



# United States Department of the Interior

## BUREAU OF OCEAN ENERGY MANAGEMENT

Alaska OCS Region

3801 Centerpoint Drive, Suite 500

Anchorage, Alaska 99503-5823

**NOV 29 2013**

Susan Childs, Alaska Venture Support Manager  
Shell Gulf of Mexico, Inc.  
3601 C Street, Suite 1000  
Anchorage, Alaska 99503 - 5937

Dear Ms. Childs:

The Bureau of Ocean Energy Management (BOEM) received the Shell Gulf of Mexico Inc. filing of the Revised Chukchi Sea Exploration Plan (Chukchi Sea EP Revision 2), pursuant to 30 CFR 550.285, on November 6, 2013.

We are requesting additional information in order to deem the Chukchi Sea EP Revision 2 submitted in accordance with 30 CFR 550.231. Enclosed are collected comments and requests for additional information on Chukchi Sea EP Revision 2. Enclosure 1 is a summary of required operational information and Enclosure 2 is a summary of required environmental information.

On November 26, 2013, Shell submitted its Integrated Operations Report (IOP) in compliance with the Department of Interior's Report to the Secretary of the Interior, Review of Shell's 2012 Alaska Offshore Oil and Gas Exploration Program" (60-Day Report). BOEM is currently reviewing Shell's IOP; we reserve the right to supplement this request for additional information if we have questions or require further details about the IOP after completing its review. We also acknowledge that some information requested in Enclosures 1 or 2 may be addressed within Shell's IOP. If you believe the IOP addresses one or more of our points of inquiry, you may respond to that specific request by citing the IOP page number referencing the responsive information.

If you have any questions, please contact William Ingersoll at 907-334- 5224 or by email at [william.ingersoll@boem.gov](mailto:william.ingersoll@boem.gov).

Sincerely,

David Johnston, Regional Supervisor  
Office of Leasing and Plans

Enclosures

cc: Tommy Beaudreau, BOEM Director  
James Kendall, Regional Director BOEM, Alaska Region  
Mark Fesmire, Regional Director BSEE, Alaska Region  
David Moore, Chief, Oil Spill Response Division, BSEE  
Charles Barbee, Chief, Environmental Enforcement Division, BSEE

## Enclosure 1: Operational

Item	EP Section	Page	Paragraph	Request/Comment
1	Section 1.0	1-1	1	Provide information on any modifications that Shell performed to the <i>Noble Discoverer</i> to make it Arctic-ready, and provide documentation that Shell has addressed and corrected all non-compliance deficiencies cited by the U.S. Coast Guard and EPA following exploration drilling by the <i>Noble Discoverer</i> in 2012.
2	Section 1.0	-	-	Provide confirmation of the completion of the third party management system review (as required by the 60-Day Report) or, if not yet complete, Shell's plans and schedule for completing the third party review.
3	Section 1.0	1-1	-	EP Rev 2 proposes adjusting the BOP test frequency from once every 7 days to once every 14 days. In its 2012 Chukchi Sea EP, Shell stated "[t]he blowout prevention program will be enhanced through ...increased frequency of BOP performance tests from 14 to 7 days, ..." Provide the rationale behind Shell's decision now to reduce the frequency of BOP tests to 14 days. Also, provide clarification for the doubling of the barrels of well fluids to be discharged because of BOP re-testing, if the BOP system is now proposed to be tested half as often (i.e., every 14 days as opposed to 7 days).
4	Section 1.0	1-1	footnote	Correction: BOEM was enjoined from taking action on the May document. Once the injunction was lifted, Shell submitted its Revised draft EP, dated October 11, 2011.
5	Section 1.0	1-7	Figure 1.b-7	The anchor radius of the Burger S well is projected to extend outside of lease block 6762 and would require a right of use easement per 30 CFR 550.160. This should be reflected within the EP narrative, within Table 1-1, and other applicable sections of the EP Rev 2.
6	Section 2.0	2-1	Tbl 2.a-1	Permits and certifications associated with the relief drilling rig operations in the Chukchi Sea need to be identified in this table. Submittal of copies of the permits listed in this table would be helpful.
7	Section 2.0 & Section 6.0	-	Tbl 2.b-1 Tbl 6.1-1 Tbl 6.a-2 Tbl 6.a-3 Tbl 6.a-4 Tbl 6.a-5	Provide clarification of the differences between volumes provided in Table 2.b-1 and the well specific tables within Section 6.0 regarding estimated discharge volumes once the riser is set. Provide example of calculations.
8	Section 2.0	2-2	d) New or Unusual Technology	Provide information and documentation (i.e. certification and approvals) to verify that the well capping stack and containment system are ready and available for Arctic OCS conditions.
9	Section 2.0	2-2	g) Blowout Scenario	For drilling a relief well, provide for the <i>Polar Pioneer</i> : <ul style="list-style-type: none"> <li>• mobilization time (supported by speed of towing vessel, distance, weather factors, time to anchor, etc.), and proposed drilling schedule;</li> <li>• notifications that Shell will issue before moving the <i>Polar Pioneer</i>; and</li> <li>• assets (availability and logistics of support vessels/equipment) moving with the <i>Polar Pioneer</i>.</li> </ul>

