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

Mr. Mauro Fenoglio
Global Manufacturing Director, PET Resin Division
M&G Resins USA, LLC
450 Gears Road, Suite 240
Houston, Texas 77067

FEB 05 2014

RE: Application Completeness Determination for M&G Resins USA, LLC
Greenhouse Gas Prevention of Significant Deterioration Permit
Polyethylene Terephthalate and Terephthalic Acid Units: Project Jumbo

Dear Mr. Fenoglio:

The EPA has reviewed your Greenhouse Gas (GHG) Prevention of Significant Deterioration (PSD) permit application, including supporting documentation, for M&G Resins USA, LLC that was received by the EPA on March 4, 2013, 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 February 24, 2014.

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 there will be no effects on threatened or endangered species or their designated critical habitat, or 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 your permit application, please contact Brad Toups of my staff at (214) 665-7258 or toups.brad@epa.gov.

Sincerely yours,

Thomas H. Diggs
Associate Director
Air Programs Branch

Enclosure

ENCLOSURE

EPA Completeness Comments for M&G Resins, LLC
Application for Greenhouse Gas Prevention of Significant Deterioration Permit
Polyethylene Terephthalate (PET) and Terephthalic Acid Units (PTA): Project Jumbo

1. Please update the process flow diagram to include a representation of the equipment that is discussed in the process description beginning on page 16 of the permit application. (e.g., the process air and off-gas units, PTA oxidizers and PTA post oxidizers, off-gas preheater, water removal column's condenser and reflux tank, and the regenerative thermal oxidizers (RTO), RTO preheater and associated water gas scrubber system). Please show and label all inlet, outlet and reflux streams associated with this equipment. The blocks that are used to represent several pieces of equipment make it difficult to understand the process and follow the process description given in the application. Instead of using blocks to represent several pieces of equipment, please consider revising the process flow diagram to include, but not limited to, acetic acid vaporizer, digester, crystallizer, by expanding the blocks out to include the equipment discussed in the process description. Please include and label all inlet and outlet streams. Please identify on the process flow diagram the interrelated feed streams between the different process units (e.g., in addition to the primary feed to the water removal column (WRC) from the oxidizers, the WRC will receive digester and crystallizer off-gases used to increase the enthalpy input to the WRC). It is also suggested that additional pages be created and provided to EPA to represent the process to avoid overcrowding. Please ensure that all emission sources that emit or have the potential to emit GHG and associated emission point numbers (EPNs) are identified on the process flow diagram.

2. In addition to the previously mentioned comment, please provide supplemental information to the process flow diagram and/or process description:

   A. On page 16 of the permit application, it states that hot vapor exiting the water removal column is superheated in the offgas preheater and then routed to the expander for energy recovery. The expander, together with a steam turbine, drives the main air compressor and a power generator for the plant. Please show this process equipment on the process flow diagram and label all of the inlet and outlet steams directed to this air compression system and offgas preheater (steam, air, waste gas) and the power generated.
   B. Also, on page 16 of the permit application, it is stated that the hot vapor exiting the water removal column is superheated in the offgas preheater and then routed to the expander for energy recovery. Following the expander, the decompressed vapor is partially condensed in a WRC condenser. The discharge from the WRC condenser passes to the WRC reflux tank. The separated, uncondensed offgas stream is routed to the RTO preheater. Please update the process flow diagram to show this process. What media is being used in the preheaters to preheat these streams? Discharge from the preheater enters the system of two RTOs where the volatile organic compounds (VOCs) and residual carbon monoxide (CO) in the waste gas stream are oxidized to carbon dioxide (CO_2). Please update the process flow diagram to show the two RTOs. In addition, it is also stated that an associated waste gas scrubber system is designed to convert residual bromine-containing species (methyl bromide) in the offgas (waste gas) before it is vented to atmosphere. Please update the process flow diagram to show the tie-in of the offgas from the RTOs to the waste gas scrubber with the associated EPN. What media is being used in the scrubber to convert the residual bromine containing species? Where are the outlet streams directed after the scrubber? Please update the process flow diagram to show the inlet and

outlet streams to the waste scrubber with labeling. What is the material converted to? The application states that during normal operation the heat release of the offgas is sufficient for the RTO to operate auto-thermally, i.e. supplementary heat input is not required. Should the heat release from the offgas decrease, natural gas will be supplied to the RTOs to sustain proper firebox temperature. During what times of plant operation would M&G Resin (M&G) expect that natural gas will need to be supplied to the RTOs? Is natural gas added to the RTOs automatically or manually? What is the proposed compliance strategy for the operation of the RTOs? What will be monitored and recorded?

