

**Finding of No Significant Impact for the Issuance of
An Incidental Harassment Authorization to
Shell Offshore Inc. to Take Marine Mammals by Harassment Incidental to
Conducting Open Water Marine Surveys
in the Beaufort and Chukchi Seas, Alaska**

National Marine Fisheries Service

Background

The National Marine Fisheries Service (NMFS) received an application from Shell Offshore Inc. (Shell) for an incidental harassment authorization (IHA) pursuant to NMFS' responsibility to authorize the take of small numbers of marine mammals incidental to activities other than commercial fishing, provided that NMFS determines that the actions will have a negligible impact on the affected species or stocks of marine mammals, and will not have an unmitigable adverse impact on the availability of those species or stocks of marine mammals for taking for subsistence uses, and sets forth permissible methods of taking and requirements pertaining to the mitigation, monitoring, and reporting of such takes. NMFS has satisfied those requirements for the authorizations for the take of small numbers of 8 species, by Level B Harassment only, incidental to marine and seismic surveys by Shell in the Beaufort and Chukchi Seas, Alaska, during the 2010 Arctic open-water season.

In accordance with the National Environmental Policy Act (NEPA) and its implementing regulations and agency NEPA procedures, NMFS completed an *Environmental Assessment on the Issuance of Incidental Harassment Authorizations to Take Marine Mammals by Harassment Incidental to Conducting Open Water Seismic and Marine Surveys in the Chukchi and Beaufort Seas*. This FONSI has been prepared to evaluate the significance of the impacts of NMFS' proposed action and is specific to Alternative 2 in the Environmental Assessment (EA), which was identified in a July 2010 Final EA (the EA) as the preferred alternative. Alternative 2 is entitled "Issuance of an IHA with Required Mitigation, Monitoring, and Reporting Measures." Based on NMFS' review of Shell's proposed actions and the measures contained in Alternative 2, NMFS has determined that no significant impacts to the human environment would occur from implementing the Preferred Alternative.

Significance Review

National Oceanic and Atmospheric Administration Administrative Order (NAO) 216-6 (May 20, 1999) contains criteria for determining the significance of the impacts of a proposed action. In addition, the Council on Environmental Quality (CEQ) regulations at 40 C.F.R. §1508.27 state that the significance of an action should be analyzed both in terms of "context" and "intensity." Each criterion listed below is relevant to making a finding of no significant impact and has been considered individually, as well as in combination with the others. The significance of this action is analyzed based on NOAA's criteria and CEQ's context and intensity criteria. These include:

Little or no mortality to fish and/or invertebrates is anticipated. The Beaufort and Chukchi Seas open-water marine survey program is predicted to have minor physical effects on the various life stages of fish and invertebrates. Though these effects do not require authorization under the IHA, the effects on these features were considered with respect to consideration of effects to marine mammals and their habitats, and NMFS finds that these effects from the survey itself on fish and invertebrates are not anticipated to have a substantial effect on biodiversity and/or ecosystem function within the survey area.

3) Can the proposed action reasonably be expected to have a substantial adverse impact on public health or safety?

Response: Issuance of the IHA associated with the surveys is not expected to have a substantial adverse impact on public health or safety. The constant monitoring for marine mammals and other marine life during operations effectively eliminates the possibility of any humans being inadvertently exposed to levels of sound that might have adverse effects. As described in question 5 below, mitigation measures imposed by the IHA will ensure that the marine and seismic activities will not interfere with any fall 2010 subsistence bowhead whale hunt in the Beaufort and Chukchi Seas.

4) Can the proposed action reasonably be expected to adversely affect endangered or threatened species, their critical habitat, marine mammals, or other non-target species?

Response: The proposed marine surveys may result in some Level B Harassment (in the form of short-term and localized changes in behavior and short-term displacement from habitat) of small numbers, relative to the population sizes, of 8 species of marine mammals by Shell. No injury or mortality is anticipated, and none will be authorized. Behavioral effects may include temporary and short-term displacement of marine mammals from within certain ensonified zones by acoustic equipment used for surveys (which are not expected to exceed the time of ensonification for an area), generally within 1,220 m from the airguns operated by Shell. The mitigation measures required for the activity are designed to minimize the exposure of marine mammals to sound and to minimize conduct of the activity in the vicinity of habitats that might be used by certain cryptic marine mammals (i.e., those that are more difficult to detect).

