

**Finding of No Significant Impact for the Issuance of an
Incidental Harassment Authorization to Take Marine Mammals
by Harassment Incidental to Conducting an In-ice Marine Seismic Survey
in the Beaufort and Chukchi Seas**

National Marine Fisheries Service

Background

The National Marine Fisheries Service (NMFS) received an application from ION Geophysical (ION), for an incidental harassment authorization (IHA) under the Marine Mammal Protection Act (MMPA) for the take of small numbers of marine mammals, by Level A and Level B harassment, incidental to an in-ice 2D marine seismic survey in the Beaufort and Chukchi Seas off Alaska, between October and December 2012. Section 101(a)(5)(D) directs NMFS to allow, upon request, the take of small numbers of marine mammals incidental to activities other than commercial fishing, provided that NMFS determines that the taking 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.

In accordance with the National Environmental Policy Act (NEPA) and its implementing regulations and agency NEPA procedures, NMFS completed an *Environmental Assessment for the Issuance of an Incidental Harassment Authorization to Take Marine Mammals by Harassment Incidental to Conducting an In-ice Seismic Survey in the Beaufort and Chukchi Seas* (EA). This Finding of No Significant Impact (FONSI) has been prepared to evaluate the significance of the impacts of NMFS' proposed action and is specific to Alternative 2 in the EA, which was identified as the preferred alternative. Alternative 2 is entitled "Issuance of an IHA with Required Mitigation, Monitoring, and Reporting Measures." Based on NMFS' review of ION'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 the NAO 216-6 criteria and CEQ's context and intensity criteria, and NMFS NEPA policy. These include:

1) Can the proposed action reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat (EFH) as defined under the Magnuson-Stevens Fishery Conservation and Management Act and identified in fishery management plans?

Response: NMFS does not anticipate that its proposed action (i.e., issuing an IHA to ION) or ION's proposed activity would cause substantial damage to the ocean and coastal habitats or EFH. ION's proposed in-ice marine seismic survey would result in only short-term marine mammal exposure to seismic sounds (for a total of up to 75 days, not including weather delays) within a limited area. The scientific literature suggests that there are few if any fish mortalities associated with seismic operations. Behavioral changes in fish associated with sound exposures are expected to be minor (e.g., temporary abandonment of the ensonified area). Only a small portion of the available foraging habitat would be subjected to sound pulses with received levels at or above 160 dB re 1 μ Pa at any given time. Therefore, potential impacts, if they were to occur, would be limited primarily to short-term avoidance responses and minor adverse impacts to fish resources; these impacts would not be significant.

Five species of Pacific salmon occurring in Alaska are the only managed species with essential fish habitat (EFH) designated in the Alaskan Beaufort Sea. NMFS determined that issuance of an IHA for the taking of marine mammals incidental to ION's in-ice marine seismic survey would not have an adverse impact on EFH; therefore, an EFH consultation was not required.

2) Can the proposed action be expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?

Response: The proposed issuance of the IHA to authorize the take of marine mammals by harassment incidental to ION's in-ice seismic survey would not have a substantial impact on biodiversity or ecosystem function within the affected areas. The impacts of the seismic survey itself on marine mammals are specifically related to the acoustic activities, and these are expected to be temporary in nature and not result in a substantial impact to marine mammals or to their role in the ecosystem. In accordance with the Preferred Alternative, NMFS will authorize the take, by Level B harassment (temporary behavioral disturbance and displacement) of 9 species of marine mammals and by Level A harassment (minor permanent hearing threshold shift, or PTS) of up to 1 individual bowhead whale, 3 individual beluga whales, and 4 individual ringed seals incidental to ION's activities. Neither serious injury nor mortality is anticipated and will not be authorized. Level A and B harassment of marine mammals is not expected to affect biodiversity or ecosystem function.

During the survey operations, only a small fraction of the available habitat would be ensonified at any given time (i.e., the 160-dB radius extends to a maximum of up to 27,800 – 42,200 m (depending on water depth) for ION's 26 airgun array with a total discharge of 4,450 in³). Disturbance to fish species would be short-term (i.e., most likely

only hours to days), and fish are anticipated to return to their pre-disturbance behavior once the seismic activity in a specific area ceases. Finally, although the proposed in-ice seismic survey would use an icebreaker, relatively few marine mammals would be present in the action area during the proposed survey season (October through December), and no seal lair is expected to be present during the time of the proposed survey. Thus, the proposed surveys would have little, if any, impact on the ability of marine mammals to feed in the area where airgun operations are conducted.

