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

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.

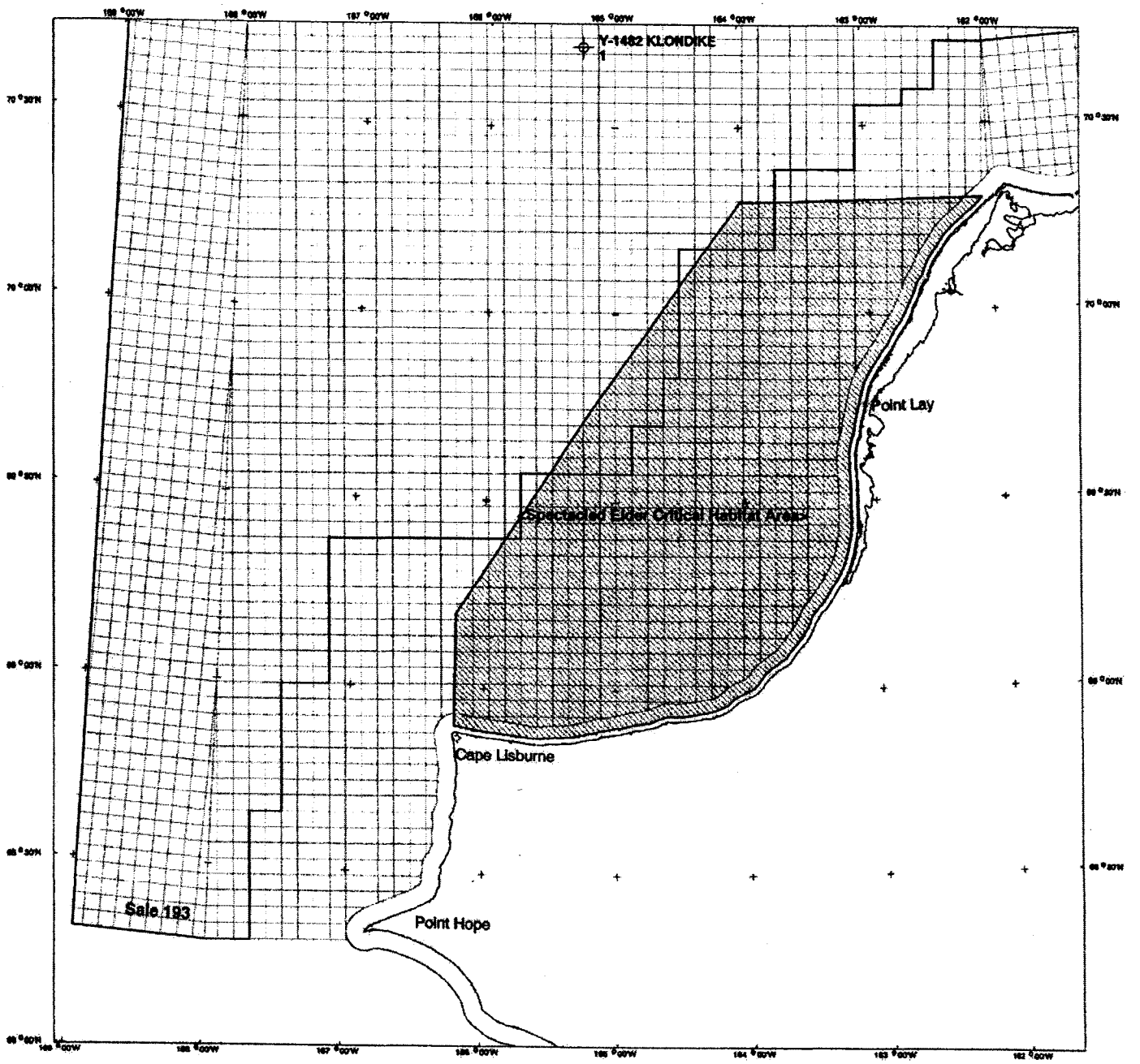
- High-intensity lights will be turned off in inclement weather when the seismic vessel is not actively conducting surveys to minimize the potential for adverse impacts to marine birds; however, navigation lights, deck lights, and interior lights could remain on for safety.
- All bird-vessel collisions 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.


Y-1482 KLONDIKE
1
Point Lay
Spectacled Eider Critical Habitat Area
Cape Lisburne
Sale 193
Point Hope

United States Department of the Interior

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

JUN 20 2006

To: Regional Supervisor, Resource Evaluation

From: Acting Regional Supervisor, Leasing and Environment

Subject: Review of Geological and Geophysical Permit Application 06-02 (Chukchi Sea); Shell Offshore, Inc.