Enclosure 1: Operational

Item	EP Section	Page	Paragraph	Request/Comment
10	Section 3.0	-	-	<p>The EP Rev 1 proprietary Section 3.0 was written prior to the drilling program in 2012. The drilling program at the Burger Site A included the excavation of a mudline cellar approximately 21 feet in diameter by 40 feet deep and drilling a pilot hole to approximately 1,500 feet below the sea level that was continuously logged while drilling. Shell interpreted the proprietary well log data, concluding that no permafrost is present in the subsurface at Burger Site A and that cooled muds would not be required when drilling to TD. These conclusions are asserted on pages 12-1 and xiv (App. E) in EP Rev 2, but the logs nor their analysis are not included.</p> <p>Provide an updated proprietary Section 3.0 with geological descriptions and associated data (specifically log data) obtained from the 2012 drilling field season, and Shell's analysis to support changes in the exploration drilling program.</p>
11	Section 4.0	-	-	<p>Submit the recent H2S Contingency Plan that was submitted to BSEE on July 18, 2013. The revised H2S plan should be referenced in the EP Rev. 2 and changes are needed to Section 4.0 to reflect this new plan. Also, confirm that all emergency contact phone numbers are valid. Provide information on how any changes will be provided to relevant agencies.</p>
12	Section 6.0	-	-	<p>Within Table 1-1 Shell has indicated that drilling fluids will not be cooled. Provide the rationale for the change, with supporting documentation, including any associated changes this will have on permitted actions and environmental impacts.</p>
13	Section 9.0	-	-	<p>The Well Control Plan in the EP Rev 1 included two topics that are not addressed in Appendix L, EP Rev 2, specifically: Blowout Well Ignition and Blowout Well Intervention. Identify and discuss any changes of assets and/or procedures to the referenced methods/practices for these two topics.</p>
14	Section 10.0	10-1	b) Incidental Takes	<p>Discuss the Hanna Shoal Walrus Use Area (HSWUA) and Shell's proposed mitigations, specifically for the months of June through September since Figure 13.e-1 and Figure 13.e-2 and identify operational/logistical activities (i.e. ice management, vessel, aircraft travel, etc.) within the HSWUA.</p>
15	Section 11.0	11-1	3	<p>Provide decision criteria for when a sound source verification of the drillship and support vessels would not be necessary.</p>
16	Section 12.0	12-1	Exploration Drilling Operations  4th - bullet	<p>Provide performance and capability information (i.e., drill unit specifications) for the <i>Polar Pioneer</i>. BOEM expects information similar to what is provided for the primary drilling unit within EP Rev 1. At minimum, include: station keeping capabilities; drilling capabilities; and, Arctic-readiness modifications and capabilities. Also revise Table 2.a-1 to include any permits or certifications associated with the <i>Polar Pioneer's</i> ability to operate in the Chukchi Sea under Alaska OCS conditions.</p>
17	Section 13.0	13-1	Tbl 13.a-1	<p>Identify and incorporate the relief drilling rig and support vessel(s) within this section.</p>