The potential for ION's activity to affect other ecosystem features and biodiversity components, including fish, invertebrates, seabirds, EFH, and oceanographic features are fully analyzed in the EA. NMFS' evaluation indicates that any direct or indirect effects of the action would not result in a substantial impact on biodiversity or ecosystem function. Little or no mortality to fish and/or invertebrates is anticipated. The Beaufort and Chukchi Seas in-ice seismic survey is predicted to have minor to negligible adverse 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 potential adverse effects from the seismic survey 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 seismic activities will not interfere with any fall 2012 subsistence bowhead whale hunts in the Beaufort and Chukchi Seas. Although the conduct of the seismic survey may carry some risk to the personnel involved (i.e., boat or mechanical accidents during surveys), those personnel would be required to be adequately trained or supervised in performance of the underlying activity (i.e., the seismic survey) to minimize such risk to personnel.

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 in-ice seismic survey may result in some Level A and 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 9 species of marine mammals. No serious 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, and possibly mild levels of PTS in up to 1 bowhead whale, 3 beluga whales, and 4 ringed seals, caused

by acoustic equipment used for surveys. The monitoring and mitigation measures required for the activity are designed to minimize the exposure of marine mammals to sound, to ensure that impacts are at the lowest level practicable.

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 exclusion 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 preferred alternative are expected to be mostly limited to avoidance of the area around the seismic operation and short-term behavioral changes, falling within the MMPA definition of “Level B harassment”. However, since the monitoring measures may become limited as the daylight hours are reduced during the seasonal progression into the winter months, it is possible that a few animals could be exposed to received noise levels that may cause PTS. Because these mitigation measures will be included in the IHA proposed to be issued to ION, no serious 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 and no unmitigable adverse impact on the availability of species or stocks for taking for subsistence uses.

NMFS Office of Protected Resources initiated consultation under section 7 of the Endangered Species Act (ESA) with NMFS Alaska Regional Office (AKRO) on June 5, 2012. In October 2012, NMFS AKRO issued a biological opinion concluding that the proposed actions 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 is the bowhead whale, with ringed and bearded seals proposed for listing. No critical habitat has been designated for these species, therefore none will be affected.

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 subsistence harvest in the proposed action area.

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

Response: Neither issuance of the IHA nor ION’s proposed action will have a significant social or economic impact to commercial fishing or other activities that could potentially be affected by offshore seismic survey. Since some Level B (behavioral) 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.

Level A (PTS) 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 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. The fall bowhead whale hunts conducted by the communities of Kaktovik, Nuiqsut, and Barrow typically occur before the proposed in-ice seismic survey. Therefore, there will be minimal potential adverse effects on bowhead whale subsistence harvest from the proposed in-ice seismic survey between October and December 2012. Additionally, ION will implement the measures contained in the POC which would further minimize any potential adverse impacts to subsistence harvest.

Therefore, NMFS has determined (based on the above stated reasons) that neither issuance of the IHA nor ION's proposed activities are likely to result in significant socioeconomic or cultural impacts. The scheduling of the proposed seismic survey is 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: The effects of this action on the quality of the human environment are not likely to be highly controversial. There is no substantial debate over the proposed action's size, nature, or effect, nor is there such debate over the underlying action (the proposed in-ice seismic survey).

For several years, NMFS has assessed and authorized marine mammal incidental take for multiple seismic surveys conducted within the same year and has developed relatively standard mitigation and monitoring measures which have been vetted during each public comment period for over nine years. Moreover, the scope of the action is not unusually large or substantial. The mitigation measures are based on NMFS's past experiences and practices with similar projects and consideration of comments submitted on this action and other similar actions by the Marine Mammal Commission (Commission) and members of the public.

Specific to ION's application, a Notice of Proposed IHA published in the *Federal Register* on August 17, 2012 (77 FR 49922), which allowed the public to submit comments for up to 30 days from the date of publication of the notice. During the public comment period, NMFS received comment letters from the following groups and

organizations on the proposed ION activities: the Marine Mammal Commission (Commission); the North Slope Borough, Ocean Conservancy, PEW Environment Group, Ocean Conservation Research, Oceana, and Alaska Wilderness League, Audubon Alaska, Center for Biological Diversity, Earthjustice, Natural Resources Defense Council, Northern Alaska Environmental Center, Ocean Conservation Research, Pacific Environment, Sierra Club, and World Wildlife Fund. The comments focused on concerns of NMFS proposed issuance of Level A takes, small number issues under the MMPA, uncertainty of marine mammal distribution and density in the winter months, and limited monitoring and mitigation measures during low light hours. All these issues have been analyzed in this EA, and all relevant comments will be addressed and included in the *Federal Register* notice if NMFS decides to issue the IHA(s). 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 ION in the Beaufort and Chukchi Seas in the Arctic Ocean in 2012 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 ION 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.

To mitigate potential impacts to subsistence hunting, no seismic survey will be conducted before the completion of fall bowhead whaling season, since the proposed in-ice seismic survey would start after October 2012.

