



United States Department of the Interior



MINERALS MANAGEMENT SERVICE
Alaska Outer Continental Shelf Region
3801 Centerpoint Drive, Suite 500
Anchorage, Alaska 99503-5823

MAY -2 2008

Ms. Susan Childs
Shell Offshore Inc.
3601 C. Street, Suite 1334
Anchorage, Alaska 99503

Dear Ms. Childs:

The Mineral Management Service (MMS) has received your March 20, 2008, *Ancillary Activity Notice for Site Clearance Marine Surveys in the Beaufort Sea, Alaska – During 2008*. Shell Offshore Inc. (SOI) proposes to complete three types of marine surveys which are designed to support a multiyear drilling program in the Beaufort Sea, they are: (1) shallow hazard and site clearance surveys; (2) strudel scour surveys; and (3) ice gouge surveys. The 2008 marine surveys are similar in scope and a continuation of the marine survey work SOI conducted in 2007. Geophysical methods include high-resolution multi-channel seismic, side scan sonar, multibeam sonar bathymetry, and subbottom profiling. The data acquisition will be used to acquire seafloor imagery, bathymetric, and subsurface data for shallow hazards and site clearance assessments. The survey data will be collected over potential well sites, on various leases, and on some areas off-lease between the outer continental shelf (OCS) and the shoreline.

The MMS reviewed the Notice of Ancillary Activities, and offers the following suggestions and comments:

The workplan:

- In the Cover Letter, fathometer or dedicated water column anomaly data acquisition is identified, but there is no mention of this aspect of survey work within the Work Plan. MMS will require this information within the final Survey Report in accordance with the NTL 05-A01; and to ensure a complete site clearance package.
- Profiler (single channel) systems should have at least a spacing of 300 X 300 meters at the well site, out to 600 meters from the well site; and the survey lines should pass through the well sites; and ideally cross at each well site. For the multichannel (air gun) data, the grid configuration needs to be denser (at least 600 X 1200m) near the well sites; NTL 05-A01 states that survey grids for vertical exploration or production well-sites should be 150 X 300 meters within 600 meters (or farther) beyond the proposed well site, and a 300 by 600 meter grid extending to a distance of 1200 meters from the surface location; and 1200 by 1200 meter grid-spacing extending another 1200 meters beyond that (to a total of 2400 meters from the well site).

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The MMS has determined that SOI's 2008 site clearance and shallow hazard seismic survey activities are authorized activities in accordance with 30 CFR 250.209; subject to the mitigation and monitoring terms (attachment) to be incorporated into your 2008 ancillary activities work plan.

The MMS understands that the 2007 incidental harassment assessment (IHA) governing marine surveys issued by National Marine Fisheries Service (NMFS) to SOI on August 20, 2007, is valid through August 1, 2008. Since SOI's 2008 marine survey program is planned to begin during July 2008, the 2008 program will operate under the 2007 IHA through August 1, 2008, then under an anticipated 2008 IHA for the remainder of the 2008 open water season. MMS also understands that a request for a Letter of Authorization (LOA) for incidental harassment of polar bears and Pacific walrus, in accordance with 50 CFR 18.121-129, was also submitted to the U.S. Fish & Wildlife Service (USF&WS). In all cases the mitigation measures identified within the NMFS and USF&WS authorizations will apply and will take precedence over any MMS requirements, where applicable; including protocols for monitoring programs.

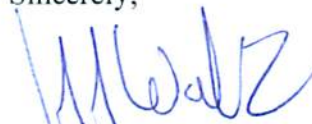
A final Survey Report must be submitted in accordance with 30 CFR 250.210, and Alaska Notice to Lessee's (NTL) No. 05-A01 and 05-A02. Please note that prior to conducting seismic survey operations in the Beaufort Sea after August 1, 2008, a copy of both the 2008 IHA and LOA approvals (and associated monitoring and/or interaction plans) are required to be sent to the RS/FO for our records, and to ensure that the requirements of approval are met.

Additionally, MMS recommends that SOI retain for future availability and access: time series information of your operations and locations coordinates; shot-point numbers; and dates, times, type of source and source levels for shot, including off-specifications between lines and those shots for testing and calibrating purposes. Vessel log-type information and activities information on at least an hourly basis for all involved vessels would be particularly useful to verify or analyze whether an alleged, or otherwise perceived effect or taking(s), occurred.

Subject to the accompanying mitigations and monitoring terms, MMS conditionally authorizes SOI to conduct the proposed ancillary activities. This office requests to be notified 30 days prior to the start-up of field operations. Please be advised that this office requires a weekly report of daily operations. Daily reports may be substituted for this requirement. A final Survey Report with supportive data must be submitted in accordance with 30 CFR 250.210; as well as fulfilling requirements of Alaska NTLs.