Enclosure 1: Operational

Item	EP Section	Page	Paragraph	Request/Comment
18	Section 13.0	13-1	-	<p>Provide a description of how the assets in Section 13-1 are designed and built or modified for the Alaska OCS Conditions (i.e., extreme cold, freezing spray, snow, extended periods of low light, strong winds, dense fog, sea ice, strong currents, and dangerous sea states). Explain how Shell will manage all assets within the EP drilling program. The explanation must address:</p> <ul style="list-style-type: none"> <li>• how contractor safety practices are aligned with Shell safety principles and standards;</li> <li>• documentation of your integrated risk management approach for contractor management and oversight from mobilization through to demobilization;</li> <li>• a schedule of your exploration program, including contractor work on critical components, and plans to tailor your management and oversight programs to Alaska OCS Conditions;</li> <li>• documentation of Health, Safety, Security, and Environmental (HSSE) elements and risk management capabilities tailored for the risks and challenges of operating in the Alaska OCS;</li> <li>• documentation about how vessels and equipment will be (or have been) designed, built, and/or modified to handle the Alaska OCS Conditions;</li> <li>• drilling program objectives and timelines for each objective, including contingency plans for temporary abandonment of its well(s);</li> <li>• documentation of mobilization and demobilization operations, including tow plans applicable within Alaska OCS Conditions, as well as anticipated maintenance plans;</li> <li>• documentation of any resource sharing agreements for assets or mutual aid in the event of an emergency;</li> <li>• information regarding Shell's preparation and plans for staging spill response and cleanup assets;</li> <li>• weather and ice forecasting capability for all phase of the exploration program, including transportation to and from the Alaska OCS, and plan for managing ice hazards and responding to extreme weather events;</li> <li>• accountability and auditing of the implementation of plans and oversight of contractors; and, benchmarks for determining successful implementation.</li> </ul> <p>If Shell believes all or some of this information is included in the Integrated Operations Plan, submitted November 26, Shell may respond by citing the IOP page number referencing the responsive information.</p>
19	Section 13.0	13-1 & 13-2	-	<p>The following vessels are identified as available when needed: an ice management vessel, <i>M/V Nordica</i>; an anchor handling vessel, <i>M/V Aiviq</i>; a resupply tug and barge, such as <i>M/V Lauren Foss</i> and/or <i>Tuuq</i>; an additional tug, similar to the <i>M/V Ocean Wave</i>; a science research vessel; an additional third offshore supply vessel; and an oil storage tanker, <i>Affinity</i>. Some of these vessels were listed in the Shell Camden Bay Exploration Plan. To ensure that the Chukchi Sea EP Rev 2 will be a stand-alone document, provide the same detail for each of these vessels as was provided for the Camden Bay EP: information where the support vessels are to be stationed when they are not in direct support of the drilling activities; and provide clarification of when and how these assets will be utilized and managed on a daily basis.</p>
20	Section 13.0	13-1	5	<p>The <i>Aiviq</i> suffered four engine failures during the towing of the <i>Kulluk</i> in 2012. Provide information about the cause of the failure of the four engines on the <i>Aiviq</i> in 2012 and what steps or procedures has Shell adopted to prevent a reoccurrence.</p>