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

Response: The effects of the action on the human environment are not considered to be highly uncertain and do not involve unique or unknown risks. The exact mechanisms of how different sounds may affect certain marine organisms are not fully understood. However, while NMFS's judgments on impact thresholds are based on somewhat limited data, enough is known for NMFS and the regulated entity (here ION) to develop precautionary monitoring and mitigation measures to minimize the potential for significant impacts on biological and cultural resources and to support NMFS's

findings for this action. Therefore, effects on the human environment are not highly uncertain and do not involve unique or unknown risks.

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

Response: ION's conduct of the seismic survey and NMFS' action of issuing an IHA are interrelated. These actions are not expected to result in cumulatively significant impacts when considered in relation to other separate actions with individually insignificant effects.

Within the U.S. Arctic Ocean there are other Federal actions, such as oil-and-gas exploration and production (BP's Northstar facility, exploratory drilling proposed by Shell in the Beaufort and Chukchi Seas, and an open-water seismic survey conducted by BP) and MMS (now the Bureau of Ocean Energy Management) 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 and commercial fishing do not occur in this area. ION's activities will only occur for approximately 75 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. Any cumulative effects caused by the addition of the in-ice seismic survey impacts on marine mammals will be limited and will not rise to the level of "significant," especially considering the timeframe of the proposed activities and the mitigation and monitoring measures.

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 in-ice seismic survey will occur in the offshore areas of the Beaufort and Chukchi Seas, therefore, it is 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. NMFS' proposed action is not likely to adversely affect native cultural resources along the Beaufort and Chukchi Seas coast. As described in question 5 above, implementation of mitigation and monitoring measures in the IHA issued to ION ensures that there will not be significant social or economic impacts on the coastal inhabitants of

the Alaska coast or an unmitigable adverse impact on the availability of marine mammals for subsistence uses by these residents.

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 survey is through ballast water exchange. ION is responsible for ensuring that its ships are in compliance with all international and U.S. national ballast water requirements to prevent the spread of a non-indigenous species. Therefore, neither NMFS's issuance of the IHA nor ION's proposed survey is expected to result in the introduction or spread of non-indigenous species, as all international and national preventive measures would be implemented.

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: Although ION's proposed in-ice seismic survey would be the first marine seismic survey that involves the use of an icebreaker in the Beaufort and Chukchi Seas, such technology has been used in other parts of the Arctic Ocean. 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 in the field of underwater sound. 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 2012 fall/winter season. Regarding bowhead whales, there is extensive history and a scientifically-based regulatory and procedural structure to evaluate the effects of seismic survey noise on bowhead whales and other marine mammal species. For these reasons, a finding of no significant impact for this proposed action, and for NMFS's issuance of an IHA, may inform the environmental review for future projects but would not establish a precedent or represent a decision in principle about a future consideration.

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?

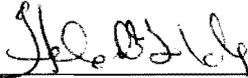
Response: NMFS does not expect the actions to violate any Federal law or requirements imposed for the protection of the environment, as responsibilities under Section 7 of the ESA have been fulfilled (see response to question 4 above), and the action itself would result in issuance of the IHA in compliance with all standards required in the MMPA.

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: ION's in-ice seismic survey and NMFS' issuance of an IHA are not expected to result in any significant adverse effects on species incidentally taken by harassment. 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 action 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. Only one other survey is being conducted in the Arctic Ocean in 2012: an open-water seismic survey in the Simpson Lagoon area of the Beaufort Sea by BP from July to October 2012. Two exploratory drilling programs are also planned for the U.S. Arctic Ocean in 2012. However, there will be no overlap of the ensonified areas between the two surveys or the exploratory drilling programs since they are dispersed geographically and temporally. In order to avoid, and if not possible, minimize, adverse effects, NMFS is requiring ION 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 mortality 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 Beaufort and Chukchi Seas that is of interest for conducting the seismic survey, the relatively short time that seismic operations will be in the area (from approximately October to mid-December), 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 believes that the proposed action will not 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 for the Issuance of an Incidental Harassment Authorization to Take Marine Mammals by Harassment Incidental to Conducting an In-ice Seismic Survey in the Beaufort and Chukchi Seas*, prepared by NMFS, it is hereby determined that the issuance of an IHA to ION for the take, by harassment only, of small numbers of marine mammals incidental to conducting an in-ice 2D marine seismic survey in the Beaufort and Chukchi Seas, Alaska, in accordance with Alternative 2 in NMFS' 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 analyzed to reach the conclusion of no significant impacts. Accordingly, preparation of an Environmental Impact Statement for this action is not necessary.



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National Marine Fisheries Service

OCT 11 2012

Date