If you have questions or require additional information, please contact Daniel Hartung at 907-334-5300.

Sincerely,



Jeff Walker
Regional Supervisor
Field Operations

cc: Don Perrin, ADNR OPMP
Edward S. Itta, Mayor - NSB
Freddie C. Aishanna, Mayor - City of Kaktovik
Sam Kunaknana, Mayor - City of Nuiqsut
Michael D. Stotts, Mayor - City of Barrow
Isaac Akootchook, President - Native Village of Kaktovik
Leonard Lampe, Sr., President - Native Village of Nuiqsut
Teresa Judkins, Executive Director – Alaska Eskimo Whaling Commission
George Edwardson., President - Inupiat Community of the Arctic Slope
Mr. Thomas Olemaun, President - Native Village of Barrow Inupiat Traditional
Government

Mitigation and monitoring requirements to be included in Shell Offshore Inc. Letter of Authorization for 2008 Site Clearance and Shallow Hazards Seismic Surveys in the Beaufort Sea OCS.

- No solid or liquid explosives shall be used without specific approval.
- Operations shall be conducted in a manner to ensure that they will not cause pollution, cause undue harm to aquatic life, create hazardous or unsafe conditions, or unreasonably interfere with other uses of the area. Any difficulty encountered with other uses of the area or any conditions that cause undue harm to aquatic life, pollution, or could create a hazardous or unsafe condition as a result of the operations shall be reported to the Regional Supervisor/Field Operations (RS/FO). Serious or emergency conditions shall be reported without delay.
- Operators shall use the lowest sound levels feasible to accomplish their data-collection needs.
- Vessels and aircraft shall avoid concentrations or groups of whales. Operators shall, at all times, conduct their activities at a maximum distance from such concentrations of whales. Under no circumstances, other than an emergency, shall aircraft be operated at an altitude lower than 1,000 feet above sea level (ASL) when within 1,500 lateral feet of groups of whales. Helicopters may not hover or circle above such areas or within 1,500 lateral feet of such areas.
- When weather conditions do not allow a 1,000-foot ASL flying altitude, such as during severe storms or when cloud cover is low, aircraft may be operated below the 1,000-foot ASL altitude stipulated above. However, when aircraft are operated at altitudes below 1,000 ASL feet because of weather conditions, the operator shall avoid known whale-concentration areas and shall take precautions to avoid flying directly over or within 500 yards of groups of whales.
- When a vessel is operated near a concentration of whales, the operator shall take every precaution to avoid harassment of these animals. Therefore, vessels shall reduce speed when within 900 feet of whales and those vessels capable of steering around such groups should do so. Vessels shall not be operated in such a way as to separate members of a group of whales from other members of the group.
- Vessel operators shall avoid multiple changes in direction and speed when within 900 feet of whales. In addition, operators shall check the waters immediately adjacent to a vessel to ensure that no whales will be injured when the vessel's propellers (or screws) are engaged.
- Small boats shall not be operated at such a speed as to make collisions with whales likely. When weather conditions require, such as when visibility drops, vessels shall adjust speed accordingly to avoid the likelihood of injury to whales.
- When any operator becomes aware of the potentially harassing effects of operations on endangered whales, or when any operator is unsure of the best course of action to avoid harassment of endangered whales, every measure to avoid further harassment shall be taken until the National Marine Fisheries Service (NMFS) is consulted for instructions or directions. However, human safety will take precedence at all times over the guidelines

and distances recommended herein for the avoidance of disturbance and harassment of endangered whales.

- Seismic-survey operators shall notify MMS, NMFS, and U.S. Fish and Wildlife Service (FWS) in the event of any loss of cable, streamer, or other equipment that could pose a danger to marine mammals and other wildlife resources.
- Seismic cables and airgun arrays must not be towed in the vicinity of fragile biocenoses (e.g. the Boulder Patch, kelp beds), unless MMS determines the proposed operations can be conducted without damage to the fragile biocenoses. Seismic-survey and support vessels shall not anchor in the vicinity of fragile biocenoses as identified by MMS or may be discovered by the operator during the course of their operations, unless there is an emergency situation involving human safety and there are no other feasible sites in which to anchor at the time. Operators must report to MMS any damage to fragile biocenoses as a result of their operations.
- To help avoid causing bird collisions with seismic survey and support vessels, seismic and surface support vessels will minimize the use of high-intensity work lights, especially within the 20-meter-bathymetric contour. High-intensity lights will be used only as necessary to illuminate active, on-deck work areas during periods of darkness or inclement weather (such as rain or fog) otherwise they shall be turned off. Deck lights, interior lights, and lights used during navigation could remain on for safety.¹
- All bird collisions (with vessels and aircraft) shall be documented and reported within 3 days to the MMS RS/FO, or a designee. Minimum information shall include species (if possible), date/time, location, weather, identification of the vessel or aircraft involved and its operational status when the strike occurred. Bird photographs are not required, but would be helpful in verifying species. Operators are advised that the FWS does not recommend recovery or transport of dead or injured birds due to avian influenza concerns.

