UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 4

Final Determination and Response to Comments

Outer Continental Shelf Air Permit OCS-EPA-R4009

Murphy Exploration and Production Company

On February 29, 2012, the Region 4 office of the United States Environmental Protection Agency (EPA) requested public comment on a draft Outer Continental Shelf (OCS) air permit for Murphy Exploration and Production Co. (Murphy). The permit will regulate air pollutant emissions from the dynamically positioned Diamond Offshore deepwater drilling vessel *Ocean Confidence* and an associated support fleet to conduct exploratory drilling and well completion for up to 90 calendar days within a two year period at a single well location within its Lloyd Ridge lease block 317. The drill site is located on the OCS in the Gulf of Mexico, approximately 135 miles southeast of the mouth of the Mississippi River and 180 miles from the Florida shoreline.

EPA also prepared a preliminary determination and statement of basis document that explains the derivation of the permit conditions. The preliminary determination and the draft permit are available on EPA Region 4's website at: http://www.epa.gov/region4/air/permits/ocspermits/ocspermits.html. The permit incorporates applicable requirements from the federal Prevention of Significant Deterioration preconstruction permit program, New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants (NESHAP), as required by the OCS Air Quality Regulations at 40 Code of Federal Regulations (CFR) part 55.

During the public comment period, which commenced on February 29, 2012, and ended on March 30, 2012, EPA received comments from Murphy. No requests for a public hearing were received, and the hearing was canceled due to insufficient interest.

EPA carefully reviewed each of the comments. This Response to Comments document summarizes the comments received from Murphy, provides EPA's response, and summarizes the changes made to the permit. A complete copy of the comments is included in the administrative record for Murphy's permit and is available at the website listed above.

After consideration of the expressed view of all interested persons, the pertinent federal statutes and regulations, the application and supplemental information submitted by the applicant, and additional material relevant to the application and contained in the administrative record, EPA has made a final determination in accordance with title 40 CFR part 55 to issue an air permit to construct and operate to Murphy for the proposed exploratory drilling operation in the Lloyd Ridge OCS lease block 317.

Comments from Murphy Exploration and Production Company on the Draft Permit

Comment 1: Engine Horsepower Ratings (Draft Permit page 3; Section 4, Table 1).

Based on the initial application and subsequent submittals, including the emissions calculations and supporting documentation, the following diesel engines are listed with the incorrect horsepower. The corrected horsepower needs to be put in the permit.

Emissions Unit ID	As shown in draft permit INCORRECT Rating (hp)	CORRECT Rating (hp)
DR-GE-01	4439	4435
DR-GE-02	4439	4435
DR-GE-03	4439	4435
DR-GE-04	4439	4435
DR-GE-05	4439	4435
DR-GE-06	4439	4435
DR-GE-07	4439	4435
DR-GE-08	4439	4435
DR-GE-09	6705	6789
DR-GE-10	6705	6789
DR-GE-11	6705	6789
DR-AC-01	17.6	23.1

Murphy requests a revision to draft permit Table 1 to adjust the horsepower ratings for DR-GE-01 through DR-GE-11 and DR-AC -01.

Response: The requested change is consistent with the application and the assumptions used in EPA's review. EPA has adjusted the horsepower ratings for the specified emissions units in Table 1 of the final permit.

Comment 2: Record of Ocean Confidence Dry Dock Downtime (Draft Permit page 10; Section 6.1.4.).

Section 6.1.4 states: The permittee shall maintain a record of any time the Ocean Confidence is put into dry dock or experiences downtime from drilling activities beginning with the effective date of this permit and during the pendency of this permit to be reported with the Compliance Certification Report as set forth by Condition 5.13.

It is not reasonable for EPA to require the permittee to maintain these records since Murphy does not own the Ocean Confidence. Also, at present, the rig is not drilling for Murphy.

The rig owner should not be required to maintain records for this project prior to the project beginning (during pendency of permit and project) especially if Murphy does not have the Ocean Confidence under contract for this or other projects. It is very possible that Murphy may not have a contract with Diamond Offshore for the Ocean Confidence during the pendency of the

permit or during the time leading up to the beginning of the drilling operation for this project.