We have conducted a review of the subject permit application to determine if the proposed seismic survey activities are within the scope of the environmental analysis contained in the final Programmatic Environmental Assessment (PEA) "Arctic Ocean Outer Continental Shelf Seismic Surveys-2006" (OCS EIS/EA, MMS 2006-038) and whether further NEPA analysis is necessary. The final PEA considered a range of alternatives before: 1) identifying Alternative 6 and its associated mitigation and monitoring measures as the agency's Selected Alternative (see Section V of the PEA for a description of the Selected Alternative and the associated mitigation measures); 2) making a finding of no significant impacts (FONSI); and 3) determining that there was no need to prepare an environmental impact statement.

Below is a brief description of the seismic survey activities proposed in the subject permit. Attachment 1 is our review of the proposed activities for consistency with the range of activities evaluated in the PEA. Attachment 2 is the FONSI for the PEA, which includes mitigation and monitoring measures that must be requirements of the G&G permit. We acknowledge and endorse that mitigation and monitoring requirements in the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (FWS) authorizations under the Marine Mammal Protection Act will have precedence over the marine-mammal-related G&G permit requirements.

The purpose of the subject permit application is for Shell Offshore, Inc. (SOI) to collect geophysical information in the Chukchi Sea OCS for the use in evaluating the potential for hydrocarbon accumulations and making decisions related to leasing and further exploration (hereinafter referred to as the "proposed activities"). The proposed activities are authorized under the Outer Continental Shelf (OCS) Lands Act and are regulated under 30 CFR 251. The MMS is mandated to preserve, protect, and develop oil and natural gas resources in the OCS in a manner which is consistent with the need (a) to make such resources available to meet the Nation's energy needs as rapidly as possible, and (b) to balance orderly energy resource development with protection of the human, marine, and coastal environments.

The proposed activities include a three-dimensional (3D) seismic survey for exploration purposes in the Chukchi Sea Program Area. The goal of the survey is to gather seismic data over approximately 2% of the total Chukchi Sea Program Area or about 2,800 square kilometers. Operations are proposed to commence in mid-July 2006 and be completed by November 15,

2006. Timing of the operation is dependent on there being relatively ice-free waters. Water depths in the proposed area of operation generally range from 30 to 50 meters. No operations are proposed nearshore or within the 2002-2007 5-Year Program Polynya Deferral Area.

The applicant, SOI, contracted the geophysical service company, WesternGeco, to conduct the operation. The seismic survey vessel is the *MV Gilavar*, owned by WesternGeco, which can accommodate more than 50 crew members. There will also be support vessels including a chase boat, the *MV Jim Kilabuk*, dedicated to the proposed action, and a supply vessel, the *MV Gulf Service*, which will be shared with two other proposed seismic surveys. The vessels will stage out of Dutch Harbor in early July. Resupply and crew changes will be done at Barrow. The *MV Peregrine Falcon* will be used as a shuttle vessel to move supplies and personnel between Barrow and the supply vessel.

The energy source for the 3D seismic survey will be two airgun arrays towed behind the seismic source vessel. The receivers will be 6 to 8 hydrophone cables, each approximately 5,400 meters long, spaced about 100 meters apart, and towed behind the seismic source vessel. Operations would be conducted around the clock, except for downtime due to weather, ice-conditions, repairs, etc.

SOI has applied for incidental harassment authorizations (IHA's) under the Marine Mammal Protection Act (MMPA) from NMFS and FWS for the "taking" of marine mammals. In support of their IHA applications, SOI has signed a Conflict Avoidance Agreement with the Alaska Eskimo Whaling Commission and affected villages' Whaling Captains to address the potential impacts of seismic survey operations on subsistence whaling.

Cumulative impacts associated with seismic surveys in the Chukchi Sea should be less than described in the PEA because only three seismic survey operations (which include SOI) are proposed to be permitted for the Chukchi Sea instead of the four surveys projected and environmentally analyzed in the PEA.

SOI's activities were included in the scope of activities covered by our Endangered Species Act Section 7 consultation and MMPA coordination with NMFS and FWS and our essential fish habitat consultation with NMFS. No coordination with the State of Alaska State Historic Protection Officer is required because no ocean-bottom-cable seismic survey operations are proposed by SOI.

