# United States Department of the Interior

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


JUN 20 2006

Mr. Chandler Wilhelm
Shell Offshore Inc.
200 North Dairy Ashford
Houston, Texas 77079

Dear Mr. Wilhelm:

Your application dated February 16, 2006, requests a Federal permit to conduct geophysical operations on certain Outer Continental Shelf (OCS) lands. The activity is in the Chukchi Sea area as shown on the map accompanying your application. Your application specified WesternGeco will be your service providing company, and will conduct the subject operations using the vessels described in the Operation Plan. Operations are proposed to begin on or after June 15, 2006, and will be completed on or before November 15, 2006. The proposed program is a 3D marine seismic acquisition using airguns as an energy source.

Your application states that Shell Offshore Inc., has requested an Incidental Harassment Authorization (IHA) from National Marine Fisheries Service (NMFS) for whales and pinnipeds, and an IHA from US Fish and Wildlife Service (USFWS) for polar bears and walrus. The MMS will require a copy of the signed IHAs prior to the conduct of seismic operations. The Conflict Avoidance Agreement (CAA) between Shell Offshore Inc., and the North Slope communities is in place to resolve subsistence-related concerns. The procedures outlined in this agreement represent a good faith effort on the part of Shell Offshore Inc. to avoid conflict with subsistence activities which may be conducted during a portion of the time proposed for this seismic operation. Please provide this office with a signed copy of the CAA and notify us of any changes in the CAA.

OCS Permit 06-02 is hereby granted to conduct geophysical exploration operations on the OCS in the area and manner described in the application. A detailed track map of planned operations must be submitted to this office prior to the start of seismic operations. All operations are subject to the enclosed stipulations (see attachment) and approved Permit for Geophysical Exploration for Mineral Resources on the OCS. In all cases, the specific mitigating measures identified in the NMFS and USFWS IHAs will have precedence over the marine mammal related G&G permit requirements, including protocols for monitoring programs.

The information contained in the following paragraphs should be evaluated before initiating operations and appropriate action taken:

Endangered bowhead whales may occur in the Chukchi Sea during operations. Bowhead whales pass through the area on their fall migration back to the Bering Sea. They begin to leave

TAKE PRIDE IN AMERICA

Canadian Beaufort Sea waters in August and September and travel west through the southern Beaufort Sea into the Chukchi Sea. Other marine mammals that may appear in the project vicinity include beluga whales; spotted, bearded, and ring seals; gray whales; polar bears and walrus.

The Endangered Species Act (ESA) states there shall be no activity conducted which might jeopardize the continued existence of an endangered species or result in the destruction or adverse change of habitat of such species. In addition, the Marine Mammal Protection Act (MMPA) provides there shall be no unauthorized take of marine mammals. "Take" means to harass, hunt, capture, collect, kill, or attempt to harass, hunt, capture, collect or kill any marine mammals. Whenever whales or marine mammals are encountered in the project vicinity, Shell Offshore, Inc., and its contractors should exercise precautions to assure that activities are not in violation of the provisions of the MMPA or ESA.

Further information on the identification and occurrence of endangered whales or marine mammals in the proposed area of operations and the provisions and penalties of the ESA and the MMPA are available. This information may be obtained from the

U.S. Fish and Wildlife Service
Alaska Reigon
1011 E. Tudor Road
Anchorage, Alaska 99503
Telephone (907) 786-3467

and from the

National Marine Fisheries Service
Federal Building, Room C-554
Anchorage, Alaska 99513
Telephone (907) 271-5006

This permit is effective from the date of approval until November 15, 2006, or the completion of the survey, whichever occurs earlier. Please be advised that this office requests a weekly report of daily operations. We will require a completion report within 30 days following cessation of field operations.