Response: EPA has considered the comment and does not believe that the fact that Murphy does not own the *Ocean Confidence* makes this recordkeeping requirement unreasonable. This owner-operator relationship is typical for offshore exploratory drilling. EPA concurs that recordkeeping, permitting and compliance may be easier if the rig owner is the permittee, rather than the rig operator. However, the decision for the operator to be the permittee, as was chosen by the applicant for this project, is not prohibited by the applicable regulations, nor does it prevent compliance with the Clean Air Act. The operating status of the rig and its whereabouts is constantly maintained and can be readily obtained from the rig owner.

Upon further consideration of this requirement, however, EPA has clarified that the recordkeeping requirement is not necessary once the IMO Tier I upgrades have taken place. In addition, the recordkeeping would not be necessary if the permittee identifies a time-period when the upgrades will be performed during scheduled downtime or maintenance of the drilling floor engines, such as during the 2-3 month period that the rig is scheduled to travel from Africa to the Gulf of Mexico. Hence, condition 6.1.4 of the permit has been modified to allow for these contingencies.

Comment 3: Drilling Vessel Fuel Consumption Limit (Draft Permit page 16; Section 6.8.1).

6.8.1. Operating Limit: The Ocean Confidence drilling vessel is limited to the consumption of 500 barrels per day of diesel fuel, not to exceed 1,890,000 gallons of diesel fuel for the duration of the project.

Add "an average of" to the permit restriction on fuel consumption since the total fuel consumption is the drilling rig's emissions limit determinant.

Murphy requests that draft permit Condition 6.8.1 be changed in the final permit to read:

6.8.1. Operating Limit: The Ocean Confidence drilling vessel is limited to the consumption of an average of 500 barrels per day of diesel fuel, not to exceed 1,890,000 gallons of diesel fuel for the duration of the project.

Response: In the March 21, 2011 letter from Murphy to EPA, Murphy states that a ”worst case average of 500 BPD” and a “maximum daily average of 500 BPD” were used in emissions calculations (see the Calculation Methodology section beginning on p. 337). In this same Calculation Methodology document, the worst case emissions for air quality impact modeling were based on the consumption rate of 500 barrels of diesel fuel per day. In addition, footnote 2 in the PTE Emissions table on page 345 reads “Emissions based on combustion rate of 500 barrels of diesel fuel per day.” There is some flexibility inherent in the compliance method and recordkeeping requirements of draft permit Condition 6.8.3. Additionally, any emergencies on the drill rig necessitating a temporary increase in fuel consumption for safety reasons would be addressed under EPA’s enforcement discretion. Therefore, no changes were made to this condition in the final permit.

Comments 4 and 5: Work and Crew Boat Compliance Demonstration (Draft Permit page 17; Sections 6.9.4 and 6.9.5).

> *6.9.4. Compliance Demonstration Method: Compliance with these operating limits will be demonstrated by maintaining a record of operating time and fuel consumption for each work and crew boat within the 25 nautical mile radius of the Ocean Confidence and during standby time at the Ocean Confidence.*
>
> *Remove "and fuel consumption" from the permit condition since the work and crew boats emissions were not determined based on fuel consumption.*

and

> *6.9.5 requires the support vessels to monitor the following:*
> *• Gallons of fuel on each work boat entering the 25 nautical mile radius*
> *• Gallons of fuel on each work boat exiting the 25 nautical mile radius*
>
> *Remove the following conditions due to emissions in the application were not calculated based on fuel consumption. Emissions calculated based on default estimated hours of operation in the 25- mile radius and fuel used and emission factors from AP-42:*
>
> *Remove following requirements:*
> *-Gallons of fuel on each work boat entering the 25 nautical mile radius*
> *-Gallons of fuel on each work boat exiting the 25 nautical mile radius*

Murphy requests that fuel monitoring for support vessels be removed from Draft Permit Condition 6.9.5 that Draft Permit Condition 6.9.4 be changed to read:

> *6.9.4. Compliance Demonstration Method: Compliance with these operating limits will be demonstrated by maintaining a record of operating time for each work and crew boat within the 25 nautical mile radius of the Ocean Confidence and during standby time at the Ocean Confidence.*

Response: EPA has considered the comment and does not concur. In the March 21, 2011 letter from Murphy to EPA, specifically the Calculation Methodology section beginning on page 337, Murphy states that for the work boats and crew boat, SO_2 is calculated based on the use of ultra low sulfur fuel and an estimated fuel use value. The stated methodology indicates that the estimated fuel use was the basis for SO_2 emissions used in air quality modeling for both the work and crew boats. To calculate SO_2 emissions, the amount of fuel consumed must be known. In addition, the Project Summary section support vessel tables beginning on page 65 indicate that fuel use was calculated in gal/hr for each set of emissions calculations. Therefore, no changes were made to this condition in the final permit.