We have found that all of the proposed activities are within the range of seismic surveys environmentally evaluated in the PEA. Accordingly, no further NEPA analysis is warranted. Moreover, because the proposed activities fall within the environmental analysis contained in the PEA, its accompanying FONSI is applicable to the proposed activities. The PEA analysis concluded that seismic surveys, especially as mitigated in the PEA alternatives, would result in adverse but not significant effects. Therefore, based on the PEA analysis, the MMS determines that no significant adverse affects (40 CFR 1508.27) on the quality of the human environment would occur from seismic survey activities proposed in the subject permit application. Furthermore, SOI's proposed activities will not cause undue harm to the aquatic or marine environment (43 U.S.C. 1340(g) and 30 CFR 251). The PEA and FONSI provide the NEPA

documentation for decision on this permit application. Therefore, no further review of SOI's proposed seismic survey activities in the Chukchi Sea is required.

Attachment 1. The following table compares the key features of the proposed activities in the Shell Offshore, Inc. (SOI) G&G permit 06-02 application for seismic survey activities with the scope of seismic survey activities environmentally assessed in the Final PEA and covered in its FONSI.

Factor	PEA Scenario	SOI Proposed Seismic Survey Activities
Area	Chukchi Sea OCS Beaufort Sea OCS	Chukchi Sea OCS
Survey type	2D/3D streamer ocean-bottom-cable high resolution/site-clearance	3D streamer
Seismic survey season.	July 1 to December 31, 2006	June 15 to November 15, 2006 Actual startup planned for July 15
Number of seismic source vessels	1 – 2 per survey	1
Source arrays	1 - 3 source arrays	1 source array
Airgun array size	1,800 - 4,000 cubic inches	Falls within range (proprietary information)
Receiver streamers	4 - 12 streamer-receiver cables each 3 - 8 kilometers long	6 streamers 5,400 meters long
Streamer array width (3D seismic)	400 - 900 meters	~ 530 meters
Streamer buoyancy	liquid paraffin or solid/gel	liquid paraffin (isopar)
Support vessels	Up to 3 per survey (including crew boats, supply boats, monitoring vessels, icebreakers)	1 support vessel (ice resistant), 1 shared* crew change/supply vessel, 1 shared* shuttle vessel
Aircraft	Fixed-wing aircraft and helicopters	Aircraft use for monitoring*; helicopters for emergency use only
Restrictions:		
Ledyard Bay	No seismic survey vessel, support boats, or operations will be allowed in the Ledyard Bay critical eider habitat	No seismic survey-related activities planned within the area.
Spring lead system in the Chukchi Sea	No seismic survey operations before July1 without prior authorization from the National Marine Fisheries Service.	No seismic survey operations planned before July 1.

* The three current permit applicants plan to share the use of the supply and shuttle vessels and may share aircraft for monitoring.

Attachment 2

FINDING OF NO SIGNIFICANT IMPACT

Programmatic Environmental Assessment
Arctic Ocean Outer Continental Shelf
Seismic Surveys - 2006

In accordance with the National Environmental Policy Act (NEPA) of 1969, as amended, the Department of the Interior, Minerals Management Service (MMS) prepared a Final Programmatic Environmental Assessment (PEA) (OCS EIS/EA MMS 2006-038). The PEA assessed the potential environmental impacts of various alternatives and mitigation measures associated with conducting oil- and gas-related seismic surveys in the Arctic Ocean outer continental shelf in 2006. The MMS released a draft of the PEA for public review and comment on April 6, 2006. The 30-day comment period was extended an additional 2 days in response to requests from stakeholders.

The activities analyzed in the PEA included conducting marine-streamer 3D and 2D seismic surveys, high-resolution site-clearance seismic surveys, and ocean-bottom-cable seismic surveys. The PEA's cumulative activities scenario and cumulative impact analysis focused on oil- and gas-related and non-oil and gas-related noise-generating events/activities in both Federal and State of Alaska waters that were likely and foreseeable. Other appropriate factors, such as arctic warming, military activities, and noise contributions from community and commercial activities, also were considered.

In accordance with Council on Environmental Quality regulations and guidelines, the PEA focused on analyzing the potential for adverse and significant impacts of those activities on environmental resources and identifying mitigation measures to avoid and/or minimize those impacts. The following more prominent issues and concerns were addressed in the PEA:

- Protection of subsistence resources and the Inupiat culture and way of life.
- Risks of oil spills and their potential impacts on area fish and wildlife resources.
- Disturbance to bowhead whale-migration patterns.
- Impacts of seismic-survey operations on marine fish reproduction, growth, and development.
- Harassment and potential harm of wildlife, including marine mammals and marine birds, by vessel operations and movements.
- Impacts on water and air quality.
- Changes in the socioeconomic environment.
- Impacts to threatened and endangered species.
- Impacts to marine mammals.
- Incorporation of traditional knowledge in the decisionmaking process.
- Effectiveness of marine mammal monitoring and other mitigation measures.