Sincerely,

Rance R. Wall
Regional Supervisor
Resource Evaluation

3 Enclosures

# Seismic Survey Permit Stipulations.

- 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 under this permit shall be reported to the Regional Supervisor/Resource Evaluation. Serious or emergency conditions shall be reported without delay.
- Operators must maintain a minimum spacing of 15 miles between the seismic-source vessels for separate operations. The MMS must be notified by means of the weekly report whenever a shut down of operations occurs in order to maintain this minimum distance.
- Permit applicants shall use the lowest sound levels feasible to accomplish their data-collection needs.
- Vessels and aircraft should avoid concentrations or groups of whales. Operators should, at all times, conduct their activities at a maximum distance from such concentrations of whales. Under no circumstances, other than an emergency, should aircraft be operated at an altitude lower than 1,000 feet when within 500 lateral yards of groups of whales. Helicopters may not hover or circle above such areas or within 500 lateral yards of such areas.
- When weather conditions do not allow a 1,000-foot flying altitude, such as during severe storms or when cloud cover is low, aircraft may be operated below the 1,000-foot altitude stipulated above. However, when aircraft are operated at altitudes below 1,000 feet because of weather conditions, the operator must avoid known whale-concentration areas and should 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 must take every precaution to avoid harassment of these animals. Therefore, vessels should reduce speed when within 300 yards of whales and those vessels capable of steering around such groups should do so. Vessels may not be operated in such a way as to separate members of a group of whales from other members of the group.
- Vessel operators should avoid multiple changes in direction and speed when within 300 yards of whales. In addition, operators should 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 should not be operated at such a speed as to make collisions with whales likely. When weather conditions require, such as when visibility drops, vessels should adjust speed accordingly to avoid the likelihood of injury to whales.
- When any Permittee becomes aware of the potentially harassing effects of operations on endangered whales, or when any Permittee is unsure of the best course of action to avoid harassment of endangered whales, every measure to avoid further harassment should be taken until the 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 FWS in the event of any loss of cable, streamer, or other equipment that could pose a danger to marine mammals.
- Seismic cables and airgun arrays must not be towed in the vicinity of fragile biocenoses, 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 (e.g., the Boulder Patch, kelp beds) 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. Permittees must report to MMS any damage to fragile biocenoses as a result of their operations.
- Seismic-survey and support vessels will minimize operations that require high-intensity work lights, especially within the 20-m-bathymetric contour, to minimize the potential for adverse impacts to marine birds.