Comment 6: BACT Requirement to Retrofit Drilling Floor Engines to IMO Tier I Standards (Draft Permit page 12; Sections 6.5.2.3).

> *Section 6.5.2.3 states: In the event the Ocean Confidence has scheduled downtime from drilling for more than 21 consecutive days at sea or is put into dry dock for more than 14 days prior to drilling under this permit or during the pendency of this permit, one or more of the engines, as can be achieved in the scheduled time, DR-GE-09 through DR-GE-11 must be upgraded to IMO Tier I standards.*
>
> *This requirement should be removed from the permit based on the following:*
> *1. Sections 6.5.2.1 set the BACT limit of 26 g NO_x/kW-hr.*
> *2. This option was rejected in the permit application BACT analysis submitted based on cost and uncertainty as to whether the actual emissions could meet the 12.1 g NO_x/kW-hr.*
> *3. The Ocean Confidence drills wells for projects worldwide, not just for projects in the Gulf of Mexico. It is very likely that the Ocean Confidence, during the time leading up to the start of this project, may be operating at locations other than the United States (e.g., Eastern Atlantic Ocean off the coast of West Africa) and would not be able to secure crews, engineering staff and a contractor to perform a Tier 1 conversion at locations other than the United States.*
> *4. The time of 14 to 21 days to complete a conversion of one of the three Caterpillar engines to a Tier 1 is not feasible. An estimate of 21 to 24 days to do a conversion of the three Caterpillar engines to a Tier 1 engine was used as a best case optimistic time to for the BACT cost analysis only. That number of days was used only as lower estimated number for the costs associated with dry docking the Ocean Confidence for the work; it was not meant to be a firm number of days to complete such a project. The number did not include all of the steps necessary to get the project approved, mobilization, engine conversion, engine testing, stack testing and approval by the American Bureau of Shipping (ABS) that is required. Also, if the downtime and/or dry dock was unscheduled, it would be infeasible to complete upgrades in the 14 to 21 day time frame.*
> *Since the Ocean Confidence is presently drilling off of the coast of West Africa, the time to complete the conversion would require an additional 2 to 3 months to acquire and ship parts, equipment and personnel to the overseas location. Further delays could occur since the parts and equipment would first have to be shipped to an onshore overseas location/port and then to the Ocean Confidence. We could expect further delays due to the need for approvals through U.S. Customs and overseas customs agencies.*

Murphy requests that draft permit Condition.6.5.2.3 be removed from the final permit.

Response: EPA has considered the comment and has revised the permit condition to not require the drilling floor engines to meet IMO Tier I emission standards after periods of dry dock or downtime of less than 24 days, as estimated in the application. The dry dock or downtime period specified in the permit is intended to be the period that the engines are not in use and can be upgraded to meet IMO Tier I standards. This period is not intended to include additional time needed for ordering the parts, customs, or shipping. EPA recommends that the procurement and customs timelines be accounted for in advance, such that the upgrade installation is able to occur during scheduled maintenance or rig transport.

EPA does not find the argument that the rig will be outside US waters justification for why the upgrade to IMO Tier I standards are technically infeasible and/or cost prohibitive. In addition, the argument was not substantiated in the comment letter. It is EPA's understanding, based on discussions with operators

and rig owners, that significant maintenance and even engine replacements occur overseas as well as during rig transport. Given the rig is a foreign-flagged vessel, it is reasonable to assume that maintenance and modification activities routinely occur outside the Gulf of Mexico.

EPA understands that the IMO Tier I upgrade package for the three drilling floor engines is commercially available and is designed to allow the engines to meet an emission rate of 11.5 g/kw-hr. The BACT limit of 12.1 g/kw-hr is consistent with recent BACT determinations made for other IMO Tier I engines.

Based on the BACT analysis presented and EPA's independent review, the cost of the upgrade is reasonable if scheduled during a period when the drilling floor engines are not in use. EPA has built substantial flexibility into this determination and has not required that the conversions occur simultaneously nor be completed prior to the commencement of the drilling operation. Given that the Ocean Confidence is not scheduled to return to the Gulf of Mexico until January 2013, and that the return trip is likely to take 2-3 months, EPA believes there is adequate time for Murphy to work with the rig owner to identify a suitable schedule that will not interfere with other maintenance activities.