## Enclosure 1: Operational

Item	EP Section	Page	Paragraph	Request/Comment
21	Section 13.0	13-2	3	Provide additional information and clarification of assets and activities associated with the Goodhope Bay in Kotzebue Sound. Clarify what operational activities are planned; and if there will be any on-shore based activities/facilities associated with exploration drilling activities.
22	Section 13.0	13-2	4	Provide more information on activities (staging, fueling, duration, etc.) associated with landing craft operations.
23	Section 14.0	14-1	-	Shell proposes to increase its man camp capacity in Barrow from 75 beds to approximately 200 beds. Provide the information required by 30 CFR 550.225(a)(2); as well as any changes in existing permits that will be required for the expansion and operations of the camp. Any changes in permits and/or authorization should also be identified within Table 2.a-1; and identified and discussed within other applicable sections of EP Rev 2.
24	Appendix A	Rev 1	-	With changes to proposed anchor radii, updated OCS Plan Information forms should be submitted with the EP Rev 2 (see section of form entitled "Anchor Locations for Drilling Rig or Construction Barge").
25	Appendix L	-	-	Provide specifics regarding blowout well ignition and blowout well intervention. BOEM expects that safety principles and standards; accountability for implementations and auditing; and, benchmarks for determining successful implementation, etc. will be fully incorporated into the discussions regarding: <ul style="list-style-type: none"> <li>• the schedule of blowout well intervention (including contractor work on critical program components);</li> <li>• discrete and amalgamated timeline(s);</li> <li>• descriptions of mobilization and demobilization operations;</li> <li>• general maintenance schedule for vessels and equipment;</li> <li>• description of the primary and secondary (if applicable) mission and corresponding work designated for each vessel (including all contracted operations and contractors).</li> </ul>

## Enclosure 2: Environmental

### Attachment 1

Topic	Item	Section	Page	Comment
<b>EFH</b>	1	EIA: Fish and EFH	4-5	Seafloor Disturbance is addressed for the drilling sites in the EIA, Table 4.5-4. Provide similar information (e.g. the number of anchors, the surface area disturbed per anchor, the volume displaced per anchor, and the total seafloor area disturbed) for vessels moored in Kotzebue Sound--Opilio crab EFH will now be part of the analysis.
<b>Sociocultural /Subsistence</b>	1	EIA: 2.3	2-9	Provide full details regarding man-camps in Barrow and Wainwright. Provide maps and a detailed description to fully address the expansion (and new location) of the man camp from 75 to 200 persons in Barrow, to include precise location of the camp and changes in footprint to accommodate expansion. Also, describe the disposal of wastes (wastewater and solid waste handling) in terms of amounts and methods of disposal (impacts on NSB services) and provide associated permits.
	2	EP: Section 5.0 (c)	5-1	Provide the most recent UMIAQ reports: UMIAQ 2012 and UMIAQ 2013.
	3	EIA: 4.1.12 and 4.1.13	4-26	Provide detailed information regarding numbers of transits, crew changes, and estimated treated sanitary waste quantities to be discharged from vessels.
	4	EIA	4-30	Provide SA Beluga Whale harvest reports for the communities of Wainwright and Point Lay through 2012.
	5			Provide a map showing the locations of the maximum pollutant concentrations occurring offshore within the subsistence areas.
<b>Archaeology</b>	1	EP: Section 13.0 (a)	13-2	Provide full details regarding the staging of near shore tug and barge in Goodhope Bay: precise location, moorings, depth, distance from shore, any other seabed disturbance, discharges, staffing, etc. If the seabed will be disturbed, provide an archaeological report or information sufficient for BOEM to determine that no historic properties will be affected.
	2	EIA: Section 4.3.2	4-47	Provide an archaeological report on the proposed camp in Barrow or information sufficient for BOEM to ensure that no historic properties will be affected.
<b>Birds</b>	1	EIA: Preface	xviii	Provide report in electronic format: "Distribution and abundance of seabirds in the northeastern Chukchi Sea, 2008 – 2012" (Gall and Day 2013).
	2	EP: Appendix I	i	Provide a description of the measures Shell took, or will take, to satisfy the conditions of Lease Stipulation 7 regarding bird collisions for the Polar Pioneer.
	3	EP: Section 13.0	13-1	Provide IHA and LOA applications.
	4	EP: Attachment A	A-3	Correct the title to remove the parenthetical "(Stipulation Area)." Stipulation 7 applies to the Chukchi Sea, not only to the listed blocks.

