanol Cooling Tower (EPN: MET-CLT 246)
    - Main Loading Dock Fugitives (EPN: 327)
    - Scrubber Vent (EPN: 35)
    - Scrubber Vent (EPN: 328)
    - Refined Methanol Storage (EPN: MET-TFL50)
    - Ammonia Tank Flare (EPN: TKFLARE)
    - Oil/Water Separator (EPN: OWS325 Fugitive)

    Please supplement Table 2F to include any of the above mentioned emission sources and properly identify them as new, modified or affected. Typically CO_2 emissions are associated with combustion pollutants and CH_4 is associated with VOC pollutants, therefore if OCI feels that such emission sources do not have the potential to experience a change in the amount of GHG pollutants emitted as a result of this project, please provide an explanation. If any of the above emission sources do experience a change (i.e., new, modified or affected) in emissions because the project, please provide emission calculations including the baseline emissions calculations for these emission sources used to calculate the GHG emission increases and decreases attributed to the project.

16. In Appendix B entitled "BACT Analysis" of the permit application, the 5-step BACT analysis is presented. Please address the following questions:

Reformer MSS Flare (New)

A. On page 6-1 of the permit application, it is stated that the top down BACT analysis has been performed for the Steam Reformers and Pre-Reformer Fired Heater. On page 1-1 of the permit application it is stated that this project includes the installation of a new flare to control MSS emissions from the reformer vent during emission events, startups, and shutdowns. Please supplement the 5-step BACT analysis with an evaluation of the proposed flare to be installed. Please include all technologies considered and the basis for elimination. Please include benchmark data that compares the proposed flare to similar and existing sources. If there are other new or modified emissions sources (equipment and piping), please supplement 5-step BACT analysis.

Pre-Reformer (New)

B. It is not clear why a 5-step BACT analysis was not included for the Pre-Reformer. Please provide supplemental information on this emission or provide an analysis, as necessary.

Steam Methane Reformers (Modified)

C. On page D of the BACT analysis, it is stated that heat energy resulting from the combustion of fuel in the reformers is used as a heat source within the process and for various utility duties. This use of heat energy reduces the energy consumed by the overall process by utilizing the waste heat. The direct result of reducing the need for additional heaters/boilers reduces the use of fossil fuels and thus lowers emissions of GHGs. What is the proposed monitoring, recordkeeping, and compliance strategy to ensure maximum heat recovery from reformers to the process and utility fluids used internally in the unit? Also, the BACT analysis states that the current configuration utilizes heat recovery to greatly reduce the need for additional heaters/boilers for steam production, feedstock preheating, boiler water preheating, and other process heat needs. Please provide supplemental data that support this assertion. Please provide a comprehensive list of areas in the plant where heat recovery from the reformers is to be utilized for steam production, feedstock preheating and other process needs which reduces the need for an additional heater/boiler. If possible, please provide supporting data that compares the amount of fossil fuel usage or the amount of heater/boilers utilized in the other methanol production facilities that do not employ the same reformer design technology as OCI and provide the percent reduction.

D. On page E of BACT analysis, it states that OCI proposes to replace the existing reformer tubes with tubes that are larger in diameter and that have a smaller wall thickness. These tubes would contain more catalyst than the existing tubes, resulting in increased production efficiency. Please provide the supporting data and calculation that details the design decision to increase the reformer tube size. Please provide the supporting production efficiency calculations. If possible, please provide benchmark data that compares the reformers to an existing and/or similar source.

E. Please provide details on the operating parameters OCI is proposing to monitor and control to ensure maximum heat recovery for the reformers (i.e., flue gas stack temperature, feedstock/steam ratios, steam pressures and temperatures). What is OCI's proposed monitoring approach?
F. What operating parameters will OCI monitor and control to minimize the amount of natural gas fed (fossil fuel) to the reformer for a given methanol capacity.
G. 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.
H. The BACT analysis states that periodic tuning serves to maximize combustion efficiency by reducing CO and unburned carbon, thus reducing GHG emissions. Please provide details on the periodic tuning to be conducted and the scheduling and recordkeeping of maintenance done on the reformer burners. How will the need for maintenance be ascertained for the reformer burners? What alerts will be instituted to warn on-site personnel when the reformers are operating below design efficiency?

Saturator Column (New)

I. On page E of the BACT analysis, it states that the Saturator Column serves to eliminate the atmospheric CO_2 stripper emission point in the current process by processing the vent stream through the Saturator Column, reducing CO_2 emissions by 612.6 tons per year and methane emissions by 6.8 tons per year. Also, on page 4 of the "OCI Process Energy Efficiency Improvement Study" located in the Appendix of the application, it is stated that the operation of the Saturator Column will allow the recovery of 100 tons per hour of water as steam. Please provide technical data and calculations to support these assertions. Were different designs evaluated for the Saturator Column? Please provide benchmark data that compares the proposed Saturator Column to an existing and/or similar source. If possible, please provide the technical resources used to evaluate different designs and to support design choice. What is the proposed compliance monitoring method for the Saturator Column? What operating parameters will be monitored and used to alert on site personnel to operating problems or the Saturator Column operating below design efficiency?

Pre-Reformer Fired Heater (New)

J. OCI proposes the use of efficient combustion measures, routine maintenance practices/operational monitoring, and heat recovery from the fired heater flue gas in order to maximize heater efficiency and minimize greenhouse gas emissions. Since efficient heater designs vary among heaters, please provide supplemental data to the BACT analysis that explains if other heaters were evaluated for this project and why they were eliminated. Please provide supplemental information that includes the comparison data that was used to assess the operation, performance and efficiency of the chosen equipment. If a more efficient design was evaluated and eliminated, please explain why.

Also, please provide supplemental data that explains why the heater selected is the most efficient for this source. Please provide manufacturer's data for the Pre-Reformer Fired Heater.

K. What is OCI's proposed monitoring methodology for the Pre-Reformer Fired Heater? Please provide details on the operating parameters you are proposing to monitor and control to ensure that proper combustion and heat transfer is occurring.

L. The BACT analysis states that periodic tuning serves to maximize combustion efficiency by reducing CO and unburned carbon, thus reducing GHG emissions. Please provide details on the periodic tuning to be conducted and the scheduling and recordkeeping of maintenance done on the reformer burners. How will the need for maintenance be ascertained for the reformer burners? What alerts will be instituted to warn on-site personnel when the reformers are operating below design efficiency?

Carbon Capture and Storage (CCS)

M. On page F of the BACT analysis, it is stated that CCS is economically infeasible for OCI Reformers because of the following reasons: low CO_2 concentration, low pressure, high temperature and high volume. The BACT analysis includes an approximate cost to install, operate and maintain CCS of $106.2 million per year at the OCI facility. The supporting calculations were not included in the application. Please provide the site-specific parameters that were used 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.