Comment 7: IMO Tier 1 Upgrades (Draft Permit page 12; Section 6.5.2.4).

> *6.5.2.4 requires the NO_x upgrade to meet a limit of 12.1 g/kW -hr NO_x on a rolling 24-hour for each upgraded engines.*
>
> *There is no guarantee from the supplier that the upgrade will be able to meet the limit of 12.1 g/kW-hr NO_x on a rolling 24-hour for each upgraded engines.*

Murphy requests that draft permit Condition 6.5.2.4 be removed.

Response: Page 40 of the revised BACT analysis included in the June 21, 2011 letter from Murphy to EPA reports that "Caterpillar states that the EUI conversion can make the Caterpillar 3616 engines compliant with IMO Tier 1 emissions standards." This is calculated to be 11.544 g NO_x/kWh for the 900 rpm engines. Additional information from Caterpillar is included as Attachment 12 in Volume 2 of the original application's BACT analysis dated November 2010. This information indicates that the engines can meet IMO Tier 1 standards once upgraded. An additional 5% was added to establish the BACT limit, increasing it to 12.1 g NO_x/kWh, to allow for uncertainties in the actual emissions. Furthermore, Murphy's assertion that Caterpillar will not guarantee that the upgraded engines can meet a limit of 12.1 g NO_x/kWh is not substantiated in the comment and no additional documentation has been provided to refute the information presented in the application materials. In addition, no alternative limit was proposed in the comments for the upgraded drilling floor and hotelling engines. Therefore, no changes were made to this condition in the final permit.

Comment 8: Parametric Monitoring for CO_2 and SO_2 (Draft Permit page 13; Section 6.6.2).

> *6.6.2 Parametric Monitoring {Compliance Monitoring Option #2} requires monitoring for CO_2 and SO_2.*
>
> *No exhaust gas monitoring for SO_2 emissions should be required. The permit should allow the use of sulfur content of the diesel fuel and amount of diesel fuel burned to determine the mass of SO_2 emissions.*
>
> *Section 6.3 of the permit, requires the permittee to determine the sulfur content of the diesel fuel used by the Ocean Confidence. The amount of sulfur in the fuel is limited to <0.05 percent by weight sulfur by Section 6.3 of the draft permit. If the diesel fuel contains <0.05 percent by weight sulfur then there is an upper limit to SO_2 emissions that the rig can emit and this can be calculated based on amount of fuel burned and sulfur content of the fuel. Doing a daily calculation of SO_2 emissions based on fuel used and sulfur content would be a more cost effective method.*
>
> *No exhaust gas monitoring for CO_2 should be required. There is no CO_2 mass or concentration limitation. If the mass emission of CO_2 is required to be estimated, then the rig should be allowed to calculate CO_2 emissions using methods required by the EPA's Mandatory Greenhouse Gas Reporting Rule in 40 CFR Part 98, Subpart C.*
>
> *We note that some systems used for parametric monitoring can use CO_2 or O_2 concentrations to estimate exhaust flowrate and mass emissions using Method 19. If that is the intent of this requirement to require CO_2 and O_2, then the option should be given that CO_2 or O_2 concentration in the exhaust can be used measured, but not both being required.*

Murphy requests that monitoring for CO_2 and SO_2 be removed from draft permit Condition 6.6.2.

Response: EPA considered the commenter's request and concurs that SO_2 and CO_2 concentrations do not need to be included in parametric monitoring for this permit. EPA has modified Condition 6.6.2.2, which addresses parametric monitoring, to remove these pollutants from the recommended parameters. Condition 6.6.2.1 in the draft permit states that use of Option #2 must include an EPA-approved measurement system. Therefore, if Option #2 is selected as the compliance monitoring method, the measurement system, including parameters monitored and frequency of testing, must be submitted to EPA for approval prior to use. At that time, the parameters required to be monitored for this specific project would be determined. Furthermore, the monitoring system outlined in draft permit condition 6.6.2.2 is presented as an example only as stated in the condition. Murphy is not limited to the use of the parametric monitoring system as it is stated in the bulleted list. However, the system presented as an example in the draft permit is typical of the parameters and procedures that EPA would evaluate when approving or disapproving a monitoring system.

Comment 9: Stack Testing for CO_2 (Draft Permit page 14; Section 6.6.3).