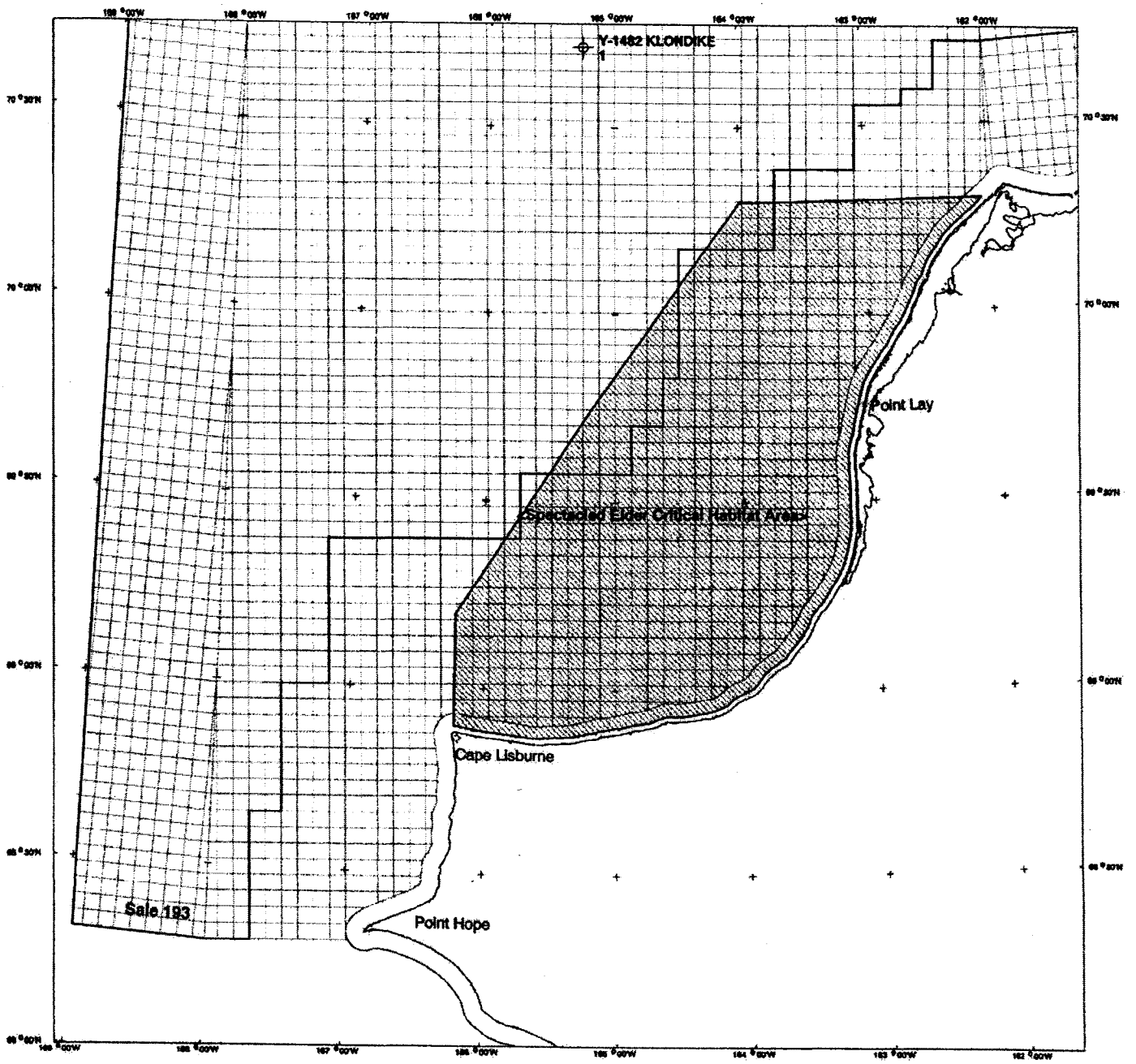
- High-intensity lights will be turned off in inclement weather when the seismic vessel is not actively conducting surveys to minimize the potential for adverse impacts to marine birds; however, navigation lights, deck lights, and interior lights could remain on for safety.
- All bird-vessel collisions shall be documented. Minimum information will include species, date/time, location, weather, and operational status of the survey vessel when the strike occurred. If eiders or murrelets that are injured or killed through collisions are recoverable, seismic-survey personnel should contact the Fairbanks Fish and Wildlife Field Office, Endangered Species Branch, Fairbanks, Alaska, at 907-456-0499 for instructions on the handling and disposal of the injured or dead bird(s).

**The following monitoring and mitigation measures are related to the MMPA Incidental Take Authorizations (ITA). The mitigation and monitoring requirements defined in the NMFS and FWS ITAs will take precedence over the measures listed below.**

- **Exclusion Zone** – A 180/190 dB isopleth exclusion zone (also called a safety 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 (Level A Harassment–injury) applies to cetaceans and the Pacific walrus and the 190 dB (Level A Harassment-injury) applies to pinnipeds, other than Pacific walrus.
- **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 monitoring programs and observers.
- **Shut Down** – The 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. 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 least 20-40 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 at night or 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 relying on modeling techniques before entering the field. Field-verification techniques must be consistent with NMFS-approved guidelines and procedures. 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.
- **Monitoring of the Seismic-Survey Area** – Aerial-monitoring surveys or an equivalent monitoring program acceptable to the NMFS may be required.