C. On page 17 of the permit application, it is stated that the PTA oxidizer serves as the primary reactor for converting para-xylene to PTA. Air from the main air compressor is injected to provide reaction oxygen and agitation, while para-xylene is fed to the reactor from one of the floating roof tanks in the tank farm. Also, the WRC is the primary means of water removal from the PTA process. The WRC overhead vapor is cooled down and condensed such that it can be pumped back to the top to the column as reflux. The WRC non-condensable overhead vapor is sent to the offgas treatment unit (system of RTOs). For consistency with the process description, please update the process flow diagram to also include the labeling of the RTOs as the "offgas treatment unit". It is also stated that a portion of the WRC underflow is pumped directly to the digestion process as the feed to the acetic acid vaporizer. Please revise the process flow diagram to show the underflow from the WRC to the acetic acid vaporizer and any additional inlet streams. Is fuel or steam added to the acetic acid vaporizer? The excess underflow is cooled in a train of heat exchangers and steam generators for energy recovery. Please update the process flow diagram to show this energy recovery. Please include all energy recovery that is discussed in the process description on the process flow diagram. It is stated that the high pressure vaporized mixture of acetic acid and water fed to the WRC is used to increase the enthalpy input to the WRC, thereby increasing acetic acid/water fractionating capacity. Does this method of operation conserve energy usage or demand (fuel, steam, etc.) of the WRC that would otherwise be needed to accomplish the same result? Is this a design strategy that is common to PET and PTA production or is it unique to M&G Resin? Can this reduction of energy demand be quantified?

D. The process flow diagram indicates at the beginning of the process a "catalyst and feed preparation" unit. The process description does not appear to include a discussion pertaining to this unit. Please update the process description to include a summary of this unit and expand the process flow diagram for this unit to include the equipment and label the inlet and outlet feed streams.

E. Beginning on page 17 of the permit application, the digestion and crystallizer process units are described. Please update the process flow diagram to show the following equipment with inlet and outlet streams labeled appropriately:

   i. The post oxidizer underflow stream that is directed to the digester. Please show on the process flow diagram.
   ii. The hot acetic acid vapor from the acid vaporizer injected to the digester. Please update the process flow diagram.
   iii. Following the post digester, slurry is directed to the crystallizer. It is unclear if the process physically includes two digesters (i.e., digester and post digester). Please clarify in the process description and show on the process flow diagram.
   iv. It is stated in the application that the offgas from the crystallizer is vented back to the respective WRCs. It is not clear if there is more than one WRC. If there is more than one WRC, please identify on the process flow diagram all of the WRCs.

v. After crystallization, product slurry is flash-cooled and sent to the PTA filters which separate the PTA from the acetic acid/catalyst liquid. Where is this liquid-mix directed? Does it go to the wastewater treatment plant (WWTP)?

vi. The wet PTA cake is sent to the respective PTA dryers, which are heated by steam. Is this steam produced from the energy recovery mentioned on page 17 when the underflow from the WRC is cooled? If appropriate, please update the process flow diagram to show this relationship.

vii. The dried PTA powder falls from the drier discharge while vaporized acetic acid is removed through the (dryer) filter vent scrubber system. The overheads from the scrubbing system are routed to the RTOs. Please update the process flow diagram to show the dryer filter vent scrubber system and the tie-ins to the RTOs.

viii. Please update the process flow diagram to show the stream from the filtering and drying section containing solid wastes sent to the WWTP.

ix. The off-spec silo located in the PTA unit process area is used to store off-spec material for further re-processing. Where is off-spec material re-introduced in the process? If possible, please indicate on the process flow diagram.

x. All the pneumatic transport systems of the PTA unit are operated using nitrogen in a closed loop. Please confirm if product conveyance is enclosed. Are the vents from this enclosed system directed to the flare, RTOs or scrubber system? If the product conveyance is not enclosed, is this a potential GHG emission source? Typically CO_2 emissions are associated with combustion pollutants and CH_4 is associated with VOC pollutants, therefore if M&G believes 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.