> *Section 6.6.3. Stack Testing Emissions Monitoring {Compliance Monitoring Option #3} requires testing for CO, NO_x, $PM_{2.5}$, PM_{10}, VOC, CO_2, and visible emissions.*
>
> *5.2. No testing for CO_2 should be required. There is no CO_2 emission limitation. If mass emissions of CO_2 required to estimated, then the rig should be allowed to calculate CO_2 emissions using methods required by the EPA's Mandatory Greenhouse Gas Reporting Rule in 40 CFR Part 98, Subpart C.*

Murphy requests that draft permit Condition 6.6.3 be revised to remove requirements for CO_2 monitoring.

Response: EPA has considered the comment and has no objection to emissions of CO_2 being calculated from fuel consumption or using methods required by EPA's Mandatory Greenhouse Gas Reporting Rule. Therefore, CO_2 monitoring requirements have been removed from final permit Condition 6.6.3.

Comment 10: Calculation of g/kW-hr for CO, PM_{10}, CO_2 and Visible Emissions (Draft Permit page 14; Sections 6.6.3.6 through 6.6.3.10).

> *Section 6.6.3.6 through 6.6.3.9. requires calculation of g/kW-hr for each pollutant listed in 6.6.3 and then the graphing of the data versus engine load for each engine tested.*
>
> *5.1. The requirement under 6.6.3.6 through 6.6.3.10 should not apply to CO, PM_{10}, CO_2 and visible emissions. As stated in EPA's Project Description, the project is major for NO_x and EPA is requiring testing for VOC and $PM_{2.5}$ since these pollutants are estimated to be emitted near their respective PSD significant emission rates. We also note that there is no regulatory or permit limitation on CO_2 emissions for this project. The methods in 6.6.3.6 through 6.6.3.10 are not feasible for visible emissions and so should specifically exclude visible emissions.*

Murphy requests that draft permit Condition 6.6.3.4 be revised in the final permit to exclude CO, PM_{10}, CO_2, and visible emissions.

Response: EPA has considered the comment and, based on the temporary nature of this project, concurs with the commentor. Therefore, Condition 6.6.3.4 has been modified in the final permit to exclude CO, PM_{10}, CO_2, and visible emissions from the list of pollutants in this permit condition.

Comments from Murphy Exploration and Production Company on the Preliminary Determination and Statement of Basis

The Preliminary Determination and Statement of Basis is a final document and as such will not be revised. This Final Determination and Response to Comments document will be used to address comments to the Preliminary Determination and Statement of Basis as listed below.

Comment 11: Engine Horsepower Ratings (page 8; Table 4-2; Section 4.5.1).

> *Based on the initial application and subsequent submittals, including the emissions calculations and supporting documentation, the following diesel engines are listed with the incorrect horsepower. The corrected horsepower needs to be put in the permit. The correct values are shown in bold in the far right side of the following table.* [See table included in Comment 1 above.]

Response: See the response to Comment 1 above. The requested change is consistent with the application and the assumptions used in EPA's review. The final permit includes the corrected horsepower ratings for the specified emissions units in Table 1.

Comments 12 through 14, and 16: Typographical Errors (pages 10, 11, 12 and 19; Tables 4-4 and 5-1; Sections 4.6, 5.0, 5.1 and 6.0).

> *Typographical errors are in the summary table. The correct values for Table 4-4 are shown in bold and underlined in the following table.*

Hazardous Air Pollutant	Ocean Confidence (TPY)	Work Boats (TPY)	Crew Boat (TPY)	Total (TPY)
Acetaldehyde	0.0	0.0	0.0	0.0
Formaldehyde	**0.01**	0.0	0.0	**0.02**
Benzene	0.10	**0.03**	**0.01**	0.14
Toluene	0.04	0.0	0.0	0.05
E-Benzene	0.0	0.0	0.0	0.0
Xylene	**0.03**	0.0	0.0	0.04

and

> *Typographical errors are in the summary table:*
> *DR-GE-01 through DR-GE-11: PM = 14.1234 TPY (not 14.1134 TPY)*
> *DR-GE-12: PM = 0.001 TPY (not 0.0110 TPY)*

and

> *A typographical error is in the bullets. DR-DE-08 is referenced in the third bullet point, but it should read DR-GE-08.*

and

Page 19, in last paragraph of Step 2
A typographical error is in the engine labels. DR-GE-1 should read DR-GE-01.

Response: The typographical errors have been noted.

Comment 15: Work and Crew Boat Compliance Demonstration (page 14; Section 5.4).