The results of the Endangered Species Act (ESA) consultation indicated that the Fish and Wildlife Service (FWS) concurred through informal consultation that there will be no adverse impacts on threatened, endangered, or candidate species under their jurisdiction, and the National Marine Fisheries Service (NMFS) stated that the activities associated with seismic surveys in the Beaufort and Chukchi seas may adversely affect but not jeopardize the continued existence of any species listed under the ESA that are under the jurisdiction of the NMFS.

Based on MMS' examination in the draft PEA of the potential impacts associated with the Proposed Action and review of comments received from the public and agencies, Alternative 6 (Seismic Surveys for Geophysical Exploration Activities would be Permitted with Existing Alaska OCS Geological and Geophysical Exploration Stipulations and Guidelines and Additional Protective Measures for Marine Mammals, including a 180/190 dB Specified-Exclusion Zone) comprise MMS' and NMFS' Selected Alternative. The Selected Alternative and the incorporated mitigation measures fulfill MMS' statutory mission and responsibilities and the stated purpose and need for the Proposed Action (to issue geophysical exploration permits for seismic surveys that are technically safe and environmentally sound) while

considering environmental, technical, and economic factors. By incorporating mitigation measures into the Selected Alternative and designating them as permit stipulations and/or conditions of approval, MMS has determined that no significant adverse affects (40 CFR 1508.27) on the quality of the human environment would occur from the Selected Alternative. Therefore, an environmental impact statement is not required and MMS is issuing this Finding of No Significant Impact (FONSI).

In consideration of the level of uncertainty in some resource areas and erring on the side of being protective of the resources, we also developed additional mitigation and monitoring measures to further reduce the level of any potential adverse effects. These measures are incorporated into the Selected Alternative in addition to the measures that define Alternative 6, providing additional protection of the resources and another level of proactive management. The suite of mitigation measures described below will be implemented as requirements in all 2006 Alaska OCS geological and geophysical (G&G) permits for open-water seismic survey activities.

To further ensure that seismic-survey operations in the Beaufort and Chukchi seas do not cause adverse impacts, MMS will conduct a separate review of each individual proposed 2006 G&G exploration permit application, in light of the PEA, to determine whether further NEPA analysis is necessary. Further analysis also will be conducted if the number of seismic-survey-permit applications exceeds the number of seismic surveys in the Proposed Action evaluated in this PEA.

To ensure compliance with the Marine Mammal Protection Act (MMPA), MMS is also requiring seismic-survey operators to obtain from NMFS and FWS an incidental take authorization (ITA)—which could be in the form of an incidental harassment authorization (IHA) or letter of authorization (LOA)—before commencing MMS-permitted seismic-survey activities. The ITA's mitigation and monitoring requirements would further ensure that potential impacts to marine mammals will be negligible and that there will be no unmitigable impacts to subsistence uses. The MMPA requires that authorized activities have no unmitigable adverse impact on subsistence uses of marine mammals.

To achieve this standard, the seismic operators are negotiating a Conflict Avoidance Agreement (CAA) with the Alaska Eskimo Whaling Commission and the affected villages' Whaling Captains Association. The CAA likely will include a prohibition on conducting seismic surveys during the bowhead whale-hunting season in the Beaufort Sea, describe a dispute-resolution process, and provide emergency assistance to whalers at sea. Implementation of the CAA further ensures that there will not be significant social or economic impacts on the coastal inhabitants of the Beaufort and Chukchi seas by avoiding an adverse impact on subsistence marine mammal-harvest activities.

<u>Mitigation and Monitoring Measures for all Resources.</u> The mitigation and monitoring measures that MMS will incorporate into individual seismic permits are summarized below.

The Selected Alternative 6 (Seismic Surveys for Geophysical Exploration Activities would be Permitted with Existing Alaska OCS Geological and Geophysical Exploration Stipulations and Guidelines and Additional Protective Measures for Marine Mammals, including a 180/190-dB Specified-Exclusion Zone) incorporates the following Alaska OCS Region standard 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.

The Selected Alternative also includes the following monitoring and mitigation measures related to the MMPA ITA's:

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 the 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).

Additional Measures – Given the lack of scientific certainty in some areas, MMS adopted a cautious approach in assessing potential impacts to certain marine mammal species and other marine biological resources. The following mitigation measures will further reduce the potential for adverse environmental impacts. The specific measures identified in NMFS and FWS ITA's will apply, where applicable, including protocols for monitoring programs.

- 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.
- 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.
- 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 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).

- Seismic-survey operators shall adhere to any mitigation measures identified by the FWS to protect polar bears from seismic-survey operations.

John Goll
Regional Director
Minerals Management Service
Alaska OCS Region

6/20/2006
Date