F. Beginning on page 18 of the permit application, the PET process is described. The PET process is divided into two units consisting of continuous polymerization (CP) and a solid state polymerization (SSP) unit. The CP unit consists of the following systems: 1) additives and feed preparation, 2) esterification, 3) prepolymerization, 4) polymerization, 5) filtration and cutting, and 6) scrap recovery. The SSP unit consists of the following systems: 1) pre-crystallization, 2) crystallization, 3) solid state polymerization reaction, 4) cooling, 5) gas treatment unit (GTU), and 6) heat transfer fluid distribution system (Therminoll 66). The following systems are common to both CP and SSP units: 1) heat transfer fluid (HTF) heaters and related distribution system (Dowtherm A), 2) organic stripping column (OSC), and 3) waste water treatment plant (WWTP) Please update the process flow diagram to show the equipment (columns, compressors, reactors, condensers, knockpots, storage tanks, etc) that are a part of each system. Please label and include the inlet and outlet process streams and show where the vessel's vent streams are directed (i.e., flare, RTO, scrubber system, etc.). Please include associated EPNs and identify whether the emission source is a potential GHG source or non-GHG source. If there are duplicate vessels, please show as such on the process flow diagram. In addition to the previous request, please provide the following updates to the process flow diagram:

i. M&G Resin's proposed process for the production of PET uses PTA and ethylene glycol (EG) as primary feedstocks and the following additives: catalyst, diethylene glycol (DEG), inhibitor (phosphoric acid), iron phosphide (FeP), toner and isophthalic acid (IPA). Please update the process flow diagram to show the feed preparation steps and label inlet and outlet streams.

ii. The feedstock is then preheated before being directed to the esterifier with a heat exchanger using heat transfer fluid (HTF). Please update the process flow diagram to show the preheating of the feedstock to the esterifier. Also, update the process flow diagram to show the esterifier.

iii. In addition to what is currently depicted on the process flow diagram for the HTF process heaters, please update to show the heat transfer fluid inlet and outlet streams and where it is utilized in the process units. Please show the fuel inlet streams to the heaters. On page 25 of the application, it states that before venting to the atmosphere, the heat of the hot flue gases leaving the HTF heaters is recovered to generate low pressure steam used within the PET plant. Please, update the process flow to show all heat recovery from the process heaters. On page 52 of the permit application, it is stated the M&G proposes a numerical energy efficiency-based BACT limit for maximum exhaust gas temperature of 320°F. The proposed BACT does not appear to include the thermal efficiency of the heaters. Please provide supplemental technical data that includes the thermal efficiency of the process gas heaters. Also, it is not clear from the process flow diagram or the process description if the HTF heaters vent through a common stack or individual stack. The process flow diagram indicates individual stacks that are combined into one stack. Please clarify. Also, please clarify on the process flow diagram what are the EPN assignments for the HTF heater stacks (i.e., E7A, B, C, and D or E7A, E7B, E7C, and E7D).

iv. The reaction between PTA and EG yields and oligomer (short-chain polymer) and water. The water is removed from the system in a tray column. The column bottoms are sent to the OSC and then onto the WWTP. Please update the process flow diagram to show the water column, the OSC and all connecting process streams. Please label inlet and outlet streams and where it is directed. The water-free oligomer is transferred to the prepolymerization unit. It is stated that downstream from this point in the process, the process stream is divided into two parallel independent lines (CP lines 1 and 2, and SSP lines 1 and 2). Please show these parallel trains on the process flow diagram.