## Enclosure 2: Environmental

Topic	Item	Section	Page	Comment
<b>Oil Spills</b>	1	EP: Section 13.0	13-2	<p>Provide information regarding whether fuel transfers will occur within Kotzebue Sound/Goodhope Bay for tugs, capping stack barge, or near shore barge. If fuel transfers will occur provide the following:</p> <p>(1) how many times might refueling occur during the season of operation;            (2) an estimate of fuel spill volume (if a hose ruptures, for example);            (3) type of fuel that would be transferred;            (4) minimum distance to shoreline;            (5) verification that the “Shell Fuel Transfer Plan” is in effect and applicable to these operations; and            (6) any mitigation measures in place to address fuel transfer spills, if they occur.</p>
<b>General</b>	1	EP: 5.6	23	Clarify “as-yet undefined ports” and the vessels that will be using these ports.
	2	EP: Table 6.c-2	6-5	Provide an explanation for the inclusion of the additive “biocide” in the drilling fluid components. What are its effects to wildlife and how long does it remain active? If this material is to be released into the ocean, provide detailed information about its potential effects.



## Attachment 2

### Air Quality

Sufficient information was not provided to satisfy the information requirements of Subpart B and establish compliance with Subpart C of 30 CFR Part 550. Additional information, documentation, and clarification must be provided to BOEM to enable us to verify the data, assumptions, calculations, and other information used by Shell to support its revised EP. Given the deficiencies in Shell's submittal, a meeting with Shell is necessary to discuss and understand the EP Rev 2 information provided to date. In preparation for the meeting, provide the following items to facilitate an informed discussion.

1. Active spreadsheets that were used for the calculations to allow verification of data provided in Appendix O—include each emission unit by make and model. The spreadsheets must not contain any locked cells, hidden rows or columns or text (i.e. white text on a white background), and the workbooks and spreadsheets must not be password protected, unless the password is provided to the Regional Supervisor.
2. Documentation or clarification concerning the capacity of the 3512C generator sets. Shell states that the generation units on the Noble Discoverer are Caterpillar 3512C generator sets. Shell lists the capacity of the 6 Caterpillar 3512C generators at 6000KW (Attachment A, Appendix O). Caterpillar's specification for the 3512C generator shows a minimum rating of 1250 ekW and a maximum rating of 1500 ekW.
3. Documentation concerning the estimated control efficiency of 50% per pollutant (Section 5.5, Appendix O).
4. Information describing what constitutes "good engine operating practices" to lower emissions by reducing all diesel engine load factors by 20% in Section 2.0 of Appendix O.
5. Documentation of MARPOL Annex VI compliance for each engine claiming the lower MARPOL emissions standards. Documentation of EPA marine engine tier standards for each engine claiming the lower EPA emissions standards. Using emission factors simply described as "a mixture of other generic emission factors" is not sufficient.
6. Documentation of the "safety policy" referenced in Table 6 of Section 5.2 of Appendix O to reduce engine power level by 50%.
7. Documentation or other supporting justification that short-term use limitations in equations (1) through (6) in Section 5.2 of Appendix O are established practices.
8. Documentation or clarification for using the 15% power to lift the drill stem in equations (6) through (15) in Section 5.2 of Appendix O.
9. Clarification of the column heading "Aggregate Nameplate Rating" and justification of the method used to aggregate the rating in Table 2-4 of Section 5.1 of Appendix O.
10. Clarification of the column heading "policy limits on emissions units/group" in Table 5 of Section 5.1 of Appendix O.
11. Documentation that propulsion engine emissions were used in the projected emissions inventory for purposes of 30 CFR 550.303(d).

## Enclosure 2: Environmental

12. Clarification of the row heading “Project Duration Total” in Table 7 of Section 5.5 of Appendix O, and an explanation of the values under this heading.
13. Data or other information to clarify the characterizations of emissions from equipment and surface vehicles for construction as “minor” and “small” in Section 4.10.3 of Appendix O.
14. Diagrams, figures, and text missing from Appendix C of the EIA.
15. Provide documentation that aggregate or averaged methods are not applied to nonlinear functions.
16. Provide a map showing the locations of the maximum pollutant concentrations occurring onshore.