The following mitigation measures will be contained in the IHA: speed or course alteration when a marine mammal appears likely to enter the safety zone; power-down procedures when marine mammals are about to enter the safety zone; shutdown procedures when marine mammals are detected in the safety zone while the airgun array is at full volume or during a power-down; and ramp-up procedures. Taking these mitigation measures into account, effects on marine mammals from the selected alternative are expected to be limited to avoidance of the area around the seismic operation and short-term behavioral changes, falling within the Marine Mammal Protection Act (MMPA) definition of "Level B harassment". Because these mitigation measures will be included in the IHA proposed to be issued to Shell, no marine mammal

injury or mortality is anticipated. Numbers of individuals of all species taken are expected to be small, and the take is anticipated to have a negligible impact on the affected species or stock.

NMFS Office of Protected Resources initiated consultation under section 7 of the Endangered Species Act (ESA) with NMFS Alaska Regional Office (AKRO) on June 9, 2010. On July 13, 2010, NMFS AKRO issued a biological opinion concluding that the action may adversely affect, but will not jeopardize the continued existence of species listed under the ESA or destroy or adversely modify their critical habitat. The ESA-listed species that might be affected by this action are the bowhead, humpback, and fin whales.

Additional mitigation measures based on the Plan of Cooperation (POC)¹ will be required via the IHA to avoid conflicts between industry activities and the fall bowhead migration through the Beaufort and Chukchi Seas. The distribution of humpback and fin whales is considered extralimital in the Beaufort and Chukchi Seas, thereby causing NMFS to conclude that the probability of any humpback and fin whales being exposed to seismic sounds would be small. Even if humpback and fin whales are found to be within the project area, any effects would be limited to behavioral harassment.

5) Are significant social or economic impacts interrelated with natural or physical environmental effects?

Response: The proposed action will not have a significant social or economic impact to commercial fishing or other activities that might be affected by offshore seismic and site clearance and shallow hazards surveys for oil and gas deposits. Since some behavioral harassment of marine mammals is anticipated, the impacts to subsistence needs and culture were fully analyzed in the supporting EA. Marine mammals are legally hunted in Alaskan waters by coastal Alaska Natives. The species hunted include: bowhead and beluga whales; ringed, spotted, ribbon, and bearded seals; walrus; and polar bears. (Note that walrus and polar bear are under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS).) The importance of each of the various species varies among the communities and is based largely on availability. Bowhead and beluga whale hunting is the key activity in the subsistence economies in and around the Beaufort and Chukchi Seas. The whale harvests have a great influence on social relations by strengthening the sense of Inupiat culture and heritage in addition to reinforcing family and community ties. Harvesting of beluga whales generally occurs between April and July, and therefore is not expected in the area during the time of Shell's proposed surveys. Ringed seals are available year-round; however, the seismic survey will not occur during the primary period when these seals are typically harvested (i.e., October through June). Thus, there is no reason to expect a conflict between seismic surveys and

¹ A POC or information that identifies what measures have been taken and/or will be taken to minimize adverse effects on the availability of marine mammals for subsistence purposes is required to be submitted by an applicant pursuant to 50 CFR 216.104(a)(12). The POC specifies measures the applicant would take to minimize adverse effects on marine mammals where proposed activities may affect the availability of a species or stock of marine mammals for Arctic subsistence uses or near a traditional subsistence hunting area.

a subsistence harvest activity. Finally, the project area is not a primary hunting ground for bearded seals, so no conflict between the survey and a subsistence harvest activity would arise.