v. The prepolymerization unit consists of a heat exchanger and a reactor equipped with special internals and a heat jacket. Please supplement the process flow diagram to show this equipment. From the prepolymerization system onward, all equipment is maintained under vacuum conditions to promote reactions and to remove the reaction side products. The vacuum is maintained in each CP line through a system of ethylene glycol vapor ejectors with three inter-condensers and a liquid ring vacuum pump. Vapor streams from the liquid ring vacuum pump bubble into the esterifier seal pot. Please provide supplemental information that explains how make-up liquid is provided back into the vacuum liquid ring pump seal pots to ensure proper operation of the pump. Is there continuous monitoring of the system? What will be implemented to alert on-site personnel to problems? Are there low/high level alarms? Ejectors will be operated with ethylene glycol vapor as motive fluid. The permit application states that sealing against atmosphere of inter-condensers working under vacuum in the prepolymerization system is guaranteed through barometric legs terminating into a vessel (one per line), called "hot wells" containing ethylene glycol that are level controlled at ambient conditions. In addition, the sealing against atmosphere of inter-condensers working under vacuum in the polymerization system is guaranteed through barometric legs terminating into a vessel (one per line), called "cold wells" containing ethylene glycol that are level controlled at ambient conditions. These hot and cold wells are integrated in the ethylene glycol distribution system within the CP unit. Please provide a detailed process flow diagram of the vacuum system equipment that labels each component. Being mindful that CH_4 is typically associated with VOC pollutants, is the ethylene glycol system a potential GHG source? Does the ethylene glycol system impact the potential GHG emissions from other equipment? Besides monitoring the liquid level of the ethylene glycol system, will there be continuous monitoring of other operating parameters (e.g., pressure) of the process equipment? What is the proposed compliance strategy for ensuring that the vacuum system is properly functioning? What operating parameters will be monitored to ensure the maintaining of a vacuum around the CP system and no venting to the atmosphere? Will there be concerns for solid carry-over or plugging around the vapor ejectors or other vacuum equipment? Please confirm the design type for the inter-condensers. (i.e., direct-contact, shell and tube, etc)

vi. In the process description, the polymerization reactor that is located in the CP unit is also referred to as the "finisher". For consistency, please make this distinction on the process flow diagram.

vii. The process vents from the OSC column is collected, along with other process vents coming from the vacuum pump unit, and bubbled into a seal pot (esterifier seal pot) equipped with a scrubber. The vapor from the scrubber is directed to HTF process heaters to be used as fuel. The heaters will also utilize natural gas as a primary fuel, as well as methane-rich biogas collected from the WWTP. Wastewater from the PET and PTA units and other areas of the complex are collected and combined in a mixed equalization tank. Once equalized, the wastewater is pumped to an anaerobic system where the resident biomass will effectively remove the bulk of the organics and produce methane gas. Please update the process flow diagram to show the process vents from the OSC, the vacuum pump unit including the scrubber, the biogas from the WWTP, and natural gas as fuel options for the HTF process heaters. Also, update the process flow diagram to show a depiction of the vacuum pump seal pot scrubber system. Please show inlet and outlet streams and where these streams are directed from the scrubber.

viii. On page 21 of the permit application, it is stated that during instances when off-spec material is produced, silos are used to store off-spec material. Also, the amorphous PET chips produced as feedstock for the SSP unit are stored in silos. Is this a potential GHG source? Being mindful that CH_4 is typically associated with VOC pollutants, therefore if M&G believes that such emission sources do not have the potential to emit GHG pollutants emitted as a result of this project, please provide an explanation.

ix. The CP unit is designed to recover scraps coming from the PET production plant (both from CP and SSP) and further recycling in the process. Is this recycling process enclosed? If not, are fugitive or dust suppressants necessary and is it utilized?

x. For the SSP unit, please provide supplemental information to the process flow diagram that shows the fluid bed heater(s), multi-cyclones and filters in the precrystallization and crystallization system. Please show the inlet and outlet process streams. If there is more than one fluid bed heater, please show on the process flow diagram. If applicable, please show any additional heat recovery that is accomplished via the fluid bed heater (e.g., preheating a feed stream using the hot vents from fluid bed heater). Also, show the liquid heat transfer fluid distribution system that includes heat exchangers that uses Therminoll 66 to heat the fluidization air. Please provide supplemental technical data that includes the design efficiency of the heat transfer fluid system. What parameters will be monitored and recorded to ensure this system is operating as designed? What is the proposed compliance strategy for the heat recovery system? This fluidization air is used to heat the amorphous PET chips conveyed from the CP unit to the fluid bed heater in the precrystallization system. Please show the connecting inlet and outlet process streams. The process gas for the crystallization system uses nitrogen. The fluidizing nitrogen leaving the fluid bed heater(s) passes through multi-cyclones and a filter. Then, the nitrogen is heated and sent back to the crystallizer in closed loop. How is heat transferred to the nitrogen? What is used to heat the nitrogen? Is nitrogen heated similar to the fluidization air in the precrystallization system via the heat transfer fluid distribution system that uses Theminoll 66? Please show on the process flow diagram. If there is more than one fluid bed heater in the crystallization system, please indicate on the process flow diagram.