- **Reporting Requirements** – Reporting requirements, such as the monitoring plans required by FWS for polar bears and walruses prior to the start of seismic activities, provide the regulating agencies with specific information on the monitoring techniques to be implemented and how any observed impacts to marine mammals will be recorded. In addition, operators must report immediately any shut downs due to a marine mammal entering the exclusion zones and provide the regulating agencies with information on the frequency of occurrence and the types and behaviors of marine mammals (if possible to ascertain) entering the exclusion zones.
- **Temporal/Spatial/Operational Restrictions** – Dynamic management approaches to avoid or minimize exposure, such as temporal or spatial limitations are based on marine mammals being present in a particular place or time, or being engaged in a particularly sensitive behavior (such as feeding).
  - Seismic survey must not occur in the Chukchi Sea spring lead system before July 1, unless authorized by NMFS, to provide bowhead cow/calf pairs additional protection.
  - Seismic-survey activities are not permitted within the Ledyard Bay spectacled eider critical-habitat area.
  - Seismic-survey support aircraft must avoid overflights of Ledyard Bay critical-habitat area after July 1; unless aircraft are at an altitude in excess of 1,500 feet or human safety requires deviation (e.g., a medical emergency).
- A 120-dB monitoring (safety) zone for bowhead whales in the Beaufort Sea will be established and monitored, once four or more bowhead whale cow/calf pairs are observed at the surface during an aerial monitoring program within the area to be seismically surveyed during the next 24 hours. No seismic surveying shall occur within the 120-dB safety zone around the area where the whales were observed, until two consecutive surveys (aerial or vessel) indicate they are no longer present within the 120-dB safety zone of seismic-surveying operations.
- A 120-dB aerial monitoring zone for bowhead whales in the Chukchi Sea will be established and monitored: (1) once four or more migrating bowhead whale cow/calf pairs are observed at the surface during the vessel research-monitoring program; (2) once Barrow whalers notify NMFS or MMS that bowhead whale cow/calf pairs are passing Barrow; or (3) on September 25, whichever is earliest. Once notified by NMFS or MMS, a daily aerial survey will occur (weather permitting) within the area to be seismically surveyed during the next 24 hours. Whenever four or more migrating bowhead whale cow/calf pairs are observed at the surface during an aerial monitoring program, no seismic surveying shall occur within the 120-dB monitoring zone around the area where the whales were observed by aircraft, until two consecutive surveys (aerial or vessel) indicate they are no longer present within the 120-dB safety zone of seismic-surveying operations.
- A 160-dB vessel monitoring zone for bowhead and gray whales will be established and monitored in the Chukchi Sea during all seismic surveys. Whenever an aggregation of bowhead whales or gray whales (12 or more whales of any age/sex class that appear to be engaged in a nonmigratory, significant biological behavior [e.g., feeding, socializing]) are observed during an aerial or vessel monitoring program within the 160-dB safety zone around the seismic activity the seismic operation will not commence or will shut down immediately, until two consecutive surveys (aerial or vessel) indicate they are no longer present within the 160-dB safety zone of seismic-surveying operations.
- Dedicated aerial and/or vessel surveys, if determined by NMFS to be appropriate and necessary, shall be conducted in the Beaufort and Chukchi seas during the fall bowhead whale-migration period to detect bowhead whale cow/calf pairs and to detect aggregations of feeding bowhead and gray whales. The protocols for these aerial and vessel monitoring programs will be specified in the MMPA authorizations granted by NMFS.
- Survey information, especially information about bowhead whale cow/calf pairs or feeding bowhead or gray whales, shall be provided to NMFS as required in ITA's, and will form the basis for NMFS determining whether additional mitigation measures, if any, will be required over a given time period.
- Seismic-survey and associated support vessels shall observe a 0.5-mile (~800-meter) safety radius around Pacific walrus groups hauled out onto land or ice.
- Aircraft shall be required to maintain a 1,000-foot minimum altitude within 0.5 miles of hauled-out Pacific walruses.

- To avoid significant additive and synergistic effects from simultaneous seismic-survey operations that might hinder the migration of bowhead whales, NMFS and MMS will review the seismic-survey plans and may require special restrictions, such as additional temporal or spatial separations.
- Seismic-survey operators shall adhere to any mitigation measures identified by the FWS to protect polar bears from seismic-survey operations.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