The following monitoring and mitigation measures are related to MMS complying with the requirements of the Marine Mammal Protection Act (MMPA) and Endangered Species Act. However, comparable mitigation and monitoring requirements defined in any: (1) NMFS (the Federal agency having MMPA management authority for cetaceans and pinnipeds, less Pacific walrus) and FWS (the Federal agency having MMPA management authority for Pacific walrus, polar bear, and sea otter) ITA and/or Letters of Authorization (LOA) obtained by the seismic survey operator will have precedence over any related measures listed below:

- Exclusion Zone – A 180/190 dB isopleth exclusion zone from the seismic-survey sound source shall be free of marine mammals before the survey can begin and must remain free of marine mammals during the survey. The purpose of the exclusion zone is to protect marine mammals from Level A harassment (injury). The 180 dB applies to cetaceans and the Pacific walrus, and the 190 dB applies to pinnipeds other than the Pacific walrus. The exclusion zones specified in ITAs and/or LOAs will take precedence over the MMS-identified exclusion zone.

¹ Nothing in this mitigation measure is intended to reduce personnel safety or prevent compliance with other regulatory requirements (e.g., U.S. Coast Guard or Occupational Safety and Health Administration) for marking or lighting of equipment and work areas.

- **Monitoring of the Exclusion Zone – Individuals** (marine mammal biologists or trained observers) shall monitor the area around the survey for the presence of marine mammals to maintain a marine mammal-free exclusion zone and monitor for avoidance or take behaviors. Visual observers monitor the exclusion zone to ensure that marine mammals do not enter the exclusion zone for at least 30 minutes prior to ramp up, during the conduct of the survey, or before resuming seismic-survey work after shut down. The NMFS will set specific requirements for the marine mammal monitoring program and observers.
- **Shut Down/Power Down –** A seismic survey shall be suspended until the exclusion zone is free of marine mammals. All observers shall have the authority to, and will, instruct the vessel operators to immediately stop or de-energize the airgun array whenever a marine mammal is seen within the exclusion zone or to power down to a sound level where the marine mammal is no longer in the exclusion zone. If the airgun array is completely powered down for any reason during nighttime or poor sighting conditions, it shall not be re-energized until daylight or whenever sighting conditions allow for the exclusion zone to be effectively monitored from the source vessel and/or through other passive acoustic, aerial, or vessel-based monitoring.
- **Ramp Up –** Ramp up is the gradual introduction of sound to deter marine mammals from potentially damaging sound intensities and from approaching the exclusion zone. This technique involves the gradual increase (usually 5-6 dB per 5-minute increment) in emitted sound levels, beginning with firing a single airgun and gradually adding airguns over a period of at 20-to-40 minutes, until the desired operating level of the full array is obtained. Ramp-up procedures may begin after observers ensure the absence of marine mammals for at least 30 minutes. Ramp-up procedures shall not be initiated when monitoring the exclusion zone is not possible. A single airgun operating at a minimum source level can be maintained for routine activities, such as making a turn between line transects, for maintenance needs or during periods of impaired visibility (e.g., darkness, fog, high sea states), and does not require a 30-minute clearance of the exclusion zone before the airgun array is again ramped up to full output.
- **Field Verification –** Before conducting the survey, the operator shall verify the radii of the exclusion zones within real-time conditions in the field. This provides for more accurate exclusion-zone radii rather than solely relying on modeling techniques before entering the field. When moving a seismic-survey operation into a new area, the operator shall verify the new radii of the exclusion zones by applying a sound-propagation series.
- **Reporting Requirements –** Operators must report immediately any shut downs/power downs due to a marine mammal entering the exclusion zones and provide the regulating agencies and MMS RS/FO with information on the frequency of occurrence and the types and behaviors of marine mammals (if possible to ascertain) entering the exclusion zones.
- **Walrus -** Vessels and aircraft should avoid concentrations or groups of walrus. Operators should, at all times, conduct their activities at a maximum distance from such aggregations. Seismic-survey and associated support vessels shall observe a 0.5-mile safety radius around Pacific walrus groups hauled out onto land or ice. Under no circumstances, other than an emergency, should aircraft be operated at an altitude lower than 1,500 feet ASL when within 0.5-mile of walrus groups. Helicopters may not hover or circle above such areas or within 2,500 lateral feet of such areas.

- **Polar Bear - Seismic survey operators shall adhere to any mitigation measures identified by the FWS to protect polar bears from being harassed and/or injured.**