Remove the following conditions due to the fact that emissions were not determined based on fuel consumption:

-Gallons of diesel fuel on the support vessel entering the 25 nautical mile radius
-Gallons of diesel fuel on the support vessel exiting the 25 nautical mile radius

Response: See response to Comment 5 above. EPA has considered the comment and does not concur. In the March 21, 2011 letter from Murphy to EPA, specifically the Calculation Methodology section beginning on page 337, Murphy states that for the work boats and crew boat, SO_2 is calculated based on the use of ultra low sulfur fuel and an estimated fuel use value. The stated methodology indicates that the estimated fuel use was the basis for SO_2 emissions used in air quality modeling for both the work and crew boats. To calculate SO_2 emissions, the amount of fuel consumed must be known. In addition, the Project Summary section support vessel tables beginning on page 65 indicate that fuel use was calculated in gal/hr for each set of emissions calculations.

Comment 17: Ocean Confidence Day Rate Costs and Dry Dock Downtime (page 23; Section 6.0).

If rig downtime occurs due to an action specifically required by Murphy (e.g., upgrade Caterpillar engines for NO_x emissions) then Murphy would incur the day rate expenses. Murphy feels that these costs are more than justified to be included in the determination of the BACT costs.

Also, there could be situations where the rig is not drilling or placed in dry dock where a NO_x upgrade could not be accomplished due to scheduling or logistical reasons. This could be due to the need for repairs to the rig where the NO_x upgrade work would interfere with such repairs. Costs for an extended downtime and dry dock time for a NO_x upgrade over and above a scheduled downtime/dry dock would be incurred by Murphy for such times. The permit should allow for such contingencies. Again, this situation would justify applying these costs to the BACT analysis.

Aside from the issue of the day rate costs that Murphy may incur, completing the NO_x upgrade in a 14 to 21 day time period per engine may not be feasible for every time such an event occurs. The Ocean Confidence is presently operating in the Eastern Atlantic off the cost of West Africa. Downtime or dry dock operations for the Ocean Confidence overseas would require a large amount of planning and staging of equipment and personnel to ensure that a NOx upgrade could be accomplished for one or more engines. Diamond Offshore estimates that an additional 2 to 3

months would be needed to acquire and ship parts, equipment and personnel to the overseas location. Further delays could occur since the parts and equipment would first have to be shipped to an onshore overseas location/port and then to the Ocean Confidence. We could expect further delays due to the need for approvals through U.S. Customs and overseas customs agencies. As noted in the comments for the draft permit, it would not be feasible to complete the upgrade of one engine in the 14 to 21 day time frame during an unscheduled downtime or unscheduled dry dock.

Response: As discussed in response to similar Comments 2 and 6 above, based on the BACT analysis presented and EPA's independent review, the cost of the IMO Tier I upgrade is reasonable if scheduled during a period when the drilling floor engines are not in use. EPA has built substantial flexibility into this determination and has not required that the conversions occur simultaneously nor be completed prior to the commencement of the drilling operation. Given that the Ocean Confidence is not scheduled to return to the Gulf of Mexico until January 2013, and that the return trip is likely to take 2-3 months, EPA believes there is adequate time for Murphy to work with the rig owner to identify a suitable schedule that will not interfere with other maintenance activities.

Upon further consideration of this comment, EPA has revised Conditions 6.1.4 and 6.5.2.3 of the final permit to allow for a period of dry dock or downtime of the drilling floor engines of 24 days, as estimated in the application. The dry dock or downtime period specified in the permit is intended to be the period that the drilling floor engines are not in use and can be upgraded to meet IMO Tier I emission standards. This period is not intended to include additional time needed for ordering the parts or shipping. EPA recommends that the procurement and customs timelines be accounted for in advance, such that the engine upgrade would be able to occur during scheduled maintenance or rig transport.

EPA does not find the argument that the rig will be outside US waters as justification for why the retrofit is technically infeasible nor cost prohibitive, and this argument was not substantiated in the comment letter. It is EPA's understanding, based on discussions with operators and rig owners, that significant maintenance occurs overseas as well as during rig transport. Given the rig is a foreign-flagged vessel, it is reasonable to assume that maintenance and rig modification routinely occurs outside the Gulf of Mexico.

Other Permit Changes

Typographical and Grammatical Errors

Other minor permit changes have been made to the permit to correct typographical or grammatical errors or to improve the clarity of certain provisions. These changes have no impact on the emissions or the required monitoring. All changes made to the draft permit can be found in the Administrative Record.