Therefore, NMFS has determined (based on the above stated reasons) that Shell's activities are not likely to result in significant socioeconomic or cultural impacts. The scheduling of the proposed marine surveys are expected to result in minimal, if any, conflict between the industry and subsistence users. As a result of these measures and the mitigation measures that will be implemented to reduce the potential for natural and physical effects, no significant social and economic impacts are expected.

6) Are the effects on the quality of the human environment likely to be highly controversial?

Response: Although there is some lack of agreement within the scientific and stakeholder communities about the potential effects of noise on marine mammals, including in this instance, bowhead whales, there is not a highly controversial, substantial dispute about the size, nature, or effect of the proposed action. The existence of some disagreement was demonstrated by a National Research Council (NRC 2005) report and by the lack of consensus among participants in the Marine Mammal Commission's Advisory Committee on Acoustic Impacts on Marine Mammals (MMC 2006). Over the past several years, comments and concerns from industry, environmental organizations, and Native Alaskan groups have focused mainly on: (1) questions and concerns related to NMFS' compliance with the NEPA and the MMPA; and (2) criticism of the mitigation and monitoring measures proposed by NMFS and MMS. Similar concerns were expressed in response to the release of the proposed Shell IHA in 2009. In reviewing these concerns (which are more specifically addressed and will be publicly available in NMFS' final IHAs determination), NMFS believes that its actions are in full compliance with the MMPA and the ESA. As noted elsewhere in this FONSI, NMFS is requiring, as proposed by Shell, a detailed mitigation and monitoring program designed to gather additional data and reduce impacts on affected marine mammal stocks to the lowest level practicable. In addition, the oil industry will jointly implement for the fourth year, a research program to gather additional data on the status of Arctic Ocean marine mammal populations.

Specific to the Shell's application, notices of receipt and request for 30-day public comment on the application and proposed authorization was published in the *Federal Register* on May 18, 2010 (75 FR 27708). During the comment period, NMFS received four comment letters from the following groups and organizations on the proposed Shell activities: the Marine Mammal Commission (Commission); the Alaska Eskimo Whaling Commission (AEWC); North Slope Borough (NSB) Office of the Mayor; Inupiat Community of the Arctic Slope; and Alaska Wilderness League, Audubon Alaska, Center for Biological Diversity, Defenders of Wildlife, Earthjustice, Greenpeace, Natural Resources Defense Council, Northern Alaska Environmental Center, Ocean Conservancy, Oceana, Pacific Environmenta, Sierra Club, and World Wildlife Fund (which also included an attached letter from Dr. David E. Bain). Inupiat concerns on the

potential impact on their traditional lifestyle have been addressed through the mitigation and monitoring measures in the IHA. As a result of the implementation of the required measures in the IHA, the industry will avoid significant sociocultural impacts. Little additional information that would augment or contradict the scientific basis for NMFS' determinations has been provided through public comment on the IHA, and NMFS continues to make its determinations under the MMPA based on the best available science. As a result, while NMFS believes that offshore oil and gas exploration and development in U.S. waters is of concern to certain members of the public, the activity proposed by Shell in the Beaufort and Chukchi Seas in the Arctic Ocean in 2010 is not highly controversial.

7) Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers, essential fish habitat, or ecologically critical areas?

Response: No substantial impacts to park land, prime farmlands, wetlands, or wild and scenic rivers are anticipated as a result of issuing an IHA to Shell as none of these unique areas are found in the action area. Similarly, as described in the response to question 1 above, no substantial impacts to EFH are expected. Bowhead whales are an important cultural resource to the Native Alaskan communities in the Arctic. Based on mitigation measures described in the EA, no substantial impacts to this cultural resource are expected.

Where data are available and sufficient, NMFS has attempted to identify other areas where aggregations of bowheads are known to occur and where feeding aggregations repeatedly have been observed. Where analyses identified areas where effects to bowheads potentially could be significant, NMFS has identified monitoring and mitigation measures to reduce the potential for such impacts to non-significant levels. For the Beaufort and Chukchi Seas, such mitigation includes prohibiting the generation of seismic sounds when an aggregation of 12 or more bowhead or gray whales are sighted within a 160 dB isopleth from an acoustic source.

8) Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

Response: NMFS has reviewed the 90-day marine mammal monitoring and mitigation reports submitted for the 2008 open-water seismic and site clearance and shallow hazards surveys conducted by Shell, BP Exploration (Alaska) Inc. (BP), PGS Onshore Inc., and ConocoPhillips Alaska Inc. (Aerts *et al.*, 2008; Hauser *et al.*, 2008; Brueggeman, 2009; Ireland *et al.*, 2009), and the 2009 shallow hazards and site clearance surveys by Shell (Ireland *et al.*, 2010). Based on the results of these studies collectively, NMFS concludes that the previous monitoring and mitigation measures prescribed in these marine mammal take authorizations were effective. In addition, actual take of marine mammals by Level B harassment was generally lower than expected due to the implementation of monitoring and mitigation measures. No Level A harassment (injuries

included) or mortality was observed or suspected as a result of the operations. Therefore, effects on the human environment are not likely to be highly uncertain or involve unique or unknown risks.

It should be noted, however, that more information is needed about the potential effects of disturbance from single vessel and multiple seismic vessels operating concurrently to the health of bowhead whale females and young calves and to the next year's reproductive potential of adult females. There is a current lack of scientific data about the effects of sound on the hearing of mysticete whales, particularly very young calves. In the past, appropriate and practicable mitigation measures have been required which were aimed at gathering additional data on these species while also reducing the potential for adverse effects on bowhead whales, especially cow/calf pairs. In the EA, NMFS again reviewed this information and determined that, because no other companies would be conducting a seismic survey in the Chukchi Sea in 2010, impacts to bowhead whales, especially cow/calf pairs, are likely to be reduced appreciably in comparison to previous years when multiple surveys have been conducted in a single season. NMFS will require Shell to monitor a 160-dB safety zone for the presence of aggregations of bowhead and gray whales from the source vessel during the marine and seismic surveys in 2010.

9) Is the proposed action related to other actions with individually insignificant but cumulatively significant impacts?

Response: Within the U.S. Arctic Ocean there are other Federal actions, such as oil-and-gas exploration and production (BP's Northstar facility) and MMS Lease Sales in the U.S. Chukchi and Beaufort Seas. However, these activities are temporally dispersed and use appropriate mitigation designed to reduce impacts on marine life to the lowest level practicable. Finally, heavy ship traffic does not occur in this area. Shell's activities will only occur for approximately 150 days; will take only small numbers of each species by behavioral disturbance; and are not expected to result in injury or mortality. While it is possible that some animals may experience multiple behavioral disturbance incidents due to the planned conduct of other actions in the larger Arctic Ocean, the potential for multiple, cumulative impacts to marine mammals is considered remote due to the distance between actions, the short term nature of anticipated behavioral effects, and the separation in time from any disturbance due to past activities. In addition, since mitigation and monitoring measures are in place or would be required for all actions that require MMPA take authorization, each action's effects would be managed to ensure the least practicable adverse impact to marine mammal species or stocks. Since fish and their habitats would be expected to be impacted only very close to an acoustic source, Shell's actions would not be expected to incrementally contribute to cumulatively significant impacts to fish or fish stocks or to their availability for harvest or as prey.

10) Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historic resources?

Response: The proposed marine surveys will occur off shore in the Beaufort and Chukchi Seas, therefore, they are not likely, directly or indirectly, to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places, as none are known to exist in the action area.

11) Can the proposed action reasonably be expected to result in the introduction or spread of a non-indigenous species?

Response: The primary concern regarding the introduction or spread of a non-indigenous species from the proposed seismic surveys is through ballast water exchange. Shell is responsible for ensuring that their ships are in compliance with all international and U.S. national ballast water requirements to prevent the spread of a non-indigenous species.

12) Is the proposed action likely to establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration?