xi. Part of the inert gas loop is sent to the gas treatment unit (GTU) for the removal of by-products. This purge avoids the build-up of undesired contaminants released during the crystallization process and the following SSP unit. In the GTU, the gas is heated and sent to a catalytic bed reactor, where the oxidation of volatile organic compounds coming from the crystallization and SSP reaction units takes place. Where are the vents from the catalytic bed directed? Is heat recovery from this vent stream possible? Is the heat from this vent stream recouped by preheating the gas before it is fed to the catalytic bed reactor? The oxidation reaction water, along with the water coming from the crystallization and SSP reaction units is adsorbed on molecular sieve type driers. The adsorbent material is then regenerated by a flow of hot, dry inert gas and the water is separated from this gas by condensation. What is used to preheat the inert gas used in the molecular sieve drier? Please show the GTU and the equipment that comprises this unit and all process streams that are directed to and from this unit. Please label equipment and process lines appropriately. After removal of by-products, the "clean gas" leaving the GTU is then heated up, and sent to the SSP unit. What is used to heat the "clean gas"? Please show on the process flow diagram. Also, please supplement the process flow diagram to show where this gas is directed in the SSP unit.

xii. According to the process description on page 23, the SSP reaction section comprises a horizontal inclined rotating cylinder (SSP reactor) in which inert gas is flowing counter current with respect to the chips flow direction. How is this accomplished? Does the inert gas suspend the chips? Are the chips on some type of conveyor system?

xiii. After the SSP reactor, chips are cooled in a fluidized bed that is operated with air. Is it possible to recover heat from the air used to cool the chips?

G. On page 25 of the permit application, it is stated that the proposed project will include the installation of a cooling tower that will be comprised of 10 modules which will supply cooling water to both the PET plant and the utility plant. Is it possible for GHG emissions to be present in the process water cooling towers due to process equipment leaks into the system or CO_2 entrainment? Does the process include direct-contact coolers/condensers? Being mindful that CH_4 is typically associated with VOC pollutants, therefore if M&G believes 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 there is a possibility for GHG emissions, please supplement the BACT analysis with an evaluation of leak repair and monitoring technologies and a proposal of what M&G would propose as BACT. What is the proposed compliance strategy for the cooling tower?

H. Beginning on page 25 of the permit application the facility's air conveyance system is summarized. PET chips are conveyed within the plant units and to/from the rail yard. Ambient air is filtered and then pressurized at the desired value using oil-free, water cooled centrifugal compressors. What drives these compressors (i.e., electric, steam)?

I. The proposed project includes a tank farm area that will consist of two tanks for EG, five tanks for para-xylene, one tank each for DG, acetic acid and caustic. The tank farm will have a water scrubber for the treatment of gaseous emissions from the tanks during normal operation. Similarly to all the other scrubbers of the plan, the liquid stream from the tank farm scrubber is sent to the WWTP. Is the tank scrubber a potential GHG source? As previously mentioned CH_4 is typically associated with VOC pollutants. If so, a BACT analysis should be developed for the tanks to be installed for the project. Please be sure to incorporate into the tank BACT analysis the factors that were considered when comparing internal (IFR) or external (EFR) floating roof, and fixed roof. Please provide any other additional information for the tanks, including whether the applicant chose to have the tanks painted white or another color of high refractive index to reduce vapor production. Please update the process flow diagram to include an EPN for the vent stream. Please label the liquid stream to indicate where it is directed.

J. On page 27 of the permit application, a summary of the proposed dock, rail yard and truck loading and unloading of product and raw materials is included. Are any these potential GHG sources? If so, a BACT analysis should be developed for the identified method of loading and/or unloading of product and/or raw materials. Please include the pollution controls that were evaluated for the reduction and/or minimization of GHG emissions during truck loading and the reasons for eliminating these controls from consideration. Will there be operating or work practice standards implemented to minimize GHG emissions generated during the truck loading operation? Please provide supplemental information that details these procedures.

K. Please update the process flow diagram by including the emergency generators and fire pump engines with the associated emission point number (EPN). Please provide design efficiency data for the emergency generator and fire pump engines.

