



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10**

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Seattle, WA 98101-3140

OFFICE OF
AIR, WASTE AND TOXICS

DEC 31 2012

Ms. Susan Childs
Alaska Venture Support Integrator, Manager
Shell Exploration and Production
3601 C Street, Suite 1000
Anchorage, Alaska 99503

RE: Shell Gulf of Mexico, Inc., Noble Discoverer-Chukchi Sea, Application to Revise Permit to Construct No. R10OCS/PSD-AK-09-01

Dear Ms. Childs:

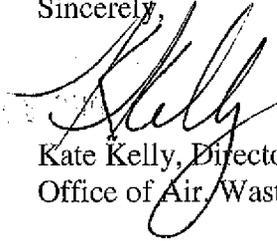
On November 30, 2012, the U.S. Environmental Protection Agency (EPA) received Shell Gulf of Mexico's (Shell) application for a revision to the Noble Discoverer Chukchi Sea Outer Continental Shelf/Prevention of Significant Deterioration Permit to Construct (No. R10OCS/PSD-AK-09-01). We have reviewed the application and determined that it is incomplete at this time.

On December 26, 2012, the EPA sent a letter to Shell outlining a two step process for conducting the completeness and technical review of the application. Following that process, the EPA has submitted informal requests for additional information via email and Shell has promptly provided EPA with responses. All of the information previously and now being requested is listed in Attachment A. Continuing with that process, and to complete the revision application, the EPA requests that Shell now formally submit all of the previously requested information, along with any information that has not yet been submitted, so that we can continue to process the application. Please provide the information requested in Attachment A by January 11, 2013. Please notify Natasha Greaves if a complete response is not possible by this date.

Your application is considered incomplete until this information is received and evaluated and the EPA has determined that the application contains all of the information needed for the EPA to propose a permit decision. Note that as the EPA continues review of your application, we may identify further information that will be essential to enable the EPA to continue processing your application and make a permit decision, including information that may be needed in response to public comments.

If you have any questions, please contact Natasha Greaves at 206-553-7079 or greaves.natasha@epa.gov.

Sincerely,



Kate Kelly, Director
Office of Air, Waste, and Toxics

Enclosure

cc Chris Lindsey, Shell
Pauline Ruddy, Shell
Lance Tolson, Shell

ATTACHMENT A
Incompleteness Determination Letter, December 31, 2012
EPA, Region 10 to Shell

Best Available Control Technology (BACT) Documentation Issues

There are multiple sections where the application contains discussion of analyses performed and the analysis results, but not the analysis itself. The technical analyses need to be submitted in spreadsheet format to allow review of the calculations. Materials submitted should include all data relied upon and clarify any assumptions made in addition to the calculations which result in the conclusions, statements, tables and charts in the submitted application. The following is a list of the areas the EPA identified via a cursory review of the application. There may be other analyses missing that the EPA has not identify at this time. The EPA requests that Shell review your materials and ensure you have submitted all the information and analyses which form the basis for your conclusions and permit revision requests. At a minimum, the following items need to be submitted:

- Page 31. Data and analysis supporting the statements made regarding the portion of Discoverer main generator deviation time which is attributable to operational problems with the E-PODs.
- Pages 33-41. Data and analysis providing the basis for the requested NO_x BACT limits. This should include the data and calculations showing how Shell screened the data, estimated emissions, and developed the charts in the application.
- Page 58. De-rating of the Nanuq main propulsion engines relies on a power-to-fuel consumption relationship. A hard copy of the spreadsheet is provided in Appendix H to the application. The Excel version of the spreadsheet is needed to facilitate examination of the calculations. The basis for the information used in the spreadsheet should be provided, including how power from the propulsion engines was measured and converted into kW.
- Pages 67-69. The data for exhaust gas temperature and fuel flow for the crane and cementing engines which forms the basis for the claim that catalytic diesel particulate filter (CDPF) is technically infeasible is needed. The pre-screened data submitted in Appendix I to the application is not sufficient because it is not possible to see how the data was screened. The data and analysis should demonstrate how the duty cycle precludes the engines from reaching operating temperature, and provide the basis for the increased hourly fuel consumption rate. The supporting calculations for Table 5-1 should be provided.
- Pages 74-75. The basis for the cost numbers in Tables 5-3 and 5-5.
- Page 77. The supporting calculations for Table 5-7.
- Page 90. Data and analysis underlying the statements made regarding how long it takes the engines equipped with catalytic control devices to reach operating temperature.
- In Shell's 08/14/12 submittal, Figure 1 on page 12 depicts the instability of the E-POD control system when trying to attain too high a NO_x control efficiency. What NO_x control efficiency set point was the engine set at when these data were collected?

- Please confirm that the CDPF units installed on Discoverer emission units FD-1 through FD-6 and FD-9 are the "CARB verified PERMIT" units described in the Clean AIR Systems document included as Appendix E to the application. The Clean AIR document refers to "non-verified" units, and it is not clear that the same emission reduction guarantees apply to the non-verified units.

BACT References Not Provided

Some of the references cited by the application as the basis for the requested changes are not readily available and are not provided. These need to be submitted to substantiate the basis for Shell's requested changes.

- Page 11. 06/28/12 email from Brian Huffman which is the primary basis for the recommended E-POD NO_x reduction targets.
- Page 73. 11/26/12 email from Garth Pulkkinen, Noble Drilling (U. S.) LLC Operations Manager-Alaska, to Rodger Steen and Jim Miller, subject "Disco crane replacement argument", related to the argument that crane engine replacement is technically infeasible.
- Page 74. 11/09/12 email from Garth Pulkkinen, Noble Drilling (U. S.) LLC Operations Manager-Alaska, to Rodger Steen, subject "Cost detail for hypothetical crane change out on Discoverer", related to crane replacement costs.
- Page 75. 11/13/12 email from Billy Coskrey Halliburton Technology, to Ronnie Holubec, subject "C9 Tier III Engine", related to technical feasibility of Tier 4 engines on drill ships.
- Page 91. 04/25/11 letter from EPA Region 7 regarding engine startup periods.

Modeling Request

- Either a spreadsheet or a post process file that contains the annual PM_{2.5} averages across the two years modeled, by receptor. Shell needs to include this step to document compliance with the PM_{2.5} national ambient air quality standards. Shell only provided raw model output, with a final average value in the modeling report. It is not straightforward to go from the raw output provided to the value in the pdf. The intermediate step to get from the raw outputs to the final average is needed for public review.
- PM_{2.5} and PM₁₀ modeling runs that contain the correct emission rate for the resupply ship while operating in Dynamic Positioning mode.
- CO and SO₂ modeling that contains the correct emission rates for the various incinerators.