Response: The proposed action will not set a precedent for future actions with significant effects or represent a decision in principle. To ensure compliance with statutory and regulatory standards, NMFS' actions under section 101(a)(5)(D) of the MMPA must be considered individually and be based on the best available information, which is continuously evolving. Moreover, each action for which an incidental take authorization is sought must be considered in light of the specific circumstances surrounding the action, and mitigation and monitoring may vary depending on those circumstances. In addition, the EA evaluated the potential effects of seismic survey activities that could occur in the 2010 open-water (ice-free) season. Regarding bowhead whales, there is extensive history and a regulatory and procedural structure to evaluate the effects of seismic survey noise on bowhead whales and other marine mammal species. For these reasons, NMFS does not believe that issuance of an IHA to Shell to conduct marine surveys in the Beaufort and Chukchi Sea, Alaska, in 2010 is precedent setting.

13) Can the proposed action reasonably be expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment?


Response: NMFS does not expect the actions to violate any Federal law or requirements imposed for the protection of the environment, as responsibilities under Section 7 of the ESA have been fulfilled (see response to question 4 above) and the action itself would result in issuance of IHAs in compliance with all standards required in the MMPA. MMS completed Section 7 responsibilities with the USFWS for the species under its jurisdiction. As the authorizing agency, MMS must comply with any required measures or conditions resulting from either the NMFS or USFWS Biological Opinions and Incidental Take Statements.

14) Can the proposed action reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?

Response: There are other seismic survey activities around the world that may impact marine mammals, but most are dispersed both geographically and temporally (Gulf of Mexico, North Sea, West Africa), are relatively short-term in nature, and most vessels either currently use, or will likely use in the future, standard mitigation and monitoring measures to minimize impacts to marine life. The actions will not target any marine species, but may affect certain non-target species, such as cetaceans and pinnipeds in the area, particularly bowhead and gray whales. Three other surveys are proposed to occur in the Arctic Ocean in 2010: Statoil's Chukchi Sea seismic survey between August and November, ION's Beaufort Sea seismic survey between October and December, 2010, and the U.S. Geological Survey in the Beaufort Sea between August and September, 2010. However, there will be no overlap of the ensonified areas between these surveys since they are dispersed geographically in space and time. In order to avoid, and if not possible, minimize, adverse effects, NMFS is requiring Shell to implement mitigation measures, such as monitoring exclusion zones to prevent injury; ramp-up; and power-down and shutdown procedures when marine mammals are observed just outside or inside the safety zones. These mitigation measures further reduce the potential for cumulative adverse effects. The surveys would also not be expected to have a substantial cumulative effect on any fish or invertebrate species. Although some loss of fish and other marine life might occur as a result of being in close proximity to the airguns, this loss is not expected to be significant. Due to the relatively large habitat area for marine mammals (and other marine species) in the Arctic Ocean and the small area of the Chukchi Sea that is of interest for conducting the marine and seismic surveys, the relatively short time that seismic operations will be in the area (approximately end of July to end of October), the dispersed nature of marine mammals (particularly pinnipeds), the relatively low density of all marine mammal species in this part of the Arctic, avoidance behavior by some species (e.g., bowheads and belugas) to the activity area, and the implementation of mitigation measures, NMFS does not anticipate that the proposed action will result in cumulative adverse effects that could have a substantial effect on marine mammals or other marine species.

DETERMINATION

In view of the information presented in this document and the analyses contained in the supporting *Environmental Assessment on the Issuance of Incidental Harassment Authorizations to Take Marine Mammals by Harassment Incidental to Conducting Open Water Seismic and Marine Surveys in the Chukchi and Beaufort Seas*, prepared by NMFS, it is hereby determined that the issuance of an IHA to Shell for the take, by Level B harassment only, of small numbers of marine mammals incidental to conducting open-water marine surveys in the Beaufort and Chukchi Seas, Alaska, in accordance with Alternative 2 in NMFS' 2010 EA will not significantly impact the quality of the human environment, as described above and supported by NMFS' EA. In addition, all beneficial and adverse impacts of the proposed actions have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an Environmental Impact Statement for this action is not necessary.


James H. Lecky, Director
Office of Protected Resources
National Marine Fisheries Service

JUL 20 2010
Date