3. On page 28 of the permit application, it is stated that M&G is proposing to select a PET process that features a single step esterification in the CP unit. This technology eliminates the second esterification step found in traditional CP units at PET plants and reduces the total energy required during the esterification unit operation by the number of heated vessels. If possible, please provide the number of heated vessels that will be reduced using the chosen technology instead of traditional technology and if possible quantify the reduction in fuel and/or GHG emission production. In addition, it is also stated that M&G is proposing to construct a SSP unit that eliminates the precrystallization and crystallization steps found in traditional SSP units. By eliminating these unit operations at the front end of the SSP process, the overall SSP unit throughput can be increased by up to threefold (as compared to a traditional SSP unit) which corresponds to significant energy (heat and electricity) savings. On page 19 of the application, the list that is provided to summarize the steps in the CP and SSP units, consists of precrystallization and crystallization steps in the SSP unit. Also, beginning on page 22 of the application, the process description for the SSP unit details the precrystallization and crystallization steps. From the process description, it appears that the SSP unit does include precrystallization and crystallization steps based on what is presented in the application. Please clarify statements made on page 28 that asserts its elimination. Also, please provide

supplemental information that compares the efficiency gains in heat and electricity consumption or reduction in GHG emissions for chosen technology versus traditional PET technology. Also, provide a copy of any technical resources used to evaluate the design decisions for the M&G facility and any benchmark comparison data of similar sources existing nationally or internationally, that may have been utilized in the design selection strategy. Please provide technical resources, literature and calculations to substantiate the claimed efficiencies.

4. On page 29 of the permit application, it is stated that M&G is proposing to collect methane-rich biogas generated from the WWTP to be used as fuel in combustion equipment (heaters). This approach minimizes potential GHG emissions associated with the continuous venting of biogas, and also reduces the amount of imported fuel (natural gas) supplied to the plant. Please provide supplemental information that quantifies the amount of potential GHG emissions that will be minimized and reduces the amount of imported natural gas by using the biogas generated from the WWTP as fuel to the process heaters. Also, on page 30 of the permit application, it is stated that the biogas may need to be flared periodically; for example during certain operating scenarios such as heater maintenance or startup, or plant runaround. If possible please provide an estimate on how long the biogas will be flared. Please confirm if the biogas is the only vent stream directed to the flare.

5. Please provide manufacturers data for the process heaters, RTOs, flare, emergency generator engine and fire pump engine. If possible, please provide supplemental data comparing the energy efficiency and production of GHG emissions of the chosen equipment to similar or existing sources. Were other designs evaluated for this project? Please provide the technical assessment conducted to compare the performance of the equipment considered for this project

6. The M&G permit application doesn't appear to include the production capacity for PET and PTA the proposed facility. Please provide this supplemental information.

7. Is proposed BACT for emission sources applicable at all times, including maintenance startup and shutdown (MSS) events? Please supplement the application by indicating whether your proposed BACT includes MSS emissions for the overall process, or provide supplemental information that details why a different BACT limit is needed during MSS along with a proposed BACT analysis for such startup/shutdown emissions.

8. Table 6.1 presents approximate costs for construction and operation of a post-combustion carbon capture and sequestration system at M&G. The estimated cost to install, operate and maintain CCS is $156.7 million per year at the M&G facility. This cost does not include pipeline costs. The supporting calculations that were used to derive this estimate 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 specific equipment to be used. This site-specific cost calculations should include, but are not limited to, size and distance of pipeline to be installed, pumps, compressors, the amine solution to be used and the equipment necessary to employ the chosen post-combustion technology. Please include cost of construction, operation and maintenance, cost per ton 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.

9. The BACT analysis indicates that M&G will utilize an energy efficient design for the heaters. Please provide supplemental information for the process heaters. If possible, please provide benchmark data that compares similar industries with existing or similar heaters that utilize the same technology.

10. The global warming potentials (GWP) have been revised by EPA. The final rule published on November 29, 2013 in the Federal Register will be effective for all permits issued on or after January 1, 2014. The methane value was increased from 21 to 25 (times more potent than CO_2), the N_2O value was decreased from 310 to 298, and the N_2O value was decreased from 23,900 to 22,800. Due to the prospective changes in the emissions for methane in the FGE Power application, please provide an updated emission tables using the new GWPs so that EPA can cross-check its own calculations.